



**Coastal Protection and Restoration
Authority of Louisiana**

**Office of Coastal Protection and
Restoration**

**2008/2009 Annual Inspection
Report**

for

**OAKS/AVERY CANALS
HYDROLOGIC RESTORATION
PROJECT
(TV-13a)**

State Project Number TV-13a
Priority Project List 6

October 30, 2008
Vermilion/Iberia Parishes

Prepared by:

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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, 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, 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 OCPR was responsible for the operation and maintenance phase of the vast majority of CWPPRA projects, that OCPR would be the responsible party for all Post Storm/Hurricane Assessments. After Hurricane Ike, every project appeared to have been impacted by the storms; therefore, OCPR determined that all projects should be assessed for damages (Broussard, 2006). With concurrence from the federal sponsor, OCPR 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 30, 2008 under sunny skies and cold temperatures. In attendance were Stan Aucoin, Troy Barrilleaux and Darrell Pontiff of OCPR. NRCS was represented by Loland Broussard and Donald Taffi. 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 west end of the north bank rock shoreline protection along the GIWW.

The field inspection included a complete visual inspection of the entire project site. Staff gauge readings, when available, 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 fixed crested steel sheet pile 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 bank stabilization 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.

Hurricane Rita in 2005 totally inundated the project area and caused extensive damages to the camps in the vicinity. Despite the tidal surge from the storm the Oaks/Avery project features sustained minimal adverse effects. In 2008, Hurricane Ike again inundated this area and the project features again sustained no damages.

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 along the western embankment of the Union Oil 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: Below is a summary of completed maintenance projects and operation tasks performed since October 2002, the construction completion date of the Oaks/Avery Canals Bayou Hydrologic Restoration Project.

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

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 continues to settle but is in no need of immediate repairs. East and west tie-ins are stable, however there is some minor erosion occurring at the east tie-in which will be monitored on future inspections. The water level was low at the time of the inspection so the entire rock dike was visible. (Appendix B; photo 5)

Site 4—Rock Bankline Stabilization at Oaks Canal

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; photos 1-2)

Site 7—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 OCPR personnel. The levee from the structure to the GIWW is stable. No maintenance required at this time. The boat lifting device installed by the landowners on the western half of the structure has been removed and is on the ground adjacent to the structure. The landowner installed channel iron to accept stoplogs is still on the structure. This will be investigated further by OCPR. (Appendix B; photo 3)

Site 5—Earthen closures

The closures are holding up well. Vegetation has been established although slightly stressed from the storm surge of Hurricane Ike. No need for any repairs.

Site 6—Rock plug

The plug is in good condition. There appears to be some rock moved from the east side of the closure allowing water to go over the rock at high tides and the landowners have placed sackcrete along this section as an interim solution. Tie-ins are stable. (Appendix B; photo 4)

Site 2—Rock breakwater/South bank

The dike is in immediate post construction condition and in no need of any repairs. (Appendix B; photo 6)

Site 3—Vegetation plantings

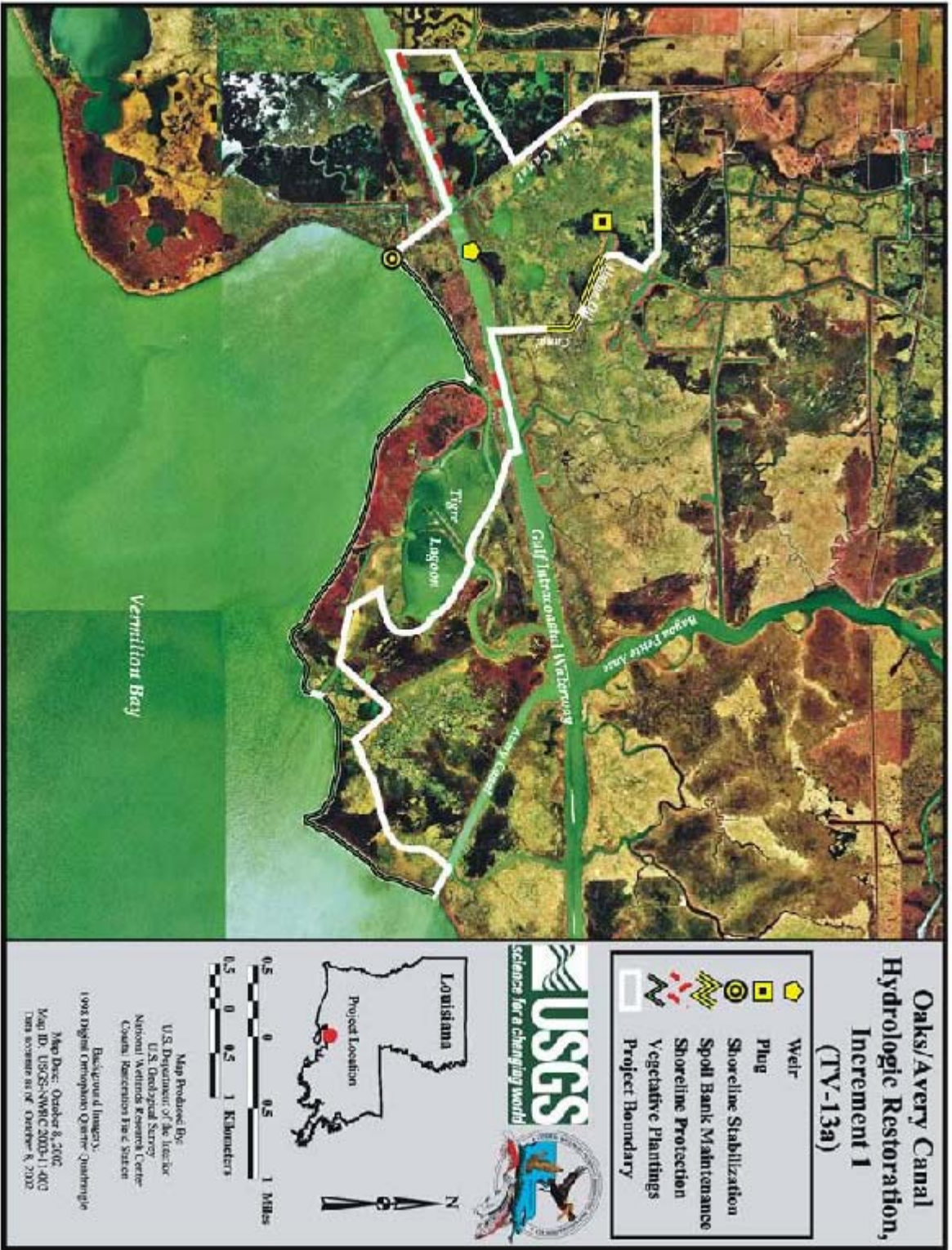
The shoreline plantings were not directly inspected on this trip due to time and wave constraints. There were some pockets of eroded shoreline where the smooth cordgrass is missing near the mouth of Oaks Canal as a result of the storm and it is expected that this condition was typical along the remainder of the bay shore.

VI. Conclusions and Recommendations

Overall, the Oaks/Avery Canals Hydrologic Restoration Project is in good condition and functioning as designed despite being submerged by the Hurricane Ike tidal surge. The landowners have pointed out a breach that has occurred off of the east bank of Oaks Canal which is circumventing the hydrologic boundary of the project, as well as some low spots along the canal (refer to Photo No. 7 in Appendix B). Plans and specifications are being prepared for a maintenance event for the following:

- Repair breach off of Oaks Canal.
- Repair vandalism to the rock plug.
- Repair low spots on the Oaks Canal where water is seeping through or over the existing levee.
- Add staff gage at Cow Path.

Appendix A
Project Features Map



Appendix B

Photographs



Photo No.1, Rock dike at Oaks Canal, west side



Photo No. 2, Rock dike at Oaks Canal, east side



Photo No. 3, Cow Path Structure



Photo No. 4, Rock plug, view showing sackcrete on eastern end



Photo No. 5, Rock along north bank of GIWW



Photo No. 6, Rock along south bank of GIWW



Photo No. 7, Breach area off of Oaks Canal, view showing landowner interim blockage of opening.

Appendix C

Three Year Budget Projection

**OAKS-AVERY HYDROLOGIC RESTORATION/ TV13a / PPL 6
Three-Year Operations & Maintenance Budgets 07/01/2009 - 06/30/2012**

<u>Project Manager</u> Pat Landry	<u>O & M Manager</u> Darrell Pontiff	<u>Federal Sponsor</u> NRCS	<u>Prepared By</u> Darrell Pontiff
2009/2010		2010/2011	2011/2012
<i>Maintenance Inspection</i>	\$ 5,737.00	\$ 5,909.00	\$ 6,086.00
<i>Structure Operation</i>		\$ -	\$ -
<i>Administration</i>	\$4,000.00	\$ -	\$ -

Maintenance/Rehabilitation

09/10 Description: Add staff gage at Cow Path Structure/repair rock plug and levee along Oaks Canal.

<i>E&D</i>	\$17,500.00
<i>Construction</i>	\$120,350.00
<i>Construction Oversight</i>	\$15,000
<i>Sub Total - Maint. And Rehab.</i>	<u>\$ 152,850.00</u>

11/12 Description

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

11/12 Description:

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

	2009/2010	2010/2011	2011/2012
<u>Total O&M Budgets</u>	\$ 162,587.00	\$ 5,909.00	\$ 6,086.00

<u>O & M Budget (3 yr Total)</u>	\$ 174,582.00
<u>Unexpended O & M Budget</u>	\$ 248,974.00
<u>Remaining O & M Budget (Projected)</u>	\$ 74,392.00

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OPERATION AND MAINTENANCE BUDGET WORKSHEET
OAKS/AVERY CANAL HR / PROJECT NO. TV-13a / PPL NO. 6

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	1	\$5,737.00	\$5,737.00
General Structure Maintenance	LUMP	1	\$0.00	\$0.00
Engineering and Design	LUMP	1	\$10,000.00	\$10,000.00
Operations Contract	LUMP	1	\$0.00	\$0.00
Construction Oversight	LUMP	1	\$15,000.00	\$15,000.00

ADMINISTRATION

OCPR / CRD Admin.	LUMP	1	\$3,000.00	\$3,000.00
FEDERAL SPONSOR Admin.	LUMP	1	\$1,000.00	\$1,000.00
SURVEY Admin.	LUMP	0	\$0.00	\$0.00
OTHER				\$0.00
TOTAL ADMINISTRATION COSTS:				\$4,000.00

MAINTENANCE / CONSTRUCTION

SURVEY

SURVEY DESCRIPTION:	Set staff gage at Cow Path Structure				
	Secondary Monument	EACH	0	\$0.00	\$0.00
	Staff Gauge / Recorders	EACH	1	\$7,500.00	\$7,500.00
	Marsh Elevation / Topography	LUMP	0	\$0.00	\$0.00
	TBM Installation	EACH	0	\$0.00	\$0.00
	OTHER				\$0.00
TOTAL SURVEY COSTS:				\$7,500.00	

GEOTECHNICAL

GEOTECH DESCRIPTION:					
	Borings	EACH	0	\$0.00	\$0.00
	OTHER				\$0.00
TOTAL GEOTECHNICAL COSTS:				\$0.00	

CONSTRUCTION

CONSTRUCTION DESCRIPTION:	Repair rock plug, Oaks Canal levee refurbishment.					
	Rip Rap	LIN FT	TON / FT	TONS	UNIT PRICE	
	Rock Dike	0	0.0	0	\$0.00	\$0.00
	Bank Paving	0	0.0	0	\$0.00	\$0.00
		0	0.0	0	\$0.00	\$0.00
	Filter Cloth / Geogrid Fabric	SQ YD	1,750		\$10.00	\$17,500.00
	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	1,000		\$45.00	\$45,000.00
	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		\$30,000.00	\$30,000.00
	Contingency (25%)	LUMP	1		\$24,070.00	\$24,070.00
	General Structure Maintenance	LUMP	1		\$0.00	\$0.00
	Sackcrete	EACH	210		\$18.00	\$3,780.00
	OTHER				\$0.00	\$0.00
	OTHER				\$0.00	\$0.00
	TOTAL CONSTRUCTION COSTS:				\$120,350.00	

TOTAL OPERATIONS AND MAINTENANCE BUDGET: \$162,587.00

Appendix D

Field Inspection Form

Annual Inspection Report
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MAINTENANCE INSPECTION REPORT CHECK SHEET

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

Date of Inspection: October 30, 2008 Time: 11:20 am

Structure No. N/A

Inspector(s): Stan Aucoin, Troy Barrilleaux, Darrell Pontiff (OCPR)
 Loland Broussard, Donald Taffi (NRCS)

Structure Description: Shoreline vegetation

Water Level

Type of Inspection: Annual

Weater Conditions: sunny and cold

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps	N/A				
Steel Grating	N/A				
Stop Logs	N/A				
Hardware	N/A				
Timber Piles	N/A				
Timber Wales	N/A				
Galv. Pile Caps	N/A				
Vegetation	Good				Only vegetation inspected was along either side of the mouth of the Oaks Canal. Slightly stressed from the storm surge.
Signage /Supports	N/A				
Rip Rap (fill)	N/A				
Earthen Embankment	N/A				

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?

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MAINTENANCE INSPECTION REPORT CHECK SHEET

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

Date of Inspection: October 30, 2008 Time: 12:05 pm

Structure No. N/A

Inspector(s): Stan Aucoin, Troy Barrilleaux, Darrell Pontiff (OCPR)
 Loland Broussard, Donald Taffi (NRCS)

Structure Description: Rock breakwater along southern bank of GIWW

Water Level

Type of Inspection: Annual

Weater Conditions: sunny and cold

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps	N/A				
Steel Grating	N/A				
Stop Logs	N/A				
Hardware	N/A				
Timber Piles	N/A				
Timber Wales	N/A				
Galv. Pile Caps	N/A				
Vegetation	N/A				
Signage /Supports	N/A				
Rip Rap (fill)	Excellent			6	
Eathern Embankment	N/A				

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?

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MAINTENANCE INSPECTION REPORT CHECK SHEET

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

Date of Inspection: October 30, 2008 Time: 11:45 am

Structure No. N/A

Inspector(s): Stan Aucoin, Troy Barrilleaux, Darrell Pontiff (OCP)
 Loland Broussard, Donald Taffi (NRCS)

Structure Description: Rock plug

Water Level

Type of Inspection: Annual

Weater Conditions: sunny and cold

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

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?

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MAINTENANCE INSPECTION REPORT CHECK SHEET

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

Date of Inspection: October 30, 2008 Time: 11:45 am

Structure No. N/A

Inspector(s): Stan Aucoin, Troy Barrilleaux, Darrell Pontiff (OCPR)
 Loland Broussard, Donald Taffi (NRCS)

Structure Description: Earthen closures

Water Level

Type of Inspection: Annual

Weater Conditions: sunny and cold

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

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?

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MAINTENANCE INSPECTION REPORT CHECK SHEET

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

Date of Inspection: October 30, 2008 Time: 11:30 am

Structure No. Cowpath Structure

Inspector(s): Stan Aucoin, Troy Barrilleaux, Darrell Pontiff (OCPR)
 Loland Broussard, Donald Taffi (NRCS)

Structure Description: Fixed crest weir

Water Level

Type of Inspection: Annual

Weater Conditions: sunny and cold

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps	Excellent			3	
Steel Grating	N/A				
Stop Logs	N/A				
Hardware	Good			3	Three SS bolts missing from pile cap. Not critical. Landowner installed boat lifting device has been removed..
Timber Piles	N/A				
Timber Wales	N/A				
Galv. Pile Caps	Excellent				
Vegetation	N/A				
Signage /Supports	Excellent			3	
Rip Rap (fill)	N/A				
Eathern Embankment	Excellent				

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?

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MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-13a Oaks/Avery Canal Hydrologic Restoration
 Structure No. N/A
 Structure Description: Bankline Stabilization at Oaks Canal
 Type of Inspection: Annual

Date of Inspection: October 30, 2008 Time: 11:20 am
 Inspector(s): Stan Aucoin, Troy Barrilleaux, Darrell Pontiff (OCPR)
 Loland Broussard, Donald Taffi (NRCS)
 Water Level
 Weater Conditions: sunny and cold

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps	N/A				
Steel Grating	N/A				
Stop Logs	N/A				
Hardware	N/A				
Timber Piles	N/A				
Timber Wales	N/A				
Galv. Pile Caps	N/A				
Vegetation	N/A				
Signage / Supports	N/A				
Rip Rap (fill)	Excellent			1,2	Rock in excellent condition
Eathern Embankment	N/A				

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?

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MAINTENANCE INSPECTION REPORT CHECK SHEET

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

Date of Inspection: October 30, 2008 Time: 10:40 am

Structure No. N/A

Inspector(s): Stan Aucoin, Troy Barrilleaux, Darrell Pontiff (OCPR)
 Loland Broussard, Donald Taffi (NRCS)

Structure Description: rock dike along northern bank of GIWW

Water Level

Type of Inspection: Annual

Weater Conditions: sunny and cold

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps	N/A				
Steel Grating	N/A				
Stop Logs	N/A				
Hardware	N/A				
Timber Piles	N/A				
Timber Wales	N/A				
Galv. Pile Caps	N/A				
Vegetation	N/A				
Signage /Supports	N/A				
Rip Rap/dike	Excellent			5	Dike is excellent post construction condition. Approx. 60 LF on eastern end has settled.
Eathern Embankment	N/A				

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?

Appendix E

Locations to be Monitored