

FLOOD RISK MANAGEMENT

SOUTH SHORE STATEN ISLAND COASTAL STORM RISK MANAGEMENT

VALIDATION REPORT

APPENDIX C – COST APPENDIX



**US Army Corps of Engineers
New York District**

January 2024

SOUTH SHORE STATEN ISLAND
VALIDATION REPORT
STATEN ISLAND, NY
APPENDIX C - COST ESTIMATES

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INTRODUCTION

This Appendix presents the detailed cost estimates for South Shore Staten Island as generally described in the Final Feasibility Report dated October 2016. The certified construction cost estimate represents the updated quantities and features based on all current requirements as of December 2023.

The purpose of this validation study is to determine if the project is still feasible as authorized in the October 2016 Final Feasibility Report.

South Shore Staten Island consists of seven (7) construction contracts that provides solutions to reduce the impact of flood in the region, which was subjected to much of fatalities during Hurricane Sandy. The features for the seven (7) construction contracts along with its respective first cost are shown on Table C1 below:

Table C1 – List of Contracts

Contracts	Features	First Cost (FY24 PL)
Area E	Interior drainage features for Area E includes wingwalls, junction chambers, culverts, outfall structures, and excavated ponds. Utility relocation, pavement replacement, gravel access road, landscaping, and erosion and sediment control. All excavated material is assumed to include phragmite.	\$115,664,000
Area C	Interior drainage features for Area C includes excavation of ponds, landscaping, and removal and capping of existing utilities.	\$130,799,000
Miller Field Offset	Forest enhancement	\$3,301,000
Oakwood Beach to Miller Field	13,528 LF of double sheet pile seawall runs along from the tidal wetlands to the natural flood storage and transitions to the existing promenade. The contract also includes reinforced concrete promenade, promenade hardscaping and furniture, underground utility relocation, bridging over existing sewers under seawall, service road, bicycle pathway, pond B1 tide gate, pond B2 tide gate, outfall structures, tidal culverts, swale culverts, tidal wetlands, erosion and control measures, civil demolition, dune vegetation, electrical work, and landscaping	\$908,740,000

Midland Beach to Fort Wadsworth	The alignment follows the footprint of the existing promenade and boardwalk. This contract includes features such as double sheet pile seawall, outlet structures, outfalls, access ramps, access stairs, underground utility relocations, reinforced concrete boardwalk, expansion of promenade/boardwalk area, boardwalk hardscaping and furniture, bicycle pathway, erosion and control measures, interior drainages, dune vegetation, remove & rebuild of DPR facilities, etc.	\$717,379,000
Floodwall	307 LF of earthen levee transitions to a vertical concrete I-shaped floodwall which then transitions to a vertical concrete T-shaped floodwall due to the limited area between Oakwood Creek and the Oakwood Beach Waste Water Treatment Plant (WWTP). The 1,569 LF of T-wall and 543 LF of I-wall protect the west and the south sides of the WWTP. The contract also includes construction of drainage structures, swing gates, sluice gate chamber, new panel board for the WWTP, utility relocation, site civil improvements, electrical upgrades, and landscaping.	\$82,334,000
Hyland Blvd. Closure Gate, Levee, Tide Gate	Starting from Oakwood Beach, the earthen levee ties into high ground on the northwest of Hyland Boulevard. A closure gate along Hyland Boulevard will be proposed and deployed during coastal storm events to prevent the flanking tidal surge waters to the project area. The earthen levee continues southeast through Oakwood Beach parallel to Oakwood Creek and Buffalo Street until the levee crosses over Oakwood Creek. A tide gate structure is proposed at this location with the deep mixing method (DMM) panels located within the proximity. The contract also includes high performance turf reinforcement mat, new monitoring well, utility replacement, sheet piles, interior drainage A, earthwork, and 268 MSF of site restoration and seeding.	\$89,460,000

BASIS OF COST

The construction cost estimate was developed in MCACES, Second Generation (MII) using the appropriate Work Breakdown Structure (WBS) and based on current estimated quantities provided by the Architect/Engineers. The cost estimate was developed from these quantities using cost resources such as RSMeans, historical data from similar construction features, vendor quotes, and MII Cost Libraries. The contingencies were developed based on input to the Cost Schedule Risk Analysis (CSRA) (template provided by the Cost Mandatory Center of Expertise, MCX, Walla Walla District). These contingencies were applied to the construction cost estimates to develop the Total Project First Cost.

The Total Project First Cost for the entire South Shore Staten Island project is presented in Table C2 on the following page. The First Cost table for each contract is presented from Table C3 through C9 from page C5 through C11.

Table C2 –First Cost Table
South Shore Staten Island Validation Study
October 2023 Price Level

Feat. Acct.	Description	Subtotal	Cont. %	Cont \$\$	Total Cost
01	Lands & Damages	\$ 80,052,889	17%	\$ 13,469,078	\$ 93,521,966
	Total Lands & Damages	\$ 80,052,889		\$ 13,469,078	\$ 93,521,966
02	Relocations	\$ 52,298,592	47%	\$ 24,580,338	\$ 76,878,930
	Total Relocations	\$ 52,298,592		\$ 24,580,338	\$ 76,878,930
08	Roads, Railroads & Bridges	\$ 123,124,612	47%	\$ 57,868,568	\$ 180,993,179
	Total Roads, Railroads & Bridges	\$ 123,124,612		\$ 57,868,568	\$ 180,993,179
10	Breakwater & Seawalls	\$ 577,232,349	47%	\$ 271,299,204	\$ 848,531,552
	Total Breakwater & Seawalls	\$ 577,232,349		\$ 271,299,204	\$ 848,531,552
11	Levees & Floodwalls	\$ 34,618,910	47%	\$ 16,270,888	\$ 50,889,798
	Total Levees & Floodwalls	\$ 34,618,910		\$ 16,270,888	\$ 50,889,798
15	Floodway Control & Diversion Structure	\$ 283,597,184	47%	\$ 133,290,676	\$ 416,887,860
	Total Floodway Control & Diversion Str	\$ 283,597,184		\$ 133,290,676	\$ 416,887,860
16	Bank Stabilization	\$ 51,192,461	47%	\$ 24,060,456	\$ 75,252,917
	Total Bank Stabilization	\$ 51,192,461		\$ 24,060,456	\$ 75,252,917
18	Cultural Resource	\$ 4,306,961	47%	\$ 2,024,272	\$ 6,331,233
	Total Cultural Resource	\$ 4,306,961		\$ 2,024,272	\$ 6,331,233
19	Buildings, Grounds & Utilities	\$ 469,423	47%	\$ 220,629	\$ 690,052
	Total Buildings, Grounds & Utilities	\$ 469,423		\$ 220,629	\$ 690,052
30	Planning, Engineering & Design	\$ 82,515,962	47%	\$ 38,782,502	\$ 121,298,464
31	Construction Management	\$ 120,000,168	47%	\$ 56,400,079	\$ 176,400,246
Total First Cost		\$ 1,409,409,509		\$ 638,266,689	\$ 2,047,676,198

Table C3 –First Cost: Area E

South Shore Staten Island Validation Study

Area E

October 2023 Price Level

Feat. Acct.	Description	Subtotal	Cont. %	Cont \$\$	Total Cost
01	Lands & Damages	\$ 5,633,344	16%	\$ 898,419	\$ 6,531,763
	Total Lands & Damages	\$ 5,633,344		\$ 898,419	\$ 6,531,763
02	Relocations	\$ 1,420,771	47%	\$ 667,762	\$ 2,088,534
	Total Relocations	\$ 1,420,771		\$ 667,762	\$ 2,088,534
08	Roads, Railroads & Bridges	\$ 3,351,872	47%	\$ 1,575,380	\$ 4,927,252
	Total Roads, Railroads & Bridges	\$ 3,351,872		\$ 1,575,380	\$ 4,927,252
15	Floodway Control & Diversion Structure	\$ 50,285,077	47%	\$ 23,633,986	\$ 73,919,063
	Total Floodway Control & Diversion Str	\$ 50,285,077		\$ 23,633,986	\$ 73,919,063
16	Bank Stabilization	\$ 9,480,441	47%	\$ 4,455,807	\$ 13,936,248
	Total Bank Stabilization	\$ 9,480,441		\$ 4,455,807	\$ 13,936,248
30	Planning, Engineering & Design	\$ 2,819,181	47%	\$ 1,325,015	\$ 4,144,197
31	Construction Management	\$ 6,882,472	47%	\$ 3,234,762	\$ 10,117,234
Total First Cost		\$ 79,873,160		\$ 35,791,132	\$ 115,664,292

Table C4 –First Cost: Area C

South Shore Staten Island Validation Study

Area C

October 2023 Price Level

Feat. Acct.	Description	Subtotal	Cont. %	Cont \$\$	Total Cost
01	Lands & Damages	\$ 35,450,435	16%	\$ 5,815,837	\$ 41,266,272
	Total Lands & Damages	\$ 35,450,435		\$ 5,815,837	\$ 41,266,272
02	Relocations	\$ 134,084	47%	\$ 63,019	\$ 197,103
	Total Relocations	\$ 134,084		\$ 63,019	\$ 197,103
08	Roads, Railroads & Bridges	\$ 2,985,583	47%	\$ 1,403,224	\$ 4,388,807
	Total Roads, Railroads & Bridges	\$ 2,985,583		\$ 1,403,224	\$ 4,388,807
15	Floodway Control & Diversion Structure	\$ 45,533,013	47%	\$ 21,400,516	\$ 66,933,529
	Total Floodway Control & Diversion Str	\$ 45,533,013		\$ 21,400,516	\$ 66,933,529
16	Bank Stabilization	\$ 3,198,289	47%	\$ 1,503,196	\$ 4,701,485
	Total Bank Stabilization	\$ 3,198,289		\$ 1,503,196	\$ 4,701,485
30	Planning, Engineering & Design	\$ 3,525,925	47%	\$ 1,657,185	\$ 5,183,109
31	Construction Management	\$ 5,529,526	47%	\$ 2,598,877	\$ 8,128,403
Total First Cost		\$ 96,356,854		\$ 34,441,854	\$ 130,798,708

Table C5 –First Cost: Miller Field Offset

South Shore Staten Island Validation Study

Miller Field Offset

October 2023 Price Level

Feat. Acct.	Description	Subtotal	Cont. %	Cont \$\$	Total Cost
01	Lands & Damages	\$ 774,035	19%	\$ 148,307	\$ 922,342
	Total Lands & Damages	\$ 774,035		\$ 148,307	\$ 922,342
16	Bank Stabilization	\$ 1,333,482	47%	\$ 626,737	\$ 1,960,219
	Total Bank Stabilization	\$ 1,333,482		\$ 626,737	\$ 1,960,219
30	Planning, Engineering & Design	\$ 142,590	47%	\$ 67,017	\$ 209,608
31	Construction Management	\$ 141,917	47%	\$ 66,701	\$ 208,619
Total First Cost		\$ 2,392,025		\$ 908,762	\$ 3,300,787

Table C6 –First Cost: Oakwood Beach to Miller Field Seawall

**South Shore Staten Island Validation Study
Oakwood Beach to Miller Field Seawall (21')**

October 2023 Price Level

Feat. Acct.	Description	Subtotal	Cont. %	Cont \$\$	Total Cost
01	Lands & Damages	\$ 24,307,174	17%	\$ 4,192,435	\$ 28,499,608
	Total Lands & Damages	\$ 24,307,174		\$ 4,192,435	\$ 28,499,608
02	Relocations	\$ 8,270,244	47%	\$ 3,887,015	\$ 12,157,258
	Total Relocations	\$ 8,270,244		\$ 3,887,015	\$ 12,157,258
08	Roads, Railroads & Bridges	\$ 79,292,368	47%	\$ 37,267,413	\$ 116,559,780
	Total Roads, Railroads & Bridges	\$ 79,292,368		\$ 37,267,413	\$ 116,559,780
10	Breakwater & Seawalls	\$ 296,986,517	47%	\$ 139,583,663	\$ 436,570,180
	Total Breakwater & Seawalls	\$ 296,986,517		\$ 139,583,663	\$ 436,570,180
15	Floodway Control & Diversion Structure	\$ 109,578,995	47%	\$ 51,502,128	\$ 161,081,123
	Total Floodway Control & Diversion Str	\$ 109,578,995		\$ 51,502,128	\$ 161,081,123
16	Bank Stabilization	\$ 11,104,780	47%	\$ 5,219,247	\$ 16,324,027
	Total Bank Stabilization	\$ 11,104,780		\$ 5,219,247	\$ 16,324,027
30	Planning, Engineering & Design	\$ 39,772,652	47%	\$ 18,693,146	\$ 58,465,798
31	Construction Management	\$ 53,797,239	47%	\$ 25,284,702	\$ 79,081,941
Total First Cost		\$ 623,109,967		\$ 285,629,748	\$ 908,739,715

Table C7 –First Cost: Midland Beach to Ft. Wadsworth Seawall

**South Shore Staten Island Validation Study
Midland Beach to Ft. Wadsworth Seawall (21')**

October 2023 Price Level

Feat. Acct.	Description	Subtotal	Cont. %	Cont \$\$	Total Cost
01	Lands & Damages	\$ 7,090,427	19%	\$ 1,352,085	\$ 8,442,512
	Total Lands & Damages	\$ 7,090,427		\$ 1,352,085	\$ 8,442,512
02	Relocations	\$ 41,252,354	47%	\$ 19,388,606	\$ 60,640,960
	Total Relocations	\$ 41,252,354		\$ 19,388,606	\$ 60,640,960
08	Roads, Railroads & Bridges	\$ 36,244,042	47%	\$ 17,034,700	\$ 53,278,742
	Total Roads, Railroads & Bridges	\$ 36,244,042		\$ 17,034,700	\$ 53,278,742
10	Breakwater & Seawalls	\$ 280,245,832	47%	\$ 131,715,541	\$ 411,961,373
	Total Breakwater & Seawalls	\$ 280,245,832		\$ 131,715,541	\$ 411,961,373
15	Floodway Control & Diversion Structure	\$ 44,615,730	47%	\$ 20,969,393	\$ 65,585,124
	Total Floodway Control & Diversion Str	\$ 44,615,730		\$ 20,969,393	\$ 65,585,124
16	Bank Stabilization	\$ 261,614	47%	\$ 122,959	\$ 384,573
	Total Bank Stabilization	\$ 261,614		\$ 122,959	\$ 384,573
18	Cultural Resource	\$ 4,306,961	47%	\$ 2,024,272	\$ 6,331,233
	Total Cultural Resource	\$ 4,306,961		\$ 2,024,272	\$ 6,331,233
30	Planning, Engineering & Design	\$ 32,024,595	47%	\$ 15,051,560	\$ 47,076,155
31	Construction Management	\$ 43,318,472	47%	\$ 20,359,682	\$ 63,678,154
Total First Cost		\$ 489,360,027		\$ 228,018,797	\$ 717,378,824

Table C8 –First Cost: Floodwall

South Shore Staten Island Validation Study

Floodwall

October 2023 Price Level

Feat. Acct.	Description	Subtotal	Cont. %	Cont \$\$	Total Cost
01	Lands & Damages	\$ 1,209,984	19%	\$ 225,747	\$ 1,435,731
	Total Lands & Damages	\$ 1,209,984		\$ 225,747	\$ 1,435,731
02	Relocations	\$ 861,256	47%	\$ 404,791	\$ 1,266,047
	Total Relocations	\$ 861,256		\$ 404,791	\$ 1,266,047
08	Roads, Railroads & Bridges	\$ 1,250,747	47%	\$ 587,851	\$ 1,838,598
	Total Roads, Railroads & Bridges	\$ 1,250,747		\$ 587,851	\$ 1,838,598
11	Levees & Floodwalls	\$ 25,319,788	47%	\$ 11,900,301	\$ 37,220,089
	Total Levees & Floodwalls	\$ 25,319,788		\$ 11,900,301	\$ 37,220,089
15	Floodway Control & Diversion Structure	\$ 12,723,006	47%	\$ 5,979,813	\$ 18,702,819
	Total Floodway Control & Diversion Str	\$ 12,723,006		\$ 5,979,813	\$ 18,702,819
16	Bank Stabilization	\$ 7,222,663	47%	\$ 3,394,651	\$ 10,617,314
	Total Bank Stabilization	\$ 7,222,663		\$ 3,394,651	\$ 10,617,314
19	Buildings, Grounds & Utilities	\$ 469,423	47%	\$ 220,629	\$ 690,052
	Total Buildings, Grounds & Utilities	\$ 469,423		\$ 220,629	\$ 690,052
30	Planning, Engineering & Design	\$ 2,088,258	47%	\$ 981,481	\$ 3,069,739
31	Construction Management	\$ 5,097,466	47%	\$ 2,395,809	\$ 7,493,275
Total First Cost		\$ 56,242,592		\$ 26,091,072	\$ 82,333,664

Table C9 –First Cost: Hyland Blvd. Closure Gate, Levee & Tide Gate

**South Shore Staten Island Validation Study
Hyland Blvd. Closure Gate, Levee & Tide Gate**

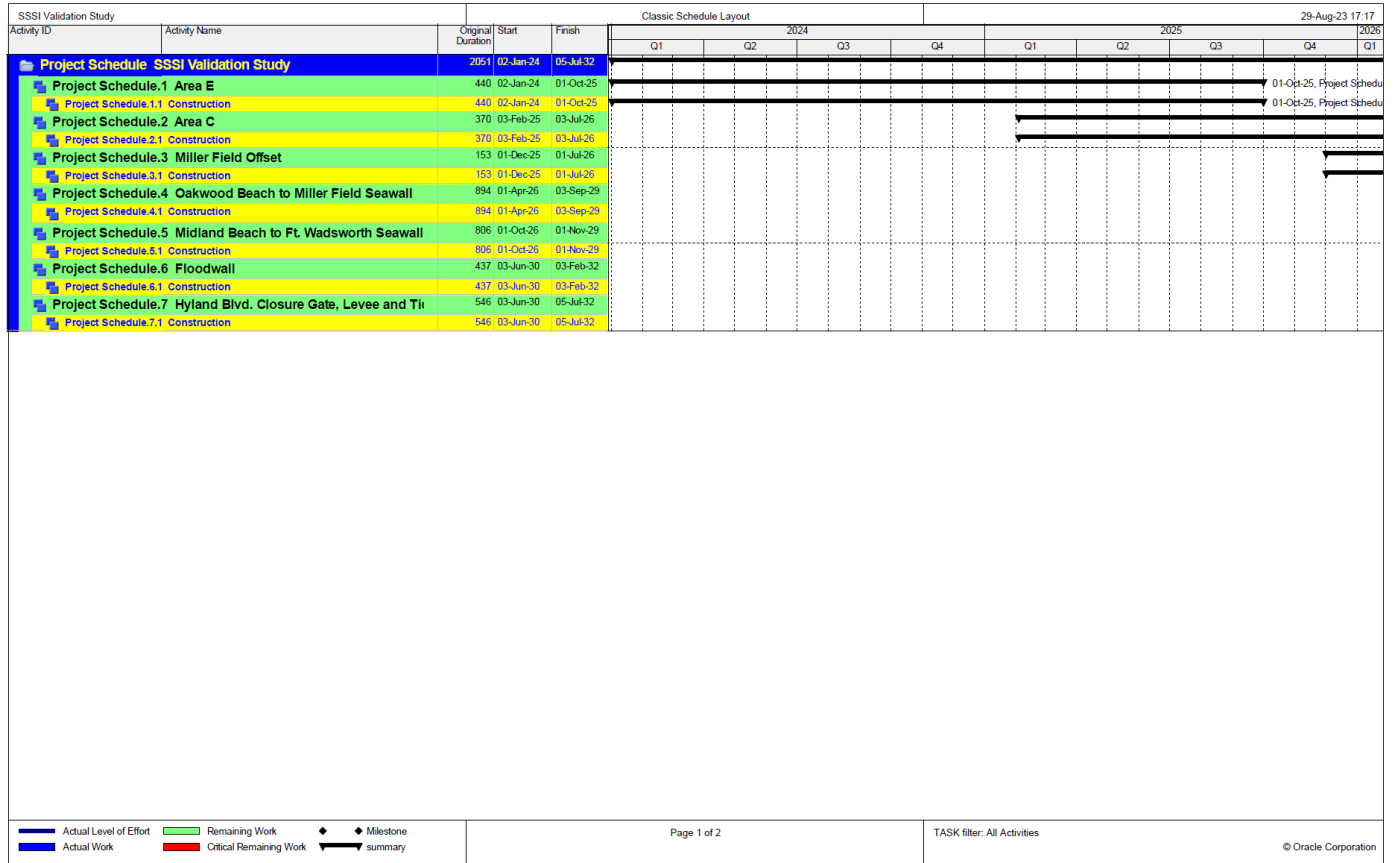
October 2023 Price Level

Feat. Acct.	Description	Subtotal	Cont. %	Cont \$\$	Total Cost
01	Lands & Damages	\$ 5,587,490	15%	\$ 836,248	\$ 6,423,738
	Total Lands & Damages	\$ 5,587,490		\$ 836,248	\$ 6,423,738
02	Relocations	\$ 359,883	47%	\$ 169,145	\$ 529,028
	Total Relocations	\$ 359,883		\$ 169,145	\$ 529,028
11	Levees & Floodwalls	\$ 9,299,122	47%	\$ 4,370,587	\$ 13,669,710
	Total Levees & Floodwalls	\$ 9,299,122		\$ 4,370,587	\$ 13,669,710
15	Floodway Control & Diversion Structure	\$ 20,861,361	47%	\$ 9,804,840	\$ 30,666,201
	Total Floodway Control & Diversion Str	\$ 20,861,361		\$ 9,804,840	\$ 30,666,201
16	Bank Stabilization	\$ 18,591,192	47%	\$ 8,737,860	\$ 27,329,052
	Total Bank Stabilization	\$ 18,591,192		\$ 8,737,860	\$ 27,329,052
30	Planning, Engineering & Design	\$ 2,142,761	47%	\$ 1,007,098	\$ 3,149,859
31	Construction Management	\$ 5,233,076	47%	\$ 2,459,546	\$ 7,692,621
Total First Cost		\$ 62,074,885		\$ 27,385,324	\$ 89,460,208

CONSTRUCTION SCHEDULE

The construction duration for the entire South Shore Staten Island project is estimated at 8 years and 6 months, as shown in Figure C1 on the following page. The construction schedule for each one of the seven (7) contracts was developed based on discussions with the construction field personnel, as well as the crew outputs referenced from RSMeans with assumption that multiple crews would work simultaneously.

Figure C1 – Construction Schedule



CONTINGENCIES

As stated in ER 1110-2-1302, the goal in contingency development is to identify the uncertainty associated with an item of work or task to an acceptable degree of confidence. Consideration must be given to the detail available at each stage of planning, design, or construction for which a cost estimate is being prepared. Contingency may vary throughout the cost estimate and could constitute a significant portion of the overall costs when data or design details are unavailable. Final contingency development and assessment of the potential for cost growth is included in this cost estimate. To develop the Total Project First Cost, contingencies developed in the CSRA were applied. The construction cost contingency developed per CSRA is shown in Table C10.

Table C10 – Contingencies

Element	Contingency Factor
Relocation	47.00%
Roads, Railroads & Bridges	47.00%
Breakwater & Seawalls	47.00%
Levees & Floodwalls	47.00%
Floodway Control & Diversion Structure	47.00%
Bank Stabilization	47.00%
Cultural Resource Preservation	47.00%
Buildings, Grounds & Utilities	47.00%
Total Construction Contingency	47.00%
Lands & Damages	17.00%
Planning, Engineering, and Design	47.00%
Construction Management	47.00%

LANDS AND DAMAGES

To construct the proposed plan, local stakeholders are required to provide certain lands and easements. Studies were conducted by the Real Estate Division to determine the estimated value of lands and easements needed for construction. Seven types of easements are required for the coastal risk management project: Flood Protection Levee Easement – in locations where the construction, operation, maintenance, patrol, and repair and replacement of the LOP are required. Temporary Work Area Easement – to allow right-of-way, in, and over and across the land for the planned construction schedule; Restrictive Easement – to protect against future development; Ponding Easement – Portions of land to be subjected to permanent inundation and portions to be subjected to occasional flooding; Pipeline Easement – for construction, O&M of underground storm water drainage structure; Road Easement – to construct and maintain road and maintenance vehicle access ramps; Wetland Easement – to construction and/or enhance existing wetland features.

PLANNING, ENGINEERING AND DESIGN

The cost was developed for all activities associated with the planning, engineering and design effort. The cost for this account includes the preparation of Design Documentation Reports, plans, and specifications for South Shore Staten Island and engineering support during construction through project completion. It includes all the in-house labor based upon work-hour requirements, material and facility costs, travel, and overhead. The percentage breakdown in the Total Project Cost Summary (TPCS), as shown in Figure C2 on page C16 through page C19, was developed based on input from respective offices in accordance with the CWBS.

CONSTRUCTION MANAGEMENT

The cost was developed for all construction management activities from pre-award requirements through final contract closeout. This cost includes the in-house labor based upon work-hour requirements, materials, facility costs, support contracts, travel and overhead. The cost was developed based on the input from the construction division in accordance with the Civil Works Breakdown Structure (CWBS) and includes, but is not limited to, anticipated items such as the salaries of the resident engineer and staff, surveyors, inspectors, drafters, clerical, and custodial personnel; operation, maintenance and fixed charges for transportation and for other field equipment; field supplies; construction management, general construction supervision; and project office administration, distributive cost of area office and general overhead charged to the project.

INTEREST DURING CONSTRUCTION

Interest during construction (IDC) is the amount of interest the construction cost would earn were it invested from the beginning of construction until the accumulation of benefits begins. IDC cost has been added to the project cost to determine investment cost. Average annual cost was determined based on investment cost, which includes IDC. The pre-base year costs were estimated using the Federal interest rate of 2.75 percent (FY24).

OPERATION AND MAINTENANCE

The Operation and Maintenance (O&M) cost of \$2,001,478 includes the annual inspections and maintenance of the Line of Protection (LOP) including stop-log structure, gate chambers, access ramps, sand/soil cover estimated at a total annual cost of \$942,113, along with the interior facility maintenance and equipment replacement over the 50 years period estimated at an annual cost of \$711,053, and vegetation management of the ponding areas and tidal wetland estimated at an annual cost of \$348,312. Annual LOP costs are shown in Table C11 below.

Table C11 – Annual LOP O&M Costs

Item	Annual O&M Costs
Coastal Monitoring	\$83,983
Sand Cover Maintenance	\$117,360
Dune Grass Maintenance	\$27,994
Levee Mowing	\$4,307
Gate Chamber Maintenance	\$29,071
Line of Protection O&M Total	\$262,715
Interior Facility Maintenance	\$482,362
Equipment Replacement	\$197,036
Total Interior Maintenance Cost	\$679,398
Total O&M	\$942,113

The O&M costs also include annual inspections and maintenance of the interior drainage features and include the annualized cost of replacement of interior drainage appurtenant structures (e.g., gates, backflow valves, sluice gates, etc.) at the end of their useful project life of approximately 25 years. Area-specific interior drainage O&M costs are shown in Table C12 on the following page.

Table C12 – Annual Interior Drainage O&M Costs

Interior Drainage Items	Annual O&M Costs
Area A	\$ 125,759
Area B	\$ 207,372
Area C	\$ 225,461
Area D	\$ 45,760
Area E	\$ 106,701
Total O&M	\$ 711,053

ESTIMATED ANNUAL COST

Annual costs are based on an economic period of analysis of 50 years and an interest rate of 2.75%. The annual costs include the annualized investment cost along with annual operation and maintenance cost. A detailed breakdown of annual costs for South Shore Staten Island is presented in Table C13 below.

Table C13 – Annualized Cost

South Shore Staten Island Validation Study Annualized Cost Summary	
First Cost	\$ 2,047,676,198
Sunk Cost	\$ 46,525,721
Investment Cost	
Interest During Construction ^(a)	\$ 81,723,889
Total Investment Cost:	\$ 2,175,925,808
Annual Costs	
Annualized Investment Cost ^(b)	\$ 78,874,937
Annualized Operation & Maintenance Cost ^(c)	\$ 2,007,938
Total Annual Cost*	\$ 80,882,875
<small>*October 2023 Price Level</small>	
<small>(a) Based on 101 months of construction @ 2.75% (IDC, E&D, RE and Sunk costs calculated separately and included in this total)</small>	
<small>(b) Annualized investment cost only includes the remaining features. For annualized investment cost with the sunk cost, please see the economic appendix. I = 2.75% and n = 50 yrs</small>	
<small>(c) Summation of annual LOP O&M costs on Table C11 and annual interior drainage O&M costs on Table C12. Developed in 8/2022. Using 2.75% Discount Rate and the OMRR cost has been escalated from FY22 to FY24.</small>	

COST SUMMARY

The Total Fully Funded Project cost is \$2,330,751,000. The project is cost-shared between the Corps, State of New York, and City of New York. Project costs up to the original executed PPA amount of \$615M are cost-shared at 65% federal and 35% non-federal. All project costs above \$615M will be cost-shared at 90% federal and 10% non-federal per WRDA 2022.

Figure C2 – Total Project Cost Summary

PROJECT: **South Shore Staten Island**
PROJECT NO: **403365**
LOCATION: **Staten Island, NY**

DISTRICT: **NAN**

PREPARED: **11/30/2023**

POC: **CHIEF, COST ENGINEERING, Jeffery Gross**

This Estimate reflects the scope and schedule in report;

Validation Study

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)	Program Year (Budget EC): Effective Price Level Date:				2024 1-Oct- 23 Spent Thru: 1-Oct-22 (\$K)	TOTAL FIRST COST (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
						ESC (%)	COST (\$K)	CNTG (\$K)	REMAINING COST (\$K)						
02	RELOCATIONS	\$50,524	\$23,746	47%	\$74,271	3.5%	\$52,299	\$24,580	\$76,879		\$76,879	12.1%	\$58,617	\$27,550	\$86,166
08	ROADS, RAILROADS & BRIDGES	\$118,948	\$55,905	47%	\$174,853	3.5%	\$123,125	\$57,869	\$180,993		\$180,993	11.1%	\$136,794	\$64,293	\$201,087
10	BREAKWATER & SEAWALLS	\$556,254	\$261,439	47%	\$817,693	3.8%	\$577,232	\$271,299	\$848,532		\$848,532	11.6%	\$644,375	\$302,866	\$947,232
11	LEVEES & FLOODWALLS	\$33,399	\$15,697	47%	\$49,096	3.7%	\$34,619	\$16,271	\$50,890		\$50,890	21.4%	\$42,020	\$19,749	\$61,769
15	FLOODWAY CONTROL & DIVERSION STRUCTURE	\$274,023	\$128,791	47%	\$402,814	3.5%	\$283,597	\$133,291	\$416,888		\$416,888	10.0%	\$312,079	\$146,677	\$458,755
16	BANK STABILIZATION	\$49,395	\$23,216	47%	\$72,611	3.6%	\$51,192	\$24,060	\$75,253		\$75,253	14.2%	\$58,465	\$27,479	\$85,944
18	CULTURAL RESOURCE PRESERVATION	\$4,162	\$1,956	47%	\$6,118	3.5%	\$4,307	\$2,024	\$6,331		\$6,331	12.4%	\$4,840	\$2,275	\$7,115
19	BUILDINGS, GROUNDS & UTILITIES	\$454	\$213	47%	\$667	3.5%	\$469	\$221	\$690		\$690	21.4%	\$570	\$268	\$838
CONSTRUCTION ESTIMATE TOTALS:		\$1,087,158	\$510,964		\$1,598,122	3.7%	\$1,126,840	\$529,615	\$1,656,456		\$1,656,456	11.6%	\$1,257,759	\$591,147	\$1,848,906
01	LANDS AND DAMAGES	\$80,053	\$13,469	17%	\$93,522	0.0%	\$80,053	\$13,469	\$93,522		\$93,522	5.8%	\$84,705	\$14,252	\$98,957
30	PLANNING, ENGINEERING & DESIGN	\$78,494	\$36,892	47%	\$115,386	5.1%	\$82,516	\$38,783	\$121,298	\$46,526	\$167,824	11.0%	\$91,599	\$43,051	\$181,176
31	CONSTRUCTION MANAGEMENT	\$114,151	\$53,651	47%	\$167,802	5.1%	\$120,000	\$56,400	\$176,400		\$176,400	14.3%	\$137,219	\$64,493	\$201,712
PROJECT COST TOTALS:		\$1,359,855	\$614,976	45%	\$1,974,832		\$1,409,410	\$638,267	\$2,047,676	\$46,526	\$2,094,202	11.6%	\$1,571,282	\$712,943	\$2,330,751

CHIEF, COST ENGINEERING, Jeffery Gross

PROJECT MANAGER, Frank Verga

CHIEF, REAL ESTATE, Helen Luke

ESTIMATED TOTAL PROJECT COST: **\$2,330,751**
ESTIMATED FEDERAL COST: **65%** \$1,514,988
ESTIMATED NON-FEDERAL COST: **35%** \$815,763

*** CONTRACT COST SUMMARY ***

PROJECT: **South Shore Staten Island**
LOCATION: **Staten Island, NY**

DISTRICT: **NAN**

PREPARED: **11/30/2023**

This Estimate reflects the scope and schedule in report;

Validation Study

POC: **CHIEF, COST ENGINEERING, Jeffery Gross**

WBS Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: Estimate Price Level:		13-Jul-23 1-Oct-22		Program Year (Budget EC): Effective Price Level Date:		2024 1 -Oct-23						
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
02	RELOCATIONS	\$1,373	\$645	47.0%	\$2,018	3.5%	\$1,421	\$668	\$2,089	2025Q1	2.7%	\$1,459	\$686	\$2,145
08	ROADS, RAILROADS & BRIDGES	\$3,238	\$1,522	47.0%	\$4,760	3.5%	\$3,352	\$1,575	\$4,927	2025Q1	2.7%	\$3,443	\$1,618	\$5,061
15	FLOODWAY CONTROL & DIVERSION STRUCTURE	\$48,587	\$22,836	47.0%	\$71,424	3.5%	\$50,285	\$23,634	\$73,919	2025Q1	2.7%	\$51,645	\$24,273	\$75,918
16	BANK STABILIZATION	\$9,148	\$4,299	47.0%	\$13,447	3.6%	\$9,480	\$4,456	\$13,936	2025Q1	2.7%	\$9,737	\$4,576	\$14,313
CONSTRUCTION ESTIMATE TOTALS:		\$62,346	\$29,303	47.0%	\$91,648		\$64,538	\$30,333	\$94,871			\$66,283	\$31,153	\$97,436
01	LANDS AND DAMAGES	\$5,633	\$898	15.9%	\$6,532	3.1%	\$5,633	\$898	\$6,532	2024Q2	0.6%	\$5,667	\$904	\$6,571
30	PLANNING, ENGINEERING & DESIGN													
0.5%	Project Management	\$31	\$15	47.0%	\$46	5.1%	\$33	\$15	\$48	2024Q2	1.2%	\$33	\$16	\$49
0.5%	Planning & Environmental Compliance	\$31	\$15	47.0%	\$46	5.1%	\$33	\$15	\$48	2024Q2	1.2%	\$33	\$16	\$49
6.5%	Engineering & Design	\$405	\$190	47.0%	\$596	5.1%	\$426	\$200	\$626	2024Q2	1.2%	\$431	\$203	\$634
0.5%	Reviews, ATRs, IEPRs, VE	\$31	\$15	47.0%	\$46	5.1%	\$33	\$15	\$48	2024Q2	1.2%	\$33	\$16	\$49
0.5%	Life Cycle Updates (cost, schedule, risks)	\$312	\$147	47.0%	\$459	5.1%	\$328	\$154	\$482	2024Q2	1.2%	\$332	\$156	\$488
0.5%	Contracting & Reprographics	\$312	\$147	47.0%	\$459	5.1%	\$328	\$154	\$482	2025Q1	3.6%	\$340	\$160	\$499
1.5%	Engineering During Construction	\$935	\$439	47.0%	\$1,374	5.1%	\$883	\$462	\$1,445	2025Q1	3.6%	\$1,018	\$479	\$1,497
0.5%	Planning During Construction	\$312	\$147	47.0%	\$459	5.1%	\$328	\$154	\$482	2024Q2	1.2%	\$332	\$156	\$488
0.5%	Adaptive Management & Monitoring	\$312	\$147	47.0%	\$459	5.1%	\$328	\$154	\$482	2025Q1	3.6%	\$340	\$160	\$499
31	CONSTRUCTION MANAGEMENT													
10.0%	Construction Management	\$6,235	\$2,930	47.0%	\$9,165	5.1%	\$6,554	\$3,081	\$9,635	2025Q1	3.6%	\$6,789	\$3,191	\$9,980
0.5%	Project Operation: Project Management	\$312	\$147	47.0%	\$459	5.1%	\$328	\$154	\$482	2025Q1	3.6%	\$340	\$160	\$499
CONTRACT COST TOTALS:		\$77,208	\$34,538		\$111,746		\$79,873	\$35,791	\$115,664			\$81,972	\$36,767	\$118,739

*** CONTRACT COST SUMMARY ***

PROJECT: South Shore Staten Island
LOCATION: Staten Island, NY
This Estimate reflects the scope and schedule in report;

Validation Study

DISTRICT: NAN
POC: CHIEF, COST ENGINEERING, Jeffery Gross

PREPARED: 11/30/2023

WBS Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 13-Jul-23 Estimate Price Level: 1-Oct-22				Program Year (Budget EC): 2024 Effective Price Level Date: 1-Oct-23								
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	RISK BASED				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
		COST (\$K) C	CNTG (\$K) D	CNTG (%) E	TOTAL (\$K) F									
02	30% Area C RELOCATIONS	\$130	\$61	47.0%	\$190	3.5%	\$134	\$63	\$197	2026Q1	5.4%	\$141	\$66	\$208
08	ROADS, RAILROADS & BRIDGES	\$2,884	\$1,356	47.0%	\$4,240	3.5%	\$2,986	\$1,403	\$4,389	2026Q1	5.4%	\$3,146	\$1,479	\$4,625
15	FLOODWAY CONTROL & DIVERSION STRUCTURE	\$43,996	\$20,678	47.0%	\$64,674	3.5%	\$45,533	\$21,401	\$66,934	2026Q1	5.4%	\$47,980	\$22,551	\$70,531
16	BANK STABILIZATION	\$3,086	\$1,450	47.0%	\$4,536	3.6%	\$3,198	\$1,503	\$4,701	2026Q1	5.4%	\$3,370	\$1,584	\$4,954
CONSTRUCTION ESTIMATE TOTALS:		\$50,096	\$23,545	47%	\$73,641		\$51,851	\$24,370	\$76,221			\$54,638	\$25,680	\$80,317
01	LANDS AND DAMAGES	\$35,450	\$5,816	16.4%	\$41,266	3.1%	\$35,450	\$5,816	\$41,266	2025Q2	3.3%	\$36,610	\$6,006	\$42,616
30	PLANNING, ENGINEERING & DESIGN													
0.5%	Project Management	\$100	\$47	47.0%	\$147	5.1%	\$105	\$50	\$155	2025Q2	4.4%	\$110	\$52	\$162
0.5%	Planning & Environmental Compliance	\$100	\$47	47.0%	\$147	5.1%	\$105	\$50	\$155	2025Q2	4.4%	\$110	\$52	\$162
6.5%	Engineering & Design	\$1,302	\$612	47.0%	\$1,915	5.1%	\$1,369	\$644	\$2,013	2025Q2	4.4%	\$1,429	\$672	\$2,101
0.5%	Reviews, ATRs, IEPs, VE	\$100	\$47	47.0%	\$147	5.1%	\$105	\$50	\$155	2025Q2	4.4%	\$110	\$52	\$162
0.5%	Life Cycle Updates (cost, schedule, risks)	\$250	\$118	47.0%	\$368	5.1%	\$263	\$124	\$386	2025Q2	4.4%	\$274	\$129	\$403
0.5%	Contracting & Reprographics	\$250	\$118	47.0%	\$368	5.1%	\$263	\$124	\$386	2026Q1	6.8%	\$281	\$132	\$413
1.5%	Engineering During Construction	\$751	\$353	47.0%	\$1,104	5.1%	\$789	\$371	\$1,161	2026Q1	6.8%	\$843	\$396	\$1,239
0.5%	Planning During Construction	\$250	\$118	47.0%	\$368	5.1%	\$263	\$124	\$386	2025Q2	4.4%	\$274	\$129	\$403
0.5%	Adaptive Management & Monitoring	\$250	\$118	47.0%	\$368	5.1%	\$263	\$124	\$386	2026Q1	6.8%	\$281	\$132	\$413
31	CONSTRUCTION MANAGEMENT													
10.0%	Construction Management	\$5,010	\$2,355	47.0%	\$7,365	5.1%	\$5,267	\$2,475	\$7,742	2026Q1	6.8%	\$5,624	\$2,643	\$8,268
0.5%	Project Operation:													
0.5%	Project Management	\$250	\$118	47.0%	\$368	5.1%	\$263	\$124	\$386	2026Q1	6.8%	\$281	\$132	\$413
CONTRACT COST TOTALS:		\$94,160	\$33,409		\$127,570		\$96,357	\$34,442	\$130,799			\$100,864	\$36,206	\$137,070

*** CONTRACT COST SUMMARY ***

PROJECT: South Shore Staten Island
LOCATION: Staten Island, NY
This Estimate reflects the scope and schedule in report;

Validation Study

DISTRICT: NAN
POC: CHIEF, COST ENGINEERING, Jeffery Gross

PREPARED: 11/30/2023

WBS Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 13-Jul-23 Estimate Price Level: 1-Oct-22				Program Year (Budget EC): 2024 Effective Price Level Date: 1-Oct-23								
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	RISK BASED				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
		COST (\$K) C	CNTG (\$K) D	CNTG (%) E	TOTAL (\$K) F									
02	100% Levee & Tide Gate .30% Hyland Blvd. RELOCATIONS	\$348	\$163	47.0%	\$511	3.5%	\$360	\$169	\$529	2031Q3	21.4%	\$437	\$205	\$642
11	LEVEES & FLOODWALLS	\$8,971	\$4,217	47.0%	\$13,188	3.7%	\$9,299	\$4,371	\$13,670	2031Q3	21.4%	\$11,287	\$5,305	\$16,592
15	FLOODWAY CONTROL & DIVERSION STRUCTURE	\$20,157	\$9,474	47.0%	\$29,631	3.5%	\$20,861	\$9,805	\$30,666	2031Q3	21.4%	\$25,321	\$11,901	\$37,222
16	BANK STABILIZATION	\$17,938	\$8,431	47.0%	\$26,370	3.6%	\$18,591	\$8,738	\$27,329	2031Q3	21.4%	\$22,565	\$10,606	\$33,171
CONSTRUCTION ESTIMATE TOTALS:		\$47,415	\$22,285	47.0%	\$69,699		\$49,112	\$23,082	\$72,194			\$59,610	\$28,017	\$87,627
01	LANDS AND DAMAGES	\$5,587	\$836	15.0%	\$6,424	3.1%	\$5,587	\$836	\$6,424	2030Q3	18.2%	\$6,603	\$988	\$7,591
30	PLANNING, ENGINEERING & DESIGN													
0.5%	Project Management	\$24	\$11	47.0%	\$35	5.1%	\$25	\$12	\$37	2030Q3	22.4%	\$31	\$14	\$45
0.5%	Planning & Environmental Compliance	\$24	\$11	47.0%	\$35	5.1%	\$25	\$12	\$37	2030Q3	22.4%	\$31	\$14	\$45
6.5%	Engineering & Design	\$308	\$145	47.0%	\$453	5.1%	\$324	\$152	\$476	2030Q3	22.4%	\$397	\$186	\$583
0.5%	Reviews, ATRs, IEPs, VE	\$24	\$11	47.0%	\$35	5.1%	\$25	\$12	\$37	2030Q3	22.4%	\$31	\$14	\$45
0.5%	Life Cycle Updates (cost, schedule, risks)	\$237	\$111	47.0%	\$348	5.1%	\$249	\$117	\$366	2030Q3	22.4%	\$305	\$143	\$448
0.5%	Contracting & Reprographics	\$237	\$111	47.0%	\$348	5.1%	\$249	\$117	\$366	2031Q3	26.2%	\$314	\$148	\$462
1.5%	Engineering During Construction	\$711	\$334	47.0%	\$1,045	5.1%	\$747	\$351	\$1,099	2031Q3	26.2%	\$843	\$443	\$1,386
0.5%	Planning During Construction	\$237	\$111	47.0%	\$348	5.1%	\$249	\$117	\$366	2030Q3	22.4%	\$305	\$143	\$448
0.5%	Adaptive Management & Monitoring	\$237	\$111	47.0%	\$348	5.1%	\$249	\$117	\$366	2031Q3	26.2%	\$314	\$148	\$462
31	CONSTRUCTION MANAGEMENT													
10.0%	Construction Management	\$4,741	\$2,228	47.0%	\$6,969	5.1%	\$4,984	\$2,342	\$7,326	2031Q3	26.2%	\$6,288	\$2,955	\$9,243
0.5%	Project Operation:													
0.5%	Project Management	\$237	\$111	47.0%	\$348	5.1%	\$249	\$117	\$366	2031Q3	26.2%	\$314	\$148	\$462
CONTRACT COST TOTALS:		\$60,018	\$26,419		\$86,437		\$62,075	\$27,385	\$89,460			\$75,485	\$33,363	\$108,848

**** CONTRACT COST SUMMARY ****														
PROJECT: South Shore Staten Island					DISTRICT: NAN					PREPARED: 11/30/2023				
LOCATION: Staten Island, NY					POC: CHIEF, COST ENGINEERING, Jeffery Gross									
This Estimate reflects the scope and schedule in report;					Validation Study									
WBS Structure		ESTIMATED COST				PROJECT FIRST COST Dollar Basis) (Constant				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 13-Jul-23 Estimate Price Level: 1-Oct-22				Program Year (Budget EC): 2024 Effective Price Level Date: 1-Oct-23								
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	RISK BASED				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
		COST (\$K) C	CNTG (\$K) D	CNTG (%) E	TOTAL (\$K) F									
	10%Oakwood Beach to Miller Field + Pond Area B													
02	RELOCATIONS	\$7,990	\$3,755	47.0%	\$11,745	3.5%	\$8,270	\$3,887	\$12,157	2028Q1	10.9%	\$9,174	\$4,312	\$13,485
08	ROADS, RAILROADS & BRIDGES	\$76,602	\$36,003	47.0%	\$112,605	3.5%	\$79,292	\$37,267	\$116,560	2028Q1	10.9%	\$87,955	\$41,339	\$129,294
10	BREAKWATER & SEAWALLS	\$286,193	\$134,511	47.0%	\$420,704	3.8%	\$296,987	\$139,584	\$436,570	2028Q1	10.9%	\$329,432	\$154,833	\$484,265
15	FLOODWAY CONTROL & DIVERSION STRUCTURE	\$105,880	\$49,763	47.0%	\$155,643	3.5%	\$109,579	\$51,502	\$161,081	2028Q1	10.9%	\$121,551	\$57,129	\$178,679
16	BANK STABILIZATION	\$10,715	\$5,036	47.0%	\$15,751	3.6%	\$11,105	\$5,219	\$16,324	2028Q1	10.9%	\$12,318	\$5,789	\$18,107
CONSTRUCTION ESTIMATE TOTALS:		\$487,380	\$229,068	47.0%	\$716,448		\$505,233	\$237,459	\$742,692			\$560,430	\$263,402	\$823,832
01	LANDS AND DAMAGES	\$24,307	\$4,192	17.2%	\$28,500	3.1%	\$24,307	\$4,192	\$28,500	2026Q3	6.6%	\$25,923	\$4,471	\$30,394
30	PLANNING, ENGINEERING & DESIGN													
0.5%	Project Management	\$1,298	\$610	47.0%	\$1,909	5.1%	\$1,365	\$642	\$2,007	2026Q3	8.4%	\$1,480	\$696	\$2,176
0.5%	Planning & Environmental Compliance	\$1,298	\$610	47.0%	\$1,909	5.1%	\$1,365	\$642	\$2,007	2026Q3	8.4%	\$1,480	\$696	\$2,176
6.5%	Engineering & Design	\$16,880	\$7,933	47.0%	\$24,813	5.1%	\$17,745	\$8,340	\$26,085	2026Q3	8.4%	\$19,241	\$9,043	\$28,285
0.5%	Reviews, ATRs, IEPRs, VE	\$1,298	\$610	47.0%	\$1,909	5.1%	\$1,365	\$642	\$2,007	2026Q3	8.4%	\$1,480	\$696	\$2,176
0.5%	Life Cycle Updates (cost, schedule, risks)	\$2,437	\$1,145	47.0%	\$3,582	5.1%	\$2,562	\$1,204	\$3,766	2026Q3	8.4%	\$2,778	\$1,306	\$4,084
0.5%	Contracting & Reprographics	\$2,437	\$1,145	47.0%	\$3,582	5.1%	\$2,562	\$1,204	\$3,766	2028Q1	13.5%	\$2,908	\$1,367	\$4,275
1.5%	Engineering During Construction	\$7,311	\$3,436	47.0%	\$10,747	5.1%	\$7,686	\$3,612	\$11,298	2028Q1	13.5%	\$8,724	\$4,100	\$12,825
0.5%	Planning During Construction	\$2,437	\$1,145	47.0%	\$3,582	5.1%	\$2,562	\$1,204	\$3,766	2026Q3	8.4%	\$2,778	\$1,306	\$4,084
0.5%	Adaptive Management & Monitoring	\$2,437	\$1,145	47.0%	\$3,582	5.1%	\$2,562	\$1,204	\$3,766	2028Q1	13.5%	\$2,908	\$1,367	\$4,275
31	CONSTRUCTION MANAGEMENT													
10.0%	Construction Management	\$48,738	\$22,907	47.0%	\$71,645	5.1%	\$51,235	\$24,081	\$75,316	2028Q1	13.5%	\$58,161	\$27,335	\$85,496
0.5%	Project Operation: Project Management	\$2,437	\$1,145	47.0%	\$3,582	5.1%	\$2,562	\$1,204	\$3,766	2028Q1	13.5%	\$2,908	\$1,367	\$4,275
CONTRACT COST TOTALS:		\$600,696	\$275,095		\$875,791		\$623,110	\$285,630	\$908,740			\$691,200	\$317,151	\$1,008,351

**** CONTRACT COST SUMMARY ****														
PROJECT: South Shore Staten Island					DISTRICT: NAN					PREPARED: 11/30/2023				
LOCATION: Staten Island, NY					POC: CHIEF, COST ENGINEERING, Jeffery Gross									
This Estimate reflects the scope and schedule in report;					Validation Study									
WBS Structure		ESTIMATED COST				PROJECT FIRST COST Dollar Basis) (Constant				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 13-Jul-23 Estimate Price Level: 1-Oct-22				Program Year (Budget EC): 2024 Effective Price Level Date: 1-Oct-23								
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	RISK BASED				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
		COST (\$K) C	CNTG (\$K) D	CNTG (%) E	TOTAL (\$K) F									
	10%Midland Beach to Ft. Wadsworth													
02	RELOCATIONS	\$39,853	\$18,731	47.0%	\$58,584	3.5%	\$41,252	\$19,389	\$60,641	2028Q3	12.4%	\$46,360	\$21,789	\$68,149
08	ROADS, RAILROADS & BRIDGES	\$35,014	\$16,457	47.0%	\$51,471	3.5%	\$36,244	\$17,035	\$53,279	2028Q3	12.4%	\$40,732	\$19,144	\$59,875
10	BREAKWATER & SEAWALLS	\$270,061	\$126,929	47.0%	\$396,989	3.8%	\$280,246	\$131,716	\$411,961	2028Q3	12.4%	\$314,943	\$148,023	\$462,966
15	FLOODWAY CONTROL & DIVERSION STRUCTURE	\$43,109	\$20,261	47.0%	\$63,371	3.5%	\$44,616	\$20,969	\$65,585	2028Q3	12.4%	\$50,140	\$23,566	\$73,705
16	BANK STABILIZATION	\$252	\$119	47.0%	\$371	3.6%	\$262	\$123	\$385	2028Q3	12.4%	\$294	\$138	\$432
18	CULTURAL RESOURCE PRESERVATION	\$4,162	\$1,956	47.0%	\$6,118	3.5%	\$4,307	\$2,024	\$6,331	2028Q3	12.4%	\$4,840	\$2,275	\$7,115
CONSTRUCTION ESTIMATE TOTALS:		\$392,452	\$184,452	47.0%	\$576,904		\$406,927	\$191,255	\$598,182			\$457,309	\$214,935	\$672,244
01	LANDS AND DAMAGES	\$7,090	\$1,352	19.1%	\$8,443	3.1%	\$7,090	\$1,352	\$8,443	2027Q1	8.0%	\$7,658	\$1,460	\$9,118
30	PLANNING, ENGINEERING & DESIGN													
0.5%	Project Management	\$1,046	\$491	47.0%	\$1,537	5.1%	\$1,099	\$517	\$1,616	2027Q1	10.1%	\$1,210	\$569	\$1,779
0.5%	Planning & Environmental Compliance	\$1,046	\$491	47.0%	\$1,537	5.1%	\$1,099	\$517	\$1,616	2027Q1	10.1%	\$1,210	\$569	\$1,779
6.5%	Engineering & Design	\$13,592	\$6,388	47.0%	\$19,980	5.1%	\$14,288	\$6,716	\$21,004	2027Q1	10.1%	\$15,732	\$7,394	\$23,126
0.5%	Reviews, ATRs, IEPRs, VE	\$1,046	\$491	47.0%	\$1,537	5.1%	\$1,099	\$517	\$1,616	2027Q1	10.1%	\$1,210	\$569	\$1,779
0.5%	Life Cycle Updates (cost, schedule, risks)	\$1,962	\$922	47.0%	\$2,884	5.1%	\$2,063	\$969	\$3,032	2027Q1	10.1%	\$2,271	\$1,067	\$3,338
0.5%	Contracting & Reprographics	\$1,962	\$922	47.0%	\$2,884	5.1%	\$2,063	\$969	\$3,032	2028Q3	15.3%	\$2,377	\$1,117	\$3,495
1.5%	Engineering During Construction	\$5,887	\$2,767	47.0%	\$8,654	5.1%	\$6,189	\$2,909	\$9,097	2028Q3	15.3%	\$7,133	\$3,353	\$10,486
0.5%	Planning During Construction	\$1,962	\$922	47.0%	\$2,884	5.1%	\$2,063	\$969	\$3,032	2027Q1	10.1%	\$2,271	\$1,067	\$3,338
0.5%	Adaptive Management & Monitoring	\$1,962	\$922	47.0%	\$2,884	5.1%	\$2,063	\$969	\$3,032	2028Q3	15.3%	\$2,377	\$1,117	\$3,495
31	CONSTRUCTION MANAGEMENT													
10.0%	Construction Management	\$39,245	\$18,445	47.0%	\$57,690	5.1%	\$41,256	\$19,390	\$60,646	2028Q3	15.3%	\$47,553	\$22,350	\$69,902
0.5%	Project Operation: Project Management	\$1,962	\$922	47.0%	\$2,884	5.1%	\$2,063	\$969	\$3,032	2028Q3	15.3%	\$2,377	\$1,117	\$3,495
CONTRACT COST TOTALS:		\$471,213	\$219,490		\$690,702		\$489,360	\$228,019	\$717,379			\$550,689	\$256,685	\$807,373

**** CONTRACT COST SUMMARY ****

PROJECT: South Shore Staten Island
 LOCATION: Staten Island, NY
 This Estimate reflects the scope and schedule in report;

Validation Study

DISTRICT: NAN
 POC: CHIEF, COST ENGINEERING, Jeffery Gross

PREPARED: 11/30/2023

WBS Structure		ESTIMATED COST				PROJECT FIRST COST Dollar Basis				(Constant	TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 13-Jul-23 Estimate Price Level: 1-Oct-22				Program Year (Budget EC): 2024 Effective Price Level Date: 1-Oct-23									
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	
16	Feasibility - Miller Field Offset BANK STABILIZATION	\$1,287	\$605	47.0%	\$1,891	3.6%	\$1,333	\$627	\$1,960	2026Q2	6.1%	\$1,414	\$665	\$2,079	
CONSTRUCTION ESTIMATE TOTALS:		\$1,287	\$605	47.0%	\$1,891		\$1,333	\$627	\$1,960			\$1,414	\$665	\$2,079	
01	LANDS AND DAMAGES	\$774	\$148	19.2%	\$922	3.1%	\$774	\$148	\$922	2026Q1	5.3%	\$815	\$156	\$971	
30	PLANNING, ENGINEERING & DESIGN														
0.5%	Project Management	\$6	\$3	47.0%	\$9	5.1%	\$6	\$3	\$9	2026Q1	6.8%	\$7	\$3	\$10	
0.5%	Planning & Environmental Compliance	\$6	\$3	47.0%	\$9	5.1%	\$6	\$3	\$9	2026Q1	6.8%	\$7	\$3	\$10	
6.5%	Engineering & Design	\$75	\$35	47.0%	\$111	5.1%	\$79	\$37	\$116	2026Q1	6.8%	\$85	\$40	\$124	
0.5%	Reviews, ATRs, IEPRs, VE	\$6	\$3	47.0%	\$9	5.1%	\$6	\$3	\$9	2026Q1	6.8%	\$7	\$3	\$10	
0.5%	Life Cycle Updates (cost, schedule, risks)	\$6	\$3	47.0%	\$9	5.1%	\$6	\$3	\$9	2026Q1	6.8%	\$7	\$3	\$10	
0.5%	Contracting & Reprographics	\$6	\$3	47.0%	\$9	5.1%	\$6	\$3	\$9	2026Q2	7.6%	\$7	\$3	\$10	
1.5%	Engineering During Construction	\$19	\$9	47.0%	\$28	5.1%	\$20	\$9	\$29	2026Q2	7.6%	\$21	\$10	\$32	
0.5%	Planning During Construction	\$6	\$3	47.0%	\$9	5.1%	\$6	\$3	\$9	2026Q1	6.8%	\$7	\$3	\$10	
0.5%	Adaptive Management & Monitoring	\$6	\$3	47.0%	\$9	5.1%	\$6	\$3	\$9	2026Q2	7.6%	\$7	\$3	\$10	
31	CONSTRUCTION MANAGEMENT														
10.0%	Construction Management	\$129	\$61	47.0%	\$190	5.1%	\$136	\$64	\$199	2026Q2	7.6%	\$146	\$69	\$214	
0.5%	Project Operation: Project Management	\$6	\$3	47.0%	\$9	5.1%	\$6	\$3	\$9	2026Q2	7.6%	\$7	\$3	\$10	
CONTRACT COST TOTALS:		\$2,331	\$880		\$3,212		\$2,392	\$909	\$3,301			\$2,534	\$964	\$3,499	

MII Reports

Print Date Tue 29 August 2023
Eff. Date 5/18/2023

U.S. Army Corps of Engineers
Project : South Shore Staten Island (SSSI) Contract 1 Interior Drainage Area E
SSSI Validation Study

Time 17:40:49
Summary Page 1

Description	UOM	Quantity	ProjectCost
Summary			62,345,760.74
Revised 60% CWE	JOB	1.0000	62,345,760.74
02 RELOCATIONS	JOB	1.0000	1,372,570.63
08 ROADS, RAILROADS & BRIDGES	JOB	1.0000	3,238,159.35
15 FLOODWAY CONTROL & DIVERSION STRUCTURE - DRAINAGE STRUCTURES	JOB	1.0000	4,266,740.57
15 FLOODWAY CONTROL & DIVERSION STRUCTURE - PONDING AREA	JOB	1.0000	44,320,697.71
16 BANK STABILIZATION	JOB	1.0000	9,147,592.48

Print Date Tue 29 August 2023
Eff. Date 5/18/2023

U.S. Army Corps of Engineers
Project : South Shore Staten Island Storm Risk Management Project (SSSI) Area C Pond
SSSI Validation Study

Time 17:43:07
Summary Page 1

Description	UOM	Quantity	ProjectCost
Summary			50,095,638.07
South Shore Staten Island Pond C 30%	JOB	1.0000	50,095,638.07
02 RELOCATION	JOB	1.0000	129,535.46
08 ROADS, RAILROADS & BRIDGES	JOB	1.0000	2,884,296.50
15 FLOODWAY CONTROL & DIVERSION STRUCTURES	JOB	1.0000	43,995,806.19
16 BANK STABILIZATION	JOB	1.0000	3,085,999.93

Print Date Tue 28 June 2022
Eff. Date 5/2/2022

U.S. Army Corps of Engineers
Project : South Shore Staten Island Storm Risk Management Project (SSSI) Area C Pond
SSSI Validation Study

Time 18:46:34

Summary Page 1

<u>Description</u>	<u>UOM</u>	<u>Quantity</u>	<u>ProjectCost</u>
Summary			40,160,606.32
South Shore Staten Island Pond C 30%	JOB	1.0000	40,160,606.32
08 ROADS, RAILROADS & BRIDGES	JOB	1.0000	23,633.08
16 BANK STABILIZATION	JOB	1.0000	40,020,518.04
19 BUILDING, GROUNDS & UTILITIES	JOB	1.0000	116,455.20

Print Date Tue 29 August 2023
Eff. Date 7/3/2023

U.S. Army Corps of Engineers
Project : Miller Field Off-Set Alternative B
SSSI Validation Study

Time 18:21:32

Summary Page 1

<u>Description</u>	<u>UOM</u>	<u>Quantity</u>	<u>ProjectCost</u>
Summary			1,286,664.84
Miller Field Off-Set Alternative B	JOB	1.0000	1,286,664.84
0016 BANK STABILIZATION	JOB	1.0000	1,286,664.84

Print Date Tue 29 August 2023
Eff. Date 5/22/2023

U.S. Army Corps of Engineers
Project : SSSI Seawall Alternatives
SSSI Validation Study

Time 18:14:17
Summary Page 1

Description	UOM	Quantity	ProjectCost
Summary			487,379,610.65
Oakwood Beach to Miller Field	LS	1.0000	487,379,610.65
Oakwood Beach to Miller Field	LS	1.0000	487,379,610.65
02 RELOCATIONS	LS	1.0000	7,989,672.75
08 ROADS, RAILROADS & BRIDGES	LS	1.0000	76,602,347.71
10 BREAKWATER & SEAWALLS	LS	1.0000	286,193,110.23
15 FLOODWAY CONTROL & DIVERSION STRUCTURE	LS	1.0000	105,879,577.87
16 BANK STABILIZATION	LS	1.0000	10,714,902.09

Print Date Tue 29 August 2023
Eff. Date 5/22/2023

U.S. Army Corps of Engineers
Project : SSSI Seawall Alternatives
SSSI Validation Study

Time 18:10:41
Summary Page 1

Description	UOM	Quantity	ProjectCost
Summary			392,451,657.93
Midland Beach to Ft. Wadsworth Seawall	LS	1.0000	392,451,657.93
Midland Beach to Ft. Wadsworth	LS	1.0000	392,451,657.93
02 RELOCATIONS	LS	1.0000	39,852,853.61
08 ROADS, RAILROADS & BRIDGES	LS	1.0000	35,014,451.34
10 BREAKWATER & SEAWALLS	LS	1.0000	270,060,832.73
15 FLOODWAY CONTROL & DIVERSION STRUCTURE	LS	1.0000	43,109,490.89
16 BANK STABILIZATION	LS	1.0000	252,429.36
18 CULTURAL RESOURCE PRESERVATION	LS	1.0000	4,161,600.00

Print Date Tue 29 August 2023
Eff. Date 5/18/2023

U.S. Army Corps of Engineers
Project SSSI: SSSI Floodwall
SSSI Validation Study

Time 17:55:19
Summary Page 1

Description	UOM	Quantity	ProjectCost
Summary			46,183,719.99
South Shore Staten Island - Contract 2 - Floodwall 100% Design	LS	1.0000	46,183,719.99
02 RELOCATIONS	JOB	1.0000	832,037.55
08 ROADS & BRIDGES	JOB	1.0000	1,208,315.49
11 LEVEES & FLOODWALLS	JOB	1.0000	24,427,230.31
15 FLOODWAY CONTROL & DIVERSION STRUCTURE	JOB	1.0000	12,293,474.16
16 BANK STABILIZATION	JOB	1.0000	6,969,082.09
19 BUILDINGS, GROUNDS & UTILITIES	JOB	1.0000	453,580.39

Print Date Tue 29 August 2023
Eff. Date 6/20/2023

U.S. Army Corps of Engineers
Project : SSSI Levee & Tide Gate 100% CWE
SSSI Validation Study

Time 17:54:17
Summary Page 1

Description	UOM	Quantity	ProjectCost
Summary			47,414,537.30
SSSI Levee & Tide Gate Contract 4	JOB	1.0000	47,414,537.30
02 RELOCATION	JOB	1.0000	347,674.16
11 LEVEES & FLOODWALLS	LS	1.0000	8,971,314.81
15 FLOODWAY CONTROL & DIVERSION STRUCTURE	LS	1.0000	20,157,075.69
16 BANK STABILIZATION	JOB	1.0000	17,938,472.64