Coastal Protection and Restoration Authority of Louisiana

Office of Coastal Protection and Restoration

2008 Annual Inspection Report

for

DELTA WIDE CREVASSES (MR-09)

State Project Number MR-09
Priority Project List 6

March 12, 2008
Plaquemines Parish

Prepared by:

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Appendixes

I. Introduction

Delta Wide Crevasses (MR-09) was authorized by Section 303(a) of Title III Public Law 101-646, the Coastal Wetlands Planning Protection and Restoration Act (CWPPRA) enacted on November 29, 1990 as amended. The Delta Wide Crevasses Project was approved on the sixth (6^{th}) Priority Project List and project area is located within two wildlife management/refuge areas, both in Plaquemines Parish, La. The northern half of the project is located in the Delta National Wildlife Refuge. The southern half is located in the Pass a Loutre State Wildlife Management Area. The necessary agreements to allow project construction and operation to proceed have been executed between OCPR and the above-referenced parties.

II. Inspection Purpose and Procedures

The purpose of the annual inspection of the Delta Wide Crevasses Project (MR-09) is to evaluate the constructed project features to identify any deficiencies and prepare a report detailing the condition of the project features and recommended corrective actions needed. Should it be determined that corrective actions are needed, OCPR 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 (O&M Plan August 1, 2007). The annual inspection report also contains a summary of maintenance projects and an estimated projected budget for the upcoming three (3) years for operation, maintenance and rehabilitation. The three (3) year projected operation and maintenance budget is shown in Appendix C. A summary of past and maintenance projects completed since completion of the initial construction of the Delta Wide Crevasses Project in 1999 are outlined in Section IV.

This initial annual inspection of the Delta Wide Crevass Project (MR-09) was held on March 12, 2008 on a clear to partly cloudy and cold day with winds NW 10 to 15 mph. At the time of the inspection, 10:00AM, the Mississippi River Gage at the Venice, La. station was +3.5 feet NGVD. In attendance were Tom Bernard, OCPR; Cheryl Brodnax, NMFS; and Todd Baker, LDWF. Due to the spread out and remote locations of the Crevasses, and of some possible new locations, the three member inspection team choose to use an air-boat for the inspection. Photographs of that inspection are included in Appendix B of this report.

III. Project Description and History

The project area is located in Plaquemines Parish to the southeast of Venice, Louisiana on the active Mississippi River Delta (figure 1). This project utilizes the major process that forms subaerial land in the lower Mississippi River Delta, the formation of crevasses. Crevasses are breaks in the levee that allow over-bank deposition of sediments to occur in adjacent interdistributary receiving bays. This deposition of sediments causes land formation that is controlled by the processes of distributary mouth-bar islands. Coleman and Gagliano (1964) ordered the mouth-bar island process into crevasse sub-delta and

crevasse-splay based on relative size. Crevasse sub-deltas consist of relatively large receiving bays that have areal extents of 115-154 sq mi. (300-400 sq km) and depths of 32-49 ft (10-15 m). The process by which these sub-deltas are formed is referred to as "bay filling" (Coleman and Gagliano 1964). Crevasse-splays are a smaller sub-unit that are distinguished from sub-deltas in that their size, frequency, and expected life spans are smaller generally having a receiving bay extent of approximately 0.234 sq mi. (0.59 sq km) (Boyer 1996).

The project consists of maintaining presently existing crevasse-splays, the construction of new crevasse-splays, and future maintenance of selected crevasse-splays in both the Pass-A-Loutre Wildlife Management Area (PALWMA) and the Delta National Wildlife Refuge (DNWR). The PALWMA covers 66,000 ac (26,709 ha) between Pass-A-Loutre and South Pass and is owned and managed by the Louisiana Department of Wildlife and Fisheries (LDWF). The DNWR covers 48,000 ac (19,425 ha) from just north of Main Pass southward to Pass-A-Loutre and is owned and managed by the U.S. Fish and Wildlife Service (USFWS). It is understood that the natural cycle of crevasse-splays is a temporary event that is rarely active for more than 10 to 15 years. This process of crevasse-splay deposition, building, and subsidence will all be considered in the evaluation of this project.

The usefulness of crevasses as a tool of wetland and coastal management on the Mississippi River Delta began to be realized in the early 1980's. The Louisiana Department of Natural Resources (LDNR) constructed three new crevasses in 1986 (on Pass-A-Loutre, South Pass, and Loomis Pass) that produced over 657 ac (266 ha) of emergent marsh from 1986 to 1991, and four crevasses in 1990 (two each on South Pass and Pass-A-Loutre) that produced over 400 ac (162 ha) of emergent marsh from 1990 to 1993 (LDNR 1993; Trepagnier 1994). Thirteen crevasses included in the LDNR Small Sediment Diversions Project cumulatively produced 313 ac (127 ha) of emergent marsh between 1986 and 1993; land growth rates ranged from 28 to 103 ac (11.3 to 41.7 ha) per crevasse for the older crevasses (4 to 10 years old) and 0.5 to 12 ac (0.2 to 4.9 ha) for the younger crevasses (0 to 2 years old) (LDNR 1996). Boyer et al. (1997) concluded that crevasses in the DNWR accumulated land at about 11.6 ac/yr (4.7 ha/yr), but subaerial growth did not occur for 2-3 years after the crevasses were constructed.

The project features covered by this inspection are inclusive of and are identified as the Delta Wide Crevasses (MR-09). The intention of the annual inspection is to maintain the project in a condition that will generally provide the anticipated benefits that the project was based on. There is no requirement that this project function to any standard beyond the 20-year economic life; except that it is not left as a hazard to navigation or a detriment to the environment. A site map showing the project boundary within the Delta Wide Crevasses project benefit area is shown in Attachment II along with a map identifying all of the project features within the project area.

IV. Summary of Past Maintenance Projects

General Maintenance: Below is a summary of completed maintenance project:

Originally dredged in 1999, crevasses No. 9, 11, and 12, in the PALWMA had silted in and did not function as originally constructed. The first maintenance cycle took place in 2005. This maintenance dredging contract re-dredged those three crevasses to their original design dimensions, and dredged two new crevasses in the same area. Those were NC-1, and NC-3. Also constructed in this maintenance contract was crevasse No. 81, which is located on Baptiste Collette in the Delta Wildlife Management Area. Se Attachment II for locations of the maintenance sites.

V. Inspection Results of Crevasses Dredged in 2005 (See Appendix B for Project Photos)

A. Crevasse No. NC-1: (1,000 ft. X 100 ft. X -8.0 ft. NAVD 88) This newly dredged crevasse is in good to excellent condition. Soundings indicated that it has retained most of its originally constructed depth. River water is flowing very well through the channel and the spoil from the dredging of the crevasse has vegetated throughout the deposited bay area.

B. Crevasse No. NC-3: (1,400 ft. X 100 ft. X -8.0 ft. NAVD 88) This is the second of the two new crevasses, functioning very well and flowing with a very swift current bringing much needed sediments into the interior bays. The crevasse is maintaining a good depth throughout its channel but has lost a little depth near the upstream opening. This minor deficiency in depth; however, does not seem to be affecting the amount of flow that is entering the crevasse.

C. Crevasse No. 9: (2,200 ft. X 75 ft. X -8.0 ft. NAVD 88) Good flow is being maintained in this dog-leg shaped previously dredged crevasse (1999). Its location allows for swift currents during high river stages. The spoil deposition from this cut is very heavily vegetated and appears to have kept its constructed height above the bays.

D. Crevasse No. 11: (2,600 ft. X 100 ft. X -8.0 ft. NAVD 88) This re-dredged crevasse (1999) has maintained a good flow throughout its length. It has maintained its depth throughout and the current in this cut is more than adequate. All of the spoil deposited in the inner lagoon areas has vegetated very heavily and appears to be in excellent condition.

E. Crevasse No. 12: (2,000 ft. X 75 ft. X -8.0 ft. NAVD 88) Despite being located off of the main channel, this crevasse appears to be functioning very well. There is sufficient current to carry sediments to the inner section of the bays and lagoons and the spoil from the dredging is heavily vegetated. Soundings indicate good depth throughout the cut. This crevasse also had been previously dredged (1999).

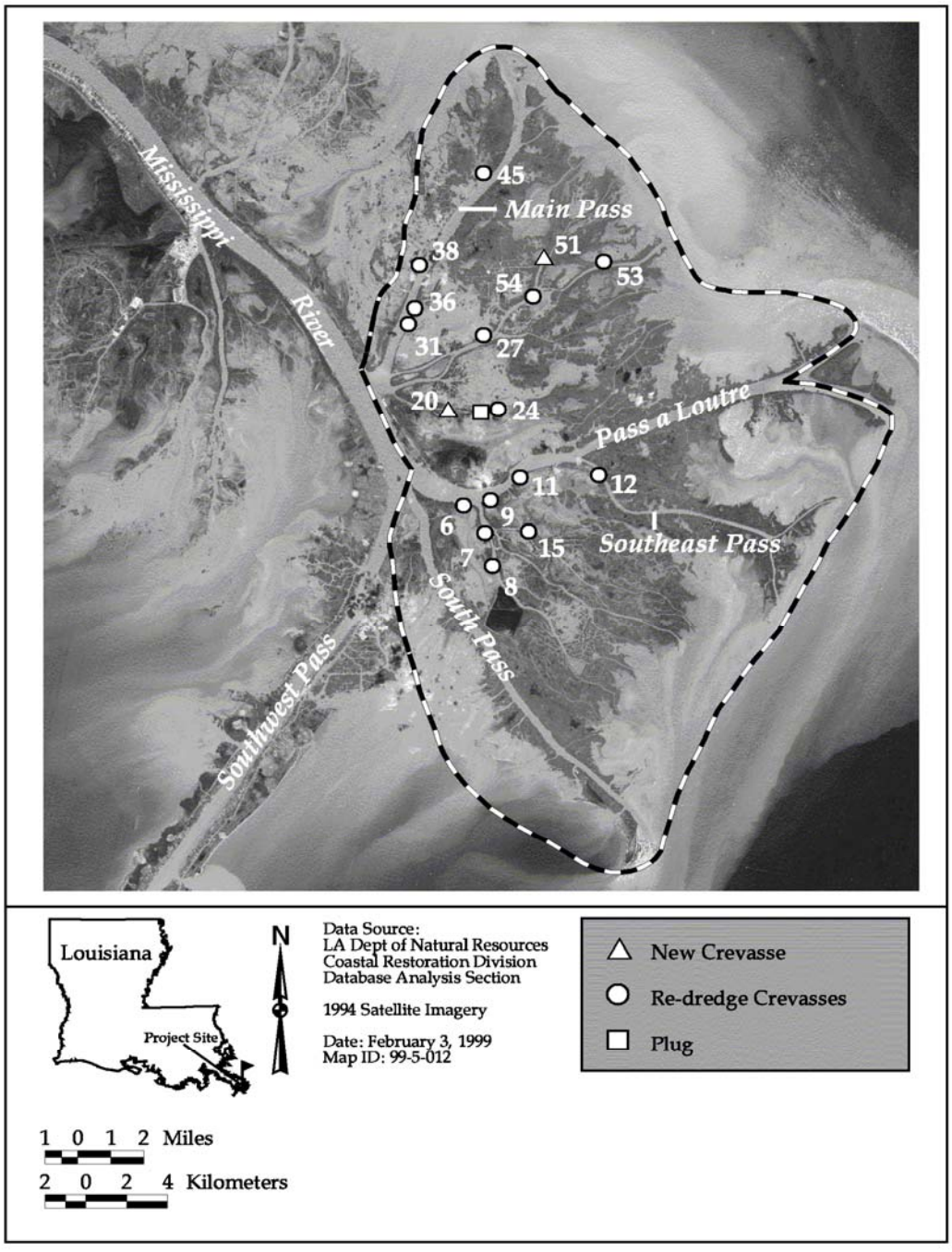
F. Crevasse No. 81: (1,200 ft. X 100 ft. X -8.0 ft. NAVD 88) This crevasse is located off of Baptiste Colette in the Delta Wildlife Management Area. The current in the crevasse is strong, since it is located in close proximity to the Mississippi River. Soundings show that the mouth of this crevasse has silted up

from the large amounts of sediments that is carried into the cut by the river currents. It is estimated that there is only 3 to 4 feet of draft that exists at the mouth of the crevasse.

VI. Conclusions and recommendations

As a result of the inspection, the team concluded that all project features are functioning as designed and should continue to do so without any immediate maintenance. Further assessment of the project will be determined following the next scheduled inspection in the summer of 2009. Therefore; it is recommended that no action be taken for maintenance at this time.

APPENDIX "A"
Project Features Map



APPENDIX B
Photographs

Crevasse No. NC-1, (view 1) Looking into crevasse from Pass-a-Loutre, notice camps in rear of photo.

Crevasse No. NC-1, (view 2) Midway into crevasse looking towards vegetated spoil area.

Crevasse No. NC-3, (view 1) Looking into crevasse from South Pass.

Crevasse No. NC-3, (view 2) Vegetated crevasse dredging spoil in bay area.

Crevasse No. 9, (view 1) In bay area, vegetated spoil from crevasse dredging.

Crevasse No. 9, (view 2) Vegetated spoil deposition in bay area.

Crevasse No. 11, (view 1) From Pas-a-loutre looking into Crevasse.

Crevasse No. 11, (view 2) Crevasse end looking at spoil area vegetation.

Crevasse No. 12, (view 1) Inside bay looking out into crevasse.

Crevasse No. 12, (view 2) Outside crevasse looking into bay.

Crevasse No. 81, (view 1) Looking into crevasse from Baptiste Collette channel. Notice power line at Crevasse entrance.

Crevasse No. 81, (view 2) Inside crevasse looking toward vegetated spoil area.

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Appendix C
Three-Year Operation & Maintenance Budgets

2008 Annual Inspection Report
DELTA WIDE CREVASSES
State Project No. MR-09

Delta Wide Crevasses / MR-09 / PPL 6

Three-Year Operations & Maintenance Budgets 07/01/2008 - 06/30/2011

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Project	O & M	Federal Sponsor	Prepared By
Tom Bernard	*Tom Bernard*	*NMFS*	*Tom Bernard*

	2008/2009	2009/2010	2010/2011
Maintenance Inspection	$5,305.00	$5,443.00	$5,584.00
General Maintenance	$0.0	$0.0	$0.0
Structure Operation	$0.0	$0.0	$0.0
Administration	$0.0	$0.0	$0.0
Maintenance/Rehabilitation			

07/08 Description:

E&D	$0.0
Construction	$0.0
Construction Oversight	$0.0
Sub Total - Maint. And Rehab.	$ -

08/09 Description

E&D		$0.0
Construction		$0.0
Construction Oversight		$0.0
	Sub Total - Maint. And Rehab.	$ -

09/10 Description:

E&D			$0.0
Construction			$0.0
Construction Oversight			$0.0
		Sub Total - Maint. And Rehab.	$ -

	2008/2009	2009/2010	2010/2011
Total O&M Budgets	**$ 5,305.00**	**$ 5,443.00**	**$ 5,584.00**

O &M Budget (3 yr	**$ 16,332.00**
Unexpended O & M Budget	**$ 968,076.00**
Remaining O & M Budget (Projected)	**$ 951,744.00**

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DELTA WIDE CREVASSES
State Project No. MR-09

OPERATION AND MAINTENANCE BUDGET WORKSHEET 2008/2009

Delta Wide Crevasses / MR-09 / PPL 6

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EAC	1	0.00	**$5,305.00**
General Structure Maintenance	LUM	1	$0.00	**$0.00**
Engineering and Design	LUM	1	$0.00	**$0.00**
Operations	LUM	1	$0.00	**$0.00**
Construction Oversight	LUM	1	$0.00	**$0.00**
ADMINISTRATION				
LDNR / CRD	LUM	1	$0.00	$0.00
FEDERAL SPONSER Admin.	LUM	0	$0.00	$0.00
SURVEY	LUM	1	$0.00	$0.00
OTHE				$0.00
			TOTAL ADMINISTRATION COSTS:	**$0.00**

MAINTENANCE / CONSTRUCTION

SURVEY

SURVEY DESCRIPTION:					
Secondary	EAC	0	$0.00	$0.00
Staff Gauge / Recorders	EAC	0	$0.00	$0.00
Marsh Elevation / Topography	LUM	0	$0.00	$0.00
TBM Installation	EAC	0	$0.00	$0.00
OTHE				$0.00
			TOTAL SURVEY COSTS:	**$0.00**

GEOTECHNICAL

GEOTECH DESCRIPTION:					
Borings	EAC	0	$0.00	$0.00
OTHE				$0.00
			TOTAL GEOTECHNICAL COSTS:	**$0.00**

CONSTRUCTION

CONSTRUCTION DESCRIPTION:					
Rip Rap	LIN FT	TON / FT	TON	UNIT	
	0	0.0	0	$0.00	$0.00
	0	0.0	0	$0.00	$0.00
	0	0.0	0	$0.00	$0.00
Filter Cloth / Geogrid Fabric		SQ	0	$0.00	$0.00
Navagation Aid		EAC	0	$0.00	$0.00
Signage		EAC	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			0	$0.00	$0.00
Timber Members (each or lump sum)			0	$0.00	$0.00
Hardware		LUM	1	$0.00	$0.00
Materials		LUM	1	$0.00	$0.00
Mob /		LUM	1	$0.00	$0.00
Contingency		LUM	1	$0.00	$0.00
General Structure Maintenance		LUM	1	$0.00	$0.00
OTHE				$0.00	$0.00
OTHE				$0.00	$0.00
OTHE				$0.00	$0.00
				TOTAL CONSTRUCTION COSTS:	**$0.00**

TOTAL OPERATIONS AND MAINTENANCE BUDGET: **$5,305.00**

OPERATION AND MAINTENANCE BUDGET WORKSHEET 2009/2010

Delta Wide Crevasses / MR-09 / PPL 6

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EAC	1	0.00	**$5,443.00**
General Structure Maintenance	LUM	1	$0.00	**$0.00**
Engineering and Design	LUM	1	$0.00	**$0.00**
Operations	LUM	1	$0.00	**$0.00**
Construction Oversight	LUM	1	$0.00	**$0.00**
ADMINISTRATION				
LDNR / CRD	LUM	0	$0.00	$0.00
FEDERAL SPONSER Admin.	LUM	0	$0.00	$0.00
SURVEY	LUM	0	$0.00	$0.00
OTHE				$0.00
			TOTAL ADMINISTRATION COSTS:	**$0.00**

MAINTENANCE / CONSTRUCTION

SURVEY

SURVEY DESCRIPTION:					
Secondary	EAC	0	$0.00	$0.00
Staff Gauge / Recorders	EAC	0	$0.00	$0.00
Marsh Elevation / Topography	LUM	0	$0.00	$0.00
TBM Installation	EAC	0	$0.00	$0.00
OTHE				$0.00
			TOTAL SURVEY COSTS:	**$0.00**

GEOTECHNICAL

GEOTECH DESCRIPTION:					
Borings	EAC	0	$0.00	$0.00
OTHE				$0.00
			TOTAL GEOTECHNICAL COSTS:	**$0.00**

CONSTRUCTION

CONSTRUCTION DESCRIPTION:					
Rip Rap	LIN FT	TON / FT	TON	UNIT	
	0	0.0	0	$0.00	$0.00
	0	0.0	0	$0.00	$0.00
	0	0.0	0	$0.00	$0.00
Filter Cloth / Geogrid Fabric		SQ	0	$0.00	$0.00
Navagation Aid		EAC	0	$0.00	$0.00
Signage		EAC	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			0	$0.00	$0.00
Timber Members (each or lump sum)			0	$0.00	$0.00
Hardware		LUM	1	$0.00	$0.00
Materials		LUM	1	$0.00	$0.00
Mob /		LUM	1	$0.00	$0.00
Contingency		LUM	1	$0.00	$0.00
General Structure Maintenance		LUM	1	$0.00	$0.00
OTHE				$0.00	$0.00
OTHE				$0.00	$0.00
OTHE				$0.00	$0.00
				TOTAL CONSTRUCTION COSTS:	**$0.00**

TOTAL OPERATIONS AND MAINTENANCE BUDGET: **$5,443.00**

2008 Annual Inspection Report
DELTA WIDE CREVASSES
State Project No. MR-09

OPERATION AND MAINTENANCE BUDGET WORKSHEET 2010/2011

Delta Wide Crevasses / MR-09 / PPL 6

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EAC	1	0.00	**$5,584.00**
General Structure Maintenance	LUM	1	$0.00	**$0.00**
Engineering and Design	LUM	1	$0.00	**$0.00**
Operations	LUM	1	$0.00	**$0.00**
Construction Oversight	LUM	1	$0.00	**$0.00**
ADMINISTRATION				
LDNR / CRD	LUM	0	$0.00	$0.00
FEDERAL SPONSER Admin.	LUM	0	$0.00	$0.00
SURVEY	LUM	0	$0.00	$0.00
OTHE				$0.00
			TOTAL ADMINISTRATION COSTS:	**$0.00**

MAINTENANCE / CONSTRUCTION

SURVEY

SURVEY DESCRIPTION:					
Secondary	EAC	0	$0.00	$0.00
Staff Gauge / Recorders	EAC	0	$0.00	$0.00
Marsh Elevation / Topography	LUM	0	$0.00	$0.00
TBM Installation	EAC	0	$0.00	$0.00
OTHE				$0.00
			TOTAL SURVEY COSTS:	**$0.00**

GEOTECHNICAL

GEOTECH DESCRIPTION:					
Borings	EAC	0	$0.00	$0.00
OTHE				$0.00
			TOTAL GEOTECHNICAL COSTS:	**$0.00**

CONSTRUCTION

CONSTRUCTION DESCRIPTION:					
Rip Rap	LIN FT	TON / FT	TON	UNIT	
	0	0.0	0	$0.00	$0.00
	0	0.0	0	$0.00	$0.00
	0	0.0	0	$0.00	$0.00
Filter Cloth / Geogrid Fabric		SQ	0	$0.00	$0.00
Navagation Aid		EAC	0	$0.00	$0.00
Signage		EAC	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			0	$0.00	$0.00
Timber Members (each or lump sum)			0	$0.00	$0.00
Hardware		LUM	1	$0.00	$0.00
Materials		LUM	1	$0.00	$0.00
Mob /		LUM	1	$0.00	$0.00
Contingency		LUM	1	$0.00	$0.00
General Structure Maintenance		LUM	1	$0.00	$0.00
OTHE				$0.00	$0.00
OTHE				$0.00	$0.00
OTHE				$0.00	$0.00
				TOTAL CONSTRUCTION COSTS:	**$0.00**

TOTAL OPERATIONS AND MAINTENANCE BUDGET: **$5,584.00**

Appendix D
Field Inspection Form

FIELD INSPECTION CHECK SHEET

Project No. / Name:	Delta Wide Crevasses MR-09	Date of Inspection:	March 12, 2008 Time: 10:00 AM
Crevasse No.	**See Report Section III**	Inspector(s):	LDNR: Tom Bernard, NMFS: Cheryl Brodnax, LDWF: Todd Baker
Crevasse Description	See Report Section III	Water Level:	3.5 NGVD at Venice, La. 10:00 AM
Type of Inspection:	2008 Annual Inspection	Weather Conditions:	Clear to Ptly. Cloudy & Cold, Wind NW 10-15 mph

Item	Condition	Physical Damage	Dimensions	Photo	Observations and Remarks
Crevasse # NC-1	Very Good	None	1,000 ft X 100 ft by 8.0' NAVD 88	Appendix B	This newly dredged crevasse is in good to excellent condition. Soundings showed that it has retained most of its original depth. Water is flowing well through the channel and the spoil from the dredging of the cervasse has vegetated throughout the deposited area.
Crevasse # NC-3	Very Good	None	1,400 ft X 100 ft by 8.0' NAVD 88	Appendix B	This second of the two new crevasses is flowing with a swift currect and is bringing much needed sediments into the interior marsh. The crevasse is maintaing a good depth throughout its channel but has lost a little depth near the upstream opening.
Crevasse # 9	Very Good	None	2,200 ft X 75 ft by 8.0' NAVD 88	Appendix B	Good flow is being maintained by this previously dredged crevasse (1999). Its location allows for swift currents during high river stages. The spoil deposition from this cut is very heavily vegetated and has kept its heitght above the lagoon.
Crevasse # 11	Very Good	None	2,600 ft X 100 ft by 8.0' NAVD 88	Appendix B	This redredged crevasse maintains a good flow throughout its length. It has maintained its depth through and the currect through this cut is quick. All of the spoil deposited in the inner lagoon area has vegetated very heavily and seems to be in good condition.
Crevasse # 12	Very Good	None	2,000 ft X 75 ft by 8.0' NAVD 88	Appendix B	Despite being off the main pass, this crevasse seems to working out just fine. There is sufficient current to carry sediments to the inner section of the marsh and the spoil from the dredging is heavily vegetated. The depth through the cut is very good.
Crevasse # 81	Good	None	1,200 ft X 100 ft by 8.0' NAVD 88	Appendix B	This crevasse is in off of Baptiste Collette in the Delta WLFA. Current in this crevasse is strong even though the mouth has silted up from the heavy amounts of silt that is carried into this area. It is estimated that only 3 to 4 feet of draft exists at the mouth.