



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

**2005/2006 Annual Inspection
Report**

for

**OAKS/AVERY CANALS
HYDROLOGIC RESTORATION
PROJECT**

State Project Number TV-13a
Priority Project List 6

October 4, 2005
Vermilion/Iberia Parishes

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I. Introduction

The Oaks/Avery Project consists of approximately 2,876 acres of brackish marsh and open water. It is located on the border of Iberia and Vermilion Parishes, approximately 12 miles south of Delcambre, LA. (See Appendix A).

The Oaks/Avery Canals Hydrologic Restoration Project 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 and approved on the sixth Priority Project List. The Oaks/Avery Project has a twenty –year (20 year) economic life, which began in October 2002.

II. Inspection Purpose and Procedures

The purpose of the annual inspection of the Oaks/Avery Canals Hydrologic Restoration Project (TV-13a) 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 (O&M Plan, 2002). The annual inspection report also contains a summary of maintenance projects 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. The three (3) year projected operation and maintenance budget is shown in Appendix C. A summary of past operation and maintenance projects completed since completion of the Oaks/Avery Canals Project are outlined in Section IV.

In 2003, the CWPPRA Task Force determined, due to the fact that LDNR was responsible for the operation and maintenance phase of the vast majority of CWPPRA projects, that LDNR would be the responsible party for all Post Storm/Hurricane Assessments. After Hurricanes Katrina and Rita, every project appeared to have been impacted by the storms; therefore, LDNR determined that all projects should be assessed for damages (Broussard, 2006). With concurrence from the federal sponsor, LDNR has decided to use the information obtained during this post hurricane assessment in this Annual Maintenance Inspection.

An inspection of the Oaks/Avery Canals Hydrologic Restoration Project (TV-13a) was held on October 4, 2005 under partly cloudy skies and mild temperatures. In attendance were Stan Aucoin, Herbert Juneau, Darrell Pontiff, Beau Tate, Christine Thibodeaux and Patrick Landry of LDNR. NRCS was represented by Troy Mallach. Parties met at the Lafayette Field Office of CED and proceeded to the TV-13a project area. The annual inspection began at the rock revetment at the mouth of the Oaks Canal.

The field inspection included a complete visual inspection of the entire project site. Staff gauge readings and existing temporary benchmarks were used to determine approximate elevations of water, rock weirs, earthen embankments, steel bulkhead structures and other

project features. Photographs were taken at each project feature (see Appendix B) and Field Inspection notes were completed in the field to record measurements and deficiencies (see Appendix D).

III. Project Description and History

This project consists of the following unrelated restorative components designed to address different land loss problems within the project area: protection of Vermilion Bay shoreline with vegetative plantings; protection of GIWW bankline with rock dikes; stabilization of water level variability north of the GIWW.

The Vermilion Bay shoreline is subject to high energy wind driven waves due to the large fetch of Vermilion Bay. Most of the shoreline within the project area is “scalloped”, with sloped banks separated by more seaward points of land with cutbanks. Vegetative plantings provide protection for erosion impacted areas by stabilizing sediment with live root mass and dissipating wave energy with above-ground plant structure (Knutson 1977). The lead federal agency for the project, NRCS, determined that vegetation plantings, similar to those used for the effective TV-09 project (Thibodeaux 1998), are the preferred alternative to protect this shoreline (NRCS 1998).

The banks of the GIWW within the project boundary are subjected to erosion from boat wakes from heavy commercial traffic (Good et al. 1995). The emergent marsh and SAV behind the bank will be subject to the erosive action of boat wakes if the banks are not protected. Wake protection from marine traffic has been provided along sections of the GIWW by freestanding dike sections of riprap material placed approximately 25–30 ft from the existing “cut” bank. Approximately 1,200 ft of bankline has been protected on the south embankment in the area where Bayou Petite Anse exits Tigre Lagoon and enters Vermilion Bay. The narrow strip of land that currently separates Bayou Petite Anse from the GIWW continues to reduce in size due to the eroding banks of the GIWW. The remaining 6,300 ft of bankline stabilization is installed on the north bank of the GIWW immediately west of Oaks Canal. The absence of spoil bank material in this section of the GIWW exposes fragile marsh soils to the erosive wake action of passing marine vessels.

The section of the project area north of the GIWW is currently subject to increased effects of tidal action and frontal storm passage, and from water surges created by daily barge traffic in the GIWW. The scour erosion from rapid water movement through channels in the area may physically damage vegetation and cause excess water turbidity, which has been found to be an important factor limiting SAV growth (Korschgen et al. 1997). A low sill rock weir has been set 2 ft below marsh level, approximately 150 ft north of the opening of this area to the GIWW, to stabilize water levels and lessen the impact of the approximately 500 acres of this section of the project area that will be the hydrologic unit. An existing spoilbank from the weir south to the Intracoastal Canal has been refurbished to prevent the possibility of water flow bypassing the structure. To ensure the integrity of the hydrologic unit, a breach between the hydrologic unit and outside waterways has been plugged with a rock plug. Additionally, existing substandard sections of the hydrologic unit embankment south of the rock plug will be refurbished.

A low sill rock structure built at the convergence of the Oaks Canal and Vermilion Bay will significantly reduce the volume of water moving through the Oaks Canal.

The project has a twenty-year (20 year) economic life, which began in October 2002.

The principal project features include:

- 1 - Approximately 6,300 linear feet of rock breakwater on the northern bank of the Gulf Intracoastal Waterway (GIWW) beginning at the Oaks Canal entrance into the GIWW and heading westward.
- 2 - Approximately 1,200 linear feet of rock breakwater along the southern bank of the GIWW just NE of Tigre Lagoon.
- 3 - Approximately 34,000 smooth cord grass plants planted between the Oaks and Avery Canals along the northern bank of Vermilion Bay.
- 4-Approximately 650 linear feet of bankline stabilization at the southern end of Oaks Canal at it's convergence with Vermilion Bay.
- 5-Approximately 1,200 linear feet of spoilbank restoration at various locations north of the GIWW between the Union Oil Canal and Oaks Canal.
- 6-Approximately 130 linear feet of rock plug at a breach in the levee on the northern end of the project area.
- 7-A low sill sheet pile weir in the Cowpath Canal just north of the GIWW and east of Oaks Canal.

IV. Summary of Past Operation and Maintenance Projects

General Maintenance: No maintenance has been required on this project since construction was completed.

2003 Structure Operations: There are no active operations associated with this project.

V. Inspection Results

Site 1—Rock breakwater/North bank

The dike is in excellent condition.. Approximately 60 linear feet on the eastern end at a barge slip has settled slightly but is and in no need of any repairs. East and west tie-ins are stable. (Appendix B; photos 1-3)

Site 2—Rock paving at Oaks Canal

High tides concealed the area along the western bank paving where some rock had apparently slid into the channel. No worsening in this area was evident. The bank between the bay and Bayou Hebert is still only about 6 feet wide and has not gotten any worse. No immediate maintenance required at this time. (Appendix B; photo 4)

Site 3—Cow path Structure

The structure is in excellent shape. Signage is stable. Wingwalls show no signs of any erosion. Three SS bolts are missing from pile cap and will eventually need to be replaced, probably by DNR personnel. The levee from the structure to the GIWW is stable. No maintenance required at this time. (Appendix B; photos 5-7)

Site 4—Earthen closures

The closures are holding up well. Vegetation has been established. No need for any repairs. (Appendix B; photos 8-11)

Site 5—Rock plug

The plug is in excellent condition. No evidence of settling or vandalism. Tie-ins are stable. No need for any repairs. (Appendix B; photo 12)

Site 6—Rock breakwater/South bank

The dike is in immediate post construction condition and in no need of any repairs. (Appendix B; photo 13)

Site 7—Vegetation plantings

While a close inspection of the plants was not possible due to high water and rough seas, plantings, and the marsh behind them, although stressed due to high salinity water from the hurricane, appeared to be in relatively good condition and in no need of repair. (Appendix B; photo 14)

VI. Conclusions and Recommendations

Overall, the Oaks/Avery Canals Hydrologic Restoration Project is in good condition and functioning as designed. Effects from Hurricane Rita were minimal.

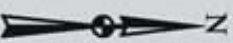
Appendix A
Project Features Map



Oaks/Avery Canal Hydrologic Restoration, Increment 1 (TV-13a)

- Weir
- Plug
- Shoreline Stabilization
- Spoil Bank Maintenance
- Shoreline Protection
- Vegetative Plantings
- Project Boundary

USGS
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Map Produced By:
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Coastal Restoration Field Station

Background Imagery:
1998 Digital Orthophoto Quarter Quadrangle

Map Date: October 8, 2002
Map ID: USGS-NWRC 2003-11-003
Data accurate as of: October 8, 2002

Appendix B

Photographs



Photo 1—eastern tie in of rock dike on northern bank of GIWW



Photo 2—low section at abandoned location on north bank of GIWW



Photo 3—western tie in of rock dike on northern bank of GIWW



Photo 4—rock revetment at mouth of Oaks Canal



Photo 5—Cowpath structure



Photo 6—western end of Cowpath structure



Photo 7—eastern end of Cowpath structure



Photo 8—earthen closure



Photo 9—earthen closure



Photo 10—earthen closure



Photo 11—earthen closure



Photo 12—rock plug



Photo 13—rock dike along southern bank of GIWW



Photo 14—vegetation along northern bank of Vermilion Bay

Appendix C

Three Year Budget Projection

OAKS-AVERY HYDROLOGIC RESTORATION/ TV13a / PPL 6
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>
Herb Juneau	Herb Juneau	NRCS	Stan Aucoin

	2005/2006	2006/2007	2007/2008
Maintenance Inspection	\$ 4,955.00	\$ 5,250.00	\$ 5,407.00
Structure Operation			
Administration		\$ -	\$ -
Maintenance/Rehabilitation			

05/06 Description:

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

06/07 Description:

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

07/08 Description:

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

	2005/2006	2006/2007	2007/2008
<u>Total O&M Budgets</u>	\$ 4,955.00	\$ 5,250.00	\$ 5,407.00

<u>O & M Budget (3 yr Total)</u>	\$ 15,612.00
<u>Existing O & M Budget</u>	\$ 278,535.00
<u>Remaining O & M Budget (Projected)</u>	\$ 262,923.00

Appendix D

Field Inspection Form

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-13a Oaks/Avery Canal Hydrologic Restoration

Date of Inspection: October 4, 2005 Time:

Structure No. N/A

Inspector(s): Stan Aucoin, Pat Landry, Herb Juneau, Darrell Pontiff,
Beau Tate, Christine Thibodeaux (DNR); Troy Mallach (NRCS)

Structure Description: rock dike along northern bank of GIWW

Water Level

Type of Inspection: Annual

Weather Conditions: partly cloudy and mild

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps					
Steel Grating					
Stop Logs					
Hardware					
Timber Piles					
Timber Wales					
Galv. Pile Caps					
Vegetation					
Signage /Supports					
Rip Rap/dike	Excellent			1-3	Dike is excellent post construction condition.
Eathern Embankment					

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?

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-13a Oaks/Avery Canal Hydrologic Restoration

Date of Inspection: October 4, 2005 Time:

Structure No. N/A

Inspector(s): Stan Aucoin, Pat Landry, Herb Juneau, Darrell Pontiff,
Beau Tate, Christine Thibodeaux (DNR); Troy Mallach (NRCS)

Structure Description: rock paving at Oaks Canal

Water Level

Type of Inspection: Annual

Weather Conditions: partly cloudy and mild

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps					
Steel Grating					
Stop Logs					
Hardware					
Timber Piles					
Timber Wales					
Galv. Pile Caps					
Vegetation					
Signage /Supports					
Rip Rap (fill)	Excellent			4	Rock in excellent condition
Eathern Embankment					

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?

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-13a Oaks/Avery Canal Hydrologic Restoration

Date of Inspection: October 4, 2005 Time:

Structure No. Cowpath Structure

Inspector(s): Stan Aucoin, Pat Landry, Herb Juneau, Darrell Pontiff,
Beau Tate, Christine Thibodeaux (DNR); Troy Mallach (NRCS)

Structure Description: Fixed crest weir

Water Level

Type of Inspection: Annual

Weather Conditions: partly cloudy and mild

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps	Excellent				
Steel Grating					
Stop Logs					
Hardware	Good				Three SS bolts missing from pile cap. Not critical.
Timber Piles					
Timber Wales					
Galv. Pile Caps	Excellent				
Vegetation					
Signage /Supports	Excellent			5	
Rip Rap (fill)					
Eathern Embankment	Excellent			6,7	

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?

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-13a Oaks/Avery Canal Hydrologic Restoration

Date of Inspection: October 4, 2005 Time:

Structure No. N/A

Inspector(s): Stan Aucoin, Pat Landry, Herb Juneau, Darrell Pontiff,
Beau Tate, Christine Thibodeaux (DNR); Troy Mallach (NRCS)

Structure Description: Earthen closures

Water Level

Type of Inspection: Annual

Weather Conditions: partly cloudy and mild

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps					
Steel Grating					
Stop Logs					
Hardware					
Timber Piles					
Timber Wales					
Galv. Pile Caps					
Vegetation					
Signage /Supports					
Rip Rap (fill)					
Eathern Embankment	Excellent			8-11	

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?

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-13a Oaks/Avery Canal Hydrologic Restoration

Date of Inspection: October 4, 2005 Time:

Structure No. N/A

Inspector(s): Stan Aucoin, Pat Landry, Herb Juneau, Darrell Pontiff,
Beau Tate, Christine Thibodeaux (DNR); Troy Mallach (NRCS)

Structure Description: Rock plug

Water Level

Type of Inspection: Annual

Weather Conditions: partly cloudy and mild

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps					
Steel Grating					
Stop Logs					
Hardware					
Timber Piles					
Timber Wales					
Galv. Pile Caps					
Vegetation					
Signage /Supports					
Rip Rap (fill)	Excellent			12	
Eathern Embankment					

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?

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-13a Oaks/Avery Canal Hydrologic Restoration

Date of Inspection: October 4, 2005 Time:

Structure No. N/A

Inspector(s): Stan Aucoin, Pat Landry, Herb Juneau, Darrell Pontiff,
Beau Tate, Christine Thibodeaux (DNR); Troy Mallach (NRCS)

Structure Description: Rock breakwater along southern bank of GIWW

Water Level

Type of Inspection: Annual

Weather Conditions: partly cloudy and mild

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps					
Steel Grating					
Stop Logs					
Hardware					
Timber Piles					
Timber Wales					
Galv. Pile Caps					
Vegetation					
Signage /Supports					
Rip Rap (fill)	Excellent			13	
Eathern Embankment					

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?

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-13a Oaks/Avery Canal Hydrologic Restoration

Date of Inspection: October 4, 2005 Time:

Structure No. N/A

Inspector(s): Stan Aucoin, Pat Landry, Herb Juneau, Darrell Pontiff,
Beau Tate, Christine Thibodeaux (DNR); Troy Mallach (NRCS)

Structure Description: Shoreline vegetation

Water Level

Type of Inspection: Annual

Weather Conditions: partly cloudy and mild

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps					
Steel Grating					
Stop Logs					
Hardware					
Timber Piles					
Timber Wales					
Galv. Pile Caps					
Vegetation	Excellent			14	Based on limited inspection, vegetation appeared to have survived Hurricane Rita and is expected to fully recover.
Signage /Supports					
Rip Rap (fill)					
Earthen Embankment					

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

Appendix E

Locations to be Monitored