

**FORT PIERCE  
ST. LUCIE COUNTY, FLORIDA  
SHORE PROTECTION PROJECT**

**GENERAL REEVALUATION REPORT WITH ENVIRONMENTAL ASSESSMENT**

**APPENDIX B  
COST ENGINEERING**

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## 1.0 COST ESTIMATES

### 1.1 General Information

This report presents a Total Project Cost (construction and non-construction costs) at the current price level for justification/authorization of the Fort Pierce Shore Protection Project's NED Plan. The cost estimates are intended to provide a reliable and accurate budget for planning purposes that defines Federal Government and non-Federal Sponsor obligations. The estimates are prepared in Civil Works Work Breakdown Structure (CWWBS) format

#### 1.1.1 Plan Formulation Cost Estimates

Plan formulation alternatives were run through Beach-Fx for calculation of the Benefit-to-Cost Ratio (BCR). For the plan formulation cost estimates, unit prices and mobilization costs for dredging related work were developed based on actual project costs and placement volumes for recent nourishments of the currently authorized shore protection project. Non-construction costs were included as percentages of the total construction contract cost for this level of comparison and screening.

#### 1.1.2 NED Plan (Recommended Plan)

The plan formulation described above led to the NED Plan, which represents the Recommended Plan or. The **Economics Appendix** provides details regarding the plan selection process, and the **Engineering Appendix** describes the scope of the NED Plan. For project justification purposes, the estimated costs are categorized under the appropriate CWWBS code and include both construction and non-construction costs.

The construction costs fall under the following feature codes:

- 17 Beach Replenishment

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

- 01 Lands and Damages
- 30 Planning, Engineering and Design
- 31 Construction Management

#### 1.1.3 Construction Cost

Actual construction costs of recently completed projects formed the basis of the planned nourishment construction costs. As detailed in the **Economics Appendix**, a mobilization/demobilization cost of \$2,000,000 and a unit cost of \$9.46 per cubic (FY2017) represents the planned nourishment costs (excluding contingency). Sub-Appendix B-1 contains the cost estimate for the shoreline stabilization structures. Refinements and value engineering during the final engineering and design phase will likely reduce the costs considerably; thus, the cost estimate applied for this study is conservative.

#### 1.1.4 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). Lands and Damages were provided by Jacksonville District Real Estate as described in the **Real Estate Appendix**.

PED costs include preparation of contract plans and specifications (P&S), Post-Construction Monitoring, and Engineering During Construction (EDC). Construction Management costs include Project Management and Contract Admin costs required for supervision and administration of a contract. The above costs were estimated as a lump sum cost or as a percentage of the total Construction Contract Cost.

The main report details both cost allocation and cost apportionment for the Federal Government and the non-Federal Sponsor, as well as the non-Federal Sponsor's obligations (items of local cooperation).

#### *1.1.5 Construction Schedule*

A projected construction schedule reflects all project construction components. The schedule considers not only durations of individual components of construction, but also the timing of construction contracts based on funding and construction windows. The construction schedule will change as the project moves through the various project lifecycle phases. The construction schedule combined with the project schedule yields an overall schedule (Section 1.4) that helped generate the TPCS.

#### *1.1.6 Total Project Cost Summary*

The cost estimate for the NED Plan reflects an identified price level date, and inflation factors adjust the pricing to the project schedule. This estimate is known as the Total Project Cost Summary (TPCS). The TPCS includes all Federal and non-Federal costs: Lands, Easements, Rights of Way and Relocations; construction features; Planning Engineering and Design; Construction Management; Contingency; and Inflation.

### **1.2 Plan Formulation Cost Estimates**

Plan formulation included evaluation of several alternatives to identify the NED Plan. The main report discusses all the alternatives evaluated at various stages in the study, and the **Economics Appendix** discusses the final evaluation of alternatives. The final alternatives included a without project scenario that included armoring and emergency nourishment, a beach nourishment only scenario that simulated the currently authorized project scenario (i.e., a 2-yr nourishment interval), and the optimized beach fill configuration combined with construction of shore stabilization structures to achieve a 4-yr nourishment interval. All scenarios assumed construction would occur using a hopper dredge and the currently permitted Capron Shoal offshore sand source. As discussed in the **Economics Appendix**, beach nourishment and emergency nourishment cost estimates are based on actual costs of bid or constructed projects, and emergency armoring costs are based on USACE estimates. Costs for the shoreline stabilization structures represent the preliminary structure design, which may be improved and value engineered during the detailed design phase of the study; the cost used in this study represents Taylor Engineering's best judgment as a professional design firm familiar with the type of construction proposed.

### **1.3 NED Plan Cost Estimate**

The recommended design includes construction of shoreline stabilization structures combined with beach nourishment at a 4-year frequency. The project covers the 1.3-mile shoreline between the Fort Pierce Inlet south jetty and FDEP monument R-41. The construction template consists of a 20-ft wide dune crest at elevation 12.4 ft NAVD, a variable width berm, and a 1V:10H foreshore slope. This template, dimensioned for constructability, will equilibrate into the project template (20-ft wide dune crest and 130 ft-wide berm). Of note, modification of this design may occur during the detailed design phase of the study.

## 1.4 Schedule

The project schedule (Table 1.1) covers the lifecycle phases of the NED Plan (Planning, PED, and Construction Phases).

**Table 1.1** Project Schedule

Year	Task	Date	
		Start	Finish
<b>2017–Report Milestones</b>	Submit GRR to ASA(CW)	-	2/24/17
	ASA(CW) approval	-	9/30/17
<b>2018–2019 PED, Update</b>	PED for shore stabilization	4/1/18	12/31/19
	Lands & Damages	1/1/18	12/31/19
<b>2020–PED, P&amp;S</b>	P&S	1/1/20	12/31/20
	Environmental Monitoring	3/1/20	12/31/20
<b>2021–Initial Construction</b>	Structures	1/1/21	5/31/21
	Beach Replenishment	1/1/21	5/31/21
	Construction Management	1/1/21	5/31/21
	Physical/Environmental Monitoring	3/1/21	12/31/21
<b>2022–Monitoring</b>	Physical/Environmental Monitoring	3/1/22	12/31/22
<b>2023–Monitoring</b>	Physical/Environmental Monitoring	3/1/23	12/31/23
<b>2024–Monitoring, PED, P&amp;S, Update</b>	Physical/Environmental Monitoring	3/1/24	12/31/24
	PED, P&S	4/1/24	12/31/24
<b>2025–1<sup>st</sup> Nourishment</b>	Beach Replenishment	1/1/25	5/31/25
	Construction Management	1/1/25	5/31/25
	Physical/Environmental Monitoring	3/1/25	12/31/25
<b>2026–Monitoring</b>	Physical/Environmental Monitoring	3/1/26	12/31/26
<b>2027–Monitoring</b>	Physical/Environmental Monitoring	3/1/27	12/31/27
<b>2028–Monitoring, PED, P&amp;S, Update</b>	Physical/Environmental Monitoring	3/1/28	12/31/28
	PED, P&S	4/1/28	12/31/28
<b>2029–2<sup>nd</sup> Nourishment</b>	Beach Replenishment	1/1/29	5/31/29
	Construction Management	1/1/29	5/31/29
	Physical/Environmental Monitoring	3/1/29	12/31/29
<b>2030–Monitoring</b>	Physical/Environmental Monitoring	3/1/30	12/31/30
<b>2031–Monitoring</b>	Physical/Environmental Monitoring	3/1/31	12/31/31
<b>2032–Monitoring, PED, P&amp;S, Update</b>	Physical/Environmental Monitoring	3/1/32	12/31/32
	PED, P&S	4/1/32	12/31/32
<b>2033–3<sup>rd</sup> Nourishment</b>	Beach Replenishment	1/1/33	5/31/33
	Construction Management	1/1/33	5/31/33
	Physical/Environmental Monitoring	3/1/33	12/31/33
<b>2034–Monitoring</b>	Physical/Environmental Monitoring	3/1/34	12/31/34
<b>2035–Monitoring</b>	Physical/Environmental Monitoring	3/1/35	12/31/35
<b>2036–Monitoring, PED, P&amp;S, Update</b>	Physical/Environmental Monitoring	3/1/36	12/31/36
	PED, P&S	4/1/36	12/31/36
<b>2037–4<sup>th</sup> Nourishment</b>	Beach Replenishment	1/1/37	5/31/37
	Construction Management	1/1/37	5/31/37
	Physical/Environmental Monitoring	3/1/37	12/31/37

Year	Task	Date	
		Start	Finish
<b>2038–Monitoring</b>	Physical/Environmental Monitoring	3/1/38	12/31/38
<b>2039–Monitoring</b>	Physical/Environmental Monitoring	3/1/39	12/31/39
<b>2040–Monitoring, PED, P&amp;S, Update</b>	Physical/Environmental Monitoring	3/1/40	12/31/40
	PED, P&S	4/1/40	12/31/40
<b>2041–5<sup>th</sup> Nourishment</b>	Beach Replenishment	1/1/41	5/31/41
	Construction Management	11/41	5/31/41
	Physical/Environmental Monitoring	3/1/41	12/31/41
<b>2042–Monitoring</b>	Physical/Environmental Monitoring	3/1/42	12/31/42
<b>2043–Monitoring</b>	Physical/Environmental Monitoring	3/1/43	12/31/43
<b>2044–Monitoring, PED, P&amp;S, Update</b>	Physical/Environmental Monitoring	3/1/44	12/31/44
	PED, P&S	4/1/44	12/31/44
<b>2045–6<sup>th</sup> Nourishment</b>	Beach Replenishment	1/1/45	5/31/45
	Construction Management	1/1/45	5/31/45
	Physical/Environmental Monitoring	3/1/45	12/31/45
<b>2046–Monitoring</b>	Physical/Environmental Monitoring	3/1/46	12/31/46
<b>2047–Monitoring</b>	Physical/Environmental Monitoring	3/1/47	12/31/47
<b>2048–Monitoring, PED, P&amp;S, Update</b>	Physical/Environmental Monitoring	3/1/48	12/31/48
	PED, P&S	4/1/48	12/31/48
<b>2049–7<sup>th</sup> Nourishment</b>	Beach Replenishment	1/1/49	5/31/49
	Construction Management	1/1/49	5/31/49
	Physical/Environmental Monitoring	3/1/49	12/31/49
<b>2050–Monitoring</b>	Physical/Environmental Monitoring	3/1/50	12/31/50
<b>2051–Monitoring</b>	Physical/Environmental Monitoring	3/1/51	12/31/51
<b>2052–Monitoring, PED, P&amp;S, Update</b>	Physical/Environmental Monitoring	3/1/52	12/31/52
	PED, P&S	4/1/52	12/31/52
<b>2053–8<sup>th</sup> Nourishment</b>	Beach Replenishment	1/1/53	5/31/53
	Construction Management	1/1/53	5/31/53
	Physical/Environmental Monitoring	3/1/53	12/31/53
<b>2054–Monitoring</b>	Physical/Environmental Monitoring	3/1/54	12/31/54
<b>2055–Monitoring</b>	Physical/Environmental Monitoring	3/1/55	12/31/55
<b>2056–Monitoring, PED, P&amp;S, Update</b>	Physical/Environmental Monitoring	3/1/56	12/31/56
	PED, P&S	4/1/56	12/31/56
<b>2057–9<sup>th</sup> Nourishment</b>	Beach Replenishment	1/1/57	5/31/57
	Construction Management	1/1/57	5/31/57
	Physical/Environmental Monitoring	3/1/57	12/31/57
<b>2058–Monitoring</b>	Physical/Environmental Monitoring	3/1/58	12/31/58
<b>2059–Monitoring</b>	Physical/Environmental Monitoring	3/1/59	12/31/59
<b>2060–Monitoring, PED, P&amp;S, Update</b>	Physical/Environmental Monitoring	3/1/60	12/31/60
	PED, P&S	4/1/60	12/31/60
<b>2061–10<sup>th</sup> Nourishment</b>	Beach Replenishment	1/1/61	5/31/61
	Construction Management	1/1/61	5/31/61
	Physical/Environmental Monitoring	3/1/61	12/31/61

Year	Task	Date	
		Start	Finish
<b>2062–Monitoring</b>	Physical/Environmental Monitoring	3/1/62	12/31/62
<b>2063–Monitoring</b>	Physical/Environmental Monitoring	3/1/63	12/31/63
<b>2064–Monitoring, PED, P&amp;S, Update</b>	Physical/Environmental Monitoring	3/1/64	12/31/64
	PED, P&S	4/1/64	12/31/64
<b>2065–11<sup>th</sup> Nourishment</b>	Beach Replenishment	1/1/65	5/31/65
	Construction Management	1/1/65	5/31/65
	Physical/Environmental Monitoring	3/1/65	12/31/65
<b>2066–Monitoring</b>	Physical/Environmental Monitoring	3/1/66	12/31/66
<b>2067–Monitoring</b>	Physical/Environmental Monitoring	3/1/67	12/31/67
<b>2068–Monitoring, PED, P&amp;S, Update</b>	Physical/Environmental Monitoring	3/1/68	12/31/68
	PED, P&S	4/1/68	12/31/68
<b>2069–12<sup>th</sup> Nourishment</b>	Beach Replenishment	1/1/69	5/31/69
	Construction Management	1/1/69	5/31/69
	Physical/Environmental Monitoring	3/1/69	12/31/69
<b>2070–Monitoring</b>	Physical/Environmental Monitoring	3/1/70	12/31/70

### 1.5 Total Project Cost Summary

The TPCS for the NED Plan addresses inflation through project completion (accomplished by escalation to mid-point of construction per ER 1110-2-1302), based on the project schedule. The TPCS includes Federal and non-Federal costs for Lands and Damages, all construction features, PED, S&A, appropriate contingencies, and escalation associated with each of these activities. The TPCS uses Civil Works Construction Cost Indexing System (CWCCIS) factors for escalation (EM 1110-2-1304). Table 1.2 summarizes the costs for all construction events. Tables 1.3 – 1.15 provides the costs for each construction event.

**Table 1.2 Total Project Cost Summary**

Construction Year & Event		Contract Cost Total (Fully Funded)	Cost Shares		Contract Cost Total (FY2021 Dollars)	Cost Shares		AAEQ (FY2021 Dollars)	Cost Shares	
			Federal	Non-federal		Federal	Non-federal		Federal	Non-federal
2021	Initial Construction	\$35,545,401	\$27,640,104	\$7,905,297	\$35,219,085	\$27,640,104	\$7,905,297	\$1,336,497	\$1,048,889	\$299,991
2025	1st Nourishment	\$11,337,782	\$8,816,259	\$2,521,523	\$10,055,960	\$7,871,273	\$2,251,249	\$381,604	\$298,700	\$85,431
2029	2nd Nourishment	\$12,351,029	\$9,604,160	\$2,746,869	\$9,780,400	\$7,655,624	\$2,189,572	\$371,147	\$290,516	\$83,090
2033	3rd Nourishment	\$13,369,190	\$10,395,882	\$2,973,308	\$9,451,901	\$7,398,491	\$2,116,029	\$358,682	\$280,759	\$80,299
2037	4th Nourishment	\$14,471,123	\$11,252,745	\$3,218,378	\$9,134,334	\$7,149,916	\$2,044,935	\$346,631	\$271,326	\$77,601
2041	5th Nourishment	\$15,663,925	\$12,180,268	\$3,483,657	\$8,827,462	\$6,909,711	\$1,976,234	\$334,985	\$262,210	\$74,994
2045	6th Nourishment	\$16,955,103	\$13,184,288	\$3,770,815	\$8,530,928	\$6,677,599	\$1,909,848	\$323,732	\$253,402	\$72,475
2049	7th Nourishment	\$18,352,712	\$14,271,069	\$4,081,643	\$8,244,356	\$6,453,284	\$1,845,692	\$312,858	\$244,890	\$70,040
2053	8th Nourishment	\$19,865,526	\$15,447,433	\$4,418,093	\$7,967,410	\$6,236,504	\$1,783,691	\$302,348	\$236,663	\$67,688
2057	9th Nourishment	\$21,503,041	\$16,720,765	\$4,782,276	\$7,699,767	\$6,027,006	\$1,723,773	\$292,191	\$228,713	\$65,414
2061	10th Nourishment	\$23,275,537	\$18,099,058	\$5,176,479	\$7,441,115	\$5,824,545	\$1,665,868	\$282,376	\$221,030	\$63,216
2065	11th Nourishment	\$25,194,140	\$19,590,963	\$5,603,177	\$7,191,151	\$5,628,886	\$1,609,908	\$272,890	\$213,605	\$61,093
2022	12th Nourishment	\$27,270,892	\$21,205,846	\$6,065,046	\$6,351,682	\$5,439,799	\$1,555,827	\$241,034	\$206,430	\$59,041
50-Year Total		\$255,155,401	\$198,408,840	\$56,746,561	\$135,895,551	\$106,912,741	\$30,577,924	\$5,156,976	\$4,057,134	\$1,160,374



**Table 1.3 Total Project Cost Summary – Initial Construction**

Civil Works Breakdown Structure		Estimated Cost				Project First Cost (Constant Dollar Basis)				Total Project Cost (Fully Funded)				
Initial Project Construction		Estimate Prepared: 22 Feb 17 Effective Price Level: 1 Oct 16				Program Year (Budget EC): 2021 Effective Price Level Date: 1 Oct 2020								
WBS Number	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL	ESC	COST	CNTG	TOTAL	Mid-Point INFLATED		COST (\$K)	CNTG (\$K)	FULL (\$K)
										Date	(%)			
17	Beach Replenishment	\$ 6,730	\$ 1,346	20%	\$ 8,076	8.0%	\$ 7,268	\$ 1,454	\$ 8,722	2021Q2	0.5%	\$ 7,305	\$ 1,461	\$ 8,766
10	Shore stabilization Structures	\$ 15,939	\$ 3,188	20%	\$ 19,126	8.0%	\$ 17,214	\$ 3,443	\$ 20,656	2021Q2	0.5%	\$ 17,300	\$ 3,460	\$ 20,760
<b>Construction Estimate Totals:</b>		\$ 22,669	\$ 4,534	100	\$ 27,202		\$ 24,482	\$ 4,896	\$ 29,378			\$ 24,605	\$ 4,921	\$ 29,526
1	Lands and Damages	\$ 30	\$ 6	20%	\$ 36	8.0%	\$ 32	\$ 6	\$ 39	2020Q3	-1.0%	\$ 32	\$ 6	\$ 39
30	Planning, Engineering & Design													
	1.3% Project Management	\$ 295	\$ 59	20%	\$ 354	8.0%	\$ 318	\$ 64	\$ 382	2020Q3	-1.0%	\$ 315	\$ 63	\$ 378
	0.1% Planning & Environmental Compliance	\$ 23	\$ 5	20%	\$ 27	8.0%	\$ 24	\$ 5	\$ 29	2020Q3	3.0%	\$ 25	\$ 5	\$ 30
	1.9% Engineering & Design	\$ 431	\$ 86	20%	\$ 517	8.0%	\$ 465	\$ 93	\$ 558	2020Q3	3.0%	\$ 479	\$ 96	\$ 575
	0.3% Contracting & Reprographics	\$ 68	\$ 14	20%	\$ 82	8.0%	\$ 73	\$ 15	\$ 88	2020Q3	3.0%	\$ 76	\$ 15	\$ 91
	3.3% Life Cycle Updates (cost, schedule, risks)	\$ 748	\$ 150	20%	\$ 898	8.0%	\$ 808	\$ 162	\$ 969	2020Q3	3.0%	\$ 832	\$ 166	\$ 999
	0.1% Engineering During Construction	\$ 23	\$ 5	20%	\$ 27	8.0%	\$ 24	\$ 5	\$ 29	2021Q2	0.5%	\$ 25	\$ 5	\$ 30
	0.1% Planning During Construction	\$ 23	\$ 5	20%	\$ 27	8.0%	\$ 24	\$ 5	\$ 29	2021Q2	0.5%	\$ 25	\$ 5	\$ 30
	2.6% Physical Monitoring	\$ 589	\$ 118	20%	\$ 707	8.0%	\$ 637	\$ 127	\$ 764	2022Q3	3.0%	\$ 656	\$ 131	\$ 787
	2.7% Environmental Monitoring	\$ 612	\$ 122	20%	\$ 734	8.0%	\$ 661	\$ 132	\$ 793	2022Q3	3.0%	\$ 681	\$ 136	\$ 817
31	Construction Management													
	7.6% Construction Management	\$ 1,723	\$ 345	20%	\$ 2,067	8.0%	\$ 1,861	\$ 372	\$ 2,233	2021Q2	0.5%	\$ 1,870	\$ 374	\$ 2,244
<b>Contract Cost Totals</b>		\$ 27,232	\$ 5,446		\$ 32,679		\$ 29,411	\$ 5,882	\$ 35,293			\$ 29,621	\$ 5,924	\$ 35,545

Estimated Federal Cost: 77.76% \$27,640.10  
 Estimated Non-Federal Cost: 22.24% \$7,905.30

**Table 1.4 Total Project Cost Summary – 1<sup>st</sup> Nourishment**

Civil Works Breakdown Structure		Estimated Cost				Project First Cost (Constant Dollar Basis)				Total Project Cost (Fully Funded)				
1st Nourishment		Estimate Prepared: 22 Feb 17 Effective Price Level: 1 Oct 16				Program Year (Budget EC): 2021 Effective Price Level Date: 1 Oct 2020								
WBS Number	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL	ESC	COST	CNTG	TOTAL	Mid-Point Date	INFLATED (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
17	Beach Replenishment	\$ 6,730	\$ 1,346	20%	\$ 8,076	8.0%	\$ 7,268	\$ 1,454	\$ 8,722	2025Q2	8.8%	\$ 7,907	\$ 1,581	\$ 9,489
<b>Construction Estimate Totals:</b>		\$ 6,730	\$ 1,346		\$ 8,076		\$ 7,268	\$ 1,454	\$ 8,722			\$ 7,907	\$ 1,581	\$ 9,489
				100										
1	Lands and Damages	\$ -	\$ -	20%	\$ -	8.0%	\$ -	\$ -	\$ -	2024Q3	7.2%	\$ -	\$ -	\$ -
30	Planning, Engineering & Design													
	1.3% Project Management	\$ 87	\$ 17	20%	\$ 105	8.0%	\$ 94	\$ 19	\$ 113	2024Q3	7.2%	\$ 94	\$ 19	\$ 113
	0.1% Planning & Environmental Compliance	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2024Q3	11.5%	\$ 8	\$ 2	\$ 9
	1.9% Engineering & Design	\$ 128	\$ 26	20%	\$ 153	8.0%	\$ 138	\$ 28	\$ 166	2024Q3	11.5%	\$ 154	\$ 31	\$ 185
	0.3% Contracting & Reprographics	\$ 20	\$ 4	20%	\$ 24	8.0%	\$ 22	\$ 4	\$ 26	2024Q3	11.5%	\$ 24	\$ 5	\$ 29
	3.3% Life Cycle Updates (cost, schedule, risks)	\$ 222	\$ 44	20%	\$ 267	8.0%	\$ 240	\$ 48	\$ 288	2024Q3	11.5%	\$ 267	\$ 53	\$ 321
	0.1% Engineering During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2025Q2	8.8%	\$ 8	\$ 2	\$ 10
	0.1% Planning During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2025Q2	8.8%	\$ 8	\$ 2	\$ 9
	2.6% Physical Monitoring	\$ 175	\$ 35	20%	\$ 210	8.0%	\$ 189	\$ 38	\$ 227	2026Q3	11.5%	\$ 206	\$ 41	\$ 247
	2.7% Environmental Monitoring	\$ 182	\$ 36	20%	\$ 218	8.0%	\$ 196	\$ 39	\$ 235	2026Q3	11.5%	\$ 219	\$ 44	\$ 263
31	Construction Management													
	7.6% Construction Management	\$ 511	\$ 102	20%	\$ 614	8.0%	\$ 552	\$ 110	\$ 663	2025Q2	8.8%	\$ 552	\$ 110	\$ 663
<b>Contract Cost Totals</b>		\$ 8,076	\$ 1,615		\$ 9,691		\$ 8,722	\$ 1,744	\$ 10,466			\$ 9,448	\$ 1,890	\$ 11,338

Estimated Federal Cost: 77.76% \$8,816.26  
 Estimated Non-Federal Cost: 22.24% \$2,521.52

**Table 1.5 Total Project Cost Summary – 2<sup>nd</sup> Nourishment**

Civil Works Breakdown Structure		Estimated Cost				Project First Cost (Constant Dollar Basis)				Total Project Cost (Fully Funded)				
2nd Nourishment		Estimate Prepared: 22 Feb 17 Effective Price Level: 1 Oct 16				Program Year (Budget EC): 2021 Effective Price Level Date: 1 Oct 2020								
WBS Number	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL	ESC	COST	CNTG	TOTAL	Mid-Point Date	INFLATED (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
17	Beach Replenishment	\$ 6,730	\$ 1,346	20%	\$ 8,076	8.0%	\$ 7,268	\$ 1,454	\$ 8,722	2029Q2	17.8%	\$ 8,559	\$ 1,712	\$ 10,271
<b>Construction Estimate Totals:</b>		\$ 6,730	\$ 1,346		\$ 8,076		\$ 7,268	\$ 1,454	\$ 8,722			\$ 8,559	\$ 1,712	\$ 10,271
				100										
1	Lands and Damages	\$ -	\$ -	20%	\$ -	8.0%	\$ -	\$ -	\$ -	2028Q3	16.0%	\$ -	\$ -	\$ -
30	Planning, Engineering & Design													
	1.3% Project Management	\$ 87	\$ 17	20%	\$ 105	8.0%	\$ 94	\$ 19	\$ 113	2028Q3	16.0%	\$ 110	\$ 22	\$ 132
	0.1% Planning & Environmental Compliance	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2028Q3	20.7%	\$ 9	\$ 2	\$ 11
	1.9% Engineering & Design	\$ 128	\$ 26	20%	\$ 153	8.0%	\$ 138	\$ 28	\$ 166	2028Q3	20.7%	\$ 167	\$ 33	\$ 200
	0.3% Contracting & Reprographics	\$ 20	\$ 4	20%	\$ 24	8.0%	\$ 22	\$ 4	\$ 26	2028Q3	20.7%	\$ 26	\$ 5	\$ 32
	3.3% Life Cycle Updates (cost, schedule, risks)	\$ 222	\$ 44	20%	\$ 267	8.0%	\$ 240	\$ 48	\$ 288	2028Q3	20.7%	\$ 290	\$ 58	\$ 347
	0.1% Engineering During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2029Q2	17.8%	\$ 9	\$ 2	\$ 10
	0.1% Planning During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2029Q2	17.8%	\$ 9	\$ 2	\$ 10
	2.6% Physical Monitoring	\$ 175	\$ 35	20%	\$ 210	8.0%	\$ 189	\$ 38	\$ 227	2030Q3	20.7%	\$ 228	\$ 46	\$ 274
	2.7% Environmental Monitoring	\$ 182	\$ 36	20%	\$ 218	8.0%	\$ 196	\$ 39	\$ 235	2030Q3	20.7%	\$ 237	\$ 47	\$ 284
31	Construction Management													
	7.6% Construction Management	\$ 511	\$ 102	20%	\$ 614	8.0%	\$ 552	\$ 110	\$ 663	2029Q2	17.8%	\$ 650	\$ 130	\$ 781
<b>Contract Cost Totals</b>		\$ 8,076	\$ 1,615		\$ 9,691		\$ 8,722	\$ 1,744	\$ 10,466			\$ 10,293	\$ 2,059	\$ 12,351

Estimated Federal Cost: 77.76% \$9,604.16  
 Estimated Non-Federal Cost: 22.24% \$2,746.87

**Table 1.6 Total Project Cost Summary – 3<sup>rd</sup> Nourishment**

Civil Works Breakdown Structure		Estimated Cost				Project First Cost (Constant Dollar Basis)				Total Project Cost (Fully Funded)				
3rd Nourishment		Estimate Prepared: 22 Feb 17 Effective Price Level: 1 Oct 16				Program Year (Budget EC): 2021 Effective Price Level Date: 1 Oct 2020								
WBS Number	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL	ESC	COST	CNTG	TOTAL	Mid-Point Date	INFLATED (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
17	Beach Replenishment	\$ 6,730	\$ 1,346	20%	\$ 8,076	8.0%	\$ 7,268	\$ 1,454	\$ 8,722	2033Q2	27.5%	\$ 9,264	\$ 1,853	\$ 11,117
<b>Construction Estimate Totals:</b>		\$ 6,730	\$ 1,346		\$ 8,076		\$ 7,268	\$ 1,454	\$ 8,722			\$ 9,264	\$ 1,853	\$ 11,117
				100										
1	Lands and Damages	\$ -	\$ -	20%	\$ -	8.0%	\$ -	\$ -	\$ -	2032Q3	25.6%	\$ -	\$ -	\$ -
30	Planning, Engineering & Design													
	1.3% Project Management	\$ 87	\$ 17	20%	\$ 105	8.0%	\$ 94	\$ 19	\$ 113	2032Q3	25.6%	\$ 119	\$ 24	\$ 142
	0.1% Planning & Environmental Compliance	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2032Q3	30.7%	\$ 9	\$ 2	\$ 11
	1.9% Engineering & Design	\$ 128	\$ 26	20%	\$ 153	8.0%	\$ 138	\$ 28	\$ 166	2032Q3	30.7%	\$ 180	\$ 36	\$ 217
	0.3% Contracting & Reprographics	\$ 20	\$ 4	20%	\$ 24	8.0%	\$ 22	\$ 4	\$ 26	2032Q3	30.7%	\$ 28	\$ 6	\$ 34
	3.3% Life Cycle Updates (cost, schedule, risks)	\$ 222	\$ 44	20%	\$ 267	8.0%	\$ 240	\$ 48	\$ 288	2032Q3	30.7%	\$ 313	\$ 63	\$ 376
	0.1% Engineering During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2033Q2	27.5%	\$ 9	\$ 2	\$ 11
	0.1% Planning During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2033Q2	27.5%	\$ 9	\$ 2	\$ 11
	2.6% Physical Monitoring	\$ 175	\$ 35	20%	\$ 210	8.0%	\$ 189	\$ 38	\$ 227	2034Q3	30.7%	\$ 247	\$ 49	\$ 296
	2.7% Environmental Monitoring	\$ 182	\$ 36	20%	\$ 218	8.0%	\$ 196	\$ 39	\$ 235	2034Q3	30.7%	\$ 256	\$ 51	\$ 308
31	Construction Management													
	7.6% Construction Management	\$ 511	\$ 102	20%	\$ 614	8.0%	\$ 552	\$ 110	\$ 663	2033Q2	27.5%	\$ 704	\$ 141	\$ 845
<b>Contract Cost Totals</b>		\$ 8,076	\$ 1,615		\$ 9,691		\$ 8,722	\$ 1,744	\$ 10,466			\$ 11,141	\$ 2,228	\$ 13,369

Estimated Federal Cost: 77.76% \$10,395.88  
 Estimated Non-Federal Cost: 22.24% \$2,973.31

**Table 1.7 Total Project Cost Summary – 4<sup>th</sup> Nourishment**

Civil Works Breakdown Structure		Estimated Cost				Project First Cost (Constant Dollar Basis)				Total Project Cost (Fully Funded)				
4th Nourishment		Estimate Prepared: 22 Feb 17 Effective Price Level: 1 Oct 16				Program Year (Budget EC): 2021 Effective Price Level Date: 1 Oct 2020								
WBS Number	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL	ESC	COST	CNTG	TOTAL	Mid-Point Date	INFLATED (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
17	Beach Replenishment	\$ 6,730	\$ 1,346	20%	\$ 8,076	8.0%	\$ 7,268	\$ 1,454	\$ 8,722	2037Q2	38.0%	\$ 10,028	\$ 2,006	\$ 12,034
<b>Construction Estimate Totals:</b>		\$ 6,730	\$ 1,346		\$ 8,076		\$ 7,268	\$ 1,454	\$ 8,722			\$ 10,028	\$ 2,006	\$ 12,034
				100										
1	Lands and Damages	\$ -	\$ -	20%	\$ -	8.0%	\$ -	\$ -	\$ -	2036Q3	35.9%	\$ -	\$ -	\$ -
30	Planning, Engineering & Design													
	1.3% Project Management	\$ 87	\$ 17	20%	\$ 105	8.0%	\$ 94	\$ 19	\$ 113	2036Q3	35.9%	\$ 128	\$ 26	\$ 154
	0.1% Planning & Environmental Compliance	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2036Q3	41.4%	\$ 10	\$ 2	\$ 12
	1.9% Engineering & Design	\$ 128	\$ 26	20%	\$ 153	8.0%	\$ 138	\$ 28	\$ 166	2036Q3	41.4%	\$ 195	\$ 39	\$ 234
	0.3% Contracting & Reprographics	\$ 20	\$ 4	20%	\$ 24	8.0%	\$ 22	\$ 4	\$ 26	2036Q3	41.4%	\$ 31	\$ 6	\$ 37
	3.3% Life Cycle Updates (cost, schedule, risks)	\$ 222	\$ 44	20%	\$ 267	8.0%	\$ 240	\$ 48	\$ 288	2036Q3	41.4%	\$ 339	\$ 68	\$ 407
	0.1% Engineering During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2037Q2	38.0%	\$ 10	\$ 2	\$ 12
	0.1% Planning During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2037Q2	38.0%	\$ 10	\$ 2	\$ 12
	2.6% Physical Monitoring	\$ 175	\$ 35	20%	\$ 210	8.0%	\$ 189	\$ 38	\$ 227	2038Q3	41.4%	\$ 267	\$ 53	\$ 321
	2.7% Environmental Monitoring	\$ 182	\$ 36	20%	\$ 218	8.0%	\$ 196	\$ 39	\$ 235	2038Q3	41.4%	\$ 278	\$ 56	\$ 333
31	Construction Management													
	7.6% Construction Management	\$ 511	\$ 102	20%	\$ 614	8.0%	\$ 552	\$ 110	\$ 663	2037Q2	38.0%	\$ 762	\$ 152	\$ 915
<b>Contract Cost Totals</b>		\$ 8,076	\$ 1,615		\$ 9,691		\$ 8,722	\$ 1,744	\$ 10,466			\$ 12,059	\$ 2,412	\$ 14,471

Estimated Federal Cost: 77.76% \$11,252.75  
 Estimated Non-Federal Cost: 22.24% \$3,218.38

**Table 1.8 Total Project Cost Summary – 5<sup>th</sup> Nourishment**

Civil Works Breakdown Structure		Estimated Cost				Project First Cost (Constant Dollar Basis)				Total Project Cost (Fully Funded)				
5th Nourishment		Estimate Prepared: 22 Feb 17 Effective Price Level: 1 Oct 16				Program Year (Budget EC): 2021 Effective Price Level Date: 1 Oct 2020								
WBS Number	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL	ESC	COST	CNTG	TOTAL	Mid-Point Date	INFLATED (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
17	Beach Replenishment	\$ 6,730	\$ 1,346	20%	\$ 8,076	8.0%	\$ 7,268	\$ 1,454	\$ 8,722	2041Q2	49.3%	\$ 10,855	\$ 2,171	\$ 13,026
<b>Construction Estimate Totals:</b>		\$ 6,730	\$ 1,346		\$ 8,076		\$ 7,268	\$ 1,454	\$ 8,722			\$ 10,855	\$ 2,171	\$ 13,026
				100										
1	Lands and Damages	\$ -	\$ -	20%	\$ -	8.0%	\$ -	\$ -	\$ -	2040Q3	47.1%	\$ -	\$ -	\$ -
30	Planning, Engineering & Design													
	1.3% Project Management	\$ 87	\$ 17	20%	\$ 105	8.0%	\$ 94	\$ 19	\$ 113	2040Q3	47.1%	\$ 139	\$ 28	\$ 167
	0.1% Planning & Environmental Compliance	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2040Q3	53.1%	\$ 11	\$ 2	\$ 13
	1.9% Engineering & Design	\$ 128	\$ 26	20%	\$ 153	8.0%	\$ 138	\$ 28	\$ 166	2040Q3	53.1%	\$ 211	\$ 42	\$ 254
	0.3% Contracting & Reprographics	\$ 20	\$ 4	20%	\$ 24	8.0%	\$ 22	\$ 4	\$ 26	2040Q3	53.1%	\$ 33	\$ 7	\$ 40
	3.3% Life Cycle Updates (cost, schedule, risks)	\$ 222	\$ 44	20%	\$ 267	8.0%	\$ 240	\$ 48	\$ 288	2040Q3	53.1%	\$ 367	\$ 73	\$ 441
	0.1% Engineering During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2041Q2	49.3%	\$ 11	\$ 2	\$ 13
	0.1% Planning During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2041Q2	49.3%	\$ 11	\$ 2	\$ 13
	2.6% Physical Monitoring	\$ 175	\$ 35	20%	\$ 210	8.0%	\$ 189	\$ 38	\$ 227	2042Q3	53.1%	\$ 289	\$ 58	\$ 347
	2.7% Environmental Monitoring	\$ 182	\$ 36	20%	\$ 218	8.0%	\$ 196	\$ 39	\$ 235	2042Q3	53.1%	\$ 300	\$ 60	\$ 360
31	Construction Management													
	7.6% Construction Management	\$ 511	\$ 102	20%	\$ 614	8.0%	\$ 552	\$ 110	\$ 663	2041Q2	49.3%	\$ 825	\$ 165	\$ 990
<b>Contract Cost Totals</b>		\$ 8,076	\$ 1,615		\$ 9,691		\$ 8,722	\$ 1,744	\$ 10,466			\$ 13,053	\$ 2,611	\$ 15,664

Estimated Federal Cost: 77.76% \$12,180.27  
 Estimated Non-Federal Cost: 22.24% \$3,483.66

**Table 1.9 Total Project Cost Summary – 6<sup>th</sup> Nourishment**

Civil Works Breakdown Structure		Estimated Cost				Project First Cost (Constant Dollar Basis)				Total Project Cost (Fully Funded)				
6th Nourishment		Estimate Prepared: 22 Feb 17 Effective Price Level: 1 Oct 16				Program Year (Budget EC): 2021 Effective Price Level Date: 1 Oct 2020				<u>Mid-Point INFLATED</u>				
WBS Number	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL	ESC	COST	CNTG	TOTAL	Date	(%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
17	Beach Replenishment	\$ 6,730	\$ 1,346	20%	\$ 8,076	8.0%	\$ 7,268	\$ 1,454	\$ 8,722	2045Q2	61.7%	\$ 11,750	\$ 2,350	\$ 14,100
<b>Construction Estimate Totals:</b>		\$ 6,730	\$ 1,346		\$ 8,076		\$ 7,268	\$ 1,454	\$ 8,722			\$ 11,750	\$ 2,350	\$ 14,100
				100										
1	Lands and Damages	\$ -	\$ -	20%	\$ -	8.0%	\$ -	\$ -	\$ -	2044Q3	59.2%	\$ -	\$ -	\$ -
30	Planning, Engineering & Design													
	1.3% Project Management	\$ 87	\$ 17	20%	\$ 105	8.0%	\$ 94	\$ 19	\$ 113	2044Q3	59.2%	\$ 150	\$ 30	\$ 181
	0.1% Planning & Environmental Compliance	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2044Q3	65.7%	\$ 12	\$ 2	\$ 14
	1.9% Engineering & Design	\$ 128	\$ 26	20%	\$ 153	8.0%	\$ 138	\$ 28	\$ 166	2044Q3	65.7%	\$ 229	\$ 46	\$ 275
	0.3% Contracting & Reprographics	\$ 20	\$ 4	20%	\$ 24	8.0%	\$ 22	\$ 4	\$ 26	2044Q3	65.7%	\$ 36	\$ 7	\$ 43
	3.3% Life Cycle Updates (cost, schedule, risks)	\$ 222	\$ 44	20%	\$ 267	8.0%	\$ 240	\$ 48	\$ 288	2044Q3	65.7%	\$ 397	\$ 79	\$ 477
	0.1% Engineering During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2045Q2	61.7%	\$ 12	\$ 2	\$ 14
	0.1% Planning During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2045Q2	61.7%	\$ 12	\$ 2	\$ 14
	2.6% Physical Monitoring	\$ 175	\$ 35	20%	\$ 210	8.0%	\$ 189	\$ 38	\$ 227	2046Q3	65.7%	\$ 313	\$ 63	\$ 376
	2.7% Environmental Monitoring	\$ 182	\$ 36	20%	\$ 218	8.0%	\$ 196	\$ 39	\$ 235	2046Q3	65.7%	\$ 325	\$ 65	\$ 390
31	Construction Management													
	7.6% Construction Management	\$ 511	\$ 102	20%	\$ 614	8.0%	\$ 552	\$ 110	\$ 663	2045Q2	61.7%	\$ 893	\$ 179	\$ 1,072
<b>Contract Cost Totals</b>		\$ 8,076	\$ 1,615		\$ 9,691		\$ 8,722	\$ 1,744	\$ 10,466			\$ 14,129	\$ 2,826	\$ 16,955

Estimated Federal Cost: 77.76% \$13,184.29  
 Estimated Non-Federal Cost: 22.24% \$3,770.81

**Table 1.10 Total Project Cost Summary – 7<sup>th</sup> Nourishment**

Civil Works Breakdown Structure		Estimated Cost				Project First Cost (Constant Dollar Basis)				Total Project Cost (Fully Funded)				
7th Nourishment		Estimate Prepared: 22 Feb 17 Effective Price Level: 1 Oct 16				Program Year (Budget EC): 2021 Effective Price Level Date: 1 Oct 2020								
WBS Number	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL	ESC	COST	CNTG	TOTAL	Mid-Point Date	INFLATED (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
17	Beach Replenishment	\$ 6,730	\$ 1,346	20%	\$ 8,076	8.0%	\$ 7,268	\$ 1,454	\$ 8,722	2049Q2	75.0%	\$ 12,718	\$ 2,544	\$ 15,262
	<b>Construction Estimate Totals:</b>	\$ 6,730	\$ 1,346		\$ 8,076		\$ 7,268	\$ 1,454	\$ 8,722			\$ 12,718	\$ 2,544	\$ 15,262
				100										
1	Lands and Damages	\$ -	\$ -	20%	\$ -	8.0%	\$ -	\$ -	\$ -	2048Q3	72.4%	\$ -	\$ -	\$ -
30	Planning, Engineering & Design													
	1.3% Project Management	\$ 87	\$ 17	20%	\$ 105	8.0%	\$ 94	\$ 19	\$ 113	2048Q3	72.4%	\$ 163	\$ 33	\$ 195
	0.1% Planning & Environmental Compliance	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2048Q3	79.4%	\$ 13	\$ 3	\$ 16
	1.9% Engineering & Design	\$ 128	\$ 26	20%	\$ 153	8.0%	\$ 138	\$ 28	\$ 166	2048Q3	79.4%	\$ 248	\$ 50	\$ 297
	0.3% Contracting & Reprographics	\$ 20	\$ 4	20%	\$ 24	8.0%	\$ 22	\$ 4	\$ 26	2048Q3	79.4%	\$ 39	\$ 8	\$ 47
	3.3% Life Cycle Updates (cost, schedule, risks)	\$ 222	\$ 44	20%	\$ 267	8.0%	\$ 240	\$ 48	\$ 288	2048Q3	79.4%	\$ 430	\$ 86	\$ 516
	0.1% Engineering During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2049Q2	75.0%	\$ 13	\$ 3	\$ 15
	0.1% Planning During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2049Q2	75.0%	\$ 13	\$ 3	\$ 15
	2.6% Physical Monitoring	\$ 175	\$ 35	20%	\$ 210	8.0%	\$ 189	\$ 38	\$ 227	2050Q3	79.4%	\$ 339	\$ 68	\$ 407
	2.7% Environmental Monitoring	\$ 182	\$ 36	20%	\$ 218	8.0%	\$ 196	\$ 39	\$ 235	2050Q3	79.4%	\$ 352	\$ 70	\$ 422
31	Construction Management													
	7.6% Construction Management	\$ 511	\$ 102	20%	\$ 614	8.0%	\$ 552	\$ 110	\$ 663	2049Q2	75.0%	\$ 967	\$ 193	\$ 1,160
	<b>Contract Cost Totals</b>	\$ 8,076	\$ 1,615		\$ 9,691		\$ 8,722	\$ 1,744	\$ 10,466			\$ 15,294	\$ 3,059	\$ 18,353

Estimated Federal Cost: 77.76% \$14,271.07  
 Estimated Non-Federal Cost: 22.24% \$4,081.64



**Table 1.11 Total Project Cost Summary – 8<sup>th</sup> Nourishment**

Civil Works Breakdown Structure		Estimated Cost				Project First Cost (Constant Dollar Basis)				Total Project Cost (Fully Funded)				
8th Nourishment		Estimate Prepared: 22 Feb 17 Effective Price Level: 1 Oct 16				Program Year (Budget EC): 2021 Effective Price Level Date: 1 Oct 2020								
WBS Number	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL	ESC	COST	CNTG	TOTAL	Mid-Point Date	INFLATED (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
17	Beach Replenishment	\$ 6,730	\$ 1,346	20%	\$ 8,076	8.0%	\$ 7,268	\$ 1,454	\$ 8,722	2053Q2	89.4%	\$ 13,766	\$ 2,753	\$ 16,520
<b>Construction Estimate Totals:</b>		\$ 6,730	\$ 1,346		\$ 8,076		\$ 7,268	\$ 1,454	\$ 8,722			\$ 13,766	\$ 2,753	\$ 16,520
				100										
1	Lands and Damages	\$ -	\$ -	20%	\$ -	8.0%	\$ -	\$ -	\$ -	2052Q3	86.6%	\$ -	\$ -	\$ -
30	Planning, Engineering & Design													
	1.3% Project Management	\$ 87	\$ 17	20%	\$ 105	8.0%	\$ 94	\$ 19	\$ 113	2052Q3	86.6%	\$ 176	\$ 35	\$ 212
	0.1% Planning & Environmental Compliance	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2052Q3	94.1%	\$ 14	\$ 3	\$ 17
	1.9% Engineering & Design	\$ 128	\$ 26	20%	\$ 153	8.0%	\$ 138	\$ 28	\$ 166	2052Q3	94.1%	\$ 268	\$ 54	\$ 322
	0.3% Contracting & Reprographics	\$ 20	\$ 4	20%	\$ 24	8.0%	\$ 22	\$ 4	\$ 26	2052Q3	94.1%	\$ 42	\$ 8	\$ 51
	3.3% Life Cycle Updates (cost, schedule, risks)	\$ 222	\$ 44	20%	\$ 267	8.0%	\$ 240	\$ 48	\$ 288	2052Q3	94.1%	\$ 466	\$ 93	\$ 559
	0.1% Engineering During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2053Q2	89.4%	\$ 14	\$ 3	\$ 17
	0.1% Planning During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2053Q2	89.4%	\$ 14	\$ 3	\$ 17
	2.6% Physical Monitoring	\$ 175	\$ 35	20%	\$ 210	8.0%	\$ 189	\$ 38	\$ 227	2054Q3	94.1%	\$ 367	\$ 73	\$ 440
	2.7% Environmental Monitoring	\$ 182	\$ 36	20%	\$ 218	8.0%	\$ 196	\$ 39	\$ 235	2054Q3	94.1%	\$ 381	\$ 76	\$ 457
31	Construction Management													
	7.6% Construction Management	\$ 511	\$ 102	20%	\$ 614	8.0%	\$ 552	\$ 110	\$ 663	2053Q2	89.4%	\$ 1,046	\$ 209	\$ 1,256
<b>Contract Cost Totals</b>		\$ 8,076	\$ 1,615		\$ 9,691		\$ 8,722	\$ 1,744	\$ 10,466			\$ 16,555	\$ 3,311	\$ 19,866

Estimated Federal Cost: 77.76% \$15,447.43  
 Estimated Non-Federal Cost: 22.24% \$4,418.09

**Table 1.12 Total Project Cost Summary – 9<sup>th</sup> Nourishment**

Civil Works Breakdown Structure		Estimated Cost				Project First Cost (Constant Dollar Basis)				Total Project Cost (Fully Funded)				
9th Nourishment		Estimate Prepared: 22 Feb 17 Effective Price Level: 1 Oct 16				Program Year (Budget EC): 2021 Effective Price Level Date: 1 Oct 2020								
WBS Number	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL	ESC	COST	CNTG	TOTAL	Mid-Point Date	INFLATED (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
17	Beach Replenishment	\$ 6,730	\$ 1,346	20%	\$ 8,076	8.0%	\$ 7,268	\$ 1,454	\$ 8,722	2057Q2	105.0%	\$ 14,901	\$ 2,980	\$ 17,882
<b>Construction Estimate Totals:</b>		\$ 6,730	\$ 1,346		\$ 8,076		\$ 7,268	\$ 1,454	\$ 8,722			\$ 14,901	\$ 2,980	\$ 17,882
				100										
1	Lands and Damages	\$ -	\$ -	20%	\$ -	8.0%	\$ -	\$ -	\$ -	2056Q3	101.9%	\$ -	\$ -	\$ -
30	Planning, Engineering & Design													
	1.3% Project Management	\$ 87	\$ 17	20%	\$ 105	8.0%	\$ 94	\$ 19	\$ 113	2056Q3	101.9%	\$ 191	\$ 38	\$ 229
	0.1% Planning & Environmental Compliance	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2056Q3	110.1%	\$ 15	\$ 3	\$ 18
	1.9% Engineering & Design	\$ 128	\$ 26	20%	\$ 153	8.0%	\$ 138	\$ 28	\$ 166	2056Q3	110.1%	\$ 290	\$ 58	\$ 348
	0.3% Contracting & Reprographics	\$ 20	\$ 4	20%	\$ 24	8.0%	\$ 22	\$ 4	\$ 26	2056Q3	110.1%	\$ 46	\$ 9	\$ 55
	3.3% Life Cycle Updates (cost, schedule, risks)	\$ 222	\$ 44	20%	\$ 267	8.0%	\$ 240	\$ 48	\$ 288	2056Q3	110.1%	\$ 504	\$ 101	\$ 605
	0.1% Engineering During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2057Q2	105.0%	\$ 15	\$ 3	\$ 18
	0.1% Planning During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2057Q2	105.0%	\$ 15	\$ 3	\$ 18
	2.6% Physical Monitoring	\$ 175	\$ 35	20%	\$ 210	8.0%	\$ 189	\$ 38	\$ 227	2058Q3	110.1%	\$ 397	\$ 79	\$ 477
	2.7% Environmental Monitoring	\$ 182	\$ 36	20%	\$ 218	8.0%	\$ 196	\$ 39	\$ 235	2058Q3	110.1%	\$ 412	\$ 82	\$ 495
31	Construction Management													
	7.6% Construction Management	\$ 511	\$ 102	20%	\$ 614	8.0%	\$ 552	\$ 110	\$ 663	2057Q2	105.0%	\$ 1,132	\$ 226	\$ 1,359
<b>Contract Cost Totals</b>		\$ 8,076	\$ 1,615		\$ 9,691		\$ 8,722	\$ 1,744	\$ 10,466			\$ 17,919	\$ 3,584	\$ 21,503

Estimated Federal Cost: 77.76% \$16,720.76  
 Estimated Non-Federal Cost: 22.24% \$4,782.28

**Table 1.13 Total Project Cost Summary – 10<sup>th</sup> Nourishment**

Civil Works Breakdown Structure		Estimated Cost				Project First Cost (Constant Dollar Basis)				Total Project Cost (Fully Funded)				
10th Nourishment		Estimate Prepared: 22 Feb 17 Effective Price Level: 1 Oct 16				Program Year (Budget EC): 2021 Effective Price Level Date: 1 Oct 2020								
WBS Number	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL	ESC	COST	CNTG	TOTAL	Mid-Point Date	INFLATED (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
17	Beach Replenishment	\$ 6,730	\$ 1,346	20%	\$ 8,076	8.0%	\$ 7,268	\$ 1,454	\$ 8,722	2061Q2	121.9%	\$ 16,130	\$ 3,226	\$ 19,355
<b>Construction Estimate Totals:</b>		\$ 6,730	\$ 1,346		\$ 8,076		\$ 7,268	\$ 1,454	\$ 8,722			\$ 16,130	\$ 3,226	\$ 19,355
				100										
1	Lands and Damages	\$ -	\$ -	20%	\$ -	8.0%	\$ -	\$ -	\$ -	2060Q3	118.6%	\$ -	\$ -	\$ -
30	Planning, Engineering & Design													
	1.3% Project Management	\$ 87	\$ 17	20%	\$ 105	8.0%	\$ 94	\$ 19	\$ 113	2060Q3	118.6%	\$ 207	\$ 41	\$ 248
	0.1% Planning & Environmental Compliance	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2060Q3	127.5%	\$ 17	\$ 3	\$ 20
	1.9% Engineering & Design	\$ 128	\$ 26	20%	\$ 153	8.0%	\$ 138	\$ 28	\$ 166	2060Q3	127.5%	\$ 314	\$ 63	\$ 377
	0.3% Contracting & Reprographics	\$ 20	\$ 4	20%	\$ 24	8.0%	\$ 22	\$ 4	\$ 26	2060Q3	127.5%	\$ 50	\$ 10	\$ 60
	3.3% Life Cycle Updates (cost, schedule, risks)	\$ 222	\$ 44	20%	\$ 267	8.0%	\$ 240	\$ 48	\$ 288	2060Q3	127.5%	\$ 546	\$ 109	\$ 655
	0.1% Engineering During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2061Q2	121.9%	\$ 16	\$ 3	\$ 19
	0.1% Planning During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2061Q2	121.9%	\$ 16	\$ 3	\$ 19
	2.6% Physical Monitoring	\$ 175	\$ 35	20%	\$ 210	8.0%	\$ 189	\$ 38	\$ 227	2062Q3	127.5%	\$ 430	\$ 86	\$ 516
	2.7% Environmental Monitoring	\$ 182	\$ 36	20%	\$ 218	8.0%	\$ 196	\$ 39	\$ 235	2062Q3	127.5%	\$ 446	\$ 89	\$ 536
31	Construction Management													
	7.6% Construction Management	\$ 511	\$ 102	20%	\$ 614	8.0%	\$ 552	\$ 110	\$ 663	2061Q2	121.9%	\$ 1,226	\$ 245	\$ 1,471
<b>Contract Cost Totals</b>		\$ 8,076	\$ 1,615		\$ 9,691		\$ 8,722	\$ 1,744	\$ 10,466			\$ 19,396	\$ 3,879	\$ 23,276

Estimated Federal Cost: 77.76% \$18,099.06  
 Estimated Non-Federal Cost: 22.24% \$5,176.48

**Table 1.14 Total Project Cost Summary – 11<sup>th</sup> Nourishment**

Civil Works Breakdown Structure		Estimated Cost				Project First Cost (Constant Dollar Basis)				Total Project Cost (Fully Funded)				
11th Nourishment		Estimate Prepared: 22 Feb 17 Effective Price Level: 1 Oct 16				Program Year (Budget EC): 2021 Effective Price Level Date: 1 Oct 2020				<u>Mid-Point INFLATED</u>				
WBS Number	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL	ESC	COST	CNTG	TOTAL	Date	(%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
17	Beach Replenishment	\$ 6,730	\$ 1,346	20%	\$ 8,076	8.0%	\$ 7,268	\$ 1,454	\$ 8,722	2065Q2	140.2%	\$ 17,459	\$ 3,492	\$ 20,951
<b>Construction Estimate Totals:</b>		\$ 6,730	\$ 1,346		\$ 8,076		\$ 7,268	\$ 1,454	\$ 8,722			\$ 17,459	\$ 3,492	\$ 20,951
				100										
1	Lands and Damages	\$ -	\$ -	20%	\$ -	8.0%	\$ -	\$ -	\$ -	2064Q3	136.6%	\$ -	\$ -	\$ -
30	Planning, Engineering & Design													
	1.3% Project Management	\$ 87	\$ 17	20%	\$ 105	8.0%	\$ 94	\$ 19	\$ 113	2064Q3	136.6%	\$ 224	\$ 45	\$ 268
	0.1% Planning & Environmental Compliance	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2064Q3	146.2%	\$ 18	\$ 4	\$ 21
	1.9% Engineering & Design	\$ 128	\$ 26	20%	\$ 153	8.0%	\$ 138	\$ 28	\$ 166	2064Q3	146.2%	\$ 340	\$ 68	\$ 408
	0.3% Contracting & Reprographics	\$ 20	\$ 4	20%	\$ 24	8.0%	\$ 22	\$ 4	\$ 26	2064Q3	146.2%	\$ 54	\$ 11	\$ 64
	3.3% Life Cycle Updates (cost, schedule, risks)	\$ 222	\$ 44	20%	\$ 267	8.0%	\$ 240	\$ 48	\$ 288	2064Q3	146.2%	\$ 591	\$ 118	\$ 709
	0.1% Engineering During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2065Q2	140.2%	\$ 17	\$ 3	\$ 21
	0.1% Planning During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2065Q2	140.2%	\$ 17	\$ 3	\$ 21
	2.6% Physical Monitoring	\$ 175	\$ 35	20%	\$ 210	8.0%	\$ 189	\$ 38	\$ 227	2066Q3	146.2%	\$ 465	\$ 93	\$ 558
	2.7% Environmental Monitoring	\$ 182	\$ 36	20%	\$ 218	8.0%	\$ 196	\$ 39	\$ 235	2066Q3	146.2%	\$ 483	\$ 97	\$ 580
31	Construction Management													
	7.6% Construction Management	\$ 511	\$ 102	20%	\$ 614	8.0%	\$ 552	\$ 110	\$ 663	2065Q2	140.2%	\$ 1,327	\$ 265	\$ 1,592
<b>Contract Cost Totals</b>		\$ 8,076	\$ 1,615		\$ 9,691		\$ 8,722	\$ 1,744	\$ 10,466			\$ 20,995	\$ 4,199	\$ 25,194

Estimated Federal Cost: 77.76% \$19,590.96  
 Estimated Non-Federal Cost: 22.24% \$5,603.18

**Table 1.15 Total Project Cost Summary — 12<sup>th</sup> Nourishment**

Civil Works Breakdown Structure		Estimated Cost				Project First Cost (Constant Dollar Basis)				Total Project Cost (Fully Funded)				
12th Nourishment		Estimate Prepared: 22 Feb 17 Effective Price Level: 1 Oct 16				Program Year (Budget EC): 2021 Effective Price Level Date: 1 Oct 2020								
WBS Number	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL	ESC	COST	CNTG	TOTAL	Mid-Point	INFLATED	COST (\$K)	CNTG (\$K)	FULL (\$K)
										Date	(%)			
17	Beach Replenishment	\$ 6,730	\$ 1,346	20%	\$ 8,076	8.0%	\$ 7,268	\$ 1,454	\$ 8,722	2069Q2	160.0%	\$ 18,898	\$ 3,780	\$ 22,678
	<b>Construction Estimate Totals:</b>	\$ 6,730	\$ 1,346		\$ 8,076		\$ 7,268	\$ 1,454	\$ 8,722			\$ 18,898	\$ 3,780	\$ 22,678
				100										
1	Lands and Damages	\$ -	\$ -	20%	\$ -	8.0%	\$ -	\$ -	\$ -	2068Q3	156.1%	\$ -	\$ -	\$ -
30	Planning, Engineering & Design													
1.3%	Project Management	\$ 87	\$ 17	20%	\$ 105	8.0%	\$ 94	\$ 19	\$ 113	2068Q3	156.1%	\$ 242	\$ 48	\$ 290
0.1%	Planning & Environmental Compliance	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2068Q3	166.5%	\$ 19	\$ 4	\$ 23
1.9%	Engineering & Design	\$ 128	\$ 26	20%	\$ 153	8.0%	\$ 138	\$ 28	\$ 166	2068Q3	166.5%	\$ 368	\$ 74	\$ 442
0.3%	Contracting & Reprographics	\$ 20	\$ 4	20%	\$ 24	8.0%	\$ 22	\$ 4	\$ 26	2068Q3	166.5%	\$ 58	\$ 12	\$ 70
3.3%	Life Cycle Updates (cost, schedule, risks)	\$ 222	\$ 44	20%	\$ 267	8.0%	\$ 240	\$ 48	\$ 288	2068Q3	166.5%	\$ 639	\$ 128	\$ 767
0.1%	Engineering During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2069Q2	160.0%	\$ 19	\$ 4	\$ 23
0.1%	Planning During Construction	\$ 7	\$ 1	20%	\$ 8	8.0%	\$ 7	\$ 1	\$ 9	2069Q2	160.0%	\$ 19	\$ 4	\$ 23
2.6%	Physical Monitoring	\$ 175	\$ 35	20%	\$ 210	8.0%	\$ 189	\$ 38	\$ 227	2070Q3	166.5%	\$ 504	\$ 101	\$ 604
2.7%	Environmental Monitoring	\$ 182	\$ 36	20%	\$ 218	8.0%	\$ 196	\$ 39	\$ 235	2070Q3	166.5%	\$ 523	\$ 105	\$ 628
31	Construction Management													
7.6%	Construction Management	\$ 511	\$ 102	20%	\$ 614	8.0%	\$ 552	\$ 110	\$ 663	2069Q2	160.0%	\$ 1,436	\$ 287	\$ 1,724
<b>Contract Cost Totals</b>		\$ 8,076	\$ 1,615		\$ 9,691		\$ 8,722	\$ 1,744	\$ 10,466			\$ 22,726	\$ 4,545	\$ 27,271

Estimated Federal Cost: 77.76% \$21,205.85  
 Estimated Non-Federal Cost: 22.24% \$6,065.05