CAMERON PRAIRIE REFUGE PROTECTION (ME-09)

I. INTRODUCTION

I.1. Project Description

Despite being classified as a shoreline protection project, it is clear that project success was actually assumed to depend on keeping the interior of the project area hydraulically isolated from the GIWW (see CWPPRA 1993, DNR 1997, and DNR 1998). See Section II (Planning) below for details.

The project description in the CWPPRA Plan (CWPPRA 1993) indicated that the project would armor 6,000 ft (1,829 m) of shoreline but 13,200 ft (4,023 m) of shoreline were armored according to the first Comprehensive Monitoring Report (DNR 1997). The length was increased to tie into pre-existing riprap shoreline protection to the west east but the increase was not essential because other shoreline protection projects have tied into existing shoreline (e.g. see Cote Blanch Hydrologic Restoration). The justification for increasing the length of shoreline protection 220%, and hence the cost, was not indicated. This was already one of the most costly, least beneficial projects on the first priority list (see appendix 1). It is not clear if such an increase in length would be approved if the project were being planned today because the cost increase is unknown and because there is conflicting guidance regarding the need for Federal Sponsors to request Task Force approval to proceed under such circumstances. See sections 5. d. (1) and 6. e. (2) of CWPPRA (2002) for conflicting guidance on project modifications. Despite more than doubling the shoreline protected and increasing the cost, the anticipated wetland loss prevented by the project remained at 247 ac from CWPPRA (1993) through the 2nd Comprehensive Monitoring Report (Barrilleaux and Clark 2002).

The next four paragraphs were copied from monitoring documents. The first two paragraphs were copied from the CWPPRA Monitoring Plan that was revised in 1998 (here-in-after referred to as DNR 1998). The last two paragraphs were copied from the first Comprehensive Monitoring report (DNR 1997). Note that the monitoring plan is younger than the first Comprehensive Monitoring Report because of a revision to the monitoring plan.

The Cameron Prairie Refuge project includes a 247 ac (100 ha) area located within 1,600 ac (648 ha) of wetlands in the Cameron Prairie National Wildlife Refuge, approximately 25 mi (40 km) southeast of Lake Charles in north central Cameron Parish (figure 1). The project area borders the north bank of the Gulf Intracoastal Waterway (GIWW). Since the construction of the GIWW (between 1935 and 1940) wave erosion on the north bank of the channel has accelerated significantly due to increased utilization by navigational vessels. This energy has

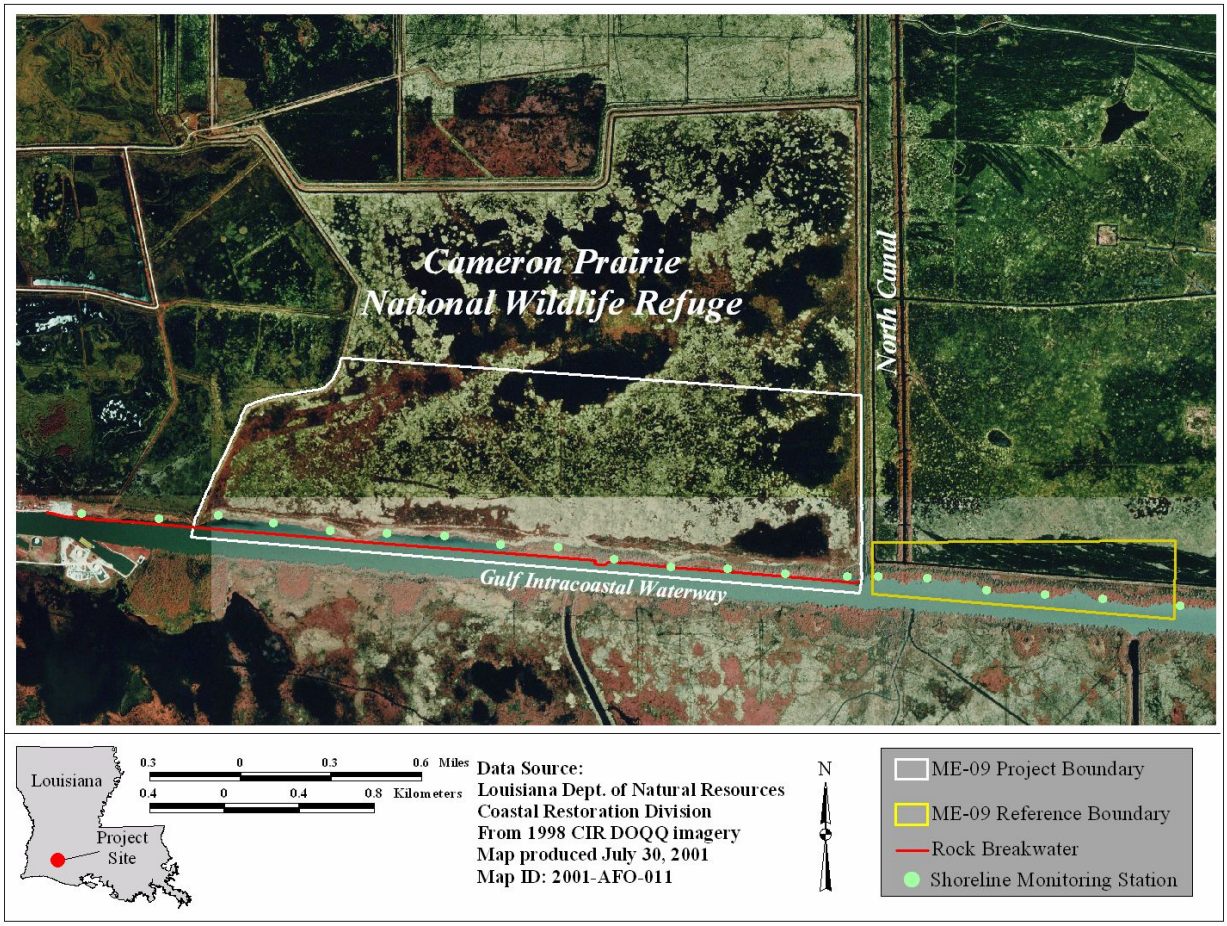

Figure 1. Project boundaries and features.

enabled high river stages from the Mermentau Basin to overtop and erode the existing spoil bank, thus leaving exposed a highly organic freshwater marsh vulnerable to erosion. The construction of a 2 mi (3.2 km) rock breakwater on the north bank of the channel will prevent the erosion of these organic soils and prevent further breaching along the existing spoil bank.

The Cameron Prairie project is considered a "shoreline protection" project within the CWPPRA classification. Additional descriptive information regarding the Cameron Prairie project can be found in documents prepared by the USFWS for CWPPRA, including a project information sheet (Yakupzack, 1991).

The GIWW borders the project area to the south and threatens to breach into the refuge. Wave action caused by boat traffic within the GIWW has eroded most of the spoil banks that protect the refuge, allowing the high energy saline waters of the GIWW to enter the project area. The resulting wave energy and saltwater

intrusion has impacted the fragile interior freshwater wetlands, and could potentially result in a "blowout", causing considerable wetland loss (Cameron Prairie National Wildlife Refuge 1991).

The project design consists of installing a rock dike (breakwater) to protect the remaining shoreline. In August 1994, a 13,200 ft (4,023 m) rock breakwater was constructed 0-50 ft (0-15.24 m) from, and parallel to, the northern bank of the GIWW in 3 to 4 ft (0.9 to 1.2 m) of water. The purpose of the breakwater is to prevent the encroachment of the GIWW into the project area by preventing the waves caused by boat traffic from eroding the remaining spoil bank. The project objectives are to prevent the loss of 247 ac (100 ha) of emergent wetlands of the Cameron Prairie NWR adjacent to the GIWW and to prevent the widening of the GIWW into the NWR.

I.2. Project Personnel

Project Phase	Name	Position	Agency
Planning	unknown		
Implementation	Mel Guidry	Project Engineer	LDNR
Monitoring	Chad Courville	Monitoring Manager	LDNR
	Troy Barrilleaux	Monitoring Manager	LDNR

II. PLANNING

II.1. Causes of Loss

What was assumed to be the major cause of land loss in the projected area?
It appears that a blow out was assumed to be the major cause of marsh loss in the project area during the next 20 years. Blow-out is a term that is often used in conversation but is rarely used in print. Blow-out refers to wetland loss that occurs when hydraulically isolated broken-marsh areas are connected to large water bodies because "increased wave and wind energies and saltwater intrusion destroy fragile interior marsh which was previously unexposed to these effects" (Good et al. 1995). According to Cameron Prairie National Wildlife Refuge (1991, cited in DNR 1997) wave energy and saltwater intrusion could potentially result in a "blowout." DNR (1997) states that a blow out was expected in the project area if shoreline erosion continued. Blow-out is not specifically mentioned in the CWPPRA Plan (1993) or the monitoring plan (DNR 1998) but a blow-out is needed to explain how 2.5 ft/year (0.76 m/yr) of erosion along 6,000 ft (1829 m) could cause 247 (100 ha) acres of marsh loss in 20 years (140 dog years). Without a "blow out," the projected erosion would cause only 6.9 acres (2.8 ha) of loss in 20 years (140 dog years).

What were assumed to be the additional causes of land loss in the projected area?
Shoreline erosion was assumed to be a minor cause of marsh loss in the project area. Shoreline erosion was occurring; it was estimated to be 2.5 ft/year (0.76 m/yr) before monitoring data were collected (DNR 1998). Over the 20-year life of the project, this shoreline erosion would cause 6.9 ac (2.8 ha) of wetland loss. Shoreline erosion was thus assumed to cause <3% of the marsh loss anticipated in the project area during the next 20 years if the project was not constructed.

II.2. Background

Despite being based on the blow-out concept, the project is described as being a standard shore-line protection project. The following paragraph was copied from DNR (1998).

A similar shoreline erosion project employs the use of a rock breakwater at Blind Lake. This project is on the GIWW approximately 5 mi (8 km) west of the Cameron Prairie Project and has been subjected to the same high-energy wave erosion as the proposed project. The Blind Lake Project met its goals and objectives of preventing further erosion of existing spoil bank, and is described in the Intracoastal Waterway Bank Stabilization and Cutgrass Planting Project (Holbrook 1996).

II.3. Project Goals and Objectives

How were the goals and objectives for the project determined?
The description in the initial project proposal (CWPPRA 1993) listed three objectives: (1) Protect the emergent wetlands of the Cameron Prairie NWR, (2) Enhancement of emergent wetlands protected by the proposed levee, and (3) Terminate the encroachment of the GIWW on the NWR.

The Monitoring Plan (DNR 1998) listed only two goals: (1) Protect the emergent wetlands of the Cameron Prairie NWR adjacent to the GIWW and prevent the loss of approximately 247 ac (100 ha) of marsh, and (2) prevent the widening of the GIWW into the NWR.

It is assumed that the Monitoring Plan dropped the "enhancement" goal because it is impossible measure enhancement. It appears that the Monitoring Plan added "247 acres (100 ha) of marsh" to the first goal because that is the amount of wetlands would be lost if the project were not constructed according to the initial project proposal (CWPPRA 1993).

Are the goals and objectives clearly stated and unambiguous?
The goals and objectives are not clearly stated. The goals and objectives do not indicate how stopping 2.5 ft/year (0.76 m/yr) of erosion along 6,000 ft (1829 m) (or 13,200 ft [4,023 m]) of shoreline for 20 years is supposed to protect more than

6.9 acres (2.8 ha) (or 15.1 acres [6.1 ha]). The goals apparently assume that a blow-out is feared but do not explicitly state so.

Are the goals and objectives attainable?
The goals and objectives are attainable only if the threat of a blow-out causing 247 acres (100 ha) of loss in 20 years is real.

Do the goals and objectives reflect the causes of land loss in the project area?
The goals and objectives do not reflect the cause of land loss in the project area because they do not explain how stopping 2.5 ft/year (0.76 m/yr) of erosion along 6,000 ft (1829 m) (or 13,200 ft [4,023 m]) of shoreline for 20 years is supposed to stop 247 acres (100 ha) of marsh loss.

III. ENGINEERING

III.1. Design Feature(s)

What construction features were used to address the major cause of land loss in the project area?
Hydrologic isolation between the marsh interior and the GIWW was maintained by protecting the existing shoreline with a free-standing, continuous rock dike.

The top elevation of the breakwaters was set to the same elevation as the Blind Lake Project (+3.7' MSL), for reasons previously stated in II.2. The average annual mean low tide for this area was stated to be +0.14' MSL and the average annual mean high tide was stated to be +2.89' MSL. The design of the rock breakwater was derived from the Blind Lake Project.

What construction features were used to address the additional causes of land loss in the project area?
The free-standing, continuous rock dike also stopped shoreline erosion, which caused a minor amount of wetland loss.

What kind of data was gathered to engineer the features?
Survey information collected included bathymetric cross-sections conducted every 1000' along the proposed foreshore dike alignment from the shoreline to the centerline of the GIWW. Soil borings were taken in the project area to evaluate settlement and wave calculations were performed to determine the height and slope of the rock dike.

What engineering targets were the features trying to achieve?
The foreshore rock dike was designed with a top elevation of 3.7' NAVD with 2:1 side slopes and was constructed on the (-) 1.0' contour of the GIWWW.

III.2. Implementation of Design Feature(s)

Were construction features built as designed? If not, which features were altered and why?
The project was constructed in August, 1994 as designed.

III.3. Operation and Maintenance

Were structures operated as planned? If not, why not?
Not applicable

Are the structures still functioning as designed? If not, why not?
The structure is functioning as designed from an engineering point of view but not from a wetland-loss point of view. Examination of the engineers' first annual inspection report (October 1996) and inspection by LDNR monitoring personnel in September 2000 provided evidence that the Cameron Prairie Refuge shoreline and the protective rock dike are in good condition. However, interior marsh loss continued as discussed below.

Was maintenance performed?
No maintenance was required.

IV. PHYSICAL RESPONSE

IV.1. Project Goals

Do monitoring goals and objectives match the project goals and objectives?
Yes. Interior marsh loss and shoreline erosion were monitored.

IV.2. Comparison to adjacent and/or healthy marshes

IV.2.1. Elevation

What is the range of elevations that support healthy marshes in the different marsh types?
This information is unknown in general. Elevation was not measured in the project.

Does the project elevation fall within the range for its marsh type?
Elevation is unknown in the project area.

Did the project meet its target elevation?
Not applicable.

What is the subsidence rate and how long will the project remain in the correct elevation range?
The subsidence rate is unknown; the correct elevation range is unknown.

IV.2.2. Hydrology

What is the hydrology that supports healthy marshes in the different marsh types?
Hydrology supporting healthy marshes is unknown.

Does the project have the correct hydrology for its marsh type?
The correct hydrology is unknown; the hydrology in the project area is also unknown.

What were the hydrology targets for the project and were they met?
No hydrology targets were set.

IV.2.3. Salinity

What is the salinity regime that supports healthy marshes in the different marsh types?
The salinity regime that supports healthy marshes is unknown.

Does the project have the correct salinity for its marsh type?
The correct salinity for fresh marsh is unknown (less salinity is better but it is not known how much is too much). The salinity regime in the project area is unknown. The monitoring on this project does not include salinity measurements. Chabreck and Linscombe habitat data from 1988, 1997, and 2001 indicated the project area is freshwater marsh, as it was assumed for the WVA.

What were the salinity targets for the project and were they met?
There were no salinity targets for this project.

IV.2.4. Soils

What is the soil type that supports healthy marshes in the different marsh types?
Numerous soil types support healthy marshes.

Does the project have the correct soil for its marsh type?
The correct soil type for a marsh type is unknown. Soils in the project area are classified as being in the Allemands series, which is common throughout fresh marshes in southwest Louisiana (USDA 1995).

IV.2.5. Shoreline Erosion

How have shoreline erosion rates changed in the project area compared to nearby reference areas?
The project not only stopped shoreline erosion but also reversed it (Barrilleaux and Clark 2002). The erosion rate in the reference area was greater than originally believed (4.1 ft/yr [1.2 m/yr] vs. 2.5 ft/yr [0.8 m/yr]). Over the 20 year life of the project, this rate would convert 24.8 ac (10.1 ha) of wetlands in the project area to open water.

IV.2.6. Other

Describe any other physical characteristics of the project that have bearing on the projects' success
Blow-outs in coastal Louisiana need to be documented. Documenting blow-outs would provide a basis for judging the value of maintaining hydraulic barriers between interior broken marsh areas and adjacent water bodies.

The cause of ongoing interior marsh loss (see below) needs to be determined, and that cause needs to be monitored.

IV.3. Suggestions for physical response monitoring

Are there other variables that could be monitored to substantially increase the ability to understand the results of the project?
Water level and salinity, which are described under biological response.

V. BIOLOGICAL RESPONSE

V.1. Project Goals

According to CWPPRA (1993) the goals of the project are "(1) Protection of the emergent wetlands of Cameron Prairie NWR. (2) Enhancement of emergent wetlands protected by the proposed levee. (3) Terminate the encroachment of the GIWW on the NWR." The monitoring plan (DNR 1998) ignored the second goal evidently because "enhance" was undefined.

V.2. Comparison to adjacent and/or healthy marshes

V.2.1. Vegetation

What is the range in species composition and cover for healthy marshes in each type?
There were no vegetation goals and objectives in this project and therefore no vegetation data collection. The entire project area has been classified, and is

being maintained as fresh marsh based on Chabreck and Linscombe 1988, 1997, and 2001.

Does the project have the correct species composition and cover for its type?
The species composition and vegetative cover are undocumented.

What were the vegetation targets for this project and were they met? If not, what is the most likely reason?
Vegetation targets were not set.

V.2.2. Landscape

What is the range in landscapes that supports healthy marshes in different marsh types?
The range in landscapes that supports healthy marshes in different marsh types is unknown. Cursory examination of aerial photographs in the Soil Survey of Cameron Parish (USDA 1995) suggest that the project area has more water than marshes immediately east but has a similar land/water dispersion as the Pool at Lacassine National Wildlife Refuge, which is the next property encountered to the east. Property to the west appears to be farmed for rice.

Is the project changing in the direction of the optimal landscape? If not, what is the most likely reason?
Analyses of aerial photography indicates that the project area continues to lose emergent wetlands at an alarming rate, but the validity of those analyses is questioned. During the 38 months between the aerial photograhs, DNR (1997) found that the project area lost 9% of its marsh but the reference area lost 2% of its marsh. Because the validity of the first land/water analyses was questioned (DNR 1997), the same images were analyzed at the same resolution for the second Comprehensive Monitoring Report (Barrilleaux and Clark 2002, in preparation). The software packages used for the two analyses were not noted in either Comprehensive Monitoring Report but reportedly differed (Troy Barrilleaux, personal communication). The re-analyses by Barrilleaux and Clark (2002) found that the project area lost 5% of its marsh but the reference area remained stable. Marsh loss in the project area was 13.3 ac/year [5.4 ha/yr]) (Barrilleaux and Clark 2002, in preparation). If that rate continues, then 266 ac (107.7 ha) will be lost within 27 years. That is more loss than the project was designed to prevent (247 ac or 100 ha).

The validity of both analyses is questioned by personnel at Cameron Prairie NWR. Refuge personnel believe the aerial photography analyses is futile because the pre-construction photographs were taken in late fall but the post-construction photographs were taken in mid-winter. They note that the project area generally contains more Bulltongue (*Sagittaria lancifolia*) and *Eleocharis quadrangulata*, which can disappear between November and January, than the reference area (personal communication from Glen Harris, Cameron Prairie National Wildlife Refuge to Andy Nyman, LSU). Refuge personnel believe that there is no marsh

loss in the project area and that it continues to fill with *Panicum hemitomon* (personal communication from Glen Harris, Cameron Prairie National Wildlife Refuge to Andy Nyman, LSU). Coincidentally, refuge personnel at Lacassine NWR likewise believe that Sabine Pool is filling with *P. hemitomon* despite analyses of aerial photographs from 1955, 1978, 1988, and 1995 that indicate a clear trend in increasing open water and decreasing marsh in the pool (unpublished handout to participants of the Lacassine NWR Biological Review, May 20-24, 2002).

The reason(s) for ongoing marsh loss in the project area, if marsh loss is real, are unknown. No vegetation data, water level data, water salinity data, or elevation data were collected during the monitoring because the project was classified as a shoreline protection project. Evaluating project status is further hampered by the decision in 1998 to reduce land-water analyses so that only one more land/water analyses is funded during the life of the project.

Table 1. Land/water analyses of the Cameron Prairie Refuge Protection (ME-09) project and reference areas before (1 November, 1993) and after construction (11 January, 1997). The project area is 853 acres; the reference area is 140 acres.

time	project area water	project area land	reference area water	reference area land
		first analyses		
1 November, 1993	47%	53%	8%	92%
11 January, 1997	56%	43%	10%	90%
		second analyses		
1 November, 1993	52%	48%	27%	73%
11 January, 1997	57%	43%	27%	73%

Unfortunately, the next land:water analysis will not be conducted until 2009. That is also the final land:water analyses planned because of budget cuts made in 1998.

This is one of the few restoration projects where it is relatively unimportant if the project and reference areas differ in land loss rates because project planners assumed the project would stop all marsh loss. Despite the rock dike, marsh loss may be proceeding in the reference area at an alarming rate. The project has not stopped nor even slowed marsh loss in the marsh interior as it was expected.

V.2.3. Other

Not Applicable

V.3. Suggestions for biological response monitoring

Are there other variables that could be monitored to substantially increase the ability to understand the results of the project?
Monitoring of salinity within the project area might allow project managers to determine if salinity stress caused the recent marsh loss in the project area. Monitoring of water level within the project area might allow project managers to determine if flooding stressed caused the recent marsh loss in the project area. Monitoring of vegetation composition within the project area might allow project managers to infer causes of recent marsh loss in the project area.

It was suggested that on all shoreline protection projects, maintenance surveys should be used to monitor and evaluate shoreline protection features. The maintenance survey would need to include a DGPS shoreline survey of the vegetated marsh edge in both the project and a reference area.

VI. ADAPTIVE MANAGEMENT

VI.1. Existing improvements

What has already been done to improve the project?
Nothing has been done to date to improve the project.

VI.2. Project effectiveness

Are we able to determine if the project has performed as planned? If not, why?
This project as designed may not have addressed the only causes of wetland loss within this project area. Current debate relative to whether or not interior wetland loss persists in this area begs the discussion of whether or not shoreline erosion was the only cause of wetland loss. It was assumed that protecting the shoreline would have also protected the interior wetlands from degradation, however, this may not be the case. The current monitoring activities are insufficient to differentiate the true cause of marsh loss from other possible causes of marsh loss in the project area.

Current CWPPRA planning and selection procedures would likely have not claimed much of the interior area within this project as being protected from loss, given the features proposed. In the case of shoreline erosion, the project has demonstrated the ability to eliminate and even reverse shoreline erosion in the protected project area.

What should be the success criteria for this project?
Success criteria should focus on interior marsh loss rates. Interior marsh loss was measured but too much attention has been paid to the fact that shoreline erosion was stopped. At measured rates, 266 ac (107.7 ha) of interior wetlands will be lost within the 20 year life of this project, which was designed to prevent the loss

of 247 (100 ha) of loss. Stopping measured erosion rates will save only 24.8 ac (10.1 ha) wetlands in the project area during the life of the project.

VI.3. Recommended improvements

What can be done to improve the project?
The extent and cause of possible ongoing wetland loss in the project area needs to be determined. Once the cause is determined, protection and restoration options can be evaluated. It should be noted, however, that agreement has not been reached on whether or not interior wetland loss exists. Differences in water levels and photography dates confound the interpretation of aerial photography, giving the impression of interior wetland loss, however, refuge personnel suggest that no loss is occurring.

New aerial photographs immediately could be acquired as close to 1 November as possible. As scheduled, only one more aerial photograph is planned for 2009. By the time that image has been analyzed the project will be 15 years old and it would probably be too late to collect sufficient data to determine the cause of loss if loss is proceeding as indicated by the available aerial photographs.

If new aerial photographs confirm that wetland loss is rapid, then the cause of ongoing wetland loss in the project area needs to be determined. Once the cause is determined, protection and restoration options can be evaluated.

VI.4. Lessons learned

These lessons were learned and changes were incorporated into CWPPRA procedures before this review:

1. Goals and objectives must be clearly stated to prevent ambiguity.
2. Two, albeit conflicting, rules were adopted by CWPPRA that requires a re-evaluation of the decision to construct if the project area or costs change by more than 15% or 25%. See sections 5.d(1) and 6.e.(2) of CWPPRA (2002) for those rules. If those rules had been in place when this project was planned, then the rock dike probably would have been tied into the existing shoreline near the original project boundaries rather than being doubled because as planned this project was one of the least cost effective projects on the first project priority list (see appendix 1).

These lessons were learned as a result of this review and are available to CWPPRA planners:

1. Before- and after-construction aerial photographs need to be taken at similar times of the year.
2. Interior wetland loss may not always be caused by loss of a protective shoreline. In such cases, protecting the shoreline has not prevented loss of adjacent interior wetlands.

3. Projects that protect more acres of marsh than are anticipated to erode should be classified as something other than shoreline protection, or not classified at all. There are no benefits of classifying projects (as to hydrologic restoration, shore-line protection, etc.). This is not a new conclusion; Nyman (1998) found that 19% of CWPPRA projects were misclassified, and that all misclassifications reduced rather than increased monitoring budgets. The cost of classifying this project as a shoreline protection project is that there were no funds available to collect water level data, water salinity data, and vegetation data that could be used to support or refute the land loss data, and no data to identify the cause of marsh loss in the project area if marsh loss is occurring. Assembling and analyzing a data set sufficient to eliminate likely but unreal causes of wetland loss in the project area probably will take three to five years.
4. A Coastwide Reference System may provide the data to determine if the interior marsh loss is as unusually high as it appears.
5. Aerial photography, even when properly timed, is insufficient to determine causes of marsh loss.

VII. SUPPORTING DOCUMENTATION

VII.1. Published References

USDA. 1995. Soil Survey of Cameron Parish, Louisiana. U.S. Department of Agriculture, Soil Conservation Service in Cooperation the Louisiana Agricultural Experiment Station and the Louisiana Soil and Water Conservation Committee.

VII.12. Unpublished References

Barrilleaux, T. and N. Clark. 2002. Three year comprehensive monitoring report, Coast 2050 Region 4, Cameron Prairie Refuge Protection, ME-09. Monitoring Series No. ME-09- MSTY-0202-2. Louisiana Department of Natural Resources, Coastal Restoration Division. Baton Rouge, LA

Cameron Prairie National Wildlife Refuge. 1991. Project information fact sheet. Gibbstouwn, Louisiana: U.S. Fish and Wildlife Service, Cameron Prairie National Wildlife Refuge. 7pp. Cited In DNR. 1997. Three year comprehensive monitoring report, Coast 2050 Region 4, Cameron Prairie Refuge Protection, ME-09. Monitoring Series No. ME-09- MSTY-0797-1. Louisiana Department of Natural Resources, Coastal Restoration Division. Baton Rouge, LA

CWPPRA. 1993. Louisiana coastal wetlands restoration plan, Mermentau basin, Appendix H. Louisiana Coastal Wetlands Conservation and Restoration Task Force.

CWPPRA. 2002. Project standard operating procedures manual. 5.0. revised 16 July 2002. working draft.

DNR. 1997. Three year comprehensive monitoring report, Coast 2050 Region 4, Cameron Prairie Refuge Protection, ME-09. Monitoring Series No. ME-09-

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DNR. 1998. Monitoring plan, Project number ME-09 Cameron Prairie. Louisiana Department of Natural Resources, Coastal Restoration Division. Baton Rouge, LA

Holbrook, S. 1996. Blind Lake Shoreline Stabilization Progress Report No. 1. Baton Rouge: Louisiana Department of Natural Resources, Coastal Restoration Division. (Cited in DNR 1998).

Nyman, J.A. 1998. Technical Audit of the Coastal Wetlands Planning, Protection, and Restoration Act Monitoring Program. Contract Completion Report submitted to Greg Steyer, Louisiana Department of Natural Resources, Baton Rouge, LA. February, 1998.

VII. PROJECT REVIEW TEAM

Troy Barrilleaux	La. Department of Natural Resources
Darryl Clark	US Fish and Wildlife Service
Marty Floyd	USDA Natural Resource Conservation Service
John Foret	USDC National Marine Fisheries Services
Mel Guidry	La. Department of Natural Resources
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Wes McQuiddy	US Environmental Protection Agency
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APPENDIX 1

Undated, anonymous table of cost and benefits of wetland restoration projects on the first priority project list of the Coastal Planning Protection and Restoration Act Task Force.

Table 1 PPL 1

Ranking of Projects by Cost ($) per AAHU

	Lead Task Force Member*	Cost ($) per AAHU**	Fully Funded Cost ($1,000)	Cumulative Fully Funded Cost ($1,000)	Wetland Percentage by Type *** F/I	B	S
Fourchon	CO	21	252	252	--	--	100
BA-2 (GIWW to Clovelly)	AG	68	8,142	8,394	83	17	--
Cameron Creole Watershed	IN	128	502	8,896	24	76	--
Bayou Sauvage Refuge	IN	180	1,105	10,001	100	--	--
Turtle Cove	IN/LA	194	386	10,387	100	--	--
Sabine Refuge	IN	253	4,844	15,231	100	--	--
Vegetative Plantings (Demonstration)	AG	282	848	16,079	3	11	86
West Bay Sediment Diversion	AR	305	8,517	24,596	100	--	--
Barataria Bay Waterway	AR	449	1,625	26,221	--	--	100
Lower Bayou La Cache	CO	837	1,254	27,475	--	15	85
Bayou La Branche	AR	2,369	4,327	31,802	100	--	--
Cameron Prairie Refuge	IN	3,171	1,111	32,913	100	--	--
Vermilion River Cutoff	AR/LA	6,196	1,523	34,436	--	100	--
Eastern Isle Dernieres (Demonstration)	EPA	13,949	6,345	40,781	--	--	100
ojects Deferred †							
BA-6 (GIWW to Hwy 90)	AG	323	4,583	4,583	100	--	--
Tiger Pass	AR	1,661	7,078	11,661	100	--	--
Falgout Canal South (Demonstration)	EPA	5,950	6,109	17,770	--	100	--
Lake Salvador Shoreline	AR	10,376	4,427	22,197	100	--	--

APPENDIX B: INFORMATION CHECK SHEET

Project Name and Number: ME-09 Cameron Prairie Refuge- Shoreline
Date: March 11, 2002

INFORMATION TYPE	YES	NO	N/A	SOURCE
Fact Sheet	X			Darryl Clark (USFWS), PPL 1 RTC
Project Description	X			Darryl Clark (USFWS), Pre-selection plan
Project Information Sheet	X			Darryl Clark (USFWS)
Wetland Value Assessment	X			Mel Guidry, Troy Barrilleaux (DNR)
Environmental Assessment	?			Darryl Clark (USFWS)
Project Boundary	X			John Jurgensen (NRCS)
Planning Data	?			Darryl Clark (USFWS)
Permits	?			John Jurgensen (NRCS)
Landrights			X	Refuge property
Cultural Resources	?			Darryl Clark (USFWS)
Preliminary Engineering Design		X		Darryl Clark (USFWS) ?
Geotechnical		X		Darryl Clark (USFWS) ?
Engineering Design	X			John Jurgensen (NRCS)
As-built Drawings	X			John Jurgensen (NRCS)
Modeling Output			X	
Construction Completion Report		X		
Engineering Data	X			Darryl Clark (USFWS) ?, 2 surveys behind rock 1995, 1997 (DNR)
Monitoring Plan	X			(DNR), www.saveLAwetlands.org
Monitoring Reports	X			(DNR), www.saveLAwetlands.org
Supporting Literature	?			Blind Lake report
Monitoring Data	X			2000 shoreline position survey (DNR), BUMP data?
Operations Plan			X	
Operations Data			X	
Maintenance Plan: O&M Plan	X			DNR
Maintenance Data	X			Added navigation warning signs
O&M Reports: Annual inspection rpts	X			DNR
Other:				
Cost Share Agreement	X			DNR
Data Needs:				
Elevation of sediment/accretion behind breakwater				

Project modeled after Blind Lake project. Rock design elevation taken from Blind Lake project. NRCS did the project design.