



**State of Louisiana
Department of Natural Resources
Coastal Restoration Division and
Coastal Engineering Division**

**2005 Operations, Maintenance, and
Monitoring Report**

for

Clear Marais Shoreline Protection

State Project Number CS-22
Priority Project List 2

June 2005
Calcasieu Parish

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Operations, Maintenance, and Monitoring Report
for
Clear Marais Shoreline Protection (CS-22)

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Preface

The Operations, Maintenance, and Monitoring (OM&M) Report format is a streamlined approach which combines the Operations and Maintenance annual project inspection information with the Monitoring data and analyses on a project-specific basis. This report includes monitoring data collected through December 2004, and annual Maintenance Inspections through June 2005.

The 2005 report is the second in a series of reports. For additional information on lessons learned, recommendations, and project effectiveness, please refer to the 2004 Operations, Maintenance, and Monitoring Report on the Louisiana Department of Natural Resources (LDNR) web site at dnr.louisiana.gov (Miller and Guidry 2007).



I. Introduction

The Clear Marais shoreline protection project area is located along the north bank of the Gulf Intracoastal Waterway (GIWW) in Calcasieu Parish between the Alkali Ditch and Goose Lake (figure 1). The project provides features to protect 3,827 ac (1,531 ha) of freshwater marsh that are threatened by saltwater intrusion and marsh loss from breaches in the GIWW shoreline. Of the 3,827 ac of fresh marsh, 1,179 ac (472 ha) are vegetated marsh and 2,648 ac (1,059 ha) are open water, with the dominant marsh plant species including *Sagittaria lancifolia* (bulltongue), *Schoenoplectus californicus* (bullwhip), and *Juncus effusus* (soft rush).

The construction of the GIWW, which was deepened to its present depth of 12 ft (3.7 m) between 1942 and 1949, provided an avenue for high-action wave energy. This wave energy is increased during high-river stages in the Calcasieu-Sabine basin (USDA 1993). The marshes located adjacent to the GIWW are protected from rapid fluctuations of water salinity and water level by a water management levee. However, increased tidal action and boat wakes threaten to create breaches in the levee that would connect the GIWW with interior ponds and marshes. The shoreline erosion rate of the north bank of the GIWW adjacent to the freshwater wetlands is 10 ft/yr (3.05 m/yr), based on aerial photography (USDA 1992). Additionally, the present rate of wetland loss in the project area is 1.1%/yr (USDA 1992). The susceptibility to saltwater damage and the erosional forces of the GIWW threaten the integrity of the remaining acres of the vegetated freshwater marsh.

The project design includes a 35,000 ft (10,668 m) rock dike along the north shore of the GIWW to protect the integrity of the Clear Marais freshwater wetlands north of the GIWW. Construction on the project was completed on March 4, 1997.





Figure 1. Clear Marais Shoreline Protection (CS-22) project boundary and features.

II. Maintenance Activity

a. Project Feature Inspection Procedures

The purpose of the annual inspection of the Clear Marais Shoreline Protection Project (CS-22) is to evaluate the constructed project features to identify any deficiencies and prepare a report detailing the condition of project features and recommended corrective actions needed. Should it be determined that corrective actions are needed, LDNR shall provide, in the report, a detailed cost estimate for engineering, design, supervision, inspection, and construction contingencies, and an assessment of the urgency of such repairs. The annual inspection report also contains a summary of maintenance projects, if any, which were completed since completion of constructed project features and an estimated projected budget for the upcoming three (3) years for operation, maintenance and rehabilitation. Photographs from the annual inspection are presented in Appendix A. The 3-year projected operation and maintenance budget is shown in Appendix B.

An inspection of the Clear Marais Shoreline Protection Project (CS-22) was held on November 10, 2004, under cloudy skies. The temperature was approximately 60 degrees. In attendance were Stan Aucoin, Dewey Billodeau, and Pat Landry from LDNR; and Lourdes Gonzalez of the U. S. Army Corps of Engineers. Parties left the Lafayette Field Office of the LDNR Coastal Engineering Division (CED), and proceeded to the CS-22 project area. The boat was launched at the park at the foot of the Ellender Bridge over the GIWW. The annual inspection began at approximately 12:50 pm at the eastern end of the rock dike at its intersection with Alkali Ditch.

The field inspection included a complete visual inspection of all features. No staff gauge readings were available to determine approximate elevations of water, or rock dikes. Parties agreed on an estimated water level of approximately +1.5 ft NAVD 88. Photographs were taken at each project feature (see Appendix A), and Field Inspection notes were completed in the field to record measurements and deficiencies (see Appendix C).

b. Inspection Results

Site 1—Foreshore Rock Dike:

The dike is in good condition. Approximately 4,000 to 5,000 linear feet (1,219–,1524 m) of dike is below construction elevation. This appears to be the result of slight settlement rather than displacement. Several of the settlement plates placed during construction are broken/leaning/damaged, etc., and are no longer useful. One section of dike, approximately 0.5 mile (0.8 km) from the Alkali Ditch, has apparently been removed by hunters and or fishermen. This section is only about 4 ft (1.2 m) wide with rock removed to an approximate +0.5 ft NAVD 88 elevation. Three random stops were made along the dike. At these three locations, the dike appears to be stable with no signs of toe-scour. There is no apparent need for any maintenance at this time. The original O&M budget called for capping 25% of the dike in year 10. While this is accounted for in the attached 3-year budget as part of this inspection, in all probability, this maintenance event will not be necessary. (Photos: Appendix A, Photos 1-4.)



c. Maintenance Recommendations

i. Immediate/ Emergency Repairs

None

ii. Programmatic/ Routine Repairs

None

d. Maintenance History

There has been no required maintenance on this project.

III. Operation Activity

a. Operation Plan

There are no water control structures associated with this project, therefore no Structural Operation Plan is required.

b. Actual Operations

There are no water control structures associated with this project, therefore there are no required structural operations.



IV. Monitoring Activity

Pursuant to a Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) Task Force decision on August 14, 2003, to adopt the Coastwide Reference Monitoring System-*Wetlands* (CRMS-*Wetlands*) for CWPPRA, updates were made to the CS-22 Monitoring Plan to merge it with CRMS-*Wetlands* and provide more useful information for modeling efforts and future project planning while maintaining the monitoring mandates of the Breaux Act.

a. Project Objectives and Goals:

The objective of the Clear Marais Shoreline Protection Project (CS-22) is to maintain and protect approximately 35,000 linear ft (10,668 m) of management levee along the north bank of the GIWW that will contribute to protecting the integrity of the freshwater marshes of Clear Marais adjacent to the GIWW.

The following goal will contribute to the evaluation of the above objective:

1. Decrease the rate of shoreline erosion along the north bank of the GIWW south of the Clear Marais marshes through the use of a rock breakwater.

b. Monitoring Elements

The following monitoring elements will provide the information necessary to evaluate the specific goal listed above:

Aerial Photography:

To document land and water acreage and land loss rates in project and reference area, near-vertical color infrared aerial photography (1:12,000 scale) was obtained pre-construction in 1994. The original photography was checked for flight accuracy, color correctness, and clarity, and was subsequently archived. Aerial photography was scanned, mosaicked, and georectified by U.S. Geological Survey, National Wetlands Research Center (USGS/NWRC) personnel according to standard operating procedures (Steyer et al. 1995, revised 2000). No additional land-water photography will be collected.

Shoreline Change:

To document shoreline movement, 35 shoreline markers were placed at points along the vegetated marsh edge adjacent to the rock breakwater at a maximum interval of 1,000 ft (305 m). Five shoreline markers were placed at the same 1,000-ft intervals 1 mi (1.6 km) west of the proposed breakwater in the reference area. The position of the shoreline relative to the shoreline markers was documented in 1997, 2000, and 2003. Future shoreline surveys will be documented in 2006, 2010, and 2015 by direct measurement. A GPS coordinate was obtained for each shoreline marker placed to maintain baseline condition over time. The shoreline was stratified into three different groups: Group A had mild erosion and was located east of Brannon Ditch to the Alkali Ditch, group B had moderate erosion and was located from the Brannon Ditch to the



IV. Monitoring Activity (continued)

end of the management levee, and group C, which had severe erosion, from the end of the management levee to directly adjacent to the Clear Marais wetlands. Determinations of land types were made through evaluation of aerial photography.

c. Preliminary Monitoring Results and Discussion

Aerial Photography:

The 1994 land/water analysis indicated that the project area had a ratio of 32.4% land to 67.6% water. The reference area had a ratio of 74.0% land to 26.0% water (figures 2 and 3).

Shoreline Change:

Data were collected in May 1997 (as-built), May 2000, and May 2003. The data indicate that after 6 years, the project has been effective in preventing erosion within each group (figures 4 and 5). Group A, which was experiencing mild erosion prior to construction, gained 1.89 ft/yr (0.57 m/yr) (table 1). Group B, which was experiencing moderate erosion, gained 3.02 ft/yr (.92 m/yr). Group C, which was experiencing severe erosion, gained 17.00 ft/yr (5.18 m/yr). Overall, the project area gained an average of 7.66 ft/yr (2.33 m/yr), as compared to the reference area, which is losing 9.10 ft/yr (2.77 m/yr).



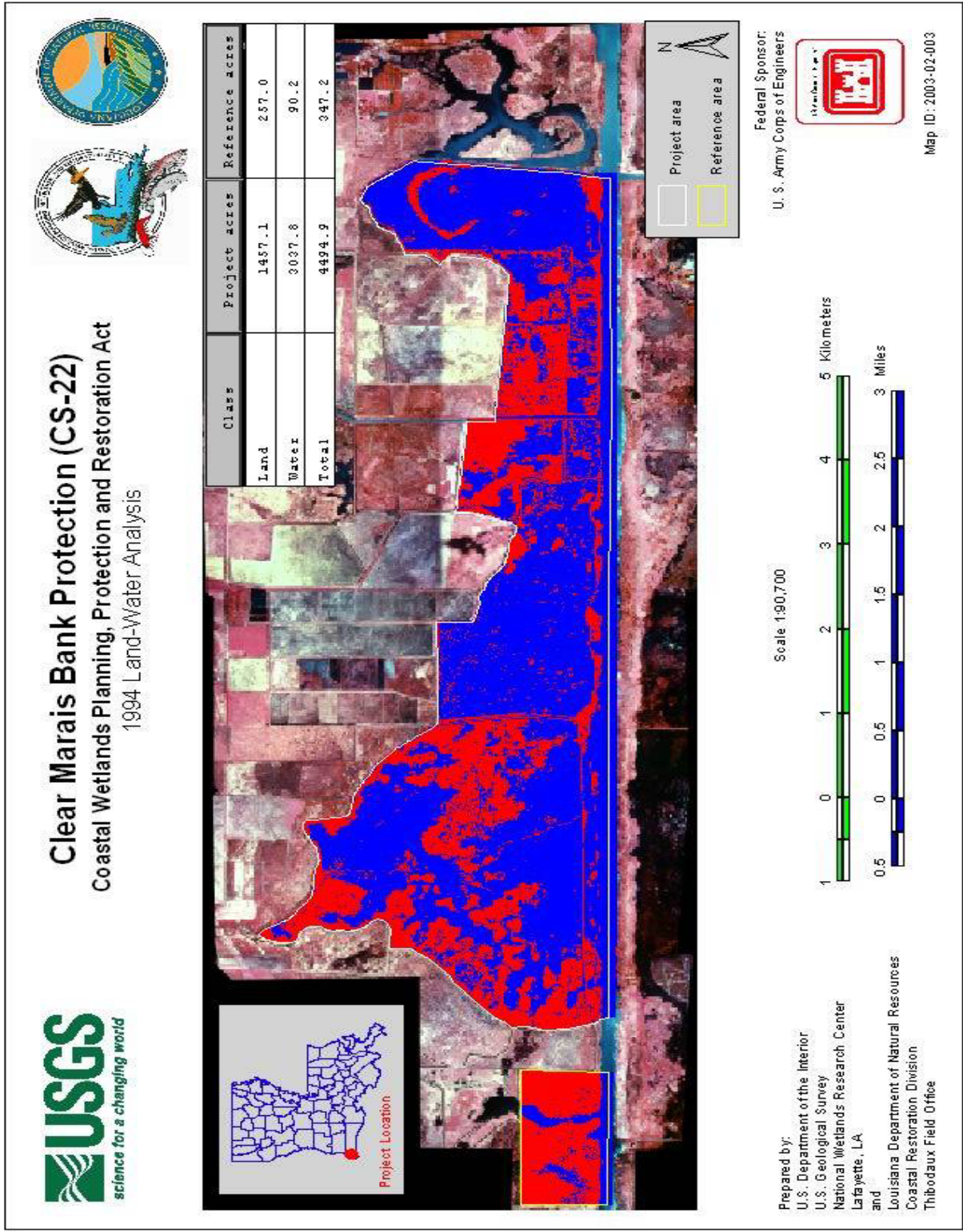


Figure 2. Land/water analysis of the Clear Marais Shoreline Protection (CS-22) project and reference areas from aerial photography taken on November 7, 1994.

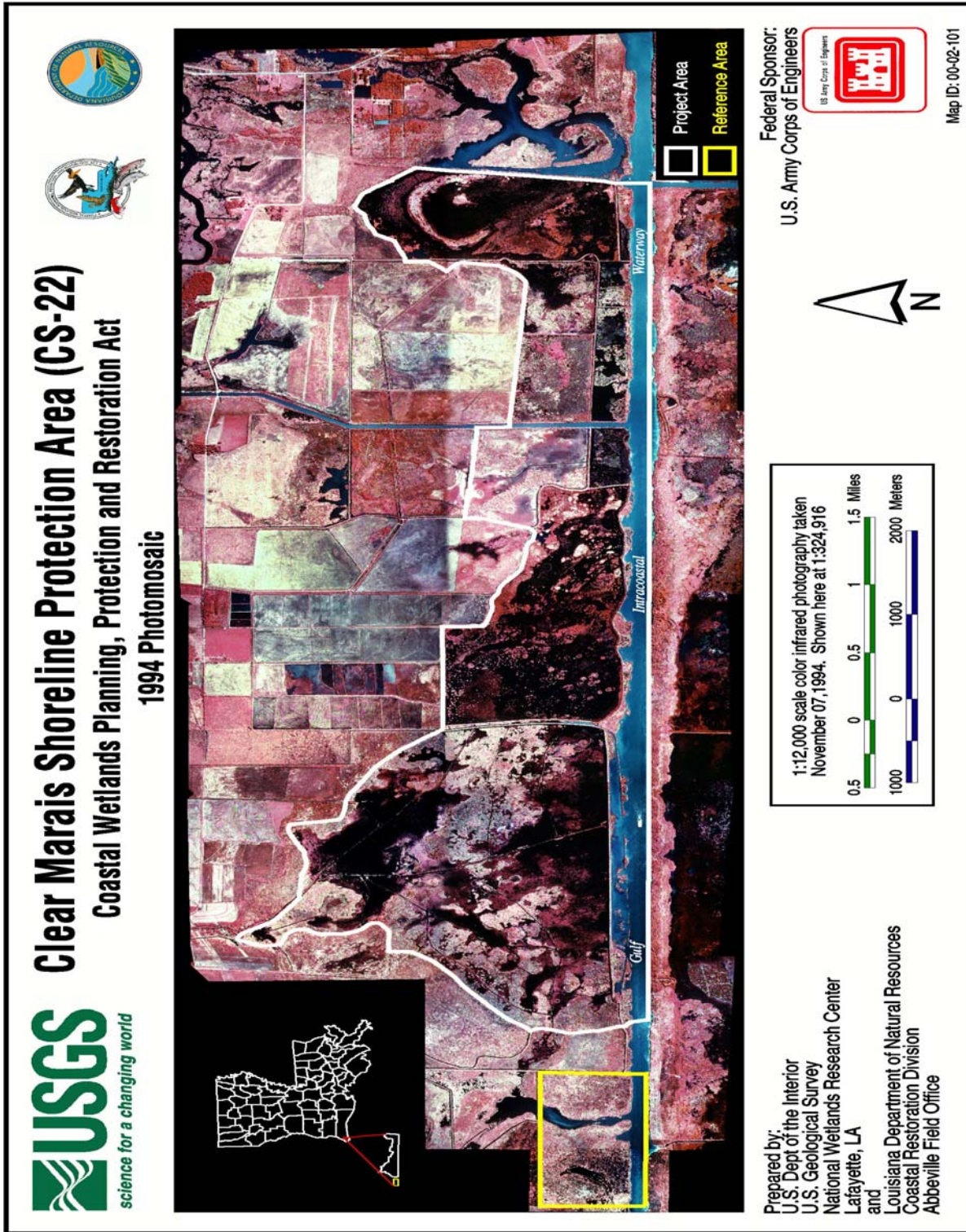


Figure 3. Photo-mosaic of the Clear Marais Shoreline Protection (CS-22) project and reference areas from aerial photography taken on November 7, 1994.

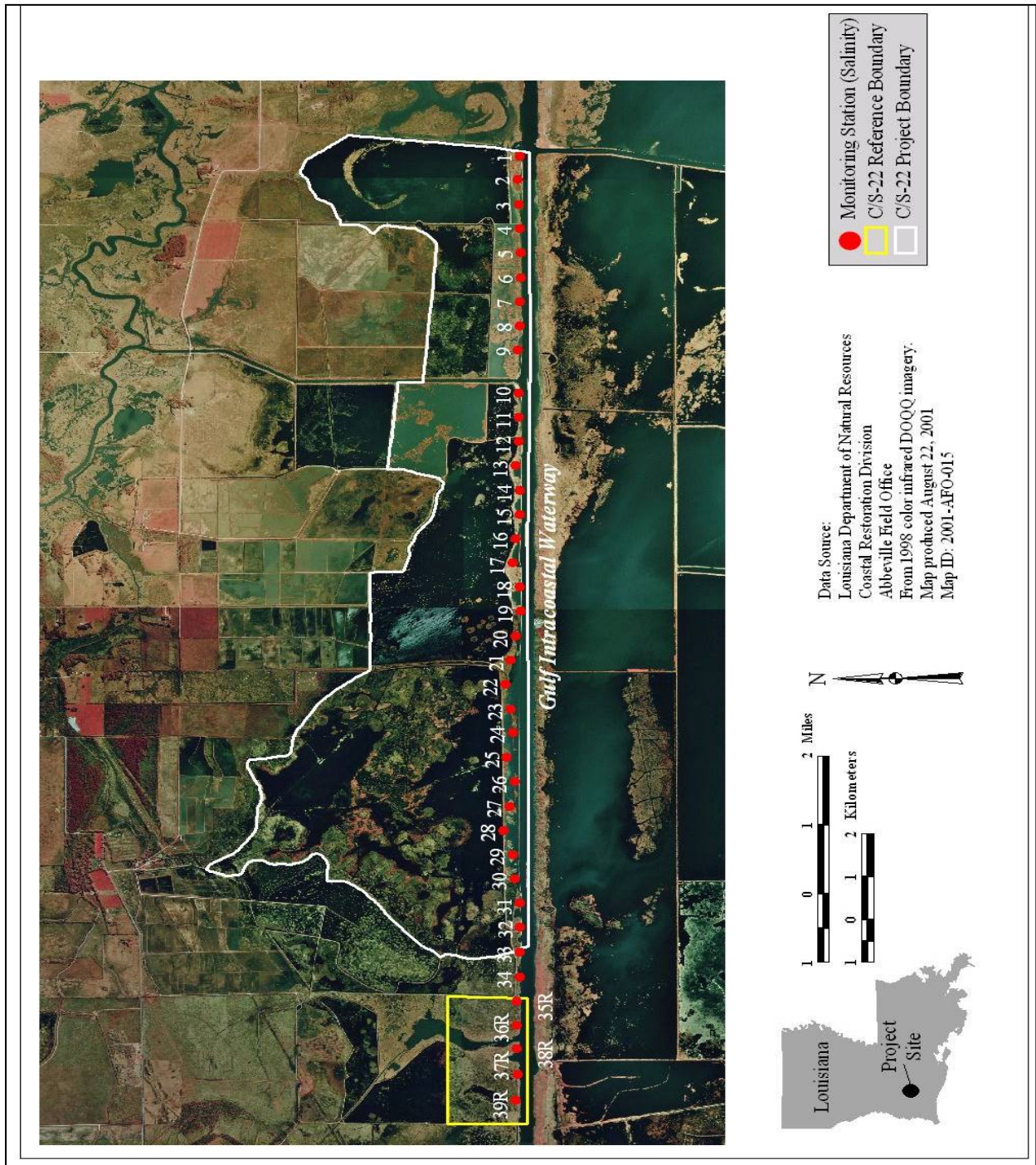


Figure 4. Project map showing the location of shoreline marker stations within the project (N=34) and reference (N=5) areas.

Table 1. 1997, 2000, and 2003 measurements in feet and meters from the survey hub to the vegetated edge of the bank within project and reference areas.

Station	Group	1997	1997	2000	2000	2003	2003	Total	Total
		Distance (ft)	Distance (m)	Distance (ft)	Distance (m)	Distance (ft)	Distance (m)	Shoreline Change (ft)	Shoreline Change (m)
CS22-01	A	53.99	16.46	55.76	17.00	5.90	1.80	-48.09	-14.66
CS22-02	A	38.99	11.89	127.92	39.00	104.77	31.94	65.78	20.06
CS22-03	A	93.98	28.65	137.76	42.00	90.68	27.65	-3.30	-1.01
CS22-04	A	60.98	18.59	59.04	18.00	50.09	15.27	-10.90	-3.32
CS22-05	A	25.99	7.92	6.56	2.00	6.80	2.07	-19.20	-5.85
CS22-06	A	25.99	7.92	26.24	8.00	6.50	1.98	-19.50	-5.94
CS22-07	A	49.99	15.24	52.48	16.00	6.60	2.01	-43.39	-13.23
CS22-08	A	49.99	15.24	42.64	13.00	28.99	8.84	-20.99	-6.40
CS22-09	A	98.97	30.18	100.36	30.60	95.88	29.23	-3.10	-0.94
CS22-10	B	29.99	9.14	22.96	7.00	23.09	7.04	-6.90	-2.10
CS22-11	B	92.98	28.35	88.56	27.00	86.48	26.37	-6.50	-1.98
CS22-12	B	95.98	29.26	75.44	23.00	13.80	4.21	-82.18	-25.05
CS22-13	B	159.96	48.77	160.72	49.00	159.56	48.65	-0.40	-0.12
CS22-14	B	42.99	13.11	39.36	12.00	31.49	9.60	-11.50	-3.51
CS22-15	B	22.99	7.01	13.12	4.00	10.40	3.17	-12.60	-3.84
CS22-16	B	127.97	39.01	131.20	40.00	113.17	34.50	-14.80	-4.51
CS22-17	B	205.95	62.79	203.36	62.00	188.55	57.49	-17.40	-5.30
CS22-18	B	53.99	16.46	52.48	16.00	52.69	16.06	-1.30	-0.40
CS22-19	B	23.99	7.32	16.40	5.00	6.10	1.86	-17.90	-5.46
CS22-20	B	151.96	46.33	154.16	47.00	139.26	42.46	-12.70	-3.87
CS22-21	B	272.93	83.21	272.24	83.00	276.93	84.43	4.00	1.22
CS22-22	B	445.89	135.94	N/A	N/A	388.40	118.41	-57.49	-17.53
CS22-23	C	532.86	162.46	429.16	130.84	409.50	124.85	-123.37	-37.61
CS22-24	C	554.86	169.16	462.48	141.00	115.37	35.17	-439.49	-133.99
CS22-25	C	389.90	118.87	328.00	100.00	307.92	93.88	-81.98	-24.99
CS22-26	C	47.99	14.63	145.52	44.37	135.27	41.24	87.28	26.61
CS22-27	C	502.87	153.31	256.62	78.24	252.64	77.02	-250.24	-76.29
CS22-28	C	498.87	152.10	463.47	141.30	318.92	97.23	-179.95	-54.86
CS22-29	C	179.95	54.86	137.51	41.93	113.17	34.50	-66.78	-20.36
CS22-30	C	396.90	121.01	383.48	116.92	253.34	77.24	-143.56	-43.77
CS22-31	C	26.99	8.23	10.22	3.12	6.20	1.89	-20.79	-6.34
CS22-32	C	37.99	11.58	44.19	13.47	37.09	11.31	-0.90	-0.27
CS22-33	C	30.99	9.45	28.27	8.62	21.19	6.46	-9.80	-2.99
CS22-34	C	11.00	3.35	9.74	2.97	6.60	2.01	-4.40	-1.34
CS22-35R	R	0.00	0.00	-33.80	-10.31	-91.97	-28.04	-91.97	-28.04
CS22-36R	R	0.00	0.00	-44.32	-13.51	-102.76	-31.33	-102.76	-31.33
CS22-37R	R	0.00	0.00	-111.34	-33.95	-89.87	-27.40	-89.87	-27.40
CS22-38R	R	0.00	0.00	-28.86	-8.80	-27.49	-8.38	-27.49	-8.38
CS22-39R	R	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A

**CS-22 Clear Marais
Shoreline Position Change 1997-2003**

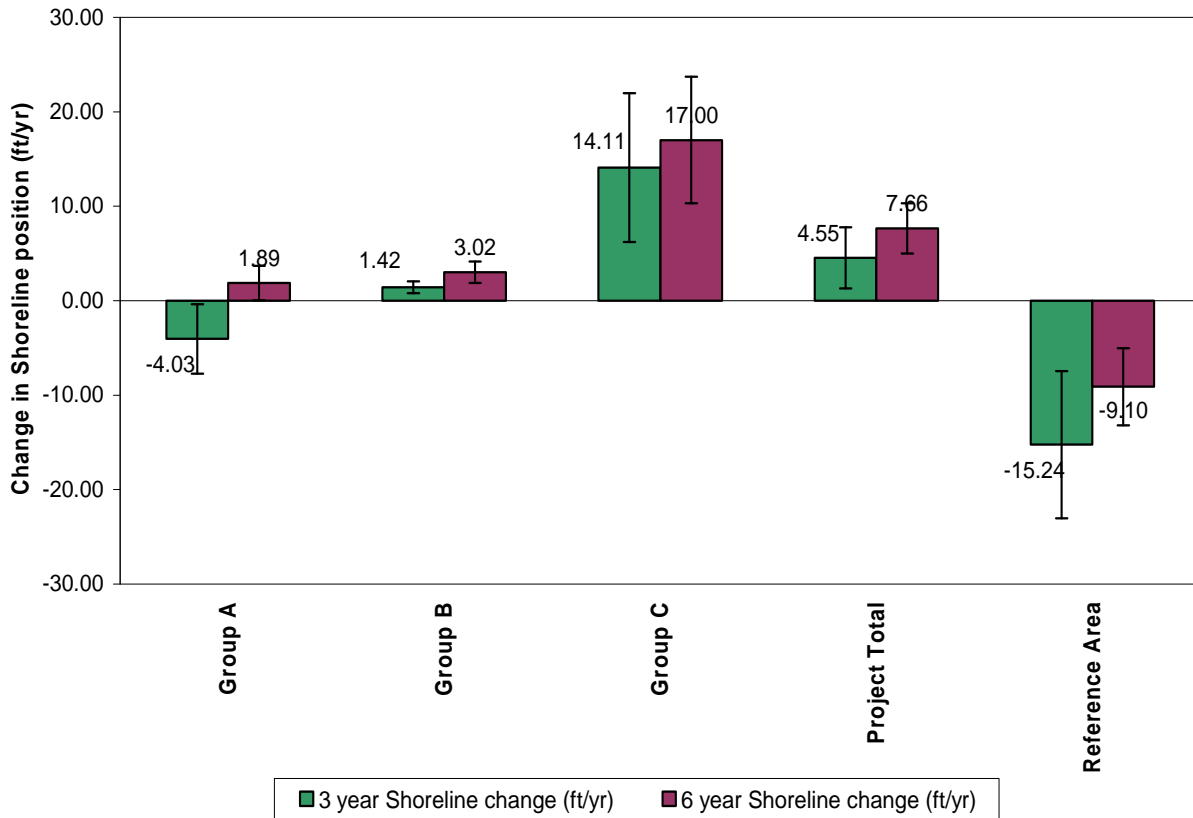


Figure 5. CS-22 Shoreline position change within each group, project, and reference area, 1997-2003. 1997–2000 represents the 3-year shoreline change (ft/yr), and 1997–2003 represents the 6-year shoreline (ft/yr) change.



V. Conclusions

a. Project Effectiveness

The data indicate that the project has been effective thus far in preventing shoreline erosion within each sampling group. No additional data were collected in 2004. The next data collection event is scheduled for 2006.

b. Recommended Improvements

Establish LDNR Louisiana Coastal Zone secondary monument.

c. Lessons Learned

Due to the minimal settlement occurring at this project, the use of geotextile fabric may not be necessary in areas with similar soil types. Other projects in similar soils should be investigated to determine if geotextile is necessary.

There may not be a necessity to monitor land/water ratios if maintaining a certain ratio is not a project goal or objective.

Information is being collected through a cooperative effort between the monitoring program and the maintenance program to document accretion behind the dike. This project benefit is not captured in the project goals or objectives, but is believed to be worthy of documentation. Both the monitoring and maintenance programs are contributing to surveys so that efforts are not duplicated.



VI. REFERENCES

- Miller, M. and M. Guidry 2007. 2004 Operations, maintenance and monitoring report for Clear Marais shoreline protection project (CS-22). Louisiana Department of Natural Resources, Coastal Restoration Division, Lafayette.
- Steyer, G. D., R. C. Raynie, D. L. Steller, D. Fuller, and E. Swenson. 1995, revised 2000. Quality management plan for Coastal Wetlands Planning, Protection, and Restoration Act monitoring program. Open-file series no. 95-01 (Revised June 2000). Baton Rouge: Louisiana Department of Natural Resources, Coastal Restoration Division. 97pp.
- U.S. Department of Agriculture (USDA) 1993. Calcasieu-Sabine River Basin study report. Alexandria, LA: Soil Conservation Service. 152 pp.
- U.S. Department of Agriculture (USDA) 1994. Perry Ridge shoreline protection (CS-24), wetland value assessment, Alexandria, LA.: Soil Conservation Service. 5 pp.
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Appendix A

13



(Inspection Photographs)



Photo 1—East tie-in at Alkali Ditch



Photo 2—Typical section of dike including damaged settlement plate



Photo 3—West tie-in



Photo 4—Area apparently damaged by hunters/fishermen

Appendix B

15



(Three-Year Budget Projection)

CLEAR MARAIS SP / CS22 / PPL2

Three-Year Operations & Maintenance Budgets 07/01/2005 - 06/30/08

<u>Project Manager</u>	<u>O & M Manager</u>	<u>Federal Sponsor</u>	<u>Prepared By</u>
		COE	
	2005/2006	2006/2007	2007/2008
Maintenance Inspection	\$ 4,955.00	\$ 5,119.00	\$ 5,288.00
Structure Operation	\$ -	\$ -	\$ -
Administration	\$ 2,000.00	\$ -	\$ -

Maintenance/Rehabilitation

05/06 Description: Staff Gage Installation

<i>E&D</i>	\$ 20,000.00
<i>Construction</i>	\$ -
<i>Construction Oversight</i>	\$ -
<i>Sub Total - Maint. And Rehab.</i>	<u>\$ 20,000.00</u>

06/07 Description

<i>E&D</i>	\$ -
<i>Construction</i>	\$ -
<i>Construction Oversight</i>	\$ -
<i>Sub Total - Maint. And Rehab.</i>	<u>\$ -</u>

07/08 Description:

<i>E&D</i>	\$ -
<i>Construction</i>	\$ -
<i>Construction Oversight</i>	\$ -
<i>Sub Total - Maint. And Rehab.</i>	<u>\$ -</u>

	2005/2006	2006/2007	2007/2008
<u>Total O&M Budgets</u>	\$ 26,955.00	\$ 5,119.00	\$ 5,288.00



OPERATION AND MAINTENANCE BUDGET 07/01/2005-06/30/2006
CLEAR MARAIS/CS-22/PPL2

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	1	\$4,955.00	\$4,955.00
General Structure Maintenance	LUMP	1	\$0.00	\$0.00
Engineering and Design	LUMP	1	\$0.00	\$0.00
Operations Contract	LUMP	1	\$0.00	\$0.00
Construction Oversight	LUMP	1	\$0.00	\$0.00

ADMINISTRATION

LDNR / CRD Admin.	LUMP	0	\$0.00	\$0.00
FEDERAL SPONSER Admin.	LUMP	0	\$0.00	\$0.00
SURVEY Admin.	LUMP	1	\$2,000.00	\$2,000.00
OTHER				\$0.00
TOTAL ADMINISTRATION COSTS:				\$2,000.00

MAINTENANCE / CONSTRUCTION

SURVEY

SURVEY DESCRIPTION:	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
	Secondary Monument	EACH	0	\$0.00	\$0.00
	Staff Gauge / Recorders	EACH	1	\$20,000.00	\$20,000.00
	Marsh Elevation / Topography	LUMP	0	\$0.00	\$0.00
	TBM Installation	EACH	0	\$0.00	\$0.00
	OTHER				\$0.00
TOTAL SURVEY COSTS:					\$20,000.00

GEOTECHNICAL

GEOTECH DESCRIPTION:	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
	Borings	EACH	0	\$0.00	\$0.00
	OTHER				\$0.00
TOTAL GEOTECHNICAL COSTS:					\$0.00

CONSTRUCTION

CONSTRUCTION DESCRIPTION:	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
	Rip Rap	LIN FT	0	\$0.00	\$0.00
		TON / FT	0.0	\$0.00	\$0.00
		TONS	0	\$0.00	\$0.00
			0	\$0.00	\$0.00
	Filter Cloth / Geogrid Fabric	SQ YD	0	\$0.00	\$0.00
	Navigation Aid	EACH	0	\$0.00	\$0.00
	Signage	EACH	0	\$0.00	\$0.00
	General Excavation / Fill	CU YD	0	\$0.00	\$0.00
	Dredging	CU YD	0	\$0.00	\$0.00
	Sheet Piles (Lin Ft or Sq Yds)		0	\$0.00	\$0.00
	Timber Piles (each or lump sum)		0	\$0.00	\$0.00
	Timber Members (each or lump sum)		0	\$0.00	\$0.00
	Hardware	LUMP	1	\$0.00	\$0.00
	Materials	LUMP	1	\$0.00	\$0.00
	Mob / Demob	LUMP	1	\$0.00	\$0.00
	Contingency	LUMP	1	\$0.00	\$0.00
	General Structure Maintenance	LUMP	1	\$0.00	\$0.00
	OTHER			\$0.00	\$0.00
	OTHER			\$0.00	\$0.00
	OTHER			\$0.00	\$0.00
TOTAL CONSTRUCTION COSTS:					\$0.00

TOTAL OPERATIONS AND MAINTENANCE BUDGET: \$26,955.00



OPERATION AND MAINTENANCE BUDGET 07/01/2006-06/30/2007
CLEAR MARAIS/CS-22/PPL2

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	1	\$5,119.00	\$5,119.00
General Structure Maintenance	LUMP	1	\$0.00	\$0.00
Engineering and Design	LUMP	1	\$0.00	\$0.00
Operations Contract	LUMP	1	\$0.00	\$0.00
Construction Oversight	LUMP	1	\$0.00	\$0.00

ADMINISTRATION

LDNR / CRD Admin.	LUMP	0	\$0.00	\$0.00
FEDERAL SPONSER Admin.	LUMP	0	\$0.00	\$0.00
SURVEY Admin.	LUMP	0	\$0.00	\$0.00
OTHER				\$0.00
TOTAL ADMINISTRATION COSTS:				\$0.00

MAINTENANCE / CONSTRUCTION

SURVEY

SURVEY DESCRIPTION:	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
	Secondary Monument	EACH	0	\$0.00	\$0.00
	Staff Gauge / Recorders	EACH	0	\$0.00	\$0.00
	Marsh Elevation / Topography	LUMP	0	\$0.00	\$0.00
	TBM Installation	EACH	0	\$0.00	\$0.00
	OTHER				\$0.00
TOTAL SURVEY COSTS:				\$0.00	

GEOTECHNICAL

GEOTECH DESCRIPTION:	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
	Borings	EACH	0	\$0.00	\$0.00
	OTHER				\$0.00
TOTAL GEOTECHNICAL COSTS:				\$0.00	

CONSTRUCTION

CONSTRUCTION DESCRIPTION:	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
	Rip Rap	LIN FT	0	\$0.00	\$0.00
		TON / FT	0	\$0.00	\$0.00
		TONS	0	\$0.00	\$0.00
			0	\$0.00	\$0.00
	Filter Cloth / Geogrid Fabric	SQ YD	0	\$0.00	\$0.00
	Navigation Aid	EACH	0	\$0.00	\$0.00
	Signage	EACH	0	\$0.00	\$0.00
	General Excavation / Fill	CU YD	0	\$0.00	\$0.00
	Dredging	CU YD	0	\$0.00	\$0.00
	Sheet Piles (Lin Ft or Sq Yds)		0	\$0.00	\$0.00
	Timber Piles (each or lump sum)		0	\$0.00	\$0.00
	Timber Members (each or lump sum)		0	\$0.00	\$0.00
	Hardware	LUMP	1	\$0.00	\$0.00
	Materials	LUMP	1	\$0.00	\$0.00
	Mob / Demob	LUMP	1	\$0.00	\$0.00
	Contingency	LUMP	1	\$0.00	\$0.00
	General Structure Maintenance	LUMP	1	\$0.00	\$0.00
	OTHER			\$0.00	\$0.00
	OTHER			\$0.00	\$0.00
	OTHER			\$0.00	\$0.00
TOTAL CONSTRUCTION COSTS:				\$0.00	

TOTAL OPERATIONS AND MAINTENANCE BUDGET: **\$5,119.00**



OPERATION AND MAINTENANCE BUDGET 07/01/2007-06/30/2008
CLEAR MARAIS/CS-22/PPL2

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	1	\$5,288.00	\$5,288.00
General Structure Maintenance	LUMP	1	\$0.00	\$0.00
Engineering and Design	LUMP	1	\$0.00	\$0.00
Operations Contract	LUMP	1	\$0.00	\$0.00
Construction Oversight	LUMP	1	\$0.00	\$0.00

ADMINISTRATION

LDNR / CRD Admin.	LUMP	1	\$0.00	\$0.00
FEDERAL SPONSER Admin.	LUMP	1	\$0.00	\$0.00
SURVEY Admin.	LUMP	1	\$0.00	\$0.00
OTHER				\$0.00
TOTAL ADMINISTRATION COSTS:				\$0.00

MAINTENANCE / CONSTRUCTION

SURVEY

SURVEY DESCRIPTION:	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
	Secondary Monument	EACH	0	\$0.00	\$0.00
	Staff Gauge / Recorders	EACH	0	\$0.00	\$0.00
	Marsh Elevation / Topography	LUMP	0	\$0.00	\$0.00
	TBM Installation	EACH	0	\$0.00	\$0.00
	OTHER				\$0.00
TOTAL SURVEY COSTS:					\$0.00

GEOTECHNICAL

GEOTECH DESCRIPTION:	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
	Borings	EACH	0	\$0.00	\$0.00
	OTHER				\$0.00
TOTAL GEOTECHNICAL COSTS:					\$0.00

CONSTRUCTION

CONSTRUCTION DESCRIPTION:	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
	Rip Rap	LIN FT	0	\$0.00	\$0.00
		TON / FT	0.0	\$0.00	\$0.00
		TONS	0	\$0.00	\$0.00
			0	\$0.00	\$0.00
	Filter Cloth / Geogrid Fabric	SQ YD	0	\$0.00	\$0.00
	Navigation Aid	EACH	0	\$0.00	\$0.00
	Signage	EACH	0	\$0.00	\$0.00
	General Excavation / Fill	CU YD	0	\$0.00	\$0.00
	Dredging	CU YD	0	\$0.00	\$0.00
	Sheet Piles (Lin Ft or Sq Yds)		0	\$0.00	\$0.00
	Timber Piles (each or lump sum)		0	\$0.00	\$0.00
	Timber Members (each or lump sum)		0	\$0.00	\$0.00
	Hardware	LUMP	1	\$0.00	\$0.00
	Materials	LUMP	1	\$0.00	\$0.00
	Mob / Demob	LUMP	1	\$0.00	\$0.00
	Contingency	LUMP	1	\$0.00	\$0.00
	General Structure Maintenance	LUMP	1	\$0.00	\$0.00
	OTHER			\$0.00	\$0.00
	OTHER			\$0.00	\$0.00
	OTHER			\$0.00	\$0.00
TOTAL CONSTRUCTION COSTS:					\$0.00

TOTAL OPERATIONS AND MAINTENANCE BUDGET: **\$5,288.00**



Appendix C (Field Inspection Notes)

FIELD INSPECTION CHECK SHEET

Project No. / Name: CS-22 Clear Marais Shore Protection

Date of Inspection: 10-Nov-04 Time: 12:50 p.m.

Structure No. _____

Inspector(s): Stan Aucoin, Pat Landry, Dewey Billodeau, Lourdes Gonzales

Structure Description: Foreshore rock dike

Water Level: Inside: _____ Outside: _____

Type of Inspection: Annual

Weather Conditions: Partly Cloudy

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps					
Steel Grating					
Stop Logs					
Hardware					
Timber Piles					
Timber Wales					
Galv. Pile Caps					
Cables					
Signage/Support	Good				
Rip Rap(fill)	Excellent				
Earthen Embankment					
Foreshore Dike					like is below construction elevation due to settlement. Some settlement plates are leaning

What are the conditions of the existing levees?
 Are there any noticable breaches?
 Settlement of rock plugs and rock weirs?
 Position of stoplogs at the time of the inspection?
 Are there any signs of vandalism?

