REPORT SUMMARY

Jacksonville Harbor Navigation Study, Duval County, Florida
Integrated General Reevaluation Report II and Supplemental Environmental Impact Statement

Feasibility Cost Sharing Agreement:	15 June 2006
Feasibility Scoping Meeting:	07 February 2008
Tentatively Selected Plan Meeting:	20 May 2013

STUDY INFORMATION

Study Authority. A resolution from the Committee on Public Works and Transportation, United States House of Representatives, dated February 5, 1992, provides the study authority as follows:

> Resolved by the Committee on Public Works and Transportation of the United States House of Representatives, That the Board of Engineers for Rivers and Harbors, is requested to review the report of the Chief of Engineers on Jacksonville Harbor, Florida, published as House Document 214, Eighty-ninth Congress, First Session, and other pertinent reports, to determine whether modifications of the recommendations contained therein are advisable at the present time, in the interest of navigation and other purposes.

The District, in coordination with South Atlantic Division, determined that further study in the nature of a General Reevaluation Report (GRR) will fulfill the intent of the Congressional directive. The GRR will assess the extent of the Federal interest in participation in a solution to the identified navigation problems.

President Barack Obama issued an Executive Order ("We Can't Wait") to help modernize and expand 5 major ports in the United States, including Jacksonville Harbor. This expedited the completion of the Jacksonville Harbor deepening study, reducing the study schedule by 14 months.

Study Sponsor. The non-Federal sponsor is the Jacksonville Port Authority.

Study Purpose and Scope. The purpose of this study is to evaluate Federal interest in alternative plans (including the no-action plan) for reducing transportation costs at Jacksonville Harbor and the effects of the alternatives on the natural system and human environment, including economic development effects. The study area generally encompasses the St. Johns River from its mouth at the Atlantic Ocean near Mayport, Florida to River Mile 20 in Jacksonville, Florida. The nonfederal sponsor is the Jacksonville Port Authority. Port facilities and users within the study area include container and bulk shipping facilities at Blount Island, Dames Point, Talleyrand and several private terminal facilities including oil terminals and naval facilities. There is an opportunity to improve navigation at Jacksonville Harbor by reducing transportation costs for larger ships forecast to call at Jacksonville Harbor.

Project Location/Congressional District. Jacksonville Harbor is in Duval County, Florida and

at the mouth of the St. Johns River where it empties into the Atlantic Ocean. The harbor project provides access to deep draft vessel traffic using terminal facilities located in the City of Jacksonville, Florida as shown in **Figure 1**. Jacksonville Harbor is in the 4th and 5th Congressional Districts. Representatives Ander Crenshaw and Corrine Brown support the project.

FIGURE 1: LOCATION OF JACKSONVILLE HARBOR

Prior Reports and Existing Projects.

Prior Reports. Federal interest in navigation on the St. Johns River dates back to 1869. **Table 1** lists the prior studies and reports over the years on reaches of the river that are today the deep draft portion of the Jacksonville Harbor project.

Table 1: Prior Studies and Reports

		CHIEF OF ENGINEERS	PUBLISHED DOCUMENTS				
STUDY[1] TYPE	REPORT DATE	RECOMMENDATIONS	CONGRESSIONAL DOCUMENTS				
			TYPE[2]	NO.	CONGRESS	SESSION	NOTE
S	01/29/1869	--					3
S	06/30/1872	--					4
S	03/25/1879	Favorable					5
S	02/18/1895	Favorable	H.Ex	346	53	3	6
PE	4/30/1909	Favorable					
S	11/22/1909	Favorable	H	611	61	2	
PE	4/29/1922	Favorable					
S	3/4/1926	Favorable	H	483	70	2	
S	6/3/1935	--					
S	11/19/1940	Favorable	H	322	77	1	
S	5/23/1944	Favorable	S	230	78	2	
S	8/9/1945	Favorable	S	179	79	2	
PE	12/26/1950	Unfavorable					
S	5/19/1965	Favorable	H	214	89	1	
S	5/15/1981	Favorable	H	233	98	2	
R	6/29/1994	Favorable					
FR	4/21/1999	Favorable	S	507	106		7
R	11/19/2005	Favorable			109		8

1 Abbreviations are: PE = Preliminary Evaluations R = Reconnaissance Report
FR = Feasibility Report S = Surveys

2 Symbols are: H = U.S. House of Representatives Document S = U.S. Senate Document

3 Annual Report of the Chief of Engineers, 1869, page 266.

4 Annual Report of the Chief of Engineers, 1872, page 672.

5 Annual Report of the Chief of Engineers, 1879, page 767.

6 Annual Report of the Chief of Engineers, 1895, page 1586.

7 Public Law 106-53, Aug. 17, 1999, 106th Congress, "Water Resources Development Act of 1999", Sec.101(a)(17)

8 Public Law 109-103, Nov. 19, 2005, 109th Congress, "Energy and Water Development Appropriations Act, 2006"

Two other studies, not included in **Table 1**, involved the consideration of navigation improvements in the vicinity of Blount Island. Both of those studies were under the authority of Section 107 of the 1960 Rivers and Harbors Act, as amended. The reconnaissance study and report, dated December 1985, considered the Federal interest of widening the turn at the junction of the main ship channel in Jacksonville and the Blount Island west channel. The study results showed economic justification for the widener. Just prior to the report, Section 102 of Public Law 99-141, dated November 1, 1985, provided the authorization for widening of the turn in

Jacksonville with the use of available operation and maintenance funds. Based on language in the Act, no further study was needed for authorization of the work. A second reconnaissance study report, dated August 1989, considered the deepening of the channel on the west side of Blount Island. The study was favorable but the Jacksonville Port Authority deferred further study pending the availability of funds. Since that time the WRDA 1999 authorization included deepening the West Blount Island channel from 30 feet to 38 feet based on the April 21, 1999 feasibility study listed in **Table 1** above.

Existing Projects.

a. The Chief of Engineers Report dated April 30, 2012 recommends construction of a relocated Mile Point training wall. Relocation of the Mile Point training wall involves removal of the western 3,110 feet of the existing Mile Point training wall; land removal and dredging to open the confluence of the IWW and the St. Johns River; construction of a new training wall western leg (approximately 4,250 feet) and relocated eastern leg (approximately 2,050 feet); restoration of Great Marsh Island as the least cost disposal alternative and mitigation site while providing beneficial use of dredged material; and construction of a flow improvement channel to offset project induced adverse impacts. The recommended plan reduces the ebb tide crosscurrents at the confluence of the St. Johns River with the IWW. The Assistant Secretary of the Army (ASA) for Civil Works (CW) submitted the Final Integrated Feasibility Report to Congress on August 16, 2012.

b. The IWW crosses the St. Johns River south of the Mile Point training wall at Pablo Creek and to the north at Sisters Creek. The IWW has an authorized bottom width of 125 feet at a depth of 12 feet both on the north and south side of the St. Johns River. The first Federal authorization for the IWW (at Pablo Creek) from Jacksonville to Miami was provided in the Rivers and Harbors Act of January 21, 1927. Using an existing private canal, USACE took possession of the waterway on December 11, 1929. That first project called for a canal 8 feet deep by 75 feet wide and subsequently has been deepened and widened further. Construction began when the United States snagboat D-1 moved from the St. Johns River into Pablo Creek and headed south clearing obstructions. The first Federal authorization for the IWW north of the St. Johns River (which includes Sisters Creek), known as the Atlantic Intracoastal Waterway (AIWW) occurred under the River and Harbor Act of March 4, 1913, and provided for a channel 7 feet deep by 100 feet wide (found in document H. Doc. 898/62/2).

c. History of the Jacksonville Harbor Area: The Chief of Engineers Report dated May 19, 1965 recommended modification of the existing project for Jacksonville Harbor, Florida (from the entrance channel to River Mile 20), "to provide for maintenance of the existing ocean entrance 42 and 40 feet deep, deepening of the interior channel to 38 feet to the Municipal Docks and Terminals, and widening the channel near mile 5 and mile 7 by 100 feet and 200 feet, respectively." The Water Resources Development Act of 1999 modified some of the project features. The project features authorized in WRDA 1999 (and constructed in 2003) include a 40-foot project depth from the entrance channel to river mile 14.7, and a 38-foot project depth for Cuts F and G, and channel widths that vary from approximately 400 feet to 1,200 feet. Section 129 of the Energy and Water Development Appropriations Act, 2006, Public Law 109-103, authorized deepening and widening of miles 14.7 to 20 to the new project depth of 40 feet.

Funding was provided through the American Recovery and Rehabilitation Act (ARRA) of 2009 and the project was completed in 2010.

The existing federally authorized Jacksonville Harbor project provides for Federal maintenance of an existing channel depth of 40 feet with bottom widths ranging from 400 to 1,200 feet from the Atlantic Ocean to Mile 20 of the St. Johns River and 38 feet in the West Blount Island Channel (cuts F and G).

Federal Interest. As a result of a determination of Federal interest in further improvements, a cost sharing agreement for the GRR II study was entered into on July 1, 2005 and was amended on June 15, 2006. The study is cost shared at 65/35 per Section 129(b) of Public Law 109-103.

The Water Resources Development Act of 1986 (Public Law 99-662) as amended, specifies cost apportionment by project purpose for deep draft navigation projects. Federal participation in navigation projects is limited to sharing costs for design and construction of general navigation features (GNF) consisting of breakwaters and jetties, entrance and primary access channels, widened channels, turning basins, anchorage areas, locks, and dredged material disposal areas with retaining dikes. Non-Federal interests are responsible for and bear all costs for acquisition of necessary lands, easements, rights-of-way and relocations; terminal facilities; and dredging berthing areas and interior access channels to those berthing areas. For a commercial navigation project with project depths greater than 20 feet but not in excess of 45 feet, the non-Federal share for the construction is 25 percent. The non-Federal sponsor is responsible for 100% of the additional costs of a Locally Preferred Plan (LPP). Lands, easements, rights-of-way, and relocations (LERRs) are 100 percent non-Federal costs.

This project meets these definitions for Federal interest. Project implementation will generate approximately $55,400,000 in net benefits at a benefit-to-cost ratio of 2.6.

STUDY OBJECTIVES

Problems and Opportunities. Transportation delays and inefficiencies occur due to the existing conditions at Jacksonville Harbor. Vessels are restricted to the maximum depth of 40 feet, the authorized project depth. Larger vessels must light-load, wait for tidal advantage, or use smaller vessels in lieu of larger vessels to transit Jacksonville Harbor. This causes increased transportation costs. The 40-foot project depth impacts the introduction of larger vessels into the fleet and efficient use of larger vessels already using the harbor. These impacts also create transportation inefficiencies. Navigation concerns include two main problems: insufficient Federal channel depths and restrictive channel widths and turning basins. Opportunities are positive conditions in the study area that may result from management measures. There is an opportunity to bring the forecast volume of goods into the harbor on fewer larger ships providing transportation cost savings.

Planning Objectives. The objective of the Jacksonville Harbor Study is to evaluate improvements for Jacksonville Harbor to efficiently and safely accommodate larger vessels while preserving natural and recreational resources impacted by navigation improvements. The current 40-foot channel depth at Jacksonville Harbor impacts the introduction of larger vessels into the fleet utilizing the existing terminals. The loss of those larger vessels results in a loss of

transportation efficiencies.

Planning Constraints. Constraints are restrictions that limit the planning process. Plan formulation involves meeting the study objectives while not violating constraints. Specific study constraints include:

1) Height restrictions of the Dames Point Bridge and Jacksonville Electric Authority power lines limit the air draft of vessels to 175 feet.
2) Strong massive rock exists in the project area that would ordinarily need to be blasted for economical excavation. Homeowners along the St. Johns River and environmental resource agencies have expressed concerns about blasting. The homeowners' concerns are about impacts to their property and the agencies have expressed concerns about water clarity. The project would seek to minimize impacts by placing limitations on times blasting can occur.
3) There is limited capacity at the existing upland disposal facilities. The project would need to examine other means of disposal of dredged material including beneficial uses.
4) Jacksonville Harbor is bordered by several Federal lands such as Fort Caroline National Memorial and Timucuan Ecological and Historical Preserve, and state lands including a portion of Huguenot Memorial Park, and Nassau-St Johns River Marshes State Aquatic Preserve. The project will seek to minimize impacts wherever practicable.
5) There are endangered and threatened species that exist within the project footprint. Endangered species impacts will be consistent with applicable laws and consultation under the Endangered Species Act.
6) Adverse effects on environmental resources including essential fish habitat, salt marsh, and bird sanctuaries that exist near current upland confined disposal sites and other general navigation features such as training walls will be avoided, minimized, or mitigated for.
7) Placement of material on the beaches during the sea turtle nesting season will be avoided to the maximum extent practicable.
8) Development of available lands adjacent to the harbor limits the selection of potential future areas for use as upland confined disposal sites.

ALTERNATIVES

Plan Formulation Rationale. The Four Accounts are established in the Principles and Guidelines (P&G 1983) to facilitate the evaluation and display of effects of alternative plans. The national economic development (NED) account displays changes in the economic value of the national output of goods and services, the environmental quality (EQ) account displays non-monetary effects on ecological, cultural, and aesthetic resources including the positive and adverse effects of ecosystem restoration plans, the regional economic development (RED) account displays changes in the distribution of regional economic activity (e.g., income and employment), and the other social effects (OSE) account displays plan effects on social aspects such as community impacts, health and safety, displacement, energy conservation and others. The NED plan must also meet the test of four additional criteria: completeness, effectiveness, efficiency, and acceptability. The criteria are used in the building of alternatives; the four accounts are used in addition to the planning objectives and constraints in evaluating alternative plans.

Management Measures and Alternative Plans. A management measure is a feature or activity that can be implemented at a specific geographic site to address one or more planning objectives. Management measures are used to create plans and can be categorized as non-structural or structural. The following measures were identified to improve navigation efficiency.

The following non-structural management measures were identified to improve navigation in Jacksonville Harbor:

a) Designate existing deep water areas for turning of future larger ships in place of turning basin construction.
b) Examine realignment of segments of the Federal channel to areas of existing deep water by relocation of USCG aids to navigation (buoys) to avoid or minimize construction quantities.
c) Light-load vessels to accommodate larger vessels under the existing depths.
d) Use of tide to transit larger vessels under existing conditions.

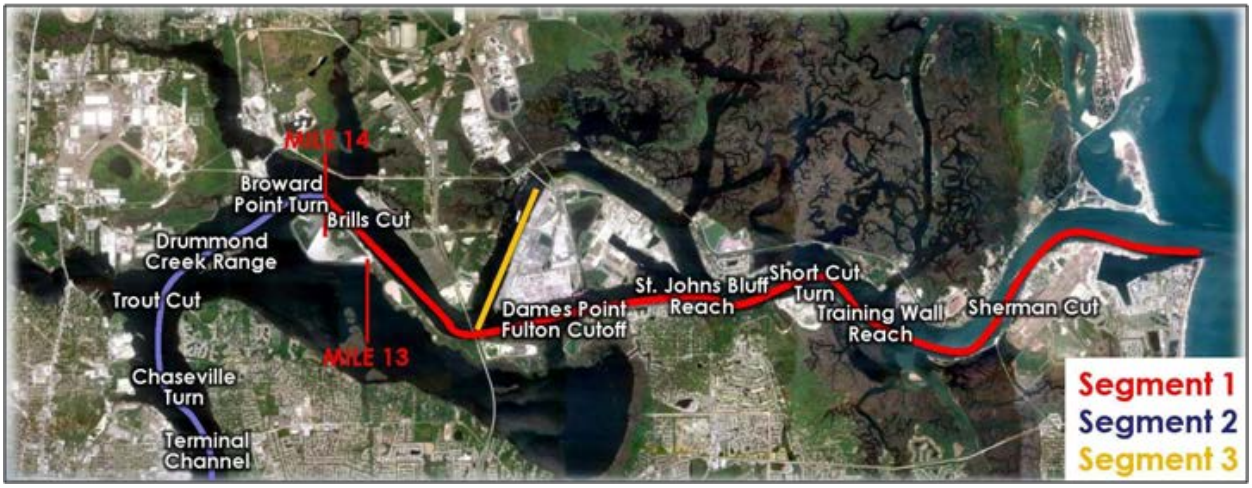
The following structural management measures were identified to meet the objectives of providing transportation cost savings.

Table 2: Structural Management Measures

Channel Segment	Cut Number	Estimated River Mile	Type	Measure	Opportunities
Sherman Cut Range	8	3-4	Widening	200' on Red Side	Transportation cost savings and two-way vessel traffic
	9	3-4	Widening	200' on Red Side	
	10	4-5	Widening	200' on Red Side	
	11	4-5	Widening	200' on Red Side	
	12	4-5	Widening	200' on Red Side	
	13	4-5	Widening	200' on Red Side tapering into Cut-14 at Atlantic Drydock tapering out to 100' on Green Side at Cut-14	
Training Wall Reach	14/15	4-5	Widening	100' on Green Side	
	16	5-6	Widening	100' on Green Side expanding to 250' in Cut-17	
Short Cut Turn	17	6-7	Widening	250' on Green Side	
	18	6-7	Widening	100' on Green Side	
	19	6-7	Widening	100' on Green Side	
St. Johns Bluff Reach/White Shells Cut	40	7-8	Widening	300' on Green Side	
	40	7-8	Widening	400' on Red Side tapering to 200' at Cut-41	
	41	7-8	Widening	200' on Red Side Varies on Green Side to match old 38' project limits	
Dames Point Fulton Cutoff Range	42	8-11	Widening	Varies on Green Side to match old 38' project limits	
Brills Cut	45	12-13	Widening	100' on Green Side	
Broward Point Turn	49	14-15	Widening	200' on Green Side	
Drummond Creek Range	50	14-16	Widening	200' on Green Side	
Trout River Cut	51	16-17	Widening	100' on Red Side tapers into Cut-52 at NuStar	
Chaseville Turn	54	18	Widening	200' expansion of Chaseville Widener at apex	
Terminal Channel	Terminal Channel	19-20	Widening	100' on Green Side	
Segment 1	Entrance to 46	Entrance Channel to River Mile 13	Deepening	Deepen from 41 feet up to 50 feet, in one foot increments	Transportation cost savings
Segment 2	46-Terminal Channel	River Mile 13 to 20	Deepening	Deepen from 41 feet up to 50 feet, in one foot increments	
Segment 3	F and G	West Blount Island Channel	Deepening	Deepen from 38 feet up to 40 feet, in one foot increments	
Blount Island Turning Basin (T.B.)	42	8-11	T.B.	Approx 2672 ft long by 1500 ft wide	Transportation Cost Savings and vessel maneuverability
Brills Cut Turning Basin (T.B.)	45	12-13	T.B.	Approx 2500 ft long by 1500 ft wide	
Talleyrand Turning Basin (T.B.)	Terminal Channel	19-20	T.B.	Approx 3025 ft long by 1500 ft wide	

The Red Side is the north side of the channel and the Green Side is the south side of the channel.

FIGURE 2: CHANNEL SEGMENTS USED IN PLAN FORMULATION



Screening of Measures. Management measures were evaluated on its potential to contribute to the planning objectives and its consistency with the planning constraints. A preliminary benefit/cost evaluation in addition to a request from the non-federal sponsor indicated certain increments of some of the deepening measures could be eliminated; incremental depths were carried forward for future evaluation. Some of the deepening and widening measures were then combined to form alternative plans.

Non-structural measures were eliminated from the study due to their inability to provide transportation cost savings. Existing deep water areas for turning of future larger ships are not available in place of turning basin construction. Examination did not turn up areas to realign the channel to avoid or minimize construction quantities for widening. Light-loading or use of tide does not provide transportation cost savings. The following table summarizes the reason for the elimination of certain structural measures.

Table 3: Management Measures Eliminated From Further Study

Channel Segment	Cut Number	River Mile	Type	Widening Measure	Reason for Elimination
Sherman Cut Range	8	3-4	Widening	200' on Red Side	Ship simulation showed no additional benefits of two-way traffic. Widening in these areas would be for channel reconfiguration needed for the deepening alternatives only.
	9	3-4	Widening	200' on Red Side	
	10	4-5	Widening	200' on Red Side	
	11	4-5	Widening	200' on Red Side	
	12	4-5	Widening	200' on Red Side	
	13	4-5	Widening	200' on Red Side tapering into Cut-14 at Atlantic Drydock tapering out to 100' on Green Side at Cut-14	
	16	5-6	Widening	100' on Green Side expanding to 250' in Cut-17	
Short Cut Turn	17	6-7	Widening	250' on Green Side	
	18	6-7	Widening	100' on Green Side	
	19	6-7	Widening	100' on Green Side	
St. Johns Bluff Reach/White Shells Cut	41	7-8	Widening	200' on Red Side Varies on Green Side to match old 38' project limits	
Dames Point Fulton Cutoff Range	42	8-11	Widening	Varies on Green Side to match old 38' project limits	
Brills Cut	45	12-13	Widening	100' on Green Side	
Broward Point Turn	49	14-15	Widening	200' on Green Side	Area eliminated from consideration due to lack of deepening preliminary benefits and at the request of the non-federal sponsor.
Drummond Creek Range	50	14-16	Widening	200' on Green Side	
Trout River Cut	51	16-17	Widening	100' on Red Side tapers into Cut-52 at NuStar	
Caseville Turn	54	18	Widening	200' expansion of Caseville Widener at apex	
Terminal Channel	Terminal Channel	19-20	Widening	100' on Green Side	
Talleyrand Turning Basin			T.B.	~3025' long by ~1500' wide	
Segment 2	46-Terminal Channel	River Mile 13 to 20	Deepening	Deepen from 41 feet up to 50 feet, in one foot increments	The analysis showed that the majority of benefiting vessels transit Segment 1, this enabled Segments 2 and 3 to be eliminated from further study. Additionally the non-federal sponsor requested Segments 2 and 3 be dropped from further evaluation.
Segment 3	F and G	West Blount Island Channel	Deepening	Deepen from 38 feet up to 40 feet, in one foot increments	

Red on Right when Returning from Sea – Red Right Returning. For Jacksonville Harbor the Red Side is the north side of the channel and the Green Side is the south side of the channel.

Initial Array of Alternative Plans. Alternative plans are made up of structural and/or non-structural measures that function together to address one or more of the study objectives. Alternative plans were formed to improve navigation in the harbor.

(1) No action (required by NEPA). The existing channel (40 feet in the main channel) will continue to be maintained at authorized depths. Commodity tonnage is expected to continue to

grow in the future, until capacity is reached at the existing terminals. Vessels will be depth constrained, so with future growth, it is expected that vessel operating costs will increase and congestion may increase if additional vessel calls are required to move the needed tonnage.

(2) Deepening Alternatives: Current ship movements in Jacksonville Harbor appear to have an acceptable width. Future vessels are not expected to be significantly larger than those in the existing fleet. In deciding what alternatives to consider for deepening, the location and identification of the various terminals were necessary along the river. The alternative was formed by combining and expanding on the management measures.
a) Segment 1 was reduced from River Mile 14 (Cut 47) to approximately River Mile 13 (Cut 45). The reason for this is because the benefits end at this point thus deepening beyond this point would provide no additional NED benefits at this time.
b) Deepening Increments from 41 to 50 feet will be carried further for investigation.

(3) Widening Alternatives: The Widening Measures were determined to be required for deepening thus the benefits when combined with deepening are incidental. A stand alone widening alternative was carried forward along with the combined deepening alternatives. The two widening areas in Segment 1 are at the Turning Wall Reach and St. Johns Bluff Reach. Successful meeting in these areas was shown in ship simulation.

(4) Turning Basins: There are two Turning Basins that are carried forward for investigation.
a) Blount Island Turning Basin: Located between River Mile 10-11 (Cut 42B)
b) Brills Cut Turning Basin: Located just past the TRAPAC MOL Container Terminal at River Mile 13 (Cut 45)

(5) The non-structural alternatives that were measured include additional tug assists and using the tide to transit the harbor for deeper draft vessels.

Evaluation Array of Alternative Plans. Deepening benefits were computed from 41 to 50 feet in one foot increments. The widening alternative was run independently as well as with the deepening increments. Costs and benefits were run to determine the plan that maximizes net benefits (NED plan).

Final Array of Alternatives. ERDC ship simulation took place in 2010 (final report March 2012) and greatly helped to refine the widening measures. A preliminary cost benefit analysis also helped to refine the deepening measures. The analysis showed that the vast majority of benefiting vessels would call in Segment 1, which led to the elimination of Segments 2 and 3 from further study. The widening measures that remain after ship simulation are incidental to deepening; however two reaches offer additional benefits to two-way traffic. Those measures were evaluated separately for added benefits. The following is a list of alternative plans that were evaluated for NED benefits to determine the recommended plan.

Deepening Alternatives Segment 1 (Entrance Channel to ~River Mile 13): Incidental widening benefits from two-way traffic areas at the Training Wall Reach and St. Johns Bluff Reach. Widening in these areas is identified through the ship simulation as necessary for deepening however they do provide additional benefits. Deepen up to 50 feet from existing 40 foot project

depth as determined by HarborSym. Two Turning Basins were identified through the ship simulation.

No Action Alternative: The no action alternative is provided for comparison purposes.

Evaluation of Final Array of Alternative Plans. The alternative plans were evaluated using the USACE navigation planning model HarborSym, ship simulation, engineering design, and engineering cost computations. Each increment of deepening was evaluated to determine the changes in cost and benefit.

Table 4: Final Array of Alternative Plans

Alternative	Channel Segment	River Mile	Measure	Reason Carried Forward
Widening Only Alterantive	Training Wall Reach	4-5	Widen 100' on Green Side	Ship simulation showed successful two-way meeting
	St. Johns Bluff Reach/White Shells Cut	7-8	Widen300' on Green Side	
Deepening Alternative (Includes Widening and Turning Basins)	Segment 1	Entrance Channel to ~13	Deepen up to 50 feet	The majority of benefiting vessels transit this segment, the non-federal sponsor supports this segment
	Blount Island Turning Basin	8-11	Approx. 2672' long by 1500' wide	Ship Simulation showed successful turning
	Brills Cut (Cut-45) Turning Basin	12-13	Approx. 2500' long by 1500' wide	
	Training Wall Reach	4-5	Widen 100' on Green Side	Ship simulation showed successful two-way meeting
	St. Johns Bluff Reach/White Shells Cut	7-8	Widen300' on Green Side	
The Red Side is the north side of the channel and the Green Side is the south side of the channel.				

The Brills Cut Turning Basin is a new turning basin; there is a local turning basin off of the existing container terminal. This is a separate proposed turning basin and is not an extension of the existing local turning basin.

Comparison of Final Array of Alternative Plans. The results of the cost and benefit evaluations are shown in **Table 5**. The Widening Only alternative was not justified however the widening areas are required for deepening and is included in the depths below. Widening of the channel and the turning basin measures are included in each of the deepening alternatives.

Table 5: Comparison of Final Array of Alternative Plans

Depth	AAEQ Costs*	AAEQ Benefits	AAEQ Net Benefits	BCR
44ft	$23,890,000	$66,730,000	$42,840,000	2.80
45ft	$26,030,000	$84,220,000	$58,190,000	3.20
46ft	$32,330,000	$88,030,000	$55,700,000	2.70
47ft	$34,260,000	$89,690,000	$55,430,000	2.60
*Costs include IDC and O&M.				

Note: FY14 price level at 3.5%

Key Uncertainties. To account for uncertainties in the economic analysis several sensitivities were run including zero growth after year 2020, 2030, and 2040. The OMB rate of 7% was also run. To account for uncertainties in the cost estimate, contingencies were applied to the overall estimate and the mitigation estimate.

Recommended Plan. The NED plan has been identified to be 45 feet. This is the depth where the net benefits are the highest. The non-federal sponsor requested a locally preferred plan (LPP) of 47 feet, which has been approved for consideration as the recommended plan by the ASA (CW) in a May 17, 2013 letter. Given the positive net benefits at this depth and ASA (CW) approval; the recommended plan is the LPP of 47 feet. In addition to deepening, the two areas of widening at the Training Wall Reach and St. Johns Bluff Reach are recommended. Two turning basins located at Blount Island and Brills Cut were recommended under the final 2012 ship simulation report and are currently being evaluated using HarborSym. The graphic below outlines the recommended plan area.

FIGURE 3: Recommended Plan (47-foot LPP)

Environmental Operating Principles. In coordination with the agencies and other stakeholders, USACE proactively considered the environmental consequences of the proposed deepening project. Avoidance and minimization measures were evaluated, and mitigation will be provided to offset unavoidable adverse impacts to natural resources (i.e., wetlands and submerged aquatic vegetation). The project is located within the St. Johns River, which has been designated an American Heritage River. In accordance with the mandate of this designation and the EOPs, USACE will propose a project that supports economic and environmentally sustainable solutions. The project would be constructed in compliance with all applicable laws.

A risk management assessment has been performed, which included environmental concerns. In addition, USACE coordinated with all stakeholders to gather scientific, economic, and social information. This coordination was conducted in a manner that encouraged all groups to express their views.

Agency Technical Review / Independent External Peer Review.

ATR: An external Agency Technical Review (ATR) was performed by a multi-disciplinary team. The ATR team membership and the scope of ATR work were coordinated with the USACE National Deep Draft Navigation Planning Center of Expertise (DDNPCX). During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. Certification was provided October 2013 with a final environmental certification January 2014.

IEPR: Overall, 13 Final Panel Comments were identified and documented. Of these, two were identified as having high significance, seven had medium significance, and four had low significance. Certification August 8, 2013.

EXPECTED PROJECT PERFORMANCE

Project Costs, Equivalent Annual Costs and Benefits.

Project Costs. Project benefits are based on transportation cost savings. These benefits, or transportation cost savings, are attributable to enabling vessels to use their capacity more efficiently, and/or reduced susceptibility to tidal delays and congestion. The project total cost of the recommended plan is estimated at $695 million at October 1, 2013 price levels with the Federal share of the recommended plan $338 million, and the non-federal share $357 million. After authorization, it is estimated that the project could be constructed in approximately 6 years, assuming sufficient Federal and non-federal appropriations to support award of construction contracts.

Table 6: Project Costs

(October 1, 2013 Price Levels and FY14 discount rate) Cost Summary LPP Plan (Deepen to 47 feet)			
	Total Cost	**Federal Share**	**Non-federal Share**
General Navigation Features	**20-47 ft.**	**75% of NED[5]**	**25% of NED + Addtl**
Mobilization	**$9,700,000**	**$5,100,000**	**$4,500,000**
Dredging and Disposal	**$520,500,000**	**$327,300,000**	**$193,100,000**
Associated General Items[1]	**$3,700,000**	**$2,900,000**	**$800,000**
Environmental Mitigation	**$33,400,000**	**$25,200,000**	**$8,200,000**
Planning, Engineering, and Design	**$16,500,000**	**$9,200,000**	**$7,300,000**
Construction Management (S&I)	**$16,500,000**	**$9,200,000**	**$7,300,000**
Subtotal Construction of GNF	**$600,200,000**	**$379,000,000**	**$221,200,000**
Lands and Damages	**$700,000**	**$500,000**	**$200,000**
Corrective Action Mitigation	**$10,600,000**	**$8,000,000**	**$2,600,000**
Total Project First Costs	**$611,500,000**	**$387,600,000**	**$223,900,000**
Non-federal Construction Costs (Local Service Facilities)	**$82,000,000**	**$0**	**$82,000,000**
Aids to Navigation[2]	**$1,300,000**	**$1,300,000**	**$0**
Credit for non-Federal LERR[3]	**$0**	**$0**	**($200,000)**
10% GNF Non-Federal[4]	**$0**	**($50,500,000)**	**$50,500,000**
Total Cost Allocation[6]	**$694,800,000**	**$338,300,000**	**$356,500,000**
1. Includes Turbidity and Endangered Species Monitoring.			
2. Navigation Aids - 100% Federal			
3. Real Estate Costs: These RE Costs are for incidental costs (administrative costs only). Credit is given for the incidental costs borne by the non-Federal sponsor for lands, easements, rights of way and relocations per Section 101 of WRDA 86.			
4. The Non-Federal Sponsor shall pay an additional 10% of the costs of GNF, pursuant to Section 101 of WRDA 86. The value of LERR shall be credited toward the additional 10% payment. The value of lands provided for mitigation including the sponsor's incidental cost of acquisition are not creditable against this 10% since that value is cost shared as a GNF.			
5. The Federal share is the same that of the NED plan, which at 45 feet is 75%.			
6. In addition to these costs the AAEQ increases in O&M costs are approximately $1.1 million. Currently no additional O&M is identified for the LPP, any O&M above the NED will be the responsibility of the non-Federal Sponsor.			

Equivalent Annual Costs and Benefits. Based on an evaluation of alternative plan economic costs and benefits, the NED plan includes a 45-foot deep channel with associated widening and turning basins. This is the depth at which net benefits (benefits minus costs) are greatest. The benefit-to-cost ratio (BCR) for the NED plan is 3.2 (**Table 7**). The non-federal sponsor, the Jacksonville Port Authority (JAXPORT), subsequently requested a locally preferred plan (LPP) including a 47-foot depth with associated widening and turning basins. The LPP has positive net benefits and is economically justified (BCR is 2.6). The recommendations for the widening areas and the turning basins are the same for both the NED and the LPP. In accordance with USACE policy, the LPP was submitted for consideration to the Assistant Secretary of the Army for Civil Works (ASA-CW) and approved for consideration as the recommended plan on May 17, 2013.

The recommended plan (preferred alternative) is the locally preferred plan (LPP). The recommended plan includes deepening the Federal channel to 47 feet from the entrance channel to approximately River Mile 13, two areas of widening at the Training Wall Reach and St. Johns Bluff Reach, and two new Turning Basins at Blount Island and Brills Cut (**Figure 3**).

Table 7: NED and LPP Benefits and Costs

Depth	AAEQ Costs	*AAEQ IDC*	AAEQ Benefits	AAEQ Net Benefits	BCR 3.50%	BCR 7%
45ft	**$26,000,000**	*$3,070,000*	**$ 84,200,000**	**$58,200,000**	**3.20**	**1.50**
47ft	**$34,300,000**	*$3,810,000*	**$ 89,700,000**	**$55,400,000**	**2.60**	**1.20**

**Average Annual Equivalent Costs (AAEQ) Costs include AAEQ IDC (shown above) and AAEQ O&M*

Cost Sharing. The Water Resources Development Act of 1986 (Public Law 99-662) as amended, specifies cost apportionment by project purpose for deep draft navigation projects. Federal participation in navigation projects is limited to sharing costs for design and construction of general navigation features (GNF) consisting of breakwaters and jetties, entrance and primary access channels, widened channels, turning basins, anchorage areas, locks, and dredged material disposal areas with retaining dikes. Non-Federal interests are responsible for and bear all costs for acquisition of necessary lands, easements, rights-of-way and relocations; terminal facilities; and dredging berthing areas and interior access channels to those berthing areas.

Title I Section 101 of WRDA 1986 requires the project sponsor to bear a percentage share of harbor construction for project components that are cost shared (general navigation features, mitigation) that varies according to the range of water depths where work is to be done. That cost share is paid during construction.

For a commercial navigation project with project depths greater than 20 feet but not in excess of 45 feet, the non-Federal share for the construction is 25 percent. The percentage applies as well to mitigation and other work cost shared the same as general navigation features. Lands, easements, rights-of-way, and relocations (LERRs) are 100 percent non-Federal costs. Operation and maintenance of the general navigation features with a 100 percent commercial vessel navigation project are a 100 percent Federal responsibility. The cost share is paid during construction. The project sponsor will pay an additional amount equal to 10 percent of the total construction cost for general navigation features of the NED plan. This may be paid over a period not to exceed thirty years, and LERRs may be credited against it. The non-federal sponsor will pay 100% of the difference between the NED plan and the recommended plan (LPP). **Table 7** summarizes the cost sharing percentages. **Table 8** shows the total cost sharing summary of the recommended plan.

Table 8: Cost Sharing

Feature	Federal Cost % [1]	Non-Federal Cost % [1]
General Nav. Features (GNF)	• 90% from 0' to 20' • 75% from 20' to 45' • 50% 46'and deeper	• 10% from 0' to 20' • 25% from 20' to 45' • 50% 46' and deeper
GNF's costs for this project include: mobilization, all dredging costs, and all disposal area construciton costs.		
Navigation Aids	• 100%	• 0%
Operation and Maintenance		
GNF	• 100% except cost share 50% costs for maint. > 45 feet	• 0% except cost share 50% for maint. > 45 feet
Mitigation	• 75%	• 25%
(1) The Non-Federal Sponsor shall pay an additional 10% of the costs of GNF over a period of 30 year.s, at an interest rate determined pursuant to Section 106 of WRDA 86. The value of LERR shall be credited toward the additional 10% payment.		

Project Implementation. The U. S. Army Corps of Engineers is responsible for budgeting for the Federal share of construction costs for all future work for Federal projects. Federal funding is subject to budgetary constraints inherent in the formation of the national civil works budget for a given fiscal year. The USACE would perform the necessary preconstruction engineering and design needed prior to construction. Cost sharing will be in accordance with WRDA 1986, as amended, subject to the availability of appropriations and concurrence with the coastal zone consistency determination.

The non-Federal sponsor for the project is the Jacksonville Port Authority. Non-Federal sponsor is responsible for all costs for acquisition of necessary lands, easements, rights-of-way and relocations. Title I Section 101 of WRDA 1986 requires the project sponsor to bear a percentage share of harbor construction for project components that are cost shared (general navigation features, mitigation) that varies according to the range of water depths where work is to be done. That cost share is paid during construction. For a commercial navigation project with project depths greater than 20 feet but not in excess of 45 feet, the non-Federal share for the construction is 25 percent. Lands, easements, rights-of-way, and relocations (LERRs) are 100 percent non-Federal costs. Operation and maintenance of the general navigation features with a 100 percent commercial vessel navigation project are a 100 percent Federal responsibility. The project sponsor will also pay an additional amount equal to 10 percent of the total construction cost for general navigation features. This may be paid over a period not to exceed thirty years, and LERRs may be credited against it. The non-federal sponsor will pay 100% of the difference in costs from the NED plan to the recommended plan (LPP).

Operation, Maintenance, Repair, Rehabilitation, and Replacement (OMRR&R). Based on a desktop analysis of the existing O&M requirements and the proposed project expansion

features, it is estimated that there will be an average annual increase of 137,000 cubic yards (cy) of shoal material to be dredged each year from the new project. Much of the increase is due to the construction of two new turning basins that will be needed to accommodate the Post-Panamax container ships. With the incorporation of advance maintenance zones into these turning basins, it may be possible to reduce the frequency of dredging required and thus reduce contract costs and equipment mobilization costs. The average annual additional cost of O&M due to the increases to the project footprint (widening) for the recommended plan is approximately $1.1 million. As there is no discernible difference between the O&M costs of the NED plan versus the recommended plan (LPP) the costs will be 100% Federal. Advance maintenance is dredging to a specified depth and/or width beyond the authorized channel dimensions in critical and fast-shoaling areas to avoid frequent redredging and ensure the reliability and least overall cost of operating and maintaining the project authorized dimensions.

Key Social and Environmental Factors. Environmental impacts caused by the implementation of the NED plan (45 feet) or the LPP (47 feet) are expected to be similar. The mitigation options for salinity induced effects resulting from the proposed deepening of Jacksonville Harbor are formulated in compliance with Council on Environmental Quality (CEQ) Regulation 1508.20 and Engineering Regulation (ER) 1105-2-100, as well as Federal Register Announcement 19594 (Compensatory Mitigation for Losses of Aquatic Resources).

Mitigation is required for wetlands and submerged aquatic vegetation affected by the deepening. A base mitigation plan, consisting of conservation land purchase of 638 acres of freshwater wetlands, uplands, river shoreline, and salt marsh wetlands has been proposed.

A model verification process is included within the mitigation plan, and would be implemented for a minimum of 5 years post-construction. This will ensure that the proposed deepening effort will not negatively affect the ecological resources of the Lower St. Johns River above and beyond that which was predicted and mitigated for in the deepening study. The specific objective of the plan is to measure actual salinity effects of the project deepening. Salinity levels within the St. Johns River can also be affected by dry and wet years, sea level rise, water withdrawal, and other factors. The system is already showing signs of salinity effects, i.e. conversion of tidal swamp to tidal marsh. Measuring salinity effects potentially caused by the deepening would reduce uncertainty of predicted salinity impacts and most importantly the causes of impacts. If we do not measure salinity after deepening and changes to the resources continue there will be no way to discern what caused the changes.

Collectively, the mitigation measures and the project corrective action plan will help ensure that adverse effects resulting from project implementation will be offset in the St. Johns River watershed. However, should corrective action be triggered, a Post Authorization Change (PAC) report would be required before any actions would occur.

Stakeholder Perspectives and Differences. To ensure that the public and Federal, tribal, state, and local agencies were kept informed about progress on technical analyses and policy issues, public meetings were held throughout the study period. In addition to a May 2009 public workshop at the initiation of the study, additional meetings were conducted to inform the public and receive initial comments on ecological modeling and proposed methods for evaluating

impacts (May 2012), preliminary ecological modeling results (October 2012 and September 2013), methods for blasting if required for dredging (March 2013), ship wake and storm surge modeling results (September 2013) and to present the draft report/SEIS (June 2013 and September 2013). In addition, the public and agencies were invited to participate in bi-monthly teleconferences throughout the study beginning August 2012.

Environmental Compliance. The NEPA document for this project is a SEIS. The Draft SEIS was coordinated with the Draft General Reevaluation Report II as an integrated document. All public comments were incorporated into the Final SEIS. A Draft ROD has been included in the report submittal package.

Certification of Peer, Agency, Cost and Legal Review.

IEPR Certification	08 August 2013
ATR Certification	31 January 2014
Cost Certification	14 November 2013
Legal Review Certification	07 February 2014