

**The Economic Value of the 47 Ft.  
Deepening Project of the St. John's River**

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**Prepared for:**

***JAXPORT***

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## *Executive Summary*

The dynamics of the US container trade have positioned the Port of Jacksonville as a potential international gateway for the growing all-water services. There has been an increased focus on diversification of containerized cargo via various US Ports. This is evident by the growth in container volume at the North Atlantic, South Atlantic and Gulf Coast Ports. The growth of all water service from Asia to the East Coast and Gulf Coast Ports has been significantly increasing since 2002.

The United States Army Corps of Engineers is finalizing a feasibility study of deepening the St. John's River. The local preferred plan is to deepen the river to a depth of -47 ft. This will provide JAXPORT with the ability to market directly to the ocean carriers providing all water services between Asia and the South Atlantic Port range, and to attract cargo now moving to and from Florida and Asia via other non-Florida ports, including Savannah and intermodally via the West Coast ports. The ability for JAXPORT to compete for this cargo now moving to and from Florida via non-Florida ports will similarly increase the ability of JAXPORT to grow its economic contribution to the Northeast Florida regional economy, as well as the economy of the State of Florida.

Without the -47 ft. St. John's River Channel, JAXPORT and Northeastern Florida will not be able to compete with the Caribbean transshipment centers developing in response to the expanded Panama Canal, and will lose the opportunity to leverage a first-inbound port call at Jacksonville into the development of import distribution center operations. Similarly, the Port will not be able to market a last-outbound port call potential, which is critical to attract heavy weight export cargo now moving through Savannah and Charleston, and to further attract export oriented industry into Northeastern Florida.

It is estimated that the deepening of the St. John's River to -47 ft. will provide the Port with the opportunity to grow the container business at the Port to about 2.8 million TEUs by 2035. Under a no deepening scenario with a -40 ft. channel, the Port would lose the opportunity to handle 1.9 million of the 2.8 million potential TEUs, as JAXPORT would likely lose its current Asian services and not participate in the future growing Asian import and export markets. In essence, JAXPORT would be relegated to a port serving the Puerto Rican market and the Caribbean should the channel remain at the current -40 ft. depth. The opportunity cost of not deepening to -47ft. is estimated at about 25,500 direct, induced and indirect jobs annually by 2035, including both Port sector jobs and distribution center jobs associated with an annual first-inbound port call service.

Assuming an \$800 million total project cost, the *return on investment to the State is 14.8 using a 3.75% discount rate, or for each dollar of total investment in the St. John's River deepening project returns \$14.80 to the State of Florida. With a 5% discount rate, the rate of return is 12.5 or a return to the State of Florida of about \$12.50 for each dollar of total investment. Based on the criteria established in the Florida Department of Transportation Overview of Seaport Project Evaluation Process Summary, a rate of return investment in excess of 7, places the project in the highest priority category. Since the final project cost is under review, the ROI is subject to change with the finalization of the total project cost.*

## The Economic Value of the 47 Ft. Deepening Project of the St. John's River

The dynamics of the US container trade have positioned the Port of Jacksonville as a potential international gateway for the growing all-water services. There has been an increased focus on diversification of containerized cargo via various US Ports. This is evident by the growth in container volume at the North Atlantic, South Atlantic and Gulf Coast Ports. The growth of all water service from Asia to the East Coast and Gulf Coast Ports has been significantly increasing since 2002.

Underlying the growth in all-water containerized service activity at the Atlantic and Gulf Coast ports, and the investment in distribution center activity, is the expansion of the Panama Canal to be completed by 2015, as well as the increased deployment of vessels via the Suez Canal, particularly to serve the growing trade with countries located to the south of Singapore.

The ability of Atlantic and Gulf Coast ports to handle larger vessels is critical because of the increased deployment of larger vessels via the Panama Canal after 2015, as well as via the Suez Canal. The growth in the size of the container fleet is underscored by Exhibit 1. Exhibit 1 indicates that 43% of the container vessels currently on order are in excess of 8,000 TEUs, and will require a channel depth of -47 to -50 ft. Compared to the current fleet composition, approximately 7% of the current world container fleet is in excess of 8,000 TEUs. Therefore, the size of the container ships will continue to increase in the future and will require a -47 to -50 ft. shipping channel.

### Exhibit 1

Size Distribution of Current World Container Fleet and Order Book, as of 2012

TEU Size Class	Current Fleet	Order Book
<999	1,099	32
1000 < 1999	1,286	87
2000 < 3999	1,046	89
4000 < 5999	921	110
6000 < 7999	250	42
8000 < 9999	280	106
>= 10,000	<u>111</u>	<u>165</u>
Total	<b>4,993</b>	<b>631</b>

Source: Institute of Shipping Economic and Logistics, Shipping Statistics and Market Review, 2012

This presents a serious constraint at many Atlantic and Gulf Coast ports, as the majority of these ports that will compete for the new services consisting of larger container vessels do not have channel depths in the necessary -47 to -50 foot range.

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The United States Army Corps of Engineers has completed a feasibility study of deepening the St. John's River. The local preferred plan is to deepen the river to a depth of -47 ft. This will provide JAXPORT with the ability to market directly to the ocean carriers providing all water services between Asia and the South Atlantic Port range, and to attract cargo now moving to and from Florida and Asia via other non-Florida ports, including Savannah and intermodally via the West Coast ports. The ability for JAXPORT to compete for this cargo now moving to and from Florida via non-Florida ports will similarly increase the ability of JAXPORT to grow its economic contribution to the Northeast Florida regional economy, as well as the economy of the State of Florida.

Moving forward to complete the -47 ft. channel project at the Port of Jacksonville will provide significant dividends to the State and national economies.

The impact of not completing the -47 ft. channel will have a significant economic impact to the State of Florida, as well as the Northeastern Florida Regional Economy. As part of the JAXPORT strategic plan, which is being performed by Martin Associates, it is estimated that the deepening of the St. John's River to -47 ft. will provide the Port with the opportunity to grow the container business at the Port to about 2.8 million TEUs by 2035. Without the -47 ft. channel and assuming the St. John's River remains at a -40 ft. channel depth, the projected annual container throughput is projected to fall from its current levels as the present Asian services would most likely relocate to other non-Florida ports, and the Port would not be a participant in the growing import and export trade with Asia. Under a no deepening scenario, the Port's container throughput is projected at about 830,000 TEUs by 2035. Under this scenario, the Port would not be able to participate in the US Asia Trade routes, and would be relegated to a regional port primarily serving the Puerto Rican and other Caribbean trade lanes. Therefore, without deepening the channel to -47 ft. by 2035, about 1.9 million TEUs would move through other ports, most likely Savannah and the West Coast ports of Los Angeles and Long Beach.

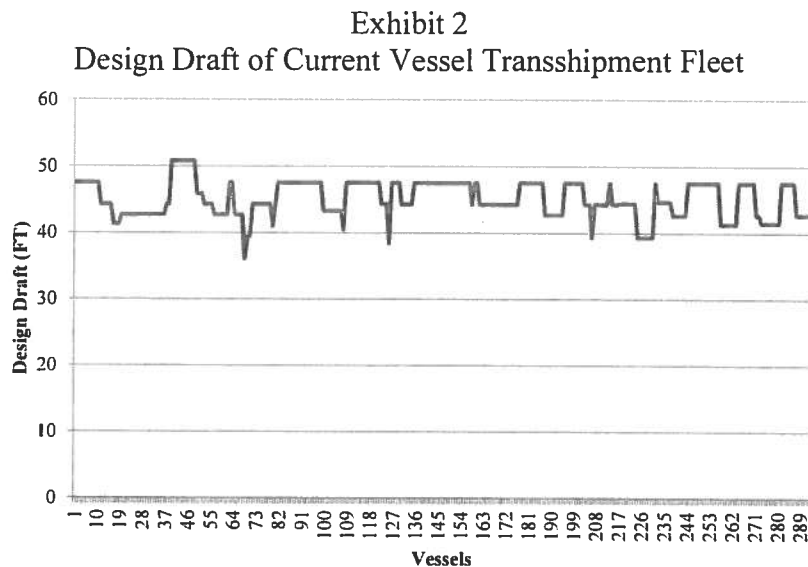
In contrast, with a -47 ft. depth channel in the St. John's River, JAXPORT will be able to serve as a first inbound-port call to carriers serving the US East Coast-Asia trade lane, and further serve as a last outbound port call. The ability to serve as a first inbound-port call for an Asia all-water service to the East Coast of the United States is of critical importance not only to the State economy, but to the national economy as well. With the completion of the Panama Canal expansion to accommodate vessels with a draft in excess of 45 ft., and length overall (LOA) in excess of 1,000 ft., there has been growth in the development of container transshipment hubs in the Caribbean. This growth has been the result of several factors. First, the economies of using larger ships to transport cargo, particularly containerized cargo between Asia and the mainland United States (East and Gulf Coasts), are only realized when the vessels are deployed on relatively long routes with minimal port calls. The ability to handle a first-inbound port call of a fully laden vessel (8,000 TEUs and greater) will require that the Port facilities have channels and berths of a depth of 47-50 ft. Most ports on the United States East Coast and Gulf Coast do not currently have sufficient water depth to accommodate a full laden first port of call for a vessel likely to be deployed after the expansion of the Panama Canal.

The process of deepening port channels in the United States is a very cumbersome and lengthy process. It is unlikely that funding for new projects will be approved in the next several

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years and hence East and Gulf Coast ports are limited in their ability to handle the fully laden ships likely to transit the Panama Canal after 2015 and the current sized vessels now deployed to the East and Gulf Coasts via the Suez Canal. Because of the limitations of the majority of East and Gulf Coast ports in the United States to accommodate the fully laden Panamax ships to be deployed after 2015, the development of transshipment hubs in the Caribbean will likely continue to grow. Such development has already occurred in the Bahamas, Panama and Costa Rica, and additional developments are under study in Puerto Rico, Haiti, the Dominican Republic and Cuba. At these transshipment ports, the larger vessels transiting the Panama Canal (after 2015) from Asia will discharge containers at these hubs and then return to Asia. Smaller vessels will be deployed from the transshipment hubs to serve the Atlantic and Gulf Coast United States ports. In addition, these transshipment hubs will also represent an opportunity to mix north and south bound cargoes headed to and from Asia and the United States, and to develop import distribution centers to compete with those centers in the Southeastern United States.

Without the -47 ft. St. John's River Channel, JAXPORT and Northeastern Florida will not be able to compete with the Caribbean transshipment centers, and will lose the opportunity to leverage a first-inbound port call at Jacksonville into the development of import distribution center operations. This distribution center function accompanying the establishment of first-inbound port calls will potentially be lost to off-shore Caribbean locations. It is to be noted that the current transshipment hubs are actually being served by container vessels with a design draft of -45 ft. Exhibit 2 presents the design draft of vessels currently calling Florida ports and a transshipment center in the Caribbean. Therefore, even to participate in the Caribbean transshipment service as a first-inbound or last-outbound port call, a channel depth of -47ft. is required.



Source: Martin Associates proprietary data base

The -47ft. channel will also provide JAXPORT with the ability to serve as a last-outbound port call on a vessel rotation prior to leaving the US for a return to Asia. With the -47 ft. channel, vessels can call JAXPORT as the last port of call, since the -47ft. channel would

provide the ability to fully laden the container vessels prior to return to Asia. This provides the port with the ability to compete for heavy weight exports originating in Florida, as well as Georgia, South Carolina, Alabama, and North Carolina that now moved via Savannah and Charleston. The heavy weight exports include such commodities as forest products, clay, and perishables. With the combination of a direct rail access to JAXPORT and the -47 ft. channel, JAXPORT will be able to directly compete for these exports.

An additional benefit of a last-outbound port call becomes an important tool in attracting manufacturing into the State. Currently, if Savannah is the last outbound port call, then a manufacturer located in Florida would have to allow an extra 2-3 days to move the export cargo from the plant location to the Port of Savannah. Should JAXPORT become a last outbound port call, then manufacturers located in Florida, particularly northeast Florida, could move the export cargo to the Port in 1 day. As a result, the use of JAXPORT by a Northeast Florida port would essentially allow for 1 to 2 days per week of additional production time, effectively increasing export production capacity to a manufacturer by about 52 to 104 extra days per year. With this type of savings to export manufacturers, the -47 ft. channel, with a last-outbound port call, becomes an important leverage to market to export industries to locate in Florida.

In terms of the economic impact of the -47 ft. St. John's River Channel, the potential lost containers due to the lack of a -47ft. channel was used with the Martin Associates' JAXPORT Container Economic Impact Model to translate the foregone annual container tonnage into economic impacts to the State of Florida. Exhibit 3 presents the economic impact of not deepening the St. John's River to a -47 ft. depth in terms of direct, induced and indirect port jobs associated with the handling of the containers and moving the containers to and from the Port and importers/exporters located in the State of Florida as well as those located in other portions of the country. It is to be emphasized that these impacts are only those associated with the deepening of the channel from its current -40 ft. depth to -47 ft. As this exhibit indicates, by 2035, the opportunity cost of not providing a -47 ft. channel to handle the projected 1.9 million TEUs of cargo that would require a -47 ft. channel is about 14,000 port sector jobs annually.

In addition to the 14,000 job impact associated with the Port operations driven by the foregone 1.9 million TEUs, the potential distribution center activity associated with an annual first inbound Asian service has been estimated by Martin Associates as 11,500 direct, induced and indirect jobs. Therefore, when the distribution center job impact associated with the deepening of the St. John's River is included, the annual job impacts increase to about 25,500 direct, induced and indirect jobs.

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**Exhibit 3**

**Opportunity Cost/Lost Economic Impact of Not Deepening the St. John's River to a 47 ft. Depth**

<b>TEU Projections Scenarios</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>
<b>Low and No Deepening</b>	732,816	762,889	796,093	832,752
<b>Moderate Penetration with 47ft.</b>	1,379,800	1,566,364	1,769,642	2,010,604
<b>Aggressive Penetration with Deepening to 47ft.</b>	1,713,294	1,952,976	2,217,831	2,530,178
<b>Aggressive with 47ft. + Intermodal Penetration</b>	1,877,695	2,143,562	2,438,772	2,786,309
<b>Maximum Opportunity Cost of No Deepening (TEUS)</b>	<b>1,144,879</b>	<b>1,380,672</b>	<b>1,642,680</b>	<b>1,953,557</b>
<b>Opportunity Cost in Terms of Lost Economic Impacts</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>
<b>Jobs</b>				
<b>Direct</b>	3,274	3,949	4,699	5,587
<b>Induced</b>	3,015	3,636	4,326	5,145
<b>Indirect</b>	1,824	2,199	2,617	3,112
<b>Total</b>	<b>8,113</b>	<b>9,784</b>	<b>11,642</b>	<b>13,844</b>
<b>Personal Income (1,000)</b>				
<b>Direct</b>	\$131,660	\$158,776	\$188,907	\$224,657
<b>Re-spending/Local Consumption</b>	\$383,683	\$462,704	\$550,511	\$654,695
<b>Indirect</b>	\$76,337	\$92,060	\$109,530	\$130,259
<b>Total</b>	<b>\$591,680</b>	<b>\$713,540</b>	<b>\$848,948</b>	<b>\$1,009,611</b>
<b>Business Revenue (1,000)</b>	<b>\$492,250</b>	<b>\$593,632</b>	<b>\$706,284</b>	<b>\$839,948</b>
<b>Local Purchases (1,000)</b>	<b>\$150,045</b>	<b>\$180,948</b>	<b>\$215,286</b>	<b>\$256,029</b>
<b>State/Local Taxes (1,000)</b>	<b>\$54,435</b>	<b>\$65,646</b>	<b>\$78,103</b>	<b>\$92,884</b>

The economic value of the -47ft. deepening project can also be viewed in terms of the return on investment (ROI) to the State of Florida. Currently, the State of Florida uses the ROI process to rank major state infrastructure projects. Changes in state gross domestic product are used as a proxy for a return metric, and the total dollar amount of cost of the project as the investment<sup>1</sup>. For purposes of the -47 ft. St. John's River Deepening Project, the sum of the direct business revenue to the Florida firms, plus the additional local consumption expenditures by the direct and induced job holders, was used as a proxy for the impact on the State domestic product generated by the additional containerized cargo that could be handled at JAXPORT due to the deepening of the channel from the current -40 ft. depth to the locally preferred plan depth of -47 ft.. This return metric was estimated on an annual basis over the 2013-2035 time period. Exhibit 4 shows the projected return to the State, as defined as the combination of business revenue and the respending and local consumption impact of the personal income generated by the -47 ft. channel. These two measures reflect a direct return to the State and do not include any double counting of benefits.

<sup>1</sup> Overview of Seaport Project Evaluation Process, Office of Freight , Logistics, and Passenger Operations; prepared by Cambridge Systematics

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Exhibit 4  
Projected Return to the State of Florida

Year	2013	2020	2025	2030	2034	2035
<b>Return to the State (1,000)</b>						
Personal Income/local purchases	\$76,741	\$383,683	\$462,704	\$550,511	\$632,389	\$654,695
Direct Business Revenue	\$98,456	\$492,250	\$593,632	\$706,284	\$811,330	\$839,948
<b>Total Return</b>	<b>\$175,197</b>	<b>\$875,933</b>	<b>\$1,056,336</b>	<b>\$1,256,795</b>	<b>\$1,443,720</b>	<b>\$1,494,643</b>
<b>Present Value (1,000)</b>						
<b>Present Value Total Return at 5% Discount Rate (1,000)</b>	<b>\$12,662,783</b>					
<b>Present Value Total Return at 3.75% Discount Rate (1,000)</b>	<b>\$10,793,238</b>					

The present value of the projected annual business revenue and local consumption impact over the 22 year forecast period was based on a discount rate of 3.75%, which is the current rate used by the US Army Corps of Engineers in evaluating the national economic development benefits of navigation projects. A discount rate of 5% was also used for sensitivity purposes. As this exhibit indicates, using a 3.75% discount rate, the present value of the return to the State of the -47ft. channel is \$12.7 billion. With the 5% discount rate, the present value of the -47. Ft. channel is \$10.8 billion.

The return on investment to the State is based on the formula (net present value of the return-total project cost)/project cost. Assuming an \$800 million total project cost, the **return on investment is 14.8 using a 3.75% discount rate, or for each dollar of total investment in the St. John's River deepening project returns \$14.80 to the State of Florida. With a 5% discount rate, the rate of return is 12.5 or a return to the State of Florida of about \$12.50 for each dollar of total investment. Based on the criteria established in the Overview of Seaport Project Evaluation Process Summary, a rate of return investment in excess of 7, places the project in the highest priority category. Since the final project cost is under review, the ROI is subject to change with the finalization of the total project cost.**

If only direct business revenue is included as the return to the State (and the personal income re-spending and consumption impacts are not included in the return), the ROI is estimated at 7.9 with a 3.75% discount rate and 6.6 with a 5% ROI.

It is to be emphasized that this rate of return analysis does not include the impacts that would be associated with the distribution center activity associated with a first- inbound port call, nor does it include the economic impacts that would be associated with the development of light industrial that could accompany the completion of the -47 ft. channel and the establishment of a last outbound port call. Furthermore, the ROI calculations do not include the transportation cost savings benefits, sometimes included in the evaluation process for other State infrastructure



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projects. Therefore, the calculated ROI's of 14.8 and 13.5 are very conservative by design. Finally, the investment includes the total cost of the deepening project, only a portion of which will be incurred by a local sponsor such as the State. The balance of the investment cost of the deepening project will be incurred at the Federal level.