

RHODE ISLAND COASTLINE COAST STORM RISK MANAGEMENT Draft Feasibility Study

Appendix E: Cost Engineering



**US Army Corps
of Engineers®**
New England District

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RHODE ISLAND COASTLINE COASTAL STORM RISK MANAGEMENT

Draft Feasibility Report Appendix E: Cost Engineering

TABLE OF CONTENTS

1. COST NARRATIVE	1
2. PROJECT DESCRIPTION	1
3. ALTERNATIVES	4
3.1. Initial Alternatives Screening	5
3.2. Second Screening Iteration	6
3.3. Third Screening Iteration	10
3.4. Final Array of Alternatives	10
3.5. Structural Analysis.....	11
3.6. Nonstructural Analysis	11
3.6.1. Nonstructural Measures	12
3.6.2. Baseline Structures	12
3.6.3. Community Groups	13
3.6.4. Nonstructural Plans	15
3.7. Critical Infrastructure	17
4. EVALUATION OF ALTERNATIVES	18
5. TENTATIVELY SELECTED PLAN (TSP)	19
5.1. Plan Refinement.....	19
5.2. Plan Components.....	19
6. BASIS OF COST ESTIMATE	21
7. SCHEDULE	23
8. CONTINGENCY DEVELOPMENT	23
8.1. Purpose	23
8.2. Risk Analysis Process	23
8.3. Methodology	23
8.3.1. Identify and Assess Risk Factors	25
8.3.2. Risk Register	25
8.3.3. Risk Analysis Results	26
9. PLANNING ENGINEERING AND DESIGN (PED)	27

10. CONSTRUCTION MANAGEMENT (S&A)	27
11. TOTAL PROJECT COST SUMMARY	27

LIST OF FIGURES

E1: Risk Level Matrix.....	24
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LIST OF TABLES

E1: Initial Array of Alternatives/Measures.....	5
E2: Initial array of alternatives after the second screening iteration.....	7
E3: Nonstructural Analysis, Number of Structures by Measure and Modal Area.....	13
E4: Structure types by community groups.....	14
E5: Critical Infrastructure.....	17
E6: Nonstructural Alternative Cost Summary (Project First Costs).....	19
E7: The Tentatively Selected Plan.....	20
E8: Tentatively Selected Plan Cost Summary (Project First Costs).....	21
E9: Structure-Type Quantity and Location Breakdown (100-year Floodplain).....	21
E10: Total Project Cost Summary.....	28

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1. COST NARRATIVE

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

- Engineer Technical Letter (ETL) 1110-2-573, Construction Cost Estimating Guide for Civil Works, 30 September 2008
- Engineer Regulation (ER) 1110-1-1300, Cost Engineering Policy and General Requirements, 26 March 1993
- ER 1110-2-1302, Civil Works Cost Engineering, 15 September 2008
- ER 1110-2-1150, Engineering and Design For Civil Works Projects, 31 August 1999
- ER 1105-2-100, Planning Guidance Notebook, 22 April 2000, as amended
- Engineer Manual (EM) 1110-2-1304 (Tables revised 30 March 2007), Civil Works Construction Cost Index System, 31 March 2013
- CECW-CP Memorandum For Distribution, Subject: Initiatives To Improve The Accuracy Of Total Project Costs In Civil Works Feasibility Studies Requiring Congressional Authorization, 19 Sep 2007
- CECW-CE Memorandum For Distribution, Subject: Application of Cost Risk Analysis Methods To Develop Contingencies For Civil Works Total Project Costs, 3 Jul 2007
- Cost and Schedule Risk Analysis Guidance, 17 May 2009

The goals of cost engineering for the Rhode Island Coastline Coastal Storm Risk Management General Investigation are to present a Total Project Cost (construction and non-construction costs) for the Tentatively Selected Plan (TSP) at the current price level to be used for project justification/authorization and to project costs forward in time for budgeting purposes. In addition, the costing efforts are intended to produce a final product, or cost estimate, that is reliable and accurate and that supports the definition of the Government's and the non-Federal sponsor's obligations.

2. PROJECT DESCRIPTION

The study area is located along the coastline of southern Rhode Island extending approximately 23 miles from Point Judith in Narragansett to West Beach in Westport Point including Block Island as well as inland to Providence Harbor (as shown in Figure E1). There are currently more than 650,000 people residing in the 19 towns included in the study area. Approximately 75 percent of the state population resides in a 40-mile long urban/suburban corridor along the shores of Narragansett Bay. Structures in the area consist of a mix of single-family homes, apartment buildings, and commercial buildings. A considerable portion of these buildings have basements and are over 50

years old. Over 12,000 structures in the study area are designated as FEMA special flood hazard area zones VE, which means that they are inundated at 1% AEP with additional hazards associated with storm-induced waves, and AE (inundation at 1% AEP using methods with Base Flood Elevations).

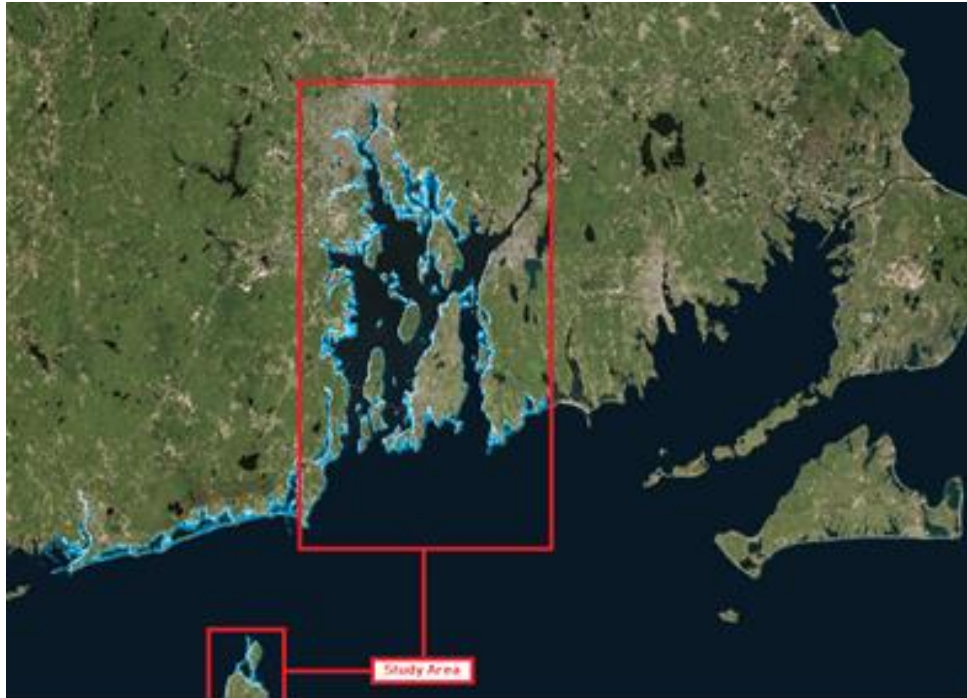


Figure E1: Study Area

Rhode Island is located in New England, south of Massachusetts and east of Connecticut. The State lies along the western shoreline of the Atlantic Ocean and is characterized by low topographic relief. Providence is the largest city located at the northern point of Narragansett Bay, followed by Cranston and Warwick. Rhode Island is bordered by Massachusetts to the north, Long Island Sound to the south, and Connecticut to the west. Following the horseshoe shape of the Rhode Island coastline from a southwest point up to the northern-most point, then southeast back down, includes the following main geographical features. Starting with Long Island Sound and moving up the coast, Narrow River runs just a few hundred feet inland parallel to Narragansett Bay. Along the way north up to Providence Harbor there are numerous coves and harbors such as Wickford Harbor and Allen Harbor. The Potowomut River meets the Narragansett Bay and runs inland towards East Greenwich. Moving slightly north again to Greenwich Bay, just south of Warwick. Narragansett Bay reaches its most northern point meeting the Providence River just south of Barrington. The Providence River then breaks off into the Pawtuxet River running west towards Cranston. The Providence River finally meets up with Providence Harbor before splitting into the Woonasquatucket River, Moshassuck River, and Seekonk Rivers. Moving south down the eastern coast of the Narragansett Bay we reach the Warren River which flows north into Barrington and Warren. Moving further south we reach

Bristol Harbor then Mt. Hope Bay, just north of Tiverton and Portsmouth. Then finally Easton Bay that splits out into the Long Island Sound.

Focus areas for the study were identified based on elevation data, structure density, and discussions with town and state officials regarding high damage-prone areas and history of coastal storm damages. A key component of choosing the study focus areas was USACE's ability to construct projects to alleviate coastal storm damage risk while contributing to the NED objective. Eleven focus areas within the regional study area were originally identified and are shown in **Figure E2** below and defined as follows:

- Area 1, furthest inland is the Providence Harbor Waterfront (Fields Point/Prov Port) area. This area is primarily industrial; containing important supplies for State infrastructure.
- Area 2, furthest east along the coast is the Newport Reservoirs and Newport Downtown area. This area contains a very densely populated community with a large mix of residential and commercial structures as well as being a large tourist destination.
- Area 3, in the northern part of the study area there is Barrington/Warren/Bristol Rhode Island (Structures and Rte 114). This area contains one of the only exit roads to the mainland for the areas of Jamestown, Newport, Middletown and Portsmouth.
- Area 4, The Newport Bridge Approach (Jamestown). This bridge connects the island of Jamestown to both Newport and North Kingstown.
- Area 5, The Narrow River (Narragansett) runs behind a peninsula in Narragansett that contains residential structures. This river also opens into Long Island Sound.
- Area 6, Warwick Neck is a plot of land that extends into Narragansett Bay while also being surrounded by Warwick cove.
- Area 7, Wickford Village (North Kingstown) is a densely populated area containing shops and residential homes. This area is very close to Wickford Cove.
- Area 8, Island Park/Common Fence Point (Portsmouth) is a very water forward area. There are residential structures.
- Area 9, Corn Neck Road (Block Island) is a main road. Runs from the northern tip of the island to about the midway point along the eastern coast.

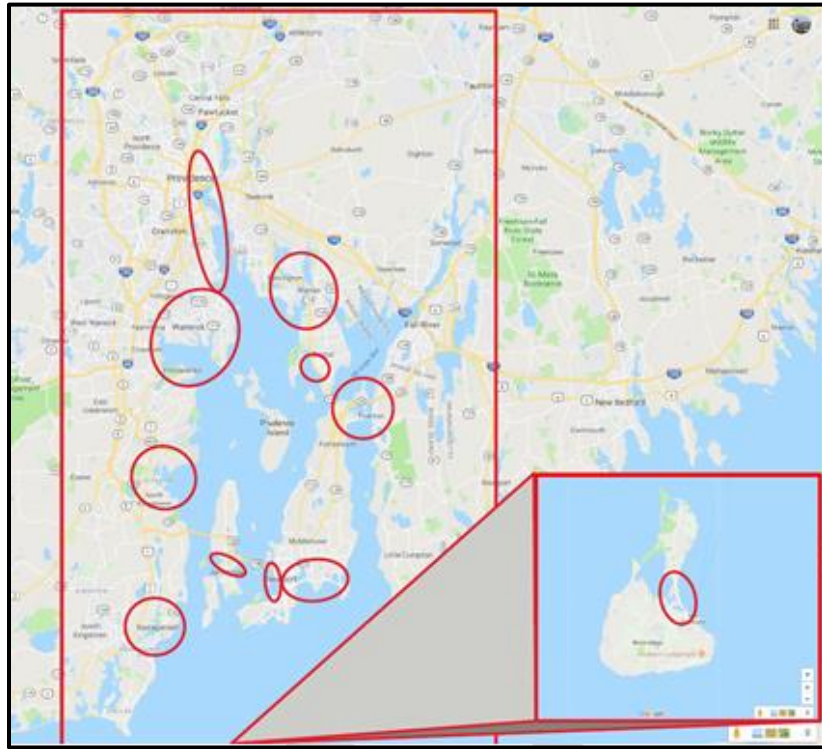


Figure E2: Focused Study Areas

The study is authorized by the following: a resolution adopted by the Senate Public Works Committee dated 12 September 1969, resolution adopted by the Senate Committee on Environment and Public Works dated August 2, 1995 and by Public Law (PL) 84-71. The purpose of the study is to identify which areas within the overall study area are most vulnerable to coastal storm risk and then investigate a combination of structural and non-structural measures and alternatives that if implemented might significantly reduce storm induced damages in those areas.

3. ALTERNATIVES

The Feasibility Study plan formulation considered a range of structural and nonstructural measures to reduce the risk of storm damage in the study areas. Coastal storm risk management measures were developed to address problems and to capitalize upon opportunities described in the main report. They were derived from a variety of sources including prior studies, the public scoping process, and the Project Delivery Team (PDT). The following management measures were considered:

- No Action
- Nonstructural
 - Elevate Structures
 - Wet Floodproofing
 - Dry Floodproofing
 - Buy-out/Acquisition
 - Relocation
 - Land Use Development Regulations
 - Emergency Response Plan
- Structural

- Storm Surge Barriers
- Beach Nourishment
- Breakwaters/Groins
- Shoreline Stabilization
- Road Raisings
- Levees/Floodwalls/Seawalls
- Tide Gates
- NNBF
 - Living Shorelines
 - Reefs

Through an iterative planning process, potential coastal storm risk management measures were identified, evaluated, and compared. Net benefits and benefit-to-cost ratios (BCRs) were reviewed to determine the viability of each alternative based on an economic justification.

3.1. Initial Alternatives Screening

Due to the size and complexity of the assessment, initial and secondary screenings were conducted toward the beginning of the study to rule out unsuitable measures that clearly would not contribute to NED objectives. The initial screening was strictly qualitative. The second screening, while mostly qualitative, did include development of rough costs and benefits for the measures that were brought forward from the initial screening. NACCS parametric costs were used to develop project costs and NSI structure data was used to develop rough BCRs. The Average Annual Benefits (AAB) was calculated using the, then current, Federal project evaluation discount rate for fiscal year 2020 of 2.75 percent, a price level of FY2020, and a period of analysis of 50 years. **Table E1** summarizes the estimated Average Annual Cost (AAC) and AAB for considered measures.

Table E1: Initial Array of Alternatives/Measures

Initial Array of Measures			
ID #	Description	Location	Management Measure
NAA	No Action	Entire Study Area	N/A
NS	Nonstructural	Entire Study Area	Structure Raising/Floodproofing
R3	3-Segment Narragansett Bay Barrier	Entire Study Area	Storm Surge Barrier
R4	2-Segment Narragansett Bay Barrier	Entire Study Area	Storm Surge Barrier
J1	No Action	Jamestown	N/A
J2	Newport Bridge Approach Protection	Jamestown	Levee/Floodwall
ND1	No Action	Newport Downtown	N/A
ND2	Nonstructural	Newport Downtown	Structure Raising/Floodproofing
ND3	Point Area Perimeter	Newport Downtown	Point Area Floodwall
ND4	Wellington Perimeter	Newport Downtown	Wellington Area Floodwall/Levee
NR1	No Action	Newport Reservoirs	N/A
NR2	Easton Pond Perimeter Only	Newport Reservoirs	Easton Pond Perimeter Levee

Initial Array of Measures			
ID #	Description	Location	Management Measure
NR3	Memorial Boulevard Barrier Only	Newport Reservoirs	Memorial Boulevard Barrier Levee
NR4	Gardner Pond Barrier only	Newport Reservoirs	Gardner Pond Perimeter Levee
NR5	Sachuest Road	Newport Reservoirs	Sachuest Road Floodwall/Dune
BI1	No Action	Block Island	No Action
BI2	Corn Neck Road Raising	Block Island	Elevation of Corn Neck Road
BI3	Corn Neck Road Beach Nourishment	Block Island	Beach Nourishment
BI4	Corn Neck Road Stabilization (Hard)	Block Island	Rock Revetment
BI5	Corn Neck Road Stabilization (NNBF)	Block Island	Sill/Reef-based Living Shoreline
BI6	Corn Neck Road Stabilization & NNBF	Block Island	Combination of Revetment & NNBF
PO1	No Action	Portsmouth	N/A
PO2	Nonstructural	Portsmouth	Structure Raising/Floodproofing
PO3	Common Fence Perimeter	Portsmouth	Floodwall/Levee
PO4	Island Park Perimeter	Portsmouth	Floodwall/Levee
BW1	No Action	Barrington/Warren	N/A
BW2	Nonstructural	Barrington/Warren	Structure Raising/Floodproofing
BW3	Warren River Surge Barrier (Upper)	Barrington/Warren	Surge Barrier
BW4	Warren River Surge Barrier (Lower)	Barrington/Warren	Surge Barrier
BW5	Mathewson Road Protection	Barrington/Warren	Rock Revetment
BW6	Belchers Cove Perimeter	Barrington/Warren	Belchers Cove Levee/Floodwall
BW7	Route 114 Floodproofing	Barrington/Warren	Route 114 Levee/Floodwall
BR1	No Action	Bristol	N/A
BR2	Nonstructural	Bristol	Structure Raising/Floodproofing
BR3	Bike Path Levee	Bristol	Raise Existing Bike Path
PR1	No Action	Providence	N/A
PR2	Nonstructural	Providence	Structure Raising/Floodproofing
PR3	Providence Harbor Bulkhead	Providence	Bulkhead
PR4	Fields Point Levee/Bulkhead	Providence	Levee/Floodwall
WA1	No Action	Warwick	N/A
WA2	Nonstructural	Warwick	Structure Raising/Floodproofing
WA3	West Shore Road Barrier	Warwick	Bulkhead/Floodwall/Levee
NA1	No Action	Narragansett	N/A
NA2	Nonstructural	Narragansett	Structure Raising/Floodproofing
NA3	Pier Area Protection	Narragansett	Floodwall/Levee/Revetment
NA4	Middle Bridge Protection	Narragansett	Middle Bridge Barrier

3.2. Second Screening Iteration

The second screening iteration involved a quantitative analysis. During this screening iteration, measures were combined into a basic initial array of alternatives. Rough costs and benefits were developed for the measures that were brought forward from the initial screening. NACCS parametric costs were used to develop project costs and National Structure Inventory structure data was used to develop rough Benefit/Cost Ratios

Table E2: Initial array of alternatives after the second screening iteration

Alternative		Location	Measures	Project Cost (\$)	Annual Cost (\$)	Annual Damage Reduced (\$)	BCR	Carried Forward?
NAA	No Action	Entire Study Area	N/A	N/A	N/A	N/A	N/A	YES
NS	Non-Structural	Entire Study Area	Structure Raising/Floodproofing	848,200,000	32,189,190	111,498,877	3.46	YES
R3	3-Segment Narragansett Bay Barrier	Entire Study Area	Storm Surge Barrier	23,175,000,000	879,491,250	200,697,978	0.23	NO
R4	2-Segment Narragansett Bay Barrier	Entire Study Area	Storm Surge Barrier	55,575,000,000	2,109,071,250	200,697,977	0.10	NO
J1	No Action	Jamestown	N/A	N/A	N/A	N/A	N/A	YES
J2	Newport Bridge-Approach Protection	Jamestown	Levee/Floodwall	33,120,000	1,256,904			YES
ND1	No Action	Newport Downtown	N/A	N/A	N/A	N/A	N/A	YES
ND2	Non-Structural	Newport Downtown	Structure Raising/Floodproofing	75,200,000	2,853,840	4,288,786	1.50	YES
ND3	Point Area Perimeter Only	Newport Downtown	Point Area Floodwall	28,885,000	1,096,186	2,143,367	1.96	YES
ND4	Wellington Perimeter Only	Newport Downtown	Wellington Area Floodwall/Levee	11,289,411	428,433	565,108	1.32	YES
ND5	Point and Wellington Area Perimeter Protection	Newport Downtown	Combination	40,174,411	1,524,619	2,708,475	1.78	YES
NR1	No Action	Newport Reservoirs	N/A	N/A	N/A	N/A	N/A	NO
NR2	Easton Pond Perimeter Only	Newport Reservoirs ¹	Easton Pond Perimeter Levee	28,800,000	1,092,960	N/A	N/A	NO
NR3	Memorial Blvd Barrier Only	Newport Reservoirs ¹	Memorial Blvd Floodwall	19,240,000	730,158	N/A	N/A	NO
NR4	Gardner Pond Barrier Only	Newport Reservoirs ¹	Gardner Pond Perimeter Levee	13,440,000	510,048	N/A	N/A	NO
NR5	Sachuest Rd Barrier Only	Newport Reservoirs ¹	Sachuest Rd Floodwall/Dune	25,875,000	981,956	N/A	N/A	NO
NR6	Easton Pond and Gardner Pond Barrier	Newport Reservoirs ¹	Combination	42,240,000	1,603,008	N/A	N/A	NO
NR7	Memorial Blvd and Gardner Pond Barrier	Newport Reservoirs ¹	Combination	32,680,000	1,240,206	N/A	N/A	NO
NR8	Easton Pond and Sachuest Rd Barrier	Newport Reservoirs ¹	Combination	54,675,000	2,074,916	N/A	N/A	NO
NR9	Memorial Blvd and Sachuest Rd Barrier	Newport Reservoirs ¹	Combination	45,115,000	1,712,114	N/A	N/A	NO

Alternative		Location	Measures	Project Cost (\$)	Annual Cost (\$)	Annual Damage Reduced (\$)	BCR	Carried Forward?
BI1	No Action	Block Island	No Action	N/A	N/A	N/A	N/A	YES
BI2	Corn Neck Road Raising	Block Island	Elevate Corn Neck Road	25,875,000	981,956			YES
BI3	Corn Neck Road Beach Nourishment	Block Island	Beach Nourishment	28,800,000	1,092,960			YES
BI4	Corn Neck Road Stabilization (Hard)	Block Island	Rock Revetment	3,000,000	113,850			YES
BI5	Corn Neck Road Stabilization (NNBF)	Block Island	Sill/Reef-based Living Shoreline ²	2,700,000	102,465	N/A	N/A	NO
BI6	Corn Neck Road Stabilization and (NNBF)	Block Island	Combination ²	5,700,000	216,315	N/A	N/A	NO
PO1	No Action	Portsmouth	N/A	N/A	N/A	N/A	N/A	YES
PO2	Non-Structural	Portsmouth	Structure Raising/Floodproofing	34,600,000	1,313,070	395,724	0.30	YES
PO3	Common Fence Perimeter	Portsmouth	Floodwall/Levee	79,005,000	2,998,240	207,580	0.07	NO
PO4	Island Park Perimeter	Portsmouth	Floodwall/Levee	70,380,000	2,670,921	476,897	0.18	NO
PO5	Common Fence and Island Park Barrier	Portsmouth	Combination	149,385,000	5,669,161	684,477	0.12	NO
BW1	No Action	Barrington/Warren	N/A	N/A	N/A	N/A	N/A	YES
BW2	Non-Structural	Barrington/Warren	Structure Raising/Floodproofing	207,400,000	7,870,830	7,666,354	0.97	YES
BW3	Warren River Surge Barrier (upper)	Barrington/Warren	Surge Barrier	9,600,000	364,320	12,156,303	33.37	YES
BW4	Warren River Surge Barrier (lower)	Barrington/Warren	Surge Barrier	1,128,200,000	42,815,190	13,507,004	0.32	YES
BW5	Mathewson Road Protection	Barrington/Warren	Rock Revetment	3,900,000	148,005	110,892	0.75	NO
BW6	Belchers Cove Perimeter	Barrington/Warren	Belchers Cove Levee/Floodwall	31,050,000	1,178,348	3,500,953	2.97	YES
BW7	Route 114 Floodproofing	Barrington/Warren	Route 114 Levee/Floodwall	67,333,333	2,555,300			YES
BW8	Belchers Cove and Route 114 Protection	Barrington/Warren	Combination	98,383,333	3,733,648			YES
BR1	No Action	Bristol	N/A	N/A	N/A	N/A	N/A	YES
BR2	Non-Structural	Bristol	Structure Raising/Floodproofing	14,200,000	538,890	556,846	1.03	YES
BR3	Bike Path Levee	Bristol	Raise Existing Bike Path	8,320,000	315,744	501,161	1.59	YES

Alternative		Location	Measures	Project Cost (\$)	Annual Cost (\$)	Annual Damage Reduced (\$)	BCR	Carried Forward?
PR1	No Action	Providence	N/A	N/A	N/A	N/A	N/A	YES
PR2	Non-Structural	Providence	Structure Raising/Floodproofing	10,600,000	402,270	517,004	1.29	YES
PR3	Providence Harbor Bulkhead	Providence	Bulkhead	46,080,000	1,748,736	568,704	0.33	YES
PR4	Fields Point Levee/Bulkhead	Providence	Levee/Bulkhead	43,750,000	1,660,313	568,704	0.34	NO
PR5	Providence Harbor/Fields Point Combo	Providence	Combination	90,080,000	3,418,536	930,606	0.27	NO
WA1	No Action	Warwick	N/A	N/A	N/A	N/A	N/A	YES
WA2	Non-Structural	Warwick	Structure Raising/Floodproofing	101,200,000	3,840,540	2,060,341	0.54	YES
WA3	West Shore Road Barrier	Warwick	Levee/Floodwall	42,780,000	1,623,501	80,177	0.05	NO
NK1	No Action	North Kingstown	N/A	N/A	N/A	N/A	N/A	YES
NK2	Non-Structural	North Kingstown	Structure Raising/Floodproofing	50,400,000	1,912,680	2,130,424	1.11	YES
NK3	Wickford Village Perimeter	North Kingstown	Bulkhead/Floodwall/Levee	49,920,000	1,894,464	2,789,058	1.47	YES
NA1	No Action	Narragansett	N/A	N/A	N/A	N/A	N/A	YES
NA2	Non-Structural	Narragansett	Structure Raising/Floodproofing	39,400,000	1,495,230	2,015,123	1.35	YES
NA3	Pier Area Protection	Narragansett	Floodwall/Levee/Revetment	27,440,000	1,041,348	80,790	0.08	NO
NA4	Middle Bridge Protection	Narragansett	Middle Bridge Surge Barrier	5,520,000	209,484	3,022,684	14.43	YES
NA5	Pier Area and Middle Bridge	Narragansett	Combination	32,957,200	1,250,726	3,103,474	2.48	NO

1 – All Newport Reservoirs alternatives were removed from consideration due to disinterest from Reservoir managers.

2 – NNBF were eliminated because they were determined not to be effective at decreasing storm surge

Row Legend

White – Alternatives with BCRs greater than 1.0 and were kept for further analysis

Light Gray – Alternatives that didn't have enough information to develop an accurate BCE and were carried forward to the next screening.

Dark Gray – Alternatives removed from consideration because their BCR was lower than 1.0.

(BCRs). Alternatives fell into three categories. The first group were alternatives were removed from consideration, because they had a BCR significantly lower than 1.0. The next group of alternatives had BCRs greater than 1.0 and were carried forward to the next round of screenings. For the remaining alternatives, the Project Development Team (PDT) did not have enough information to develop accurate BCRs at that point in the study. These alternatives were also carried forward into the next screening iteration.

There were a number of alternatives that were removed from consideration during this iteration without the development of a BCR. All alternatives that involving the Newport Reservoirs were removed from consideration. The facility staff indicated that they did not want to participate in the project and declined to provide data necessary to complete the analysis. NNBFs were also removed from consideration. In compliance with WRDA of 2016, Section 1184(b), the PDT considered two (2) NNBFs (living shorelines and reefs) as management measures for the RIC study. The main coastal hazard within the RIC study area is storm surge. Both reefs and living shorelines are more effective at dissipating wave energy, and less effective at decreasing storm surge. While living shorelines such as marshes have been shown to decrease storm surge in some settings, they require large areas on the order of miles, to be effective. No opportunities for such a large-scale project were located within the study area.

3.3. Third Screening Iteration

Following this second screening, a third screening iteration was completed on all alternatives carried through from the previous screening iterations and the No Action Alternative were evaluated against the P&G criteria of completeness, effectiveness, efficiency, and acceptability. Additionally, the PDT took a more in-depth look at the remaining alternatives, again considering constructability, design, environmental impacts. The results of this screening resulted in the final array of alternatives which were carried forward for evaluation.

3.4. Final Array of Alternatives

The following alternatives were included in the final array of alternatives:

No Action Alternative: Under this Alternative, no Federal action would be taken to reduce flooding risk to the properties within the study areas. Implementation of the No Action Alternative (NAA) would result in the Future without project condition. Although the NAA provides no flood risk management, is required to be included in the study by USACE regulations. The NAA serves as a baseline against which the proposed alternatives can be evaluated. Evaluation of the NAA involves assessing the economic and environmental effects that would result over the period of analysis if the proposed action did not take place.

Nonstructural Alternatives – Four nonstructural alternatives were developed that include elevation, floodproofing, and/or acquisition of structures throughout the entire study area.

Barrington/Warren – Lower Surge Barrier: This alternative is a surge barrier that includes 1,000 LF in-water structure and a 2,000 LF approach levee. The structure would start near Bourne Lane in Barrington, then it would cross Warren River and ending near Burrs Hill Park.

Barrington/Warren - Upper Warren Surge Barrier: This alternative is a surge barrier that consists of two (2) in-water structures and 5,800 LF of land-based levees/floodwalls. The structure would start at Bike Path/Shaws in Barrington, then run along Bike Path Bridges. The alternative would end in Warren near Tourister Mill building.

Narragansett – Middle Bridge Barrier: This alternative is a closure structure across Narrow River at Middle Bridge that includes 500 LF in-water structure and 2,000 LF approach levee.

Newport - Wellington Levee/Floodwall: This alternative consists of a 2,100 LF of Levee/Floodwall along Wellington Ave. High ground tie-ins at Wellington Ave and Columbus Ave.

Providence – The Port of Providence: The Port of Providence is New England's second biggest deep-water port. The port includes 4,200 feet of berthing space, 115 acres, 20 acres of open laydown area and 40 feet alongside water depth. The primary exports are scrap metals, automobiles and project equipment and materials. This port is part of an intermodal transportation system in Rhode Island that includes two major highways that are less than one (1) mile away from the port, railway capable of supporting double stack service and the deep-water port itself.

Early in the planning process, it was determined that the port area is an extremely complicated system with diverse facilities and stakeholders. Many challenges were discovered which led to the recommendation of this study that Prov Port should be the subject of its own study.

3.5. Structural Analysis

Structural measures analyzed include the following: Barrington/Warren – Lower Surge Barrier, Barrington/Warren - Upper Warren Surge Barrier, Narragansett – Middle Bridge Barrier, and Newport - Wellington Levee/Floodwall. Each of these measures was evaluated for protection consistent with a 100-yr storm event.

3.6. Nonstructural Analysis

Nonstructural measures are permanent or contingent measures applied to a structure and its contents that prevent or provide resistance to damage from flooding. Existing structures within the study area were identified and considered for either acquisition, floodproofing or elevation. Nonstructural measures differ from structural measures in that they reduce the consequences of flooding instead of reducing the probability of flooding.

Participation in elevation and floodproofing is voluntary, an outreach plan will be collaboratively developed with the NFS to ensure that all eligible owners are notified and have an opportunity to participate. For modeling and plan formulation purposes, the nonstructural economic analysis assumes full participation. However, a sensitivity analysis using varying participation rates will be conducted to ensure that the net benefit will be greater than zero and the BCR will be higher than unity for the Recommended Plan with less than full participation. Participation in acquisitions are mandatory in accordance with Planning Bulletin 2019-03.

3.6.1. Nonstructural Measures

Elevation was considered for single family residences. The elevation design height was determined separately for each structure based on the 1% AEP NACCS water level + wave contribution + 1 ft + sea level change (intermediate through 2080). Costs for elevation were estimated based on structure type and foundation heights, height of raising, as well as square footage.

Floodproofing was considered for non-residential structures and large multi-family structures not in a designated VE Zone and without a basement. For floodproofing, a 3 feet height was assumed for all measures. However, this assumes a watertight barrier of 3 feet around the structure. It should be noted that, where applicable, additional measures, such as closures for windows and doors, may be appropriate and may provide a higher-level protection than evaluated in this analysis. Costs for floodproofing were estimated based on various ranges of structure square footage.

Acquisition was considered for single family residences expected to be inundated at MHHW plus 1.5ft (King tide) using the intermediate SLC or have access roads which would be cutoff from utility access at this flood level. Cost of acquisition were developed based on available city tax assessment data adjusted as necessary and included various cost components. More details on the methodology used to develop acquisition costs can be found in the real estate appendix.

3.6.2. Baseline Structures

The selection of structures for nonstructural measures is an iterative process. Nonstructural investigation included the entire study area and were not limited to the eleven problem areas. The structures were initially considered if located within the 100-year floodplain and aggregated into an initial inventory of approximately 12,000 buildings.

Since ground elevation was used to determine the initial inventory, FFE was examined to determine if it is estimated to be 1 foot or greater below a water level threshold. This threshold was calculated as the 1% or 0.5% AEP water level estimated for 2084 plus additional wave action according to the FEMA Special Flood Hazard Area. Structures in Zone VE or with a basement were also screened from consideration of floodproofing.

Lastly, a screening was applied by determining whether the future without project damages to was large enough to support the calculated cost of the nonstructural measure using a threshold of \$125,000. This value was a considered a very

conservative estimate since it was based on half of the lowest cost estimated for floodproofing. It should be noted that structures that fell into this category were brought back into consideration if determined to be located in socially vulnerable areas.

This aggregation resulted in a Baseline Inventory of 1033 structures, 757 that are single family residential and 276 which are non-residential. Non-residential structures include commercial properties and multi-family housing, such as apartment buildings. The number of structures evaluated for elevations and floodproofing in each model area can be seen in **Table E3**.

Table E3: Nonstructural Analysis, Number of Structures by Measure and Modal Area

Modal Area	Elevation	Floodproofing	Total
MA_BI1	1	0	1
MA_BI2	2	10	12
MA_BRI1	56	9	65
MA_CRA1	11	9	20
MA_GB1	63	25	88
MA_LC1	3	2	5
MA_MTHB1	42	1	43
MA_NAR1	76	5	81
MA_NPT1	55	47	102
MA_NPT2	39	3	42
MA_PVD1	0	41	41
MA_SAKM1	11	0	11
MA_SAKN1	79	1	80
MA_WAR1	161	66	227
MA_WICK1	158	57	215
Grand Total	757	276	1033

3.6.3. Community Groups

Structures included in the baseline inventory were divided into approximately 30 community groups using the following three criteria:

Town Boundaries - All but two (2) community groups were located within a single town and did not cross town boundaries. Town boundaries were considered important

because structures within the same town share the same infrastructure and town governments.

Modeling Areas - Areas with similar water levels during storm events were developed for modeling purposes. Water levels can vary greatly depending on where location within the study area for a particular storm event, so it was necessary to delineate them by areas of similar water levels. Each community group fell within a single modeling group.

Structure Groups - Community groups were made up of structures that are located on proximity to other structures. Community groups consisted of anywhere from five (5) to 153 structures, both residential and non-residential. 74 structures were not located near any other structures, so were not part of any community group. These were identified as outliers and were removed from consideration.

The number of structures included in each community group and locality can be seen the following table.

Table E4: Structure types by community groups

Community Group Name	Town	Residential	Non-Residential
Barrington	Barrington	66	11
Block Island	Block Island	2	10
Bristol Downtown	Bristol	14	8
Common Fence Point	Portsmouth	25	0
Cranston Mall	Cranston	0	5
Downtown Warwick	Warwick	5	12
East Greenwich	East Greenwich	0	10
Fort Ave	Cranston	9	3
Island Park	Portsmouth	50	0
Laurel Park	Warren/Bristol	37	0
Little Tree Point	North Kingston	24	0
Nannaquaket Pond	Tiverton	13	1
Narragansett	Narragansett	26	3
Newport Downtown	Newport	85	38
Newport North	Newport	3	8
Oakland Beach	Warwick	28	2
Potowomut	Warwick	5	0
Port of Providence 1	Providence	0	35
Quonset Airport	North Kingston	0	9
Sakonnet	Little Compton	3	2
Sakonnet North	Tiverton	8	0
Sakonnet South	Tiverton	10	0
Shawomet	Warwick	21	3
Shore Acres	North Kingston	7	0
South Kingston	South Kingston	38	0

Community Group Name	Town	Residential	Non-Residential
The Hummocks	Portsmouth	7	0
Tiverton/Little Compton	Tiverton/Little Compton	9	0
Warren	Warren	64	49
Warwick Neck	Warwick	29	0
West Passage	North Kingston	9	0
Wickford	North Kingston	113	40
Outliers		47	27

3.6.4. Nonstructural Plans

Three nonstructural plans were developed for this analysis, Plans NS-A, NS-B, and NS-C.

Plan NS-A - For the first plan costs and benefits for elevations for residential properties and floodproofing for non-residential floodproofing were developed for each community group. Twelve community groups had a BCR >1.0, while the remaining community groups had a BCR <1.0. Three community groups had a BCR of 0.9. At this point, there is a large amount of uncertainty in this initial economic analysis due to large contingency and the preliminary in nature of the cost analysis. For that reason, the three (3) community groups with a BCR of 0.9 were included with the 12 groups that have a BCR above 1.0 to create the NED Plan. Additional cost analysis will be completed after the TSP milestone meeting to reduce the uncertainty. Currently this plan includes 494 total structures – 313 residential recommended for elevation and 181 non-residential recommended for floodproofing.

Plan NS-B – Vulnerable Communities - Plan NS-B addresses socially vulnerable populations within the project area. The CDC Social Vulnerability Index (SVI). The CDC defines social vulnerability as “the potential negative effects on communities caused by external stresses on human health. Such stresses include natural or human-caused disasters, or disease outbreaks. Reducing social vulnerability can decrease both human suffering and economic loss.” The index uses U.S. Census data to determine the social vulnerability of every census tract. The CDC SVI ranks each tract on 15 social factors, including poverty, lack of vehicle access, and crowded housing, and groups them into four related themes. These themes include Socioeconomic status, Household Composition, Race/Ethnicity/Language and Housing and transportation. A numerical ranking is assigned to each tract for each of the four (4) themes, in addition to an overall ranking. For the RI Coastline Study, the overall ranking was used to identify socially vulnerable communities.

Plan NS-A was used as the baseline for Plan NS-B. The first part of the social vulnerability analysis involved the community groups that were developed from the Baseline Inventory. Four (4) community group are located in vulnerable communities. Two (2) communities (Quonset Airport & Fort Ave) had a BCR >1.0 so were already included in Plan NS-A. The two (2) other communities (Oakland Beach & Port of Providence 1) were not included in the Plan NS-A because their BCR is <1.0. Oakland

Beach and Port of Providence 1 were included in the Plan NS-B, adding 28 residential properties and 37 non-residential properties into the plan.

The second step in the creation of Plan NS-B involved the Initial Inventory. The PDT reevaluate the approximately 12,000 structures included in the Initial Inventory to identify structures in vulnerable communities that weren't included in the Baseline Inventory. Only areas identified by the CDC SVI over .75 were evaluated. 51 additional structures, not included in the community groups, were found. These properties were divided into three (3) additional community groups (Port of Providence 2, Newport NE & Quonset Airport 2) and added into the plan.

Plan NS-B includes 348 residential properties that will be recommended for elevations and 262 non-residential properties that will be recommended for floodproofing.

Plan NS-C – Flooded and Isolated Structures - Plan NS-C considered Health and Safety of the residents living within the study area by assessing structures that would be cut off from essential services and utilities due to future flooding caused by SLR and storm flooding. This was done by modeling inundation levels at Mean Higher High Water plus 1.5ft (King tide) using the USACE intermediate SLC model. Residential structures that were predicted to be inundated at this future flood level were recommended for acquisition, instead of elevations. Additionally, there are residential properties that would be cut off from essential services and utilities because all access (i.e., roads and bridges) would be inundated at this future flood level. The structures on these properties were also included for buy-outs. This element of Plan NS-C's rationale was that private properties experiencing consistent flooding would no longer be safe to inhabit because they would be cut off from essential services and utilities. Therefore, moving the buildings out of the floodplain, instead of elevating them, would reduce repetitive flooding, promote safety and increase community resiliency. The final element of Plan NS-C addressed non-residential structures. All non-residential structures that would be inundated at this future flood level would not be included in the plan. Because these properties would regularly experience flooding (at every King Tide), floodproofing measures would be insufficient to stop property damage. The state and property owners would have to consider other measures to address these properties.

This plan was developed using the community groups formulated in Plan NS-A. An economic analysis as completed, which included three (3) elements:

1. Acquisitions for residential properties that would be consistently flooded at the future flood level (i.e., Mean Higher High Water plus 1.5ft using the USACE intermediate SLC model),
2. Elevations for residential properties that would be flooded at the future flood level,
3. Floodproofing for non-residential properties that would not be consistently flooded at the future flood level.

Because the cost of acquisition is so much higher than the cost of elevations, only seven (7) community groups had a BCR less than 0.9. Twenty-five had a BCR less than 0.9, so were not included in the plan. As a result, Plan NS-C is a much smaller plan. Plan NS-C includes 21 elevations, five (5) acquisitions and 41 floodproofings.

3.7. Critical Infrastructure

Flood risk management measures for critical infrastructure was analyzed as part of this study. A list of facilities, initially developed from the Rhode Island Emergency Management Office, the Department of the Interior, as well as various Rhode Island localities, were preliminarily identified as critical infrastructure. This included airports, communication sites, electrical substations, emergency facilities (EMS and fire stations, hospitals, police stations), HazMat facilities (e.g., wastewater treatment plants), nursing homes, and schools. There were a total of 75 facilities preliminarily identified as critical within the designated 100-year floodplain. The list was refined down to approximately 51 structures and/or sites to be considered for flood risk management measures. The formulation strategy was to provide flood risk management measures for critical infrastructure as part of the nonstructural component of the alternative plan selected for recommendation, regardless of whether or not the critical infrastructure is located in a community group that is otherwise economically justified. As such, critical infrastructure could be incorporated throughout the study area, including those areas where no other nonstructural action is recommended.

Preliminary costs and benefits for providing flood risk management for critical infrastructure was developed for those facilities identified to have associated buildings that could potentially be protected by dry floodproofing. Of the refined list off 51 discussed previously, there were 43 critical infrastructure sites that had identified buildings on the premises. Due to the individualized characteristics associated with critical infrastructure, further investigation on both the costs and benefits is necessary prior to making a decision regarding inclusion in the recommended plan for this study. A summary of the number and types of critical infrastructure considered in the analysis can be seen in the following table.

Table E5: Critical Infrastructure

Critical Infrastructure Type	No. of Sites	No. of Buildings
Airport	1	0
Electrical Power Station	4	3
Energy Production	1	0
Fire/Police	5	5
FP – Chemical/Single Building	2	2
Nursing Home	4	4
School	9	9
Sewer	22	18
Structural – WWTF	1	0
Tank Farm	2	2
Total	51	43

4. EVALUATION OF ALTERNATIVES

The final array of alternatives carried forward for evaluation included the No Action Alternative (NAA), four (4) nonstructural alternatives (NS) (A, B, and C), a surge barrier in the lower portion of the Warren River (BW4), a surge barrier in the upper portion of the Warren River (BW3), a surge barrier at Middle Bridge (NA4), and a floodwall and levee system at Wellington (ND3). **Table E6** summarizes the structural alternative costs (assumed Program Year 2023) while **Table E7** summarizes the nonstructural alternative costs (assumed Program Year 2021).

Table E6: Structural Alternative Cost Summary (Project First Costs)¹

	Lower Warren River Barrier (BW4)	Upper Warren River Barrier (BW3)	Middle Bridge Barrier (NA4)	Wellington Floodwall & Levee (ND3)
Initial Construction	\$496,628,000	\$542,182,000	\$99,260,000	\$32,683,000
Maintenance	\$69,419,000	\$119,003,000	\$5,950,000	\$0
Lands and Damages	\$0	\$0	\$0	\$0
PED	\$35,880,000	\$45,771,000	\$5,961,000	\$3,440,000
S&A	\$13,979,000	\$13,979,000	\$8,414,000	\$1,310,000
Mitigation	\$72,099,000	\$68,336,000	\$30,800,000	\$0
Total	\$688,005,000	\$789,271,000	\$150,385,000	\$37,433,000

1 - Project First Cost assumes Program Year to be FY23 and includes Maintenance. Without Maintenance, Project First Costs for the barrier alternatives would be \$526,179,000, \$579,488,000, and \$106,254,000 for the Lower Warren River Barrier (BW4), Upper Warren River Barrier (BW3), and the Middle Bridge Barrier (NA4), respectively.

Table E7: Nonstructural Alternative Cost Summary (Project First Costs)

	NS-A	NS-A.1	NS-B	NS-C
Elevations	\$64,242,000	\$83,515,000	\$71,028,000	\$4,663,000
Floodproofing	\$46,359,000	\$68,599,000	\$68,926,000	\$10,270,000
Relocations	\$0	\$0	\$0	\$819,000
Lands and Damages	\$11,490,000	\$14,449,000	\$14,114,000	\$4,749,000
PED	\$18,772,000	\$25,639,000	\$23,180,000	\$2,419,000
Construction Management	\$4,958,000	\$6,954,000	\$6,464,000	\$813,000
Contingency	\$42,597,000		\$53,702,000	\$6,061,000
Total	\$188,418,000	\$199,156,000	\$237,414,000	\$29,794,000

There are four (4) accounts to facilitate and display the effects of alternative plans in the formulation of water resource projects while recognizing the importance of maximizing potential benefits relative to project costs. These accounts include National Economic Development (NED), Environmental Quality (EQ), Regional Economic Development (RED), and Other Social Effects (OSE). The results from the “System of Accounts Analysis are provided in Table 3.14. Plan NS-A maximized NED benefits and the Warren River Upper Surge Barrier maximized RED benefits. The Providence

Harbor structural alternative and nonstructural plans NS-A, and NS-C all received the highest scores for OSE benefits. The Providence Harbor structural alternative also received the highest score for EQ benefit. However, it was difficult to compare a localized plan, such as the Providence Harbor alternative, with the regional nonstructural plans. Although the Providence Harbor plan would provide significant environmental benefits, these benefits would only be experienced in the immediate vicinity of the Port. The nonstructural plans would produce minor environmental benefits throughout the entire region, so the comparison of a structural and nonstructural plans provides limited insight when trying to compare the structural and nonstructural plans.

The National Economic Development (NED) plan is Plan NS-A. Nonstructural Plan NS-A. has the higher Average Annual Net Benefit of the plans under consideration

5. TENTATIVELY SELECTED PLAN (TSP)

5.1. Plan Refinement

To be as inclusive as possible and reduces the greatest amount of flood risk in the study area, two (2) refinements were made to Plan NS-A. These refinements resulted in the inclusion of an additional 39 structures to the TSP. This plan will be referred to as NS-A.1. The first refinement added non-residential structures from four (4) community groups (Barrington, Bristol Downtown, Narragansett and Shawomet). Although these groups had an overall BCR less than 0.9 when both elevations and floodproofing were considered, the BCR for non-residential floodproofing alone was greater than 1.0. As a result of this refinement, twenty-five non-residential properties were added in Plan NS-A.1.

The second refinement included the addition of certain outlier properties. As previously described, 74 structures were not located near any other structures, and, therefore, were not part of any community group. These “outliers” were initially removed from consideration. Of the 74 outliers, 14 had a BCR greater than 0.9. These 14 structures were added to the TSP plan.

5.2. Plan Components

The TSP is an entirely nonstructural plan that includes 533 total structures – 323 residential recommended for elevation and 210 non-residential recommended for floodproofing (**Table E8**). There are five (5) facilities that are identified a critical infrastructure currently included in the TSP (2 schools, 2 fire/police, and 1 building at an electric power station).

Table E8: The Tentatively Selected Plan

Community Group Name	Total Costs (\$)	Residential Structures (Elevations)	Non-Residential Structures (Floodproofing)	Total Structures
PLAN NS-A				
Block Island	4,384,340	2	10	12
Downtown Warwick	6,467,902	5	12	17
East Greenwich	3,737,150	0	10	10
Fort Ave	4,113,303	9	3	12
Newport Downtown	47,593,332	85	38	123
Newport North	4,678,317	3	8	11
Potowomut	1,591,669	5	0	5
Quonset Airport	4,498,113	0	9	9
Sakonnet	1,747,901	3	2	5
Sakonnet North	2,775,778	8	0	8
Shore Acres	2,542,409	7	0	7
Warren	42,055,525	64	49	113
West Passage	3,187,718	9	0	9
Wickford	51,653,408	113	40	153
PLAN NS-A Refinement - Floodproofing only				
Barrington	5,454,351	0	11	11
Bristol Downtown	2,989,720	0	8	8
Narragansett	1,121,145	0	3	3
Shawomet	1,121,145	0	3	3
OUTLIERS				
Outliers		10	4	14
TOTAL		323	210	533

Total project first costs of the TSP at FY 2021 price levels are approximately \$197 million (**Table E9**). The total fully funded cost of the project, with escalation through the mid-point of construction, is approximately \$247 million. Nonstructural costs were developed using information from FEMA and nonstructural projects recently completed in vicinity of the study area.

Table E9: Tentatively Selected Plan Cost Summary (Project First Costs)

	TSP
Elevations	\$66,210,000
Floodproofing	\$53,921,000
Relocations	\$0
Lands and Damages	\$6,120,000
PED	\$20,254,000
S&A	\$5,480,000
Contingency	\$44,983,000
Total	\$196,967,000

It should be noted that Lands and Damages costs were updated by NAE Real Estate Division after NS-A.1 was selected and the additional fourteen (14) outliers were added to form the Tentatively Selected Plan (TSP).

6. BASIS OF COST ESTIMATE

The construction cost estimate was developed using Micro-Computer Aided Cost Estimating System (MCACES), Second Generation (MII) using the appropriate Work Breakdown Structure (WBS) and is based on individual cost estimates for raising each of the twelve typical structure-types. These individual cost estimates were developed utilizing cost resources such as RSMeans, MII Cost Libraries, and vendor quotations and are supported by the preferred labor, equipment, materials, and crew/production breakdown. These twelve typical structure-type cost estimates were then applied to the number of each typical structure to calculate the total construction cost. **Table E10** summarizes the quantity of each structure-types and their breakdown by locations:

Table E10: Structure-Type Quantity and Location Breakdown (100-year Floodplain)

	Barrington 1	Block Island	Downtown Warwick	East Greenwich	Fort Newport Ave	Newport Downtown	Newport North	Potowomut	Quonset Airport	Sakonnet	Wickford North	Sakonnet Shore	West Passage	Barrington 2	Bristol Downtown	MB Narragansett	Shawomet	Newport	Warren	North Kingstown	Narragansett	Providence	Portsmouth	Barrington	Total
Elevations																									
AE RES-5A	9	0	1	0	0	4	3	1	0	1	10	0	0	0	0	0	0	0	1	0	1	0	0	1	32
AE RES-5B	8	0	0	0	1	21	0	0	0	1	14	0	0	0	0	0	0	0	1	0	0	0	0	0	46
AE RES-6A	5	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0	0	1	1	0	0	0	21
AE RES-6B	37	2	4	0	5	51	0	1	0	0	68	0	1	1	0	0	0	0	0	0	0	1	0	0	171
AE RES-7A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AE RES-7B	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
VE RES-5A	2	0	0	0	0	3	0	1	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	9
VE RES-5B	1	0	0	0	0	3	0	0	0	0	1	2	2	2	0	0	0	0	0	0	0	0	0	0	11
VE RES-5A	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	4
VE RES-5B	1	0	0	0	3	3	0	1	0	0	4	3	4	5	0	0	0	0	0	0	1	0	0	0	25
VE RES-7A	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
VE RES-7B	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Floodproofings																									
0-30,000	44	10	11	10	3	26	6	0	6	2	40	0	0	0	10	8	3	3	1	0	0	1	1	0	185
30,000-100,000	4	0	1	0	0	12	2	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	23
100,000+	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
Total	113	12	17	10	12	123	11	5	9	5	153	8	7	9	11	8	3	3	3	1	5	2	1	1	533
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25

Quantities related to the individual cost estimates for each of the twelve typical structure-types and the floodproofings were developed with minimal input from the PDT as no design work has been completed for the non-structural alternative. Throughout the individual estimates the cost engineer assumed conservative quantities for excavation, concrete, piles, interior modifications, etc. wherever applicable.

These structure types are broken down as follows: Res-5A: Single-story residence on slab-on-grade, Res-5B: Multi-story residence on slab-on-grade, Res-6A: Single-story residence with basement, Res-6B: Multi-story residence with basement, Res-7A: Single-story residence on piles, and Res-7B: Multi-story residence on piles. These structures are also broken down between those 6 types that fall into the A zone or V zone.

Initially, the PDT was looking at several different floodplains; the 5, 10, 25, and 100-year floodplains. An inventory was created for each of the floodplains, which resulted in different average square footage and different average raising height. Since it was not clear which floodplain would be selected, an average cost was generated based on the different structure types and different floodplains. As the analysis continued, the 100-year floodplain was used to compared between the different nonstructural plans with the selection of floodplain assumed to take place during optimization later in the planning process prior to finalization of the report. All cost information is based on the 100-year floodplain.

The floodproofing costs used are based on square footage of the building to be floodproofed. The three size ranges utilized in the study were those less than 30,000 square feet, those between 30,000 and 100,000 square feet, and those greater than 100,000 square feet. The cost information for those ranges is based on data from the Nonstructural Committee for costs from New Orleans from FY19. The costs were escalated to FY21 using ENR's 20-City Building Cost Index from Oct 2018 to Oct 2020 and adjusted for location from New Orleans, Louisiana to Newport, Rhode Island using PAX Area Cost Factors.

The labor rates were adjusted to the local and current prevailing wage determinations. The most current MII Cost Book (2016) and Equipment database, Region 1 (2020) were utilized in developing the cost estimate. The Equipment database is based on EP 1110-1-8, Construction Equipment Ownership and Operation Expense Schedule. It should be noted that due to the vintage of the cost book and equipment book, escalations from FY16Q1 and FY20Q1 for the cost book and equipment book, respectively, to FY21Q1(FY21Q4) is included in the estimate. Material was escalated using ENR's Material Cost Index from Oct 2015 to Oct 2020 while the equipment was escalated using ENR's 20-City Building Cost Index from Oct 2019 to Oct 2020. The direct costs are based on anticipated labor, equipment, and materials necessary to construct the project. The estimate assumes the prime contractor will consist of a pass-through contractor that will subcontract all work to subs to include elevations, site/civil, MEP trades, concrete, etc.

Sales tax at 7.0% was applied to materials for the project. No overtime or global productivity reduction was included in the estimate.

Rhode Island Statewide prevailing wage rates were obtained from GSA and used for all craft labor (General Decision Number: RI20210001 06/18/2021, Construction Type: Building, Heavy (Heavy and Marine) and Highway). The base wage rate and taxable fringe were entered into MII and applied accordingly. The total labor rate was

developed using the base wage, fringe benefits, FICA, FUTA, and Worker's Compensation rates for each labor class computed by MII based on project location and contractor type.

Contingency will be developed using a Cost and Schedule Risk Assessment (CSRA). See **Section E.8, Contingency Development** for additional details regarding the risk-based contingency development.

The civil works breakdown structure (CWBS) feature accounts associated with each contract were escalated to the program year and then to the mid-point of design or construction using the Civil Works Construction Cost Index System (CWCCIS) factors as contained in EM 1110-2-1304, dated September 30, 2021. See **Section E.11, Total Project Cost Summary** for additional details.

7. SCHEDULE

The total project schedule has been developed in Microsoft Excel using major construction activities and associated network logic to determine the project duration. The total project schedule is provided as Attachment 1 to this Cost Engineering Appendix. It is assumed that NAE will prepare an RFP package and solicit a design-build contractor. It is further assumed there will be four (4) different contractors performing the construction and averaging 2-week rolling completions.

8. CONTINGENCY DEVELOPMENT

8.1. Purpose

The purpose of the Cost and Schedule Risk Assessment (CSRA) is to identify potential events that could affect project cost and analyze their likelihood and impact.

8.2. Risk Analysis Process

The risk analysis process follows the USACE Headquarters requirements as well as the guidance provided by the Cost MCX. The abbreviated risk analysis process uses cost growth curves for seven predetermined categories (Project Scope Growth, Acquisition Strategy, Construction Elements, Quantities, Special Construction or Fabrication, Cost Estimate Assumptions, and External Risks). The growth curves are dependent on the selection of the Project Development Stage/Alternative and the Risk Category and the selections are Alternative Formulation, Feasibility (Alternatives), Feasibility (Recommended Plan), PED 60%, PED 90%, and Construction Period and Low Risk: Typical Construction, Simple, Moderate Risk: Typical Project Construction Type, and High Risk: Complex Project or Unique Type Construction, respectively. These selections change the growth curves from a shallower curve for a project at a more advanced stage and simpler construction to a much steeper curve for a project early in development with high risk or complex construction. This particular project selected Feasibility (Recommended Plan) for project development stage and Moderate Risk: Typical Project Construction Type for risk category.

8.3. Methodology

In simple terms, contingency is an amount added to an estimate (cost or schedule) to allow for items, conditions, or events for which the occurrence (event risk) or impact

(condition/variant risk) is uncertain, and that experience suggests will likely result in additional costs being incurred or additional time being required. The amount of contingency included in project control plans depends, at least in part, on the project leadership’s willingness to accept risk of project overruns. The less risk that project leadership is willing to accept, the more contingency should be applied in the project control plans. The risk of overrun is expressed, in a probabilistic context, using confidence levels.

The risk analysis uses an Excel form provided by the Cost MCX. The major features of work and their corresponding costs entered into the form which populates the risk register with these features in each of the risk categories.

Below is a brief step-by-step summary of the process performed during this analysis:

1. Development of Risk Register - In accordance with the PDT, a risk register was developed to identify the various risks associated with the project. Each feature of work was reviewed in each risk category to determine what, if any, risk events should be documented.
2. Determination of Risk - During the risk register meeting, these risk events were discussed and notated and conclusions made as to the impact and likelihood of occurrence. The impact and likelihood selections can be seen in Figure E13 below. These factors determined whether an event’s risk level was 0, 1, 2, 3, 4, or 5.

		<u>Risk Level</u>				
		2	3	4	5	5
Very Likely		2	3	4	5	5
Likely		1	2	3	4	5
Possible		0	1	2	3	4
Unlikely		0	0	1	2	3
		Negligible	Marginal	Moderate	Significant	Critical

Figure E3: Risk Level Matrix

3. Cost Growth Curves - The risk level for each risk category was determined based on the inputs from the risk register and the inputs of project development and risk category which calculated a risk percentage for each risk category and each feature of work.
4. Summary of Results - For this draft report, other planning projects with nonstructural TSPs were reviewed. Pawcatuck CSR, Florida Keys CSR, and Upper CT River Watershed Storm Risk Reduction (SRR) risk analyses were reviewed; Pawcatuck NED plan contingency was 28%, Pawcatuck LP plan was 30%, Florida Keys was 28%, Upper CT River Watershed NED plan was 30% and the Upper CT River Watershed LP plan was 33%; with an average of 29.8% over the five

analyses. For the draft report, this analysis utilized 30% contingency until a project-specific risk analysis is completed.

8.3.1. Identify and Assess Risk Factors

Identifying the risk factors via the PDT are considered a qualitative process that results in establishing a risk register that serves as the document for the further study in the risk model. Risk factors are events or conditions (variances) that may influence or drive uncertainty in project performance. They may be inherent characteristics or conditions of the project or external influences such as weather or economic conditions. Risk factors may have either favorable or unfavorable impacts on project cost and schedule. Checklists or historical databases of common risk factors are sometimes used to facilitate risk factor identification. However, key risk factors are often unique to a project and not readily derivable from historical information. Therefore, input from the entire PDT is obtained using creative processes such as brainstorming or other facilitated risk assessment meetings. In practice, a combination of professional judgment from the PDT and empirical data from similar projects is desirable and is considered.

Informal risk identification was initially performed by the cost engineering team member working through the base estimate and schedule development process. As scope uncertainty and constructability type issues were identified, they were submitted to a draft risk register to be presented to the larger team and presented in the formal PDT meetings.

A formal PDT meeting was held virtually on May 5, 2021 to discuss the risks/opportunities associated with the project. The meetings focused primarily on the identification, concerns, and discussions of the risk/opportunities along with some quantification of risks (best case, most likely, and worst-case thresholds) when appropriate. Additionally, numerous telephone calls, informal meetings, and coordination through email were conducted throughout the risk analysis process on an as-needed basis to further facilitate risk factor identification, market analysis, and risk assessment. The PDT was represented by the following disciplines:

- Project management
- Civil engineering
- Coastal engineering
- Geotechnical engineering
- Structural engineering
- Construction support
- Cost engineering

Follow up meetings and/or discussions were also held to discuss risk thresholds and update the risk register. A full roster of participating team members at each risk meeting is included in **Attachment 2**.

8.3.2. Risk Register

The risk register is a tool commonly used in project planning and risk analysis and serves as the basis for the risk models. The risk register and identified events are

included in **Attachment 2**. The risk register documents the PDT risk identification and assessment.

It is important to note that a risk register can be an effective tool for managing identified risks throughout the project life cycle. As such, it is generally recommended that risk registers be updated as the design, cost estimate, and schedule are further refined, especially on large projects with extended schedules. Recommended uses of the risk register going forward include:

- Documenting risk mitigation strategies being pursued in response to the identified risks and their assessment in terms of probability and impact.
- Providing project sponsors, stakeholders, and leadership/management with a documented framework from which risk status can be reported in the context of project controls
- Communicating risk management issues.
- Providing a mechanism for eliciting risk analysis feedback and project control input.
- Identifying risk transfer, elimination, or mitigation actions required for implementation of risk management plans.

8.3.3. Risk Analysis Results

The Cost and Schedule Risk Assessment calculated a total contingency for all project accounts to include Elevations, Floodproofings, Lands and Damages, Planning, Engineering & Design (PED) and Construction Management (S&A) was calculated at 30%.

The PDT identified highly rated concerns in order to evaluate the proper means to mitigate and limit their effect on the project as follows:

- Bidding Competition – Bidding competition is a risk in all IFB procurements. It is possible there could be limited bidders which may have a moderate impact on the bid prices.
- Construction Mods & Claims - Bidding competition is a risk in all IFB procurements. It is possible there could be limited bidders which may have a moderate impact on the bid prices.
- Cost Estimate Products Assumptions – A vast majority of inputs to the cost estimate are determined by the cost engineer and are based on professional and historic experience. It is possible these inputs, which affect all aspects of the cost and features of work in the cost estimate, will have an impact on cost. Because the cost estimate products are built conservatively, the impact is expected to be moderate in the worst case.

9. PLANNING ENGINEERING AND DESIGN (PED)

The costs were developed for all activities associated with the planning, engineering and design effort. The cost for this account includes the preparation of Design Documentation Reports and plans and specifications for each construction contract 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 breakout in the Total Project Cost Summary (TPCS), was developed based with input from respective offices in accordance with the CWBS as well as historical prices.

10. CONSTRUCTION MANAGEMENT (S&A)

The costs were developed for all construction management activities from pre-award requirements through final contract closeout. These costs include the in-house labor based upon work-hour requirements, materials, facility costs, support contracts, travel and overhead. Costs were developed based on the input from the construction division in accordance with the CWBS and include, but are not limited to, anticipated items such as the salaries of the resident engineer and staff, survey men, inspectors, draftsmen, clerical, and custodial personnel; operation, maintenance and fixed charges for transportation and for other field equipment; field supplies; construction management, general construction supervision; project office administration, distributive cost of area office and general overhead charged to the project. The work items and activities would include, but not be limited to: the salaries of all supervisory, engineering, office and safety field personnel; all on site expenses.

11. TOTAL PROJECT COST SUMMARY

The Total Project Cost Summary (TPCS) addresses the inflation through project completion; accomplished by escalation to the mid-point of construction per CWCCIS as required by ER 1110-2-1302 and ETL 1110-2-573. The TPCS includes Federal and non-Federal costs for all construction features of the project, lands and damages, as well as PED and S&A, along with the appropriate contingencies and escalation associated with each of these activities. The TPCS is formatted according to the CWWBS. The TPCS was prepared using the MCACES/MII cost estimate, contingencies developed by the CSRA, the project design and construction schedule, and estimates of PED and S&A. The TPCS is provided as **Attachment 3** to this Cost Engineering Appendix.

Table E11: Total Project Cost Summary

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)					
TENTATIVELY SELECTED PLAN		COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	2021 Effective Price Level Date: 1 OCT 20		INFLATED (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
										Spent Thru: 1-Oct-20 (\$K)	TOTAL FIRST COST (\$K)				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	C	D	E	F	G	H	I	J	K	L	M	N	O	
19	BUILDINGS, GROUNDS & UTILITIES	\$66,210	\$19,863	30.0%	\$86,072	0.0%	\$66,210	\$19,863	\$86,072	\$0	\$86,072	32.0%	\$87,423	\$26,227	\$113,650
19	BUILDINGS, GROUNDS & UTILITIES	\$53,921	\$16,176	30.0%	\$70,097	0.0%	\$53,921	\$16,176	\$70,097	\$0	\$70,097	32.0%	\$71,197	\$21,359	\$92,556
02	RELOCATIONS	\$0	\$0	-	\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	#/N/A	\$0	\$0	-	\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	#/N/A	\$0	\$0	-	\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	#/N/A	\$0	\$0	-	\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	#/N/A	\$0	\$0	-	\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	#/N/A	\$0	\$0	-	\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	#/N/A	\$0	\$0	-	\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	CONSTRUCTION ESTIMATE TOTALS:	\$120,130	\$36,039		\$156,169	0.0%	\$120,130	\$36,039	\$156,169	\$0	\$156,169	32.0%	\$158,621	\$47,586	\$206,207
01	LANDS AND DAMAGES	\$6,120	\$1,224	20.0%	\$7,344	0.0%	\$6,120	\$1,224	\$7,344	\$0	\$7,344	26.4%	\$7,733	\$1,547	\$9,280
30	PLANNING, ENGINEERING & DESIGN	\$20,254	\$6,076	30.0%	\$26,330	0.0%	\$20,254	\$6,076	\$26,330	\$0	\$26,330	15.8%	\$23,460	\$7,038	\$30,498
31	CONSTRUCTION MANAGEMENT	\$5,480	\$1,644	30.0%	\$7,124	0.0%	\$5,480	\$1,644	\$7,124	\$0	\$7,124	15.8%	\$6,347	\$1,904	\$8,251
PROJECT COST TOTALS:		\$151,984	\$44,983	29.6%	\$196,967		\$151,984	\$44,983	\$196,967	\$0	\$196,967	29.1%	\$196,161	\$58,075	\$254,236



Attachment 1
Project Schedule

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Attachment 2
Cost & Schedule Risk Analysis

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Abbreviated Risk Analysis

Project (less than \$40M): **Upper Connecticut River Watershed, VT**
 Project Development Stage/Alternative: **Feasibility (Recommended Plan)**
 Risk Category: **Low Risk: Typical Construction, Simple**

Alternative: LP Plan

Meeting Date: 8/3/2020

Total Estimated Construction Contract Cost = \$ **15,248,420**

CWWBS	Feature of Work	Estimated Cost	% Contingency	\$ Contingency	Total
01 LANDS AND DAMAGES	Real Estate	\$ 1,017,816	4.4%	\$ 44,784	\$ 1,062,600
2 19 BUILDINGS, GROUNDS, AND UTILITIES	Elevate Residential Structures	\$ 5,375,009	36%	\$ 1,912,225	\$ 7,287,234
3 19 BUILDINGS, GROUNDS, AND UTILITIES	Floodproof Non-Residential Structures	\$ 6,067,442	34%	\$ 2,080,740	\$ 8,148,182
4			0%	\$ -	\$ -
5			0%	\$ -	\$ -
6			0%	\$ -	\$ -
7			0%	\$ -	\$ -
8			0%	\$ -	\$ -
9			0%	\$ -	\$ -
10			0%	\$ -	\$ -
11		\$ -	0%	\$ -	\$ -
12 All Other	Remaining Construction Items*	\$ 3,805,969	33.3%	\$ 1,186,346	\$ 4,992,315
13 30 PLANNING, ENGINEERING, AND DESIGN	Planning, Engineering, & Design	\$ 1,219,874	27%	\$ 325,017	\$ 1,544,890
14 31 CONSTRUCTION MANAGEMENT	Construction Management	\$ 853,912	19%	\$ 164,666	\$ 1,018,578
XX	FIXED DOLLAR RISK ADD (EQUALLY DISPERSED TO ALL, MUST INCLUDE JUSTIFICATION SEE BELOW)			\$ -	

Notes:

*- Includes Oversight and General Conditions Costs

Totals							
Real Estate	\$	1,017,816	4.4%	\$	44,784	\$	1,062,600.00
Total Construction Estimate	\$	15,248,420	34%	\$	5,179,311	\$	20,427,731
Total Planning, Engineering & Design	\$	1,219,874	27%	\$	325,017	\$	1,544,890
Total Construction Management	\$	853,912	19%	\$	164,666	\$	1,018,578
Total Excluding Real Estate	\$	17,322,205	33%	\$	5,668,994	\$	22,991,199

Confidence Level Range Estimate (\$000's)	Base	50%	80%
		\$17,322k	\$20,723k

* 50% based on base is at 5% CL.

<p>Fixed Dollar Risk Add: (Allows for additional risk to be added to the risk analysis. Must include justification. Does not allocate to Real Estate.)</p>	
---	--

Abbreviated Risk Analysis

Project (less than \$40M): **Upper Connecticut River Watershed, VT**
 Project Development Stage/Alternative: **Feasibility (Recommended Plan)**
 Risk Category: **Low Risk: Typical Construction, Simple**

Alternative: **NED Plan**

Meeting Date: **8/3/2020**

Total Estimated Construction Contract Cost = \$ **14,668,200**

	<u>CWWBS</u>	<u>Feature of Work</u>	<u>Estimated Cost</u>	<u>% Contingency</u>	<u>\$ Contingency</u>	<u>Total</u>
	01 LANDS AND DAMAGES	Real Estate	\$ 7,997,500	4.4%	\$ 352,500	\$ 8,350,000
1	19 BUILDINGS, GROUNDS, AND UTILITIES	Buyout Homes in Lyndon & Brattleboro	\$ 2,956,859	18%	\$ 537,610	\$ 3,494,469
2	19 BUILDINGS, GROUNDS, AND UTILITIES	Elevate Residential Structures	\$ 1,663,559	36%	\$ 591,831	\$ 2,255,390
3	19 BUILDINGS, GROUNDS, AND UTILITIES	Floodproof Non-Residential Structures	\$ 5,979,622	34%	\$ 2,050,623	\$ 8,030,245
4				0%	\$ -	\$ -
5				0%	\$ -	\$ -
6				0%	\$ -	\$ -
7				0%	\$ -	\$ -
8				0%	\$ -	\$ -
9				0%	\$ -	\$ -
10				0%	\$ -	\$ -
11			\$ -	0%	\$ -	\$ -
12	All Other	Remaining Construction Items*	\$ 4,068,160	38.4%	\$ 1,268,073	\$ 5,336,233
13	30 PLANNING, ENGINEERING, AND DESIGN	Planning, Engineering, & Design	\$ 1,173,456	27%	\$ 312,649	\$ 1,486,105
14	31 CONSTRUCTION MANAGEMENT	Construction Management	\$ 821,419	19%	\$ 158,400	\$ 979,820
XX	FIXED DOLLAR RISK ADD (EQUALLY DISPERSED TO ALL, MUST INCLUDE JUSTIFICATION SEE BELOW)				\$ -	\$ -

Notes:

*- Includes Oversight and General Conditions Costs

Totals								
	Real Estate	\$	7,997,500	4.4%	\$	352,500	\$	8,350,000.00
	Total Construction Estimate	\$	14,668,200	30%	\$	4,448,138	\$	19,116,338
	Total Planning, Engineering & Design	\$	1,173,456	27%	\$	312,649	\$	1,486,105
	Total Construction Management	\$	821,419	19%	\$	158,400	\$	979,820
	Total Excluding Real Estate	\$	16,663,075	30%	\$	4,919,187	\$	21,582,263

Confidence Level Range Estimate (\$000's)	Base	50%	80%
		\$16,663k	\$19,614k

* 50% based on base is at 5% CL.

Fixed Dollar Risk Add: (Allows for additional risk to be added to the risk analysis. Must include justification. Does not allocate to Real Estate.

Cost Summary for Risk Register Development

Project: Florida Keys CSRM Feasibility Study

Project Development Stage/Alternative: Feasibility Milestone #4 - CWRB

Risk Category: Low Risk: Simple Project-No Life Safety

Meeting Date: 8/8/2020

Schedule Duration Aug-2025 Jan-2035 Schedule Duration: 113.1 Months 106%
From (Month/Year) From (Month/Year) Schedule Contingency
 80% Finish Date Dec-2044

WBS	Feature of Work	Contract Cost	% Contingency	\$ Contingency	Total
Risk Not included within CSRA Model					
01	LANDS AND DAMAGES	Real Estate	\$ 39,301,000	28%	\$ 11,004,280 \$ 50,305,280
Risk included within CSRA Model					
1	02 RELOCATIONS	Utility Relocation	\$ -	0%	\$ - \$ -
2	16 BANK STABILIZATION	Revetments	\$ 11,279,000	28%	\$ 3,158,120 \$ 14,437,120
3	18 CULTURAL RESOURCE PRESERVATION	Cultural Resource Preservation	\$ 12,319,000	28%	\$ 3,449,320 \$ 15,768,320
4	19 BUILDINGS, GROUNDS, AND UTILITIES	Elevations	\$ 1,021,531,000	28%	\$ 286,028,680 \$ 1,307,559,680
5	19 BUILDINGS, GROUNDS, AND UTILITIES	CI Floodproofing	\$ 12,323,000	28%	\$ 3,450,440 \$ 15,773,440
6	19 BUILDINGS, GROUNDS, AND UTILITIES	Commercial Floodproofing	\$ 197,901,000	28%	\$ 55,412,280 \$ 253,313,280
7			\$ -	0%	\$ - \$ -
8			\$ -	0%	\$ - \$ -
9			\$ -	0%	\$ - \$ -
10			\$ -	0%	\$ - \$ -
11			\$ -	0%	\$ - \$ -
12			\$ -	0%	\$ - \$ -
13			\$ -	0%	\$ - \$ -
14			\$ -	0%	\$ - \$ -
15			\$ -	0%	\$ - \$ -
16			\$ -	0%	\$ - \$ -
17			\$ -	0%	\$ - \$ -
18			\$ -	0%	\$ - \$ -
19			\$ -	0%	\$ - \$ -
20			\$ -	0%	\$ - \$ -
21			\$ -	0%	\$ - \$ -
22			\$ -	0%	\$ - \$ -
23	DDC Costs	Planning, Engineering, & Design	\$ 182,026,185	28%	\$ 50,967,332 \$ 232,993,517
24	S&A	Construction Management	\$ 182,026,185	28%	\$ 50,967,332 \$ 232,993,517
XX	FIXED DOLLAR RISK ADD (EQUALLY DISPERSED TO ALL, MUST INCLUDE JUSTIFICATION SEE BELOW)			\$ -	\$ -

Totals					
	Real Estate	\$ 39,301,000	28%	\$ 11,004,280	\$ 50,305,280.00
	Total Construction Estimate	\$ 1,255,353,000	28%	\$ 351,498,840	\$ 1,606,851,840
	Total Planning, Engineering & Design	\$ 182,026,185	28%	\$ 50,967,332	\$ 232,993,517
	Total Construction Management	\$ 182,026,185	28%	\$ 50,967,332	\$ 232,993,517
	Fixed Dollar Risk Equally Distributed	\$ -	0%	\$ -	\$ -
	Total	\$ 1,658,706,370	0%	\$ 464,437,784	\$ 2,123,144,154

Fixed Dollar Risk Add: (Allows for additional risk to be added to the risk analysis. Must include justification. Does not allocate to Real Estate.)

Attachment 3

Total Project Cost Summary

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

PROJECT: RI Coastline CSRM
PROJECT NO: P2 xxxxxx
LOCATION: RI Coastline (multiple cities/towns)

DISTRICT: NAE District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 11/8/2021

This Estimate reflects the scope and schedule in report; RI Coastline CSRM Feasibility Study

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)						TOTAL PROJECT COST (FULLY FUNDED)			
TENTATIVELY SELECTED PLAN		COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	Program Year (Budget EC): Effective Price Level Date: 2021 1 OCT 20				Spent Thru: 1-Oct-20 (\$K)	TOTAL FIRST COST (\$K)	INFLATED (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
						ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)						
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	C	D	E	F	G	H	I	J	K	L	M	N	O	
19	BUILDINGS, GROUNDS & UTILITIES	\$66,210	\$19,863	30.0%	\$86,072	0.0%	\$66,210	\$19,863	\$86,072	\$0	\$86,072	32.0%	\$87,423	\$26,227	\$113,650
19	BUILDINGS, GROUNDS & UTILITIES	\$53,921	\$16,176	30.0%	\$70,097	0.0%	\$53,921	\$16,176	\$70,097	\$0	\$70,097	32.0%	\$71,197	\$21,359	\$92,556
02	RELOCATIONS	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0		\$0	\$0	
	#N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0		\$0	\$0	
	#N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0		\$0	\$0	
	#N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0		\$0	\$0	
	#N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0		\$0	\$0	
	#N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0		\$0	\$0	
	CONSTRUCTION ESTIMATE TOTALS:	\$120,130	\$36,039		\$156,169	0.0%	\$120,130	\$36,039	\$156,169	\$0	\$156,169	32.0%	\$158,621	\$47,586	\$206,207
01	LANDS AND DAMAGES	\$6,120	\$1,224	20.0%	\$7,344	0.0%	\$6,120	\$1,224	\$7,344	\$0	\$7,344	26.4%	\$7,733	\$1,547	\$9,280
30	PLANNING, ENGINEERING & DESIGN	\$20,254	\$6,076	30.0%	\$26,330	0.0%	\$20,254	\$6,076	\$26,330	\$0	\$26,330	15.8%	\$23,460	\$7,038	\$30,498
31	CONSTRUCTION MANAGEMENT	\$5,480	\$1,644	30.0%	\$7,124	0.0%	\$5,480	\$1,644	\$7,124	\$0	\$7,124	15.8%	\$6,347	\$1,904	\$8,251
PROJECT COST TOTALS:		\$151,984	\$44,983	29.6%	\$196,967		\$151,984	\$44,983	\$196,967	\$0	\$196,967	29.1%	\$196,161	\$58,075	\$254,236

- CHIEF, COST ENGINEERING, xxx
- PROJECT MANAGER, xxx
- CHIEF, REAL ESTATE, xxx
- CHIEF, PLANNING, xxx
- CHIEF, ENGINEERING, xxx
- CHIEF, OPERATIONS, xxx
- CHIEF, CONSTRUCTION, xxx
- CHIEF, CONTRACTING, xxx
- CHIEF, PM-PB, xxx
- CHIEF, DPM, xxx

ESTIMATED TOTAL PROJECT COST: **\$254,236**

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

**** CONTRACT COST SUMMARY ****

PROJECT: RI Coastline CSR
LOCATION: RI Coastline (multiple cities/towns)
This Estimate reflects the scope and schedule in report;

RI Coastline CSR Feasibility Study

DISTRICT: NAE District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 11/8/2021

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
TENTATIVELY SELECTED PLAN		Estimate Prepared:		1-Jul-21	Program Year (Budget EC):		2021							
		Effective Price Level:		1-Oct-20	Effective Price Level Date:		1 OCT 20							
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	RISK BASED			TOTAL (\$K) F	ESC (%) G	COST (\$K) H	CNTG (\$K) I	TOTAL (\$K) J	Mid-Point Date P	INFLATED (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O
		COST (\$K) C	CNTG (\$K) D	CNTG (%) E										
19	Elevations BUILDINGS, GROUNDS & UTILITIES	\$66,210	\$19,863	30.0%	\$86,072	0.0%	\$66,210	\$19,863	\$86,072	2027Q1	32.0%	\$87,423	\$26,227	\$113,650
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	CONSTRUCTION ESTIMATE TOTALS:	\$66,210	\$19,863	30.0%	\$86,072		\$66,210	\$19,863	\$86,072			\$87,423	\$26,227	\$113,650
01	LANDS AND DAMAGES	\$3,720	\$744	20.0%	\$4,464	0.0%	\$3,720	\$744	\$4,464	2027Q1	26.4%	\$4,700	\$940	\$5,641
30	PLANNING, ENGINEERING & DESIGN													
2.5%	Project Management	\$12,274	\$3,682	30.0%	\$15,956	0.0%	\$12,274	\$3,682	\$15,956	2027Q1	15.8%	\$14,217	\$4,265	\$18,482
1.0%	Planning & Environmental Compliance	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
15.0%	Engineering & Design	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
1.0%	Reviews, ATRs, IEPRs, VE	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
1.0%	Life Cycle Updates (cost, schedule, risks)	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
1.0%	Contracting & Reprographics	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
3.0%	Engineering During Construction	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
2.0%	Planning During Construction	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
3.0%	Adaptive Management & Monitoring	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	2.4%	\$0	\$0	\$0
1.0%	Project Operations	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
31	CONSTRUCTION MANAGEMENT													
10.0%	Construction Management	\$2,191	\$657	30.0%	\$2,849	0.0%	\$2,191	\$657	\$2,849	2027Q1	15.8%	\$2,538	\$761	\$3,300
2.0%	Project Operation:	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
2.5%	Project Management	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
	CONTRACT COST TOTALS:	\$84,395	\$24,946		\$109,341		\$84,395	\$24,946	\$109,341			\$108,879	\$32,194	\$141,073

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

**** CONTRACT COST SUMMARY ****

PROJECT: RI Coastline CSRM
LOCATION: RI Coastline (multiple cities/towns)
This Estimate reflects the scope and schedule in report;

RI Coastline CSRM Feasibility Study

DISTRICT: NAE District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 11/8/2021

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
WBS NUMBER A		Civil Works Feature & Sub-Feature Description B		Estimate Prepared:		Program Year (Budget EC):		Effective Price Level Date:		Mid-Point Date P	INFLATED (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O
				COST (\$K) C	CNTG (\$K) D	CNTG (%) E	TOTAL (\$K) F	ESC (%) G	COST (\$K) H					
TENTATIVELY SELECTED PLAN														
	Floodproofings													
19	BUILDINGS, GROUNDS & UTILITIES	\$53,921	\$16,176	30.0%	\$70,097	0.0%	\$53,921	\$16,176	\$70,097	2027Q1	32.0%	\$71,197	\$21,359	\$92,556
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	CONSTRUCTION ESTIMATE TOTALS:	\$53,921	\$16,176	30.0%	\$70,097		\$53,921	\$16,176	\$70,097			\$71,197	\$21,359	\$92,556
01	LANDS AND DAMAGES	\$2,400	\$480	20.0%	\$2,880	0.0%	\$2,400	\$480	\$2,880	2027Q1	26.4%	\$3,033	\$607	\$3,639
30	PLANNING, ENGINEERING & DESIGN													
2.5%	Project Management	\$7,980	\$2,394	30.0%	\$10,374	0.0%	\$7,980	\$2,394	\$10,374	2027Q1	15.8%	\$9,243	\$2,773	\$12,016
1.0%	Planning & Environmental Compliance	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
15.0%	Engineering & Design	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
1.0%	Reviews, ATRs, IEPRs, VE	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
1.0%	Life Cycle Updates (cost, schedule, risks)	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
1.0%	Contracting & Reprographics	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
3.0%	Engineering During Construction	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
2.0%	Planning During Construction	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
3.0%	Adaptive Management & Monitoring	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	2.4%	\$0	\$0	\$0
1.0%	Project Operations	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
31	CONSTRUCTION MANAGEMENT													
10.0%	Construction Management	\$3,289	\$987	30.0%	\$4,275	0.0%	\$3,289	\$987	\$4,275	2027Q1	15.8%	\$3,809	\$1,143	\$4,952
2.0%	Project Operation:	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
2.5%	Project Management	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
	CONTRACT COST TOTALS:	\$67,589	\$20,037		\$87,626		\$67,589	\$20,037	\$87,626			\$87,282	\$25,881	\$113,163

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

PROJECT: Project X Major Rehabilitation
PROJECT NO: P2 xxxxxx
LOCATION: Somewhere

DISTRICT: XXX District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 11/8/2021

This Estimate reflects the scope and schedule in report; Project X Major Rehabilitation Report 2021

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)					TOTAL PROJECT COST (FULLY FUNDED)				
Plan A (over 0.9 BCR)						Program Year (Budget EC): 2021 Effective Price Level Date: 1 OCT 20									
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	COST (\$K) C	CNTG (\$K) D	CNTG (%) E	TOTAL (\$K) F	ESC (%) G	COST (\$K) H	CNTG (\$K) I	TOTAL (\$K) J	Spent Thru: 1-Oct-20 (\$K) K	TOTAL FIRST COST (\$K) K	INFLATED (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O
19	BUILDINGS, GROUNDS & UTILITIES	\$64,242	\$19,273	30.0%	\$83,515	0.0%	\$64,242	\$19,273	\$83,515	\$0	\$83,515	31.1%	\$84,210	\$25,263	\$109,473
19	BUILDINGS, GROUNDS & UTILITIES	\$46,359	\$13,908	30.0%	\$60,267	0.0%	\$46,359	\$13,908	\$60,267	\$0	\$60,267	31.1%	\$60,769	\$18,231	\$78,999
02	RELOCATIONS	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	#N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	#N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	#N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	#N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	#N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	CONSTRUCTION ESTIMATE TOTALS:	\$110,601	\$33,180		\$143,781	0.0%	\$110,601	\$33,180	\$143,781	\$0	\$143,781	31.1%	\$144,979	\$43,494	\$188,472
01	LANDS AND DAMAGES	\$11,490	\$2,298	20.0%	\$13,788	0.0%	\$11,490	\$2,298	\$13,788	\$0	\$13,788	25.4%	\$14,414	\$2,883	\$17,296
30	PLANNING, ENGINEERING & DESIGN	\$18,772	\$5,632	30.0%	\$24,404	0.0%	\$18,772	\$5,632	\$24,404	\$0	\$24,404	15.1%	\$21,610	\$6,483	\$28,093
31	CONSTRUCTION MANAGEMENT	\$4,958	\$1,487	30.0%	\$6,445	0.0%	\$4,958	\$1,487	\$6,445	\$0	\$6,445	15.1%	\$5,707	\$1,712	\$7,420
	PROJECT COST TOTALS:	\$145,821	\$42,597	29.2%	\$188,418		\$145,821	\$42,597	\$188,418	\$0	\$188,418	28.1%	\$186,710	\$54,572	\$241,282

- _____ CHIEF, COST ENGINEERING, xxx
- _____ PROJECT MANAGER, xxx
- _____ CHIEF, REAL ESTATE, xxx
- _____ CHIEF, PLANNING, xxx
- _____ CHIEF, ENGINEERING, xxx
- _____ CHIEF, OPERATIONS, xxx
- _____ CHIEF, CONSTRUCTION, xxx
- _____ CHIEF, CONTRACTING,xxx
- _____ CHIEF, PM-PB, xxx
- _____ CHIEF, DPM, xxx

ESTIMATED TOTAL PROJECT COST: **\$241,282**

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

**** CONTRACT COST SUMMARY ****

PROJECT: Project X Major Rehabilitation
LOCATION: Somewhere
This Estimate reflects the scope and schedule in report;

Project X Major Rehabilitation Report 2021

DISTRICT: XXX District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 11/8/2021

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
Plan A (over 0.9 BCR)		Estimate Prepared:		1-Jul-21	Program Year (Budget EC):		2021							
		Effective Price Level:		1-Oct-20	Effective Price Level Date:		1 OCT 20							
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	RISK BASED			TOTAL (\$K) F	ESC (%) G	COST (\$K) H	CNTG (\$K) I	TOTAL (\$K) J	Mid-Point Date P	INFLATED (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O
		COST (\$K) C	CNTG (\$K) D	CNTG (%) E										
19	Elevations BUILDINGS, GROUNDS & UTILITIES	\$64,242	\$19,273	30.0%	\$83,515	0.0%	\$64,242	\$19,273	\$83,515	2026Q4	31.1%	\$84,210	\$25,263	\$109,473
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	CONSTRUCTION ESTIMATE TOTALS:	\$64,242	\$19,273	30.0%	\$83,515		\$64,242	\$19,273	\$83,515			\$84,210	\$25,263	\$109,473
01	LANDS AND DAMAGES	\$7,502	\$1,500	20.0%	\$9,003	0.0%	\$7,502	\$1,500	\$9,003	2026Q4	25.4%	\$9,411	\$1,882	\$11,293
30	PLANNING, ENGINEERING & DESIGN													
2.5%	Project Management	\$11,894	\$3,568	30.0%	\$15,462	0.0%	\$11,894	\$3,568	\$15,462	2026Q4	15.1%	\$13,692	\$4,108	\$17,800
1.0%	Planning & Environmental Compliance	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.1%	\$0	\$0	\$0
15.0%	Engineering & Design	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.1%	\$0	\$0	\$0
1.0%	Reviews, ATRs, IEPRs, VE	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.1%	\$0	\$0	\$0
1.0%	Life Cycle Updates (cost, schedule, risks)	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.1%	\$0	\$0	\$0
1.0%	Contracting & Reprographics	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.1%	\$0	\$0	\$0
3.0%	Engineering During Construction	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.1%	\$0	\$0	\$0
2.0%	Planning During Construction	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.1%	\$0	\$0	\$0
3.0%	Adaptive Management & Monitoring	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	2.4%	\$0	\$0	\$0
1.0%	Project Operations	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.1%	\$0	\$0	\$0
31	CONSTRUCTION MANAGEMENT													
10.0%	Construction Management	\$2,123	\$637	30.0%	\$2,760	0.0%	\$2,123	\$637	\$2,760	2026Q4	15.1%	\$2,444	\$733	\$3,178
2.0%	Project Operation:	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.1%	\$0	\$0	\$0
2.5%	Project Management	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.1%	\$0	\$0	\$0
	CONTRACT COST TOTALS:	\$85,762	\$24,978		\$110,740		\$85,762	\$24,978	\$110,740			\$109,758	\$31,986	\$141,744

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

**** CONTRACT COST SUMMARY ****

PROJECT: Project X Major Rehabilitation
LOCATION: Somewhere
This Estimate reflects the scope and schedule in report;

Project X Major Rehabilitation Report 2021

DISTRICT: XXX District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 11/8/2021

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
Plan A (over 0.9 BCR)		Estimate Prepared:		1-Jul-21		Program Year (Budget EC):		2021						
		Effective Price Level:		1-Oct-20		Effective Price Level Date:		1 OCT 20						
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	INFLATED (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
	Floodproofings													
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
19	BUILDINGS, GROUNDS & UTILITIES	\$46,359	\$13,908	30.0%	\$60,267	0.0%	\$46,359	\$13,908	\$60,267	2026Q4	31.1%	\$60,769	\$18,231	\$78,999
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	CONSTRUCTION ESTIMATE TOTALS:	\$46,359	\$13,908	30.0%	\$60,267		\$46,359	\$13,908	\$60,267			\$60,769	\$18,231	\$78,999
01	LANDS AND DAMAGES	\$3,988	\$798	20.0%	\$4,786	0.0%	\$3,988	\$798	\$4,786	2026Q4	25.4%	\$5,003	\$1,001	\$6,003
30	PLANNING, ENGINEERING & DESIGN													
2.5%	Project Management	\$6,878	\$2,063	30.0%	\$8,941	0.0%	\$6,878	\$2,063	\$8,941	2026Q4	15.1%	\$7,918	\$2,375	\$10,293
1.0%	Planning & Environmental Compliance	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.1%	\$0	\$0	\$0
15.0%	Engineering & Design	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.1%	\$0	\$0	\$0
1.0%	Reviews, ATRs, IEPRs, VE	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.1%	\$0	\$0	\$0
1.0%	Life Cycle Updates (cost, schedule, risks)	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.1%	\$0	\$0	\$0
1.0%	Contracting & Reprographics	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.1%	\$0	\$0	\$0
3.0%	Engineering During Construction	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.1%	\$0	\$0	\$0
2.0%	Planning During Construction	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.1%	\$0	\$0	\$0
3.0%	Adaptive Management & Monitoring	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	2.4%	\$0	\$0	\$0
1.0%	Project Operations	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.1%	\$0	\$0	\$0
31	CONSTRUCTION MANAGEMENT													
10.0%	Construction Management	\$2,834	\$850	30.0%	\$3,685	0.0%	\$2,834	\$850	\$3,685	2026Q4	15.1%	\$3,263	\$979	\$4,242
2.0%	Project Operation:	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.1%	\$0	\$0	\$0
2.5%	Project Management	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.1%	\$0	\$0	\$0
	CONTRACT COST TOTALS:	\$60,059	\$17,619		\$77,678		\$60,059	\$17,619	\$77,678			\$76,952	\$22,585	\$99,537

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

PROJECT: Project X Major Rehabilitation
PROJECT NO: P2 xxxxxx
LOCATION: Somewhere

DISTRICT: XXX District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 11/8/2021

This Estimate reflects the scope and schedule in report; Project X Major Rehabilitation Report 2021

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)					TOTAL PROJECT COST (FULLY FUNDED)				
Plan A.1 (w/ FP 1.0+ BCR)						Program Year (Budget EC): 2021 Effective Price Level Date: 1 OCT 20									
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	COST (\$K) C	CNTG (\$K) D	CNTG (%) E	TOTAL (\$K) F	ESC (%) G	COST (\$K) H	CNTG (\$K) I	TOTAL (\$K) J	Spent Thru: 1-Oct-20 (\$K) K	TOTAL FIRST COST (\$K) K	INFLATED (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O
19	BUILDINGS, GROUNDS & UTILITIES	\$64,242	\$19,273	30.0%	\$83,515	0.0%	\$64,242	\$19,273	\$83,515	\$0	\$83,515	32.0%	\$84,825	\$25,448	\$110,273
19	BUILDINGS, GROUNDS & UTILITIES	\$52,769	\$15,831	30.0%	\$68,599	0.0%	\$52,769	\$15,831	\$68,599	\$0	\$68,599	32.0%	\$69,676	\$20,903	\$90,579
02	RELOCATIONS	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	#N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	#N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	#N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	#N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	#N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	CONSTRUCTION ESTIMATE TOTALS:	\$117,011	\$35,103		\$152,114	0.0%	\$117,011	\$35,103	\$152,114	\$0	\$152,114	32.0%	\$154,501	\$46,350	\$200,852
01	LANDS AND DAMAGES	\$12,041	\$2,408	20.0%	\$14,449	0.0%	\$12,041	\$2,408	\$14,449	\$0	\$14,449	26.4%	\$15,215	\$3,043	\$18,258
30	PLANNING, ENGINEERING & DESIGN	\$19,722	\$5,917	30.0%	\$25,639	0.0%	\$19,722	\$5,917	\$25,639	\$0	\$25,639	15.8%	\$22,844	\$6,853	\$29,697
31	CONSTRUCTION MANAGEMENT	\$5,349	\$1,605	30.0%	\$6,954	0.0%	\$5,349	\$1,605	\$6,954	\$0	\$6,954	15.8%	\$6,196	\$1,859	\$8,055
	PROJECT COST TOTALS:	\$154,123	\$45,033	29.2%	\$199,156		\$154,123	\$45,033	\$199,156	\$0	\$199,156	29.0%	\$198,756	\$58,105	\$256,862

- _____ CHIEF, COST ENGINEERING, xxx
- _____ PROJECT MANAGER, xxx
- _____ CHIEF, REAL ESTATE, xxx
- _____ CHIEF, PLANNING, xxx
- _____ CHIEF, ENGINEERING, xxx
- _____ CHIEF, OPERATIONS, xxx
- _____ CHIEF, CONSTRUCTION, xxx
- _____ CHIEF, CONTRACTING,xxx
- _____ CHIEF, PM-PB, xxx
- _____ CHIEF, DPM, xxx

ESTIMATED TOTAL PROJECT COST: **\$256,862**

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

**** CONTRACT COST SUMMARY ****

PROJECT: Project X Major Rehabilitation
LOCATION: Somewhere
This Estimate reflects the scope and schedule in report;

Project X Major Rehabilitation Report 2021

DISTRICT: XXX District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 11/8/2021

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
Plan A.1 (w/ FP 1.0+ BCR) WBS NUMBER Civil Works Feature & Sub-Feature Description A B		Estimate Prepared: 1-Jul-21		Effective Price Level: 1-Oct-20		Program Year (Budget EC): 2021		Effective Price Level Date: 1 OCT 20						
		RISK BASED												
		COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	INFLATED (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
		C	D	E	F	G	H	I	J	P	L	M	N	O
19	Elevations BUILDINGS, GROUNDS & UTILITIES	\$64,242	\$19,273	30.0%	\$83,515	0.0%	\$64,242	\$19,273	\$83,515	2027Q1	32.0%	\$84,825	\$25,448	\$110,273
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	CONSTRUCTION ESTIMATE TOTALS:	\$64,242	\$19,273	30.0%	\$83,515		\$64,242	\$19,273	\$83,515			\$84,825	\$25,448	\$110,273
01	LANDS AND DAMAGES	\$7,502	\$1,500	20.0%	\$9,003	0.0%	\$7,502	\$1,500	\$9,003	2027Q1	26.4%	\$9,480	\$1,896	\$11,376
30	PLANNING, ENGINEERING & DESIGN													
2.5%	Project Management	\$11,894	\$3,568	30.0%	\$15,462	0.0%	\$11,894	\$3,568	\$15,462	2027Q1	15.8%	\$13,777	\$4,133	\$17,910
1.0%	Planning & Environmental Compliance	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
15.0%	Engineering & Design	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
1.0%	Reviews, ATRs, IEPRs, VE	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
1.0%	Life Cycle Updates (cost, schedule, risks)	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
1.0%	Contracting & Reprographics	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
3.0%	Engineering During Construction	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
2.0%	Planning During Construction	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
3.0%	Adaptive Management & Monitoring	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	2.4%	\$0	\$0	\$0
1.0%	Project Operations	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
31	CONSTRUCTION MANAGEMENT													
10.0%	Construction Management	\$2,123	\$637	30.0%	\$2,760	0.0%	\$2,123	\$637	\$2,760	2027Q1	15.8%	\$2,460	\$738	\$3,197
2.0%	Project Operation:	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
2.5%	Project Management	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
	CONTRACT COST TOTALS:	\$85,762	\$24,978		\$110,740		\$85,762	\$24,978	\$110,740			\$110,541	\$32,214	\$142,756

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

**** CONTRACT COST SUMMARY ****

PROJECT: Project X Major Rehabilitation
LOCATION: Somewhere
This Estimate reflects the scope and schedule in report;

Project X Major Rehabilitation Report 2021

DISTRICT: XXX District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 11/8/2021

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
Plan A.1 (w/ FP 1.0+ BCR)		Estimate Prepared:		1-Jul-21		Program Year (Budget EC):		2021						
		Effective Price Level:		1-Oct-20		Effective Price Level Date:		1 OCT 20						
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	INFLATED (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
	Floodproofings													
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
19	BUILDINGS, GROUNDS & UTILITIES	\$52,769	\$15,831	30.0%	\$68,599	0.0%	\$52,769	\$15,831	\$68,599	2027Q1	32.0%	\$69,676	\$20,903	\$90,579
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	CONSTRUCTION ESTIMATE TOTALS:	\$52,769	\$15,831	30.0%	\$68,599		\$52,769	\$15,831	\$68,599			\$69,676	\$20,903	\$90,579
01	LANDS AND DAMAGES	\$4,539	\$908	20.0%	\$5,447	0.0%	\$4,539	\$908	\$5,447	2027Q1	26.4%	\$5,735	\$1,147	\$6,882
30	PLANNING, ENGINEERING & DESIGN													
2.5%	Project Management	\$7,828	\$2,348	30.0%	\$10,176	0.0%	\$7,828	\$2,348	\$10,176	2027Q1	15.8%	\$9,067	\$2,720	\$11,787
1.0%	Planning & Environmental Compliance	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
15.0%	Engineering & Design	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
1.0%	Reviews, ATRs, IEPRs, VE	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
1.0%	Life Cycle Updates (cost, schedule, risks)	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
1.0%	Contracting & Reprographics	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
3.0%	Engineering During Construction	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
2.0%	Planning During Construction	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
3.0%	Adaptive Management & Monitoring	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	2.4%	\$0	\$0	\$0
1.0%	Project Operations	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
31	CONSTRUCTION MANAGEMENT													
10.0%	Construction Management	\$3,226	\$968	30.0%	\$4,194	0.0%	\$3,226	\$968	\$4,194	2027Q1	15.8%	\$3,737	\$1,121	\$4,858
2.0%	Project Operation:	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
2.5%	Project Management	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	15.8%	\$0	\$0	\$0
	CONTRACT COST TOTALS:	\$68,361	\$20,055		\$88,416		\$68,361	\$20,055	\$88,416			\$88,215	\$25,891	\$114,106

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

PROJECT: Project X Major Rehabilitation
PROJECT NO: P2 xxxxxx
LOCATION: Somewhere

DISTRICT: XXX District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 11/8/2021

This Estimate reflects the scope and schedule in report; Project X Major Rehabilitation Report 2021

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)					TOTAL PROJECT COST (FULLY FUNDED)				
Plan B (w/ 0.75 SOVI and Prev. Screened Areas)						Program Year (Budget EC): 2021 Effective Price Level Date: 1 OCT 20									
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	COST (\$K) C	CNTG (\$K) D	CNTG (%) E	TOTAL (\$K) F	ESC (%) G	COST (\$K) H	CNTG (\$K) I	TOTAL (\$K) J	Spent Thru: 1-Oct-20 (\$K) K	TOTAL FIRST COST (\$K) K	INFLATED (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O
19	BUILDINGS, GROUNDS & UTILITIES	\$71,028	\$21,308	30.0%	\$92,336	0.0%	\$71,028	\$21,308	\$92,336	\$0	\$92,336	35.1%	\$95,991	\$28,797	\$124,789
19	BUILDINGS, GROUNDS & UTILITIES	\$68,926	\$20,678	30.0%	\$89,604	0.0%	\$68,926	\$20,678	\$89,604	\$0	\$89,604	35.1%	\$93,152	\$27,945	\$121,097
02	RELOCATIONS	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0		\$0	\$0	\$0
	#N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0		\$0	\$0	\$0
	#N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0		\$0	\$0	\$0
	#N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0		\$0	\$0	\$0
	#N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0		\$0	\$0	\$0
	#N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0		\$0	\$0	\$0
	CONSTRUCTION ESTIMATE TOTALS:	\$139,954	\$41,986		\$181,940	0.0%	\$139,954	\$41,986	\$181,940	\$0	\$181,940	35.1%	\$189,143	\$56,743	\$245,886
01	LANDS AND DAMAGES	\$14,114	\$2,823	20.0%	\$16,937	0.0%	\$14,114	\$2,823	\$16,937	\$0	\$16,937	29.3%	\$18,253	\$3,651	\$21,904
30	PLANNING, ENGINEERING & DESIGN	\$23,180	\$6,954	30.0%	\$30,134	0.0%	\$23,180	\$6,954	\$30,134	\$0	\$30,134	18.0%	\$27,352	\$8,206	\$35,557
31	CONSTRUCTION MANAGEMENT	\$6,464	\$1,939	30.0%	\$8,403	0.0%	\$6,464	\$1,939	\$8,403	\$0	\$8,403	18.0%	\$7,627	\$2,288	\$9,915
	PROJECT COST TOTALS:	\$183,712	\$53,702	29.2%	\$237,414		\$183,712	\$53,702	\$237,414	\$0	\$237,414	31.9%	\$242,375	\$70,887	\$313,262

- CHIEF, COST ENGINEERING, xxx
- PROJECT MANAGER, xxx
- CHIEF, REAL ESTATE, xxx
- CHIEF, PLANNING, xxx
- CHIEF, ENGINEERING, xxx
- CHIEF, OPERATIONS, xxx
- CHIEF, CONSTRUCTION, xxx
- CHIEF, CONTRACTING, xxx
- CHIEF, PM-PB, xxx
- CHIEF, DPM, xxx

ESTIMATED TOTAL PROJECT COST: **\$313,262**

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

**** CONTRACT COST SUMMARY ****

PROJECT: Project X Major Rehabilitation
LOCATION: Somewhere
This Estimate reflects the scope and schedule in report;

Project X Major Rehabilitation Report 2021

DISTRICT: XXX District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 11/8/2021

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
Plan B(w/ 0.75 SOVI and Prev. Screened Areas)		Estimate Prepared:		1-Jul-21	Program Year (Budget EC):		2021							
		Effective Price Level:		1-Oct-20	Effective Price Level Date:		1 OCT 20							
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	INFLATED (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O	
		COST (\$K) C	CNTG (\$K) D	CNTG (%) E										TOTAL (\$K) F
19	Elevations BUILDINGS, GROUNDS & UTILITIES	\$71,028	\$21,308	30.0%	\$92,336	0.0%	\$71,028	\$21,308	\$92,336	2027Q4	35.1%	\$95,991	\$28,797	\$124,789
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	CONSTRUCTION ESTIMATE TOTALS:	\$71,028	\$21,308	30.0%	\$92,336		\$71,028	\$21,308	\$92,336			\$95,991	\$28,797	\$124,789
01	LANDS AND DAMAGES	\$8,341	\$1,668	20.0%	\$10,009	0.0%	\$8,341	\$1,668	\$10,009	2027Q4	29.3%	\$10,788	\$2,158	\$12,945
30	PLANNING, ENGINEERING & DESIGN													
2.5%	Project Management	\$13,224	\$3,967	30.0%	\$17,191	0.0%	\$13,224	\$3,967	\$17,191	2027Q4	18.0%	\$15,604	\$4,681	\$20,285
1.0%	Planning & Environmental Compliance	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	18.0%	\$0	\$0	\$0
15.0%	Engineering & Design	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	18.0%	\$0	\$0	\$0
1.0%	Reviews, ATRs, IEPRs, VE	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	18.0%	\$0	\$0	\$0
1.0%	Life Cycle Updates (cost, schedule, risks)	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	18.0%	\$0	\$0	\$0
1.0%	Contracting & Reprographics	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	18.0%	\$0	\$0	\$0
3.0%	Engineering During Construction	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	18.0%	\$0	\$0	\$0
2.0%	Planning During Construction	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	18.0%	\$0	\$0	\$0
3.0%	Adaptive Management & Monitoring	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	2.4%	\$0	\$0	\$0
1.0%	Project Operations	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	18.0%	\$0	\$0	\$0
31	CONSTRUCTION MANAGEMENT													
10.0%	Construction Management	\$2,361	\$708	30.0%	\$3,069	0.0%	\$2,361	\$708	\$3,069	2027Q4	18.0%	\$2,786	\$836	\$3,621
2.0%	Project Operation:	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	18.0%	\$0	\$0	\$0
2.5%	Project Management	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	18.0%	\$0	\$0	\$0
	CONTRACT COST TOTALS:	\$94,954	\$27,652		\$122,606		\$94,954	\$27,652	\$122,606			\$125,169	\$36,472	\$161,641

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

**** CONTRACT COST SUMMARY ****

PROJECT: Project X Major Rehabilitation
LOCATION: Somewhere
This Estimate reflects the scope and schedule in report;

Project X Major Rehabilitation Report 2021

DISTRICT: XXX District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 11/8/2021

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
Plan B (w/ 0.75 SOVI and Prev. Screened Areas)		Estimate Prepared:		1-Jul-21	Program Year (Budget EC):		2021							
		Effective Price Level:		1-Oct-20	Effective Price Level Date:		1 OCT 20							
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	INFLATED (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
	Floodproofings													
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
19	BUILDINGS, GROUNDS & UTILITIES	\$68,926	\$20,678	30.0%	\$89,604	0.0%	\$68,926	\$20,678	\$89,604	2027Q4	35.1%	\$93,152	\$27,945	\$121,097
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	CONSTRUCTION ESTIMATE TOTALS:	\$68,926	\$20,678	30.0%	\$89,604		\$68,926	\$20,678	\$89,604			\$93,152	\$27,945	\$121,097
01	LANDS AND DAMAGES	\$5,773	\$1,155	20.0%	\$6,927	0.0%	\$5,773	\$1,155	\$6,927	2027Q4	29.3%	\$7,466	\$1,493	\$8,959
30	PLANNING, ENGINEERING & DESIGN													
2.5%	Project Management	\$9,956	\$2,987	30.0%	\$12,943	0.0%	\$9,956	\$2,987	\$12,943	2027Q4	18.0%	\$11,748	\$3,524	\$15,272
1.0%	Planning & Environmental Compliance	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	18.0%	\$0	\$0	\$0
15.0%	Engineering & Design	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	18.0%	\$0	\$0	\$0
1.0%	Reviews, ATRs, IEPRs, VE	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	18.0%	\$0	\$0	\$0
1.0%	Life Cycle Updates (cost, schedule, risks)	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	18.0%	\$0	\$0	\$0
1.0%	Contracting & Reprographics	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	18.0%	\$0	\$0	\$0
3.0%	Engineering During Construction	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	18.0%	\$0	\$0	\$0
2.0%	Planning During Construction	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	18.0%	\$0	\$0	\$0
3.0%	Adaptive Management & Monitoring	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	2.4%	\$0	\$0	\$0
1.0%	Project Operations	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	18.0%	\$0	\$0	\$0
31	CONSTRUCTION MANAGEMENT													
10.0%	Construction Management	\$4,103	\$1,231	30.0%	\$5,334	0.0%	\$4,103	\$1,231	\$5,334	2027Q4	18.0%	\$4,841	\$1,452	\$6,294
2.0%	Project Operation:	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	18.0%	\$0	\$0	\$0
2.5%	Project Management	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	18.0%	\$0	\$0	\$0
	CONTRACT COST TOTALS:	\$88,758	\$26,050		\$114,808		\$88,758	\$26,050	\$114,808			\$117,206	\$34,415	\$151,622

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

PROJECT: Project X Major Rehabilitation
PROJECT NO: P2 xxxxxx
LOCATION: Somewhere

DISTRICT: XXX District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 11/8/2021

This Estimate reflects the scope and schedule in report; Project X Major Rehabilitation Report 2021

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)					TOTAL PROJECT COST (FULLY FUNDED)				
Plan C(Acquisitions w/ No Measure on Inundated)						Program Year (Budget EC): 2021 Effective Price Level Date: 1 OCT 20									
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	COST (\$K) C	CNTG (\$K) D	CNTG (%) E	TOTAL (\$K) F	ESC (%) G	COST (\$K) H	CNTG (\$K) I	TOTAL (\$K) J	Spent Thru: 1-Oct-20 (\$K) K	TOTAL FIRST COST (\$K) K	INFLATED (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O
19	BUILDINGS, GROUNDS & UTILITIES	\$4,663	\$1,399	30.0%	\$6,062	0.0%	\$4,663	\$1,399	\$6,062	\$0	\$6,062	26.2%	\$5,883	\$1,765	\$7,648
19	BUILDINGS, GROUNDS & UTILITIES	\$10,270	\$3,081	30.0%	\$13,352	0.0%	\$10,270	\$3,081	\$13,352	\$0	\$13,352	26.2%	\$12,958	\$3,887	\$16,845
02	RELOCATIONS	\$819	\$246	30.0%	\$1,065	0.0%	\$819	\$246	\$1,065	\$0	\$1,065	19.3%	\$977	\$293	\$1,270
	#/N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	#/N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	#/N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	#/N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	#/N/A	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	CONSTRUCTION ESTIMATE TOTALS:	\$15,752	\$4,726		\$20,478	0.0%	\$15,752	\$4,726	\$20,478	\$0	\$20,478	25.8%	\$19,818	\$5,945	\$25,763
01	LANDS AND DAMAGES	\$4,749	\$366	7.7%	\$5,116	0.0%	\$4,749	\$366	\$5,116	\$0	\$5,116	20.7%	\$5,734	\$442	\$6,176
30	PLANNING, ENGINEERING & DESIGN	\$2,419	\$726	30.0%	\$3,144	0.0%	\$2,419	\$726	\$3,144	\$0	\$3,144	11.6%	\$2,699	\$810	\$3,509
31	CONSTRUCTION MANAGEMENT	\$813	\$244	30.0%	\$1,057	0.0%	\$813	\$244	\$1,057	\$0	\$1,057	11.6%	\$907	\$272	\$1,180
	PROJECT COST TOTALS:	\$23,733	\$6,061	25.5%	\$29,794		\$23,733	\$6,061	\$29,794	\$0	\$29,794	22.9%	\$29,159	\$7,469	\$36,629

- _____ CHIEF, COST ENGINEERING, xxx
- _____ PROJECT MANAGER, xxx
- _____ CHIEF, REAL ESTATE, xxx
- _____ CHIEF, PLANNING, xxx
- _____ CHIEF, ENGINEERING, xxx
- _____ CHIEF, OPERATIONS, xxx
- _____ CHIEF, CONSTRUCTION, xxx
- _____ CHIEF, CONTRACTING,xxx
- _____ CHIEF, PM-PB, xxx
- _____ CHIEF, DPM, xxx

ESTIMATED TOTAL PROJECT COST: **\$36,629**

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

**** CONTRACT COST SUMMARY ****

PROJECT: Project X Major Rehabilitation
LOCATION: Somewhere
This Estimate reflects the scope and schedule in report;

Project X Major Rehabilitation Report 2021

DISTRICT: XXX District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 11/8/2021

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
Plan C(Acquisitions w/ No Measure on Inundated)		Estimate Prepared:		1-Jul-21	Program Year (Budget EC):		2021							
		Effective Price Level:		1-Oct-20	Effective Price Level Date:		1 OCT 20							
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	RISK BASED			TOTAL (\$K) F	ESC (%) G	COST (\$K) H	CNTG (\$K) I	TOTAL (\$K) J	Mid-Point Date P	INFLATED (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O
		COST (\$K) C	CNTG (\$K) D	CNTG (%) E										
19	Elevations BUILDINGS, GROUNDS & UTILITIES	\$4,663	\$1,399	30.0%	\$6,062	0.0%	\$4,663	\$1,399	\$6,062	2025Q3	26.2%	\$5,883	\$1,765	\$7,648
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	CONSTRUCTION ESTIMATE TOTALS:	\$4,663	\$1,399	30.0%	\$6,062		\$4,663	\$1,399	\$6,062			\$5,883	\$1,765	\$7,648
01	LANDS AND DAMAGES	\$503	\$101	20.0%	\$604	0.0%	\$503	\$101	\$604	2025Q3	20.7%	\$608	\$122	\$729
30	PLANNING, ENGINEERING & DESIGN													
2.5%	Project Management	\$798	\$239	30.0%	\$1,037	0.0%	\$798	\$239	\$1,037	2025Q3	11.6%	\$891	\$267	\$1,158
1.0%	Planning & Environmental Compliance	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
15.0%	Engineering & Design	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
1.0%	Reviews, ATRs, IEPRs, VE	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
1.0%	Life Cycle Updates (cost, schedule, risks)	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
1.0%	Contracting & Reprographics	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
3.0%	Engineering During Construction	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
2.0%	Planning During Construction	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
3.0%	Adaptive Management & Monitoring	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	2.4%	\$0	\$0	\$0
1.0%	Project Operations	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
31	CONSTRUCTION MANAGEMENT													
10.0%	Construction Management	\$142	\$43	30.0%	\$185	0.0%	\$142	\$43	\$185	2025Q3	11.6%	\$159	\$48	\$207
2.0%	Project Operation:	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
2.5%	Project Management	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
	CONTRACT COST TOTALS:	\$6,107	\$1,782		\$7,888		\$6,107	\$1,782	\$7,888			\$7,541	\$2,201	\$9,742

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

**** CONTRACT COST SUMMARY ****

PROJECT: Project X Major Rehabilitation
LOCATION: Somewhere
This Estimate reflects the scope and schedule in report;

Project X Major Rehabilitation Report 2021

DISTRICT: XXX District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 11/8/2021

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
Plan C (Acquisitions w/ No Measure on Inundated)		Estimate Prepared:		1-Jul-21		Program Year (Budget EC):		2021						
		Effective Price Level:		1-Oct-20		Effective Price Level Date:		1 OCT 20						
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	INFLATED (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
	Floodproofings													
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
19	BUILDINGS, GROUNDS & UTILITIES	\$10,270	\$3,081	30.0%	\$13,352	0.0%	\$10,270	\$3,081	\$13,352	2025Q3	26.2%	\$12,958	\$3,887	\$16,845
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#/N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	CONSTRUCTION ESTIMATE TOTALS:	\$10,270	\$3,081	30.0%	\$13,352		\$10,270	\$3,081	\$13,352			\$12,958	\$3,887	\$16,845
01	LANDS AND DAMAGES	\$903	\$181	20.0%	\$1,084	0.0%	\$903	\$181	\$1,084	2025Q3	20.7%	\$1,091	\$218	\$1,309
30	PLANNING, ENGINEERING & DESIGN													
2.5%	Project Management	\$1,558	\$467	30.0%	\$2,025	0.0%	\$1,558	\$467	\$2,025	2025Q3	11.6%	\$1,739	\$522	\$2,261
1.0%	Planning & Environmental Compliance	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
15.0%	Engineering & Design	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
1.0%	Reviews, ATRs, IEPs, VE	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
1.0%	Life Cycle Updates (cost, schedule, risks)	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
1.0%	Contracting & Reprographics	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
3.0%	Engineering During Construction	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
2.0%	Planning During Construction	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
3.0%	Adaptive Management & Monitoring	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	2.4%	\$0	\$0	\$0
1.0%	Project Operations	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
31	CONSTRUCTION MANAGEMENT													
10.0%	Construction Management	\$642	\$193	30.0%	\$835	0.0%	\$642	\$193	\$835	2025Q3	11.6%	\$717	\$215	\$932
2.0%	Project Operation:	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
2.5%	Project Management	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
	CONTRACT COST TOTALS:	\$13,374	\$3,922		\$17,296		\$13,374	\$3,922	\$17,296			\$16,504	\$4,842	\$21,347

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

**** CONTRACT COST SUMMARY ****

PROJECT: Project X Major Rehabilitation
LOCATION: Somewhere
This Estimate reflects the scope and schedule in report;

Project X Major Rehabilitation Report 2021

DISTRICT: XXX District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 11/8/2021

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
Plan C (Acquisitions w/ No Measure on Inundated)		Estimate Prepared:		1-Jul-21	Program Year (Budget EC):		2021							
		Effective Price Level:		1-Oct-20	Effective Price Level Date:		1 OCT 20							
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	INFLATED (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
Acquisitions/Buyouts														
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
02	RELOCATIONS	\$819	\$246	30.0%	\$1,065	0.0%	\$819	\$246	\$1,065	2025Q3	19.3%	\$977	\$293	\$1,270
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	#N/A		\$0	0.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
	CONSTRUCTION ESTIMATE TOTALS:	\$819	\$246	30.0%	\$1,065		\$819	\$246	\$1,065			\$977	\$293	\$1,270
01	LANDS AND DAMAGES	\$3,343	\$85	2.5%	\$3,427	0.0%	\$3,343	\$85	\$3,427	2025Q3	20.7%	\$4,036	\$102	\$4,138
30	PLANNING, ENGINEERING & DESIGN													
2.5%	Project Management	\$63	\$19	30.0%	\$81	0.0%	\$63	\$19	\$81	2025Q3	11.6%	\$70	\$21	\$91
1.0%	Planning & Environmental Compliance	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
15.0%	Engineering & Design	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
1.0%	Reviews, ATRs, IEPs, VE	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
1.0%	Life Cycle Updates (cost, schedule, risks)	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
1.0%	Contracting & Reprographics	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
3.0%	Engineering During Construction	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
2.0%	Planning During Construction	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
3.0%	Adaptive Management & Monitoring	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	2.4%	\$0	\$0	\$0
1.0%	Project Operations	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
31	CONSTRUCTION MANAGEMENT													
10.0%	Construction Management	\$28	\$9	30.0%	\$37	0.0%	\$28	\$9	\$37	2025Q3	11.6%	\$32	\$10	\$41
2.0%	Project Operation:	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
2.5%	Project Management	included	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	11.6%	\$0	\$0	\$0
	CONTRACT COST TOTALS:	\$4,252	\$358		\$4,610		\$4,252	\$358	\$4,610			\$5,114	\$426	\$5,540