



U.S. Army Corps of Engineers
Charleston District

APPENDIX D

CHARLESTON HARBOR POST 45
CHARLESTON, SOUTH CAROLINA

Cost Engineering

May 2015

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NAVIGATION STUDY FOR CHARLESTON HARBOR, SOUTH CAROLINA

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D. COST ESTIMATES AND RISK ANALYSIS

D1. GENERAL INFORMATION

US Army Corps of Engineers' cost estimates for planning purposes are prepared in accordance with the following guidance:

- Engineer Technical Letter (ETL) 1110-2-573, Construction Cost Estimating Guide for Civil Works, 30 September 2008
- Engineer Regulation (ER) 1110-1-1300, Cost Engineering Policy and General Requirements, 26 March 1993
- ER 1110-2-1302, Civil Works Cost Engineering, 15 September 2008
- ER 1110-2-1150, Engineering and Design for Civil Works Projects, 31 August 1999
- ER 1105-2-100, Planning Guidance Notebook, 22 April 2000, as amended
- Engineer Manual (EM) 1110-2-1304 (Tables Revised 31 September 2014), Civil Works Construction Cost Index System, 31 March 2000
- CECW-CP Memorandum for Distribution, Subject: Initiatives to Improve the Accuracy of Total Project Costs in Civil Works Feasibility Studies Requiring Congressional Authorization, 19 September 2007
- CECW-CE Memorandum for Distribution, Subject: Application of Cost Risk Analysis Methods to Develop Contingencies for Civil Works Total Project Costs, 3 July 2007
- Cost and Schedule Risk Analysis Process, March 2008

The goal of the cost estimates for the Charleston Harbor Post 45 Phase II Feasibility Study for the shipping harbor located in Charleston, South Carolina is to present a Total Project Cost (Construction and Non-Construction costs) for the National Economic Development (NED) plan and the Locally Preferred Plan (LPP) at the current price level to be used for project justification and/authorization. In addition, the costing efforts are intended to produce a final product (cost estimate) that is reliable and accurate, and that supports the definition of the Government's and the Non-Federal sponsor's obligations.

This study was conducted in accordance with the requirements of "SMART Planning", also known as a 3X3X3 study. The level of analysis for cost, while shortened, was conducted to the appropriate level to determine a recommended plan. The cost estimating effort for the study also yielded a series of alternative plan formulation cost estimates for decision making. The cost estimates supporting the NED plan and LPP (the Recommended Plan) are prepared in Micro-computer Aided Cost Estimating System version II (MCACES/MII) format to the Civil Works Work Breakdown Structure (CWWBS) sub-feature level. These estimates are supported by the preferred labor, equipment, materials and

crew/production breakdown. During the evaluation of alternatives, an abbreviated risk analysis (ARA) was performed on each alternative. The cost estimates and ARAs were evaluated by the Cost MCX and found to be compliant with requirements and acceptable for the alternative evaluation phase. A full Cost and Schedule Risk Analysis (CSRA) was performed on the final NED and LPP plans and is included that addresses project uncertainties and sets contingencies for each plan's cost items. Value engineering processes were followed throughout the feasibility study and have resulted in significant savings in the overall construction cost. In addition, a formal VE study has been conducted in accordance with USACE Policy.

D.1.1 Recommended Alternative Plans

The final NED plan and LPP resulted directly from the plan formulation process described above. The Economics Appendix (Appendix C) fully describes the plan selection process based upon the plan that maximizes the net benefits while considering the significance of the change in cost between alternative plans. The NED plan selected by USACE HQ is the 50'/48' plan (see Section D.2.1 for more details of this plan). The local Sponsor has selected to pursue an LPP which is the 52'/48' plan (see Section D.2.2 for more details of this plan). The scopes of work for the NED plan and LPP are found in the main report and Engineering Appendix (Appendix A). The MCACES/MII cost estimates are based on the scopes and are formatted in the CWWBS. The notes provided in the body of the estimate detail the estimate parameters and assumptions. These include pricing at the Fiscal Year 2015 price level (1 October 2014-30 September 2015).

The construction costs fall under the following feature codes:

- 06 Fish and Wildlife Facilities
- 11 Levees and Floodwalls
- 12 Navigation Ports and Harbors

The non-construction costs fall under the following feature codes:

- 01 Lands and Damages
- 06 Fish and Wildlife Facilities
- 18 Cultural Resource Preservation
- 30 Planning, Engineering and Design
- 31 Construction Management

D.1.2 Construction Cost

Construction costs were developed in MCACES/MII and include all major project components categorized under the appropriate CWWBS to the sub- feature level. The construction costs for dredging operations were developed using the Corps of Engineers Dredge Estimating Program (CEDEP) and then transferred into the MCACES/MII estimates. Total

Project Costs on each plan contain contingencies that were determined as a result of the Cost and Schedule Risk Analysis. Additional information follows on the risk analysis.

D.1.3 Non-construction Cost

Non-construction costs typically include Lands and Damages (Real Estate), Planning Engineering & Design (PED) and Construction Management Costs (Supervision & Administration, S&A). These costs were provided by the PDT either as a lump sum cost or as a percentage of the total Construction Contract Cost. Lands and Damages cover the potential real estate purchase to mitigate for wetland impacts. An average cost per acre was provided by the Savannah Real Estate Branch and are best described in the Real Estate Appendix (Appendix E). PED costs for the preparation of contract plans and specifications (P&S) have been provided by the project manager and include additional studies, such as ship simulation and environmental surveys, which were not performed during feasibility in accordance with the requirements of the SMART Planning methodology for feasibility studies. Construction Management costs are for the supervision and administration of the contracts required to perform the various aspects of construction required for this project and includes Project Management, Construction Quality Assurance and Contract Administration costs. These costs were provided by the project manager with input from the Chief of Construction and are included as a percentage of the total construction contract cost.

In addition to the typical non-construction costs, this project also includes additional costs for Fish & Wildlife Facilities for environmental monitoring and a cost for Cultural Resource Preservation for monitoring shoreline erosion. The environmental monitoring has been added to the Non-construction costs of this project to cover the cost of monitoring the viability of the mitigation efforts included in this project and to ensure other environmental limits are not exceeded. The shoreline erosion monitoring has been added to the Non-construction costs to cover monitoring of shoreline erosion to verify that the larger vessels calling on the port of Charleston do not negatively impact the shoreline, especially in the area of Fort Sumter, a National Historic Landmark. The main report details both cost allocation and cost apportionment for the Federal Government and the Non-Federal Sponsor. Also included in the main report are the Non-Federal Sponsor's obligations (items of local cooperation).

D.1.4 Plan Formulation Cost Estimates

For the plan formulation cost estimates, unit prices for dredging related work were developed in the Corps of Engineers Dredge Estimating Program (CEDEP) and then entered into MCACES/MII. Unit prices for the remaining major or variable construction elements were developed in

MCACES/MII based on input from the PDT. Design details, information and assumptions are provided in the notes of the MCACES/MII estimates for each alternative. Plan formulation alternatives and cost estimates include advanced maintenance at the same rate for advanced maintenance as the existing 45' project, except for the seaward section of the entrance channel which does not include any advanced maintenance, but does include 1' of required over depth in order to maintain additional under keel clearance in areas where rock is present. In order to reduce the hard bottom mitigation in the Entrance Channel, the existing side slope design was changed from having a plateau at +5' from the authorized channel depth. The existing side slopes were extended to the new plateau depth thus eliminating some hard bottom impacts. This design is shown in Figure D-1 below.

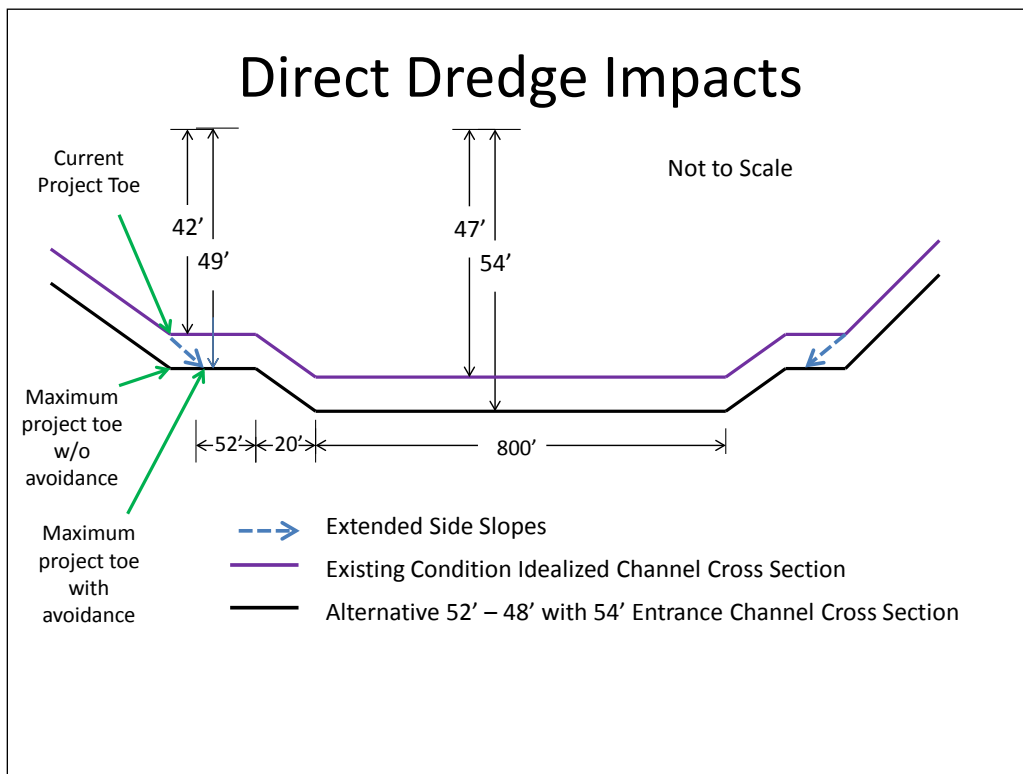


Figure D-1. Proposed Side Slope Extension to Avoid Hardbottom Areas

Refer to Economics Section in the main report for final plan formulation cost tables including the calculation of net benefits and benefit to cost ratios for the NED plan and the LPP.

D.1.5 Annual Costs

Estimates for increases in annual costs for O&M dredging due to increased shoaling and increased maintenance for aids to navigation due to the deepening of the harbor were calculated for economic analysis. The increase in maintenance costs for the aids to navigation were provided by

the USCG, who is the responsible agency for navigation markers and aids. The increase in O&M dredging quantities for the new project, either NED or LPP, were calculated from models of the hydrodynamic properties and provided by H&H engineering. As noted, the major portion of the increase in shoaling is due to the widening features that increase the footprint of the channel. The change in depth has a much smaller affect on the shoaling. These quantities were then used with an average cost per cubic yard for the affected reaches. The unit cost was used with the assumption that the mobilization costs were already covered in the current plan for dredging the existing channel. Table D-1 shows the annual cost increases due to increased shoaling for each of the plans, NED and LPP.

Table D-1 Increased Shoaling Annual Costs

Plan	Shoaling Qty	Delta Qty – Harbor	Delta Qty – EC	Cost Increase
Existing Condition	1,452,936 CY	--	--	--
NED	2,156,376 CY	703,440 CY	80,000 CY	\$3,525,480
LPP	2,171,466 CY	718,530 CY	112,000 CY	\$3,737,385

D.1.6 Construction Schedule

Construction schedules for the NED plan and the LPP were prepared utilizing input from the PDT and reflect all project construction components. The schedule considers not only durations of individual components of construction, but also the timing of construction contracts based on the assumption of unconstrained funding. Each of the construction schedules was combined with the project schedule to create an overall schedule that was used for the generation of the Total Project Cost.

The construction schedule presented within this appendix is a true construction schedule that incorporates simultaneous dredging operations occurring in different areas of the project. This schedule is a real world approach as opposed to the very conservative method of a straight line dredging operation where all reaches are considered as being dredged in a series that was used for the interest during construction calculation.

The construction schedule will change as the project moves through the various project lifecycle phases. The overall project schedule for the Recommended Plan is provided in Section D.4 of this Appendix.

D2. PLAN FORMULATION COST ESTIMATES

Cost estimates for all alternative plans were generated based on quantities derived from the dredging to reach the target depth plus any advanced maintenance, allowable overdepth and unpaid overdepth. These quantities were used to derive cost estimates that are accurate for the conditions expected in each of the alternatives of this project.

D.2.1 Alternative 1 - 50/48 Estimate

The MII estimate for this alternative is considered “For Official Use Only” (FOUO). Therefore, it is available to government personnel only upon request. This plan is based on an authorized channel with the following characteristics: 52’ Entrance Channel, 50’ Main Channel providing access to the Wando Welch and New Navy Base terminals, 48’ Channel from the New Navy Base terminal to the North Charleston terminal. Table D-2 below shows the expected type and quantity of dredges, quantities of material to be dredged, disposal site and the duration of dredging for this plan. This estimate includes improvements to three inland disposals areas (DA), Yellowhouse Creek DA, Clouter Creek DA and Daniel Island DA. In addition, environmental mitigation, monitoring, changes for aids to navigation, PED and Construction S&A are included in the estimate. For a complete cost impact, Associated Costs to relocate Aids to Navigation by the USCG, improve the wharf at the Wando Welch terminal and to deepen the berthing facilities at the Wando Welch (50’), New Navy Base (50’) and North Charleston (48’) terminals are included in the cost estimate for this alternative and added as separate costs with responsibility only to the Sponsor in the Total Project Cost Summary.

Table D-2 – Project Characteristics of the 50’/48’ Plan

50’/48’ Project with Max Wideners								
Channel Reach	Dredge Plant Type	# of Dredges	Placement Area	Deepening Dredge Quantity in Cubic Yards (CY)				Duration Months
				Required	Advanced Maint	Allowable OD	Total	
Fort Sumter Reach EC1	Large Hopper	2	ODMDS	1,188,513	1,570,978	1,167,345	3,926,836	3.92
Fort Sumter Reach EC1	Medium Hopper	1	ODMDS	297,128	392,745	291,908	981,781	3.76
Fort Sumter Reach EC1	Rock cutter	1	ODMDS	121,651	501,410	630,464	1,253,525	8.60
Fort Sumter Reach EC1	Rock cutter	1	DNR Site	36,000	24,000	0	60,000	0.33
Fort Sumter Reach EC1	Rock cutter	1	Reef Placement	252,000	168,000	0	420,000	2.37
Ft. Sumter - Reach EC1	Clamshell w/ rock bucket	1	ODMDS	136,000	264,000	260,000	660,000	6.35
Ft. Sumter - Reach EC1	Clamshell w/ rock bucket	1	Mitigation Site	56,000	144,000	160,000	360,000	3.79
Ft. Sumter - Reach EC1	Clamshell w/ rock bucket	1	DNR Site	28,000	72,000	80,000	180,000	1.72
Fort Sumter Reach EC2	Large Hopper	1	ODMDS	226,705	326,775	1,080,416	1,633,896	3.90
Fort Sumter Reach EC2	Medium Hopper	2	ODMDS	151,137	217,850	720,278	1,089,265	2.49
Fort Sumter Reach EC2	Rock cutter	1	ODMDS	134,410	302,766	1,076,654	1,513,830	10.47
Fort Sumter Reach EC2	Rock cutter	1	Reef Placement	336,000	84,000	0	420,000	2.37
Fort Sumter Reach EC2	Clamshell w/ rock bucket	1	Reef Placement	364,000	216,000	500,000	1,080,000	10.09

Mount Pleasant Reach	Clamshell	2	ODMDS	23,898	172,633	300,460	496,990	0.76
Rebellion Reach	Clamshell	2	ODMDS	59,059	253,432	368,922	681,413	0.99
Bennis Reach	Clamshell	2	ODMDS	370,425	452,088	535,877	1,358,390	0.93
Horse Reach	Clamshell	2	ODMDS	12,121	58,350	119,491	189,961	0.27
Hog Island Reach	Clamshell	2	ODMDS	356,935	441,818	604,646	1,403,398	1.45
Wando River Lower Reach	Clamshell	2	ODMDS	613,040	352,567	390,659	1,356,266	0.81
Wando River Upper Reach	Clamshell	2	ODMDS	46,250	146,218	215,433	407,901	0.52
Wando River Turning Basin	Clamshell	2	ODMDS	2,177,682	361,548	369,479	2,908,708	1.60
Segment 1 Total				6,986,954	6,523,176	8,872,030	22,382,160	67.50
Drum Island Reach	Clamshell	2	ODMDS	178,841	183,826	259,075	621,742	0.73
Myers Bend	Clamshell	2	ODMDS	171,835	185,746	238,297	595,878	0.60
Daniel Island Reach	Pipeline	2	Daniel Island	560,801	453,618	583,009	1,597,428	1.32
Segment 2 Total				911,477	823,190	1,080,381	2,815,048	2.65
Daniel Island Bend	Pipeline	2	Daniel Island	0	15,962	58,589	74,551	0.21
Clouter Creek Reach	Pipeline	2	Daniel Island	0	239,435	343,715	583,150	0.98
Navy Yard Reach	Pipeline	2	Clouter Creek	0	81,661	277,155	358,816	0.60
North Charleston Reach	Pipeline	2	Clouter Creek	0	278,703	253,990	532,693	0.50
Filbin Creek Reach	Pipeline	2	Yellowhouse	0	215,518	189,902	405,420	0.61
Port Terminal Reach	Pipeline	2	Yellowhouse	0	51,731	140,337	192,068	0.43
Ordnance Reach	Pipeline	2	Yellowhouse	0	30,989	87,102	118,091	0.26
Ordnance Reach Turning Basin	Pipeline	2	Yellowhouse	0	1,309,852	239,461	1,549,313	1.21
Segment 3 Total				0	2,223,851	1,590,251	3,814,102	4.80
North Charleston Terminal Berthing Area Dredging	Pipeline	1	Yellowhouse	0	27,334	13,667	41,001	0.16
Navy Base Terminal Berthing Area Dredging	Pipeline	1	Daniel Island	67,794	135,585	135,585	338,964	0.67
Wando Terminal Berthing Area Dredging	Pipeline	1	Daniel Island	22,519	45,038	45,038	112,595	0.22
Berthing Areas Total				90,313	207,957	194,290	492,560	1.05
Total Construction				7,988,744	9,778,174	11,736,952	29,503,871	76.00

D.2.2 Alternative 2 - 52/48 Estimate

The MII estimate for this alternative is considered “For Official Use Only” (FOUO). Therefore, it is available to government personnel only upon request. This plan is based on an authorized channel with the following characteristics: 54’ Entrance Channel, 52’ Main Channel providing access to the Wando Welch and New Navy Base terminals, 48’ Channel from the New Navy Base terminal to

the North Charleston terminal. Table D-3 below shows the expected type and quantity of dredges, quantities of material to be dredged, disposal site and the duration of dredging for this plan. This estimate includes improvements to three inland disposals areas, Yellowhouse Creek DA, Clouter Creek DA and Daniel Island DA. In addition, environmental mitigation, monitoring, changes to aids to navigation, PED and Construction S&A are included in the estimate. For a complete cost impact, Associated Costs to relocate Aids to Navigation by the USCG, improve the wharf at the Wando Welch terminal and to deepen the berthing facilities at the Wando Welch (52'), New Navy Base (52') and North Charleston (48') terminals are included in the cost estimate for this alternative and added as separate costs with responsibility only to the Sponsor in the Total Project Cost Summary.

Table D-3 – Project Characteristics of the 52'/48' Plan

52'/48' Project with Max Wideners								
Channel Reach	Dredge Plant Type	# of Dredges	Placement Area	Deepening Dredge Quantity in Cubic Yards (CY)				Duration Months
				Required	Advanced Maint	Allowable OD	Total	
Fort Sumter Reach EC1	Large Hopper	2	ODMDS	2,832,782	358,006	894,718	4,085,506	3.98
Fort Sumter Reach EC1	Medium Hopper	2	ODMDS	1,525,343	192,774	481,771	2,199,888	4.11
Fort Sumter Reach EC1	Rock cutter	1	ODMDS	1,453,667	299,858	749,644	2,503,169	11.57
Fort Sumter Reach EC1	Rock cutter	1	DNR Site	36,000	24,000	0	60,000	0.28
Fort Sumter Reach EC1	Rock cutter	1	Reef Placement	252,000	168,000	0	420,000	1.81
Ft. Sumter - Reach EC1	Clamshell w/ rock bucket	1	ODMDS	136,000	264,000	260,000	660,000	4.34
Ft. Sumter - Reach EC1	Clamshell w/ rock bucket	1	Mitigation Site	56,000	144,000	160,000	360,000	2.52
Ft. Sumter - Reach EC1	Clamshell w/ rock bucket	1	DNR Site	28,000	72,000	80,000	180,000	1.26
Fort Sumter Reach EC2	Large Hopper	2	ODMDS	1,401,679	640,691	1,601,714	3,644,084	3.85
Fort Sumter Reach EC2	Medium Hopper	2	ODMDS	467,226	213,564	533,905	1,214,695	2.46
Fort Sumter Reach EC2	Rock cutter	1	ODMDS	1,470,949	542,881	1,357,203	3,371,033	13.73
Fort Sumter Reach EC2	Rock cutter	1	Reef Placement	336,000	84,000	0	420,000	1.81
Fort Sumter Reach EC2	Clamshell w/ rock bucket	1	Reef Placement	364,000	216,000	500,000	1,080,000	7.69
Mount Pleasant Reach	Clamshell	2	ODMDS	196,530	300,460	343,093	840,083	0.76
Rebellion Reach	Clamshell	2	ODMDS	312,491	368,922	399,928	1,081,341	0.98
Bennis Reach	Clamshell	2	ODMDS	822,514	535,877	584,468	1,942,858	1.12
Horse Reach	Clamshell	2	ODMDS	70,470	119,491	174,109	364,070	0.27
Hog Island Reach	Clamshell	2	ODMDS	798,751	604,647	693,522	2,096,920	1.46
Wando River Lower Reach	Clamshell	2	ODMDS	965,607	390,659	412,804	1,769,070	1.02
Wando River Upper Reach	Clamshell	2	ODMDS	192,468	215,433	228,350	636,251	0.52

Wando River Turning Basin	Clamshell	2	ODMDS	2,539,229	369,479	375,925	3,284,633	1.81
Segment 1 Total				16,257,707	6,124,740	9,831,153	32,213,600	67.33
Drum Island Reach	Clamshell	2	ODMDS	362,667	259,075	295,731	917,473	0.72
Myers Bend	Clamshell	2	ODMDS	357,581	238,297	257,811	853,689	0.60
Daniel Island Reach	Pipeline	2	Daniel Island	1,014,419	583,009	614,529	2,211,957	1.65
Segment 2 Total				1,734,667	1,080,381	1,168,071	3,983,119	2.97
Daniel Island Bend	Pipeline	2	Daniel Island	0	15,962	58,589	74,551	0.21
Clouter Creek Reach	Pipeline	2	Daniel Island	0	239,435	343,715	583,150	0.98
Navy Yard Reach	Pipeline	2	Clouter Creek	0	81,661	277,155	358,816	0.60
North Charleston Reach	Pipeline	2	Clouter Creek	0	278,703	253,990	532,693	0.50
Filbin Creek Reach	Pipeline	2	Yellowhouse	0	215,518	189,902	405,420	0.61
Port Terminal Reach	Pipeline	2	Yellowhouse	0	51,731	140,337	192,068	0.43
Ordnance Reach	Pipeline	2	Yellowhouse	0	30,989	87,102	118,091	0.26
Ordnance Reach Turning Basin	Pipeline	2	Yellowhouse	0	1,309,852	239,461	1,549,313	1.21
Segment 3 Total				0	2,223,851	1,590,251	3,814,102	4.80
North Charleston Terminal Berthing Area Dredging	Pipeline	1	Yellowhouse	0	27,334	13,667	41,001	0.16
Navy Base Terminal Berthing Area Dredging	Pipeline	1	Daniel Island	203,379	135,586	135,586	474,551	0.73
Wando Terminal Berthing Area Dredging	Pipeline	1	Daniel Island	67,557	45,038	45,038	157,633	0.24
Berthing Areas Total				270,936	207,958	194,291	673,185	1.13
Total Construction				18,263,310	9,636,930	12,783,765	40,684,006	76.23

D3. NED and LPP (RECOMMENDED PLAN) COST ESTIMATES

Cost estimates in summary form are contained in Table D-4 of this Appendix as shown below.

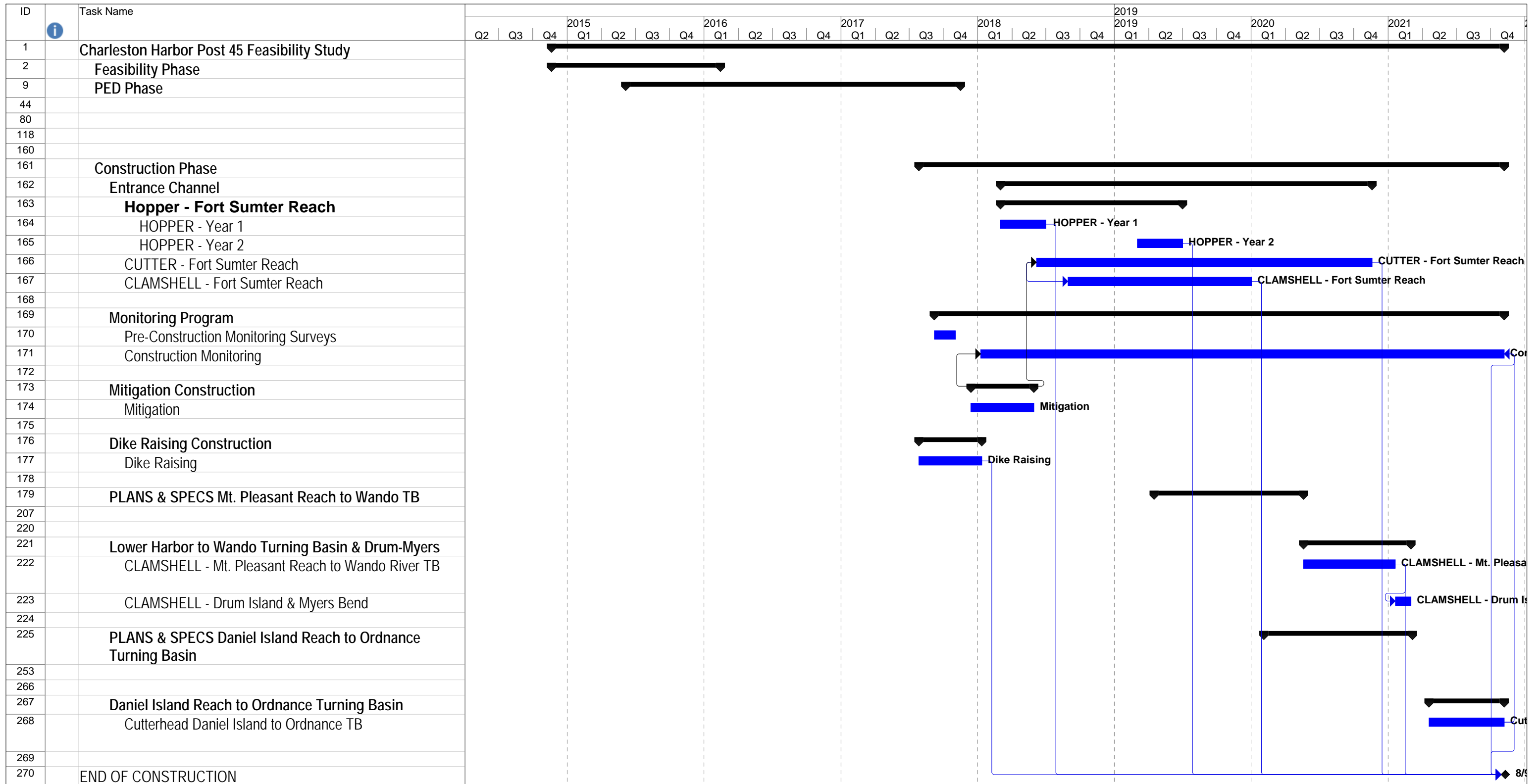
Table D-4 – Base Costs for NED Plan and LPP for WBS Features

Feature	Base Cost Estimate (2015 Cost Level Excludes Contingency)
NED Plan – 52' EC, 50' to WWT & NBT, 48' to NCT	
Wildlife Facilities & Sanctuary (Mitigation for hard bottom, creation of additional hard bottom & Monitoring)	\$ 20,125,000
Levees & Floodwalls (Inland Disposal Area Improvements)	\$ 14,223,000

Navigation Ports & Harbors (Dredging)	\$ 329,484,000
Cultural Preservation (monitoring)	\$ 4,500,000
Lands and Damages (for Wetland Mitigation)	\$ 1,744,000
Planning Engineering and Design	\$ 4,720,000
Construction Management	\$ 5,322,000
Total to be cost shared	\$ 380,118,000
Associated Costs (Aids to Navigation, Wharf Improvements & Berth Area Dredging)	\$ 26,560,000
Total Cost	\$ 406,678,000
LPP - 54' EC, 52' to WWT & NBT, 48' to NCT	
Wildlife Facilities & Sanctuary (Mitigation & Monitoring)	\$ 16,723,000
Levees & Floodwalls (Inland Disposal Area Improvements)	\$ 14,223,000
Navigation Ports & Harbors (Dredging)	\$ 369,424,000
Cultural Preservation (monitoring)	\$ 4,500,000
Lands and Damages	\$ 2,426,000
Planning Engineering and Design	\$ 4,720,000
Construction Management	\$ 5,871,000
Total to be cost shared	\$ 417,887,000
Associated Costs (Aids to Navigation, Wharf Improvements & Berth Area Dredging)	\$ 26,731,000
Total Cost	\$ 444,618,000

D4. SCHEDULE for RECOMMENDED PLAN

Schedule for the Recommended Plan is contained on the following pages of this Appendix.



Project: 52-48 PED & Construction Sch Date: Thu 4/16/15	Task		Project Summary		Inactive Summary		Manual Summary		External Milestone	
	Split		External Tasks		Manual Task		Start-only		Progress	
	Milestone		External Milestone		Duration-only		Finish-only		Deadline	
	Summary		Inactive Milestone		Manual Summary Rollup		External Tasks			

D5. RISK AND UNCERTAINTY ANALYSIS

A full Cost and Schedule Risk Analysis (CSRA) was performed on both the NED and Recommended Plan according to the procedures outlined in the manual entitled; "Cost and Schedule Risk Analysis Process" dated March 2008. The full CSRA was used to develop the final project risk and the resulting contingency.

D.5.1 Risk Analysis Methods

The entire PDT participated in a cost risk analysis brainstorming session to identify risks associated with the NED and Recommended Plan. The risks were listed in the risk register and evaluated by the PDT. Assumptions were made as to the likelihood and impact of each risk item, as well as the probability of occurrence and magnitude of the impact if it were to occur. Adjustments were made to the analysis accordingly and the final contingency was established for each alternative. The contingency was applied to each alternative plan estimate in order to obtain the Total Project Cost.

D.5.2 General Information

Charleston Harbor, located in Charleston County, South Carolina is formed at the confluence of the Ashley, Cooper and Wando Rivers. The harbor flows directly into the Atlantic Ocean. Deep draft vessels transit Charleston Harbor from the Atlantic Ocean to one of three existing terminals and a new terminal that is under construction. The existing terminals are the Columbus Street Union Pier (main users are roll on/roll off transports and pre-Panamax vessels), the Wando Welch Container Terminal (main users are large post-Panamax container transport vessels) and the North Charleston Terminal (main users are bulk transport vessels). The New Navy Base Terminal currently under construction will provide additional berthing and unloading/loading capabilities for large post-Panamax container transport vessels. Charleston Harbor has an authorized depth of 47 feet for the entrance channel and an authorized depth of 45 feet for the remainder of the Federal channel.

Charleston District is conducting a study to increase the depth of the existing Federal channel to the Wando Welch Terminal and the New Navy Base Terminal from its current project depth of 45 feet to a maximum depth of 52 feet. In addition, the existing Federal channel from the New Navy Base Terminal to the North Charleston Terminal will be deepened from its current project depth of 45 feet to a maximum depth of 48 feet. The entrance channel, due to vessel squat and added motion from wind and waves, will be deepened from its current depth to a maximum depth of 54 feet. The harbor project provides access to deep draft vessel traffic using terminal facilities located in Charleston. The study will evaluate navigation concerns and provide recommendations for investigating navigation improvements. The non-federal sponsor is the South Carolina State Ports Authority. The National Economic Development (NED) plan has been identified to be the 50'/48' plan. This is the plan that maximizes the net benefits while considering the significance of the change in cost between alternative plans. The local Sponsor has selected to

pursue a Locally Preferred Plan (LPP) which is the 52'/48' plan. The Recommended Plan is the LPP, 52'/48' plan.

D.5.3 Risk Analysis Results

A full Cost and Schedule Risk Analysis including Crystal Ball analysis was generated for the Recommended Plan with the assistance of the Cost MCX. Refer to the printout of the Cost and Schedule Risk Analysis for the Recommended Plan in this report at the end of this section. In addition, the Risk Register for the Recommended Plan is contained as an attachment to this Appendix.

D.5.4 Summary of Findings

Table D-5 provides the cost contingency for the Recommended Plan calculated from the Cost and Schedule Risk Analysis using the Monte-Carlo based Crystal Ball add-in for Excel. Contingency was quantified as approximately \$75 million for the Recommended Plan. Table D-6 provides additional breakdown of the cost and contingency by the various project components for the Recommended Plan.

Table D-5 - Alternative Plans Cost & Schedule Risk Analysis

	Base Cost Estimate (less Sponsor only costs)	Contingency (\$)	Contingency (%)
NED – 50/48	\$380,118,000	\$66,706,000	18%
LPP - 52/48	\$417,887,000	\$74,820,000	18%

The primary threats to the cost estimates identified by the CSRA process are listed below. These threats include both direct cost impacts and the cost impacts of schedule delays.

Industry Availability/Bidding Climate: Relatively large contract sizes may limit field of interested bidders and increase the uncertainty of future costs. Joint ventures will likely be necessary due to the size of the contracts required to perform this project in a timely manner. Schedule for this project could overlap with competing dredging projects which are preparing for New Post Panamax class ships. Ultimately, this uncertainty cannot be mitigated until more information is available on the schedule of work and the availability of qualified dredging contractors.

Dredge Plant Availability: There is uncertainty in the availability of the type and size of dredging equipment that were used to generate the cost estimates for this study. In particular, this estimate assumes the use of a 30" rock cutter hydraulic pipeline dredge. At the time the cost estimate was generated, there is only one of these dredges available on the East Coast of the United States. If this dredge is already under contract at the time that this part of the project is

being bid, this could affect both the cost and schedule of the dredging operations. In addition, the estimate assumes the simultaneous use of multiple hopper dredges in order to accomplish the required amount of dredging within the environmental window due to sea turtle restrictions. If the number of available hoppers does not support the current schedule, this could increase the schedule and therefore cause an increase in cost due to lengthening the schedule.

Stability of the Entrance Channel Jetties: There is uncertainty in whether deepening the channel in conjunction with sea level rise will affect the stability and function of the current jetties. Approximately 16,000 feet of the jetties were assumed to require additional stone to be placed to maintain the functionality of the jetties. The cost associated with this uncertainty is extremely large, but the PDT felt that the probability of occurrence was very low.

Fuel Price Fluctuations: On dredging projects, fuel is a major cost driver for equipment. Fuel prices are always a volatile and can be affected by international events that cannot be predicted. Over the last 15 years, fuel prices have in general exceeded the cost of inflation. Present fuel costs are at historic low levels that are not expected to continue to the time of construction of this project. If fuel costs increase significantly above the level assumed with escalation, then the project cost could be affected.

Productivity of Rock Dredging Operations: Charleston District has a great deal of experience with dredging operations that involve removal of sands or silt material. However, the amount of rock dredging in the Charleston area has been extremely limited. The assumptions of productivity and effective working time for rock dredging operations could be different from those actually experienced. This could have an impact on both cost and schedule for these dredging operations.

Federal Incremental Funding: Future Federal funding levels are uncertain. Incremental funding is anticipated. Funding levels less than required to support the project schedule may result in additional years of work. WRDA 2014 allows the Non-Federal Sponsor to expend funds prior to receipt of Federal Funds. The local Sponsor for this project has available funding to support the scheduled start of this project. However, if Federal funds are not received for multiple years, the schedule and subsequent cost could increase. Project Management needs to stay aware of the current project cost and schedule and ensure that estimates are updated yearly and economics verified on a routine basis until the project receives funding.

Dredging Quantities: There is some uncertainty in the estimated quantity of rock and dredge material. Rock quantities are based on studies, including core borings with strength analysis. Underestimating rock quantity will result in additional costs. The PDT performed adequate surveys to calculate quantities and feel confident in the rock quantity estimates. For other dredge materials, surveys should be performed periodically so that this item can be monitored.

This item can be mitigated when final plans and specs surveys are done prior to solicitation of a contract.

Table D-6 - Contingency for Recommended Plan by WBS Features

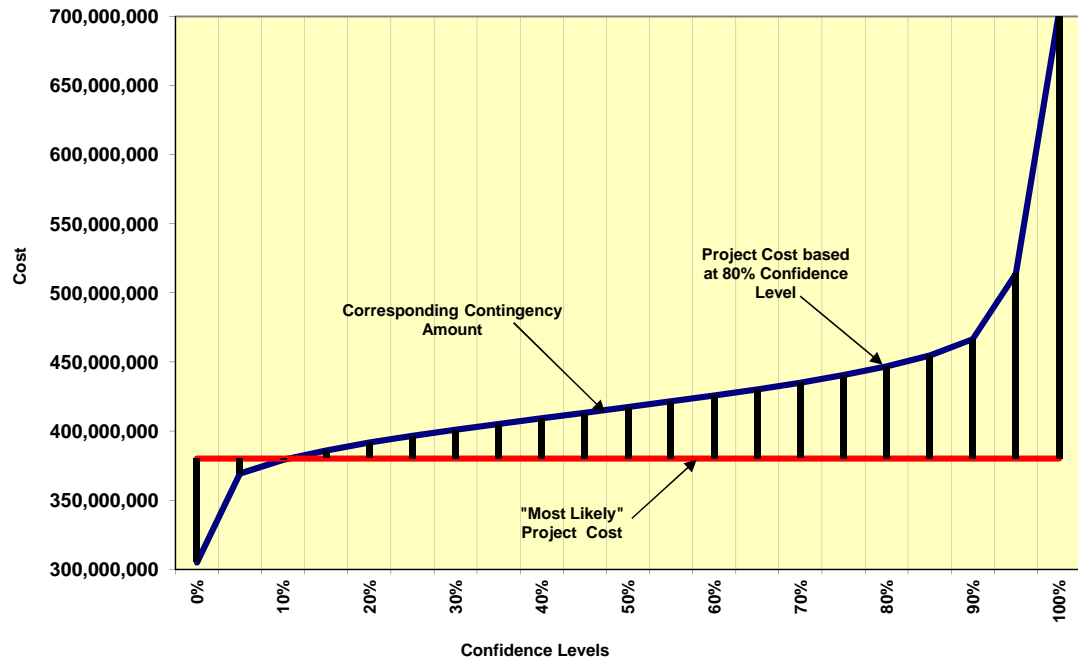
Feature	Base Cost Estimate w/o Contingency (\$)	Recommended Contingency (\$)	Base Cost Estimate + Contingency (\$)
Recommended Plan – 52’/48’			
06 – Fish & Wildlife Facilities (Mitigation & Monitoring)	\$ 16,723,000	\$ 3,010,000	\$ 19,733,000
11 – Levees & Floodwalls (Disposal Area Improvements)	\$ 14,223,000	\$ 2,560,000	\$ 16,783,000
12 - Navigation Ports & Harbors (Dredging)	\$ 369,424,000	\$ 66,496,000	\$ 435,920,000
18 – Cultural Resource Preservation (monitoring)	\$ 4,500,000	\$ 810,000	\$ 5,310,000
01 - Lands and Damages	\$ 2,426,000	\$ 607,000	\$ 3,033,000
30 - Planning Engineering and Design	\$ 4,720,000	\$ 850,000	\$ 5,570,000
31 - Construction Management	\$ 5,870,000	\$ 1,057,000	\$ 6,927,000
Total cost to be cost shared	\$ 417,886,000	\$ 75,389,000	\$ 493,275,000
Associated Costs (Aids to Navigation, Wharf Improvements & Berth Area Dredging)	\$ 26,731,000	\$ 852,000	\$ 27,583,000
Total Cost	\$ 444,618,000	\$ 76,160,000	\$ 520,858,000

- PROJECT CONTINGENCY DEVELOPMENT - NED PLAN -

INITIAL CONSTRUCTION Contingency Analysis

Most Likely Cost Estimate	\$380,118,000	
Confidence Level	Value	Contingency
0%	304,918,219	-20%
5%	369,343,837	-3%
10%	379,131,453	-1%
15%	385,991,512	2%
20%	391,598,475	4%
25%	396,453,420	5%
30%	400,967,154	6%
35%	405,190,751	7%
40%	409,226,564	8%
45%	413,291,577	9%
50%	417,392,962	10%
55%	421,480,211	11%
60%	425,679,299	12%
65%	430,119,024	14%
70%	435,112,099	15%
75%	440,582,829	16%
80%	446,824,693	18%
85%	454,727,491	20%
90%	466,408,643	23%
95%	513,924,545	36%
100%	703,055,851	85%

Project Cost Contingency Analysis

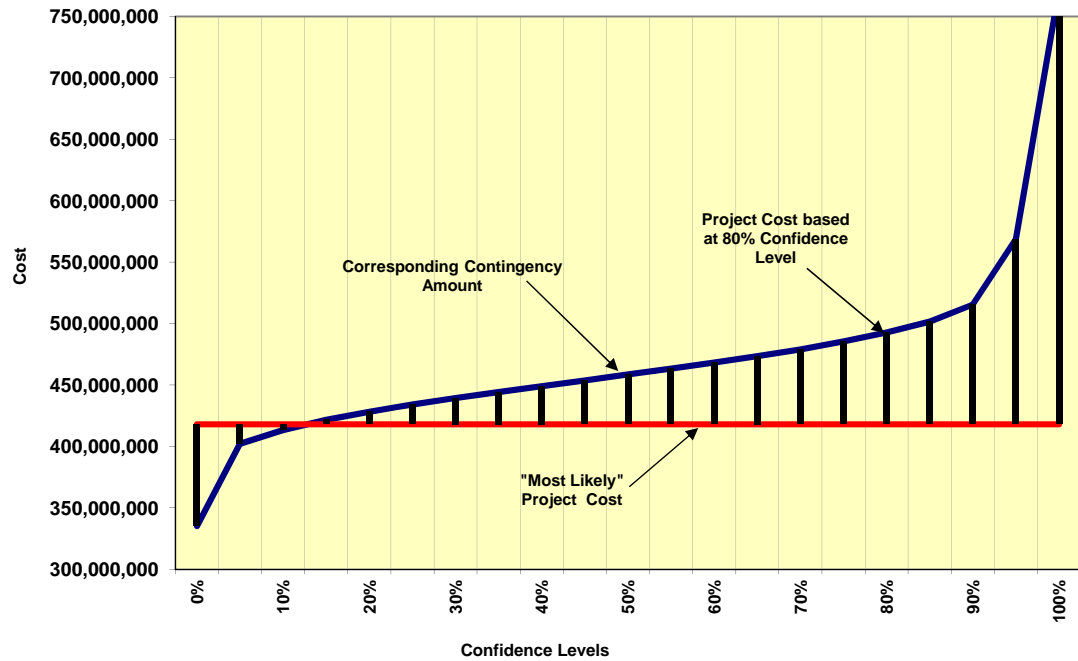


- PROJECT CONTINGENCY DEVELOPMENT - RECOMMENDED PLAN -

INITIAL CONSTRUCTION Contingency Analysis

Most Likely Cost Estimate	\$417,887,000	
Confidence Level	Value	Contingency
0%	335,230,340	-20%
5%	402,239,566	-4%
10%	413,435,978	-2%
15%	421,718,903	1%
20%	428,282,146	3%
25%	434,128,141	4%
30%	439,365,379	6%
35%	444,314,685	7%
40%	449,079,254	8%
45%	453,798,122	9%
50%	458,547,465	10%
55%	463,280,921	11%
60%	468,321,918	13%
65%	473,469,668	14%
70%	479,054,587	15%
75%	485,403,274	17%
80%	492,706,958	18%
85%	501,747,773	21%
90%	515,310,634	24%
95%	568,714,283	37%
100%	771,788,189	85%

Project Cost Contingency Analysis



D6. TOTAL PROJECT COST SUMMARY

The Total Project Cost Summary (TPCS) addresses inflation through project completion (accomplished by escalation to mid-point of construction per ER 1110-2-1302, Appendix C, Page C-2). It is based on the scope of the Recommended Plan, the NED Plan and the official project schedule. Due to the selection of an LPP for the recommended plan, the TPCS for both the NED and LPP are included in this Appendix. The TPCS includes Federal and Non-Federal costs for Lands and Damages, all construction features, PED, S&A and all other Non-construction features along with the appropriate contingencies and escalation associated with each of these activities. The TPCS is formatted according to the WBS and uses Civil Works Construction Cost Indexing System factors for escalation (EM 1110-2-1304) of construction costs and Office of Management and Budget (EC 11-2-18X, 20 Feb 2008) factors for escalation of PED and S&A costs. The Total Project Cost Summary was prepared using the MCACES/MII cost estimate on each of the plans, as well as the contingency set by the risk analysis and the official project schedule. The TPCS for the NED Plan and the Recommended Plan is contained on the following pages.

D7. COST MCX TPCS CERTIFICATION

The Cost MCX Total Project Cost Summary (TPCS) Certification is contained on the following page with the TPCS for each plan following.

WALLA WALLA COST ENGINEERING MANDATORY CENTER OF EXPERTISE

COST AGENCY TECHNICAL REVIEW

CERTIFICATION STATEMENT

For Project No. 137921

SAC – Charleston Harbor Deepening Feasibility Study

The Charleston Harbor Deepening (Post 45) Feasibility Study presented by Charleston District, has undergone a successful Cost Agency Technical Review (Cost ATR), performed by the Walla Walla District Cost Engineering Mandatory Center of Expertise (Cost MCX) team. The Cost ATR included study of the project scope, report, cost estimates, schedules, escalation, and risk-based contingencies. This certification signifies the products meet the quality standards as prescribed in ER 1110-2-1150 Engineering and Design for Civil Works Projects and ER 1110-2-1302 Civil Works Cost Engineering.

As of May 14, 2015, the Cost MCX certifies the estimated total project cost of:

NED Plan:

FY 2015 Project First Cost: \$448,691,000
Fully Funded Amount: \$489,799,000

Locally Preferred Plan:

FY 2015 Project First Cost: \$493,308,000
Fully Funded Amount: \$538,117,000

It remains the responsibility of the District to correctly reflect these cost values within the Final Report and to implement effective project management controls and implementation procedures including risk management throughout the life of the project.



SKARBEK.JOHN
.P.1229040665

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SKARBEK.JOHN.P.1229040665
DN: c=US, o=U.S. Government, ou=DoD,
ou=PKI, ou=USA,
cn=SKARBEK.JOHN.P.1229040665
Date: 2015.05.14 10:42:50 -07'00'

For: Kim C. Callan, PE, CCE, PM
Chief, Cost Engineering MCX
Walla Walla District

**** TOTAL PROJECT COST SUMMARY ****

Printed:5/13/2015
Page 1 of 10

PROJECT: Charleston Harbor Deepening Feasibility - NED Plan
PROJECT NO: 137921
LOCATION: Charleston, SC

DISTRICT: SAC South Atlantic Division
POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins
PREPARED: 5/11/2015

This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)						TOTAL PROJECT COST (FULLY FUNDED)			
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Program Year (Budget EC): 2015 Effective Price Level Date: 1 OCT 14		ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
										Spent Thru: 10/1/2013 (\$K)	TOTAL FIRST COST (\$K)				
A	B	C	D	E	F	G	H	I	J				M	N	O
12	NAVIGATION PORTS & HARBORS	\$329,484	\$59,307	18%	\$388,791	0.0%	\$329,484	\$59,307	\$388,791	\$0	\$388,791	8.8%	\$358,606	\$64,549	\$423,155
11	LEVEES & FLOODWALLS	\$14,223	\$2,560	18%	\$16,783	0.0%	\$14,223	\$2,560	\$16,783	\$0	\$16,783	6.2%	\$15,102	\$2,718	\$17,821
06	FISH & WILDLIFE FACILITIES	\$20,125	\$3,623	18%	\$23,748	0.0%	\$20,125	\$3,623	\$23,748	\$0	\$23,748	12.1%	\$22,551	\$4,059	\$26,610
18	CULTURAL RESOURCE PRESERVATION	\$4,500	\$810	18%	\$5,310	0.0%	\$4,500	\$810	\$5,310	\$0	\$5,310	17.3%	\$5,280	\$950	\$6,231
CONSTRUCTION ESTIMATE TOTALS:		\$368,332	\$66,300		\$434,632	0.0%	\$368,332	\$66,300	\$434,632	\$0	\$434,632	9.0%	\$401,540	\$72,277	\$473,817
01	LANDS AND DAMAGES	\$1,744	\$436	25%	\$2,180	0.0%	\$1,744	\$436	\$2,180	\$0	\$2,180	4.2%	\$1,817	\$454	\$2,271
30	PLANNING, ENGINEERING & DESIGN	\$4,745	\$854	18%	\$5,599	0.0%	\$4,745	\$854	\$5,599	\$0	\$5,599	10.0%	\$5,217	\$939	\$6,156
31	CONSTRUCTION MANAGEMENT	\$5,322	\$958	18%	\$6,280	0.0%	\$5,322	\$958	\$6,280	\$0	\$6,280	20.3%	\$6,421	\$1,134	\$7,555
PROJECT COST TOTALS:		\$380,143	\$68,548	18%	\$448,691		\$380,143	\$68,548	\$448,691	\$0	\$448,691	9.2%	\$414,994	\$74,804	\$489,799

Nancy J. Jenkins
CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins

Brian Williams
PROJECT MANAGER, Brian Williams

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CHIEF, REAL ESTATE, Ralph J. Werthmann, SAS

Bret Walters
CHIEF, PLANNING, Bret Walters

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17
CHIEF, ENGINEERING, Carole Works, PE

Tim Fudge
CHIEF, OPERATIONS, Tim Fudge

David Dodds
CHIEF, CONSTRUCTION, David Dodds, PE

Lauri Newkirk-Paggi
CHIEF, CONTRACTING, Lauri Newkirk-Paggi

Brian Williams
CHIEF, PM-PB, Brian Williams

Lisa Metheney
CHIEF, DPM, Lisa Metheney for

ESTIMATED FEDERAL COST: \$244,899
ESTIMATED NON-FEDERAL COST: \$244,899
ESTIMATED TOTAL PROJECT COST: \$489,799
ASSOCIATED COSTS: \$29,498

ESTIMATED TOTAL PROJECT O&M COSTS FOR 50 YEARS \$1,135,343
Beginning Oct 2022 and includes 18% contingency

ESTIMATED INCREASE IN PROJECT O&M COSTS FOR 50 YEARS \$412,495
Beginning Oct 2022 and includes 18% contingency

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Charleston Harbor Deepening Feasibility - NED Plan
 LOCATION: Charleston, SC
 This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

DISTRICT: SAC South Atlantic Division
 POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins
 PREPARED: 5/11/2015

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 4/30/2015		Effective Price Level: 10/1/2014		Program Year (Budget EC): 2015		Effective Price Level Date: 1 OCT 14						
WBS NUMBER	Civil Works Feature & Sub-Feature Description	RISK BASED				ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
		COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)									
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
PHASE 1 Entrance Channel														
12	NAVIGATION PORTS & HARBORS	\$228,401	\$41,112	18%	\$269,513	0.0%	\$228,401	\$41,112	\$269,513	2019Q2	7.8%	\$246,166	\$44,310	\$290,476
11	LEVEES & FLOODWALLS	\$14,223	\$2,560	18%	\$16,783	0.0%	\$14,223	\$2,560	\$16,783	2018Q3	6.2%	\$15,102	\$2,718	\$17,821
06	FISH & WILDLIFE FACILITIES	\$12,125	\$2,183	18%	\$14,308	0.0%	\$12,125	\$2,183	\$14,308	2019Q2	7.8%	\$13,068	\$2,352	\$15,420
18	CULTURAL RESOURCE PRESERVATION	\$500	\$90	18%	\$590	0.0%	\$500	\$90	\$590	2019Q2	7.8%	\$539	\$97	\$636
CONSTRUCTION ESTIMATE TOTALS:		\$255,249	\$45,945	18%	\$301,194		\$255,249	\$45,945	\$301,194			\$274,876	\$49,478	\$324,353
01	LANDS AND DAMAGES	\$1,744	\$436	25%	\$2,180	0.0%	\$1,744	\$436	\$2,180	2017Q3	4.2%	\$1,817	\$454	\$2,271
30	PLANNING, ENGINEERING & DESIGN													
0.22%	Project Management	\$562	\$101	18%	\$663	0.0%	\$562	\$101	\$663	2017Q2	7.0%	\$601	\$108	\$710
0.21%	Planning & Environmental Compliance	\$536	\$96	18%	\$632	0.0%	\$536	\$96	\$632	2017Q2	7.0%	\$574	\$103	\$677
0.35%	Engineering & Design	\$893	\$161	18%	\$1,054	0.0%	\$893	\$161	\$1,054	2017Q2	7.0%	\$956	\$172	\$1,128
0.09%	Reviews, ATRs, IEPRs, VE	\$230	\$41	18%	\$271	0.0%	\$230	\$41	\$271	2017Q2	7.0%	\$246	\$44	\$290
0.04%	Life Cycle Updates (cost, schedule, risks)	\$102	\$18	18%	\$120	0.0%	\$102	\$18	\$120	2017Q2	7.0%	\$109	\$20	\$129
0.04%	Contracting & Reprographics	\$102	\$18	18%	\$120	0.0%	\$102	\$18	\$120	2017Q2	7.0%	\$109	\$20	\$129
0.10%	Engineering During Construction	\$255	\$46	18%	\$301	0.0%	\$255	\$46	\$301	2019Q2	15.8%	\$295	\$53	\$348
0.06%	Planning During Construction	\$153	\$28	18%	\$181	0.0%	\$153	\$28	\$181	2019Q2	15.8%	\$177	\$32	\$209
0.18%	Project Operations	\$459	\$83	18%	\$542	0.0%	\$459	\$83	\$542	2017Q2	7.0%	\$491	\$88	\$580
31	CONSTRUCTION MANAGEMENT													
1.00%	Construction Management	\$2,537	\$457	18%	\$2,994	0.0%	\$2,537	\$457	\$2,994	2019Q2	15.8%	\$2,937	\$529	\$3,465
0.30%	Project Operation:	\$761	\$137	18%	\$898	0.0%	\$761	\$137	\$898	2019Q2	15.8%	\$881	\$159	\$1,039
0.20%	Project Management	\$507	\$91	18%	\$598	0.0%	\$507	\$91	\$598	2019Q2	15.8%	\$587	\$106	\$693
CONTRACT COST TOTALS:		\$264,090	\$47,658		\$311,749		\$264,090	\$47,658	\$311,749			\$284,656	\$51,365	\$336,021

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Charleston Harbor Deepening Feasibility - NED Plan
 LOCATION: Charleston, SC
 This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

DISTRICT: SAC South Atlantic Division
 POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins
 PREPARED: 5/11/2015

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 4/30/2015		Effective Price Level: 10/1/2014		Program Year (Budget EC): 2015		Effective Price Level Date: 1 OCT 14						
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
PHASE 2 Lower Harbor														
12	NAVIGATION PORTS & HARBORS	\$66,782	\$12,021	18%	\$78,803	0.0%	\$66,782	\$12,021	\$78,803	2020Q3	10.5%	\$73,784	\$13,281	\$87,065
11	LEVEES & FLOODWALLS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
06	FISH & WILDLIFE FACILITIES	\$1,000	\$180	18%	\$1,180	0.0%	\$1,000	\$180	\$1,180	2020Q3	10.5%	\$1,105	\$199	\$1,304
18	CULTURAL RESOURCE PRESERVATION	\$500	\$90	18%	\$590	0.0%	\$500	\$90	\$590	2020Q3	10.5%	\$552	\$99	\$652
CONSTRUCTION ESTIMATE TOTALS:		\$68,282	\$12,291	18%	\$80,573		\$68,282	\$12,291	\$80,573			\$75,441	\$13,579	\$89,021
01	LANDS AND DAMAGES	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
30	PLANNING, ENGINEERING & DESIGN													
0.22%	Project Management	\$150	\$27	18%	\$177	0.0%	\$150	\$27	\$177	2018Q3	12.4%	\$169	\$30	\$199
0.21%	Planning & Environmental Compliance	\$143	\$26	18%	\$169	0.0%	\$143	\$26	\$169	2018Q3	12.4%	\$161	\$29	\$190
0.35%	Engineering & Design	\$239	\$43	18%	\$282	0.0%	\$239	\$43	\$282	2018Q3	12.4%	\$269	\$48	\$317
0.09%	Reviews, ATRs, IEPRs, VE	\$61	\$11	18%	\$72	0.0%	\$61	\$11	\$72	2018Q3	12.4%	\$69	\$12	\$81
0.04%	Life Cycle Updates (cost, schedule, risks)	\$27	\$5	18%	\$32	0.0%	\$27	\$5	\$32	2018Q3	12.4%	\$30	\$5	\$36
0.04%	Contracting & Reprographics	\$27	\$5	18%	\$32	0.0%	\$27	\$5	\$32	2018Q3	12.4%	\$30	\$5	\$36
0.10%	Engineering During Construction	\$68	\$12	18%	\$80	0.0%	\$68	\$12	\$80	2020Q3	21.6%	\$83	\$15	\$98
0.06%	Planning During Construction	\$41	\$7	18%	\$48	0.0%	\$41	\$7	\$48	2020Q3	21.6%	\$50	\$9	\$59
0.18%	Project Operations	\$123	\$22	18%	\$145	0.0%	\$123	\$22	\$145	2018Q3	12.4%	\$138	\$25	\$163
31	CONSTRUCTION MANAGEMENT													
1.00%	Construction Management	\$668	\$120	18%	\$788	0.0%	\$668	\$120	\$788	2020Q3	21.6%	\$812	\$146	\$958
0.30%	Project Operation:	\$200	\$36	18%	\$236	0.0%	\$200	\$36	\$236	2020Q3	21.6%	\$243	\$44	\$287
0.20%	Project Management	\$134	\$24	18%	\$158	0.0%	\$134	\$24	\$158	2020Q3	21.6%	\$163	\$29	\$192
CONTRACT COST TOTALS:		\$70,163	\$12,629		\$82,792		\$70,163	\$12,629	\$82,792			\$77,658	\$13,978	\$91,636

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Charleston Harbor Deepening Feasibility - NED Plan
 LOCATION: Charleston, SC
 This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

DISTRICT: SAC South Atlantic Division
 POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins
 PREPARED: 5/11/2015

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 4/30/2015		Program Year (Budget EC): 2015										
		Effective Price Level: 10/1/2014		Effective Price Level Date: 1 OCT 14										
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
PHASE 3 Upper Harbor														
12	NAVIGATION PORTS & HARBORS	\$34,301	\$6,174	18%	\$40,475	0.0%	\$34,301	\$6,174	\$40,475	2021Q3	12.7%	\$38,655	\$6,958	\$45,613
11	LEVEES & FLOODWALLS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
06	FISH & WILDLIFE FACILITIES	\$1,000	\$180	18%	\$1,180	0.0%	\$1,000	\$180	\$1,180	2021Q3	12.7%	\$1,127	\$203	\$1,330
18	CULTURAL RESOURCE PRESERVATION	\$500	\$90	18%	\$590	0.0%	\$500	\$90	\$590	2021Q3	12.7%	\$563	\$101	\$665
CONSTRUCTION ESTIMATE TOTALS:		\$35,801	\$6,444	18%	\$42,245		\$35,801	\$6,444	\$42,245			\$40,346	\$7,262	\$47,608
01	LANDS AND DAMAGES	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
30	PLANNING, ENGINEERING & DESIGN													
0.22%	Project Management	\$79	\$14	18%	\$93	0.0%	\$79	\$14	\$93	2019Q1	14.6%	\$91	\$16	\$107
0.21%	Planning & Environmental Compliance	\$75	\$14	18%	\$89	0.0%	\$75	\$14	\$89	2019Q1	14.6%	\$86	\$15	\$101
0.35%	Engineering & Design	\$125	\$23	18%	\$148	0.0%	\$125	\$23	\$148	2019Q1	14.6%	\$143	\$26	\$169
0.09%	Reviews, ATRs, IEPRs, VE	\$32	\$6	18%	\$38	0.0%	\$32	\$6	\$38	2019Q1	14.6%	\$37	\$7	\$43
0.04%	Life Cycle Updates (cost, schedule, risks)	\$14	\$3	18%	\$17	0.0%	\$14	\$3	\$17	2019Q1	14.6%	\$16	\$3	\$19
0.04%	Contracting & Reprographics	\$14	\$3	18%	\$17	0.0%	\$14	\$3	\$17	2019Q1	14.6%	\$16	\$3	\$19
0.10%	Engineering During Construction	\$36	\$6	18%	\$42	0.0%	\$36	\$6	\$42	2021Q3	26.5%	\$46	\$8	\$54
0.06%	Planning During Construction	\$21	\$4	18%	\$25	0.0%	\$21	\$4	\$25	2021Q3	26.5%	\$27	\$5	\$31
0.18%	Project Operations	\$64	\$12	18%	\$76	0.0%	\$64	\$12	\$76	2019Q1	14.6%	\$73	\$13	\$87
31	CONSTRUCTION MANAGEMENT													
1.00%	Construction Management	\$343	\$62	18%	\$405	0.0%	\$343	\$62	\$405	2021Q3	26.5%	\$434	\$78	\$512
0.30%	Project Operation:	\$103	\$19	18%	\$122	0.0%	\$103	\$19	\$122	2021Q3	26.5%	\$130	\$23	\$154
0.20%	Project Management	\$69	\$12	18%	\$81	0.0%	\$69	\$12	\$81	2021Q3	26.5%	\$87	\$16	\$103
CONTRACT COST TOTALS:		\$36,776	\$6,620		\$43,396		\$36,776	\$6,620	\$43,396			\$41,531	\$7,476	\$49,007

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Charleston Harbor Deepening Feasibility - NED Plan
LOCATION: Charleston, SC

DISTRICT: SAC South Atlantic Division
POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins

PREPARED: 5/11/2015

This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	Estimate Prepared: 4/30/2015 Effective Price Level: 10/1/2014		TOTAL (\$K) F	Program Year (Budget EC): 2015 Effective Price Level Date: 1 OCT 14				FULLY FUNDED PROJECT ESTIMATE					
		COST (\$K) C	CNTG (\$K) D		CNTG (%) E	ESC (%) G	COST (\$K) H	CNTG (\$K) I	TOTAL (\$K) J	Mid-Point Date P	ESC (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O
Monitoring Year 4														
12	NAVIGATION PORTS & HARBORS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
11	LEVEES & FLOODWALLS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
06	FISH & WILDLIFE FACILITIES	\$1,000	\$180	18%	\$1,180	0.0%	\$1,000	\$180	\$1,180	2022Q3	14.9%	\$1,149	\$207	\$1,356
18	CULTURAL RESOURCE PRESERVATION	\$500	\$90	18%	\$590	0.0%	\$500	\$90	\$590	2022Q3	14.9%	\$575	\$103	\$678
CONSTRUCTION ESTIMATE TOTALS:		\$1,500	\$270	18%	\$1,770		\$1,500	\$270	\$1,770			\$1,724	\$310	\$2,035
01	LANDS AND DAMAGES	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
Note: Percentages for the 30 & 31 Accounts are adjusted for years with monitoring only.														
30	PLANNING, ENGINEERING & DESIGN													
0.40%	Project Management	\$6	\$1	18%	\$7	0.0%	\$6	\$1	\$7	2015Q3	1.1%	\$6	\$1	\$7
0.30%	Planning & Environmental Compliance	\$5	\$1	18%	\$6	0.0%	\$5	\$1	\$6	2015Q3	1.1%	\$5	\$1	\$6
0.20%	Engineering & Design	\$3	\$1	18%	\$4	0.0%	\$3	\$1	\$4	2015Q3	1.1%	\$3	\$1	\$4
0.00%	Reviews, ATRs, IEPRs, VE	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Life Cycle Updates (cost, schedule, risks)	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.10%	Contracting & Reprographics	\$2	\$0	18%	\$2	0.0%	\$2	\$0	\$2	2015Q3	1.1%	\$2	\$0	\$2
0.00%	Engineering During Construction	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Planning During Construction	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.20%	Project Operations	\$3	\$1	18%	\$4	0.0%	\$3	\$1	\$4	2015Q3	1.1%	\$3	\$1	\$4
31	CONSTRUCTION MANAGEMENT													
0.00%	Construction Management	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Operation:	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Management	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
CONTRACT COST TOTALS:		\$1,519	\$273		\$1,792		\$1,519	\$273	\$1,792			\$1,743	\$314	\$2,057

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Charleston Harbor Deepening Feasibility - NED Plan
LOCATION: Charleston, SC

DISTRICT: SAC South Atlantic Division
POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins

PREPARED: 5/11/2015

This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 4/30/2015				Program Year (Budget EC): 2015				FULLY FUNDED PROJECT ESTIMATE				
		Effective Price Level: 10/1/2014				Effective Price Level Date: 1 OCT 14								
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
Monitoring Year 5														
12	NAVIGATION PORTS & HARBORS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
11	LEVEES & FLOODWALLS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
06	FISH & WILDLIFE FACILITIES	\$1,000	\$180	18%	\$1,180	0.0%	\$1,000	\$180	\$1,180	2023Q3	17.2%	\$1,172	\$211	\$1,384
18	CULTURAL RESOURCE PRESERVATION	\$500	\$90	18%	\$590	0.0%	\$500	\$90	\$590	2023Q3	17.2%	\$586	\$106	\$692
CONSTRUCTION ESTIMATE TOTALS:		\$1,500	\$270	18%	\$1,770		\$1,500	\$270	\$1,770			\$1,759	\$317	\$2,075
01	LANDS AND DAMAGES	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
Note: Percentages for the 30 & 31 Accounts are adjusted for years with monitoring only.														
30	PLANNING, ENGINEERING & DESIGN													
0.40%	Project Management	\$6	\$1	18%	\$7	0.0%	\$6	\$1	\$7	2016Q3	3.9%	\$6	\$1	\$7
0.30%	Planning & Environmental Compliance	\$5	\$1	18%	\$6	0.0%	\$5	\$1	\$6	2016Q3	3.9%	\$5	\$1	\$6
0.20%	Engineering & Design	\$3	\$1	18%	\$4	0.0%	\$3	\$1	\$4	2016Q3	3.9%	\$3	\$1	\$4
0.00%	Reviews, ATRs, IEPRs, VE	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Life Cycle Updates (cost, schedule, risks)	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.10%	Contracting & Reprographics	\$2	\$0	18%	\$2	0.0%	\$2	\$0	\$2	2016Q3	3.9%	\$2	\$0	\$2
0.00%	Engineering During Construction	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Planning During Construction	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.20%	Project Operations	\$3	\$1	18%	\$4	0.0%	\$3	\$1	\$4	2016Q3	3.9%	\$3	\$1	\$4
31	CONSTRUCTION MANAGEMENT													
0.00%	Construction Management	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Operation:	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Management	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
CONTRACT COST TOTALS:		\$1,519	\$273		\$1,792		\$1,519	\$273	\$1,792			\$1,778	\$320	\$2,099

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Charleston Harbor Deepening Feasibility - NED Plan
LOCATION: Charleston, SC

DISTRICT: SAC South Atlantic Division
POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins

PREPARED: 5/11/2015

This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 4/30/2015				Program Year (Budget EC): 2015				FULLY FUNDED PROJECT ESTIMATE				
		Effective Price Level: 10/1/2014				Effective Price Level Date: 1 OCT 14								
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	COST (\$K) C	CNTG (\$K) D	CNTG (%) E	TOTAL (\$K) F	ESC (%) G	COST (\$K) H	CNTG (\$K) I	TOTAL (\$K) J	Mid-Point Date P	ESC (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O
Monitoring Year 6														
12	NAVIGATION PORTS & HARBORS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
11	LEVEES & FLOODWALLS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
06	FISH & WILDLIFE FACILITIES	\$1,000	\$180	18%	\$1,180	0.0%	\$1,000	\$180	\$1,180	2024Q3	19.6%	\$1,196	\$215	\$1,411
18	CULTURAL RESOURCE PRESERVATION	\$500	\$90	18%	\$590	0.0%	\$500	\$90	\$590	2024Q3	19.6%	\$598	\$108	\$706
CONSTRUCTION ESTIMATE TOTALS:		\$1,500	\$270	18%	\$1,770		\$1,500	\$270	\$1,770			\$1,794	\$323	\$2,117
01	LANDS AND DAMAGES	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
Note: Percentages for the 30 & 31 Accounts are adjusted for years with monitoring only.														
30	PLANNING, ENGINEERING & DESIGN													
0.40%	Project Management	\$6	\$1	18%	\$7	0.0%	\$6	\$1	\$7	2017Q3	8.1%	\$6	\$1	\$8
0.30%	Planning & Environmental Compliance	\$5	\$1	18%	\$6	0.0%	\$5	\$1	\$6	2017Q3	8.1%	\$5	\$1	\$6
0.20%	Engineering & Design	\$3	\$1	18%	\$4	0.0%	\$3	\$1	\$4	2017Q3	8.1%	\$3	\$1	\$4
0.00%	Reviews, ATRs, IEPRs, VE	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Life Cycle Updates (cost, schedule, risks)	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.10%	Contracting & Reprographics	\$2	\$0	18%	\$2	0.0%	\$2	\$0	\$2	2017Q3	8.1%	\$2	\$0	\$3
0.00%	Engineering During Construction	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Planning During Construction	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.20%	Project Operations	\$3	\$1	18%	\$4	0.0%	\$3	\$1	\$4	2017Q3	8.1%	\$3	\$1	\$4
31	CONSTRUCTION MANAGEMENT													
0.00%	Construction Management	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Operation:	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Management	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
CONTRACT COST TOTALS:		\$1,519	\$273		\$1,792		\$1,519	\$273	\$1,792			\$1,814	\$327	\$2,141

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Charleston Harbor Deepening Feasibility - NED Plan
LOCATION: Charleston, SC

DISTRICT: SAC South Atlantic Division
POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins

PREPARED: 5/11/2015

This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	COST (\$K) C	CNTG (\$K) D	CNTG (%) E	TOTAL (\$K) F	ESC (%) G	COST (\$K) H	CNTG (\$K) I	TOTAL (\$K) J	FULLY FUNDED PROJECT ESTIMATE				
										Mid-Point Date P	ESC (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O
		Estimate Prepared: 4/30/2015 Effective Price Level: 10/1/2014				Program Year (Budget EC): 2015 Effective Price Level Date: 1 OCT 14								
12	NAVIGATION PORTS & HARBORS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
11	LEVEES & FLOODWALLS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
06	FISH & WILDLIFE FACILITIES	\$1,000	\$180	18%	\$1,180	0.0%	\$1,000	\$180	\$1,180	2025Q3	22.0%	\$1,220	\$220	\$1,439
18	CULTURAL RESOURCE PRESERVATION	\$500	\$90	18%	\$590	0.0%	\$500	\$90	\$590	2025Q3	22.0%	\$610	\$110	\$720
CONSTRUCTION ESTIMATE TOTALS:		\$1,500	\$270	18%	\$1,770		\$1,500	\$270	\$1,770			\$1,830	\$329	\$2,159
01	LANDS AND DAMAGES	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
Note: Percentages for the 30 & 31 Accounts are adjusted for years with monitoring only.														
30	PLANNING, ENGINEERING & DESIGN													
0.40%	Project Management	\$6	\$1	18%	\$7	0.0%	\$6	\$1	\$7	2018Q3	12.4%	\$7	\$1	\$8
0.30%	Planning & Environmental Compliance	\$5	\$1	18%	\$6	0.0%	\$5	\$1	\$6	2018Q3	12.4%	\$6	\$1	\$7
0.20%	Engineering & Design	\$3	\$1	18%	\$4	0.0%	\$3	\$1	\$4	2018Q3	12.4%	\$3	\$1	\$4
0.00%	Reviews, ATRs, IEPRs, VE	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Life Cycle Updates (cost, schedule, risks)	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.10%	Contracting & Reprographics	\$2	\$0	18%	\$2	0.0%	\$2	\$0	\$2	2018Q3	12.4%	\$2	\$0	\$3
0.00%	Engineering During Construction	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Planning During Construction	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.20%	Project Operations	\$3	\$1	18%	\$4	0.0%	\$3	\$1	\$4	2018Q3	12.4%	\$3	\$1	\$4
31	CONSTRUCTION MANAGEMENT													
0.00%	Construction Management	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Operation:	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Management	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
CONTRACT COST TOTALS:		\$1,519	\$273		\$1,792		\$1,519	\$273	\$1,792			\$1,851	\$333	\$2,184

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Charleston Harbor Deepening Feasibility - NED Plan
LOCATION: Charleston, SC

DISTRICT: SAC South Atlantic Division
POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins

PREPARED: 5/11/2015

This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	COST (\$K) C	CNTG (\$K) D	CNTG (%) E	TOTAL (\$K) F	ESC (%) G	COST (\$K) H	CNTG (\$K) I	TOTAL (\$K) J	FULLY FUNDED PROJECT ESTIMATE				
										Mid-Point Date P	ESC (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O
		Estimate Prepared: 4/30/2015 Effective Price Level: 10/1/2014				Program Year (Budget EC): 2015 Effective Price Level Date: 1 OCT 14								
12	NAVIGATION PORTS & HARBORS	\$0	\$0	0%	\$ -	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
11	LEVEES & FLOODWALLS	\$0	\$0	0%	\$ -	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
06	FISH & WILDLIFE FACILITIES	\$1,000	\$180	18%	\$ 1,180	0.0%	\$1,000	\$180	\$1,180	2026Q3	24.4%	\$1,244	\$224	\$1,468
18	CULTURAL RESOURCE PRESERVATION	\$500	\$90	18%	\$ 590	0.0%	\$500	\$90	\$590	2026Q3	24.4%	\$622	\$112	\$734
CONSTRUCTION ESTIMATE TOTALS:		\$1,500	\$270	18%	1,770		\$1,500	\$270	\$1,770			\$1,866	\$336	\$2,202
01	LANDS AND DAMAGES	\$0	\$0	0%	\$ -	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
Note: Percentages for the 30 & 31 Accounts are adjusted for years with monitoring only.														
30	PLANNING, ENGINEERING & DESIGN													
0.40%	Project Management	\$6	\$1	18%	7	0.0%	\$6	\$1	\$7	2019Q3	16.9%	\$7	\$1	\$8
0.30%	Planning & Environmental Compliance	\$5	\$1	18%	6	0.0%	\$5	\$1	\$6	2019Q3	16.9%	\$6	\$1	\$7
0.20%	Engineering & Design	\$3	\$1	18%	4	0.0%	\$3	\$1	\$4	2019Q3	16.9%	\$4	\$1	\$4
0.00%	Reviews, ATRs, IEPRs, VE	\$0	\$0	18%	0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Life Cycle Updates (cost, schedule, risks)	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.10%	Contracting & Reprographics	\$2	\$0	18%	2	0.0%	\$2	\$0	\$2	2019Q3	16.9%	\$2	\$0	\$3
0.00%	Engineering During Construction	\$0	\$0	18%	0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Planning During Construction	\$0	\$0	18%	0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.20%	Project Operations	\$3	\$1	18%	4	0.0%	\$3	\$1	\$4	2019Q3	16.9%	\$4	\$1	\$4
31	CONSTRUCTION MANAGEMENT													
0.00%	Construction Management	\$0	\$0	18%	0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Operation:	\$0	\$0	18%	0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Management	\$0	\$0	18%	0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
CONTRACT COST TOTALS:		\$1,519	\$273		1,792		\$1,519	\$273	\$1,792			\$1,889	\$340	\$2,229

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Charleston Harbor Deepening Feasibility - NED Plan
LOCATION: Charleston, SC

DISTRICT: SAC South Atlantic Division
POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins

PREPARED: 5/11/2015

This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 4/30/2015				Program Year (Budget EC): 2015				FULLY FUNDED PROJECT ESTIMATE				
		Effective Price Level: 10/1/2014				Effective Price Level Date: 1 OCT 14								
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
Monitoring Year 9														
12	NAVIGATION PORTS & HARBORS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
11	LEVEES & FLOODWALLS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
06	FISH & WILDLIFE FACILITIES	\$1,000	\$180	18%	\$1,180	0.0%	\$1,000	\$180	\$1,180	2027Q3	26.9%	\$1,269	\$228	\$1,498
18	CULTURAL RESOURCE PRESERVATION	\$500	\$90	18%	\$590	0.0%	\$500	\$90	\$590	2027Q3	26.9%	\$635	\$114	\$749
CONSTRUCTION ESTIMATE TOTALS:		\$1,500	\$270	18%	\$1,770		\$1,500	\$270	\$1,770			\$1,904	\$343	\$2,246
01	LANDS AND DAMAGES	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
Note: Percentages for the 30 & 31 Accounts are adjusted for years with monitoring only.														
30	PLANNING, ENGINEERING & DESIGN													
0.40%	Project Management	\$6	\$1	18%	\$7	0.0%	\$6	\$1	\$7	2020Q3	21.6%	\$7	\$1	\$9
0.30%	Planning & Environmental Compliance	\$5	\$1	18%	\$6	0.0%	\$5	\$1	\$6	2020Q3	21.6%	\$6	\$1	\$7
0.20%	Engineering & Design	\$3	\$1	18%	\$4	0.0%	\$3	\$1	\$4	2020Q3	21.6%	\$4	\$1	\$4
0.00%	Reviews, ATRs, IEPRs, VE	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Life Cycle Updates (cost, schedule, risks)	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.10%	Contracting & Reprographics	\$2	\$0	18%	\$2	0.0%	\$2	\$0	\$2	2020Q3	21.6%	\$2	\$0	\$3
0.00%	Engineering During Construction	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Planning During Construction	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.20%	Project Operations	\$3	\$1	18%	\$4	0.0%	\$3	\$1	\$4	2020Q3	21.6%	\$4	\$1	\$4
31	CONSTRUCTION MANAGEMENT													
0.00%	Construction Management	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Operation:	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Management	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
CONTRACT COST TOTALS:		\$1,519	\$273		\$1,792		\$1,519	\$273	\$1,792			\$1,927	\$347	\$2,274

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Charleston Harbor Deepening Feasibility - NED Plan
LOCATION: Charleston, SC

DISTRICT: SAC South Atlantic Division
POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins

PREPARED: 5/11/2015

This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 4/30/2015				Program Year (Budget EC): 2015				FULLY FUNDED PROJECT ESTIMATE				
		Effective Price Level: 10/1/2014				Effective Price Level Date: 1 OCT 14								
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
ASSOCIATED COSTS														
02	RELOCATIONS	\$522	\$94	18%	\$616	0.0%	\$522	\$94	\$616	2020Q2	9.9%	\$574	\$103	\$677
	Aids to Navigation from USCG													
12	NAVIGATION PORTS & HARBORS	\$4,038	\$727	18%	\$4,764	0.0%	\$4,038	\$727	\$4,764	2020Q2	9.9%	\$4,439	\$799	\$5,238
	Terminal berth dredging													
12	NAVIGATION PORTS & HARBORS	\$22,000	\$0	0%	\$22,000	0.0%	\$22,000	\$0	\$22,000	2018Q1	5.2%	\$23,139	\$0	\$23,139
	Wharf improvements at Wando Terminal													
CONSTRUCTION ESTIMATE TOTALS:		\$26,560	\$821	3%	\$27,380		\$26,560	\$821	\$27,380			\$28,151	\$902	\$29,054
01	LANDS AND DAMAGES	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
Note: Percentages for the 30 & 31 Accounts are for sponsor costs.														
30	PLANNING, ENGINEERING & DESIGN													
0.00%	Project Management	\$0	\$0	3%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Planning & Environmental Compliance	\$0	\$0	3%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
1.00%	Engineering & Design	\$266	\$8	3%	\$274	0.0%	\$266	\$8	\$274	2017Q2	7.0%	\$285	\$9	\$293
0.00%	Reviews, ATRs, IEPRs, VE	\$0	\$0	3%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Life Cycle Updates (cost, schedule, risks)	\$0	\$0	3%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Contracting & Reprographics	\$0	\$0	3%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Engineering During Construction	\$0	\$0	3%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Planning During Construction	\$0	\$0	3%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Operations	\$0	\$0	3%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
31	CONSTRUCTION MANAGEMENT													
0.50%	Construction Management	\$133	\$4	3%	\$137	0.0%	\$133	\$4	\$137	2018Q1	10.2%	\$147	\$5	\$151
0.00%	Project Operation:	\$0	\$0	3%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Management	\$0	\$0	3%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
CONTRACT COST TOTALS:		\$26,959	\$833		\$27,792		\$26,959	\$833	\$27,792			\$28,583	\$916	\$29,498

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Charleston Harbor Deepening Feasibility - NED Plan
LOCATION: Charleston, SC

DISTRICT: SAC South Atlantic Division
POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins

PREPARED: 5/11/2015

This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 4/30/2015				Program Year (Budget EC): 2015				FULLY FUNDED PROJECT ESTIMATE				
		Effective Price Level: 10/1/2014				Effective Price Level Date: 1 OCT 14								
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
O&M COSTS														
	#N/A	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
12	NAVIGATION PORTS & HARBORS	\$176,274	\$31,729	18%	\$208,003	0.0%	\$176,274	\$31,729	\$208,003	2047Q1	86.7%	\$329,112	\$59,240	\$388,353
	Increase in O&M for 50 years													
	#N/A	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
		\$0	\$0		\$0		\$0		\$0			\$0		\$0
	CONSTRUCTION ESTIMATE TOTALS:	\$176,274	\$31,729	18%	\$208,003		\$176,274	\$31,729	\$208,003			\$329,112	\$59,240	\$388,353
01	LANDS AND DAMAGES	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
30	PLANNING, ENGINEERING & DESIGN													
0.22%	Project Management	\$388	\$70	18%	\$458	0.0%	\$388	\$70	\$458	2046Q3	309.7%	\$1,590	\$286	\$1,876
0.21%	Planning & Environmental Compliance	\$370	\$67	18%	\$437	0.0%	\$370	\$67	\$437	2046Q3	309.7%	\$1,516	\$273	\$1,789
0.35%	Engineering & Design	\$617	\$111	18%	\$728	0.0%	\$617	\$111	\$728	2046Q3	309.7%	\$2,528	\$455	\$2,983
0.09%	Reviews, ATRs, IEPRs, VE	\$159	\$29	18%	\$188	0.0%	\$159	\$29	\$188	2046Q3	309.7%	\$651	\$117	\$769
0.04%	Life Cycle Updates (cost, schedule, risks)	\$71	\$13	18%	\$84	0.0%	\$71	\$13	\$84	2046Q3	309.7%	\$291	\$52	\$343
0.04%	Contracting & Reprographics	\$71	\$13	18%	\$84	0.0%	\$71	\$13	\$84	2046Q3	309.7%	\$291	\$52	\$343
0.10%	Engineering During Construction	\$176	\$32	18%	\$208	0.0%	\$176	\$32	\$208	2047Q1	320.0%	\$739	\$133	\$872
0.06%	Planning During Construction	\$106	\$19	18%	\$125	0.0%	\$106	\$19	\$125	2047Q1	320.0%	\$445	\$80	\$525
0.18%	Project Operations	\$317	\$57	18%	\$374	0.0%	\$317	\$57	\$374	2046Q3	309.7%	\$1,299	\$234	\$1,533
31	CONSTRUCTION MANAGEMENT													
1.00%	Construction Management	\$1,763	\$317	18%	\$2,080	0.0%	\$1,763	\$317	\$2,080	2047Q1	320.0%	\$7,405	\$1,333	\$8,738
0.30%	Project Operation:	\$529	\$95	18%	\$624	0.0%	\$529	\$95	\$624	2047Q1	320.0%	\$2,222	\$400	\$2,622
0.20%	Project Management	\$353	\$64	18%	\$417	0.0%	\$353	\$64	\$417	2047Q1	320.0%	\$1,483	\$267	\$1,750
	CONTRACT COST TOTALS:	\$181,194	\$32,615		\$213,809		\$181,194	\$32,615	\$213,809			\$349,572	\$62,923	\$412,495

**** TOTAL PROJECT COST SUMMARY ****

Printed:5/13/2015
Page 1 of 10

PROJECT: Charleston Harbor Deepening Feasibility - LPP - Recommended Plan
PROJECT NO: 137921
LOCATION: Charleston, SC

DISTRICT: SAC South Atlantic Division
POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins
PREPARED: 5/11/2015

This Estimate reflects the scope and schedule in report: Charleston Harbor Post 45 Draft IFR and EIS

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT COST (Constant Dollar Basis)					TOTAL PROJECT COST (FULLY FUNDED)				
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	COST (\$K) C	CNTG (\$K) D	CNTG (%) E	TOTAL (\$K) F	ESC (%) G	COST (\$K) H	CNTG (\$K) I	TOTAL (\$K) J	Program Year (Budget EC): 2015 Effective Price Level Date: 1 OCT 14		ESC (%) M	COST (\$K) N	CNTG (\$K) O	FULL (\$K) O
										Spent Thru: 10/1/2013 (\$K)	TOTAL FIRST COST (\$K)				
12	NAVIGATION PORTS & HARBORS	\$369,424	\$66,496	18%	\$435,920	0.0%	\$369,424	\$66,496	\$435,920	\$0	\$435,920	8.8%	\$401,912	\$72,344	\$474,257
11	LEVEES & FLOODWALLS	\$14,223	\$2,560	18%	\$16,783	0.0%	\$14,223	\$2,560	\$16,783	\$0	\$16,783	6.2%	\$15,102	\$2,718	\$17,821
06	FISH & WILDLIFE FACILITIES	\$16,723	\$3,010	18%	\$19,733	0.0%	\$16,723	\$3,010	\$19,733	\$0	\$19,733	12.9%	\$18,884	\$3,399	\$22,283
18	CULTURAL RESOURCE PRESERVATION	\$4,500	\$810	18%	\$5,310	0.0%	\$4,500	\$810	\$5,310	\$0	\$5,310	17.3%	\$5,280	\$950	\$6,231
CONSTRUCTION ESTIMATE TOTALS:		\$404,870	\$72,877		\$477,746	0.0%	\$404,870	\$72,877	\$477,746	\$0	\$477,746	9.0%	\$441,179	\$79,412	\$520,591
01	LANDS AND DAMAGES	\$2,426	\$607	25%	\$3,033	0.0%	\$2,426	\$607	\$3,033	\$0	\$3,033	4.2%	\$2,528	\$632	\$3,160
30	PLANNING, ENGINEERING & DESIGN	\$4,748	\$855	18%	\$5,603	0.0%	\$4,748	\$855	\$5,603	\$0	\$5,603	10.7%	\$5,258	\$946	\$6,204
31	CONSTRUCTION MANAGEMENT	\$5,870	\$1,057	18%	\$6,927	0.0%	\$5,870	\$1,057	\$6,927	\$0	\$6,927	17.8%	\$6,917	\$1,245	\$8,162
PROJECT COST TOTALS:		\$417,914	\$75,394	18%	\$493,308		\$417,914	\$75,394	\$493,308	\$0	\$493,308	9.1%	\$455,881	\$82,236	\$538,117

Nancy Jenkins
CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins

Brian Williams
PROJECT MANAGER, Brian Williams

Ralph J. Werthmann, SAS
CHIEF, REAL ESTATE, Ralph J. Werthmann, SAS

Bret Walters
CHIEF, PLANNING, Bret Walters

Carole Works, PE
CHIEF, ENGINEERING, Carole Works, PE

Tim Fudge
CHIEF, OPERATIONS, Tim Fudge

David Dodds
CHIEF, CONSTRUCTION, David Dodds, PE

Lauri Newkirk-Paggi
CHIEF, CONTRACTING, Lauri Newkirk-Paggi

Brian Williams
CHIEF, PM-PB, Brian Williams

Lisa Metheney for
CHIEF, DPM, Lisa Metheney for

ESTIMATED FEDERAL COST: NED Cost **\$244,899**
ESTIMATED NON-FEDERAL COST: Delta **\$293,218**
ESTIMATED TOTAL PROJECT COST: **\$538,117**

ASSOCIATED COSTS: **\$29,748**

ESTIMATED TOTAL PROJECT O&M COSTS FOR 50 YEARS **\$1,140,443**
Beginning Oct 2022 and includes 18% contingency

ESTIMATED INCREASE IN PROJECT O&M COSTS FOR 50 YEARS **\$436,195**
Beginning Oct 2022 and includes 18% contingency

ESTIMATED INCREASE IN PROJECT O&M COSTS NED **\$412,495**
Federal share

DELTA ESTIMATED INCREASE IN O&M FROM NED **\$23,699**
Non-Federal share

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Charleston Harbor Deepening Feasibility - LPP - Recommended Plan
 LOCATION: Charleston, SC
 This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

DISTRICT: SAC South Atlantic Division
 POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins
 PREPARED: 5/11/2015

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 4/14/2015		Effective Price Level: 10/1/2014		Program Year (Budget EC): 2015		Effective Price Level Date: 1 OCT 14						
WBS NUMBER	Civil Works Feature & Sub-Feature Description	RISK BASED				ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
		COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)									
A	B	C	D	E	F	G	H	I	J					
PHASE 1 Entrance Channel														
12	NAVIGATION PORTS & HARBORS	\$259,904	\$46,783	18%	\$306,687	0.0%	\$259,904	\$46,783	\$306,687	2019Q2	7.8%	\$280,120	\$50,422	\$330,541
11	LEVEES & FLOODWALLS	\$14,223	\$2,560	18%	\$16,783	0.0%	\$14,223	\$2,560	\$16,783	2018Q3	6.2%	\$15,102	\$2,718	\$17,821
06	FISH & WILDLIFE FACILITIES	\$8,723	\$1,570	18%	\$10,293	0.0%	\$8,723	\$1,570	\$10,293	2019Q2	7.8%	\$9,401	\$1,692	\$11,093
18	CULTURAL RESOURCE PRESERVATION	\$500	\$90	18%	\$590	0.0%	\$500	\$90	\$590	2019Q2	7.8%	\$539	\$97	\$636
CONSTRUCTION ESTIMATE TOTALS:		\$283,350	\$51,003	18%	\$334,353		\$283,350	\$51,003	\$334,353			\$305,162	\$54,929	\$360,091
01	LANDS AND DAMAGES	\$2,426	\$607	25%	\$3,033	0.0%	\$2,426	\$607	\$3,033	2017Q3	4.2%	\$2,528	\$632	\$3,160
30	PLANNING, ENGINEERING & DESIGN													
0.20%	Project Management	\$567	\$102	18%	\$669	0.0%	\$567	\$102	\$669	2017Q2	7.0%	\$607	\$109	\$716
0.20%	Planning & Environmental Compliance	\$567	\$102	18%	\$669	0.0%	\$567	\$102	\$669	2017Q2	7.0%	\$607	\$109	\$716
0.33%	Engineering & Design	\$935	\$168	18%	\$1,103	0.0%	\$935	\$168	\$1,103	2017Q2	7.0%	\$1,001	\$180	\$1,181
0.08%	Reviews, ATRs, IEPRs, VE	\$227	\$41	18%	\$268	0.0%	\$227	\$41	\$268	2017Q2	7.0%	\$243	\$44	\$287
0.04%	Life Cycle Updates (cost, schedule, risks)	\$113	\$20	18%	\$133	0.0%	\$113	\$20	\$133	2017Q2	7.0%	\$121	\$22	\$143
0.03%	Contracting & Reprographics	\$85	\$15	18%	\$100	0.0%	\$85	\$15	\$100	2017Q2	7.0%	\$91	\$16	\$107
0.09%	Engineering During Construction	\$255	\$46	18%	\$301	0.0%	\$255	\$46	\$301	2019Q2	15.8%	\$295	\$53	\$348
0.05%	Planning During Construction	\$142	\$26	18%	\$168	0.0%	\$142	\$26	\$168	2019Q2	15.8%	\$164	\$30	\$194
0.15%	Project Operations	\$425	\$77	18%	\$502	0.0%	\$425	\$77	\$502	2017Q2	7.0%	\$455	\$82	\$537
31	CONSTRUCTION MANAGEMENT													
1.00%	Construction Management	\$2,818	\$507	18%	\$3,325	0.0%	\$2,818	\$507	\$3,325	2019Q2	15.8%	\$3,262	\$587	\$3,849
0.30%	Project Operation:	\$846	\$152	18%	\$998	0.0%	\$846	\$152	\$998	2019Q2	15.8%	\$979	\$176	\$1,156
0.20%	Project Management	\$564	\$102	18%	\$666	0.0%	\$564	\$102	\$666	2019Q2	15.8%	\$653	\$118	\$770
CONTRACT COST TOTALS:		\$293,320	\$52,967		\$346,287		\$293,320	\$52,967	\$346,287			\$316,167	\$57,087	\$373,255

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Charleston Harbor Deepening Feasibility - LPP - Recommended Plan
 LOCATION: Charleston, SC
 This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

DISTRICT: SAC South Atlantic Division
 POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins
 PREPARED: 5/11/2015

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 4/14/2015		Program Year (Budget EC): 2015		Effective Price Level: 10/1/2014		Effective Price Level Date: 1 OCT 14						
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
PHASE 2 Lower Harbor														
12	NAVIGATION PORTS & HARBORS	\$73,785	\$13,281	18%	\$87,066	0.0%	\$73,785	\$13,281	\$87,066	2020Q3	10.5%	\$81,521	\$14,674	\$96,195
11	LEVEES & FLOODWALLS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
06	FISH & WILDLIFE FACILITIES	\$1,000	\$180	18%	\$1,180	0.0%	\$1,000	\$180	\$1,180	2020Q3	10.5%	\$1,105	\$199	\$1,304
18	CULTURAL RESOURCE PRESERVATION	\$500	\$90	18%	\$590	0.0%	\$500	\$90	\$590	2020Q3	10.5%	\$552	\$99	\$652
CONSTRUCTION ESTIMATE TOTALS:		\$75,285	\$13,551	18%	\$88,836		\$75,285	\$13,551	\$88,836			\$83,178	\$14,972	\$98,150
01	LANDS AND DAMAGES	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
30	PLANNING, ENGINEERING & DESIGN													
0.20%	Project Management	\$151	\$27	18%	\$178	0.0%	\$151	\$27	\$178	2018Q3	12.4%	\$170	\$31	\$200
0.20%	Planning & Environmental Compliance	\$151	\$27	18%	\$178	0.0%	\$151	\$27	\$178	2018Q3	12.4%	\$170	\$31	\$200
0.33%	Engineering & Design	\$248	\$45	18%	\$293	0.0%	\$248	\$45	\$293	2018Q3	12.4%	\$279	\$50	\$329
0.08%	Reviews, ATRs, IEPRs, VE	\$60	\$11	18%	\$71	0.0%	\$60	\$11	\$71	2018Q3	12.4%	\$67	\$12	\$80
0.04%	Life Cycle Updates (cost, schedule, risks)	\$30	\$5	18%	\$35	0.0%	\$30	\$5	\$35	2018Q3	12.4%	\$34	\$6	\$40
0.03%	Contracting & Reprographics	\$23	\$4	18%	\$27	0.0%	\$23	\$4	\$27	2018Q3	12.4%	\$26	\$5	\$31
0.09%	Engineering During Construction	\$68	\$12	18%	\$80	0.0%	\$68	\$12	\$80	2020Q3	21.6%	\$83	\$15	\$98
0.05%	Planning During Construction	\$38	\$7	18%	\$45	0.0%	\$38	\$7	\$45	2020Q3	21.6%	\$46	\$8	\$55
0.15%	Project Operations	\$113	\$20	18%	\$133	0.0%	\$113	\$20	\$133	2018Q3	12.4%	\$127	\$23	\$150
31	CONSTRUCTION MANAGEMENT													
1.00%	Construction Management	\$738	\$133	18%	\$871	0.0%	\$738	\$133	\$871	2020Q3	21.6%	\$897	\$162	\$1,059
0.30%	Project Operation:	\$221	\$40	18%	\$261	0.0%	\$221	\$40	\$261	2020Q3	21.6%	\$269	\$48	\$317
0.20%	Project Management	\$148	\$27	18%	\$175	0.0%	\$148	\$27	\$175	2020Q3	21.6%	\$180	\$32	\$212
CONTRACT COST TOTALS:		\$77,274	\$13,909		\$91,183		\$77,274	\$13,909	\$91,183			\$85,525	\$15,395	\$100,920

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Charleston Harbor Deepening Feasibility - LPP - Recommended Plan
 LOCATION: Charleston, SC
 This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

DISTRICT: SAC South Atlantic Division
 POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins
 PREPARED: 5/11/2015

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 4/14/2015		Program Year (Budget EC): 2015		Effective Price Level Date: 1 OCT 14								
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
PHASE 3 Upper Harbor														
12	NAVIGATION PORTS & HARBORS	\$35,735	\$6,432	18%	\$42,168	0.0%	\$35,735	\$6,432	\$42,168	2021Q3	12.7%	\$40,272	\$7,249	\$47,521
11	LEVEES & FLOODWALLS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
06	FISH & WILDLIFE FACILITIES	\$1,000	\$180	18%	\$1,180	0.0%	\$1,000	\$180	\$1,180	2021Q3	12.7%	\$1,127	\$203	\$1,330
18	CULTURAL RESOURCE PRESERVATION	\$500	\$90	18%	\$590	0.0%	\$500	\$90	\$590	2021Q3	12.7%	\$563	\$101	\$665
CONSTRUCTION ESTIMATE TOTALS:		\$37,235	\$6,702	18%	\$43,938		\$37,235	\$6,702	\$43,938			\$41,962	\$7,553	\$49,515
01	LANDS AND DAMAGES	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
30	PLANNING, ENGINEERING & DESIGN													
0.20%	Project Management	\$74	\$13	18%	\$87	0.0%	\$74	\$13	\$87	2019Q1	14.6%	\$85	\$15	\$100
0.20%	Planning & Environmental Compliance	\$74	\$13	18%	\$87	0.0%	\$74	\$13	\$87	2019Q1	14.6%	\$85	\$15	\$100
0.33%	Engineering & Design	\$123	\$22	18%	\$145	0.0%	\$123	\$22	\$145	2019Q1	14.6%	\$141	\$25	\$166
0.08%	Reviews, ATRs, IEPRs, VE	\$30	\$5	18%	\$35	0.0%	\$30	\$5	\$35	2019Q1	14.6%	\$34	\$6	\$41
0.04%	Life Cycle Updates (cost, schedule, risks)	\$15	\$3	18%	\$18	0.0%	\$15	\$3	\$18	2019Q1	14.6%	\$17	\$3	\$20
0.03%	Contracting & Reprographics	\$11	\$2	18%	\$13	0.0%	\$11	\$2	\$13	2019Q1	14.6%	\$13	\$2	\$15
0.09%	Engineering During Construction	\$34	\$6	18%	\$40	0.0%	\$34	\$6	\$40	2021Q3	26.5%	\$43	\$8	\$51
0.05%	Planning During Construction	\$19	\$3	18%	\$22	0.0%	\$19	\$3	\$22	2021Q3	26.5%	\$24	\$4	\$28
0.15%	Project Operations	\$56	\$10	18%	\$66	0.0%	\$56	\$10	\$66	2019Q1	14.6%	\$64	\$12	\$76
31	CONSTRUCTION MANAGEMENT													
1.00%	Construction Management	\$357	\$64	18%	\$421	0.0%	\$357	\$64	\$421	2021Q3	26.5%	\$452	\$81	\$533
0.30%	Project Operation:	\$107	\$19	18%	\$126	0.0%	\$107	\$19	\$126	2021Q3	26.5%	\$135	\$24	\$160
0.20%	Project Management	\$71	\$13	18%	\$84	0.0%	\$71	\$13	\$84	2021Q3	26.5%	\$90	\$16	\$106
CONTRACT COST TOTALS:		\$38,206	\$6,877		\$45,083		\$38,206	\$6,877	\$45,083			\$43,145	\$7,766	\$50,911

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Charleston Harbor Deepening Feasibility - LPP - Recommended Plan
 LOCATION: Charleston, SC
 This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

DISTRICT: SAC South Atlantic Division
 POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins
 PREPARED: 5/11/2015

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 4/14/2015				Program Year (Budget EC): 2015				FULLY FUNDED PROJECT ESTIMATE				
		Effective Price Level: 10/1/2014				Effective Price Level Date: 1 OCT 14								
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
Monitoring Year 4														
12	NAVIGATION PORTS & HARBORS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
11	LEVEES & FLOODWALLS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
06	FISH & WILDLIFE FACILITIES	\$1,000	\$180	18%	\$1,180	0.0%	\$1,000	\$180	\$1,180	2022Q3	14.9%	\$1,149	\$207	\$1,356
18	CULTURAL RESOURCE PRESERVATION	\$500	\$90	18%	\$590	0.0%	\$500	\$90	\$590	2022Q3	14.9%	\$575	\$103	\$678
CONSTRUCTION ESTIMATE TOTALS:		\$1,500	\$270	18%	\$1,770		\$1,500	\$270	\$1,770			\$1,724	\$310	\$2,035
01	LANDS AND DAMAGES	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
Note: Percentages for the 30 & 31 Accounts are adjusted for years with monitoring only.														
30	PLANNING, ENGINEERING & DESIGN													
0.40%	Project Management	\$6	\$1	18%	\$7	0.0%	\$6	\$1	\$7	2022Q3	31.7%	\$8	\$1	\$9
0.30%	Planning & Environmental Compliance	\$5	\$1	18%	\$6	0.0%	\$5	\$1	\$6	2022Q3	31.7%	\$7	\$1	\$8
0.20%	Engineering & Design	\$3	\$1	18%	\$4	0.0%	\$3	\$1	\$4	2022Q3	31.7%	\$4	\$1	\$5
0.00%	Reviews, ATRs, IEPRs, VE	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Life Cycle Updates (cost, schedule, risks)	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.10%	Contracting & Reprographics	\$2	\$0	18%	\$2	0.0%	\$2	\$0	\$2	2022Q3	31.7%	\$3	\$0	\$3
0.00%	Engineering During Construction	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Planning During Construction	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.20%	Project Operations	\$3	\$1	18%	\$4	0.0%	\$3	\$1	\$4	2022Q3	31.7%	\$4	\$1	\$5
31	CONSTRUCTION MANAGEMENT													
0.00%	Construction Management	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Operation:	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Management	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
CONTRACT COST TOTALS:		\$1,519	\$273		\$1,792		\$1,519	\$273	\$1,792			\$1,749	\$315	\$2,064

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Charleston Harbor Deepening Feasibility - LPP - Recommended Plan
 LOCATION: Charleston, SC
 This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

DISTRICT: SAC South Atlantic Division
 POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins
 PREPARED: 5/11/2015

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 4/14/2015				Program Year (Budget EC): 2015				FULLY FUNDED PROJECT ESTIMATE				
		Effective Price Level: 10/1/2014				Effective Price Level Date: 1 OCT 14								
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
Monitoring Year 5														
12	NAVIGATION PORTS & HARBORS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
11	LEVEES & FLOODWALLS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
06	FISH & WILDLIFE FACILITIES	\$1,000	\$180	18%	\$1,180	0.0%	\$1,000	\$180	\$1,180	2023Q3	17.2%	\$1,172	\$211	\$1,384
18	CULTURAL RESOURCE PRESERVATION	\$500	\$90	18%	\$590	0.0%	\$500	\$90	\$590	2023Q3	17.2%	\$586	\$106	\$692
CONSTRUCTION ESTIMATE TOTALS:		\$1,500	\$270	18%	\$1,770		\$1,500	\$270	\$1,770			\$1,759	\$317	\$2,075
01	LANDS AND DAMAGES	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
Note: Percentages for the 30 & 31 Accounts are adjusted for years with monitoring only.														
30	PLANNING, ENGINEERING & DESIGN													
0.40%	Project Management	\$6	\$1	18%	\$7	0.0%	\$6	\$1	\$7	2023Q3	37.1%	\$8	\$1	\$10
0.30%	Planning & Environmental Compliance	\$5	\$1	18%	\$6	0.0%	\$5	\$1	\$6	2023Q3	37.1%	\$7	\$1	\$8
0.20%	Engineering & Design	\$3	\$1	18%	\$4	0.0%	\$3	\$1	\$4	2023Q3	37.1%	\$4	\$1	\$5
0.00%	Reviews, ATRs, IEPRs, VE	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Life Cycle Updates (cost, schedule, risks)	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.10%	Contracting & Reprographics	\$2	\$0	18%	\$2	0.0%	\$2	\$0	\$2	2023Q3	37.1%	\$3	\$0	\$3
0.00%	Engineering During Construction	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Planning During Construction	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.20%	Project Operations	\$3	\$1	18%	\$4	0.0%	\$3	\$1	\$4	2023Q3	37.1%	\$4	\$1	\$5
31	CONSTRUCTION MANAGEMENT													
0.00%	Construction Management	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Operation:	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Management	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
CONTRACT COST TOTALS:		\$1,519	\$273		\$1,792		\$1,519	\$273	\$1,792			\$1,785	\$321	\$2,106

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Charleston Harbor Deepening Feasibility - LPP - Recommended Plan
 LOCATION: Charleston, SC
 This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

DISTRICT: SAC South Atlantic Division
 POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins
 PREPARED: 5/11/2015

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 4/14/2015				Program Year (Budget EC): 2015				FULLY FUNDED PROJECT ESTIMATE				
		Effective Price Level: 10/1/2014				Effective Price Level Date: 1 OCT 14								
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
Monitoring Year 6														
12	NAVIGATION PORTS & HARBORS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
11	LEVEES & FLOODWALLS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
06	FISH & WILDLIFE FACILITIES	\$1,000	\$180	18%	\$1,180	0.0%	\$1,000	\$180	\$1,180	2024Q3	19.6%	\$1,196	\$215	\$1,411
18	CULTURAL RESOURCE PRESERVATION	\$500	\$90	18%	\$590	0.0%	\$500	\$90	\$590	2024Q3	19.6%	\$598	\$108	\$706
CONSTRUCTION ESTIMATE TOTALS:		\$1,500	\$270	18%	\$1,770		\$1,500	\$270	\$1,770			\$1,794	\$323	\$2,117
01	LANDS AND DAMAGES	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
Note: Percentages for the 30 & 31 Accounts are adjusted for years with monitoring only.														
30	PLANNING, ENGINEERING & DESIGN													
0.40%	Project Management	\$6	\$1	18%	\$7	0.0%	\$6	\$1	\$7	2024Q3	42.9%	\$9	\$2	\$10
0.30%	Planning & Environmental Compliance	\$5	\$1	18%	\$6	0.0%	\$5	\$1	\$6	2024Q3	42.9%	\$7	\$1	\$8
0.20%	Engineering & Design	\$3	\$1	18%	\$4	0.0%	\$3	\$1	\$4	2024Q3	42.9%	\$4	\$1	\$5
0.00%	Reviews, ATRs, IEPRs, VE	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Life Cycle Updates (cost, schedule, risks)	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.10%	Contracting & Reprographics	\$2	\$0	18%	\$2	0.0%	\$2	\$0	\$2	2024Q3	42.9%	\$3	\$1	\$3
0.00%	Engineering During Construction	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Planning During Construction	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.20%	Project Operations	\$3	\$1	18%	\$4	0.0%	\$3	\$1	\$4	2024Q3	42.9%	\$4	\$1	\$5
31	CONSTRUCTION MANAGEMENT													
0.00%	Construction Management	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Operation:	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Management	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
CONTRACT COST TOTALS:		\$1,519	\$273		\$1,792		\$1,519	\$273	\$1,792			\$1,821	\$328	\$2,149

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Charleston Harbor Deepening Feasibility - LPP - Recommended Plan
 LOCATION: Charleston, SC
 This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

DISTRICT: SAC South Atlantic Division
 POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins
 PREPARED: 5/11/2015

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	Estimate Prepared: 4/14/2015		TOTAL (\$K) F	Program Year (Budget EC): 2015				FULLY FUNDED PROJECT ESTIMATE					
		Effective Price Level: 10/1/2014			ESC (%) G	COST (\$K) H	CNTG (\$K) I	TOTAL (\$K) J	Mid-Point Date P	ESC (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O	
C	D	E												
Monitoring Year 7														
12	NAVIGATION PORTS & HARBORS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
11	LEVEES & FLOODWALLS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
06	FISH & WILDLIFE FACILITIES	\$1,000	\$180	18%	\$1,180	0.0%	\$1,000	\$180	\$1,180	2025Q3	22.0%	\$1,220	\$220	\$1,439
18	CULTURAL RESOURCE PRESERVATION	\$500	\$90	18%	\$590	0.0%	\$500	\$90	\$590	2025Q3	22.0%	\$610	\$110	\$720
CONSTRUCTION ESTIMATE TOTALS:		\$1,500	\$270	18%	\$1,770		\$1,500	\$270	\$1,770			\$1,830	\$329	\$2,159
01	LANDS AND DAMAGES	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
Note: Percentages for the 30 & 31 Accounts are adjusted for years with monitoring only.														
30	PLANNING, ENGINEERING & DESIGN													
0.40%	Project Management	\$6	\$1	18%	\$7	0.0%	\$6	\$1	\$7	2025Q3	48.9%	\$9	\$2	\$11
0.30%	Planning & Environmental Compliance	\$5	\$1	18%	\$6	0.0%	\$5	\$1	\$6	2025Q3	48.9%	\$7	\$1	\$9
0.20%	Engineering & Design	\$3	\$1	18%	\$4	0.0%	\$3	\$1	\$4	2025Q3	48.9%	\$4	\$1	\$5
0.00%	Reviews, ATRs, IEPRs, VE	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Life Cycle Updates (cost, schedule, risks)	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.10%	Contracting & Reprographics	\$2	\$0	18%	\$2	0.0%	\$2	\$0	\$2	2025Q3	48.9%	\$3	\$1	\$4
0.00%	Engineering During Construction	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Planning During Construction	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.20%	Project Operations	\$3	\$1	18%	\$4	0.0%	\$3	\$1	\$4	2025Q3	48.9%	\$4	\$1	\$5
31	CONSTRUCTION MANAGEMENT													
0.00%	Construction Management	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Operation:	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Management	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
CONTRACT COST TOTALS:		\$1,519	\$273		\$1,792		\$1,519	\$273	\$1,792			\$1,858	\$334	\$2,193

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Charleston Harbor Deepening Feasibility - LPP - Recommended Plan
 LOCATION: Charleston, SC
 This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

DISTRICT: SAC South Atlantic Division
 POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins
 PREPARED: 5/11/2015

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 4/14/2015				Program Year (Budget EC): 2015				FULLY FUNDED PROJECT ESTIMATE				
		Effective Price Level: 10/1/2014				Effective Price Level Date: 1 OCT 14								
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
Monitoring Year 8														
12	NAVIGATION PORTS & HARBORS	\$0	\$0	0%	\$ -	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
11	LEVEES & FLOODWALLS	\$0	\$0	0%	\$ -	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
06	FISH & WILDLIFE FACILITIES	\$1,000	\$180	18%	\$ 1,180	0.0%	\$1,000	\$180	\$1,180	2026Q3	24.4%	\$1,244	\$224	\$1,468
18	CULTURAL RESOURCE PRESERVATION	\$500	\$90	18%	\$ 590	0.0%	\$500	\$90	\$590	2026Q3	24.4%	\$622	\$112	\$734
CONSTRUCTION ESTIMATE TOTALS:		\$1,500	\$270	18%	1,770		\$1,500	\$270	\$1,770			\$1,866	\$336	\$2,202
01	LANDS AND DAMAGES	\$0	\$0	0%	\$ -	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
Note: Percentages for the 30 & 31 Accounts are adjusted for years with monitoring only.														
30	PLANNING, ENGINEERING & DESIGN													
0.40%	Project Management	\$6	\$1	18%	7	0.0%	\$6	\$1	\$7	2026Q3	55.5%	\$9	\$2	\$11
0.30%	Planning & Environmental Compliance	\$5	\$1	18%	6	0.0%	\$5	\$1	\$6	2026Q3	55.5%	\$8	\$1	\$9
0.20%	Engineering & Design	\$3	\$1	18%	4	0.0%	\$3	\$1	\$4	2026Q3	55.5%	\$5	\$1	\$6
0.00%	Reviews, ATRs, IEPRs, VE	\$0	\$0	18%	0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Life Cycle Updates (cost, schedule, risks)	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.10%	Contracting & Reprographics	\$2	\$0	18%	2	0.0%	\$2	\$0	\$2	2026Q3	55.5%	\$3	\$1	\$4
0.00%	Engineering During Construction	\$0	\$0	18%	0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Planning During Construction	\$0	\$0	18%	0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.20%	Project Operations	\$3	\$1	18%	4	0.0%	\$3	\$1	\$4	2026Q3	55.5%	\$5	\$1	\$6
31	CONSTRUCTION MANAGEMENT													
0.00%	Construction Management	\$0	\$0	18%	0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Operation:	\$0	\$0	18%	0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Management	\$0	\$0	18%	0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
CONTRACT COST TOTALS:		\$1,519	\$273		1,792		\$1,519	\$273	\$1,792			\$1,896	\$341	\$2,237

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Charleston Harbor Deepening Feasibility - LPP - Recommended Plan
 LOCATION: Charleston, SC
 This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

DISTRICT: SAC South Atlantic Division
 POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins
 PREPARED: 5/11/2015

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 4/14/2015				Program Year (Budget EC): 2015				FULLY FUNDED PROJECT ESTIMATE				
		Effective Price Level: 10/1/2014				Effective Price Level Date: 1 OCT 14								
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
Monitoring Year 9														
12	NAVIGATION PORTS & HARBORS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
11	LEVEES & FLOODWALLS	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
06	FISH & WILDLIFE FACILITIES	\$1,000	\$180	18%	\$1,180	0.0%	\$1,000	\$180	\$1,180	2027Q3	26.9%	\$1,269	\$228	\$1,498
18	CULTURAL RESOURCE PRESERVATION	\$500	\$90	18%	\$590	0.0%	\$500	\$90	\$590	2027Q3	26.9%	\$635	\$114	\$749
CONSTRUCTION ESTIMATE TOTALS:		\$1,500	\$270	18%	\$1,770		\$1,500	\$270	\$1,770			\$1,904	\$343	\$2,246
01	LANDS AND DAMAGES	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
Note: Percentages for the 30 & 31 Accounts are adjusted for years with monitoring only.														
30	PLANNING, ENGINEERING & DESIGN													
0.40%	Project Management	\$6	\$1	18%	\$7	0.0%	\$6	\$1	\$7	2027Q3	62.4%	\$10	\$2	\$11
0.30%	Planning & Environmental Compliance	\$5	\$1	18%	\$6	0.0%	\$5	\$1	\$6	2027Q3	62.4%	\$8	\$1	\$10
0.20%	Engineering & Design	\$3	\$1	18%	\$4	0.0%	\$3	\$1	\$4	2027Q3	62.4%	\$5	\$1	\$6
0.00%	Reviews, ATRs, IEPRs, VE	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Life Cycle Updates (cost, schedule, risks)	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.10%	Contracting & Reprographics	\$2	\$0	18%	\$2	0.0%	\$2	\$0	\$2	2027Q3	62.4%	\$3	\$1	\$4
0.00%	Engineering During Construction	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Planning During Construction	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.20%	Project Operations	\$3	\$1	18%	\$4	0.0%	\$3	\$1	\$4	2027Q3	62.4%	\$5	\$1	\$6
31	CONSTRUCTION MANAGEMENT													
0.00%	Construction Management	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Operation:	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Management	\$0	\$0	18%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
CONTRACT COST TOTALS:		\$1,519	\$273		\$1,792		\$1,519	\$273	\$1,792			\$1,935	\$348	\$2,283

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Charleston Harbor Deepening Feasibility - LPP - Recommended Plan
 LOCATION: Charleston, SC
 This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

DISTRICT: SAC South Atlantic Division
 POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins
 PREPARED: 5/11/2015

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 4/15/2015				Program Year (Budget EC): 2015				FULLY FUNDED PROJECT ESTIMATE				
		Effective Price Level: 10/1/2014				Effective Price Level Date: 1 OCT 14								
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
ASSOCIATED COSTS FOR SPONSOR														
02	RELOCATIONS	\$522	\$94	18%	\$616	0.0%	\$522	\$94	\$616	2020Q2	9.9%	\$574	\$103	\$677
	Aids to Navigation from USCG													
12	NAVIGATION PORTS & HARBORS	\$4,209	\$758	18%	\$4,967	0.0%	\$4,209	\$758	\$4,967	2020Q2	9.9%	\$4,627	\$833	\$5,460
	Terminal berth dredging													
12	NAVIGATION PORTS & HARBORS	\$22,000	\$0	0%	\$22,000	0.0%	\$22,000	\$0	\$22,000	2018Q1	5.2%	\$23,139	\$0	\$23,139
	Wharf improvements at Wando Terminal													
CONSTRUCTION ESTIMATE TOTALS:		\$26,731	\$852	3%	\$27,583		\$26,731	\$852	\$27,583			\$28,340	\$936	\$29,276
01	LANDS AND DAMAGES	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
Note: Percentages for the 30 & 31 Accounts are for sponsor costs.														
30	PLANNING, ENGINEERING & DESIGN													
0.00%	Project Management	\$0	\$0	3%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Planning & Environmental Compliance	\$0	\$0	3%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
1.00%	Engineering & Design	\$267	\$9	3%	\$276	0.0%	\$267	\$9	\$276	2018Q1	10.2%	\$294	\$9	\$304
0.00%	Reviews, ATRs, IEPRs, VE	\$0	\$0	3%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Life Cycle Updates (cost, schedule, risks)	\$0	\$0	3%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Contracting & Reprographics	\$0	\$0	3%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Engineering During Construction	\$0	\$0	3%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Planning During Construction	\$0	\$0	3%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Operations	\$0	\$0	3%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
31	CONSTRUCTION MANAGEMENT													
0.50%	Construction Management	\$134	\$4	3%	\$138	0.0%	\$134	\$4	\$138	2020Q3	21.6%	\$163	\$5	\$168
0.00%	Project Operation:	\$0	\$0	3%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.00%	Project Management	\$0	\$0	3%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
CONTRACT COST TOTALS:		\$27,132	\$864		\$27,996		\$27,132	\$864	\$27,996			\$28,797	\$951	\$29,748

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Charleston Harbor Deepening Feasibility - LPP - Recommended Plan
 LOCATION: Charleston, SC
 This Estimate reflects the scope and schedule in report; Charleston Harbor Post 45 Draft IFR and EIS

DISTRICT: SAC South Atlantic Division
 POC: CHIEF, DESIGN & GENERAL ENGINEERING, Nancy Jenkins
 PREPARED: 5/11/2015

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 4/15/2015				Program Year (Budget EC): 2015				FULLY FUNDED PROJECT ESTIMATE				
		Effective Price Level: 10/1/2014				Effective Price Level Date: 1 OCT 14								
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
O&M COSTS														
12	NAVIGATION PORTS & HARBORS Total O&M for 50 years	\$488,580	\$87,944	18%	\$576,524	0.0%	\$488,580	\$87,944	\$576,524	2047Q1	86.7%	\$912,203	\$164,197	\$1,076,400
CONSTRUCTION ESTIMATE TOTALS:		\$488,580	\$87,944	18%	\$576,524		\$488,580	\$87,944	\$576,524			\$912,203	\$164,197	\$1,076,400
01	LANDS AND DAMAGES	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
30 PLANNING, ENGINEERING & DESIGN														
0.20%	Project Management	\$977	\$176	18%	\$1,153	0.0%	\$977	\$176	\$1,153	2046Q3	309.7%	\$4,003	\$721	\$4,723
0.20%	Planning & Environmental Compliance	\$977	\$176	18%	\$1,153	0.0%	\$977	\$176	\$1,153	2046Q3	309.7%	\$4,003	\$721	\$4,723
0.33%	Engineering & Design	\$1,612	\$290	18%	\$1,902	0.0%	\$1,612	\$290	\$1,902	2046Q3	309.7%	\$6,605	\$1,189	\$7,793
0.08%	Reviews, ATRs, IEPRs, VE	\$391	\$70	18%	\$461	0.0%	\$391	\$70	\$461	2046Q3	309.7%	\$1,602	\$288	\$1,890
0.04%	Life Cycle Updates (cost, schedule, risks)	\$195	\$35	18%	\$230	0.0%	\$195	\$35	\$230	2046Q3	309.7%	\$799	\$144	\$943
0.03%	Contracting & Reprographics	\$147	\$26	18%	\$173	0.0%	\$147	\$26	\$173	2046Q3	309.7%	\$602	\$108	\$711
0.09%	Engineering During Construction	\$440	\$79	18%	\$519	0.0%	\$440	\$79	\$519	2047Q1	320.0%	\$1,848	\$333	\$2,181
0.05%	Planning During Construction	\$244	\$44	18%	\$288	0.0%	\$244	\$44	\$288	2047Q1	320.0%	\$1,025	\$184	\$1,209
0.15%	Project Operations	\$733	\$132	18%	\$865	0.0%	\$733	\$132	\$865	2046Q3	309.7%	\$3,003	\$541	\$3,544
31 CONSTRUCTION MANAGEMENT														
1.00%	Construction Management	\$4,886	\$879	18%	\$5,765	0.0%	\$4,886	\$879	\$5,765	2047Q1	320.0%	\$20,523	\$3,694	\$24,217
0.30%	Project Operation:	\$1,466	\$264	18%	\$1,730	0.0%	\$1,466	\$264	\$1,730	2047Q1	320.0%	\$6,158	\$1,108	\$7,266
0.20%	Project Management	\$977	\$176	18%	\$1,153	0.0%	\$977	\$176	\$1,153	2047Q1	320.0%	\$4,104	\$739	\$4,843
CONTRACT COST TOTALS:		\$501,625	\$90,293		\$591,918		\$501,625	\$90,293	\$591,918			\$966,477	\$173,966	\$1,140,443

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

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DISTRICT: SAC South Atlantic Division
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Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 4/15/2015				Program Year (Budget EC): 2015				FULLY FUNDED PROJECT ESTIMATE				
		Effective Price Level: 10/1/2014				Effective Price Level Date: 1 OCT 14								
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
O&M COSTS														
12	NAVIGATION PORTS & HARBORS Increase in O&M for 50 years	\$186,870	\$33,637	18%	\$220,507	0.0%	\$186,870	\$33,637	\$220,507	2047Q1	86.7%	\$348,896	\$62,801	\$411,697
CONSTRUCTION ESTIMATE TOTALS:		\$186,870	\$33,637	18%	\$220,507		\$186,870	\$33,637	\$220,507			\$348,896	\$62,801	\$411,697
01	LANDS AND DAMAGES	\$0	\$0	0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
30 PLANNING, ENGINEERING & DESIGN														
0.20%	Project Management	\$374	\$67	18%	\$441	0.0%	\$374	\$67	\$441	2046Q3	309.7%	\$1,532	\$276	\$1,808
0.20%	Planning & Environmental Compliance	\$374	\$67	18%	\$441	0.0%	\$374	\$67	\$441	2046Q3	309.7%	\$1,532	\$276	\$1,808
0.33%	Engineering & Design	\$617	\$111	18%	\$728	0.0%	\$617	\$111	\$728	2046Q3	309.7%	\$2,528	\$455	\$2,983
0.08%	Reviews, ATRs, IEPRs, VE	\$149	\$27	18%	\$176	0.0%	\$149	\$27	\$176	2046Q3	309.7%	\$610	\$110	\$720
0.04%	Life Cycle Updates (cost, schedule, risks)	\$75	\$14	18%	\$89	0.0%	\$75	\$14	\$89	2046Q3	309.7%	\$307	\$55	\$363
0.03%	Contracting & Reprographics	\$56	\$10	18%	\$66	0.0%	\$56	\$10	\$66	2046Q3	309.7%	\$229	\$41	\$271
0.09%	Engineering During Construction	\$168	\$30	18%	\$198	0.0%	\$168	\$30	\$198	2047Q1	320.0%	\$706	\$127	\$833
0.05%	Planning During Construction	\$93	\$17	18%	\$110	0.0%	\$93	\$17	\$110	2047Q1	320.0%	\$391	\$70	\$461
0.15%	Project Operations	\$280	\$50	18%	\$330	0.0%	\$280	\$50	\$330	2046Q3	309.7%	\$1,147	\$206	\$1,354
31 CONSTRUCTION MANAGEMENT														
1.00%	Construction Management	\$1,869	\$336	18%	\$2,205	0.0%	\$1,869	\$336	\$2,205	2047Q1	320.0%	\$7,850	\$1,413	\$9,263
0.30%	Project Operation:	\$561	\$101	18%	\$662	0.0%	\$561	\$101	\$662	2047Q1	320.0%	\$2,356	\$424	\$2,781
0.20%	Project Management	\$374	\$67	18%	\$441	0.0%	\$374	\$67	\$441	2047Q1	320.0%	\$1,571	\$283	\$1,854
CONTRACT COST TOTALS:		\$191,860	\$34,535		\$226,395		\$191,860	\$34,535	\$226,395			\$369,657	\$66,538	\$436,195

ATTACHMENT D-1 - RISK REGISTER FOR RECOMMENDED PLAN

Charleston Harbor Post 45', Charleston District Cost and Schedule Risk Register												
Include?	RT	Ref #	Risk/Opportunity Event	Description	PDT Discussions	Project Cost			Project Schedule			Comments
						Likelihood ©	Impact ©	Risk Level ©	Likelihood (\$)	Impact (\$)	Risk Level (\$)	
Y	PM		Project & Program Management (PM)									
Y	PM		Funding Issues									
Y	PM	17	Stakeholder Funding	Large funding requirement by stakeholder needed for project execution.	Stakeholder has available funds and local buy in to assure project moves forward.	Unlikely	Negligible	Low	Unlikely	Negligible	Low	
Y	PM	18	Intermittent Funding	Federal funds are limited and the District must compete at the congressional level for those funds to keep the project moving.	As part of the risk mitigation, the District will split the project into smaller, more affordable contracts over time. This could result in changes to channel conditions, labor rate fluctuations, regulatory and environmental changes/restrictions. This may result in additional time with impact to cost.	Likely	Marginal	Moderate	Likely	Significant	High	The overall cost for this project is based on "New Work" dredging, not O&M. Therefore, the cost impacts would be due to the possible schedule impacts only. Assuming a potential delay of 2 years in funding, the cost impact from updating the TPCS to 2020 - 2024 instead of 2018 - 2022 results in an increase in fully funded cost of \$18,600,000 for the TSP. With a "Yes/No" distribution, it is the opinion of the PDT that the probability of occurrence is 20% for a delay of 2 years. This probability is due to the sponsor having their portion of the required funding already allocated. With the WRDA 2014 allowing the sponsor's funds to be used prior to the receipt of Federal funding, the scheduled project start has a low probability of being delayed.
Y	CA		Contract Acquisition (CA)									
Y	CA	42	Acquisition strategy affecting competition	The contracting plan has not been firmly established. Smaller contracts could result in small business and a restricted competitive market.	Current assumption is competitive bids, full and open competition for the dredging work which is the major portion of the cost. Smaller contracts w/ small business are expected for the inland disposal area improvements. This work is simple earthwork and SAC has received very competitive bids from small businesses for similar work in the same area. Small business could have an impact on price of the disposal area work. Since there are multiple contracts, schedule impacts are minimal.	Likely	Marginal	Moderate	Unlikely	Negligible	Low	The only area expected to have a cost impact from small business is the disposal area work. A potential increase of 10% above the current estimate is possible. However, on recent contracts for the same work, SAC has received bids from small businesses that were at or below the government estimate. Therefore, a potential low value of 5% below the current estimate is possible.

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Y	CA	44	Award of multiple smaller contracts.	Award of multiple smaller contracts could impact cost by requiring additional mob/demob of dredges.	If contract capacity becomes an issue, multiple smaller contracts may be awarded versus the large contracts assumed by this estimate.	Likely	Marginal	Moderate	Unlikely	Negligible	Low	Current estimate assumes 4 contracts for the entrance channel and 1 each for the lower harbor and upper harbor sections. If multiple contracts are used, the most likely scenerio is to break up the lower and upper harbor sections into multiple contracts of 3 each. This would require 2 additional mob/demobs of dredges in these sections. This would increase cost by 2 X \$1,366,000 + 2 X \$2,496,000 = \$7,724,000.
Y	CA	45	Contract Modifications	Project is large dredging project with rock removal.	Good soil borings on project, however, there is risk for additional hard material.	Likely	Marginal	Moderate	Likely	Marginal	Moderate	There may be modification issues that have not been captured in current risks. Mostly the quantities of material to be removed to reach the required depth in areas with hard material may change. Even though there were borings taken, the calculation of hard material still has some uncertainty. Low value assumes that the current dredging quantities are adequate to accomplish the required depth in all areas. High assumes a 5% increase in the quantity of hard material to be dredged. This equates to 452,700 CY for the LPP. At an average cost of \$22.00/cy yields an increase of \$9,959,400. The schedule impact could result in additional escalation to the cost of the rock cutter dredging. Assume 2% per year of the cost of the rock cutter dredging yields 2% X 2 months/12 months X \$142,992,500 = \$476,600.
Y	TD		Technical Design (TD)									
Y	TD	47	Design Development, Incomplete or Preliminary	During the SMART Planning process, design effort was moved to PED. Items which normally completed within feasibility (such as ship simulation for optimum channel width)	Final channel study and design moved to PED stage, Estimate is based on conservative channel widths and turning basin diameters based on harbor and docking pilots' best professional judgment, which ship simulation may reduce or optimize.	Unlikely	Significant	Moderate	Unlikely	Marginal	Low	The current cost estimate is based on the maximum amount of potential widening features. From discussions with the PDT, the areas of potential reductions in widenings are the turning basins and the widening at Clouter Creek reach. Assume that the turning basin widenings would be reduced by 50% and the Clouter Creek reach widening feature would be eliminated. The reduction in cost would be: Wando TB - 50% X 2,754,500 CY X \$4.49 /CY = \$6,183,900; Ordnance TB - 50% X 1,372,700 CY X \$4.14 /CY = \$2,841,500; Navy Base Terminal (Daniel Island Reach) - 50% X 619,300 CY X \$3.21 /CY = \$994,000; Clouter Creek Reach - 193,191 CY X \$10.23 /CY = \$1,976,300. Total reduction in cost would be \$11,995,700. There is a small possibility that ship simulation could increase the widening features due to addition of a Gen III vessel to the modeling for simulation. Assume a 5% increase in all widening measures, total of 7,821,415 CY yields a total of 391,070 CY. At an average cost of \$10.00/CY yields \$3,910,700.

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Y	TD	59	Rock Quantities	Varying qty	Final channel study and design moved to PED stage, Could influence qty's. Qty amounts used for base estimate assumed larger width. Higher risk qty's would be reduced final designs. 0% to 5% to historical O&M funding allows flexibility in scheduling	Likely	Marginal	Moderate	Unlikely	Marginal	Low	There may be design changes that affect the cost of this project. Due to the use of the maximum potential design in terms of depth and channel width, the greatest likelihood would be a reduction in quantity of dredged material. The quantities of material to be removed to reach the required depth in areas with hard material may change. If detail design reduces the scope of material to be removed, quantities and cost will be reduced. Low value assumes that the current dredging quantities can be reduced by 5%. Current design assumes the maximum, however, there are some areas that had inconclusive core borings. Therefore, High assumes the an increase of 2% of current design quantities. This equates to a reduction 452,700 CY for the LPP for Low and an increase of 181,084 for High. At an average cost of \$22.00/cy yields a reduction of \$9,959,400 and an increase of \$3,984,000.
Y	TD	60	Dredging Quantities	Varying qty	Final channel study and design moved to PED stage, Could influence qty's. Qty amounts used for base estimate assumed larger width. Higher risk qty's would be reduced final designs. +5 – 10% historical O&M funding allows flexibility in scheduling	Likely	Marginal	Moderate	Unlikely	Marginal	Low	There may be design changes that affect the cost of this project. Due to the use of the maximum potential design in terms of depth and channel width, the greatest likelihood would be a reduction in quantity of dredged material. The quantities of material to be removed to reach the required depth may change. If detail design reduces the scope of material to be removed, quantities and cost will be reduced. Low value assumes that the current dredging quantities can be reduced by 7.5%. Since current design is the maximum, High assumes the current design quantities. This equates to a reduction 2,321,700 CY for the LPP. At an average cost of \$10.00/cy yields an reduction of \$23,217,000. Some of this item was covered in TD 47 above. Therefore, this reduction in cost would be reflected as \$23,217,000 - \$11,995,700 = \$11,221,300. High would assume an increase of 2% of all non-rock quantity or 619,132 CY at average cost of \$10/cy equals \$6,191,320.
Y	TD	77	Sea Level Rise	Current design based on historical rates. Assessment. Base estimate incorporates historical sea level rise.	No assumed risk identified within the estimate.	Unlikely	Negligible	Low	Unlikely	Negligible	Low	
Y	TD	78	Stability of jetties.	Concern that the deepening of the channel will cause instability of the jetties that reduce sedimentation in the channel.	PDT feels that the probability of occurrence of jetty failure is remote, but the consequences are significant.	Unlikely	Critical	Moderate	Unlikely	Negligible	Low	If excavation of the channel in conjunction with sea level rise results in instability to the jetties, repairs or raising of the jetties will be required to maintain the functionality of the jetties. The PDT feels that the likelihood of occurrence is very low, 5% or less. The cost impact is based on similar work that has been accomplished by other USACE Districts. The possible cost impact was calculated by taking the length of jetty possibly impacted and multiplying by the average per linear foot cost for recent repairs on jetties by USACE. The expected length is 16,500 LF and the average cost of \$10,900 per LF.

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Y	TD	79	Hazardous waste concerns	Soil sampling completed. No hazardous material located	No risk identified	Unlikely	Negligible	Low	Unlikely	Negligible	Low	
Y	CO		Construction (CO)									
Y	CO	85	Weather Impacts	Storm Impacts	Potential for foul weather. Construction contract will identify projected non work time due to weather delays. Potential risk for additional time. To be included within CA45 - Contract Modifications	Likely	Marginal	Moderate	Likely	Marginal	Moderate	This item covers the potential for delays or additional dredging due to weather, in particular tropical storms or hurricanes. The Charleston area has experienced tropical systems in the past, but the number of occurrences over time is not significant. If additional shoaling occurs during a storm event, emergency funds would be requested to cover the cost of dredging the extra material. Therefore, the only cost impact would be from the lost production time or standby cost. Assuming a one week delay with four dredges working, the total delay would be 1 month. Average monthly cost for dredges is approximately \$3,000,000.
Y	CO	87	Unknown Cultural Historic Preservation	Surveys have been completed	No identified risk	Unlikely	Negligible	Low	Unlikely	Negligible	Low	
Y	CO	98	Conflicts with other contracts	Potential for O&M dredging contracts (separate or within)	Low cost risk, increase of schedule risk	Unlikely	Negligible	Low	Unlikely	Negligible	Low	
Y	ES		Cost and Schedule (ES)									
Y	ES	134	Estimate include quantity changes during project duration	Storm Impacts/Shoaling	Shoaling and storm will be funded by O&M funding. Assumes no additional risk to authorized cost based on shoaling	Likely	Negligible	Low	Unlikely	Negligible	Low	
Y	ES	136	Estimate reasonableness of crews and productivities	Dredge cycle times and effective work times	District has large historical data and experience. Project includes rock removal. Risk associated with removal of rock and dredge cycle and effective times.	Likely	Marginal	Moderate	Unlikely	Negligible	Low	For the rock dredging operations, an effective working time (EWT) of 45% for rock cutter and 50% for clamshell dredging has been assumed with costs built in to replace 100 cutter teeth per day. The EWT could vary from this assumption. A low value would be realized if the EWT increased by 5%. The high value would be realized if the EWT decreased by 10%. The resulting cost changes would be -\$8,393,000 for the low and \$23,607,000 for the high value.
Y	ES	151	Fuel Prices Fluctuate Significantly	Fluctuation of Fuel pricing	Most likely cost is based on typical marine diesel cost at present time. This is higher than the current low price. Risk will evaluate historical trends to establish risk range.	Likely	Significant	High	Unlikely	Negligible	Low	On dredging projects, fuel is a major cost driver for equipment. Over the last 15 years, fuel prices have in general exceeded the cost of inflation. Low assumes that fuel prices could be as low as \$2.95/gal. Using \$2.95 for fuel cost results in a reduction in cost of \$22,975,000. High assumes that fuel prices could be as high as \$4.25/gal based on experience with fuel cost volatility. Cost would increase by \$36,883,000 with fuel at this price.

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Y	ES	154	Dredging (Plant Value)	Dredge Plant Cost	Due to Variance in dredge plant cost for limited numbers of contractors and for lack of actual pricing data.	Very Likely	Significant	High	Unlikely	Negligible	Low	Dredge plant values in the CEDEP equipment database are based on the original construction value and in many cases have not been updated. Low value is assumed as the default plant value in the current CEDEP programs. High value is assumed to be the cost with the plant value set at +15% of the default value.
Y	ES	155	Dredging (Labor Cost)	Dredge Plant Labor Cost	The estimate is based on current cost from historic information combined with Davis-Bacon information where available.	Unlikely	Negligible	Low	Unlikely	Negligible	Low	
Y	ES	156	Dredging (Effective Time)	Variance to dredging time in production	District has large historical data and experience. Project includes rock removal. Risk associated with removal of rock and dredge cycle and effective times.	Likely	Marginal	Moderate	Unlikely	Negligible	Low	This item was covered in ES 136. Not modeled here to eliminate redundancy of risk.
Y	ES	159	Turbidly Requirements	Turbity	Basis of estimate currently allows limited turbidity requirements.	Unlikely	Marginal	Low	Unlikely	Negligible	Low	
Y	ES	160	Dredge Plant Availability	Current Estimate assumes large number of plant (3 to 4 Hoppers) and rock cutting dredge and dump scows	Current plan is dependant on fleet availability. Reduced competition due to multiple dredge being required for dredging. The rock removal assumes use of Rock Cutting Cutterhead Dredge. There are extremely limited available dredges with this capability. The plan utilizes high number of dump scows. The option is to utilize expensive alternate solutions which have a high impact to overall cost.	Very Likely	Significant	High	Likely	Significant	High	For this item, assumed all rock dredging would be accomplished by 2 each P996 Lebherr excavator dredges with rock buckets. Estimated cost for this alternative is actually \$9,069,144 less than that calculated with rock cutter dredge and clamshell. However, schedule duration is 7 months longer. The schedule impact could result in additional escalation to the cost of the rock dredging. Assume 2% per year of the cost of the rock dredging yields 2% X 7 months/12 months X \$174,531,000 = \$2,036,200. Therefore, the low would be -\$7,032,944. With the availability of a single 30" rock cutter dredge, the potential for significant price increases in the cost for the rock excavation is possible. Assume a 20% higher cost for all rock excavation yields \$34,906,200 for a high value.
Y	RE		Regulatory & Environmental (RE)									
Y	RE	169	Environmental and Water quality issues	Potential for changes to contract requirements for water quality	Final water quality, mitigation, dissolved oxygen requirements have been given regulatory approvals. However, monitoring will be required and has been accounted for in the estimate.	Unlikely	Negligible	Low	Unlikely	Negligible	Low	

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Y	RE	184	Project in the Coastal Zone	Risk associated with sea level rise considerations.	Design has incorporated sea level rise based on historical design criteria. Engineering is confident that no changes will result to design based on sea level change at this time.	Unlikely	Negligible	Low	Unlikely	Negligible	Low	
Y	RE	188	Turtle Monitoring	Cost for monitoring is included in all hopper dredging costs. If excessive turtle takes occur, work can be shut down.	The PDT feels this is a unlikely occurrence. The planned actions are consistent with biological assessment.	Unlikely	Negligible	Low	Unlikely	Negligible	Low	
Y	RE	189	Speed restrictions for hoppers and scows	The biological opinion from fish and wildlife contains speed restrictions in times of low visibility due to right whales	The PDT feels that the addition of speed restrictions as requested by National Fish & Wildlife Service, 10 knots during the day and 5 knots at night or in times of low visibility, could have some impact.	Very Unlikely	Negligible	Low	Very Unlikely	Negligible	Low	The costs for the hopper dredging operations and the other dredging operations that included transportation by tugs with scows were calculated assuming reduced speeds for the various pieces of dredging equipment with endangered species observers to prevent whale strikes. This item has already been incorporated into the base cost, therefore it will not contribute to the contingency..
Y	LD		Lands & Damages (LD)									
Y	LD	198	Status of real estate acquisition	Risk associated with real estate acquisition for project execution.	Real estate acquisition will take place during PED.	Unlikely	Negligible	Low	Unlikely	Negligible	Low	USACE real estate has identified several available tracks that would be appropriate for acquisition as mitigation for wetland impacts. The sponsor has already made progress in establishing options for purchase of the necessary lands for preservation.
Y	EX		External (EX)									

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Y	EX	215	Market conditions and bidding competition	Current Estimate assumes large number of plant (3 to 4 Hoppers) and Rock cutting dredge.	Current plan is dependant on fleet availability. Reduced competition due to multiple dredge being required for dredging. The rock removal assumes use of Rock Cutting Cutterhead Dredge. There are extremely limited available dredges with this capability. The option is to utilize expensive alternate solutions which have a high impact to overall cost.	Very Likely	Significant	High	Likely	Significant	High	<p>Currently, there are a lot of projects planned when considering the number of dredges available. It is a tough bidding climate based on environmental time-line restrictions. Dredging construction start is scheduled for 2018. For the Low value, assumed a value of 5% below the most likely price in case of good market conditions. This yields \$369,424,200 X 0.05 = -\$18,471,210. High assumes that the project could be up to 10% above most likely estimate. Most recent dredging awards have been within 10% of the IGE. 10% increase of dredging cost = \$369,424,200 x 0.10 = \$36,942,420. For a schedule impact, if fewer hopper dredges are available than what the cost estimate assumes, this would add 2 years to the schedule for hopper dredging due to the environmental window for hopper dredges. However, assuming that dredging operations would be conducted simultaneously, there should be less impact to the overall schedule.</p> <p>In addition, assuming a 1 large and 1 medium hopper for 4 cycles versus 1 large and 3 medium hoppers for 2 cycles actually lowers the cost of the project due to more material being removed by the large hopper which can operate more effeciently. Even with additional escalation, the cost is \$4,061,000 lower for this option.</p>