Board of
Commissioners Meeting
May 17, 2014

PRELIMINARY AGENDA

FLORIDA INLAND NAVIGATION DISTRICT
Board of Commissioners Meeting

9:00 a.m., Saturday, May 17, 2014

Courtyard by Marriott Miami Coconut Grove
2649 South Bayshore Drive
Miami, (Miami-Dade County) FL 33133-5464

Item 1. **Call to Order.**

Chair Kavanagh will call the meeting to order.

Item 2. **Pledge of Allegiance.**

Commissioner Crowley will lead the Pledge of Allegiance to the United States of America.

Item 3. **Roll Call.**

Secretary Cuozzo will call the roll.

Item 4. **Consent Agenda.**

The consent agenda items are presented for approval. Commissioners may remove any items from this agenda that they have questions on or would like the Committee to discuss in depth. Any items removed would then be included in the regular agenda in an order assigned by the Chair.

(Please see back up pages 1 - 9 following the **COLOR** page)

RECOMMEND: Approval of the Consent Agenda.

A) Waterway Clean Up Program Funding Assistance to Keep Martin Beautiful for the Annual Intracoastal Waterway Cleanup Project in Martin County.
B) Florida Department of Environmental Protection (FDEP) Small-Scale Spoil Island Restoration and Enhancement Program Project, Brevard County, FL.

Item 5. **Additions or Deletions.**

Any additions or deletions to the meeting agenda will be announced.

RECOMMEND: Approval of a final agenda.

Item 6. **Public Comments.**

The public is invited to provide comments on issues that are NOT on today's agenda. All comments regarding a specific agenda item will be considered following Board discussion of that agenda item. *Please note: Individuals who have comments concerning a specific agenda item should make an effort to fill out a speaker card or communicate with staff prior to that agenda item.*

Item 7. **Board Meeting Minutes.**

The minutes of the following meetings are presented for approval.

- April 11, 2014 – Finance & Budget Committee Mtg. (Please see back up pages 8 - 10)
- April 11, 2014 – Board Meeting (Please see back up pages 12 - 36)

RECOMMEND: Approval of the minutes as presented.

Item 8. **Comments from the U.S. Army Corps of Engineers.**

U.S. Army Corps of Engineers (USACE) Intracoastal Waterway Project Manager, Ms. Shelley Trulock is scheduled to present an update on projects and activities.

(Please see back up pages 37 - 42)

Item 9. **Staff Report on Miami-Dade County Area Projects.**

Staff will present a report on the District's Miami-Dade County area projects.

(Please see back up pages 43 - 57)

Item 10. **Draft Financial Audit for FY 2012-2013.**

The District's Auditor has completed and will present a draft of the FY 2012-2013 Financial Audit for Board review and comment. The Finance and Budget Committee reviewed the draft audit this morning and will provide their comments.

(Please see the Finance and Budget Committee Agenda Package)

Item 11. **Agreement Extension, Roadway Access to Dredge Material Management Area (DMMA) NA-1, Nassau County, FL.**

In 2008, the Navigation District entered into an agreement with the trustees of Crane Island to cost-share in a permanent access road. As per the agreement, the District paid $620,000 of the total purchase price, and placed $300,964 in escrow, pending the construction of the permanent bridge to Crane Island.

Crane Island was recently sold to "The Range at Crane Island LLC", and the current owner has contacted staff to renew the agreement to confirm construction of the bridge. The current agreement expires in May 2014. Staff is proposing a 2-year extension of the existing agreement to allow adequate time for the developer to build the roadway bridge to Crane Island and allowing the Navigation District to utilize the bridge as a permanent access for DMMA NA-1. Currently, the site has a temporary access through the use of "crane mats".

The questions raised at the last meeting have been resolved. The escrow has been confirmed, and our attorney has reviewed and revised the proposed agreement.

(Please see back up pages 58 - 76)

RECOMMEND: Approval of a two-year agreement extension with "The Range at Crane Island LLC" for construction of a permanent access bridge to allow access to DMMA NA-1, Nassau County.

Item 12. **Presentation on the Okeechobee Waterway (OWW) Cut 1 Sediment Basin and Feasibility Study.**

Cut 1 of the OWW, also known as the "Crossroads", is one of the Navigation District's highest frequency dredging areas in the entire District. Approximately every three years, this authorized -8' channel is dredged and the material is placed in Dredge Material Management Area (DMMA) M-5 for future offloading. The frequency and logistics of dredging this area results in additional costs and efforts to manage this waterway.

Seeking alternatives to the current management strategy, on January 18, 2013 the Board approved a scope of services and fee quote in the amount of $74,781.08 from Taylor Engineering to analyze and recommend possible management alternatives to Okeechobee Waterway Cut 1 (Crossroads area).

Staff of Taylor Engineering will present their initial findings of this study and recommendations for future analysis and management of this area.

(Please see back up pages 77 - 138)

Item 13. **Scope of Services and Cost Proposal for Additional Engineering Services for the Okeechobee Waterway (OWW) Cut 1 Sediment Basin Study, Martin County, FL.**

While Taylor Engineering's initial findings for the referenced study were not supportive of constructing a sediment basin, some of the alternatives evaluated included additional dredging (advance maintenance) in the current dredge template and removal of existing shoals (i.e. alternatives 7 & 9). These alternatives appear to offer the best potential for future cost-efficient management of this frequently dredged area of the OWW.

Taylor Engineering has proposed additional analysis to further refine potential future management alternatives. Staff has reviewed the proposal and found it reasonable and consistent with the initial work effort.

(Please see back up pages 139 - 143)

RECOMMEND: Approval of a scope of work and cost proposal in the amount of $35,272.00 from Taylor Engineering for additional analysis of Management Alternatives for the Okeechobee Waterway Cut 1, Martin County.

Item 14. **Scope of Services and Cost Proposal for Seagrass Mitigation Area Identification, Intracoastal Waterway (IWW), Palm Beach County, FL.**

Taylor Engineering has been working on the identification of potential seagrass mitigation areas within the District in order to preserve these areas for future mitigation needs for management of the IWW.

At the February meeting, the results of the study for Brevard and Indian River Counties were presented to the Board. At the February meeting, the Board requested Taylor Engineering to pursue similar studies for the remaining applicable counties within the District.

The Board approved a similar study for St. Lucie County at our April meeting in the amount of $20,203.00. The District's engineer has prepared a similar scope and cost proposal for Palm Beach County. Staff has reviewed the proposal and it is consistent with their previous work.

(Please see back up pages 144 - 150)

RECOMMEND: Approval of a scope of work and cost proposal in the amount of $22,601.00 from Taylor Engineering for a Seagrass Mitigation Area Evaluation Study in Palm Beach County.

Item 15. **Scope of Services and Cost Proposal for Additional Engineering Services, Permit Modifications, Final Plans & Specifications, and Bidding Assistance for the Broward County Intracoastal Waterway Deepening Project, Broward County, FL.**

Since 2008, the Navigation District and Taylor Engineering have been working to deepen the Intracoastal Waterway in Broward County. The proposed 2.72 mile project would deepen the existing, authorized -10' federal channel to -15' (with a -2' over-dredge to achieve project maintenance depth) from just north of Port Everglades to north of the Las Olas Street bridge in Fort Lauderdale.

The Navigation District has obtained the required federal and state permits for this project, and has been working diligently for the past 1-1/2 years to obtain the required Broward County permit. This effort, accompanied by Port Everglades expressed concerns with utilizing the existing temporary Dredge Material Management Area (DMMA) on port property, have resulted in additional project costs and delays.

The county permit issuance appears imminent and this project will be moving forward to the bidding and construction phase. The need for this project and its economic justification have been well documented. However, we anticipate a challenging project that will be mechanically dredged and take approximately 18 months to construct.

Taylor Engineering has submitted a scope of services and a cost proposal to complete the required permitting for this project, as well as the final plans, specifications and bidding assistance necessary to move this project to construction. Note that a significant portion of the proposed cost estimate is comprised of required subcontractor costs that will be instrumental to the success of this project. Staff has reviewed the proposal and costs and found them to be within an acceptable range for a project of this magnitude.

(Please see back up pages 151 - 198)

RECOMMEND: Approval of a scope of work and cost proposal in the amount of $422,708.00 from Taylor Engineering for completion of the permitting, DMMA lease, plans & specifications, and bidding assistance for the Broward County Intracoastal Waterway Deepening Project.

Item 16. **Post Dredging Project Seagrass Survey Scope of Services and Fee Quote for the Intracoastal Waterway (IWW) in the Vicinity of Jupiter Inlet.**

In conjunction with the USACE efforts to dredge the Intracoastal Waterway Cuts P-1 through P-4 in the vicinity of Jupiter Inlet, FIND agreed to conduct both pre and post benthic surveys as part of the FDEP permit conditions. Staff has received a reasonable proposal from the contractor who conducted the pre-project survey for this dredging project.

(Please see back up pages 199 - 200)
Item 16 (cont.)

RECOMMEND: Approval of a scope of services and fee quote from CSA Ocean Services, Inc. in the amount of $19,655.00 to conduct post-project benthic surveys of the IWW in the Vicinity of Jupiter Inlet.

Item 17. **Partnership with the Jupiter Inlet District (JID) and Martin County to Conduct a Boat Traffic Study at the Loxahatchee River Railroad Bridge, Palm Beach County and the St. Lucie River Railroad Bridge, Martin County, FL.**

At the April Board meeting, Mr. Ken Craig of Taylor Engineering provided a presentation to the Board regarding the recent efforts by the Jupiter Inlet District to document vessel traffic at the Loxahatchee River railroad bridge. This effort was contracted by the Jupiter Inlet District in response to the potential for increased bridge closings due to the forthcoming operations of the high-speed rail "All Aboard Florida".

Staff had been requested to conduct a similar study at the St. Lucie River railroad bridge to determine vessel movements and the duration of present railroad bridge closures.

At that meeting, the Board directed staff to investigate partnering in efforts for data collection that may already be in effect. As a result, both the JID and Martin County have requested cost-share funding from the Navigation District in this important data collection effort. The U.S. Coast Guard has expressed that this data effort will be instrumental in their efforts to permit the future operations of the railroad bridges.

Although the data collection efforts are similar, there are subtle differences in studies. Staff suggests that the District contribute up to $25,000.00 to each study, which is less than half of the total costs.

(Please see back up pages 201 - 210)

RECOMMEND: Approval of up to $25,000.00 each per data collection study effort for the effects of bridge operations on boat navigation on the Loxahatchee River and St. Lucie River railroad bridges.

Item 18. **Nomination of Officers Committee Report.**

The Nomination of Officers Committee met earlier today and the Chair of the Committee will present their recommendations for officers for the next year. These officers will assume their positions after today's meeting.

(Please see Nomination of Officers Committee Agenda Package)

RECOMMEND Approval of the Nomination Committee of Officers recommendations for Officers for the period of June 2014 through May of 2015.

Item 19. **Finance and Budget Committee Report.**

The District's Finance and Budget Committee met prior to the Board meeting and will provide their recommendations concerning items on their agenda.

(Please see Finance and Budget Committee Agenda Package)

RECOMMEND: Approval of the recommendations of the District's Finance and Budget Committee.

Item 20. **Tallahassee Report.**

The District's Tallahassee Governmental Affairs firm has provided a report on the State Legislative session.

(Please see back up pages 211 - 229)

Item 21. **Washington Report.**

The District's Washington DC government relations firm has submitted a status report on their activities on the District's federal issues.

(Please see back up pages 230 - 258)

Item 22. **Additional Staff Comments and Additional Agenda Items.**

Item 23. **Additional Commissioners Comments.**

Item 24. **Adjournment.**

If a person decides to appeal any decision made by the board, agency, or commission with respect to any matter considered at such meeting or hearing, he or she will need a record of the proceedings, and that, for such purpose, he or she may need to ensure that a verbatim record of the proceedings is made, which record includes the testimony and evidence upon which the appeal is to be based.

MINUTES OF THE

FLORIDA INLAND NAVIGATION DISTRICT

Finance and Budget Committee Meeting

8:30 a.m., Friday, April 11, 2014

The Hilton Garden Inn

55 Town Center Boulevard

City of Palm Coast, Flagler County, Florida

ITEM 1. Call to Order.

Committee Chair Blow called the meeting to order at 8:31 a.m.

ITEM 2. Roll Call.

Assistant Executive Director Janet Zimmerman called the roll and Chair Blow, Commissioner Chappell, Commissioner McCabe, and Commissioner Sansom were present. Ms. Zimmerman stated that a quorum was present. Commissioner Bowman was absent.

ITEM 3. Additions or Deletions.

Chair Blow asked if there were any additions or deletions to the meeting agenda.

Mr. Crosley stated that there are no additions or deletions to the agenda and he distributed additional agenda information.

Commissioner Sansom made a motion to approve the agenda as presented. The motion was seconded by Commissioner Chappell. Chair Blow asked for any additional discussion. Hearing none, a vote was taken and the motion passed.

ITEM 4. Public Comments.

Chair Blow asked if there were any public comments on issues that are not on today's agenda. There were none.

ITEM 5. Financial Statements for February of 2014.

Mr. Crosley presented the District's financial statements for February of 2014.

Mr. Crosley stated that Paradise Bank had been working with the District to obtain a CD. He stated that the District secured a $5 million CD with them in January and two months later the bank contacted the District and cancelled the CD. He stated that Paradise Bank is a small bank and once they realized the limitations that collateralizing the District's money has on their other investments, it may not have been worth it to the bank. He stated that the District staff is discussing a review of the District's long-term investment criteria. He stated that the District accountant is shopping the $5 million for a CD with other banks.

Mr. Crosley stated that the District Fund A with the State Board of Administration is over $100,000.00 and can be moved to the District's banking account.

Commissioner Chappell made a motion to approve a recommendation to the full Board of the financial statements for February of 2014. The motion was seconded by Commissioner McCabe. Chair Blow asked for any additional discussion. Hearing none, a vote was taken and the motion passed.

ITEM 6. February 2014 Expenditure and Project Status Reports.

Mr. Crosley presented the Expenditure and Project Status Reports for February 2014.

Mr. Crosley stated that the field work and draft report of the District's annual audit has been completed and will be presented at the May meeting.

Mr. Crosley stated that the District is waiting on the Broward County permit for the IWW Broward County Deepening project. He asked for questions.

Chair Blow commented that the IWW Vicinity Ponce Inlet and Crossroads dredging projects and the DMMA NA-1 Construction project have all been completed under budget.

ITEM 7. Delegation of Authority Report.

Mr. Crosley presented the Executive Director's Delegation of Authority actions and stated that four actions were taken from March 5, 2014 through April 1, 2014 and are presented for committee review.

Mr. Crosley referenced Item 2, and stated that upon inspection of DMMA SJ-14 he noticed that part of the fence was down. He stated that because that part of the fence is located in a wetland, the posts had rotted at the bottom and staff had new fence posts installed in that area. He stated that the fencing contractor inspected the remaining fence and noted another area that needed work. He stated that staff will be moving forward with that repair in the near future.

Commissioner Sansom suggested using marine grade posts because the material is treated for use in a wet area.

ITEM 8. Additional Agenda Items or Staff Comments.

Chair Blow asked if there were any additional agenda items or staff comments. There were none.

ITEM 9. Additional Commissioners Comments.

Chair Blow asked if there were any additional Commissioner comments. There were none.

ITEM 10. Adjournment.

Chair Blow stated that hearing no further business the meeting was adjourned at 8:54 a.m.

MINUTES OF THE

FLORIDA INLAND NAVIGATION DISTRICT

Board of Commissioners Meeting

9:00 a.m., Friday, April 11, 2014

The Hilton Garden Inn

55 Town Center Boulevard

City of Palm Coast, Flagler County, Florida

ITEM 1. Call to Order.

Chair Kavanagh called the meeting to order at 9:04 a.m.

ITEM 2. Pledge of Allegiance.

Commissioner Netts led the pledge of allegiance to the flag of the United States of America.

ITEM 3. Roll Call.

Assistant Executive Director Janet Zimmerman called the roll and Chair Kavanagh, Vice-Chair Chappell, Treasurer Blow, Commissioners Crowley, Isiminger, McCabe, Netts, Sansom, and Williams were present. Ms. Zimmerman stated that a quorum was present. Secretary Cuozzo, Commissioner Bowman, and Commissioner Dritenbas were absent.

ITEM 4. Consent Agenda.

Chair Kavanagh asked if there were any comments or questions regarding the Consent Agenda. There were none.

Treasurer Blow made a motion to approve the Consent Agenda as presented. The motion was seconded by Commissioner Sansom. Chair Kavanagh asked for discussion. Hearing none, a vote was taken and the motion passed.

ITEM 5. Additions or Deletions.

Chair Kavanagh asked if there were any additions or deletions to the meeting agenda. Mr. Crosley stated that there were no additions or deletions to the meeting agenda, but that under Item 18, Staff Comments, he will discuss the; FY 2014-2015 Grant Listing, IWW Trip, and the Officer appointments in May.

Vice-Chair Chappell made a motion to approve the final agenda as presented. The motion was seconded by Commissioner Isiminger. Chair Kavanagh asked for discussion. Hearing none, a vote was taken and the motion passed.

ITEM 6. Public Comments.

Chair Kavanagh asked if there were any public comments on issues that are not on today's agenda. There were none.

ITEM 7. Board Meeting Minutes.

Chair Kavanagh asked if there were any comments or questions regarding the Board Meeting Minutes.

Commissioner Netts made a motion to approve the minutes as presented. The motion was seconded by Commissioner Isiminger. Chair Kavanagh asked if there was any further discussion. Hearing none, a vote was taken and the motion passed.

ITEM 8. Comments from the U.S. Army Corps of Engineers.

Mr. Crosley noted that Ms. Shelley Trulock, the Intracoastal Waterway (IWW) Project Manager with the U.S. Army Corps of Engineers (Corps), could not attend today's meeting.

Mr. Crosley stated that at the District's May Board meeting, Ms. Trulock will bring the Work Order for the IWW Indian River Reach 1 Dredging Project for approval. He stated that the Corps has received $1.7 million in federal funding that will be used for this project and that FIND will be contributing a similar amount of funding to this project.

Mr. Crosley noted that Ms. Trulock stated that dredging of the IWW, Jupiter was completed on March 5th and the post dredging surveys were completed and accepted on March 7th. He stated that just under 90,000 cubic yards of material was removed and placed on the beach.

Mr. Crosley stated that Cut 1, the north portion of this area of the IWW, has not been dredged in many years and he wanted to thank the Corps for getting this project completed.

Mr. Crosley stated that the IWW Bakers Haulover dredging project was completed by mid-April 2014. He stated that approximately 54,000 cubic yards of material was removed and placed on the beach. He noted that a boater hit the staging pipe and was injured. He noted that the staging pipe was correctly marked and that this was a Corps project.

Mr. Crosley stated that the IWW tour is scheduled from April 23rd – 25th and that commissioners should arrive in Miami the evening of April 22nd. He stated that

Commissioner Crowley has arranged a two-hour tour on the Miami River from 6:00 pm until 8:00 pm on the 22nd. He stated that Wednesday, the IWW tour will leave Miami and travel north to Deerfield Beach, with overnight accommodations in Deerfield. He stated that Thursday, the IWW tour will leave Deerfield Beach and travel north to West Palm Beach, with overnight accommodations in West Palm Beach. He stated that Friday, the IWW tour will leave West Palm Beach and travel north to Stuart, with an early afternoon arrival and the end of the tour.

Mr. Crosley stated that FIND did receive some calls from residents regarding the noise at night from the IWW Jupiter dredging project. Commissioner Isiminger asked if there is a way that the District could notify residents within the project area about the project before starting work.

Vice-Chair Chappell stated that FIND will need to perform some type of public relations contact with the local community and adjacent marinas before starting the IWW Deepening project in Broward County.

Commissioner Sansom suggested a newspaper story about the project, the process, and the end result.

Commissioner Sansom suggested that the District's Public Relations Committee meet to discuss this issue and perhaps set guidelines for these projects.

Treasurer Blow referred to the DMMA IR-2 site and asked if the District has heard anything from the citizens that were initially opposed to the construction of this site. Mr. Crosley stated that he received a telephone call from a Scripps reporter about the upcoming dredging project. He noted that the story was supposed to run last Sunday

in the TC Palm Newspaper, but to date, it has not run. He noted that this is a Corps project.

Treasurer Blow cautioned commissioners to refer all telephone calls or e-mails regarding DMMA IR-2 to Mr. Crosley at the District office.

Mr. Crosley noted that the dredging of the channel in that section of the waterway will remove muck and improve water clarity and water quality.

Commissioner Sansom noted that the Florida Legislature may provide funding to dredge muck in that section of the waterway. Mr. Crosley noted that if the legislative funding could be used for muck removal, the District would have to use existing DMMA facilities.

ITEM 9. Staff Report on Flagler County Area Projects.

Mr. Crosley stated that Phase I of the Dredged Material Management Plan (DMMP) for the Intracoastal Waterway in Flagler County was completed in 1993. He stated that Phase II of the DMMP was completed in 1994 and all major land acquisition was completed in 1996.

Mr. Crosley stated that the 50-year dredging projection for the 20 miles of channel in Flagler County is 926,905 cubic yards and the storage projection is 1,992,846 cubic yards.

Mr. Crosley stated that Phase I construction has been completed for all three upland sites in Flagler County, DMMA FL-3, DMMA FL-8, and DMMA FL-12. He stated that all the sites have been fenced and the buffer of DMMA FL-12 was landscaped several years ago. He stated that stabilization of the shoreline of DMMA FL-8 has been

completed along with the installation of a pedestrian pathway along the shoreline that connects an existing waterfront walkway to the City of Palm Coast's Waterfront Park.

Mr. Crosley stated that plans and specifications for DMMA FL-3 were completed in 2013. He stated that the Board recently approved a contract for the bidding and construction management oversight of this site for the eventual construction this year.

Mr. Crosley stated that routine maintenance dredging of the Intracoastal Waterway in the vicinity of the Matanzas Inlet and in Cut F-2 was completed in September of 2011. He stated that the material was placed on the beach in Summerhaven. He stated that this project is likely to be undertaken again in 2015 or 2016.

Mr. Crosley stated that the Flagler County Waterways Economic Study was completed in 2002 and updated in 2011. He noted that the waterways in Flagler County are completely man made. He stated that the updated study found that the waterway related businesses in the county employ 1,226 people, with salaries of $47.8 million, and a total economic impact of $216 million. He stated that property values were determined to be increased by $163 to $185 million by the presence of the IWW channel. He stated that there are approximately 3,737 registered vessels in the county.

Mr. Crosley stated that since 1986, the District has provided $2.1 million in Waterways Assistance Program funding to 22 projects in Flagler County having a total constructed value of $3.8 million. He noted that the county, the City of Flagler Beach, Marineland and the City of Palm Coast have all participated in the program.

Mr. Crosley stated that notable projects funded include: Bing's Landing, Moody, Grand Haven South and North Park boat ramps, Marineland Marina and Flagship Harbor Preserve.

Mr. Crosley stated that the District's Cooperative Assistance Program has provided funding assistance to 23 projects with elements in Flagler County. He stated that notable projects include: Florida Marine Patrol Officer Funding; Manatee Acoustic Warning System; FWC Officer Equipment Funding and, Environmental Education Exhibits at Gamble Rogers State Park. He stated that the District's funding assistance for the Flagler County portion of these projects was approximately $492,100.00.

Mr. Crosley stated that the District's Interlocal Agreement Program (which is a sub-set of the WAP and CAP programs) has provided funding assistance to two projects. He stated that the District's funding assistance for the Flagler County portion of these projects was approximately $25,000.00.

Mr. Crosley stated that the District currently prints and distributes the following brochure with specific information about Flagler County Waterways: the Economic Impact of Flagler County Waterways.

Mr. Crosley stated that the District has consistently partnered with the City of Palm Coast on waterway cleanup projects in Flagler County, in the amount of $5,000 per year.

Mr. Crosley stated that Flagler County has previously participated in the Small-Scale Derelict Vessel Removal Program with $6,503 contributed in FIND funding.

Commissioner Netts stated that the residents of Flagler County are very appreciative of the District's funding assistance for these local projects. He stated that Flagler County looks forward to many years of this partnership.

Commissioner McCabe asked about the small floating dock adjacent to Bing's Landing Park. Commissioner Netts stated that is a dry launch for canoes and kayaks.

ITEM 10. Presentation and Discussion of a Potential Boat Traffic Study and Navigation Concerns at the St. Lucie River Railroad Bridge, Martin County, FL.

Mr. Crosley introduced Mr. Ken Craig of Taylor Engineering to provide a presentation to the Board regarding the recent efforts by the Jupiter Inlet District to document vessel traffic, by camera, at the Loxahatchee River train bridge. He stated that this effort was contracted by the Jupiter Inlet District in response to the potential for increased bridge closings due to the forthcoming operations of the high-speed rail "All Aboard Florida". He stated that this high-speed rail will run from Orlando to Miami. He stated that he had requested to schedule the "All Aboard Florida" staff to make a presentation to the District in May about this project, but he learned that the EIS will not be ready at that time. He stated that the District would like to conduct a similar study at the St. Lucie River train bridge to determine vessel movements and the duration of present bridge closures.

Mr. Crosley stated that the three bridges that concern the District are the Loxahatchee River train bridge, near the Jupiter Inlet and a residential area, the St. Lucie River train bridge that provides access across Florida, and the New River train bridge which is near commercial marine businesses. He noted that the concern is there will be 32 trains every 16 hours that will require additional bridge closings, which have the

potential to affect boating. He stated that the FEC has stated that there will be improvements to the train crossings and train traffic would be increasing for freight even without the "All Aboard Florida" project.

Mr. Craig, for Taylor Engineering stated that Taylor Engineering recently completed a study of the Loxahatchee River train bridge for the Jupiter Inlet District. He stated that the Loxahatchee River train bridge has a four-foot height clearance at mean low water. He stated that the Loxahatchee River train bridge runs parallel to the Alternate A-I-A fixed clearance bridge, which has a 35-foot clearance at mean low water and has enough clearance for sport fishing boats.

Mr. Craig stated that the concern regarding these train bridges will be the additional 32 closings per day in addition to the current freight closings.

Commissioner Sansom suggested looking at historical train traffic and associated impacts in the three areas the District is concerned about and compare that information to the new proposed train traffic. Commissioner McCabe suggested reviewing historical train traffic and historical boat traffic data.

Mr. Craig stated that to monitor the Loxahatchee River train bridge, cameras were placed upstream of the bridge on channel markers both north and south, parallel to the markers. He stated that these high-definition battery-operated cameras were single frame time lapse, set to photograph every 20 seconds around the clock for 30 days. He stated that every 30 days the camera is serviced and provided with a new battery.

Mr. Craig stated that the photographs showed all boat traffic, including the number of small boats that can travel under the bridge when the bridge is closed and the amount of large boat traffic traveling when the bridge is open. He stated that when that

bridge is open, there is a mad rush of large boats scrambling to go through the opening before it closes again.

Mr. Craig stated that the data the cameras collected included date, time, vessel length, draft, and travel direction. He stated that it was determined that approximately 100 boats per hour, during daylight hours, traveled under the Loxahatchee River train bridge.

Commissioner Isiminger asked if the cameras could record the vessel's FL numbers. Mr. Craig answered no. He stated that the Jupiter Inlet District does not want to identify vessels or invade boater's privacy.

Mr. Craig stated that the project was started January 14th and 2,000 boats traveled in January and 6,000 boats traveled in February under the Loxahatchee River train bridge. He stated for two days in February, over 600 boats per day traveled under the train bridge. He stated that the biggest boating day in this area is Sunday, followed by Saturday averaging over 450 boats per day traveling under this train bridge. He stated that Taylor Engineering's staff is working on the data for March, 2014. He stated that the Jupiter Inlet District's goal is to have one year's worth of data specific to this bridge. He stated that all of this data is reviewed and processed by a degreed engineer. He stated that this will be a defensible data report.

Mr. Craig stated that the statistics will most likely change with the change of seasons and the boater traffic could decrease in the summer months. He stated that he will also coordinate this information with the weather.

Mr. Craig stated that Taylor Engineering is collecting four data time-points on the Loxahatchee River train bridge: the first movement of the bridge going down, including

how long the bridge is down; when the train arrives; the last visible image of the train; and the first movement of the bridge opening.

Commissioner Sansom asked the amount of time the train bridge is down each time a freight train passes. Mr. Craig answered 22 minutes is an average bridge close time per train. He stated that the train bridge closing average lead time is 17 minutes, with two or three additional minutes for the train to pass. He noted that the majority of daylight freight trains travel Wednesday through Friday.

Commissioner Sansom stated that the train bridge cycle is approximately 2.5 minutes from open to close without a train and that he would like to know the estimated cycle time for the train bridge, including lead time for a high-speed train to pass.

Commissioner Isiminger asked if the District historically gets involved in bridge issues and schedules that are located on the District's waterways.

Treasurer Blow stated that when the Bridge of Lions in St. Augustine was constructed, there was a lot of local controversy regarding various issues and FIND and the U.S. Coast Guard were both actively involved in helping to resolve those issues.

Mr. Crosley noted that the Marine Industries generally look to FIND as a commenting agency on waterway issues for boating interests. He stated that he, Ms. Zimmerman, and Secretary Cuozzo attended the Marine Industries Association of Palm Beach County meeting about the "All Aboard Florida" project. He suggested that Secretary Cuozzo is in favor of an "All Aboard Florida" representative meeting with the District to provide additional information about this project. He stated that Secretary Cuozzo is concerned about the negative impact this project could have on the boating industry and boaters. He noted that Martin County is generally against this project.

Mr. Craig stated that Taylor Engineering are the engineers for Martin County and that the county has expressed an interest in reviewing this issue.

Vice-Chair Chappell stated that the "All Aboard Florida" project is relevant to Broward County. He stated that FIND is funding the New River project and is currently planning the Broward County IWW deepening project to attract larger boats and support a growing local marine industry. He stated all of those businesses will be impacted by the "All Aboard Florida" project.

Chair Kavanagh stated that it is the District's responsibility to make sure that the waterways are open and available for transport, especially in Stuart. She noted that the St. Lucie train bridge, when it is down, contributes negatively to waterway travel. She stated that the "All Aboard Florida" project will contribute to additional train bridge closings. She noted that it is the District's responsibility to make sure that there is boater access to all of the District's waterways and the Okeechobee Waterway (OWW) is one of the District's waterways.

Commissioner McCabe stated that the District has a mission and statutes that govern our work and she questioned if there is a legal answer to the question regarding the District's involvement in the "All Aboard Florida" project.

Mr. Crosley stated that the District is the state sponsor for the OWW and the District does not necessarily have a direct responsibility for the Loxahatchee Waterway.

Commissioner Sansom stated that as a Board, he feels that the District should be very careful about its role in this issue. He stated that it is important to facilitate information gathering so interested parties can make an informed decision about the project. He stated that the "All Aboard Florida" project involves significant state policies

and economic issues. He suggested that the District become a guiding entity in train bridge studies regarding marine commerce. He stated that the District does not need to be in an advocacy position one way or another on this issue.

Commissioner Crowley stated that the law firm he is employed with represents "All Aboard Florida" and he will not participate in this discussion.

Commissioner Netts noted that the Governor is passionate about economic development and if the District were to become involved in this issue, it could appear that the District is attempting to impede economic development. He stated that could put this District in the position of losing all support from the Governor's office. He stated that the District is involved in the waterway from the top of the water down, not bridge clearance.

Mr. Crosley stated that the District has had an active interest in bridge issues, particularly the Bridge of Lions. He stated that the District's grant program has provided funding for studies and bridge issues.

Attorney Breton stated that after reviewing the District's authorizing legislation, he found the following "that the Board is hereby authorized and empowered to expend funds of the District for publicizing the Intracoastal Waterway and its availability to watercraft, print and distribute information; and such other information and data, desirable, useful, or attractive to give full information regarding said waterway to promote its use and navigation by watercraft of all kinds." He stated that FIND could commission a study and disseminate that information to the U. S. Coast Guard and other decision makers.

Commissioner Sansom noted that the District has several small funding programs that operate outside of the grant cycle. He stated that the District has a waterway cleanup program and a derelict vessel removal program. He stated that information assistance, if requested, could be considered for funding.

Mr. Crosley summarized that the Board feels that the District could entertain cost-sharing for these studies, but not take the lead.

Attorney Breton stated that FIND has the authority to fund these types of studies and noted that if local government wants to do a study and has the authority to do a study, the District can do an Interlocal Agreement and cost share.

ITEM 11. Scope of Services and Cost Proposal for Seagrass Mitigation Area Identification, Intracoastal Waterway (IWW), St. Lucie County, FL.

Mr. Crosley stated that Taylor Engineering has been working on the identification of potential seagrass mitigation areas within the District in order to preserve these areas for future mitigation needs for management of the Intracoastal Waterway (IWW.)

Mr. Crosley stated that at the District's February meeting, the results of the study for Brevard and Indian River Counties were presented to the Board. He noted that the final drafts of these studies are posted on the District's website under the "files" section, awaiting final edits and approval.

Mr. Crosley stated that at the February meeting, the Board requested Taylor Engineering pursue similar studies for the remaining applicable counties within the District. He stated that the District's engineer has prepared a scope and cost proposal for St. Lucie County and he noted that staff has reviewed the proposal and it is consistent with their previous work.

Commissioner Netts made a motion to approve a scope of work and cost proposal in the amount of $20,203.00 from Taylor Engineering for a Seagrass Mitigation Area Evaluation Study in St. Lucie County. The motion was seconded by Commissioner Isiminger. Chair Kavanagh asked for discussion. Hearing none, a vote was taken and the motion passed.

ITEM 12. Interlocal Agreement Extension No. 7 with St. Johns County for Removal of Dredge Material from Dredge Material Management Area (DMMA) SJ-1, St. Johns County, FL.

Mr. Crosley stated that in 2005, the Navigation District entered into an Interlocal Agreement with St. Johns County to allow the removal of beach quality sand from DMMA SJ-1 to perform dune restoration on the county's beaches. He stated that the agreement has been extended numerous times over the years and was modified to allow the county's contractor to perform repair and do maintenance work on the DMMA for the District. He stated that the county has requested an additional agreement extension to remove up to 36,000 cubic yards of beach-compatible material from the site. He stated that the proposed extension continues this beneficial relationship. He stated that this extension includes the requirement that the county perform certain access roadway repairs from washouts caused by the county during their operations.

Treasurer Blow made a motion to approve Interlocal Agreement Extension No. 7 with St. Johns County for the removal of up to 36,000 cubic yards of material from DMMA SJ-1, St. Johns County. The motion was seconded by Commissioner Isiminger. Chair Kavanagh asked for discussion. Hearing none, a vote was taken and the motion passed.

ITEM 13. Agreement Extension, Roadway Access to Dredge Material Management Area (DMMA) NA-1, Nassau County, FL.

Mr. Crosley stated that in 2008, the Navigation District entered into an agreement with the trustees of Crane Island to cost-share in a permanent access road. He stated that as per the agreement, the District paid $620,000.00 of the total purchase price, and placed $300,964.00 in escrow, pending the construction of the permanent bridge to Crane Island.

Mr. Crosley stated that Crane Island was recently sold to "The Range at Crane Island LLC", and the current owner has inquired about the status of this agreement. He stated that the current agreement expires in May 2014. He stated that staff is proposing a two-year extension of the existing agreement to allow adequate time for the developer to build the permanent bridge to Crane Island. He stated that once the bridge has been constructed, the agreement (with conditions) allows the District to utilize the bridge as a permanent access for DMMA NA-1. Currently, the site has a temporary access through the use of "crane mats".

Treasurer Blow noted that this $300,964.00 that is being held in an escrow account is not listed on the District's financial reports. He stated that the funds are in escrow with a reputable law firm in Fernandina Beach, but staff has not received an accounting of these funds. Mr. Crosley stated that when the agreement was executed, the District booked the entire transaction, including the funds being held in escrow.

Treasurer Blow stated that the District has been involved in the agreement since 2008 with several delays, and now the property has been sold and the agreement transferred to a different company. He stated that he is concerned about the new company's financing and how to protect FIND's $300,964.00. He suggested that the

District meet with the new owners to discuss this project and the District's escrow account.

Mr. Crosley suggested that there are three options: (1) the Board can approve the two-year agreement extension and verify that the escrow account is safe. He noted that Range called the District and stated that they were moving forward with this project; (2) The District could say that Range is now in violation of the agreement and renegotiate the agreement with an attempt to get the escrow funds back; (3) or the District could say that Range is in violation of the contract and ask for the funds back.

Treasurer Blow stated that he feels that this is a legal issue and that the District needs to make sure that if the new owner defaults and does not construct this bridge, that the District does not lose access to the DMMA NA-1 site. Mr. Crosley stated that the District's permit allows for the use of crane mats for access to the DMMA site and that access could continue.

Mr. Crosley stated that the Board would like staff to perform additional research on this item and bring it back at the May meeting. He stated that the concern is that this current agreement expires May 24th. Treasurer Blow suggested a motion extending the agreement from 30 to 90 days to allow for further review of the items of concern.

Commissioner McCabe asked how Range is in default. Mr. Crosley stated that the agreement stated that the bridge would be constructed within a time-frame that has passed. Commissioner McCabe questioned the District's ability to enforce this agreement when it contains a clause "to their best ability."

Commissioner Isiminger made a motion to authorize staff to consult with legal counsel to make sure that the District's easement and funds are protected and determine a

recommendation regarding "The Range at Crane Island LLC" for construction of a permanent access bridge to allow access to DMMA NA-1, Nassau County. The motion was seconded by Commissioner Sansom. Chair Kavanagh asked for discussion. Hearing none, a vote was taken and the motion passed.

ITEM 14. Site Mowing Project Bids, Indian River County Dredge Material Management Areas (DMMA) IR-2, IR-7 and IR-14, and St. Lucie County DMMA SL-2.

Mr. Crosley stated that staff has requested bids from qualified applicants for the quarterly mowing of a total of four DMMA's (IR-2, IR-7, IR-14, and SL-2 in Indian River and St. Lucie Counties. He stated that these sites are currently cleared and maintained (or constructed) and the existing mowing contracts have expired. He stated that the low bidder has worked on other District sites and is qualified to perform the project. The contract will continue for a three-year period.

Commissioner McCabe made a motion to approve the qualified low bid from Santa Cruz Construction, Inc. in the amount of $6,177.00 per event for the three year, quarterly mowing of four DMMA's in Indian River and St. Lucie Counties, total contract price is $74,124.00. The motion was seconded by Commissioner Netts. Chair Kavanagh asked for discussion. Hearing none, a vote was taken and the motion passed.

ITEM 15. Discussion and Purchase of Electronic Media for Board Agendas.

Mr. Crosley stated that the Board has requested staff investigate the possibility of providing the monthly agenda digitally, as opposed to the current method of publishing a monthly agenda and mailing it to each Commissioner.

Mr. Crosley stated that there are several options that could be pursued and he presented information on several products for review and stated that he would like to

know the format the Board wants for the agenda. Vice-Chair Chappell stated that he as a 16GB Samsung 3, which would be enough for this purpose and as far as ability to read the content, a 10.1 screen would be large enough. He stated that as far as format, Android, Windows, or Apple is personal to each person.

Mr. Crosley stated that staff scans the agenda to a PDF format and places that on the District's web site. He stated that this is the best format for the District's agenda. He questioned if readability or portability is most important.

Vice-Chair Chappell suggested that commissioners be provided with FIND e-mail addresses to receive District information. He stated that he is not comfortable receiving FIND information on his personal or work e-mail.

Commissioner Sansom asked why commissioner tablets are necessary. He stated that he can download public information onto his tablet for his use and that does not make his tablet part of the public records.

Commissioner Isiminger stated that he would like to keep everything from FIND separate from his personal or office information. He stated he wants everything in one spot and he will use that one device to review FIND current and historical information. He stated that for better resolution, he would prefer items be converted to PDF and not scanned to PDF. He stated that additionally, there are GIS packages that cost less than $300,000.00.

He stated that when he receives electronic packages for other agency meetings, you can go to the table of contents, click on an item, and it will go to that item, so everything is linked.

Commissioner Netts stated that the City of Palm Coast went electronic three years ago. He stated that they all have an iPad with an application that allows the user to highlight, make notes, and underline items. He stated that occasionally there will be a document that will have to be scanned into the agenda and occasionally that document will not scan in well. He noted that these iPads are not being given to commissioners, they are being issued to commissioners and this equipment will be FIND owned. He stated that the IT Department for the City of Palm Coast can help the District.

Mr. Crosley stated that considering the previous comments, it would appear that the Microsoft Surface Tablet may be the best fit for FIND's use.

Commissioner Crowley stated that he feels that going electronic is a good idea. He stated that for District meetings, during discussion, he pulls up maps of District projects on his telephone. He noted that he has heard bad feedback and comments regarding the Microsoft Surface tablet. Commissioner Netts concurred. Commissioner Crowley stated that if you want a stable system with good hardware, it should be an iPad or Samsung tablet. He stated that if the District is going to go electronic, then it needs to be done right.

Commissioner McCabe stated that this effort should be correct at the very beginning so commissioners can grow with the technology. She asked what is the difference in cost between Apple and Microsoft and inquired as to what is the District would not get with Microsoft that we would get with Apple. Mr. Crosley stated that he does not have a preference. He stated that his concern with Apple is that the system does not have a USB port and also it may not be completely compatible with all Microsoft software.

Commissioner Netts suggested that the District consider making this purchase under the state purchasing agreement or other government contract.

Commissioner Sansom stated that he prefers an Android because it provides a broader platform.

Commissioner Sansom stated that the hotel or meeting facility should have Wi-Fi so commissioners can connect to a link during a meeting to look up information if necessary.

Attorney Breton stated that his tablet has a cellular with a data plan with Wi-Fi and he can use it anywhere.

Mr. Crosley stated that he does not want to have to depend on the hotel having Wi-Fi. Commissioner Isiminger noted that the Executive Director's tablet could have a Wi-Fi hot spot on it.

Commissioner Netts stated that the agenda can be downloaded at home and brought to the meeting. He stated that if the agenda needs to be updated, if the hotel does not have Wi-Fi, Mr. Crosley can hand out paper copies at the meeting.

Mr. Crosley stated that he will perform additional research and come back to the May meeting with further options.

Commissioner McCabe commented that Apple does not crash and is completely compatible with windows. Commissioner Crowley noted that Apple has apps for Word and Excel.

Commissioner Sansom stated that it is important not to over equip commissioners. He stated that this tablet will be for the agenda and District e-mails.

ITEM 16. Finance and Budget Committee Report.

Treasurer Blow stated that the Finance and Budget Committee met earlier today and the committee reviewed and recommends approval of the February 2014 financial statements, delegation of authority, and expenditure and project status report.

Treasurer Blow stated that a small community bank had to return District funds and cancel a District CD. He stated that staff is shopping rates and will place the funding shortly. He asked for questions. There were none.

Treasurer Blow made a motion to approve the recommendations of the District's Finance and Budget Committee. The motion was seconded by Commissioner Sansom. Chair Kavanagh asked for discussion. Hearing none, a vote was taken and the motion passed.

ITEM 17. Washington Report.

Mr. Crosley stated that the District was successful in obtaining $1.75 million for the U.S. Army Corps of Engineers for the fiscal year (FY) 2014 work plan for maintenance dredging of the Indian River Reach 1.

Mr. Crosley stated that the District is now asking our congressional delegation to submit two language requests to the House Energy and Water Appropriations Subcommittee that would support funding for inland waterway dredging in FY 2015. He stated that these requests are for Army Corps Operations and Maintenance in the amount of $50 million for Navigation and $50 million for Inland Waterways.

Mr. Crosley stated that the House Energy and Water Appropriations Subcommittee held a hearing this week on the USACE budget proposal for FY 2015. He stated that the Intracoastal Waterway received $600,000.00 in the budget, which is

the highest level of initial funding the IWW has received since being represented by Alcalde & Fay. He stated that this funding will help keep the Corps funded.

Mr. Crosley stated that the District continues to work on language on the Magnuson-Stevens Reauthorization legislation.

Mr. Crosley stated that Mr. Davenport has had an email dialogue with the USACE Jacksonville District Office and the National Marine Fishers Service (NMFS), both of who have told him that there are no NMFS/USACE consultation agreements that cover large maintenance dredging projects for routine maintenance dredging activities to occur without mitigation, even for ports.

Vice-Chair Chappell stated that if Mr. Davenport schedules a meeting with the NMFS he would like to attend.

ITEM 18. Additional Staff Comments and Additional Agenda Items.

Chair Kavanagh asked if there were any additional staff comments or agenda items.

Ms. Zimmerman stated that the District's FY 2014-2015 Assistance Program has received 65 WAP and 2 CAP applications. She stated that technical sufficiency letters will go out next week and applicants will have until May 30th to get sufficiency items to the District. She stated that the applicants have until the final September Board Tax Hearing to get their project permits.

Mr. Crosley noted that the District's Waterway Tour is scheduled for April 23rd, 24th, and 25th and will begin in Miami and head north to Port Salerno. He provided a trip summary from the Corps about the tour. Mr. Crosley stated that the participants starting

the first day in Miami should plan to arrive the afternoon of April 22 for a two-hour tour of the Miami River that has been planned by Commissioner Crowley.

Mr. Crosley noted that Officer Elections will take place with the District's May 17, 2014 Nomination Committee meeting. He stated that commissioners interested in becoming an officer should contact him.

ITEM 19. Additional Commissioners Comments.

Chair Kavanagh asked if there were any additional Commissioner comments.

Commissioner Sansom stated that the state budget process is approximately half-way done. He stated that the Senate has $10 million in the budget for muck management of the Indian River Lagoon. He stated that the funding would go to the South Florida Water Management District to be spent in coordination with FIND for the Indian River Lagoon project.

Commissioner Isiminger stated that the Senate confirmed new commissioners this month.

Commissioner Isiminger complimented Commissioner Netts on his comments the previous night about the District.

Commissioner Crowley stated that the way Commissioner Netts tells the FIND history is delivered in a manner that keeps it interesting. He stated that it is important to get the information out to the public, and that the commissioners need to work to get the District's message out.

Commissioner Netts thanked commissioners for their comments. He stated that last evening's event was attended by many local officials and he noted that three-quarters

of them are newly elected officials. He stated that he felt it was important that those officials know who FIND is and what the District does.

ITEM 20. Adjournment.

Chair Kavanagh stated that hearing no further business the meeting was adjourned at 11:44 a.m.

US Army Corps of Engineers ®
Jacksonville District

IWW STATUS UPDATE
FIND Board of Commissioners Meeting
May 17, 2014

WORK ACTIVITIES IN FY 14:

1. IWW: Indian River Reach 1(Indian River County)

2. IWW: Bakers Haulover / Jupiter (O&M Supplemental project)

3. MISC.

US Army Corps of Engineers ®
Jacksonville District

IWW STATUS UPDATE
FIND Board of Commissioners Meeting
May 17, 2014

AIWW = Atlantic Intracoastal Waterway Norfolk to St. Johns
IWW = Intracoastal Waterway Jacksonville to Miami (12' and 10' projects)
DMMA = Dredge Material Management Area

1. WORK ACTIVITY: IWW Indian River Reach 1 (Indian River County)

CONTRACT AMOUNT: TBD

DESCRIPTION OF WORK: Development of plans and specifications for the IWW Indian River Reach 1 and procurement of the O&M dredging contract. Material from this reach is non beach quality and will be placed upland in the newly constructed DMMA IR-2. Preliminary estimates for shoaling quantities include 200,000 cy of material within Reach 1.

SCHEDULE (Tentative):

Submit Exemption Letters to FDEP:	26 Nov 2013A
Complete Plans &Specification (including reviews and certifications):	2 June 2014
Contract Advertisement Initiated:	10 June 2014
Bid Opening:	9 July 2014
Contract Award:	6 Aug 2014
NTP Issued:	4 Sept 2014
Mobilization Complete:	2 Oct 2014
Dredging Complete:	31 Dec 2014

FIND WORK ORDER: Work order for developing plans and specifications for Indian River Reach 1 was approved at the May 2013 FIND Board Meeting. Wire transfer of funds was completed 25 June 2013.

At the May FIND Board meeting a work order will be briefed which requests $2,500,000 in FIND contributed funds for the O&M dredging contract. $1,000,000 in Federal funds will also be utilized for the contract.

NAME OF CONTRACTOR: TBD

STATUS: P&S are underway and advertisement of the dredging contract is tracking for 10 June 2014. Work order is being briefed at the May FIND Board meeting which requests funding for the O&M dredging contract.

US Army Corps of Engineers ®
Jacksonville District

IWW STATUS UPDATE
FIND Board of Commissioners Meeting
May 17, 2014

2. WORK ACTIVITY: IWW Bakers Haulover / Jupiter – O&M Supplemental Project

DESCRIPTION OF WORK: Based on shoaling incurred within these two reaches with the passage of Hurricane Sandy in the Fall of 2012, Emergency Supplemental funding was received by the Corps to proceed with O&M dredging for these two reaches. Approximately 50,000 cy of material will be removed from within the Bakers Haulover reach of the IWW and 125,000 cy of material will be removed from within the Jupiter reach of the IWW. All material is beach quality. There is approximately 3,000 cy of material that is advanced maintenance within cut 4.

SCHEDULE:

Contract Advertisement Initiated:	15 Aug 2013A
Bid Opening:	5 Sept 2013A
Contract Award:	19 Sept 2013A
NTP Issued:	7 Dec 2013A
Mobilization Complete:	27 Jan 2014A
Begin Dredging:	2 Feb 2014A
Dredging Complete:	5 Apr 2014A

FIND WORK ORDER: N/A; 100% of the plans and specifications and dredging contract is being funded with Hurricane Sandy Supplemental funding.

NAME OF CONTRACTOR: Contract was awarded to Southwind Construction Corporation on 19 Sept 2013 in the amount of $2,601,206.58.

STATUS: Dredging is complete for both the Bakers Haulover Reach and Jupiter Reach of the IWW. 49,592cy of beach quality material was dredged out of the Bakers Haulover Reach and 85,986cy of material from the Jupiter Reach. All dredge material was placed on the beach. This will be the last report for this effort.

US Army Corps of Engineers ®
Jacksonville District

IWW STATUS UPDATE
FIND Board of Commissioners Meeting
May 17, 2014

3. WORK ACTIVITY: Miscellaneous Topics

a. Development of Plans and Specifications for Broward Reach 1: Corps would like to move forward with initiation of plans and specifications for this reach, with 100% Federal funding. Depending on funding received in FY 2015, FIND Contributed Funds for the dredging may be needed.

b. OWW Contributed Funds Agreement: Discussions are currently underway on the path forward for receiving funds from FIND for efforts associated with the OWW. Currently, the thought is that completion of design and construction of the OWW DMMAs could be accomplished under the current Contributed Funds Agreement between the Corps and FIND. The DMMAs could feasibly be used for either the IWW or OWW which we feel provides us with some flexibility.

c. IWW Inspection Tour: Just wanted to say THANKS to everyone who participated. The tour was a 100% success!

US Army Corps of Engineers ®
Jacksonville District

FLORIDA INLAND NAVIGATION DISTRICT
INTRACOASTAL WATERWAY
WORK ORDER No. 39-2014-01

In accordance with the Memorandum of Agreement (MOA) between the Department of the Army and the Florida Inland Navigation District (FIND) for acceptance of contributed funds for the Atlantic Intracoastal Waterway, entered into on September 3, 1997, as amended on October 22, 2001, by amendment number 1, work order number 39-2014-01 is described per the following requirements:

1. Project Name: O&M Maintenance dredging of Indian River Reach 1, Indian River County, Florida.

2. Detailed Scope of Work: The Corps will be performing maintenance dredging of Indian River Reach 1, located in Indian River County, Florida. Dredge material will be placed in Dredge Material Management Area IR2 since it is not suitable for beach placement. It is anticipated that approximately 200,000 cubic yards of material will be dredged and placed upland in IR2. Dredging will be accomplished with a cutter suction dredge.

3. Tentative Schedule: A request for proposal will be issued under the existing Small Business Dredging Multiple Award Task Order Contract (MATOC. The request for proposal for this specific effort is anticipated to be issued by. June 10, 2014. Bid opening is scheduled for July 9, 2014 and award by August 6 2014.

4. Funding arrangements providing for funding of obligation: Contributed funds must be received in accordance with the MOA as amended prior to obligation. The current working level estimate is $3,500,000, including supervision and administration of the contract as well as engineering during construction.

5. The amount of funds required and available to accomplish the scope of work: $1,000,000 in Federal funds are currently available and will be used for this O&M dredging effort. An estimated $2,500,000 in FIND Contributed Funds are required to fund the remainder of the O&M dredging contract.

6. Identification of individual project managers: The Contributor's project manager is Mark Crosley, 561-627-3386. The Government's project manager is Shelley Trulock, 904-232-3292.

7. Identification of types of contracts to be used: Dredging will occur under the Corps' small business dredging MATOC.

8. Types and frequency of reports: Monthly progress reports will be provided by the Government's project manager to the Contributor's project manager. The Government will also provide quarterly accounting in accordance with the MOA.

9. Identification of which party is responsible for contract administration, records maintenance, and contract audits: Corps of Engineers North Florida Area Office.

10. Procedures for amending or modifying the work order: This work order can be amended or modified in writing with mutual consent of both parties.

11. Such other particulars as are necessary to describe clearly the obligations of the parties with respect to the requested goods and services for this work order: None

THE DEPARTMENT OF THE ARMY	FLORIDA INLAND NAVIGATION DISTRICT
BY:_____	BY:_____
Alan M. Dodd Colonel, U.S. Army District Engineer	Gail Kavanagh Chair, Florida Inland Navigation District
DATE:_____	DATE:_____

MIAMI-DADE COUNTY
PROJECT STATUS UPDATE

May 2014

Dredged Material Management Plan.
Phase I of the Dredged Material Management Plan (DMMP) for the Intracoastal Waterway in Miami-Dade County was completed in 2003. Phase II of the DMMP was completed in 2005 and all major land acquisition was completed in 2007.

The 50-year dredging projection for the 48 miles of channel in Miami-Dade County is 574,292 yds^3, and the storage projection is 1.2 million yds^3. Dredging of Reach II in the vicinity of Bakers Haulover Inlet was completed in 2011, and again recently completed in April of 2014. For the most recent dredging event, approximately 50,000 yds^3 of material was dredged by the USACE utilizing super-storm Sandy funding and placed on the nearby beach. (Please see attached location maps).

Waterways Economic Study
The Miami-Dade County Waterways Economic Study was completed in 2007 and updated in 2011. The study identified approximately 901 recreational waterway-related businesses in the county (please see map) employing 7,094 people, with salaries of $294.3 million, a total economic impact of $1.2 billion, which generated $54 million in tax revenue. Property values were determined to be increased by $4.1 billion by the presence of the IWW channel. There are currently approximately 56,000 registered vessels in the county. The past recession was estimated to have caused a reduction of $1 billion in marine related economy, the loss of 5,835 jobs, and a decrease of $42.5 million in tax revenue.

Waterways Assistance Program
Since 1986, the District has provided $ 45.2 million in Waterways Assistance Program funding to 161 projects in the County having a total constructed value of $ 140.9 million. The County and nine cities have participated in the program. See attached map and project listing.

Notable projects funded include: several Spoil Island Management Projects, the Marjorie Stoneman Douglas Biscayne Nature Center, Bicentennial Park Improvements, repair of County marinas following Hurricane Andrew, Haulover Marina reconstruction, and the South Pointe Pier project.

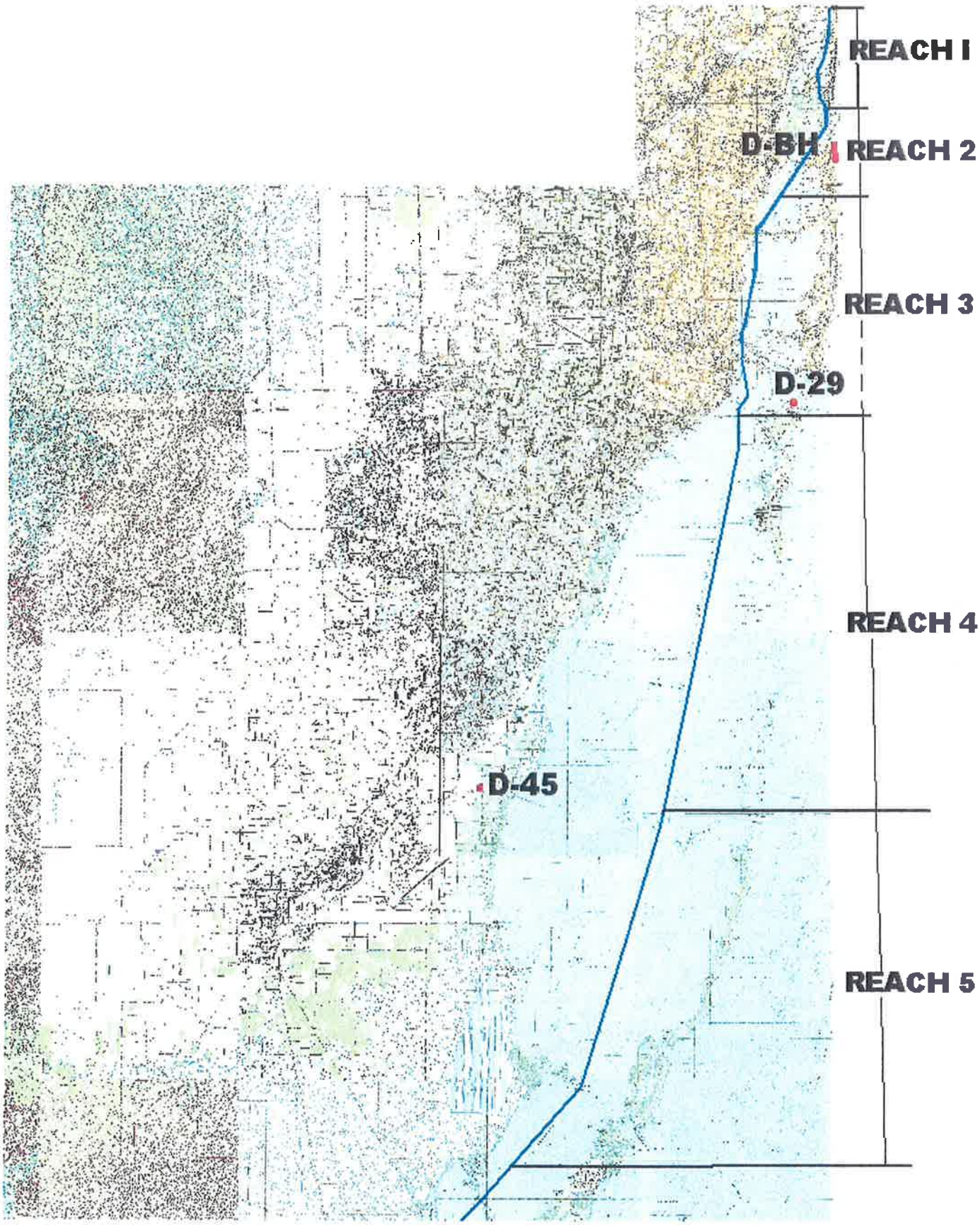
MIAMI-DADE COUNTY
PROJECT STATUS UPDATE

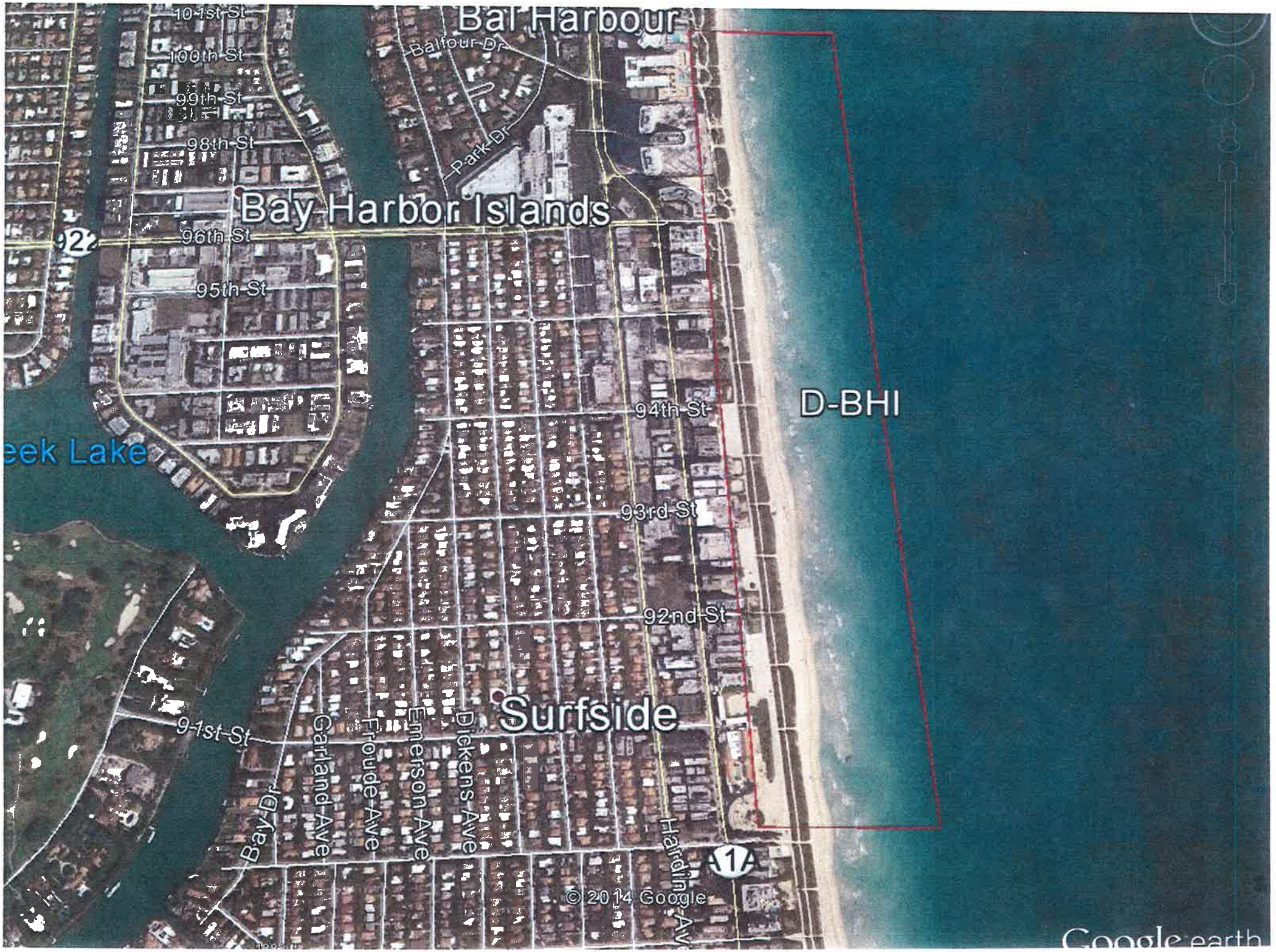
May 2014

Cooperative Assistance Program
The District's Cooperative Assistance Program has providing funding assistance for the following projects with elements in Miami-Dade County: Blue Marlin Construction at Oleta River State Park; No-Name Harbor Boater's Access; Bill Baggs Shoreline and Fishing Platform Project; Florida Marina Patrol Office Building; Florida Marine Patrol Officer Funding; Miami River Dredging; and the Manatee Acoustic Study. The District's funding assistance for the Miami-Dade County portion of these projects was approximately $ 3.5 million.

Interlocal Agreement Program
The District's Interlocal Agreement Program (a sub-set of the WAP and CAP programs) has provided funding assistance for the following projects with elements in Miami-Dade County: Miami River Dredging; Clean Marina Program; Clean Vessel Act Program, and the Miami Circle Shoreline Rehabilitation Project. The District's funding assistance for the Miami-Dade County portion of these projects was approximately $3.3 million.

Public Information Program
The District currently prints and distributes the following brochures with specific information about Miami-Dade County Waterways: the Economic Impact of Miami-Dade County Waterways, Miami-Dade County Boating Safety and Manatee Protection Zone Brochure, Movable Bridge Guide, and the IWW Channel Conditions Brochure.


REACH I
D-BH
REACH 2
REACH 3
D-29
REACH 4
D-45
REACH 5
Channel
DMMA
Miami-Dade County
Intracoastal Waterway
Dredged Material Management Plan
N


Bal Harbour
Balfour Dr
101st St
100th St
99th St
98th St
Park Dr
Bay Harbor Islands
96th St
95th St
94th St
D-BHI
93rd St
92nd St
Surfside
91st St
Bay Dr
Garland Ave
Froude Ave
Emerson Ave
Dickens Ave
Harding Ave
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Pace Picnic Islands
Sunset Islands
Venetian Islands
, USA
Miami, FL, USA
Di Lido Island
Miami Beach
Watson Island
Hibiscus Island
Palm Island
Star Island
Dodge Island
Burlingame Island
Claughton Island
Fisher Island
DMMA D-29
Virginia Key
Sister Banks
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D-45
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ECONOMIC BENEFITS OF THE DISTRICT'S WATERWAYS

MIAMI-DADE COUNTY

Purpose

To update economic benefits in Miami-Dade County of marine-related activities on the District Waterways, as previously estimated in *An Economic Analysis of the District's Waterways in Miami-Dade County*, April 2007, and to provide the general public and Federal, State, and local officials with a clear understanding of the importance of maintaining the waterways.

Scenarios Evaluated

1. Current Existing Conditions
2. Cessation of Waterways Maintenance
3. Increase in Waterways Maintenance
4. Estimated impact of the 2007-2009 U.S. economic recession

ECONOMIC IMPACTS

Current Existing Impacts

- $1.209 billion in business volume
- $294.3 million in personal income
- 7,094 jobs
- $54.0 million in tax revenue

Impacts of Cessation of Waterways Maintenance

- Decrease of $661.2 million in business volume
- Decrease of $157.7 million in personal income
- Decrease of 3,818 jobs
  Decrease of $28.2 million in tax revenue

Impacts of an Increase in Waterways Maintenance

- Increase of $152.8 million in business volume
- Increase of $40.9 million in personal income
- Increase of 1,006 jobs
- Increase of $7.1 million in tax revenue

Impact of the 2007-2009 U.S. Economic Recession

- Decrease of $976.2 million in business volume
- Decrease of $242.0 million in personal income
- Decrease of 5,835 jobs
- Decrease of $42.8 million in tax revenue

Economic Benefits as of April 2011

ECONOMIC BENEFITS OF THE DISTRICT'S WATERWAYS

MIAMI-DADE COUNTY

The Intracoastal Waterway

The Atlantic Intracoastal Waterway (AICW) is a 1,391-mile channel between Trenton, New Jersey, and Miami, Florida. The Waterway along Florida's eastern seaboard is 406 miles long and follows coastal rivers and lagoons past numerous tourism-oriented communities. The channel is authorized to a depth of 12 feet from Nassau County to Fort Pierce, and a 10 foot depth south through Miami-Dade County. Boating activities on the waterways contribute to the existence of numerous marine-related businesses such as marinas and boatyards and have stimulated development of residential properties on the Waterways.

The Navigation District

The Florida Inland Navigation District, created in 1927, is the local sponsor for the AICW in Florida. In cooperation with the Jacksonville District of the U.S. Army Corps of Engineers, the Navigation District is responsible for maintenance of the AICW in Florida. To maintain navigation, the waterways need to be periodically dredged due to shoaling from currents, upland soil erosion, and the movement of offshore sands through the ocean inlets. Maintenance dredging is projected to cost approximately $12 to $16 million annually during the next 50 years, of which 50 percent of the costs are expected to be borne by property owners within the Navigation District's jurisdiction.

The Navigation District also partners with other governments to provide waterway access and improvement facilities for our mutual constituents. These projects include public boat ramps, marinas, side channels, parks, fishing piers, boardwalks, navigation aids, derelict vessel removal, shoreline stabilization, and waterway cleanups.

Source of Data Used in This Analysis

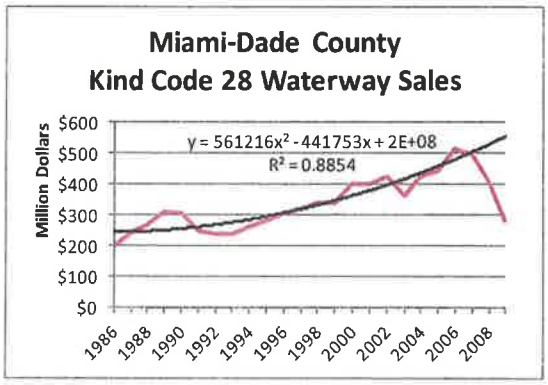
The economic benefits of the Waterways were estimated in April 2007 in *An Economic Analysis of the District's Waterways in Miami-Dade County.*

Updating of Previously Estimated Benefits

The benefits presented in this analysis were estimated by updating the direct marine-business impacts in the original analysis to current values using the change in gross sales reported by boat dealers to the Florida Department of Revenue (FDOR). The updated direct impacts were used in conjunction with an IMPLAN input/output model to estimate total economic benefits.

Estimating the Impact of the Recession

The impact of the recession was estimated by determining the trend in gross sales of boat dealers over the 20-year period prior to the onset of the recession. This trend was used to estimate the theoretical gross sales if sales had continued to increase at the rates previously experienced. The red line in the figure below illustrates reported actual gross sales of boat dealers and the black line illustrates the trend of those sales. From 2007 to 2009 gross boat dealer sales in Miami-Dade County decreased by 44 percent; if the recession had not occurred, it is estimated that gross sales from 2007 to 2009 would have increased by four percent.



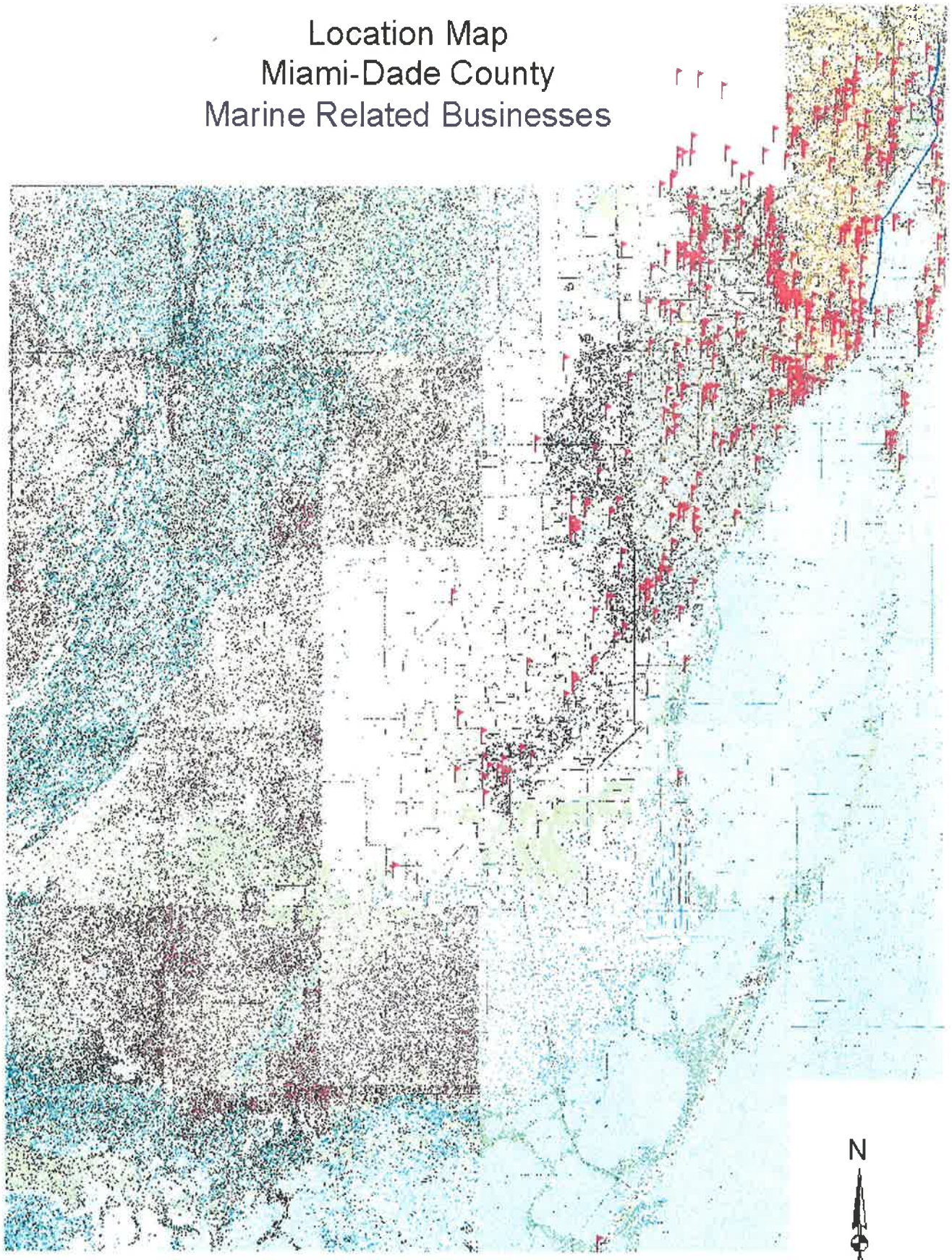
Annual Boater Spending on Gas, Food, and Drinks at Non-Marine-Related Establishments

- Current existing conditions: $55.0 million
- Cessation of maintenance: $32.4 million
- Increased maintenance: $55.0 million
- Assuming no recession: $72.8 million

Vessel Draft Restrictions Assumed for Each Scenario

- Current existing conditions: 6.5 feet MLW
- Cessation of maintenance: 3 feet MLW
- Increased maintenance: 10 feet MLW
- Assuming no recession: 6.5 feet MLW

Location Map
Miami-Dade County
Marine Related Businesses



WATERWAYS ASSISTANCE PROGRAM PROJECTS
MIAMI-DADE COUNTY
1986-2013

Project Name	Project Number	Project Sponsor	Grant Amount	Total Cost
Hurricane Preparedness Manual For Vessels	DA-91-16	Miami - Dade County	$35,000.00	$70,000.00
Sand Bypass At Bakers Haulover Inlet - Phase I	DA-BH-12-135	Bal Harbour Village	$50,000.00	$400,000.00
Jetty and Groin Repairs	DA-BH-2	Bal Harbour Village	$200,000.00	$400,000.00
Public Works Compound Seawall	DA-BH-88-6	Bal Harbour Village	$29,265.00	$58,530.00
Miami Marine Stadium Inwater Structural Assessment Ph I	DA-MI-13-150	City of Miami	$157,900.00	$315,800.00
Miami Woman's Club Baywalk Ph II	DA-MI-13-151	City of Miami	$150,000.00	$300,000.00
Seybold Canal &Wagner Creek Dredging & Environmental	DA-MI-13-152	City of Miami	$1,000,000.00	$2,000,000.00
Virginia Key Nature Center Seawall & Kayak Launch Ph I	DA-MI-13-153	City of Miami	$37,500.00	$75,000.00
Curtis Park Boat Ramp reconstruction	DA-MI-13-154	City of Miami	$190,050.00	$380,100.00
Lummus Landing Riverwalk and Dock	DA-MI-13-150	City of Miami	$570,000.00	$1,140,000.00
Manatee Bend Park Seawall & Floating Dock Ph II	DA-MI-13-156	City of Miami	$325,000.00	$650,000.00
Marine Law Enforcement & Safety Project	DA-MB-93-29	City Of Miami	$35,000.00	$35,000.00
Watson Island Boat Ramp Replacement	DA-MI-00-59	City Of Miami	$150,000.00	$300,000.00
Derelict Vessel Removal	DA-MI-00-60	City Of Miami	$34,137.00	$68,275.00
Legion Park Waterfront Enhancement Project	DA-MI-01-65	City Of Miami	$90,000.00	$180,000.00
Int. Watersports Center - Public Baywalk Overlook	DA-MI-02-70	City Of Miami	$200,371.00	$486,500.00
Bicentennial Park Shoreline Stabilization - Stage I	DA-MI-03-78	City Of Miami	$700,000.00	$1,400,000.00
Dinner Key Mooring & Anchorage Field Project - Phase I	DA-MI-03-79	City Of Miami	$32,500.00	$100,000.00
Bicentennial Park Shoreline Stabilization - Phase I I	DA-MI-04-83	City Of Miami	$419,670.00	$2,398,000.00
Derelict Vessel Removal	DA-MI-04-84	City Of Miami	$50,000.00	$100,000.00
Bicentennial Park Shoreline Stabilization - Phase I I I	DA-MI-05-88	City Of Miami	$1,000,000.00	$2,000,000.00
Dinner Key Spoil Island Enhancement	DA-MI-05-89	City Of Miami	$425,000.00	$850,000.00
Seminole Public Dinghy Dock Replacement	DA-MI-05-90	City Of Miami	$28,350.00	$62,700.00
Bicentennial Park Shoreline Stab. - Phase I I I - C	DA-MI-06-93	City Of Miami	$1,000,000.00	$2,000,000.00
Dinner Key Mooring Field Project - Phase I I	DA-MI-06-94	City Of Miami	$424,745.00	$841,500.00
Sewell Park Kayak Launch - Phase I	DA-MI-06-95	City Of Miami	$8,500.00	$17,000.00
Dinner Key Mooring Field Dredging - Phase I I	DA-MI-07-100	City Of Miami	$390,000.00	$800,000.00
Construction Of Sewell Park Kayak Launch - Phase I I	DA-MI-07-101	City Of Miami	$37,625.00	$75,250.00
Bicentennial Park Mooring Bollards Design - Phase I	DA-MI-08-103	City Of Miami	$42,450.00	$84,900.00
Miamarina Seawall Replacement - Phase I	DA-MI-08-104	City Of Miami	$40,000.00	$80,000.00
Bicentennial Park Mooring Bollards Construction	DA-MI-09-107	City Of Miami	$513,255.00	$1,026,510.00
Coconut Grove Public Piers - Phase I (Withdrawn)	DA-MI-09-108	City Of Miami	$144,000.00	$288,000.00
James L. Knight Center Riverwalk - Ph I I (Withdrawn)	DA-MI-09-109	City Of Miami	$30,000.00	$60,000.00
Kennedy Park Floating Dock - Phase I	DA-MI-09-110	City Of Miami	$17,500.00	$35,000.00
Kennedy Park Shoreline Stabilization - Phase I	DA-MI-09-111	City Of Miami	$40,000.00	$80,000.00
Marine Stadium Marina Seawall Replacement - Phase I	DA-MI-09-112	City Of Miami	$17,500.00	$35,000.00
Citywide Derelict Vessel Removal	DA-MI-10-117	City Of Miami	$20,000.00	$45,000.00
Miami Marine Stadium Restoration - Phase I	DA-MI-10-118	City Of Miami	$175,000.00	$350,000.00

WATERWAYS ASSISTANCE PROGRAM PROJECTS
MIAMI-DADE COUNTY
1986-2013

Project Name	Project Number	Project Sponsor	Grant Amount	Total Cost
Miami Woman's Club Baywalk - Phase I	DA-MI-10-119	City Of Miami	$46,500.00	$93,000.00
Spoil Island E Restoration & Floating Dock - Phase I	DA-MI-10-120	City Of Miami	$15,000.00	$30,000.00
Baywalk At Bicentennial Park	DA-MI-11-125	City Of Miami	$1,143,000.00	$2,286,000.00
Kennedy Park Floating Dock Construction & Restoration	DA-MI-11-126	City Of Miami	$60,000.00	$120,000.00
Kennedy Park Shoreline Stabilization & Restoration	DA-MI-11-127	City Of Miami	$75,000.00	$150,000.00
Little River Waterfront Park	DA-MI-11-128	City Of Miami	$117,500.00	$470,000.00
Marine Stadium Marina At Virginia Key - Phase I	DA-MI-11-129	City Of Miami	$800,000.00	$1,600,000.00
Seybold Canal & Wagner Creek Dredging & Env. Clean Up	DA-MI-11-130	City Of Miami	$1,000,000.00	$22,000,000.00
Little River Waterfront Acquisition - Phase B	DA-MI-12-136	City Of Miami	$183,750.00	$735,000.00
Manatee Bend Park Seawall Improv. & Kayak Lnch - Ph I	DA-MI-12-137	City Of Miami	$38,500.00	$77,000.00
Marine Stadium Marina Seawall Replacement - Phase I I	DA-MI-12-138	City Of Miami	$785,000.00	$1,570,000.00
Pallot Park Shoreline Stabilization - Phase I	DA-MI-12-139	City Of Miami	$30,000.00	$60,000.00
Seybold Canal & Wagner Creek Dredging - Phase B	DA-MI-12-140	City Of Miami	$700,000.00	$1,400,000.00
Spoil Island E Floating Dock Restoration - Phase I I	DA-MI-12-141	City Of Miami	$57,500.00	$115,000.00
Baywood Park Shoreline Enhancement Project	DA-MI-95-39	City Of Miami	$75,590.00	$199,971.72
Morningside Seawall Improvements	DA-MI-96-44	City Of Miami	$34,250.00	$68,500.00
Peacock Park Shoreline Educational Enhancement	DA-MI-97-47	City Of Miami	$100,000.00	$200,000.00
Watson Island Boat Ramp Repairs	DA-MI-98-51	City Of Miami	$142,000.00	$357,687.00
Margaret Pace Park Public Waterfront Enhancement	DA-MI-99-56	City Of Miami	$196,085.00	$392,170.00
Kenneth Myers Park/ Seminole Boat Ramp	DA-MI-99-57	City Of Miami	$180,000.00	$488,333.00
Indian Creek Park Seawall Ph I	DA-MB-13-157	City of Miami Beach	$160,000.00	$320,000.00
Parks Blueways Master Plan	DA-MB-13-158	City of Miami Beach	$40,000.00	$80,000.00
Citywide Seawalls - Phase I	DA-MB-02-71	City Of Miami Beach	$135,000.00	$270,720.00
Shoreline Stab. Of Monument Island - Ph. I (Withdrawn)	DA-MB-03-80	City Of Miami Beach	$50,000.00	$100,000.00
Citywide Seawalls Project - Phase I I	DA-MB-04-85	City Of Miami Beach	$293,562.00	$636,626.00
South Pointe Park Pier Renovation & Expansion - Phase I	DA-MB-08-105	City Of Miami Beach	$323,075.00	$969,230.00
Pine Tree Park Shoreline Improvements	DA-MB-09-113	City Of Miami Beach	$74,766.00	$248,090.00
Biscayne Bay 10th Street-end Park & Seawall	DA-MB-11-131	City Of Miami Beach	$472,820.00	$945,640.00
South Pointe Pier Construction - Phase I I	DA-MB-12-142	City Of Miami Beach	$986,000.00	$4,098,381.00
Miami Beach Marina Shoreline Stabilization	DA-MB-92-22	City of Miami Beach	$200,000.00	$454,675.00
Marine Patrol Boat	DA-NBV-00-63	City Of North Bay Village	$50,406.00	$67,208.00
Navigational Buoys (Expired)	DA-NBV-01-69	City Of North Bay Village	$6,250.00	$15,000.00
Paul Vogel Community Park Seawall & Dock Repl. - Ph I	DA-NBV-10-123	City Of North Bay Village	$55,000.00	$110,000.00
Baywalk Plaza Area - Phase I	DA-NBV-12-146	City Of North Bay Village	$50,250.00	$100,500.00
Vogel Park Improvements	DA-NBV-12-147	City Of North Bay Village	$110,167.00	$220,335.00
North Bayshore William Lehman Park Fishing and Viewing	DA-NM-13-148	City of North Miami	$300,000.00	$630,000.00
William Lehman Park Fishing & Viewing Piers - Phase I	DA-NM-98-50	City Of North Miami	$15,734.00	$31,469.00
William Lehman Park Fishing & Viewing Piers - Phase I I	DA-NM-99-55	City Of North Miami	$33,475.00	$66,950.00

WATERWAYS ASSISTANCE PROGRAM PROJECTS
MIAMI-DADE COUNTY
1986-2013

Project Name	Project Number	Project Sponsor	Grant Amount	Total Cost
Maule Lake Derelict Vessel Removal	DA-NMB-06-99	City Of North Miami Beach	$40,000.00	$85,000.00
Waterway Signage Video Program	DA-NMB-91-20	City of North Miami Beach	$16,000.00	$45,300.00
Law Enforcement/Rescue Boat & Equipment	DA-NMB-91-21	City of North Miami Beach	$25,000.00	$62,455.00
Marine Patrol Vessel	DA-ICV-01-64	Indian Creek Village	$18,880.00	$37,760.00
Flagler Memorial Island Enhancements - Phase I I	DA-00-61	Miami - Dade County	$42,500.00	$102,500.00
Haulover Boat Ramp Fish Cleaning Station (Withdrawn)	DA-00-62	Miami - Dade County	$20,000.00	$40,000.00
Pelican Harbor Marina	DA-1	Miami - Dade County	$400,000.00	$4,075,000.00
Pelican Harbor Marina	DA-87-3	Miami - Dade County	$750,000.00	$3,300,000.00
Biscayne Bay Restoration	DA-87-4	Miami - Dade County	$160,310.00	$500,000.00
Spoil Island Enhancement	DA-87-5	Miami - Dade County	$86,000.00	$300,000.00
Biscayne Bay Restoration	DA-88-7	Miami - Dade County	$75,000.00	$222,500.00
Venetian Causeway Repairs	DA-88-8	Miami - Dade County	$157,500.00	$315,000.00
Venetian Causeway Design	DA-88-9	Miami - Dade County	$250,000.00	$500,000.00
Pelican Harbor Marina	DA-89-10	Miami - Dade County	$500,000.00	$4,975,000.00
Biscayne Bay Restoration & Enhancement Project	DA-89-11	Miami - Dade County	$98,000.00	$216,300.00
Spoil Island Restoration	DA-89-12	Miami - Dade County	$96,875.00	$193,750.00
Restoration of Dredge Areas	DA-90-13	Miami - Dade County	$97,755.00	$195,570.00
Spoil Island Enhancement	DA-90-14	Miami - Dade County	$40,000.00	$80,000.00
Pelican Harbor Spoil Island	DA-90-15	Miami - Dade County	$320,000.00	$640,000.00
Restoration of Dredged Areas	DA-91-17	Miami - Dade County	$180,000.00	$365,950.00
Haulover Inlet Spoil Island Enhancement Project	DA-91-18	Miami - Dade County	$200,000.00	$714,448.00
Deering Environmental Education Facilities	DA-91-19	Miami - Dade County	$650,000.00	$4,400,000.00
North Miami Spoil Island Enhancement Project	DA-92-23	Miami - Dade County	$196,030.00	$412,060.00
Pelican Harbor Marina Facilities	DA-92-24	Miami - Dade County	$500,000.00	$740,000.00
Marjory Stoneman Douglas Biscayne Nature Center Desig	DA-92-25	Miami - Dade County	$187,500.00	$375,000.00
Hurricane Andrew Marina Improvement - Phase I	DA-92-26	Miami - Dade County	$463,670.00	$463,670.00
Flagler Memorial Island Enhancement	DA-93-27	Miami - Dade County	$175,000.00	$300,800.52
Hurricane Andrew Marina Improvement - Phase I I	DA-93-28	Miami - Dade County	$850,000.00	$1,800,000.00
Cape Florida Shoreline Stabilization	DA-93-30	Miami - Dade County	$340,000.00	$739,700.98
Crandon Park Marina Renovations	DA-94-31	Miami - Dade County	$900,000.00	$1,800,000.00
Venetian Causeway Shoreline Stabilization Project	DA-94-32	Miami - Dade County	$101,200.00	$240,311.72
Haulover Park Marina Renovation Designs	DA-95-33	Miami - Dade County	$60,000.00	$120,000.00
Matheson Hammock Marina Boat Ramp Renovation	DA-95-34	Miami - Dade County	$116,200.00	$232,400.00
Crandon Marina Boat Ramp Renovation	DA-95-35	Miami - Dade County	$174,400.00	$348,800.00
Crandon Park Marina Renovations I I	DA-95-36	Miami - Dade County	$300,000.00	$600,000.00
Biscayne Bay Spoil Island #2 Enhancement Project	DA-95-37	Miami - Dade County	$180,262.00	$360,525.00
Derelict Vessel Removal Project	DA-95-38	Miami - Dade County	$102,577.00	$205,155.00
Biscayne Bay Spoil Island (#14) Enhancement Project	DA-96-40	Miami - Dade County	$105,000.00	$210,000.00

WATERWAYS ASSISTANCE PROGRAM PROJECTS
MIAMI-DADE COUNTY
1986-2013

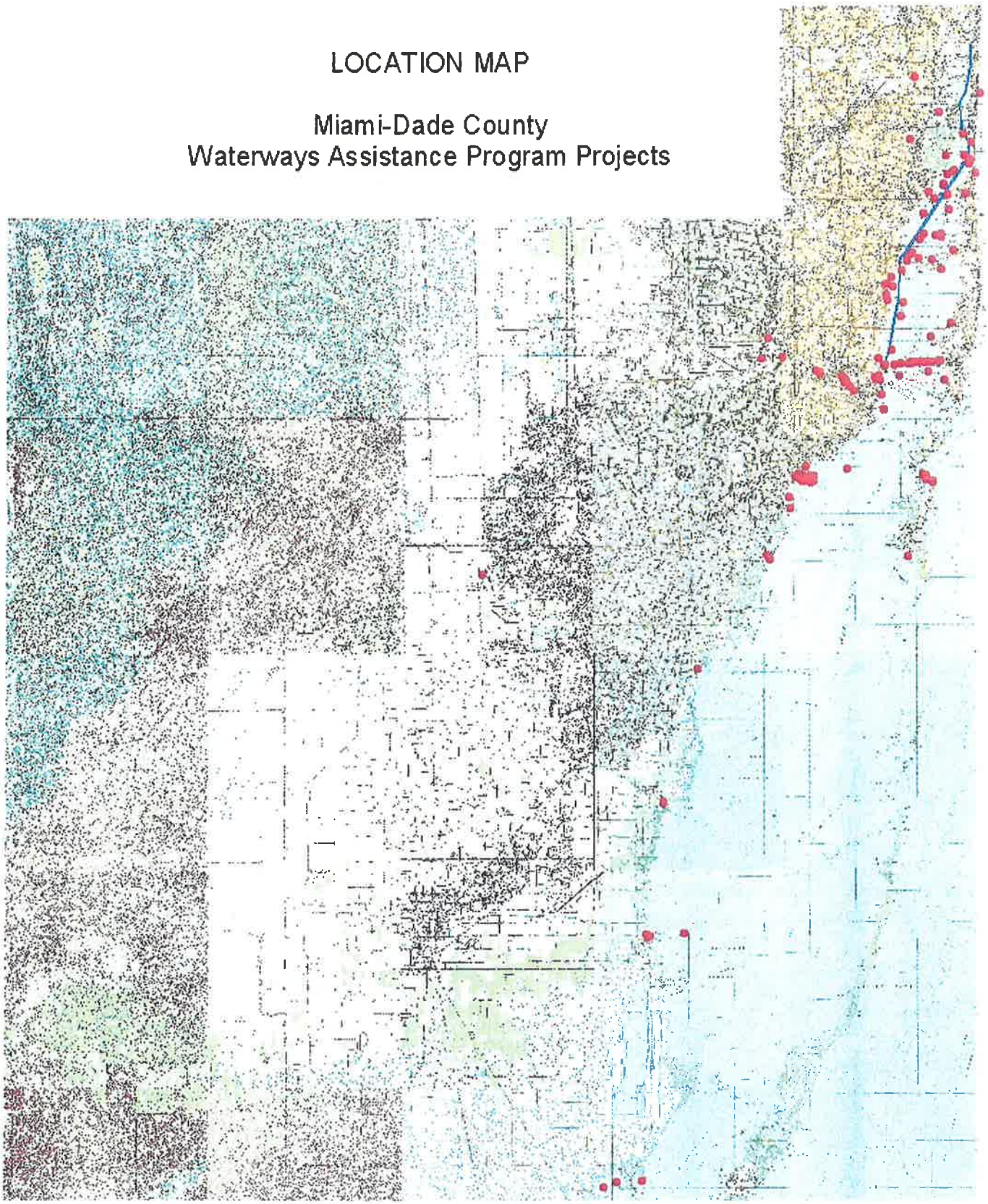
Project Name	Project Number	Project Sponsor	Grant Amount	Total Cost
Homestead Bayfront Park Shoreline Stabilization	DA-96-41	Miami - Dade County	$50,000.00	$100,000.00
Manatee Halfway House (Project Expired)	DA-96-42	Miami - Dade County	$25,000.00	$100,000.00
M.S.D. Biscayne Nature Center	DA-96-43	Miami - Dade County	$800,000.00	$3,530,000.00
Crandon Park Marina Pier Renovation - Phase I I	DA-97-45	Miami - Dade County	$920,000.00	$1,840,000.00
Biscayne Bay Spoil Island #1 Enhancement	DA-97-46	Miami - Dade County	$115,000.00	$230,000.00
Haulover Park Marina Renovations (Project Expired)	DA-98-48	Miami - Dade County	$1,400,000.00	$2,800,000.00
Biscayne Bay Spoil Island #6 Enhancements	DA-98-49	Miami - Dade County	$112,500.00	$225,000.00
Haulover Marina Expansion Designs	DA-99-52	Miami - Dade County	$148,250.00	$296,500.00
Haulover Marina Boat Ramp Renovations	DA-99-53	Miami - Dade County	$183,750.00	$367,500.00
Spoil Islands #9 & #10 Enhancements	DA-99-54	Miami - Dade County	$135,000.00	$316,265.00
Crandon Park Marina Pier Renovations - Phase I I	DA-01-66	Miami- Dade County	$403,129.00	$878,271.00
Haulover Park Marina Renovations	DA-01-67	Miami- Dade County	$1,400,000.00	$2,800,000.00
Spoil Island #3 Enhancement Project	DA-01-68	Miami- Dade County	$105,000.00	$210,000.00
Miami River Dredging Project - Stage I I	DA-02-72	Miami- Dade County	$300,000.00	$6,000,000.00
Black Point & Homestead Bayfront Marinas Piling Repl.	DA-02-73	Miami- Dade County	$125,000.00	$250,000.00
Crandon Park Marina Dockmaster's Complex - Phase I	DA-02-74	Miami- Dade County	$75,000.00	$150,000.00
Homestead Bayfront Marina Navigational Impr. - Phase I	DA-02-75	Miami- Dade County	$50,000.00	$100,000.00
Pelican Harbor Fishing Pier Repl. - P H I (Withdrawn)	DA-02-76	Miami- Dade County	$18,000.00	$36,000.00
Pelican Harbor Marina Mooring Field-ph I (Withdrawn)	DA-02-77	Miami- Dade County	$25,000.00	$50,000.00
Haulover Marina Dockmaster Complex- P H I (Withdrawn)	DA-03-81	Miami- Dade County	$87,000.00	$174,000.00
Spring Garden Point Park Shoreline Enhancement	DA-03-82	Miami- Dade County	$138,000.00	$370,000.00
Haulover Marina Breakwater Completion	DA-04-86	Miami- Dade County	$1,134,243.00	$4,112,392.00
Haulover Marina Dredging, Seawall, Dock & Wetslips	DA-05-91	Miami- Dade County	$1,135,000.00	$4,882,000.00
Homestead Bayfront Channel Markers Relocation	DA-05-92	Miami- Dade County	$56,150.00	$112,300.00
Homestead Bayfront Marina Complex - Phase I (Expired)	DA-06-96	Miami- Dade County	$130,000.00	$260,000.00
Parcel B Public Shoreline Stabilization	DA-06-97	Miami- Dade County	$178,596.00	$372,075.00
Pelican Harbor Marina Boaters' Complex - Phase I I	DA-06-98	Miami- Dade County	$111,000.00	$222,000.00
Parcel B Public Shoreline Stabilization - Stage 2	DA-07-102	Miami- Dade County	$2,000,000.00	$4,200,000.00
Pelican Harbor Marina Restrooms & Boater Amenities	DA-08-106	Miami- Dade County	$493,716.00	$987,433.00
Crandon Marina Seawall Restoration	DA-09-114	Miami- Dade County	$597,633.00	$1,195,266.00
Fire Rescue Floating Dock & Boat Lift	DA-09-115	Miami- Dade County	$111,150.00	$273,882.50
R. Hardy Matheson Preserve Shoreline Stabilization	DA-09-116	Miami- Dade County	$550,000.00	$1,100,000.00
Crandon Marina Seawall #2 Replacement	DA-10-121	Miami- Dade County	$1,342,932.00	$2,685,865.00
Pelican Harbor Marina Elec., Water & Fire Systems- Ph I	DA-10-122	Miami- Dade County	$56,000.00	$112,000.00
Dinner Key Spoil Islands B & C Shoreline Stabilization	DA-11-132	Miami- Dade County	$300,000.00	$600,000.00
Miami Marine Stadium Park Shoreline Stabilization	DA-11-133	Miami- Dade County	$400,000.00	$800,000.00
Vizcaya Public Shoreline Stabilization - Phase I	DA-11-134	Miami- Dade County	$41,000.00	$84,500.00
Miami River Greenways Riverwalk	DA-12-143	Miami- Dade County	$500,000.00	$1,134,297.00

WATERWAYS ASSISTANCE PROGRAM PROJECTS
MIAMI-DADE COUNTY
1986-2013

Project Name	Project Number	Project Sponsor	Grant Amount	Total Cost
Pelican Harbor Marina Improvements	DA-12-144	Miami- Dade County	$1,200,000.00	$2,400,000.00
Vizcaya Public Shoreline Stabilization N.E. Garden Area	DA-12-145	Miami- Dade County	$134,000.00	$268,000.00
Crandon Marina Boat Ramps Ph I	DA-13-159	Miami-Dade County	$70,000.00	$169,500.00
Matheson Hammock Marina Boat Ramps Ph I	DA-13-160	Miami-Dade County	$74,000.00	$177,000.00
Miami River Greenway sites 4&5	DA-13-161	Miami-Dade County	$500,000.00	$1,024,025.00
Boating Safety & Environmental Education Program	DA-SI-99-58	Sunny Isles Beach	$45,603.06	$60,804.08
Waterfront Park	DA-BHI-05-87	Town Of Bay Harbor Islands	$92,000.00	$184,000.00
The Strand Park Boat Dock	DA-GB-11-124	Town Of Golden Beach	$29,735.00	$78,664.00
Surfside Seawall Replacement	DA-SU-13-149	Town of Surfside	$494,445.00	$988,890.00
		TOTALS	**$45,314,989.06**	**$140,988,936.52**

LOCATION MAP

Miami-Dade County
Waterways Assistance Program Projects



Mark Crosley

From: Peter Breton <pbreton@blesmlaw.com>
Sent: Thursday, May 01, 2014 3:22 PM
To: Mark Crosley
Cc: Glenn Scambler; Janet Zimmerman
Subject: RE: Crane Island Road Easement Agreement
Attachments: Third amendment to crane island contract (5-1-14 PLB revisions).doc

Here is a revised version of the Third Amendment. I revised section 3.1 to delete the "best efforts" and add a time of the essence provision.

I noticed that the 1st and 2nd amendments were not recorded. Since the easement agreement itself was recorded, the amendments should also be recorded. If you have the original 1st and 2nd amendments, you should send them along with the 3rd amendment to be recorded in Nassau County.

Sincerely,
Peter L. Breton
Breton, Lynch, Eubanks & Suarez-Murias, P.A.
1209 North Olive Avenue
West Palm Beach, FL 33401
561-721-4003
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From: Mark Crosley [mailto:mcrosley@aicw.org]
Sent: Monday, April 14, 2014 4:29 PM
To: Peter Breton
Cc: Glenn Scambler; Janet Zimmerman
Subject: RE: Crane Island Road Easement Agreement

Peter:

Please see my comments below...

Sincerely,

Mark Crosley
Executive Director

Florida Inland Navigation District
1314 Marcinski Road

Jupiter, FL 33477-9498

561-627-3386
561-624-6480 FAX

From: Peter Breton [mailto:pbreton@blesmlaw.com]
Sent: Monday, April 14, 2014 3:38 PM
To: Mark Crosley
Subject: Crane Island Road Easement Agreement

Mark, I took a look at the Agreement for Purchase and Sale and the Road Access Easement Agreement. The "Construction Escrow" in the amount of $330,964.00 is governed by the P&S Agreement and is supposed to be held in escrow by Jacobs, Scholz & Associates, in Fernandina Beach. **If you want me to, I will contact them to confirm that they still hold the escrowed funds.**
-Glenn has already initiated this action, he spoke with the firm, and is he trying to get something in writing to verify..

According to Paragraph 3.2 of the P&S Agreement, the Construction Escrow is not to be released until the Seller has entered into a binding agreement for the construction of the entire Access Road. A fully executed copy of the construction agreement is to be provided to FIND for review. It specifically states that "Escrow Agent shall not release the Construction Escrow to the Seller without Buyer's written authorization.

Thanks Peter.... Glenn said the new owner mentioned a 'box culvert" rather than a full bridge... Janet astutely pointed out that that may change the terms for our long-term maintenance agreement...

However, according to the recitals in the Third Amendment, the "actual date of commencement of the construction of the Access Road was November 25, 2008." **This begs the question of whether the Seller provided a copy of the executed construction contract for the Access Road, and if so, did FIND review and approve it?**

They never constructed the bridge and to my knowledge, we never saw an executed construction contract... Hence the several agreement extensions to allow the developer more time to construct the access (bridge or culvert!)

Paragraph 33 of the P&S Agreement provides that if the Seller is unable to provide the Access Road to FIND property within the timeframe required by Section 3.1(c) of the Road Access Easement Agreement, they must refund the portion of the Purchase Price representing the pro-rata cost of the Access Road not completed. It does not say that refunding the pro-rata cost relieves them of the obligation to complete the construction of the Access Road. I would argue it does not, since the construction obligation is in the Road Access Easement Agreement, not the P&S Agreement.

This is what I needed..... David had elected to provide multiple extensions to allow the access to be constructed (rather than request a reimbursement) since we all know that access has to be provided to develop the island.... I am of the opinion that it is still in FIND's interest to wait since the bridge will be beneficial and the temporary access (crane mats) cannot be permanent...

The P&S Agreement "shall be binding upon and inure to the benefit of the parties hereto and their respective devisees, personal representatives, successors and permitted assigns." **We need to check with The Range at Crane Island to make sure that the P&S Agreement was assigned to it.**

I will request that you coordinate with Glenn (to determine what work he has accomplished) and proceed with this inquiry....

The other document is the Road Access Easement Agreement. Under that agreement, FIND has the perpetual access easement to NA-1. Section 6.4 of the Easement Agreement states "Notwithstanding the foregoing to the contrary, no breach hereunder shall entitle any party to cancel, rescind or otherwise terminate this Agreement." So the easement is locked in.

Good, we always seem to be fairly diligent about this in the past...

Also, Section 7.9 provides "All provisions of this instrument, including the benefits and burdens, run with the land and are binding upon and inure to the heirs, successors and assigns of the parties hereto." So The Range at Crane Island is liable for all of the obligations in the Easement Agreement, including the obligation to construct the Access Road. Section 7.11 provides that "whenever a transfer of ownership of the Grantor's Parcel takes place, liability of the transferor for any breach of any covenant hereunder first occurring after such transfer of ownership automatically terminates."

The new owners did check in with us to see if the remaining funds were still available (hence, the agreement on the agenda) and they have made noises about going forth with the development...

Since they still have until May 25, 2014 to complete construction of the Access Road, they are not in breach yet. Wthout a further time extension, they will be in breach of contract after May 25, 2014. However, there is a "best efforts" standard in Section 3.1(b): "Grantor . . . shall use its best efforts to cause the Access Road to be completed eighteen (18) months after the commencement of construction (the "Completion Date"). The "best efforts" language creates some wiggle room for TRCI to claim they are not really in breach.

I concur, hence my effort to extend the agreement...

So here are three alternatives for you to consider.

1. Approve the Third Amendment as written.

- My preference....

2. Approve a modified Third Amendment where the "best efforts" language is deleted and the phrase "and time shall be of the essence in meeting the Completion Date" is added.

Hmmm.. could we be even MORE definitive???

3. Tell them that FIND will not extend the Completion Date and will hold them in breach of contract unless they agree to refund the $300,964 to us and still complete the Access Road within 2 years.

I'd like to stay "good neighbors". Unless something different develops with you and Glenn's research and contact with them.... ....

I don't know if you want to play hardball but the Access Road is already 4 years late and will be 6 years late even if they meet the extended deadline.

At this point, we have our site constructed and we have a temporary access road (crane mats). We will need a permanent access to our site, so I suggest it is still in our interest to work with these folks on this option.. Otherwise, we could find ourselves in the position of building an access and negotiating with the developer to use or maintain it!

Thanks Peter (and Glenn)

Sincerely,
Peter L. Breton
Breton, Lynch, Eubanks & Suarez-Murias, P.A.
1209 North Olive Avenue
West Palm Beach, FL 33401
561-721-4003
561-721-4001 (Facsimile)

under the Internal Revenue Code or (2) promoting, marketing or recommending to another party any matters addressed herein.

This instrument prepared by:
Peter L. Breton, Esq.
1209 North Olive Ave.
West Palm Beach, FL 33401

THIRD AMENDMENT

TO

ROAD ACCESS EASEMENT AGREEMENT

THIS THIRD AMENDMENT TO ROAD ACCESS EASEMENT AGREEMENT (this "Amendment") is entered into this ____ day of _____, 2014, by and between **FLORIDA INLAND NAVIGATION DISTRICT,** a special taxing district organized under the laws of the State of Florida ("**FIND**") and **THE RANGE AT CRANE ISLAND, LLC**, (hereinafter referred to as "**TRCI**").

RECITALS

A. TRCI is the owner of that certain real property located on Crane Island and on Amelia Island in Nassau County, Florida, being more particularly described on Exhibit "A" attached hereto and incorporated herein ("Easement Parcel").

B. FIND and Lynwood G. Willis, Partner, Jane T. Willis, Robert H. Still, Jr., as Co-Trustee of the Lynwood G. Willis and Jane T. Willis Trust, U/D/O December 31, 1992, Michael D. Abney, Co-Trustee of the Lynwood G. Willis and Jane T. Willis Trust, U/D/O December 31, 1992, Christopher Anderson, Piedmont Square, LLC, A Virginia Limited Liability Corporation, David Agnew, Crane Island Investments, LLC, A South Carolina Limited Liability Corporation, and Vincent G. Graham, (hereinafter referred to collectively as "**Grantor**") entered into a Road Access Easement Agreement dated as of November 21, 2008 and recorded in Official Records Book 1594, Page 1387 of the Public Records of Nassau County, Florida ("Easement Agreement").

C. Section 3.1 (b) of the Easement Agreement required the Grantor to use its best efforts to cause the commencement of the construction of the Access Road on or before August 26, 2008 (the "Commencement Date").

D. The actual date of commencement of the construction of the Access Road was November 25, 2008.

E. Section 3.1 (b) of the Easement Agreement required the Grantor to use its best efforts to cause the Access Road to be completed eighteen (18) months after the commencement of construction (the "Completion Date").

F. Grantor and FIND executed a First Amendment to Road Access Easement Agreement.

G. Grantor was not able to complete the construction of the Access Road by the Completion Date and requested FIND to grant a one (1) year extension of the Completion Date.

H. The Board of Commissioners of FIND, at its meeting of May 20, 2011, approved Grantor's request for a one (1) year extension of the Completion Date, until May 25, 2012, although a formal amendment to the Easement Agreement was not executed.

I. Grantor had been unable to complete the construction of the Access Road by the Completion Date, as extended, and requested a further extension of the Completion Date.

J. The Board of Commissioners of FIND, at its meeting on May 18, 2012, approved an additional two (2) year extension of the Completion Date, until May 25, 2014.

K. TRCI purchased the Easement Parcel from Grantor in February 2014.

L. TRCI has requested a further extension of the Completion Date.

M. The Board of Commissioners of FIND, at its meeting on April 11, 2014, approved an additional two (2) year extension of the Completion Date, until May 25, 2016.

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, the receipt and sufficiency of which is hereby acknowledged, TRCI and FIND hereby agree as follows:

ARTICLE I

RECITALS

1.1 Recitals. The foregoing Recitals are true and correct and are incorporated herein by reference.

ARTICLE II

ASSUMPTION OF GRANTOR'S OBLIGATIONS

2.1 TRCI here by assumes and agrees to perform all of Grantor's duties and obligations under the Easement Agreement.

ARTICLE III

AMENDMENT

3.1 Section 3.1 (b) of the Easement Agreement is amended to read:

Construction of Improvements. Having received a key Access Road Permit from Nassau County, ~~Grantor~~ TRCI shall ~~use its best efforts to~~ cause the commencement of the construction of the Access Road on or before November 25, 2008 (the "Commencement Date") and shall ~~use its best efforts to~~ cause the Access Road to be completed by ~~May 25, 2014~~ May 25, 2016 (the "Completion Date"). Time shall be of the essence in meeting the Completion Date.

3.2 Except as amended hereby, the Easement Agreement is ratified, confirmed and accepted.

3.3 This Amendment may be executed in a number of identical counterparts with separate signature pages of the parties attached in which event each such counterpart shall constitute an original, executed agreement.

[SIGNATURES BEGIN ON NEXT PAGE]

This instrument prepared by:
Peter L. Breton, Esq.
1209 North Olive Ave.
West Palm Beach, FL 33401

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed for the uses and purposes herein expressed on the day and year written below.

Signed, sealed and delivered

In the presence of:

_____
Print name:_____

_____
Print name:_____

THE RANGE AT CRANE ISLAND, LLC

By: _____

Name: _____

Title: _____

STATE OF _____
COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of_____, 2014, by_____, as _____ of The Range at Crane Island, a Florida limited liability company, on behalf of the company, who is personally known to me or has produced_____ as identification.

_____
Print Name:_____
Notary Public, State of_____
Commission Number:_____
My Commission expires:_____

This instrument prepared by:
Peter L. Breton, Esq.
1209 North Olive Ave.
West Palm Beach, FL 33401

Signed, sealed and delivered in the presence of:

FLORIDA INLAND NAVIGATION DISTRICT

_____
Print Name:_____

By:_____
Gail Kavanagh, Chair

_____
Print Name:_____

STATE OF FLORIDA
COUNTY OF _____

The foregoing instrument was acknowledged before me this ___ day of _____, 2014, by Gail Kavanagh, as Chair of Florida Inland Navigation District, an independent special taxing district of the State of Florida. She is personally known to me or has produced _____ as identification.

_____
Notary Public, State of _____
Name:_____
My Commission Expires:_____
My Commission Number is:_____

Exhibit "A"

LEGAL DESCRIPTION
EASEMENT PARCEL

PARCEL 1:

A PORTION OF GOVERNMENT LOTS 2 AND 3, SECTION 6, TOWNSHIP 2 NORTH, RANGE 28 EAST, NASSAU COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE NORTHEAST CORNER OF SECTION 6; THENCE NORTHWESTERLY, ALONG THE NORTHERLY LINE OF SAID SECTION 6, RUN THE FOLLOWING TWO (2) COURSES AND DISTANCES; COURSE NO. 1: NORTH 89°41'48" WEST, 2353.12 FEET, TO THE POINT OF BEGINNING; COURSE NO. 2: CONTINUE NORTH 89°41'48" WEST, 1161.60 FEET TO THE POINT OF CURVATURE OF A CURVE TO THE SOUTHWEST; THENCE SOUTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE SOUTHEASTERLY, HAVING A RADIUS OF 330.00 FEET, AN ARC DISTANCE OF 53.38 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 85°40'09" WEST, 53.33 FEET; THENCE SOUTH 87°37'42" WEST, 160.30 FEET; THENCE SOUTH 79°19'19" WEST, 24.40 FEET; THENCE SOUTH 50°37'01" EAST, 17.23 FEET; THENCE NORTH 87°37'42" EAST, 104.39 FEET, TO THE ARC OF A CURVE TO THE SOUTHWEST; THENCE SOUTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE SOUTHEASTERLY, HAVING A RADIUS OF 330.00 FEET, AN ARC DISTANCE OF 151.26 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 55°55'34" WEST, 149.94 FEET; THENCE NORTH 09°42'36" WEST, 87.84 FEET; THENCE SOUTH 79°19'19" WEST, 20.00 FEET; THENCE SOUTH 09°42'36" EAST, 104.14 FEET, TO THE ARC OF A CURVE TO THE SOUTHWEST; THENCE SOUTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE SOUTHEASTERLY, HAVING A RADIUS OF 330.00 FEET, AN ARC DISTANCE OF 170.91 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 23°26'24" WEST, 169.00 FEET, TO THE POINT OF TANGENCY OF SAID CURVE; THENCE SOUTH 08°36'12" WEST, 204.17 FEET TO THE POINT OF CURVATURE OF A CURVE TO THE SOUTHWEST; THENCE SOUTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE NORTHWESTERLY, HAVING A RADIUS OF 320.00 FEET, AN ARC DISTANCE OF 152.62 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 22°16'01" WEST, 151.18 FEET TO THE POINT OF TANGENCY OF SAID CURVE; THENCE SOUTH 35°55'50" WEST, 53.35 FEET; THENCE NORTH 54°04'10" WEST, 20.00 FEET; THENCE SOUTH 35°55'50" WEST, 80.00 FEET; THENCE SOUTH 54°04'10" EAST, 20.00 FEET; THENCE SOUTH 35°55'50" WEST, 449.05 FEET TO THE POINT OF CURVATURE OF A CURVE TO THE SOUTHWEST; THENCE SOUTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE NORTHWESTERLY, HAVING A RADIUS OF 140.00 FEET, AN ARC DISTANCE OF 23.90 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 40°49'14" WEST, 23.87 FEET TO THE POINT OF TANGENCY OF SAID CURVE; THENCE SOUTH 45°42'38" WEST, 87.98 FEET; THENCE NORTH 56°53'41" WEST, 117.11 FEET; THENCE SOUTH 33°06'19" WEST, 20.00 FEET; THENCE

SOUTH 56°53'41" EAST, 112.79 FEET, TO THE ARC OF A CURVE TO THE SOUTHWEST; THENCE SOUTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE EASTERLY, HAVING A RADIUS OF 200.00 FEET, AN ARC DISTANCE OF 237.63 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 09°28'31" WEST, 223.90 FEET TO THE POINT OF REVERSE CURVATURE OF A CURVE TO THE SOUTHEAST; THENCE SOUTHEASTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE WESTERLY, HAVING A RADIUS OF 140.00 FEET, AN ARC DISTANCE OF 87.80 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 06°35'48" EAST, 86.37 FEET TO THE POINT OF TANGENCY OF SAID CURVE; THENCE SOUTH 11°22'10" WEST, 155.95 FEET TO THE POINT OF CURVATURE OF A CURVE TO THE SOUTHWEST; THENCE SOUTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE NORTHWESTERLY, HAVING A RADIUS OF 144.00 FEET, AN ARC DISTANCE OF 215.58 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 54°15'27" WEST, 196.00 FEET, TO AN INTERSECTION WITH THE ORIGINAL GOVERNMENT MEANDER LINE OF SECTION 5, AS SURVEYED BY WASHINGTON AND WILLIS, DATED 1831; THENCE SOUTH 09°46'52" EAST, ALONG LAST SAID LINE, 61.88 FEET, TO THE ARC OF A CURVE TO THE NORTHEAST; THENCE NORTHEASTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE NORTHWESTERLY, HAVING A RADIUS OF 204.00 FEET, AN ARC DISTANCE OF 287.36 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF NORTH 51°43'26" EAST, 264.19 FEET, TO THE POINT OF TANGENCY OF SAID CURVE; THENCE NORTH 11°22'10" EAST, 155.95 FEET, TO THE POINT OF CURVATURE OF A CURVE TO THE NORTHWEST; THENCE NORTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE WESTERLY, HAVING A RADIUS OF 200.00 FEET, AN ARC DISTANCE OF 125.43 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF NORTH 06°35'48" WEST, 123.38 FEET, TO THE POINT OF REVERSE CURVATURE OF A CURVE TO THE NORTHEAST; THENCE NORTHEASTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE EASTERLY, HAVING A RADIUS OF 140.00 FEET, AN ARC DISTANCE OF 171.71 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF NORTH 10°34'26" EAST, 161.15 FEET, TO THE POINT OF TANGENCY OF SAID CURVE; THENCE NORTH 45°42'38" EAST, 100.77 FEET, TO THE POINT OF CURVATURE OF A CURVE TO THE NORTHEAST; THENCE NORTHEASTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE NORTHWESTERLY, HAVING A RADIUS OF 200.00 FEET, AN ARC DISTANCE OF 34.14 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF NORTH 40°49'14" EAST, 34.10 FEET, TO THE POINT OF TANGENCY OF SAID CURVE; THENCE NORTH 35°55'50" EAST, 449.05 FEET; THENCE SOUTH 54°04'10" EAST, 20.00 FEET; THENCE NORTH 35°55'50" EAST, 80.00 FEET; THENCE NORTH 54°04'10" WEST, 20.00 FEET; THENCE NORTH 35°55'50" EAST, 53.35 FEET, TO THE POINT OF CURVATURE OF A CURVE TO THE NORTHEAST; THENCE NORTHEASTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE NORTHWESTERLY, HAVING A RADIUS OF 380.00 FEET, AN ARC DISTANCE OF 181.24 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF NORTH 22°16'01" EAST, 179.53 FEET, TO THE POINT OF TANGENCY OF SAID CURVE; THENCE NORTH 08°36'12" EAST, 204.17 FEET, TO THE POINT OF CURVATURE OF A CURVE TO THE NORTHEAST; THENCE NORTHEASTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE SOUTHEASTERLY, HAVING A RADIUS OF 270.00 FEET, AN ARC DISTANCE OF 385.00 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF NORTH 49°27'12" EAST,

353.20 FEET, TO THE POINT OF TANGENCY OF SAID CURVE; THENCE SOUTH 89°41'48" EAST, 1106.60 FEET, TO THE POINT OF CURVATURE OF A CURVE TO THE NORTHEAST; THENCE NORTHEASTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE NORTHWESTERLY, HAVING A RADIUS OF 55.00 FEET, AN ARC DISTANCE OF 86.39 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF NORTH 45°18'12" EAST, 77.78 FEET, TO THE POINT OF TANGENCY OF SAID CURVE; THENCE NORTH 00°18'12" EAST, 5.00 FEET, TO THE POINT OF BEGINNING.

TOGETHER WITH: (PARCEL 2)

A PORTION OF SECTION 6, TOWNSHIP 2 NORTH, RANGE 28 EAST, NASSAU COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE NORTHEAST CORNER OF SECTION 6; THENCE NORTH 89°41'48" WEST, ALONG THE NORTHERLY LINE OF SAID SECTION 6, A DISTANCE OF 3514.72 FEET TO THE POINT OF CURVATURE OF A CURVE TO THE SOUTHWEST; THENCE SOUTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE SOUTHEASTERLY, HAVING A RADIUS OF 330.00 FEET, AN ARC DISTANCE OF 53.38 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 85°40'09" WEST, 53.33 FEET; THENCE SOUTH 87°37'42" WEST, 160.30 FEET; THENCE SOUTH 79°19'19" WEST, 24.40 FEET; THENCE SOUTH 50°37'01" EAST, 17.23 FEET; THENCE NORTH 87°37'42" EAST, 104.39 FEET, TO THE ARC OF A CURVE TO THE SOUTHWEST; THENCE SOUTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE SOUTHEASTERLY, HAVING A RADIUS OF 330.00 FEET, AN ARC DISTANCE OF 151.26 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 55°55'34" WEST, 149.94 FEET; THENCE NORTH 09°42'36" WEST, 87.84 FEET; THENCE SOUTH 79°19'19" WEST, 20.00 FEET; THENCE SOUTH 09°42'36" EAST, 104.14 FEET, TO THE ARC OF A CURVE TO THE SOUTHWEST; THENCE SOUTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE SOUTHEASTERLY, HAVING A RADIUS OF 330.00 FEET, AN ARC DISTANCE OF 170.91 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 23°26'24" WEST, 169.00 FEET, TO THE POINT OF TANGENCY OF SAID CURVE; THENCE SOUTH 08°36'12" WEST, 204.17 FEET TO THE POINT OF CURVATURE OF A CURVE TO THE SOUTHWEST; THENCE SOUTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE NORTHWESTERLY, HAVING A RADIUS OF 320.00 FEET, AN ARC DISTANCE OF 152.62 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 22°16'01" WEST, 151.18 FEET TO THE POINT OF TANGENCY OF SAID CURVE; THENCE SOUTH 35°55'50" WEST, 53.35 FEET; THENCE NORTH 54°04'10" WEST, 20.00 FEET; THENCE SOUTH 35°55'50" WEST, 80.00 FEET; THENCE SOUTH 54°04'10" EAST, 20.00 FEET; THENCE SOUTH 35°55'50" WEST, 449.05 FEET TO THE POINT OF CURVATURE OF A CURVE TO THE SOUTHWEST; THENCE SOUTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE NORTHWESTERLY, HAVING A RADIUS OF 140.00 FEET, AN ARC DISTANCE OF 23.90 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 40°49'14" WEST, 23.87 FEET TO THE POINT OF TANGENCY OF SAID CURVE; THENCE SOUTH 45°42'38" WEST, 87.98 FEET; THENCE NORTH 56°53'41" WEST, 117.11 FEET; THENCE SOUTH 33°06'19" WEST, 20.00 FEET; THENCE SOUTH 56°53'41"

EAST, 112.79 FEET, TO THE ARC OF A CURVE TO THE SOUTHWEST; THENCE SOUTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE EASTERLY, HAVING A RADIUS OF 200.00 FEET, AN ARC DISTANCE OF 237.63 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 09°28'31" WEST, 223.90 FEET TO THE POINT OF REVERSE CURVATURE OF A CURVE TO THE SOUTHEAST; THENCE SOUTHEASTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE WESTERLY, HAVING A RADIUS OF 140.00 FEET, AN ARC DISTANCE OF 87.80 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 06°35'48" EAST, 86.37 FEET TO THE POINT OF TANGENCY OF SAID CURVE; THENCE SOUTH 11°22'10" WEST, 155.95 FEET TO THE POINT OF CURVATURE OF A CURVE TO THE SOUTHWEST; THENCE SOUTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE NORTHWESTERLY, HAVING A RADIUS OF 144.00 FEET, AN ARC DISTANCE OF 215.58 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 54°15'27" WEST, 196.00 FEET TO TO THE ORIGINAL GOVERNMENT MEANDER LINE OF SECTION 5, AS SURVEYED BY WASHINGTON AND WILLIS, DATED 1831, A POINT ON THE ARC OF SAID CURVE, AND THE POINT OF BEGINNING; THENCE WESTERLY, CONTINUING ALONG AND AROUND THE ARC OF SAID CURVE CONCAVE NORTHERLY, HAVING A RADIUS OF 144.00 FEET, AN ARC DISTANCE OF 75.98 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF NORTH 67°44'17" WEST, 75.11 FEET TO THE POINT OF TANGENCY OF SAID CURVE; THENCE NORTH 52°37'17" WEST, 176.38 FEET TO THE POINT OF CURVATURE OF A CURVE TO THE NORTHWEST; THENCE NORTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE CONCAVE SOUTHWESTERLY, HAVING A RADIUS OF 280.00 FEET, AN ARC DISTANCE OF 17.43 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF NORTH 54°24'19" WEST, 17.43 FEET TO THE POINT OF TANGENCY OF SAID CURVE; THENCE NORTH 56°11'20" WEST, 166.98 FEET TO THE POINT OF CURVATURE OF A CURVE TO THE WEST; THENCE WESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE CONCAVE SOUTHERLY, HAVING A RADIUS OF 526.00 FEET, AN ARC DISTANCE OF 310.62 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF NORTH 73°06'23" WEST, 306.12 FEET; THENCE SOUTH 00°01'25" EAST, 60.00 FEET TO THE ARC OF A CURVE TO THE EAST; THENCE EASTERLY, ALONG AND AROUND THE ARC OF SAID CURVE CONCAVE SOUTHERLY, HAVING A RADIUS OF 466.00 FEET, AN ARC DISTANCE OF 275.18 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 73°06'23" EAST, 271.20 FEET TO THE POINT OF TANGENCY OF SAID CURVE; THENCE SOUTH 56°11'20" EAST, 166.98 FEET TO THE POINT OF CURVATURE OF A CURVE TO THE SOUTHEAST; THENCE SOUTHEASTERLY, ALONG AND AROUND THE ARC OF SAID CURVE CONCAVE SOUTHWESTERLY, HAVING A RADIUS OF 220.00 FEET, AN ARC DISTANCE OF 13.70 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 54°24'19" EAST, 13.70 FEET TO THE POINT OF TANGENCY OF SAID CURVE; THENCE SOUTH 52°37'17" EAST, 176.38 FEET TO THE POINT OF CURVATURE OF A CURVE TO THE EAST; THENCE EASTERLY, ALONG AND AROUND THE ARC OF SAID CURVE CONCAVE NORTHERLY, HAVING A RADIUS OF 204.00 FEET, AN ARC DISTANCE OF 125.69 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 70°16'17" EAST, 123.71 FEET TO THE AFORESAID ORIGINAL GOVERNMENT MEANDER LINE OF SECTION 5, AS SURVEYED BY WASHINGTON AND WILLIS, DATED 1831; THENCE NORTH 09°46'52" WEST, ALONG LAST SAID LINE, 61.88 FEET TO THE POINT OF BEGINNING.

TOGETHER WITH: (PARCEL 3)

A PORTION OF SECTIONS 6 AND 49, TOWNSHIP 2 NORTH, RANGE 28 EAST, NASSAU COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE NORTHEAST CORNER OF SECTION 6; THENCE NORTH 89°41'48" WEST, ALONG THE NORTHERLY LINE OF SAID SECTION 6, A DISTANCE OF 3514.72 FEET TO THE POINT OF CURVATURE OF A CURVE TO THE SOUTHWEST; THENCE SOUTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE SOUTHEASTERLY, HAVING A RADIUS OF 330.00 FEET, AN ARC DISTANCE OF 53.38 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 85°40'09" WEST, 53.33 FEET; THENCE SOUTH 87°37'42" WEST, 160.30 FEET; THENCE SOUTH 79°19'19" WEST, 24.40 FEET; THENCE SOUTH 50°37'01" EAST, 17.23 FEET; THENCE NORTH 87°37'42" EAST, 104.39 FEET, TO THE ARC OF A CURVE TO THE SOUTHWEST; THENCE SOUTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE SOUTHEASTERLY, HAVING A RADIUS OF 330.00 FEET, AN ARC DISTANCE OF 151.26 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 55°55'34" WEST, 149.94 FEET; THENCE NORTH 09°42'36" WEST, 87.84 FEET; THENCE SOUTH 79°19'19" WEST, 20.00 FEET; THENCE SOUTH 09°42'36" EAST, 104.14 FEET, TO THE ARC OF A CURVE TO THE SOUTHWEST; THENCE SOUTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE SOUTHEASTERLY, HAVING A RADIUS OF 330.00 FEET, AN ARC DISTANCE OF 170.91 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 23°26'24" WEST, 169.00 FEET, TO THE POINT OF TANGENCY OF SAID CURVE; THENCE SOUTH 08°36'12" WEST, 204.17 FEET TO THE POINT OF CURVATURE OF A CURVE TO THE SOUTHWEST; THENCE SOUTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE NORTHWESTERLY, HAVING A RADIUS OF 320.00 FEET, AN ARC DISTANCE OF 152.62 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 22°16'01" WEST, 151.18 FEET TO THE POINT OF TANGENCY OF SAID CURVE; THENCE SOUTH 35°55'50" WEST, 53.35 FEET; THENCE NORTH 54°04'10" WEST, 20.00 FEET; THENCE SOUTH 35°55'50" WEST, 80.00 FEET; THENCE SOUTH 54°04'10" EAST, 20.00 FEET; THENCE SOUTH 35°55'50" WEST, 449.05 FEET TO THE POINT OF CURVATURE OF A CURVE TO THE SOUTHWEST; THENCE SOUTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE NORTHWESTERLY, HAVING A RADIUS OF 140.00 FEET, AN ARC DISTANCE OF 23.90 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 40°49'14" WEST, 23.87 FEET TO THE POINT OF TANGENCY OF SAID CURVE; THENCE SOUTH 45°42'38" WEST, 87.98 FEET; THENCE NORTH 56°53'41" WEST, 117.11 FEET; THENCE SOUTH 33°06'19" WEST, 20.00 FEET; THENCE SOUTH 56°53'41" EAST, 112.79 FEET, TO THE ARC OF A CURVE TO THE SOUTHWEST; THENCE SOUTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE EASTERLY, HAVING A RADIUS OF 200.00 FEET, AN ARC DISTANCE OF 237.63 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 09°28'31" WEST, 223.90 FEET TO THE POINT OF REVERSE CURVATURE OF A CURVE TO THE SOUTHEAST; THENCE SOUTHEASTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE WESTERLY, HAVING A RADIUS

OF 140.00 FEET, AN ARC DISTANCE OF 87.80 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 06°35'48" EAST, 86.37 FEET TO THE POINT OF TANGENCY OF SAID CURVE; THENCE SOUTH 11°22'10" WEST, 155.95 FEET TO THE POINT OF CURVATURE OF A CURVE TO THE SOUTHWEST; THENCE SOUTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE NORTHWESTERLY, HAVING A RADIUS OF 144.00 FEET, AN ARC DISTANCE OF 291.56 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 69°22'27" WEST, 244.25 FEET TO THE POINT OF TANGENCY OF SAID CURVE; THENCE NORTH 52°37'17" WEST, 176.38 FEET TO THE POINT OF CURVATURE OF A CURVE TO THE NORTHWEST; THENCE NORTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE CONCAVE SOUTHWESTERLY, HAVING A RADIUS OF 280.00 FEET, AN ARC DISTANCE OF 17.43 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF NORTH 54°24'19" WEST, 17.43 FEET TO THE POINT OF TANGENCY OF SAID CURVE; THENCE NORTH 56°11'20" WEST, 166.98 FEET TO THE POINT OF CURVATURE OF A CURVE TO THE WEST; THENCE WESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE CONCAVE SOUTHERLY, HAVING A RADIUS OF 526.00 FEET, AN ARC DISTANCE OF 280.43 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF NORTH 71°27'43" WEST, 277.12 FEET TO THE ARC OF A CURVE TO THE NORTHWEST AND THE POINT OF BEGINNING; THENCE NORTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE SOUTHWESTERLY, HAVING A RADIUS OF 85.64 FEET, AN ARC DISTANCE OF 136.08 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF NORTH 38°46'49" WEST, 122.21 FEET TO THE POINT OF REVERSE CURVATURE OF A CURVE TO THE NORTHWEST; THENCE NORTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE NORTHEASTERLY, HAVING A RADIUS OF 96.11 FEET, AN ARC DISTANCE OF 116.73 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF NORTH 49°30'16" WEST, 109.69 FEET TO THE POINT OF REVERSE CURVATURE OF A CURVE TO THE NORTHWEST; THENCE NORTHWESTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE SOUTHWESTERLY, HAVING A RADIUS OF 157.91 FEET, AN ARC DISTANCE OF 87.10 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF NORTH 30°30'40" WEST, 86.00 FEET TO THE POINT OF REVERSE CURVATURE OF A CURVE TO THE NORTH; THENCE NORTHERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE EASTERLY, HAVING A RADIUS OF 79.53 FEET, AN ARC DISTANCE OF 69.14 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF NORTH 21°24'35" WEST, 66.98 FEET TO THE SOUTHERLY LINE OF THOSE LANDS DESIGNATED AS PARCEL 1, AND DESCRIBED AND RECORDED IN OFFICIAL RECORDS BOOK 539, PAGE 1099 OF THE PUBLIC RECORDS OF SAID COUNTY; THENCE SOUTH 83°40'50" WEST, ALONG LAST SAID LINE, 30.32 FEET TO THE ARC OF A CURVE TO THE SOUTHEAST; THENCE SOUTHEASTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE NORTHEASTERLY, HAVING A RADIUS OF 109.53 FEET, AN ARC DISTANCE OF 90.05 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 22°45'43" EAST, 87.53 FEET TO THE POINT OF REVERSE CURVATURE OF A CURVE TO THE SOUTHEAST; THENCE SOUTHEASTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE SOUTHWESTERLY, HAVING A RADIUS OF 127.91 FEET, AN ARC DISTANCE OF 70.55 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 30°30'40" EAST, 69.66 FEET TO THE POINT OF REVERSE CURVATURE OF A CURVE TO THE SOUTHEAST; THENCE SOUTHEASTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE

NORTHEASTERLY, HAVING A RADIUS OF 126.11 FEET, AN ARC DISTANCE OF 153.17 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 49°30'16" EAST, 143.93 FEET TO THE POINT OF REVERSE CURVATURE OF A CURVE TO THE SOUTHEAST; THENCE SOUTHEASTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE SOUTHWESTERLY, HAVING A RADIUS OF 55.64 FEET, AN ARC DISTANCE OF 91.11 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 37°23'36" EAST, 81.27 FEET TO THE ARC OF A CURVE TO THE EAST; THENCE EASTERLY, ALONG AND AROUND THE ARC OF SAID CURVE, CONCAVE SOUTHERLY, HAVING A RADIUS OF 526.00 FEET, AN ARC DISTANCE OF 30.19 FEET, SAID ARC BEING SUBTENDED BY A CHORD BEARING AND DISTANCE OF SOUTH 88°22'46" EAST, 30.19 FEET TO THE POINT OF BEGINNING.

Mark Crosley

From: Glenn Scambler
Sent: Monday, May 05, 2014 11:28 AM
To: Mark Crosley
Subject: FW: Crane Island / FIND
Attachments: Crane Find Escrow statement.pdf

They confirmed the escrow.

Glenn

-----Original Message-----
From: Maggie Adams [mailto:maggie.adams@comcast.net]
Sent: Monday, May 05, 2014 11:11 AM
To: Glenn Scambler
Subject: Crane Island / FIND

Mr. Scambler:

Attached please find our escrow ledger which contains the $300,964.00 for the bridge. Please let me know if you need anything further.

Thanks,

Maggie Adams, Paralegal
Jacobs & Associates, P.A.
961687 Gateway Blvd., Suite 201-I
Fernandina Beach, FL 32034
(904) 261-3693
(904) 261-7879 (facsimile)

May 5, 2014
11:06 AM

Escrow Ledger for File: CRANE FIND
Crane sale to FIND

First Federal Bank (1ST FED)

Deposit	Seq #	Source	Amount	Accounting	Statement	Stat	By	WI
Feb 8,2012	2- 7	transfer from prosperity	300,681.80	2-2012	2-2012	C		X
May 5,2014	2- 1	Error at closing - #'s inverted (694 - 964)	282.20	5-2014		O		
		Total Deposits (2)	300,964.00					
		less Net Disbursements	0.00					
		equals	300,964.00					

First Federal Bank (1ST FED) Balance 300,964.00

Branch Banking & Trust Company (BBT)

Check	Dated	Payee	Amount	Accounting	Statement	Stat	Ctl	Vchr
11391	Nov 21,2008	Clary & Associates, P.A.	3,500.00	11-2008	11-2008	V		
11392		First American Title Insurance Co.	1,200.00			V		
11393		Law Offices of Jacobs & Associates, P.A.	10,100.00			V		
		Total Checks (3)	14,800.00					
		less Void Checks (3)	14,800.00					
		Net Checks	0.00					

Wire	Dated	Payee	Amount	Accounting	Statement	Stat	Control
CRANE FIND			0.00	11-2008	11-2008	C	
		Total Wire Transfers (1)	0.00				

Branch Banking & Trust Company (BBT) Balance 0.00

Citizens State Bank (CITIZENS)

Check	Dated	Payee	Amount	Accounting	Statement	Stat	Ctl	Vchr
11450	Nov 21,2008	Clary & Associates, P.A.	3,500.00	11-2008	1-2009	C		
11451		First American Title Insurance Co.	1,200.00		12-2008	C		
11452		Law Offices of Jacobs & Associates, P.A.	10,100.00		11-2008	V		
11467	Nov 24,2008	Willis Construction Company	57,649.60		12-2008	C		
11468	Nov 25,2008	Clerk of the Circuit Court	7,155.90		11-2008	C		
11976	Mar 30,2009	Clerk of the Court	87.20	3-2009	4-2009	C		
11977	Mar 31,2009	Clerk of the Court	5.00			C		
		Total Checks (7)	79,697.70					
		less Void Checks (1)	10,100.00					
		Net Checks	69,597.70					

Wire	Dated	Payee	Amount	Accounting	Statement	Stat	Control
CRANE	Feb 8,2010	Transfer from Citizens	300,681.80	2-2010	2-2010	C	
CRANE FIND	Nov 24,2008	CRANE ISLAND (TRANSFER)	543,281.50	11-2008	11-2008	C	
CRANE FIND1		Jacobs & Assoc	10,100.00			C	
CRANE FIND2		Moyle, Flanigan, Katz	4,678.50			C	
		Total Wire Transfers (4)	858,741.80				
		Net Disbursements	928,339.50				

Deposit	Seq #	Source	Amount	Accounting	Statement	Stat	By	WI
Nov 19,2008	1- 1	FIND funds	928,322.50	11-2008	11-2008	C		
Dec 11,2008	1- 1	Refund from Clerk for recording	17.00	12-2008	12-2008	C		
		Total Deposits (2)	928,339.50					
		less Net Disbursements	928,339.50					
		equals	0.00					

	Deposit	Seq #	Source
Citizens State Bank (CITIZENS) Balance		**0.00**	

Prosperity Bank (PROSPERI)

Wire	Dated	Payee	Amount	Accounting	Statement	Stat	Control
CRANE FIND	Feb 8,2012	transfer to FFBF	300,681.80	2-2012	2-2012	C	
		Total Wire Transfers (1)	300,681.80				
		Net Disbursements	300,681.80				

Deposit	Seq #	Source	Amount	Accounting	Statement	Stat	By	WI
Feb 8,2010	2- 4	Transfer from Citizens	300,681.80	2-2010	2-2010	C	BS	X
		Total Deposits (1)	300,681.80					
		less Net Disbursements	300,681.80					
		equals	0.00					

Prosperity Bank (PROSPERI) Balance **0.00**

Escrow Condition	Status	Multiple Banks	CRANE FIND File Balance
Funds Available	**Outstanding**	**Yes**	**300,964.00**

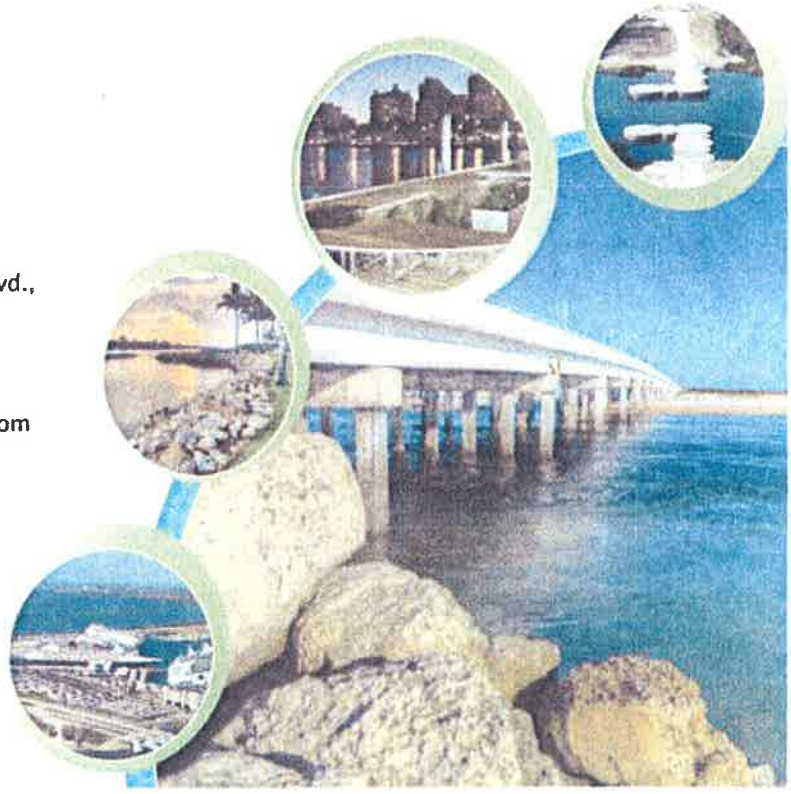
Notes: $300,964.00 TO BE HELD UNTIL BRIDGE CONTRACT APPROVED ($300,694.00 on closing statement)

Okeechobee Waterway Cut 1
Sediment Basin Feasibility Study
Draft Report

Martin County, FL

April 2014

10151 Deerwood Park Blvd.,
Bldg. 300, Suite 300,
Jacksonville, FL 32256
(904) 731-7040
www.taylorengineering.com



Draft Report
Okeechobee Waterway Cut 1 Sediment Basin
Feasibility Study
(Martin County)

April 2014

Okeechobee Waterway Cut 1 Sediment Basin Feasibility Study (Martin County)

Draft Report

Prepared for

Florida Inland Navigation District

by

Taylor Engineering, Inc.
10151 Deerwood Park Blvd, Bldg. 300, Suite 300
Jacksonville, Florida 32256

April 2014

C2013-015

EXECUTIVE SUMMARY

Taylor Engineering conducted this study to identify and analyze the existing features, hydrodynamics, and sediment characteristics of the Okeechobee Waterway (OWW) Cut 1 area to determine whether alternatives exist that would reduce sediment inflow into OWW Cut 1. These alternatives, if implemented, would reduce the frequency and costs of maintenance dredging. Additionally, feasible alternatives would also preserve the environmental value and existing use of the associated waterways.

The study applied the MIKE21 Flexible Mesh (FM) two-dimensional integrated hydrodynamic, wave, sediment transport, and morphology (bed change) models to understand the forcing mechanisms of sediment transport in the waterways near OWW Cut 1. The model results show westward flood flow velocities (currents) slow down past M-5 and further slow down past the Intracoastal Waterway (ICWW). This rapid decrease in flow velocity explains the observed sediment deposition (shoaling) in OWW Cut 1. The major morphological patterns, well simulated in the model, include (a) shoaling at the junction of ICWW and OWW Cut 1, (b) shoaling at approximately the east one-third length point of OWW Cut 1, and (c) shoal formation on both sides of OWW Cut 1 near locations that historically exhibit the fastest rate of OWW Cut 1 shoaling.

The Work Order for this project included an evaluation of up to three alternatives. In developing these alternatives, it became obvious that additional alternative evaluations could provide better results. Therefore, within the funds available, this study evaluated 11 possible alternatives (Table 4.1 and Table 4.2) to reduce the amount of sediment deposition in OWW Cut 1. These alternatives included (1) Alternative 1 — construction of a rectangular sediment basin north of the west end of OWW Cut 1, (2) Alternative 2 — construction of a triangular basin north of the east end of OWW Cut 1, (3) Alternative 3 — construction of two basins (a triangular basin north and a triangular basin south of the east end of OWW Cut 1), (4) Alternative 4 — construction of a rectangular basin along the south shoreline of St. Lucie Inlet (north of M-5), (5) Alternative 5 — construction of a triangular basin south of the east end of OWW Cut 1, (6) Alternative 6 — deepening the whole OWW Cut 1 to -10 ft MLLW (with 2 ft of overdredge), and (7) Alternatives 7 – 11 — deepening the eastern 1,350 ft length of OWW Cut 1 by 2 ft and/or partially removing nearby shoals by dredging the shoals to -8 ft to -10 ft MLLW.

Analyses of the performance of Alternatives 1 – 5 show the basin construction alternatives do not reduce the frequency of the maintenance dredging. Reducing the frequency of dredging in OWW Cut 1 requires further dredging the eastern portion of OWW Cut 1 and/or removing the shoals near locations

that historically exhibit the fastest rate of OWW Cut 1 shoaling. Alternatives 7 – 11 provide the additional dredge and/or shoal removal. Several of these alternatives extend the current maintenance dredging frequency from once every three years to once every four years (Alternatives 6, 7, and 10) and once every five years (Alternatives 9 and 11). Alternatives 6 and 8 do not present savings when compared to the current maintenance cost. Alternative 7 presents annual savings of approximately $36,000 — the largest savings without partial shoal removal. Alternative 9 presents the largest annual savings at approximately $200,000, but would likely require additional cost to dredge the west portion of OWW Cut 1 (OWW-W). Alternative 10 presents the smallest annual savings at approximately $13,000. Alternative 11 presents an annual savings of approximately $37,000.

Alternative 7 presents the most promising solution without shoal removal. It requires the smallest dredging volume per dredging event and is the second best alternative among the functionally and economically feasible alternatives. It specifies deepening the eastern 1,350-ft length of OWW Cut 1 and its transition zone to the ICWW from the current authorized depth of -8.0 ft-MLLW (plus 2-ft overdredge) to -10.0 ft-MLLW (plus 2-ft overdredge). The 2-ft deepening of the eastern portion of OWW Cut 1 (OWW-E) creates additional sediment storage capacity in OWW-E.

Alternative 9 presents the best performance and largest cost savings among the functionally and economically feasible alternatives. It specifies dredging nearby shoals on both sides of OWW Cut 1 to elevation -10.0 ft-MLLW. As it accelerates shoaling on the western portion of OWW Cut 1 (OWW-W), Alternative 9 will likely require additional cost for dredging that area. If OWW-W is not dredged, the area south of OWW-W that appears naturally deep can serve as a navigation channel as OWW-W becomes shallow.

Because OWW Cut 1 trapping efficiency reduces with time, the shoaling rates provided by the simulations presented in this study would not reflect the long-term average shoaling rates or the temporal variation of shoaling rates. Over time, OWW Cut 1 will fill up and shoaling rates in OWW Cut 1 will likely return to baseline conditions. OWW Cut 1 will require periodic maintenance dredging to restore its trapping efficiency.

Based on the above limitations, this study provides the following recommendations:

- Estimating long-term morphological changes in the study area requires lengthy computational time that goes beyond the schedule of the present study. Alternatively, Taylor Engineering simulated month-long sediment transport scenarios and prorated the

computed transport in a typical year to rapidly determine functionally feasible alternatives. To estimate long-term shoaling rates, this study recommends at least a one-year simulation period for the no-action alternative, Alternative 7, and Alternative 9. The no-action alternative provides the baseline to compare the long-term performances and costs of Alternative 7 and Alternative 9. The longer simulation period accounts for reduction in sediment trapping efficiency as OWW Cut 1 shoals and accounts for long-term variation in sediment transport.

- Conduct annual bathymetric surveys at the north and south shoal areas to monitor the long-term growth rate of the north and south shoals. If any of the shoals grow back to pre-dredge size before the scheduled maintenance dredging, then consider additional dredging at the shoal to achieve the designed dredging interval in OWW Cut 1.

- A final assessment of alternatives to reduce frequency of maintenance dredging should use updated available bathymetric information of the St. Lucie River and OWW Cut 1 and vibracore borings at the dredge sites.

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1.0 INTRODUCTION

A navigation channel maintained by the U.S. Army Corps of Engineers, Jacksonville District (USACE), the Okeechobee Waterway (OWW) is located in central and southern Florida. It extends 154 miles from the Gulf of Mexico at Ft. Myers to the Atlantic Ocean at Stuart (Figure 1.1). It includes portions of Lake Okeechobee and Caloosahatchee River (west of the lake) and the St. Lucie Canal (east of the lake).

1.1 Purpose

Taylor Engineering conducted this study to identify and analyze the existing features, hydrodynamics, and sediment characteristics of the OWW Cut 1 area to determine whether alternatives exist that would reduce sediment inflow into OWW Cut 1. These alternatives, if implemented, would reduce the frequency and costs of dredging. Additionally, feasible alternatives would preserve the environmental values and existing use of the associated waterways.

1.2 Site Description

The area of interest is OWW Cut 1 and adjacent waterways. Located in the St. Lucie River, OWW Cut 1 extends approximately 3,450 ft west (azimuth 260°) from the Intracoastal Waterway (ICWW). The inset in Figure 1.1 shows the location of OWW Cut 1. Specifically, OWW Cut 1 lies from latitude 27° 9'59.71"N and longitude 80°10'48.49"W to latitude 27° 9'54.65"N and longitude 80°11'26.17"W.

OWW Cut 1 experiences a high rate of shoaling. The 2003, 2005, 2009, and 2013 dredging records indicate that OWW Cut 1 requires maintenance dredging on average every 3.3 years. Each operation requires removal of 5,000 – 12,000 cubic yards (cy) of material. As the area lies at the confluence of St. Lucie River, Indian River Lagoon, and St. Lucie Inlet, the sediment transport to OWW Cut 1 could possibly come through any of these waterways. The St. Lucie Inlet Management Study Implementation Plan (FDEP, 1995) provides measures to minimize the effect of the inlet's disruption of longshore sediment transport. Given the area of interest is regularly affected by the St. Lucie River, Indian River Lagoon, and St. Lucie Inlet flows, tidal action predominantly influences the area's daily flow regime. The major tidal flow sources originate from the St. Lucie Inlet, Ft. Pierce Inlet, Jupiter Inlet, and periodically through barrier island breaches due to episodic dune overtopping (from storm surge and waves). Upstream flow from the St. Lucie River, the connectivity of the upland waterways, the waterways' drainage basin characteristics, and channel characteristics also influence OWW Cut 1 flows — albeit to a lesser degree compared to tidal and surge flows.

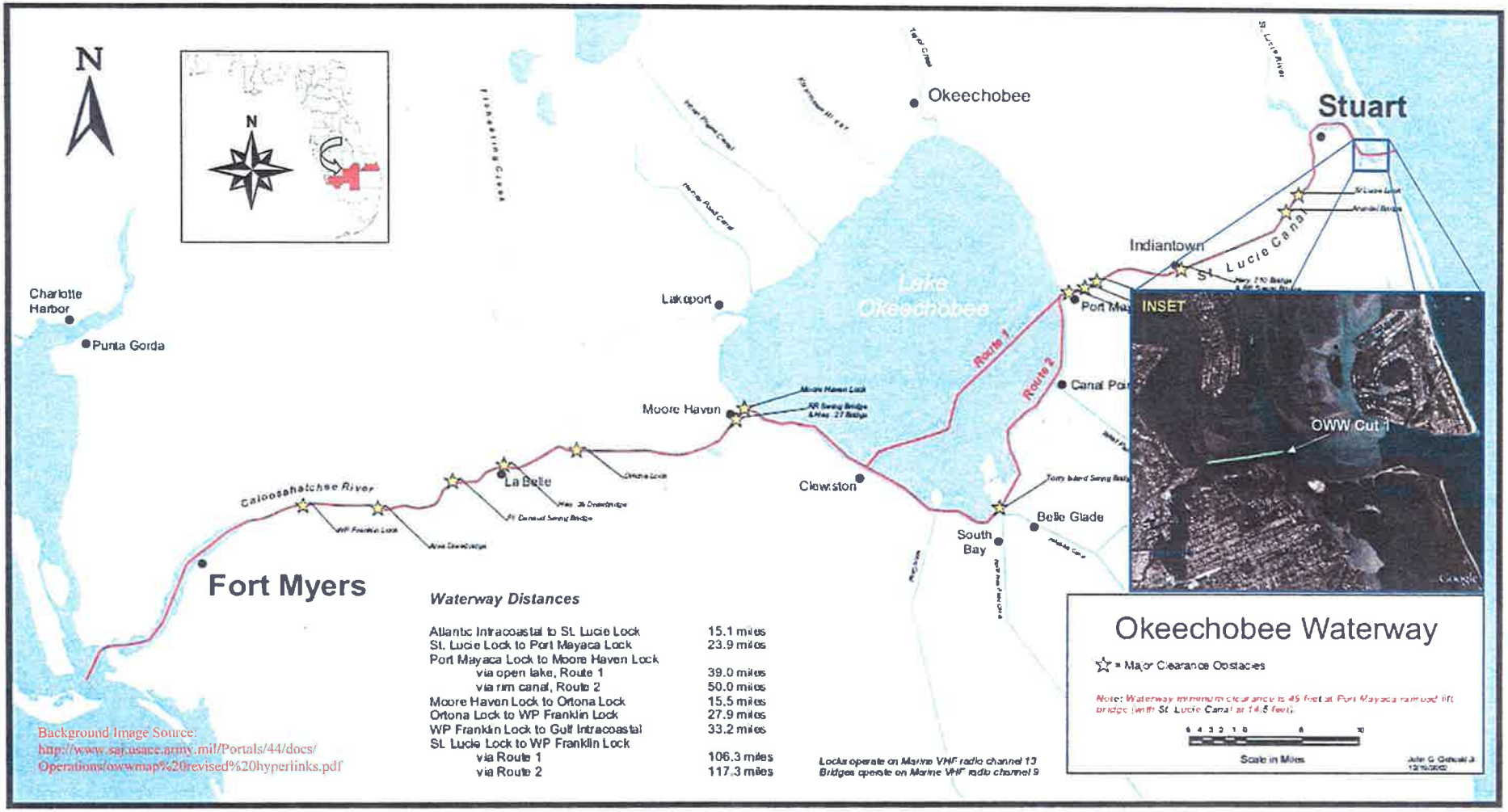

Figure 1.1 Route of the Okeechobee Waterway and Location of Cut 1

Tides and storm surges entering the interior waterways (1) through Ft. Pierce Inlet propagate south, (2) through St. Lucie Inlet propagate west, and (3) through Jupiter Inlet propagate north to the St. Lucie River. The northern route flows through the Indian River Lagoon for approximately 24 mi, the western route flows 2 mi through St. Lucie Inlet and Indian River Lagoon, and the south route flows through the Indian River for approximately 17 mi to reach OWW Cut 1.

1.3 Report Scope

Developing the alternatives to reduce sediment inflow into OWW Cut 1 requires an understanding of the dominant coastal processes that affect sediment transport at the St. Lucie Inlet, St. Lucie River, and adjacent waterways. Without this understanding, any approach to reduce sediment inflow into OWW Cut 1 could produce unanticipated and unwanted results. To understand ongoing processes in the area of interest, this study collected and reviewed existing data covering the inlets, river, lagoon, and adjacent waterways. The review provided an historical perspective on past efforts and allowed Taylor Engineering to document and assess existing data and identify data gaps. The collected data provided input information in the model development, model application, and analyses of various alternatives to reduce OWW Cut 1 shoaling

Following this introduction, Chapter 2 describes the available existing data and the field measurements of tides and flow velocities in the St. Lucie Inlet, OWW, and St. Lucie River. Chapter 3 describes model development and model application. Chapter 4 presents an evaluation of performance and associated cost of various alternatives to reduce OWW Cut 1 shoaling. Finally, Chapter 5 summarizes and concludes the study.

2.0 DATA COLLECTION AND EVALUATION

Developing the alternatives to estimate bed morphology in inshore waterways requires an understanding of the dominant processes that affect sediment transport at the inlet and adjacent waterways. Without this understanding, any approach to construct a sediment shoaling basin near OWW Cut 1 channel may produce unanticipated and unwanted results.

The physical characteristics discussed in this section include wave climate, water levels, OWW maintenance dredging history and sediment characteristics, and measurements of tide level and flow velocity.

2.1 Wave Data

The USACE Wave Information Study (WIS) provides wave hindcast data generated from numerical models. These models (WISWAVE, WAM) use data from climatological wind fields overlaid on grids containing estimated bathymetries. The WIS hindcasts provide a long-range nearshore wave climate at several stations along the Pacific, Atlantic, and Gulf coasts. WIS Stations 43453 and 43454 (Figure 2.1) lie offshore 11.2 miles northeast and 9.7 miles east of St. Lucie Inlet. The WIS data provides three hourly hindcast wave characteristics from 1980 – 1999. Statistical analyses of the stations' three-hourly, 20-year (1980 – 1999) wave climate dataset provided wave conditions offshore of St. Lucie Inlet.

The two stations provide similar onshore wave roses (Figure 2.2) with most of the waves originating from the northeast (45% from 45° and 67.5° clockwise from the north). Figure 2.2 shows the shoreline orientated at approximately 160° clockwise from the north with the wave roses axes at 1% gradations. The offshore wave data provided the input wave condition to estimate the average longshore sediment transport across the inlet. The Perlin and Kit (1999) CERC formula that relates longshore sediment transport to deep water wave height and direction showed the 1985 WIS offshore wave data likely produces the average longshore transport across St. Lucie Inlet.

Figure 2.1 Locations of WIS Stations 63453 and 63454

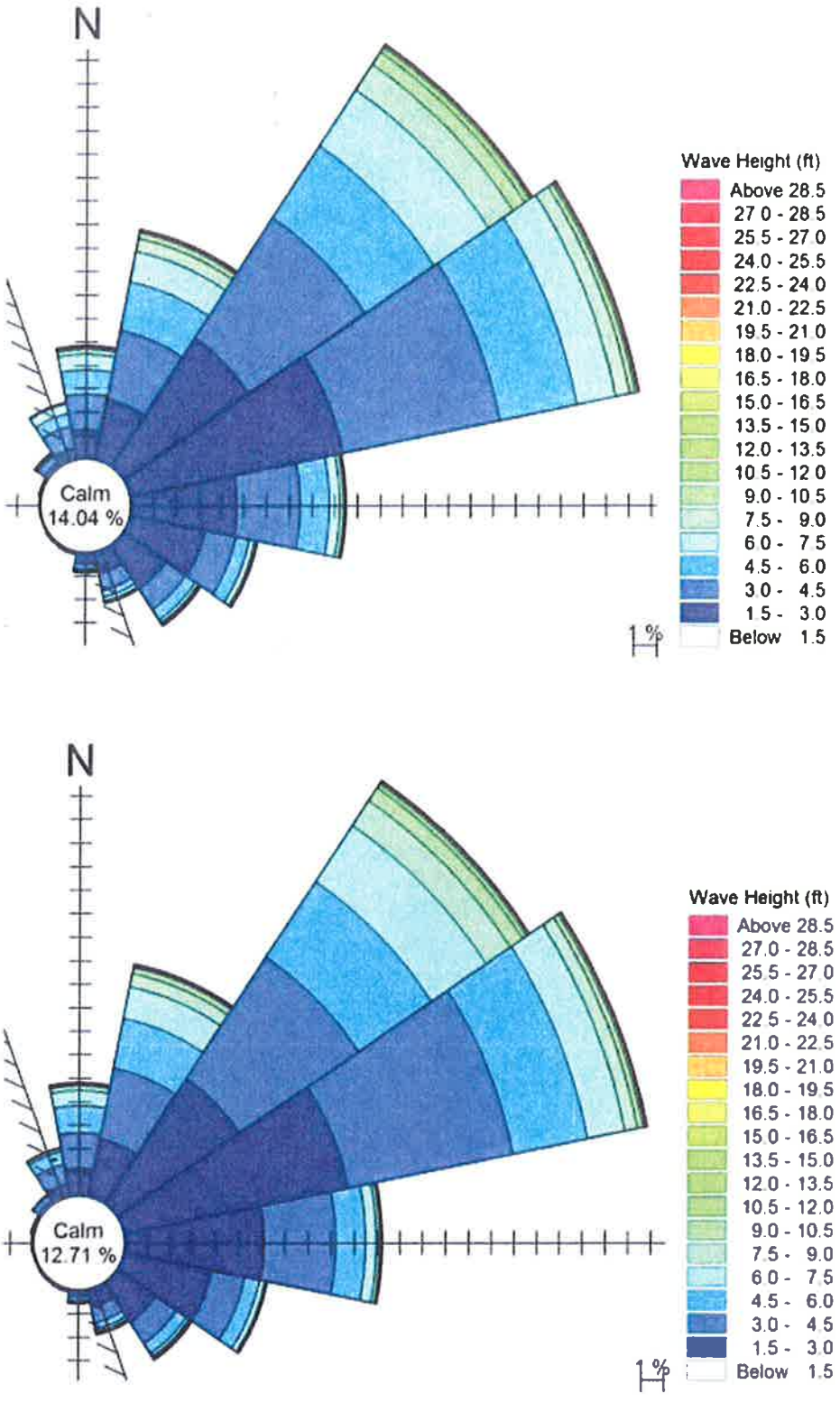

Figure 2.2 Wave Roses of WIS Stations 63453 (Top) and 63454 (Bottom) Hindcast Wave Data (1980 – 1999) (http://frf.usace.army.mil/cgi-bin/wis/atl/atl_main.html)

2.2 Tide Data

Semidiurnal tides with two highs and two lows per day and mixed tides during neap period characterize the astronomical tides in the study area. Figure 2.3 shows the location of the National Oceanic and Atmospheric Administration (NOAA) tidal stations nearest to the area of interest. Tidal data from the nearest reference station (NOAA 872371 at Sewall Point) indicate a mean tidal range approximately 0.79 ft at the study area. Mean tidal ranges, about 1 ft, indicate relatively very small tidal variations. Other nearby NOAA tidal stations reflect similar very small mean tidal ranges along St. Lucie River — 0.98 ft at North Fork (NOAA 8722334), 0.88 ft at Port Salerno (NOAA 8722383), and 0.53 ft at Great Pocket (NOAA 8722381). Table 2.1 presents tidal datums at nearby NOAA reference stations.

Figure 2.3 Locations of the NOAA Tidal Stations

Table 2.1 NOAA Tide Datums and Locations of Stations in Martin County, Florida (1983 – 2001 Tide Epoch)

Tide Datum	NOAA 8722371 Sewall Point, St. Lucie River (ft-NAVD)	NOAA 8722334 North Fork, St. Lucie River (ft-NAVD)	NOAA 8722383 Port Salerno (ft-NAVD)	NOAA 8722381 Great Pocket, St. Lucie Inlet (ft-NAVD)
Mean Higher High Water (MHHW)	-0.62	-0.34	-0.54	-0.27
Mean High Water (MHW)	-0.70	-0.44	-0.65	-0.38
Mean Tide Level (MTL)	-1.09	-0.93	-1.09	-0.66
Mean Low Water (MLW)	-1.49	-1.42	-1.53	-0.91
Mean Lower Low Water (MLLW)	-1.60	-1.54	-1.65	-1.57
NGVD29	-1.45	-1.48	-1.52	-1.46
Coordinates				
Latitude	27°10'30"N	27°14'36"N	27°09'06"N	27°09'18"N
Longitude	80°11'18"W	80°18'48"W	80°11'42"W	80°10'18"W

NOAA also provides tide level prediction at several locations in St. Lucie River, the ICWW, and along the Atlantic coast. The NOAA tide prediction is available along St. Lucie River at North Fork (NOAA 8722334) and South Fork (NOAA 8722376); along the ICWW at Jensen Beach (NOAA 8722338), Great Pocket (NOAA 8722381), Peck Lake (NOAA 8722404), Gomez (NOAA 8722414), Hobe Sound Bridge (NOAA 8722429), Hobe Sound State Park (NOAA 8722445); and along the Atlantic coastline at Seminole Shores (NOAA 8722366). NOAA tide predictions at St. Lucie River North Fork, St. Lucie River South Fork, ICWW Hobe Sound State Park, and ocean at Seminole Shores provide the water level boundary condition to the hydrodynamic model. Notably, the tide predictions represent estimates of the tide levels based on astronomical forcings and exclude the effect of wind setup or setdown.

2.3 Bathymetric Data

Multiple sources provided elevation data to construct the bed elevation in the hydrodynamic model mesh. Morgan & Eklund's July 2012 Crossroads survey provided recent bed elevations at the area of interest (OWW Cut 1) and nearby waterways. USACE surveys of the ICWW and St. Lucie Inlet provided additional bed elevation in the navigation channels. The South Florida Water Management District (SFWMD) survey provided bathymetric data in the Indian River Lagoon. St. Lucie County and Martin County beach profile surveys provided beach elevation in the nearshore areas. Digitized NOAA nautical charts and GEODAS data specified bathymetry offshore. Scanned U.S. Geological Survey

(USGS) quadrangle sheets and aerial photographs specified the land type boundaries and topography. Table 2.2 summarizes the collected elevation data. Figure 2.4 shows color contours of bathymetric (purple to orange contours) and topographic (orange to red contours) elevations synthesized from the Table 2.2 sources.

Table 2.2 Collected Bathymetric Data

Date	Description	Type	Source
Varies	Offshore Bed Elevation	Bathymetric	NOAA-GEODAS
1988	Indian River Lagoon Bed Survey	Bathymetric	SFWMD
August 2006	St. Lucie Beach Profile	Bathymetric	St. Lucie County
March 31 – May 30, 2008	IWW Project Condition Survey, St. Lucie County	Bathymetric	USACE
August 2008	Martin County Beach Profile	Bathymetric	
July 22, 2011	St. Lucie River Hydrographic Survey	Bathymetric	USACE
July 2012	Crossroads Hydrographic Survey	Bathymetric	Morgan & Eklund, Inc.
April 19 & May 1, 2013	St. Lucie Inlet Hydrographic Survey	Bathymetric	USACE

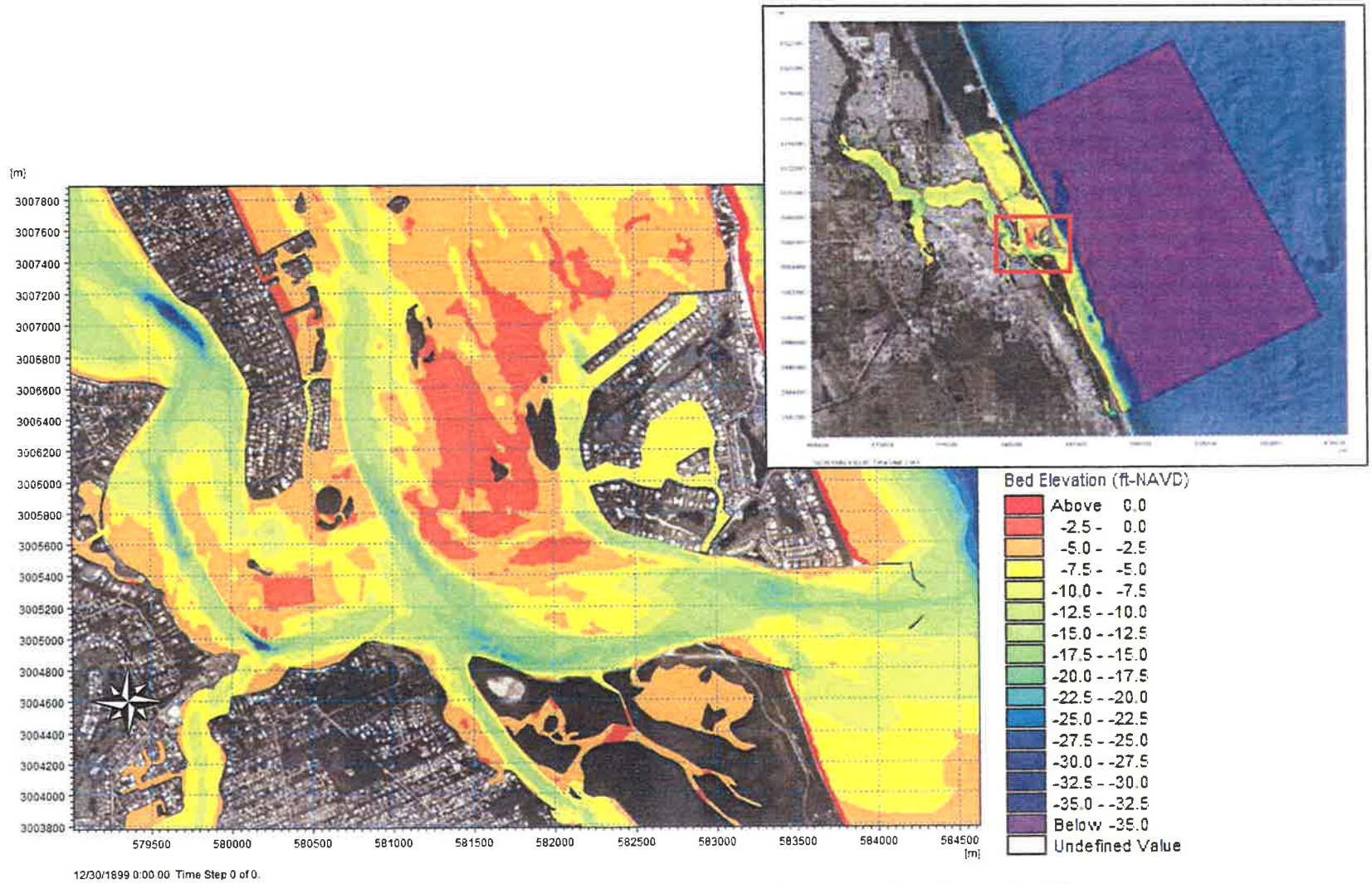

Figure 2.4 Bathymetry and Topographic Elevations in the Study Area (Red Box in Top Figure)

2.4 Sediment Data

Taylor Engineering collected sediment grab samples at eight locations to estimate the mean sediment diameter to apply in the sediment transport model. Table 2.3 provides the coordinates and Figure 2.5 shows the locations of these stations on a map. Ellis & Associates analyzed the sediment samples and provided sediment gradation plots of the samples. The plots provided sediment size and gradation at select locations in St. Lucie River, OWW, Indian River Lagoon, St. Lucie Inlet, and north and south beaches along the Atlantic Ocean. Based on the results of the sediment analysis, Table 2.3 provides the sediment median grain size, which varies from 0.08 mm in St. Lucie River to 0.48 mm at the beaches. At the OWW Cut 1 area, Station S2 provides a median sediment grain size of 0.29 mm. A sediment transport model will apply this median sediment grain diameter to simulate the transport of sediments through the OWW Cut 1 area.

Table 2.3 Coordinates of Sediment Sampling Stations

Station	State Plane Florida East NAD83		Sediment Median Grain Size (mm)	Estimated Sediment Gradation
	Northing (ft)	Easting (ft)		
S1	1034866.2	918449.2	0.12	1.3
S2	1030434.1	922142.7	0.29	1.5
S3	1028651.0	918127.5	0.08	n/a
S4	1031345.1	925786.4	0.43	2.8
S5	1029841.2	926478.6	0.47	4.7
S6	1035570.1	921944.4	0.12	1.2
S7	1034467.8	930498.9	0.48	1.9
S8	1027179.9	930760.2	0.48	2.0

2.5 Dredging Records and Dredging Cost

The USACE provided maintenance dredging records for OWW Cut 1 and the ICWW for 2003 – 2013. Table 2.4 provides a summary of historical maintenance dredging volume and associated cost records from 2003 – 2013. The records show dredged volume for OWW Cut 1 and ICWW and totals 187,827 cy with an average of 18,783 cy/yr. Dredging frequency averages once every 3 – 4 years. The most recent dredging operation in the area of interest occurred in June – July 2013. The results show, on average, removal of 2,280 cy/yr from OWW Cut 1 and 16,500 cy/yr from the ICWW. Figure 2.6 shows the limits of dredged areas during typical dredging of OWW Cut 1 and adjacent ICWW.

Figure 2.5 Locations of Sediment Sampling Stations

Table 2.4 Summary of Historical Maintenance Dredging in OWW Cut 1 and ICWW (2003 – 2013)

Year	Total Dredge Volume (cy)	OWW Cut 1 Dredge Volume (cy)	ICWW Dredge Volume (cy)	Cost per cy	Mobilization/ Demobilization Cost	Other Cost	Total Cost
2003	68,899	11,562	57,337	$10.48	$385,591	$13,923	$1,121,742
2005	35,341	5,964	29,377	$6.40	$203,000	$10,500	$439,682
2009	41,461	0	41,461	$9.65	$399,458	$79,962	$879,519
2013	42,126	5,262	36,864	$8.16	$727,166	$1,716	$1,1072,630

Figure 2.6 USACE Dredging Template at OWW Cut 1 and ICWW

2.6 Field Measurement of Tide Level and Flow Velocity

Taylor Engineering installed pressure tide gauges in St. Lucie River, OWW, Manatee Pocket, Indian River Lagoon, and St. Lucie Inlet on April 9 – 10 and May 1, 2013 and retrieved these tide gauges on May 24 – 25, 2013. The tide data provides boundary tide data for hydrodynamic model calibration and verification.

In addition, Taylor Engineering measured flow velocity at two locations on May 17, 2013 (neap tide) and May 24, 2013 (spring tide) to provide hydrodynamic model calibration and verification data at the OWW Cut 1 area. Velocity measurements at each station consisted of 5-min recordings of flow velocity and direction. The average speed and direction recorded during each measurement provided the depth-averaged flow data at each station. The measured horizontal flow speeds provided depth-averaged velocities that ranged 0.5 – 1.1 fps at Station V1 and 0.3 – 2.3 fps at Station V2.

Table 2.5 shows the coordinates of the tide stations and velocity stations and Figure 2.7 shows the station locations on a map.

Table 2.5 Coordinates of Measured Tide Level and Velocity Stations

Station	Data Type	State Plane Florida East NAD83		Period of Record	Data Frequency	Location/ Remarks
		Northing (ft)	Easting (ft)			
TG1	Tide Level	1028371.2	917743.3	Apr 10 – May 24, 2013	20 minutes	Sailfish Marina
TG2	Tide Level	1058338.2	878736.5	Apr 9 – May 25, 2013	20 minutes	Sandpiper Marina
TG3	Tide Level	988465.9	945021.4	Apr 10 – May 24, 2013	20 minutes	Jupiter Island Club Marina
TG4	Tide Level	1059212.6	908154.6	Apr 9 – May 25, 2013	20 minutes	Sundance Marina
TG5	Tide Level	1031773.3	928376.0	Apr 10 – May 24, 2013	20 minutes	St. Lucie Inlet - North Shoreline
TG6	Tide Level	1033499.9	897710.8	May 1 – May 24, 2013	15 minutes	Monterrey Inn Marina
V1	Velocity	1030348.1	920052.0	May 17 & 24, 2013	60 minutes	350 ft north of OWW Cut 1
V2	Velocity	1029979.0	920114.9	May 17 & 24, 2013	60 minutes	OWW Cut 1

Figure 2.7 Locations of the Tide Level and Velocity Measurement Stations

3.0 HYDRODYNAMIC, SEDIMENT TRANSPORT, AND MORPHOLOGY MODEL DEVELOPMENT

This chapter describes the MIKE21 Flexible Mesh (FM) two-dimensional hydrodynamic, wave, sediment transport, and morphology (bed change) models. These DHI (2013) models simulate water surface elevation, flow velocity, bed and suspended sand transport, erosion, and deposition at the area of interest. MIKE21 FM represents portions of the Atlantic Ocean, St. Lucie River, OWW, ICWW, and the Indian River Lagoon's interconnected network of waterways as a two-dimensional waterway.

The state-of-the-art MIKE modeling system has a history of extensive use in the United States (e.g., USACE, 2004; LDNR, 2008; and USACE, 2002) and in other parts of the world (Broker, 1994; Valeur, 2004; Pedersen et al., 2008). The MIKE model has undergone extensive tests, documentation, and applications in hundreds of modeling studies worldwide by research institutions, governmental agencies, and consulting organizations (Stipa et al., 2003; Neelz and Pender, 2009; and Neelz and Pender, 2013).

The MIKE21 FM hydrodynamic (HD) model applies the time-dependent mass and momentum conservation equations to compute transient flows and water surface elevations. The hydraulic model requires a flow or stage hydrograph at its upstream and downstream boundaries. Given the initial water surface elevations and the hydraulic conditions at the boundaries, MIKE21 FM HD — a two-dimensional, transient, and depth-averaged model — employs finite volume methods to compute flows and water surface elevations inside the model domain. The governing equations account for conservation of mass, conservation of momentum in the x- and y-direction, and turbulence closure. Model capabilities include wetting and drying, Coriolis acceleration, wind stress, friction assignment, Smagorinsky definition of turbulent exchange coefficients, and two choices for boundary conditions (flow or elevation).

The MIKE21 FM Spectral Wave (SW) model simulates growth, decay, and transformation of wind-generated waves and swell. The SW model requires wave parameters or wind-sea and swell parameters at its boundaries. Given initial wave parameters at the boundaries, the SW model employs finite volume methods to solve the spectral wave action balance equation and produce representative discrete two-dimensional wave action density spectra. Model capabilities include refraction due to depth variations; wave-current interaction; wave growth by wind; non-linear wave-wave interaction; and dissipation due to wave breaking, bottom friction, and white-capping.

MIKE21 FM Sediment Transport (ST) model — a two-dimensional finite-volume model — simulates non-cohesive (sand) sediment transport. It uses the flow velocity results from the MIKE21 FM

HD to calculate the movement of both bed load and suspended sediment. For purely tide-generated flows, the MIKE21 FM ST provides the Engelund and Hansen, Van Rijn, and Engelund and Fredsøe formulas for bed load and suspended sediment. For combined tide-generated and wave-generated flows, the MIKE21 FM ST provides a look-up table of sediment transport using Fredsøe et al. (1985) and Engelund and Fredsøe (1976) sediment transport equations. The MIKE21 ST also calculates the change in bed elevation from model-calculated sediment erosion and deposition.

The HD (hyrodynamic), SW (wave), and ST (sediment transport and morphology) models in MIKE21 FM link dynamically: (1) the SW module computes and feeds back wave radiation stresses to the HD module to affect the HD module flow computation; (2) the HD model flow computes the tide- and wave-generated flow velocities that drive sediment transport; (3) the ST model sediment movement results in either erosion or deposition that changes bed elevations or shoreline location; and (4) bed or shoreline changes affect the subsequent SW and HD model computations (i.e., ST model feedbacks bed level changes to the SW and HD models). The fully dynamic integration of the wave calculation, flow calculation, sediment transport, and bed changes makes the MIKE21 FM a state-of-the-art modeling system. The sections below focus on the model setup including mesh generation, development of boundary conditions, calibration, verification, and application of the models for normal tide conditions to understand sediment transport in the area of interest.

3.1 Model Setup

To apply the MIKE21 FM model to a particular area, Taylor Engineering developed a finite volume grid to map the channel network into the model's input format. The grid divides the model domain into rectangular and triangular elements. The size of the elements usually varies from large sizes in regions far from the study area to very fine sizes at the study area. Measured tides at St. Lucie Inlet North Shoreline (TG5), Jupiter Island Club Marina (TG3), Sundance Marina (TG4), Monterrey Inn Marina (TG6), and Sandpiper Marina (TG2) provided the water level at the model boundaries during model calibration and verification. The St. Lucie Inlet North Shoreline water level data and a transfer function generated the model offshore water level boundary during model calibration and verification. NOAA-predicted tide provided the water level at the model inland boundaries and the NOAA-predicted tide at Seminole Shores provided the water level at the model offshore boundary during normal tide model runs.

3.1.1 Model Schematization

The MIKE21 FM mesh, constructed to evaluate flows and sediment transport at the area of interest, stretches north-south — from the Northeast Causeway Blvd. Bridge over the Indian Lagoon in Jensen Beach to Harbor Island (near Greenville Road in Jupiter Island) approximately 15.6 mi along the ICWW. In addition to this stretch of the ICWW, the mesh includes portions of St. Lucie River (SLR) (7.0 mi), SLR North Fork (5.0 mi), SLR South Fork (4.1 mi), St. Lucie Inlet, Atlantic Ocean (from shoreline to 9.3 mi offshore), and other waterways connected to the Indian River Lagoon and the St. Lucie River. The Northeast Causeway Blvd. Bridge serves as the model's north boundary, the model's southern edge near Harbor Island serves as the south boundary, the SLR North Fork edge and the Atlantic Ocean boundary serves as the east boundary. The area of interest (OWW Cut 1 area) is located approximately 11.8 mi from the model's edge in the SLR North Fork, 6.8 mi from the model's edge in the SLR South Fork, and 2.3 mi from the mouth of the St. Lucie Inlet. Figure 3.1 shows the riverbed elevation in feet referenced to North American Vertical Datum 1988 (NAVD). The model contains increased resolution near OWW Cut 1. Figure 3.2 and Figure 3.3 show a detailed image of the bed elevation and model mesh near the area of interest. The model provides distances along the plot's horizontal and vertical axes in meters. The mesh consists of 147,861 elements and 77,717 nodes. The finer mesh elements near the area of interest provided the means to evaluate hydraulic and sediment transport conditions at the site over short distances.

The program MIKEZero Version 2012 provided the user interface for model setup. The user constructs a mesh from several of the tools provided and then adds the appropriate resolution in the areas of interest. The program allows the user to input ASCII data files of digitized bathymetry and interpolate the bathymetry onto the mesh.

3.1.2 Model Boundary Conditions

The final step required in the model setup involved specification of known boundary conditions at the external boundaries to the model mesh. For these specifications, MIKE21 FM provides several options. For an unspecified mesh boundary, the program automatically assumes a land barrier with a "slip" boundary condition. In short, the flow at nodes on a slip boundary has no velocity components perpendicular to the boundary. Specified boundary conditions include constant and time-varying free surface elevation and constant or time-varying flow. The hydrodynamic model contains five time-varying elevation boundary conditions, one each corresponding to the SLR North Fork, SLR South Fork, ICWW north, ICWW south, and offshore edges of the model. Taylor Engineering excluded wind input (no wind

shear) because winds are not reliable and regular driving mechanisms for sediment transport. Model simulations applied a zero sediment flux gradient for outflows and a zero bed change for inflows in the sediment transport model. In simulations with a wave model, Taylor Engineering applied the WIS Station 63453 wave data at the offshore boundary, open (waves pass through) at the north and south lateral boundaries, and closed boundary (no waves) at the model boundaries at SLR North Fork, SLR South Fork, ICWW north, and ICWW south.

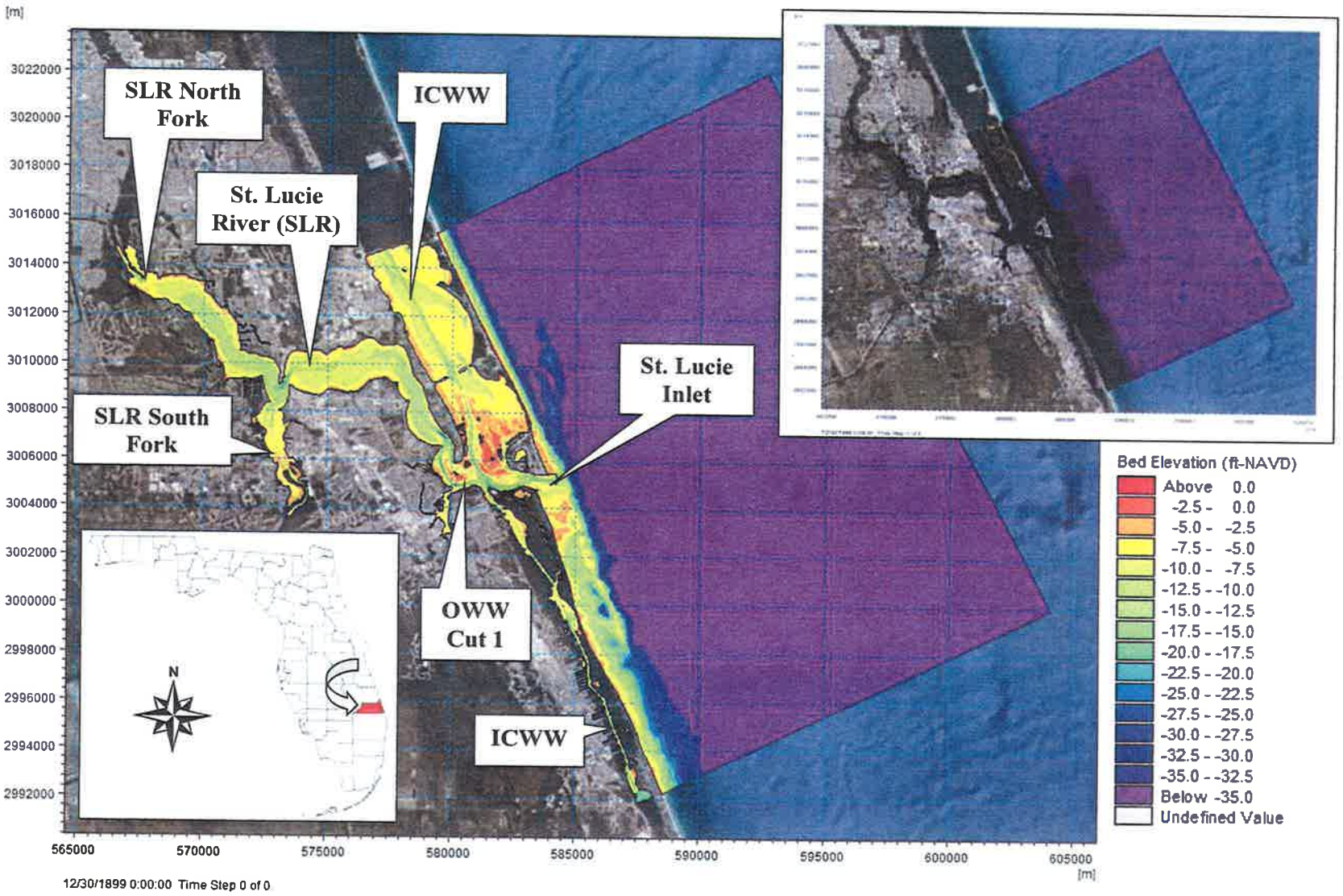

Figure 3.1 Model Domain, Bed Elevations, and Mesh

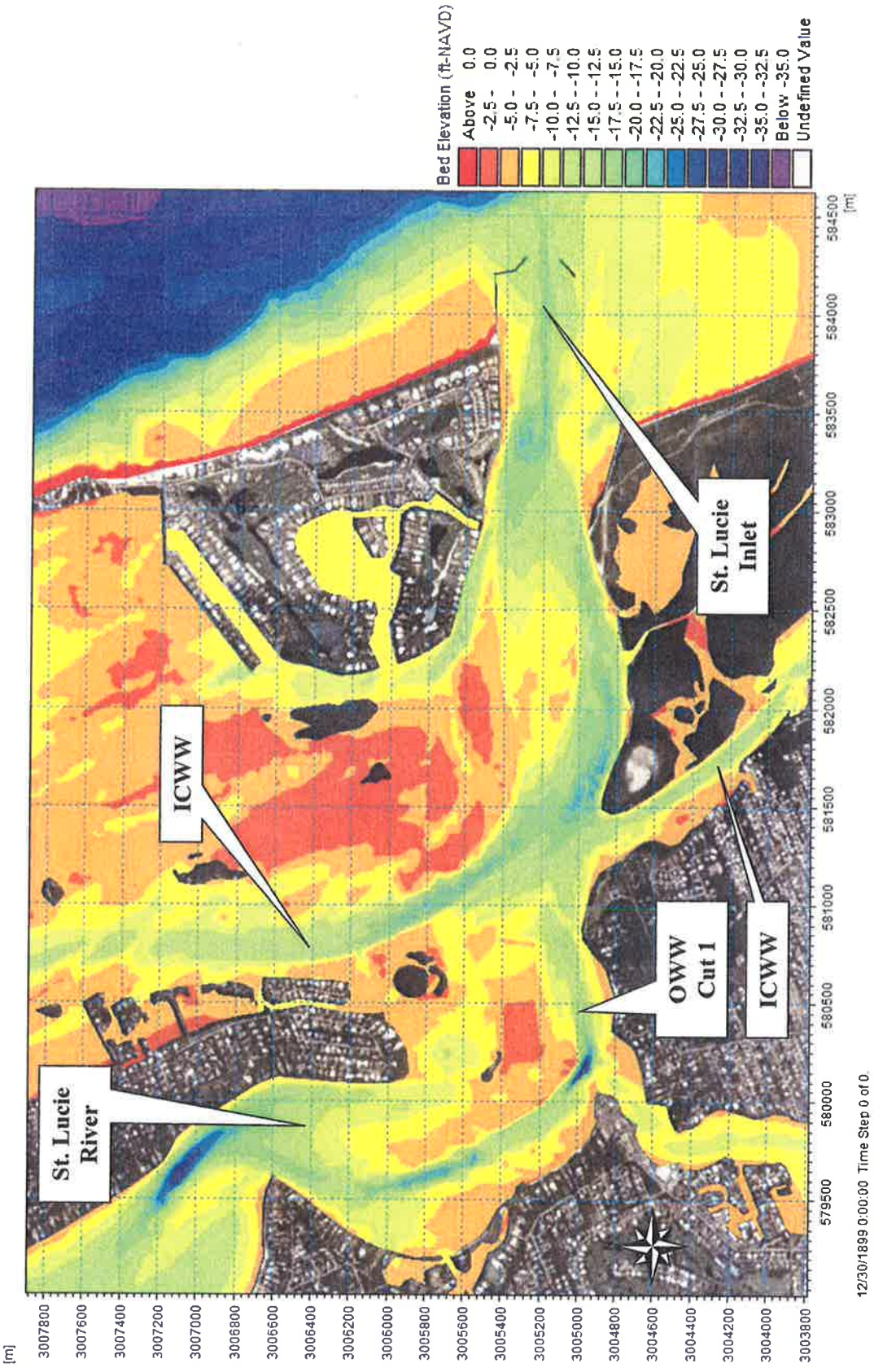

Figure 3.2 Model Bed Elevations at OWW Cut 1

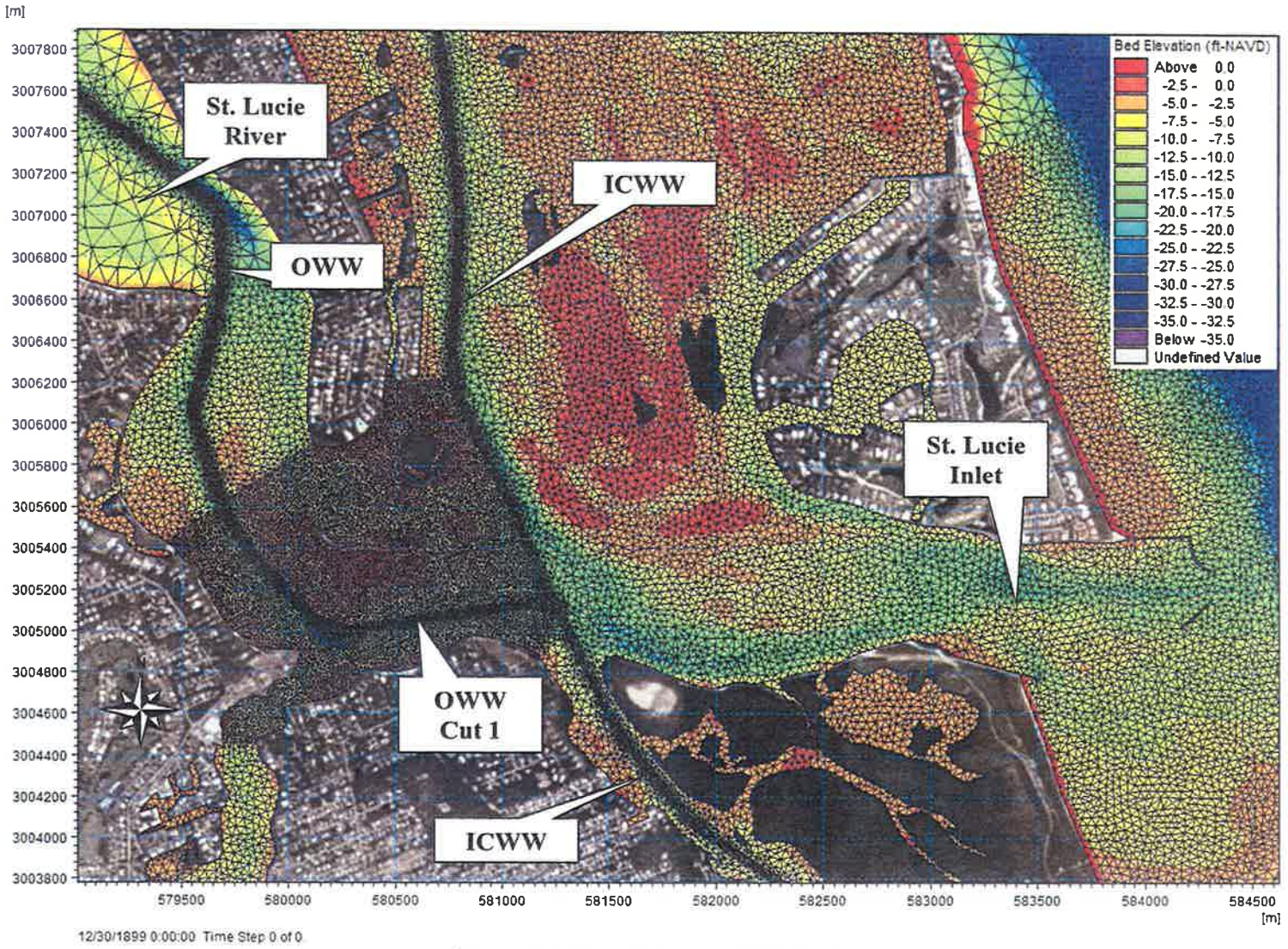

Figure 3.3 Model Mesh at OWW Cut 1

3.2 Model Calibration and Verification

Calibration demonstrates a model's capability to reproduce observed hydrodynamic conditions in the study area. This study accomplished calibration through iterative adjustments to hydrodynamic model parameters until data and model results agreed. For this study, hydraulic calibration data consisted of the measured flow velocity at Stations V1 and V2 (see Figure 2.7) on May 17, 2013. After model calibration, Taylor Engineering then applied the calibrated model parameters for model verification and simulation of normal tide conditions. The model verification data consisted of measured flow velocity at Stations V1 and V2 on May 24, 2013.

The HD model calibration run applied May 1 – 20, 2013 boundary conditions to the model — measured tides at Sandpiper Marina (TG2) for SLR North Fork boundary, Monterrey Inn Marina (TG6) for SLR South Fork boundary, Sundance Marina (TG4) for ICWW north boundary, Jupiter Island Club Marina (TG3) for ICWW south boundary, and St. Lucie Inlet North Shoreline (TG5) for the offshore boundary. A transfer function provided the means to apply the tide measurements at TG5 to the model's offshore boundary. The application of the transfer function inherently included other factors that affected tide levels during measurements (e.g., wind setup and wave setup) at the offshore boundary.

Calibration occurred through iterative adjustments of friction (Manning's n) until model flow velocity matched the measured flow velocity reasonably well. This study assigned a uniform Manning's n of 0.025 for the model domain. Figure 3.4 and Figure 3.5 show comparisons of the modeled and measured flow velocities at Stations V1 and V2 during neap tides.

At Station V1, the model-simulated flow velocity compared very well with seven out of eight measurements. On the one data point that the comparison was not as good as with the other seven, the maximum discrepancy from measurements was only approximately 0.2 fps. The Station V1 velocity root mean squared errors (RMSE) and correlation were 0.3 fps and 0.98.

At Station V2, the model-simulated flow velocity compared very well with data in seven out of eight measurements. On the one data point that the comparison was not as good as with the other seven, the maximum discrepancy from measurements was approximately 0.9 fps. The Station V2 velocity root mean squared errors (RMSE) and correlation were 0.2 fps and 0.97.

Overall, Figure 3.4 and Figure 3.5 show very good agreement between data and model-simulated flow velocity during the ebb (positive flow) and flood (negative flow) phases of the tidal cycle.

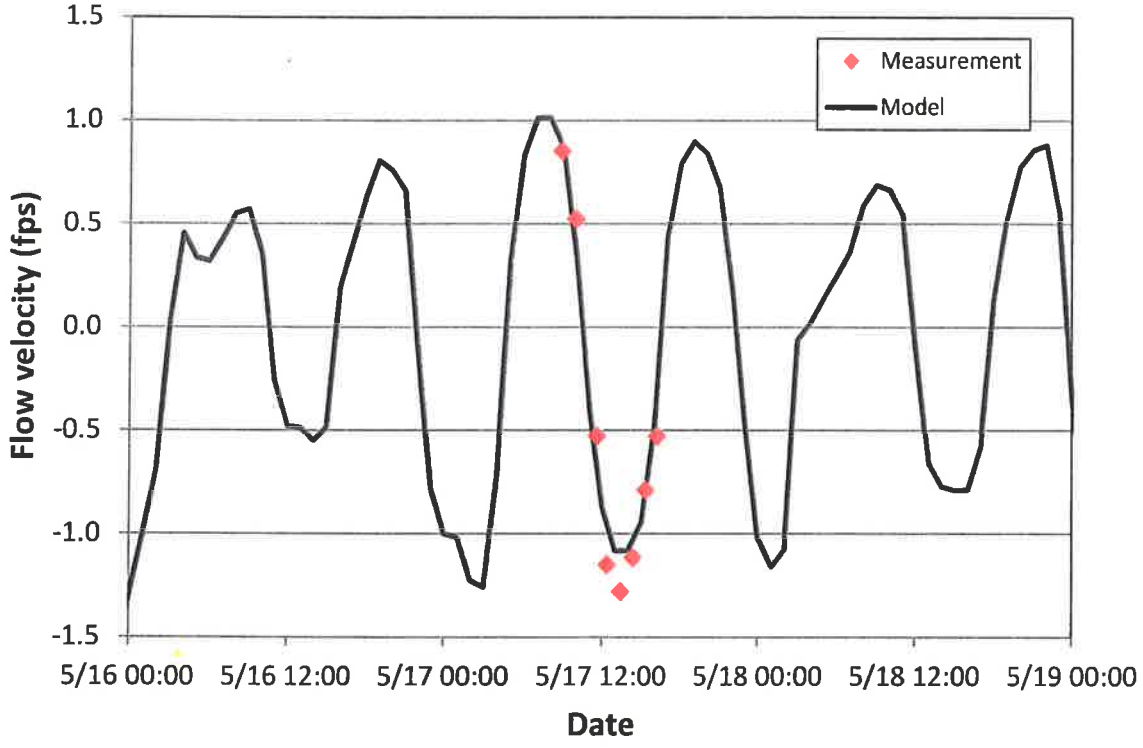

Figure 3.4 Comparison of Modeled and Measured Flow Velocity at Model Calibration (Station V1)

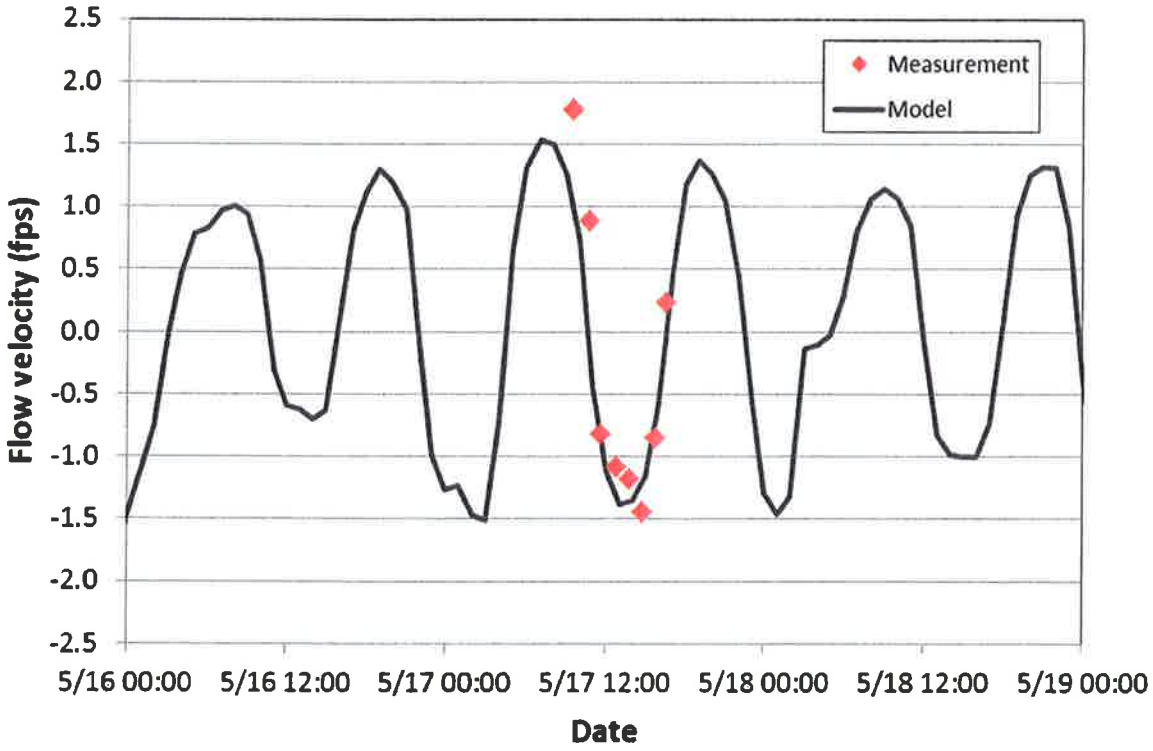

Figure 3.5 Comparison of Modeled and Measured Flow Velocity at Model Calibration (Station V2)

Model verification ensures that the calibrated parameters apply to simulations outside the calibration period. To verify model performance, this study applied the May 20 – 26, 2013 measured tides as boundary conditions on the calibrated model and compared the model's simulated flow velocity with the measured velocity at Stations V1 – V2. The transfer function applied in model calibration provided the offshore tide levels. All model parameters remained the same as in the calibrated model.

Figure 3.6 shows very good comparison of modeled and measured flow velocity at Station V1 with flow velocity RMSE and correlation of 0.5 fps and 0.92. Figure 3.7 shows overestimation of peak flows at Station V2 with flow velocity RMSE and correlation of 0.6 fps and 0.73. The discrepancy in flow velocity between data and model simulation results at Station V2 is likely due to the strengthening of the wind, which had more pronounced effect on the deeper water in Station V2. Overall, the model results still provided good comparison with the data.

As the model simulated well the flow velocity in the study area, Taylor Engineering considered the model calibrated and verified to provide the flow velocity field for sediment transport.

The absence of available measured wave and sediment concentration data precluded calibration of the wave and sediment transport models. Therefore, Taylor Engineering verified wave model performance by testing the capability of the wave model to simulate the prescribed wave height, direction, and period at the nearshore area. Results show the wave model simulates well wave propagation and simulates well the changing of wave directions. For example, the model-computed nearshore wave heights are larger at high tide than at low tide. Figure 3.8 and Figure 3.9 show the model-computed wave height (color contour in ft) and direction (arrow) in the nearshore area at high tide and low tide. These figures show consistent nearshore wave heights and direction for the given incident wave height and direction — H_i = 7.0 ft, θ_i = 5° at high tide and H_i = 6.8 ft, θ_i = 8° at low tide. Notably, because the wave model integrates with the hydrodynamic model, the effect of rising and falling tides becomes apparent in the nearshore area — that is, deeper water depths and a closer waterline cause waves at high tide to break nearer the shoreline than waves at low tide. Because of wave breaking, the wave model generates radiation stresses and the hydrodynamic model uses the gradient of radiation stresses to generate longshore currents. The generation of the longshore currents allows the sediment transport model to generate littoral transport. Based on the wave model's capability to propagate offshore waves and generate wave-induced currents and directions in the surf zone, Taylor Engineering considers the wave model adequate to provide the forcing mechanism to generate the littoral transport in the sediment transport model.

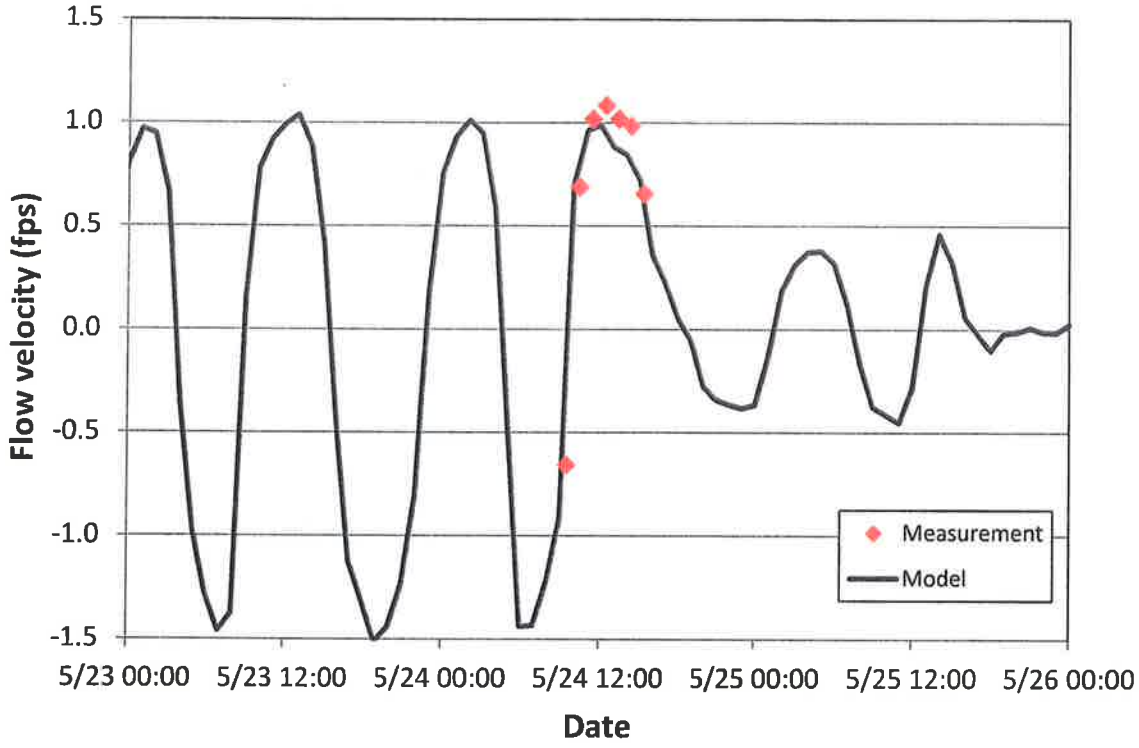

Figure 3.6 Comparison of Modeled and Measured Flow Velocity at Model Verification (Station V1)

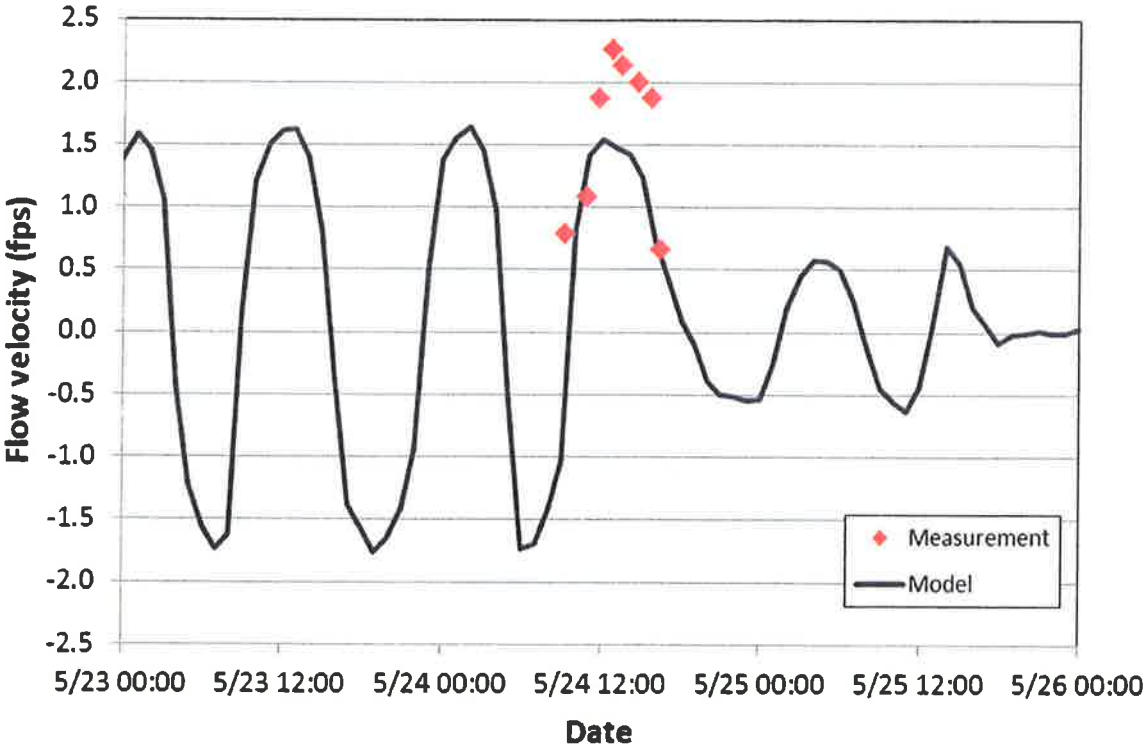

Figure 3.7 Comparison of Modeled and Measured Flow Velocity at Model Verification (Station V2)

The sediment transport model, integrated with the hydrodynamic and wave models, simulated longshore, cross-shore, estuary, and river sediment transport. The model input data included sediment porosity of 0.40 sediment grab samples with median sediment diameter of 0.29 mm. The median sediment size data provided the sediment size in the sediment transport model. This sediment median diameter in the sediment transport model provided a sediment transport pattern consistent with OWW, ICWW, inlet, and beach hydraulics. Figure 3.10 shows total sediment load through the inlet is much larger than the longshore transport at peak flood. Small amounts of inlet sediments reach OWW Cut 1 only during peak flood. Figure 3.11 shows sediment transport at peak ebb is weak in OWW Cut 1. Abrupt increases in transport rate (green to red contour) cause erosion from the "green" area, and abrupt decreases (red to green or blue; or purple to no color) cause deposition on the "blue or green" area. For example, the abrupt decreases in sediment transport rate north of M-5 and near the junction of ICWW and OWW explain the historical depositional pattern in the area — sediments from the inlet deposit in the ICWW and OWW Cut 1 as the flood current swings west to the ICWW. Notably, Figure 3.10 shows an abrupt decrease in sediment transport at the eastern end of OWW Cut 1 — a sediment transport pattern that indicates sediment deposition and explains the formation of shoals in this part of OWW. Figure 3.11 shows some erosion at ebb just east of the inlet jetties. Overall, the model-computed sediment transport patterns prove consistent with historical observations in the area.

Because the sediment transport model simulated well the observed sediment transport patterns in the study area, Taylor Engineering considers the sediment transport model and, in general, the integrated hydrodynamic, wave, and sediment transport models sufficient to (1) understand sediment transport forcing mechanisms in the study area, (2) identify potential alternatives to reduce OWW Cut 1 shoaling, (3) evaluate the performance of alternatives sediment basins to reduce OWW Cut 1 shoaling, (4) understand the potential impact of the alternatives to flow and sediment transport, and (5) estimate potential morphological changes to the study area associated with basin construction.

Like other state-of-the-art sediment transport models, the present sediment transport model simulates well the sediment transport and morphological patterns in the area of interest. However, these models do not usually provide very accurate magnitudes of erosion and deposition. Sediment transport model calibration enhances the accuracy of the sediment transport and morphological modeling.

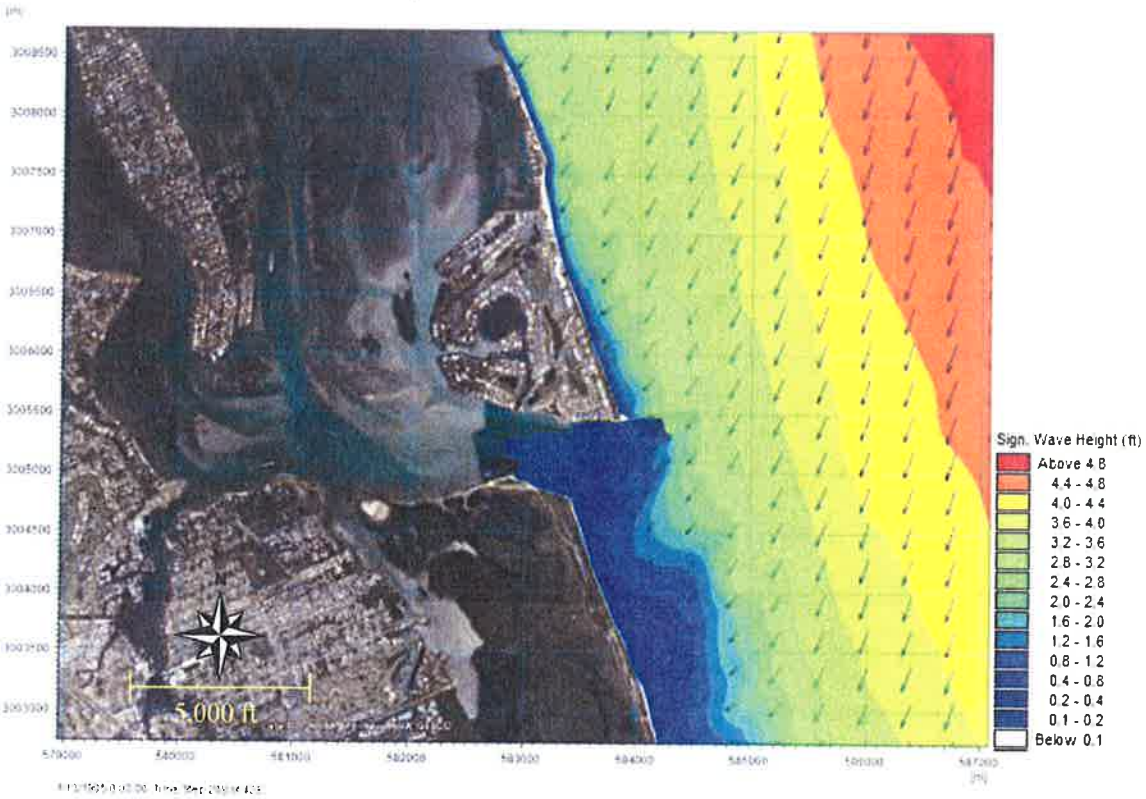

Figure 3.8 Model-computed Wave Height and Direction at High Tide (H_i = 7.0 ft, θ_i = 5°)

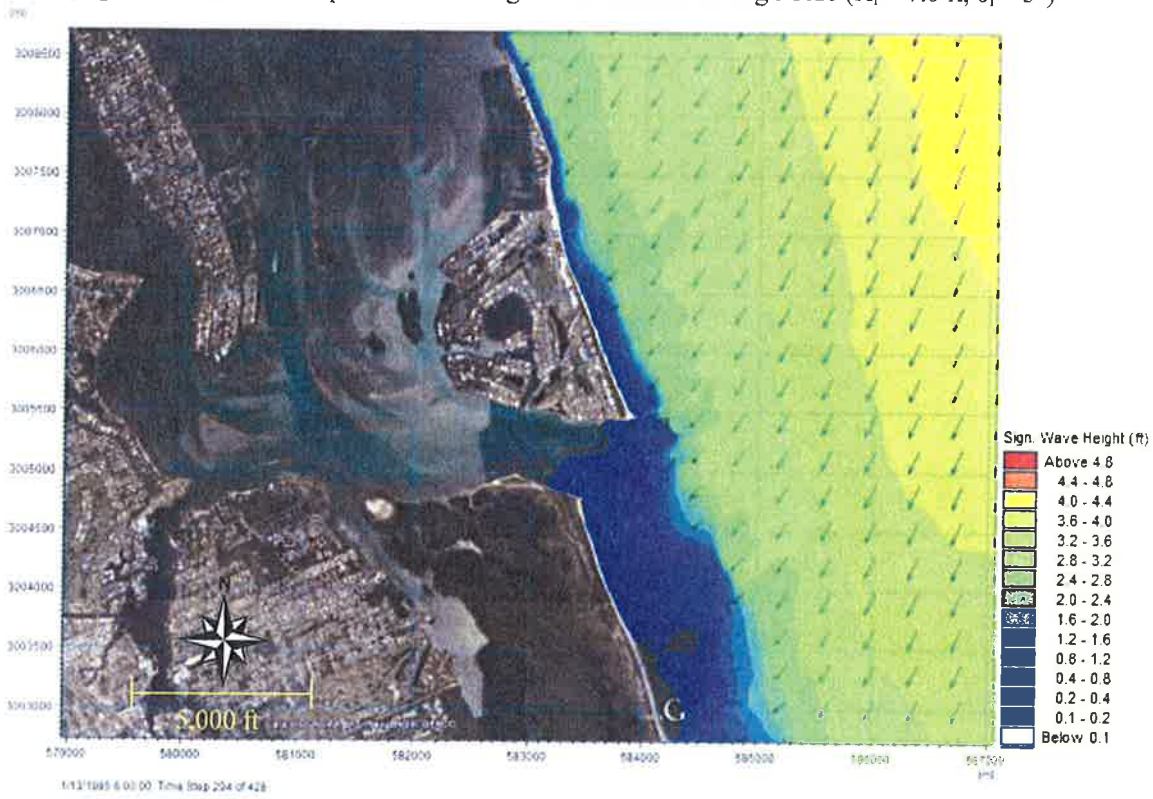

Figure 3.9 Model-computed Wave Height and Direction at Low Tide (H_i = 6.8 ft, θ_i = 8°)

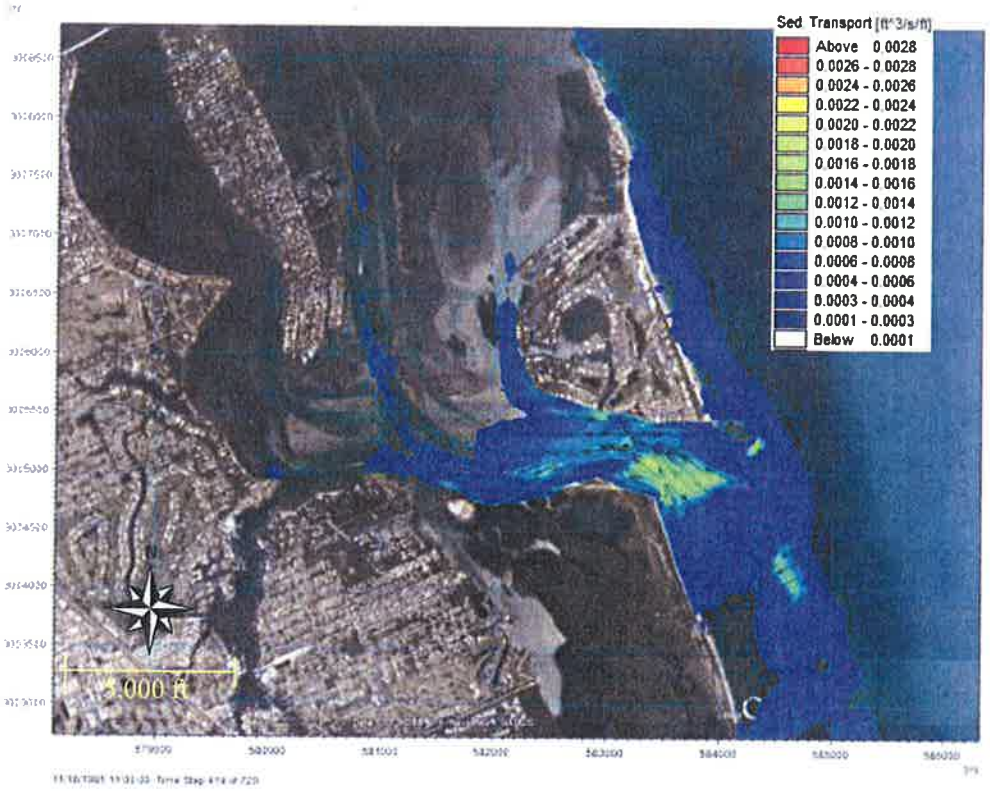

Figure 3.10 Model-computed Sediment Transport at Peak Flood

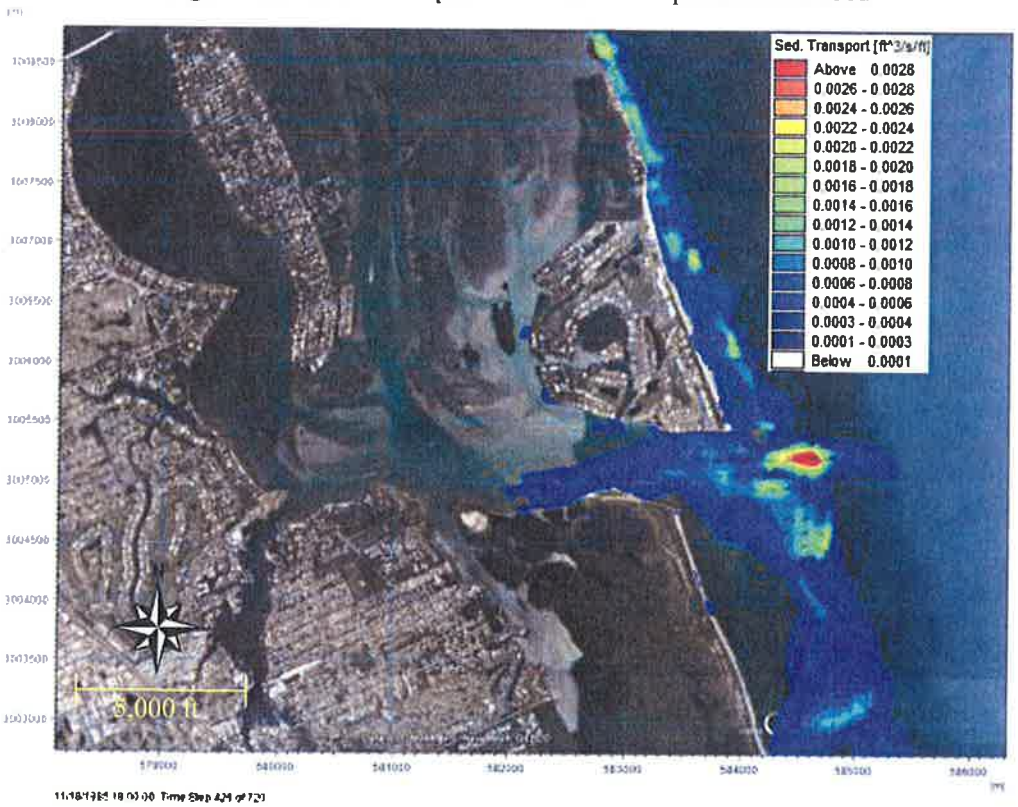

Figure 3.11 Model-computed Sediment Transport at Peak Ebb

4.0 EVALUATION OF ALTERNATIVES TO REDUCE OWW CUT 1 SHOALING

Each of the alternatives discussed below seek to alter the fate of sediments entering OWW via St. Lucie River, Indian River Lagoon, and St. Lucie Inlet. Results of the integrated hydrodynamic, wave, and sediment transport model show that although a portion of the longshore transport enters St. Lucie Inlet during flood, the majority of sediments that reach OWW Cut 1 comes from St. Lucie Inlet and surrounding areas. Moreover, small amounts of inlet sediment reach OWW Cut 1 only during peak flood. Given this sediment transport process, the present study evaluated proactive alternatives that aim to capture the sediment before it deposits into OWW Cut 1 and alternatives that deepen OWW Cut 1. The present study also included a no-action alternative to serve as a baseline condition for evaluation of the performance of five basin-construction and six OWW Cut 1 deepening and/or partial shoal removal proactive alternatives. The no-action alternative includes dredging in the current OWW Cut 1 (OWW-E) at 8 ft below MLLW (plus 2 ft of overdredge) and the ICWW at 10 ft below MLLW (plus 2 ft of overdredge). Table 2.1 shows the MLLW lies at -1.6 ft-NAVD at the nearest NOAA tidal station (NOAA 8722371).

Figure 4.1 shows the locations for basin construction alternatives (a) Basin 1 at north of the west end of OWW Cut 1, (b) Basin 2 at north of the east end of OWW Cut 1, (c) Basin 2 at north and Basin 3 at south of the east end of OWW Cut 1, (d) Basin 4 along the south shoreline of St. Lucie Inlet (north of M-5), and (e) Basin 3 at south of the east end of OWW Cut 1. Figure 4.1 also shows the locations of OWW deepening and Figure 4.2 shows the locations of the two shoals for partial removal for the other proactive alternatives. Table 4.1 and Table 4.2 in Section 4.2 provide the size, surface area, bottom elevation, and volume of the basin(s) for each of the alternative. Table 4.1 lists the basin construction alternatives and Table 4.2 lists the alternatives that require OWW Cut 1 dredging and partial removal of nearby shoals. Model results show these shoals significantly contribute to shoaling in OWW-E.

Evaluation criteria for all alternatives included (1) net reduction in sediment deposition in OWW Cut 1, (2) net reduction in the portion of OWW Cut 1 that normally experiences the fastest shoaling, and (2) net reduction in maintenance dredging costs. Alternatives that satisfy the first or second criterion to significantly reduce the frequency of maintenance dredging are functionally feasible. Alternatives that satisfy the third criterion are economically feasible. The present study also evaluated the no-action alternative to provide baseline data to compare the relative effects of each proactive alternative.

Figure 4.1 Proposed Locations of Basins and Shoal for Removal to Reduce Shoaling in OWW Cut 1

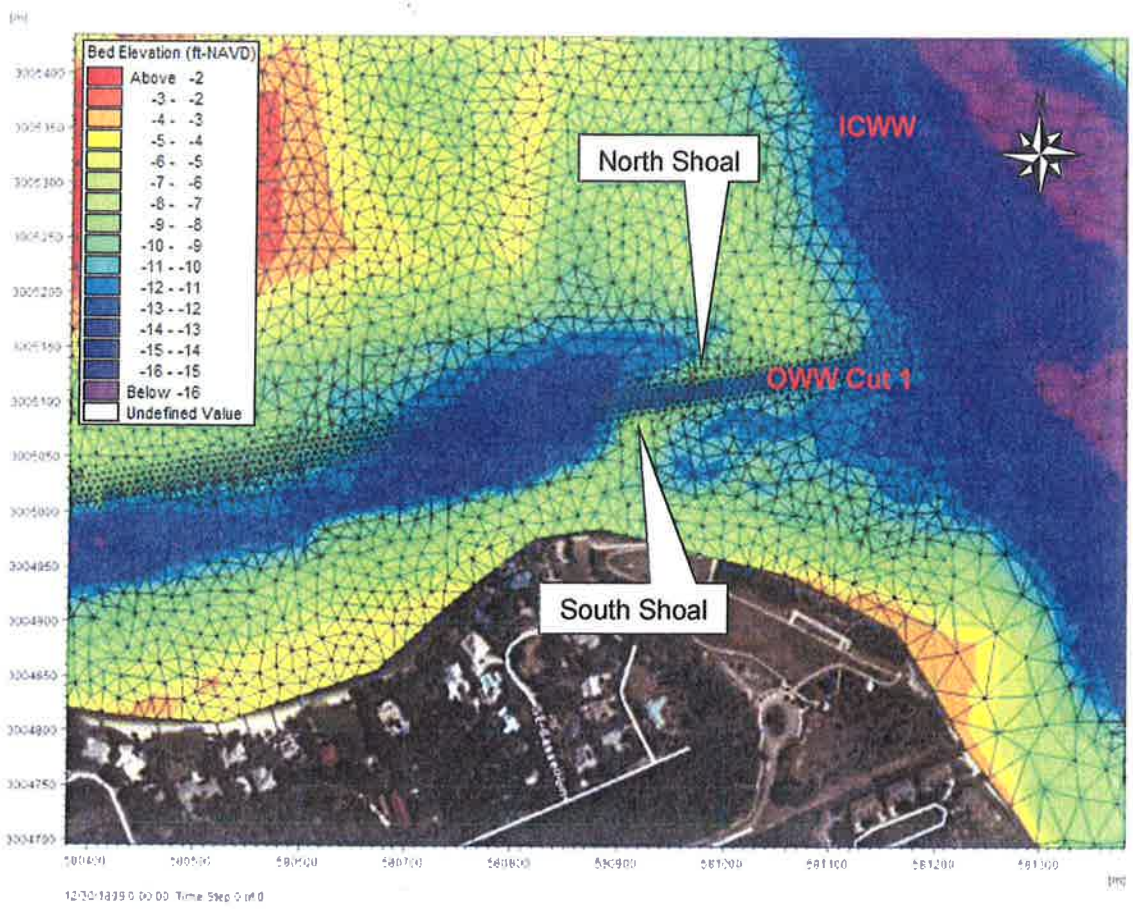

Figure 4.2 Locations and Elevations of Shoals Adjacent to OWW

4.1 Alternatives

4.1.1 No-Action Alternative (Baseline)

The no-action alternative refers to a course of action that maintains the existing schedule of maintenance dredging of OWW and ICWW in the study area typically once every three years. This alternative requires no additional intervention or construction. The purpose of evaluating the no-action alternative is to estimate future hydraulic and morphologic conditions in the study area. In addition, the evaluation provided baseline conditions to assess the performance of alternatives and identify their effects when compared to baseline conditions.

Estimating long-term morphological changes in the study area requires simulation of sediment transport over several years. However, such long-term simulations require lengthy computational time that goes beyond the schedule of the present study. Alternatively, Taylor Engineering simulated month-long sediment transport scenarios and prorated the computed transport in a typical year (e.g., 1985). Predicted inshore and offshore tides and hindcast offshore WIS Station 43453 waves provided the

boundary conditions for the simulations. Taylor Engineering prorated the volume that shoaled during these periods to estimate the change in shoaling rate in the portions of OWW Cut 1 (OWW-W and OWW-E) and the ICWW. Figure 2.6 shows the dredged portions of the East OWW Cut 1 (OWW-E) and the ICWW. Located west of OWW-E, West OWW Cut 1 (OWW-W) is not dredged regularly.

4.1.2 Alternative 1: Construction of Sediment Basin 1

Alternative 1 specifies construction of rectangular Basin 1 in St. Lucie River at the west end and north of OWW Cut 1 (Figure 4.1). Alternative 1 intends to reduce the amount of sediment from the northwest by trapping some of the sediments and preventing them from moving further south and east to OWW Cut1. Thus, if the sediment basin functions as intended, a portion of the incoming sediment volume during ebb will remain in the basin and consequently reduce the deposition rate in OWW Cut 1. To simulate the behavior of Basin 1 in St. Lucie River, Taylor Engineering set model elements at the prescribed basin bed elevation and location in the baseline model (Table 4.1). The difference in basin bed elevation from the baseline bed elevation multiplied by the basin plan area provided the basin's dredge volume and trapping capacity.

Table 4.1 shows the construction of Basin 1 increases sediment shoaling by 161% in OWW-W, decreases sediment shoaling by 5% in OWW-E, and decreases sediment shoaling by 4% in the ICWW. The portion of OWW Cut 1 that normally experiences the fastest shoaling under the no-action alternative will likely shoal 2% less with the construction of Basin 1. Model results show locating the basin in close proximity to OWW Cut 1 causes more sediment to deposit in OWW-W. The decrease in OWW-E shoaling is very small and adds only about two months to the dredging interval. These findings indicate that Alternative 1 will not likely decrease the current frequency of dredging in OWW Cut 1. In addition, modification of the size and depth of Basin 1 will not likely reduce the additional shoaling induced by the basin construction and will not likely increase the dredging interval.

4.1.3 Alternative 2: Construction of Sediment Basin 2

Model results of Alternative 1 simulations show sediment deposits at a triangular area at the east end and north of OWW Cut 1. Thus, to capture this sediment deposition, Alternative 2 specifies construction of triangular Basin 2 in St. Lucie River at the east end and north of OWW Cut 1 (Figure 4.1). Alternative 2 intends to reduce the amount of sediment from the north by trapping some of the sediments to prevent them from moving further south to OWW Cut1. To simulate the behavior of Basin 2 in St. Lucie River, Taylor Engineering set model elements at the prescribed basin bed elevation and location in

the baseline model (Table 4.1). The difference in basin bed elevation from the baseline bed elevation multiplied by the basin plan area provided the basin's dredge volume and trapping capacity.

Table 4.1 shows the construction of Basin 2 decreases sediment shoaling by 46% in OWW-W, decreases sediment shoaling by 18% in OWW-E, and increases sediment shoaling by 4% in the ICWW. However, the portion of OWW Cut 1 that normally experiences the fastest shoaling under the no-action alternative will likely shoal 10% more with the construction of Basin 2. This finding indicates that Alternative 2 will not decrease the current frequency of dredging in OWW Cut 1.

4.1.4 Alternative 3: Construction of Sediment Basin 2 and Basin 3

As shows sediment comes from the southeast direction, construction of Basin 3 along the path of the sediment transport can possibly reduce sediment deposition in OWW Cut 1. Thus, Alternative 3 specifies construction of triangular Basin 2 at the north side and Basin 3 at the south side of the east end of OWW Cut 1 (Figure 4.1). Alternative 3 intends to reduce the amount of sediment from the north with Basin 2 trapping some of the sediments to prevent them from moving further south and Basin 3 trapping some of the sediments to prevent them from moving further northwest to OWW Cut1. Thus, if the sediment basins function as intended, a portion of the incoming sediment volume during ebb will remain in Basin 2 and a portion of the sediment during flood will remain in Basin 3 and consequently reduce the deposition rate in OWW Cut 1. To simulate the behavior of Basin 2 and Basin 3 in St. Lucie River, Taylor Engineering set model elements at the prescribed basin bed elevations and locations in the baseline model (Table 4.1). The difference in basin bed elevations from the baseline bed elevation multiplied by the basins' plan areas provided the basins' dredge volumes and trapping capacities.

Table 4.1 shows the construction of Basins 2 and 3 increases sediment shoaling by 3% in OWW-W, increases sediment shoaling by 17% in OWW-E, and decreases sediment shoaling by 10% in the ICWW. Model results show locating the basin in close proximity to OWW Cut 1 causes more sediment to deposit in OWW-E. Moreover, the portion of OWW Cut 1 that normally experiences the fastest shoaling under the no-action alternative will likely shoal 200% more with the construction of Basins 2 and 3. This finding indicates that Alternative 3 will not decrease the current frequency of dredging in OWW Cut 1.

4.1.5 Alternative 4: Construction of Basin 4 at North of M-5

Alternative 4 specifies construction of Basin 4 in the northeast corner of St. Lucie Inlet and ICWW just north of M-5 (Figure 4.1). Alternative 4 intends to reduce the amount of sediment from the

east by intercepting and trapping some of the sediments to prevent them from moving further northwest to OWW Cut1. Thus, if the sediment basin functions as intended, a portion of the incoming sediment volume during flood will remain in the basin and consequently reduce the deposition rate in OWW Cut 1. Locating the basin more than 1,000 ft from OWW Cut 1 will also avoid sediment deposition in OWW Cut 1 due to close proximity to the sediment basin. To simulate the behavior of Basin 4, Taylor Engineering set model elements at the prescribed basin bed elevation and location in the baseline model (Table 4.1). The difference in basin bed elevation from the baseline bed elevation multiplied by the basin plan area provided the basin's dredge volume and trapping capacity.

Table 4.1 shows the construction of Basin 4 increases sediment shoaling by 6% in OWW-W, increases sediment shoaling by 12% in OWW-E, and decreases sediment shoaling by 8% in the ICWW. Model results show locating the basin in close proximity to OWW Cut 1 causes more sediment to deposit in OWW Cut 1. However, the portion of OWW Cut 1 that normally experiences the fastest shoaling under the No-Action alternative will likely shoal 1% less with the construction of Basin 4. Model results show sediment from the inlet fills up Basin 4 quickly in about seven months — a very short period for operation of a large volume sediment basin. Notably, a sediment basin located directly along the path of very large sediment transport must have a much larger storage volume to reduce sediment movement towards OWW Cut 1 over longer period. However, construction of a larger storage basin near M-5 is not practical due to limitations in bed elevation, construction, and maintenance cost. These factors indicate that Alternative 4 will likely increase OWW Cut 1 sediment shoaling and will not decrease the current frequency of dredging in OWW Cut 1.

4.1.6 Alternative 5: Construction of Basin 3

Alternative 5 specifies construction of Basin 3 at the south side of the east end of OWW Cut 1 (Figure 4.1). Alternative 5 intends to reduce the amount of sediment from the east by intercepting and trapping some of the sediments to prevent them from moving further northwest to OWW Cut1. Thus, if the sediment basin functions as intended, a portion of the incoming sediment volume during flood will remain in the basin and consequently reduce the deposition rate in OWW Cut 1. To simulate the behavior of Basin 3, Taylor Engineering set model elements at the prescribed basin bed elevation and location in the baseline model (Table 4.1). The difference in basin bed elevation from the baseline bed elevation multiplied by the basin plan area provided the basin's dredge volume and trapping capacity.

Table 4.1 shows the sole construction of Basin 3 increases sediment shoaling by 66% in OWW-W, increases sediment shoaling by 18% in OWW-E, and decreases sediment shoaling by 14% in the

ICWW. Moreover, the portion of OWW Cut 1 that normally experiences the fastest shoaling under the No-Action alternative will likely shoal 198% more with the construction of Basin 3. This finding indicates that Alternative 5 will likely increase OWW Cut 1 sediment shoaling and will not decrease the current frequency of dredging in OWW Cut 1.

4.1.7 Conclusions on Basin Construction Alternatives

The basin construction alternatives generally show that due to the basin's proximity to OWW Cut 1, the eastern portion of OWW Cut 1 will likely shoal faster than baseline conditions. **Therefore, to reduce the frequency of dredging in OWW Cut 1, it becomes necessary to have (in lieu of basin construction) additional OWW Cut 1 dredging at locations that historically exhibit the fastest rate of shoaling and/or partial removal of nearby shoals.** The following paragraphs describe the proactive alternatives, which include additional OWW Cut 1 deepening and partial nearby shoal removal.

4.1.8 Alternative 6: Additional 2-ft Dredge in Whole Length of OWW Cut 1

Alternative 6 specifies deepening the whole length of OWW Cut 1 from the current authorized depth of -8.0 ft-MLLW (plus 2-ft overdredge) to -10.0 ft-MLLW (plus 2-ft overdredge). The 2-ft additional deepening of OWW Cut 1 (OWW-W and OWW-E) creates additional sediment storage capacity in OWW Cut1. To simulate the behavior of OWW Cut 1 deepening, Taylor Engineering set model elements at the prescribed OWW Cut 1 bed elevation and location in the baseline model (Table 4.2). The difference in OWW Cut 1 bed elevation from the baseline bed elevation multiplied by OWW Cut 1 plan area provided the additional dredge volume.

Table 4.2 shows Alternative 6 increases sediment shoaling by 601% in OWW-W, increases sediment shoaling by 143% in OWW-E, and decreases sediment shoaling by 1% in the ICWW. The portion of OWW Cut 1 that normally experiences the fastest shoaling under the No-Action alternative will likely shoal 29% more. Model results show the increased shoaling in OWW-W and OWW-E will likely fill the additional volume (created by lowering the bed by 2 ft) in 1.4 years. This results in addition of at least one year to the baseline dredging interval. Model results also show Alternative 6 does not significantly change shoaling in the ICWW. These findings indicate that Alternative 6 can decrease the current frequency of dredging in OWW Cut 1 by adding one year to the dredging interval.

4.1.9 Alternative 7: Additional 2-ft Dredge in Eastern 1,350-ft Length of OWW Cut 1

Alternative 7 specifies deepening the eastern 1,350-ft length of OWW Cut 1 and its transition

zone to the ICWW from the current authorized depth of -8.0 ft-MLLW (plus 2-ft overdredge) to -10.0 ft-MLLW (plus 2-ft overdredge). The 2-ft deepening of OWW-E creates additional sediment storage capacity only in OWW-E and the amount of required dredge volume is much less than the required dredge volume in Alternative 6. To simulate the behavior of OWW-E deepening, Taylor Engineering set model elements at the prescribed OWW-E bed elevation and location in the baseline model (Table 4.2). The difference in OWW-E bed elevation from the baseline bed elevation multiplied by OWW-E plan area provided the additional dredge volume.

Table 4.2 shows Alternative 7 increases sediment shoaling by 1% in OWW-W, increases sediment shoaling by 144% in OWW-E, and decreases sediment shoaling by 1% in the ICWW. The portion of OWW Cut 1 that normally experiences the fastest shoaling under the No-Action alternative will likely shoal 31% more. Model results show the increased shoaling in OWW-E will likely fill the additional volume (created by lowering OWW-E bed by 2 ft) in 1.4 years. This results in addition of at least one year to the baseline dredging interval. Model results also show Alternative 7 does not significantly change shoaling in OWW-W and the ICWW. These findings indicate that Alternative 7 can decrease the current frequency of dredging in OWW Cut 1 by adding one year to the dredging interval.

4.1.10 Alternative 8: Dredging of Nearby Shoals to -8 ft MLLW

Alternative 8 specifies dredging the western portion of OWW Cut 1 (OWW-W) to -8.0 ft-MLLW (plus 2-ft overdredge) and partial removal of nearby shoals by dredging them to elevation -8.0 ft-MLLW. The shoal excavation is along OWW-E and extends outside the width of the channel 160 ft on the north and 110 ft south of the channel. Dredging OWW-W creates additional sediment storage capacity in OWW Cut1 and the shoal dredging removes large sources of sediment that deposit in OWW-E. To simulate the behavior of partial shoal removal, Taylor Engineering set model elements at the shoal bed elevation and location in the baseline model (Table 4.2). The difference in shoal bed elevation from the baseline bed elevation multiplied by the shoal plan area provided the additional dredge volume.

Table 4.2 shows Alternative 8 increases sediment shoaling by 324% in OWW-W, decreases sediment shoaling by 17% in OWW-E, and does not change sediment shoaling in the ICWW. As a result of the partial shoal removal, the portion of OWW Cut 1 that normally experiences the fastest shoaling under the No-Action alternative will likely shoal 32% less. Model results also show Alternative 8 does not change shoaling in the ICWW. Model results show the decreased shoaling in OWW-E will likely add an additional 0.6 year to the baseline dredging interval. These findings indicate that Alternative 8 can slightly decrease the current frequency of dredging in OWW Cut 1.

4.1.11 Alternative 9: Dredging of Nearby Shoals to -10 ft MLLW

Alternative 9 specifies partial removal of nearby shoals by dredging them to elevation -10.0 ft-MLLW. The shoal excavation is along OWW-E and extends outside the width of the channel 160 ft on the north and 110 ft south of the channel. The shoal dredging removes large sources of sediment that deposit in OWW-E. To simulate the behavior of partial shoal removal, Taylor Engineering set model elements at the shoal bed elevation and location in the baseline model (Table 4.2). The difference in shoal bed elevation from the baseline bed elevation multiplied by the shoal plan area provided the additional dredge volume.

Table 4.2 shows Alternative 9 increases sediment shoaling by 13% in OWW-W, decreases sediment shoaling by 76% in OWW-E, and does not change sediment shoaling in the ICWW. The portion of OWW Cut 1 that normally experiences the fastest shoaling under the No-Action alternative will likely shoal 41% less. Given the decrease in OWW-E shoaling, model results show OWW-E will require maintenance dredging at least once every five years. As OWW-W is not included in the regular maintenance dredging, the increase in OWW-W shoaling could also require OWW-W dredging. If OWW-W is not dredged, the area south of OWW-W that appears naturally deep can serve as a navigation channel as OWW-W becomes shallow. The analysis indicates that Alternative 9 can decrease the current frequency of dredging in OWW Cut 1 by adding two years to the dredging interval. Alternative 9 demonstrates shoal removal can solely reduce shoaling in OWW Cut 1.

4.1.12 Alternative 10: Additional 2-ft Dredge in Eastern 1,350-ft Length of OWW Cut 1 Dredging of Nearby Shoals to -8 ft MLLW

Alternative 10 specifies deepening the eastern 1,350-ft length of OWW Cut 1 and its transition zone to the ICWW (OWW-E) from the current authorized depth of -8.0 ft-MLLW (plus 2-ft overdredge) to -10.0 ft-MLLW (plus 2-ft overdredge). The 2-ft deepening of OWW-E creates additional sediment storage capacity in OWW-E. Alternative 10 also specifies removal of nearby shoals by dredging them to elevation -8.0 ft-MLLW. The shoal excavation is along OWW-E and extends outside the width of the channel 160 ft on the north and 110 ft south of the channel. The shoal dredging removes large sources of sediment that deposit in OWW-E. To simulate the behavior of OWW-E dredging and partial shoal removal, Taylor Engineering set model elements at OWW-E and shoal bed elevations and locations in the baseline model (Table 4.2). The difference in shoal bed elevation from the baseline bed elevation multiplied by the shoal plan area provided the additional dredge volume.

Table 4.2 shows Alternative 10 increases sediment shoaling by 5% in OWW-W, increases sediment shoaling by 129% in OWW-E, and decreases sediment shoaling by 1% in the ICWW. The portion of OWW Cut 1 that normally experiences the fastest shoaling under the No-Action alternative will likely shoal 7% less. Given the initial lowering of OWW-E bed by 2 ft and the increase in OWW-E shoaling, model results show OWW-E will require maintenance dredging once every four years. These findings indicate that Alternative 10 can decrease the current frequency of dredging in OWW Cut 1 by adding one year to the dredging interval.

4.1.13 Alternative 11: Additional 2-ft Dredge in Eastern 1,350-ft Length of OWW Cut 1 Dredging of Nearby Shoals to -10 ft MLLW

Alternative 11 specifies deepening the eastern 1,350-ft length of OWW Cut 1 and its transition zone to the ICWW (OWW-E) from the current authorized depth of -8.0 ft-MLLW (plus 2-ft overdredge) to -10.0 ft-MLLW (plus 2-ft overdredge). The 2-ft deepening of OWW-E creates additional sediment storage capacity in OWW-E. Alternative 11 also specifies removal of nearby shoals by dredging them to elevation -10.0 ft-MLLW. The shoal excavation is along OWW-E and extends outside the width of the channel 125 ft on the north and south of the channel. The shoal dredging removes large sources of sediment that deposit in OWW-E. Alternative 11 removes more volume of the shoals than Alternative 10. To simulate the behavior of OWW-E dredging and partial shoal removal, Taylor Engineering set model elements at OWW-E and shoal bed elevations and locations in the baseline model (Table 4.2). The difference in shoal bed elevation from the baseline bed elevation multiplied by the shoal plan area provided the additional dredge volume.

Table 4.2 shows Alternative 11 increases sediment shoaling by 13% in OWW-W, increases sediment shoaling by 84% in OWW-E, and decreases sediment shoaling by 1% in the ICWW. As more volume of the shoal is removed, the portion of OWW Cut 1 that normally experiences the fastest shoaling under the No-Action alternative will likely shoal 48% less (i.e., shoals less than Alternative 10). Given the initial lowering of OWW-E bed by 2 ft and the increase in OWW-E shoaling, model results show OWW-E will require maintenance dredging once every five years. The increase in OWW-W shoaling could also require OWW-W dredging. These findings indicate that Alternative 11 can decrease the frequency of current dredging in OWW Cut 1 but may require dredging OWW-W at longer intervals.

4.2 Comparison of Cost of Functionally Feasible Alternatives

A comparison of costs of the various functionally feasible alternatives requires evaluation of three factors — dredging frequency, dredging cost, and other related costs (e.g., engineering, permitting, bid administration, construction observation). Results of the model simulations for Alternatives 6 – 11

provide the dredging frequency.

A review of historical USACE data and other previous dredging experience provided the basis for estimating dredging cost, including mobilization/demobilization cost and unit costs (cost per cubic yard). Table 2.4 summarizes the cost data. Notably, costs of three previous dredging events (i.e., 2005, 2009, and 2013) have escalated over an 8-year span. Data show that mobilization/demobilization costs have continued to increase. The unit cost also continued to increase from 2005 to 2009 but decreased slightly in 2013 to $8.16 per cubic yard. Based on the trend of the cost shown in Table 2.4, mobilization/demobilization and dredge volume unit costs will likely continue to increase. This study assumes the next OWW Cut 1 and ICWW dredging will occur in 2016. To estimate the dredging cost starting in 2016, this study adopted the 2013 dredging cost (the most recent available dredging cost) and applied an annual interest rate of 3.500% to transform the mobilization and yardage costs for the 2016 maintenance dredging and subsequent dredging events thereafter.

In comparing the cost of each functionally feasible alternative, the more material dredged and removed from the same location normally results in less cost per cubic yard. However, even when the dredge volumes of alternatives fall in the range 50,000 – 150,000 cy, this study used the same unit cost for all the functionally feasible alternatives to conservatively estimate the cost. The cost analysis also considered the dredging project's other costs, including costs associated with permitting, environmental coordination, engineering and design (surveys), and construction administration for each dredging event. Experience on similar projects derives the other costs (Table 4.3) associated with dredging projects.

- Initial permitting includes permit preparation, submission, and response to initial Requests for Additional Information (RAI); will have an initial cost of $50,000 and a recurring cost of $15,000 for each dredging event.

- Environmental studies composed of seagrass or natural resource survey; will have an initial cost of $20,000 and a recurring cost of $5,000 per acre of additional dredge area for each dredging event.

- Engineering and design includes the preparation of engineering design drawings; will have an initial cost of $70,000 and a recurring cost of 5% of the dredging cost for each dredging event.

- Construction administration; will have a recurring cost of 10% of the dredging cost for each dredging event.

Table 4.1 Estimated Dredged Areas, Bed Elevations, Dredged Volumes, and Shoaling Rate Change for Alternatives with Basin Construction

Parameter	 Alternative 1	 Alternative 2	 Alternative 3	 Alternative 4	 Alternative 5
Approx. Basin Length (ft) or Approx. Basin Side Lengths for Triangular Basin (ft)	1,300	Side A: 800 Side B: 790 Side C: 670	Basin 2: Side A: 800 Side B: 790 Side C: 670 Basin 3: Side A: 730 Side B: 470 Side C: 890	1,360	Side A: 730 Side B: 470 Side C: 890
Approx. Basin Width (ft)	560	n/a	n/a	460	n/a
Approx. Basin Area (acres)	16.7	5.5	Basin 2: 5.5 Basin 3: 3.9	13.4	3.9
Basin Bed Elevation (ft-MLLW)	-32.6	-32.6	Basin 2: -32.6 Basin 3: -32.6	-22.8	-22.8
Basin Dredge Volume (cy)	583,100	214,200	Basin 2: 214,200 Basin 3: 296,800	120,700	296,800
Percent Change in Shoaling Rate	OWW-W: +161% OWW-E: -5% ICWW: -4%	OWW-W: -46% OWW-E: -18% ICWW: +4%	OWW-W: +3% OWW-E: +17% ICWW: -10%	OWW-W: +6% OWW-E: +12% ICWW: -8%	OWW-W: +66% OWW-E: +18% ICWW: -14%
Percent Change in Deposition at Shallowest Portion	OWW-W: +18% OWW-E: -2% ICWW: -3%	OWW-W: 0% OWW-E: +10% ICWW: +4%	OWW-W: +10% OWW-E: +200% ICWW: +9%	OWW-W: -1% OWW-E: -1% ICWW: -3%	OWW-W: +12% OWW-E: +198% ICWW: +3%
Approx. Dredging Interval (years)	3.2	3.7	2.6	2.7	2.5
Functionally Feasible	No	No	No	No	No

Table 4.2 Estimated Dredged Areas, Bed Elevations, Dredged Volumes, and Shoaling Rate Change for Alternatives with OWW Cut 1 and Adjacent Shoals Dredging

Parameter	 Alternative 6	 Alternative 7	 Alternative 8	 Alternative 9	 Alternative 10	 Alternative 11
Approx. Basin Length (ft) or Approx. Basin Side Lengths for Triangular Basin (ft)	OWW-W: 2,000 OWW-E: 1,350	OWW-E: 1,350	OWW-W: 2,000 OWW-E: 1,350 Shoal: 1,350	OWW-E: 1,350	OWW-E: 1,350	OWW-E: 1,350
Approx. Basin Width (ft)	56	56	Shoal: 270	Shoal: 270	Shoal: 270	Shoal: 270
Approx. Basin Area (acres)	6.6	4.0	12.1	9.5	9.5	9.5
OWW Cut 1 (East) and Adjacent Shoals Bed Elevation (ft-MLLW)	OWW-W: -12.0 OWW-E: -12.0 Shoals: n/a	OWW-E: -12.0 Shoals: n/a	OWW-W: -10.0 Shoals: -8.0	Shoals: -10.0	OWW-E: -12.0 Shoals: -8.0	OWW-E: -12.0 Shoals: -10.0
Dredge Volume (cy)	24,670	7,870	12,460	11,780	10,980	19,650
Percent Change in Shoaling Rate	OWW-W: +601% OWW-E: +143% ICWW: -1%	OWW-W: +1% OWW-E: +144% ICWW: -1%	OWW-W: +324% OWW-E: -17% ICWW: 0%	OWW-W: +13% OWW-E: -76% ICWW: 0%	OWW-W: +5% OWW-E: +129% ICWW: -1%	OWW-W: +13% OWW-E: +84% ICWW: -1%
Percent Change in Deposition at Shallowest Portion	OWW-W: +25% OWW-E: +29% ICWW: 0%	OWW-W: +1% OWW-E: +31% ICWW: 0%	OWW-W: +3% OWW-E: -32% ICWW: 0%	OWW-W: +2% OWW-E: -41% ICWW: 0%	OWW-W: +1% OWW-E: -7% ICWW: 0%	OWW-W: +3% OWW-E: -48% ICWW: +1%
Approx. Dredging Interval (years)	4	4	3	5	4	5
Functionally Feasible	**Yes**	**Yes**	**No**	**Yes**	**Yes**	**Yes**

Table 4.3 Other Costs Associated with Dredging Projects

Item	Amount	Remarks
Permitting	$50,000	$50,000 initial cost and $15,000 for each dredging event
Environmental	$5,000 per acre	$20,000 initial cost and $5,000 per acre for each dredging event
Engineering and Design	$70,000	Initial cost and 5% of the dredging cost for each dredging event
Construction Administration	Depends on dredging cost	10% of the dredging cost for each dredging event

Taylor Engineering estimated the current maintenance dredging equivalent uniform annual cost at $1,057,000. This cost involves dredging OWW-E and the ICWW based on an annual interest rate of 3.500% and a design life of 48 years. For costs associated with dredging for the functionally feasible alternatives, this study applied a dredging frequency that allows dredging at a time when OWW-E and the ICWW requires maintenance dredging — that is, approximately when the beds reach elevations that require dredging at the current navigation draft criteria. Dredging both OWW-E and the ICWW and shoal removal during one dredge deployment would minimize the associated dredging mobilization/demobilization cost. The estimated annual cost of functionally feasible alternatives maintenance dredging assumes a project life of 48 – 50 years and an annual interest rate of 3.500%. The following paragraphs summarize the results of the cost analyses. Table 4.4 shows the details of the cost breakdown. The following paragraphs describe only functionally and economically feasible alternatives as Alternatives 6 and 8 do not provide savings when compared to the current maintenance cost.

The parameters in Table 4.4 have the following definitions.

- Dredging interval is the number of years between dredging events.
- Years of comparison is the assumed project life to facilitate comparison using equivalent uniform annual cost.
- Number of dredging events is the total number of dredging events during the project life.
- Quantity is the volume of material dredged during each dredging event.
- Total yardage is the total volume of material dredged during the project life.

Table 4.4 Details of Equivalent Uniform Annual Cost Estimates

	Parameter	Baseline	Alternative 6	Alternative 7	Alternative 8	Alternative 9	Alternative 10	Alternative 11
A.	Dredging Interval (years)	3	4	4	3	5	4	5
B.	Years of Comparison	48	48	48	48	50	48	50
C.	Number of Dredging Events	16	12	12	16	10	12	10
D.	Quantity (cubic yards per event)	56,340	112,172	95,463	67,637	97,016	97,205	133,701
E.	Total Yardage (cubic yards)	901,440	1,346,059	1,145,554	1,082,195	970,160	1,166,458	1,337,010
F.	Yardage Cost	$509,716	$1,014,832	$863,665	$611,923	$877,717	$879,425	$1,209,611
G.	Mobilization Cost	$806,222	$806,222	$806,222	$806,222	$806,222	$806,222	$806,222
H.	Total Dredging Cost (F+G)	$1,315,938	$1,821,054	$1,669,887	$1,418,145	$1,683,939	$1,685,647	$2,015,833
I.	Permitting Cost ($250,000)	n/a	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000
J.	Environmental Cost	$12,500	$33,000	$20,000	$60,500	$47,500	$47,500	$47,500
K.	E&D Cost	$65,797	$91,053	$83,494	$70,907	$84,197	$84,282	$100,792
L.	CA Cost (10% of Total Dredging Cost)	$131,594	$182,105	$166,989	$141,815	$168,394	$168,565	$201,583
M.	Total Cost (H + I + J + K + L)	$1,525,828	$2,142,212	$1,955,370	$1,706,367	$1,999,030	$2,000,994	$2,380,708
N.	Total Cost (Rounded to Nearest Thousand)	$1,526,000	$2,142,000	$1,955,000	$1,706,000	$1,999,000	$2,001,000	$2,381,000
O.	Equivalent Uniform Annual Cost (Rounded to Nearest Thousand)	$1,057,000	$1,118,000	$1,021,000	$1,187,000	$857,000	$1,044,000	$1,020,000
P.	Annual Savings	n/a	-$61,000	$36,000	-$130,000	$200,000	$13,000	$37,000

Notes: 1. Equivalent uniform annual cost represents total of initial and annual maintenance costs and associated dredging costs. Cost estimation assumes a 48 – 50-year project life and an interest rate of 3.500%.
2. Total dredging cost includes OWW Cut1, ICWW, and shoal dredging maintenance costs.
3. Maintenance dredging occurs when approximately OWW Cut 1 East Portion (OWW-E) shoals to bed elevations that will require maintenance dredging.

- Yardage cost is the cost of dredging the dredge quantity for each dredging event. For example in 2016, a unit dredging cost of $9.05 per cubic yard multiplied by 56,340 cubic yards provides a yardage cost of $509,716 for the baseline or no-action alternative. Notably, an interest rate of 3.500% adjusts the 2013 yardage cost of $8.16 to $9.05 in 2016.
- Mobilization cost is the adjusted cost for mobilization and demobilization of the dredging contractor. Notably, an interest rate of 3.500% adjusts the 2013 mobilization cost of $727,166 to $806,222 in 2016.
- Total dredging cost is the sum of yardage and mobilization costs.
- Permitting cost is a recurring cost of $15,000 for each dredging event.
- Environmental cost is a recurring cost of $5,000 per acre of dredge area for each dredging event. For example, recurring environmental cost for Alternative 9 is $47,500 (9.5 acres x $5,000/acre).
- Engineering and design cost is a recurring 5% of total dredging cost for each dredging event. For example, recurring engineering and design cost for Alternative 9 is $84,197 ($1,683,939 x 0.05).
- Construction administration cost is a recurring 10% of total dredging cost for each dredging event. For example, recurring engineering and design cost for Alternative 9 is $168,394 ($1,683,939 x 0.1).
- Total cost is the sum of total dredging, permitting, engineering and design, and construction administration costs for each dredging event.
- Equivalent uniform annual cost is the equal annual payments required to pay for the total project cost over the project life span. The equivalent uniform annual cost remains constant over the project life span.
- Annual savings is the difference between a project and baseline equivalent uniform annual costs. A positive value indicates cost savings over the baseline (no-action alternative) dredging cost.

Alternative 7 would reduce dredging frequency from one dredging operation every three years to one every four years. Each dredging operation would remove approximately 95,463 cy at an equivalent uniform annual cost of $1,021,000. In comparison with the current maintenance dredging equivalent uniform annual cost, this alternative presents annual savings of approximately $36,000. Alternative 7 provides the largest savings without partial shoal removal.

Alternative 9 would reduce dredging frequency from one dredging operation every three years to one every five years. Each dredging operation would remove approximately 97,016 cy at an equivalent uniform annual cost of $857,000. In comparison with the current maintenance dredging equivalent uniform annual cost, this alternative presents the largest annual savings at approximately $200,000. Alternative 9 provides the largest savings but would likely require additional cost to dredge the west portion of OWW Cut 1 (OWW-W) at longer intervals. If OWW-W is not dredged, the area south of OWW-W that appears naturally deep can serve as a navigation channel as OWW-W becomes shallow.

Alternative 10 would reduce dredging frequency from one dredging operation every three years to one every four years. Each dredging operation would remove approximately 97,205 cy at an equivalent uniform annual cost of $1,044,000. In comparison with the current maintenance dredging equivalent uniform annual cost, this alternative presents the smallest annual savings at approximately $13,000.

Alternative 11 would reduce dredging frequency from one dredging operation every three years to one every five years. Each dredging operation would remove approximately 133,701 cy at an equivalent uniform annual cost of $1,020,000. In comparison with the current maintenance dredging equivalent uniform annual cost, this alternative presents annual savings of approximately $37,000.

4.3 Caveats

Model results offer a good (albeit limited) understanding of the potential morphologic development with the shoal partial removal and/or additional OWW Cut 1 dredging. Long-term morphologic developments including the magnitude of erosion and deposition could vary from those presented in this study given other factors such as long-term variation of sediment transport rate, effect of episodic events (hurricanes), and the effect of periodic beach dune breaches. These factors extend beyond the scope and schedule of this study. In addition, as sediments accrete in OWW Cut 1, they elevate the bed and lessen its efficiency to trap sediment. Because OWW Cut 1 trapping efficiency reduces with time, the shoaling rates provided by the simulation presented in this study would not reflect the long-term average shoaling rates or the temporal variation of shoaling rates. Over time, OWW Cut 1 will fill up and shoaling rates in OWW Cut 1 will likely return to baseline conditions. OWW Cut 1 will require periodic maintenance dredging to restore its trapping efficiency.

This study did not evaluate the long-term growth rate of the north and south shoals near OWW Cut 1 because monitoring and geotechnical data was not available.

5.0 SUMMARY AND CONCLUSIONS

5.1 Summary

The MIKE21 Flexible Mesh (FM) two-dimensional hydrodynamic, wave, sediment transport, and morphology (bed change) models provided the means to understand the forcing mechanisms of sediment transport in the waterways near OWW Cut 1. Taylor Engineering calibrated and verified the hydrodynamic model with measured velocity data from the St. Lucie River. As model results generally agree well with measured flow velocity and direction, the model is well calibrated and verified to provide the flow velocity field for sediment transport.

The absence of available measured wave and sediment concentration data precluded calibration of the wave and sediment transport models. Therefore, Taylor Engineering verified wave model performance by testing the capability of the wave model to simulate the prescribed wave height, direction, and period at the nearshore area. Results show the wave model accurately simulates wave propagation, changing of wave directions, and interaction with temporally- and spatially-varying tide conditions. The wave model adequately provides the forcing mechanism to generate the littoral transport in the sediment transport model.

The sediment transport model, integrated with the hydrodynamic and wave models, simulated longshore and cross-shore sediment transport. The integrated hydrodynamic, wave, and sediment transport models show the majority of the sediment that reaches OWW Cut 1 and the ICWW originates from St. Lucie Inlet and surrounding areas. Moreover, small amounts of inlet sediment reach OWW Cut 1 only during peak flood. The sediment transport model accurately simulated the observed sediment transport patterns in the study area.

The sediment transport model and, in general, the integrated hydrodynamic, wave, and sediment transport models was found sufficient to (1) understand sediment transport forcing mechanisms in the study area, (2) identify potential alternatives to reduce OWW Cut 1 shoaling, (3) evaluate the performance of alternative sediment basins to reduce OWW Cut 1 shoaling, (4) understand the potential impact of the alternatives to flow and sediment transport, and (5) estimate potential morphological changes to the study area associated with basin construction.

The MIKE21-computed morphological pattern is consistent with observed historical patterns in the study area. At flood, the model shows an abrupt decrease in sediment transport rate past M-5 and the

ICWW. This rate decrease explains the historical depositional pattern in the area — (a) shoaling at the junction of ICWW and OWW Cut 1, (b) shoaling at approximately the east one-third length point of OWW Cut 1, and (c) shoal formation on both sides of OWW Cut 1 near locations that historically exhibit the fastest rate of OWW Cut 1 shoaling.

Given this sediment transport process and historical shoaling patterns, Taylor Engineering evaluated the no-action alternative, five proactive basin construction alternatives, and six OWW Cut 1 deepening and/or partial shoal removal proactive alternatives to reduce sediment deposition in OWW Cut 1. The no-action alternative provided baseline data to compare the effects of each proactive alternative. Taylor Engineering applied normal tide conditions to evaluate the performance and effects of the alternatives.

Model results show Alternatives 1 – 5 that require basin construction would generally increase shoaling in OWW Cut 1 and thus would not likely decrease the frequency of maintenance dredging. Alternative 6, which requires dredging OWW Cut 1 (OWW-W and OWW-E) to -10 ft MLLW (with additional 2 ft of overdredge), significantly increases shoaling in OWW Cut 1 but provides sufficient additional storage volume to decrease the frequency of dredging in OWW Cut 1. Alternative 7, which requires dredging only the eastern 1,350 ft of OWW Cut 1 (OWW-E) to -10 ft MLLW (with additional 2 ft of overdredge), also significantly increases shoaling in OWW Cut 1, but compared with Alternative 6, still provides sufficient additional storage volume to decrease the frequency of dredging in OWW Cut 1. Alternative 8, which requires dredging the western portion of OWW Cut 1 (OWW-W) to -8.0 ft-MLLW (with additional 2 ft of overdredge) and partial removal of nearby shoals by dredging them to elevation -8.0 ft-MLLW, increases shoaling in OWW-W, decreases shoaling in OWW-E, and barely decreases the frequency of dredging in OWW Cut 1. Alternative 9, which requires partial removal of nearby shoals by dredging them to elevation -10.0 ft-MLLW (with additional 2 ft of overdredge), increases shoaling in OWW-W, decreases shoaling in OWW-E, and greatly decreases the frequency of dredging in OWW Cut 1. Alternative 9 demonstrates shoal removal can solely reduce shoaling in OWW Cut 1. Alternatives 10 and 11, which require dredging the eastern 1,350-ft length of OWW Cut 1 to -10.0 ft-MLLW (with additional 2 ft of overdredge) and partial removal of nearby shoals by dredging them to -8 and -10 ft-MLLW respectively, increase shoaling in OWW Cut 1. However, each provides sufficient additional storage volume to decrease the frequency of dredging in OWW Cut 1.

Among the 11 alternatives, only Alternatives 6 – 11 provide functionally feasible sediment trapping performance that significantly reduces the frequency of maintenance dredging in OWW Cut 1. Comparison with the current maintenance dredging equivalent uniform annual cost provided the means to

evaluate savings associated with each promising alternative. Alternatives 6 and 8 do not provide savings when compared to the current maintenance cost. Alternative 7 presents annual savings of approximately $36,000 — the largest savings without partial shoal removal. Alternative 9 presents the largest annual saving at approximately $200,000 but would likely require additional cost to dredge the west portion of OWW Cut 1 (OWW-W). Alternative 10 presents the smallest annual savings at approximately $13,000. Alternative 11 requires the largest dredge volume and presents an annual saving of approximately $37,000.

5.2 Conclusions

The data and evaluations presented in this report support the following conclusions:

- Alternative 7 — which consists of deepening the eastern 1,350-ft length of OWW Cut 1 and its transition zone to the ICWW (OWW-E) from the current authorized depth of -8.0 ft-MLLW (plus 2-ft overdredge) to -10.0 ft-MLLW (plus 2-ft overdredge) — represents the most promising solution without shoal removal. It requires the smallest dredging volume per dredging event and is the second best alternative among the functionally and economically feasible alternatives.

- Alternative 9 — which consists solely of partial removal of nearby shoals by dredging them to elevation -10.0 ft-MLLW — represents the most promising solution to reduce dredging frequency at OWW Cut 1. It requires just slightly larger dredge volume than Alternative 7 but provides the best performance and largest cost savings. It is the best alternative among the functionally and economically feasible alternatives

- Alternative 10 — which consists of deepening the eastern 1,350-ft length of OWW Cut 1 and its transition zone to the ICWW (OWW-E) from the current authorized depth of -8.0 ft-MLLW (plus 2-ft overdredge) to -8.0 ft-MLLW (plus 2-ft overdredge) and partial removal of nearby shoals by dredging them to elevation -10.0 ft-MLLW — represents a possible solution to reduce dredging frequency at OWW Cut 1. It performs as well as Alternative 7 but offers a smaller cost savings than Alternative 7.

- Alternative 11 — which consists of deepening the eastern 1,350-ft length of OWW Cut 1 and its transition zone to the ICWW (OWW-E) from the current authorized depth of -8.0 ft-MLLW (plus 2-ft overdredge) to -10.0 ft-MLLW (plus 2-ft overdredge) and partial removal of nearby shoals by dredging them to elevation -10.0 ft-MLLW — represents a

possible solution to reduce dredging frequency at OWW Cut 1. It requires 40% larger dredge volume than Alternative 7 but provides less cost savings in comparison with Alternative 7. Further, Alternative 9 provides the same performance as Alternative 11 at 40% less dredge volume.

5.3 Recommendations

The conclusions in this report support the following recommendations:

- Estimating long-term morphological changes in the study area requires lengthy computational time that goes beyond the schedule of the present study. Alternatively, Taylor Engineering simulated month-long sediment transport scenarios and prorated the computed transport in a typical year to rapidly determine functionally feasible alternatives. To estimate long-term shoaling rates, this study recommends at least a one-year simulation period for the no-action alternative, Alternative 7, and Alternative 9. The no-action alternative provides the baseline to compare the long-term performances and costs of Alternative 7 and Alternative 9. The longer simulation period accounts for reduction in sediment trapping efficiency as OWW Cut 1 shoals and accounts for long-term variation in sediment transport.

- Conduct annual bathymetry surveys at the north and south shoal areas to monitor the long-term growth rate of the north and south shoals. If any of the shoals grows back to pre-dredge size before the scheduled maintenance dredging, then consider additional dredging at the shoal to achieve the designed dredging interval in OWW Cut 1.

- A final assessment of alternatives to reduce frequency of maintenance dredging should use updated available bathymetric information of the St. Lucie River and OWW Cut 1 and vibracore borings at the dredge sites.

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TAYLOR ENGINEERING, INC.
Delivering Leading-Edge Solutions

May 1, 2014

Mark Crosley
Executive Director
Florida Inland Navigation District
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Re: Scope of Additional Professional Engineering Services
Okeechobee Waterway Cut 1, Sediment Basin; Martin County, Florida

Mr. Crosley:

Per your request, Taylor Engineering has prepared the attached Scope of Services (Exhibit A), Cost Proposal (Exhibit B), and Proposed Schedule (Exhibit C) for the following additional services related to the Okeechobee Waterway Cut 1, Sediment Basin Feasibility Study.

Task 1 – Analyses of Long-Term Performance of Alternatives
Task 2 – Update of Recommendations and Economic Analysis
Task 3 – Update of Feasibility Report and Presentation

Taylor Engineering will complete the work described herein for a fixed fee, lump sum of $35,272.

We appreciate this opportunity to serve the FIND. Please contact me if you have questions or comments.

Sincerely,

John Adams

John Adams, P.E.
Senior Advisor, Waterfront Engineering

Attachments

EXHIBIT A

SCOPE OF PROFESSIONAL ENGINEERING SERVICES
Proposed Analyses of Long-Term Performance of Select Alternatives to Reduce Maintenance Dredging of Okeechobee Waterway Cut 1 in Martin County, Florida
Feasibility Study

Overview

The Florida Inland Navigation District (FIND) sponsored a study to determine the feasibility of constructing deposition basins near Okeechobee Waterway Cut 1. To evaluate the performance of 11 potential alternatives within the limited project duration, the study applied a state-of-the-art integrated hydrodynamic, wave, and sediment transport model to estimate short-term (one-month long) shoaling rates in OWW Cut 1. The initial study found that in comparison with the No-Action conditions (no basin construction) the basin construction alternatives will cause faster shoaling in the eastern portion of OWW Cut 1. Numerical model results show the basin's proximity to OWW Cut 1 causes the faster shoaling. Thus, basin construction alternatives will likely not reduce the frequency of maintenance dredging in OWW Cut 1.

The short-term model simulations show that in lieu of basin construction, additional dredging in OWW Cut 1 at locations that historically exhibit the fastest rate of shoaling and/or partial removal of nearby shoals can reduce the frequency of dredging in OWW Cut 1. Economic analyses based on short-term shoaling rates also show the additional OWW Cut 1 dredging offers cost savings in relation to the current maintenance dredging. The initial study found two additional dredging alternatives — Alternative 7 and Alternative 9 — as the best and second best functionally and economically feasible alternatives to reduce the maintenance dredging frequency in the OWW Cut 1.

However, the short-term performances of alternatives do not necessarily reflect long-term performance as several factors can cause the differences in short-term and long-term performances. Firstly, long-term factors such as variation of sediment transport rate, effect of episodic events (hurricanes), and the effect of periodic beach dune breaches are inherently limited in short-term morphology. These factors extend beyond the scope and schedule of the initial study. Secondly, as sediments accrete in OWW Cut 1, they elevate the bed and lessen its efficiency to trap sediment. Because OWW Cut 1 trapping efficiency reduces with time, the shoaling rates provided by the short-term simulation did not adequately reflect the temporal variation of shoaling rates and therefore will not provide long-term average shoaling rates.

To estimate long-term shoaling rates, the initial study recommends model simulations that will cover at least one-year periods for the No-Action alternative, Alternative 7, and Alternative 9. The No-Action alternative provides the baseline to compare the long-term performances and costs of Alternative 7 and Alternative 9. The longer simulation period will account for reduction in sediment trapping efficiency as OWW Cut 1 shoals and will account for long-term variation in sediment transport. The proposal that follows outlines the steps Taylor Engineering will take to complete the analyses of long-term performance of the No-Action alternative, Alternative 7, and Alternative 9.

The following scope of work describes the (1) analyses of long-term performance of alternatives, (2) cost estimations and recommendations based on long-term performance analyses, and (3)

documentation of results of analyses in the feasibility study report. A detailed description of each task follows below. Exhibit B provides cost estimates to complete each task. Exhibit C provides a project schedule.

Task 1 Analyses of Long-Term Performance of Alternatives

We will modify the No-Action alternative, Alternative 7, and Alternative 9 models to include boundary conditions for long-term simulations. We assume our model simulations will cover at least one-year periods to estimate the long-term shoaling rates in the OWW Cut 1. We will conduct hydrodynamic, wave, and sediment transport modeling to estimate long-term performances of Alternative 7 and Alternative 9.

Task 2 Update of Economic Analysis and Recommendations

Based on the results of the analyses for long-term performance of Alternative 7 and Alternative 9, we will update the cost associated with the construction, permitting, and maintenance dredging for these alternatives. We will provide recommendations for the better alternative — between Alternative 7 and Alternative 9 — for detailed engineering design, potential dredging methods, estimates of construction and maintenance costs, and descriptions for permitting requirements.

Task 3 Update of Feasibility Report and Presentation

We will add to the initial report the documentations for Tasks 1 and 2. The model documentation will include a written summary of the modeling approach and results, as well as summary graphics and animations. We assume we will make one presentation to the FIND to describe the methodology and results of the analyses for the long-term performance of alternatives.

End Scope of Services

We propose to perform the above scope of services for a fixed fee, lump sum of $35,272. Exhibit B provides a summary of our cost. We will deliver the updated report and complete the above scope of services within four months of a written notice-to-proceed.

EXHIBIT B

TAYLOR ENGINEERING, INC.
ADD-ON COST SUMMARY BY TASK
TUDY OF SEDIMENT BASINS AT NORTH AND SOUTH OF OKEECHOBEE WATERWAY

TASK 1: Analyses of Long-Term Performance of Alternatives

Labor	Hours	Cost ($)	Task Totals
President	2.0	460.00	
Vice President	4.0	740.00	
Senior Advisor	6.0	1,110.00	
Director	8.0	1,240.00	
Senior Professional	84.0	11,340.00	
Project Professional	84.0	8,820.00	
Senior Technical Support	6.0	618.00	
Total Man-Hours	194.0		
Labor Cost			24,328.00
Total Task 1			$ 24,328.00

TASK 2: Update of Economic Analysis and Recommendations

Labor	Hours	Cost ($)	Task Totals
President	1.0	230.00	
Vice President	1.0	185.00	
Senior Advisor	4.0	740.00	
Director	3.0	465.00	
Senior Professional	7.0	945.00	
Staff Professional	4.0	344.00	
Total Man-Hours	20.0		
Labor Cost			2,909.00
Total Task 2			$ 2,909.00

TASK 3: Update of Feasibility Report and Presentation

Labor	Hours	Cost ($)	Task Totals
President	3.0	690.00	
Vice President	6.0	1,110.00	
Senior Advisor	10.0	1,850.00	
Director	5.0	775.00	
Senior Professional	24.0	3,240.00	
Staff Professional	2.0	172.00	
Editor	2.0	198.00	
Total Man-Hours	52.0		
Labor Cost			8,035.00
Total Task 3			$ 8,035.00

Project Total $ 35,272.00

EXHIBIT C

Table 1 Proposed Schedule of Tasks

No.	Task	Months from Notice to Proceed											
		1	2	3	4	5	6	7	8	9	10	11	12
1	Analyses of Long-Term Performance of Alternatives												
2	Update of Economic Analysis and Recommendations												
3	Update of Feasibility Report and Presentation												

TAYLOR ENGINEERING, INC.
Delivering Leading-Edge Solutions

May 1, 2014

Mark Crosley
Executive Director
Florida Inland Navigation District
1314 Marcinski Road
Jupiter, FL 33477

Re: Proposal for Seagrass Mitigation Area Identification, ICWW in Palm Beach County

Dear Mr. Crosley:

Per the board's request, we have prepared the attached scope of services and cost proposal to identify and evaluate FIND-owned or -managed properties potentially available for seagrass mitigation in Palm Beach County. Attachment A provides details of the proposed scope of services and an estimated schedule. We propose to provide these services for a fixed fee amount of $22,601. Attachment B provides our costs by task.

If you have any questions concerning this proposal, please contact me at (904) 731-7040.

Sincerely,

John Adams, P.E.
Senior Advisor

Attachments

SEAGRASS MITIGATION SITE EVALUATION
PALM BEACH COUNTY, FLORIDA

ATTACHMENT A
SCOPE OF WORK

ATTACHMENT A

Seagrass Mitigation Site Evaluation – Palm Beach County

Scope of Work

Introduction

Maintenance dredging of Florida's Intracoastal Waterway (ICWW) requires compliance with state and federal environmental planning and regulatory programs. Mitigation for dredging operations' adverse impacts to environmental resources is part of such compliance. Damage to seagrass represents one of the most difficult environmental impacts to mitigate. Seagrass occurs in the vicinity of the ICWW from Brevard County south through Dade County. Impacts to seagrass may result from dredging site operations and pipeline placement and operation. Mitigation for seagrass impacts may become quite costly for individual dredging projects and may cause substantial delays in acquisition of environmental permits and implementation of maintenance dredging. Anticipating need for seagrass mitigation, the Florida Inland Navigation District (FIND) wishes to identify areas under its control that may serve as seagrass mitigation sites. The scope of work below describes the effort to identify such properties for the Palm Beach County segment of the ICWW.

Task 1. Inventory Properties

Taylor Engineering will identify parcels owned by or under easement to FIND or the USACE that may contain areas suitable for seagrass mitigation. We will examine FIND-provided GIS information, digitize and examine 22 USACE real estate maps, and review aerial photographs to identify FIND-managed parcels or parcels under easement to the USACE. The state of Florida and private landowners granted many such easements to the USACE for ICWW right of way and channel maintenance. Parcels potentially useful for seagrass mitigation may contain spoil islands and open water adjacent to the ICWW or upland areas adjacent to the shoreline. We will submit the list of potentially suitable properties to FIND for review and verification of ownership and property identifier designations.

Task 2. Evaluate Seagrass Mitigation Potential

For those properties identified as potentially suitable for mitigation in Task 1, we will locate aquatic and terrestrial habitats based on examination of the aerial photographs. For each property we will, to the extent possible, identify land and aquatic cover and determine areas apparently suitable for seagrass mitigation. Suitable seagrass mitigation areas could include 1) uplands that can be excavated or 2) submerged land that that could be filled to create subtidal sediment elevations favorable for seagrass colonization. We will create GIS coverages with the locations of potential seagrass mitigation sites, mitigation area configuration, and estimated seagrass mitigation acreage. All mapping will derive from evaluation of the aerial photographs; this scope of work does not include field verification of the photographic signatures.

Task 3. Report and Deliverables

Taylor Engineering will describe the evaluation methods and the results of this work in a written report. The report will include a tabular listing of all areas determined as potentially suitable for seagrass mitigation and will briefly discuss the characteristics of those areas. Taylor Engineering will provide a draft final report for FIND review. Upon receipt of FIND review comments, Taylor Engineering will revise the report and submit a final report in digital (.pdf) and hardcopy (three copies) formats. Digital files of the GIS coverages will accompany the report.

ATTACHMENT A

Estimated Schedule

Task		Months from Notice to Proceed				
		1	2	3	4	5
1	**Inventory Properties**					
1	**FIND Review**					
2	**Evaluate Seagrass Mitigation Potential**					
3	**Draft Final Report**					
3	**FIND Review**					
3	**Final Report and Deliverables**					

SEAGRASS MITIGATION SITE EVALUATION
PALM BEACH COUNTY, FLORIDA

ATTACHMENT B
COSTS

TAYLOR ENGINEERING, INC.
COST SUMMARY BY TASK
P2014-060: SEAGRASS MITIGATION EVALUATION PALM BEACH COUNTY

TASK 1: Inventory Properties

Labor	Hours	Cost ($)	Task Totals
R. Bruce Taylor, Ph.D. P.E.	0.0	-	
President	0.5	115.00	
Vice President	0.0	-	
Senior Advisor	1.5	277.50	
Director	3.0	465.00	
Senior Professional	32.0	4,320.00	
Project Professional	0.0	-	
Staff Professional	0.0	-	
Editor	0.0	-	
Senior Technical Support	44.0	4,532.00	
Staff Technical Support	0.0	-	
Administrative	2.0	104.00	
Total Man-Hours	83.0		
Labor Cost			9,813.50

Non-Labor	Units	Cost ($)	
Scan USACE Real Estate Maps	22.0	220.00	
	-	-	
	-	-	
Non-Labor Cost		220.00	
Fee @ 0.0%		-	
Total Non-Labor Cost			220.00
Total Task 1			$ 10,033.50

TASK 2: Evaluate Seagrass Mitigation Potential

Labor	Hours	Cost ($)	Task Totals
R. Bruce Taylor, Ph.D. P.E.	0.0	-	
President	0.5	115.00	
Vice President	0.0	-	
Senior Advisor	1.0	185.00	
Director	4.0	620.00	
Senior Professional	28.0	3,780.00	
Project Professional	0.0	-	
Staff Professional	0.0	-	
Editor	0.0	-	
Senior Technical Support	8.0	824.00	
Staff Technical Support	0.0	-	
Administrative	0.0	-	
Total Man-Hours	41.5		
Labor Cost			5,524.00

Non-Labor	Units	Cost ($)	
	-	-	
	-	-	
	-	-	
Non-Labor Cost		-	
Fee @ 0.0%		-	
Total Non-Labor Cost			-
Total Task 2			$ 5,524.00

P2014-060: SEAGRASS MITIGATION EVALUATION PALM BEACH COUNTY

TASK 3: Report and Deliverables

Labor	Hours	Cost ($)	Task Totals
R. Bruce Taylor, Ph.D. P.E.	0.0	-	
President	1.0	230.00	
Vice President	0.0	-	
Senior Advisor	3.0	555.00	
Director	5.0	775.00	
Senior Professional	30.0	4,050.00	
Project Professional	0.0	-	
Staff Professional	0.0	-	
Editor	2.5	247.50	
Senior Technical Support	10.0	1,030.00	
Staff Technical Support	0.0	-	
Administrative	3.0	156.00	
Total Man-Hours	54.5		
Labor Cost			7,043.50

Non-Labor	Units	Cost ($)	
	-	-	
	-	-	
	-	-	
Non-Labor Cost		-	
Fee @ 0.0%		-	
Total Non-Labor Cost			-
Total Task 3			$ 7,043.50

Project Total $ 22,601.00

January 8, 2014

SUMMARY OF THE DEEPENING PROJECT FOR THE INTRACOASTAL WATERWAY IN BROWARD COUNTY, FLORIDA

(USACE FILE NO. SAJ-2009-03523 (SP-SLR), FDEP FILE NO. 06-0283683-006, & BROWARD CO. FILE NO. DF10-1018)

ISSUE: Existing permitted depths in the Intracoastal Waterway ICWW, part of the federally authorized channel, are currently -10 feet (ft) Mean Low Water (MLW). The proposed 2.72-mile project presently requests deepening the channel to -15 ft MLW (with an allowable -2 ft overdredge to achieve and maintain project depth) and temporary placement of the dredged material in 6.6-acre dredged material management area (DMMA) on Port Everglades property. After nearly 4 years of permitting efforts, three issues remain: (1) the Broward County Environmental Protection and Growth Management Department asserted that the contingency mitigation plan approved by Florida Department of Environmental Protection (FDEP) is not sufficient to meet the Broward County regulatory agency standards; (2) Broward County has raised the question whether Deerfield Island, owned by FIND and leased to the County, can be used for mitigation, if required; and (3) Port Everglades must extend its lease for temporary use of the Dredged Material Disposal Area.

BACKGROUND & JUSTIFICATION: The proposed project need originates from an increased number of larger vessels that require a deeper channel for safe navigation and the location of facilities within the project template that service these vessels (Las Olas Marina, Swimming Hall of Fame, and Bahia Mar, etc.). Based on an April 2011 economic analysis of local city, county, and industry groups, implementation of the currently proposed deepening project would result in significant annual benefits of: *$7.3 million for servicing 160 – 180 ft Loa* (length overall) *vessels that draft in excess of 10 ft, $73.7 million for vessels up to 180 – 240 ft Loa vessels that draft in excess of 12 ft, and $185.3 million for vessels up to 240 – 280 ft Loa vessels that draft in excess of 14 ft.*

The project begins at the 17th Causeway Bridge over the ICWW just north of the Port Everglades Northport Garage and Convention Center northward to a point about 4,000 ft north of the Las Olas Boulevard (State Road 842) Bridge. Based on vessel design drafts, projected future growth, and industry trends described in the 2011 analysis, and to capture the full economic benefit associated with these vessels, engineering guidelines recommended a channel depth between -17 ft and -20 ft MLW.

AVOIDANCE & MINIMIZATION OF ENVIRONMENTAL IMPACTS: The original submerged natural resources survey and dredging template identified 1.83 acres of environmental resources within the project. Due to FIND's commitment to minimize (and in this case, completely avoid) environmental resource impacts (seagrass), FIND reduced the average bottom width of the channel to 110 ft (Figure 1). The dredge template — that provides for a 2:1 side slope, requires a minimum 10-ft buffer from identified seagrasses, and results in the removal of approximately 283,000 cy^3 — reflects a compromise between navigational requirements and impacts to existing natural resources.

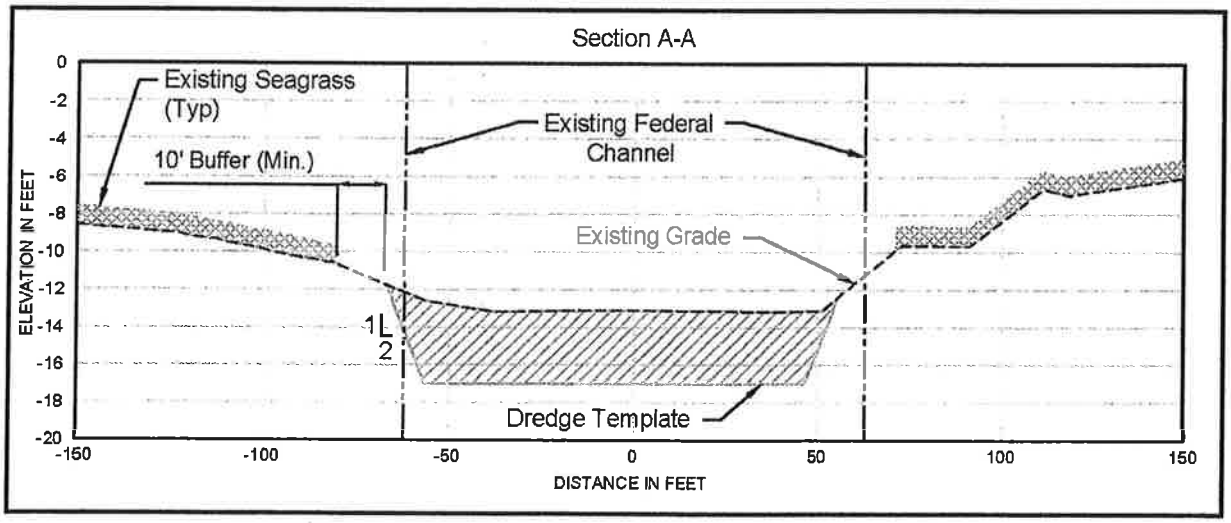


Figure 1. ICWW typical dredging template cross section

CURRENT PLAN: FIND has designed the ICWW dredge template not to impact seagrass. Therefore, there is no requirement for mitigation. To resolve the Broward County Environmental Protection and Growth Management Department's request for contingency mitigation plan, Deerfield Island (owned by FIND and leased to Broward County) has been approved by the FDEP to serve as a possible mitigation site, if needed. Should the proposed project inadvertently impact seagrass during construction, FIND has the potential to utilize a small portion of Deerfield Island Park to create seagrass habitat, while exploring other possibilities.

PROJECT MAP.

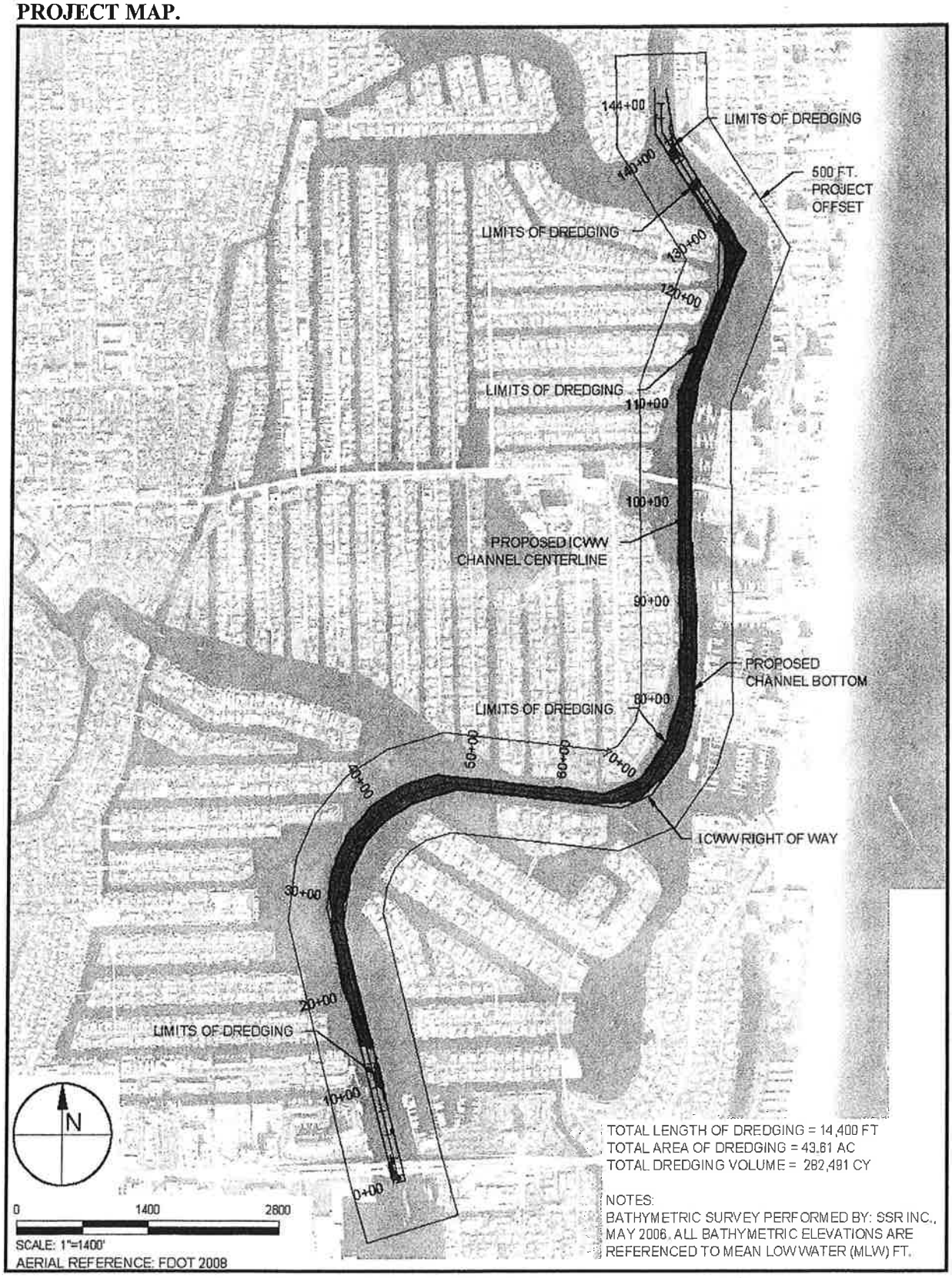
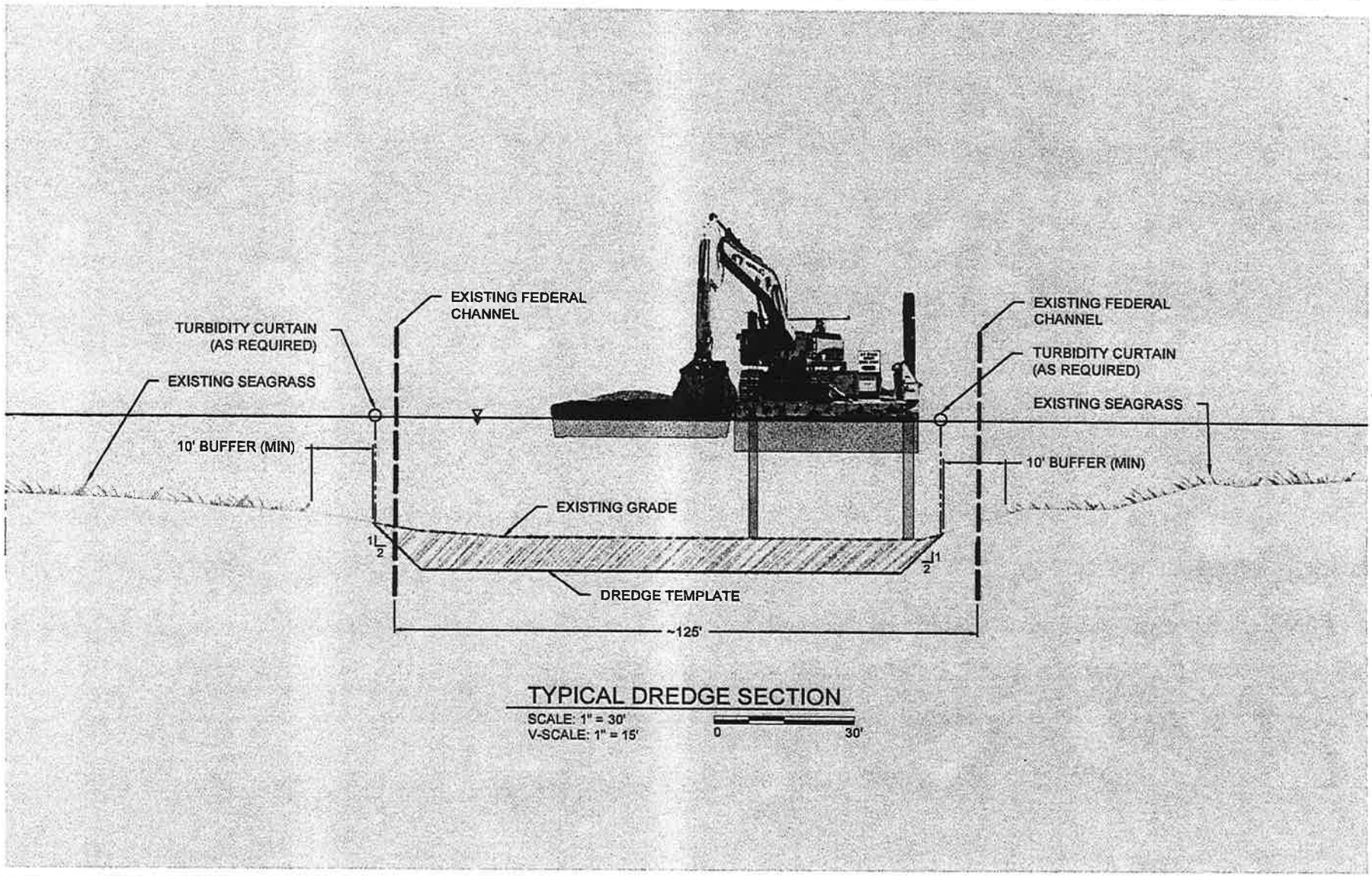


Figure 2. Broward County ICWW Deepening project overview



TYPICAL DREDGE SECTION

SCALE: 1" = 30'
V-SCALE: 1" = 15'

0 30'

TAYLOR ENGINEERING INC.
10151 DEERWOOD PARK BLVD.
BLDG. 300, SUITE 300
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

FIGURE 3
TYPICAL DREDGE SECTION
BROWARD ICWW DEEPENING
BROWARD COUNTY, FLORIDA

PROJECT	C2005-076-10
DRAWN BY	
SHEET	
DATE	JAN 2014

PRELIMINARY DRAWINGS: THESE DRAWINGS ARE NOT IN FINAL FORM, BUT ARE BEING TRANSMITTED FOR AGENCY REVIEW.

TAYLOR ENGINEERING, INC.
Delivering Leading-Edge Solutions

May 1, 2014

Mr. Mark Crosley
Executive Director
Florida Inland Navigation District (FIND)
1314 Marcinski Road
Jupiter, FL 33477

Re: Scope of Professional Engineering Services
Permit Modifications, Port Everglades Lease Agreement, Site Investigations, Final Plans and Specifications, and Bidding Assistance — Broward County Deepening (Intracoastal Waterway)

Mr. Crosley:

On behalf of Taylor Engineering, I am pleased to present the attached detailed scope of services (Attachment A), project schedule (Attachment B), and cost summary (Attachment C) for the following.

Task 1. Permitting Support Services
Task 2. Port Everglades Lease Agreement Services
Task 3. Field Investigations
  a. Utility Line Survey
  b. Bathymetric Survey
  c. Submerged Aquatic Resources Survey
  d. Seismic Reflection Evaluation
Task 4. Agency Coordination
  a. FDOT (Bridge Dredging Buffers)
  b. USCG (Traffic Plan & Post-Dredging Aid to Mariners Plan)
  c. Various Agencies (Utilities Relocation)
Task 5. Drawings and Specifications
Task 6. Pre-Solicitation Meeting
Task 7. Project Bid Assistance

Taylor Engineering will complete the work described herein for a cost plus maximum fee of $422,708. Of this cost, Taylor Engineering's labor equals $165,479. The remaining costs are associated with the subcontractors required to accomplish this project. Our subconsultant Dial Cordy & Associates, Inc. fee is $160,530 for submerged aquatic resources survey services (Attachment D) as required by the Florida Department of Environmental Protection (FDEP) permit. Fugro Consultants, Inc. fee is $83,000 for seismic reflection evaluation services (Attachment E) to provide a better understanding of the distribution of the limestone strata within the dredging template. Keith and Associates, Inc. fee is $5,000 for a boundary and topographic survey (Attachment F) of the proposed alternative haul route.

Taylor Engineering appreciates this opportunity to serve the FIND. Please contact me if you have questions or comments.

Sincerely,

John Adams, P.E.
Senior Advisor, Waterfront Engineering

Attachments (6)

FLORIDA INLAND NAVIGATION DISTRICT
PERMIT MODIFICATIONS, PORT EVERGLADES LEASE AGREEMENT SERVICES, SITE INVESTIGATIONS, FINAL PLANS AND SPECIFICATIONS, AND BIDDING ASSISTANCE — BROWARD COUNTY DEEPENING PROJECT (ICWW), BROWARD COUNTY, FLORIDA

ATTACHMENT A
SCOPE OF SERVICES

INTRODUCTION

This scope of services describes Taylor Engineering's proposed additional engineering services in support of a proposed project to deepen a portion of the Intracoastal Waterway (ICWW) in Broward County, Florida. The deepening project would excavate the ICWW to -17 feet (ft) mean low water (MLW), representing a -15 ft MLW project depth with an additional 2 ft of allowable overdepth dredging. The project area extends from the 17th Street Causeway immediately north of Port Everglades (approximately Cut BW-49, Station 26+50) northward approximately 14,300 ft to a point about 4,000 ft north of the Las Olas Boulevard (S.R. 842) Bridge (Cut BW-37, Station 0+00).

TASK 1. PERMITTING SUPPORT SERVICES

Taylor Engineering will prepare a letter requesting modification of U.S. Army Corps of Engineers (USACE) Permit No. SAJ-2009-03523 (issued December 06, 2013) Special Condition regarding turbidity curtain requirements.

> The USACE Special Condition #11 currently notes
>
> *Prior to the initiation of any of the work authorized by this permit the Permittee shall install floating turbidity barriers with weighted skirts that extend to within one foot of the bottom around all work areas that are in, or adjacent to, surface waters. The turbidity barriers shall remain in place and be maintained until the authorized work has been completed.*

Similar unnecessary or burdensome requirements may appear in the forthcoming Broward County Environmental Protection and Growth Management Department (Broward County) regulatory permits. Taylor Engineering will review draft permit documents for these similar conditions and will work with the regulatory agencies to have these modified/rectified during the review of the draft permit documents. Any of the regulatory agencies may respond with additional requests for additional information (RAI). Taylor Engineering will provide all proposed RAI responses to the FIND for review before submittal to the agencies.

To establish and maintain a clear line of communication between the applicant and the participating agencies, Taylor Engineering will continue to coordinate actively with the FDEP, USACE, and Broward County. Taylor Engineering will maintain consistency between county, state, and federal permit applications and other environmental documentation, and strive to resolve environmental issues that arise during the review period.

Task 1 provides funds to address future RAI from, and necessary coordination with Broward County. Due to the uncertainties involved with the extent of federal agency RAI (which may include information requests from various agencies, Taylor Engineering proposes to perform Task 1 on a cost-plus to a maximum basis. Accordingly, Taylor Engineering has estimated a maximum $20,608 budget (150 hours) to address the USACE permit modification, County regulatory RAI, and associated coordination. Should the regulatory agency review process require labor and other costs beyond the support afforded by the proposed budget, Taylor Engineering will submit an additional cost proposal to complete the work.

TASK 2. PORT EVERGLADES LEASE AGREEMENT SERVICES

2.1 Coordination with Port Everglades

Since early December 2013, FIND has been actively working with Port Everglades to establish an extension of the agreement between FIND and Port Everglades for FIND's continued use of the FIND-constructed dredged material management area (DMMA), through the end of calendar year 2016, for the ICWW and the City of Fort Lauderdale dredging projects. The current agreement expired on March 12, 2014.

It is the Port's position that the requested extension would conflict with several upcoming Port Everglades activities. The potential sources of conflict include the Southport Turning Notch Extension, increased usage of the adjacent road system due to expected growth in terminal yard traffic, a fumigation facility on adjacent land, and the opening of an intermodal container transfer facility, which according to the Port would be operational by the summer of 2014. Due to these conflicts, Port Everglades is unwilling to extend the existing agreement without compensation for costs and the imposition of several restrictions. These restrictions and costs include restricting hours during which the contractor may remove dredged material from the site; allowances for Port Everglades to use the site for any maintenance material the Port may generate during the period of FIND use; and pass through of personnel, operations, or maintenance costs incurred due to the project.

Imposition of these restrictions, specifically the restriction to hours when the selected contractor could remove material from the site, would have a significant impact on the planned Broward County ICWW Deepening project. Restricting removal of dredged material from the DMMA invokes both safety and economic consequences. These include the fact that offloading would occur during lower light conditions or at a higher cost for proper illumination. Meanwhile the contractor would have to hold more dredged material on site; this condition could both delay dewatering and restrict the amount of dredged material that the contractor could process at one time. Furthermore, the selected contractor's negotiated disposal location is unlikely to operate outside of normal daylight business hours. As such, the contractor may require special arraignments at presumably additional costs for the final disposal operations. Given these restrictions, it is prudent for FIND to evaluate relocating the DMMA or constructing an alternative trucking route.

Taylor Engineering will investigate an alternative trucking route proposed in August 2012. This alternate route connects the DMMA to a Florida Power and Light (FP&L) transmission line corridor through what appears to be an upland Australian pine thicket, which then exits onto Northeast 7th Avenue, just to the north of Broward Shipyard, Inc. entrance. The total length of the route is approximately 1,600 feet and extends from the Port Everglades fence to Northeast 7th Avenue. The anticipated design would consist of at a minimum, a road width of 12 ft (one-way traffic) with a preferred maximum width of 24 ft (two-way traffic). The proposed road would be gravel with 3H:1V side-slopes to existing surface. The road height would be at least a foot (12 inches) above the existing grade, to avoid normal flooding issues. Actual design conditions may vary depending on results of field evaluations.

Using this route would require, at minimum, delineating the route to document any potential wetland impacts as well as permission from Port Everglades, Broward County, and FP&L to improve the route. Improvements would likely including clearing and grubbing and the development of both a traffic and security plan. Taylor Engineering would need to develop these plans, at least to a preliminary level, and provide the information to Port Everglades for its review and approval. This subtask includes efforts to generate these preliminary plans.

Taylor Engineering will create permit-level drawings of the proposed alternative trucking route (plan view and typical cross-sections). Taylor Engineering will use these permit-level drawings in our request for site access from FP&L, Broward County, and Port Everglades.

Task 2.1 provides time and budget for Taylor Engineering to develop permit-level drawings and to coordinate with Port Everglades, Broward County, and FP&L to develop an acceptable alternative haul route.

2.2 Field Investigation (Natural Resources Survey)

Under a separate contract, the FIND has contracted with Kimberly Ann Brown and Associates, Inc. (KABA) to identify, locate, and document potential wetlands within the proposed access road corridor; provide photo-documentation of the corridor showing areas of potential wetlands; and provide an opinion of permitting requirements including a cost estimate to provide mitigation for impacts, if necessary.

Task 2.2 provides time and budget for Taylor Engineering to incorporate KABA's data into new project drawings.

2.3 Field Investigation (Topographic and Boundary Survey)

Taylor Engineering will subcontract with Keith and Associates, Inc. to provide a boundary and topographic survey of the alternative haul route including survey of any natural resources features identified by KABA in Task 2.2.

Task 2.3 provides time and budget for Taylor Engineering to incorporate Keith and Associates' data into existing project drawings.

2.4 Roadway Field Investigation and Engineering Design

An engineer from Taylor Engineering's Jacksonville office will visit the proposed alternative trucking route to observe the current site conditions and make visual assessments of the existing condition of this corridor. Visual assessments will help determine the available trucking route width and the extent of clearing or pruning required for truck passage. Taylor Engineering will identify and document the presence and condition of any drainage structures and other visible structures that intersect the trucking route.

This documentation will include determining the approximate depth from the roadway to the top of the structure to help assess the vehicle load transferred onto these structures. Taylor Engineering will identify any potential locations of soft ground that may require special attention (need for geotechnical borings, over-excavation of soft material, etc.). Notably, this scope of work does not include budget for geotechnical borings. If Taylor Engineering determines that geotechnical borings are necessary, Taylor Engineering will provide a revised scope of work.

With the data gathered from the site visit, Taylor Engineering will determine the appropriate roadway width and level of stabilization. As previously stated, we assume that the roadway would require at least a 12-inch layer of material. This material would likely consist of limerock, shellrock, or crushed concrete depending on local availability. Taylor Engineering will analyze the load distribution from the loaded vehicles to the culverts to determine if the roadway cross section requires special design at these locations.

Taylor Engineering will update the conceptual drawings of the proposed alternative trucking route (plan view and typical cross sections) that FIND may include in the updated extension of FIND's lease of the Port Everglades DMMA in Port Everglades. Taylor Engineering will develop an opinion of probable cost for permitting (if necessary), engineering, and construction of the alternative trucking route. Finally, Taylor Engineering will present the results of the investigation in a brief letter report to FIND.

TASK 3. FIELD INVESTIGATIONS (UTILITY LINE SURVEY, BATHYMETRIC SURVEY, SUBMERGED AQUATIC RESOURCES SURVEY, AND SEISMIC REFLECTION EVALUATION)

3.1 Field Investigation (Utility Line Survey)

Under a separate contract, the FIND has contracted with Morgan & Eklund, Inc. to provide on-site verification of submerged utilities. As of the date of this proposal, Morgan& Eklund has completed the fieldwork and Taylor Engineering anticipates receiving Morgan & Eklund's final report including the results of its research into available utility crossing information, magnetometer survey, and a verification of the utility location by dive operations (as necessary).

Task 3.1 provides time and budget for Taylor Engineering to incorporate Morgan & Eklund's data into existing project drawings.

3.2 Field Investigation (Bathymetric Survey)

Under a separate contract, the FIND has contracted with Morgan & Eklund to provide an updated bathymetric survey within the project area. Morgan & Eklund will collect multi-beam bathymetric data along the navigation channel to update the May 2006 bathymetric survey used for planning and permitting. The intent of the system is to achieve 100% coverage of the proposed limits of dredging and the edge of the nearby seagrass beds.

Task 3.2 provides time and budget for Taylor Engineering to incorporate Morgan and Eklund's data into existing project drawings.

3.3 Field Investigation (Submerged Aquatic Resources Survey)

Taylor Engineering will subcontract with Dial Cordy & Associates, Inc. (Dial Cordy) to provide a pre-construction resource survey, as required by the FDEP Permit No. 06-0283683-004 (issued April 26, 2012), during the seagrass growing season (April 1 – October 31) prior to the commencement of dredging. Dial Cordy will complete a hard coral and seagrass survey. This work will include agency coordination, survey, and geographic location of hard corals within the proposed dredging template. Dial Cordy's project supervisor and field crew preformed the previous 2008 seagrass and hard corals survey.

3.3.1 Hard Corals Survey and Report

Prior to Dial Cordy conducting its hard corals survey, Taylor Engineering will provide Dial Cordy with the updated project drawings, in both hardcopy and digital (AutoCAD) formats, based on Morgan & Eklund's updated utility (Task 2.1) and bathymetric survey data (Task 2.2) and Dial Cordy's original seagrass survey. Dial Cordy will identify hard corals within the proposed dredging template, including the predicted equilibrium side-slopes, and within a 10-ft buffer between any seagrasses and the top of the stabilized post-construction side slope (as required by the FDEP permit). Dial Cordy will relocate any identified hard corals to an area outside of the impact area yet still within the ICWW and at similar depths to the donor site.

Dial Cordy will use experienced personnel to conduct the transplantation. Relocation of hard corals will follow the Florida Keys National Marine Sanctuary guidance for relocating hard corals (as required by FDEP permit). The relocation site will be marked and documented so that the hard corals can be located after dredging activities have ceased. After the selected dredging contractor has completed dredging, Dial Cordy will relocate these hard corals back to their original location, if conditions remain adequate for the hard corals.

This scope of services does not include time and budget for post-construction relocation of the hard corals. Following the successful contracting of the project, the FIND will contract Taylor Engineering and Dial Cordy, under a separate scope of services, for the post-construction relocation of the hard corals.

3.3.2 Seagrass Survey and Report

Dial Cordy will complete the in-situ seagrass survey of the same 155 transects utilized during the original 2008 seagrass and hard corals survey. The data that Dial Cordy collects along the in-situ transects will include seagrass species distribution, abundance, and density, as well as hard coral locations (see Dial Cordy 2008 for methods). Dial Cordy will analyze the collected data and provide seagrass maps showing the geographic distribution of seagrasses and hard corals along the ICWW in relation to the proposed project footprint. Dial Cordy will provide the draft report with seagrass maps and hard coral locations 30 days after fieldwork completion.

In the past, all three regulatory agencies have requested coordination with Dial Cordy and Taylor Engineering following the submittal of Dial Cordy's Submerged Aquatic Resources report. In addition, the regulatory agencies have required coordination and assistance from Dial Cordy when the regulatory agency conducts its verification dives. Dial Cordy has included time and budget for these services.

Task 3.3 provides time and budget for Taylor Engineering to coordinate with and to incorporate Dial Cordy & Associates, Inc.'s data into existing project drawings.

3.4 Field Investigation (Seismic Reflection Evaluation)

The 2006 geotechnical borings collected by Ellis and Associates, Inc. encountered unconsolidated deposits and limestone of varying strength as indicated by the standard penetration test (SPT) N-values. The limestone materials are generally described on the boring logs as weathered limestone, and the SPT N-values range widely from less than 5 blows per foot of penetration to 50 blows for less than 6 inches of penetration. In general, the N-values were typically between 5 and 30 blows per foot and materials with N-values greater than 12 blows per foot were encountered within the proposed dredge template.

The spatial and vertical variability of the limestone strata relative to the proposed dredge cut template is poorly defined by the geotechnical borings alone. This uncertainty represents a risk to the proposed deepening project, in the form of change orders or additional geotechnical/survey work during the contract period. Taylor Engineering proposes the collection and evaluation of seismic reflection data in conjunction with the existing geotechnical data to provide a better understanding of the distribution of the limestone strata.

Taylor Engineering will subcontract to Fugro Consultants, Inc. (Fugro) to collect and evaluate seismic reflection data with the dredging template. Fugro will use the updated Morgan & Eklund bathymetric data, the geotechnical data collected by Ellis and Associates, Inc. (Ellis) in 2006, and the collected seismic reflection data to characterize subsurface conditions and prepare a report. Taylor Engineering will include the report in the project's bid package (Task 5.3).

Task 3.4 provides time and budget for Taylor Engineering to coordinate with and to incorporate Fugro Consultants, Inc.'s data into existing project drawings.

TASK 4. AGENCY COORDINATION: FDOT (BRIDGE DREDGING BUFFER), USCG (TRAFFIC PLAN & POST-DREDGING AID TO MARINERS PLAN), AND VARIOUS AGENCIES (UTILITIES RELOCATION)

4.1 Florida Department of Transportation (Bridge Dredging Buffer)

The current permitted dredging template (FDEP Permit No. 06-0283683-004, issued April 26, 2012 and USACE Permit No. SAJ-2009-03523; issued December 06, 2013) does not provide a dredging buffer around the two bridges that cross the dredging template. Those bridges are the 17th Street Causeway Bridge, which crosses the template immediately north of Port Everglades, and the Las Olas Boulevard (S.R. 842) Bridge, which crosses the template approximately 4,000 ft south of the project's northern terminus.

Task 4.1 provides time and budget for Taylor Engineering to coordinate with the Florida Department of Transportation (FDOT). Taylor Engineering proposes to perform Task 4.1 on a cost-plus to a maximum basis. Accordingly, Taylor Engineering has estimated a maximum $12,172 budget (90 hours) to establish an acceptable dredging buffer and dredging procedures at these bridges. Should the agency coordination process require labor and other costs beyond the support afforded by the proposed budget, Taylor Engineering will submit an additional cost proposal to complete the work.

4.2 USCG (Marine Traffic Plan and Post-Dredging Aid to Mariners Plan)

Taylor Engineering will coordinate with the U.S. Coast Guard (USCG), Broward County, and local marinas to establish a marine traffic plan for use during the deepening of a portion of the Broward County ICWW. In addition, Taylor Engineering will coordinate with the USCG to establish a post-dredging aid to mariners plan necessitated by the proposed dredging template.

Task 4.2 provides time and budget for Taylor Engineering to coordinate with the USCG, Broward County, and the local marinas. Taylor Engineering proposes to perform Task 4.2 on a cost-plus to a maximum basis. Accordingly, Taylor Engineering has estimated a maximum $17,350 budget (130 hours) to establish a dredging traffic plan and a post-dredging aid to mariners plan. Should the agency coordination process require labor and other costs beyond the support afforded by the proposed budget, Taylor Engineering will submit an additional cost proposal to complete the work.

4.3 Various Agencies (Utilities Relocation)

Taylor Engineering will coordinate with the various agencies, including FP&L, FDOT, Tampa Electric Company (TECO), AT&T, and additional unidentified companies, to ensure that these agencies will relocate utilities outside of the dredging template and in compliance with the USACE Regional General Permit SAJ-14 SAJ-2005-09981 Subaqueous Utility and Transmission Lines in Florida.

Task 4.3 provides time and budget for Taylor Engineering to coordinate with the various agencies that own utilities affected by the proposed dredging project. Taylor Engineering proposes to perform Task 4.3 on a cost-plus to a maximum basis. Accordingly, Taylor Engineering has estimated a maximum $16,092 budget (120 hours) to coordinate with the various agencies that own utilities affected by the proposed dredging to ensure that these agencies will relocate utilities outside of the dredging template and in compliance with USACE guidelines. Should the agency coordination process require labor and other

costs beyond the support afforded by the proposed budget, Taylor Engineering will submit an additional cost proposal to complete the work.

TASK 5. DRAWINGS AND SPECIFICATIONS

5.1 Dredging Template and Dredge Quantities

Taylor Engineering will develop three-dimensional AutoCAD-based digital terrain models of the project area that incorporate the utility line survey (Task 3.1), updated bathymetric survey (Task 3.2), updated submerged aquatic resources survey (Task 3.3), and seismic reflection evaluation (Task 3.4) to develop a final dredging template for the project. Taylor Engineering will compute dredge quantities based on the ICWW dredging template construction drawings.

5.2 Engineering Design and Construction Drawings

Taylor Engineering will prepare a final design for a temporary DMMA at Port Everglades. Taylor Engineering will also incorporate DMMA construction drawings (plan, profile, and detail views) included in the Dania Cutoff Canal construction drawings created under the Dania Cutoff Canal dredging project. Taylor Engineering will provide construction drawings in appropriate hardcopy and digital (AutoCAD) formats, signed and sealed by a Florida Registered Professional Engineer.

5.3 Specifications

Taylor Engineering will update technical specifications including incorporating the lessons learned from the construction of the Dania Cutoff Canal Deepening project. Taylor Engineering will prepare comprehensive technical specifications for the project based on existing bathymetric and seagrass surveys and submit both hardcopy and digital formats to the FIND.

Taylor Engineering will revise the draft documents as required based on FIND's review and comments, and submit to the FIND two electronic (PDF format files on individual compact discs) and six hardcopies of the final construction documents — drawings and specifications signed and sealed by a registered Professional Engineer.

TASK 6. PRE-SOLICITATION MEETING

Taylor Engineering will provide the FIND with support services throughout a qualifications-based bidding and dredging contractor selection process. Taylor Engineering will prepare and provide a master copy of bid packages to the FIND (based on the current seagrass and bathymetric survey data) and will clarify and interpret the project documents, as required. Taylor Engineering's Engineer of Record and a project engineer will attend the mandatory pre-solicitation meeting near the project site or in another location as directed by the FIND. At this meeting, a project engineer and Engineer of Record will answer questions and gather information concerning elements of the project for which Taylor Engineering is responsible.

TASK 7. PROJECT BID ASSISTANCE

Taylor Engineering will assist with bid review and provide the FIND with a written recommendation for contractor selection based on the provided qualifications. Taylor Engineering's review of bid documents will focus on contractors' technical qualifications and excludes review of contractors' financial or contractual arrangements and other non-technical issues.

FLORIDA INLAND NAVIGATION DISTRICT
PERMIT MODIFICATIONS, PORT EVERGLADES LEASE AGREEMENT SERVICES, SITE INVESTIGATIONS, FINAL PLANS AND SPECIFICATIONS, AND BIDDING ASSISTANCE — BROWARD COUNTY DEEPENING PROJECT (ICWW), BROWARD COUNTY, FLORIDA

ATTACHMENT B
PROJECT SCHEDULE

Planning Schedule

The table below details the proposed project schedule for the FIND Broward County Intracoastal Waterway Deepening Dredging project. The proposed schedule corresponds to the proposal activities (Tasks 1 – 7), outlined in the scope of service. The FDEP permit requires that the permittee conduct a formal seagrass and submerged natural recourses survey during the active seagrass growing season (April 1 – October 31), as close as possible to the start of construction. Thus, Taylor Engineering has created the schedule around an April 1 – October 31 submerged aquatic resources survey timeframe. Changes in either project bathymetry or seagrass and hard coral coverage will require an update to the dredging template.

Following the successful contracting of the project, the FIND will contract Taylor Engineering, under a separate scope of services, for *Construction Administration and Certification* of this project (see below).

Task	Permit Modification, Alternative Haul Route, Site Investigations, Final Design, Preparation of Project Bid Documents, & Project Bidding Activity	Milestone Dates
1	Permitting Support Services (as required) (8 Weeks)	May 26, 2014 July 21, 2014
2	Port Everglades Lease Agreement Services (8 Weeks)	May 26, 2014 July 21, 2014
3.1	Field Investigation (Utility Line Survey) (2 Weeks)	May 26, 2014 June 9, 2014
3.2	Field Investigation (Bathymetric Survey) (3 Weeks)	June 9, 2014 June 30, 2014
3.3	Field Investigation (Submerged Aquatic Resources Survey) (7 Weeks)	June 2, 2014 July 21, 2014
3.4	Field Investigation (Seismic Reflection Evaluation) (10 Weeks)	June 30, 2014 September 8, 2014
4	Agency Coordination: FDOT (Bridge Dredging Buffer), USCG (Traffic Plan & Post-Dredging Aid to Mariners Plan), & Various Agencies (Utilities Relocation) (12 Weeks)	June 30, 2014 September 22, 2014
5	Drawings and Specifications (10 Weeks)	July 21, 2014 September 29, 2014
6	Pre-Solicitation Meeting (1 day)	October 15, 2014
7	Project Bid Assistance (6 Weeks)	September 29, 2014 November 10, 2014
Task	**Construction Administration and Certification Activity**	**Milestone Dates**
1	Pre-Construction Conference (1 day)	January 5, 2015
2	Construction Project Implementation (1 day)	January 19, 2015
3	Construction Administration (22 months)	January 19, 2015 November 18, 2016
4	Construction Project Certification (1 day)	December 30, 2016

*FDEP permit requires a formal seagrass survey during the active growing season (April 1 – October 31)

FLORIDA INLAND NAVIGATION DISTRICT
PERMIT MODIFICATIONS, PORT EVERGLADES LEASE AGREEMENT SERVICES, SITE INVESTIGATIONS, FINAL PLANS AND SPECIFICATIONS, AND BIDDING ASSISTANCE — BROWARD COUNTY DEEPENING PROJECT (ICWW), BROWARD COUNTY, FLORIDA

ATTACHMENT C
COST PROPOSAL

 Attachment C

TAYLOR ENGINEERING, INC.
COST SUMMARY BY TASK
P2014-054: FIND - BROWARD ICWW DEEPENING

TASK 1: Permitting Support Services

Labor	Hours	Cost ($)	Task Totals
President	1.0	230.00	
Senior Advisor	20.0	3,700.00	
Director	22.0	3,410.00	
Senior Professional	76.0	10,260.00	
Editor	8.0	792.00	
Senior Technical Support	20.0	2,060.00	
Administrative	3.0	156.00	
Total Man-Hours	150.0		
Labor Cost			20,608.00

Non-Labor	Units	Cost ($)	
Car Rental & fuel (R/T Jax-Port Everglades) 2 trips	1,284.0	571.38	
Hotel (person nights)	4.0	500.00	
Meals (person days) 2 people 2 trips	4.0	144.00	
Reproductions	1.0	25.00	
Total Non-Labor Cost			1,240.38
Total Task 1			$ 21,848.38

TASK 2: Port Everglades Lease Agreement Services

Labor	Hours	Cost ($)	Task Totals
Senior Advisor	8.0	1,480.00	
Senior Professional	58.0	7,830.00	
Project Professional	64.0	6,720.00	
Editor	4.0	396.00	
Senior Technical Support	32.0	3,296.00	
Administrative	5.0	260.00	
Total Man-Hours	171.0		
Labor Cost			19,982.00

Non-Labor	Units	Cost ($)	
Keith and Associates	1.0	5,000.00	
Reproductions (Aerial Base Maps)	1.0	25.00	
Car Rental & fuel (R/T Jax-Port Everglades) 1 trip	642.0	285.69	
Hotel (person nights)	1.0	125.00	
Meals (person days) 1 person 1 trip	1.0	36.00	
Reproductions	1.0	25.00	
Total Non-Labor Cost			5,496.69
Total Task 2			$ 25,478.69

P2014-054: FIND - BROWARD ICWW DEEPENING

TASK 3: Field Investigations (Utility Line Survey, Bathymetric Survey, Submerged Aquatic Resources Survey, and Seismic Reflection Evaluation)

Labor	Hours	Cost ($)	Task Totals
Senior Advisor	23.0	4,255.00	
Director	6.0	930.00	
Senior Professional	108.0	14,580.00	
Editor	2.0	198.00	
Senior Technical Support	88.0	9,064.00	
Administrative	13.0	676.00	
Total Man-Hours	240.0		
Labor Cost			29,703.00
Non-Labor	Units	Cost ($)	
Dial Cordy	1.0	160,530.00	
Fugro	1.0	83,000.00	
Reproductions (Aerial Base Maps)	1.0	25.00	
Total Non-Labor Cost			243,555.00
Total Task 3			$ 273,258.00

TASK 4: Agency Coordination: FDOT (Bridge Dredging Buffer), USCG (Traffic Plan & Post-Dredging Aid to Mariners Plan) and Various Agencies (Utilities Relocation)

Labor	Hours	Cost ($)	Task Totals
Senior Advisor	28.0	5,180.00	
Senior Professional	208.0	28,080.00	
Editor	8.0	792.00	
Senior Technical Support	86.0	8,858.00	
Administrative	10.0	520.00	
Total Man-Hours	340.0		
Labor Cost			43,430.00
Non-Labor	Units	Cost ($)	
Car Rental & fuel (R/T Jax-Port Everglades) 4 trips	2,568.0	1,142.76	
Hotel (person nights)	6.0	750.00	
Meals (person days) 2 people 2 trips	4.0	144.00	
Meals (person days) 1 person 2 trips	2.0	72.00	
Reproductions	3.0	75.00	
Total Non-Labor Cost			2,183.76
Total Task 4			$ 45,613.76

P2014-054: FIND - BROWARD ICWW DEEPENING

TASK 5: Drawings & Specifications

Labor	Hours	Cost ($)	Task Totals
President	2.0	460.00	
Senior Advisor	28.0	5,180.00	
Director	20.0	3,100.00	
Senior Professional	176.0	23,760.00	
Editor	6.0	594.00	
Senior Technical Support	72.0	7,416.00	
Administrative	11.0	572.00	
Total Man-Hours	315.0		
Labor Cost			41,082.00
Non-Labor	Units	Cost ($)	
Car Rental & fuel (R/T Jax-Port Everglades) 1 trip	642.0	285.69	
Hotel (person nights) 1 person 1 trip	1.0	125.00	
Meals (person days) 1 person 1 trip	1.0	36.00	
Reproductions (aerial base maps)	1.0	25.00	
Draft Construction Docs(Reproducible)	2.0	100.00	
Draft SpecificationsDocs (Reproducible)	2.0	100.00	
Final Spec& Construction Docs(Electronic)	2.0	20.00	
Final SpecificationsDocs (Reproducible)	7.0	350.00	
Final Construction Docs(Reproducible)	7.0	350.00	
Total Non-Labor Cost			1,391.69
Total Task 5			$ 42,473.69

TASK 6: Pre-Solicitation Meeting

Labor	Hours	Cost ($)	Task Totals
President	1.0	230.00	
Senior Advisor	2.0	370.00	
Director	16.0	2,480.00	
Senior Professional	24.0	3,240.00	
Administrative	8.0	416.00	
Total Man-Hours	51.0		
Labor Cost			6,736.00
Non-Labor	Units	Cost ($)	
Car Rental & fuel (R/T Jax-Port Everglades) 1 trip	642.0	285.69	
Hotel (person nights)	2.0	250.00	
Meals (person days) 2 people/1 trip	2.0	72.00	
Reproductions (aerial base maps)	1.0	25.00	
Total Non-Labor Cost			632.69
Total Task 6			$ 7,368.69

P2014-054: FIND - BROWARD ICWW DEEPENING

TASK 7: Project Bid Assistance

Labor	Hours	Cost ($)	Task Totals
Senior Advisor	6.0	1,110.00	
Director	2.0	310.00	
Senior Professional	24.0	3,240.00	
Project Professional	16.0	1,680.00	
Editor	2.0	198.00	
Administrative	2.0	104.00	
Total Man-Hours	52.0		
Labor Cost			6,642.00
Non-Labor	Units	Cost ($)	
Reproductions (Aerial Base Maps)	1.0	25.00	
Total Non-Labor Cost			25.00
Total Task 7			$ 6,667.00

Project Total $ 422,708.21

FLORIDA INLAND NAVIGATION DISTRICT
PERMIT MODIFICATIONS, PORT EVERGLADES LEASE AGREEMENT SERVICES, SITE INVESTIGATIONS, FINAL PLANS AND SPECIFICATIONS, AND BIDDING ASSISTANCE — BROWARD COUNTY DEEPENING PROJECT (ICWW), BROWARD COUNTY, FLORIDA

ATTACHMENT D
DIAL CORDY & ASSOCIATES, INC.
SCOPE OF WORK AND COST PROPOSAL

DIAL CORDY AND ASSOCIATES INC
Environmental Consultants

Attachment D

April 21, 2014

Joseph Wagner
Senior Engineer, Waterfront Group
Taylor Engineering
10151 Deerwood Park Blvd.
Bldg. 300, Suite 300
Jacksonville, FL 32256

RE: FIND - Broward ICWW Deepening – Revised Proposal

Dear Mr. Wagner:

Dial Cordy and Associates Inc. (DC&A) is pleased to provide a revised proposal for professional services in support of the above referenced project. Option B is described below which encompass the seagrass and hardbottom monitoring required by FDEP permit 06-0283683-004. Option B includes costs for the hardbottom and seagrass surveys should they take place consecutively; requires a single mobilization and a single report. Option B is the more cost effective option due to cost savings associated with a single mobilization/demobilization of equipment and a single report.

OPTION B

Task 1 – Hardbottom Survey and Mobilization/Demobilization

The hardbottom survey task will include agency coordination, survey of the hardbottom habitat or habitats, geographic location of hard corals within the project area (dredging footprint: area between existing channel and new dredge line and 10 foot buffer), and transplantation of hard corals found in the project footprint. Divers will develop a hardbottom species/genera community list, sufficient data to calculate soft coral densities, and sufficient to develop hardbottom/attached community or communities characterizations. Identified hard corals will be relocated to a site outside of the impact area, still within the ICWW and at similar depths to the donor site. All surveys and transplantation will be conducted by experienced personnel. Relocation of corals will follow the Florida Keys National Marine Sanctuary guidance for relocating hard corals (as required by FDEP permit). The relocation site will be marked with DGPS so that corals can be located after dredging activities have ceased. Post-construction corals will be moved back to their original locations as long as site conditions are adequate. Post-construction relocation back to the donor site will be performed under a separate scope of work. One in person coordination meeting and travel

THE MURCHISON BUILDING • SUITE 307 • 201 NORTH FRONT STREET • WILMINGTON, NORTH CAROLINA 28401
910-251-9790 • FAX 910-251-9409 • E-MAIL info@dialcordy.com
JACKSONVILLE BEACH, FLORIDA • HOLLYWOOD, FLORIDA • TAMPA, FLORIDA

(100 miles) is included in this task. Field supplies required include tools and supplies for coral removal and relocation. Mobilization / demobilization fee of boats and equipment of $5000.00 is included here for the hardbottom and seagrass surveys.

Lump-Sum $29,825.00

Task 2 – Seagrass Survey

The seagrass survey task will include agency coordination, the *in situ* survey of 155 transects within the project area and reporting (Dial Cordy 2008). Data collected along *in situ* transects will include seagrass species distribution, abundance and density, as well as hard coral locations as required by permit (see Dial Cordy 2008 for methods). Data will be quantitatively analyzed and spatially analyzed using GIS to create seagrass distribution maps. Maps will show the geographic distribution of seagrasses and hard corals along the ICWW in relation to the proposed project footprint. One in person agency meeting is provided for in this task (100 miles travel distance). Field supplies include the specialized equipment, tools and supplies required to carry out underwater seagrass surveys in the ICWW.

Lump-Sum $111,745.00

Task 3 – Hardbottom and Seagrass Survey Data Analysis and Report

The hardbottom and seagrass surveys will be conducted under a single mobilization event and follow consecutively so that the seagrass survey starts as soon as possible during seagrass growing season (April 1-October 30). Data analysis for hardbottom survey includes GIS analysis and GIS map development to show location of corals and relocation site. Data analysis for seagrass survey includes quantitative analysis of seagrass abundance, density and cover throughout the project area and GIS analysis of all seagrass data to create seagrass distribution maps that may be used for project engineering. The report for hardbottom and seagrass surveys will be combined and include introduction, methods and results for hardbottom and seagrass surveys. All hardbottom and seagrass data will be included in the report in tabular or graphic form. Seagrass distribution maps and maps of hard coral locations and relocation site(s) will also be included in the report. The draft report will be submitted 45 days after the completion of all fieldwork.

Lump-Sum $18,960.00

Dial Cordy and Associates Inc. agrees to provide services associated with Option B Task 1-3 above for a lump-sum fee of $160,530.00 and Taylor Engineering Inc. agrees to compensate DC&A for such services. Additional services not provided herein will be provided based on our then current rate schedule.

Attachment D

Joseph Wagner
Taylor Engineering

April 21, 2014
Page 3

RE: FIND - Broward ICWW Deepening – Revised Proposal

Should the terms of this agreement be satisfactory, please sign below and return one original to this office. A signed agreement will serve as authorization for us to proceed.

We look forward to assisting you.

Sincerely,

DIAL CORDY AND ASSOCIATES INC.

R. Steve Dial
President

Accepted and Agreed:

_____
Joe Wagner

_____
For Taylor Engineering

_____
Date

DC&A STANDARD RATE - COST ESTIMATE (2013 Standard Rates)

Broward Cunty ICWW Deepening 4/21/2014 16:34

Proposal 13-1584

HOURS

CATEGORY	Hourly Rate	Task I	Task 2	Task 3	Total	COST	Check column
Principal	220.00	2	2	4	8	1760.00	
Project Mgr/Technical Director	150.00	40	80	40	160	24000.00	
Senior Scientist II	120.00	30	140	24	194	23280.00	
Senior Scientist II	110.00	30	140		170	18700.00	
Staff Scientist I	90.00	30	400	40	470	42300.00	
Scientist/Operations Specialist	85.00	40	140		180	15300.00	
CAD/GIS Specialist	95.00	24	40	40	104	9880.00	
Administrative Assistant	68.00				0	0.00	
Report Production Manager	75.00			24	24	1800.00	
	0.00				0	0.00	
	0.00				0	0.00	
	0.00				0	0.00	
	0.00				0	0.00	
	0.00				0	0.00	
	0.00				0	0.00	
Other	0.00				0	0.00	
TOTAL LABOR		21720.00	96340.00	18960.00		137020.00	137020.00
EXPENSES					Unit Numbers	Cost	
Miles @ .55/mi	0.55	100	100		200	110.00	
Airfare Trips @					0	0.00	
Rental Car Days @	0.00				0	0.00	
Lunch for field crew @	10.00	9	70		79	790.00	
Film # rolls @	0.00				0	0.00	
Phone/fax/delivery	enter amt. under tasks				0	0	
Field Supplies	enter amt. under task:	300	1000		1300	1300	
Coral relocation expendables	enter amt. under task:	200			200	200	
Boat, GPS, video rental	enter amt. under task:	2460	13650		16110	16110	
Misc - mob/demob	enter amt. under task:	5000			5000	5000	
TOTAL EXPENSES		8105.00	15405.00	0.00		23510.00	23510.00
TOTAL JOB COSTS		29825.00	111745.00	18960.00		**160530.00**	160530.00

Task 1 Hardbottom Survey and agency coordination -13 10 hour man days to complete fieldwork. One in person agency meeting in West Palm Beach

Task 2 Seagrass Survey and agency coordination - 79 10 hour man days to complete fieldwork. One in person agency meeting in West Palm Beach.

Task 3 Hardbottom and Seagrass Survey Data Analysis and Report - electronic copy and 2 CDs with report and photos

FLORIDA INLAND NAVIGATION DISTRICT
PERMIT MODIFICATIONS, PORT EVERGLADES LEASE AGREEMENT SERVICES, SITE INVESTIGATIONS, FINAL PLANS AND SPECIFICATIONS, AND BIDDING ASSISTANCE — BROWARD COUNTY DEEPENING PROJECT (ICWW), BROWARD COUNTY, FLORIDA

ATTACHMENT E
FUGRO CONSULTANTS, INC.
SCOPE OF WORK AND COST PROPOSAL

Attachment E

FUGRO CONSULTANTS, INC.

World Trade Center
101 West Main Street, Suite 350
Norfolk, Virginia 23510
Tel: (757) 625-3350
Fax: (757) 625-3352

February 6, 2014
Proposal No. 04.81149001

Taylor Engineering, Inc.
10151 Deerwood Park Boulevard
Building 300, Suite 300
Jacksonville, Florida 32256

Attention: Mr. Joseph Wagner

Subject: Proposal for Seismic Reflection Investigation, Broward County ICWW Deepening, Broward County, Florida

Dear Mr. Wagner:

Fugro Consultants, Inc. (Fugro) is pleased to present this proposal for collecting and evaluating seismic reflection data along a section of the Broward County Intracoastal Waterway (ICWW) located near Fort Lauderdale, Florida. We propose to utilize the seismic data and geotechnical data collected by others to characterize subsurface conditions and prepare information that can be used to support planning of future dredging in the ICWW navigation channel. This proposal provides a description of our project understanding, proposed scope of services, fee estimate, and schedule for conducting the work.

Background

Our understanding of the project is based on recent emails and phone conversations with Taylor Engineering, Inc. (Taylor). It is our understanding that the Florida Inland Navigation District (FIND) is planning to dredge the Intracoastal Waterway (ICWW) to create deeper water from the Port Everglades Turning Basin and the Las Olas (A1A) Bridge to approximately 14,500 feet north along the channel. Channel centerline stationing interval for proposed deepening corresponds to approximate station (Sta.) 0+00 to 145+00 as shown on Figure 1. The project dredge elevation (El.) is El. -15 feet mean low water (MLW) with a two-foot overdredge allowance (El. -17 feet MLW). The full channel width is typically 125 feet, but is wider at channel turns.

Earthen materials encountered by dredging projects in this part of Florida can vary widely and range from unconsolidated sediments to rock strata of varying strength. Moreover, unconsolidated to partially consolidated sediments can underlie rock strata. Strength properties of the rock strata can vary widely within a stratigraphic layer or between layers as a result of weathering or induration (rock forming processes).

Geotechnical borings conducted by others during 2006 in the proposed channel deepening area encountered unconsolidated deposits and limestone of varying strength as inferred from standard penetration test (SPT) N-values. The limestone materials are generally

described on the boring logs as weathered limestone and the SPT N-values range widely from less than 5 to reaching 50 blows for less than 6 inches. In general, the N-values were typically between 5 and 30 and materials with N-values greater than 12 were encountered within the proposed dredge interval.

Figures 2 and 3 present representative subsurface cross sections that depict areas where higher N-values (greater than 12 and highlighted by red shading) were encountered within the dredge cut zone. The cross sections also show available geotechnical data, bathymetric surface from a recent survey, the project dredge cut and overdredge allowance zones, and SPT N-values. The profiles were created inputting project data provided by Taylor into a GIS database and using automated software developed by Fugro to create the profiles shown in the figures. The GIS-based software can be used to create three-dimensional ground models from interpreted geotechnical and geophysical data, identify where dredge cuts will intercept mapped strata and calculate material volumes for planned dredge cuts.

The spatial and vertical variability of the limestone strata relative to the proposed dredge cut interval is poorly constrained by the geotechnical borings alone. This uncertainty represents a risk that Taylor Engineering has expressed a need to mitigate for the proposed deepening project. We propose to collect seismic reflection data and evaluate together with the existing geotechnical data to provide a better understanding of the distribution of the limestone strata.

Taylor Engineering has requested a proposal with two options for conducting investigation of different extents of the ICWW channel. Figure 1 shows the extents of the two proposed investigation areas.

Option 1 - Priority 1 Investigation Area – Priority 1 investigation area is comprised of two sub-areas where the hardness of the material may be a problem to excavate per an email from Mr. Wagner on January 15, 2014. Priority 1 Investigation Area includes the channel sections between:

- Station 0 and 20, and
- Station 96 and 127.

Option 2 – Full Channel Investigation from Station 0 to 144

Our proposed scope of work is described in the following section.

Proposed Scope of Work

Task 1 – Project Set-up and Mobilization. We propose to develop a project health and safety plan and conduct project management activities (e.g. develop a survey line plan) required to initiate and set-up the project. This proposed task does not include participation in coordination or kick-off meetings, obtaining site access approval, coordination with various agencies (e.g. USACE, Coast Guard, FIND, etc.), or permitting. Some of those activities can be conducted by Taylor or FIND; however, if necessary, Fugro can conduct those activities and they will be invoiced in accordance with current fee schedule and expenses will be invoiced with a 15% mark-up.

We propose to mobilize a purpose-built vessel, equipment, and staff from our Norfolk, Virginia office to conduct the investigation and then return to Norfolk.

Task 2 – Seismic Reflection Investigation. We propose to conduct a 2D high resolution seismic reflection investigation of the proposed channel deepening areas. We propose to use two separate, but complimentary, seismic systems to image the subsurface. The Chirp seismic system utilizes high frequency energy to provide detailed information of the shallow subsurface. This system is considered to be capable of defining layers as thin as about one to two feet thick. The Chirp system usually is capable of imaging the upper 5 to 30 feet, however, actual signal penetration will depend on the materials beneath the seafloor. Dense sand or rock strata will reflect a significant portion of the seismic signal and may inhibit signal penetration. Therefore, we propose to utilize a boomer, multichannel seismic reflection seismic system as the second system to image deeper.

The second seismic system will be comprised of a boomer energy source and multichannel GeoEel hydrophone array. We propose to use an eight-channel, 1.56-meter group interval streamer to image the upper 50 feet. The system is capable of imaging deeper. The advantage of this boomer, multichannel system is that it will image below the top of dense sand or limestone strata that may impede the Chirp data and it will allow us to interpret reflectors over large horizontal distances if the reflectors undulate or dip below the Chirp signal interval. This will allow us to better map the subsurface conditions and correlate to the geotechnical data.

This seismic method (using a Chirp and boomer with mini-streamer) has yielded high-quality data on dredging projects of similar scope and water depth including a recent Florida survey with very similar subsurface conditions.

In order to provide a vertical reference surface interpreting the seismic data interpretation, we propose to conduct a multibeam survey. The multibeam survey will also provide an elevation dataset representative of the seafloor at the time of the seismic survey. Thus, cross sections and mapping (e.g. sediment isopach thickness) will utilize concurrent and the most recent datasets. We propose to use our R2 Sonic 2024, beam steerable multibeam echosounder to provide full coverage of the seafloor in the surveyed area. We propose to utilize a local tide gauge and if one is not available we will set our own water level monitoring sensor.

We propose to conduct the primary (parallel to channel) Chirp lines at 25-foot spacing and tie lines (perpendicular to the channel) at approximately 800-foot spacing. We propose to conduct the primary boomer lines at 50-foot spacing and will be located on Chirp lines and on the same Chirp tie lines at nominally 800-foot spacing. We propose to conduct fewer boomer lines because we anticipate that the primary mapping within the dredge envelope (vertical window) will be based on the Chirp data and the boomer data will be used to interpolate reflectors over large distances.

We estimate that it will take one day of system testing and calibration on the water. We estimate that it will take one day to complete the Priority 1 investigation area and one more day to complete the investigation of the rest of the ICWW channel. Thus, we estimate that it would take two days to conduct the wet testing and calibration and investigate Priority 1 area (Sta. 0 to 20 and Sta. 96 to 127) or three days to conduct the wet testing and full channel investigation (Sta. 0 to 144).

Task 3 – Data Processing, Interpretation, and Reporting. Data processing will commence upon returning to the office in Norfolk. Multibeam data will be processed and output referenced to mean low water tidal datum. The multichannel, boomer data will be processed

following standard methods used in the oil and gas industry that includes stacking, normal move out correction, migration, and deconvolution to as close to zero phase as possible.

The seismic data will be loaded into a computer workstation for interpretation using the Seismic Microtechnology's Kingdom Suite software. The geotechnical boring data will also be loaded into the software program, integrated with the seismic data and used to during the interpretation to correlate geotechnical and lithologic information to the seismic data.

Interpretation of subsurface conditions will be displayed on subsurface cross sections (refer to Figures 2 and 3 for example outputs). Contour maps showing the interpreted elevation of rock or other relevant strata will be developed. We will also include representative interpreted seismic records in our report.

We will prepare a report that describes the work performed and summarizes information developed during our study. The report will contain the aforementioned interpreted cross sections, maps, and data examples. We will also prepare a discussion of the interpreted extent of the limestone materials, potential impacts on dredging, and dredging recommendations of the materials. We note that the only geotechnical data available related to properties of the limestone are SPT N-values which are not a direct measurement of the rock strength or hardness. Dredgeabilty assessments are typically based on strength test data from unconfined compressive or tensile strength, Brazilian split, or point load tests. Thus, . dredging recommendations developed in our report will be based on the available boring logs, SPT N-values, and interpretation of the seismic data.

Fee Estimate

Fugro's fee estimates for the respective tasks are listed below. We have provided a fee estimates for the conducting the study of Priority 1 Investigation Area and both priority areas.

Option 1 - Priority 1 Investigation Area (Station 0 to 20 and Station 96 to 127)

• Task 1: Project Set-up, Mobilization/Demobilization	$ 23,000
• Task 2: Seismic Reflection and Multibeam Survey	$ 19,500
• Task 3: Data Processing, Interpretation, & Reporting	$ 22,000
Option 1 Total:	$ 64,500

Option 2 – Full Channel Investigation (Station 0 to 144)

• Task 1: Project Set-up, Mobilization/Demobilization	$ 23,000
• Task 2: Seismic Reflection and Multibeam Survey	$ 32,500
• Task 3: Data Processing, Interpretation, & Reporting	$ 27,500
Option 2 Total:	$ 83,000

Schedule

We anticipate that we can begin mobilization within two to four weeks after receiving written authorization. Actual start date will depend on availability of vessel, equipment and staff and weather conditions. We estimate that the mobilization to and from the site and the site

investigation may take up to one week to complete. We anticipate that data processing, interpretation and reporting can be completed within about four weeks after returning from the investigation. Thus, we anticipate that we can provide a draft report within about seven to nine weeks after receiving written authorization.

Closing

We thank you for the opportunity to propose on this project. For the budgetary planning, appropriate contingencies should be added to all estimates. Our proposal assumes that the client is responsible for any permit or right of entry permission. We attach our standard Professional Service Agreement for your review and execution to authorize our services.

If you should have questions concerning any aspect of this proposal, please call.

Sincerely,

FUGRO CONSULTANTS, INC.

Ray Wood, C Eng.
Executive Vice President

Nancy E. Lehr, PE
Senior Project Manager

Attachment: Figure 1 – Proposed Survey Areas
Figure 2 – Channel Centerline Profile Station 12+00 to 23+50
Figure 3 – Transverse Channel Profile at Station 15+00

Attachment E

FUGRO CONSULTANTS, INC.
Schedule 40.01 (Rev. Nov 10)

GENERAL CONDITIONS FOR TECHNICAL SERVICES

1. Parties to This Agreement
CLIENT as used herein is the entity who authorizes performance of services by Fugro Consultants, Inc. (FUGRO) under the conditions stated herein. FUGRO as used herein includes, Fugro Consultants, Inc., its employees and officers, and its subcontractors and sub-consultants (including affiliated corporations).

2. On-site Responsibilities and Risks
2.1 Right-of-Entry. Unless otherwise agreed, CLIENT will furnish unfettered rights-of-entry and obtain permits as required for FUGRO to perform the fieldwork.
2.2 Damage to Property. FUGRO will take reasonable precautions to reduce damage to land and other property caused by FUGRO's operations. However, CLIENT understands that damage may occur and FUGRO's fee does not include the cost of repairing such damage. If CLIENT desires FUGRO to repair and/or pay for damages, FUGRO will undertake the repairs and add the pre-agreed cost to FUGRO's fee.
2.3 Toxic and Hazardous Materials. CLIENT will provide FUGRO with all information within CLIENT's possession or knowledge as to the potential occurrence of toxic or hazardous materials, or Biological Pollutants (as defined in 9. below) at the site being investigated. If unanticipated toxic or hazardous materials, or biological pollutants are encountered, FUGRO reserves the right to demobilize FUGRO's field operations at CLIENT's expense. Remobilization will proceed following consultation with FUGRO's safety coordinator and CLIENT's acceptance of proposed safety measures and fee adjustments.
2.4 Utilities and Pipelines. While performing FUGRO's fieldwork, FUGRO will take reasonable precautions to avoid damage to subterranean and subaqueous structures, pipelines, and utilities. CLIENT agrees to defend, indemnify, and hold FUGRO harmless for any damages to such structures, pipelines, and utilities that are not called to FUGRO's attention and/or correctly shown on plans furnished to FUGRO.
2.5 Site Safety. FUGRO is not responsible for the job site safety of others, nor does FUGRO have stop-work authority over work by others. However, FUGRO will conduct its work in a safe, workman-like manner, and will observe the work-site safety requirements of CLIENT that have been communicated to FUGRO in writing.

3. Standard of Care
3.1 FUGRO will perform its services consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the same location.
3.2 CLIENT acknowledges that conditions may vary from those encountered at the location where borings, surveys, or explorations are made and that FUGRO's data, interpretations, and recommendations are based solely on the information available to FUGRO, and FUGRO is not responsible for the interpretation by others of the information developed.

4. **Limitation of Remedies**
To the greatest extent permitted by law, CLIENT's sole remedy against FUGRO for claims and liabilities in any way arising out of or directly or indirectly related to FUGRO's work for CLIENT will not exceed an aggregate limit of $50,000 or the amount of FUGRO's fee, whichever is greater, regardless of the legal theory under which remedy is sought, whether based on negligence [whether sole or concurrent, active or passive], breach of warranty, breach of contract, strict liability or otherwise. In the event CLIENT does not wish to limit FUGRO's remedy to this sum, and if CLIENT requests in writing prior to acceptance of this Agreement, FUGRO agrees to negotiate a greater remedy amount in exchange for an increase in scope and fee appropriate to the project and remedy risks involved.

5. Invoices and Payment
At FUGRO's discretion, invoices will be submitted at the completion of task elements, or monthly for services rendered. Payment is due upon presentation of FUGRO's invoice and is past due thirty- (30) days from invoice date. CLIENT agrees to pay a financing charge of one percent (1%) per month (or the maximum rate allowable by law, whichever is less), on past due accounts, and agrees to pay attorney's fees or other costs incurred in collecting any delinquent amount.

6. Data, Records, Work Product and Report(s), and Samples
Data, Records, Work Product and Report(s) are FUGRO's property. All pertinent records relating to FUGRO's services shall be retained for a minimum of two (2) years after completion of the work. CLIENT shall have access to the records at all reasonable times during said period. FUGRO will retain samples of soil and rock for a minimum of 30 days after submission of FUGRO's report unless CLIENT advises FUGRO otherwise. Upon CLIENT's written request, for an agreed charge FUGRO will store or deliver the samples in accordance with CLIENT's instructions.

7. Indemnification
Each party (Indemnitor) shall protect, defend, indemnify and hold harmless the other party (Indemnitee) from and against any claims, damages, losses, and costs arising from this Agreement or the project, including, but not limited to, reasonable attorney's fees and litigation costs, to the extent such claims, damages, losses or costs are caused by the negligence of the Indemnitor regardless of the negligence of the Indemnitee its employees, affiliated corporations, officers, and sub-tier parties in connection with the project.

8. Consequential Damages
Notwithstanding any other provision of this Agreement, CLIENT and FUGRO waive and release any claim against the other for loss of revenue, profit or use of capital, loss of services, business interruption and/or delay, loss of product, production delays, losses resulting from failure to meet other contractual commitments or deadlines, downtime of facilities, or for any special, indirect, delay or consequential damages resulting from or arising out of this Agreement, or as a result of or in connection with the work, and whether based on negligence (whether sole or concurrent, active or passive), breach of warranty, breach of contract, strict liability or otherwise.

9. Biological Pollutants
FUGRO's scope of work does not include the investigation, detection, or design related to the presence of any Biological Pollutants. The term "Biological Pollutants" includes, but is not limited to, mold, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms. CLIENT agrees that FUGRO will have no liability for any claim regarding bodily injury or property damage alleged, arising from, or caused directly or indirectly by the presence of or exposure to any Biological Pollutants. In addition, CLIENT will defend, indemnify, and hold harmless FUGRO from any third party claim for damages alleged to arise from or be caused by the presence of or exposure to any Biological Pollutants. If CLIENT requests in writing prior to acceptance of this Agreement, FUGRO will negotiate a greater limitation amount, and remove CLIENT's responsibilities, in exchange for an increase in fee to develop an expanded scope of work to provide biological pollutant protection.

10. Acceptance of Agreement
These GENERAL CONDITIONS have been established in large measure to allocate certain risks between CLIENT and FUGRO. FUGRO will not initiate service without formal agreement on the terms and conditions set forth in these GENERAL CONDITIONS. Acceptance or authorization to initiate services shall be considered by both parties to constitute formal acceptance of all terms and conditions of these GENERAL CONDITIONS. Furthermore, all preprinted terms and conditions on CLIENT's purchase order or purchase order acknowledgment forms are inapplicable to these GENERAL CONDITIONS and FUGRO's involvement in CLIENT's project.

11. Termination of Contract
CLIENT and FUGRO may terminate services at any time upon ten (10) days written notice. In the event of termination, CLIENT agrees to fully compensate FUGRO for services performed including reimbursable expenses to the termination date, as well as demobilization expenses. FUGRO will terminate services without waiving any claims or incurring any liability.

Taylor Engineering, Inc.
Proposal No. 04.81149001

LEGEND

B 9 — Approximate Borehole Location (Ellis & Associates, Inc, 2006)

Vessel Navigation Channel Limits

Vessel Navigation Channel Centerline

2006 Bathymetric Survey Elevation (Feet, MLW)
Conducted by SSR.INC

- -6- -4
- -8 - -6
- -10 - -8
- -11 -10
- -12 - -11
- -14 - -12
- -15- -14

Above El. -15 ft Proposed Dredge Cut

- -17- -15 — 2-ft Overdredge Allowance Interval

- -20 - -17
- -22 - -20
- -24- -22
- -26- -24
- -28 - -26
- -30 - -28
- -32- -30

N
W E
S

0 1,000 2,000 Feet

PROPOSED SURVEY AREAS
Proposed Seismic Reflection Survey
Broward County, Florida

FIGURE 1

N:\Projects\2014_Proposals\04_8114_9001_Ft_Lauderdale_SeismicSurveyOutputs\proposal_02_05_2014\MXD\dredge_area8.5x11.mxd, 2/4/2014, dmiao

FLORIDA INLAND NAVIGATION DISTRICT
PERMIT MODIFICATIONS, PORT EVERGLADES LEASE AGREEMENT SERVICES, SITE INVESTIGATIONS, FINAL PLANS AND SPECIFICATIONS, AND BIDDING ASSISTANCE — BROWARD COUNTY DEEPENING PROJECT (ICWW), BROWARD COUNTY, FLORIDA

ATTACHMENT F
KEITH AND ASSOCIATES, INC.
SCOPE OF WORK AND COST PROPOSAL

Attachment F

KEITH & ASSOCIATES, INC.
consulting engineers
301 East Atlantic Boulevard, Pompano Beach, Florida 33060-6643
Tel. 954-788-3400 Fax. 954-788-3500

April 23, 2014

Joe Wagner, P.E.
Senior Dredging Engineer, Waterfront Group
Taylor Engineering, Inc.
10151 Deerwood Park Blvd., Bldg. 300, Suite 300
Jacksonville, FL 32256
Phone (904) 731-7040
Cell (904) 252-4918
Email JWagner@Taylorengineering.com

RE: Agreement for Professional Services
Project Name: Broward County ICWW Deepening
Project Location: Fort Lauderdale, FL
Our Project/Proposal Number: 08799.M0

Dear Mr. Wagner:

In accordance with your request and subsequent discussions between members of our association and yourself, this agreement between Keith & Associates, Inc. ("CONSULTANT"), and Taylor Engineering, Inc. ("CLIENT") for professional services is submitted for your consideration and approval. CONSULTANT will begin work within ten (10) days after receipt of a fully executed copy of this Agreement. Such receipt shall constitute written notice to proceed.

I. PURPOSE OF AGREEMENT/PROJECT DESCRIPTION

The purpose of this Agreement is to outline the scope of services recommended by CONSULTANT and accepted by CLIENT, and to establish the contractual conditions between CONSULTANT and CLIENT with respect to the proposed services.

CONSULTANT is to provide professional services associated with Surveying and Mapping for the Property generally described as a portion of Section 35, Township 50 South, Range 42 East within the City of Fort Lauderdale, Broward County, Florida, (the "Project").

II. SCOPE OF SERVICES

Section 1 - Engineering Services

Not a part of this Agreement.

Section 2 - Planning Services

Not a part of this Agreement.

Section 3 - Surveying Services

Not a part of this Agreement.

Task 001 Topographic Survey

The Consultant will prepare a Topographic Survey for a portion of Section 35, Township 50 South, Range 42 East. The southern limits of the survey will be defined by the location / delineation of the wetland boundary by others. The cross-sections will be obtained at 100-foot intervals along a 24-foot wide path starting at the east right-of-way line of N.E. 7th Avenue and following the Florida Power and Light access road easterly and northerly to the easterly extension of N.E. 10 Street (Taylor Road). The survey corridor will terminate at the north end of the DMMA area within the Port Everglades property as depicted on the attached Exhibit. The Consultant will deliver the survey depicting the parcel lines of the adjacent plats and sectional lines as well as the topographic information geo-referenced (horizontally) to the North American Datum of 1983 with the 2011 adjustment applied. The elevations for the project will be collected in North American Vertical Datum of 1988. The deliverables for this project will be a signed and sealed Topographic Survey as well as the same transmitted digitally. The above scope does not include a Boundary Survey.

The Lump Sum Fee for this Task shall be.....$4,000.00

Task 002 Prepare Access Easements:

The Consultant will prepare two separate access easements for the haul route as it affects the different property owners, Florida Power and Light and Broward County. The easements will follow the 24-foot wide Topographic Survey corridor as described above. The deliverables for this task will be a signed and sealed Sketch and Descriptions as well as the same transmitted digitally.

The Lump Sum Fee for this Task shall be.....$1,000.00

Section 4 – Landscape Architecture Services

Not a part of this Agreement.

Section 5 – Subsurface Utility Engineering (SUE) Services

Not a part of this Agreement

CONSULTANT'S TOTAL LUMP SUM FEE.....$5,000.00

Section 6 - Additional Services

The undertaking by CONSULTANT to perform professional services defined within this Agreement extends only to those services specifically described herein. If upon request of CLIENT, CONSULTANT agrees to perform additional services hereunder, CLIENT shall be obligated to pay CONSULTANT for the performance of such additional services an amount (in addition to all other amounts payable under this Agreement) based on an hourly fee in accordance with CONSULTANT'S current professional fee schedule, plus reimbursable expenses as incurred by CONSULTANT, unless a lump sum addendum to Agreement is executed by the parties to this Agreement which addresses the additional services.

Additional services shall include revisions to work previously performed that are required due to a change in the data or criteria furnished to CONSULTANT, a change in the scope or concept of the project initiated by CLIENT, or services that are required by changes in the requirements of public agencies after work under this Agreement has commenced.

If the preceding scope of services includes public agency permitting, our quoted fees/hours include services to respond to the agency's first RAI (Request for Additional Information). Additional agency requests or requirements shall be considered an increase to our scope of services.

III. COMPENSATION

A). Payments and Invoicing:

Invoices will be submitted by CONSULTANT to CLIENT monthly for services performed and expenses incurred pursuant to this Agreement during the prior month. Payment of such invoice will be due upon presentation. CONSULTANT'S standard invoice format shall apply and such format shall be acceptable to CLIENT for payment, unless otherwise agreed to in writing hereunder. Invoices shall be submitted monthly based on a percentage completed for lump sum contracts. On a Time and Material contract, invoices shall be submitted in accordance with our current professional service fee schedule as seen on "Exhibit A" attached.

In the event of any dispute concerning the accuracy of content of any invoice, CLIENT shall within seven (7) days from the date of said invoice, notify CONSULTANT in writing stating the exact nature and amount of the dispute. Any invoice that is not questioned within seven (7) days shall be deemed due and payable. In the event an invoice or portion of an invoice is disputed within seven (7) days, CLIENT shall be obligated to pay the undisputed portion of the invoice as set forth in below.

If CLIENT fails to make any payment due to CONSULTANT for services and expenses within thirty (30) days from the date of invoice, CONSULTANT may, after giving seven (7) days written notice to CLIENT, apply the retainer to the unpaid balance of the account and/or suspend services under this Agreement until the account has been paid in full. There will be a fee charged for suspended work, which will be negotiated when work is resumed.

In the event any invoice or any portion thereof remains unpaid for more than forty five (45)

days following the invoice date, CONSULTANT may, following seven (7) days prior written notice to CLIENT, initiate legal proceedings to collect the same and recover, in addition to all amounts due and payable, including accrued interest, its reasonable attorneys' fees and costs.

The invoices referenced above, will be sent in accordance to the information as reflected on the "Billing Information Form" attached hereto.

PAYMENT DELAY: If the CONTRACTOR has received payment from the OWNER and if for any reason not the fault of Keith and Associates, Inc.(the SUBCONTRACTOR) does not receive a progress payment from the CONTRACTOR within seven (7) days after the date such payment is due; the SUBCONTRACTOR, upon giving an additional seven (7) days written notice to the CONTRACTOR, and without prejudice to and in addition to any other legal remedies, may stop work until payment of the full amount owing to the SUBCONTRACTOR has been received. The Subconsultant Amount and Time shall be adjusted by the amount of the SUBCONTRACTOR'S reasonable and verified cost of shutdown, delay and startup, which shall be effected by an appropriate Subcontractor Change Order.

B). Reimbursable Expenses:

CONSULTANT shall be reimbursed for direct charges as itemized in "Exhibit B". For those out-of-pocket expenses directly chargeable to the project but not itemized in "Exhibit B", CONSULTANT shall be reimbursed at actual cost incurred, plus a 10% carrying charge.

IV. PROVISIONS RELATIVE TO THE SERVICES RENDERED

A). Re-use of Documents:

All original documents, including, but not limited to, drawings, sketches, specifications, maps, as-built drawings, reports, test reports, etc., that result from CONSULTANT'S services pursuant or under this Agreement remain the sole property of CONSULTANT and are not intended or represented to be suitable for re-use by CLIENT or others.

CLIENT may, at their expense, obtain a set of reproducible copies of any maps and/or drawings prepared for them by CONSULTANT, in consideration of which CLIENT agrees that no additions, deletions, changes or revisions shall be made to same without the express written consent of CONSULTANT. Any re-use without written verification of adaptation by CONSULTANT mandates that CLIENT indemnify and hold CONSULTANT harmless from all claims, damages, losses and expenses, including, but not limited to, attorney's fees, arising out of or resulting there from.

Photographs of any completed project embodying the services of CONSULTANT provided hereunder may be made by CONSULTANT and shall be considered as its property, and may be used for publication.

B). Performance:

CONSULTANT shall not be considered in default in performance of its obligations hereunder if performance of such obligations is prevented or delayed by acts of God or government, labor disputes, failure or delay of transportation or by subcontractors, or any other similar cause or causes beyond the reasonable control of CONSULTANT. Time of performance of CONSULTANT'S obligations hereunder shall be extended by time period reasonably necessary to overcome the effects of such force majeure occurrences.

C). Professional Standards:

All work performed by CONSULTANT will be in accordance with its professional standards and in accordance with all applicable government regulations. CONSULTANT will exercise its best efforts to obtain all governmental approvals contemplated under this Agreement. However, CONSULTANT does not warrant or represent that any government approval will be obtained.

Unless the Scope of Services of this Agreement includes an investigation into the applicable land use, zoning and platting requirements for the Project, CONSULTANT shall proceed on the assumption that the Project as presented by CLIENT, is in accordance with all applicable governmental regulations.

D). Opinions of Cost:

Since CONSULTANT does not have control over the cost of labor, materials, equipment or services furnished by others, or over methods of determining prices, or over competitive bidding, or market conditions, any and all opinions as to costs rendered hereunder, including, but not limited to, opinions as to the costs of construction and materials, shall be made on the basis of its experience and qualifications and represent its best judgment as an experienced and qualified CONSULTANT, familiar with the construction industry. CONSULTANT cannot and does not guarantee that proposals, bids or actual costs will not vary from opinions of probable cost. If, at any time, CLIENT wishes greater assurance as to the amount of any cost, CLIENT shall employ an independent cost estimator to make such determination. Engineering services required to bring costs within any limitation established by CLIENT will be paid for as additional services hereunder by CLIENT.

If the services under this Agreement continue for a period of more than one (1) year from the notice to proceed, CONSULTANT shall be entitled to renegotiate the terms of this Agreement. CONSULTANT shall not be bound under this Agreement if modifications to the terms contained herein are made without the written consent of CONSULTANT (such consent to be signified by CONSULTANT'S initials next to each modification, and if a fully executed copy hereof is not received from CLIENT by CONSULTANT on or before sixty (60) calendar days from the date of execution by CONSULTANT.

E). Termination:

This Agreement may be terminated by either party upon seven (7) days written notice in event of the substantial failure by the other party to perform in accordance with the terms of this Agreement through no fault of the terminating party. For the purpose of this Agreement, the failure to pay any invoice submitted by CONSULTANT within sixty (60) days of the date of said invoice, shall be considered a substantial failure on behalf of CLIENT. In the event of

any termination, CONSULTANT shall be paid for all services rendered to the date of termination including all reimbursable expenses.

F). Liability:

CONSULTANT is protected by Workmen's Compensation Insurance, Professional Liability Insurance and by Public Liability Insurance for bodily injury and property damage and will furnish certificates of insurance upon request. CONSULTANT agrees to hold CLIENT harmless from loss, damage, injury or liability arising solely from the negligent acts or omission of CONSULTANT, its employees, agents, subcontractors and their employees and agents, but only to the extent that the same is actually covered and paid under the foregoing policies of insurance. If CLIENT requires increased insurance coverage, CONSULTANT will, if specifically directed by CLIENT, secure additional insurance obtained at CLIENT'S expense.

CLIENT agrees that CONSULTANT'S aggregate liability to CLIENT and all construction and professional contractors and subcontractors employed directly or indirectly by CLIENT on the Project, due to or arising from CONSULTANT'S services under this Agreement or because of the relation hereby of CONSULTANT, its agents, employees or subcontractors, or otherwise, is and shall be limited to CONSULTANT'S total fees under this Agreement or $50,000.00 whichever is greater. In no event shall CONSULTANT be liable for any indirect, special or consequential loss or damage arising out of the services hereunder including, but not limited to, loss of use, loss of profit, or business interruption whether caused by the negligence of CONSULTANT or otherwise.

CLIENT agrees that CONSULTANT shall have no liability to CLIENT, or to any person or entity employed directly or indirectly by CLIENT in the project for damages of any kind from services rendered by CONSULTANT relating to the testing for, monitoring, cleaning up, removing, containing, treating, detoxifying or neutralizing of pollutants, whether or not, caused by the negligence of CONSULTANT.

G). Litigation:

In the event litigation in any way related to the services performed hereunder is initiated between CONSULTANT and CLIENT, the non-prevailing party shall reimburse the prevailing party for all of its reasonable attorney's fees and costs related to said litigation.

V. CLIENT'S OBLIGATIONS:

CLIENT shall provide CONSULTANT with all data, studies, surveys, plats and all other pertinent information concerning the Project. CLIENT shall designate a person to act with authority on CLIENT'S behalf with respect to all aspects of the Project. CLIENT shall be responsible for all processing fees or assessments required for the completion of the Project. CLIENT shall provide CONSULTANT access to the Project site at reasonable times upon reasonable notice.

VI. GENERAL PROVISIONS:

A). Persons Bound by Agreement:

The persons bound by this Agreement are CONSULTANT and CLIENT and their respective partners, successors, heirs, executors, administrators, assigns and other legal representatives. This Agreement and any interest associated with this Agreement may not be assigned, sublet or transferred by either party without the prior written consent of the other party, such consent not to be unreasonably withheld. Nothing contained herein shall be construed to prevent CONSULTANT from employing such independent consultants, associates and sub-consultants as CONSULTANT may deem appropriate to assist in the performance of the services hereunder. Nothing herein shall be construed to give any rights or benefits arising from this Agreement to anyone other than CONSULTANT and CLIENT.

B). No Waiver or Modifications:

No waiver by CONSULTANT of any default shall operate as a waiver for any other default or be construed to be a waiver of the same default on a future occasion. No delay, course of dealing or omission on the part of CONSULTANT in exercising any right or remedy shall operate as a waiver thereof, and no single or partial exercise by CONSULTANT of any right or remedy shall preclude any other or further exercise of any right or remedy.

This Agreement, including all requests for additional services placed hereunder, express the entire understanding and agreement of the parties with reference to the subject matter hereof, and is a complete and exclusive statement of the terms of this Agreement, and no representations or agreements modifying or supplementing the terms of this Agreement shall be valid unless in writing, signed by persons authorized to sign agreements on behalf of both parties.

C). Governing Laws or Venue:

This Agreement shall be governed, construed and enforced in accordance with the laws of the State of Florida. Venue for any litigation shall be Broward County, Florida.

VII. CLOSURE

If you concur with the foregoing and wish to direct us to proceed with the aforementioned work, please execute the agreement in the space provided and return same to the undersigned with the required retainer and completed billing information form.

We appreciate the opportunity to submit our proposal. Mike Mossey has been selected to serve as project manager. Please contact Mr. Mossey or myself if you have any questions.

IN WITNESS WHEREOF, CONSULTANT and CLIENT have executed this agreement the day and year indicated below.

As to CONSULTANT Keith & Associates, Inc. Consulting Engineers	As to CLIENT Taylor Engineering, Inc.
Dodie Keith-Lazowick	Client:_____
President	Title:_____
DATED: _____	DATED:_____

EXHIBIT A
PROFESSIONAL SERVICE FEE SCHEDULE

	Hourly Rate
01 Administrative Assistant	$50.00
11 CADD Technician	$80.00
15 Senior Technician	$90.00
30 Associate Planner	$90.00
32 Senior Planner (AICP)	$115.00
33 Landscape Designer	$80.00
34 Senior Landscape Designer	$100.00
35 Landscape Architect (RLA)	$110.00
36 ISA Certified Arborist	$110.00
50 Project Engineer	$100.00
51 Senior Project Engineer	$115.00
52 Professional Engineer (PE)	$120.00
53 Junior Field Inspector	$75.00
54 Field Inspector / Representative	$90.00
60 Project Manager	$125.00
61 Senior Project Manager	$150.00
70 Principal	$200.00
72 Expert Witness Testimony	$250.00
76 BIM Modeler	$125.00
77 GIS Specialist	$100.00
78 Project Surveyor	$95.00
79 Senior Project Surveyor.	$110.00
80 Professional Surveyor & Mapper (PSM).	$120.00
81 Survey Party (2) Person	$100.00
82 Survey Party (3) Person	$125.00
83 Survey Laser Scanning	$125.00
85 Survey Party w/Watercraft	$160.00
90 Utility Crew Supervisor	$70.00
91 Utility Locating Technician	$60.00
92 Utility Project Manager	$100.00
93 Utility Project Engineer	$125.00
94 Utility CADD Technician	$80.00
95 Utility Field Technician	$40.00
96 Utility Designating/GPR (2) Person	$200.00
97 Utility Locating (3) Person	$250.00
103 Vacuum Excavation Test Hole (Pervious Surface)	$350.00/Each
104 Vacuum Excavation Test Hole (Impervious Surface)	$400.00/Each

Effective 08/01/07

EXHIBIT B

Direct Expenses	Cost per Unit
Photographic Copies	
Color Copies	
a) 8.5" x 11"	$ 1.00
b) 8.5" x 14 or 11"x 17"	$ 2.00
c) 24"x 36"	$18.00
Black & White Copies	
a) Any Size up to 11"x17"	$ 0.15
b) 24"x 36" Blackline	$ 2.00
c) 30" x 42" Blackline	$ 2.00
d) 24"x 36" Mylar	$15.00
Laminating/Transparency Film Covers	$ 2.00
Display Boards	
Mounted (Foam) 30"x 40"	$42.00
Mounted (Foam) 40"x 60" and larger	$70.00
3 Ring Binders 1"	$ 1.00
Dividers (Tabs) Set of 10	$ 0.80
Acco/GBC Binding	$ 1.50
Facsimiles	$ 2.00
Overnight Packages	per service
Courier & Delivery Services	per service
Postage: 1st Class	Current US Postal rate
Mileage:	$ 0.50 / mile

Any other expenses will be billed at cost plus 10% carrying charge.

****NOTE:** Typical other reimbursable expenses include travel, lodging, and meals when traveling on CLIENT'S behalf, identifiable communication expenses, all reproduction costs, and special accounting expenses not applicable to general overhead.

Effective 08/01/07

BILLING INFORMATION FORM

PROJECT NAME:

PROJECT ADDRESS:

SUBDIVISION NAME:

LAND OWNER:

OWNER ADDRESS:

OWNER PHONE NO.: ( )

OWNER CELL PHONE NO.: ( )

E-MAIL:

JOB SITE SUPERINTENDENT:

JOB SITE PHONE:

PURCHASE ORDER #:

INVOICE:

Company Name

ATTN:

Name Title

COMPANY ADDRESS:

Street Address/Post Office Box

City/State/Zip Code

PHONE: ( )
Area Code/Number

FAX: ( )
Area Code/Number

SPECIAL BILLING INSTRUCTIONS:

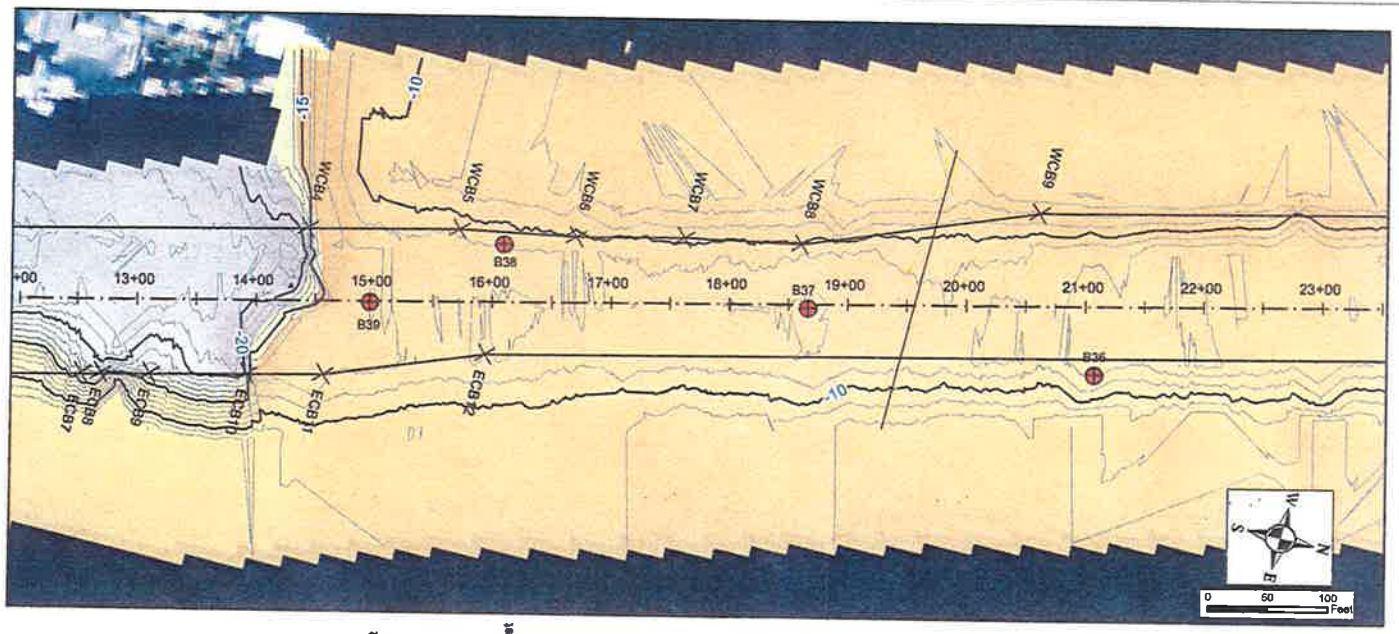
Google earth

feet 1000

meters 400

PROPOSAL FEES

Our Project/Proposal Number		08799.M0	Personnel and Hourly Rates			
Proposal Date		4/23/2014	11	80	81	
Tasks			CADD Technician	Professional Surveyor & Mapper (PSM)	Survey Party (2) Person	Task Subtotals
No.	Description		$80.00	$120.00	$100.00	
001	Topographic Survey		8	3	30	$ 4,000.00
002	Prepare Access Easements		8	3		$ 1,000.00
Personnel Hours			16	6	30	$ 5,000.00
Personnel Cost			$ 1,280.00	$ 720.00	$ 3,000.00	
Personnel Subtotal		$ 5,000.00				
Test Holes - Pervious ($350.00/each)						
Test Holes Subtotal		$ -				
Test Holes - Impervious ($400.00/each)						
Test Holes Subtotal		$ -				
Miscellaneous Expenses		$ -				
Direct Expenses		$ -				
GRAND TOTAL		$ 5,000.00				



LEGEND

- B 9 — Approximate Borehole Location (Ellis & Associates, Inc, 2006)
- Vessel Navigation Channel Limits
- Vessel Navigation Channel Centerline

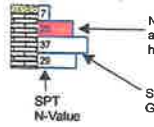
2006 Bathymetric Survey Elevation (Feet, MLW) Conducted by SSR.INC

- -15- -3 Above El -15 ft Proposed Dredge Cut
- -17- -15 2-ft Overdredge Allowance Interval
- -32- -17

Interpreted Borehole Lithology

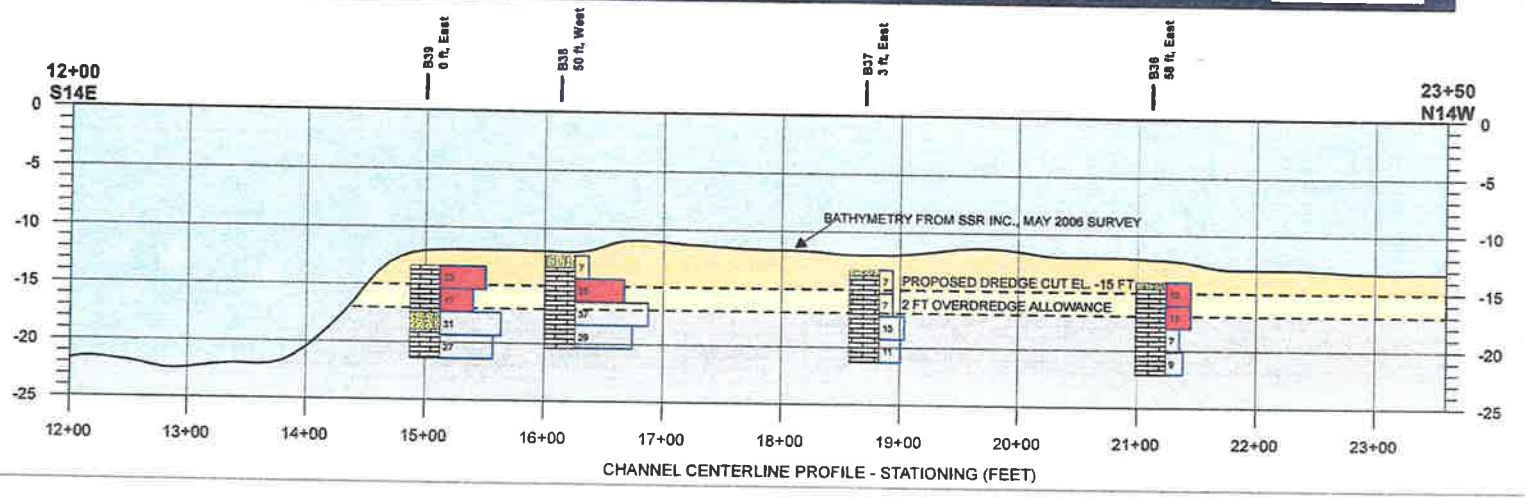
- Silty SAND (SM)
- Poorly-Graded SAND with Silt (SP-SM)
- Limestone (LX)

Borehole Graphic

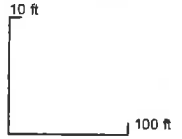


N-Value greater than 12 and within the proposed dredge cut area highlighted red

SPT N-Value Graphic Scale



Cross Section Scale

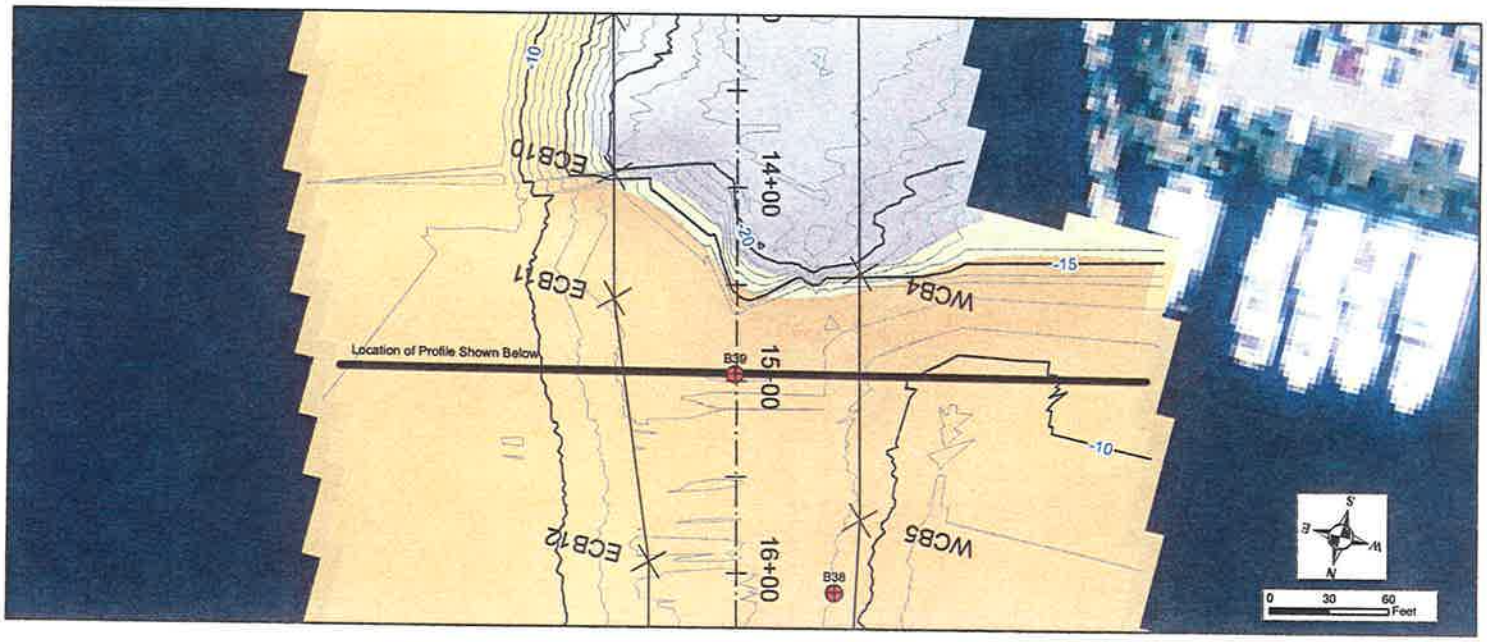


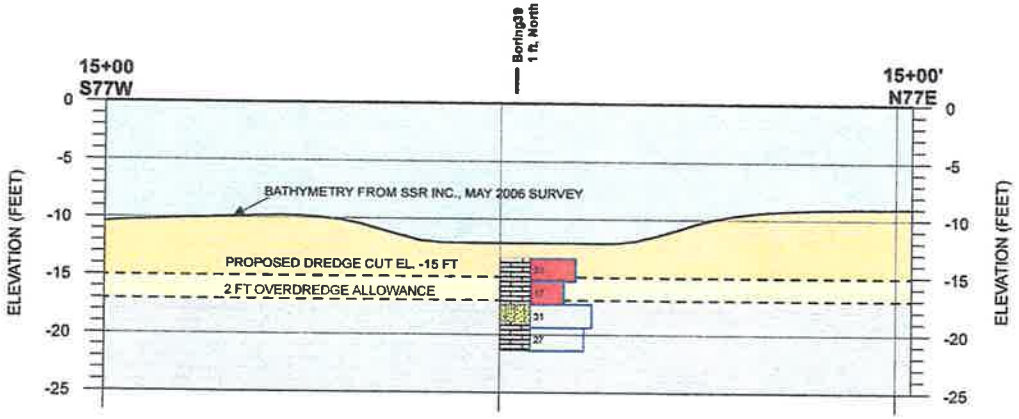
Horizontal and Vertical Scales
Vertical exaggeration is 10x.

CHANNEL CENTERLINE PROFILE
STATION 12+00 TO 23+50
Proposed Seismic Reflection Survey
Broward County, Florida

FIGURE 2

N:\Projects\2014_Proposals\04_8114_6001_FL_Lauderdale_SeismicSurvey\Output\proposal_02_05_2014\MXD\plan_profile11x17.mxd, 2/4/2014, dmiles





LEGEND

B 9 — Approximate Borehole Location (Ellis & Associates, Inc. 2006)

Vessel Navigation Channel Limits

Vessel Navigation Channel Centerline

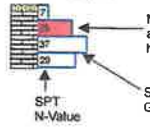
2006 Bathymetric Survey Elevation (Feet, MLW) Conducted by SSR.INC

-15- -3	Above El. -15 ft Proposed Dredge Cut
-17- -15	2-ft Overdredge Allowance Interval
-32- -17	

Interpreted Borehole Lithology

- Silty SAND (SM)
- Poorly-Graded SAND with Silt (SP-SM)
- Limestone (LX)

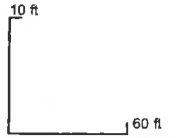
Borehole Graphic



N-Value greater than 12 and within the proposed dredge cut area highlighted red

SPT N-Value Graphic Scale

Cross Section Scale



Horizontal and Vertical Scales
Vertical exaggeration is 6x.

TRANSVERSE CHANNEL PROFILE AT STATION 15+00

Proposed Seismic Reflection Survey
Broward County, Florida

FIGURE 3

N:\Projects\2014_Proposals\04_8114_9001_FL_Lauderdale_SeismicSurvey\Output\Working\mxd\plan_profile11x17_trans mxd, 2/4/2014, dmiao

CSA Ocean Sciences Inc.
8502 SW Kansas Avenue
Stuart, Florida 34997

www.csaocean.com
Phone: 772-219-3000
Fax: 772-219-3010

MEMORANDUM

Date: 15 April 2014

To: Mr. Mark Crosley, Executive Director, Florida Inland Navigation District

From: Anne McCarthy, Project Scientist, CSA Ocean Sciences Inc.

Re: Proposal to Conduct the Post-Construction Seagrass Survey for the Maintenance Dredging in the Vicinity of Jupiter Inlet

---

In late August 2013, CSA Ocean Sciences Inc. (CSA) conducted the Pre-Construction Seagrass Survey for the *Atlantic Intracoastal Waterway (AIWW) Maintenance Dredging Project in the Vicinity of Jupiter Inlet* under a work order from the Florida Inland Navigation District (FIND). CSA developed an approved survey plan and conducted a detailed mapping effort and extensive diving to document the presence of seagrass, specifically *Halophila johnsonii*, using methods approved by the National Marine Fisheries Service (NMFS) and in compliance with the Florida Department of Environmental Protection (FDEP) permit conditions.

CSA is currently proposing to conduct the Post-Construction Seagrass Survey in June 2014 using the same approach and methodology previously approved by the regulatory agencies. The proposed Scope of Services (SOS) and cost for the Post-Construction Seagrass Survey are provided below.

PROPOSED SURVEY METHODOLOGY

In order to meet the FDEP's permit condition that states "within 30 days following completion of construction of each maintenance event, or after June 1 (whichever is later), a post-construction seagrass survey shall be conducted following the same transect locations," CSA proposes to use the existing maps and perform the survey in the same manner as described in the Pre-Construction Survey Report. The benefits of having CSA perform this survey for FIND are our familiarity with the site conditions, ease of data transfer from pre- to post-construction maps, and consistency in the quality of reporting.

CSA will use the pre-plotted transect locations from the Pre-Construction Survey and a diver-operated navigation system to swim along the transects and conduct a line-intercept sampling approach. Where areas are small and discrete, direct sampling will be conducted. Similar to the Pre-Construction Survey where areas devoid of seagrass or barren areas of sand were not surveyed following the reconnaissance survey, these sites will similarly not be re-surveyed, per the FDEP's permit requirements. Along each transect within the AIWW and anchor zones, CSA will collect data to determine percent cover, abundance, and species composition using the same quantitative sampling approach conducted during the Pre-Construction Survey. The pipeline corridor did not contain any seagrass and will not be resurveyed.

CSA will conduct the Post-Construction Survey after 1 June 2014 and prepare a report and map of the survey results. The survey map will include water depths and bottom contours and indicate the locations of all seagrass within the survey area. The final deliverable will include written survey reports and accompanying maps of the surveyed areas in hard and digital formats. Digital maps will be provided in ARCHINFO GIS as well as CAD.

COST SUMMARY PROPOSAL

The following is a total cost basis, including all costs necessary to perform the Post-Dredging Seagrass Survey and prepare all deliverables. This price is reduced from the Pre-Dredging Seagrass Survey cost of $20,743.

Total Proposal Cost: $19,655

Mark Crosley

From: Kenneth R. Craig <KCraig@Taylorengineering.com>
Sent: Tuesday, May 06, 2014 3:26 PM
To: 'Grella, Michael J (mgrella@jupiterinletdistrict.org)'; mjgrella@aol.com
Cc: Mark Crosley
Subject: Revised cost for AAF camera work
Attachments: JID - AAF - Modified Scope and Cost.pdf

Mike,

Based on discussions at the last board meeting, I have developed the attached revised cost estimate for the All Aboard Florida Loxahatchee River Boat Traffic Study.

Please note I have copied Mark Crosley from FIND as well.

Thanks,
Ken

Kenneth R. Craig, P.E.
Vice President, Coastal Engineering

TAYLOR ENGINEERING, INC.

10151 Deerwood Park Blvd.
Bldg. 300, Suite 300
Jacksonville, FL 32256
Phone (904) 731-7040
Direct (904) 256-1334
Fax (904) 731-9847
Mobile (904) 472-9811

TAYLOR ENGINEERING, INC.
Delivering Leading-Edge Solutions

May 6, 2014

Mr. Michael Grella
Executive Director
Jupiter Inlet District
400 North Delaware Blvd
Jupiter, Florida 33458

Re: Revised JID Boat Traffic Study (P2014-002)

Dear Mr. Grella:

On behalf of the staff of Taylor Engineering, I am pleased to present the enclosed scope of services and cost proposal for the work referenced above. We propose to perform the following work for a lump sum of $64,574.

Please let me know if you have any questions or need additional information.

Sincerely,

Kenneth R. Craig, P.E.
Vice President of Coastal Engineering

Attachment

ATTACHMENT A

SCOPE OF SERVICES
JID LOXAHATCHEE RIVER BOAT TRAFFIC STUDY
P2014-002

OVERVIEW

The Jupiter Inlet District (JID) seeks to better understand the level of boat traffic actively transiting the District's waterways. In particular, this study will focus on the Loxahatchee River Railroad Bridge crossing.

All Aboard Florida (AAF) plans to establish a commuter train system connecting the south Florida and Orlando markets. The proposed system includes the existing Loxahatchee River railroad draw bridge (RR bridge). When the draw span is closed, boat traffic is essentially stopped due to the low vertical clearance at the closed bridge. Given that a) the existing freight train traffic across the bridge will continue and b) the AAF plan will significantly increase the number of daily commuter trains (and subsequent bridge closures) crossing the bridge, JID seeks to understand the level of boat traffic passing through the bridge to help determine potential navigation impacts resulting from implementation of the AAF plan.

Notably, this proposal modifies an earlier agreement by adjusting the funding provided for the recurring monthly costs.

TASK 1 – RECOVERY OF PREVIOUS COSTS

As noted at the April board meeting, Taylor Engineering significantly underestimated the time required to document the vessels traveling through the bridge. The February and March vessel counts slightly exceeded 6,000 separate passages each month. Unfortunately we budgeted for approximately 2,500 vessels/month. Per discussions at the April meeting, the JID indicated a willingness to reimburse Taylor Engineering for the extra hours expended. Our total costs expended, over and above that previously budgeted for the first three months of processing (February, March, and April 2014), comes to $4,256 total.

Total cost Task 1: $4,256

TASK 2 – RECURRING MONTHLY COSTS

The remaining effort will continue on a monthly basis from May 2014 to January 2015 for a period of one year.

Subtask 2a – CAMERA SERVICE

Each month, Taylor Engineering will service the cameras, download data, refresh the batteries, and attempt to troubleshoot any problems. The service will require on water access to the cameras and includes a day of boat rental per mobilization.

Recurring monthly cost $1,252

Subtask 2b – DATA REDUCTION

Taylor Engineering will review the time-lapse video and record, at a minimum, the following characteristics of any observed boat traffic:

1) Date and time
2) Direction of travel (east, west)
3) Vessel length estimate in feet (<15, 15-20, 21-25, 26-30, 31-35, >35)
4) Vessel air draft estimate

With regards to bridge closings, we will record, at a minimum, the following data:

1) Cycle start time (bridge starts down)
2) Train arrival time
3) Train departure time
4) Cycle end time (bridge returns to full upright position)

Collectively, these data provide the basis for a variety of analyses. Examples include hourly and daily vessel traffic distribution graphs. This information will indicate peak day/time of vessel traffic at the bridge and/or inlet as well as how traffic evolves over time. Longer term data collection will provide monthly and seasonal totals. Data collected over holiday weekends will provide insight into the associated impact on traffic levels.

An interesting observation should come from the combination of bridge closings and the traffic counts immediately following reopening. If we observe a relatively high traffic level after bridge opening we may be able to extrapolate information about vessel queuing that results from bridge closures.

The cost indicated below assumes a total of 60 hours of staff engineer time per month to process the data. We have determined that our staff can process the video, identify, and record 100 vessels/hour of processing time. The 60 staff hours provides funding to process up to 6,000 vessels per month. Should the traffic level exceed the total, we will notify JID and seek guidance on how to move forward.

Recurring monthly cost $5,272

Subtask 2c – UPDATE BOAT TRAFFIC STATISTICS

Taylor Engineering will compile the individual boating records into summary statistics and provide an update to JID at their monthly board meetings.

Recurring monthly cost $178

The combined recurring monthly cost is $6,702. Extrapolated to cover the remaining 9 months required to produce a full year of continuous data collection results in a total cost for Task 2 of $60,318.

Total project cost $64,574

Mark Crosley

From: Kathy Fitzpatrick <kfitzpat@martin.fl.us>
Sent: Tuesday, April 29, 2014 6:50 PM
To: Mark Crosley; Janet Zimmerman
Cc: Don Donaldson; Kathy Fitzpatrick; Donald J. Cuozzo (dcuozzo@cdgplan.com)
Subject: Vessel count for OWW railroad bridge
Attachments: LOT + Scope - AAF only.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Mark,

As we have discussed, the County has an interest in identifying all the impacts that may be presented by the All Aboard Florida proposal. The impacts from new crossings, quiet zones and increased train traffic is fairly easy to quantify on land. The one thing we do not have a good understanding of is the impact to our boating community. The railroad bridge that spans the Okeechobee Waterway has a very low deck. Only the smallest boats can pass when that bridge is down. Long lead times are required for the bridge to be lowered in advance of an oncoming train, and as an old bridge it moves very slowly. Threading the needle through the Old Roosevelt Bridge, the railroad bridge and pilings for the new Roosevelt bridge – all while navigating in strong currents – is neither quick or easy. Added train traffic will have an obvious impact on vessels moving through the OWW, but since we do not have any good data reflecting the volume of traffic or percentage of those boats that require an open bridge, that impact is impossible to quantify.

The work that Taylor Engineering has done for the Jupiter Inlet District to improve their understanding of vessel traffic through that railroad bridge is also appropriate for our needs. I have attached the proposal that was developed for Martin County. I believe it will provide the data that we need, and the archived files will be maintained should further analysis be necessary in the future. Based on the impact to the Okeechobee Waterway vessel traffic, we are requesting that your Board consider sharing in the cost for this project .

As I mentioned, this proposal was submitted today (4/29/14) by Taylor Engineering, and a local funding source has not yet been identified, therefore I am submitting this for review by you and your Board, contingent on County funding. The total cost for this project, which includes 1 year of data collection, is $56,433. If approved, we would expect to begin work within a few weeks.

Please let me know if you have any questions or require any additional information. I will be in contact with you as soon as the County funding issue is resolved.

Martin County appreciates your consideration of this issue.

Kathy FitzPatrick, P.E.
Coastal Engineer
Martin County
Board of County Commissioners
2401 SE Monterey Road
Stuart, FL 34996
772-288-5429 (o)
772-288-5955 (f)

TAYLOR ENGINEERING, INC.
Delivering Leading-Edge Solutions

April 29, 2014

Ms. Kathy Fitzpatrick, P.E.
Coastal Engineer
Martin County Board of County Commissioners
2401 SE Monterey Road
Stuart, Florida 34996

Re: Martin County Boat Traffic Study (P2014-077)

Dear Ms. Fitzpatrick:

On behalf of the staff of Taylor Engineering, I am pleased to present the enclosed scope of services and cost proposal for the work referenced above. We propose to perform the following work for a lump sum of $56,433.

Please let me know if you have any questions or need additional information.

Sincerely,

Kenneth R. Craig, P.E.
Vice President of Coastal Engineering

Attachment

ATTACHMENT A

SCOPE OF SERVICES
MARTIN COUNTY BOAT TRAFFIC STUDY – ST. LUCIE RIVER RAILROAD BRIDGE
P2014-077

OVERVIEW

Martin County seeks to better understand the level of boat traffic actively transiting the county's waterways. In particular, this study will focus on the St. Lucie River Railroad Bridge crossing in Stuart.

All Aboard Florida (AAF) plans to establish a commuter train system connecting the south Florida and Orlando markets. The proposed system includes the existing St. Lucie River railroad draw bridge (RR bridge). When the draw span is closed, boat traffic is essentially stopped due to the low vertical clearance at the closed bridge. Given that a) the existing freight train traffic across the bridge will continue and b) the AAF plan will significantly increase the number of daily commuter trains (and subsequent bridge closures) crossing the bridge, Martin County seeks to understand the level of boat traffic passing through the bridge to help determine potential navigation impacts resulting from implementation of the AAF plan.

Assumptions:

1) Martin County will coordinate with the City of Stuart to ensure access to the installation site for the RR bridge cameras.

TASK 1 – ESTABLISH DATA COLLECTION PROCESS & INSTALL CAMERAS

In order to determine accurate estimates of existing boat traffic in the areas of interest, Taylor Engineering will collect video-based field data. We will deploy Brinno model TLC200 Time Lapse Cameras in waterproof housings to capture a frame of video data every 20 seconds. The cameras automatically compile the image sequence into an .avi format digital movie. Onboard data storage includes a 32 gigabyte SD storage card capable of holding approximately 32 days of images (based on 20 second interval capture rate). Four AA batteries can power the camera for approximately one month. The entire system is housed within a 4 inch PVC fitting. Given the memory card and camera's available storage capacity, the preferred deployment length is approximately 30 days. The cameras collect data during daylight hours only. Of course, as with any field data collection effort, vandalism and subsequent loss of a portion of the data record are always risks.

We plan to install two cameras at the RR bridge site to provide redundancy which should ensure a consistent, uninterrupted data set. We will most likely install the two RR bridge cameras on the piling of the former Dixie Highway bridge immediately west of the RR bridge. The bridge is owned by the City of Stuart.

Task 1 total cost $5,396

TASK 2 – RECURRING MONTHLY COSTS

The remaining effort will continue on a monthly basis for a period of one year.

Subtask 2a – CAMERA SERVICE

Each month, Taylor Engineering will service the cameras, download data, refresh the batteries, and attempt to troubleshoot any problems. The service will require on water access to the cameras and includes a day of boat rental per mobilization.

Recurring monthly cost $1,316

Subtask 2b – DATA REDUCTION

St. Lucie River Cameras – Taylor Engineering staff will review the time-lapse video and record, at a minimum, the following characteristics of observed boat traffic from the St. Lucie River cameras:

1) Date and time
2) Direction of travel
3) Can pass when closed? (Y/N) (visual assessment of vertical clearance)

With regards to bridge operations, we will record, at a minimum, the following data:

1) Cycle start time (bridge starts down)
2) Train arrival time
3) Train departure time
4) Cycle end time (bridge returns to full upright position)

Collectively, these data provide the basis for a variety of analyses. Examples include hourly and daily vessel traffic distribution graphs. This information will indicate peak day/time of vessel traffic at the bridge and/or inlet as well as how traffic evolves over time. Longer term data collection will provide monthly and seasonal totals. Data collected over holiday weekends will provide insight into the associated impact on traffic levels.

An interesting observation should come from the combination of bridge closings and the traffic counts immediately following reopening. If we observe a relatively high traffic level after bridge opening we may be able to extrapolate information about vessel queuing that results from bridge closures.

The cost indicated below assumes a total of 50 hours of intern time per month to process the data. We have determined that our staff can process the video, identify, and record 100 vessels/hour of processing time. The 50 staff hours provides funding to process up to 5,000 vessels per month. Should the traffic level exceed the total, we will notify Martin County and seek guidance on how to move forward.

Recurring monthly cost $2,760

Subtask 2c – UPDATE BOAT TRAFFIC STATISTICS

Taylor Engineering will compile the individual boating records into summary statistics and provide an update to Martin County on a monthly basis.

Recurring monthly cost $178

The combined recurring monthly cost is $4,253. Extrapolated to cover a full year of data collection results in a total cost for Task 2 of $49,107.

Total project cost for one year of data $56,433

DELIVERABLES

Deliverable A – Letter report covering camera installation; total cost $5,396; Due date: May 31, 2014

Deliverable B – May 2014 statistical report; Total cost $4,253; Due date June 30, 2014

Deliverable C – June 2014 statistical report; Total cost $4,253; Due date July 30, 2014

Deliverable D – July 2014 statistical report; Total cost $4,253; Due date Aug 30, 2014

Deliverable E – Aug 2014 statistical report; Total cost $4,253; Due date Sep 30, 2014

Deliverable F – Sep 2014 statistical report; Total cost $4,253; Due date Oct 30, 2014

Deliverable G – Oct 2014 statistical report; Total cost $4,253; Due date Nov 30, 2014

Deliverable H – Nov 2014 statistical report; Total cost $4,253; Due date Dec 30, 2014

Deliverable I – Dec 2014 statistical report; Total cost $4,253; Due date Jan 30, 2015

Deliverable J – Jan 2015 statistical report; Total cost $4,253 Due date Feb 28, 2015

Deliverable K – Feb 2015 statistical report; Total cost $4,253; Due date Mar 30, 2015

Deliverable L – Mar 2015 statistical report; Total cost $4,253; Due date Apr 30, 2015

Deliverable M – Apr 2015 statistical report; Total cost $4,253; Due date May 30, 2015

CONFIDENTIAL

NOT FOR PUBLIC RELEASE

EXHIBIT B
TAYLOR ENGINEERING, INC.
COST SUMMARY BY TASK
P2014-077: MARTIN COUNTY BOAT TRAFFIC STUDY

TASK 1: Establish Data Collection Process & Install Cameras

Labor	Hours	Cost	Task Totals
Principal	16.0	3,040.00	
Senior Professional	16.0	2,256.00	
Total Man-Hours	32.0		
Labor Cost			5,296.00
Non-Labor	Units	Cost	
Daly boat rental	1.0	100.00	
Total Non-Labor Cost			100.00
Total Task 1			$ 5,396.00

TASK 2: Recurring Monthly Costs

Labor	Hours	Cost	Task Totals
Principal	99.0	18,810.00	
Senior Professional	27.0	3,807.00	
Staff Professional	30.0	2,490.00	
Intern	600.0	24,000.00	
Total Man-Hours	756.0		
Labor Cost			49,107.00
Non-Labor	Units	Cost	
Daily boat rental	12.0	1,200.00	
& housing rental, 4 cameras($1/camera/day)	365.0	730.00	
Total Non-Labor Cost			1,930.00
Total Task 2			$ 51,037.00

Project Total $ 56,433.00

Moyle LAW FIRM

MEMORANDUM

TO: Mark Crosley, Executive Director
Florida Inland Navigation District

FROM: Jon C. Moyle, Jr.

DATE: May 6, 2014

RE: Final Report on 2014 Regular Legislative Activity and Bills of Interest

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As requested, here is the final legislative report that will update you and the Board on the status of a number of issues that were considered during the 2014 session. The report provides a general overview of the legislative session, discusses 2014 legislative issues of specific interest to the Florida Inland Navigation District ("FIND") and lists major issues that the Legislature addressed during the sixty (60) day regular legislative session, which ended on Friday, May 2, 2014. Finally, I have also attached a list of bills that were tracked for FIND.

GENERAL OVERVIEW

The 2014 legislative session was marked by the state having sufficient revenues to fund, and in some cases, increase funding, for essential state government operations. While the Legislature did not fund many member projects during the tight budget years of the Great Recession, the improving economy enabled the Legislature to fund generously many member projects this year. The 2014-15 budget was set at $77.1 billion dollars, the largest budget in the state's history. This sum was approximately $3 billion dollars more than Governor Scott asked for in his budget recommendations, and was available largely due to updated revenue estimates

made during the legislative session. Many believe that the biggest winner in the 2014-15 budget was education, which received $18.9 billion dollars in funding. Among the education enhancements were $50 million dollars appropriated to the school districts for construction, $40 million for technology upgrades, an expansion of the tax credit scholarship program, and an increase of $176 dollars for each enrolled student, from $6,761 per student to $6,937 per student.

Additionally, the Legislature worked closely with Governor Scott to put in place tax cuts totaling approximately $500 million dollars. Vehicle registration fees were reduced significantly, by approximately $20 dollars per vehicle, which represented approximately $400 million dollars in reduced taxes. The remaining tax relief of $105 million dollars can be found in sales tax holidays that halt the collection of sales tax for a prescribed period of time for back to school supplies, hurricane preparedness supplies, and energy efficient appliances. The legislature also enacted sales tax exemptions for other items such as child booster seats, bike helmets, and college meal plans.

Overall, the presiding officers of the House and Senate, Representative Will Weatherford (R-Wesley Chapel) and Senator Don Gaetz (R-Niceville), worked well together, and with the members of both parties of their respective legislative bodies.

ISSUES AND BILLS OF INTEREST TO FIND

While a host of bills were monitored for FIND, two legislative issues remained of particular interest and are detailed below.

Special Districts (SB 1632/HB 1237): This legislation was followed closely during the session, with amendments and revised versions of the legislation being shared with FIND staff and counsel as it progressed through the legislative process. Senate bill 1632 passed and is expected to be approved by the Governor. While a lot of the changes were technical in nature,

the bill contains a number of substantive changes to the state's special district statute. The bill that passed emphasizes that annual financial reports need to be filed timely, and provides the Joint Legislative Auditing Committee and Department of Economic Opportunity ("DEO") with authority to hold public hearings in the event of non-compliance. It amends the definition of "agency" for the purposes of the state's ethics laws to recognize special districts as being covered. The bill clarifies gubernatorial power to suspend special district members for malfeasance or misfeasance. Additionally, the bill requires special districts to maintain a website that offers the public specified information; requires special districts to give the website address to the DEO for publication on its website; redefines the term special district in s. 189.403, F.S.; prohibits inactive districts from collecting taxes, fees, and assessments; and changes the required education for new special district members.

Funding for Indian River Lagoon Clean Up Efforts: Keen legislative interest and attention was paid to water quality issues affecting the Lake Okeechobee Basin and Indian River Lagoon. This issue enjoys the strong support of many legislative leaders, including, but not limited to Appropriations Chairman Joe Negron (R-Palm City), Speaker Designate Steve Crisafulli (R-Merritt Island), and Senator Thad Altman (R-Melbourne). FIND has been engaged in discussions regarding certain muck dredging efforts, and the District's appropriate role. The legislative funding for efforts related to the Indian River Lagoon, including muck dredging and management, are found in legislative appropriations 1622A and 1627A, set forth below. Key proviso language addressing muck dredging is highlighted in yellow.

1622A SPECIAL CATEGORIES

GRANTS AND AIDS - INDIAN RIVER LAGOON AND
LAKE OKEECHOBEE BASIN - OPERATIONS
FROM GENERAL REVENUE FUND 13,769,525

1627A GRANTS AND AIDS TO LOCAL GOVERNMENTS AND NONSTATE ENTITIES - FIXED CAPITAL OUTLAY
GRANTS AND AIDS - INDIAN RIVER LAGOON AND LAKE OKEECHOBEE BASIN - FIXED CAPITAL OUTLAY
FROM GENERAL REVENUE FUND 15,075,000
FROM SAVE OUR EVERGLADES TRUST FUND 67,000,000

Funds in Specific Appropriations 1622A and 1627A shall be distributed to Everglades and other environmental initiatives in the amounts and purposes in the Select Committee on Indian River Lagoon and Lake Okeechobee Basin (IRL/LOB) final report dated November 8, 2013. These funds reflect an increase of $3,000,000 for the Caloosahatchee River C-43 Basin Storage Reservoir and a reduction of $10,000,000 for the muck removal initiative included in the final report, which shall be provided to Brevard County for removal of muck from the Central and Northern Indian River Lagoon and the Banana River. Brevard County shall provide $1,000,000 to the Indian River Lagoon Research Institute at Florida Institute of Technology for the purpose of scientific assessment to determine environmental benefits from the project. In order to expedite completion of the Kissimmee River Restoration, C-111 South Dade, and the Picayune Strand Restoration projects, funds appropriated for those projects may be increased or decreased and used in such increased or decreased amounts solely for the completion of those projects, in combination with funds provided by the South Florida Water Management District or federal government subject to the approval of the Legislative Budget Commission pursuant to section 216.292, Florida Statutes.

There was also an appropriation of $2,076,718 for the "St. Lucie River and Indian River Lagoon Issues Team".

OTHER MAJOR ISSUES

I wanted to briefly share information about other major issues that received considerable legislative attention during the 2014 legislative session. One list reflects significant issues that passed and will be acted on by the Governor. The other list includes major issues that did not pass, but received considerable attention.

SIGNIFICANT ISSUES THAT PASSED

Expansion of tax credit scholarship program (SB 850): A priority of House Speaker Will Weatherford, legislation passed expanding the number of eligible families who may use tax-credit scholarships at private schools. Specifically, income eligibility limits were adjusted upward to allow more families to qualify for the need-based scholarship program.

Undocumented immigrants receive in-state college tuition rate (HB 851): A priority of many legislative leaders, and the Governor, legislation passed to allow undocumented immigrants to qualify for the less expensive in-state college tuition rate.

Non-euphoric use of marijuana permitted (SB 1030): By overwhelming majorities, legislation passed that will allow a doctor to prescribe non-euphoric marijuana in certain cases. The proponents of this legislation argued that a low-THC strain of marijuana will help those afflicted with epilepsy control seizures.

Reform of Child Welfare System (SB 1666): Legislation designed to improve the state's protection of at risk children legislation passed and makes protection of children a paramount concern of the state. The legislation also requires immediate investigations of child deaths, emphasizes keeping siblings together, seeks to improve the quality of child abuse investigations, and creates a consortium of social work schools to advise the state and creates a new criminal offense for the unlawful desertion of a child.

Warning Shot Legislation (HB 89): Legislation passed which provides "stand your ground" immunity to people who fire a warning shot or threaten force. This bill was prompted by a case in the Jacksonville area in which a threatened person fired a warning shot and was then prosecuted for doing so. This bill rekindled an emotional debate about the state's "stand your ground" law that garnered national attention in the Trayvon Martin case.

SIGNIFICANT ISSUES THAT DID NOT PASS

Springs Legislation (SB 1576/HB 1313): The Senate spent considerable time working on springs legislation and passed comprehensive springs legislation. However, the House did not act on the springs issue, so nothing passed the Legislature.

State Pension Reform (SB 1114/HB 7181): Reforming the state's pension system was a top priority of Speaker Will Weatherford; legislation reforming the state's pension system passed the House, but was not well-received by the Senate and did not pass.

Gaming (HB 1383): A much discussed and contentious subject this legislative session, efforts to enact comprehensive gaming legislation failed. This issue is likely to reappear, however. In fact, during the last days of the 2014 legislative session, there were some discussions about possibly having a special legislative session to consider a new gaming compact apparently being negotiated between the State and the Seminole Tribe. Most believe that a special session is unlikely given the upcoming elections.

Trauma care (SB 1276/HB 7105): There were many efforts to legislatively address trauma care in the state and to clarify the status of certain trauma centers that were approved pursuant to a rule that was later declared invalid. A large health care bill containing this issue and others was one of the final bills to pass the House the last day of the session, but was not taken up by the Senate.

Environmental regulatory reform (SB 1464/HB 703): Representative Jimmy Patronis (R-Panama City), who for the last two years has sponsored and successfully passed an environmental regulatory reform package, again pursued legislation that addressed a number of environmental regulatory issues. The legislation passed a number of committees, but got bogged down due to vocal opposition by numerous environmentalist interests.

I trust that you will find this final 2014 legislative report useful and informative. Additionally, as is always the case, should you have questions or need additional information, or need assistance with any issue that may arise involving state agency activity, please let me know.

Attachment: 2014 FIND Bill Tracking List

FIND 2014 Bill Tracking List
2014 Senate Bills

SB 222 by Ring

State Technology; Creating the Department of State Technology; requiring the department to develop a long-range plan; establishing the Fletcher Shared Resource Center within the Department of Financial Services to provide enterprise information technology services to the department, to provide colocation services to the Department of Legal Services and the Department of Agriculture and Consumer Services, and to host the Legislative Appropriations System/Planning and Budgeting Subsystem; authorizing the Department of Legal Affairs and the Department of Agriculture and Consumer Services to move data center equipment to the center, etc. APPROPRIATION: $5,000,000.00

- Died in Governmental Oversight and Accountability

SB 320 by Sachs

Commercial Parasailing; Citing this act as the "White-Miskell Act"; requiring the operator of a vessel engaged in commercial parasailing to ensure that specified requirements are met; requiring the owner of a vessel engaged in commercial parasailing to obtain and maintain an insurance policy; requiring the operator to have a current and valid license issued by the United States Coast Guard; prohibiting commercial parasailing unless certain equipment is present on the vessel and certain weather conditions are met; requiring that a weather log be maintained and made available for inspection, etc.

- In returning messages
- Concurred in 1 amendment(s) (595839) -SJ 1033
- Passed as amended; YEAS 38 NAYS 0 -SJ 1036
- Passed; Ordered engrossed, then enrolled -SJ 1036

SB 372 by Galvano

Developments of Regional Impact; Deleting certain exemptions for dense urban land areas; revising the exemption for any proposed development within a county that has a population of at least 300,000 and an average population of at least 400 people per square mile, etc.

- Died in Rules

SB 374 by Detert

Growth Management; Revising restrictions on an initiative or referendum process with regard to local comprehensive plan amendments and map amendments, etc.

• Passed; Ordered enrolled -SJ 880

SB 376 by Soto

Local Land Development Regulations; Requiring local land development regulations to provide for sinkhole testing, etc.

• Died in Community Affairs

SB 600 by Dean

Administrative Procedures; Requiring that a final order in specified administrative proceedings award all reasonable costs and attorney fees to a prevailing party under certain circumstances; revising the criteria used by an administrative law judge to determine if a party participated in a proceeding for an improper purpose, etc.

• Died in Governmental Oversight and Accountability

SB 606 by Clemens

Governmental Ethics; Requiring elected municipal officials to participate in annual ethics training; deleting the requirement that each reporting individual or procurement employee file a quarterly statement disclosing certain gifts with the Commission on Ethics; authorizing a reporting individual or procurement employee to request an advisory opinion regarding application of the section; requiring the commission to impose a civil penalty on a person who has filed a complaint with malicious intent under certain circumstances, etc.

• Died in Ethics and Elections

SB 612 by Hays

Preference in the Award of State Contracts; Expanding provisions that require an agency, university, college, school district, or other political subdivision of the state to provide preferential consideration to a Florida business in awarding competitively bid contracts to purchase personal property to include the purchase of construction services; requiring counties and municipalities to provide such preferential consideration, etc.

• Died in Appropriations

SB 846 by Appropriations

Governmental Ethics; Specifying the applicability of certain provisions of the Code of Ethics for Public Officers and Employees to members of the executive council of the Florida Clerks of Court Operations Corporation; requiring elected municipal officers to participate in annual ethics training; prohibiting a person from lobbying a water management district before registering; specifying the applicability of certain provisions of the Code of Ethics for Public Officers and Employees to the president, senior managers, and members of the board of directors of Enterprise Florida, Inc., etc.

- Concurred in 1 amendment(s) (957295)
- CS passed as amended; YEAS 38 NAYS 0
- Passed; Ordered engrossed, then enrolled

SB 926 by Simpson

Wage Theft; Expanding the original jurisdiction of county courts; describing the occurrence of a wage theft; authorizing an aggrieved employee to initiate a civil action for wage theft; granting county courts original and exclusive jurisdiction over actions involving wage theft; preempting regulation of wage theft to the state after a specified date; exempting certain counties, municipalities, and political subdivisions, etc.

- Died on Calendar

SB 956 by Appropriations

Environmental Regulation; Extending and renewing building permits and certain permits issued by the Department of Environmental Protection or a water management district, including any local government-issued development order or building permit issued pursuant thereto; authorizing the Department of Environmental Protection to grant areawide permits for certain structures; prohibiting certain new concession agreements in state parks with limited shorelines; requiring the department to promote the public use of aquatic preserves and their associated uplands, etc.

- Read 2nd time -SJ 985
- Substituted CS/CS/HB 791 -SJ 985
- Laid on Table, refer to CS/CS/HB 791 -SJ 985

SB 974 by Transportation

Towing of Vehicles and Vessels; Authorizing an owner or lessee of real property to have a vehicle or vessel removed from the property without certain signage if the vehicle or vessel has remained on the property for a specified period; providing that the specified period does not begin until a certain notice is physically attached to the vehicle or vessel; providing requirements for the notice, etc.

• Died in Community Affairs

SB 1094 by Environmental Preservation and Conservation

Aquatic Preserves; Creating the Nature Coast Aquatic Preserve; designating the preserve for inclusion in the aquatic preserve system; outlining the authority of the Board of Trustees of the Internal Improvement Trust Fund in respect to the preserve; requiring the board to adopt rules to carry out this section; prohibiting the establishment and management of the preserve from infringing upon the riparian rights of upland property owners adjacent to or within the preserve, etc.

• Died in Appropriations

SB 1126 by Environmental Preservation and Conservation

Fish and Wildlife Conservation Commission; Providing that a boating safety course may be offered in a classroom or online; eliminating an exemption from boating safety education requirements for boating law violators; repealing provisions relating to a charge to be applied to areas covered by cooperative agreements with the United States Forest Service over and above the license fee for hunting; conforming provisions relating to the change in responsibility for providing developmental disabilities services from the Department of Children and Families to the Agency for Persons with Disabilities; clarifying the activities authorized under an annual military gold sportsman's license, etc.

• Read 2nd time -SJ 1022
• Amendment(s) failed (255208) -SJ 1022
• Substituted CS/CS/HB 955 -SJ 1022
• Laid on Table, refer to CS/CS/HB 955 -SJ 1022

SB 1336 by Evers

Lionfish; Providing a definition; prohibiting the importation and aquaculture of lionfish and the sale of illegally imported lionfish; providing penalties; authorizing the Fish and Wildlife Conservation Commission and the Department of Agriculture and Consumer Services to adopt rules, etc.

• Died in Agriculture

SB 1464 by Simpson

Environmental Regulation; Revising procedures for the transmittal and adoption of a comprehensive plan or plan amendment; exempting certain lessees of sovereignty submerged lands from lease renewal processing fees under certain circumstances; specifying the authorized duration of consumptive use permits for certain developments; encouraging certain counties to establish water well construction advisory boards; providing that proof of insurance satisfies a specified requirement to obtain a mitigation

bank permit; requiring that certain criteria be incorporated into a regional water supply plan, etc.

• Died in Community Affairs

SB 1518 by Bradley

Special Districts; Requiring the Department of Economic Opportunity to publish certain information on its website with respect to special districts; creating part II of ch. 190, F.S., relating to the conversion of water control districts to community development districts; authorizing the governing board of a water control district to conduct a referendum on the question of whether the district may exercise certain special powers of a community development district, etc.

• Died in Commerce and Tourism

SB 1594 by Bradley

Vessel Safety; Authorizing the Fish and Wildlife Conservation Commission and certain law enforcement agencies or officers to relocate or remove vessels that unreasonably or unnecessarily constitute a navigational hazard or interfere with another vessel; exempting the commission or a law enforcement agency or officer from liability for damages to such a vessel caused by the relocation or removal thereof; providing an exception; requiring the Department of Legal Affairs to represent the commission in actions to recover such costs; authorizing the commission and certain law enforcement agencies and officers to relocate or remove a derelict vessel from public waters, etc.

• Read 2nd time -SJ 926
• Substituted CS/CS/HB 1363 -SJ 926
• Laid on Table, refer to CS/CS/HB 1363 -SJ 926

SB 1626 by Lee

Administrative Procedures; Providing conditions under which a proceeding is not substantially justified for purposes of an award under the Florida Equal Access to Justice Act; authorizing certain parties to provide to an agency their understanding of how certain rules apply to specific facts; authorizing the administrative law judge to award attorney fees under certain circumstances; authorizing a party to request mediation of a rule challenge and declaratory statement proceedings, etc.

• Died in Judiciary

SB 1632 by Stargel

Special Districts; Revising duties of the Legislative Auditing Committee; specifying applicability of procedures regarding suspension and removal of a member of the

governing body of a special district; deleting provisions relating to the application of a special district to amend its charter; revising the circumstances under which the Department of Economic Opportunity may declare a special district inactive; repealing specified provisions relating to the Community Improvement Authority Act; requiring the Legislative Auditing Committee to provide notice of the failure of special districts to file certain required reports to certain persons and bodies, etc.

- Passed; Ordered enrolled -SJ 778

SB 1706 by Governmental Oversight and Accountability

Administrative Procedures; Revising requirements for the content of notices of rule development; revising the scope of public workshops to include information gathering for the preparation of statements of estimated regulatory costs; authorizing electronic delivery of notices to persons who have requested advance notice of agency rulemaking proceedings; revising requirements for substantially affected persons to submit proposals for lower cost regulatory alternatives to a proposed rule following a notice of change; revising requirements for an agency's consideration of such lower cost regulatory alternatives, etc.

- Died in Judiciary

2014 House Bills

HB 189 by Boyd(Similar SB 374)

Growth Management: Revising restrictions on initiative or referendum process in regard to local comprehensive plan amendments & map amendments.

- Substituted SB 374 -HJ 841
- Laid on Table, refer to SB 374 -HJ 841

HB 241 by Gaetz(Similar SB 372)

Developments of Regional Impact: Deletes certain exemptions for dense urban land areas.

- Died in Economic Development and Tourism Subcommittee

HB 315 by Stark (Identical SB 376)

Local Land Development Regulations: Requires local land development regulations to include sinkhole testing.

- Died in Economic Development & Tourism Subcommittee

HB 389 by Combee (Similar SB 842)

Ad Valorem Taxation: Creates ad valorem tax exemption for certain mobile home lots; provides requirements; provides responsibilities of DOR; provides duties of property appraisers; provides legislative intent.

- Died in Finance & Tax Subcommittee on

HB 395 by Perry

Growth Management: Requires local governments to address protection of private property rights in their comprehensive plans; requires comprehensive plan to include property rights element that addresses certain objectives; requires counties & municipalities to adopt land development regulations consistent with property rights element.

- Died in Economic Development & Tourism Subcommittee

HB 617 by Wood

Towing of Vehicles & Vessels: Authorizes owner or lessee of real property to have vehicle or vessel removed from property without certain signage if vehicle or vessel has remained on property for specified period.

- Died in Transportation

HB 655 by Hood (Similar SB 606)

Governmental Ethics: Requires elected municipal officials to participate in annual ethics training; revises format for disclose of abstentions & conflicts by state, local, and appointed public officers; provides for issuance of advisory opinions upon request of reporting individual or procurement employee regarding honoraria & prohibited gifts; requires Commission on Ethics to impose civil penalty on person who has filed complaint with malicious intent; requires commission to dismiss complaint against state, county, municipal, or school district officer or employee if certain circumstances are met; prohibits political subdivision from imposing additional standards of conduct upon officers & employees of another political subdivision.

- Died in Ethics & Elections Subcommittee

HB 703 by Patronis

Environmental Regulation: Specifies authority of counties to enforce certain wetlands, springs protection, & stormwater ordinances, regulations, & rules; provides vote requirements for adoption of certain elements of local government comprehensive plans & plan amendments; prohibits local governments from rescinding certain comprehensive plan amendments; authorizes durations & multiple commencement dates for certain consumptive use permits; requires delegated local governments to follow certain criteria & standards for well construction; provides that proof of insurance meets certain mitigation bank permit requirements; requires certain criteria to be incorporated into regional water supply plans; provides conditions under which DEP is required to establish certain greenhouse gas performance standards & repeal & revise certain rules; establishes solid waste landfill closure account within Solid Waste Management Trust Fund.

- Favorable by Agriculture and Natural Resources Appropriations Subcommittee; YEAS 8 NAYS 4 -HJ 427
- Died in State Affairs Committee -HJ 427

HB 791 by Renuart

Coastal Management: Revises permit requirements; authorizes DEP to grant areawide permits for certain structures; requires DEP to promote public use of aquatic preserves; authorizes DEP to grant certain privileges, leases, concessions, & permits & to receive funds for specified purposes.

- Died in returning messages

HB 801 by Fitzenhagen (Similar SB 612)

Preference in Award of State Contracts: Expands provisions to require certain political subdivisions to provide preferential consideration to Florida businesses when awarding competitively bid contracts for construction services; requires counties & municipalities to provide preferential consideration if state appropriations are used; specifies that grant preference supersedes local ordinances that restrict certain contractors from competing for an award; requires certain political subdivisions to disclose whether payment for competitively awarded contract will come from state appropriations.

- Died in Local and Federal Affairs Committee -HJ 336

HB 955 by State Affairs Committee

Fish and Wildlife Conservation Commission; Revises provisions relating to hunting & fishing licenses, permits, & authorizations, boating safety courses, & use of moneys collected from vessel registration fees; repeals provisions relating to cooperative

agreements with U.S. Forest Service, certain spiny lobster licenses, gear license fees, & certain haul seine & trawl permits.

- Passed; Ordered enrolled

HB 985 by Santiago

Public Meetings; Requires that notice of public meeting include description of each matter to be considered at such meeting; prohibits board or commission of agency or authority of state, county, municipality, or political subdivision from acting upon matter at public meeting which was not included in notice of such meeting; provides exception for certain emergency matters upon approval of super majority of members of board or commission; provides applicability.

- Died in Government Operations Subcommittee

HB 1023 by Economic Affairs Committee

Canaveral Port District, Brevard County; Codifies, amends, reenacts, and repeals the district's special acts.

- Passed; Ordered enrolled

HB 1069 by Raschein

Lionfish; Prohibits importation, aquaculture, & sale of illegally imported lionfish; provides penalties; authorizes FWCC & DACS to adopt rules.

- Died in Agriculture and Natural Resources Subcommittee

HB 1075 by Adkins

Ocean Highway and Port Authority, Nassau County; Revises weight limit on break-bulk freight.

- Died in Local and Federal Affairs Committee

HB 1123 by Agriculture and Natural Resources Appropriations Subcommittee

Aquatic Preserves; Creates Nature Coast Aquatic Preserve; provides powers & duties of the Board of Trustees of the Internal Improvement Trust Fund; provides certain riparian rights; provides for enforcement & applicability; provides appropriations & authorizes positions. APPROPRIATION: $132,489.00

• Died on Calendar

HB 1129 by Local and Federal Affairs Committee

Special Districts; Exempts conversion of certain water control districts into community development districts from specific charter requirements; requires DEO to publish certain information on its website; authorizes department to coordinate with DOS for certain purposes; creates an exception for conversion of certain water control districts; creates an exception for establishment of certain community development district; requires districts created by conversion of water control districts to record notice of establishment; exempts acts creating districts by conversion of water control districts; creates part II of chapter 190, F.S., relating to conversion of water control districts to community development districts; authorizes popularly elected governing board of water control district to conduct certain referenda; provides referendum requirements & procedures; creates prohibition on enacting special laws granting additional powers without prior referendum; authorizes conversion of water control district to community development district by special or local legislation.

• Died on Calendar -HJ 481

HB 1229 by Rooney

Port of Palm Beach District; Codifies the district charter.

• Died in State Affairs Committee -HJ 475

HB 1237 by Metz

Special Districts; Reorganizes chapter 189, F.S., relating to special districts, into eight parts; transfers & renumbers various sections within chapter; revises duties of Legislative Auditing Committee; specifies applicability of procedures regarding suspension & removal of member of governing body of special district; revises when special district may be declared inactive; prohibits special districts declared inactive from collecting taxes, fees, or assessments; provides for costs of litigation & reasonable attorney fees under certain conditions; renames Special District Information Program Special District Accountability Program; revises provisions related to failure of special district to file certain reports or information; revises notification requirements; provides for deposit of administration fees into Operating Trust Fund rather than Grants & Donations Trust Fund; requires special districts to be treated as municipalities for certain purposes; requires special districts to maintain an official Internet website for certain purposes.

• Substituted CS/CS/CS/SB 1632 -HJ 803
• Laid on Table, refer to CS/CS/CS/SB 1632 -HJ 803

HB 1281 by Fresen

Preference in Award of Governmental Contracts; Provides preference for local businesses in awarding competitively bid contracts for construction, printing, & goods & contractual services.

- Died in Government Operations Subcommittee

HB 1355 by Adkins

Administrative Procedures; Provides conditions under which proceeding is not substantially justified for purposes of award under Florida Equal Access to Justice Act; provides for publication of notices of rule development & of rules filed for adoption; provides additional notice of rule development, proposals, & adoptions; revises numerous provisions addressing challenges to agency action & agency statements, rules, & proposed rules; revises numerous provisions to authorize or require ALJ to award attorney fees & costs in administrative actions; requires ALJ to make certain findings & enter final order on validity of certain rules & alleged unadopted rules; provides for stay of proceedings not involving disputed issues of fact under certain circumstances; provides that final order terminates stay; provides for award of attorney fees & costs by appellate court in specified administrative challenges; provides for attorney fees & costs incurred in litigating right to attorney fees & costs in administrative actions; authorizes extensions for filing certain appeals or petitions.

- Died in Appropriations Committee -HJ 439

HB 1363 by Van Zant

Vessel Safety; Provides for FWCC & certain law enforcement agencies or officers to relocate or remove vessels that constitute navigation hazard or interfere with another vessel.

- Passed; Ordered enrolled

HB 7001 by Rulemaking Oversight & Repeal Subcommittee, Santiago (Compare HB 7031)

Administrative Procedures: Revises deadline to propose rules implementing new laws; revises requirements for periodic review of agency rules; requires agencies to annually review rulemaking & prepare & publish regulatory plans; requires publication by specified dates of notices of rule development & proposed rules necessary to implement new laws; provides for suspension of agency's rulemaking authority for failure to comply with specified provisions; repeals provisions relating to legislative review of agency rules in effect on or before specified date & Internet-based public survey of regulatory impacts; provides for recision of suspension of rulemaking authority under such repealed provisions.

- Died on Calendar

HB 7073 by Santiago

Information Technology Governance; Creates Agency for State Technology (AST); provides for appointment of executive director of AST, who shall serve as chief information officer; transfers certain assets and authority of Agency for Enterprise Information Technology, Northwood Shared Resource Center, & Southwood Shared Resource Center to AST; establishes single state data center; revises schedules for consolidation of state agency data centers & computing facilities into state data center; provides additional duties of FDLE Cybercrime Office; repeals provisions for statewide e-mail service; provides appropriations. APPROPRIATION: $4,810,994.00

- Passed; Ordered enrolled

HB 7107 by Richardson

Administrative Procedures; Revises requirements for notice of rule development, notice of proposed rule, & notice of change; authorizes electronic delivery of certain notices; revises requirements for certain agency filings with JAPC; requires certain agency personnel to attend public hearings; requires agency to publish notice of convening separate proceeding & tolling rulemaking deadlines during separate proceedings; revises requirements for substantially affected persons to submit proposals for lower cost regulatory alternatives following notice of change; revises requirements for agency's consideration of lower cost regulatory alternatives; provides addition documents to be listed on agency website under certain conditions; provides additional requirements for calculation of estimated regulatory costs; creates presumption of adverse impact on small business; requires petition to establish community development district to include certain economic impacts statement.

- Died in Governmental Oversight and Accountability

HB 7116 by Governmental Oversight and Accountability

Administrative Procedures; Revising the deadline to propose rules implementing new laws; revising requirements for the periodic review of agency rules; requiring agencies to annually review rulemaking and prepare and publish regulatory plans; specifying requirements for such plans; requiring an agency to include a certification of the regulatory plan in a legislative budget request; requiring an agency to file a certification with the Administrative Procedures Committee, etc.

- Died in Governmental Oversight and Accountability

HB 7118 by Governmental Oversight and Accountability

Administrative Procedures; Revising requirements for the content of notices of rule development; creating a presumption of adverse impact on small business in specified circumstances; requiring certain agency personnel to attend public hearings on proposed rules; revising requirements for substantially affected persons to submit proposals for lower cost regulatory alternatives to a proposed rule following a notice of change, etc.

- Died in Governmental Oversight and Accountability

ALCALDE & FAY

GOVERNMENT & PUBLIC AFFAIRS CONSULTANTS

May 1, 2014

MEMORANDUM

TO: Mark Crosley, Executive Director

FROM: Jim Davenport

SUBJECT: Federal Legislative Report

WATER RESOURCES DEVELOPMENT ACT

The Water Resources Development Act (WRDA) conference report should be released in a couple of days. As you know, the House WRDA (H.R. 3080) adopted several of the concepts we offered to the House Transportation & Infrastructure Committee on behalf of FIND and supported by the Atlantic Intracoastal Waterway Association. Section 218 of H.R. 3080 authorizes and assessment of operation and maintenance needs of the Atlantic Intracoastal Waterway.

This legislation is a positive step toward obtaining additional attention to and funding for the Intracoastal Waterway, because the Corps is required to examine the entire AIWW system from Virginia to Florida, determine the funding needs, and then report those needs to Congress. Likewise, "recreation purposes" will be assessed, which will certainly highlight the unique marine economy in Florida.

We will share a copy of WRDA with you once we have it.

MAGNUSON STEVENS ACT REAUTHORIZATION AND NATIONAL MARINE FISHERIES SERVICE

We have sent a couple versions of legislative language to the Senate Commerce, Science and Transportation Committee's Subcommittee on Oceans, Atmosphere, Fisheries and Coast Guard seeking to ease mitigation for maintenance requirements resulting from Essential Fish Habitat (EFH) consultation. As you know, the Committee is working on Magnuson Stevens Reauthorization legislation, which would be the appropriate vehicle for such language.

2111 WILSON BOULEVARD 8TH FLOOR ARLINGTON, VA 22201 PH (703) 841-0626 FAX (703) 243-2874

We have been in regular communication with staff and will continue to discuss language as the Committee moves forward with a bill. In the meantime, we have contacted the National Marine Fisheries Service (NMFS) Southeast Region, who has told us that there are no model agreements between the USACE and NMFS that allow routine maintenance dredging activities to occur without mitigation, even for ports.

At your direction, we will schedule a call or meeting with NMFS in Florida to begin discussions on mitigation for maintenance while we continue to work to obtain language in the Magnuson Stevens bill.

2111 Wilson Boulevard 8th Floor Arlington, VA 22201 Ph (703) 841-0626 Fax (703) 243-2874

Mark Crosley

From: James Davenport <davenport@alcalde-fay.com>
Sent: Tuesday, May 06, 2014 11:30 AM
To: Mark Crosley
Subject: EPA/Corps Proposed Waters of the US Rule
Attachments: WOTUSCommentExtension.pdf; Waters of the US. Federal Register. 4.21.2014.pdf; CRS.Waters of the US.3.27.14.pdf

Mark – I inadvertently left this out of your last report. The EPA/Corps is proposing new rules to define waters of the U.S. Since FIND already has to request permits for your dredging activity, this may have no impact on you. But new waters would fall under EPA/Corps jurisdiction, and it's probably worth a review of my summary (which I sent to city and county clients) below.

- Jim

PROPOSED RULE TO DEFINE "WATERS OF THE U.S."

Overview

We are writing to provide you with a brief summary of a **proposed rule** to define "waters of the U.S." The term "waters of the U.S." is a key phrase used within the Clean Water Act (CWA) to determine what waters are considered "navigable waters" and fall under federal CWA oversight as opposed to state oversight. This rule is proposed jointly by the Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers (USACE), and will impact city and county-owned and maintained infrastructure such as roadside ditches and flood-control channels. The proposed rule defines a number of key terms including tributary, other waters, neighboring, riparian area, floodplain and significant nexus.

According to the EPA/USACE, the proposed rule would revise the existing regulatory definition of "waters of the U.S." consistent with Supreme Court rulings and science concerning the interconnectedness of tributaries, wetlands, and other waters to downstream waters and effects of these connections on the chemical, physical, and biological integrity of downstream waters. Waters that are "jurisdictional" are subject to the multiple regulatory requirements of the CWA: standards, discharge limitations, permits, and enforcement. Non-jurisdictional waters, in contrast, do not have the federal legal protection of those requirements.

EPA/USACE Guidance and Response by Local Governments

In April 2011, EPA/USACE proposed guidance on policies for determining CWA jurisdiction to replace guidance previously issued in 2003 and 2008. The guidance was intended to lessen confusion over the Supreme Court's 2001 and 2006 rulings that interpreted the regulatory scope of the CWA more narrowly than previously rulings. Most state and local officials were supportive of clarifying the scope of CWA-regulated waters, but were concerned that expanding the CWA's scope could impose costs on states and localities as their own actions (e.g., transportation projects) become subject to new requirements. Most environmental advocacy groups welcomed the proposed guidance. The 2014 proposed rule would replace the existing 2003 and 2008 guidance, which remains in effect because the 2011 proposed guidance was not finalized.

New Waters That Would be Jurisdictional under the Rule

The following waters would be jurisdictional under the rule:

- Waters susceptible to interstate commerce, known as traditional navigable waters (no change from current rules);
- All interstate waters, including interstate wetlands (no change from current rules);
- The territorial seas (no change from current rules);
- Impoundments of the above waters or a tributary, as defined in the rule (no change from current rules);
- Tributaries of the above waters (more inclusive than current rules because "tributary" is newly and broadly defined); and
- All waters, including wetlands, adjacent to a water identified in the above categories (by including all adjacent waters—not simply adjacent wetlands—the proposal is more inclusive than current rules; these waters are considered jurisdictional under the rule because they have a ***significant nexus*** to a traditional navigable water, interstate water, or the territorial seas).

Significant Nexus

The concept of significant nexus is critical because courts have ruled that, to establish CWA jurisdiction between waters, there needs to be "some measure of the significance of the connection for downstream water quality," as Justice Kennedy found in the 2006 *Rapanos* case. As the EPA/USACE proposes, significant nexus is a determination of the agencies in light of the law and science. Functions that might demonstrate significant nexus include sediment trapping and retention of flood waters. In the proposed rule, the agencies note that a hydrologic connection is not necessary to demonstrate significant nexus, because the function may be demonstrated even in the absence of a connection (e.g., pollutant trapping is another such function.)

Other Waters

Beyond the categories of waters that would be categorically jurisdictional under the proposed rule is a category sometimes referred to as "other waters." The regulatory term "other waters" applies to wetlands and non-wetland waters that do not fall into the category of waters susceptible to interstate commerce, interstate waters, the territorial seas, tributaries, or waters adjacent to waters in one of these four categories. In the proposed rule, "other waters," including wetlands that are adjacent to jurisdictional water are categorically jurisdictional. Non-adjacent "other waters" and wetlands will continue to require a case-by-case determination of significant nexus. According to the analysis by the EPA/USACE, 17% of other waters would be determined to be jurisdictional under changes in the proposal.

The proposed rule also lists waters and features that would not be jurisdictional, such as prior converted cropland and certain ditches. It makes no change to and does not affect existing statutory and regulatory permit exclusions, such as exemptions for normal farming and ranching activities.

Exclusions of Specified Waters from "Waters of the U.S"

The second section of the proposed rule excludes specified waters from the definition of "waters of the U.S." The listed waters and features would not be jurisdictional even if they would otherwise be included within categories that are jurisdictional. The exclusions are:

- waste treatment systems, including treatment ponds or lagoons, that are designed to meet CWA requirements;
- prior converted cropland;
- a list of features that have been excluded by long-standing practice and guidance and would now be excluded by rule, such as artificially irrigated areas that would revert to upland should application of irrigation water to the area cease (see Table 1 of CRS report for the full list); and
- two types of ditches: (1) ditches that are excavated wholly in uplands, drain only uplands or non-jurisdictional waters, and have less than perennial (i.e., permanent) flow; and (2) ditches that do not contribute flow, either directly or through another water, to a traditional navigable water, interstate water, impoundment, or the territorial seas. Other ditches, if they meet the rule's definition of "tributary," would continue to be "waters of the United States"—a point of much controversy with some stakeholders.

EPA/USACE Estimated Impacts: Costs and Benefits

In an Economic Analysis document that accompanies the proposed rule, EPA/USACE estimate that approximately 3% of U.S. waters would additionally be subject to CWA jurisdiction as a result of the proposed rule. The estimated increase includes about 17% of "other waters" that were not jurisdictional under existing regulations and guidance.

According to the analysis, costs to regulated entities and governments (federal, state, and local) are likely to increase. Direct and indirect costs would result from the following:

- additional permit application expenses (for CWA §404 permitting, stormwater permitting for construction and development activities, permitting of pesticide discharges and confined animal feeding operations (CAFOs) for discharges to waters that would now be determined jurisdictional)
- additional requirements for oil storage and production facilities needing to develop and implement spill prevention, control and countermeasure (SPCC) plans;
- Federal and state government administration and processing of additional permits; and
- compensatory mitigation requirements for permit impacts (if applicable), affecting land developers and state and local governments.

In all, the agencies estimate that incremental costs associated with the rule range from $162 million to $279 million per year.

The agencies believe that benefits accruing from the proposed rule include the value of ecosystem services provided by the waters and wetlands protected as a result of CWA requirements, such as:

- habitat for aquatic and other species;
- support for recreational fishing and hunting;
- flood protection.
- government savings on enforcement expenses, because the rule is intended to provide greater regulatory certainty, thus reducing the need for government enforcement.

In all, the agencies estimate that benefits of the proposed rule range from $318 million to $514 million per year. However, they note that "there is uncertainty and limitations associated with the results," due to data and information gaps, as well as analytic challenges. The analysis does not quantify all possible costs and benefits.

Enclosed are the proposed rule and a Congressional Research Service (CRS) Report.

Next Steps: Submitting Comments to EPA

We would encourage you to share this material with your staff and let us know if you would like to submit comments to the EPA in opposition to this proposed rule.

Written comments to EPA and USACE are due on July 21. 2014. Submit your comments, identified by Docket ID No. EPA–HQ– OW–2011–0880, by one of the following methods:

- Federal eRulemaking Portal: http://www.regulations.gov. Follow the instructions for submitting comments.
- E-mail: ow-docket@epa.gov. Include EPA–HQ–OW–2011–0880 in the subject line of the message.
- Mail: Send the original and three copies of your comments to: Water Docket, Environmental Protection Agency, Mail Code 2822T, 1200 Pennsylvania Avenue, NW, Washington, DC 20460, Attention: Docket ID No. EPA–HQ–OW–2011–0880.

JIM DAVENPORT, ESQ., PARTNER

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May 1, 2014

Ms. Donna Downing
Jurisdiction Team Leader, Wetlands Division
U.S. Environmental Protection Agency
Water Docket, Room 2822T
1200 Pennsylvania Avenue NW
Washington, DC 20460

Ms. Stacey Jensen
Regulatory Community of Practice
U.S. Army Corps of Engineers
441 G Street NW
Washington, DC 20314

RE: Proposed Rule on "Definition of "Waters of the United States Under the Clean Water Act," Docket No. EPA-HQ-OW-2011-0880

Dear Ms. Downing and Ms. Jensen:

On behalf of the nation's mayors, cities and counties, we respectfully request that the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (Corps) extend the public comment period for the proposed rule on *"Definition of Waters of the United States" Under the Clean Water Act,"* as published in the Federal Register on April 21, 2014. We thank the agencies for their efforts to educate our members on the proposal; however, due to its technical and complex nature and the potential unintended consequences this proposal could have on our communities, we request that the comment period be extended by 90 days so that we and the communities we represent have ample opportunity to develop and submit comments that are as thoughtful and thorough as possible.

The proposed rule redefines the current "waters of the U.S." definition in the Clean Water Act (CWA) in a way that will impact all CWA programs according to the agencies' *Economic Analysis of Proposed Revised Definition of Waters of the U.S.* Yet, according to the same analysis, the impact of this change in definition is largely unknown because the findings are "incomplete" due to the "many data and methodological limitations, as well as the inherent assumptions in each component of the analysis."

It is our belief that changes to the CWA definition of "waters of the U.S." will have far-reaching effects and could have unintended consequences to a number of state and local CWA programs, including the National Pollutant Discharge Elimination System (NPDES), total maximum daily load (TMDL) and other water quality standards programs, state water quality certification process,

and Spill Prevention, Control and Countermeasure (SPCC) programs. Because the agencies' analysis is "incomplete," our organizations need additional time to further develop an economic analysis to help us more completely understand how all waters will be impacted, beyond the current analysis of Section 404 permit applications.

For all the foregoing reasons and to give all stakeholders adequate time to compile supporting data and information and to fully study and understand potential impacts, we request a 90 day extension to the public comment period. If you have any questions, please do not hesitate to contact any of our staff: Judy Sheahan (USCM) at jsheahan@usmayors.org; Carolyn Berndt (NLC) at berndt@nlc.org; or Julie Ufner (NACo) at jufner@naco.org.

Sincerely,

Tom Cochran
CEO and Executive Director
The U.S. Conference of Mayors

Clarence E. Anthony
Executive Director
National League of Cities

Matthew D. Chase
Executive Director
National Association of Counties

Congressional Research Service
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EPA and the Army Corps' Proposed Rule to Define "Waters of the United States"

Claudia Copeland
Specialist in Resources and Environmental Policy

March 27, 2014

Congressional Research Service
7-5700
www.crs.gov
R43455

CRS REPORT
Prepared for Members and
Committees of Congress

Summary

On March 25, 2014, the Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (Corps) jointly proposed a rule defining the scope of waters protected under the Clean Water Act (CWA). The proposed rule would revise regulations that have been in place for more than 25 years. Revisions are proposed in light of Supreme Court rulings in 2001 and 2006 that interpreted the regulatory scope of the CWA more narrowly than previously, but created uncertainty about the precise effect of the Court's decisions.

In April 2011, EPA and the Corps proposed guidance on policies for determining CWA jurisdiction to replace guidance previously issued in 2003 and 2008; all were intended to lessen confusion over the Court's rulings. The 2011 proposed guidance was extremely controversial, with some groups contending that it represented a massive federal overreach beyond the agencies' statutory authority. Most environmental advocacy groups welcomed the proposed guidance, although some would have preferred a stronger document. The 2014 proposed rule would replace the existing 2003 and 2008 guidance, which remains in effect because the 2011 proposed guidance was not finalized.

According to the agencies, the proposed rule would revise the existing regulatory definition of "waters of the United States" consistent with legal rulings—especially the Supreme Court cases—and science concerning the interconnectedness of tributaries, wetlands, and other waters to downstream waters and effects of these connections on the chemical, physical, and biological integrity of downstream waters. Waters that are "jurisdictional" are subject to the multiple regulatory requirements of the CWA: standards, discharge limitations, permits, and enforcement. Non-jurisdictional waters, in contrast, do not have the federal legal protection of those requirements.

This report describes the March 25 proposed rule and includes a table comparing the existing regulatory language that defines "waters of the United States" with that in the proposal. The proposed rule is particularly focused on clarifying the regulatory status of waters located in isolated places in a landscape, the types of waters with ambiguous jurisdictional status following the Supreme Court's ruling. The proposal does not modify some categories of waters that currently are jurisdictional by rule (traditional navigable waters, interstate waters and wetlands, the territorial seas, and impoundments). Changes proposed in the proposed rule would increase the asserted geographic scope of CWA jurisdiction, in part as a result of the agencies' expressly declaring some types of waters categorically jurisdictional (such as all waters adjacent to a jurisdictional water), and also by application of new definitions, which give larger regulatory context to some types of waters, such as tributaries. The proposal does not identify specific waters—particular streams or ponds—that would be jurisdictional as a result of the rule.

Beyond the categories of waters that would be categorically jurisdictional under the proposed rule is a category sometimes referred to as "other waters." The regulatory term "other waters" applies to wetlands and non-wetland waters such as prairie potholes that are not considered traditionally navigable or meet other of the proposed rule's jurisdictional definitions. Much of the controversy since the Supreme Court rulings has focused on the degree to which "other waters" are jurisdictional. According to the agencies' analyses, 17% of these "other waters" would be determined to be jurisdictional under changes in the proposal. The proposed rule also lists waters and features that would not be jurisdictional, such as prior converted cropland and certain ditches.

It makes no change to and does not affect existing statutory and regulatory permit exclusions, such as exemptions for normal farming and ranching activities.

The agencies believe that the proposed rule does not exceed the CWA's coverage or protect any new types of waters that have not been protected historically. That is, while it would enlarge jurisdiction beyond that under the 2003 and 2008 EPA-Corps guidance, which the agencies believe was narrower than is justified by science and the law, they believe that it would not enlarge jurisdiction beyond what is consistent with the Supreme Court's narrow reading of jurisdiction. Others may disagree. Overall, the agencies estimate that approximately 3% of U.S. waters will additionally be subject to CWA jurisdiction as a result of the proposed rule (including additional "other waters"), compared with current field practice. EPA and the Corps estimate that costs of the proposed rule, resulting from additional permit application expenses, for example, range from $162 million to $279 million annually. Benefits from the rule, including the value of ecosystem services provided by waters and wetlands protected as a result of CWA requirements, such as flood protection, are estimated to range from $318 million to $514 million per year. They acknowledge uncertainties and limitations in the estimate of costs and benefits.

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Introduction

On March 25, 2014, the Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (Corps) jointly proposed a rule defining the scope of waters protected under the Clean Water Act (CWA). The proposed rule would revise regulations that have been in place for more than 25 years.[1] Revisions are proposed in light of Supreme Court rulings in 2001 and 2006 that interpreted the regulatory scope of the CWA more narrowly than previously, but created uncertainty about the precise effect of the Court's decisions.[2]

In April 2011, EPA and the Corps proposed guidance on policies for determining CWA jurisdiction to replace guidance previously issued in 2003 and 2008; all were intended to lessen confusion over the Court's rulings for the regulated community, regulators, and the general public. The guidance documents sought to identify, in light of the Court's rulings, categories of waters that remain jurisdictional, categories not jurisdictional, and categories that require a case-specific analysis to determine if CWA jurisdiction applies. The 2011 proposed guidance identified similar categories as in the 2003 and 2008 documents, but it would have narrowed categories that require case-specific analysis in favor of asserting jurisdiction categorically for some types of waters. The 2014 proposed rule would replace the existing 2003 and 2008 guidance, which remains in effect because the 2011 proposed guidance was not finalized.[3]

The 2011 proposed guidance was extremely controversial, especially with groups representing property owners, land developers, and the agriculture sector, who contended that it represented a massive federal overreach beyond the agencies' statutory authority. Most state and local officials were supportive of clarifying the scope of CWA-regulated waters, but some were concerned that expanding the CWA's scope could impose costs on states and localities as their own actions (e.g., transportation projects) become subject to new requirements. Most environmental advocacy groups welcomed the proposed guidance, which would more clearly define U.S. waters that are subject to CWA protections but would not, they said, expand the reach of the law beyond the Supreme Court's reading. Some in these groups favored even a stronger document. Still, both supporters and critics of the 2011 proposed guidance urged the agencies to replace guidance with revised regulations that define "waters of the United States." Three opinions in the 2006 Supreme Court *Rapanos* ruling similarly urged the agencies to initiate a rulemaking, as they now have done.

In Congress, a number of legislative proposals were introduced to bar EPA and the Corps from implementing the 2011 proposed guidance or developing regulations based on it; none of these proposals was enacted. Similar criticism followed almost immediately after release of the proposed rule on March 25, 2014, with some Members asserting that the proposed rule would result in job losses and would damage economic growth. Supporters of the Administration, on the other hand, defended the agencies' efforts to protect U.S. waters and reduce frustration that has

[1] Regulatory definition of "waters of the United States" is found at 33 C.F.R. § 328.3 (Corps) and 40 C.F.R. § 122.2 (EPA). The term is similarly defined in other EPA regulations, as is the term "navigable waters." See **Table 1**.

[2] Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers (SWANCC), 531 U.S. 159 (2001), and Rapanos v. United States, 547 U.S. 715 (2006).

[3] For background on the Supreme Court rulings, subsequent guidance, and other developments, see CRS Report RL33263, *The Wetlands Coverage of the Clean Water Act (CWA):* Rapanos *and Beyond*, by Robert Meltz and Claudia Copeland.

resulted from the unclear jurisdiction of the act.[4] Support was expressed by environmental and conservation organizations, among others.[5]

The CWA and the Proposed Rule

A prepublication copy of the proposed rule is available on EPA's website.[6] **Table 1** in this report provides a comparison of the current regulatory language that defines "waters of the United States" with language in the proposed rule.

The CWA protects "navigable waters," a term defined in the act to mean "the waters of the United States, including the territorial seas."[7] Waters that are jurisdictional are subject to the multiple regulatory requirements of the CWA: standards, discharge limitations, permits, and enforcement. Non-jurisdictional waters, in contrast, do not have the federal legal protection of those requirements. The act's single definition of "navigable waters" applies to the entire law. In particular, it applies to federal prohibition on discharges of pollutants except in compliance with the act's requirements (§301), requirements for point sources to obtain a permit prior to discharge (§§402 and 404), water quality standards and measures to attain them (§303), oil spill liability and oil spill prevention and control measures (§311), certification that federally permitted activities comply with state water quality standards (§401), and enforcement (§309). It impacts the Oil Pollution Act and other environmental laws, as well.[8] The CWA leaves it to the agencies to define the term "waters of the United States," which EPA and the Corps have done several times, most recently in 1986.

According to the agencies, the proposed rule would revise the existing regulatory definition of "waters of the United States" consistent with legal rulings—especially the recent Supreme Court cases—and science concerning the interconnectedness of tributaries, wetlands, and other waters to downstream waters and effects of these connections on the chemical, physical, and biological integrity of downstream waters. It is particularly focused on clarifying the regulatory status of waters located in isolated places in a landscape, the types of waters with ambiguous jurisdictional status following the Supreme Court's ruling. In developing the proposed rule, EPA and the Corps relied on a draft synthesis of more than 1,000 published and peer-reviewed scientific reports; the synthesis discusses the nature of connectivity and effects of streams and wetlands on downstream waters.[9] This draft assessment document is under review by EPA's Science Advisory Board

[4] Anthony Adragna and Amena Saiyid, "Republicans Contend EPA Overreached on Clean Water Act Jurisdiction Proposal," *Daily Environment Report*, vol. 58 (March 26, 2014), pp. A-7.

[5] U.S. Environmental Protection Agency, "Here's What They're Saying About the Clean Water Act Proposed Rule," press release, March 26, 2014, http://yosemite.epa.gov/opa/admpress.nsf/3881d73f4d4aaa0b85257359003f5348/3f954c179cf0720985257ca7004920fa!OpenDocument.

[6] Environmental Protection Agency and Department of Defense, Department of the Army, Corps of Engineers, *Definition of "Waters of the United States" Under the Clean Water Act, Proposed Rule* (prepublication version), http://www2.epa.gov/uswaters/definition-waters-united-states-under-clean-water-act. Official publication occurs when the proposed rule appears in the Federal Register. A prepublication version is not expected to diverge from the *Federal Register* publication.

[7] CWA §502(7); 33 U.S.C. § 1362(7).

[8] For example, the reach of the Endangered Species Act (ESA) is affected, because that act's requirement for consultation by federal agencies over impacts on threatened or endangered species is triggered through the issuance of federal permits.

[9] U.S. Environmental Protection Agency, Office of Research and Development, Connectivity of Streams and Wetlands (continued...)

(SAB), which provides independent engineering and scientific advice to the agency. A number of EPA's critics have suggested that the agencies should have deferred developing or proposing a revised rule until a final scientific review document is complete. In the preamble to the proposed rule, the agencies state that the rule will not be finalized until the SAB's review and a final report are complete. However, some have expressed concern that the final report will not be available during the public comment period on the rule.

Under the first section of the March 25 proposal, the following waters would be jurisdictional by rule:

- Waters susceptible to interstate commerce, known as traditional navigable waters (no change from current rules);
- All interstate waters, including interstate wetlands (no change from current rules);
- The territorial seas (no change from current rules);
- Impoundments of the above waters or a tributary, as defined in the rule (no change from current rules);
- Tributaries of the above waters (more inclusive than current rules because "tributary" is newly and broadly defined); and
- All waters, including wetlands, adjacent to a water identified in the above categories (by including all adjacent waters—not simply adjacent wetlands—the proposal is more inclusive than current rules; these waters are considered jurisdictional under the rule because they have a significant nexus to a traditional navigable water, interstate water, or the territorial seas).

The concept of significant nexus is critical because courts have ruled that, to establish CWA jurisdiction between waters, there needs to be "some measure of the significance of the connection for downstream water quality," as Justice Kennedy found in the 2006 *Rapanos* case. He said, "Mere hydrologic connection should not suffice in all cases; the connection may be too insubstantial for the hydrologic linkage to establish the required nexus with navigable waters as traditionally understood."[10] However, as EPA and the Corps observe in the March 25 proposed rule, significant nexus is not itself a scientific term, but rather a determination of the agencies in light of the law and science. Functions that might demonstrate significant nexus include sediment trapping and retention of flood waters. In the proposed rule, the agencies note that a hydrologic connection is not necessary to demonstrate significant nexus, because the function may be demonstrated even in the absence of a connection (e.g., pollutant trapping is another such function).

(...continued)

to Downstream Waters: A Review and Synthesis of the Scientific Evidence, External Review Draft, EPA/600/R-11-098B, September 2013, http://yosemite.epa.gov/sab/sabproduct.nsf/0/7724357376745F48852579E60043E88C/$File/WOUS_ERD2_Sep2013.pdf.

[10] 547 U.S. at 784-785.

"Other Waters"

Beyond the categories of waters that would be categorically jurisdictional under the proposed rule is a category sometimes referred to as "other waters." The regulatory term "other waters" applies to wetlands and non-wetland waters that do not fall into the category of waters susceptible to interstate commerce (traditional navigable waters), interstate waters, the territorial seas, tributaries, or waters adjacent to waters in one of these four categories. Current rules contain a non-exclusive list of "other waters," such as intrastate lakes, mudflats, prairie potholes, and playa lakes (see **Table 1**). Headwaters, which constitute most "other waters," supply most of the water to downstream traditional navigable waters, interstate waters, and the territorial seas.

EPA and the Corps recognize that the Supreme Court decisions in *SWANCC* and *Rapanos* put limitations on the scope of "other waters" that may be determined to be jurisdictional under the CWA. Much of the controversy since the Court's rulings has focused on uncertainty as to what degree "other waters" are jurisdictional, either by definition/rule, or as determined on a case-by-case basis to evaluate significant nexus to a jurisdictional water. Under the 2008 guidance, all "other waters" require a case-by-case evaluation to determine if a significant nexus exists, thus providing a finding of CWA jurisdiction. There likewise has been uncertainty as to what degree "other waters" that are similarly situated may be aggregated or combined for a significant nexus determination. In the proposed rule, "other waters," including wetlands, that are adjacent to a jurisdictional water are categorically jurisdictional. Non-adjacent "other waters" and wetlands will continue to require a case-by-case determination of significant nexus. Also, the proposed rule allows broader aggregation of "other waters" that are similarly situated than under the 2008 guidance, which could result in more "other waters" being found to be jurisdictional following a significant nexus evaluation.

Some in the regulated community have urged EPA and the Corps to provide metrics, such as quantifiable flow rates or minimum number of functions for "other waters," to establish a significant nexus to jurisdictional waters. The agencies declined to do so in the proposed rule, saying that absolute standards would not allow sufficient flexibility to account for variability of conditions and the varied functions that different waters provide.

The agencies acknowledge that there may be more than one way to determine which waters are jurisdictional as "other waters," and they are requesting comment on alternate approaches, combination of approaches, scientific and technical data, case law, and other information that would clarify which "other waters" should be considered categorically jurisdictional or following a case-specific significant nexus determination.

Exclusions and Definitions

The second section of the proposed rule excludes specified waters from the definition of "waters of the United States." The listed waters and features would not be jurisdictional even if they would otherwise be included within categories that are jurisdictional. The exclusions are:

- Waste treatment systems, including treatment ponds or lagoons, that are designed to meet CWA requirements;
- Prior converted cropland;
- A list of features that have been excluded by long-standing practice and guidance and would now be excluded by rule, such as artificially irrigated areas that would

revert to upland should application of irrigation water to the area cease (see **Table 1** for the full list); and

- Two types of ditches: ditches that are excavated wholly in uplands, drain only uplands or non-jurisdictional waters, and have less than perennial (i.e., permanent) flow; and ditches that do not contribute flow, either directly or through another water, to a traditional navigable water, interstate water, impoundment, or the territorial seas. Other ditches, if they meet the rule's definition of "tributary," would continue to be "waters of the United States"—a point of much controversy with some stakeholders.

The proposed rule makes no change to and does not affect existing statutory and regulatory exclusions, such as exemptions for normal farming, ranching, and silviculture activities (CWA §404(f)); exemptions for permitting of agricultural stormwater discharges and return flows from irrigated agriculture; or exemptions for water transfers that do not introduce pollutants into a waterbody. Nor would it change permitting processes.

In the third section of the proposed rule, the agencies define terms, including "floodplain," "riparian area," "tributary," "significant nexus," and "neighboring" as a component of the existing term "adjacent." The terms "adjacent" and "wetland" are not redefined. (See **Table 1**.)

Finally, the proposed rule includes two appendixes. One is an abbreviated, but lengthy, version of the scientific assessment document currently being reviewed by EPA's Science Advisory Board; the other is an analysis of relevant case law.

Impacts of the Proposed Rule

The agencies acknowledge that the proposed rule would increase the asserted geographic scope of CWA jurisdiction, when compared to a baseline of current practices under the existing regulations and the 2003-2008 EPA-Corps guidance. This results in part from the agencies' expressly declaring some types of waters categorically jurisdictional (such as all waters adjacent to a jurisdictional water), and also by application of definitions, which give larger regulatory context to some types of waters, such as tributaries.

The agencies believe, however, that the proposed rule does not protect any new types of waters that have not been protected historically (i.e., prior to the *SWANCC* and *Rapanos* rulings) or exceed the CWA's coverage. That is, while it would enlarge jurisdiction beyond that under the 2003 and 2008 EPA-Corps guidance, which the agencies believe was narrower than is justified by science and the law, they believe that it would not enlarge jurisdiction beyond what is consistent with the Supreme Court's narrow reading of jurisdiction. Others may disagree. Many stakeholders are concerned with what changes the proposed rule will make, how much additional waters will be considered jurisdictional, and what additional costs will result.

The agencies' broader assertion of jurisdiction, compared to existing regulation and current practice, does not identify specific waters that will be found to be jurisdictional—that is, this or that particular stream or pond—but the proposed rule attempts to draw more of a bright line of CWA jurisdiction than in the past.

In an Economic Analysis document that accompanies the proposed rule, EPA and the Corps estimate that approximately 3% of U.S. waters would additionally be subject to CWA jurisdiction

as a result of the proposed rule, compared with current field practice, and thus subject to CWA requirements. The estimated increase includes about 17% of "other waters" (discussed above) that were not jurisdictional under existing regulations and the 2008 guidance.[11]

According to the analysis, costs to regulated entities and governments (federal, state, and local) are likely to increase. Direct and indirect costs would result from additional permit application expenses (for CWA §404 permitting, stormwater permitting for construction and development activities, permitting of pesticide discharges and confined animal feeding operations (CAFOs) for discharges to waters that would now be determined jurisdictional) and additional requirements for oil storage and production facilities needing to develop and implement spill prevention, control and countermeasure (SPCC) plans. Federal and state governments would likely experience costs to administer and process additional permits. Other costs would likely include compensatory mitigation requirements for permit impacts (if applicable), affecting land developers and state and local governments. In all, the agencies estimate that incremental costs associated with the rule range from $162 million to $279 million per year.

The agencies believe that benefits accruing from the proposed rule include the value of ecosystem services provided by the waters and wetlands protected as a result of CWA requirements, such as habitat for aquatic and other species, support for recreational fishing and hunting, and flood protection. Other benefits would include government savings on enforcement expenses, because the rule is intended to provide greater regulatory certainty, thus reducing the need for government enforcement. Business and government may also achieve savings from reduced uncertainty concerning where CWA jurisdiction applies, they believe. In all, the agencies estimate that benefits of the proposed rule range from $318 million to $514 million per year. However, they note that "there is uncertainty and limitations associated with the results," due to data and information gaps, as well as analytic challenges. The analysis does not quantify all possible costs and benefits.[12] Overall, they conclude that benefits would exceed costs.

Unclear for now is a question of the extent to which case law construing the existing regulatory definition of "waters of the United States" will continue to apply. Some of that case law has been in place for more than 35 years. The preamble to the proposed rule does not address this issue.

The agriculture sector has been vigorous in criticizing and challenging EPA regulatory actions that may affect the sector's operations, making potential impacts of the proposed rule on agriculture a likely focus of controversy. One of the sector's concerns about a new "waters of the United States" rule has been whether it would modify existing statutory and regulatory exemptions that exclude certain discharges from agricultural activities from CWA permitting. As described above, the proposed rule makes no change and does not affect these exemptions. An EPA fact sheet discusses the continued exclusions and exemptions.[13] In addition, simultaneous with proposing the rule, EPA and the Corps issued an interpretive rule that identifies 53 conservation practices approved by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) that qualify for exemption under the CWA Section 404(f)(1)(A) exclusion of "normal farming" activities from Section 404 permit requirements and do not require

[11] U.S. Environmental Protection Agency and U.S. Army Corps of Engineers, *Economic Analysis of Proposed Revised Definition of Waters of the United States*, March 2014, http://www2.epa.gov/uswaters/economic-analysis-proposed-revised-definition-waters-united-states, p. 12.

[12] Ibid., pp. 21-22, 32.

[13] See http://www2.epa.gov/sites/production/files/2014-03/documents/cwa_ag_exclusions_exemptions.pdf.

determination whether the discharge involves a "water of the United States." Through this interpretive rule, the agencies intend to resolve uncertainties about "normal farming" activities that are exempt from permitting when these conservation practices are used. The agencies plan to enter into a Memorandum of Agreement identifying a process for reviewing and updating the list of qualifying NRCS conservation practices.[14]

Conclusion

After publication of the proposed rule in the *Federal Register*, the agencies will accept public comment for 90 days. If past experience regarding controversial proposals is a guide, however, it is likely that the public comment period will be extended. Further, as noted above, the agencies pledge that a final rule will not be promulgated before completion of EPA's scientific assessment report; so, when that may occur is likely to be some months in the future. Once a rule is finalized, legal challenges are likely, possibly delaying implementation of any rule for years.

[14] See http://www2.epa.gov/uswaters/interpretive-rule-regarding-applicability-clean-water-act-section-404. USDA had no formal role in developing the proposed rule, but it was among the federal agencies commenting on it during interagency review.

Table 1. Comparison of "Definition of Waters of the United States" Regulatory Language

Current Regulatory Language and Proposed Rule Announced by EPA and the Army Corps of Engineers March 25, 2014

Current Regulatory Language[a]	Proposed Regulatory Language (3/25/2014)	Comments
(a) The term *waters of the United States* means	(a) For purposes of all sections of the Clean Water Act, 33 U.S.C. 1251 *et seq.* and its implementing regulations, subject to the exclusions in subsection (b) of this section, the term "waters of the United States" means:	
(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;	(1) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;	These waters are often referred to as "traditional navigable waters" (TNWs), which include but are not limited to the "navigable waters of the United States" within the meaning of Section 10 of the Rivers and Harbors Act of 1899. No change from the existing rule.
(2) All interstate waters including interstate wetlands;	(2) All interstate waters, including interstate wetlands;	These waters include tributaries to interstate waters, waters adjacent to interstate waters, waters adjacent to tributaries of interstate waters, and "other waters" that have a significant nexus to interstate waters. No change from the existing rule. Interstate waters would continue to be "waters of the United States" even if they are not navigable in fact and do not connect to such waters.
(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:	(7) On a case-specific basis, other waters, including wetlands, provided that those waters alone, or in combination with other similarly situated waters, including wetlands, located in the same region, have a significant nexus to a water identified in paragraphs (a)(1) through (3) of this section.	In the existing rule, there is a non-exclusive list of the types of "other waters" which may be found to be "waters of the U.S." The existing description is omitted under the proposal as unnecessary and confusing because it includes some waters that would be jurisdictional under one of the categories of waters that are jurisdictional by rule under the proposal (for example, an intermittent stream that meets the definition of tributary). Under the proposed rule, "other waters" are not jurisdictional as a single category but require a case-specific analysis of a significant nexus to a traditional navigable water, an interstate water, or the territorial seas. They may be evaluated either individually, or as a group of waters where they are determined to be similarly situated in a region. "In the region" means the watershed that drains

Current Regulatory Language[a]	Proposed Regulatory Language (3/25/2014)	Comments
		to the nearest traditional navigable water, interstate water, or the territorial seas through a single point of entry. How other waters are aggregated for a case-specific significant nexus analysis depends on the functions they perform and their spatial arrangement within the region or watershed. It is the landscape position within the watershed that is the determinative factor for the analysis, which will focus on the degree to which the functions provided by the other waters affect the chemical, physical, or biological integrity of (a)(1) through (a)(3) waters. Current rule asserts jurisdiction more broadly than what is proposed; the proposal deletes language requiring that an "other water" be one "the use, degradation or destruction of which could affect interstate commerce" and replaces it with requirement that the "other water" meet the significant nexus standard. The agencies consider this a substantial change from the current rule.
(i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or (ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or (iii) Which are used or could be used for industrial purpose by industries in interstate commerce;		Specific examples are omitted in the proposed rule as unnecessary. The agencies say that the listing has led to confusion where it has been incorrectly read as an exclusive list.
(4) All impoundments of waters otherwise defined as waters of the United States under the definition;	(4) All impoundments of waters identified in paragraphs (a)(1) through (3) and (5) of this section;	Impoundments of a traditional navigable water, interstate water, the territorial seas, or a tributary are jurisdictional by rule. As a matter of policy and law, impoundments do not de-federalize a water, even where there is no longer flow below the impoundment. That is, damming or impounding a water of the United States does not make the water non-jurisdictional.

Current Regulatory Language[a]	Proposed Regulatory Language (3/25/2014)	Comments
(5) Tributaries of waters identified in paragraphs (a)(1) through (4) of this section;	(5) All tributaries of waters identified in paragraphs (a)(1) through (4) of this section;	Tributaries, as defined in the proposed rule, of a traditional navigable water, interstate water, the territorial seas, or an impoundment would be jurisdictional by rule. Unless excluded under subsection (b) of the proposed rule, any water that meets the proposed definition of tributary is a water of the United States, whether it is perennial, intermittent, or ephemeral. The water may contribute flow directly or may contribute flow to another water or waters that eventually flow into a jurisdictional water. The tributary must drain, or be part of a network of tributaries that drain, into an (a)(1) through (a)(4) water. "Tributary" is defined below.
(6) The territorial seas;	(3) The territorial seas;	Jurisdictional by rule; no change from the existing rule.
(7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1) through (6) of this section.	(6) All waters, including wetlands, adjacent to a water identified in paragraphs (a)(1) through (5) of this section; and	All waters, including wetlands, adjacent to a traditional navigable water, interstate water, the territorial seas, impoundment, or tributary would be jurisdictional by rule. Under the proposed rule, wetlands, ponds, lakes, and similar waterbodies that are adjacent to traditional navigable waters, interstate waters, and the territorial seas, as well as waters and wetlands adjacent to other jurisdictional waters such as tributaries and impoundments, would be jurisdictional by rule.
	(b) The following are not "waters of the United States"	
(8) Waters of the United States do not include prior converted cropland.[b] Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.	(2) Prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.	No change proposed.

Current Regulatory Language[a]	Proposed Regulatory Language (3/25/2014)	Comments
Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States.[c]	(1) Waste treatment systems, including treatment ponds or lagoons, designed to meet the requirements of the Clean Water Act.	The agencies do not believe that omitting the parenthetical reference to 40 CFR 423.11(m) is a substance change to the waste treatment exclusion or how it is applied.
	(3) Ditches that are excavated wholly in uplands, drain only uplands or non-jurisdictional waters, and have less than perennial flow.	Proposed rule would codify long-standing practice and guidance (including 1986 and 1988 preamble language), which has been to exclude these waters from jurisdiction. Excluded ditches must be dug only in uplands, drain only uplands, and have ephemeral or intermittent flow. Water that only stands or pools in a ditch is not considered perennial flow and, therefore, any such upland ditch would not be subject to regulation. Other ditches, if they meet the new proposed definition of "tributary," would continue to be waters of the U.S. Ditches may function as point sources that discharge pollutants, thus subject to CWA section 402.
	(4) Ditches that do not contribute flow, either directly or through another water, to a water identified in paragraphs (a)(1) through (4) of this section.	Proposed rule would codify long-standing practice and guidance (including 1986 and 1988 preamble language), which has been to exclude these waters from jurisdiction. These waters would not be jurisdictional by rule. Ditches that do not contribute flow to the tributary system of a traditional navigable water, interstate water, impoundment, or the territorial seas are not "waters of the United States," even if the ditch has a perennial flow. Other ditches, if they meet the new proposed definition of "tributary," would continue to be waters of the U.S. Ditches may function as point sources that discharge pollutants, thus subject to CWA section 402.
	(5) The following features: (i) Artificially irrigated areas	Proposed rule would codify long-standing practice and

Current Regulatory Language[a]	Proposed Regulatory Language (3/25/2014)	Comments
	that would revert to upland should application of irrigation water to that area cease; (ii) artificial lakes or ponds created by excavating and/or diking dry land and used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing; (iii) artificial reflecting pools or swimming pools created by excavating and/or diking dry land; (iv) small ornamental waters created by excavating and/or diking dry land for primarily aesthetic reasons; (v) water-filled depressions created incidental to construction activity; (vi) groundwater drained through subsurface drainage systems; and (vii) gullies and rills and non-wetland swales.	guidance (including 1986 and 1988 preamble language), which has been to exclude these waters from jurisdiction. These waters would not be jurisdictional by rule.
	(c) Definitions—	
(b) The term *wetlands* means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.	(6) **Wetlands**: The term *wetlands* means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.	No change proposed. Wetlands are ecosystems that often occur at the edge of aquatic (water, fresh or salty) or terrestrial (upland) systems. Wetlands typically represent transitional zones between aquatic and upland systems.
(c) The term *adjacent* means bordering, contiguous, or neighboring. Wetlands separated from other waters of the United States by man-made dikes or barriers, natural river berms, beach dunes and the like are "adjacent wetlands."	(1) **Adjacent**: The term *adjacent* means bordering, contiguous or neighboring. Waters, including wetlands, separated from other waters of the United States by man-made dikes or barriers, natural river berms, beach dunes and the like are "adjacent waters."	Current rule limits consideration of adjacency to wetlands. Proposed rule would change "adjacent wetlands" to "adjacent waters" so that waterbodies such as ponds and oxbow lakes [a U-shaped body of water formed when a wide meander from a river is cut off to form a lake] as well as wetlands that are adjacent to jurisdictional waters are "waters of the U.S." by regulation. The rule would include wetlands and other waterbodies that meet the proposed definition of adjacent, including "neighboring," which is defined separately. Adjacent waters are those that provide similar functions which, *together with functions provided by tributaries to which they are adjacent*, have a significant

Current Regulatory Language[a]	Proposed Regulatory Language (3/25/2014)	Comments
		nexus to traditional navigable waters (TNWs), interstate waters, and the territorial seas. "In the aggregate, all adjacent waters have a significant nexus with their downstream TNWs or interstate waters." The lateral limits of an adjacent water, other than wetlands or tributaries, are determined by the presence of an ordinary high water mark (OHWM) without the need for a bed and banks. Deletion of parenthetical phrase in the existing rule is intended to ensure that all waters that meet the proposed definitions of "adjacent" are "waters of the U.S." regardless of whether or not another adjacent water is located between those waters and the tributary.
(d) The term *high tide line* means the line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.	No change proposed	
(e) The term *ordinary high water mark* means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding area.	No change proposed	

Current Regulatory Language[a]	Proposed Regulatory Language (3/25/2014)	Comments
(f) The term *tidal waters* means those waters that rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by hydrologic, wind, or other effects.	No change proposed	
	(2) **Neighboring:** The term *neighboring*, for purposes of the term "adjacent" in this section, includes waters located within the riparian area or floodplain of a water identified in paragraphs (a)(1) through (a)(5) of this section, or waters with a surface or shallow subsurface hydrologic connection to such a jurisdictional water.	Waters, including wetlands, that are located within the riparian area or floodplain of an (a)(1) through (a)(5) water would be jurisdictional without a case-specific significant nexus analysis. Even if separated from such a water by natural or man-made features (e.g., a berm), the water would be adjacent and thus jurisdictional.
	(3) **Riparian area:** The term *riparian area* means an area bordering a water where surface or subsurface hydrology influence the ecological processes and plant and animal community structure in that area. Riparian areas are transitional areas between aquatic and terrestrial ecosystems that influence the exchange of energy and materials between those ecosystems.	The term "riparian area" is used to help identify waters, including wetlands, that may be "adjacent" and would, therefore, be "waters of the United States" under the proposed rule. No uplands located in "riparian areas" can ever be "waters of the United States."
	(4) **Floodplain:** The term *floodplain* means an area bordering inland or coastal waters that was formed by sediment deposition from such water under present climatic conditions and is inundated during period of moderate to high water flows.	The term "floodplain" is used to help identify waters, including wetlands, that may be "adjacent" and would, therefore, be "waters of the United States" under the proposed rule. No uplands located in "floodplains" can ever be "waters of the United States."
	(5) **Tributary:** The term *tributary* means a waterbody physically characterized by the presence of a bed and banks and ordinary high water mark, as defined at 33 CFR § 328.3(e), which contributes flow, either directly or through another water, to a water identified in paragraphs (a)(1) through (4) of this section. In addition, wetlands, lakes, and ponds are tributaries (even if they lack a bed and banks or ordinary high water mark) if they contribute flow, either directly or through another water to a water identified in paragraphs (a)(1) through (3) of this section. A water that otherwise qualifies as a	This term has not previously been defined in any regulation or preamble. Bed and banks and ordinary high water mark (OHWM) are features that generally are physical indicators of flow. OHWM generally defines the lateral limits of a water. In many tributaries, the bed is that part of the channel below the OHWM, and the banks often extend above the OHWM. Wetland tributaries are wetlands that are located within the stream channel itself or that form the start

Current Regulatory Language[a]	Proposed Regulatory Language (3/25/2014)	Comments
	tributary under this definition does not lose its status as a tributary if, for any length, there are one or more man-made breaks (such as bridges, culverts, pipes, or dams) or one or more natural breaks (such as wetlands at the head of or along the run of a stream, debris piles, boulder fields, or a stream that flows underground) so long as a bed and banks and an ordinary high water mark can be identified upstream of the break. A tributary, including wetlands, can be a natural, man-altered, or man-made waterbody and includes waters such as rivers, streams, lakes, ponds, impoundments, canals, and ditches not excluded in paragraph (b)(3) or (4) of this section.	of the stream channel. Man-altered and man-made tributaries perform many of the same functions as natural tributaries and provide connectivity between streams and downstream rivers.
	(7) **Significant nexus**: The term *significant nexus* means that a water, including wetlands, either alone or in combination with other similarly situated waters in the region (i.e., the watershed that drains to a water identified in paragraphs (a)(1) through (3) of this section), significantly affects the chemical, physical or biological integrity of a water identified in paragraphs (a)(1) through (3) of this section. For an effect to be significant, it must be more than speculative or insubstantial. Other waters, including wetlands, are similarly situated when they perform similar functions and are located sufficiently close together or close to a "water of the U.S." so that they can be evaluated as a single landscape unit with regard to their effect on the chemical, physical, or biological integrity of a water identified in paragraphs (a)(1) through (3) of this section.	A significant nexus analysis may be based on a particular water alone or on the effect that the water has in combination with other similarly situated waters in the region. "Region" means the watershed that drains to a water identified in (a)(1) through (a)(3). Proposed rule adopts the concept of aggregating certain waters to determine whether they meet the "alone or in combination with similarly situated waters" test of Justice Kennedy. Waters must perform similar functions and be located sufficiently close together or close to a traditional navigable water, interstate water, or the territorial seas so that they can be evaluated as a single landscape unit with regard to their effects. Examining both functionality and proximity limits the "other waters" that can be aggregated for purposes of determining jurisdiction. Functions that might demonstrate significant nexus include sediment trapping and retention of flood waters. A hydrologic connection is not necessary, because the function may be demonstrated even in the absence of a connection (e.g., pollutant trapping).

Source: Prepared by CRS.

Notes:

a. 33 C.F.R. 328.3, 40 C.F.R. 122.2, 40 C.F.R. 230.3, and 40 C.F.R. 232.2 (definition of "waters of the United States"). The term "navigable waters" is defined at 40 C.F.R. 110.1 (Discharge of Oil); 40 C.F.R. 112.2 (Oil Pollution Prevention); 40 C.F.R. 116.3 (Designation of Hazardous Substance); 40 C.F.R. 117.1(i) (Determination of Reportable Quantities for Hazardous Substances); 40 C.F.R. 300.5 and Appendix E 1.5 to Part 300 (National Oil and Hazardous Substances Pollution Contingency Plan); and 40 C.F.R. 302.3 (Designation, Reportable Quantities, and Notification).

b. The term "prior converted cropland" is included in the U.S. Department of Agriculture's regulatory definition of the term "wetland" (see 7 C.F.R. 12.2).

c. A regulatory definition of "waste treatment system is found in EPA regulations (35 C.F.R. 35.905): "Complete waste treatment system. A complete waste treatment system consists of all of the treatment works necessary to meet the requirements of title III of the Act, involved in (a) The transport of waste waters from individual homes or buildings to a plant or facility where treatment of the waste water is accomplished; (b) the treatment of the waste waters to remove pollutants; and (c) the ultimate disposal, including recycling or reuse, of the treated waste waters and residues which result from the treatment process. One complete waste treatment system would, normally, include one treatment plant or facility, but also includes two or more connected or integrated treatment plants or facilities."

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