APPENDIX B

Draft Cost Estimates

SANDY HOOK TO BARNEGAT INLET ELBERON TO LOCH ARBOUR
BEACH EROSION CONTROL PROJECT, NEW JERSEY

APPENDIX B - COST ESTIMATES

Table of Contents

SANDY HOOK TO BARNEGAT INLET ELBERON TO LOCH ARBOUR BEACH EROSION CONTROL PROJECT, NEW JERSEY

Appendix B – Cost Estimates

Introduction

This Appendix presents the detailed cost estimate for the authorized Sandy Hook to Barnegat Inlet Elberon to Loch Arbour Beach Erosion Control Project. The project was designed to provide beach erosion control (or storm damage reduction) to the highly populated communities and infrastructure located along this area of the New Jersey shoreline. The project consists of a three mile shoreline restoration from South Long Branch (Elderon) through Ocean Township (just north of the Deal Lake outfall), the extension of outfalls, and the notching of stone groins. This project will be completed with a two contract duration. The first contract will consist of the notching of 3 groins, extension of 5 outfalls, and the renourisment of 1,483,750 CY of beachfill. This work should be completed in approximately 10 months as shown on the schedule page C8. The second contract will consist of the notching 3 groins, extension of 12 outfalls, and the renourisment of 2,958,710 CY of beachfill. This work should be completed in approximately 12 months as shown on the schedule page C9.

The Shore Protection component of the project included the notching of six groins located at the Loch Arbour to Elberon reach. The unit costs for the groin notches include the excavation of existing material and placement costs of new bedding stone and reuse of existing armor stone. The material and delivery price for the stones were based on truck-hauling to the site from quarries in central New Jersey with construction utilizing land-based equipment, which rates were obtained from 2011 region 1 price level and escalated to current price level using an escalation factor derived using CWCCIS dated March 2012.

The beach nourishment cost was developed using CEDEP with a Generic Large Hopper dredge, with an average production rate of approximately 332,500cy per month

and historical factors, which coincide with the project area. For initial construction the shore crew will be responsible for grading the dredge material for the offshore slope templates and the 100' wide beach berm. In addition the beach fill placement is required to be coordinated with groin construction to preclude adverse shore erosion impacts from groin construction. This involves starting with the partial placement of fill at the groin C4 area to keep pace with groin construction while full pay fill sections are accomplished away from the groin area: full beach sections are to be completed at the groin area to coincide with groin completion. This process will also be utilized for the extension of the outfalls. This will help the contractor to work in more of a dry work zone versus a wave zone from the ocean.

The outfall extensions costs were developed with production rates obtained from RS Means and material costs from RS Means and websites containing pricing for some of the line items.

The estimated project first cost is as follows: HSLRR Plan is $134,637,511 and is 100% federally funded. These costs include beach fill, groin construction, extension of outfalls, contingencies, land & damages, design (E&D), supervision and administration (S&A) costs. The estimated total first cost can be found on table 1.

The total fully funded project cost is as follows: HSLRR Plan is $638,309,000 (rounded to the nearest thousand) and includes the initial first cost for construction, along with the land & damages, design (E&D), supervision and administration (S&A) costs associated with it. In addition the escalation to midpoint for each of the two contracts and the continuing construction costs which include the following: beach renourishment, (which occurs once every 6 years) emergency beach fill, environmental monitoring, and coastal monitoring. These costs include the S&A and E&D associated with them and the midpoint of construction for each renourishment year. The renourishment costs will be cost shared 65% federal and 35% non-federal. The estimated total fully funded project cost can be found on table 3.

The contingencies for were developed using Walla Walla's abbreviated Cost & Schedule Risk Analysis program (ARA). The contingencies for the renourishment costs were acquired from the ARA for the account 17 portion of the project's work

Annualized costs are based on an economic project life of 32 years and an interest rate of 3-1/2%. The project life is typically 50 years however the economic analysis reflects that, for the first 18 years of the project (50 – 18 = 32), only the benefits which accrue from construction of the completed portions are applicable. The annual charges include the annualized first costs along with periodic nourishment every 6 years, coastal monitoring, federal inspection cost, dune, groin, and outfall maintenance. These costs are included in table 2 (a) & (b) and are broken out for the Elberon to Loch Arbour Reach, and the entire Sandy Hook to Barnegat Inlet Section I respectively.

Table 1 below summarizes the project first cost

Total First Cost

Sandy Hook to Barnegat Inlet, Elberon to Loch Arbour Reach, NJ

October2013 Price Level

Coastal Storm Risk Management Report Cost Estimate Summary

Feat. Acct.	Description	Qty	UoM	Subtotal	Cont. %	Cont $$	Total Cost
	Contract 1						
10	**10 - Breakwaters and Seawalls**						
	Groins	1	LS	$ 896,433	26.73%	$ 239,617	$ 1,136,049
	TOTAL BREAKWATERS & SEAWALLS			$ 896,433		$ 239,617	$ 1,136,049
17	**17 - Beach Replenishment**						
	Outfalls	1	LS	$ 3,928,044	26.73%	$ 1,049,966	$ 4,978,011
	Hydraulic Beach Fill	1	LS	$ 24,523,678	26.73%	$ 6,555,179	$ 31,078,857
	TOTAL BEACH REPLENISHMENT			$ 28,451,722		$ 7,605,145	$ 36,056,868
	01 - Land & Damages	1	LS	$ 318,778	20%	$ 63,756	$ 382,533
	30 - Planning, Engineering & Design	1	LS	$ 5,354,000	15%	$ 785,967	$ 6,139,967
	31 - Construction Management	1	LS	$ 2,235,766	18%	$ 407,133	$ 2,642,899
	TOTAL FIRST COST CONTRACT 1			$ 37,256,699		$ 9,101,618	$ 46,358,317
	Contract 2						
10	**10 - Breakwaters and Seawalls**						
	Groins	1	LS	$ 969,037	26.73%	$ 259,023	$ 1,228,060
	TOTAL BREAKWATERS & SEAWALLS			$ 969,037		$ 259,023	$ 1,228,060
17	**17 - Beach Replenishment**						
	Outfalls	1	LS	$ 9,206,656	26.73%	$ 2,460,939	$ 11,667,595
	Hydraulic Beach Fill	1	LS	$ 45,935,681	26.73%	$ 12,278,608	$ 58,214,289
	TOTAL BEACH REPLENISHMENT			$ 55,142,337		$ 14,739,547	$ 69,881,884
01	**01 - Land & Damages**	1	LS	$ 637,556	20.00%	$ 127,511	$ 765,067
30	**30 - Planning, Engineering & Design**	1	LS	$ 10,240,000	14.68%	$ 1,503,232	$ 11,743,232
31	**31 - Construction Management**	1	LS	$ 3,942,942	18.21%	$ 718,010	$ 4,660,952
	TOTAL FIRST COST CONTRACT 2			$ 70,931,872		$ 17,347,323	$ 88,279,195
	TOTAL FIRST COST			$ 108,188,571		$ 26,448,941	$ 134,637,511

Table 2 (a) Annualized Cost Table – For Elberon to Loch Arbour - Deal

	Project First Cost	$	134,638,000
	Interest During Construction	$	2,010,855
	Total Investment Cost:	$	136,648,855
	Annual Costs		
	Annualized Investment Cost (a)	$	4,783,000
	Annualized Scheduled Renourishment (b)	$	2,381,000
	Annualized Major Rehab Cost (c)	$	130,000
	Annual Dune & Groin Maintenance Cost (d)	$	28,000
	Annual Coastal Monitoring Cost	$	325,000
	Annual Environmental Monitoring Cost	$	54,000
	Annual Outfall Maintenance Cost (e)	$	832,000
	Total Annual Cost*	**$**	**8,533,000**
	*October 2013 Price Level		
(a)	I = 3.50% and n = 32 yrs		
(b)	Based on 660K CY at $14.06/CY plus Mob/demob, 15% contingency, E&D, and S&A.		
(c)	From Annualized Major Rehabilitation Cost Table		
(d)	Based 0.5% of initial new groin, groin extension and groin rehabilitation costs from First Cost table on TPCS.		
(e)	Based 5% of initial outfall extensions in "October 2013 Price level" for total outfall costs with contingency.		

Table 2 (b) Annualized Cost Table – Sandy Hook to Barnegat Inlet – Section I

	Project First Cost	$	134,638,000
	Interest During Construction	$	2,011,000
	Total Investment Cost:	$	136,649,000
	Annual Costs		
	Annualized Investment Cost (a)	$	4,783,000
	Annualized Scheduled Renourishment (b)	$	7,599,000
	Annualized Major Rehab Cost (c)	$	477,000
	Annual Dune & Groin Maintenance Cost (d)	$	28,000
	Annual Coastal Monitoring Cost	$	975,000
	Annual Environmental Monitoring Cost	$	162,000
	Annual Outfall Maintenance Cost (e)	$	832,000
	Total Annual Cost*	**$**	**14,856,000**
	*October 2013 Price Level		
	Section I		
(a)	I = 3.50% and n = 32 yrs		
(b)	Based on 2.6mil CY at $14.06/CY plus Mob/demob, 15% contingency, E&D, and S&A.		
(c)	From Annualized Major Rehabilitation Cost Table		
(d)	Based 0.5% of initial new groin, groin extension and groin rehabilitation costs from First Cost table on TPCS.		
(e)	Based 5% of initial outfall extensions in "October 2013 Price level" for total outfall costs with contingency.		

Table 3 below shows the Total Project Cost Summary (TPCS).

PROJECT: Sandy Hook to Barnegat Inlet, Elberon to Loch Arbour Reach, NJ - Deal — DISTRICT: NAN New York — PREPARED: 11/5/2013
PROJECT N -
LOCATION: Sandy Hook to Barnegat Inlet, Elberon to Loch Arbour Reach, NJ — POC: CHIEF, COST ENGINEERING, Mukesh Kumar
This Estimate reflects the scope and schedule in report; -

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
						Program Year (Budget EC): 2014								
						Effective Price Level Date: 1 OCT 13								
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: 4-Nov-13 ($K) K	L	COST ($K) M	CNTG ($K) N	FULL ($K) O
10	BREAKWATER & SEAWALLS	$1,865	$499	27%	$2,364	0.0%	$1,865	$499	$2,364	$0		$1,923	$514	$2,437
17	BEACH REPLENISHMENT	$83,594	$22,345	27%	$105,939	0.0%	$83,594	$22,345	$105,939	$0		$86,333	$23,077	$109,410
	CONSTRUCTION ESTIMATE TOTALS:	$85,460	$22,843		$108,303	0.0%	$85,460	$22,843	$108,303	$0		$88,256	$23,591	$111,847
01	LANDS AND DAMAGES	$956	$191	20%	$1,148	0.0%	$956	$191	$1,148	$0		$979	$196	$1,174
30	PLANNING, ENGINEERING & DESIGN	$15,594	$2,289	15%	$17,883	0.0%	$15,594	$2,289	$17,883	$0		$16,431	$2,412	$18,843
31	CONSTRUCTION MANAGEMENT	$6,179	$1,125	18%	$7,304	0.0%	$6,179	$1,125	$7,304	$0		$6,383	$1,162	$7,546
	PROJECT COST TOTALS:	$108,189	$26,449	24%	$134,638		$108,189	$26,449	$134,638	$0		$112,048	$27,361	$139,409
17	BEACH REPLENISHMENT renourishments	$246,640	$54,877	22%	$301,517	0.0%	$246,640	$54,877	$301,517	$0		$348,104	$77,453	$425,557
	RENOURISHMENT ESTIMATE TOTALS:	$246,640	$54,877		$301,517	0.0%	$246,640	$54,877	$301,517	$0		$348,104	$77,453	$425,557
30	PLANNING, ENGINEERING & DESI renourishments	$16,976	$2,492	15%	$19,468	0.0%	$16,976	$2,492	$19,468	$0		$41,419	$6,080	$47,500
31	CONSTRUCTION MANAGEMENT renourishments	$15,452	$2,814	18%	$18,265	0.0%	$15,452	$2,814	$18,265	$0		$21,863	$3,981	$25,844
	PROJECT COST TOTALS:	$279,068	$60,183	22%	$339,251		$279,068	$60,183	$339,251	$0		$411,386	$87,515	$498,900

Mandatory by Regulation	CHIEF, COST ENGINEERING, Mukesh Kumar			
Mandatory by Regulation	PROJECT MANAGER, Ron Pinzon	ESTIMATED FEDERAL COST:	100%	$139,409
Mandatory by Regulation	CHIEF, REAL ESTATE, Noreen Dresser	ESTIMATED NON-FEDERAL COST:	0%	$0
	CHIEF, PLANNING,Frank Santomauro	ESTIMATED TOTAL PROJECT COST:		$139,409
	CHIEF, ENGINEERING, Arthur Connolly	ESTIMATED FEDERAL COST:	65%	$324,285
	CHIEF, OPERATIONS, Tom Creamer	ESTIMATED NON-FEDERAL COST:	35%	$174,615
	CHIEF, CONSTRUCTION, Gerald Byrne	ESTIMATED RENOURISHMENT TOTAL PROJECT COST:		$498,900
	CHIEF, CONTRACTING,Frank Cashman			
	CHIEF, PM-PB, Anthony Ciorra			
	CHIEF, DPM, Joseph Seebode			

**** CONTRACT COST SUMMARY ****

PROJECT: Sandy Hook to Barnegat Inlet, Elberon to Loch Arbour Reach, NJ - Deal — DISTRICT: NAN New York — PREPARED: 11/5/2013
LOCATION: Sandy Hook to Barnegat Inlet, Elberon to Loch Arbour Reach, NJ — POC: CHIEF, COST ENGINEERING, Mukesh Kumar
This Estimate reflects the scope and schedule in report; -

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)					
		Estimate Prepared: 11/4/2013				Program Year (Budget EC): 2014									
		Effective Price Level: 4-Nov-2013				Effective Price Level Date: 1 OCT 13									
		RISK BASED													
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	COST ($K) C	CNTG ($K) D	CNTG (%) E	TOTAL ($K) F	ESC (%) G	COST ($K) H	CNTG ($K) I	TOTAL ($K) J	Mid-Point Date P	INFLATED (%) L	COST ($K) M	CNTG ($K) N	FULL ($K) O	
	Contract #1														
10	BREAKWATER & SEAWALLS	$896	$240	26.73%	$1,136	0.0%	$896	$240	$1,136	2015Q2	2.3%	$917	$245	$1,162	
17	BEACH REPLENISHMENT	$28,452	$7,605	26.73%	$36,057	0.0%	$28,452	$7,605	$36,057	2015Q2	2.3%	$29,112	$7,782	$36,894	
	CONSTRUCTION ESTIMATE TOTALS:	$29,348	$7,845	27%	$37,193		$29,348	$7,845	$37,193			$30,029	$8,027	$38,056	
01	LANDS AND DAMAGES	$319	$64	20%	$383	0.0%	$319	$64	$383	2014Q4	1.3%	$323	$65	$388	
30	PLANNING, ENGINEERING & DESIGN														
2.5%	Project Management	$734	$108	15%	$842	0.0%	$734	$108	$842	2014Q4	2.6%	$753	$111	$864	
1.0%	Planning & Environmental Compliance	$293	$43	15%	$336	0.0%	$293	$43	$336	2014Q4	2.6%	$301	$44	$345	
7.8%	Engineering & Design	$2,274	$334	15%	$2,608	0.0%	$2,274	$334	$2,608	2014Q4	2.6%	$2,333	$343	$2,676	
1.0%	Reviews, ATRs, IEPRs, VE	$293	$43	15%	$336	0.0%	$293	$43	$336	2014Q4	2.6%	$301	$44	$345	
0.3%	schedule, risks)	$73	$11	15%	$84	0.0%	$73	$11	$84	2014Q4	2.6%	$75	$11	$86	
0.3%	Contracting & Reprographics	$73	$11	15%	$84	0.0%	$73	$11	$84	2014Q4	2.6%	$75	$11	$86	
1.5%	Engineering During Construction	$440	$65	15%	$505	0.0%	$440	$65	$505	2015Q2	4.7%	$461	$68	$528	
4.0%	Planning During Construction	$1,174	$172	15%	$1,346	0.0%	$1,174	$172	$1,346	2015Q2	4.7%	$1,229	$180	$1,410	
0.0%	Project Operations	$0	$0	15%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0	
31	CONSTRUCTION MANAGEMENT														
7.6%	Construction Management	$2,236	$407	18%	$2,643	0.0%	$2,236	$407	$2,643	2015Q2	2.4%	$2,289	$417	$2,706	
0.0%	Project Operation:	$0	$0	18%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0	
0.0%	Project Management	$0	$0	18%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0	
	CONTRACT COST TOTALS:	$37,257	$9,102		$46,358		$37,257	$9,102	$46,358			$38,169	$9,320	$47,489	

Table 3 below shows the Total Project Cost Summary (TPCS). (cont.)

****** CONTRACT COST SUMMARY ******

PROJECT: Sandy Hook to Barnegat Inlet, Elberon to Loch Arbour Reach, NJ - Deal
LOCATION: Sandy Hook to Barnegat Inlet, Elberon to Loch Arbour Reach, NJ
This Estimate reflects the scope and schedule in report;

DISTRICT: NAN New York
POC: CHIEF, COST ENGINEERING, Mukesh Kumar
PREPARED: 11/5/2013

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 11/4/2013 Effective Price Level: 4-Nov-2013 RISK BASED				Program Year (Budget EC): 2014 Effective Price Level Date: 1 OCT 13								
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
	Contract #2													
10	BREAKWATER & SEAWALLS	$969	$259	26.73%	$1,228	0.0%	$969	$259	$1,228	2016Q1	3.8%	$1,006	$269	$1,274
17	BEACH REPLENISHMENT	$55,142	$14,740	26.73%	$69,882	0.0%	$55,142	$14,740	$69,882	2016Q1	3.8%	$57,221	$15,295	$72,516
	CONSTRUCTION ESTIMATE TOTALS:	$56,111	$14,999	27%	**$71,110**		$56,111	$14,999	$71,110			$58,226	$15,564	$73,790
01	LANDS AND DAMAGES	$638	$128	20%	$766	0.0%	$638	$128	$766	2015Q3	2.8%	$655	$131	$787
30	PLANNING, ENGINEERING & DESIGN													
2.5%	Project Management	$1,403	$206	15%	$1,609	0.0%	$1,403	$206	$1,609	2015Q3	5.8%	$1,485	$218	$1,702
1.0%	Planning & Environmental Compliance	$561	$82	15%	$643	0.0%	$561	$82	$643	2015Q3	5.8%	$594	$87	$681
7.8%	Engineering & Design	$4,349	$638	15%	$4,987	0.0%	$4,349	$638	$4,987	2015Q3	5.8%	$4,602	$676	$5,277
1.0%	Reviews, ATRs, IEPRs, VE	$561	$82	15%	$643	0.0%	$561	$82	$643	2015Q3	5.8%	$594	$87	$681
0.3%	Life Cycle Updates (cost, schedule, risks)	$140	$21	15%	$161	0.0%	$140	$21	$161	2015Q3	5.8%	$148	$22	$170
0.3%	Contracting & Reprographics	$140	$21	15%	$161	0.0%	$140	$21	$161	2015Q3	5.8%	$148	$22	$170
1.5%	Engineering During Construction	$842	$124	15%	$966	0.0%	$842	$124	$966	2016Q1	8.0%	$909	$134	$1,043
4.0%	Planning During Construction	$2,244	$329	15%	$2,573	0.0%	$2,244	$329	$2,573	2016Q1	8.0%	$2,424	$356	$2,780
0.0%	Project Operations	$0	$0	15%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
31	CONSTRUCTION MANAGEMENT													
7.0%	Construction Management	$3,943	$718	18%	$4,661	0.0%	$3,943	$718	$4,661	2016Q1	3.8%	$4,094	$746	$4,840
0.0%	Project Operation:	$0	$0	18%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
0.0%	Project Management	$0	$0	18%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
	CONTRACT COST TOTALS:	$70,932	$17,347		**$88,279**		$70,932	$17,347	$88,279			$73,879	$18,041	**$91,920**

****** CONTRACT COST SUMMARY ******

PROJECT: Sandy Hook to Barnegat Inlet, Elberon to Loch Arbour Reach, NJ - Deal
LOCATION: Sandy Hook to Barnegat Inlet, Elberon to Loch Arbour Reach, NJ
This Estimate reflects the scope and schedule in report;

DISTRICT: NAN New York
POC: CHIEF, COST ENGINEERING, Mukesh Kumar
PREPARED: 11/5/2013

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 11/4/2013 Effective Price Level: 4-Nov-2013 RISK BASED				Program Year (Budget EC): 2014 Effective Price Level Date: 1 OCT 13								
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
	Contract #3													
17	BEACH REPLENISHMENT Year 6	$52,010	$11,572	22.25%	$63,582	0.0%	$52,010	$11,572	$63,582	2020Q2	12.4%	$58,469	$13,009	$71,478
17	BEACH REPLENISHMENT Year 12	$48,020	$10,684	22.25%	$58,704	0.0%	$48,020	$10,684	$58,704	2026Q2	25.9%	$60,437	$13,447	$73,884
17	BEACH REPLENISHMENT Year 18	$48,245	$10,735	22.25%	$58,980	0.0%	$48,245	$10,735	$58,980	2032Q2	40.9%	$67,980	$15,126	$83,106
17	BEACH REPLENISHMENT Year 24	$49,355	$10,981	22.25%	$60,336	0.0%	$49,355	$10,981	$60,336	2038Q2	57.8%	$77,858	$17,324	$95,182
17	BEACH REPLENISHMENT Year 30	$49,010	$10,905	22.25%	$59,915	0.0%	$49,010	$10,905	$59,915	2042Q2	70.1%	$83,360	$18,548	$101,907
	CONSTRUCTION ESTIMATE TOTALS:	$246,640	$54,877	22%	**$301,517**		$246,640	$54,877	$301,517			$348,104	$77,453	$425,557
30	PLANNING, ENGINEERING & DESI Year 6	$3,395	$498	15%	$3,894	0.0%	$3,395	$498	$3,894	2020Q1	27.8%	$4,339	$637	$4,976
30	PLANNING, ENGINEERING & DESI Year 12	$3,395	$498	15%	$3,894	0.0%	$3,395	$498	$3,894	2026Q1	66.3%	$5,645	$829	$6,474
30	PLANNING, ENGINEERING & DESI Year 18	$3,395	$498	15%	$3,894	0.0%	$3,395	$498	$3,894	2032Q1	122.9%	$7,569	$1,111	$8,680
30	PLANNING, ENGINEERING & DESI Year 24	$3,395	$498	15%	$3,894	0.0%	$3,395	$498	$3,894	2038Q1	209.6%	$10,511	$1,543	$12,054
30	PLANNING, ENGINEERING & DESI Year 30	$3,395	$498	15%	$3,894	0.0%	$3,395	$498	$3,894	2042Q1	293.4%	$13,355	$1,961	$15,316
	PLANNING, ENGINEERING & DESIGN TOTALS:	$16,976	$2,492	15%	**$19,468**		$16,976	$2,492	$19,468			$41,419	$6,080	$47,500
31	CONSTRUCTION MANAGEMENT Year 6	$3,090	$563	18%	$3,653	0.0%	$3,090	$563	$3,653	2020Q2	12.5%	$3,476	$633	$4,109
31	CONSTRUCTION MANAGEMENT Year 12	$3,090	$563	18%	$3,653	0.0%	$3,090	$563	$3,653	2026Q2	25.9%	$3,892	$709	$4,601
31	CONSTRUCTION MANAGEMENT Year 18	$3,090	$563	18%	$3,653	0.0%	$3,090	$563	$3,653	2032Q2	41.0%	$4,357	$793	$5,151
31	CONSTRUCTION MANAGEMENT Year 24	$3,090	$563	18%	$3,653	0.0%	$3,090	$563	$3,653	2038Q2	57.8%	$4,878	$888	$5,766
31	CONSTRUCTION MANAGEMENT Year 30	$3,090	$563	18%	$3,653	0.0%	$3,090	$563	$3,653	2042Q2	70.2%	$5,259	$958	$6,217
	CONSTRUCTION MANAGEMENT TOTALS:	$15,452	$2,814	18%	**$18,265**		$15,452	$2,814	$18,265			$21,863	$3,981	$25,844
	CONTRACT COST TOTALS:	$279,068	$60,183		**$339,251**		$279,068	$60,183	$339,251			$411,386	$87,515	**$498,900**

Table 4 below shows the construction schedule. (contract 1)

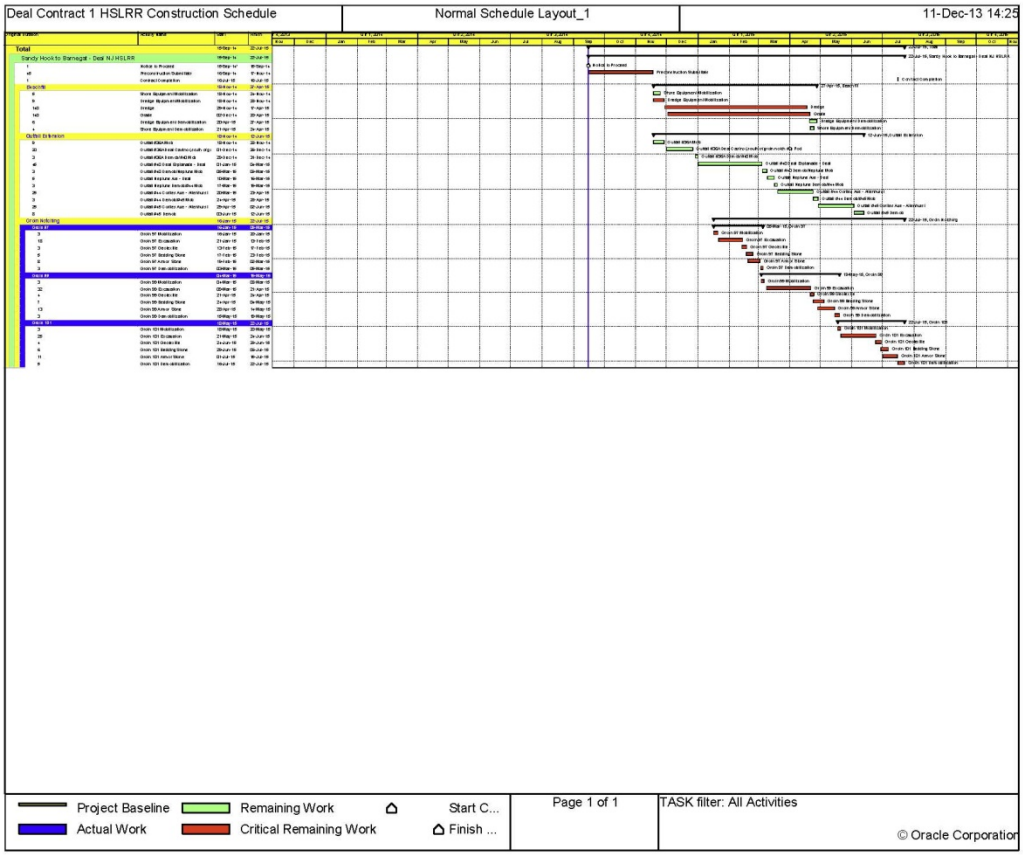

Table 4 below shows the construction schedule. (contract 2)

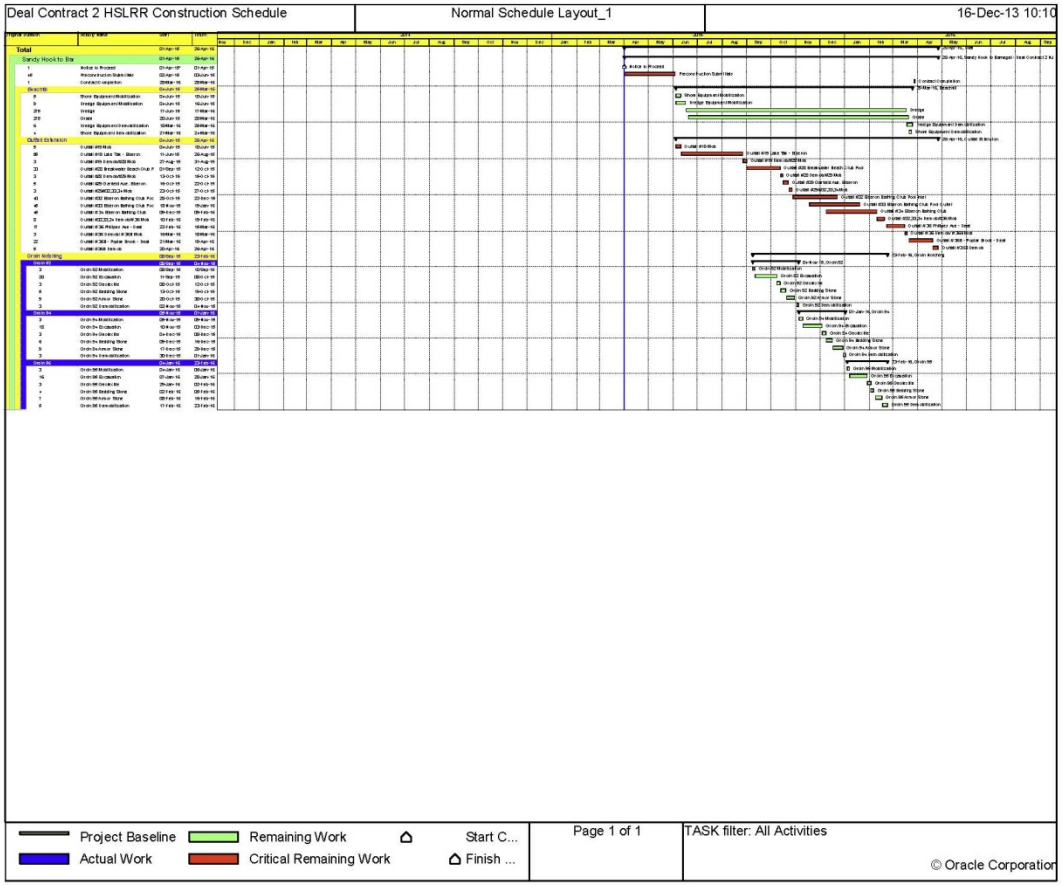

Table 5 below shows the findings from the Abbreviated Risk Analysis (ARA).

Abbreviated Risk Analysis

Project (less than $40M): **Sandy Hook to Barnegat Inlet, Elberon to Loch Arb**
Project Development Stage: **Feasibility (Recommended Plan)**
Risk Category: **Moderate Risk: Typical Project or Possible Life Safety**

Total Construction Contract Cost = $ 85,459,529

	CWWBS	Feature of Work	Contract Cost		% Contingency	$ Contingency	Total
	01 LANDS AND DAMAGES	Real Estate	$ 956,000		20.00%	$ 191,200	$ 1,147,200.00
1	10 BREAKWATERS AND SEAWALLS	Groin Notching	$ 1,865,470		25.95%	$ 484,016	$ 2,349,485.77
2	10 BREAKWATERS AND SEAWALLS	Beach Replenishment	$ 70,459,359		22.25%	$ 15,674,409	$ 86,133,768.07
3	17 BEACH REPLENISHMENT	Outfall Extensions	$ 13,134,700		50.88%	$ 6,682,588	$ 19,817,287.95
4					0.00%	$ -	$ -
5					0.00%	$ -	$ -
6					0.00%	$ -	$ -
7					0.00%	$ -	$ -
8					0.00%	$ -	$ -
9					0.00%	$ -	$ -
10					0.00%	$ -	$ -
11					0.00%	$ -	$ -
12		Remaining Construction Items	$ -	*0.0%*	0.00%	$ -	$ -
13	30 PLANNING, ENGINEERING, AND DESIGN	Planning, Engineering, & Design	$ 15,594,000		14.68%	$ 2,289,328	$ 17,883,328.27
14	31 CONSTRUCTION MANAGEMENT	Construction Management	$ 6,179,000		18.21%	$ 1,125,399	$ 7,304,398.52

Totals					
Real Estate	$ 956,000	20.00%	$ 191,200	$ 1,147,200.00
Total Construction Estimate	$ 85,459,529	26.73%	$ 22,841,013	$ 108,300,542
Total Planning, Engineering & Design	$ 15,594,000	14.68%	$ 2,289,328	$ 17,883,328
Total Construction Management	$ 6,179,000	18.21%	$ 1,125,399	$ 7,304,399
Total	$ 108,188,529		$ 26,446,940	$ 134,635,469