



**US Army Corps
of Engineers
Detroit District**

APPENDIX C
COST ENGINEERING REPORT
FOR THE
GREEN BAY DMMP PROJECT, BROWN COUNTY,
GREEN BAY, WISCONSIN

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1. Introduction

1.1 The Green Bay Harbor Federal Navigation Project is located at the southern portion of Green Bay, Wisconsin, on Lake Michigan's western shore and extends up the Fox River to a location just downstream of DePere Lock and Dam, which is about 204 miles north of Chicago, Illinois. Bayport Confined Disposal Facility (CDF) is the current disposal placement site for dredged material from the outer and inner Federal navigation channels at Green Bay Harbor. Bayport CDF is owned by Brown County and a tipping fee is assessed to the Federal Government to place dredged material at the site. With the current dredging cycle and utilizing the Bayport CDF for disposal of maintenance dredged material, it is anticipated that Bayport CDF will be at full capacity in 2015. A disposal plan to accommodate, at a minimum, 20-years of future dredged material capacity, consisting of the outer Federal channel at 2,350,000 cubic yards and the inner Federal channel at 1,956,000 cubic yards is needed.

Numerous alternatives for dredged material disposal at the Harbor have been investigated to date. These include beneficial use of material such as various island creations, open water placement, beach nourishment, additional Dredged Material Disposal Facilities (DMDF) and no action. This study seeks a feasibly engineered disposal solution that is the least costly, from both an economical and environmental position.

Based upon the investigation presented in this Phase II Dredged Material Management Plan document, Alternative 15 is a combination of constructing an in-water DMDF (Cat Island chain) and the Expand the Bayport CDF is designated as the "Base Plan". The use of Bayport CDF addresses the inner harbor channel material and the in-water DMDF (Islands) will contain the outer harbor channel material. It is feasible from an engineering stance, environmentally acceptable (Federal Standards) and least costly and it forms the basis for future actions leading toward adequately handling dredged material disposal for a minimum of 20 years for Green Bay Harbor and provides the maximum potential environmental beneficial use. The Base Plan would be funded at \$41,580,000 over a 20-year period, including constructing the in-water DMDF (Islands), and expanding the existing Bayport CDF.

The locally preferred plan is also the Base Plan. The construction cost share for the Cat Island Chain and Expanded Bayport CDF is 65% Federal and 35% non-Federal (\$27,027mil/\$14,553mil respectively). The operation and maintenance of Bayport CDF will be funded thru a tipping fee. The benefits from constructing the in-water DMDF (islands and wave barrier) would provide 20-year dredged capacity for the outer harbor and restore approximately 1,449 acres of habit, and thereby serving both navigation and environmental purposes. The in-water DMDF (islands) provides dredged material capacity for navigation with positive economic and environmental benefits. It provides a synergistic and cost-reducing approach and is

determined to be in the best public interest. Therefore, the combination of island creation and expanded Bayport CDF is the recommended plan to address the needs of both the inner and outer harbor.

Please note that any references in this report regarding elevations refer to International Great Lakes Datum (IGLD), 1955. To convert to IGLD 1985, add 0.7 feet to elevation:

2. Description of Existing Condition

2.1 General

Evaluation of Green Bay Harbor channel sediments was completed in accordance with the Great Lakes Dredged Material Testing and Evaluation Manual (USEPA/USACE, 1998). The Manual presents guidance on testing and evaluation for proposed discharges of dredged material into U.S. waters of the Great Lakes Basin. The physical and chemical testing conducted indicated that the sediments in the inner channel areas may have deleterious impacts to water quality and benthic organisms restricting its use. The material dredged from beyond mile three in outer harbor (Figure 6) is suitable for unrestricted uses. The area of the channel from approximately one-half mile upstream of the Fox River mouth, to approximately three miles into the bay is in flux with regard to sediment quality because of varying river currents and storm load outputs. The material in the flux area is expected to vary in classification from unrestricted to restricted, depending on conditions over a 20-year period. Historical testing results indicate that approximately 30% of the shoal material within the flux area would be available for unrestricted use. Future evaluations of the Federal channel sediments will be periodically conducted, consistent with the Great Lakes Testing and Evaluation Manual (USEPA/USACE 1998) to ensure that material is disposed of in accordance with its classification.

The channel limits identified in the Green Bay Harbor Dredged Material Management Plan (DMMP) study are all Federal channels from 11- ¼ miles into the bay to approximately 7 miles to the upstream limit of the Fox River.

Sediment samples were obtained in 2006 from the outer harbor (beginning at river mile 3 to the end of the Federal navigation channel). The physical and chemical analysis showed that the material is clean with metals below background, and PCB results were non-detectable. Future evaluations will be conducted frequently from a point ½ mile upstream of the mouth of the Fox River to 3 miles in the bay to determine or confirm the viability of placing the dredged material for island creation.

2.2 Outer Harbor

The outer Federal channel begins at 11-1/4 miles into the bay and extends upstream to a point ½ mile into the mouth of harbor entrance. The project channel depth and width vary in the bay. The segment from 11-1/4 miles to 3 miles into the bay has a depth and width of 26 feet and 500 feet respectively. The segment from 3 miles into the bay upstream to a point ½ mile into the harbor entrance has a depth and width of 24 feet and 300 feet, respectively.

See Figures 3 & 6.

2.3 Inner Harbor

The inner channel begins at a point ½ mile into the mouth of the harbor entrance and extends 7 miles upstream within the Fox River to the City of DePere. From the ½-mile point to approximately 3.5 miles upstream (Chicago and North Western Railway Bridge) the channel width varies, but the authorized channel depth continues at 24 feet. WRDA 07, Section 3173, authorized a reduction of the Federal navigation channel depth and width beginning at the turning basin, upstream of the Chicago and North Western Railway bridge (station 190+00) to the upstream limit at DePere (station 378+00) to 6 feet and 75 feet respectively. See Figure 2.

2.4 Bayport CDF

Currently, the dredged material from Green Bay Harbor (defined above) is placed in the Bayport Confined Disposal Facility (CDF). The Bayport CDF is located adjacent to the shoreline, west of the harbor entrance. Under a 217 agreement, the Corps pays a tipping fee to place dredged material from the inner and outer segments of the harbor into the Bayport facility. (WRDA 1996, Section 217(c), authorized the Corps to enter into an agreement with public or private entities in the design and construction of dredged material disposal facilities. The Government may reimburse the entity, subject to appropriations through payment of a subsequent tipping fee.) Bayport continues to receive dredged material that is both suitable and unsuitable for open lake placement from the inner and outer channel harbor segments of Green Bay Harbor.

The future DMDF must be able to contain, at a minimum, a 20-year dredged material capacity (including backlog), which in this case is approximately 2,350,000 cubic yards (cy) for the outer Federal channel and 1,956,000 for the inner channel for a total of 4,306,000 cubic yards. The large backlog in the Navigation Channel is due to a lack of funds available to completely maintain the channel. Permit dredging will continue to be placed in the Bayport CDF, which is owned by Brown County, but it will not be included the Base Plan. The 20-year maintenance dredging capacity is based on an annual average dredge cycle quantity of 215,300 cubic yards (outer harbor 117,500 cubic yards, inner harbor 97,800 cubic yards).

The 215,300 cubic yards/year figure was based on reviewing dredging volumes for the last 20 years. Those figures were annualized to spread the volume over a per year basis.

3. ALTERNATIVE PLANS

The alternatives presented in the following paragraphs are those that remain as potential options for consideration in handling future maintenance dredging needs of Green Bay Harbor navigation channels. The Green Bay Harbor management plan considers a full range of measures including: Island Creation, open water placement, continued use of existing CDF, and beneficial use of the dredged material. A summary of alternative placement options for the annual maintenance-dredging program is displayed at the end of this section in Attachments.

Each Management Plan will include an assessment of potential beneficial uses of dredged material for meeting both navigation and non-navigation objectives, including fish and wildlife habitat creation.

3.1 Alternative 1 - No Action.

This alternative involves no Corps action and would approximate the without project condition listed above. This alternative proposes to continue to use Bayport CDF for the dredged material from the inner and outer Federal channels of Green Bay Harbor under the 217 agreement until the year 2015 when a new facility would be needed. The Corps will also continue to pay a tipping fee for the use of the facility.

If no action is taken to address this problem, it is anticipated that the backlog of shoal material will continue to increase, suspension of maintenance dredging of the Federal navigation channels would occur, and vessels will continue operate by light loading while risking grounding as long as they can.

3.2 Alternative 4 - Construct Two Island (West and Middle Islands) DMDF, a Partial Wave Barrier, and an Access Road.

This alternative proposes to sequentially construct an in-water DMDF, two islands (West and Middle Islands) and a partial wave barrier located within Green Bay, WI. This in-water DMDF (two islands) would provide dredged material capacity of approximately 1,350,000 cubic yards and re-establish a portion of the deteriorated Cat Island Chain and surrounding shallow water habitat. The size of the two island are as follows; West Island (approximately 2,000 feet by 800 feet and would encompass approximately 74 acres) and Middle Island (approximately 2,100 feet by 1,100 feet and would encompass approximately 92 acres). The two islands would encompass a total of approximately 166 acres. The construction of the two islands and partial wave barrier could be phased-in over a period of time as needed. A temporary access road would be constructed initiating at the shoreline of the mainland and extend into the water 3,600 linear feet, connecting to the starting point of the wave barrier. The wave barrier would extend 5,400 feet eastward along the northeast side of West and Middle Island to protect the in-water DMDF (two islands) and the shallow water habitat behind it (Duck Creek delta wetland and Peters Marsh) against wave action from the bay. Construction of the West Island and Middle Island and a partial wave barrier would create a reduction in wave height and restore approximately 875 acres of water habitat and 166 acres of terrestrial habitat for a total restoration of 1,041 acres. See Appendix A, Attachment B, Alternative 4 for a plan view.

3.3 Alternative 6 - Construct a Three Island (West, Middle and East Islands) DMDF, a Partial Wave Barrier, and an Access Road.

This alternative proposes to sequentially construct an in-water DMDF, three island (West, Middle, and East Islands) and a partial (incrementally constructed) wave barrier located within Green Bay, WI. The three islands are centrally located between the northwest shoreline

and the Federal navigation channel (See Attachments). This alternative would create a dredged material capacity of approximately 2,350,000 cy. The size of the three island are as follows; West Island (approximately 74 acres), Middle Island (approximately 92 acres) and East Island (approximately 106 acres). The three islands would encompass a total of approximately 272 acres. The construction of the in-water DMDF (three islands and wave barrier) could be phased-in over a period of time as needed. A temporary access road would be constructed initiating at the shoreline of the mainland and extend into the water 3,600 linear feet, connecting to the starting point of the wave barrier. The wave barrier would extend 8,600 feet eastward along the northeast side of the three islands to protect the in-water DMDF (islands) and the shallow water habitat behind it (Duck Creek delta wetland and Peters Marsh) against wave action from the bay. Construction of the West, Middle and East Island and a partial wave barrier would create a reduction in wave height and restore approximately 1,225 acres of water habitat and 272 acres of terrestrial habitat for a total restoration of 1,497 acres.

3.4 Alternative 7 - Construct a Three Island (West, Middle and East Islands) DMDF, a Complete Wave Barrier, and an Access Road.

This alternative proposes to construct an in-water DMDF, three islands (West, Middle, and East Islands) and a complete wave barrier located within Green Bay, WI. (See Attachments) This alternative would also create a dredged material capacity of approximately 2,350,000 cubic yards of dredged material. The size and location of these islands and the access road are the same as discussed in Alternative 6 above. The difference between this alternative and Alternative 6 above is that the complete wave barrier and in-water DMDF (islands) will be constructed at once versus a partial wave barrier and each island constructed sequentially. The three islands would encompass a total of approximately 272 acres. The wave barrier would extend 8,600 feet eastward along the northeast side of the three islands to protect the islands and the shallow water habitat behind it (Duck Creek delta wetland and Peters Marsh) against wave action from the bay. Construction of the West, Middle and East Island and a complete wave barrier would create a reduction in wave height and restore approximately 1,225 acres of water habitat and 272 acres of terrestrial habitat for a total restoration of 1,497 acres.

3.5 Alternative 9 – Open Water Placement.

This alternative proposes to place dredged material in an open water disposal site, approximately 51 miles from the outer channel of Green Bay Harbor, Lake Michigan. The character of the dredged material from the outer Federal channel (Bay Mile 3 to 11) is classified as suitable for in-water placement.

3.6 Alternative 11 – Brown County Expanded Bayport CDF (Scenario 1- Inner Channel Only).

This alternative proposes to expand Bayport CDF (construct in yr 2023) for the dredged

material from the inner channel of Green Bay Harbor. Approximately 400,000 cubic yards of dried dredged material will be transferred from the existing Bayport CDF to Renard Island CDF for capping purposes, which will provide additional capacity and it will be funded through O&M. Based on only the inner harbor demand, and 400,000 cubic yards of dried dredged material being transferred from the existing Bayport CDF to Renard Island CDF, it is anticipated that there are approximately 16 years of remaining capacity. Then, Brown County would need to provide capacity of approximately 800,000 cubic yards (for yrs 2024 thru 2031) to meet the total 20-year dredged material capacity (1,956,000 cubic yards) needs for the inner channel. The expansion would consist of constructing a 36 acre Dredged Material Disposal Facility (DMDF) adjacent to the existing Bayport CDF containing dry cells for stock piling dry dredged material. The existing Bayport CDF will continue to process wet dredged material. The process will consist of temporary storage of the wet dredged material in designated cells until it is dried, then transferring it to the 36 acre expansion site. Taking into consideration, the 400,000 cubic yards for Renard Island, the proposed 36 acre DMDF site will be designed to contain approximately 800,000 cubic yards. This alternative will provide additional placement capacity for years 2020 thru 2031. The Corps will continue to pay a tipping fee for the Operation & Maintenance of the facility. The design for Alternative 11 with the quantities is located in the listed Attachments.

3.7 Alternative 12 – Brown County Expanded Bayport CDF (Scenario 2 -Inner and Outer Channels)

This alternative proposes to expand Bayport CDF as described in Alternative 11 above and construct an additional Dredged Material Disposal Facility (DMDF), near Holland Twp., WI (construct in yr 2016) to provide dredged material capacity for the inner and outer channels of Green Bay Harbor. Based on the inner and outer harbor demand, it is anticipated that there are approximately 9 years of remaining capacity. Then, Brown County would need to provide capacity of approximately 3,444,800 cubic yards (for yrs 2019 thru 2031) to meet the total 20-year dredged material capacity (4,300,000 cubic yards) needs for the inner and outer channels. The DMDF would consist of constructing a 100 acre DMDF approximately 20 miles from the Bayport CDF, near Holland, WI, containing dry cells for stock piling dry dredged material.

The existing Bayport CDF will continue to process wet dredged material. The process would consist of the temporary storage of the wet dredged material in designated cells until it is dried, then transferring it to the 36 acre expansion site and the 100 acre DMDF. Approximately 400,000 cubic yards of dried dredged material will be transferred from the existing Bayport CDF to Renard Island CDF. Taking into consideration, the 400,000 cubic yards for Renard Island, and the 800,000 cubic yards for the proposed 36 acre expansion site, the 100 acre DMDF will be required to contain approximately 2,271,200 cubic yards. The Corps will continue to pay a tipping fee for the Operation & Maintenance of the facility.

3.8 Alternative 15 – Combination of Alternative 7 and Alternative 11. (Base Plan)

This alternative proposes to combine *Alternative 7 - Construct a three island (West, Middle and East Islands) DMDF, a complete wave barrier, and an access road with Alternative 11 –*

Brown County Expanded Bayport CDF (Inner Channel Only) to address the inner and outer dredged material capacity harbor needs. (See descriptions above).

3.9 Alternative 16 – Combination of Alternative 9 and Alternative 11.

This alternative proposes to combine *Alternative 9 – Open Water Placement with Alternative 11 – Brown County Expanded Bayport CDF (Inner Channel Only)* to address the inner and outer dredged material capacity harbor needs. (See description above).

3.10 Alternative 17 – Combination of Alternative 4 and Alternative 11

This alternative proposes to combine *Alternative 4 – Construct a two island (West and Middle Islands) DMDF, a partial wave barrier, and an access road* with expanding Bayport CDF (construct in yr 2023) as described in Alternative 11 above and construct an additional Dredged Material Disposal Facility (DMDF), near Holland Twp., WI (construct in yr 2022) to provide dredged material capacity for the inner and outer channels of Green Bay, Harbor. Based on the inner and outer harbor demand, it is anticipated that there are approximately 9 years of remaining capacity. Then, Brown County would need to provide capacity of approximately 3,444,800 cubic yards (for yrs 2019 thru 2031) to meet the total 20-year dredged material capacity (4,300,000 cubic yards) needs for the inner and outer channels.

The 36 acre expanded Bayport CDF (construct in yr 2023) includes the dredged material from the Inner Channel only and would provide dredge material capacity of approximately 800,000 cubic yards (yrs 2024 thru 2031). Approximately 400,000 cubic yards of dried dredged material will be transferred from the existing Bayport CDF to Renard Island CDF, providing capacity for years 2028 thru 2031 for the inner harbor material. The construction of the West and Middle Island will provide dredged material capacity of approximately 1,350,000 cubic yards (yrs 2012 thru 2022). The portion of the outer channel equivalent to the capacity of the East Island (1,000,000 cubic yards) will be placed in the 100 acre DMDF located at Holland Twp., WI, approximately 20 miles from the Bayport CDF.

The existing Bayport CDF will continue to process wet dredged material. The process would consist of the temporary storage of the wet dredged material in designated cells until it is dried, then transferring it to the 36 acre expansion site and the 100 acre DMDF. Taking into consideration, the 400,000 cubic yards for Renard Island, and the 800,000 cubic yards for the proposed 36 acre expansion site, the 100 acre DMDF will be required to contain approximately 1,000,000 cubic yards. The Corps will continue to pay a tipping fee for the Operation & Maintenance of the facility.

4. Purpose and Scope of Cost Engineering Appendix

4.1 Purpose of Cost Engineering Appendix

The purpose of this appendix is to present the cost estimates associated with the five alternative plans identified in the preceding paragraphs. Although all the alternatives were cost

estimated for the evaluation, only the viable seven plans were identified as feasible. Excel summary spreadsheets are used to present the alternative cost estimates in this appendix (See Attachments). The alternatives include the cost of dredging the inner and outer harbor. There are considered O&M costs and are not included in the TPCS. Information from recent studies and construction projects that utilized features similar to those proposed and USACE Unit Pricing Software (MII), and Corps of Engineers Dredge Estimating Program (CEDEP) were used to prepare estimates.

4.2 Scope of Cost Engineering Appendix

The scope of this appendix is to present the construction of Alternative 15– Combination of Alternative 7 and Alternative 11(Base Plan). This appendix is prepared in accordance with the guidance contained in ER 1110-2-1302, Civil Works Cost Engineering, and ETL 1110-2-573, Construction Cost Estimating Guide for Civil Works. The submitted cost estimate was prepared using Micro-Computer Aided Cost Estimating System (MCACES), Second Generation (MII) software for cost estimating, and cost estimates will be presented in the Civil Works Breakdown Structure (CWBS) format to the subfeature level. The Cost and Schedule Risk Analysis provided in attached appendix (Cost & Schedule Risk Analysis). The project Construction Schedule shows activity to project completion. The Total Project Cost Summary (TPCS) and the MII cost estimate are also included in this appendix, as are the plans and quantities.

5. Alternative Cost Estimate

5.1 Construction quantities shown in the engineering technical appendix are used in the cost estimates presented in this appendix. Additional quantities and features that should be considered for the chosen alternative have been computed by the cost engineering personnel and included in the cost estimate. The quantities are therefore substantially complete from the standpoint of biddability, constructibility, and operability of the chosen alternative.

6. Cost and Schedule

6.1 Cost

This appendix includes the cost estimate prepared using MII, CEDEP, EP 110-1-8, Volume 4, 31 July 2007 and estimators spreadsheet to support the chosen alternative. Alternative 15-Combination of Alternative 7 and Alternative 11 is the chosen alternative; this MII cost estimate for Alternative 7 includes the construction of three islands, (West, Middle, and East Islands), an access road, complete wave barrier, geotextile, bedding stone and armor stone. The dredging estimate for this alternative during the selection process included the cost estimate prepared using CEDEP for mechanically dredging the outer harbor with dredge material being hydraulically placed, CEDEP used area factors, and fuel adjusted to pricing at time of estimate. Alternative 11 is for the Brown County Expanded Bayport CDF which will likely be designed and constructed by the local sponsor and a MII cost estimate was prepared to support the locals sponsors preliminary cost estimate. The MII cost estimate for the creating a 36 acre cell adjacent to the

existing Bayport CDF. The estimate includes inspection trench, dikes, water monitoring, and closure after its 20 year use.

The cost for WBS 30/31 accounts were provided by Engineering and Construction Division and based upon historical costs from similar types of projects.

6.2 Schedule

This appendix includes the project construction schedule as taken from MII and put into Project 2007. There are 3 tables to show the construction schedules. Table 1 shows the construction schedule for Cat Islands (West, Middle, and East) with the placement of shot rock, gravel, culverts, geotextile, bedding stone, and armor stone. It is assumed that construction would begin in FY11Q3 with completion of all three islands in FY14Q1. Table 2 shows the construction schedule for the Brown County Bayport CDF Expansion, which includes, clearing and grubbing, stockpile topsoil, inspection trench, dikes, ground water monitoring, topsoil, and seed. At the present rate of use, this CDF expansion will be required for use in FY23Q3. Therefore construction would begin in FY23Q1 and be completed in FY23Q4. Table 3 shows the construction schedule for the Closure of the Bayport CDF Expanded, which includes capping the CDF with clean dry dredge material, and seeding. Therefore the capping would start in FY32Q3 and not be completed with seeding until FY33Q3.

7. Cost and Schedule Risk Analysis

The cost and schedule risk analysis was prepared by Walla Walla, DX, and reflects the cost estimate prepared at that time for the evaluation of the five alternatives. Crystal ball was performed on all five alternatives to set contingencies during evaluation. The cost estimate still reflects the 20% contingency as determined in the risk analysis. The Cost and Schedule Risk Analysis is located in Appendix Project Cost and Schedule Risk Analysis Report attached to this appendix.

8. Life Cycle Cost Analysis and Comparison of Alternatives

Presented is the development of the life cycle cost analysis of each of the feasible alternatives.

8.1 Life Cycle Cost Analysis

The life cycle cost analysis for each alternative includes the following cost elements:

- Initial capital costs
- Annual Operations and Maintenance (O&M) costs

The development of each of these cost are described below, followed by a summary of the life cycle cost.

8.2. Initial Capital Cost

The initial capital costs of each alternative were developed in detail and are shown in table 8.1 of this section. These costs are in current dollars.

8.3. Annual Operations and Maintenance Costs

The alternatives proposed Alternative 1- No Action, Alternative 6 - Construct a Three Island (West, Middle and East Islands) DMDF, a Partial Wave Barrier, and an Access Road, Alternative 7 - Construct a Three Island (West, Middle and East Islands) DMDF, a Complete Wave Barrier, and an Access Road, Alternative 9 – Open Water Placement (Outer), Alternative 12 – Brown County Expanded Bayport CDF (Inner & Outer), Alternative 15 – Combination of Alternative 7 & Alternative 11, Alternative 16 – Combination of Alternative 9 & Alternative 11, Alternative 17 – Combination of Alternative 4 & Alternative 11. Alternative 15 – Combination of Alternative 7 & Alternative 11 was selected as the Base Plan for this project. All Alternatives that include repairs to the Cat Islands wave barrier will show Life Cycle Cost; all work for the Bayport Expanded CDF will be covered by the tipping fee. The development of the annual operations and maintenance unit costs for each alternative relied on the cost spreadsheets used during the evaluation process before contingency.

- Alternative 6 - Construct a Three Island (West, Middle and East Islands) DMDF, a Partial Wave Barrier, and an Access Road, historical data based upon similar type structures shows that the yearly cost for Alternative 7 - Cat Islands (West, Middle, and East), maintenance per year is approximately \$23,654 for 8,143 linear feet. This includes clearing and removal of growth along wave barrier, and any repairs which may occur from weather, or ice damage.
- Alternative 7 - Construct a Three Island (West, Middle and East Islands) DMDF, a Complete Wave Barrier, and an Access Road, historical data based upon similar type structures shows that the yearly cost for Alternative 7 - Cat Islands (West, Middle, and East), maintenance per year is approximately \$23,423 for 8,143 linear feet. This includes clearing and removal of growth along wave barrier, and any repairs which may occur from weather, or ice damage.
- Alternative 9 - Open Water Placement (Outer), there are no operation and maintenance cost associated with this alternative.
- Alternative 12 - Brown County Expanded Bayport CDF (Inner & Outer), all operations and maintenance would be included in the Brown County tipping fee.
- Alternative 15 - Combination of Alternative 7 & Alternative 11, historical data based upon similar type structures shows that the yearly cost for Alternative 7 - Cat Islands (West, Middle, and East), maintenance per year is approximately \$23,423 for 8,143 linear feet. This includes clearing and removal of growth along

wave barrier, and any repairs which may occur from weather, or ice damage. Alternative 11 - Brown County Expanded Bayport CDF (Inner Channel Only). Yearly operations and maintenance cost will be included in the Brown County tipping fee.

- Alternative 16, - Combination of Alternative 9 & Alternative 11, historical data shows that the yearly cost for Alternative 9 – Open Water Placement, no cost associated with open water placement. Alternative 11 - Brown County Expanded Bayport CDF (Inner Channel Only). Yearly operations and maintenance cost will be included in the Brown County tipping fee
- Alternative 17 - Combination of Alternative 4 and Brown County Expanded Bayport CDF (Scenario 3) historical data shows that the yearly cost for Alternative 4 - Cat Islands (West, and Middle), maintenance per year is approximately \$11,098 for 4,955 linear feet. This includes clearing and removal of growth behind wall, and any repairs which may occur from weather, or ice damage. Alternative 11 - Brown County Expanded Bayport CDF (Scenario 1- Inner Channel Only). Yearly operations and maintenance cost will be included in the Brown County tipping fee.
- For all alternatives, it is anticipated that project life is 50 years and no capital costs are anticipated.

8.4 LIFE CYCLE COST SUMMARY SHEET										
S. No.	Item Feature/Description	Quantities	Unit	Alternative 6	Alternative 7	Alternative 9	Alternative 12	*Alternative 15	Alternative 16	Alternative 17
12	NAVIGATION PORTS & HARBORS									
1	Cat Islands (West, Middle, East)	1	LS	23,654,145.00	23,423,310.00	0.00	0.00	23,423,310.00	0.00	0.00
2	Cat Islands (West, Middle)	1	LS	0.00	0.00	0.00	0.00	0.00	0.00	11,097,568.00
3	Bayport 36 Acre Site	1	LS	0.00	0.00	0.00	5,055,426.00	5,055,426.00	5,055,426.00	5,055,426.00
4	Bayport 100 Acre Site	1	LS	0.00	0.00	0.00	21,900,709.00	0.00	0.00	18,505,959.00
5	Open Water Placement	1	LS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUB TOTAL			23,654,145.00	23,423,310.00	0.00	26,956,135.00	28,478,736.00	5,055,426.00	34,658,953.00
	CONSTRUCTION COST			23,654,145.00	23,423,310.00	0.00	26,956,135.00	28,478,736.00	5,055,426.00	34,658,953.00
	50 year Life Cycle Cost			1,182,707.25	1,171,165.50	0.00	0.00	1,171,165.50	0.00	554,878.40
	All Cost Shown at Current Dollars									

NOTES:

1. The Life Cycle Cost are only for the operation and maintenance cost associated with the Cat Islands, Bayport CDF operation and maintenance cost will be included in the tipping fee to Brown County.

* Alternative 15 is the selected alternative. The TPCS does not match with cost estimate for alternative selection.

This did not alter the Life Cycle Cost.

GREEN BAY DMMP, GREEN BAY, WISCONSIN**PROPOSED ALTERNATIVES 6****ALTERNATIVE 6 CONSTRUCT PARTIAL THREE ISLAND WAVE BARRIER AND ACCESS ROAD**

S. No.	Item Feature/Description	Quantities	Unit	Unit Cost	Alternative 6
CONSTRUCTION COST					
12	NAVIGATION PORTS & HARBORS				
1.0	Dredging	2350000	CY	\$12.22	\$ 28,717,000.00
2.0	Cat Island Disposal (Three Islands)	1.00	LS	\$23,654,145.00	\$ 23,654,145.00
3.0	Bayport 36 Acre Site	1.00	LS	\$0.00	\$ -
4.0	Bayport 100 Acre Site	1.00	LS	\$0.00	\$ -
	SUB TOTAL				\$ 52,371,145.00
	CONTINGENCY 20%				\$ 10,474,229.00
	CONSTRUCTION COST				\$ 62,845,374.00
NON CONSTRUCTION COST					
	Engineering & Design (3% of Total Const. Cost)				\$ 1,571,100.00
	Supervision & Inspection (8% of Total Const. Cost)				\$ 4,189,700.00
	Engineering & Design During Construction EDDC (0.5% of Total Const. Cost)				\$ 261,900.00
	Planning/Program Management				\$ 100,000.00
	Engineering Tech. Review ATR				\$ 30,000.00
	Solicitation/Contracting				\$ 400,000.00
	Real Estate				\$ 25,000.00
	LEERDS				\$ 10,000.00
	Environmental Branch				\$ 44,000.00
	TOTAL NON CONSTRUCTION COST				\$ 6,631,700.00
	TOTAL CONSTRUCTION COST				\$ 69,477,074.00

GREEN BAY DMMP, GREEN BAY, WISCONSIN**PROPOSED ALTERNATIVES 7****ALTERNATIVE 7 CONSTRUCT COMPLETE THREE ISLAND WAVE BARRIER AND ACCESS ROAD**

S. No.	Item Feature/Description	Quantities	Unit	Unit Cost	Alternative 7
CONSTRUCTION COST					
12	NAVIGATION PORTS & HARBORS				
1.0	Dredging	2350000	CY	\$12.22	\$ 28,717,000.00
2.0	Cat Island Disposal (Three Islands)	1.00	LS	\$23,423,310.00	\$ 23,423,310.00
3.0	Bayport 36 Acre Site	1.00	LS	\$0.00	\$ -
4.0	Bayport 100 Acre Site	1.00	LS	\$0.00	\$ -
	SUB TOTAL				\$ 52,140,310.00
	CONTINGENCY 20%				\$ 10,428,062.00
	CONSTRUCTION COST				\$ 62,568,372.00
NON CONSTRUCTION COST					
	Engineering & Design (3% of Total Const. Cost)				\$ 1,564,200.00
	Supervision & Inspection (8% of Total Const. Cost)				\$ 4,171,200.00
	Engineering & Design During Construction EDDC (0.5% of Total Const. Cost)				\$ 260,700.00
	Planning/Program Management				\$ 100,000.00
	Engineering Tech. Review ATR				\$ 30,000.00
	Solicitation/Contracting				\$ 400,000.00
	Real Estate				\$ 25,000.00
	LEERDS				\$ 10,000.00
	Environmental Branch				\$ 44,000.00
	TOTAL NON CONSTRUCTION COST				\$ 6,605,100.00
	TOTAL CONSTRUCTION COST				\$ 69,173,472.00

**GREEN BAY DMMP, GREEN BAY, WISCONSIN
 PROPOSED ALTERNATIVES 9
 OPEN WATER PLACEMENT (OUTER)**

S. No.	Item Feature/Description	Quantities	Unit	Unit Cost	Alternative 9
CONSTRUCTION COST					
12	NAVIGATION PORTS & HARBORS				
1.0	Dredging	2350000	CY	\$67.10	\$ 157,685,000.00
2.0	Cat Island Disposal	1.00	LS	LS	
3.0	Bayport 36 Acre Site	1.00	LS	LS	
4.0	Bayport 100 Acre Site	1.00	LS	LS	
	SUB TOTAL				\$ 157,685,000.00
	CONTINGENCY 23%				\$ 36,267,550.00
	CONSTRUCTION COST				\$ 193,952,550.00
NON CONSTRUCTION COST					
	Engineering & Design (3% of Total Const. Cost)				\$ 4,730,600.00
	Supervision & Inspection (8% of Total Const. Cost)				\$ 12,614,800.00
	Engineering & Design During Construction EDDC (0.5% of Total Const. Cost)				\$ 788,400.00
	Planning/Program Management				\$ 100,000.00
	Engineering Tech. Review ATR				\$ 30,000.00
	Solicitation/Contracting				\$ 400,000.00
	Real Estate				\$ -
	LEERDS				\$ -
	Environmental Branch				\$ 44,000.00
	TOTAL NON CONSTRUCTION COST				\$ 18,707,800.00
	TOTAL CONSTRUCTION COST				\$ 212,660,350.00

**GREEN BAY DMMP, GREEN BAY, WISCONSIN
 PROPOSED ALTERNATIVES 12
 BROWN COUNTY EXPANDED BAYPORT CDF (Scenario 2 - Inner & Outer)**

S. No.	Item Feature/Description	Quantities	Unit	Unit Cost	Alternative 12
CONSTRUCTION COST					
12	NAVIGATION PORTS & HARBORS				
1.0	Dredging	4300000	CY	\$30.37	\$ 130,591,000.00
2.0	Cat Island Disposal	1.00	LS	\$0.00	
3.0	Bayport 36 Acre Site	1.00	LS	\$5,055,426.00	\$ 5,055,426.00
4.0	Bayport 100 Acre Site	1.00	LS	\$21,900,709.00	\$ 21,900,709.00
	SUB TOTAL				\$ 157,547,135.00
	CONTINGENCY 23%				\$ 36,235,841.05
	CONSTRUCTION COST				\$ 193,782,976.05
NON CONSTRUCTION COST					
	Engineering & Design (3% of Total Const. Cost)				\$ 4,726,400.00
	Supervision & Inspection (8% of Total Const. Cost)				\$ 12,603,800.00
	Engineering & Design During Construction EDDC (0.5% of Total Const. Cost)				\$ 787,700.00
	Planning/Program Management				\$ 100,000.00
	Engineering Tech. Review ATR				\$ 30,000.00
	Solicitation/Contracting				\$ 400,000.00
	Real Estate				\$ 25,000.00
	LEERDS				\$ 200,000.00
	Environmental Branch				\$ 44,000.00
	TOTAL NON CONSTRUCTION COST				\$ 18,916,900.00
	TOTAL CONSTRUCTION COST				\$ 212,699,876.05

**GREEN BAY DMMP, GREEN BAY, WISCONSIN
 PROPOSED ALTERNATIVES 15
 COMBINATION OF ALTERNATIVE 7 & ALTERNATIVE 11**

S. No.	Item Feature/Description	Quantities	Unit	Unit Cost	Alternative 15
CONSTRUCTION COST					
12	NAVIGATION PORTS & HARBORS				
1.0	Dredging	4300000	CY	\$14.87	\$ 63,941,000.00
2.0	Cat Island Disposal (Three Islands)	1.00	LS	\$23,423,310.00	\$ 23,423,310.00
3.0	Bayport 36 Acre Site	1.00	LS	\$5,055,426.00	\$ 5,055,426.00
4.0	Bayport 100 Acre Site	1.00	LS	\$0.00	\$ -
	SUB TOTAL				\$ 92,419,736.00
	CONTINGENCY 20%				\$ 18,483,947.20
	CONSTRUCTION COST				\$ 110,903,683.20
NON CONSTRUCTION COST					
	Engineering & Design (3% of Total Const. Cost)				\$ 2,772,600.00
	Supervision & Inspection (8% of Total Const. Cost)				\$ 7,393,600.00
	Engineering & Design During Construction EDDC (0.5% of Total Const. Cost)				\$ 462,100.00
	Planning/Program Management				\$ 100,000.00
	Engineering Tech. Review ATR				\$ 30,000.00
	Solicitation/Contracting				\$ 400,000.00
	Real Estate				\$ 25,000.00
	LEERDS				\$ 10,000.00
	Environmental Branch				\$ 44,000.00
	TOTAL NON CONSTRUCTION COST				\$ 11,237,300.00
	TOTAL CONSTRUCTION COST				\$ 122,140,983.20

**GREEN BAY DMMP, GREEN BAY, WISCONSIN
 PROPOSED ALTERNATIVES 16
 COMBINATION OF ALTERNATIVE 9 & ALTERNATIVE 11**

S. No.	Item Feature/Description	Quantities	Unit	Unit Cost	Alternative 16
CONSTRUCTION COST					
12	NAVIGATION PORTS & HARBORS				
1.0	Dredging	4300000	CY	\$44.14	\$ 189,802,000.00
2.0	Cat Island Disposal (Three Islands)	1.00	LS	\$0.00	\$ -
3.0	Bayport 36 Acre Site	1.00	LS	\$5,055,426.00	\$ 5,055,426.00
4.0	Bayport 100 Acre Site	1.00	LS	\$0.00	\$ -
	SUB TOTAL				\$ 194,857,426.00
	CONTINGENCY 21%				\$ 40,920,059.46
	CONSTRUCTION COST				\$ 235,777,485.46
NON CONSTRUCTION COST					
	Engineering & Design (3% of Total Const. Cost)				\$ 5,845,700.00
	Supervision & Inspection (8% of Total Const. Cost)				\$ 15,588,600.00
	Engineering & Design During Construction EDDC (0.25% of Total Const. Cost)				\$ 487,100.00
	Planning/Program Management				\$ 100,000.00
	Engineering Tech. Review ATR				\$ 30,000.00
	Solicitation/Contracting				\$ 400,000.00
	Real Estate				\$ 25,000.00
	LEERDS				\$ -
	Environmental Branch				\$ 44,000.00
	TOTAL NON CONSTRUCTION COST				\$ 22,520,400.00
	TOTAL CONSTRUCTION COST				\$ 258,297,885.46

**GREEN BAY DMMP, GREEN BAY, WISCONSIN
 PROPOSED ALTERNATIVES 17
 COMBINATION OF ALTERNATIVE 4 & ALTERNATIVE 11**

S. No.	Item Feature/Description	Quantities	Unit	Unit Cost	Alternative 17
CONSTRUCTION COST					
12	NAVIGATION PORTS & HARBORS				
1.0	Dredging	4300000	CY	\$21.94	\$ 94,342,000.00
2.0	Cat Island Disposal (Two Islands)	1.00	LS	\$11,097,568.00	\$ 11,097,568.00
3.0	Bayport 36 Acre Site	1.00	LS	\$5,055,426.00	\$ 5,055,426.00
4.0	Bayport 100 Acre Site	1.00	LS	\$18,505,959.00	\$ 18,505,959.00
	SUB TOTAL				\$ 129,000,953.00
	CONTINGENCY 25%				\$ 32,250,238.25
	CONSTRUCTION COST				\$ 161,251,191.25
NON CONSTRUCTION COST					
	Engineering & Design (3% of Total Const. Cost)				\$ 3,870,000.00
	Supervision & Inspection (8% of Total Const. Cost)				\$ 10,320,100.00
	Engineering & Design During Construction EDDC (0.25% of Total Const. Cost)				\$ 322,500.00
	Planning/Program Management				\$ 100,000.00
	Engineering Tech. Review ATR				\$ 30,000.00
	Solicitation/Contracting				\$ 400,000.00
	Real Estate				\$ 25,000.00
	LEERDS				\$ 210,000.00
	Environmental Branch				\$ 44,000.00
	TOTAL NON CONSTRUCTION COST				\$ 15,321,600.00
	TOTAL CONSTRUCTION COST				\$ 176,572,791.25

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

PROJECT: Green Bay DMMP, Alternative 15
LOCATION: Green Bay, Wisconsin

DISTRICT: LRE
POC: CHIEF, COST ENGINEERING, William D. Merte, P.E.
PREPARED: 3-Mar-10

This Estimate reflects the scope and schedule in report; Green Bay DMMP Feasibility Report 03 March 2010

WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	Program Year (Budget EC): 2010 Effective Price Level Date: 1 OCT 09				FULLY FUNDED PROJECT ESTIMATE				
						ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Spent Thru:				
										3-Mar-10 (\$K)	COST (\$K)	CNTG (\$K)	FULL (\$K)	
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
12	NAVIGATION PORTS & HARBORS													
	Federal Funds	18,510	3,702	20%	22,212	5.2%	19,478	3,896	23,374			20,054	4,011	24,065
	Non-Federal Funds	9,967	1,993	20%	11,960	5.2%	10,489	2,098	12,587			10,771	2,154	12,925
	#N/A													
	#N/A													
	CONSTRUCTION ESTIMATE TOTALS:	28,477	5,695		34,172	5.2%	29,967	5,994	35,961			30,825	6,165	36,990
01	LANDS AND DAMAGES	-	-	-	-	-	-	-	-			-	-	-
01	Federal Funds	6	1	20%	7	-2.8%	6	1	7			6	1	7
01	Non-Federal Funds	4	-	20%	4		4	-	4			4	-	4
30	PLANNING, ENGINEERING & DESIGN	1,256	251	20%	1,507	6.6%	1,340	266	1,606			1,353	269	1,622
31	CONSTRUCTION MANAGEMENT	2,278	456	20%	2,734	0.6%	2,293	458	2,751			2,465	492	2,957
	PROJECT COST TOTALS:	32,021	6,403	20%	38,424	5.0%	33,610	6,719	40,329			34,653	6,927	41,580

William D. Merte
CHIEF, COST ENGINEERING, William D. Merte, P.E.

David W. Bowman
PROJECT MANAGER, David Bowman

Victor Kotwi
CHIEF, REAL ESTATE, Victor Kotwi (Recommended)

Jim Galloway
CHIEF, PLANNING, Jim Galloway

David L. Schweiger
CHIEF, ENGINEERING & CONSTRUCTION OFFICE, David L. Schweiger, P.E.

Wayne Schloop
CHIEF, OPERATIONS, Wayne Schloop

David L. Schweiger
CHIEF, CONSTRUCTION, David L. Schweiger, P.E.

Marilyn Hill
CHIEF, CONTRACTING, Marilyn Hill

Larry Pawlus
CHIEF, PM, Larry Pawlus

ESTIMATED FEDERAL COST: **41,580**
ESTIMATED NON-FEDERAL COST: **-**
ESTIMATED TOTAL PROJECT COST: **41,580**

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

**** CONTRACT COST SUMMARY ****

PROJECT: Green Bay DMMP, Alternative 15
 LOCATION: Green Bay, Wisconsin
 This Estimate reflects the scope and schedule in report; Green Bay DMMP Feasibility Report 03 March 2010

DISTRICT: LRE
 POC: CHIEF, COST ENGINEERING, William D. Merte, P.E.
 PREPARED: 3-Mar-10

Estimate Prepared: 3-Mar-10 Effective Price Level: 1 OCT Phase 1, Cat Islands						Program Year (Budget EC): 2010 Effective Price Level Date: 1 OCT 09				FULLY FUNDED PROJECT ESTIMATE				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
PHASE 1														
12	NAVIGATION PORTS & HARBORS	\$ -	\$ -		\$ -									
12	Federal Funds	\$ 15,225	\$ 3,045	20%	\$ 18,270	0.6%	15,320	3,064	18,384	2012Q4	3.3%	15,825	3,165	18,990
12	Non-Federal Funds	\$ 8,198	\$ 1,640	20%	\$ 9,838	0.6%	8,249	1,650	9,899	2012Q4	3.3%	8,521	1,704	10,225
	#N/A	\$ -	\$ -		\$ -									
	#N/A	\$ -	\$ -		\$ -									
CONSTRUCTION ESTIMATE TOTALS:		23,423	4,685	20%	28,108		23,569	4,714	28,283			24,346	4,869	29,215
01	LANDS AND DAMAGES	\$ -	\$ -		\$ -									
01	LANDS AND DAMAGES	\$ 6	\$ 1	20%	\$ 7	0.6%	6	1	7	2011Q2	0.8%	6	1	7
01	LANDS AND DAMAGES	\$ 4	\$ -		\$ 4	0.6%	4		4	2011Q2	0.8%	4		4
30 PLANNING, ENGINEERING & DESIGN														
	Project Management	25	\$ 5	20%	30	0.6%	25	5	30	2011Q2	0.8%	25	5	30
	Planning & Environmental Compliance	44	\$ 9	20%	53	0.6%	44	9	53	2011Q2	0.8%	44	9	53
3.0%	Engineering & Design	703	\$ 141	20%	843	0.6%	707	141	848	2011Q2	0.8%	712	142	854
	Engineering Tech Review ATR & VE	25	\$ 5	20%	30	0.6%	25	5	30	2011Q2	0.8%	25	5	30
	Contracting & Reprographics	25	\$ 5	20%	30	0.6%	25	5	30	2011Q2	0.8%	25	5	30
0.5%	Engineering During Construction	117	\$ 23	20%	141	0.6%	118	24	142	2012Q4	3.3%	122	25	147
	Planning During Construction	25	\$ 5	20%	30	0.6%	25	5	30	2012Q4	3.3%	26	5	31
	Project Operations		\$ -	20%										
31 CONSTRUCTION MANAGEMENT														
8.0%	Construction Management	1,874	\$ 375	20%	2,249	0.6%	1,886	377	2,263	2012Q4	3.3%	1,948	389	2,337
	Project Operation:		\$ -	20%										
	Project Management		\$ -	20%										
CONTRACT COST TOTALS:		26,271	5,253		31,524		26,434	5,286	31,720			27,283	5,455	32,738

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

**** CONTRACT COST SUMMARY ****

PROJECT: Green Bay DMMP, Alternative 15
 LOCATION: Green Bay, Wisconsin
 This Estimate reflects the scope and schedule in report; Green Bay DMMP Feasibility Report 03 March 2010

DISTRICT: LRE
 POC: CHIEF, COST ENGINEERING, William D. Merte, P.E.
 PREPARED: 3-Mar-10

Phase 2 Bayport CDF Expanded						Program Year (Budget EC): 2010 Effective Price Level Date: 1 OCT 09				FULLY FUNDED PROJECT ESTIMATE				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
PHASE 1														
12	NAVIGATION PORTS & HARBORS	\$ -	\$ -		\$ -									
12	Federal Funds	\$ 2,788	\$ 558	20%	\$ 3,346	24.8%	3,480	696	4,176	2023Q1		3,480	696	4,176
12	Non-Federal Funds	\$ 1,501	\$ 300	20%	\$ 1,801	24.8%	1,874	375	2,249	2023Q1		1,874	375	2,249
	#N/A	\$ -	\$ -		\$ -									
	#N/A	\$ -	\$ -		\$ -									
CONSTRUCTION ESTIMATE TOTALS:		4,289	858	20%	5,147		5,354	1,071	6,425			5,354	1,071	6,425
01	LANDS AND DAMAGES	\$ -	\$ -		\$ -									
PHASE 2														
30	PLANNING, ENGINEERING & DESIGN													
	Project Management	25	\$ 5	20%	30	24.8%	31	6	37	2021Q4	-2.2%	30	6	36
	Planning & Environmental Compliance		\$ -	20%										
3.0%	Engineering & Design	129	\$ 26	20%	154	24.8%	161	32	193	2021Q4	-2.2%	157	31	188
	Engineering Tech Review ATR & VE	2	\$ 0	20%	2	24.8%	2		2	2021Q4	-2.2%	2		2
	Contracting & Reprographics	25	\$ 5	20%	30	24.8%	31	6	37	2021Q4	-2.2%	30	6	36
0.5%	Engineering During Construction	21	\$ 4	20%	26	24.8%	27	5	32	2022Q3	-0.9%	27	5	32
	Planning During Construction	25	\$ 5	20%	30	24.8%	31	6	37	2022Q3	-0.9%	31	6	37
	Project Operations		\$ -	20%										
31	CONSTRUCTION MANAGEMENT													
8.0%	Construction Management	343	\$ 69	20%	412	0.6%	345	69	414	2022Q3	23.0%	424	85	509
	Project Operation:		\$ -	20%										
	Project Management		\$ -	20%										
CONTRACT COST TOTALS:		4,859	972		5,831		5,982	1,195	7,177			6,055	1,210	7,265

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

PROJECT: Green Bay DMMP, Alternative 15
 LOCATION: Green Bay, Wisconsin
 This Estimate reflects the scope and schedule in report; Green Bay DMMP Feasibility Report 03 March 2010

DISTRICT: LRE
 POC: CHIEF, COST ENGINEERING, William D. Merte, P.E.
 PREPARED: 3-Mar-10

Estimate Prepared: 3-Mar-10 Effective Price Level: 1 OCT Phase 3 Bayport CDF Closure						Program Year (Budget EC): 2010 Effective Price Level Date: 1 OCT 09				FULLY FUNDED PROJECT ESTIMATE				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
	PHASE 1													
12	NAVIGATION PORTS & HARBORS	\$ -	\$ -		\$ -									
12	Federal Funds	\$ 497	\$ 99	20%	\$ 596	36.5%	678	136	814	2032Q3	10.5%	749	150	899
12	Non-Federal Funds	\$ 268	\$ 54	20%	\$ 322	36.5%	366	73	439	2032Q3	2.7%	376	75	451
	#N/A	\$ -	\$ -		\$ -									
	#N/A	\$ -	\$ -		\$ -									
	CONSTRUCTION ESTIMATE TOTALS:	765	153	20%	918		1,044	209	1,253			1,125	225	1,350
01	LANDS AND DAMAGES	\$ -	\$ -		\$ -									
30	PLANNING, ENGINEERING & DESIGN													
	Project Management	5	\$ 1	20%	6	36.5%	7	1	8	2032Q1	10.0%	8	1	9
	Planning & Environmental Compliance	1	\$ 0	20%	1	36.5%	1		1	2032Q1	10.0%	1		1
3.0%	Engineering & Design	23	\$ 5	20%	28	36.5%	31	6	37	2032Q1	10.0%	34	7	41
	Engineering Tech Review ATR & VE	2	\$ 0	20%	2	36.5%	3	1	4	2032Q1	10.0%	3	1	4
	Contracting & Reographics	25	\$ 5	20%	30	36.5%	34	7	41	2032Q1	10.0%	37	8	45
0.5%	Engineering During Construction	4	\$ 1	20%	5	36.5%	5	1	6	2032Q3	10.5%	6	1	7
	Planning During Construction	5	\$ 1	20%	6	36.5%	7	1	8	2032Q3	10.5%	8	1	9
	Project Operations		\$ -	20%										
31	CONSTRUCTION MANAGEMENT													
8.0%	Construction Management	61	\$ 12	20%	73	0.6%	62	12	74	2032Q3	49.9%	93	18	111
	Project Operation:		\$ -	20%										
	Project Management		\$ -	20%										
	CONTRACT COST TOTALS:	891	178		1,069		1,194	238	1,432			1,315	262	1,577

ALTERNATIVE 15-Combination of ALT 7 & ALT 11

Estimated by Construction, Cost & General Engineering Branch
Designed by Geotech & Structural Engineering Branch
Prepared by Jack Frost

Preparation Date 3/29/2010
Effective Date of Pricing 3/29/2010
Estimated Construction Time 912 Days

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Designed by
 Geotech & Structural Engineering Branch
 Estimated by
 Construction, Cost & General Engineering Branch
 Prepared by
 Jack Frost

Design Document
 Document Date 3/29/2010
 District Detroit District
 Contact David Bowman, Project Manager
 Budget Year 2010
 UOM System Original

Direct Costs
 LaborCost
 EQCost
 MatlCost
 SubBidCost

Timeline/Currency
 Preparation Date 3/29/2010
 Escalation Date 3/29/2010
 Eff. Pricing Date 3/29/2010
 Estimated Duration 912 Day(s)

Currency US dollars
 Exchange Rate 1.000000

Costbook CB08EB: MII English Cost Book 2008

Labor WI19: Wiscosnin WI080019 dated 12/18/2009

date, Davis Bacon & Service (FOOH) Labor Rates!!!! Fringes paid to the laborers are taxable. In a non-union job the whole fringes are taxable. In union job, the vacation pay fringes is taxable. The current a

Labor Rates
 LaborCost1
 LaborCost2
 LaborCost3
 LaborCost4

Equipment EP07R04: MII Equipment Region 4r 2007

04 NORTHCENTRAL
 Sales Tax 5.10
 Working Hours per Year 1,260
 Labor Adjustment Factor 1.08
 Cost of Money 5.25
 Cost of Money Discount 25.00
 Tire Recap Cost Factor 1.50
 Tire Recap Wear Factor 1.80
 Tire Repair Factor 0.15
 Equipment Cost Factor 1.00
 Standby Depreciation Factor 0.50

Fuel
 Electricity 0.088
 Gas 3.060
 Diesel Off-Road 2.350
 Diesel On-Road 2.830

Shipping Rates
 Over 0 CWT 13.74
 Over 240 CWT 13.53
 Over 300 CWT 11.81
 Over 400 CWT 10.48
 Over 500 CWT 5.92
 Over 700 CWT 5.36
 Over 800 CWT 4.04

Date	Author	Note
12/28/2009		<p>This estimate is for Alternative 15 - Combination of Alternative 7 and Alternative 11.</p> <p>This alternative proposes to combine Alternative 7 - Construct a three island (West, Middle and East Islands) DMDF, a complete wave barrier, and an access road with Alternative 11 - Brown County Expanded Bayport CDF (Inner Channel Only) to address the inner and outer dredged material capacity harbor needs. (See description above).</p> <p>Alternative 7 - Construct a three island (West, Middle and East Islands) DMDF, a complete wave barrier, and an access road.</p> <p>This alternative proposes to construct a three island (West, Middle, and East Islands) DMDF and a complete wave barrier located within Green Bay, WI. (See Figures 6 and 7). This alternative would also create a dredged material capacity of approximately 2,350,000 cy of dredged material. The size and location of these islands and the access road are the same as discussed in Alternative 6 above. The difference between this alternative and Alternative 6 above is that the complete wave barrier and islands will be constructed versus a partial wave barrier and each island is constructed sequentially. The three islands would encompass a total of approximately 272 acres. The construction of the three islands could be phased-in over a period of time as needed. The wave barrier would extend 8,600 feet eastward along the northeast side of the three islands to protect the islands and the shallow water habitat behind it (Duck Creek delta wetland and Peters Marsh) against wave action from the bay. Construction of the West, Middle and East Island and a complete wave barrier would create a reduction in wave height and restore approximately 1,225 acres of water habitat and 272 acres of terrestrial habitat for a total restoration of 1,497 acres. .</p> <p>The construction of the complete wave barrier, access road and dredging of the (Outer Harbor) approximately 117,500 cubic yards yearly. Estimator assumes that 117,500 cubic yards of material will be placed yearly at the Cat Islands for 20 years = 2,350,000 cubic yards. The estimator has used the weighted guidelines for profit only on the construction of the wave barrier, profit for the dredging estimate was prepared seperately as this will occur over a 20 year period.</p> <p>Alternative 11 - Brown County Expanded Bayport CDF (Scenario 1- Inner Channel Only).</p> <p>This alternative proposes to expand Bayport CDF (construct in yr 2023) for the dredged material from the inner channel of Green Bay, Harbor. Approximately 400,000 cy of dried dredged material will be transferred from the existing Bayport CDF to Renard Island CDF for capping purposes and it will be funded through O&M. Based on only the inner harbor demand, and 400,000 cy of dried dredged material being transferred from the existing Bayport CDF to Renard Island CDF, it is anticipated that there are approximately 16 years of remaining capacity. Then, Brown County would need to provide capacity of approximately 800,000 cy (for yrs 2024 thru 2031) to meet the total 20-year dredged material capacity (1,956,000 cy) needs for the inner channel. The expansion would consist of constructing a 36 acre Dredged Material Disposal Facility (DMDF) adjacent to the existing Bayport CDF containing dry cells for stock piling dry dredged material. The existing Bayport CDF will continue to process wet dredged material. The process will consist of temporary storage of the wet dredged material in designated cells until it is dried, then transferring it to the 36 acre expansion site. Taking into consideration, the 400,000 cy for Renard Island, the proposed 36 acre DMDF site will be designed to contain approximately 800,000 cy. This will provide additional placement capacity for years 2020 thru 2031. The Corps will continue to pay a tipping fee for the Operation & Maintenance of the facility.</p> <p>Expanded Bay Port Confined Disposal Facility (CDF), 36 Acre Site.</p> <ol style="list-style-type: none">1.The information provided requires the construction of dikes at 15' high on 2.5:1 slopes. The above property is adjacent to the existing Bayport CDF. Design and quantities are included in Cost Appendix Attachments.2.The estimator assumed that one contractor would perform this work, working 6 days per week, 10 hours per day to ensure work completed in one construction season.3. Sales Tax 5.7% on material only.4. Equipment Region IV, 20075. Wages, IL18 and WI196. Work schedule, 6 days per week, 10 hours per day.

Direct Cost Markups

	Category			Method		
	Productivity			Productivity		
Overtime	Overtime			Overtime		
	<i>Days/Week</i>	<i>Hours/Shift</i>	<i>Shifts/Day</i>	<i>1st Shift</i>	<i>2nd Shift</i>	<i>3rd Shift</i>
<i>Standard</i>	5.00	8.00	1.00	8.00	0.00	0.00
<i>Actual</i>	6.00	8.00	1.00	10.00	0.00	0.00
	<i>OT Factor</i>	<i>Working</i>		<i>OT Percent</i>		<i>FCCM Percent</i>
<i>Monday</i>	1.50	Yes		16.67		(33.33)
<i>Tuesday</i>	1.50	Yes				
<i>Wednesday</i>	1.50	Yes				
<i>Thursday</i>	1.50	Yes				
<i>Friday</i>	1.50	Yes				
<i>Saturday</i>	1.50	Yes				
<i>Sunday</i>	2.00	No				

Sales Tax
MailCost

TaxAdj

Running % on Selected Costs

Contractor Markups

	Category		Method	
	JOOH		% of Labor	
	JOOH		JOOH (Calculated)	
	HOOH		Running %	
Profit	Profit		Profit Weighted Guidelines	
<i>Guideline</i>	<i>Value</i>		<i>Weight</i>	<i>Percentage</i>
<i>Risk</i>	0.075		20	1.50
<i>Difficulty</i>	0.075		15	1.13
<i>Size</i>	0.030		15	0.45
<i>Period</i>	0.116		15	1.74
<i>Invest (Contractor's)</i>	0.075		5	0.38
<i>Assist (Assistance by)</i>	0.075		5	0.38
<i>SubContracting</i>	0.120		25	3.00
<i>Total</i>			100	8.57

Bond
Class B, Tiered, 24 months, 1.00% Surcharge

Bond

Bond Table

<i>Contract Price</i>	<i>Bond Rate</i>
500,000	15.84
2,000,000	9.57
2,500,000	7.59
2,500,000	6.93
100,000,000,000	6.34

Excise Tax

Excise

Running %

Owner Markups

Category

Method

Escalation	<i>StartDate</i>	Escalation <i>StartIndex</i>	<i>EndDate</i>	Escalation	<i>EndIndex</i>	<i>Escalation</i>
Contingency SIOH		Contingency SIOH		Running % Running %		

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	BareCost	Productivity	Overtime	TaxAdj	DirectCost
Project Direct Summary			3,349,037	3,818,193	14,256,586	21,599,383	0	243,799	812,625	23,311,914
			<i>3,349,036.62</i>	<i>3,818,192.86</i>	<i>14,256,586.26</i>	<i>21,599,382.85</i>	<i>0.00%</i>	<i>243,798.99%</i>		<i>23,311,914.08</i>
12 Navigation Ports & Harbors	1.0	EA	3,349,037	3,818,193	14,256,586	21,599,383	0	243,799	812,625	23,311,914
			<i>0.78</i>	<i>0.89</i>	<i>3.32</i>	<i>5.02</i>	<i>0.00%</i>	<i>0.06%</i>		<i>5.42</i>
1202 Harbors	4,300,000.0	CY	3,349,037	3,818,193	14,256,586	21,599,383	0	243,799	812,625	23,311,914
			<i>3,349,036.62</i>	<i>3,818,192.86</i>	<i>14,256,586.26</i>	<i>21,599,382.85</i>	<i>0.00%</i>	<i>243,798.99%</i>		<i>23,311,914.08</i>
120220 Disposal Areas	1.0	EA	3,349,037	3,818,193	14,256,586	21,599,383	0	243,799	812,625	23,311,914
			<i>2,882,552.04</i>	<i>3,223,336.70</i>	<i>11,615,339.43</i>	<i>17,732,498.17</i>	<i>0.00%</i>	<i>214,048.15%</i>		<i>19,173,680.85</i>
12022001 Alternative 7 - Construct Three Islands (West, Middle & East Islands), Complete Wave Barrier and an Access Road	1.0	EA	2,882,552	3,223,337	11,615,339	17,732,498	0	214,048	662,074	19,173,681
<p>(Note: This alternative proposes to construct a three island (West, Middle, and East Islands) DDMF and a complete wave barrier located within Green Bay, WI. This alternative would also create a dredged material capacity of approximately 2,350,000 cy of dredged material. The size and location of these islands and the access road are the same as discussed in Alternative 6. The difference between this alternative and Alternative 6 is that the complete wave barrier and islands will be constructed versus a partial wave barrier and each island is constructed sequentially. The three islands would encompass a total of approximately 272 acres. The construction of the three islands could be phased-in over a period of time as needed. The wave barrier would extend 8,600 feet eastward along the northeast side of the three islands to protect the islands and the shallow water habitat behind it (Duck Creek delta wetland and Peters Marsh) against wave action from the bay. Construction of the West, Middle and East Island and a complete wave barrier would create a reduction in wave height and restore approximately 1,225 acres of water habitat and 272 acres of terrestrial habitat for a total restoration of 1,497 acres. Stone production will likely be limiting factor in the construction of the three islands, along with winter work and may increase the project time. At this time complete funding stream not known, so this may not be a issue.)</p>										
120201 Mob, Demob & Preparatory Work	1.0	LS	102,239	61,223	50,278	225,010	0	9,341	2,866	257,161
			<i>2,303.47</i>	<i>0.00</i>	<i>11,480.00</i>	<i>25,053.47</i>	<i>0.00%</i>	<i>242.45%</i>		<i>26,399.76</i>
120201 01 Government Trailer & Misc.	1.0	EA	2,303	0	11,480	25,053	0	242	654	26,400
			<i>0.00</i>	<i>0.00</i>	<i>241.00</i>	<i>241.00</i>	<i>100.00%</i>	<i>16.67%</i>	<i>274.74%</i>	<i>254.74</i>
RSM 015213200350 Office Trailer, furnished, rent per month, 32' x 8', excl. hookups	20.0	MO	0	0	4,820	4,820	0	0	275	5,095
(Note: Government Office trailer)										
			<i>0.00</i>	<i>0.00</i>	<i>210.00</i>	<i>210.00</i>	<i>100.00%</i>	<i>16.67%</i>	<i>239.40%</i>	<i>221.97</i>
RSM 015213400140 Field Office Expense, telephone bill; avg. bill/month, incl. long dist.	20.0	MO	0	0	4,200	4,200	0	0	239	4,439
			<i>115.17</i>	<i>0.00</i>	<i>123.00</i>	<i>238.17</i>	<i>100.00%</i>	<i>16.67%</i>	<i>140.22%</i>	<i>279.78</i>
RSM 015113500880 Temporary electrical power equipment (pro-rated per job), connections, office trailer, 100 amp	20.0	MO	2,303	0	2,460	4,763	0	242	140	5,596

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	BareCost	Productivity	Overtime	TaxAdj	DirectCost
HNC 015213201400 Toilet, portable, chemical, rent per month	20.0	MO	0.00 0	0.00 0	0.00 0	88.50 1,770	100.00% 0	16.67% 0	0.00% 0	88.50 1,770
USR 015940451 Utility Services Hookup	1.0	EA	0.00 0	0.00 0	0.00 0	6,000.00 3,000	100.00% 0	16.67% 0	0.00% 0	3,000.00 3,000
USR Telephone Service for Government	20.0	MO	0.00 0	0.00 0	0.00 0	300.00 2,000	100.00% 0	16.67% 0	0.00% 0	100.00 2,000
USR Office Supply Equipment (Note: Fax, copier, drinking water)	1.0	LS	0	0	0	2,500	0	0	0	2,500
USR 0100 Computers (Note: Includes: 2000 - computer 2000 - software 500 - printer 500 - internet)	1.0	LS	0	0	0	2,000	0	0	0	2,000
120201 02 Mobilization and Demobilization	1.0	EA	82,589.14 82,589	56,452.06 56,452	0.00 0	139,041.20 139,041	0.00% 0	7,384.38% 7,384	0 0	162,526.67 162,527
RSM 015436500100 Mobilization or demobilization, dozer, loader, backhoe or excavator, above 250 H.P., up to 50 miles	8.0	EA	105.44 844	144.11 1,153	0.00 0	249.55 1,996	100.00% 0	16.67% 60	0.00% 0	277.29 2,218
RSM 015436501150 Mobilization or demobilization, delivery charge for small equipment on flatbed trailer, maximum	8.0	EA	79.08 633	32.62 261	0.00 0	111.70 894	100.00% 0	16.67% 58	0.00% 0	134.21 1,074
RSM 015436502300 Mobilization or demobilization, crane, truck- mounted, over 75 ton	8.0	EA	480.85 3,847	346.82 2,775	0.00 0	827.67 6,621	100.00% 0	16.67% 345	0.00% 0	964.52 7,716
USR 023252500101 Mobilization and demobilization, maximum (Note: Assume 3 construction seasons with equipment being taken for repairs and transported back to project.)	3.0	LS	77,266	52,264	0	129,530	0	6,922	0	151,519
120201 03 Preparatory Work	1.0	EA	17,346.43 17,346	4,770.76 4,771	38,798.43 38,798	60,915.61 60,916	0.00% 0	1,714.13% 1,714	2,212	68,234.76 68,235
			1,246.99	257.67	2,225.00	3,729.66	100.00%	16.67%	126.83%	4,229.01

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	BareCost	Productivity	Overtime	TaxAdj	DirectCost
RSM 323113205110 Fence, chain link industrial, double swing gates, 10' high, 20' opening, includes excavation, in concrete	1.0	OPN	1,247	258	2,225	3,730	0	129	127	4,229
			<i>13.05</i>	<i>4.84</i>	<i>24.50</i>	<i>42.39</i>	<i>100.00%</i>	<i>16.67%</i>	<i>1,187.03%</i>	<i>47.58</i>
HNC 323113104650 Fence, chain link, security, 3 strands barb wire, 10' high, 9 ga. Mesh, 2-1/2" line post, 3" pull post, excludes excavation	850.0	LF	11,095	4,114	20,825	36,034	0	1,056	1,187	40,447
(Note: Work & Storage area approx. 1 acre , approximate perimeter is 850 ft)										
RSM 015523500100 Temporary, roads, gravel fill, 8" gravel depth, excl surfacing	1,666.5	SY	5,005	399	15,748	21,152	0	529	898	23,559
			<i>3.00</i>	<i>0.24</i>	<i>9.45</i>	<i>12.69</i>	<i>100.00%</i>	<i>16.67%</i>	<i>897.66%</i>	<i>14.14</i>
(Note: 1000'L X 15'W = 15,000sf X 0.1111 = 1666.5sy, this road way for access through state owned land for placing stone for wave barrier.)										
120220 Disposal Areas Alternative 7	1.0	EA	2,780,313	3,162,114	11,565,061	17,507,488	0	204,707	659,208	18,916,520
			<i>2,780,313.01</i>	<i>3,162,113.88</i>	<i>11,565,061.00</i>	<i>17,507,487.89</i>	<i>0.00%</i>	<i>204,707.19%</i>		<i>18,916,519.66</i>
12022002 Site Work	1.0	EA	2,780,313	3,162,114	11,565,061	17,507,488	0	204,707	659,208	18,916,520
			<i>2,780,313.01</i>	<i>3,162,113.88</i>	<i>11,565,061.00</i>	<i>17,507,487.89</i>	<i>0.00%</i>	<i>204,707.19%</i>		<i>18,916,519.66</i>
12022002 01 Dike Construction	1.0	EA	2,780,313	3,162,114	11,565,061	17,507,488	0	204,707	659,208	18,916,520
			<i>2,780,313.01</i>	<i>3,162,113.88</i>	<i>11,565,061.00</i>	<i>17,507,487.89</i>	<i>0.00%</i>	<i>204,707.19%</i>		<i>18,916,519.66</i>
12C Armor Stone	122,514.0	TON	1,058,396	1,275,095	2,817,822	5,151,313	0	75,708	160,616	5,595,151
			<i>8.64</i>	<i>10.41</i>	<i>23.00</i>	<i>42.05</i>	<i>0.00%</i>	<i>0.62%</i>		<i>45.67</i>
USR Cost for Armour Stone 16 - 30" to be delivered to stockpile area.	122,514.0	TON	0	0	2,817,822	2,817,822	0	0	160,616	2,978,438
			<i>0.00</i>	<i>0.00</i>	<i>23.00</i>	<i>23.00</i>	<i>100.00%</i>	<i>16.67%</i>	<i>160,615.85%</i>	<i>24.31</i>
(Note: Quote from Michael Materials, Steve Hollis, (920) 478-2084, received on 1/14/08 Armor Stone \$23.00 per ton delivery to the project site.)										
USR 22 Placing Armour Stone into placement area.	122,514.0	TON	1,053,498	1,271,742	0	2,325,240	0	75,283	0	2,607,077
			<i>8.60</i>	<i>10.38</i>	<i>0.00</i>	<i>18.98</i>	<i>100.00%</i>	<i>16.67%</i>	<i>0.00%</i>	<i>21.28</i>
HNC 312213100200 Shape embankment, slope up to 1 in 4, by machine	5,428.0	SY	4,898	3,352	0	8,250	0	426	0	9,636
			<i>0.90</i>	<i>0.62</i>	<i>0.00</i>	<i>1.52</i>	<i>100.00%</i>	<i>16.67%</i>	<i>0.00%</i>	<i>1.78</i>
12B Bedding Stone	16,933.0	TON	77,702	91,238	304,794	473,733	0	5,628	17,373	511,969
			<i>4.59</i>	<i>5.39</i>	<i>18.00</i>	<i>27.98</i>	<i>0.00%</i>	<i>0.33%</i>		<i>30.24</i>

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	BareCost	Productivity	Overtime	TaxAdj	DirectCost
USR Cost for Bedding Stone 12" to be delivered to stockpile area.	16,933.0	TON	0.00 0	0.00 0	18.00 304,794	18.00 304,794	100.00% 0	16.67% 0	17,373.26% 17,373	19.03 322,167
(Note: Quote from Michael Materials, Steve Hollis, (920) 478-2084, received on 1/14/08 Bedding Stone \$18.00 per ton delivery to the project site.)										
USR 37 Placing Bedding Stone into placement area.	16,933.0	TON	4.30 72,803	5.19 87,886	0.00 0	9.49 160,689	100.00% 0	16.67% 5,203	0.00% 0	10.64 180,166
HNC 312213100200 Shape embankment, slope up to 1 in 4, by machine	5,428.0	SY	0.90 4,898	0.62 3,352	0.00 0	1.52 8,250	100.00% 0	16.67% 426	0.00% 0	1.78 9,636
12A Shot Rock	482,800.0	TON	2.88 1,388,764	3.47 1,673,902	13.00 6,276,400	19.34 9,339,066	0.00% 0	0.21% 99,316		20.85 10,068,425
USR Cost for Shot Rock to be delivered to stockpile area.	482,800.0	TON	0.00 0	0.00 0	13.00 6,276,400	13.00 6,276,400	100.00% 0	16.67% 0	357,754.80% 357,755	13.74 6,634,155
(Note: Quote from Michael Materials, Steve Hollis, (920) 478-2084, received on 1/14/08 Shot Rock \$13.00 per ton delivery to the project site. 479800 tons + 3000 tons total for 2 turn arounds per island)										
USR 31 Placing Shot Rock into placement area.	482,800.0	TON	2.87 1,383,866	3.46 1,670,550	0.00 0	6.33 3,054,415	100.00% 0	16.67% 98,890	0.00% 0	7.09 3,424,634
HNC 312213100200 Shape embankment, slope up to 1 in 4, by machine	5,428.0	SY	0.90 4,898	0.62 3,352	0.00 0	1.52 8,250	100.00% 0	16.67% 426	0.00% 0	1.78 9,636
12D Geotextile	50,800.0	SY	0.99 50,059	0.04 1,985	1.65 83,820	2.67 135,864	0.00% 0	0.11% 5,439		3.07 155,917
HTW 334626100114 Geotextile Fabric, 170 Mil Thick Non-Woven Polypropylene	50,800.0	SY	0.99 50,059	0.04 1,985	1.65 83,820	2.67 135,864	100.00% 0	16.67% 5,439	4,777.74% 4,778	3.07 155,917
12E Coarse Gravel/Cobble	116,200.0	TON	1.45 168,117	1.01 117,567	17.50 2,033,500	19.96 2,319,184	0.00% 0	0.13% 14,649		21.37 2,482,672
			1.24	0.82	17.50	19.56	100.00%	16.67%	115,909.50%	20.90

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	BareCost	Productivity	Overtime	TaxAdj	DirectCost
RSM 321123232030 Base course drainage layers, aggregate base course for roadways and large paved areas, base course, bank run gravel, 6" deep (Note: 115200 tons + 1000 tons total for 2 turn arounds per island)	116,200.0	TON	143,806	94,995	2,033,500	2,272,301	0	12,693	115,910	2,429,094
HNC 312323239325 Spread and compact, roadway embankment, 6" lift, self propelled roller (Note: 116200 tons / 1.5 = 77466 cy)	77,466.0	ECY	24,311	22,572	0	46,883	100.00%	16.67%	0.00%	53,578
12F Culverts	1.0	EA	37,275	2,328	48,725	88,328	0	3,966	2,777	102,385
RSM 336113202464 Underground Hydronic Energy Distribution, pipe conduit prefabricated, polyurethane insulation, FRP carrier and casing, 1" thick, 8" diameter, excludes trenching, fittings or crane	600.0	LF	17,122	0	12,300	29,422	0	1,823	701	35,297
RSM 334113602200 Public Storm Utility Drainage Piping, reinforced concrete pipe (RCP) with gaskets, 12" diameter, 6' lengths, class 3, excludes excavation or backfill	3,100.0	LF	20,153	2,328	36,425	58,906	0	2,143	2,076	67,088
12022002 Site Work 36 Acre Site (Note: The Expanded Bayport CDF site will be built adjacent to existing Bayport CDF, and will be designed to hold approximately 800,000 cubic yards of dredged material from the inner harbor.)	1.0	EA	466,485	594,856	2,641,247	3,866,885	0	29,751	150,551	4,138,233
12022002 01 Dike Construction	1.0	EA	466,485	594,856	2,641,247	3,866,885	0	29,751	150,551	4,138,233
120201 Mob, Demob & Preparatory Work	1.0	EA	105,493	118,555	167,417	555,763	0	7,874	9,543	593,839

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	BareCost	Productivity	Overtime	TaxAdj	DirectCost
			0.00	0.00	0.00	155,833.00	0.00%	0.00%		155,833.00
120201 01 Mob & Demob	1.0	EA	0	0	0	155,833	0	0	0	155,833
USR 352023130020 Mobilization and demobilization, add to below, minimum	1.0	LS	0	0	0	155,833	0	0	0	155,833
			16,510.08	19,930.34	0.00	36,440.42	0.00%	1,179.80%		40,857.27
120201 02 Clearing and Grubbing	1.0	EA	16,510	19,930	0	36,440	0	1,180	0	40,857
			458.61	553.62	0.00	1,012.23	100.00%	16.67%	0.00%	1,134.92
RSM 311313100400 Selective clearing, brush, medium clearing, with dozer, ball and chain, excludes removal offsite	36.0	ACR	16,510	19,930	0	36,440	0	1,180	0	40,857
			60,474.68	92,752.72	0.00	153,227.40	0.00%	3,712.87%		168,795.15
120201 03 Topsoil Stripping and Stockpiling	1.0	EA	60,475	92,753	0	153,227	0	3,713	0	168,795
			1.04	1.60	0.00	2.64	100.00%	16.67%	0.00%	2.91
RSM 311413231430 Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 12" deep, 300' haul	58,080.0	CY	60,475	92,753	0	153,227	0	3,713	0	168,795
(Note: 1,568,160sf using 12" of removal = 58080cy)										
			1.67	0.00	0.79	2.46	0.00%	0.18%		3.02
120201 04 Silt Fence	5,194.0	LF	8,695	0	4,103	12,798	0	945	234	15,683
			1.67	0.00	0.79	2.46	100.00%	16.67%	233.89%	3.02
RSM 312513101120 Erosion control, silt fence, polypropylene, 3' high, includes 7.5' posts	5,194.0	LF	8,695	0	4,103	12,798	0	945	234	15,683
			3.74	1.04	31.44	36.23	0.00%	0.39%		39.14
120201 05 Perimeter Fence	5,194.0	LF	19,439	5,420	163,314	188,173	0	2,009	9,309	203,280
			347.02	96.75	1,150.00	1,593.77	100.00%	16.67%	131.10%	1,762.82
RSM 323113205070 Fence, chain link industrial, double swing gates, 6' high, 20' opening, includes excavation, in concrete	2.0	OPN	694	194	2,300	3,188	0	72	131	3,526
			3.61	1.01	31.00	35.62	100.00%	16.67%	9,177.80%	38.46

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	BareCost	Productivity	Overtime	TaxAdj	DirectCost
RSM 323113200900 Fence, chain link industrial, aluminized steel, 6 ga. wire, 2" posts @ 10' OC, 6' high, includes excavation, & concrete	5,194.0	LF	18,745	5,226	161,014	184,985	0	1,938	9,178	199,754
			0.00	0.00	0.00	2,116.03	0.00%	0.00%		2,116.03
120201 06 Groundwater Monitoring Wells	4.0	EA	0	0	0	8,464	0	0	0	8,464
USR 014523507710 Ground water monitoring, 3 wells, max	1.3	LS	0	0	0	8,464	0	0	0	8,464
			374.57	452.17	0.00	826.74	0.00%	26.77%		926.95
120201 07 Rough Grade	1.0	EA	375	452	0	827	0	27	0	927
			8.60	10.38	0.00	18.98	100.00%	16.67%	0.00%	21.28
RSM 329113232610 Soil preparation, rough grade & scarify subsoil to receive topsoil, common earth, 200 H.P. dozer with scarifier	43.6	MSF	375	452	0	827	0	27	0	927
(Note: 43560sf / 1000 = 43.56msf)										
120202 Construction	1.0	EA	157,421	110,910	2,464,529	2,732,860	0	13,379	140,478	2,917,572
			21.69	19.17	468.45	509.30	0.00%	1.70%		541.95
120202 01 Dike Construction	5,010.0	LF	108,649	96,029	2,346,912	2,551,589	0	8,502	133,774	2,715,167
			0.72	0.61	16.00	17.33	0.00%	0.06%		18.44
120202 011 Dike Material	143,342.0	CY	103,416	87,512	2,293,472	2,484,400	0	8,205	130,728	2,643,608
			17.20	8.19	0.00	25.39	100.00%	16.67%	0.00%	30.29
RSM 329113232710 Soil preparation, structural soil mixing, rough grade & scarify subsoil to receive clay and till, 180 H.P. grader with scarifier	4,509.0	MSF	77,546	36,946	0	114,492	0	6,879	0	136,576
(Note: 5010' L X 60' W = 300600sf x 15' = 4,509000sf / 1000 = 4509msf)										
			0.18	0.35	0.00	0.53	100.00%	16.67%	0.00%	0.58
RSM 312323236070 Compaction, 3 passes, 6" lifts, towed sheepsfoot or wobbly wheel roller	143,342.0	CY	25,870	50,565	0	76,436	0	1,325	0	82,832
			0.00	0.00	16.00	16.00	100.00%	16.67%	130,727.90%	16.91
USR 030513250500 Clay, delivered to site, includes material only	143,342.0	CY	0	0	2,293,472	2,293,472	0	0	130,728	2,424,200

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	BareCost	Productivity	Overtime	TaxAdj	DirectCost
<i>(Note: The Quote for clay material cost was supplied by Brown County and is for in placed clay cubic yards, transported.)</i>										
120202 012 Inspection Trench	5,010.0	LF	5,232	8,517	53,440	67,189	0	297	3,046	71,560
<i>(Note: 5010'L X 6'D X 3'W = 90180cf / 27 = 3340cy)</i>										
RSM 312323132200 Backfill, trench, 6" to 12" lifts, dozer backfilling, compaction with vibrating roller	3,340.0	CY	2,583	5,017	0	7,600	0	133	0	8,240
RSM 312316137180 Excavating, trench or continuous footing, dense hard clay, 2 1/2 C.Y. excavator, 6' to 10' deep, excludes sheeting or dewatering	3,340.0	BCY	2,649	3,500	0	6,149	0	164	0	6,834
USR 030513250500 Clay, delivered to site , includes material only	3,340.0	CY	0	0	53,440	53,440	0	0	3,046	56,486
<i>(Note: The Quote for clay material cost was supplied by Brown County and is for in placed clay cubic yards, transported.)</i>										
120202 03 Gravel Road	1.0	EA	23,402	1,864	110,420	135,687	0	2,472	6,294	149,038
USR 015523500100 Roads, gravel fill, 12" gravel depth, excl surfacing	7,792.6	SY	23,402	1,864	110,420	135,687	0	2,472	6,294	149,038
<i>(Note: 5010' l X 14'W = 70140sf X 0.1111 = 7792.55sy)</i>										
120202 04 Top Soil and Seed Dike Sides	44,979.0	SY	25,370	13,017	7,197	45,583	0	2,405	410	53,367
RSM 329119130400 Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	7,496.4	ECY	20,294	7,983	0	28,278	0	1,954	0	34,210
<i>(Note: 404808sf X 0.5' = 202404cf / 27 = 7496.44cy. Estimator assumes use of on-site topsoil from initial site stripping work.)</i>										

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	BareCost	Productivity	Overtime	TaxAdj	DirectCost
RSM 329219131000 Seeding, mechanical seeding hydro or air seeding for large areas, includes lime, fertilizer and seed	44,979.0	SY	5,075	5,034	7,197	17,306	100.00% 0	16.67% 452	410.21% 410	0.43 19,157
120202 02 Closure	1.0	EA	203,571	365,391	9,301	578,262	0.00% 0	8,498.04% 8,498	530	626,822.03 626,822
<i>(Note: The closure of the CDF will be with dry dredged material and seeded, the same as with Renard Island, and will be accomplished in the approximate year 2032.)</i>										
120203 02 Dredged Material Cap	139,392.0	CY	202,632	364,963	0	567,595	0.00% 0	0.06% 8,412	0	4.41 615,357
<i>(Note: The estimator assumes that 36 acre site will be capped with 2' of clean dry dredge material from Bayport CDF, as proposed for Renard Island.)</i>										
HNC 312213103020 Rough grading, open site, large area, 300 H.P., dozer	139,392.0	BCY	31,447	73,209	0	104,655	100.00% 0	16.67% 1,263	0.00% 0	0.80 112,083
HNC 312316440160 Excavate and load, bank measure, medium material, 3-1/2 C.Y. bucket, hydraulic excavator	139,392.0	BCY	83,000	124,971	0	207,972	100.00% 0	16.67% 3,710	0.00% 0	1.63 227,892
RSM 312323182020 Hauling, excavated or borrow material, loose cubic yards, 1/2mile round trip, 4.2 loads/hour, 22 C.Y. rear/bottom dump, off highway haulers	167,270.4	LCY	88,185	166,783	0	254,968	100.00% 0	16.67% 3,439	0.00% 0	1.65 275,382
<i>(Note: 139,392cy X 1.20 sweeling = 167,270.4lcy)</i>										
120203 03 Top Soil and Seed	1.0	EA	938	428	9,301	10,667	0.00% 0	85.70% 86	530	11,465.83 11,465
HNC 329219140300 Seeding, athletic field mix, 50 lb. per M.S.Y., mechanical seeding	209.0	CSY	938	428	9,301	10,667	100.00% 0	16.67% 86	530.13% 530	54.86 11,465

Description	UOM	Quantity	DirectCost	Payroll	WCI	Allowance	JOOH	HOOH	Profit	Bond	ContractCost
Project Indirect Summary			23,311,914	533,092	123,015	0	370,844	2,368,276	2,232,574	195,128	28,478,736
			<i>23,311,914.08</i>								<i>28,478,735.98</i>
12 Navigation Ports & Harbors	EA	1.0	23,311,914	533,092	123,015	0	370,844	2,368,276	2,232,574	195,128	28,478,736
			<i>5.42</i>								<i>6.62</i>
1202 Harbors	CY	4,300,000.0	23,311,914	533,092	123,015	0	370,844	2,368,276	2,232,574	195,128	28,478,736
			<i>23,311,914.08</i>								<i>28,478,735.98</i>
120220 Disposal Areas	EA	1.0	23,311,914	533,092	123,015	0	370,844	2,368,276	2,232,574	195,128	28,478,736
			<i>19,173,680.85</i>								<i>23,423,310.19</i>
12022001 Alternative 7 - Construct Three Islands (West, Middle & East Islands), Complete Wave Barrier and an Access Road	EA	1.0	19,173,681	458,935	106,125	0	305,014	1,947,869	1,836,257	160,490	23,423,310
<p>(Note: This alternative proposes to construct a three island (West, Middle, and East Islands) DMDF and a complete wave barrier located within Green Bay, WI. This alternative would also create a dredged material capacity of approximately 2,350,000 cy of dredged material. The size and location of these islands and the access road are the same as discussed in Alternative 6 . The difference between this alternative and Alternative 6 is that the complete wave barrier and islands will be constructed versus a partial wave barrier and each island is constructed sequentially. The three islands would encompass a total of approximately 272 acres. The construction of the three islands could be phased-in over a period of time as needed. The wave barrier would extend 8,600 feet eastward along the northeast side of the three islands to protect the islands and the shallow water habitat behind it (Duck Creek delta wetland and Peters Marsh) against wave action from the bay. Construction of the West, Middle and East Island and a complete wave barrier would create a reduction in wave height and restore approximately 1,225 acres of water habitat and 272 acres of terrestrial habitat for a total restoration of 1,497 acres. Stone production will likely be limiting factor in the construction of the three islands, along with winter work and may increase the project time. At this time complete funding stream not known, so this may not be an issue.)</p>											
120201 Mob, Demob & Preparatory Work	LS	1.0	257,161	16,240	3,704	0	4,091	26,125	24,628	2,153	314,158
			<i>26,399.76</i>								<i>32,250.97</i>
120201 01 Government Trailer & Misc.	EA	1.0	26,400	366	83	0	420	2,682	2,528	221	32,251
			<i>254.74</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>1.59%</i>	<i>10.00%</i>	<i>8.57%</i>	<i>0.69%</i>	<i>311.20</i>
RSM 015213200350 Office Trailer, furnished, rent per month, 32' x 8', excl. hookups	MO	20.0	5,095	0	0	0	81	518	488	43	6,224
(Note: Government Office trailer)											
			<i>221.97</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>1.59%</i>	<i>10.00%</i>	<i>8.57%</i>	<i>0.69%</i>	<i>271.17</i>
RSM 015213400140 Field Office Expense, telephone bill; avg. bill/month, incl. long dist.	MO	20.0	4,439	0	0	0	71	451	425	37	5,423
			<i>279.78</i>	<i>14.69%</i>	<i>5.73%</i>	<i>0.00%</i>	<i>1.59%</i>	<i>10.00%</i>	<i>8.57%</i>	<i>0.69%</i>	<i>341.79</i>
RSM 015113500880 Temporary electrical power equipment (pro-rated per job), connections, office trailer, 100 amp	MO	20.0	5,596	366	83	0	89	568	536	47	6,836
			<i>88.50</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>1.59%</i>	<i>10.00%</i>	<i>8.57%</i>	<i>0.69%</i>	<i>108.12</i>
HNC 015213201400 Toilet, portable, chemical, rent per month	MO	20.0	1,770	0	0	0	28	180	170	15	2,162
			<i>3,000.00</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>1.59%</i>	<i>10.00%</i>	<i>8.57%</i>	<i>0.69%</i>	<i>3,664.92</i>
USR 015940451 Utility Services Hookup	EA	1.0	3,000	0	0	0	48	305	287	25	3,665

Description	UOM	Quantity	DirectCost	Payroll	WCI	Allowance	JOOH	HOOH	Profit	Bond	ContractCost
			100.00	0.00%	0.00%	0.00%	1.59%	10.00%	8.57%	0.69%	122.16
USR Telephone Service for Government	MO	20.0	2,000	0	0	0	32	203	192	17	2,443
USR Office Supply Equipment	LS	1.0	2,500	0	0	0	40	254	239	21	3,054
(Note: Fax, copier, drinking water)											
USR 0100 Computers	LS	1.0	2,000	0	0	0	32	203	192	17	2,443
(Note: Includes: 2000 - computer 2000 - software 500 - printer 500 - internet)											
			162,526.67								198,548.87
120201 02 Mobilization and Demobilization	EA	1.0	162,527	13,118	2,983	0	2,585	16,511	15,565	1,360	198,549
			277.29	14.69%	5.73%	0.00%	1.59%	10.00%	8.57%	0.69%	338.74
RSM 015436500100 Mobilization or demobilization, dozer, loader, backhoe or excavator, above 250 H.P., up to 50 miles	EA	8.0	2,218	133	29	0	35	225	212	19	2,710
			134.21	14.69%	5.73%	0.00%	1.59%	10.00%	8.57%	0.69%	163.95
RSM 015436501150 Mobilization or demobilization, delivery charge for small equipment on flatbed trailer, maximum	EA	8.0	1,074	100	22	0	17	109	103	9	1,312
			964.52	14.69%	5.73%	0.00%	1.59%	10.00%	8.57%	0.69%	1,178.30
RSM 015436502300 Mobilization or demobilization, crane, truck-mounted, over 75 ton	EA	8.0	7,716	612	138	0	123	784	739	65	9,426
USR 023252500101 Mobilization and demobilization, maximum	LS	3.0	151,519	12,273	2,794	0	2,410	15,393	14,511	1,268	185,101
(Note: Assume 3 construction seasons with equipment being taken for repairs and transported back to project.)											
			68,234.76								83,358.22
120201 03 Preparatory Work	EA	1.0	68,235	2,756	638	0	1,085	6,932	6,535	571	83,358
			4,229.01	14.69%	5.73%	0.00%	1.59%	10.00%	8.57%	0.69%	5,166.32
RSM 323113205110 Fence, chain link industrial, double swing gates, 10' high, 20' opening, includes excavation, in concrete	OPN	1.0	4,229	198	45	0	67	430	405	35	5,166
			47.58	14.69%	5.73%	0.00%	1.59%	10.00%	8.57%	0.69%	58.13
HNC 323113104650 Fence, chain link, security, 3 strands barb wire, 10' high, 9 ga. Mesh, 2-1/2" line post, 3" pull post, excludes excavation	LF	850.0	40,447	1,762	408	0	643	4,109	3,874	339	49,412
(Note: Work & Storage area approx. 1 acre , approximate perimeter is 850 ft)											
			14.14	14.69%	5.73%	0.00%	1.59%	10.00%	8.57%	0.69%	17.27
RSM 015523500100 Temporary, roads, gravel fill, 8" gravel depth, excl surfacing	SY	1,666.5	23,559	795	185	0	375	2,393	2,256	197	28,780

Description	UOM	Quantity	DirectCost	Payroll	WCI	Allowance	JOOH	HOOH	Profit	Bond	ContractCost
(Note: 1000'L X 15'W = 15,000sf X 0.1111 = 1666.5sy, this road way for access through state owned land for placing stone for wave barrier.)											
120220 Disposal Areas Alternative 7	EA	1.0	18,916,520	442,696	102,421	0	300,923	1,921,744	1,811,628	158,337	23,109,152
12022002 Site Work	EA	1.0	18,916,520	442,696	102,421	0	300,923	1,921,744	1,811,628	158,337	23,109,152
12022002 01 Dike Construction	EA	1.0	18,916,520	442,696	102,421	0	300,923	1,921,744	1,811,628	158,337	23,109,152
12C Armor Stone	TON	122,514.0	5,595,151	168,528	38,987	0	89,007	568,416	535,846	46,833	6,835,253
USR Cost for Armour Stone 16 - 30" to be delivered to stockpile area.	TON	122,514.0	2,978,438	0	0	0	47,381	302,582	285,244	24,930	3,638,575
(Note: Quote from Michael Materials, Steve Hollis, (920) 478-2084, received on 1/14/08 Armor Stone \$23.00 per ton delivery to the project site.)											
USR 22 Placing Armour Stone into placement area.	TON	122,514.0	2,607,077	167,747	38,807	0	41,473	264,855	249,679	21,822	3,184,906
HNC 312213100200 Shape embankment, slope up to 1 in 4, by machine	SY	5,428.0	9,636	780	180	0	153	979	923	81	11,772
12B Bedding Stone	TON	16,933.0	511,969	12,373	2,862	0	8,144	52,011	49,031	4,285	625,442
USR Cost for Bedding Stone 12" to be delivered to stockpile area.	TON	16,933.0	322,167	0	0	0	5,125	32,729	30,854	2,697	393,572
(Note: Quote from Michael Materials, Steve Hollis, (920) 478-2084, received on 1/14/08 Bedding Stone \$18.00 per ton delivery to the project site.)											
USR 37 Placing Bedding Stone into placement area.	TON	16,933.0	180,166	11,592	2,682	0	2,866	18,303	17,254	1,508	220,097
HNC 312213100200 Shape embankment, slope up to 1 in 4, by machine	SY	5,428.0	9,636	780	180	0	153	979	923	81	11,772
12A Shot Rock	TON	482,800.0	10,068,425	221,132	51,156	0	160,168	1,022,859	964,249	84,276	12,299,978
USR Cost for Shot Rock to be delivered to stockpile area.	TON	482,800.0	6,634,155	0	0	0	105,536	673,969	635,351	55,530	8,104,540
(Note: Quote from Michael Materials, Steve Hollis, (920) 478-2084, received on 1/14/08 Shot Rock \$13.00 per ton delivery to the project site. 479800 tons + 3000 tons total for 2 turn arounds per island)											

Description	UOM	Quantity	DirectCost	Payroll	WCI	Allowance	JOOH	HOOH	Profit	Bond	ContractCost
			<i>7.09</i>	<i>14.69%</i>	<i>5.73%</i>	<i>0.00%</i>	<i>1.59%</i>	<i>10.00%</i>	<i>8.57%</i>	<i>0.69%</i>	<i>8.67</i>
USR 31 Placing Shot Rock into placement area.	TON	482,800.0	3,424,634	220,351	50,977	0	54,479	347,911	327,976	28,665	4,183,665
			<i>1.78</i>	<i>14.69%</i>	<i>5.73%</i>	<i>0.00%</i>	<i>1.59%</i>	<i>10.00%</i>	<i>8.57%</i>	<i>0.69%</i>	<i>2.17</i>
HNC 312213100200 Shape embankment, slope up to 1 in 4, by machine	SY	5,428.0	9,636	780	180	0	153	979	923	81	11,772
			<i>3.07</i>								<i>3.75</i>
12D Geotextile	SY	50,800.0	155,917	7,958	1,878	0	2,480	15,840	14,932	1,305	190,474
			<i>3.07</i>	<i>14.69%</i>	<i>5.73%</i>	<i>0.00%</i>	<i>1.59%</i>	<i>10.00%</i>	<i>8.57%</i>	<i>0.69%</i>	<i>3.75</i>
HTW 334626100114 Geotextile Fabric, 170 Mil Thick Non-Woven Polypropylene	SY	50,800.0	155,917	7,958	1,878	0	2,480	15,840	14,932	1,305	190,474
			<i>21.37</i>								<i>26.10</i>
12E Coarse Gravel/Cobble	TON	116,200.0	2,482,672	26,774	6,156	0	39,494	252,217	237,765	20,781	3,032,928
			<i>20.90</i>	<i>14.69%</i>	<i>5.73%</i>	<i>0.00%</i>	<i>1.59%</i>	<i>10.00%</i>	<i>8.57%</i>	<i>0.69%</i>	<i>25.54</i>
RSM 321123232030 Base course drainage layers, aggregate base course for roadways and large paved areas, base course, bank run gravel, 6" deep (Note: 115200 tons + 1000 tons total for 2 turn arounds per island)	TON	116,200.0	2,429,094	22,913	5,278	0	38,642	246,774	232,633	20,332	2,967,475
			<i>0.69</i>	<i>14.69%</i>	<i>5.73%</i>	<i>0.00%</i>	<i>1.59%</i>	<i>10.00%</i>	<i>8.57%</i>	<i>0.69%</i>	<i>0.84</i>
HNC 312323239325 Spread and compact, roadway embankment, 6" lift, self propelled roller (Note: 116200 tons / 1.5 = 77466 cy)	ECY	77,466.0	53,578	3,861	878	0	852	5,443	5,131	448	65,453
			<i>102,384.93</i>								<i>125,077.40</i>
12F Culverts	EA	1.0	102,385	5,932	1,382	0	1,629	10,401	9,805	857	125,077
			<i>58.83</i>	<i>14.69%</i>	<i>5.73%</i>	<i>0.00%</i>	<i>1.59%</i>	<i>10.00%</i>	<i>8.57%</i>	<i>0.69%</i>	<i>71.87</i>
RSM 336113202464 Underground Hydronic Energy Distribution, pipe conduit prefabricated, polyurethane insulation, FRP carrier and casing, 1" thick, 8" diameter, excludes trenching, fittings or crane	LF	600.0	35,297	2,724	627	0	562	3,586	3,380	295	43,120
			<i>21.64</i>	<i>14.69%</i>	<i>5.73%</i>	<i>0.00%</i>	<i>1.59%</i>	<i>10.00%</i>	<i>8.57%</i>	<i>0.69%</i>	<i>26.44</i>
RSM 334113602200 Public Storm Utility Drainage Piping, reinforced concrete pipe (RCP) with gaskets, 12" diameter, 6' lengths, class 3, excludes excavation or backfill	LF	3,100.0	67,088	3,207	755	0	1,067	6,816	6,425	562	81,957

Description	UOM	Quantity	DirectCost	Payroll	WCI	Allowance	JOOH	HOOH	Profit	Bond	ContractCost
12022002 Site Work 36 Acre Site	EA	1.0	4,138,233.23 4,138,233	74,156	16,890	0	65,831	420,406	396,317	34,638	5,055,425.78 5,055,426
(Note: The Expanded Bayport CDF site will be built adjacent to existing Bayport CDF, and will be designed to hold approximately 800,000 cubic yards of dredged material from the inner harbor.)											
12022002 01 Dike Construction	EA	1.0	4,138,233.23 4,138,233	74,156	16,890	0	65,831	420,406	396,317	34,638	5,055,425.78 5,055,426
120201 Mob, Demob & Preparatory Work	EA	1.0	593,839.22 593,839	16,787	3,873	0	9,447	60,329	56,872	4,971	725,456.97 725,457
120201 01 Mob & Demob	EA	1.0	155,833.00 155,833	0	0	0	2,479	15,831	14,924	1,304	190,371.62 190,372
USR 352023130020 Mobilization and demobilization, add to below, minimum	LS	1.0	155,833	0	0	0	2,479	15,831	14,924	1,304	190,372
120201 02 Clearing and Grubbing	EA	1.0	40,857.27 40,857	2,629	608	0	650	4,151	3,913	342	49,912.82 49,913
RSM 311313100400 Selective clearing, brush, medium clearing, with dozer, ball and chain, excludes removal offsite	ACR	36.0	1,134.92 40,857	14.69% 2,629	5.73% 608	0.00% 0	1.59% 650	10.00% 4,151	8.57% 3,913	0.69% 342	1,386.47 49,913
120201 03 Topsoil Stripping and Stockpiling	EA	1.0	168,795.15 168,795	9,635	2,219	0	2,685	17,148	16,165	1,413	206,206.69 206,207
RSM 311413231430 Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 12" deep, 300' haul	CY	58,080.0	2.91 168,795	14.69% 9,635	5.73% 2,219	0.00% 0	1.59% 2,685	10.00% 17,148	8.57% 16,165	0.69% 1,413	3.55 206,207
(Note: 1,568,160sf using 12" of removal = 58080cy)											
120201 04 Silt Fence	LF	5,194.0	3.02 15,683	1,381	325	0	249	1,593	1,502	131	3.69 19,159
RSM 312513101120 Erosion control, silt fence, polypropylene, 3' high, includes 7.5' posts	LF	5,194.0	3.02 15,683	1,381	325	0	249	1,593	1,502	131	3.69 19,159
120201 05 Perimeter Fence	LF	5,194.0	39.14 203,280	3,082	707	0	3,234	20,651	19,468	1,702	47.81 248,334
RSM 323113205070 Fence, chain link industrial, double swing gates, 6' high, 20' opening, includes excavation, in concrete	OPN	2.0	1,762.82 3,526	14.69% 110	5.73% 25	0.00% 0	1.59% 56	10.00% 358	8.57% 338	0.69% 30	2,153.53 4,307

Description	UOM	Quantity	DirectCost	Payroll	WCI	Allowance	JOOH	HOOH	Profit	Bond	ContractCost
RSM 323113200900 Fence, chain link industrial, aluminized steel, 6 ga. wire, 2" posts @ 10' OC, 6' high, includes excavation, & concrete	LF	5,194.0	38.46 199,754	14.69% 2,972	5.73% 682	0.00% 0	1.59% 3,178	10.00% 20,293	8.57% 19,130	0.69% 1,672	46.98 244,027
120201 06 Groundwater Monitoring Wells	EA	4.0	2,116.03 8,464	0	0	0	135	860	811	71	2,585.02 10,340
USR 014523507710 Ground water monitoring, 3 wells, max	LS	1.3	8,464	0	0	0	135	860	811	71	10,340
120201 07 Rough Grade	EA	1.0	926.95 927	60	14	0	15	94	89	8	1,132.40 1,132
RSM 329113232610 Soil preparation, rough grade & scarify subsoil to receive topsoil, common earth, 200 H.P. dozer with scarifier	MSF	43.6	21.28 927	14.69% 60	5.73% 14	0.00% 0	1.59% 15	10.00% 94	8.57% 89	0.69% 8	26.00 1,132
(Note: 43560sf / 1000 = 43.56msf)											
120202 Construction	EA	1.0	2,917,571.98 2,917,572	25,062	5,793	0	46,413	296,398	279,415	24,421	3,564,218.78 3,564,219
120202 01 Dike Construction	LF	5,010.0	541.95 2,715,167	17,303	3,999	0	43,193	275,836	260,031	22,727	662.07 3,316,954
120202 011 Dike Material	CY	143,342.0	18.44 2,643,608	16,469	3,806	0	42,054	268,566	253,177	22,128	22.53 3,229,533
RSM 329113232710 Soil preparation, structural soil mixing, rough grade & scarify subsoil to receive clay and till, 180 H.P. grader with scarifier	MSF	4,509.0	30.29 136,576	14.69% 12,348	5.73% 2,857	0.00% 0	1.59% 2,173	10.00% 13,875	8.57% 13,080	0.69% 1,143	37.00 166,846
(Note: 5010' L X 60' W = 300600sf x 15' = 4,509000sf / 1000 = 4509msf)											
RSM 312323236070 Compaction, 3 passes, 6" lifts, towed sheepsfoot or wobbly wheel roller	CY	143,342.0	0.58 82,832	14.69% 4,122	5.73% 949	0.00% 0	1.59% 1,318	10.00% 8,415	8.57% 7,933	0.69% 693	0.71 101,191
USR 030513250500 Clay, delivered to site , includes material only	CY	143,342.0	16.91 2,424,200	0.00% 0	0.00% 0	0.00% 0	1.59% 38,564	10.00% 246,276	8.57% 232,165	0.69% 20,291	20.66 2,961,496
(Note: The Quote for clay material cost was supplied by Brown County and is for in placed clay cubic yards, transported.)											
120202 012 Inspection Trench	LF	5,010.0	14.28 71,560	834	193	0	1,138	7,270	6,853	599	17.45 87,420

Description	UOM	Quantity	DirectCost	Payroll	WCI	Allowance	JOOH	HOOH	Profit	Bond	ContractCost
<i>(Note: 5010'L X 6'D X 3'W = 90180cf / 27 = 3340cy)</i>											
RSM 312323132200 Backfill, trench, 6" to 12" lifts, dozer backfilling, compaction with vibrating roller	CY	3,340.0	2.47 8,240	14.69% 412	5.73% 95	0.00% 0	1.59% 131	10.00% 837	8.57% 789	0.69% 69	3.01 10,066
RSM 312316137180 Excavating, trench or continuous footing, dense hard clay, 2 1/2 C.Y. excavator, 6' to 10' deep, excludes sheeting or dewatering	BCY	3,340.0	2.05 6,834	14.69% 422	5.73% 98	0.00% 0	1.59% 109	10.00% 694	8.57% 654	0.69% 57	2.50 8,348
USR 030513250500 Clay, delivered to site, includes material only	CY	3,340.0	16.91 56,486	0.00% 0	0.00% 0	0.00% 0	1.59% 899	10.00% 5,738	8.57% 5,410	0.69% 473	20.66 69,006
<i>(Note: The Quote for clay material cost was supplied by Brown County and is for in placed clay cubic yards, transported.)</i>											
120202 03 Gravel Road	EA	1.0	149,037.76 149,038	3,719	866	0	2,371	15,141	14,273	1,247	182,070.29 182,070
USR 015523500100 Roads, gravel fill, 12" gravel depth, excl surfacing	SY	7,792.6	19.13 149,038	14.69% 3,719	5.73% 866	0.00% 0	1.59% 2,371	10.00% 15,141	8.57% 14,273	0.69% 1,247	23.36 182,070
<i>(Note: 5010' l X 14'W = 70140sf X 0.1111 = 7792.55sy)</i>											
120202 04 Top Soil and Seed Dike Sides	SY	44,979.0	1.19 53,367	4,040	928	0	849	5,422	5,111	447	1.45 65,195
RSM 329119130400 Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	ECY	7,496.4	4.56 34,210	14.69% 3,234	5.73% 745	0.00% 0	1.59% 544	10.00% 3,475	8.57% 3,276	0.69% 286	5.57 41,792
<i>(Note: 404808sf X 0.5' = 202404cf / 27 = 7496.44cy. Estimator assumes use of on-site topsoil from initial site stripping work.)</i>											
RSM 329219131000 Seeding, mechanical seeding hydro or air seeding for large areas, includes lime, fertilizer and seed	SY	44,979.0	0.43 19,157	14.69% 806	5.73% 183	0.00% 0	1.59% 305	10.00% 1,946	8.57% 1,835	0.69% 160	0.52 23,403
120202 02 Closure	EA	1.0	626,822.03 626,822	32,307	7,224	0	9,971	63,679	60,031	5,247	765,750.04 765,750
<i>(Note: The closure of the CDF will be with dry dredged material and seeded, the same as with Renard Island, and will be accomplished in the approximate year 2032.)</i>											
120203 02 Dredged Material Cap	CY	139,392.0	4.41 615,357	32,158	7,191	0	9,789	62,515	58,933	5,151	5.39 751,744
<i>(Note: The estimator assumes that 36 acre site will be capped with 2' of clean dry dredge material from Bayport CDF, as proposed for Renard Island.)</i>											

Description	UOM	Quantity	DirectCost	Payroll	WCI	Allowance	JOOH	HOOH	Profit	Bond	ContractCost
HNC 312213103020 Rough grading, open site, large area, 300 H.P., dozer	BCY	139,392.0	112,083	5,010	1,154	0	1,783	11,387	10,734	938	136,925
			<i>0.80</i>	<i>14.69%</i>	<i>5.73%</i>	<i>0.00%</i>	<i>1.59%</i>	<i>10.00%</i>	<i>8.57%</i>	<i>0.69%</i>	<i>0.98</i>
HNC 312316440160 Excavate and load, bank measure, medium material, 3-1/2 C.Y. bucket, hydraulic excavator	BCY	139,392.0	227,892	13,219	2,991	0	3,625	23,152	21,825	1,908	278,402
			<i>1.63</i>	<i>14.69%</i>	<i>5.73%</i>	<i>0.00%</i>	<i>1.59%</i>	<i>10.00%</i>	<i>8.57%</i>	<i>0.69%</i>	<i>2.00</i>
RSM 312323182020 Hauling, excavated or borrow material, loose cubic yards, 1/2mile round trip, 4.2 loads/hour, 22 C.Y. rear/bottom dump, off highway haulers (Note: 139,392cy X 1.20 sweeling = 167,270.4lcy)	LCY	167,270.4	275,382	13,929	3,046	0	4,381	27,976	26,373	2,305	336,417
			<i>1.65</i>	<i>14.69%</i>	<i>5.73%</i>	<i>0.00%</i>	<i>1.59%</i>	<i>10.00%</i>	<i>8.57%</i>	<i>0.69%</i>	<i>2.01</i>
120203 03 Top Soil and Seed	EA	1.0	11,465	149	33	0	182	1,165	1,098	96	14,006
			<i>11,464.83</i>								<i>14,005.88</i>
HNC 329219140300 Seeding, athletic field mix, 50 lb. per M.S.Y., mechanical seeding	CSY	209.0	11,465	149	33	0	182	1,165	1,098	96	14,006
			<i>54.86</i>	<i>14.69%</i>	<i>5.73%</i>	<i>0.00%</i>	<i>1.59%</i>	<i>10.00%</i>	<i>8.57%</i>	<i>0.69%</i>	<i>67.01</i>

Description	UOM	Quantity	ContractCost	Escalation	OwnerMarkup	ProjectCost
Project Owner Summary			28,478,736	0	0	28,478,736
12 Navigation Ports & Harbors	EA	1.0	28,478,736	0	0	28,478,736
1202 Harbors	CY	4,300,000.0	28,478,736	0	0	28,478,736
120220 Disposal Areas	EA	1.0	28,478,736	0	0	28,478,736
12022001 Alternative 7 - Construct Three Islands (West, Middle & East Islands), Complete Wave Barrier and an Access Road	EA	1.0	23,423,310	0	0	23,423,310
<p>(Note: This alternative proposes to construct a three island (West, Middle, and East Islands) D MDF and a complete wave barrier located within Green Bay, WI. This alternative would also create a dredged material capacity of approximately 2,350,000 cy of dredged material. The size and location of these islands and the access road are the same as discussed in Alternative 6 . The difference between this alternative and Alternative 6 is that the complete wave barrier and islands will be constructed versus a partial wave barrier and each island is constructed sequentially. The three islands would encompass a total of approximately 272 acres. The construction of the three islands could be phased-in over a period of time as needed. The wave barrier would extend 8,600 feet eastward along the northeast side of the three islands to protect the islands and the shallow water habitat behind it (Duck Creek delta wetland and Peters Marsh) against wave action from the bay. Construction of the West, Middle and East Island and a complete wave barrier would create a reduction in wave height and restore approximately 1,225 acres of water habitat and 272 acres of terrestrial habitat for a total restoration of 1,497 acres. Stone production will likely be limiting factor in the construction of the three islands, along with winter work and may increase the project time. At this time complete funding stream not known, so this may not be a issue.)</p>						
120201 Mob, Demob & Preparatory Work	LS	1.0	314,158	0	0	314,158
120201 01 Government Trailer & Misc.	EA	1.0	32,251	0	0	32,251
RSM 015213200350 Office Trailer, furnished, rent per month, 32' x 8', excl. hookups (Note: Government Office trailer)	MO	20.0	6,224	0	0	6,224
RSM 015213400140 Field Office Expense, telephone bill; avg. bill/month, incl. long dist.	MO	20.0	5,423	0	0	5,423
RSM 015113500880 Temporary electrical power equipment (pro-rated per job), connections, office trailer, 100 amp	MO	20.0	6,836	0	0	6,836
HNC 015213201400 Toilet, portable, chemical, rent per month	MO	20.0	2,162	0	0	2,162
USR 015940451 Utility Services Hookup	EA	1.0	3,665	0	0	3,665
USR Telephone Service for Government	MO	20.0	2,443	0	0	2,443
USR Office Supply Equipment (Note: Fax, copier, drinking water)	LS	1.0	3,054	0	0	3,054

Description	UOM	Quantity	ContractCost	Escalation	OwnerMarkup	ProjectCost
USR 0100 Computers (Note: Includes: 2000 - computer 2000 - software 500 - printer 500 - internet)	LS	1.0	2,443	0	0	2,443
120201 02 Mobilization and Demobilization	EA	1.0	<i>198,548.87</i> 198,549	0	0	<i>198,548.87</i> 198,549
RSM 015436500100 Mobilization or demobilization, dozer, loader, backhoe or excavator, above 250 H.P., up to 50 miles	EA	8.0	<i>338.74</i> 2,710	0.00% 0	0.00 0	<i>338.74</i> 2,710
RSM 015436501150 Mobilization or demobilization, delivery charge for small equipment on flatbed trailer, maximum	EA	8.0	<i>163.95</i> 1,312	0.00% 0	0.00 0	<i>163.95</i> 1,312
RSM 015436502300 Mobilization or demobilization, crane, truck-mounted, over 75 ton	EA	8.0	<i>1,178.30</i> 9,426	0.00% 0	0.00 0	<i>1,178.30</i> 9,426
USR 023252500101 Mobilization and demobilization, maximum (Note: Assume 3 construction seasons with equipment being taken for repairs and transported back to project.)	LS	3.0	185,101	0	0	185,101
120201 03 Preparatory Work	EA	1.0	<i>83,358.22</i> 83,358	0	0	<i>83,358.22</i> 83,358
RSM 323113205110 Fence, chain link industrial, double swing gates, 10' high, 20' opening, includes excavation, in concrete	OPN	1.0	<i>5,166.32</i> 5,166	0.00% 0	0.00 0	<i>5,166.32</i> 5,166
HNC 323113104650 Fence, chain link, security, 3 strands barb wire, 10' high, 9 ga. Mesh, 2-1/2" line post, 3" pull post, excludes excavation (Note: Work & Storage area approx. 1 acre , approximate perimeter is 850 ft)	LF	850.0	<i>58.13</i> 49,412	0.00% 0	0.00 0	<i>58.13</i> 49,412
RSM 015523500100 Temporary, roads, gravel fill, 8" gravel depth, excl surfacing (Note: 1000'L X 15'W = 15,000sf X 0.1111 = 1666.5sy, this road way for access through state owned land for placing stone for wave barrier.)	SY	1,666.5	<i>17.27</i> 28,780	0.00% 0	0.00 0	<i>17.27</i> 28,780
120220 Disposal Areas Alternative 7	EA	1.0	<i>23,109,152.13</i> 23,109,152	0	0	<i>23,109,152.13</i> 23,109,152
12022002 Site Work	EA	1.0	<i>23,109,152.13</i> 23,109,152	0	0	<i>23,109,152.13</i> 23,109,152
12022002 01 Dike Construction	EA	1.0	<i>23,109,152.13</i> 23,109,152	0	0	<i>23,109,152.13</i> 23,109,152
12C Armor Stone	TON	122,514.0	<i>55.79</i> 6,835,253	0	0	<i>55.79</i> 6,835,253
USR Cost for Armour Stone 16 - 30" to be delivered to stockpile area.	TON	122,514.0	<i>29.70</i> 3,638,575	0.00% 0	0.00 0	<i>29.70</i> 3,638,575

Description	UOM	Quantity	ContractCost	Escalation	OwnerMarkup	ProjectCost
<i>(Note: Quote from Michael Materials, Steve Hollis, (920) 478-2084, received on 1/14/08 Armor Stone \$23.00 per ton delivery to the project site.)</i>						
USR 22 Placing Armour Stone into placement area.	TON	122,514.0	3,184,906	0.00%	0.00	3,184,906
HNC 312213100200 Shape embankment, slope up to 1 in 4, by machine	SY	5,428.0	11,772	0.00%	0.00	11,772
12B Bedding Stone	TON	16,933.0	625,442	0	0	625,442
USR Cost for Bedding Stone 12" to be delivered to stockpile area.	TON	16,933.0	393,572	0.00%	0.00	393,572
<i>(Note: Quote from Michael Materials, Steve Hollis, (920) 478-2084, received on 1/14/08 Bedding Stone \$18.00 per ton delivery to the project site.)</i>						
USR 37 Placing Bedding Stone into placement area.	TON	16,933.0	220,097	0.00%	0.00	220,097
HNC 312213100200 Shape embankment, slope up to 1 in 4, by machine	SY	5,428.0	11,772	0.00%	0.00	11,772
12A Shot Rock	TON	482,800.0	12,299,978	0	0	12,299,978
USR Cost for Shot Rock to be delivered to stockpile area.	TON	482,800.0	8,104,540	0.00%	0.00	8,104,540
<i>(Note: Quote from Michael Materials, Steve Hollis, (920) 478-2084, received on 1/14/08 Shot Rock \$13.00 per ton delivery to the project site. 479800 tons + 3000 tons total for 2 turn arounds per island)</i>						
USR 31 Placing Shot Rock into placement area.	TON	482,800.0	4,183,665	0.00%	0.00	4,183,665
HNC 312213100200 Shape embankment, slope up to 1 in 4, by machine	SY	5,428.0	11,772	0.00%	0.00	11,772
12D Geotextile	SY	50,800.0	190,474	0	0	190,474
HTW 334626100114 Geotextile Fabric, 170 Mil Thick Non-Woven Polypropylene	SY	50,800.0	190,474	0.00%	0.00	190,474
12E Coarse Gravel/Cobble	TON	116,200.0	3,032,928	0	0	3,032,928
RSM 321123232030 Base course drainage layers, aggregate base course for roadways and large paved areas, base course, bank run gravel, 6" deep	TON	116,200.0	2,967,475	0.00%	0.00	2,967,475
<i>(Note: 115200 tons + 1000 tons total for 2 turn arounds per island)</i>						
HNC 312323239325 Spread and compact, roadway embankment, 6" lift, self propelled roller	ECY	77,466.0	65,453	0.00%	0.00	65,453

Description	UOM	Quantity	ContractCost	Escalation	OwnerMarkup	ProjectCost
<i>(Note: 116200 tons / 1.5 = 77466 cy)</i>						
12F Culverts	EA	1.0	125,077	0	0	125,077
			<i>125,077.40</i>			<i>125,077.40</i>
RSM 336113202464 Underground Hydronic Energy Distribution, pipe conduit prefabricated, polyurethane insulation, FRP carrier and casing, 1" thick, 8" diameter, excludes trenching, fittings or crane	LF	600.0	43,120	0.00%	0.00	43,120
			<i>71.87</i>			<i>71.87</i>
RSM 334113602200 Public Storm Utility Drainage Piping, reinforced concrete pipe (RCP) with gaskets, 12" diameter, 6' lengths, class 3, excludes excavation or backfill	LF	3,100.0	81,957	0.00%	0.00	81,957
			<i>26.44</i>			<i>26.44</i>
12022002 Site Work 36 Acre Site	EA	1.0	5,055,426	0	0	5,055,426
			<i>5,055,425.78</i>			<i>5,055,425.78</i>
<i>(Note: The Expanded Bayport CDF site will be built adjacent to existing Bayport CDF, and will be designed to hold approximately 800,000 cubic yards of dredged material from the inner harbor.)</i>						
12022002 01 Dike Construction	EA	1.0	5,055,426	0	0	5,055,426
			<i>5,055,425.78</i>			<i>5,055,425.78</i>
120201 Mob, Demob & Preparatory Work	EA	1.0	725,457	0	0	725,457
			<i>725,456.97</i>			<i>725,456.97</i>
120201 01 Mob & Demob	EA	1.0	190,372	0	0	190,372
			<i>190,371.62</i>			<i>190,371.62</i>
USR 352023130020 Mobilization and demobilization, add to below, minimum	LS	1.0	190,372	0	0	190,372
120201 02 Clearing and Grubbing	EA	1.0	49,913	0	0	49,913
			<i>49,912.82</i>			<i>49,912.82</i>
RSM 311313100400 Selective clearing, brush, medium clearing, with dozer, ball and chain, excludes removal offsite	ACR	36.0	49,913	0.00%	0.00	49,913
			<i>1,386.47</i>			<i>1,386.47</i>
120201 03 Topsoil Stripping and Stockpiling	EA	1.0	206,207	0	0	206,207
			<i>206,206.69</i>			<i>206,206.69</i>
RSM 311413231430 Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 12" deep, 300' haul	CY	58,080.0	206,207	0.00%	0.00	206,207
			<i>3.55</i>			<i>3.55</i>
<i>(Note: 1,568,160sf using 12" of removal = 58080cy)</i>						
120201 04 Silt Fence	LF	5,194.0	19,159	0	0	19,159
			<i>3.69</i>			<i>3.69</i>
RSM 312513101120 Erosion control, silt fence, polypropylene, 3' high, includes 7.5' posts	LF	5,194.0	19,159	0.00%	0.00	19,159
			<i>3.69</i>			<i>3.69</i>

Description	UOM	Quantity	ContractCost	Escalation	OwnerMarkup	ProjectCost
120201 05 Perimeter Fence	LF	5,194.0	248,334	0	0	248,334
			47.81			47.81
RSM 323113205070 Fence, chain link industrial, double swing gates, 6' high, 20' opening, includes excavation, in concrete	OPN	2.0	4,307	0	0	4,307
			2,153.53	0.00%	0.00	2,153.53
RSM 323113200900 Fence, chain link industrial, aluminized steel, 6 ga. wire, 2" posts @ 10' OC, 6' high, includes excavation, & concrete	LF	5,194.0	244,027	0	0	244,027
			46.98	0.00%	0.00	46.98
120201 06 Groundwater Monitoring Wells	EA	4.0	10,340	0	0	10,340
			2,585.02			2,585.02
USR 014523507710 Ground water monitoring, 3 wells, max	LS	1.3	10,340	0	0	10,340
120201 07 Rough Grade	EA	1.0	1,132	0	0	1,132
			1,132.40			1,132.40
RSM 329113232610 Soil preparation, rough grade & scarify subsoil to receive topsoil, common earth, 200 H.P. dozer with scarifier	MSF	43.6	1,132	0	0	1,132
			26.00	0.00%	0.00	26.00
(Note: 43560sf / 1000 = 43.56msf)						
120202 Construction	EA	1.0	3,564,219	0	0	3,564,219
			3,564,218.78			3,564,218.78
120202 01 Dike Construction	LF	5,010.0	3,316,954	0	0	3,316,954
			662.07			662.07
120202 011 Dike Material	CY	143,342.0	3,229,533	0	0	3,229,533
			22.53			22.53
RSM 329113232710 Soil preparation, structural soil mixing, rough grade & scarify subsoil to receive clay and till, 180 H.P. grader with scarifier	MSF	4,509.0	166,846	0	0	166,846
			37.00	0.00%	0.00	37.00
(Note: 5010' L X 60' W = 300600sf x 15' = 4,509000sf / 1000 = 4509msf)						
RSM 312323236070 Compaction, 3 passes, 6" lifts, towed sheepsfoot or wobbly wheel roller	CY	143,342.0	101,191	0	0	101,191
			0.71	0.00%	0.00	0.71
USR 030513250500 Clay, delivered to site , includes material only	CY	143,342.0	2,961,496	0	0	2,961,496
			20.66	0.00%	0.00	20.66
(Note: The Quote for clay material cost was supplied by Brown County and is for in placed clay cubic yards, transported.)						
120202 012 Inspection Trench	LF	5,010.0	87,420	0	0	87,420
			17.45			17.45
(Note: 5010'L X 6'D X 3'W = 90180cf / 27 = 3340cy)						

Description	UOM	Quantity	ContractCost	Escalation	OwnerMarkup	ProjectCost
RSM 312323132200 Backfill, trench, 6" to 12" lifts, dozer backfilling, compaction with vibrating roller	CY	3,340.0	10,066	0.00%	0.00	10,066
			3.01	0	0.00	3.01
RSM 312316137180 Excavating, trench or continuous footing, dense hard clay, 2 1/2 C.Y. excavator, 6' to 10' deep, excludes sheeting or dewatering	BCY	3,340.0	8,348	0.00%	0.00	8,348
			2.50	0	0.00	2.50
USR 030513250500 Clay, delivered to site , includes material only	CY	3,340.0	69,006	0.00%	0.00	69,006
			20.66	0	0.00	20.66
(Note: The Quote for clay material cost was supplied by Brown County and is for in placed clay cubic yards, transported.)						
120202 03 Gravel Road	EA	1.0	182,070	0	0	182,070
			182,070.29			182,070.29
USR 015523500100 Roads, gravel fill, 12" gravel depth, excl surfacing	SY	7,792.6	182,070	0.00%	0.00	182,070
			23.36	0	0.00	23.36
(Note: 5010' l X 14'W = 70140sf X 0.1111 = 7792.55sy)						
120202 04 Top Soil and Seed Dike Sides	SY	44,979.0	65,195	0	0	65,195
			1.45			1.45
RSM 329119130400 Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	ECY	7,496.4	41,792	0.00%	0.00	41,792
			5.57	0	0.00	5.57
(Note: 404808sf X 0.5' = 202404cf / 27 = 7496.44cy. Estimator assumes use of on-site topsoil from initial site stripping work.)						
RSM 329219131000 Seeding, mechanical seeding hydro or air seeding for large areas, includes lime, fertilizer and seed	SY	44,979.0	23,403	0.00%	0.00	23,403
			0.52	0	0.00	0.52
120202 02 Closure	EA	1.0	765,750	0	0	765,750
			765,750.04			765,750.04
(Note: The closure of the CDF will be with dry dredged material and seeded, the same as with Renard Island, and will be accomplished in the approximate year 2032.)						
120203 02 Dredged Material Cap	CY	139,392.0	751,744	0	0	751,744
			5.39			5.39
(Note: The estimator assumes that 36 acre site will be capped with 2' of clean dry dredge material from Bayport CDF, as proposed for Renard Island.)						
HNC 312213103020 Rough grading, open site, large area, 300 H.P., dozer	BCY	139,392.0	136,925	0.00%	0.00	136,925
			0.98	0	0.00	0.98
HNC 312316440160 Excavate and load, bank measure, medium material, 3-1/2 C.Y. bucket, hydraulic excavator	BCY	139,392.0	278,402	0.00%	0.00	278,402
			2.00	0	0.00	2.00
RSM 312323182020 Hauling, excavated or borrow material, loose cubic yards, 1/2mile round trip, 4.2 loads/hour, 22 C.Y. rear/bottom dump, off highway haulers	LCY	167,270.4	336,417	0.00%	0.00	336,417
			2.01	0	0.00	2.01

<u>Description</u>	<u>UOM</u>	<u>Quantity</u>	<u>ContractCost</u>	<u>Escalation</u>	<u>OwnerMarkup</u>	<u>ProjectCost</u>
<i>(Note: 139,392cy X 1.20 sweeling = 167,270.4lcy)</i>						
120203 03 Top Soil and Seed	EA	1.0	<i>14,005.88</i> 14,006	0	0	<i>14,005.88</i> 14,006
HNC 329219140300 Seeding, athletic field mix, 50 lb. per M.S.Y., mechanical seeding	CSY	209.0	<i>67.01</i> 14,006	<i>0.00%</i> 0	<i>0.00</i> 0	<i>67.01</i> 14,006

Description	LaborCost	EQCost	MatlCost	SubBidCost	BareCost
Contractor Direct Summary					
AA Prime Contractor	3,349,037	3,818,193	14,256,586	175,567	21,613,883
12 Navigation Ports & Harbors	3,349,037	3,818,193	14,256,586	175,567	21,613,883
1202 Harbors	3,349,037	3,818,193	14,256,586	175,567	21,613,883
120220 Disposal Areas	3,349,037	3,818,193	14,256,586	175,567	21,613,883
12022001 Alternative 7 - Construct Three Islands (West, Middle & East Islands), Complete Wave Barrier and an Access Road	2,882,552	3,223,337	11,615,339	11,270	17,746,998
<p>(Note: This alternative proposes to construct a three island (West, Middle, and East Islands) DDMF and a complete wave barrier located within Green Bay, WI. This alternative would also create a dredged material capacity of approximately 2,350,000 cy of dredged material. The size and location of these islands and the access road are the same as discussed in Alternative 6 . The difference between this alternative and Alternative 6 is that the complete wave barrier and islands will be constructed versus a partial wave barrier and each island is constructed sequentially. The three islands would encompass a total of approximately 272 acres. The construction of the three islands could be phased-in over a period of time as needed. The wave barrier would extend 8,600 feet eastward along the northeast side of the three islands to protect the islands and the shallow water habitat behind it (Duck Creek delta wetland and Peters Marsh) against wave action from the bay. Construction of the West, Middle and East Island and a complete wave barrier would create a reduction in wave height and restore approximately 1,225 acres of water habitat and 272 acres of terrestrial habitat for a total restoration of 1,497 acres. Stone production will likely be limiting factor in the construction of the three islands, along with winter work and may increase the project time. At this time complete funding stream not known, so this may not be a issue.)</p>					
120201 Mob, Demob & Preparatory Work	102,239	61,223	50,278	11,270	239,510
120201 01 Government Trailer & Misc.	2,303	0	11,480	11,270	39,553
RSM 015213200350 Office Trailer, furnished, rent per month, 32' x 8', excl. hookups (Note: Government Office trailer)	0	0	4,820	0	4,820
RSM 015213400140 Field Office Expense, telephone bill; avg. bill/month, incl. long dist.	0	0	4,200	0	4,200
RSM 015113500880 Temporary electrical power equipment (pro-rated per job), connections, office trailer, 100 amp	2,303	0	2,460	0	4,763
HNC 015213201400 Toilet, portable, chemical, rent per month	0	0	0	1,770	1,770
USR 015940451 Utility Services Hookup	0	0	0	3,000	3,000
USR Telephone Service for Government	0	0	0	2,000	2,000

Description	LaborCost	EQCost	MatlCost	SubBidCost	BareCost
USR Office Supply Equipment (Note: Fax, copier, drinking water)	0	0	0	2,500	2,500
USR 0100 Computers (Note: Includes: 2000 - computer 2000 - software 500 - printer 500 - internet)	0	0	0	2,000	2,000
120201 02 Mobilization and Demobilization	82,589	56,452	0	0	139,041
RSM 015436500100 Mobilization or demobilization, dozer, loader, backhoe or excavator, above 250 H.P., up to 50 miles	844	1,153	0	0	1,996
RSM 015436501150 Mobilization or demobilization, delivery charge for small equipment on flatbed trailer, maximum	633	261	0	0	894
RSM 015436502300 Mobilization or demobilization, crane, truck-mounted, over 75 ton	3,847	2,775	0	0	6,621
USR 023252500101 Mobilization and demobilization, maximum (Note: Assume 3 construction seasons with equipment being taken for repairs and transported back to project.)	77,266	52,264	0	0	129,530
120201 03 Preparatory Work	17,346	4,771	38,798	0	60,916
RSM 323113205110 Fence, chain link industrial, double swing gates, 10' high, 20' opening, includes excavation, in concrete	1,247	258	2,225	0	3,730
HNC 323113104650 Fence, chain link, security, 3 strands barb wire, 10' high, 9 ga. Mesh, 2-1/2" line post, 3" pull post, excludes excavation (Note: Work & Storage area approx. 1 acre , approximate perimeter is 850 ft)	11,095	4,114	20,825	0	36,034
RSM 015523500100 Temporary, roads, gravel fill, 8" gravel depth, excl surfacing (Note: 1000'L X 15'W = 15,000sf X 0.1111 = 1666.5sy, this road way for access through state owned land for placing stone for wave barrier.)	5,005	399	15,748	0	21,152
120220 Disposal Areas Alternative 7	2,780,313	3,162,114	11,565,061	0	17,507,488
12022002 Site Work	2,780,313	3,162,114	11,565,061	0	17,507,488
12022002 01 Dike Construction	2,780,313	3,162,114	11,565,061	0	17,507,488
12C Armor Stone	1,058,396	1,275,095	2,817,822	0	5,151,313

Description	LaborCost	EQCost	MatlCost	SubBidCost	BareCost
	0.00	0.00	23.00	0.00	23.00
USR Cost for Armour Stone 16 - 30" to be delivered to stockpile area.	0	0	2,817,822	0	2,817,822
(Note: Quote from Michael Materials, Steve Hollis, (920) 478-2084, received on 1/14/08 Armor Stone \$23.00 per ton delivery to the project site.)					
	8.60	10.38	0.00	0.00	18.98
USR 22 Placing Armour Stone into placement area.	1,053,498	1,271,742	0	0	2,325,240
	0.90	0.62	0.00	0.00	1.52
HNC 312213100200 Shape embankment, slope up to 1 in 4, by machine	4,898	3,352	0	0	8,250
	4.59	5.39	18.00	0.00	27.98
12B Bedding Stone	77,702	91,238	304,794	0	473,733
	0.00	0.00	18.00	0.00	18.00
USR Cost for Bedding Stone 12" to be delivered to stockpile area.	0	0	304,794	0	304,794
(Note: Quote from Michael Materials, Steve Hollis, (920) 478-2084, received on 1/14/08 Bedding Stone \$18.00 per ton delivery to the project site.)					
	4.30	5.19	0.00	0.00	9.49
USR 37 Placing Bedding Stone into placement area.	72,803	87,886	0	0	160,689
	0.90	0.62	0.00	0.00	1.52
HNC 312213100200 Shape embankment, slope up to 1 in 4, by machine	4,898	3,352	0	0	8,250
	2.88	3.47	13.00	0.00	19.34
12A Shot Rock	1,388,764	1,673,902	6,276,400	0	9,339,066
	0.00	0.00	13.00	0.00	13.00
USR Cost for Shot Rock to be delivered to stockpile area.	0	0	6,276,400	0	6,276,400
(Note: Quote from Michael Materials, Steve Hollis, (920) 478-2084, received on 1/14/08 Shot Rock \$13.00 per ton delivery to the project site. 479800 tons + 3000 tons total for 2 turn arounds per island)					
	2.87	3.46	0.00	0.00	6.33
USR 31 Placing Shot Rock into placement area.	1,383,866	1,670,550	0	0	3,054,415
	0.90	0.62	0.00	0.00	1.52
HNC 312213100200 Shape embankment, slope up to 1 in 4, by machine	4,898	3,352	0	0	8,250
	0.99	0.04	1.65	0.00	2.67
12D Geotextile	50,059	1,985	83,820	0	135,864
	0.99	0.04	1.65	0.00	2.67
HTW 334626100114 Geotextile Fabric, 170 Mil Thick Non-Woven Polypropylene	50,059	1,985	83,820	0	135,864
	1.45	1.01	17.50	0.00	19.96
12E Coarse Gravel/Cobble	168,117	117,567	2,033,500	0	2,319,184
	1.24	0.82	17.50	0.00	19.56
RSM 321123232030 Base course drainage layers, aggregate base course for roadways and large paved areas, base course, bank run gravel, 6" deep	143,806	94,995	2,033,500	0	2,272,301
(Note: 115200 tons + 1000 tons total for 2 turn arounds per island)					

Description	LaborCost	EQCost	MatlCost	SubBidCost	BareCost
HNC 312323239325 Spread and compact, roadway embankment, 6" lift, self propelled roller (Note: 116200 tons / 1.5 = 77466 cy)	0.31 24,311	0.29 22,572	0.00 0	0.00 0	0.61 46,883
12F Culverts	37,274.59 37,275	2,328.26 2,328	48,725.00 48,725	0.00 0	88,327.86 88,328
RSM 336113202464 Underground Hydronic Energy Distribution, pipe conduit prefabricated, polyurethane insulation, FRP carrier and casing, 1" thick, 8" diameter, excludes trenching, fittings or crane	28.54 17,122	0.00 0	20.50 12,300	0.00 0	49.04 29,422
RSM 334113602200 Public Storm Utility Drainage Piping, reinforced concrete pipe (RCP) with gaskets, 12" diameter, 6' lengths, class 3, excludes excavation or backfill	6.50 20,153	0.75 2,328	11.75 36,425	0.00 0	19.00 58,906
12022002 Site Work 36 Acre Site (Note: The Expanded Bayport CDF site will be built adjacent to existing Bayport CDF, and will be designed to hold approximately 800,000 cubic yards of dredged material from the inner harbor.)	466,484.58 466,485	594,856.15 594,856	2,641,246.83 2,641,247	164,297.12 164,297	3,866,884.68 3,866,885
12022002 01 Dike Construction	466,484.58 466,485	594,856.15 594,856	2,641,246.83 2,641,247	164,297.12 164,297	3,866,884.68 3,866,885
120201 Mob, Demob & Preparatory Work	105,493.36 105,493	118,555.11 118,555	167,417.26 167,417	164,297.12 164,297	555,762.85 555,763
120201 01 Mob & Demob	0.00 0	0.00 0	0.00 0	155,833.00 155,833	155,833.00 155,833
USR 352023130020 Mobilization and demobilization, add to below, minimum	0 0	0 0	0 0	155,833 155,833	155,833 155,833
120201 02 Clearing and Grubbing	16,510.08 16,510	19,930.34 19,930	0.00 0	0.00 0	36,440.42 36,440
RSM 311313100400 Selective clearing, brush, medium clearing, with dozer, ball and chain, excludes removal offsite	458.61 16,510	553.62 19,930	0.00 0	0.00 0	1,012.23 36,440
120201 03 Topsoil Stripping and Stockpiling	60,474.68 60,475	92,752.72 92,753	0.00 0	0.00 0	153,227.40 153,227
RSM 311413231430 Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 12" deep, 300' haul (Note: 1,568,160sf using 12" of removal = 58080cy)	1.04 60,475	1.60 92,753	0.00 0	0.00 0	2.64 153,227
120201 04 Silt Fence	1.67 8,695	0.00 0	0.79 4,103	0.00 0	2.46 12,798

Description	LaborCost	EQCost	MatlCost	SubBidCost	BareCost
	1.67	0.00	0.79	0.00	2.46
RSM 312513101120 Erosion control, silt fence, polypropylene, 3' high, includes 7.5' posts	8,695	0	4,103	0	12,798
	3.74	1.04	31.44	0.00	36.23
120201 05 Perimeter Fence	19,439	5,420	163,314	0	188,173
	347.02	96.75	1,150.00	0.00	1,593.77
RSM 323113205070 Fence, chain link industrial, double swing gates, 6' high, 20' opening, includes excavation, in concrete	694	194	2,300	0	3,188
	3.61	1.01	31.00	0.00	35.62
RSM 323113200900 Fence, chain link industrial, aluminized steel, 6 ga. wire, 2" posts @ 10' OC, 6' high, includes excavation, & concrete	18,745	5,226	161,014	0	184,985
	0.00	0.00	0.00	2,116.03	2,116.03
120201 06 Groundwater Monitoring Wells	0	0	0	8,464	8,464
USR 014523507710 Ground water monitoring, 3 wells, max	0	0	0	8,464	8,464
	374.57	452.17	0.00	0.00	826.74
120201 07 Rough Grade	375	452	0	0	827
	8.60	10.38	0.00	0.00	18.98
RSM 329113232610 Soil preparation, rough grade & scarify subsoil to receive topsoil, common earth, 200 H.P. dozer with scarifier (Note: 43560sf / 1000 = 43.56msf)	375	452	0	0	827
	157,420.61	110,909.90	2,464,529.07	0.00	2,732,859.58
120202 Construction	157,421	110,910	2,464,529	0	2,732,860
	21.69	19.17	468.45	0.00	509.30
120202 01 Dike Construction	108,649	96,029	2,346,912	0	2,551,589
	0.72	0.61	16.00	0.00	17.33
120202 011 Dike Material	103,416	87,512	2,293,472	0	2,484,400
	17.20	8.19	0.00	0.00	25.39
RSM 329113232710 Soil preparation, structural soil mixing, rough grade & scarify subsoil to receive clay and till, 180 H.P. grader with scarifier (Note: 5010' L X 60' W = 300600sf x 15' = 4,509000sf / 1000 = 4509msf)	77,546	36,946	0	0	114,492
	0.18	0.35	0.00	0.00	0.53
RSM 312323236070 Compaction, 3 passes, 6" lifts, towed sheepsfoot or wobbly wheel roller	25,870	50,565	0	0	76,436
	0.00	0.00	16.00	0.00	16.00
USR 030513250500 Clay, delivered to site , includes material only (Note: The Quote for clay material cost was supplied by Brown County and is for in placed clay cubic yards, transported.)	0	0	2,293,472	0	2,293,472
	1.04	1.70	10.67	0.00	13.41
120202 012 Inspection Trench	5,232	8,517	53,440	0	67,189

Description	LaborCost	EQCost	MatlCost	SubBidCost	BareCost
<i>(Note: 5010'L X 6'D X 3'W = 90180cf / 27 = 3340cy)</i>					
RSM 312323132200 Backfill, trench, 6" to 12" lifts, dozer backfilling, compaction with vibrating roller	0.77 2,583	1.50 5,017	0.00 0	0.00 0	2.28 7,600
RSM 312316137180 Excavating, trench or continuous footing, dense hard clay, 2 1/2 C.Y. excavator, 6' to 10' deep, excludes sheeting or dewatering	0.79 2,649	1.05 3,500	0.00 0	0.00 0	1.84 6,149
USR 030513250500 Clay, delivered to site , includes material only	0.00 0	0.00 0	16.00 53,440	0.00 0	16.00 53,440
<i>(Note: The Quote for clay material cost was supplied by Brown County and is for in placed clay cubic yards, transported.)</i>					
120202 03 Gravel Road	23,402.48 23,402	1,864.02 1,864	110,420.43 110,420	0.00 0	135,686.93 135,687
USR 015523500100 Roads, gravel fill, 12" gravel depth, excl surfacing	3.00 23,402	0.24 1,864	14.17 110,420	0.00 0	17.41 135,687
<i>(Note: 5010' l X 14'W = 70140sf X 0.1111 = 7792.55sy)</i>					
120202 04 Top Soil and Seed Dike Sides	0.56 25,370	0.29 13,017	0.16 7,197	0.00 0	1.01 45,583
RSM 329119130400 Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	2.71 20,294	1.06 7,983	0.00 0	0.00 0	3.77 28,278
<i>(Note: 404808sf X 0.5' = 202404cf / 27 = 7496.44cy. Estimator assumes use of on-site topsoil from initial site stripping work.)</i>					
RSM 329219131000 Seeding, mechanical seeding hydro or air seeding for large areas, includes lime, fertilizer and seed	0.11 5,075	0.11 5,034	0.16 7,197	0.00 0	0.38 17,306
120202 02 Closure	203,570.61 203,571	365,391.14 365,391	9,300.50 9,301	0.00 0	578,262.25 578,262
<i>(Note: The closure of the CDF will be with dry dredged material and seeded, the same as with Renard Island, and will be accomplished in the approximate year 2032.)</i>					
120203 02 Dredged Material Cap	1.45 202,632	2.62 364,963	0.00 0	0.00 0	4.07 567,595
<i>(Note: The estimator assumes that 36 acre site will be capped with 2' of clean dry dredge material from Bayport CDF, as proposed for Renard Island.)</i>					
HNC 312213103020 Rough grading, open site, large area, 300 H.P., dozer	0.23 31,447	0.53 73,209	0.00 0	0.00 0	0.75 104,655
HNC 312316440160 Excavate and load, bank measure, medium material, 3-1/2 C.Y. bucket, hydraulic excavator	0.60 83,000	0.90 124,971	0.00 0	0.00 0	1.49 207,972
	0.53	1.00	0.00	0.00	1.52

Description	LaborCost	EQCost	MatlCost	SubBidCost	BareCost
RSM 312323182020 Hauling, excavated or borrow material, loose cubic yards, 1/2mile round trip, 4.2 loads/hour, 22 C.Y. rear/bottom dump, off highway haulers (Note: 139,392cy X 1.20 sweeling = 167,270.4lcy)	88,185	166,783	0	0	254,968
	<i>938.39</i>	<i>427.92</i>	<i>9,300.50</i>	<i>0.00</i>	<i>10,666.81</i>
120203 03 Top Soil and Seed	938	428	9,301	0	10,667
	<i>4.49</i>	<i>2.05</i>	<i>44.50</i>	<i>0.00</i>	<i>51.04</i>
HNC 329219140300 Seeding, athletic field mix, 50 lb. per M.S.Y., mechanical seeding	938	428	9,301	0	10,667

Description	ManHours	LaborCost	EQHours	EQCost	CrewHours	CrewCost
Crew Summary						
12 Navigation Ports & Harbors						
1202 Harbors						
120220 Disposal Areas						
12022001 Alternative 7 - Construct Three Islands (West, Middle & East Islands), Complete Wave Barrier and an Access Road						
<p>(Note: This alternative proposes to construct a three island (West, Middle, and East Islands) D MDF and a complete wave barrier located within Green Bay, WI. This alternative would also create a dredged material capacity of approximately 2,350,000 cy of dredged material. The size and location of these islands and the access road are the same as discussed in Alternative 6 . The difference between this alternative and Alternative 6 is that the complete wave barrier and islands will be constructed versus a partial wave barrier and each island is constructed sequentially. The three islands would encompass a total of approximately 272 acres. The construction of the three islands could be phased-in over a period of time as needed. The wave barrier would extend 8,600 feet eastward along the northeast side of the three islands to protect the islands and the shallow water habitat behind it (Duck Creek delta wetland and Peters Marsh) against wave action from the bay. Construction of the West, Middle and East Island and a complete wave barrier would create a reduction in wave height and restore approximately 1,225 acres of water habitat and 272 acres of terrestrial habitat for a total restoration of 1,497 acres. Stone production will likely be limiting factor in the construction of the three islands, along with winter work and may increase the project time. At this time complete funding stream not known, so this may not be a issue.)</p>						
120201 Mob, Demob & Preparatory Work						
120201 01 Government Trailer & Misc.						
	1.00	43.19	0.00	0.00		43.19
RSM 1ELEC 1 Electricians	53.3	2,303	0.0	0	53.3	2,303
120201 02 Mobilization and Demobilization						
	1.00	39.54	2.00	16.31		55.85
RSM A3D A3D	16.0	633	32.0	261	16.0	894
	2.00	90.16	3.00	65.03		155.19
RSM A3G A3G	85.3	3,847	128.0	2,775	42.7	6,621
	1.00	39.54	2.00	54.04		93.58
RSM B34K B34K	21.3	844	42.7	1,153	21.3	1,996
	8.00	334.82	4.00	226.48		561.30
RSM B8 B8	1,846.2	77,266	923.1	52,264	230.8	129,530
120201 03 Preparatory Work						
	4.00	156.63	1.00	58.09		214.72
GOV CLABB80B 3 laborers + 1 crane, hydr, trk mtd, 14 ton	283.3	11,095	70.8	4,114	70.8	15,209
	6.00	230.87	1.00	18.39		249.26
RSM B14 B14	130.1	5,005	21.7	399	21.7	5,403
	4.00	160.55	2.00	33.18		193.73
RSM B80 B80	31.1	1,247	15.5	258	7.8	1,505
120220 Disposal Areas Alternative 7						

Description	ManHours	LaborCost	EQHours	EQCost	CrewHours	CrewCost
12022002 Site Work						
12022002 01 Dike Construction						
12C Armor Stone						
	3.00	135.36	2.00	92.64		228.00
GOV COFGB32A 2 eqoprmed + 1 roller,vib,sd,S/P,12 ton,84"x60"	108.6	4,898	72.4	3,352	36.2	8,250
	4.00	171.98	2.00	207.61		379.59
USR B11A B11A	24,502.8	1,053,498	12,251.4	1,271,742	6,125.7	2,325,240
12B Bedding Stone						
	3.00	135.36	2.00	92.64		228.00
GOV COFGB32A 2 eqoprmed + 1 roller,vib,sd,S/P,12 ton,84"x60"	108.6	4,898	72.4	3,352	36.2	8,250
	4.00	171.98	2.00	207.61		379.59
USR B11A B11A	1,693.3	72,803	846.7	87,886	423.3	160,689
12A Shot Rock						
	3.00	135.36	2.00	92.64		228.00
GOV COFGB32A 2 eqoprmed + 1 roller,vib,sd,S/P,12 ton,84"x60"	108.6	4,898	72.4	3,352	36.2	8,250
	4.00	171.98	2.00	207.61		379.59
USR B11A B11A	32,186.7	1,383,866	16,093.3	1,670,550	8,046.7	3,054,415
12D Geotextile						
	3.00	110.86	0.40	4.40		115.26
GOV ULABJ 3 laborers + 1 pickup truck, 8,8000 GVW	1,354.7	50,059	180.6	1,985	451.6	52,044
12E Coarse Gravel/Cobble						
	3.00	125.53	2.00	116.55		242.08
GOV COFCB32F 1 eqoprmed + 1 truck, water, off-hwg, 6,000 gal	581.0	24,311	387.3	22,572	193.7	46,883
	3.00	135.36	2.00	89.42		224.78
RSM B32A B32A	3,187.2	143,806	2,124.8	94,995	1,062.4	238,801
12F Culverts						
	3.50	136.52	0.50	15.77		152.29
RSM B21 B21	516.7	20,153	73.8	2,328	147.6	22,481
	3.00	128.41	0.00	0.00		128.41
RSM Q2 Q2	400.0	17,122	0.0	0	133.3	17,122

12022002 Site Work 36 Acre Site

(Note: The Expanded Bayport CDF site will be built adjacent to existing Bayport CDF, and will be designed to hold approximately 800,000 cubic yards of dredged material from the inner harbor.)

12022002 01 Dike Construction

Description	ManHours	LaborCost	EQHours	EQCost	CrewHours	CrewCost
120201 Mob, Demob & Preparatory Work						
120201 02 Clearing and Grubbing						
RSM B11A B11A	384.0	16,510	192.0	19,930	192.0	36,440
120201 03 Topsoil Stripping and Stockpiling						
RSM B10B B10B	1,340.3	60,475	893.5	92,753	893.5	153,227
120201 04 Silt Fence						
RSM 2CLAB 2 Common Building Laborers	237.4	8,695	0.0	0	118.7	8,695
120201 05 Perimeter Fence						
RSM B80C B80C	517.1	19,439	344.7	5,420	172.4	24,859
120201 07 Rough Grade						
RSM B11A B11A	8.7	375	4.4	452	4.4	827
120202 Construction						
120202 01 Dike Construction						
120202 011 Dike Material						
RSM B10D B10D	573.4	25,870	764.5	50,565	382.2	76,436
RSM B11L B11L	1,803.6	77,546	901.8	36,946	901.8	114,492
120202 012 Inspection Trench						
(Note: 5010'L X 6'D X 3'W = 90180cf / 27 = 3340cy)						
RSM B10C B10C	57.3	2,583	76.3	5,017	38.2	7,600
RSM B12S B12S	60.7	2,649	30.4	3,500	30.4	6,149
120202 03 Gravel Road						
RSM B14 B14	608.2	23,402	101.4	1,864	101.4	25,267
120202 04 Top Soil and Seed Dike Sides						

Description	ManHours	LaborCost	EQHours	EQCost	CrewHours	CrewCost
	<i>1.50</i>	<i>67.68</i>	<i>1.00</i>	<i>26.62</i>		<i>94.30</i>
RSM B10S B10S	449.8	20,294	299.9	7,983	299.9	28,278
	<i>3.00</i>	<i>125.53</i>	<i>2.00</i>	<i>124.51</i>		<i>250.04</i>
RSM B81 B81	121.3	5,075	80.9	5,034	40.4	10,109
120202 02 Closure						
<i>(Note: The closure of the CDF will be with dry dredged material and seeded, the same as with Renard Island, and will be accomplished in the approximate year 2032.)</i>						
120203 02 Dredged Material Cap						
<i>(Note: The estimator assumes that 36 acre site will be capped with 2' of clean dry dredge material from Bayport CDF, as proposed for Renard Island.)</i>						
	<i>2.00</i>	<i>96.76</i>	<i>1.00</i>	<i>145.69</i>		<i>242.45</i>
GOV CODEB12D 1 eqoprcrn + 1 hydr excavator, crawler, 3.70 CY	1,715.6	83,000	857.8	124,971	857.8	207,972
	<i>1.50</i>	<i>67.68</i>	<i>1.00</i>	<i>157.56</i>		<i>225.24</i>
GOV CODTB10M 1 eqoprmed + 1 dozer, crawler, 341-440 HP	697.0	31,447	464.6	73,209	464.6	104,655
	<i>1.00</i>	<i>39.54</i>	<i>1.00</i>	<i>74.78</i>		<i>114.32</i>
RSM B34F B34F	2,230.3	88,185	2,230.3	166,783	2,230.3	254,968
120203 03 Top Soil and Seed						
	<i>1.00</i>	<i>46.77</i>	<i>2.00</i>	<i>21.33</i>		<i>68.10</i>
GOV COELB66 1 eqoprlt + 1 loader, BH, wheel, 0.80 CY F/E bkt	20.1	938	40.1	428	20.1	1,366

Description	ManHours	BaseWage	Travel	Overtime	TaxableFringe	Payroll	WCI	NonTaxFringe	Total
Labor Summary									
12 Navigation Ports & Harbors									
1202 Harbors									
120220 Disposal Areas									
12022001 Alternative 7 - Construct Three Islands (West, Middle & East Islands), Complete Wave Barrier and an Access Road									
<p>(Note: This alternative proposes to construct a three island (West, Middle, and East Islands) DMMF and a complete wave barrier located within Green Bay, WI. This alternative would also create a dredged material capacity of approximately 2,350,000 cy of dredged material. The size and location of these islands and the access road are the same as discussed in Alternative 6 . The difference between this alternative and Alternative 6 is that the complete wave barrier and islands will be constructed versus a partial wave barrier and each island is constructed sequentially. The three islands would encompass a total of approximately 272 acres. The construction of the three islands could be phased-in over a period of time as needed. The wave barrier would extend 8,600 feet eastward along the northeast side of the three islands to protect the islands and the shallow water habitat behind it (Duck Creek delta wetland and Peters Marsh) against wave action from the bay. Construction of the West, Middle and East Island and a complete wave barrier would create a reduction in wave height and restore approximately 1,225 acres of water habitat and 272 acres of terrestrial habitat for a total restoration of 1,497 acres. Stone production will likely be limiting factor in the construction of the three islands, along with winter work and may increase the project time. At this time complete funding stream not known, so this may not be an issue.)</p>									
120201 Mob, Demob & Preparatory Work									
120201 01 Government Trailer & Misc.									
MIL B-ELECTRN Electricians	53.3	27.27 1,454	0.00 0	242	14.92 796	366	83	1.00 53	56.16 2,995
120201 02 Mobilization and Demobilization									
MIL B-EQOPRCRN Equip. Operators, Heavy	42.7	32.67 1,394	0.00 0	232	16.95 723	345	80	1.00 43	66.03 2,817
MIL B-EQOPRMED Equip. Operators, Medium	461.5	31.42 14,502	0.00 0	2,417	16.95 7,823	3,635	831	1.00 462	64.28 29,669
MIL B-EQOPROIL Equip. Operators, Oilers / Grade Checker	230.8	28.19 6,505	0.00 0	1,084	16.95 3,912	1,690	373	1.00 231	59.78 13,794
(Note: A laborer or an Oiler can be a grade checker.)									
MIL B-LABORER Laborers, (Semi-Skilled)	230.8	24.87 5,739	0.00 0	957	11.75 2,712	1,382	329	1.00 231	49.18 11,349
MIL B-LABORER Laborers, (Semi-Skilled)	461.5	23.87 11,017	0.00 0	1,837	11.75 5,423	2,685	631	1.00 462	47.78 22,054
MIL B-TRKDVRHV Truck Drivers, Heavy	525.5	23.84 12,529	0.00 0	2,089	14.70 7,725	3,332	718	1.00 526	51.22 26,918
MIL B-TRKDVRLT Truck Drivers, Light	16.0	23.84 381	0.00 0	64	14.70 235	100	22	1.00 16	51.13 818
120201 03 Preparatory Work									

Description	ManHours	BaseWage	Travel	Overtime	TaxableFringe	Payroll	WCI	NonTaxFringe	Total
MIL B-EQOPRLT Equip. Operators, Light	100.3	28.82 2,890	0.00 0	482	16.95 1,700	806	166	1.00 100	61.26 6,143
MIL B-LABORER Laborers, (Semi-Skilled)	29.4	24.87 732	0.00 0	122	11.75 346	181	42	1.00 29	49.34 1,453
MIL B-LABORER Laborers, (Semi-Skilled)	307.0	23.87 7,328	0.00 0	1,222	11.75 3,607	1,919	420	1.00 307	48.22 14,802
MIL B-TRKDVRLT Truck Drivers, Light	7.8	23.84 185	0.00 0	31	14.70 114	49	11	1.00 8	51.13 397
120220 Disposal Areas Alternative 7									
12022002 Site Work									
12022002 01 Dike Construction									
12C Armor Stone									
MIL B-EQOPRMED Equip. Operators, Medium	72.4	31.42 2,274	0.00 0	379	16.95 1,227	570	130	1.00 72	64.28 4,652
MIL B-LABORER Laborers, (Semi-Skilled)	36.2	23.87 864	0.00 0	144	11.75 425	211	49	1.00 36	47.78 1,729
12B Bedding Stone									
MIL B-EQOPRMED Equip. Operators, Medium	72.4	31.42 2,274	0.00 0	379	16.95 1,227	570	130	1.00 72	64.28 4,652
MIL B-LABORER Laborers, (Semi-Skilled)	36.2	23.87 864	0.00 0	144	11.75 425	211	49	1.00 36	47.78 1,729
12A Shot Rock									
MIL B-EQOPRMED Equip. Operators, Medium	72.4	31.42 2,274	0.00 0	379	16.95 1,227	570	130	1.00 72	64.28 4,652
MIL B-LABORER Laborers, (Semi-Skilled)	36.2	23.87 864	0.00 0	144	11.75 425	211	49	1.00 36	47.78 1,729
12D Geotextile									
MIL B-LABORER Laborers, (Semi-Skilled)	903.1	23.87 21,557	0.00 0	3,594	11.75 10,612	5,253	1,235	1.00 903	47.78 43,154
MIL B-LABORER Laborers, (Semi-Skilled)	451.6	24.87 11,230	0.00 0	1,872	11.75 5,306	2,704	643	1.00 452	49.18 22,207
12E Coarse Gravel/Cobble									
MIL B-EQOPRMED Equip. Operators, Medium	2,318.5	31.42 72,846	0.00 0	12,143	16.95 39,298	19,893	4,173	1.00 2,318	64.99 150,672

Description	ManHours	BaseWage	Travel	Overtime	TaxableFringe	Payroll	WCI	NonTaxFringe	Total
MIL B-LABORER Laborers, (Semi-Skilled)	1,256.1	23.87 29,982	0.00 0	4,998	11.75 14,759	7,928	1,718	1.00 1,256	48.28 60,641
MIL B-TRKDVRHV Truck Drivers, Heavy	193.7	23.84 4,617	0.00 0	770	14.70 2,847	1,210	265	1.00 194	51.13 9,901
12F Culverts									
MIL B-EQOPRCRN Equip. Operators, Heavy	73.8	32.67 2,411	0.00 0	402	16.95 1,251	597	138	1.00 74	66.03 4,873
MIL B-LABORER Laborers, (Semi-Skilled)	147.6	23.87 3,524	0.00 0	587	11.75 1,735	859	202	1.00 148	47.78 7,054
MIL B-LABORER Laborers, (Semi-Skilled)	147.6	24.87 3,671	0.00 0	612	11.75 1,735	884	210	1.00 148	49.18 7,260
MIL B-PLUMBER Plumbers	133.3	19.17 2,556	0.00 0	426	14.46 1,928	721	146	1.00 133	44.34 5,912
MIL B-PLUMBER Plumbers	266.7	31.43 8,381	0.00 0	1,397	14.46 3,856	2,003	480	1.00 267	61.44 16,384
MIL B-SKILLWKR Skilled Workers	147.6	24.22 3,575	0.00 0	596	11.75 1,735	868	205	1.00 148	48.27 7,126
12022002 Site Work 36 Acre Site									
(Note: The Expanded Bayport CDF site will be built adjacent to existing Bayport CDF, and will be designed to hold approximately 800,000 cubic yards of dredged material from the inner harbor.)									
12022002 01 Dike Construction									
120201 Mob, Demob & Preparatory Work									
120201 02 Clearing and Grubbing									
MIL B-EQOPRMED Equip. Operators, Medium	192.0	31.42 6,033	0.00 0	1,006	16.95 3,254	1,512	346	1.00 192	64.28 12,342
MIL B-LABORER Laborers, (Semi-Skilled)	192.0	23.87 4,583	0.00 0	764	11.75 2,256	1,117	263	1.00 192	47.78 9,174
120201 03 Topsoil Stripping and Stockpiling									
MIL B-EQOPRMED Equip. Operators, Medium	893.5	31.42 28,075	0.00 0	4,680	16.95 15,145	7,037	1,608	1.00 894	64.28 57,439
MIL B-LABORER Laborers, (Semi-Skilled)	446.8	23.87 10,664	0.00 0	1,778	11.75 5,250	2,599	611	1.00 447	47.78 21,348
120201 04 Silt Fence									
MIL B-LABORER Laborers, (Semi-Skilled)	237.4	23.87 5,668	0.00 0	945	11.75 2,790	1,381	325	1.00 237	47.78 11,346

Description	ManHours	BaseWage	Travel	Overtime	TaxableFringe	Payroll	WCI	NonTaxFringe	Total
120201 05 Perimeter Fence									
MIL B-LABORER Laborers, (Semi-Skilled)	344.7	23.87 8,229	0.00 0	1,372	11.75 4,051	2,012	471	1.00 345	47.80 16,479
MIL B-TRKDVRLT Truck Drivers, Light	172.4	23.84 4,109	0.00 0	685	14.70 2,534	1,080	235	1.00 172	51.15 8,816
120201 07 Rough Grade									
MIL B-EQOPRMED Equip. Operators, Medium	4.4	31.42 137	0.00 0	23	16.95 74	34	8	1.00 4	64.28 280
MIL B-LABORER Laborers, (Semi-Skilled)	4.4	23.87 104	0.00 0	17	11.75 51	25	6	1.00 4	47.78 208
120202 Construction									
120202 01 Dike Construction									
120202 011 Dike Material									
MIL B-EQOPRMED Equip. Operators, Medium	1,284.0	31.42 40,345	0.00 0	6,725	16.95 21,765	10,806	2,311	1.00 1,284	64.82 83,236
MIL B-LABORER Laborers, (Semi-Skilled)	1,092.9	23.87 26,088	0.00 0	4,349	11.75 12,842	6,885	1,495	1.00 1,093	48.27 52,751
120202 012 Inspection Trench									
<i>(Note: 5010'L X 6'D X 3'W = 90180cf / 27 = 3340cy)</i>									
MIL B-EQOPRCRN Equip. Operators, Heavy	30.4	32.67 992	0.00 0	165	16.95 515	246	57	1.00 30	66.03 2,005
MIL B-EQOPRMED Equip. Operators, Medium	38.2	31.42 1,199	0.00 0	200	16.95 647	301	69	1.00 38	64.28 2,454
MIL B-LABORER Laborers, (Semi-Skilled)	49.4	23.87 1,180	0.00 0	197	11.75 581	299	68	1.00 49	48.01 2,374
120202 03 Gravel Road									
MIL B-EQOPRLT Equip. Operators, Light	101.4	28.82 2,921	0.00 0	487	16.95 1,718	753	167	1.00 101	60.65 6,148
MIL B-LABORER Laborers, (Semi-Skilled)	101.4	24.87 2,521	0.00 0	420	11.75 1,191	607	144	1.00 101	49.18 4,985
MIL B-LABORER Laborers, (Semi-Skilled)	405.5	23.87 9,678	0.00 0	1,613	11.75 4,764	2,359	554	1.00 405	47.78 19,375
120202 04 Top Soil and Seed Dike Sides									
MIL B-EQOPRMED Equip. Operators, Medium	340.3	31.42 10,692	0.00 0	1,782	16.95 5,768	2,910	613	1.00 340	64.96 22,105

Description	ManHours	BaseWage	Travel	Overtime	TaxableFringe	Payroll	WCI	NonTaxFringe	Total
MIL B-LABORER Laborers, (Semi-Skilled)	190.4	23.87 4,544	0.00 0	757	11.75 2,237	1,195	260	1.00 190	48.24 9,184
MIL B-TRKDVRHV Truck Drivers, Heavy	40.4	23.84 964	0.00 0	161	14.70 594	253	55	1.00 40	51.13 2,067
120202 02 Closure									
<i>(Note: The closure of the CDF will be with dry dredged material and seeded, the same as with Renard Island, and will be accomplished in the approximate year 2032.)</i>									
120203 02 Dredged Material Cap									
<i>(Note: The estimator assumes that 36 acre site will be capped with 2' of clean dry dredge material from Bayport CDF, as proposed for Renard Island.)</i>									
MIL B-EQOPRCRN Equip. Operators, Heavy	857.8	32.67 28,024	0.00 0	4,672	16.95 14,540	6,939	1,606	1.00 858	66.03 56,638
MIL B-EQOPRMED Equip. Operators, Medium	464.6	31.42 14,599	0.00 0	2,434	16.95 7,876	3,659	836	1.00 465	64.28 29,868
MIL B-EQOPROIL Equip. Operators, Oilers / Grade Checker	857.8	28.19 24,181	0.00 0	4,031	16.95 14,540	6,280	1,385	1.00 858	59.78 51,275
<i>(Note: A laborer or an Oiler can be a grade checker.)</i>									
MIL B-LABORER Laborers, (Semi-Skilled)	232.3	23.87 5,545	0.00 0	924	11.75 2,730	1,351	318	1.00 232	47.78 11,101
MIL B-TRKDVRHV Truck Drivers, Heavy	2,230.3	23.84 53,170	0.00 0	8,863	14.70 32,785	13,929	3,046	1.00 2,230	51.13 114,023
120203 03 Top Soil and Seed									
MIL B-EQOPRLT Equip. Operators, Light	20.1	28.82 578	0.00 0	96	16.95 340	149	33	1.00 20	60.65 1,217

Description	EQHours	Depr/Rntl	FCCM	Fuel	FOG	GroundEngage	EQRepair	TireWear	TireRepair	Total
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Equipment Summary

12 Navigation Ports & Harbors

1202 Harbors

120220 Disposal Areas

12022001 Alternative 7 - Construct Three Islands (West, Middle & East Islands), Complete Wave Barrier and an Access Road

(Note: This alternative proposes to construct a three island (West, Middle, and East Islands) D MDF and a complete wave barrier located within Green Bay, WI. This alternative would also create a dredged material capacity of approximately 2,350,000 cy of dredged material. The size and location of these islands and the access road are the same as discussed in Alternative 6 . The difference between this alternative and Alternative 6 is that the complete wave barrier and islands will be constructed versus a partial wave barrier and each island is constructed sequentially. The three islands would encompass a total of approximately 272 acres. The construction of the three islands could be phased-in over a period of time as needed. The wave barrier would extend 8,600 feet eastward along the northeast side of the three islands to protect the islands and the shallow water habitat behind it (Duck Creek delta wetland and Peters Marsh) against wave action from the bay. Construction of the West, Middle and East Island and a complete wave barrier would create a reduction in wave height and restore approximately 1,225 acres of water habitat and 272 acres of terrestrial habitat for a total restoration of 1,497 acres. Stone production will likely be limiting factor in the construction of the three islands, along with winter work and may increase the project time. At this time complete funding stream not known, so this may not be an issue.)

120201 Mob, Demob & Preparatory Work

120201 02 Mobilization and Demobilization

MAP C80TE006 CRANES, HYDRAULIC, TRUCK MTD, ALL TERRAIN, 25 TON, 94' BOOM, 6X4X2	230.8	15.89 3,667	3.67 846	17.63 4,068	2.91 671	0.00 0	13.81 3,186	2.02 466	0.33 76	56.25 12,982
MAP L35CA014 LOADER, FRONT END, CRAWLER, 3.20 CY BUCKET	230.8	19.15 4,419	3.46 798	12.78 2,950	1.39 322	0.00 0	31.50 7,269	0.00 0	0.00 0	68.28 15,758
MAP T45XX023 TRUCK TRAILER, LOWBOY, 120 TON, 4 AXLE (ADD TOWING TRUCK)	64.0	6.04 387	1.06 68	0.00 0	0.60 38	0.00 0	4.17 267	2.78 178	0.45 29	15.10 967
MAP T45XX025 TRUCK TRAILER, FLATBED, 25 TON, 2 AXLE (ADD TOWING TRUCK)	16.0	2.09 33	0.37 6	0.00 0	0.10 2	0.00 0	1.44 23	0.98 16	0.16 3	5.14 82
MAP T50XX005 TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X4	58.7	1.94 114	0.30 17	5.57 327	0.71 42	0.00 0	2.06 121	0.22 13	0.04 2	10.84 636
MAP T50XX029 TRUCK, HIGHWAY, 50,000 LBS GVW, 2 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	64.0	5.79 370	1.31 84	21.06 1,348	2.70 173	0.00 0	5.71 365	1.02 66	0.17 11	37.75 2,416
MAP T50XX033 DUMP TRUCK, HIGHWAY, 75,000 LBS GVW, 2 AXLE, 6X4 WITH REAR 16 - 20 CY DUMP BODY	461.5	7.50 3,464	1.67 771	27.17 12,539	3.49 1,609	0.00 0	7.38 3,408	0.98 453	0.16 73	48.35 22,317

Description	EQHours	Depr/Rntl	FCCM	Fuel	FOG	GroundEngage	EQRepair	TireWear	TireRepair	Total
120201 03 Preparatory Work										
GEN C80Z2240 CRANE, HYDRAULIC, TRUCK MOUNTED, 14 TON (12.7 MT), 80' (24.4 M) BOOM, 6X4	70.8	15.89 1,126	3.67 260	17.63 1,249	2.91 206	0.00 0	13.81 978	2.02 143	0.33 23	56.25 3,985
MAP L50JC001 LOADER / BACKHOE, WHEEL, 0.80 CY FRONT END BUCKET, 24" DIP, 4.3 CF, 12' DIGGING DEPTH, 4X4	21.7	4.68 101	0.96 21	3.78 82	1.80 39	0.00 0	6.02 131	0.57 12	0.09 2	17.91 388
MAP T50XX024 TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	7.8	2.40 19	0.46 4	20.56 160	2.82 22	0.00 0	2.37 18	0.46 4	0.07 1	29.15 226
MAP XMEZ0055 POST DRIVER 8" POST 15 TON IMPACT (ADD TRACTOR)	7.8	0.70 5	0.05 0	0.00 0	2.00 16	0.00 0	1.01 8	0.00 0	0.00 0	3.76 29
120220 Disposal Areas Alternative 7										
12022002 Site Work										
12022002 01 Dike Construction										
12C Armor Stone										
GEN G15Z3080 GRADER, MOTOR, ARTICULATED, 135 HP (101 KW), 12' (3.6 M) BLADE WIDTH	36.2	11.10 402	3.18 115	9.20 333	1.43 52	0.00 0	13.27 480	1.03 37	0.17 6	39.38 1,425
GEN R50Z5810 ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, SMOOTH, 12 TON (10.9 MT), 84" (2.1 M) WIDE, SOIL COMPACTOR	36.2	13.15 476	2.20 80	10.93 395	1.60 58	0.00 0	21.32 771	1.19 43	0.19 7	50.57 1,830
MAP T15CA014 TRACTOR, CRAWLER (DOZER), 240 HP, LOW GROUND PRESSURE, W/7.70 CY STRAIGHT BLADE (ADD ATTACHMENTS)	12,251.4	25.03 306,667	6.14 75,285	19.18 234,933	2.46 30,194	0.00 0	47.92 587,028	0.00 0	0.00 0	100.73 1,234,106
12B Bedding Stone										
GEN G15Z3080 GRADER, MOTOR, ARTICULATED, 135 HP (101 KW), 12' (3.6 M) BLADE WIDTH	36.2	11.10 402	3.18 115	9.20 333	1.43 52	0.00 0	13.27 480	1.03 37	0.17 6	39.38 1,425
GEN R50Z5810 ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, SMOOTH, 12 TON (10.9 MT), 84" (2.1 M) WIDE, SOIL COMPACTOR	36.2	13.15 476	2.20 80	10.93 395	1.60 58	0.00 0	21.32 771	1.19 43	0.19 7	50.57 1,830
		25.03	6.14	19.18	2.46	0.00	47.92	0.00	0.00	100.73

Description	EQHours	Depr/Rntl	FCCM	Fuel	FOG	GroundEngage	EQRepair	TireWear	TireRepair	Total
MAP T15CA014 TRACTOR, CRAWLER (DOZER), 240 HP, LOW GROUND PRESSURE, W/7.70 CY STRAIGHT BLADE (ADD ATTACHMENTS)	846.7	21,193	5,203	16,235	2,087	0	40,567	0	0	85,285
12A Shot Rock										
GEN G15Z3080 GRADER, MOTOR, ARTICULATED, 135 HP (101 KW), 12' (3.6 M) BLADE WIDTH	36.2	<i>11.10</i> 402	<i>3.18</i> 115	<i>9.20</i> 333	<i>1.43</i> 52	<i>0.00</i> 0	<i>13.27</i> 480	<i>1.03</i> 37	<i>0.17</i> 6	<i>39.38</i> 1,425
GEN R50Z5810 ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, SMOOTH, 12 TON (10.9 MT), 84" (2.1 M) WIDE, SOIL COMPACTOR	36.2	<i>13.15</i> 476	<i>2.20</i> 80	<i>10.93</i> 395	<i>1.60</i> 58	<i>0.00</i> 0	<i>21.32</i> 771	<i>1.19</i> 43	<i>0.19</i> 7	<i>50.57</i> 1,830
MAP T15CA014 TRACTOR, CRAWLER (DOZER), 240 HP, LOW GROUND PRESSURE, W/7.70 CY STRAIGHT BLADE (ADD ATTACHMENTS)	16,093.3	<i>25.03</i> 402,835	<i>6.14</i> 98,893	<i>19.18</i> 308,606	<i>2.46</i> 39,662	<i>0.00</i> 0	<i>47.92</i> 771,115	<i>0.00</i> 0	<i>0.00</i> 0	<i>100.73</i> 1,621,110
12D Geotextile										
GEN T50Z7320 TRUCK, HIGHWAY, CONVENTIONAL, 8,800 LB (3,992 KG) GVW, 4X4, 2 AXLE, 3/4 TON (0.68 MT) - PICKUP	180.6	<i>1.94</i> 351	<i>0.30</i> 54	<i>5.57</i> 1,006	<i>0.71</i> 129	<i>0.00</i> 0	<i>2.06</i> 372	<i>0.22</i> 40	<i>0.04</i> 7	<i>10.84</i> 1,958
12E Coarse Gravel/Cobble										
GEN R30Z5645 ROLLER, STATIC, SELF-PROPELLED, PNEUMATIC, 14 TON (12.7 MT), 68" (1.7 M) WIDE	193.7	<i>7.80</i> 1,511	<i>1.07</i> 207	<i>6.25</i> 1,211	<i>0.69</i> 133	<i>0.00</i> 0	<i>7.78</i> 1,507	<i>0.51</i> 98	<i>0.08</i> 16	<i>24.18</i> 4,682
GEN T60Z7920 TRUCK, WATER, OFF-HIGHWAY, 6,000 GAL (22,712 L), W/330 HP (246 KW) TRACTOR	193.7	<i>22.26</i> 4,310	<i>5.11</i> 989	<i>24.04</i> 4,656	<i>3.52</i> 682	<i>0.00</i> 0	<i>24.80</i> 4,802	<i>8.23</i> 1,594	<i>1.33</i> 258	<i>89.29</i> 17,292
MAP G15CA007 GRADER, MOTOR, ARTICULATED, 6X4, 12' BLADE W/17 TEETH SCARIFIERS	1,062.4	<i>11.10</i> 11,796	<i>3.18</i> 3,375	<i>9.20</i> 9,774	<i>1.43</i> 1,520	<i>0.00</i> 0	<i>13.27</i> 14,101	<i>1.03</i> 1,095	<i>0.17</i> 177	<i>39.38</i> 41,839
MAP R45BO006 ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 7.8 TON, 66.1" WIDE, 2X1, ASPHALT COMPACTOR	1,062.4	<i>12.48</i> 13,255	<i>1.84</i> 1,953	<i>10.91</i> 11,594	<i>1.60</i> 1,698	<i>0.00</i> 0	<i>20.70</i> 21,992	<i>0.00</i> 0	<i>0.00</i> 0	<i>47.53</i> 50,492
12F Culverts										
MAP C75GV021 CRANES, HYDRAULIC, SELF-PROPELLED, YARD, 10 TON, 30' BOOM, 4X4, NON-ROTATING OPERATOR'S CAB	73.8	<i>6.44</i> 475	<i>1.47</i> 109	<i>12.90</i> 952	<i>1.89</i> 139	<i>0.00</i> 0	<i>7.45</i> 550	<i>0.56</i> 42	<i>0.09</i> 7	<i>30.81</i> 2,274

Description	<u>EQHours</u>	<u>Depr/Rntl</u>	<u>FCCM</u>	<u>Fuel</u>	<u>FOG</u>	<u>GroundEngage</u>	<u>EQRepair</u>	<u>TireWear</u>	<u>TireRepair</u>	<u>Total</u>
12022002 Site Work 36 Acre Site										
(Note: The Expanded Bayport CDF site will be built adjacent to existing Bayport CDF, and will be designed to hold approximately 800,000 cubic yards of dredged material from the inner harbor.)										
12022002 01 Dike Construction										
120201 Mob, Demob & Preparatory Work										
120201 02 Clearing and Grubbing										
MAP T15CA014 TRACTOR, CRAWLER (DOZER), 240 HP, LOW GROUND PRESSURE, W/7.70 CY STRAIGHT BLADE (ADD ATTACHMENTS)	192.0	25.03 4,806	6.14 1,180	19.18 3,682	2.46 473	0.00 0	47.92 9,200	0.00 0	0.00 0	100.73 19,341
120201 03 Topsoil Stripping and Stockpiling										
MAP T15CA014 TRACTOR, CRAWLER (DOZER), 240 HP, LOW GROUND PRESSURE, W/7.70 CY STRAIGHT BLADE (ADD ATTACHMENTS)	893.5	25.03 22,366	6.14 5,491	19.18 17,134	2.46 2,202	0.00 0	47.92 42,814	0.00 0	0.00 0	100.73 90,008
120201 05 Perimeter Fence										
MAP L15HZ001 POST HOLE DRILL, UP TO 8" DIA, 30" DEEP, ONE MAN OPERATION	172.4	0.22 38	0.02 3	0.66 114	0.07 13	0.00 0	0.22 39	0.00 0	0.00 0	1.20 206
MAP T50XX023 TRUCK, HIGHWAY, 20,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	172.4	2.78 479	0.53 92	20.56 3,544	2.82 487	0.00 0	2.74 473	0.46 79	0.07 13	29.98 5,167
120201 07 Rough Grade										
MAP T15CA014 TRACTOR, CRAWLER (DOZER), 240 HP, LOW GROUND PRESSURE, W/7.70 CY STRAIGHT BLADE (ADD ATTACHMENTS)	4.4	25.03 109	6.14 27	19.18 84	2.46 11	0.00 0	47.92 209	0.00 0	0.00 0	100.73 439
120202 Construction										
120202 01 Dike Construction										
120202 011 Dike Material										
EP R40SO001 ROLLER, VIBRATORY, TOWED, SINGLE DRUM, SHEEPSFOOT, 25.5 TON, 72" WIDE (ADD 180 HP TOWING UNIT)	382.2	9.35 3,572	1.38 526	5.05 1,931	0.74 283	0.00 0	11.28 4,311	0.00 0	0.00 0	27.79 10,624
MAP G15CA007 GRADER, MOTOR, ARTICULATED, 6X4, 12' BLADE W/17 TEETH SCARIFIERS	901.8	11.10 10,013	3.18 2,865	9.20 8,297	1.43 1,290	0.00 0	13.27 11,970	1.03 929	0.17 151	39.38 35,514

Description	EQHours	Depr/Rntl	FCCM	Fuel	FOG	GroundEngage	EQRepair	TireWear	TireRepair	Total
MAP T15CA014 TRACTOR, CRAWLER (DOZER), 240 HP, LOW GROUND PRESSURE, W/7.70 CY STRAIGHT BLADE (ADD ATTACHMENTS)	382.2	25.03 9,568	6.14 2,349	19.18 7,330	2.46 942	0.00 0	47.92 18,315	0.00 0	0.00 0	100.73 38,504
120202 012 Inspection Trench										
(Note: 5010'L X 6'D X 3'W = 90180cf / 27 = 3340cy)										
EP H25CA032 HYDRAULIC EXCAVATOR, CRAWLER, 98,600 LBS, 3.00 CY BUCKET, 30.41' MAX DIGGING DEPTH	30.4	34.09 1,035	8.05 245	21.13 641	3.40 103	0.00 0	44.58 1,354	0.00 0	0.00 0	111.25 3,378
EP R40SO003 ROLLER, VIBRATORY, TOWED, SINGLE DRUM, SMOOTH, 25.5 TON, 72" WIDE (ADD 75-105 HP TOWING UNIT)	38.2	8.99 343	1.33 51	5.05 193	0.74 28	0.00 0	10.85 414	0.00 0	0.00 0	26.96 1,029
MAP T15CA014 TRACTOR, CRAWLER (DOZER), 240 HP, LOW GROUND PRESSURE, W/7.70 CY STRAIGHT BLADE (ADD ATTACHMENTS)	38.2	25.03 955	6.14 235	19.18 732	2.46 94	0.00 0	47.92 1,829	0.00 0	0.00 0	100.73 3,845
120202 03 Gravel Road										
MAP L50JC001 LOADER / BACKHOE, WHEEL, 0.80 CY FRONT END BUCKET, 24" DIP, 4.3 CF, 12' DIGGING DEPTH, 4X4	101.4	4.68 474	0.96 98	3.78 383	1.80 182	0.00 0	6.02 610	0.57 58	0.09 9	17.91 1,815
120202 04 Top Soil and Seed Dike Sides										
MAP L15FG001 LANDSCAPING EQUIPMENT, 3,000 GAL, HYDROSEEDER, TRUCK MTD (INCLUDES 56,000 GVW TRUCK)	40.4	35.32 1,428	2.62 106	14.64 592	1.61 65	0.00 0	35.56 1,438	0.00 0	0.00 0	89.74 3,628
MAP L40CA019 LOADER, FRONT END, WHEEL, 1.70 CY BUCKET, ARTICULATED, 4X4	299.9	7.46 2,236	1.42 427	6.48 1,944	0.78 233	0.00 0	8.39 2,516	1.19 356	0.19 58	25.91 7,770
MAP T50XX028 TRUCK, HIGHWAY, 45,000 LBS GVW, 2 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	40.4	6.30 255	1.42 57	15.62 632	2.00 81	0.00 0	6.21 251	1.02 41	0.17 7	32.75 1,324
120202 02 Closure										
(Note: The closure of the CDF will be with dry dredged material and seeded, the same as with Renard Island, and will be accomplished in the approximate year 2032.)										
120203 02 Dredged Material Cap										
(Note: The estimator assumes that 36 acre site will be capped with 2' of clean dry dredge material from Bayport CDF, as proposed for Renard Island.)										

Description	EQHours	Depr/Rntl	FCCM	Fuel	FOG	GroundEngage	EQRepair	TireWear	TireRepair	Total
		<i>37.52</i>	<i>11.64</i>	<i>27.97</i>	<i>1.42</i>	<i>0.00</i>	<i>61.32</i>	<i>0.00</i>	<i>0.00</i>	<i>139.87</i>
GEN H25Z3210 HYDRAULIC EXCAVATOR, CRAWLER, 140,000 LB (63,503 KG), 3.50 CY (2.7 M3) BUCKET, 31.4' (9.6 M) MAX DIGGING DEPTH	857.8	32,182	9,986	23,996	1,218	0	52,596	0	0	119,979
		<i>36.74</i>	<i>9.02</i>	<i>32.76</i>	<i>4.21</i>	<i>0.00</i>	<i>70.32</i>	<i>0.00</i>	<i>0.00</i>	<i>153.05</i>
GEN T15Z6600 TRACTOR, CRAWLER (DOZER), 341-440 HP (254-328 KW), POWERSHIFT, W/UNIVERSAL BLADE	464.6	17,070	4,191	15,221	1,956	0	32,676	0	0	71,114
		<i>22.47</i>	<i>4.87</i>	<i>12.07</i>	<i>1.04</i>	<i>0.00</i>	<i>26.68</i>	<i>4.49</i>	<i>0.73</i>	<i>72.35</i>
MAP T55CA010 TRUCK, OFF-HIGHWAY, ARTICULATED FRAME, 18 CY, 25 TON, 6X6, REAR DUMP	2,230.3	50,118	10,850	26,918	2,326	0	59,506	10,018	1,623	161,359
120203 03 Top Soil and Seed										
		<i>1.31</i>	<i>0.10</i>	<i>0.00</i>	<i>0.05</i>	<i>0.00</i>	<i>1.33</i>	<i>0.08</i>	<i>0.01</i>	<i>2.89</i>
GEN L15Z4040 LANDSCAPING EQUIPMENT, SPREADER, 85 CF (2.4 M3), DRY CHEMICAL (ADD 55 HP (41 KW) FARM TRACTOR)	20.1	26	2	0	1	0	27	2	0	58
		<i>4.68</i>	<i>0.96</i>	<i>3.78</i>	<i>1.80</i>	<i>0.00</i>	<i>6.02</i>	<i>0.57</i>	<i>0.09</i>	<i>17.91</i>
GEN L50Z4640 LOADER/BACKHOE, WHEEL, 0.80 CY (0.6 M3) FRONT END BUCKET, 9.8' (3.0 M) DEPTH OF HOE, 24" (0.61 M) DIPPER, 4X4	20.1	94	19	76	36	0	121	11	2	359

Description	LaborType	ManHours	BaseWage	Travel	Overtime	TaxableFringe	Payroll	WCI	NonTaxFringe	Total
Labor Cost To Contractor		25,370.3	712,816	0	118,826	336,480	309,280	40,837	25,370	1,543,609
AA Prime Contractor		25,370.3	712,816	0	118,826	336,480	309,280	40,837	25,370	1,543,609
FOP FA-AGENS General Superintendents (P.M.)	Journeyman	3,448.3	125,828	0	20,975	31,931	26,256	7,209	3,448	215,647
(Note: Assumed a Carpenter / Millwright Wages plus \$3.00 / hour)										
FOP FD-SAENG Safety Engineers	Journeyman	1,034.5	23,762	0	3,961	3,352	4,565	1,361	1,034	38,036
(Note: Assumed a Occupation Code of #29086 Engineer Technician III)										
MIL B-ELECTRN Electricians	Journeyman	106.7	2,909	0	485	1,591	768	167	107	6,026
MIL B-EQOPRCRN Equip. Operators, Heavy	Journeyman	1,004.6	32,821	0	5,471	17,029	10,328	1,880	1,005	68,534
MIL B-EQOPRLT Equip. Operators, Light	Journeyman	336.0	9,683	0	1,614	5,695	3,024	555	336	20,907
MIL B-EQOPRMED Equip. Operators, Medium	Journeyman	6,214.2	195,249	0	32,548	105,330	106,496	11,186	6,214	457,023
MIL B-EQOPROIL Equip. Operators, Oilers / Grade Checker	Journeyman	1,088.6	30,687	0	5,115	18,451	8,562	1,758	1,089	65,662
(Note: A laborer or an Oiler can be a grade checker.)										
MIL B-GLAZIER Glaziers	Journeyman	160.0	3,499	0	583	1,611	836	200	160	6,891
MIL B-LABORER Laborers, (Semi-Skilled)	Journeyman	6,916.8	165,105	0	27,523	81,273	112,946	9,459	6,917	403,222
MIL B-LABORER Laborers, (Semi-Skilled)	Foreman	1,075.0	26,736	0	4,457	12,632	8,079	1,532	1,075	54,511
MIL B-PLUMBER Plumbers	Apprentice	133.3	2,556	0	426	1,928	721	146	133	5,912
MIL B-PLUMBER Plumbers	Journeyman	266.7	8,381	0	1,397	3,856	2,003	480	267	16,384
MIL B-SKILLWKR Skilled Workers	Journeyman	307.6	7,451	0	1,242	3,615	1,895	427	308	14,937
MIL B-TRKDVRHV Truck Drivers, Heavy	Journeyman	3,069.9	73,187	0	12,200	45,128	21,356	4,193	3,070	159,133
MIL B-TRKDVRLT Truck Drivers, Light	Journeyman	208.1	4,962	0	827	3,059	1,444	284	208	10,785

Description	Quantity	UOM	CrewTag	Duration	LaborCost	EQCost	MatlCost	SubBidCost	BareCost
Detailed Estimate				23,905.2	3,349,037	3,818,193	14,256,586	175,567	21,599,383
				23,905.19	3,349,036.62	3,818,192.86	14,256,586.26	175,567.12	21,599,382.85
12 Navigation Ports & Harbors	1.0	EA		23,905.2	3,349,037	3,818,193	14,256,586	175,567	21,599,383
				0.01	0.78	0.89	3.32	0.04	5.02
1202 Harbors	4,300,000.0	CY		23,905.2	3,349,037	3,818,193	14,256,586	175,567	21,599,383
				23,905.19	3,349,036.62	3,818,192.86	14,256,586.26	175,567.12	21,599,382.85
120220 Disposal Areas	1.0	EA		23,905.2	3,349,037	3,818,193	14,256,586	175,567	21,599,383
				17,157.21	2,882,552.04	3,223,336.70	11,615,339.43	11,270.00	17,732,498.17
12022001 Alternative 7 - Construct Three Islands (West, Middle & East Islands), Complete Wave Barrier and an Access Road	1.0	EA		17,157.2	2,882,552	3,223,337	11,615,339	11,270	17,732,498
<p>(Note: This alternative proposes to construct a three island (West, Middle, and East Islands) DMDF and a complete wave barrier located within Green Bay, WI. This alternative would also create a dredged material capacity of approximately 2,350,000 cy of dredged material. The size and location of these islands and the access road are the same as discussed in Alternative 6 . The difference between this alternative and Alternative 6 is that the complete wave barrier and islands will be constructed versus a partial wave barrier and each island is constructed sequentially. The three islands would encompass a total of approximately 272 acres. The construction of the three islands could be phased-in over a period of time as needed. The wave barrier would extend 8,600 feet eastward along the northeast side of the three islands to protect the islands and the shallow water habitat behind it (Duck Creek delta wetland and Peters Marsh) against wave action from the bay. Construction of the West, Middle and East Island and a complete wave barrier would create a reduction in wave height and restore approximately 1,225 acres of water habitat and 272 acres of terrestrial habitat for a total restoration of 1,497 acres. Stone production will likely be limiting factor in the construction of the three islands, along with winter work and may increase the project time. At this time complete funding stream not known, so this may not be an issue.)</p>									
120201 Mob, Demob & Preparatory Work	1.0	LS		464.4	102,239	61,223	50,278	11,270	225,010
				53.33	2,303.47	0.00	11,480.00	11,270.00	25,053.47
120201 01 Government Trailer & Misc.	1.0	EA		53.3	2,303	0	11,480	11,270	25,053
				0.00	0.00	0.00	241.00	0.00	241.00
RSM 015213200350 Office Trailer, furnished, rent per month, 32' x 8', excl. hookups	20.0	MO		0.0	0	0	4,820	0	4,820
(Note: Government Office trailer)									
				0.00	0.00	0.00	210.00	0.00	210.00
RSM 015213400140 Field Office Expense, telephone bill; avg. bill/month, incl. long dist.	20.0	MO		0.0	0	0	4,200	0	4,200
				2.67	115.17	0.00	123.00	0.00	238.17
RSM 015113500880 Temporary electrical power equipment (pro-rated per job), connections, office trailer, 100 amp	20.0	MO	1ELEC	53.3	2,303	0	2,460	0	4,763
				0.00	0.00	0.00	0.00	88.50	88.50
HNC 015213201400 Toilet, portable, chemical, rent per month	20.0	MO		0.0	0	0	0	1,770	1,770
				0.00	0.00	0.00	0.00	3,000.00	6,000.00
USR 015940451 Utility Services Hookup	1.0	EA		0.0	0	0	0	3,000	3,000

Description	Quantity	UOM	CrewTag	Duration	LaborCost	EQCost	MatlCost	SubBidCost	BareCost
				0.00	0.00	0.00	0.00	100.00	300.00
USR Telephone Service for Government	20.0	MO		0.0	0	0	0	2,000	2,000
USR Office Supply Equipment	1.0	LS		0.0	0	0	0	2,500	2,500
(Note: Fax, copier, drinking water)									
USR 0100 Computers	1.0	LS		0.0	0	0	0	2,000	2,000
(Note: Includes: 2000 - computer 2000 - software 500 - printer 500 - internet)									
120201 02 Mobilization and Demobilization	1.0	EA		310.8	82,589	56,452	0	0	139,041
				310.77	82,589.14	56,452.06	0.00	0.00	139,041.20
RSM 015436500100 Mobilization or demobilization, dozer, loader, backhoe or excavator, above 250 H.P., up to 50 miles	8.0	EA	B34K	21.3	844	1,153	0	0	1,996
				2.67	105.44	144.11	0.00	0.00	249.55
RSM 015436501150 Mobilization or demobilization, delivery charge for small equipment on flatbed trailer, maximum	8.0	EA	A3D	16.0	633	261	0	0	894
				2.00	79.08	32.62	0.00	0.00	111.70
RSM 015436502300 Mobilization or demobilization, crane, truck-mounted, over 75 ton	8.0	EA	A3G	42.7	3,847	2,775	0	0	6,621
				5.33	480.85	346.82	0.00	0.00	827.67
USR 023252500101 Mobilization and demobilization, maximum	3.0	LS	B8	230.8	77,266	52,264	0	0	129,530
(Note: Assume 3 construction seasons with equipment being taken for repairs and transported back to project.)									
120201 03 Preparatory Work	1.0	EA		100.3	17,346	4,771	38,798	0	60,916
				100.28	17,346.43	4,770.76	38,798.43	0.00	60,915.61
RSM 323113205110 Fence, chain link industrial, double swing gates, 10' high, 20' opening, includes excavation, in concrete	1.0	OPN	B80	7.8	1,247	258	2,225	0	3,730
				7.77	1,246.99	257.67	2,225.00	0.00	3,729.66
HNC 323113104650 Fence, chain link, security, 3 strands barb wire, 10' high, 9 ga. Mesh, 2-1/2" line post, 3" pull post, excludes excavation	850.0	LF	CLABB80B	70.8	11,095	4,114	20,825	0	36,034
				0.08	13.05	4.84	24.50	0.00	42.39
(Note: Work & Storage area approx. 1 acre , approximate perimeter is 850 ft)									
RSM 015523500100 Temporary, roads, gravel fill, 8" gravel depth, excl surfacing	1,666.5	SY	B14	21.7	5,005	399	15,748	0	21,152
				0.01	3.00	0.24	9.45	0.00	12.69
(Note: 1000'L X 15'W = 15,000sf X 0.1111 = 1666.5sy, this road way for access through state owned land for placing stone for wave barrier.)									

Description	Quantity	UOM	CrewTag	Duration	LaborCost	EQCost	MatlCost	SubBidCost	BareCost
120220 Disposal Areas Alternative 7	1.0	EA		16,692.82 16,692.8	2,780,313.01 2,780,313	3,162,113.88 3,162,114	11,565,061.00 11,565,061	0.00 0	17,507,487.89 17,507,488
12022002 Site Work	1.0	EA		16,692.82 16,692.8	2,780,313.01 2,780,313	3,162,113.88 3,162,114	11,565,061.00 11,565,061	0.00 0	17,507,487.89 17,507,488
12022002 01 Dike Construction	1.0	EA		16,692.82 16,692.8	2,780,313.01 2,780,313	3,162,113.88 3,162,114	11,565,061.00 11,565,061	0.00 0	17,507,487.89 17,507,488
12C Armor Stone	122,514.0	TON		0.05 6,161.9	8.64 1,058,396	10.41 1,275,095	23.00 2,817,822	0.00 0	42.05 5,151,313
USR Cost for Armour Stone 16 - 30" to be delivered to stockpile area.	122,514.0	TON		0.00 0.0	0.00 0	0.00 0	23.00 2,817,822	0.00 0	23.00 2,817,822
(Note: Quote from Michael Materials, Steve Hollis, (920) 478-2084, received on 1/14/08 Armor Stone \$23.00 per ton delivery to the project site.)									
USR 22 Placing Armour Stone into placement area.	122,514.0	TON	B11A	0.05 6,125.7	8.60 1,053,498	10.38 1,271,742	0.00 0	0.00 0	18.98 2,325,240
HNC 312213100200 Shape embankment, slope up to 1 in 4, by machine	5,428.0	SY	COFGB32 A	0.01 36.2	0.90 4,898	0.62 3,352	0.00 0	0.00 0	1.52 8,250
12B Bedding Stone	16,933.0	TON		0.03 459.5	4.59 77,702	5.39 91,238	18.00 304,794	0.00 0	27.98 473,733
USR Cost for Bedding Stone 12" to be delivered to stockpile area.	16,933.0	TON		0.00 0.0	0.00 0	0.00 0	18.00 304,794	0.00 0	18.00 304,794
(Note: Quote from Michael Materials, Steve Hollis, (920) 478-2084, received on 1/14/08 Bedding Stone \$18.00 per ton delivery to the project site.)									
USR 37 Placing Bedding Stone into placement area.	16,933.0	TON	B11A	0.03 423.3	4.30 72,803	5.19 87,886	0.00 0	0.00 0	9.49 160,689
HNC 312213100200 Shape embankment, slope up to 1 in 4, by machine	5,428.0	SY	COFGB32 A	0.01 36.2	0.90 4,898	0.62 3,352	0.00 0	0.00 0	1.52 8,250
12A Shot Rock	482,800.0	TON		0.02 8,082.9	2.88 1,388,764	3.47 1,673,902	13.00 6,276,400	0.00 0	19.34 9,339,066
USR Cost for Shot Rock to be delivered to stockpile area.	482,800.0	TON		0.00 0.0	0.00 0	0.00 0	13.00 6,276,400	0.00 0	13.00 6,276,400
(Note: Quote from Michael Materials, Steve Hollis, (920) 478-2084, received on 1/14/08 Shot Rock \$13.00 per ton delivery to the project site. 479800 tons + 3000 tons total for 2 turn arounds per island)									

Description	Quantity	UOM	CrewTag	Duration	LaborCost	EQCost	MatlCost	SubBidCost	BareCost
				0.02	2.87	3.46	0.00	0.00	6.33
USR 31 Placing Shot Rock into placement area.	482,800.0	TON	B11A	8,046.7	1,383,866	1,670,550	0	0	3,054,415
				0.01	0.90	0.62	0.00	0.00	1.52
HNC 312213100200 Shape enbankment, slope up to 1 in 4, by machine	5,428.0	SY	COFGB32 A	36.2	4,898	3,352	0	0	8,250
				0.01	0.99	0.04	1.65	0.00	2.67
12D Geotextile	50,800.0	SY		451.6	50,059	1,985	83,820	0	135,864
				0.01	0.99	0.04	1.65	0.00	2.67
HTW 334626100114 Geotextile Fabric, 170 Mil Thick Non-Woven Polypropylene	50,800.0	SY	ULABJ	451.6	50,059	1,985	83,820	0	135,864
				0.01	1.45	1.01	17.50	0.00	19.96
12E Coarse Gravel/Cobble	116,200.0	TON		1,256.1	168,117	117,567	2,033,500	0	2,319,184
				0.01	1.24	0.82	17.50	0.00	19.56
RSM 321123232030 Base course drainage layers, aggregate base course for roadways and large paved areas, base course, bank run gravel, 6" deep	116,200.0	TON	B32A	1,062.4	143,806	94,995	2,033,500	0	2,272,301
(Note: 115200 tons + 1000 tons total for 2 turn arounds per island)									
				0.00	0.31	0.29	0.00	0.00	0.61
HNC 312323239325 Spread and compact, roadway enbankment, 6" lift, self propelled roller	77,466.0	ECY	COFCB32 F	193.7	24,311	22,572	0	0	46,883
(Note: 116200 tons / 1.5 = 77466 cy)									
				280.95	37,274.59	2,328.26	48,725.00	0.00	88,327.86
12F Culverts	1.0	EA		281.0	37,275	2,328	48,725	0	88,328
				0.22	28.54	0.00	20.50	0.00	49.04
RSM 336113202464 Underground Hydronic Energy Distribution, pipe conduit prefabricated, polyurethane insulation, FRP carrier and casing, 1" thick, 8" diameter, excludes trenching, fittings or crane	600.0	LF	Q2	133.3	17,122	0	12,300	0	29,422
				0.05	6.50	0.75	11.75	0.00	19.00
RSM 334113602200 Public Storm Utility Drainage Piping, reinforced concrete pipe (RCP) with gaskets, 12" diameter, 6' lengths, class 3, excludes excavation or backfill	3,100.0	LF	B21	147.6	20,153	2,328	36,425	0	58,906
				6,747.98	466,484.58	594,856.15	2,641,246.83	164,297.12	3,866,884.68
12022002 Site Work 36 Acre Site	1.0	EA		6,748.0	466,485	594,856	2,641,247	164,297	3,866,885
(Note: The Expanded Bayport CDF site will be built adjacent to existing Bayport CDF, and will be designed to hold approximately 800,000 cubic yards of dredged material from the inner harbor.)									

Description	Quantity	UOM	CrewTag	Duration	LaborCost	EQCost	MatlCost	SubBidCost	BareCost
12022002 01 Dike Construction	1.0	EA		6,747.98 6,748.0	466,484.58 466,485	594,856.15 594,856	2,641,246.83 2,641,247	164,297.12 164,297	3,866,884.68 3,866,885
120201 Mob, Demob & Preparatory Work	1.0	EA		1,380.98 1,381.0	105,493.36 105,493	118,555.11 118,555	167,417.26 167,417	164,297.12 164,297	555,762.85 555,763
120201 01 Mob & Demob	1.0	EA		0.00 0.0	0.00 0	0.00 0	0.00 0	155,833.00 155,833	155,833.00 155,833
USR 352023130020 Mobilization and demobilization, add to below, minimum	1.0	LS		0.00 0.0	0.00 0	0.00 0	0.00 0	155,833.00 155,833	155,833.00 155,833
120201 02 Clearing and Grubbing	1.0	EA		192.00 192.0	16,510.08 16,510	19,930.34 19,930	0.00 0	0.00 0	36,440.42 36,440
RSM 311313100400 Selective clearing, brush, medium clearing, with dozer, ball and chain, excludes removal offsite	36.0	ACR	B11A	5.33 192.0	458.61 16,510	553.62 19,930	0.00 0	0.00 0	1,012.23 36,440
120201 03 Topsoil Stripping and Stockpiling	1.0	EA		893.54 893.5	60,474.68 60,475	92,752.72 92,753	0.00 0	0.00 0	153,227.40 153,227
RSM 311413231430 Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 12" deep, 300' haul (Note: 1,568,160sf using 12" of removal = 58080cy)	58,080.0	CY	B10B	0.02 893.5	1.04 60,475	1.60 92,753	0.00 0	0.00 0	2.64 153,227
120201 04 Silt Fence	5,194.0	LF		0.02 118.7	1.67 8,695	0.00 0	0.79 4,103	0.00 0	2.46 12,798
RSM 312513101120 Erosion control, silt fence, polypropylene, 3' high, includes 7.5' posts	5,194.0	LF	2CLAB	0.02 118.7	1.67 8,695	0.00 0	0.79 4,103	0.00 0	2.46 12,798
120201 05 Perimeter Fence	5,194.0	LF		0.03 172.4	3.74 19,439	1.04 5,420	31.44 163,314	0.00 0	36.23 188,173
RSM 323113205070 Fence, chain link industrial, double swing gates, 6' high, 20' opening, includes excavation, in concrete	2.0	OPN	B80C	3.08 6.2	347.02 694	96.75 194	1,150.00 2,300	0.00 0	1,593.77 3,188
RSM 323113200900 Fence, chain link industrial, aluminized steel, 6 ga. wire, 2" posts @ 10' OC, 6' high, includes excavation, & concrete	5,194.0	LF	B80C	0.03 166.2	3.61 18,745	1.01 5,226	31.00 161,014	0.00 0	35.62 184,985
120201 06 Groundwater Monitoring Wells	4.0	EA		0.00 0.0	0.00 0	0.00 0	0.00 0	2,116.03 8,464	2,116.03 8,464

Description	Quantity	UOM	CrewTag	Duration	LaborCost	EQCost	MatlCost	SubBidCost	BareCost
USR 014523507710 Ground water monitoring, 3 wells, max	1.3	LS		0.0	0	0	0	8,464	8,464
				4.36	374.57	452.17	0.00	0.00	826.74
120201 07 Rough Grade	1.0	EA		4.4	375	452	0	0	827
				0.10	8.60	10.38	0.00	0.00	18.98
RSM 329113232610 Soil preparation, rough grade & scarify subsoil to receive topsoil, common earth, 200 H.P. dozer with scarifier (Note: 43560sf / 1000 = 43.56msf)	43.6	MSF	B11A	4.4	375	452	0	0	827
				1,794.24	157,420.61	110,909.90	2,464,529.07	0.00	2,732,859.58
120202 Construction	1.0	EA		1,794.2	157,421	110,910	2,464,529	0	2,732,860
				0.27	21.69	19.17	468.45	0.00	509.30
120202 01 Dike Construction	5,010.0	LF		1,352.6	108,649	96,029	2,346,912	0	2,551,589
				0.01	0.72	0.61	16.00	0.00	17.33
120202 011 Dike Material	143,342.0	CY		1,284.0	103,416	87,512	2,293,472	0	2,484,400
				0.20	17.20	8.19	0.00	0.00	25.39
RSM 329113232710 Soil preparation, structural soil mixing, rough grade & scarify subsoil to receive clay and till, 180 H.P. grader with scarifier (Note: 5010' L X 60' W = 300600sf x 15' = 4,509000sf / 1000 = 4509msf)	4,509.0	MSF	B11L	901.8	77,546	36,946	0	0	114,492
				0.00	0.18	0.35	0.00	0.00	0.53
RSM 312323236070 Compaction, 3 passes, 6" lifts, towed sheepsfoot or wobbly wheel roller	143,342.0	CY	B10D	382.2	25,870	50,565	0	0	76,436
				0.00	0.00	0.00	16.00	0.00	16.00
USR 030513250500 Clay, delivered to site , includes material only (Note: The Quote for clay material cost was supplied by Brown County and is for in placed clay cubic yards, transported.)	143,342.0	CY		0.0	0	0	2,293,472	0	2,293,472
				0.01	1.04	1.70	10.67	0.00	13.41
120202 012 Inspection Trench (Note: 5010'L X 6'D X 3'W = 90180cf / 27 = 3340cy)	5,010.0	LF		68.5	5,232	8,517	53,440	0	67,189
				0.01	0.77	1.50	0.00	0.00	2.28
RSM 312323132200 Backfill, trench, 6" to 12" lifts, dozer backfilling, compaction with vibrating roller	3,340.0	CY	B10C	38.2	2,583	5,017	0	0	7,600
				0.01	0.79	1.05	0.00	0.00	1.84
RSM 312316137180 Excavating, trench or continuous footing, dense hard clay, 2 1/2 C.Y. excavator, 6' to 10' deep, excludes sheeting or dewatering	3,340.0	BCY	B12S	30.4	2,649	3,500	0	0	6,149

Description	Quantity	UOM	CrewTag	Duration	LaborCost	EQCost	MatlCost	SubBidCost	BareCost
				0.00	0.00	0.00	16.00	0.00	16.00
USR 030513250500 Clay, delivered to site , includes material only	3,340.0	CY		0.0	0	0	53,440	0	53,440
(Note: The Quote for clay material cost was supplied by Brown County and is for in placed clay cubic yards, transported.)									
120202 03 Gravel Road	1.0	EA		101.37	23,402.48	1,864.02	110,420.43	0.00	135,686.93
				101.4	23,402	1,864	110,420	0	135,687
USR 015523500100 Roads, gravel fill, 12" gravel depth, excl surfacing	7,792.6	SY	B14	0.01	3.00	0.24	14.17	0.00	17.41
				101.4	23,402	1,864	110,420	0	135,687
(Note: 5010' l X 14'W = 70140sf X 0.1111 = 7792.55sy)									
120202 04 Top Soil and Seed Dike Sides	44,979.0	SY		0.01	0.56	0.29	0.16	0.00	1.01
				340.3	25,370	13,017	7,197	0	45,583
RSM 329119130400 Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	7,496.4	ECY	B10S	0.04	2.71	1.06	0.00	0.00	3.77
				299.9	20,294	7,983	0	0	28,278
(Note: 404808sf X 0.5' = 202404cf / 27 = 7496.44cy. Estimator assumes use of on-site topsoil from initial site stripping work.)									
RSM 329219131000 Seeding, mechanical seeding hydro or air seeding for large areas, includes lime, fertilizer and seed	44,979.0	SY	B81	0.00	0.11	0.11	0.16	0.00	0.38
				40.4	5,075	5,034	7,197	0	17,306
120202 02 Closure	1.0	EA		3,572.77	203,570.61	365,391.14	9,300.50	0.00	578,262.25
				3,572.8	203,571	365,391	9,301	0	578,262
(Note: The closure of the CDF will be with dry dredged material and seeded, the same as with Renard Island, and will be accomplished in the approximate year 2032.)									
120203 02 Dredged Material Cap	139,392.0	CY		0.03	1.45	2.62	0.00	0.00	4.07
				3,552.7	202,632	364,963	0	0	567,595
(Note: The estimator assumes that 36 acre site will be capped with 2' of clean dry dredge material from Bayport CDF, as proposed for Renard Island.)									
HNC 312213103020 Rough grading, open site, large area, 300 H.P., dozer	139,392.0	BCY	CODTB10 M	0.00	0.23	0.53	0.00	0.00	0.75
				464.6	31,447	73,209	0	0	104,655
HNC 312316440160 Excavate and load, bank measure, medium material, 3-1/2 C.Y. bucket, hydraulic excavator	139,392.0	BCY	CODEB12 D	0.01	0.60	0.90	0.00	0.00	1.49
				857.8	83,000	124,971	0	0	207,972
				0.01	0.53	1.00	0.00	0.00	1.52

Description	Quantity	UOM	CrewTag	Duration	LaborCost	EQCost	MatlCost	SubBidCost	BareCost
RSM 312323182020 Hauling, excavated or borrow material, loose cubic yards, 1/2mile round trip, 4.2 loads/hour, 22 C.Y. rear/bottom dump, off highway haulers (Note: 139,392cy X 1.20 sweeling = 167,270.4lcy)	167,270.4	LCY	B34F	2,230.3	88,185	166,783	0	0	254,968
120203 03 Top Soil and Seed	1.0	EA		20.1	938	428	9,301	0	10,667
HNC 329219140300 Seeding, athletic field mix, 50 lb. per M.S.Y., mechanical seeding	209.0	CSY	COELB66	20.1	938	428	9,301	0	10,667

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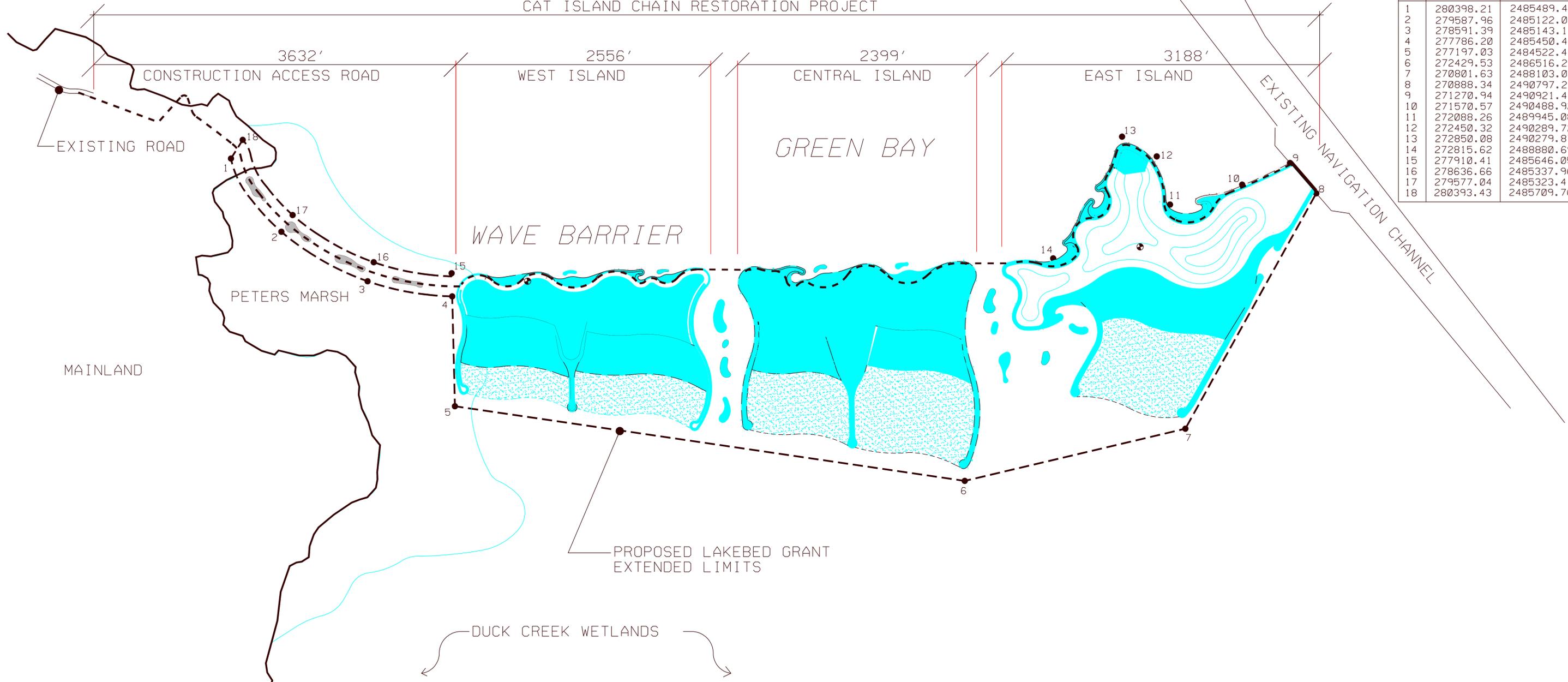
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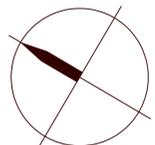
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CAT ISLAND CHAIN RESTORATION PROJECT

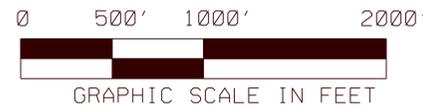


EXTENDED LAKEBED GRANT COORDINATE TABLE

•	NORTHING	EASTING
1	280398.21	2485489.44
2	279587.96	2485122.06
3	278591.39	2485143.11
4	277786.20	2485450.41
5	277197.03	2484522.42
6	272429.53	2486516.23
7	270801.63	2488103.08
8	270888.34	2490797.23
9	271270.94	2490921.49
10	271570.57	2490488.92
11	272088.26	2489945.08
12	272450.32	2490289.72
13	272850.08	2490279.87
14	272815.62	2488880.69
15	277910.41	2485646.05
16	278636.66	2485337.96
17	279577.04	2485323.41
18	280393.43	2485709.76



NORTH



CAT ISLAND CHAIN RESTORATION PROJECT
 ALTERNATIVE 7-CONSTRUCT THREE ISLANDS
 (WEST, CENTRAL AND EAST ISLANDS), A COMPLETE
 WAVE BARRIER AND AN ACCESS ROAD

NUMBER	DATE	REVISION	BY
U.S. ARMY CORPS OF ENGINEERS, DETROIT DISTRICT DESIGN BRANCH			
DESIGNED BY: JAS	GREEN BAY DMMP CAT ISLAND CHAIN RESTORATION PROJECT BROWN COUNTY GREEN BAY, WISCONSIN		
DRAWN BY: JAS			
CHECKED BY:			
APPROVED BY: INI			
		SITE PLAN ALTERNATIVE 7	
PLOT SCALE: FULL		FILE NAME: CAT FIG A.1.6	
DATE: 09 JAN. 08		SOLICITATION NUMBER: W911XK--B-	
SHEET: 7 OF 15		CONTRACT NUMBER: DACW--00-C	

COMPUTATION SHEET

PROJECT CAT ISLAND CHAIN RESTORATION
 SUBJECT _____
 ITEM SUMMARY OF ESTIMATED QUANTITIES ALT 2-8
 COMPUTED BY JM CHECKED BY JM

DATE _____
 PAGE 1 OF 6
 PAGE _____ OF _____
 REF _____

ITEM	ALT 2	ALT 3	ALT 4	ALT 5	ALT 6	ALT 7	ALT 8
SHOT ROCK TON	135400 TON	228200 TON	257000 TON	314900	479800	479800	301900 TON
CULVERTS 12" RCP LF	1300 LF	2500 LF	2200 LF	2800	3100	3100	2500 LF
1' BEDDING STONE TON	4850 TON	4850 TON	9833 TON	9833	16933	16933	7700 TON
6" 30' ARMOR STONE TON	34075 TON	34075 TON	47014 TON	47014	122514	122514	62900 TON
GEOTEXTILE SY	13600 SY	13600 SY	28600 SY	28600	50800	50800	22200 SY
CARSE GRAVEL COBBLE TON	33100 TON	33100 TON	60100 TON	60100	115200	115200	55100 TON
8" PVC PIPE LF	-	-	300 LF		600	600	

• QUANTITIES FOR ALTERNATIVE 7 ONLY INCLUDED

PROJECT CAT ISLAND CHAIN RESTORATION CAP 204
SUBJECT ESTIMATED ENGINEER'S QUANTITIES
ITEM ALT-7 SUMMARY ESTIMATED QUANTITIES
COMPUTED BY JAS CHECKED BY JM

DATE 11-15-2007
PAGE 2 OF 6
PAGE OF
REF

ALTERNATIVE 7 - SUMMARY OF ESTIMATED QUANTITIES

- * SHOT ROCK TON = $46,700 + 128,300 + 188,700 + 8000 + 19,600 + 19,000 + 69,500 = \underline{479,800}$
- * CIRCULATIONAL CULVERTS = $2500 + 600 = \underline{3100 LF}$
- * PIPE LF = 600 LF
- * BEDDING STONE TON = 16,933 TON
- * ARMOR STONE (16'-30') R.P. CAP. TON = $96,114 + 12,600 + 13,800 = 122,514 TON$
- * GEOTEXTILE SY = 50,800 SY
- * COARSE GRAVEL / COBBLE TON = 115,200 TON
- * REVTMENT PARS TON = 13,800 TON
- * SCOUR STONE TON = 19,000 TON
- * ISLAND BERMS = $19,600 + 12,200 + 46,700 = \underline{69,500 TON}$

COMPUTATION SHEET

PROJECT CAT ISLAND CHAIN RESTORATION CAP 204
SUBJECT ESTIMATED ENGINEER'S QUANTITIES
ITEM ALT 7 - ESTIMATED QUANTITIES
COMPUTED BY JAS CHECKED BY SN

DATE 11-15-2017
PAGE 3 OF 6
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REF

ALTERNATIVE 7 - CONSTRUCT THREE ISLANDS (WEST, MIDDLE AND EAST), A COMPLETE WAVE BARRIER AND AN ACCESS ROAD.

ASSUMPTIONS/DATA - SEE ALTERNATIVE 7

CALCULATIONS:

CONSTRUCTION ACCESS ROAD: SEE ALTERNATIVE 7 SAME QUANTITIES

CONSTRUCTION WAVE BARRIER: LENGTH = $2556 + 2399 + 3188 = 8143$

SHOT ROCK TON = 128,300 TON SEE ALT. 2 CALCS

CULVERTS LF = 2500 LF

CONSTRUCTION WAVE BARRIER JETTIES:

SHOT ROCK TON = 188,700 TON

LAGOON

SEE ESTIMATED QUANTITIES - ALT 5

SHORE PROTECTION: SEE ESTIMATED QUANTITIES - ALT 5

REMOVE TEMPORARY CONSTRUCTION ACCESS ROADS IN GAPS AND REPLACE AS ISLAND BERMS

REMOVE & REPLACE STONE TON = 12,200 TON

REMOVE CONSTRUCTION ACCESS ROAD AND REPLACE AS ISLAND BERMS

REMOVE & REPLACE STONE = 46,700 TON

ARMOR STONE = 12,600 TON

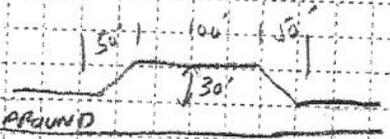
SUMMARY OF ESTIMATED COSTS USING BAIRD'S REPORT QUANTITIES & UNIT COSTS.

ITEM	WEST ISLAND / ACCESS	CENTRAL ISLAND / ACCESS	EASTERN ISLAND / ACCESS
MOBILIZATION	300,000	300,000	300,000
CONSTRUCTION ACCESS / BARRIER	2,357,200	2,357,200	2,357,200
WESTERN ISLAND	2,176,850		
CENTRAL ISLAND		2,490,816	
EASTERN ISLAND			3,790,800
SUB TOTAL	4,834,050	5,148,016	6,448,000
CONTINGENCY 20%	966,810	1,029,603	1,289,600
TOTAL	5,800,860	6,177,619	7,737,600

TURNAROUNDS QUANTITIES : ASSUME TWO TURNAROUNDS / ISLAND

COARSE GRAVEL / COBBLE 4500 FT²

$$CY = (100 \times 30 + 30 \times 50) \times \frac{1}{2} \times 2 \times 2.5 \times \frac{1}{27} = 333 \text{ CY/TURNAROUND}$$



TOTAL TON OF COARSE GRAVEL / COBBLE = $333 \times 2 = 670 \text{ CY} \times \frac{1.5 \text{ TON}}{\text{CY}} = 1000 \text{ TON / ISLAND}$

SHOT ROCK = $4500 \text{ FT}^2 \times 6' \text{ depth of Shot Rock} = 27000 \text{ FT}^3 \times \frac{1}{27} = 1000 \text{ CY / TURNAROUND}$

TOTAL TON OF SHOT ROCK FOR TWO TURNAROUND / ISLAND = $1000 \times \frac{1.5 \text{ TON}}{\text{CY}} \times 2 = 3000 \text{ TON / ISLAND}$

SUMMARY / ISLAND

FOR EACH ISLAND 2 TON COARSE GRAVEL / COBBLE = 1000 TON

TON SHOT ROCK = 3000 TON

ESTIMATED COSTS FROM BAIRD'S ESTIMATE 2005

COST OF BARRIER + ACCESS =

SHUT ROCK TON = ^{ACC LD} 46,700 + ^{WAVE BARR} 128,300 TON = 175,000 TON

CULVERTS LF = 1300 + 1200 = 2500 LF

STONE BASE FOR EXISTING ROAD = 6000 TONS

COST \$ = 175000 x 12 + 2500 x 100 + 600 x 12 = 2,100,000 + 250,000 + 7200 = \$ 2,357,200 COST OF TOTAL WAVE BARRIER + ACCESS

COST OF EAST ISLAND =

SHUT ROCK TON = 73,000 + 14,200 = 87,200 TON

ARMOR STONE TON = 53,900 TON

BEDDING STONE = 7100 TON

GEOTEXTILE = SY = 22,200 SY

COARSE GRAVEL / CURBLES TON = 55,100 TON

REVETMENT BARS TON = 9000 TON

COST \$ EAST ISLAND = (87,200)(^{31.20}12) + (53,900)(⁶⁸30) + (7100)(^{45.25}12) + (22,200)(5) + (55,100)(^{23.65}12) + (9000)(^{23.65}30) =

= 1,046,400 + 1,617,000 + 85,200 + 111,000 + 661,200 + 270,000

= 3,790,800

2720640 + 3665200 + 321275 + 111000 + 1513600

8331715

COST OF CENTRAL ISLAND

$$\text{SHOT ROCK TON} = 65,500 \text{ TON} + \overset{\text{VE P2}}{2800} = 67,800 \text{ TON}$$

$$\text{ARMOR STONE} = 44,800 - \frac{550 \times 209 \times 1.5}{27} = 37,914 \text{ TON}$$

$$\text{BEDDING STONE} = 5,900 - \frac{550 \times 30 \times 1.5}{27} = 4,983 \text{ TON}$$

$$\text{GEO TEXTILE} = 18,300 - 550 \times 36 \times \frac{1}{9} \times 1.5 = 15,000 \text{ SY}$$

$$\text{COARSE GRAVEL / COBBLE TON} = 27,000 \text{ TON}$$

$$\text{REVEIMENT BARS TON} = 2700 \text{ TON}$$

$$\begin{aligned} \text{COST \$ CENTRAL ISLAND} &= (67,800)(12) + (37,914)(30) + (4,983)(12) + (15,000)(5) \\ &\quad + (27,000)(12) + (2,700)(30) \\ &= 813,600 + 1,137,420 + 59,796 + 75,000 + 324,000 + 81,000 \\ &= \$2,490,816 \end{aligned}$$

COST OF WEST ISLAND

$$\text{SHOT ROCK TON} = 50,600 + \overset{\text{VE}}{2600} = 53,200 \text{ TON}$$

$$\text{ARMOR STONE} = 31,975 \text{ TON}$$

$$\text{BEDDING STONE TON} = 4,250 \text{ TON}$$

$$\text{GEO TEXTILE SY} = 13,600 \text{ SY}$$

$$\text{COARSE GRAVEL / COBBLE TON} = 33,100 \text{ TON}$$

$$\text{REVEIMENT BARS} = 2100 \text{ TON}$$

$$\begin{aligned} \text{COST \$ WEST ISLAND} &= (53,200)(12) + (31,975)(30) + (4,250)(12) + (13,600)(5) + (33,100)(12) \\ &\quad + (2,100)(30) = \end{aligned}$$

$$\text{COST \$} = 638,400 + 959,250 + 51,000 + 68,000 + 397,200 + 63,000 = \$2,116,850$$

Expanded Bay Port Confined CDF
 36 Acre Site
 Quantities - By: JAU, Checked By:
 4 December 2009

Construction	Qty	Unit
Total Volume of Dike Material	143,342	CY
Estimated Storage Capacity	819,012	CY
Rough Grade inside cell perim	15	ACRE
Perimeter Fence	5,010	LF
Inspection Trench 6' deep x 3' wide	5,010	LF
	or	3,340
Drain Tile Removal	0	LF
Topsoil & Seed Dike Sides	44,979	SY
Gravel Road on top of dike	2,598	CY

Closure		Unit
Assume slope surface, add 20% to area		
Clay Cap, 2' deep	139,392	CY
Poly liner	1,881,972	SF
	or	209,088
		SY

PROJECT Expanded Bay Port CDF
 SUBJECT 36 Acre Site
 ITEM _____
 COMPUTED BY JAU CHECKED BY JSF

DATE 4 Dec 2009
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Total Area = 38.7 Acres, Assume 36 Acres for calculations
 Calcs Assume square shape site.

Perimeter of 36 Acre site

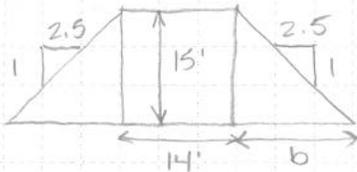
$$1 \text{ acre} = 43,560 \text{ sf}$$

$$36 \text{ acres} \left| \frac{43560 \text{ sf}}{1 \text{ acre}} = 1,568,160 \text{ sf} \right.$$

$$\sqrt{1,568,160 \text{ sf}} = 1252.26 \text{ LF} \times 4 \text{ sides} = 5009$$

perimeter: say ~ 5010

Volume of Dike.



$$b = 15' \times 2.5'$$

$$b = 37.5'$$

$$\text{X-sec Area} = (14' \times 15') + [2 \times (.5 \times 15 \times 37.5)]$$

$$\text{X-sec Area} = 210 + 562.5 = 772.5 \text{ sf}$$

$$\text{Vol of Dike} = (772.5 \text{ sf} \times 5010 \text{ LF}) / 27 \text{ cf/cy}$$

$$\text{Vol of Dike} = 143,342 \text{ cy}$$

Check Cell Capacity

$$(1,568,160 \text{ sf} \times 15' \text{ depth}) / 27 \text{ cf/cy} = 871,200 \text{ cy}$$

$$871,200 \text{ cy} - (\text{inside dike slope vols}) =$$

$$\text{Inside dike slope vol} = \left[\left(\frac{1}{2} \times 15 \times 37.5 \right) \times 5010 \text{ LF} \right] / 27 \text{ cf/cy} = 52,187.5 \text{ cy}$$

$$871,200 \text{ cy} - 52,188 = 819,012 \text{ cy cell capacity}$$

Rough Grade

Assume 40% Area will need graded: 36 acre $\times .4 \approx 15 \text{ Acres}$ (inside cell perimeter)

$$\text{Perimeter Fence} = 5010 \text{ LF}$$

$$\text{Inspection Trench} = 5010 \text{ LF}$$

Drain Tile Removal → Assume no tile removal at this site

PROJECT Expand Bay Port CDF
SUBJECT 36 Acre Site
ITEM _____
COMPUTED BY JAU CHECKED BY JSF

DATE 4 Dec 2009
PAGE 1 OF 3
PAGE _____ OF _____
REF _____

Summary

Construction

Total Vol of Dike Material 143,342 cy
Estimated Storage Capacity 819,012 cy
Rough Grade Inside Cell Perimeter 15 Acre
Perimeter Fence 5010 LF
Inspection trench, 6' deep x 3' wide 5010 LF or 3340 cy
Terrain Tile Removal 0 LF
Topsoil + Seed Dike Sides 44,979 sy
Gravel Road, Dike Tops 2598 cy

Closure

Clay cap, 2' deep 139,392 cy
Polyliner 1,981,972 sf or 209,088 sy

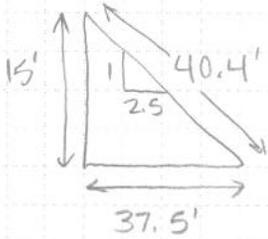
PROJECT Expanded Bay Port CDFSUBJECT 36 Acre Site

ITEM _____

COMPUTED BY JAUCHECKED BY JSFDATE 4 Dec 2009PAGE 3 OF 3

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REF _____

Topsoil + Seed Berms

$$40.4' \times 2 \text{ sides} \times 5010 \text{ LF} = 404,808 \text{ sf}$$

$$404,808 \text{ sf} / 9 \text{ sf/sy} = \boxed{44,979 \text{ sy}}$$

Gravel on Berm Tops

$$\text{Assume 1 inch thick by 14' wide} \times 5010 \text{ LF} / 27 \text{ cf/cy} =$$

$$= \boxed{2,598 \text{ cy gravel}}$$

Closure

2' Clay cap + Polyethylene Liner

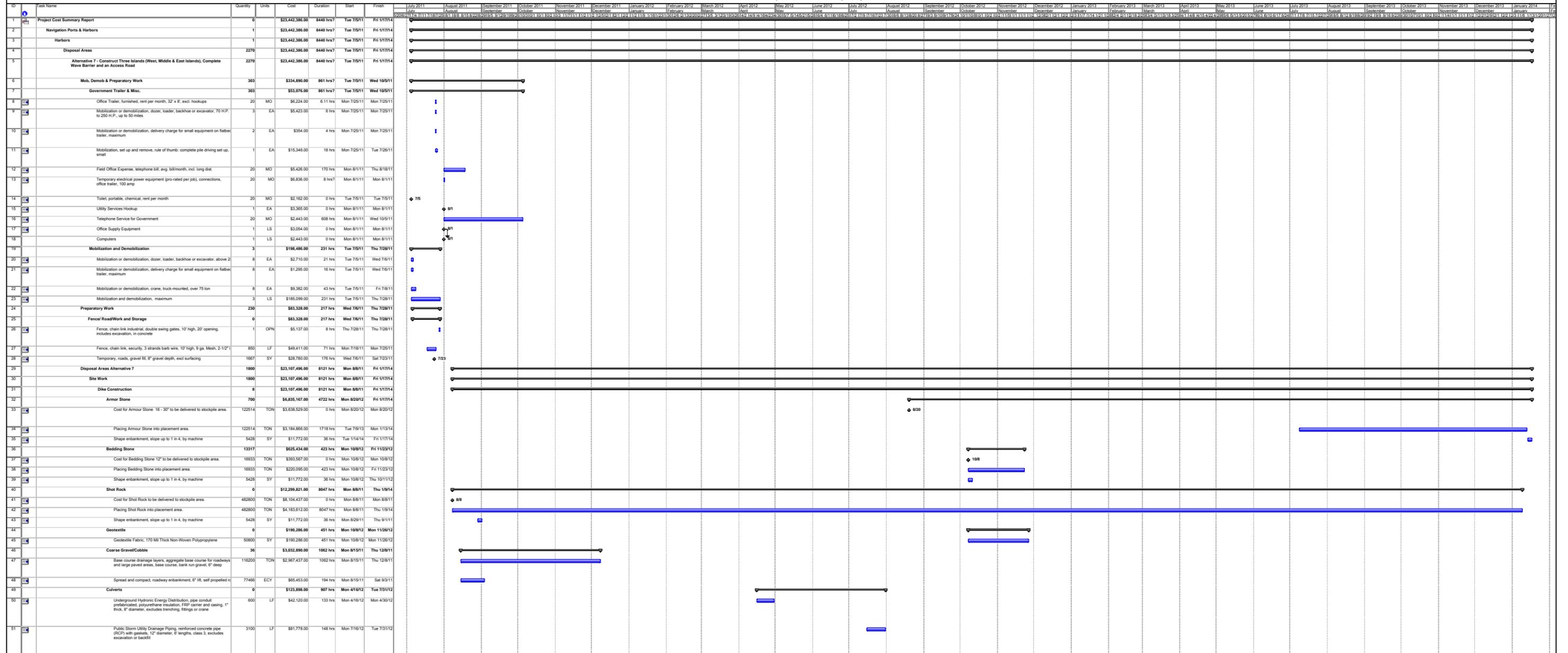
$$\text{Polyliner: } 1,568,160 \text{ sf} \times 20\% \text{ (additional for sloped surface)}$$

$$= 1,881,792 \text{ sf} / 9 \text{ sf/sy} = \boxed{209,088 \text{ sy}}$$

Clay Material: assume 2' depth

$$= 1,881,792 \text{ sf} \times 2' / 27 \text{ cf/cy} = \boxed{139,392 \text{ cy clay}}$$

Table 1
Alternative 15-7- Construct Three Islands (West, Middle & East) Complete Wave Barrier



ID	Task Name	Quantity	Units	Cost	Duration	Start	Finish	2022	October 2022	November 2022	December 2022	January 2023	February 2023	March 2023	April 2023	May 2023	June 2023	July 2023	August 2023	S
								9/18/9/25	10/2/10/9	0/1 0/2	0/3 1/1/6 1/1 1/2	1/2 1/2/4 2/1 2/1 2/2	1/1 1/8 1/15/1/22	1/29 2/5 2/12/2/19/2/26	3/5 3/12/3/19/3/26	4/2 4/9 4/16/4/23/4/30	5/7 5/14/5/21/5/28	6/4 6/11/6/18/6/25	7/2 7/9 7/16/7/23/7/30	8/6 8/13/8/20/8/27
1	Project Cost Summary Report	0		\$28,497,910.00	2994 hrs	Mon 10/3/22	Thu 8/24/23													
2	Navigation Ports & Harbors	1		\$28,497,910.00	2994 hrs	Mon 10/3/22	Thu 8/24/23													
3	Harbors	1		\$653,836.00	2994 hrs	Mon 10/3/22	Thu 8/24/23													
4	Disposal Areas	2270		\$4,302,691.00	2994 hrs	Mon 10/3/22	Thu 8/24/23													
5	Site Work 36 Acre Site	2270		\$4,302,691.00	2994 hrs	Mon 10/3/22	Thu 8/24/23													
6	Dike Construction	303		\$4,302,691.00	2994 hrs	Mon 10/3/22	Thu 8/24/23													
7	Mob, Demob & Preparatory Work	303		\$725,101.00	2442 hrs	Mon 10/3/22	Mon 6/26/23													
8	Mob & Demob	20		\$190,457.00	0 hrs	Mon 10/3/22	Mon 10/3/22													
9	Mobilization and demobilization, add to below, minimum	1	LS	\$190,457.00	0 hrs	Mon 10/3/22	Mon 10/3/22													
10	Clearing and Grubbing	2		\$49,935.00	192 hrs	Mon 10/3/22	Sat 10/22/22													
11	Selective clearing, brush, light clearing, with dozer, ball and chain, excludes removal offsite	0	ACR	\$0.00	0 hrs	Mon 10/3/22	Mon 10/3/22													
12	Selective clearing, brush, medium clearing, with dozer, ball and chain, excludes removal offsite	36	ACR	\$49,935.00	192 hrs	Mon 10/3/22	Sat 10/22/22													
13	Topsoil Stripping and Stockpiling	20		\$206,299.00	894 hrs	Mon 10/24/22	Tue 1/31/23													
14	Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 12" deep, 300' haul	58080	CY	\$206,299.00	894 hrs	Mon 10/24/22	Tue 1/31/23													
15	Silt Fence	1		\$19,167.00	119 hrs	Tue 10/4/22	Sat 10/15/22													
16	Erosion control, silt fence, polypropylene, 3' high, includes 7.5' posts	5194	LF	\$19,167.00	119 hrs	Tue 10/4/22	Sat 10/15/22													
17	Perimeter Fence	1		\$247,765.00	43 hrs	Sat 10/15/22	Thu 10/20/22													
18	Fence, chain link industrial, double swing gates, 6' high, 20' opening, includes excavation, in concrete	2	OPN	\$4,285.00	6 hrs	Sat 10/15/22	Mon 10/17/22													
19	Fence, chain link industrial, aluminized steel, 6 ga. wire, 2" posts @ 10' OC, 6' high, includes excavation, & concrete	5194	LF	\$243,480.00	43 hrs	Sat 10/15/22	Thu 10/20/22													
20	Groundwater Monitoring Wells	8		\$10,345.00	0 hrs	Mon 6/26/23	Mon 6/26/23													
21	Ground water monitoring, 3 wells, max	1	LS	\$10,345.00	0 hrs	Mon 6/26/23	Mon 6/26/23													
22	Rough Grade	8		\$1,133.00	4 hrs	Mon 2/6/23	Mon 2/6/23													
23	Soil preparation, rough grade & scarify subsoil to receive topsoil, common earth, 200 H.P. dozer with scarifier	44	MSF	\$1,133.00	4 hrs	Mon 2/6/23	Mon 2/6/23													
24	Construction	1		\$3,577,590.00	1531 hrs	Mon 3/13/23	Thu 8/24/23													
25	Dike Construction	1		\$3,577,590.00	1531 hrs	Mon 3/13/23	Thu 8/24/23													
26	Dike Material	1		\$3,230,977.00	902 hrs	Mon 3/20/23	Fri 6/23/23													
27	Soil preparation, structural soil mixing, rough grade & scarify subsoil to receive clay and till, 180 H.P. grader with scarifier	4509	MSF	\$166,921.00	902 hrs	Mon 3/20/23	Fri 6/23/23													
28	Compaction, 3 passes, 6" lifts, towed sheepfoot or wobbly wheel roller	143342	ECY	\$101,236.00	382 hrs	Mon 3/20/23	Fri 4/28/23													
29	Clay, delivered to site, includes material only	143342	CY	\$2,962,820.00	902 hrs	Mon 3/20/23	Fri 6/23/23													
30	Inspection Trench	1800		\$87,459.00	69 hrs	Mon 3/13/23	Mon 3/20/23													
31	Backfill, trench, 6" to 12" lifts, dozer backfilling, compaction with vibrating roller	3340	ECY	\$10,071.00	69 hrs	Mon 3/13/23	Mon 3/20/23													
32	Excavating, trench or continuous footing, dense hard clay, 2 1/2 C.Y. excavator, 6' to 10' deep, excludes sheeting or dewatering	3340	BCY	\$8,352.00	69 hrs	Mon 3/13/23	Mon 3/20/23													
33	Clay, delivered to site, includes material only	3340	CY	\$69,036.00	0 hrs	Mon 3/13/23	Mon 3/13/23													
34	Gravel Road	122514		\$182,152.00	101 hrs	Mon 8/14/23	Thu 8/24/23													
35	Roads, gravel fill, 12" gravel depth, excl surfacing	7793	SY	\$182,152.00	101 hrs	Mon 8/14/23	Thu 8/24/23													
36	Top Soil and Seed Dike Sides	13317		\$77,002.00	359 hrs	Mon 6/26/23	Thu 8/3/23													
37	Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	7496	ECY	\$41,811.00	300 hrs	Mon 6/26/23	Fri 7/28/23													
38	Seeding, mechanical seeding hydro or air seeding for large areas, includes lime, fertilizer and seed	44979	SY	\$23,414.00	40 hrs	Mon 7/31/23	Thu 8/3/23													
39	Shape embankment, slope up to 1 in 4, by machine	5428	SY	\$11,777.00	36 hrs	Mon 7/10/23	Thu 7/13/23													

Project: How create a MS Project from Date: Wed 4/7/10

Task Split Progress Milestone Summary Project Summary External Tasks External Milestone Deadline

**Table 3
Alternative 15- Bayport Expanded 36 Acre Site
Closure**

ID	Task Name	Quantity	Units	Cost	Duration	Start	Finish	Gantt Chart																											
								April 2032	May 2032	June 2032	July 2032	August 2032	September 2032	October 2032	November 2032	December 2032	January 2033	February 2033	March 2033	April 2033															
1	Project Cost Summary Report	0		\$786,411.00	3496 hrs	Mon 4/5/32	Tue 4/19/33	[Gantt bar spanning from Mon 4/5/32 to Tue 4/19/33]																											
2	Navigation Ports & Harbors	1		\$786,411.00	3496 hrs	Mon 4/5/32	Tue 4/19/33	[Gantt bar spanning from Mon 4/5/32 to Tue 4/19/33]																											
3	Harbors	1		\$786,411.00	3496 hrs	Mon 4/5/32	Tue 4/19/33	[Gantt bar spanning from Mon 4/5/32 to Tue 4/19/33]																											
4	Disposal Areas	2270		\$786,411.00	3496 hrs	Mon 4/5/32	Tue 4/19/33	[Gantt bar spanning from Mon 4/5/32 to Tue 4/19/33]																											
5	Site Work 36 Acre Site	2270		\$786,411.00	3496 hrs	Mon 4/5/32	Tue 4/19/33	[Gantt bar spanning from Mon 4/5/32 to Tue 4/19/33]																											
6	Dike Construction	303		\$786,411.00	3496 hrs	Mon 4/5/32	Tue 4/19/33	[Gantt bar spanning from Mon 4/5/32 to Tue 4/19/33]																											
7	Closure	303		\$786,411.00	3496 hrs	Mon 4/5/32	Tue 4/19/33	[Gantt bar spanning from Mon 4/5/32 to Tue 4/19/33]																											
8	Dredged Material Cap	20		\$772,405.00	2230 hrs	Mon 4/5/32	Thu 12/2/32	[Gantt bar spanning from Mon 4/5/32 to Thu 12/2/32]																											
9	Rough grading, open site, large area, 300 H.P., dozer	139392	BCY	\$136,923.00	465 hrs	Mon 4/5/32	Mon 5/24/32	[Blue Gantt bar spanning from Mon 4/5/32 to Mon 5/24/32]																											
10	Excavate and load, bank measure, medium material, 3-1/2 C.Y. bucket, hydraulic excavator	139392	BCY	\$289,357.00	858 hrs	Mon 4/5/32	Tue 7/6/32	[Blue Gantt bar spanning from Mon 4/5/32 to Tue 7/6/32]																											
11	Hauling, excavated or borrow material, loose cubic yards, 1/2mile round trip, 4.2 loads/hour, 22 C.Y. rear/bottom dump, off highway haulers	167270	LCY	\$346,125.00	2230 hrs	Mon 4/5/32	Thu 12/2/32	[Blue Gantt bar spanning from Mon 4/5/32 to Thu 12/2/32]																											
12	Top Soil and Seed	36	CSY	\$14,006.00	20 hrs	Mon 4/18/33	Tue 4/19/33	[Gantt bar spanning from Mon 4/18/33 to Tue 4/19/33]																											
13	Seeding, athletic field mix, 50 lb. per M.S.Y., mechanical seeding	209	CSY	\$14,006.00	20 hrs	Mon 4/18/33	Tue 4/19/33	[Gantt bar spanning from Mon 4/18/33 to Tue 4/19/33]																											

66,081 pay c.y. per month
 270 c.y. per hr, 35.6% EWT-->
 610 c.y. per hr, 90.0% EWT-->

UNIT COST... \$6.12 PER C.Y.
 EXCAV TIME.. 1.48 MONTHS
 HAUL TIME... 0.26 MONTHS

Select Dredge
 10 CY CLAMSHELL

PROJECT TITLES:

PG 1 of 10

Project Name..... **FY09 M/D GREEN BAY HARBOR - INNER**
 Project Location..... **Green Bay, Wisconsin**
 Invit. or Contr. No..... **W911XK-09-B-0000**
 Date of Estimate..... **26 December 2009**
 Estimator..... **Jack S. Frost**
 Checked by..... **William D.Merte, P.E.**

Ver. 1.0
 For Information, Call:
 Julie Davin
 Ph: 509-527-7514

(Input Project Descriptions on Sheet A)

Goto Sheet A

Mobilization Bid Item..... **1**

Excavation Bid Item..... **2**

Goto Area Factors

TYPE OF ESTIMATE

PG 2 of 10

Type of Estimate..... **1** Planning Estimate
 (1) Planning, (2) Bid, or (3) Mod

Estimate Descriptions

INDIRECT COSTS:

Contractor's Overhead... **15.0** Percent of contract
 Contractor's Profit..... **8.5** Percent of contract
 Contractor's Bond..... **1.5** Percent of contract

ESTIMATED DREDGING QUANTITY:

PG 3 of 10

Non-Pay Computation Method: **1**
 (1) Surface Area, (2) % of Pay O.D., (3) % of Net Pay, (4) % of Gross

DREDGING AREA: **792,180** SQ. FT.

DREDGING PRISM:

Required.... **97,800** C.Y.
 + Pay O.D.... **0** C.Y.
 Bid Quantity 97,800 C.Y.
 - Not Dug.. **0** C.Y.
 Net Pay 97,800 C.Y.
 + Non-Pay 5,900 C.Y.
 Gross Volume 103,700 C.Y.

AVE. BANK HEIGHT:

@ 3.3 ft pay
 @ **0.2** ft overdig
 3.5 FT. BANK HT.

66,081 pay c.y. per month
 270 c.y. per hr, 35.6% EWT-->
 610 c.y. per hr, 90.0% EWT-->

UNIT COST... \$6.12 PER C.Y.
 EXCAV TIME.. 1.48 MONTHS
 HAUL TIME... 0.26 MONTHS

Select Dredge
 10 CY CLAMSHELL ▼

EXCAVATION PRODUCTION WORKSHEET:

PG 4 of 10

CURRENT DREDGE SELECTED: 10 CY CLAMSHELL

Type of Material..... 2 SAND

(0) Unspecified Materials, (1) Mud, (2) Clays and Less-Dense Sand,
 or (3) Dense Clays, Hard-Packed Sand, Blasted Rock and Boulders

PRODUCTION FACTORS:	Override	Default	Used
Bucket Size (in CY).....	10	8	10
Bucket Fill Factor.....	0	0.70	0.70
Optimum Bank (in Feet)..	0	5.5	5.5
Bank Factor.....	0	0.64	0.64
(based on 3.5 Ft of Bank Height)			

EXCAVATION PRODUCTION WORKSHEET:

PG 5 of 10

Bucket Cycle Time..... 45 Seconds

Other Factor..... 0.80
 Description..... >weather, bridges

Cleanup Dredging..... 5 % Additional Time
 (Cleanup Factor = 0.95)

Time Efficiency.....> 35.6 % of Effective Work Time
 260 Hours Per Month

HAULING PRODUCTION WORKSHEET:

PG 6 of 10

Towing Cycle: 3000 HP Diesel--Twin Screw

Prepare Scow for Tow... 5 Minutes
 One-Way Haul Distance... 1.5 Miles
 Speed to Disposal Area.. 3 Miles per hour = 30 Min
 Speed from Disposal Area 4 Miles per hour = 23 Min
 Dumping or Pumpout..... 0 Minutes
 Disengage Scow Tow..... 5 Minutes
 Average Cycle Time: 63 Minutes per Trip

Towing Time Efficiency.. 90 Percent

Scow Capacity: 1000 CY Split Hull Scow

Useable Volume..... 80 Percent
 Percent Solids..... 80 Percent = 640 cys/load

66,081 pay c.y. per month
 270 c.y. per hr, 35.6% EWT-->
 610 c.y. per hr, 90.0% EWT-->

UNIT COST... \$6.12 PER C.Y.
 EXCAV TIME.. 1.48 MONTHS
 HAUL TIME... 0.26 MONTHS

Select Dredge
 10 CY CLAMSHELL ▼

EQUIPMENT MATCHING:

PG 7 of 10

	Override	Assumed	Used
# of Dredges.....	0	1	1
Scows per Dredge.....	0	1	1
# of Towing Vessels.....	0	1	1
Scows per Tow.....	0	1	1
Scows with Dredges:		1 (1 Dredge(s) x 1 Scow(s) Each)	
Scows with Tows:		1 (1 Tug(s) x 1 Scow(s) Each)	
Additional Scows.....	1		
Total Scows on Job:		3	

SPECIAL LABOR & EQUIPMENT:

PG 8 of 10

(1 for Yes, 0 for No)

	Override	Assumed	Used
Quarters on Dredge?.....	0	NO	NO
Survey Boat?.....	0	NO	NO
Crew Boat?.....	0	NO	NO

OTHER PRICING ADJUSTMENTS:

PG 9 of 10

Other Monthly Costs:

1st Input..... \$60,540 Per Month
 Description..... OFF-LOADING COST
 (For Additional Inputs Go to Sheet D\4)

Fixed Costs:

1st Input..... \$0 Lump Sum
 Description.....
 (For Additional Inputs Go to Sheet E)
 (To Adjust Labor Go To Sheet DB_L)
 (To Adjust Equipment Go To Sheet DB_E)

66,081 pay c.y. per month
270 c.y. per hr, 35.6% EWT-->
610 c.y. per hr, 90.0% EWT-->

UNIT COST... \$6.12 PER C.Y.
EXCAV TIME.. 1.48 MONTHS
HAUL TIME... 0.26 MONTHS

Select Dredge	
10 CY CLAMSHELL	▼

The Factors below normally will not change for every estimate.

LOCAL AREA FACTORS:

PG 10 of 10

Present Year.....	2009	(Equipment Calculations)
Economic Index.....	7667	(EP-1110-1-8, APP E)
Labor Adjustment Factor.	1.080	(EP-1110-1-8, APP B)
Full Cost of Money Rate.	5.25	Percent per Year
Dates for Money Rate....	December 2009	
Annual Months Available for Dredging:		
Pipeline....	8	Months per Year
Bucket.....	8	Months per Year
Hopper.....	8	Months per Year
Current Fuel Price.....	\$2.50	Per Gallon

Return

A DESCRIPTION AND QUANTITY SUMMARY

1 PROJECT	<u>FY09 M/D GREEN BAY HARBOR - INNER</u>	<u>DATE OF ESTIMATE</u>	<u>26 December 2009</u>
2 LOCATION	<u>Green Bay, Wisconsin</u>	<u>INVIT. OR CONTR. NO.</u>	<u>W911XK-09-B-0000</u>
3 ESTIMATED BY	<u>Jack S. Frost</u>	<u>CHECKED BY</u>	<u>William D.Merte, P.E.</u>
4 TYPE OF DREDGE	<u>10 CY CLAMSHELL</u>	<u>TYPE OF ESTIMATE</u>	<u>Planning Estimate</u>
5 DESCRIPTION OF WORK	<u>To preform dredging within (Bay Mile 0 to 11 of Green Bay Harbor, with the material being placed in the</u> <u>Confined Disposal Facility(CDF). All work will be in accordance with specifications.</u> <u>Operational Shift: One (1) shift - 12 hours per shift - 6 day per week.</u> <u>Crew Size Per Shift:</u> <u>Dredging : Superintendent (1), Operator Crane (1), Deckhand (1), Engineers (1)</u> <u>Towing : Tug Operator (1), Deckhand (1)</u> <u>Off - Loading, Operator (1)</u> <u>Labor rates as specified</u> <u>Equipment: Tugs, Mech Dredge, Off Loading, Work boats etc., are either owned or under Contractors controll.</u>		

6 EXCAVATION			REMARKS
A. REQUIRED	<u>97,800</u>	<u>CY</u>	<u>792,180 s.f. of Dredging Area</u>
B. PAY OVERDEPTH	<u>+</u>	<u>0</u> <u>CY</u>	
C. MAX. PAY YARDAGE	<u>=</u>	<u>97,800</u> <u>CY</u>	<u>(YARDAGE USED ON BID FORM)</u>
D. O.D. NOT DREDGED	<u>-</u>	<u>0</u> <u>CY</u>	
E. NET PAY YARDAGE	<u>=</u>	<u>97,800</u> <u>CY</u>	<u>(YARDAGE USED TO FIGURE UNIT PRICE PER C.Y.)</u>
F. NON-PAY YARDAGE	<u>+</u>	<u>5,900</u> <u>CY</u>	<u>0.2 ft overdig</u>
G. GROSS YARDAGE	<u>=</u>	<u>103,700</u> <u>CY</u>	<u>(YARDAGE USED TO FIGURE PRODUCTION TIME & COST)</u>

B DREDGING COST

BID ITEM # 2

REMARKS

1	GROSS YARDAGE		<u>103,700</u> CY	FROM SHEET A, ITEM 6 G.
2	PRODUCTION RATE		<u>/ 70,200</u> CY/MO	FROM SHEET C, ITEM 4.
3	DREDGING TIME	=	<u>1.48</u> MONTHS	<u>97,800 Net Pay CY / 1.48 MO = 66,081 Pay CY/MO</u>
4	TOTAL MONTHLY COST	x	<u>\$319,575</u>	FROM SHEET D, ITEM 5.
	SUBTOTAL.....=		<u>\$472,971</u>	
5	FIXED COSTS	+	<u>\$0</u>	FROM SHEET E, ITEM 15.
	SUBTOTAL.....=		<u>\$472,971</u>	
6	OVERHEAD	15.0% +	<u>\$70,946</u>	Total O/H = \$56,000 and is only added to first line item
	SUBTOTAL.....=		<u>\$543,917</u>	
7	PROFIT	8.5% +	<u>\$46,233</u>	
	SUBTOTAL.....=		<u>\$590,150</u>	
8	BOND	1.5% +	<u>\$8,852</u>	
9	GROSS PRODUCTION COST	=	<u>\$599,002</u>	
10	NET PAY YARDAGE		<u>/ 97,800</u> CY	FROM SHEET A, ITEM 6 E.
11	UNIT COST	=	<u>\$6.12</u> /CY	
12	MAX PAY YARDAGE	x	<u>97,800</u> CY	FROM SHEET A, ITEM 6 C.
13	DREDGING COST	=	<u>\$598,536</u>	

C \ 2C

HAULING CYCLE TIME

BID ITEM # 2

1 SIZE OF TUG 3000 HP Diesel--Twin Screw

2 CYCLE TIME PER TRIP: REMARKS

A. PREPARE FOR SCOW TOW 5 MIN _____

B. TO DISPOSAL AREA + 30 MIN 1.5 miles / 3.0 miles per hr x 60 min

C. DUMPING OR PUMPOUT + 0 MIN _____

D. FROM DISPOSAL AREA + 23 MIN 1.5 miles / 4.0 miles per hr x 60 min

E. DISENGAGE TOW RIGGING AND TIE UP SCOW + 5 MIN _____

3 AVERAGE CYCLE TIME = 63 MIN/TRIP _____

D MONTHLY COST SUMMARY

BID ITEM # 2

DREDGE SIZE 10 CY CLAMSHELL

REMARKS

1 LABOR COSTS		<u>\$106,591 /MO</u>	<u>FROM SHEET D \ 1</u>
2 EXCAVATION			<u>FROM SHEET D \ 2</u>
A. DREDGE(S)	+	<u>\$38,743 /MO</u>	<u>1 EA @ \$38,743 /MO</u>
B. WORK TUG(S)	+	<u>\$8,197 /MO</u>	<u>1 EA @ \$8,197 /MO</u>
C. CREW/SURVEY TUG	+	<u>\$0 /MO</u>	<u>0 EA @ \$7,324 /MO</u>
D. DERRICK(S)	+	<u>\$0 /MO</u>	<u>0 EA @ \$2,897 /MO</u>
E. FUEL/WATER BARGE	+	<u>\$0 /MO</u>	<u>0 EA @ \$1,391 /MO</u>
F. WORK BARGE(S)	+	<u>\$0 /MO</u>	<u>0 EA @ \$864 /MO</u>
H. **Unused**	+	<u>\$0 /MO</u>	<u>0 EA @ \$0 /MO</u>
I. **Unused**	+	<u>\$0 /MO</u>	<u>0 EA @ \$0 /MO</u>
3 HAULING			<u>FROM SHEET D \ 3</u>
A. TOWING VESSEL(S)	+	<u>\$69,918 /MO</u>	<u>1 EA @ \$69,918 /MO</u>
B. SCOW(S)	+	<u>\$26,586 /MO</u>	<u>3 EA @ \$8,862 /MO</u>
4 OTHER MONTHLY COSTS	+	<u>\$69,540 /MO</u>	<u>FROM SHEET D \ 4</u>
5 TOTAL MONTHLY COST	=	<u>\$319,575</u>	

D \ 1 LABOR COSTS

BID ITEM # 2

DREDGE SIZE: 10 CY CLAMSHELL

Overtime	20.49%
Holiday 8 Days/Yr	2.19%
Vacation	8.00%
COMPOSITE.....	30.68%

Management....		
0	CAPTAIN	\$0
0	CHIEF ENG	\$0
1	CIVIL ENG	\$6,000
0	OFFICE HELP	\$0
MONTHLY MANAGEMENT COST.....		\$6,000

Social Security Tax	7.65%
Workman's Compensation	10.00%
State Unemployment Comp.	3.50%
Federal Unemployment Comp.	1.00%
COMPOSITE.....	22.15%

Each Crew Position is Manned:	12 Hrs per Day
	x 6 Days per Week
	= 72 Hrs per Week
	x 4.345 Wks per Month
	= 313 Hrs per Month

Last Update...April 99

EA CREW POSITION	O.T.		SUB-TOTAL	TAXES INSUR 22.15%	FRINGE SUB-BENEFITS TOTAL #####	HRLY COST	HOURS PER MONTH	MONTHLY COST	
	BASIC HOURLY WAGE	VACATION 30.68%							
1 Operators (Dredge)	\$35.05	+ \$10.75	= \$45.80	+ \$10.14	= \$55.94	+ #####	= \$72.54	x 313	= \$22,705
1 Engineers (Dredge)	31.20	+ 9.57	= 40.77	+ 9.03	= 49.80	+ 16.60	= 66.40	x 313	= 20,783
0 Mates (Dredge)	13.88	+ 4.26	= 18.14	+ 4.02	= 22.16	+ 16.60	= 38.76	x 0	= 0
0 Launchmen (Dredge)	11.15	+ 3.42	= 14.57	+ 3.23	= 17.80	+ 16.60	= 34.40	x 0	= 0
1 Deckhands (Dredge)	25.95	+ 7.96	= 33.91	+ 7.51	= 41.42	+ 16.60	= 58.02	x 313	= 18,160
0 Cook (Dredge)	10.19	+ 3.13	= 13.32	+ 2.95	= 16.27	+ 16.60	= 32.87	x 0	= 0
0 Messman (Dredge)	9.59	+ 2.94	= 12.53	+ 2.78	= 15.31	+ 16.60	= 31.91	x 0	= 0
0 Launchmen (Survey)	11.15	+ 3.42	= 14.57	+ 3.23	= 17.80	+ 16.60	= 34.40	x 0	= 0
0 Deckhands (Survey)	25.95	+ 7.96	= 33.91	+ 7.51	= 41.42	+ 16.60	= 58.02	x 0	= 0
0 Launchmen (Crew BT)	11.15	+ 3.42	= 14.57	+ 3.23	= 17.80	+ 16.60	= 34.40	x 0	= 0
0 Deckhands (Crew BT)	25.95	+ 7.96	= 33.91	+ 7.51	= 41.42	+ 16.60	= 58.02	x 0	= 0
1 Tug Master (Tow Tug)	31.20	+ 9.57	= 40.77	+ 9.03	= 49.80	+ 16.60	= 66.40	x 313	= 20,783
0 Mates (Tow Tug)	21.00	+ 6.44	= 27.44	+ 6.08	= 33.52	+ 16.60	= 50.12	x 0	= 0
1 Deckhands (Tow Tug)	25.95	+ 7.96	= 33.91	+ 7.51	= 41.42	+ 16.60	= 58.02	x 313	= 18,160
0 Scowmen (Tow Tug)	10.59	+ 3.25	= 13.84	+ 3.07	= 16.91	+ 16.60	= 33.51	x 0	= 0

5 Total Crew MONTHLY CREW LABOR COST = \$100,591

(Average Gross Wage = \$64.28 per manhour)

TOTAL MONTHLY LABOR COST = \$106,591

D \ 2

EQUIPMENT COSTS - EXCAVATION

BID ITEM #

2

DREDGE SIZE 10 CY CLAMSHELL

[-DREDGE-] | [---TUGS & TENDERS---] | [-----BARGES-----] | [-----OTHER-----]

1a. Plant Description.....	--	Work Tug	Crew/Surv	Derrick	Fuel/Water	Work	**Unused**	**Unused**
1c. Prime Eng HP.....	625	100	100	100	0	0	0	0
1d. (1) Dredge El Gen HP....	50	--	--	--	--	--	--	--
1d. Total 2nd Eng HP.....	210	25	40	25	10	0	0	0
1e. Plant Value.....	\$370,000	\$67,000	\$42,000	\$127,000	\$95,000	\$63,000	\$0	\$0
1f. Acquis Year.....	1982	1982	1987	1980	1980	1980	0	0
1g. Pres Year.....	2009	----->	----->	----->	----->	----->	----->	----->
1h. Cost of Money Rate.....	5.250%	----->	----->	----->	----->	----->	----->	----->
1i. Disc Money Rate:	4.200%	----->	----->	----->	----->	----->	----->	----->
1j. Hrs Worked/Mo.....	260	----->	----->	----->	----->	----->	----->	----->
2a. LAF.....	1.080	----->	----->	----->	----->	----->	----->	----->
2b. Fuel Cost per Gal.....	\$2.50	----->	----->	----->	----->	----->	----->	----->
3a. Ec Index <for Acq Yr>..	3391	3391	3886	2922	2922	2922	0	0
3b. Ec Index <for 2009>....	7667	----->	----->	----->	----->	----->	----->	----->
4a. Mos Available/Year.....	8	----->	----->	----->	----->	----->	----->	----->
5a. Useful Life (in Yrs)...	13	8	8	20	20	20	0	0
5b. Physical Life (in Hrs).	26,000	16,000	16,000	90,000	90,000	90,000	0	0
5c. SLV Factor.....	0.05	0.10	0.10	0.10	0.05	0.05	0.00	0.00
5d. Pr Eng Fuel Factor.....	0.039	0.045	0.045	0.011	0.011	0.011	0	0
5e. 2nd Eng Fuel Factor....	0.033	0.039	0.039	0.011	0.011	0.011	0	0
5f. WLS Factor.....	0.24	0.38	0.38	0.20	0.20	0.20	0.00	0.00
5g. RPR Factor.....	1.00	0.80	0.80	0.70	0.60	0.60	0.00	0.00
6a. Depreciation:	7.31%	11.25%	11.25%	4.50%	4.75%	4.75%	0.00%	0.00%
6b. FCCM:	2.36%	2.55%	2.55%	2.40%	2.30%	2.30%	0.00%	0.00%
6c. Total Ownership/Year:	9.67%	13.80%	13.80%	6.90%	7.05%	7.05%	0.00%	0.00%
7a. Yearly Ownership:	\$35,779	\$9,246	\$5,796	\$8,763	\$6,698	\$4,442	\$0	\$0
7b. Monthly Ownership:	\$4,472	\$1,156	\$725	\$1,095	\$837	\$555	\$0	\$0
8a. (1) Hrly Pr Eng Fuel:	\$60.94	\$11.25	\$11.25	\$2.75	\$0.00	\$0.00	\$0.00	\$0.00
8a. (2) Hrly 2nd Eng Fuel:	\$17.33	\$2.44	\$3.90	\$0.69	\$0.28	\$0.00	\$0.00	\$0.00
8b. (1) Hrly Pr Eng WLS:	\$14.63	\$4.28	\$4.28	\$0.55	\$0.00	\$0.00	\$0.00	\$0.00
8b. (2) Hrly 2nd Eng WLS:	\$4.16	\$0.93	\$1.48	\$0.14	\$0.06	\$0.00	\$0.00	\$0.00
8c. (1) EAF:	2.261	2.261	1.973	2.624	2.624	2.624	0.000	0.000
8c. (2) Hrly Repair:	\$34.75	\$8.18	\$4.47	\$2.80	\$1.79	\$1.19	\$0.00	\$0.00
8d. Total Hrly Operating:	\$131.81	\$27.08	\$25.38	\$6.93	\$2.13	\$1.19	\$0.00	\$0.00
8e. Monthly Operating:	\$34,271	\$7,041	\$6,599	\$1,802	\$554	\$309	\$0	\$0
11. MONTHLY RATE:	\$38,743	\$8,197	\$7,324	\$2,897	\$1,391	\$864	\$0	\$0
12a. HRLY STANDBY ALLOW:	\$6.13	\$1.58	\$0.99	\$1.50	\$1.15	\$0.76	\$0.00	\$0.00
12b. Gener Fuel Allowance:	\$4.13	--	--	--	--	--	--	--
12c. DREDGE HRLY STANDBY:	\$10.26	--	--	--	--	--	--	--

D \ 3 EQUIPMENT COSTS - HAULING

BID ITEM # 2

DREDGE SIZE 10 CY CLAMSHELL

	-----TOWING VESSEL-----	-----DUMP SCOW-----	---TOWING VESSEL (MOBILIZATION)---
1a. Plant Description.....	Twin Screw	1,000 CY CAPACITY	Twin Screw
1b. Series & Model.....		Split Hull Scow	
1c. Prime Eng HP.....	3,000	0	3,000
1d. Total 2nd Eng HP.....	300	250	300
1e. Plant Value.....	\$1,000,000	\$125,000	\$1,000,000
1f. Acquis Year.....	1982	1982	1982
1g. Pres Year.....	2009	----->----->	----->----->
1h. Cost of Money Rate.....	5.250%	----->----->	----->----->
1i. Disc Money Rate:	4.200%	----->----->	----->----->
1j. Hrs Worked/Mo.....	115	730	730
2a. LAF.....	1.080	----->----->	----->----->
2b. Fuel Cost per Gal.....	\$2.50	----->----->	----->----->
3b. Ec Index <for 2009>....	7667	----->----->	----->----->
3a. Ec Index <for Acq Yr>..	3391	3391	3391
4a. Mos Available/Year.....	8	----->----->	----->----->
5a. Useful Life (in Yrs)...	20	20	20
5b. Physical Life (in Hrs).	100,000	90,000	100,000
5c. SLV Factor.....	0.10	0.05	0.10
5d. Pr Eng Fuel Factor.....	0.045	0.011	0.045
5e. 2nd Eng Fuel Factor....	0.039	0.011	0.039
5f. WLS Factor.....	0.38	0.20	0.38
5g. RPR Factor.....	1.10	0.70	1.10
6a. Depreciation:	4.50%	4.75%	4.50%
6b. FCCM:	2.40%	2.30%	2.40%
6c. Total Ownership/Year:	6.90%	7.05%	6.90%
7a. Yearly Ownership:	\$69,000	\$8,813	\$69,000
7b. Monthly Ownership:	\$8,625	\$1,102	\$8,625
8a. (1) Hrly Pr Eng Fuel:	\$337.50	\$0.00	\$337.50
8a. (2) Hrly 2nd Eng Fuel:	\$29.25	\$6.88	\$29.25
8b. (1) Hrly Pr Eng WLS:	\$128.25	\$0.00	\$128.25
8b. (2) Hrly 2nd Eng WLS:	\$11.12	\$1.38	\$11.12
8c. (1) EAF:	2.261	2.261	2.261
8c. (2) Hrly Repair:	\$26.86	\$2.37	\$26.86
8d. Total Hrly Operating:	\$532.98	\$10.63	\$532.98
8e. Monthly Operating:	\$61,293	\$7,760	\$389,075
11. MONTHLY RATE:	\$69,918	\$8,862	\$397,700
12a. HRLY STANDBY ALLOWANCE:	\$11.82	\$1.51	\$11.82

D \ 4 OTHER MONTHLY COSTS

BID ITEM # 2

DREDGE SIZE 10 CY CLAMSHELL

REMARKS

1	OFF-LOADING COST	<u>\$60,540</u> /MO	
2	SI	+ <u>\$9,000</u> /MO	Silent Inspector Cost Monthly
3	>	+ <u>\$0</u> /MO	
4	>	+ <u>\$0</u> /MO	
5	>	+ <u>\$0</u> /MO	
6	>	+ <u>\$0</u> /MO	
7	>	+ <u>\$0</u> /MO	
8	>	+ <u>\$0</u> /MO	
9	>	+ <u>\$0</u> /MO	
10	>	+ <u>\$0</u> /MO	
11	>	+ <u>\$0</u> /MO	
12	>	+ <u>\$0</u> /MO	
13	>	+ <u>\$0</u> /MO	
14	>	+ <u>\$0</u> /MO	

15 TOTAL OTHER MONTHLY COSTS = \$69,540 /MO

E FIXED COSTS

BID ITEM # 2

DREDGE SIZE 10 CY CLAMSHELL

REMARKS

1		<u> \$0 </u>	
2 >	+	<u> \$0 </u>	
3 >	+	<u> \$0 </u>	
4 >	+	<u> \$0 </u>	
5 >	+	<u> \$0 </u>	
6 >	+	<u> \$0 </u>	
7 >	+	<u> \$0 </u>	
8 >	+	<u> \$0 </u>	
9 >	+	<u> \$0 </u>	
10 >	+	<u> \$0 </u>	
11 >	+	<u> \$0 </u>	
12 >	+	<u> \$0 </u>	
13 >	+	<u> \$0 </u>	
14 >	+	<u> \$0 </u>	

15 FIXED COSTS	=	<u> \$0 </u>	
----------------	---	----------------	--

MOB & DEMOB COST \$ 155,833

SPECIAL ITEMS (USED FOR BOTH MOB & DEMOB):

Supplies & small tools @	\$ 100 /day
Support equipment with operators @	\$ 500 /day
Fuel (Plant Idle)	\$ 100 per Day
Subsistence	\$ 25 per Man

MOBILIZATION ITEMS:

1. PREPARE DREDGE FOR TRANSFER TO JOBSITE:

Time Required.....	1 Days
Crew Size.....	6 Men
Work Schedule.....	10 Hrs per Day

2. TRANSFER PLANT TO JOBSITE:

Distance.....	200 Miles
Towing Speed.....	72 Miles per Day
Crew Size.....	2 Men per Shift

3. RELOCATE PERMANENT PERSONNEL & MISC. TO JOBSITE:

Crew Size.....	1 Men
Travel Time.....	8 Hrs per Man
Travel Expenses...	\$ 100 Per Man
Local Hire.....	\$ 200 (Lump Sum)

4. PREPARE DREDGE FOR WORK AT JOBSITE:

Time Required.....	1 Days
Crew Size.....	6 Men
Work Schedule.....	10 Hrs per Day

5. OTHER:

Description.....	Permit Towing
Lump Sum Cost.....	\$ 5,000

DEMOBILIZATION ITEMS:

1. PREPARE DREDGE FOR TRANSFER AWAY FROM JOBSITE:

Time Required.....	1	Days
--------------------	---	------

2. TRANSFER PLANT AWAY FROM JOBSITE:

Distance.....	100	Miles
---------------	-----	-------

3. RELOCATE PERMANENT PERSONNEL & MISC. AWAY FROM JOBSITE:

Include Computed Costs?....	0	NO (1=YES)
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4. PREPARE DREDGE FOR STORAGE.....

1	Days
---	------

5. OTHER:

Description.....	Towing Permit
------------------	---------------

Lump Sum Cost.....	\$ 5,000
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M \ 3

MOB & DEMOB

BID ITEM # 1

DREDGE SIZE: 10 CY CLAMSHELL

REMARKS

1 EQUIPMENT COSTS - WORKING RATES		<u>RATES TAKEN FROM SHEET D \ 2 & SHEET D \ 3</u>
A. WORK TUG(S)	<u>\$31.53 /HR</u>	<u>\$8,197 /MO DIVIDED BY 260 HRS/MO</u>
B. TOWING VESSEL(S)	<u>\$544.79 /HR</u>	<u>\$397,700 /MO X 1 EACH DIVIDED BY 730 HRS/MO</u>
2 LABOR COSTS	<u>\$64.28 /MHR</u>	<u>FROM SHEET D \ 1</u>
3 EQUIPMENT COSTS - STANDBY RATES		<u>RATES TAKEN FROM SHEET D \ 2 & SHEET D \ 3</u>
A. DREDGE	<u>\$10.26 /HR</u>	<u>1 EA @ \$ 10.26 /HR</u>
B. CREW/SURVEY TUG	<u>\$0.00 /HR</u>	<u>0 EA @ \$ 0.99 /HR</u>
C. DERRICK(S)	<u>\$0.00 /HR</u>	<u>0 EA @ \$ 1.50 /HR</u>
D. FUEL/WATER BARGE	<u>\$0.00 /HR</u>	<u>0 EA @ \$ 1.15 /HR</u>
E. WORK BARGE(S)	<u>\$0.00 /HR</u>	<u>0 EA @ \$ 0.76 /HR</u>
F. **Unused**	<u>\$0.00 /HR</u>	<u>0 EA @ \$ 0.00 /HR</u>
G. **Unused**	<u>\$0.00 /HR</u>	<u>0 EA @ \$ 0.00 /HR</u>
H. SCOW(S)	<u>\$4.53 /HR</u>	<u>3 EA @ \$ 1.51 /HR</u>
I. TOWING VESSEL(S)	<u>\$11.82 /HR</u>	<u>1 EA @ \$ 11.82 /HR</u>

MOBIL & DEMOB COST: \$155,833

BID QUANTITY 97,800 C.Y.
 UNIT COST... \$6.12 PER C.Y.
 EXCAV. COST. \$598,536
 TIME..... 1.48 MONTHS

FY09 M/D GREEN BAY HARBOR - INNER

CHECKLIST FOR INPUT DATA.

PG 1.....PROJECT -	FY09 M/D GREEN BAY HARBOR - INNER	PG 7.....DREDGES -	1
LOCATION -	Green Bay, Wisconsin	SCOWS @ DREDGE -	1
INVIT # -	W911XK-09-B-0000	TOWING VESSELS -	1
DATE OF EST. -	26 December 2009	SCOWS PER TOW -	1
EST. BY -	Jack S. Frost	ADDITIONAL SCOWS -	1
MOB. BID ITEM # -	1	TOT SCOWS ON JOB -	3
EXCAV. BID ITEM # -	2		
PG 2.....TYPE OF EST. -	Planning Estimate	PG 8....QTRS ON DREDGE? -	NO
CONTRACTOR'S O.H. -	15.0%	SURVEY BOAT? -	NO
CONTRACTOR'S PROFIT -	8.5%	CREW BOAT? -	NO
CONTRACTOR'S BOND -	1.5%		
PG 3...DREDGING AREA -	792,180 sf	PG 9...SP COST/MO (1ST) -	\$60,540 OFF-LOADING COST
REQ'D EXCAVATION -	97,800 cyds	SP COST/MO (2ND-14TH) -	\$9,000 From Sheet D14
PAY OVERDEPTH -	0 cyds	SPECIAL COST LS (1ST) -	\$0
CONTRACT AMOUNT -	97,800 cyds	SP COST LS (2ND-14TH) -	\$0 From Sheet E
NOT DREDGED -	0 cyds		
NET PAY -	97,800 cyds	PG 10....PRESENT YEAR -	2009
NONPAY YARDAGE -	5,900 cyds	ECONOMIC INDEX -	7667
GROSS YARDAGE -	103,700 cyds	LAF -	1.080
NONPAY HEIGHT -	0.2 ft overdig	INTEREST RATE -	5.250% /yr
TOTAL BANK HEIGHT -	3.5 ft	TIME PERIOD -	December 2009 to June 2010
		PIPELINE AVAILABILITY -	8 mos/yr
PG 4.....DREDGE SEL. -	10 CY CLAMSHELL	BUCKET AVAILABILITY -	8 mos/yr
TYPE OF MATERIAL -	SAND	HOPPER AVAILABILITY -	8 mos/yr
BUCKET SIZE -	10	FUEL PRICE -	\$2.50 /gal
BUCKET FILL FACTOR -	0.70		
OPTIMUM BANK -	5.5	EXCAVATION PRODUCTION -	270 cy/hr (gross)
BANK FACTOR -	0.64	EXCAVATION EWT -	35.6% (260 hrs/mo)
		EXCAVATION TIME -	1.48 months
PG 5.....BUCKET CYCLE -	45 Seconds	HAULING PRODUCTION -	610 cy/hr (gross)
OTHER FACTOR -	0.80 >weather, bridges	HAULING EWT -	90.0% (657 hrs/mo)
CLEANUP -	5% More Time	HAULING TIME -	0.26 months
TIME EFFICIENCY -	35.6% of EWT	DREDGING TIME -	1.48 months
		EXCAVAT EWT (ADJUSTED) -	260 hrs/mo (35.6% EWT)
PG 6...TUG DESCRIPT. -	3000 HP Diesel--Twin Screw	HAULING EWT (ADJUSTED) -	115 hrs/mo (15.8% EWT)
PREPARE SCOW TOW -	5 min	PRODUCTION (GROSS) -	70,200 cy per month
HAUL DIST -	1.5 mi	PRODUCTION (CONTRACT) -	66,081 pay cy per month
SPEED TO D/A -	3 mph (30 min)		
SPEED FROM D/A -	4 mph (23 min)		
DUMP OR PUMPOUT -	0 min		
DISENGAGE TOW -	5 min		
TOW EFFICIENCY -	90 %		
SCOW DESCRIPTION -	1,000 CY Split Hull Scow		
USEABLE VOLUME -	80 %		
% SOLIDS -	80 % (640 cy/load)		

REASONABLE CONTRACT ESTIMATE WORKSHEET

SHEET 01 OF 5

PROJECT : FY09 Maintenance Dredging Green Bay - OPTION 1

SUBJECT: Off-Loading Monthly

QUANTITY: 1 Job

AVAILABLE OPERATION TIME IN

WORKING DAYS: 6 Days per Week - 12 Hours per Day

PLAN OF OPERATION

Assumptions were made by the estimator as to the production of the crew performing the site work.
 All equipment cost were obtained using EP 1110-1-8 Construction Equipment Ownership and Operating Expense Schedule.

Wages used in this estimate are stated in the specifications
 per diem rate.

DETERMINATION OF CONTROLLING PLANT OR OUTPUT, AMOUNT OF CONTROLLING PLANT OR LABOR, OPERATIONAL SHIFTS AND SECONDARY PLANT REQUIRED TO ACCOMPLISH WORK IN AVAILABLE WORKING DAYS:

Crew Make Up :

(1) Equipment Operators, Two (1) Labors

Production Rate :

Crew required, One, 12 hour shifts, 6 days will perform all functions as required by the specifications.
 Labor cost was developed with overtime rate included, 22.22%.
 Assume that dredging will take 24 days, actual effective time of equipment will be 10 hours per day = 240 hours.
 labor cost 12 hours per day = 288 hours.

SUMMARY OF OPERATIONAL TIME

SHIFTS PER DAY	HOURS PER SHIFT	PLANT HOURS	WORKING HOURS
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REMARKS:

REASONABLE CONTRACT ESTIMATES

SHEET 02 OF 05

PROJECT : FY09 M/D Green Bay				INVITATION NO.	
ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
		1.00	JOB	\$ 60,540.55	\$ 60,540.55
	Total divided by 24 days			\$ 1.44	\$ 2,522.52

ESTIMATE WORK SHEET

SHEET 03 OF 05

SUBJECT M/D Green Bay

QUANTITY : Lump Sum

		PLANT					
	UNIT OF PLANT	SIZE	NO.	HOURS	RATE	AMOUNT	
EQUIPMENT EXPENSE	Crane, 85 ton , Lattice Boom, w/bucket		1.00	0.00	\$ 144.24	\$ -	
	2 Bucket, 8 CY		1.00	0.00	\$ 13.73	\$ -	
	3 Hudralic Excavator, 3.06cy		1.00	240.00	\$ 89.75	\$ 21,540.00	
	Misc. Hand Tools 3.0% of Labor Cost					\$ 1,019.43	
SUBTOTAL						\$ 22,559.43	
	OPERATION	CRAFT	NO.	HOURS	RATE	AMOUNT	
LABOR EXPENSE	Equipment Operator		1.00	288.00	\$ 68.34	\$ 19,681.92	
	Labor		1.00	288.00	\$ 49.65	\$ 14,299.20	
	SUBTOTAL						\$ 33,981.12
	DESCRIPTION	UNIT	QUANTITY	PRICE	AMOUNT		
MATERIALS	SUBTOTAL						\$ -
		DESCRIPTION	UNIT	QUANTITY	PRICE	AMOUNT	
SUPPLIES	Mob and Demob of Excavator	DY	2.00	\$ 2,000.00	\$ 4,000.00		
	SUBTOTAL						\$ 4,000.00
SUMMARY OF INFORMATION						AMOUNT	
	PLANT				\$ 22,559.43		
	LABOR				\$ 33,981.12		
	MATERIALS				\$ -		
	SUPPLIES				\$ 4,000.00		
	TOTAL					\$ 60,540.55	

REASONABLE CONTRACT ESTIMATE WORKSHEET										EFFECTIVE PERIOD December 2009	
PROJECT FY09 M/D Green Bay										OPERATIONAL SHIFTS 6 Days per week - 12 Hours per Day	
LOCATION Green Bay, Wisconsin										CHECKED BY Sheetal Malhotra	
ESTIMATOR Jack S. Frost											
CRAFT DESCRIPTION [a]	BASIC HOURLY WAGE RATE [b]	OVERTIME		SUB TOTAL [b+d] [e]	TAXES AND INSURANCE		SUB TOTAL [e+g] [h]	FRINGE BENEFITS [i]	TRAVEL OR SUBSIST [j]	TOTAL HOURLY COST [h+i+j] [k]	
		% OF [b]	AMOUNT [d]		% OF [e]	AMOUNT [g]					
Truck Driver	\$ 23.84	22%	\$ 5.30	\$ 29.14	29.90%	\$ 8.71	\$ 37.85	\$ 14.70	-	\$ 52.55	
Equipment Operator, Regular	\$ 32.37	22%	\$ 7.19	\$ 39.56	29.90%	\$ 11.83	\$ 51.39	\$ 16.95	-	\$ 68.34	
Labor	\$ 23.87	22%	\$ 5.30	\$ 29.17	29.90%	\$ 8.72	\$ 37.90	\$ 11.75	-	\$ 49.65	
TAXES & INSURANCE Workmans Comp. = 13.65 Fed Un. = 0.80 FICA = 7.65 MESC = 8.10 TOTAL = 29.90											

EQUIPMENT RATE CALCULATION											
FOR USE WITH EP 1110-1-8						DATE : December 2009			SHEET 05 OF 05		
PROJECT: FY09 M/D Green Bay						EFF. PERIOD JUNE 2010					
LOCATION :						ESTIMATOR J. Frost			CHECKED BY:		
OPERATIONAL SHIFTS 7 Days - 24 Hrs/ Day											
EQUIPMENT	IDENT NO.	YEAR PURCHASE	CATEGORY NO.	ACTUAL FUEL COST	APPROX. "B" FUEL COS	COST DIFF. (E - F)	PERCENT DIFF. (G / F)	TABLE 2 - 2 FUEL RATE (I)	ADD / SUB. RATE (H X I)	TABLE 2 - 1 EQUIP. RATE (K)	ADJUSTED RATE (J + K)
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)
1 Crane, Lattice Boom 80'	C85MA001	2004	C85	\$ 2.50	\$ 2.20	\$ 0.30	\$ 0.14	\$ 20.02	\$ 2.80	\$ 141.44	\$ 144.24
2 Bucket, 8 CY	B25XX019	2002	B25	\$ 2.40	\$ 2.20	\$ 0.20	\$ 0.09	\$ -	\$ -	\$ 13.73	\$ 13.73
3 Hydraulic Excavator, 3.06cy	H25KC024	2004	H25	\$ 2.50	\$ 2.20	\$ 0.30	\$ 0.14	\$ 20.87	\$ 2.90	\$ 86.55	\$ 89.45

REASONABLE CONTRACT ESTIMATES					SHEET OF	
PROJECT: FY09 M/D Green Bay Harbor, WI - INNER				INVITATION NO. W911XK-09-B-0000		
ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT	
0002	Dredging - Base *Brown County Tipping Fee	97800.00	CY	\$ 5.51	\$	538,878.00
	**COST of Money with Handling 4.20%				\$	22,632.88
	Sub Total				\$	561,510.88
			CY	\$ 5.74		
	***Trucking Cost	97800.00	CY	\$ 4.25	\$	415,650.00
	Prime Overhead 4%				\$	16,626.00
	Sub Total				\$	432,276.00
	Profit 4%				\$	17,291.04
	Sub Total				\$	449,567.04
			CY	\$ 4.60		
	TOTAL		CY	\$ 10.34	\$	1,011,077.92
	*Brown County Tipping Fee, USACE agreement dated 6 January 2009. **COST of Money Rate (Adjusted): 4.20%. EP 110-1-8, 31 July 2007 ***Trucking Cost, Quote Peter's Concrete, Green Bay, WI					

77,303 pay c.y. per month
 317 c.y. per hr, 35.6% EWT-->
 132 c.y. per hr, 90.0% EWT-->

UNIT COST... \$8.69 PER C.Y.
 EXCAV TIME.. 1.52 MONTHS
 HAUL TIME... 1.44 MONTHS

Select Dredge
 10 CY CLAMSHELL

PROJECT TITLES:

PG 1 of 10

Project Name..... **FY09 M/D GREEN BAY HARBOR - OUTER**
 Project Location..... **Green Bay, Wisconsin**
 Invit. or Contr. No..... **W911XK-09-B-0000**
 Date of Estimate..... **26 December 2009**
 Estimator..... **Jack S. Frost**
 Checked by..... **William D.Merte, P.E.**

Ver. 1.0
 For Information, Call:
 Julie Davin
 Ph: 509-527-7514

(Input Project Descriptions on Sheet A)

Goto Sheet A

Mobilization Bid Item..... **1**

Excavation Bid Item..... **2**

Goto Area Factors

TYPE OF ESTIMATE

PG 2 of 10

Type of Estimate..... **1** Planning Estimate
 (1) Planning, (2) Bid, or (3) Mod

Estimate Descriptions

INDIRECT COSTS:

Contractor's Overhead... **15.0** Percent of contract
 Contractor's Profit..... **8.5** Percent of contract
 Contractor's Bond..... **1.5** Percent of contract

ESTIMATED DREDGING QUANTITY:

PG 3 of 10

Non-Pay Computation Method: **1**
 (1) Surface Area, (2) % of Pay O.D., (3) % of Net Pay, (4) % of Gross

DREDGING AREA: **1,057,500** SQ. FT.

DREDGING PRISM:

Required.... **117,500** C.Y.
 + Pay O.D.... **0** C.Y.
 Bid Quantity 117,500 C.Y.
 - Not Dug.. **0** C.Y.
 Net Pay 117,500 C.Y.
 + Non-Pay 7,800 C.Y.
 Gross Volume 125,300 C.Y.

AVE. BANK HEIGHT:

@ 3.0 ft pay
 @ **0.2** ft overdig
 3.2 FT. BANK HT.

77,303 pay c.y. per month
 317 c.y. per hr, 35.6% EWT-->
 132 c.y. per hr, 90.0% EWT-->

UNIT COST... \$8.69 PER C.Y.
 EXCAV TIME.. 1.52 MONTHS
 HAUL TIME... 1.44 MONTHS

Select Dredge
10 CY CLAMSHELL ▼

EXCAVATION PRODUCTION WORKSHEET:

PG 4 of 10

CURRENT DREDGE SELECTED: 10 CY CLAMSHELL

Type of Material..... 2 SAND

(0) Unspecified Materials, (1) Mud, (2) Clays and Less-Dense Sand,
 or (3) Dense Clays, Hard-Packed Sand, Blasted Rock and Boulders

PRODUCTION FACTORS:	Override	Default	Used
Bucket Size (in CY).....	15	8	15
Bucket Fill Factor.....	0.7	0.70	0.70
Optimum Bank (in Feet)..	0	5.5	5.5
Bank Factor.....	0	0.58	0.58

(based on 3.2 Ft of Bank Height)

EXCAVATION PRODUCTION WORKSHEET:

PG 5 of 10

Bucket Cycle Time..... 45 Seconds

Other Factor..... 0.70
 Description..... >weather, bridges

Cleanup Dredging..... 7 % Additional Time
 (Cleanup Factor = 0.93)

Time Efficiency.....> 35.6 % of Effective Work Time
 260 Hours Per Month

HAULING PRODUCTION WORKSHEET:

PG 6 of 10

Towing Cycle: 3000 HP Diesel--Twin Screw

Prepare Scow for Tow...	5	Minutes
One-Way Haul Distance...	8	Miles
Speed to Disposal Area..	3	Miles per hour = 160 Min
Speed from Disposal Area	4	Miles per hour = 120 Min
Dumping or Pumpout.....	0	Minutes
Disengage Scow Tow.....	5	Minutes
Average Cycle Time:	290	Minutes per Trip

Towing Time Efficiency.. 90 Percent

Scow Capacity: 1000 CY Split Hull Scow

Useable Volume.....	80	Percent
Percent Solids.....	80	Percent = 640 cys/load

77,303 pay c.y. per month
 317 c.y. per hr, 35.6% EWT-->
 132 c.y. per hr, 90.0% EWT-->

UNIT COST... \$8.69 PER C.Y.
 EXCAV TIME.. 1.52 MONTHS
 HAUL TIME... 1.44 MONTHS

Select Dredge
 10 CY CLAMSHELL ▼

EQUIPMENT MATCHING:

PG 7 of 10

	Override	Assumed	Used
# of Dredges.....	0	1	1
Scows per Dredge.....	0	1	1
# of Towing Vessels.....	0	1	1
Scows per Tow.....	0	1	1
Scows with Dredges:		1 (1 Dredge(s) x 1 Scow(s) Each)	
Scows with Tows:		1 (1 Tug(s) x 1 Scow(s) Each)	
Additional Scows.....	1		
Total Scows on Job:		3	

SPECIAL LABOR & EQUIPMENT:

PG 8 of 10

(1 for Yes, 0 for No)

	Override	Assumed	Used
Quarters on Dredge?.....	0	NO	NO
Survey Boat?.....	0	NO	NO
Crew Boat?.....	0	NO	NO

OTHER PRICING ADJUSTMENTS:

PG 9 of 10

Other Monthly Costs:

1st Input..... \$9,000 Per Month
 Description..... SI
 (For Additional Inputs Go to Sheet D\4)

Fixed Costs:

1st Input..... \$0 Lump Sum
 Description.....
 (For Additional Inputs Go to Sheet E)
 (To Adjust Labor Go To Sheet DB_L)
 (To Adjust Equipment Go To Sheet DB_E)

77,303 pay c.y. per month
317 c.y. per hr, 35.6% EWT-->
132 c.y. per hr, 90.0% EWT-->

UNIT COST... \$8.69 PER C.Y.
EXCAV TIME.. 1.52 MONTHS
HAUL TIME... 1.44 MONTHS

Select Dredge	
10 CY CLAMSHELL	▼

The Factors below normally will not change for every estimate.

LOCAL AREA FACTORS:

PG 10 of 10

Present Year.....	2009	(Equipment Calculations)
Economic Index.....	7667	(EP-1110-1-8, APP E)
Labor Adjustment Factor.	1.080	(EP-1110-1-8, APP B)
Full Cost of Money Rate.	5.25	Percent per Year
Dates for Money Rate....	December 2009	
Annual Months Available for Dredging:		
Pipeline....	8	Months per Year
Bucket.....	8	Months per Year
Hopper.....	8	Months per Year
Current Fuel Price.....	\$2.50	Per Gallon

Return

A DESCRIPTION AND QUANTITY SUMMARY

1 PROJECT	<u>FY09 M/D GREEN BAY HARBOR - OUTER</u>	<u>DATE OF ESTIMATE</u>	<u>26 December 2009</u>
2 LOCATION	<u>Green Bay, Wisconsin</u>	<u>INVIT. OR CONTR. NO.</u>	<u>W911XK-09-B-0000</u>
3 ESTIMATED BY	<u>Jack S. Frost</u>	<u>CHECKED BY</u>	<u>William D.Merte, P.E.</u>
4 TYPE OF DREDGE	<u>10 CY CLAMSHELL</u>	<u>TYPE OF ESTIMATE</u>	<u>Planning Estimate</u>
5 DESCRIPTION OF WORK	<u>To preform dredging within (Bay Mile 0 to 11 of Green Bay Harbor, with the material being placed in the</u>		
	<u>Confined Disposal Facility(CDF). All work will be in accordance with specifications.</u>		
	<u>Operational Shift: One (1) shift - 12 hours per shift - 6 day per week.</u>		
	<u>Crew Size Per Shift:</u>		
	<u>Dredging : Superintendent (1), Operator Crane (1), Deckhand (1), Engineers (1)</u>		
	<u>Towing : Tug Operator (1), Deckhand (1)</u>		
	<u>Historical data shows this is the normal work schedule for dredging.</u>		
	<u>Labor rates as specified</u>		
	<u>Equipment: Tugs, Mech Dredge, Off Loading, Work boats etc., are either owned or under Contractors controll.</u>		

6 EXCAVATION	REMARKS
A. REQUIRED	<u>117,500 CY</u> <u>1,057,500 s.f. of Dredging Area</u>
B. PAY OVERDEPTH	<u>+ 0 CY</u>
C. MAX. PAY YARDAGE	<u>= 117,500 CY</u> <u>(YARDAGE USED ON BID FORM)</u>
D. O.D. NOT DREDGED	<u>- 0 CY</u>
E. NET PAY YARDAGE	<u>= 117,500 CY</u> <u>(YARDAGE USED TO FIGURE UNIT PRICE PER C.Y.)</u>
F. NON-PAY YARDAGE	<u>+ 7,800 CY</u> <u>0.2 ft overdig</u>
G. GROSS YARDAGE	<u>= 125,300 CY</u> <u>(YARDAGE USED TO FIGURE PRODUCTION TIME & COST)</u>

B DREDGING COST

BID ITEM # 2

REMARKS

1	GROSS YARDAGE		<u>125,300</u> CY	FROM SHEET A, ITEM 6 G.
2	PRODUCTION RATE		<u>/ 82,420</u> CY/MO	FROM SHEET C, ITEM 4.
3	DREDGING TIME	=	<u>1.52</u> MONTHS	<u>117,500 Net Pay CY / 1.52 MO = 77,303 Pay CY/MO</u>
4	TOTAL MONTHLY COST	x	<u>\$530,322</u>	FROM SHEET D, ITEM 5.
	SUBTOTAL.....=		<u>\$806,089</u>	
5	FIXED COSTS	+	<u>\$0</u>	FROM SHEET E, ITEM 15.
	SUBTOTAL.....=		<u>\$806,089</u>	
6	OVERHEAD	<u>15.0%</u>	<u>+</u> <u>\$120,913</u>	Total O/H = \$56,000 and is only added to first line item
	SUBTOTAL.....=		<u>\$927,002</u>	
7	PROFIT	<u>8.5%</u>	<u>+</u> <u>\$78,795</u>	
	SUBTOTAL.....=		<u>\$1,005,797</u>	
8	BOND	<u>1.5%</u>	<u>+</u> <u>\$15,087</u>	
9	GROSS PRODUCTION COST	=	<u>\$1,020,884</u>	
10	NET PAY YARDAGE		<u>/ 117,500</u> CY	FROM SHEET A, ITEM 6 E.
11	UNIT COST	=	<u>\$8.69</u> /CY	
12	MAX PAY YARDAGE	x	<u>117,500</u> CY	FROM SHEET A, ITEM 6 C.
13	DREDGING COST	=	<u>\$1,021,075</u>	

C \ 2C

HAULING CYCLE TIME

BID ITEM # 2

1 SIZE OF TUG 3000 HP Diesel--Twin Screw

2 CYCLE TIME PER TRIP: REMARKS

A. PREPARE FOR SCOW TOW 5 MIN _____

B. TO DISPOSAL AREA + 160 MIN 8 miles / 3.0 miles per hr x 60 min

C. DUMPING OR PUMPOUT + 0 MIN _____

D. FROM DISPOSAL AREA + 120 MIN 8 miles / 4.0 miles per hr x 60 min

E. DISENGAGE TOW RIGGING AND TIE UP SCOW + 5 MIN _____

3 AVERAGE CYCLE TIME = 290 MIN/TRIP _____

D MONTHLY COST SUMMARY

BID ITEM # 2

DREDGE SIZE 10 CY CLAMSHELL

REMARKS

1 LABOR COSTS		<u>\$106,591 /MO</u>	<u>FROM SHEET D \ 1</u>
2 EXCAVATION			<u>FROM SHEET D \ 2</u>
A. DREDGE(S)	+	<u>\$38,743 /MO</u>	<u>1 EA @ \$38,743 /MO</u>
B. WORK TUG(S)	+	<u>\$8,197 /MO</u>	<u>1 EA @ \$8,197 /MO</u>
C. CREW/SURVEY TUG	+	<u>\$0 /MO</u>	<u>0 EA @ \$7,324 /MO</u>
D. DERRICK(S)	+	<u>\$0 /MO</u>	<u>0 EA @ \$2,897 /MO</u>
E. FUEL/WATER BARGE	+	<u>\$0 /MO</u>	<u>0 EA @ \$1,391 /MO</u>
F. WORK BARGE(S)	+	<u>\$0 /MO</u>	<u>0 EA @ \$864 /MO</u>
H. **Unused**	+	<u>\$0 /MO</u>	<u>0 EA @ \$0 /MO</u>
I. **Unused**	+	<u>\$0 /MO</u>	<u>0 EA @ \$0 /MO</u>
3 HAULING			<u>FROM SHEET D \ 3</u>
A. TOWING VESSEL(S)	+	<u>\$341,205 /MO</u>	<u>1 EA @ \$341,205 /MO</u>
B. SCOW(S)	+	<u>\$26,586 /MO</u>	<u>3 EA @ \$8,862 /MO</u>
4 OTHER MONTHLY COSTS	+	<u>\$9,000 /MO</u>	<u>FROM SHEET D \ 4</u>
5 TOTAL MONTHLY COST	=	<u>\$530,322</u>	

D \ 1 LABOR COSTS

BID ITEM # 2

DREDGE SIZE: 10 CY CLAMSHELL

Overtime	20.49%
Holiday 8 Days/Yr	2.19%
Vacation	8.00%
COMPOSITE.....	30.68%

Management....		
0	CAPTAIN	\$0
0	CHIEF ENG	\$0
1	CIVIL ENG	\$6,000
0	OFFICE HELP	\$0
MONTHLY MANAGEMENT COST.....		\$6,000

Social Security Tax	7.65%
Workman's Compensation	10.00%
State Unemployment Comp.	3.50%
Federal Unemployment Comp.	1.00%
COMPOSITE.....	22.15%

Each Crew Position is Manned:	12 Hrs per Day
	x 6 Days per Week
	= 72 Hrs per Week
	x 4.345 Wks per Month
	= 313 Hrs per Month

Last Update...April 99

EA CREW POSITION	O.T.		SUB-TOTAL	TAXES INSUR 22.15%	FRINGE SUB-BENEFITS TOTAL #####	HRLY COST	HOURS PER MONTH	MONTHLY COST
	BASIC HOURLY WAGE	VACATION & HOLIDAY 30.68%						
1 Operators (Dredge)	\$35.05	+ \$10.75	= \$45.80	+ \$10.14	= \$55.94	+ #####	= \$72.54	x 313 = \$22,705
1 Engineers (Dredge)	31.20	+ 9.57	= 40.77	+ 9.03	= 49.80	+ 16.60	= 66.40	x 313 = 20,783
0 Mates (Dredge)	13.88	+ 4.26	= 18.14	+ 4.02	= 22.16	+ 16.60	= 38.76	x 0 = 0
0 Launchmen (Dredge)	11.15	+ 3.42	= 14.57	+ 3.23	= 17.80	+ 16.60	= 34.40	x 0 = 0
1 Deckhands (Dredge)	25.95	+ 7.96	= 33.91	+ 7.51	= 41.42	+ 16.60	= 58.02	x 313 = 18,160
0 Cook (Dredge)	10.19	+ 3.13	= 13.32	+ 2.95	= 16.27	+ 16.60	= 32.87	x 0 = 0
0 Messman (Dredge)	9.59	+ 2.94	= 12.53	+ 2.78	= 15.31	+ 16.60	= 31.91	x 0 = 0
0 Launchmen (Survey)	11.15	+ 3.42	= 14.57	+ 3.23	= 17.80	+ 16.60	= 34.40	x 0 = 0
0 Deckhands (Survey)	25.95	+ 7.96	= 33.91	+ 7.51	= 41.42	+ 16.60	= 58.02	x 0 = 0
0 Launchmen (Crew BT)	11.15	+ 3.42	= 14.57	+ 3.23	= 17.80	+ 16.60	= 34.40	x 0 = 0
0 Deckhands (Crew BT)	25.95	+ 7.96	= 33.91	+ 7.51	= 41.42	+ 16.60	= 58.02	x 0 = 0
1 Tug Master (Tow Tug)	31.20	+ 9.57	= 40.77	+ 9.03	= 49.80	+ 16.60	= 66.40	x 313 = 20,783
0 Mates (Tow Tug)	21.00	+ 6.44	= 27.44	+ 6.08	= 33.52	+ 16.60	= 50.12	x 0 = 0
1 Deckhands (Tow Tug)	25.95	+ 7.96	= 33.91	+ 7.51	= 41.42	+ 16.60	= 58.02	x 313 = 18,160
0 Scowmen (Tow Tug)	10.59	+ 3.25	= 13.84	+ 3.07	= 16.91	+ 16.60	= 33.51	x 0 = 0

5 Total Crew MONTHLY CREW LABOR COST = \$100,591

(Average Gross Wage = \$64.28 per manhour)

TOTAL MONTHLY LABOR COST = \$106,591

D \ 2

EQUIPMENT COSTS - EXCAVATION

BID ITEM #

2

DREDGE SIZE 10 CY CLAMSHELL

|--DREDGE--| |----TUGS & TENDERS----| |-----BARGES-----| |-----OTHER-----|

1a. Plant Description.....	--	Work Tug	Crew/Surv	Derrick	Fuel/Water	Work	**Unused**	**Unused**
1c. Prime Eng HP.....	625	100	100	100	0	0	0	0
1d. (1) Dredge El Gen HP....	50	--	--	--	--	--	--	--
1d. Total 2nd Eng HP.....	210	25	40	25	10	0	0	0
1e. Plant Value.....	\$370,000	\$67,000	\$42,000	\$127,000	\$95,000	\$63,000	\$0	\$0
1f. Acquis Year.....	1982	1982	1987	1980	1980	1980	0	0
1g. Pres Year.....	2009	----->	----->	----->	----->	----->	----->	----->
1h. Cost of Money Rate.....	5.250%	----->	----->	----->	----->	----->	----->	----->
1i. Disc Money Rate:	4.200%	----->	----->	----->	----->	----->	----->	----->
1j. Hrs Worked/Mo.....	260	----->	----->	----->	----->	----->	----->	----->
2a. LAF.....	1.080	----->	----->	----->	----->	----->	----->	----->
2b. Fuel Cost per Gal.....	\$2.50	----->	----->	----->	----->	----->	----->	----->
3a. Ec Index <for Acq Yr>..	3391	3391	3886	2922	2922	2922	0	0
3b. Ec Index <for 2009>....	7667	----->	----->	----->	----->	----->	----->	----->
4a. Mos Available/Year.....	8	----->	----->	----->	----->	----->	----->	----->
5a. Useful Life (in Yrs)...	13	8	8	20	20	20	0	0
5b. Physical Life (in Hrs).	26,000	16,000	16,000	90,000	90,000	90,000	0	0
5c. SLV Factor.....	0.05	0.10	0.10	0.10	0.05	0.05	0.00	0.00
5d. Pr Eng Fuel Factor.....	0.039	0.045	0.045	0.011	0.011	0.011	0	0
5e. 2nd Eng Fuel Factor....	0.033	0.039	0.039	0.011	0.011	0.011	0	0
5f. WLS Factor.....	0.24	0.38	0.38	0.20	0.20	0.20	0.00	0.00
5g. RPR Factor.....	1.00	0.80	0.80	0.70	0.60	0.60	0.00	0.00
6a. Depreciation:	7.31%	11.25%	11.25%	4.50%	4.75%	4.75%	0.00%	0.00%
6b. FCCM:	2.36%	2.55%	2.55%	2.40%	2.30%	2.30%	0.00%	0.00%
6c. Total Ownership/Year:	9.67%	13.80%	13.80%	6.90%	7.05%	7.05%	0.00%	0.00%
7a. Yearly Ownership:	\$35,779	\$9,246	\$5,796	\$8,763	\$6,698	\$4,442	\$0	\$0
7b. Monthly Ownership:	\$4,472	\$1,156	\$725	\$1,095	\$837	\$555	\$0	\$0
8a. (1) Hrly Pr Eng Fuel:	\$60.94	\$11.25	\$11.25	\$2.75	\$0.00	\$0.00	\$0.00	\$0.00
8a. (2) Hrly 2nd Eng Fuel:	\$17.33	\$2.44	\$3.90	\$0.69	\$0.28	\$0.00	\$0.00	\$0.00
8b. (1) Hrly Pr Eng WLS:	\$14.63	\$4.28	\$4.28	\$0.55	\$0.00	\$0.00	\$0.00	\$0.00
8b. (2) Hrly 2nd Eng WLS:	\$4.16	\$0.93	\$1.48	\$0.14	\$0.06	\$0.00	\$0.00	\$0.00
8c. (1) EAF:	2.261	2.261	1.973	2.624	2.624	2.624	0.000	0.000
8c. (2) Hrly Repair:	\$34.75	\$8.18	\$4.47	\$2.80	\$1.79	\$1.19	\$0.00	\$0.00
8d. Total Hrly Operating:	\$131.81	\$27.08	\$25.38	\$6.93	\$2.13	\$1.19	\$0.00	\$0.00
8e. Monthly Operating:	\$34,271	\$7,041	\$6,599	\$1,802	\$554	\$309	\$0	\$0
11. MONTHLY RATE:	\$38,743	\$8,197	\$7,324	\$2,897	\$1,391	\$864	\$0	\$0
12a. HRLY STANDBY ALLOW:	\$6.13	\$1.58	\$0.99	\$1.50	\$1.15	\$0.76	\$0.00	\$0.00
12b. Gener Fuel Allowance:	\$4.13	--	--	--	--	--	--	--
12c. DREDGE HRLY STANDBY:	\$10.26	--	--	--	--	--	--	--

D \ 3 EQUIPMENT COSTS - HAULING

BID ITEM # 2

DREDGE SIZE 10 CY CLAMSHELL

	-----TOWING VESSEL-----	-----DUMP SCOW-----	---TOWING VESSEL (MOBILIZATION)---
1a. Plant Description.....	Twin Screw	1,000 CY CAPACITY	Twin Screw
1b. Series & Model.....		Split Hull Scow	
1c. Prime Eng HP.....	3,000	0	3,000
1d. Total 2nd Eng HP.....	300	250	300
1e. Plant Value.....	\$1,000,000	\$125,000	\$1,000,000
1f. Acquis Year.....	1982	1982	1982
1g. Pres Year.....	2009	----->-----	----->-----
1h. Cost of Money Rate.....	5.250%	----->-----	----->-----
1i. Disc Money Rate:	4.200%	----->-----	----->-----
1j. Hrs Worked/Mo.....	624	730	730
2a. LAF.....	1.080	----->-----	----->-----
2b. Fuel Cost per Gal.....	\$2.50	----->-----	----->-----
3b. Ec Index <for 2009>....	7667	----->-----	----->-----
3a. Ec Index <for Acq Yr>..	3391	3391	3391
4a. Mos Available/Year.....	8	----->-----	----->-----
5a. Useful Life (in Yrs)...	20	20	20
5b. Physical Life (in Hrs).	100,000	90,000	100,000
5c. SLV Factor.....	0.10	0.05	0.10
5d. Pr Eng Fuel Factor.....	0.045	0.011	0.045
5e. 2nd Eng Fuel Factor....	0.039	0.011	0.039
5f. WLS Factor.....	0.38	0.20	0.38
5g. RPR Factor.....	1.10	0.70	1.10
6a. Depreciation:	4.50%	4.75%	4.50%
6b. FCCM:	2.40%	2.30%	2.40%
6c. Total Ownership/Year:	6.90%	7.05%	6.90%
7a. Yearly Ownership:	\$69,000	\$8,813	\$69,000
7b. Monthly Ownership:	\$8,625	\$1,102	\$8,625
8a. (1) Hrly Pr Eng Fuel:	\$337.50	\$0.00	\$337.50
8a. (2) Hrly 2nd Eng Fuel:	\$29.25	\$6.88	\$29.25
8b. (1) Hrly Pr Eng WLS:	\$128.25	\$0.00	\$128.25
8b. (2) Hrly 2nd Eng WLS:	\$11.12	\$1.38	\$11.12
8c. (1) EAF:	2.261	2.261	2.261
8c. (2) Hrly Repair:	\$26.86	\$2.37	\$26.86
8d. Total Hrly Operating:	\$532.98	\$10.63	\$532.98
8e. Monthly Operating:	\$332,580	\$7,760	\$389,075
11. MONTHLY RATE:	\$341,205	\$8,862	\$397,700
12a. HRLY STANDBY ALLOWANCE:	\$11.82	\$1.51	\$11.82

D \ 4 OTHER MONTHLY COSTS

BID ITEM # 2

DREDGE SIZE 10 CY CLAMSHELL

REMARKS

1	SI	\$9,000 /MO	Silent Inspector Cost Monthly
2	0	+ \$0 /MO	
3	>	+ \$0 /MO	
4	>	+ \$0 /MO	
5	>	+ \$0 /MO	
6	>	+ \$0 /MO	
7	>	+ \$0 /MO	
8	>	+ \$0 /MO	
9	>	+ \$0 /MO	
10	>	+ \$0 /MO	
11	>	+ \$0 /MO	
12	>	+ \$0 /MO	
13	>	+ \$0 /MO	
14	>	+ \$0 /MO	

15 TOTAL OTHER MONTHLY COSTS = \$9,000 /MO

E FIXED COSTS

BID ITEM # 2

DREDGE SIZE 10 CY CLAMSHELL

REMARKS

1		<u> \$0 </u>	
2 >	+	<u> \$0 </u>	
3 >	+	<u> \$0 </u>	
4 >	+	<u> \$0 </u>	
5 >	+	<u> \$0 </u>	
6 >	+	<u> \$0 </u>	
7 >	+	<u> \$0 </u>	
8 >	+	<u> \$0 </u>	
9 >	+	<u> \$0 </u>	
10 >	+	<u> \$0 </u>	
11 >	+	<u> \$0 </u>	
12 >	+	<u> \$0 </u>	
13 >	+	<u> \$0 </u>	
14 >	+	<u> \$0 </u>	

15 FIXED COSTS	=	<u> \$0 </u>	
----------------	---	----------------	--

70,000 pay c.y. per month
 245 cy per hour
 14" Cutter-Suction (Det) Dredge

UNIT COST.. \$3.53 PER C.Y.
 EXCAV. COST \$111,195
 TIME..... 0.45 MONTHS

Select Dredge	
14" Cutter-Suction (Det)	▼

PROJECT TITLES:

Project Name.....	FY09 M/D GREEN BAY OFF-LOADING	PG 1 of 11
Project Location.....	Green Bay, WI - HYD	Ver. 1.0
Invit. or Contr. No.....	W911XK-09-B-0000	For Information, Call:
Date of Estimate.....	December 2009	Julie Davin
Estimator.....	Jack S. Frost	Ph: 509-527-7514
Checked by.....	William D. Merte, P.E.	
(Input Project Descriptions on Sheet A)		
Mobilization Bid Item.....	1	Goto Sheet A
Excavation Bid Item.....	1	Goto Area Factors

TYPE OF ESTIMATE

Type of Estimate.....	1	Planning Estimate	PG 2 of 11
(1) Planning, (2) Bid, or (3) Mod			
Estimate Descriptions			

INDIRECT COSTS:

Contractor's Overhead...	15.0	Percent of contract
Contractor's Profit.....	8.5	Percent of contract
Contractor's Bond.....	1.5	Percent of contract

ESTIMATED DREDGING QUANTITY:

Non-Pay Computation Method:	1	PG 3 of 11
(1) Surface Area, (2) % of Pay O.D., (3) % of Net Pay, (4) % of Gross		
DREDGING AREA:	140,000	SQ. FT.
DREDGING PRISM:		
Required....	31,500	C.Y.
+ Pay O.D....	0	C.Y.
Bid Quantity	31,500	C.Y.
- Not Dug..	0	C.Y.
Net Pay	31,500	C.Y.
+ Non-Pay	0	C.Y.
Gross Volume	31,500	C.Y.

AVE. BANK HEIGHT:	
@	6.1 ft pay
@	0.0 ft overdig
	6.1 FT. BANK HT.

70,000 pay c.y. per month
 245 cy per hour
 14" Cutter-Suction (Det) Dredge

UNIT COST.. \$3.53 PER C.Y.
 EXCAV. COST \$111,195
 TIME..... 0.45 MONTHS

Select Dredge	
14" Cutter-Suction (Det)	▼

MATERIAL FACTORS:

PG 4 of 11

DESCRIPTION	FACTOR	PERCENTAGE	
MUD & SILT	3	0	%
MUD & SILT	2.5	0	%
MUD & SILT	2	20	% DIRECT ENTRY
LOOSE SAND	1.1	40	% FACTOR= 0.00
LOOSE SAND	1	35	%
COMP. SAND	0.9	0	%
STIFF CLAY	0.6	0	%
COMP. SHELL	0.5	5	% RESULTANT MATERIAL
SOFT ROCK	0.4	0	% FACTOR= 1.09
BLAST. ROCK	0.25	0	%

PIPELINE CONSIDERATIONS:

PG 5 of 11

MAXIMUM PIPELINE REQUIRED:

Floating Pipeline.....	0	Feet
Submerged Pipeline.....	6,000	Feet
Shore Pipeline.....	1,500	Feet
Total Pipeline on Job:	7,500	Feet

Ave Pumping Distance.... 5,000 Feet of Pipeline
 Pipeline Cost Category..... 2 SAND
 (0) Computed from Material Factor,
 (1) Mud, (2) Sand, or (3) Rock

Equivalent Pipe..... 40 Feet (Theoretical)
 Description..... Vertical Lift of Discharge Pipe.
 Basis of Production: 5,040 Feet (Ave + Equiv)

PRODUCTION ANALYSIS:

PG 6 of 11

0 BOOSTER(S) 8,460 L.F. POSSIBLE based on 1000 Tot. H.P.
 5,040 Ft Ave Pumping Distance
 7,500 L.F. Max. on jobsite

39.4 % X 730 HRS/MO = EWT OF 288 HRS/MO
 (without Boosters)
 X 1.00 Booster Factor
 39.4 % X 730 HRS/MO = EWT OF 288 HRS/MO
 (with Boosters)

Goto HP Adjustments

70,000 pay c.y. per month
 245 cy per hour
 14" Cutter-Suction (Det) Dredge

UNIT COST.. \$3.53 PER C.Y.
 EXCAV. COST \$111,195
 TIME..... 0.45 MONTHS

Select Dredge	
14" Cutter-Suction (Det)	▼

OTHER PRODUCTION FACTORS:

PG 7 of 11

CURRENT DREDGE SELECTED: 14" Cutter-Suction (Det) Dredge

Bank Factor for 6.1 ft of Bank ----> 1.10 (From Chart)

Bank Factor Override.... 0 1.10 (Used)

Description..... >

Other Factor..... 0.7

Description..... Wave Action - Boat Traffic

Cleanup Dredging..... 0 Percent Additional Time
 (Cleanup Factor = 1.00)

HISTORICAL PRODUCTION OVERRIDES:

PG 8 of 11

(In order to use this screen, Overrides must be entered for all three categories.)

	Override	Computed	Used
Production (Cy/Hr).....	0	245	245
Operating Time (Hrs/Mo).	0	288	288
Number of Boosters.....	0	0	0

OTHER PRICING ADJUSTMENTS:

PG 9 of 11

Other Monthly Costs:

1st Input..... \$30,000 Per Month

Description..... Dozer/Pickup/Laser, etc.

(For Additional Inputs Go to Sheet D\4)

Fixed Costs:

1st Input..... \$0 Lump Sum

Description.....

(For Additional Inputs Go to Sheet E)

(To Adjust Labor Go To Sheet DB_L)

(To Adjust Equipment Go To Sheet DB_E)

70,000 pay c.y. per month
 245 cy per hour
 14" Cutter-Suction (Det) Dredge

UNIT COST.. \$3.53 PER C.Y.
 EXCAV. COST \$111,195
 TIME..... 0.45 MONTHS

Select Dredge
 14" Cutter-Suction (Det) ▼

The Factors below normally will not change for every estimate.

LOCAL AREA FACTORS:

PG 10 of 11

Present Year..... 2009 (Equipment Calculations)
 Economic Index..... 7667 (EP-1110-1-8, APP E)
 Labor Adjustment Factor. 1.080 (EP-1110-1-8, APP B)
 Full Cost of Money Rate. 5.25 Percent per Year
 Dates for Money Rate... December 2009
 Annual Months Available for Dredging:
 Pipeline.... 8 Months per Year
 Bucket..... 8 Months per Year
 Hopper..... 8 Months per Year
 Current Fuel Price..... \$2.50 Per Gallon

Return

HP & BOOSTER FACTOR ADJUSTMENTS:

PG 11 of 11

	Override	Database	Used
Total Available			
Pump Horsepower.....	0	1,000	1,000
Booster Pump HP.....		1,000	1,000
% Loss per booster, when job lasts:			
Less than 1 month (%)	0	15%	15%
More than 1 month (%)	0	10%	10%

Return

Without Booster Losses, this job would last 0.45 months, therefore, the 15% figure will be used.

A DESCRIPTION AND QUANTITY SUMMARY

1 PROJECT	<u>FY09 M/D GREEN BAY OFF-LOADING</u>	<u>DATE OF ESTIMATE</u>	<u>December 2009</u>
2 LOCATION	<u>Green Bay, WI - HYD</u>	<u>INVIT. OR CONTR. NO.</u>	<u>W911XK-09-B-0000</u>
3 ESTIMATED BY	<u>Jack S. Frost</u>	<u>CHECKED BY</u>	<u>William D. Merte, P.E.</u>
4 TYPE OF DREDGE	<u>14" Cutter-Suction (Det) Dredge</u>	<u>TYPE OF ESTIMATE</u>	<u>Planning Estimate</u>
5 DESCRIPTION OF WORK	<u>To perform maintenaaance dredging within Green Bay from Bay Mile 0 - 11</u>		

with material being placed in the Cat East Island

It is assumed that a 14" Hydraulic off-loader will preform the work - operating on a schedule of one (1) shift per day twelve (12) hours per shift. Crew composition is One (1) - Levermen, One (1) Engineer and One (1) Deckhand.

Equipment will be either owned or under Contractor's Control. Labor rates are as specified in Specifications.

All work will be performed in accordance with the Specification.

6 EXCAVATION		REMARKS
A. REQUIRED	<u>31,500 CY</u>	<u>140,000 s.f. of Dredging Area</u>
B. PAY OVERDEPTH	<u>+ 0 CY</u>	
C. MAX. PAY YARDAGE	<u>= 31,500 CY</u>	<u>(YARDAGE USED ON BID FORM)</u>
D. O.D. NOT DREDGED	<u>- 0 CY</u>	
E. NET PAY YARDAGE	<u>= 31,500 CY</u>	<u>(YARDAGE USED TO FIGURE UNIT PRICE PER C.Y.)</u>
F. NON-PAY YARDAGE	<u>+ 0 CY</u>	<u>0.0 ft overdig</u>
G. GROSS YARDAGE	<u>= 31,500 CY</u>	<u>(YARDAGE USED TO FIGURE PRODUCTION TIME & COST)</u>

B DREDGING COST

BID ITEM # 1

REMARKS

1	GROSS YARDAGE		<u>31,500</u> CY	FROM SHEET A, ITEM 6 G.
2	PRODUCTION RATE	/	<u>70,560</u> CY/MO	FROM SHEET C, ITEM 8.
3	DREDGING TIME	=	<u>0.45</u> MONTHS	31,500 Net Pay CY + 0.45 MO = 70,000 Pay CY/MO
4	TOTAL MONTHLY COST	x	<u>\$195,314</u>	FROM SHEET D, ITEM 5.
	SUBTOTAL.....=		<u>\$87,891</u>	
5	FIXED COSTS	+	<u>\$0</u>	FROM SHEET E, ITEM 15.
	SUBTOTAL.....=		<u>\$87,891</u>	
6	OVERHEAD	15.0% +	<u>\$13,184</u>	
	SUBTOTAL.....=		<u>\$101,075</u>	
7	PROFIT	8.5% +	<u>\$8,591</u>	
	SUBTOTAL.....=		<u>\$109,666</u>	
8	BOND	1.5% +	<u>\$1,645</u>	
9	GROSS PRODUCTION COSTS	=	<u>\$111,311</u>	
10	NET PAY YARDAGE	/	<u>31,500</u> CY	FROM SHEET A, ITEM 6 E.
11	UNIT COST	=	<u>\$3.53</u> /CY	
12	MAX PAY YARDAGE	x	<u>31,500</u> CY	FROM SHEET A, ITEM 6 C.
13	DREDGING COST	=	<u>\$111,195</u>	

MATERIAL FACTOR CALCULATION

C\3

BID ITEM # 1

BANK FACTOR CALCULATION

1 MATERIAL FACTOR COMPUTATION:

A. MATERIAL FACTOR CHART:

DESCRIPTION	INPLACE DENSITY		FACTOR	%	QUANTITIES
MUD & SILT	1200	GR/L	3	0%	0 c.y.
MUD & SILT	1300	GR/L	2.5	0%	0 c.y.
MUD & SILT	1400	GR/L	2	20%	6,300 c.y.
LOOSE SAND	1700	GR/L	1.1	40%	12,600 c.y.
LOOSE SAND	1900	GR/L	1	35%	11,025 c.y.
COMP. SAND	2000	GR/L	0.9	0%	0 c.y.
STIFF CLAY	2000	GR/L	0.6	0%	0 c.y.
COMP. SHELL	2300	GR/L	0.5	5%	1,575 c.y.
SOFT ROCK	2400	GR/L	0.4	0%	0 c.y.
BLAST. ROCK	2000	GR/L	0.25	0%	0 c.y.

B. MATERIAL FACTOR.....> 1.09 100% 31,500 cy (Computed from Chart)

REMARKS

2 BANK FACTOR COMPUTATION:

A. SIZE OF DREDGE....PIPELINE.....> 14" Cutter-Suction (Det)

B. AVERAGE BANK HEIGHT.....> 6.1 FT

C. BANK FACTOR CHART:

BANK HEIGHT	1	2	3	4	5	6	7	8	9
FACTOR	0.41	0.6	0.8	1	1.1	1.1	1.1	1.1	1.1

D. BANK FACTOR.....> 1.10 Interpolated from chart

>

D MONTHLY COST SUMMARY

BID ITEM # 1

DREDGE SIZE 14" Cutter-Suction (Det)

REMARKS

1 LABOR COSTS		<u>\$70,497 /MO</u>	FROM SHEET D \ 1
2 EQUIPMENT COSTS			FROM SHEET D \ 2
A. DREDGE	+	<u>\$75,723 /MO</u>	1 EA @ \$75,723 /MO
B. WORK TUG(S)	+	<u>\$0 /MO</u>	0 EA @ \$9,326 /MO
C. CREW/SURVEY TUG	+	<u>\$0 /MO</u>	0 EA @ \$8,140 /MO
D. DERRICK(S)	+	<u>\$3,402 /MO</u>	1 EA @ \$3,402 /MO
E. FUEL/WATER BARGE	+	<u>\$0 /MO</u>	0 EA @ \$1,691 /MO
F. WORK BARGE	+	<u>\$1,057 /MO</u>	1 EA @ \$1,057 /MO
H. BOOSTER(S)	+	<u>\$0 /MO</u>	0 EA @ \$50,124 /MO
G. ***Unused***	+	<u>\$0 /MO</u>	0 EA @ \$0 /MO
3 PIPELINE COSTS BASED ON PUMPING SAND			7,500 LF (ON JOB) - RATES TAKEN FROM SHEET D \ 3
A. (1) FLOATING (AVERAGE)	+	<u>\$0 /MO</u>	0 LF @ \$6.52 /MO
(2) FLOATING (REMAINING)	+	<u>\$0 /MO</u>	0 LF @ \$0.006 /HR X 730 HRS/MO
B. (1) SUBMERGED (AVERAGE)	+	<u>\$10,080 /MO</u>	4,000 LF @ \$2.52 /MO
(2) SUBMERGED (REMAINING)	+	<u>\$2,920 /MO</u>	2,000 LF @ \$0.002 /HR X 730 HRS/MO
C. (1) SHORE (AVERAGE)	+	<u>\$1,270 /MO</u>	1,000 LF @ \$1.27 /MO
(2) SHORE (REMAINING)	+	<u>\$365 /MO</u>	500 LF @ \$0.001 /HR X 730 HRS/MO
4 OTHER MONTHLY COSTS	+	<u>\$30,000 /MO</u>	FROM SHEET D \ 4
5 TOTAL MONTHLY COST	=	<u>\$195,314</u>	

D \ 1 LABOR COSTS

BID ITEM # 1

DREDGE SIZE: 14" Cutter-Suction (Det)

Overtime	22.22%
Holiday 8 Days/Yr	2.19%
Vacation	7.00%
COMPOSITE.....	31.41%

Management....	
0 CAPTAIN	\$0
0 CHIEF ENG	\$0
1 CIVIL ENG	\$4,000
0 OFFICE HELP	\$0
<hr/>	
MONTHLY MANAGEMENT COST.....	\$4,000

Social Security Tax	7.65%
Workman's Compensation	15.00%
State Unemployment Comp.	10.00%
Federal Unemployment Comp.	1.00%
COMPOSITE.....	33.65%

Each Crew Position is Manned:

	12 Hrs per Day
x	6 Days per Week
=	72 Hrs per Week
x	4.345 Wks per Month
=	313 Hrs per Month

Last Update...Oct 98

EA CREW POSITION	O.T.		SUB-TOTAL	TAXES INSUR 33.65%	FRINGE SUB-BENEFITS TOTAL	HRLY COST	HOURS PER MONTH	MONTHLY COST
	BASIC HOURLY WAGE	VACATION & HOLIDAY 31.41%						
1 LEVERMEN	\$35.05	+ \$11.01	= \$46.06	+ \$15.50	= \$61.56	+ #####	= \$78.16	x 313 = \$24,464
1 WATCH ENG	35.05	+ 11.01	= 46.06	+ 15.50	= 61.56	+ 16.60	= 78.16	x 313 = 24,464
0 DRDG MATE	19.00	+ 5.97	= 24.97	+ 8.40	= 33.37	+ 16.60	= 49.97	x 0 = 0
0 TUG MASTER	13.95	+ 4.38	= 18.33	+ 6.17	= 24.50	+ 16.60	= 41.10	x 0 = 0
0 LAUNCHMAN	8.19	+ 2.57	= 10.76	+ 3.62	= 14.38	+ 16.60	= 30.98	x 0 = 0
0 MAINT ENG	0.00	+ 0.00	= 0.00	+ 0.00	= 0.00	+ 16.60	= 16.60	x 0 = 0
0 WELDER	0.00	+ 0.00	= 0.00	+ 0.00	= 0.00	+ 16.60	= 16.60	x 0 = 0
0 OILER	0.00	+ 0.00	= 0.00	+ 0.00	= 0.00	+ 16.60	= 16.60	x 0 = 0
1 DECKHAND	22.51	+ 7.07	= 29.58	+ 9.95	= 39.53	+ 16.60	= 56.13	x 313 = 17,569
0 ELECTRICIAN	0.00	+ 0.00	= 0.00	+ 0.00	= 0.00	+ 16.60	= 16.60	x 0 = 0
0 G DUMP FRMN	8.68	+ 2.73	= 11.41	+ 3.84	= 15.25	+ 16.60	= 31.85	x 0 = 0
0 DUMP FOREMN	0.00	+ 0.00	= 0.00	+ 0.00	= 0.00	+ 16.60	= 16.60	x 0 = 0
0 EQUIP OPER	26.20	+ 8.23	= 34.43	+ 11.59	= 46.02	+ 16.60	= 62.62	x 0 = 0
0 SHOREMAN	7.82	+ 2.46	= 10.28	+ 3.46	= 13.74	+ 16.60	= 30.34	x 0 = 0
0 COOK	0.00	+ 0.00	= 0.00	+ 0.00	= 0.00	+ 16.60	= 16.60	x 0 = 0
0 MESS COOK	0.00	+ 0.00	= 0.00	+ 0.00	= 0.00	+ 16.60	= 16.60	x 0 = 0
0 MESSMAN	0.00	+ 0.00	= 0.00	+ 0.00	= 0.00	+ 16.60	= 16.60	x 0 = 0
0 BOOSTER ENG	35.05	+ 11.01	= 46.06	+ 15.50	= 61.56	+ 16.60	= 78.16	x 0 = 0

3 Total Crew MONTHLY CREW LABOR COST = \$66,497

(Average Gross Wage = \$70.82 per manhour)

TOTAL MONTHLY LABOR COST = \$70,497

D \ 2 EQUIPMENT COSTS

BID ITEM # 1

DREDGE SIZE 14" Cutter-Suction (Det)

	-DREDGE-	-TUGS & TENDERS-	-BARGES-	-BOOSTER-	-OTHER-	***Unused***
1a. Plant Description.....	HYDRAULIC	WORK TUG CREW/SURV	DERRICK FUELWATER	WORK	FLOATING	
1c. Prime Eng HP.....	1,000	100	100	0	0	1,000
1d. (1) Dredge El Gen HP....	50	--	--	--	--	--
1d. Total 2nd Eng HP.....	210	25	40	25	10	50
1e. Plant Value.....	\$1,040,000	\$88,000	\$48,000	\$163,000	\$122,000	\$81,000
1f. Acquis Year.....	1983	1991	1991	1985	1985	1985
1g. Pres Year.....	2009					
1h. Cost of Money Rate.....	5.250%					
1i. Disc Money Rate:	4.200%					
1j. Hrs Worked/Mo.....	288					
2a. LAF.....	1.080					
2b. Fuel Cost per Gal.....	\$2.50					
3a. Ec Index <for Acq Yr>..	3497	4438	4438	3749	3749	3749
3b. Ec Index <for 2009>....	7667					
4a. Mos Available/Year.....	8					
5a. Useful Life (in Yrs)...	15	8	8	20	20	20
5b. Physical Life (in Hrs).	40,000	16,000	16,000	90,000	90,000	90,000
5c. SLV Factor.....	0.05	0.10	0.10	0.10	0.05	0.05
5d. Pr Eng Fuel Factor.....	0.045	0.045	0.045	0.011	0.011	0.011
5e. 2nd Eng Fuel Factor....	0.039	0.039	0.039	0.011	0.011	0.011
5f. WLS Factor.....	0.22	0.38	0.38	0.20	0.20	0.20
5g. RPR Factor.....	1.00	0.80	0.80	0.70	0.60	0.60
6a. Depreciation:	6.33%	11.25%	11.25%	4.50%	4.75%	4.75%
6b. FCCM:	2.34%	2.55%	2.55%	2.40%	2.30%	2.30%
6c. Total Ownership/Year:	8.67%	13.80%	13.80%	6.90%	7.05%	7.05%
7a. Yearly Ownership:	\$90,168	\$12,144	\$6,624	\$11,247	\$8,601	\$5,711
7b. Monthly Ownership:	\$11,271	\$1,518	\$828	\$1,406	\$1,075	\$714
8a. (1) Hrly Pr Eng Fuel:	\$112.50	\$11.25	\$11.25	\$2.75	\$0.00	\$0.00
8a. (2) Hrly 2nd Eng Fuel:	\$20.48	\$2.44	\$3.90	\$0.69	\$0.28	\$0.00
8b. (1) Hrly Pr Eng WLS:	\$24.75	\$4.28	\$4.28	\$0.55	\$0.00	\$0.00
8b. (2) Hrly 2nd Eng WLS:	\$4.51	\$0.93	\$1.48	\$0.14	\$0.06	\$0.00
8c. (1) EAF:	2.192	1.728	1.728	2.045	2.045	2.045
8c. (2) Hrly Repair:	\$61.55	\$8.21	\$4.48	\$2.80	\$1.80	\$1.19
8d. Total Hrly Operating:	\$223.79	\$27.11	\$25.39	\$6.93	\$2.14	\$1.19
8e. Monthly Operating:	\$64,452	\$7,808	\$7,312	\$1,996	\$616	\$343
11. MONTHLY RATE:	\$75,723	\$9,326	\$8,140	\$3,402	\$1,691	\$1,057
12a. HRLY STANDBY ALLOW:	\$15.44	\$2.08	\$1.13	\$1.93	\$1.47	\$0.98
12b. Gener Fuel Allowance:	\$4.88	--	--	--	--	--
12c. DREDGE HRLY STANDBY:	\$20.32	--	--	--	--	--

D \ 3 PIPELINE COSTS

BID ITEM # 1

PIPELINE SIZE: 14" Cutter-Suction (Det MATERIAL PUMPED: SAND

	-----FLOATING PIPELINE-----			--SUBMERGED PIPELINE--		---SHORE---
1a. Plant Description.....	Pipeline	Joints	Pontoons	Pipeline	Joints	Pipeline
Quantity.....>	50	1	2	300	1	15
Fixed Units Per Item..>	LF	Set	Each	LF	Set	LF
Unit Price.....>	\$16.00	\$3,000.00	\$2,500.00	\$16.00	\$3,000.00	\$16.00
1e. Plant Value:	\$800.00	\$3,000.00	\$5,000.00	\$4,800.00	\$3,000.00	\$240.00
1f. Acquis Year.....	1992	1992	1992	1992	1992	1992
1g. Pres Year.....	2009	----->	----->	----->	----->	----->
1h. Cost of Money Rate....	5.250%	----->	----->	----->	----->	----->
1i. Disc Money Rate:	4.200%	----->	----->	----->	----->	----->
1j. Hrs Worked/Mo.....	288	----->	----->	----->	----->	----->
2a. LAF.....	1.080	----->	----->	----->	----->	----->
3a. Ec Index <for Acq Yr>...	4611	4611	4611	4611	4611	4611
3b. Ec Index <for 2009>....	7667	----->	----->	----->	----->	----->
4a. Mos Available/Year....	8	----->	----->	----->	----->	----->
5a. Useful Life (in Yrs)...	1.0	3.0	12.0	1.0	3.0	1.5
5b. Physical Life (in Hrs).	4,500	12,000	60,000	4,500	12,000	6,000
5c. SLV Factor.....	0.10	0.10	0.10	0.10	0.10	0.10
5g. RPR Factor.....	0.05	0.30	0.05	0.05	0.30	0.05
6a. Depreciation:	90.00%	30.00%	7.50%	90.00%	30.00%	60.00%
6b. FCCM:	4.20%	2.94%	2.47%	4.20%	2.94%	3.57%
6c. Total Ownership/Year:	94.20%	32.94%	9.97%	94.20%	32.94%	63.57%
7a. Yearly Ownership:	\$753.60	\$988.20	\$498.50	\$4,521.60	\$988.20	\$152.57
7b. Monthly Ownership:	\$94.20	\$123.53	\$62.31	\$565.20	\$123.53	\$19.07
8c. (1) EAF:	1.663	1.663	1.663	1.663	1.663	1.663
8c. (2) Hrly Repair:	\$0.02	\$0.13	\$0.01	\$0.10	\$0.13	\$0.00
8e. Monthly Operating:	\$5.76	\$37.44	\$2.88	\$28.80	\$37.44	\$0.00
11. Monthly Rate (EA Item):	\$99.96	\$160.97	\$65.19	\$594.00	\$160.97	\$19.07
Monthly Rate Per Section (Sum Of Items):			\$326.12		\$754.97	\$19.07
/ Section Length (In Linear Feet):			<u>50</u>		<u>300</u>	<u>15</u>
MONTHLY RATES PER LF OF PIPELINE:			\$6.52		\$2.52	\$1.27
5a. Useful Life (in Yrs)...	2.0	3.0	12.0	2.0	3.0	1.5
6a. Depreciation:	45.00%	30.00%	7.50%	45.00%	30.00%	30.00%
6b. FCCM:	3.26%	2.94%	2.47%	3.26%	2.94%	2.94%
6c. Total Ownership/Year:	48.26%	32.94%	9.97%	48.26%	32.94%	32.94%
7a. Yearly Ownership:	\$386.08	\$988.20	\$498.50	\$2,316.48	\$988.20	\$79.06
7b. Monthly Ownership:	\$48.26	\$123.53	\$62.31	\$289.56	\$123.53	\$9.88
12a. HRLY STANDBY ALLOW:	\$0.066	\$0.169	\$0.085	\$0.397	\$0.169	\$0.014
Hrly Standby Rate Per Section (Sum Of Items):			\$0.320		\$0.566	\$0.014
/ Section Length (In Linear Feet):			<u>50</u>		<u>300</u>	<u>15</u>
HOURLY STANDBY RATES PER LF OF PIPELINE:			\$0.006		\$0.002	\$0.001

D \ 4 OTHER MONTHLY COSTS

BID ITEM # 1

DREDGE SIZE 14" Cutter-Suction (Det)

REMARKS

1	Dozer/Pickup/Laser, etc.	<u>\$30,000</u> /MO	
2	>	+ <u>\$0</u> /MO	
3	>	+ <u>\$0</u> /MO	
4	>	+ <u>\$0</u> /MO	
5	>	+ <u>\$0</u> /MO	
6	>	+ <u>\$0</u> /MO	
7	>	+ <u>\$0</u> /MO	
8	>	+ <u>\$0</u> /MO	
9	>	+ <u>\$0</u> /MO	
10	>	+ <u>\$0</u> /MO	
11	>	+ <u>\$0</u> /MO	
12	>	+ <u>\$0</u> /MO	
13	>	+ <u>\$0</u> /MO	
14	>	+ <u>\$0</u> /MO	

15 TOTAL OTHER MONTHLY COSTS = \$30,000 /MO

E FIXED COSTS

BID ITEM # 1

DREDGE SIZE	14" Cutter-Suction (Det)		REMARKS
1	0	<u> \$0</u>	
2 >		+ <u> \$0</u>	
3 >		+ <u> \$0</u>	
4 >		+ <u> \$0</u>	
5 >		+ <u> \$0</u>	
6 >		+ <u> \$0</u>	
7 >		+ <u> \$0</u>	
8 >		+ <u> \$0</u>	
9 >		+ <u> \$0</u>	
10 >		+ <u> \$0</u>	
11 >		+ <u> \$0</u>	
12 >		+ <u> \$0</u>	
13 >		+ <u> \$0</u>	
14 >		+ <u> \$0</u>	
15	FIXED COSTS	= <u> \$0</u>	



**US Army Corps
of Engineers®**

**GREEN BAY HARBOR DREDGED MATERIAL
MANAGEMENT PLAN (DMMP)
GREEN BAY, WISCONSIN
FEASIBILITY STUDY
Project Cost and Schedule Risk Analysis Report**

Prepared for:

U.S. Army Corps of Engineers,
Detroit District

Prepared by:

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EXECUTIVE SUMMARY

Under the auspices of the U.S. Army Corps of Engineers (USACE), Detroit District, this report presents a recommendation for the total project cost and schedule contingencies for the Green Bay Harbor Dredged Material Management Plan (DMMP) Feasibility Study. In compliance with Engineer Regulation (ER) 1110-2-1302 CIVIL WORKS COST ENGINEERING, dated September 15, 2008, a formal risk analysis study was conducted for the development of contingency on the total project cost. The purpose of this risk analysis study was to establish project contingencies by identifying and measuring the cost and schedule impact of project uncertainties with respect to the estimated total project cost (at price level).

Specific to the Green Bay DMMP project, the most likely project cost is estimated at approximately \$112 Million. Based on the results of the analysis, the Cost Engineering Directory of Expertise for Civil Works (Walla Walla District) recommends a contingency value of \$22 Million, or 20%. Whereas the results of quantitative analysis depict a contingency of 19.17%, historical experience and reasonable prudence would be to use a figure of 20% for a feasibility level estimate.

The Project Delivery Team (PDT) conducted a brainstorming session to identify the risks associated with the project. Walla Walla Cost Dx performed risk analysis using the *Monte Carlo* technique, producing the aforementioned contingencies and identifying key risk drivers.

The following table ES-1 portrays the development of contingencies for the project. The contingency is based on an 80% confidence level, as per USACE Civil Works guidance.

Table ES-1. Contingency Development Summary

Contingency on Baseline Estimate	80% Confidence Project Cost
Baseline Estimate Cost (Most Likely) ->	\$111,521,702
Baseline Estimate Cost Contingency Amount ->	\$15,164,441
Baseline Estimate Construction Cost (80% Confidence) ->	\$126,686,142

Contingency on Schedule	80% Confidence Schedule
Project Schedule Duration (Most Likely) ->	252.3 Months
Schedule Contingency Duration ->	83.5 Months
Project Schedule Duration (80% Confidence) ->	335.8 Months
Project Schedule Contingency Amount (80% Confidence) ->	\$6,213,551

Project Contingency	80% Confidence Project Cost
Project Contingency Amount (80% Confidence) ->	\$21,377,992
Project Contingency Percentage (80% Confidence) ->	19%

Project Cost (80% Confidence) ->	\$132,899,694
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KEY FINDINGS/OBSERVATIONS RECOMMENDATIONS

The key cost risk drivers identified through sensitivity analysis are Risks PPM-1 (Project Scope Incomplete) and TL-3 (Dredge Estimate, Scope, Quantities, Equipment - Disposal Configuration), which together contribute over 96 percent of the statistical cost variance.

The key schedule risk drivers identified through sensitivity analysis are Risks PPM-1 (Project Scope Incomplete), PR-3 (Adequacy of Incremental Funding), and PR-1 (Funding in Question), which together contribute over 91 percent of the statistical schedule variance.

Recommendations, as detailed within the main report, include the implementation of contingencies, further iterative study of risks throughout the project life-cycle, potential mitigation throughout the PED phase, and proactive monitoring and control of risks identified in this study.

Table ES-2. Contingency Analysis Table

Most Likely Cost Estimate	\$111,521,702	
Confidence Level	Value	Contingency
0%	\$95,214,027	-14.62%
5%	\$104,586,388	-6.22%
10%	\$107,198,059	-3.88%
15%	\$109,264,626	-2.02%
20%	\$111,214,072	-0.28%
25%	\$113,089,266	1.41%
30%	\$115,006,965	3.13%
35%	\$116,821,648	4.75%
40%	\$118,629,564	6.37%
45%	\$120,377,540	7.94%
50%	\$122,173,894	9.55%
55%	\$123,875,055	11.08%
60%	\$125,763,273	12.77%
65%	\$127,510,337	14.34%
70%	\$129,283,752	15.93%
75%	\$131,049,980	17.51%
80%	\$132,899,694	19.17%
85%	\$134,720,668	20.80%
90%	\$136,775,305	22.64%
95%	\$139,417,100	25.01%
100%	\$150,288,316	34.76%

Risk is comprised of cost and schedule risk elements. This analysis considers schedule elements in terms of uncaptured escalation and significant “Hotel” costs. The following tables tabulate the results of the risk analysis currently identified as 19%.

Figure ES-1. Cumulative Frequency Chart (Cost)

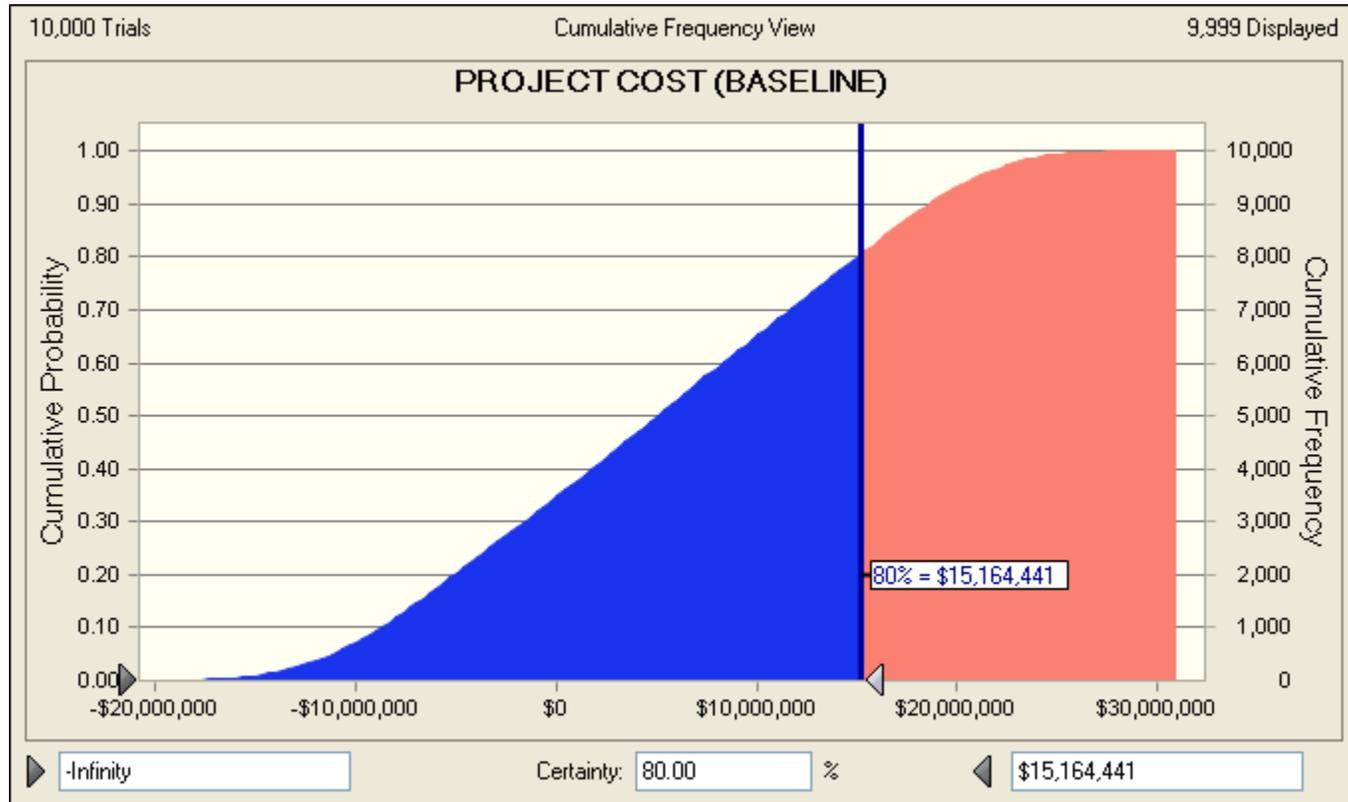


Figure ES-2. Sensitivity Chart (Cost)

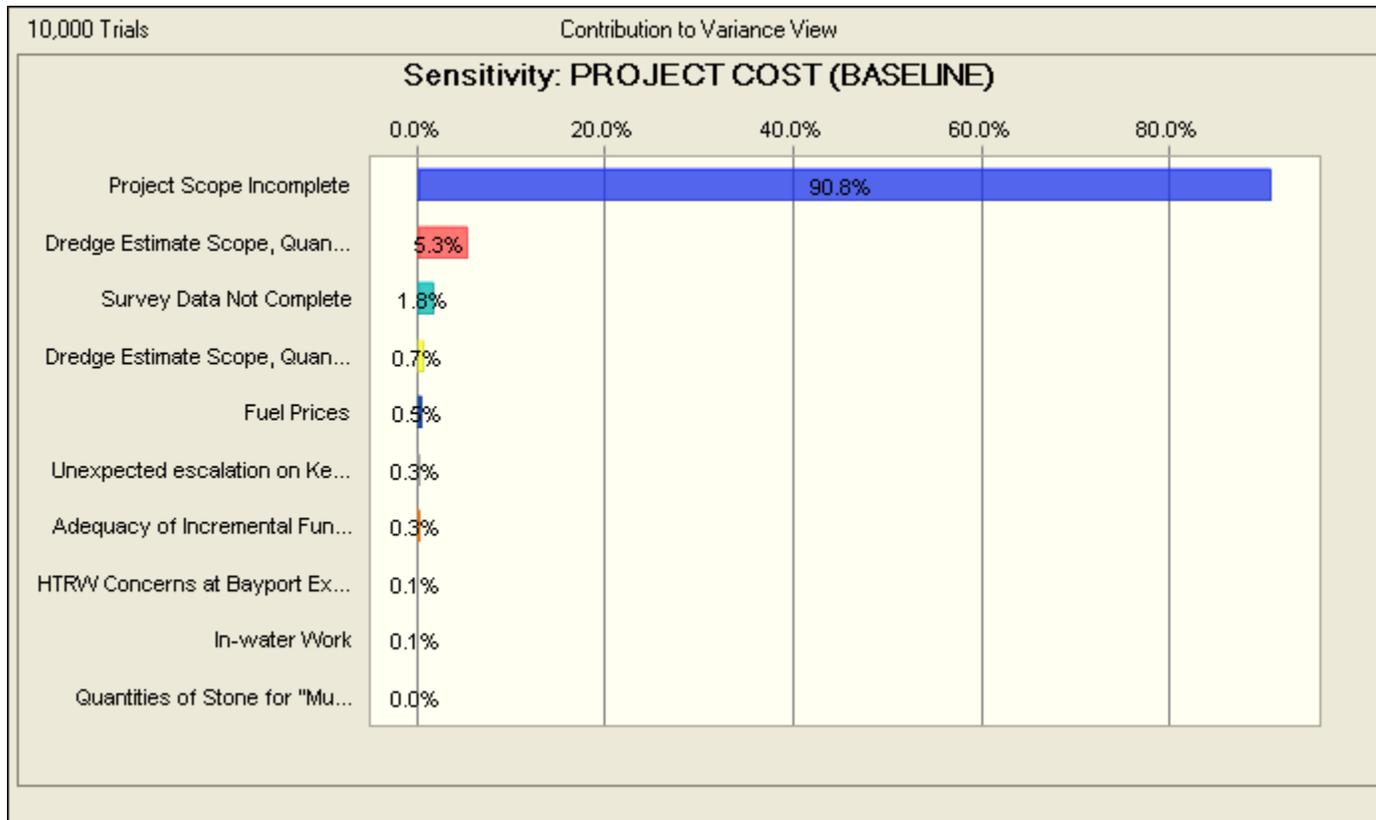


Figure ES-3. Cumulative Frequency Chart (Schedule)

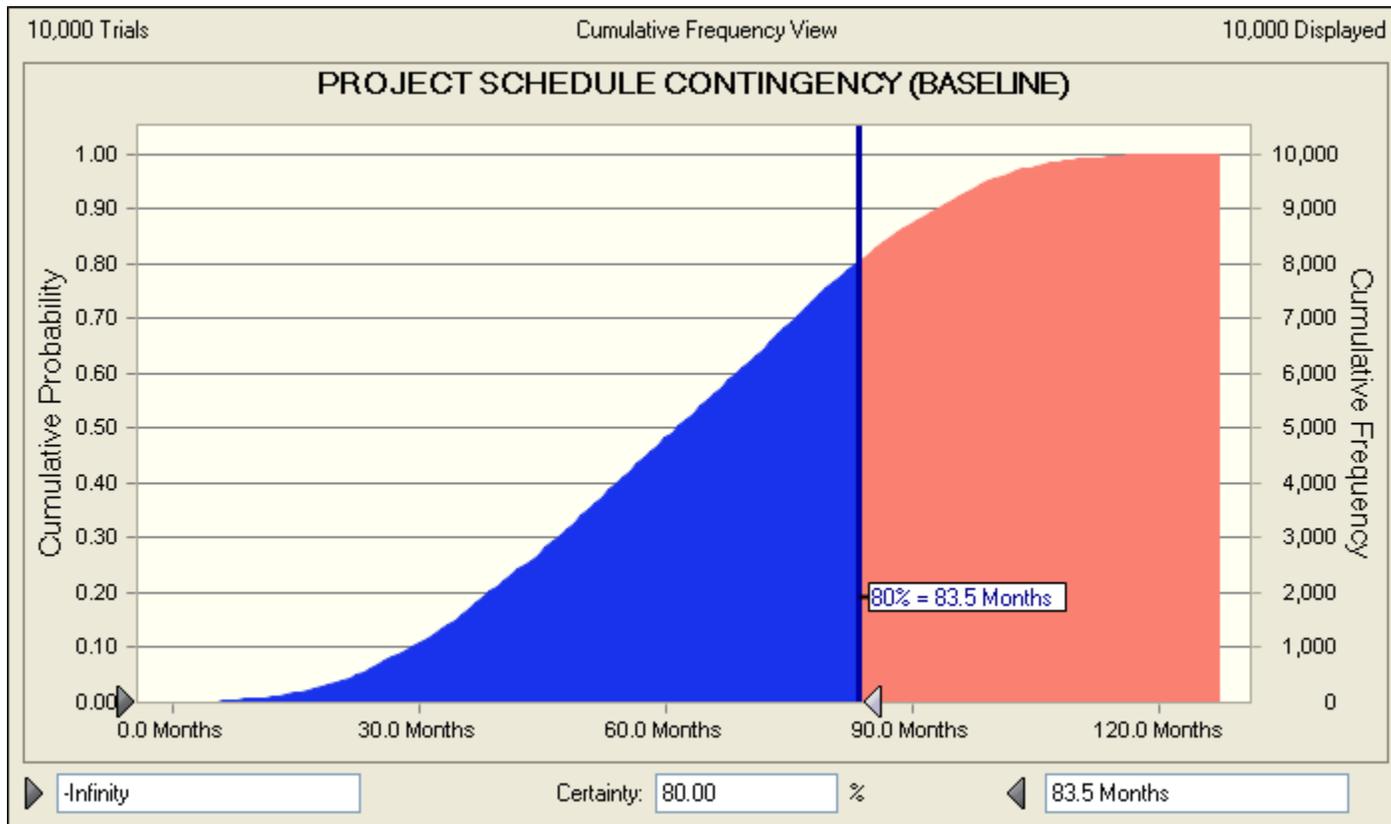
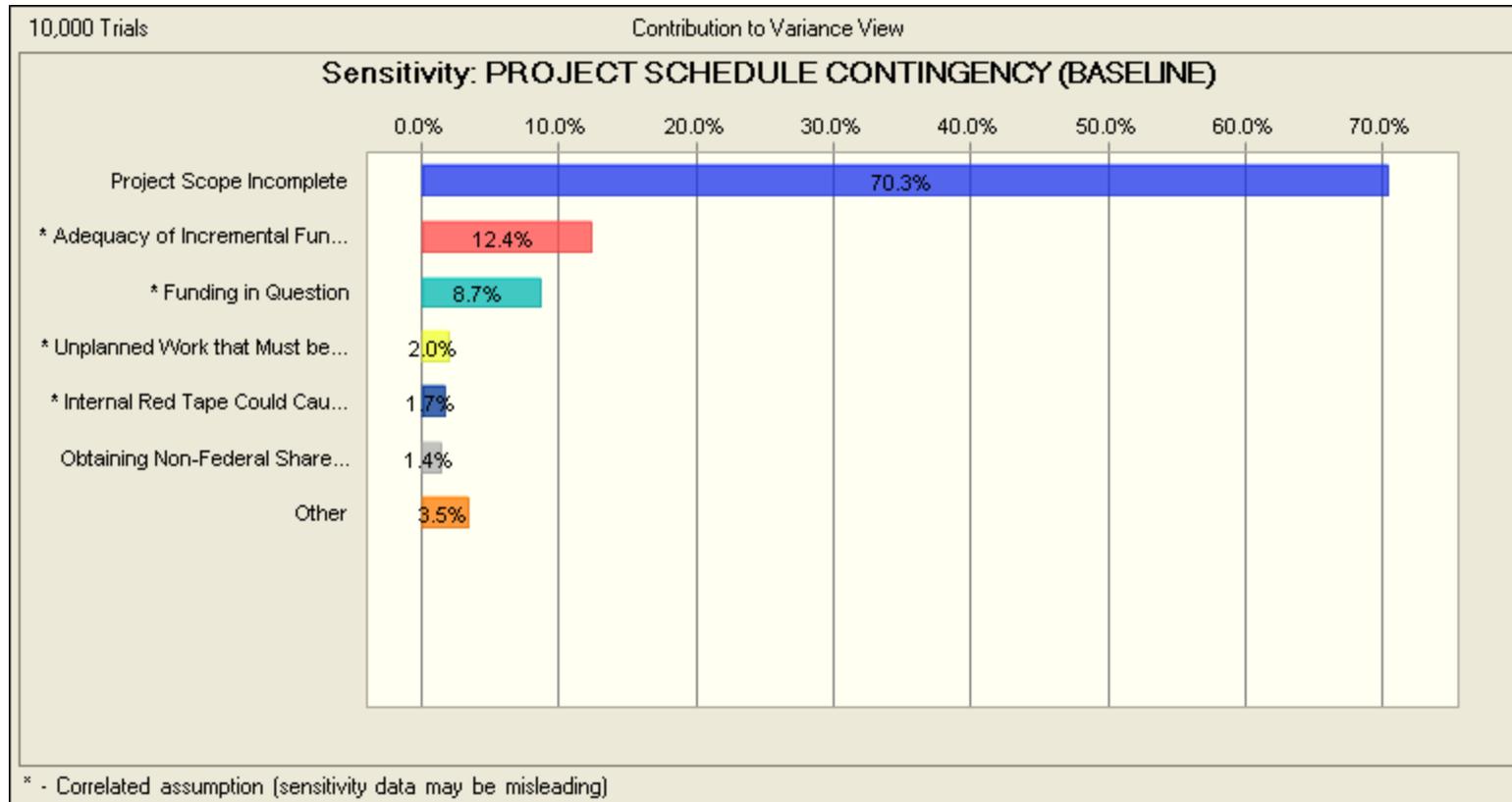


Figure ES-4. Sensitivity Chart (Schedule)



1. PURPOSE

This Risk Analysis is based on Green Bay Harbor Dredged Material Management Plan (DMMP) Feasibility Study. The purpose for a cost and schedule risk analysis (CSRA) is to briefly present discussion of the studied elements related to cost and schedule with an outcome contingency calculation at the recommended confidence level for both cost and schedule that are measured in terms of dollars. The most common and recommended contingency has been established at 80% confidence (P80).

2. BACKGROUND

The Green Bay Harbor DMMP (Cat Island Chain) Project is located in Green Bay, Wisconsin. The selected alternative includes utilizing the Cat Island Chain for storage of clean dredged material. The U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service and Brown County Office of Port and Solid Waste plan to restore the island chain. During the construction phase, access between the islands will be required. Temporary construction access roads and circulation culverts will be constructed through these gap areas. Once access is no longer required, these temporary connections will be removed and the excess material utilized to create habitat islands and provide scour protection. The Cat Island Chain will provide storage capacity at West Island (630,000 CY), Middle Island (720,000 CY) and East Island (1,000,000 CY). The project also includes maintenance phases that will stretch over a 10-year period. The feasibility study has been accelerated in an effort to obtain Great Lakes Restoration Initiative (GLRI) funding to augment funding streams.

The Detroit District PDT developed and considered 17 alternatives for the Green Bay Harbor DMMP. The Cost Dx performed cost and schedule risk analysis on five of the 17 alternatives, including alternatives 9, 12, 15, 16, and 17. This report addresses the results of Alternative 15, which is the selected alternative and recommended plan.

Alternative 15 combines Alternative 7 - Construct a three island (West, Middle and East Islands) DMDF, a complete wave barrier, and an access road with Alternative 11 – Brown County Expanded Bayport CDF (Inner Channel Only) to address the inner and outer dredged material capacity harbor needs.

Alternative 7 includes construction of an in-water DMDF, three islands (West, Middle, and East Islands) and a complete wave barrier located within Green Bay, WI. This alternative would also create a dredged material capacity of approximately 2,350,000 CY of dredged material. The assumption is that this feature would satisfy a requirement for clean dredged material storage, primarily from the Outer Harbor, but potentially also from the Inner Harbor. The three islands would encompass a total of approximately 272 acres. The wave barrier would extend 8,600 feet eastward along the northeast side of the three islands to protect the islands and the shallow water habitat behind it (Duck Creek delta wetland and Peters Marsh) against wave action from the bay. Construction of the West, Middle and East Island and a complete wave barrier would create a

reduction in wave height and restore approximately 1,225 acres of water habitat and 272 acres of terrestrial habitat for a total restoration of 1,497 acres.

Alternative 11 would expand the Bayport CDF (construct in yr 2023) for the dredged material from the inner channel of Green Bay, Harbor. Approximately 400,000 cy of dried dredged material will be transferred from the existing Bayport CDF to Renard Island CDF for capping purposes and it will be funded through O&M. Based on only the inner harbor demand, and 400,000 cy of dried dredged material being transferred from the existing Bayport CDF to Renard Island CDF, it is anticipated that there are approximately 16 years of remaining capacity. Then, Brown County would need to provide capacity of approximately 800,000 CY (for yrs 2024 thru 2031) to meet the total 20-year dredged material capacity (1,956,000 CY) needs for the inner channel. The expansion would consist of constructing a 36 acre Dredged Material Disposal Facility (DMDF) adjacent to the existing Bayport CDF containing dry cells for stock piling dry dredged material. The existing Bayport CDF will continue to process wet dredged material. The process will consist of temporary storage of the wet dredged material in designated cells until it is dried, then transferring it to the 36 acre expansion site. Taking into consideration, the 400,000 CY for Renard Island, the proposed 36 acre DMDF site will be designed to contain approximately 800,000 CY. This will provide additional placement capacity for years 2020 thru 2031. The Corps will continue to pay a tipping fee for the Operation and Maintenance of the facility.

3. REPORT SCOPE

The scope of the risk analysis report is to calculate and present the cost and schedule contingencies at the 80 percent confidence level using the risk analysis processes, as mandated by U.S. Army Corps of Engineers (USACE) Engineer Regulation (ER) 1110-2-1150, Engineering and Design for Civil Works, ER 1110-2-1302, Civil Works Cost Engineering, and Engineer Technical Letter 1110-2-573, Construction Cost Estimating Guide for Civil Works. The report presents the contingency results for cost risks for all project features. The study and presentation does not include consideration for life cycle costs.

3.1 Project Scope

The scope of this study addresses the identification of problems, needs, opportunities and potential solutions that are viable from an economic, environmental, and engineering viewpoint.

3.2 USACE Risk Analysis Process

The risk analysis process follows the USACE Headquarters requirements as well as the guidance provided by the Cost Engineering Directory of Expertise for Civil Works (Cost Dx). The risk analysis process reflected within the risk analysis report uses probabilistic cost and schedule risk analysis methods within the framework of the Crystal Ball software. The risk analysis results are intended to serve several functions – one being

the establishment of reasonable contingencies reflective of an 80 percent confidence level to successfully accomplish the project work within that established contingency amount. Furthermore, the scope of the report includes the identification and communication of important steps, logic, key assumptions, limitations, and decisions to help ensure that risk analysis results can be appropriately interpreted.

Risk analysis results are also intended to provide project leadership with contingency information for scheduling, budgeting, and project control purposes, as well as provide tools to support decision making and risk management as the project progresses through planning and implementation. To fully recognize its benefits, cost and schedule risk analyses should be considered as an ongoing process conducted concurrent to, and iteratively with, other important project processes such as scope and execution plan development, resource planning, procurement planning, cost estimating, budgeting, and scheduling.

In addition to broadly defined risk analysis standards and recommended practices, the risk analysis is performed to meet the requirements and recommendations of the following documents and sources:

- Cost and Schedule Risk Analysis Process guidance prepared by the USACE Cost Dx.
- Memorandum from Major General Don T. Riley (US Army Director of Civil Works), dated July 3, 2007.
- Engineering and Construction Bulletin issued by James C. Dalton, P.E. (Chief, Engineering and Construction, Directorate of Civil Works), dated September 10, 2007.
- Engineering Regulation ER 1110-2-1150 dated August 31, 1999.
- Engineering Regulation ER 1110-2-1302 dated September 15, 2008.
- Engineering Technical Letter 1110-2-573 dated September 30, 2008.

4. METHODOLOGY/PROCESS

The Cost Dx provided a senior civil cost engineer to perform the quantitative risk analysis, relying on the local Detroit District cost estimator to provide cost and schedule input details and information gathering.

The Cost Dx cost engineer facilitated a risk identification meeting on-site with the Detroit District PDT on December 10, 2009. The initial risk identification meeting also included qualitative analysis to produce a risk register that served as the framework for the risk analysis. The Cost Dx conducted quantitative analyses for cost and schedule issues for five alternatives, including Alternative 15. The cost risk models for all alternatives were completed and results reported on March 3, 2010.

The risk analysis process for this study is intended to determine the probability of various cost outcomes and quantify the required contingency needed in the cost estimate to achieve any desired level of cost confidence.

In simple terms, contingency is an amount added to an estimate to allow for items, conditions or events for which the occurrence or impact 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 Cost Dx guidance for cost and schedule risk analysis generally focuses on the 80-percent level of confidence (P80) for cost contingency calculation. It should be noted that use of P80 as a decision criteria is a risk averse approach (whereas the use of P50 would be a risk neutral approach, and use of levels less than 50 percent would be risk seeking). Thus, a P80 confidence level results in greater contingency as compared to a P50 confidence level. The selection of contingency at a particular confidence level is ultimately the decision and responsibility of the project's District and/or Division management.

The risk analysis process uses *Monte Carlo* techniques to determine probabilities and contingency. The *Monte Carlo* techniques are facilitated computationally by a commercially available risk analysis software package (Crystal Ball) that is an add-in to Microsoft Excel. Cost estimates are packaged into an Excel format and used directly for cost risk analysis purposes. The level of detail recreated in the Excel-format schedule is sufficient for risk analysis purposes that reflect the established risk register, but generally less than that of the native format.

The primary steps, in functional terms, of the risk analysis process are described in the following subsections. Risk analysis results are provided in section 6.

4.1 Identify and Assess Risk Factors

Identifying the risk factors via the PDT is considered a qualitative process that results in establishing a risk register that serves as the document for the quantitative study using the Crystal Ball risk software. Risk factors are events and conditions that may influence or drive uncertainty in project performance. They may be inherent characteristics or conditions of the project or external influences, events, or conditions 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.

Formal PDT meetings are held for the purposes of identifying and assessing risk factors. The meetings should include capable and qualified representatives from multiple project team disciplines and functions, for example:

- Project/Program managers
- Contracting/acquisition
- Real Estate
- Relocations
- Environmental
- Civil and Coastal Design
- Cost and schedule engineers
- Construction
- Key Sponsors

The initial formal meetings should focus primarily on risk factor identification using brainstorming techniques, but also include some facilitated discussions based on risk factors common to projects of similar scope and geographic location. Subsequent meetings should focus primarily on risk factor assessment and quantification.

Additionally, numerous conference calls and informal meetings are conducted throughout the risk analysis process on an as-needed basis to further facilitate risk factor identification, market analysis, and risk assessment.

4.2 Quantify Risk Factor Impacts

The quantitative impacts of risk factors on project plans are analyzed using a combination of professional judgment, empirical data, and analytical techniques. Risk factor impacts are quantified using probability distributions (density functions), because risk factors are entered into the Crystal Ball software in the form of probability density functions.

Similar to the identification and assessment process, risk factor quantification involves multiple project team disciplines and functions. However, the quantification process relies more extensively on collaboration between cost engineering, designers, and risk analysis team members with lesser inputs from other functions and disciplines.

The following is an example of the PDT quantifying risk factor impacts by using an iterative, consensus-building approach to estimate the elements of each risk factor:

- Maximum possible value for the risk factor.
- Minimum possible value for the risk factor.
- Most likely value (the statistical mode), if applicable.
- Nature of the probability density function used to approximate risk factor

- uncertainty.
- Mathematical correlations between risk factors.
- Affected cost estimate and schedule elements.

The resulting product from the PDT discussions is captured within a risk register as presented in section 6 for both cost and schedule risk concerns. Note that the risk register records the PDT's risk concerns, discussions related to those concerns, and potential impacts to the current cost and schedule estimates. The concerns and discussions are meant to support the team's decisions related to event likelihood, impact, and the resulting risk levels for each risk event.

4.3 Analyze Cost Estimate and Schedule Contingency

Contingency is analyzed using the Crystal Ball software, an add-in to the Microsoft Excel format of the cost estimate and schedule. *Monte Carlo* simulations are performed by applying the risk factors (quantified as probability density functions) to the appropriate estimated cost and schedule elements identified by the PDT. Contingencies are calculated by applying only the moderate and high level risks identified for each option (i.e., low-level risks are typically not considered, but remain within the risk register to serve historical purposes as well as support follow-on risk studies as the project and risks evolve).

For the cost estimate, the contingency is calculated as the difference between the P80 cost forecast and the baseline cost estimate. Each option-specific contingency is then allocated on a civil works feature level based on the dollar-weighted relative risk of each feature as quantified by *Monte Carlo* simulation. Standard deviation is used as the feature-specific measure of risk for contingency allocation purposes. This approach results in a relatively larger portion of all the project feature cost contingency being allocated to features with relatively higher estimated cost uncertainty.

5. PROJECT ASSUMPTIONS

The following data sources and assumptions were used in quantifying the costs associated with the with- and without-project conditions at Green Bay DMMP.

- a. For dredging, the estimate uses the Corps of Engineers Dredge Estimating Program (CEDEP) and assumes hopper dredging methodology. The estimate assumes an effective work time of 37% for the Inner Harbor material and up to 83% for Outer Harbor material.
- b. The cost comparisons and risk analyses performed and reflected within this report are based on design scope and estimates that are at the feasibility level.
- c. The schedule was analyzed for impact to the project cost in terms of both uncaptured escalation (variance from OMB factors and the local market) and "Hotel" costs (unavoidable fixed contract costs and/or languishing federal administration costs incurred throughout delay).

d. Per the CWCCIS Historical State Adjustment Factors in EM 1110-2-1304, State Adjustment Factor for Wisconsin is 1.07, adding approximately 0.14% differential between the local market and OMB inflation factors for future construction. For the P80 schedule, this comprises approximately 4% of the total contingency due to inflation.

e. Per the data in the estimate, the FOOH amount for the Contract Cost comprises approximately 5% of the Project Cost at Baseline. Thus, the assumed “Hotel” rate for this project is 5%. For the P80 schedule, this comprises approximately 1% of the total contingency due to the accrual of residual fixed costs associated with delay.

f. The Cost Dx guidance generally focuses on the eighty-percent level of confidence (P80) for cost contingency calculation. For this risk analysis, the eighty-percent level of confidence (P80) was used. It should be noted that the use of P80 as a decision criteria is a moderately risk averse approach, generally resulting in higher cost contingencies. However, the P80 level of confidence also assumes a small degree of risk that the recommended contingencies may be inadequate to capture actual project costs.

g. Only high and moderate risk level impacts, as identified in the risk register, were considered for the purposes of calculating cost contingency. Low level risk impacts should be maintained in project management documentation, and reviewed at each project milestone to determine if they should be placed on the risk “watch list” for further monitoring and evaluation.

6. RISK ANALYSIS RESULTS

The following table summarizes the results of the risk analysis currently identified as a 19% contingency amount based on 80% confidence level. The complete list of tables and figures are included within Appendix A.

Table 1. Contingency Development Summary

Contingency on Baseline Estimate	80% Confidence Project Cost
Baseline Estimate Cost (Most Likely) ->	\$111,521,702
Baseline Estimate Cost Contingency Amount ->	\$15,164,441
Baseline Estimate Construction Cost (80% Confidence) ->	\$126,686,142

Contingency on Schedule	80% Confidence Schedule
Project Schedule Duration (Most Likely) ->	252.3 Months
Schedule Contingency Duration ->	83.5 Months
Project Schedule Duration (80% Confidence) ->	335.8 Months
Project Schedule Contingency Amount (80% Confidence) ->	\$6,213,551

Project Contingency	80% Confidence Project Cost
Project Contingency Amount (80% Confidence) ->	\$21,377,992
Project Contingency Percentage (80% Confidence) ->	19%

Project Cost (80% Confidence) ->	\$132,899,694
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6.1 Risk Register

A risk register is a tool commonly used in project planning and risk analysis. The actual risk register is provided in Appendix A. The complete risk register includes low level risks, as well as additional information regarding the nature and impacts of each risk.

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 designs, cost estimates, 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 feedback and project control input.
- Identifying risk transfer, elimination, or mitigation actions required for implementation of risk management plans.

6.2 Cost Risk Analysis – Project Cost Contingency Results

Table 2 provides the construction cost contingencies calculated for the P80 confidence level and rounded to the nearest thousand. The construction cost contingencies for the P50 and P100 confidence levels are also provided for illustrative purposes only.

Contingency was quantified as approximately \$15 Million at the P80 confidence level (19% of the baseline cost estimate). For comparison, the cost contingency at the P50 and P100 confidence levels was quantified as 10% and 35% of the baseline cost estimate, respectively.

Table 2. Project Cost Contingency Summary

Risk Analysis Forecast	Baseline Estimate (\$K)	Total Contingency ¹ (\$K)	Total Contingency (%)
50% Confidence Level			
Project Cost	\$111,522	\$10,652	9.6%
80% Confidence Level			
Project Cost	\$111,522	\$21,378	19.2%
100% Confidence Level			
Project Cost	\$111,522	\$38,767	34.8%

Note: 1) These figures combine uncertainty in the baseline cost estimates and schedule.

2) A P100 confidence level is an abstract concept for illustration only, as the nature of risk and uncertainty (specifically the presence of "unknown unknowns") makes 100% confidence a theoretical impossibility.

6.3 Schedule Risk Analysis – Total Project Duration Contingency Results

Table 3 provides the schedule duration contingencies calculated for the P80 confidence level. The schedule duration contingencies for the P50 and P100 confidence levels are also provided for illustrative purposes.

Schedule duration contingency was quantified as 84 months based on the P80 level of confidence. These contingencies were used to calculate the projected uncaptured escalation and “Hotel” cost impact of project delays that are included in the Tables 1 and 2 presentation of total cost contingency. The schedule contingencies were calculated by applying the high level schedule risks identified in the risk register for each option to the durations of critical path and near critical path tasks.

The schedule was not resource loaded and contained open-ended tasks and non-zero lags (gaps in the logic between tasks) that limit the overall utility of the schedule risk analysis. These issues should be considered as limitations in the utility of the schedule contingency data presented. Schedule contingency impacts presented in this analysis are based on calculation of uncaptured escalation and projected “Hotel” costs. Resource impacts related to potential schedule delays could not be evaluated.

See Appendix A for detailed tables and charts.

Table 3. Schedule Duration Contingency Summary

Risk Analysis Forecast	Baseline Schedule Duration (months)	Contingency ¹ (months)	Contingency (%)
50% Confidence Level			
Total Project Duration	252	62	24.5%
80% Confidence Level			
Total Project Duration	252	84	33.1%
100% Confidence Level			
Total Project Duration	252	128	50.6%

Note: 1) The schedule was not resource loaded and contained open-ended tasks and non-zero lags (gaps in the logic between tasks) that limit the overall utility of the schedule risk analysis. These issues should be considered as limitations in the utility of the schedule contingency data presented in Table 3.

2) A P100 confidence level is an abstract concept for illustration only, as the nature of risk and uncertainty (specifically the presence of “unknown unknowns”) makes 100% confidence a theoretical impossibility.

7. MITIGATION RECOMMENDATIONS

Risk Management is an all-encompassing, iterative, and life-cycle process of project management. The Project Management Institute’s (PMI) *A Guide to the Project Management Body of Knowledge (PMBOK® Guide), 4th edition*, states that “project risk management includes the processes concerned with conducting risk management planning, identification, analysis, responses, and monitoring and control on a project.”

Risk identification and analysis are processes within the knowledge area of risk management. Its outputs pertinent to this effort include the risk register, risk quantification (risk analysis model), contingency report, and the sensitivity analysis.

The intended use of these outputs is implementation by the project leadership with respect to risk responses (such as mitigation) and risk monitoring and control. In short, the effectiveness of the project risk management effort requires that the proactive management of risks not conclude with the study completed in this report.

This section provides a list of recommendations for continued management of the risks identified and analyzed in this study. Whereas the developed contingency, itself, is a response to the potential for these risks, these risks warrant consideration of other potential responses and proactive monitoring and control. Note that this list is not all-inclusive.

1. Key Cost Risk Drivers: The key cost risk drivers identified through sensitivity analysis are Risks PPM-1 (Project Scope Incomplete) and TL-3 (Dredge Estimate, Scope, Quantities, Equipment - Disposal Configuration), which together contribute over 96 percent of the statistical cost variance.

a) Project Scope Incomplete: With respect to Project Scope Incomplete (Risk PPM-1), Cost Dx recommends that project leadership attempt to capture and finalize the scope of the project to the maximum extent possible. It is imperative to identify all features of work and probable methodologies prior to project authorization, continuing to refine scoping details during the Pre-Construction Engineering and Design (PED Phase).

b) Dredge Estimate, Scope, Quantities, Equipment (Disposal Configuration): With respect to Dredge Estimate, Scope, Quantities, Equipment - Disposal Configuration (Risk TL-3), Cost Dx recommends that project leadership confirm the condition of the material and the factors that will ultimately drive effective work time for dredging during the construction and O&M phases of the project. This factor is considered an opportunity, as the estimates already reflect less than favorable conditions for dredging configurations. Therefore, as this item improves, so do the overall costs of dredging.

2. Key Schedule Risk Drivers: The key schedule risk drivers identified through sensitivity analysis are Risks PPM-1 (Project Scope Incomplete), PR-3 (Adequacy of Incremental Funding), and PR-1 (Funding in Question), which together contribute over 91 percent of the statistical schedule variance.

a) Project Scope Incomplete: With respect to Project Scope Incomplete (Risk PPM-1), Cost Dx recommends that project leadership attempt to capture and finalize the scope of the project to the maximum extent possible. It is imperative to identify all features of work and probable methodologies prior to project authorization, continuing to refine scoping details during the Pre-Construction

Engineering and Design (PED Phase). Ultimately, an accurate schedule with a reasonable level of detail (i.e. consideration for critical path and near critical path activities, reasonable activity duration estimates, resource lags, etc.) will reduce uncertainty and provide a better platform for managing risk of schedule delay.

- b) Adequacy of Incremental Funding: With respect to the Adequacy of Incremental Funding (Risk PR-3), Cost Dx recommends that project leadership proactively develop accurate funding profile projections to capture probable funding requirements. Project leadership may also ensure that the acquisition strategy plan is suited to likely funding scenarios. Ultimately, this is an external risk, and its impacts must be communicated to management.
- c) Funding in Question: With respect to Funding in Question (Risk PR-1), Cost Dx recommends that project leadership proactively communicate with project sponsors regarding funding. Ultimately, this is an external risk, and its impacts must be communicated to management.

3. Risk Management: Cost Dx recommends use of the outputs created during the risk analysis effort as tools in future risk management processes. The risk register should be updated at each major project milestone. The results of the sensitivity analysis may also be used for response planning strategy and development. These tools should be used in conjunction with regular risk review meetings, as discussed in section 6.1.

4. Risk Analysis Updates: Project leadership should review risk items identified in the original risk register and add others, as required, throughout the project life-cycle. Risks should be reviewed for status and reevaluation (using qualitative measure, at a minimum) and placed on risk management watch lists if any risk's likelihood or impact significantly increases. Project leadership should also be mindful of the potential for secondary (new risks created specifically by the response to an original risk) and residual risks (risks that remain and have unintended impact following response).

APPENDIX A