APPENDIX D

M-CACES COST ESTIMATE (SUMMARY)

TOTAL PROJECT COST SUMMARY
ALL CONTRACTS
THIS ESTIMATE IS BASED ON THE LIMITED REEVALUATION REPORT, DATED APRIL 1997

PROJECT: BREWERTON CHANNEL EASTERN EXTENSION WIDENING
LOCATION : BALTIMORE, MARYLAND

PREPARED BY : CENAB-EN-C OLIVER LEIMBACH
P.O.C.: RONALD J. MAJ P.E., CHIEF, COST ENGINEERING BRANCH

ACCOUNT NUMBER	ITEM DESCRIPTION	CURRENT MCACES ESTIMATE APRIL 1997 EFFECTIVE PRICING LEVEL 1OCT 94				AUTHORIZ./BUDGET YEAR 1995 EFFECTIVE PRICING LEVEL: 1 OCT 94			FULLY FUNDED ESTIMATE		
		COST ($K)	CNTG ($K)	CNTG %	TOTAL ($K)	COST ($K)	CNTG ($K)	TOTAL ($K)	COST ($K)	CNTG ($K)	FULL ($K)
09	CHANNELS AND CANALS	$9,762	$1,464	15.0%	$11,226	$9,762	$1,464	$11,226	$10,699	$1,605	$12,304
	TOTAL CONSTRUCTION COST	$9,762	$1,464	15.0%	$11,226	$9,762	$1,464	$11,226	$10,699	$1,605	$12,304
30	CONSTRUCTION, ENGINEERING AND DESIGN	$990	$2	0.2%	$992	$990	$2	$992	$994	$2	$996
31	CONSTRUCTION MANAGEMENT	$414	$41	10.0%	$455	$414	$41	$455	$468	$47	$515
	TOTAL PROJECT COSTS	$11,165	$1,508	13.5%	$12,673	$11,165	$1,508	$12,673	$12,161	$1,654	$13,815

Notes

1. Fully Funded Estimate amounts are based on the escalation factors in EC 11-1-169 dated 13 Mar 96
2. Assumed midpoint of construction: January 1999

TOTAL FEDERAL COST $10,361

TOTAL NON-FEDERAL COST $3,454

DISTRICT APPROVED:

_____ CHIEF, COST ENGINEERING BRANCH

_____ CHIEF, REAL ESTATE DIVISION

_____ CHIEF, PLANNING DIVISION

_____ CHIEF, ENGINEERING DIVISION

_____ CHIEF, OPERATIONS DIVISION

_____ CHIEF, PROGRAMS MANAGEMENT BRANCH

_____ PROJECT MANAGER

_____ DDE (PM)

APPROVED DATE: _____

Cost Engineering

1. General. The following methodology was used in the preparation of the Baseline Cost Estimate for the Widening of the Brewerton Channel Eastern Extension Limited Reevaluation Report dated April 1997:

a. The estimate is in accordance with the guidance contained in ER 1110-2-1302, Civil Works Cost Engineering.

b. The estimate is presented in the standard Civil Works Breakdown Structure.

c. The price level for the estimate is 1 October 1994.

d. Construction cost developed by Cost Engineering Branch are based on input/quantities from the Operations Division. Unit costs were developed using the Cost Engineering Dredge Estimating Program (CEDEP). The estimates are documented with notes to explain the specific information used to develop the costs.

e. The labor costs are based on the prevailing Davis-Bacon wage rates for dredging.

f. Operations Division provided actual costs for Construction Engineering and Design and projected costs for Construction Management based on historical data from similar projects.

2. Estimate Scope. The estimate reflects the cost for widening the existing channel from 450 feet to 600 feet. All excavated material would be placed in the Hart-Miller Island Dredged Material Containment Facility. The dredging will be accomplished in on dredging contract. Due to the need to maximize drying and consolidation of dredged material at the Hart-Miller Island facility, dredging will be limited to the period of October through March. The plans and specifications allow any type of dredging equipment to perform the work. However, historical dredging of the channel with dredged material placement at Hart-Miller Island has been performed by clamshell dredges due to the following factors: (1) the distance from the channel to Hart-Miller Island is a minimum of 5 miles, (2) access to Hart-Miller is limited to vessels with drafts generally less than 15 feet, (3) the overflow of dredged material(economic loading) from scows and hopper dredges is prohibited, and (4) the material is generally located along the channel edges rather than being distributed across the entire channel width. The cost estimates therefore, are based upon the following historical dredging scenario; (1) Material is dredged by a clamshell dredge which loads the material into scows, (2) tugs push the scows to Hart-Miller Island, and (3) a hydraulic unloader (similar to a hydraulic pipeline dredge), moored at the Island, pumps the material from the scows into Hart-Miller Island.

3. Contingency. Contingency amounts for the construction cost items are based on uncertainties within individual project elements. Considering these uncertainties, contingencies were assigned to individual cost items or groups of related cost items to protect against the risk of potential cost increases.

The following is a list by element of the uncertainties that were identified and the corresponding contingency percentages.

a. Construction, Engineering and Design -- 5%

The uncertainty associated with the remaining engineering and design costs are low. However, design changes could be triggered by a variety of future conditions, including local sponsor requested changes due to unanticipated public pressure, new Federal or Local regulations, and site changes prior to construction. For now a contingency of 5 percent is considered reasonable.

b. Construction Management -- 10%

The uncertainty associated with construction management cost is moderate. Since construction is a future task, and plans and specifications are not completed, changes in the proposed administration of the construction contract may occur. For now, a contingency of 10 percent is considered reasonable.

c. Dredging Cost Items -- 15%

The uncertainty associated with the dredging are moderate. Since construction is a future task, changes for the labor and fuel costs may occur. In addition when the final plans and specifications are completed, changes in the proposed quantities may occur. For now a contingency of 15 percent is reasonable.

Aids to Navigation

Since the proposed channel improvements will be accomplished symmetrically about the existing channel centerline, no new aids to navigation will be required, and U.S. Coast will relocate the floating aides to navigation as part of its routine operation and maintenance activities, there are no cost for aids to navigation.

Brewerton Channel Extension
Baseline Cost Estimate
FY 1995 Price Level
600 Foot Channel

Designed By: U.S. Army Corps of Engineers
Estimated By: Baltimore District

Prepared By: CENAB-EN-C
Oliver Leimbach

Preparation Date: 04/02/97
Effective Date of Pricing: 10/01/94

Sales Tax: 5.00%

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U.S. Army Corps of Engineers
PROJECT BREW95: Brewerton Channel Extension - Baseline Cost Estimate
Baseline Cost Estimate
** PROJECT OWNER SUMMARY - FEATURE **

	QUANTITY UOM	CONTRACT COST	CONTINGE	ESCALATN	TOTAL COST	NOTES
09 Channels and Canals	1.00 EA	9,761,657	1,464,249	1,077,687	12,303,592	
30 Planning, Engineering and Design	1.00 EA	990,000	2,000	3,640	995,640	
31 Construction Management	1.00 EA	413,600	41,600	60,086	515,286	
TOTAL Brewerton Channel Extension	1.00 EA	11,165,257	1,507,849	1,141,413	13,814,519	

	QUANTITY UOM	CONTRACT COST	CONTINGE	ESCALATN	TOTAL COST	NOTES
09 Channels and Canals						
09 01 Channels	1.00 EA	9,761,657	1,464,249	1,077,687	12,303,592	
TOTAL Channels and Canals	1.00 EA	9,761,657	1,464,249	1,077,687	12,303,592	
30 Planning, Engineering and Design						
30 01 FY 94 to FY 97	1.00 EA	952,000	0	0	952,000	
30 02 FY 98	1.00 EA	38,000	2,000	3,640	43,640	
TOTAL Planning, Engineering and Design	1.00 EA	990,000	2,000	3,640	995,640	
31 Construction Management						
31 01 Supervision and Administration	1.00 EA	413,600	41,600	60,086	515,286	
TOTAL Construction Management	1.00 EA	413,600	41,600	60,086	515,286	
TOTAL Brewerton Channel Extension	1.00 EA	11,165,257	1,507,849	1,141,413	13,814,519	

U.S. Army Corps of Engineers
PROJECT BREW95: Brewerton Channel Extension - Baseline Cost Estimate
Baseline Cost Estimate
** PROJECT INDIRECT SUMMARY - FEATURE **

	QUANTITY UOM	TOTAL DIRECT	FIELD OH	HOME OFC	PROFIT	BOND	TOTAL COST
09 Channels and Canals	1.00 EA	9,761,657	0	0	0	0	9,761,657
30 Planning, Engineering and Design	1.00 EA	990,000	0	0	0	0	990,000
31 Construction Management	1.00 EA	413,600	0	0	0	0	413,600
TOTAL Brewerton Channel Extension	1.00 EA	11,165,257	0	0	0	0	11,165,257
Contingency							1,507,849
SUBTOTAL							12,673,106
Escalation							1,141,413
TOTAL INCL OWNER COSTS							13,814,519

	QUANTITY UOM	TOTAL DIRECT	FIELD OH	HOME OFC	PROFIT	BOND	TOTAL COST
09 Channels and Canals							
09 01 Channels	1.00 EA	9,761,657	0	0	0	0	9,761,657
TOTAL Channels and Canals	1.00 EA	9,761,657	0	0	0	0	9,761,657
30 Planning, Engineering and Design							
30 01 FY 94 to FY 97	1.00 EA	952,000	0	0	0	0	952,000
30 02 FY 98	1.00 EA	38,000	0	0	0	0	38,000
TOTAL Planning, Engineering and Design	1.00 EA	990,000	0	0	0	0	990,000
31 Construction Management							
31 01 Supervision and Administration	1.00 EA	413,600	0	0	0	0	413,600
TOTAL Construction Management	1.00 EA	413,600	0	0	0	0	413,600
TOTAL Brewerton Channel Extension	1.00 EA	11,165,257	0	0	0	0	11,165,257
Contingency							1,507,849
SUBTOTAL							12,673,106
Escalation							1,141,413
TOTAL INCL OWNER COSTS							13,814,519

U.S. Army Corps of Engineers
PROJECT BREW95: Brewerton Channel Extension - Baseline Cost Estimate
Baseline Cost Estimate
** PROJECT DIRECT SUMMARY - FEATURE **

	QUANTITY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	QUOTES	TOTAL COST
09 Channels and Canals	1.00	EA	0	0	0	0	9,761,657	9,761,657
30 Planning, Engineering and Design	1.00	EA	0	990,000	0	0	0	990,000
31 Construction Management	1.00	EA	0	413,600	0	0	0	413,600
TOTAL Brewerton Channel Extension	1.00	EA	0	1,403,600	0	0	9,761,657	11,165,257
Contingency								1,507,849
SUBTOTAL								12,673,106
Escalation								1,141,413
TOTAL INCL OWNER COSTS								13,814,519

	QUANTITY UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	QUOTES	TOTAL COST
09 Channels and Canals							
09 01 Channels	1.00 EA	0	0	0	0	9,761,657	9,761,657
TOTAL Channels and Canals	1.00 EA	0	0	0	0	9,761,657	9,761,657
30 Planning, Engineering and Design							
30 01 FY 94 to FY 97	1.00 EA	0	952,000	0	0	0	952,000
30 02 FY 98	1.00 EA	0	38,000	0	0	0	38,000
TOTAL Planning, Engineering and Design	1.00 EA	0	990,000	0	0	0	990,000
31 Construction Management							
31 01 Supervision and Administration	1.00 EA	0	413,600	0	0	0	413,600
TOTAL Construction Management	1.00 EA	0	413,600	0	0	0	413,600
TOTAL Brewerton Channel Extension	1.00 EA	0	1,403,600	0	0	9,761,657	11,165,257
Contingency							1,507,849
SUBTOTAL							12,673,106
Escalation							1,141,413
TOTAL INCL OWNER COSTS							13,814,519

09 01. Channels	QUANTY	UOM	CREW ID	OUTPUT	MANHOUR	LABOR	EQUIPMNT	MATERIAL	QUOTES	TOTAL COST
09. Channels and Canals										
09 01. Channels										
09 01 01. Mob, Demob & Preparatory Work										
The unit cost was developed using the CEDEP. Costs include overhead, profit and bond.										
09 01 01 AA. Mob/Demob										
USR AA < > Mob/Demob Clamshell Dredge	2.00	EA		0.00	0.00 0	0.00 0	0.00 0	0.00 0	375939.50 751,879	375939.50 751,879
USR AA < > Mob/Demob Hydraulic Unloader	1.00	EA		0.00	0.00 0	0.00 0	0.00 0	0.00 0	408322.00 408,322	408322.00 408,322
TOTAL Mob/Demob	1.00	EA			0	0	0	0	1,160,201	1,160,201
TOTAL Mob, Demob & Preparatory Work	1.00	EA			0	0	0	0	1,160,201	1,160,201

09 01. Channels	QUANTY	UOM	CREW ID	OUTPUT	MANHOUR	LABOR	EQUIPMNT	MATERIAL	QUOTES	TOTAL COST
09 01 15. Mechanical Dredging										
The unit costs for dredging were developed using the CEDEP. The unit costs include overhead, profit and bond.										
09 01 15 02. Site Work										
09 01 15 02 01. Dredging 600' Wide Channel										
09 01 15 02 01 AA. Brewerton Channel Eastern Extens										
USR AA < > Mechanical Dredging					0.00	0.00	0.00	0.00	3.38	3.38
Unit cost were developed using the CEDEP.	2257600	CY		0.00	0	0	0	0	7,630,688	7,630,688
TOTAL Brewerton Channel Eastern Extens	2257600	CY			0	0	0	0	7,630,688	7,630,688
TOTAL Dredging 600' Wide Channel	1.00	EA			0	0	0	0	7,630,688	7,630,688
TOTAL Site Work	1.00	EA			0	0	0	0	7,630,688	7,630,688
TOTAL Mechanical Dredging	1.00	EA			0	0	0	0	7,630,688	7,630,688

09 01. Channels	QUANTY	UOM	CREW ID	OUTPUT	MANHOUR	LABOR	EQUIPMNT	MATERIAL	QUOTES	TOTAL COST
09 01 20. Disposal Areas										
09 01 20 02. Site Work										
09 01 20 02 1. Dike Construction										
					0.00	0.00	0.00	0.00	970768.00	970768.00
AA < > Dike Construction. The costs of the dike raising at HMI placement site, is a pro-rated cost based on the additional capacity of the site (30 mcy) and the actual quantity of material to be placed (2.26 mcy).	1.00	EA		0.00	0	0	0	0	970,768	970,768
TOTAL Dike Construction	1.00	EA			0	0	0	0	970,768	970,768
TOTAL Site Work	1.00	EA			0	0	0	0	970,768	970,768
TOTAL Disposal Areas	1.00	EA			0	0	0	0	970,768	970,768
TOTAL Channels	1.00	EA			0	0	0	0	9,761,657	9,761,657
TOTAL Channels and Canals	1.00	EA			0	0	0	0	9,761,657	9,761,657

31 01. Supervision and Administration

	QUANTY	UOM	CREW ID	OUTPUT	MANHOUR	LABOR	EQUIPMNT	MATERIAL	QUOTES	TOTAL COST
31. Construction Management										
31 01. Supervision and Administration										
USR 31 < > Construction Management										
	1.00	EA		0.00	0.00	413600.00	0.00	0.00	0.00	413600.00
					0	413,600	0	0	0	413,600
TOTAL Supervision and Administration	1.00	EA			0	413,600	0	0	0	413,600
TOTAL Construction Management	1.00	EA			0	413,600	0	0	0	413,600
TOTAL Brewerton Channel Extension	1.00	EA			0	1,403,600	0	0	9,761,657	11,165,257