State of Louisiana

Coastal Protection and Restoration Authority (CPRA)

2012/2013 Annual Inspection Report

for

OAKS/AVERY CANALS HYDROLOGIC RESTORATION PROJECT

State Project Number TV-13a
Priority Project List 6

December 11, 2012
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) project 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, CPRA 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.

An inspection of the Oaks/Avery Canals Hydrologic Restoration Project (TV-13a) was held on December 11, 2012 under sunny skies and cool temperatures. In attendance were Loland Broussard, Dale Garber, and Brandon Samson of NRCS. Parties met at the Lafayette Field Office of NRCS and proceeded to the TV-13a project area. The annual inspection began at the rock dike at the west end of the north bank of the GIWW shoreline protection.

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 dikes, earthen embankments, low sill sheet pile weir 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 existing shoreline was planted from the Oaks Canal eastward to the Avery Canal.

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 was 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 had been plugged with a rock plug. Additionally, substandard sections of the hydrologic unit embankment south of the rock plug have been refurbished.

The 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 principal project features include:

1 - Approximately 6,300 linear feet of rock dike 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 dike 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 its convergence with Vermilion Bay.

5 - Approximately 1,200 linear feet of spoilbank restoration at various locations north of the GIWW on 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 along with the refurbishment of approximately 900 LF of spoil bank south of the structure.

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.

2007 Acadian Engineers – Post construction surveys were conducted to establish inlet/outlet baseline channel conditions adjacent to the Cowpath weir. These were performed by Acadian Engineers at a cost of $5,194.15.

2012 Southern Delta Construction – A breach occurred off of the eastern embankment of Oaks Canal which was circumventing the hydrologic boundary of the project, additionally there were some low spots along the same embankment south of the breach. The project included:

1. Approximately 800 feet (including the creation of an earthen canal plug) of levee was refurbished and raised to a grade of approximately +5 ft along the Oaks Canal.
2. An earthen canal plug was constructed on the Union Canal approximately 200 ft in length across the channel. The intended elevation was to be +5 ft across the entire plug. Due to continuous problems with base failure and poor borrow material, approximately 50 ft section of the plug has settled to approximately +3 ft elevation. The rest of the plug is at or near the intended +5 ft elevation.
3. The existing rock plug was gapped to allow for fisheries movement.

4. A navigation aid was installed at the newly constructed earthen canal plug on the Union Canal.

Construction----------	$153,413.75
E&D, Construction Oversight, As-Builts ----------	$15,000.00
Total Project Cost	**$168,413.75**

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

V. Inspection Results

Site 1—Rock Dike/North Bank GIWW

The dike is in excellent condition. Approximately 50 linear feet on the eastern end at an oilfield location canal continues to settle but is in no need of any repairs. This low area is located at N 29° 49' 58.3" and W 91° 59' 25.9". 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 2—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. Additional rock has been added to connect the end of the existing rock paving to the rock island protecting two pipelines located on the eastern side of the Oaks Canal. This work was performed by ChevronTexaco Pipeline, LLC-Erath in 2009 through CUP No. 20070581. No immediate maintenance required at this time. (Appendix B; Photos 1-2)

Site 3—Cow path Structure

Due to low water conditions, the structure could not be inspected. Water could be seen pouring out of structure. (Appendix B; Photo 3)

Site 4—Spoilbank Maintenance (Union Canal)

Spoilbank maintenance done in a previous maintenance event looks good and is in the same condition as last inspection.

Site 5—Rock plug

The rock plug located on the north section of the project area near Union Canal has been gapped with the latest maintenance event. (Appendix B; Photo 4)

Site 6—Rock Dike/South Bank GIWW

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

Site 7—Vegetation plantings

The shoreline plantings were not directly inspected on this trip due to time and wave constraints. The vegetation near the mouth of Oaks Canal is in fair condition and it is expected that this condition was typical along the remainder of the bay shore.

Site 8 – Spoilbank Maintenance (Oaks Canal)

The recently completed spoilbank maintenance on the Oaks canal looks great and was built to a +5.0' elevation. As part of the spoilbank maintence an old slip that provided access to a landowner camp was plugged. The plug has some settlement in the middle (15-20 feet in length) and is at approximately +2.5' elevation, where the settlement has occurred. (Appendix B; Photo 7)

Site 9 – Earthen Canal Plug (Union Canal)

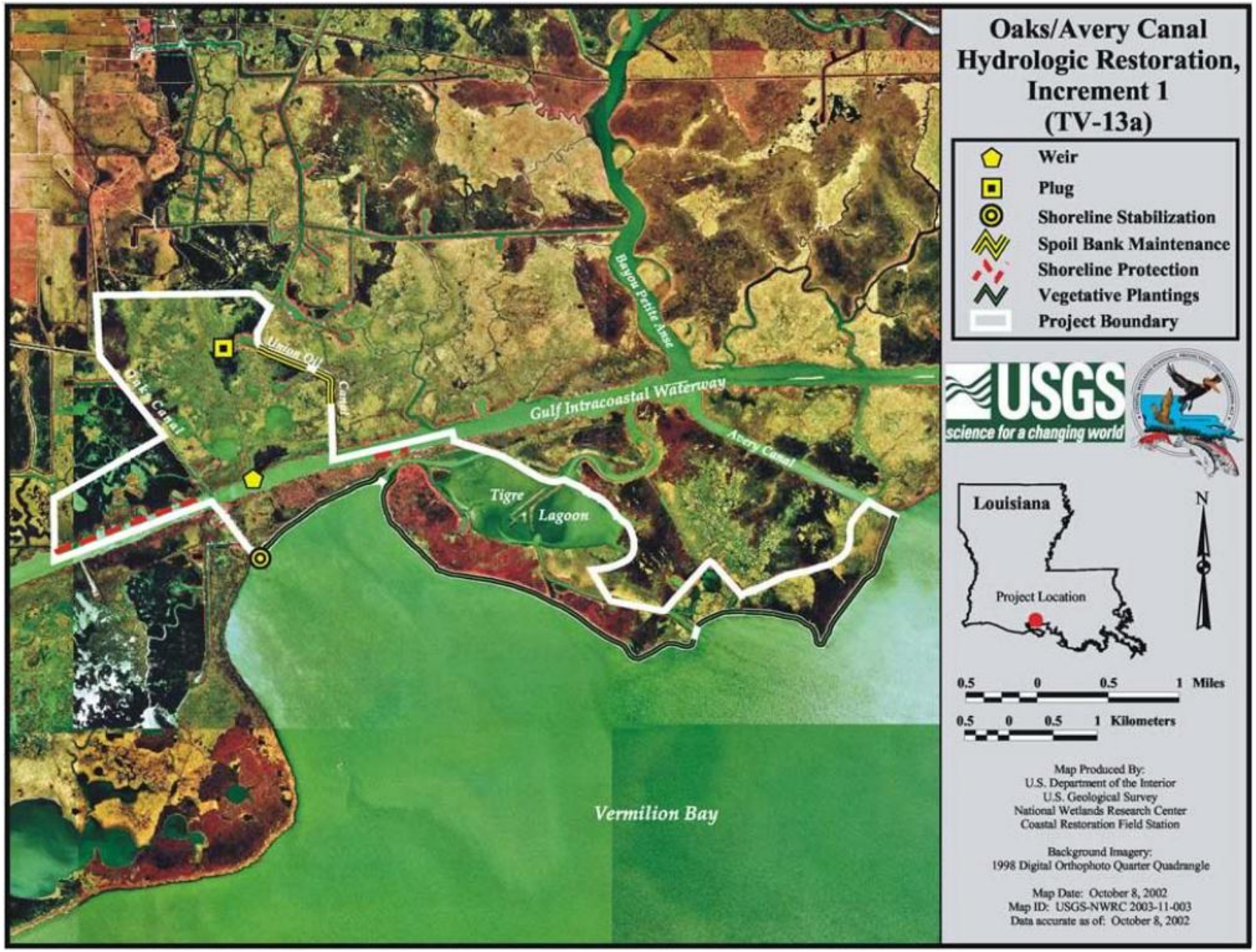
The Earthen Canal plug has experienced some settlement in a 50' section and is approximately at a +2.5' elevation where the settlement occurred.

VI. Conclusions and Recommendations

Overall, the Oaks/Avery Canals Hydrologic Restoration Project is in good condition and functioning as designed. Additional work may need to be done at a later time to shore up the earthen canal plugs constructed during the recent maintenance event. High tides and southerly winds may cause water to migrate across the plugs in the settled sections, and cutting may occur.

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
Bayou Petite Anse
Union Oil
Canal
Oak Canal
Gulf Intracoastal Waterway
Avery Canal
Tigre
Lagoon
Vermilion Bay
USGS
science for a changing world
Louisiana
Project Location
N
0.5 0 0.5 1 Miles
0.5 0 0.5 1 Kilometers
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 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 gapped as part of maintenance event. (photo taken 07/02/2012)

Photo No. 5, Rock along north bank of GIWW showing low area

Photo No. 6, Rock dike along south bank of GIWW

Photo No. 7, Spoilbank Maintenance along Oaks Canal

Photo No. 8, Earthen Canal plug on Union Canal

Appendix C

Three Year Budget Projection

OAKS-AVERY HYDROLOGIC RESTORATION/ TV13a / PPL 6

Three-Year Operations & Maintenance Budgets 07/01/2013 - 06/30/2016

Project Manager	O & M Manager	Federal Sponsor	Prepared By
Pat Landry	*Darrell Pontiff*	*NRCS*	*Darrell Pontiff*

	2013/2014 (-11)	2014/2015 (-12)	2015/2016 (-13)
Maintenance Inspection	$ 6,457.00	$ 6,651.00	$ 6,851.00
Structure Operation		$ -	$ -
State Administration		$ -	$ -
Federal Administration		$ -	$ -
Maintenance/Rehabilitation			

13/14 Description:

E&D	$0.00
Construction	$0.00
Construction Oversight	$0
Sub Total - Maint. And Rehab.	$ -

14/15 Description

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

15/16 Description:

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

	2013/2014 (-11)	2014/2015 (-12)	2015/2016 (-13)
Total O&M Budgets	**$ 6,457.00**	**$ 6,651.00**	**$ 6,851.00**

O &M Budget (3 yr Total)	**$ 19,959.00**
Unexpended O & M Budget	**$ 37,971.00**
Remaining O & M Budget (Projected)	**$ 18,012.00**

Appendix D

Field Inspection Form

Annual Inspection Report
OAKS/AVERY CANALS HYDROLOGIC RESTORATION
State Project No. TV-13a

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-13a Oaks/Avery Canal Hydrologic Restoration — Date of Inspection: December 11, 2012 Time: 10:00 am

Structure No. N/A — Inspector(s): Loland Broussard, Dale Garber, Brandon Samson (NRCS)

Structure Description: Earthen canal plug (Union Canal) — Water Level

Type of Inspection: Annual — Weater Conditions: sunny and cool

Item	Condition	Pysical 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			8	Plantings from recent maintenance event still in place. No growth due to short duration in soil and time of year.
Signage /Supports	N/A				
Rip Rap/dike	N/A				
Eathern Embankment	Good			8	The earthen canal plug has experienced settlement and may need additional work.

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?

Annual Inspection Report
OAKS/AVERY CANALS HYDROLOGIC RESTORATION
State Project No. TV-13a

MAINTENANCE INSPECTION REPORT CHECK SHEET

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

Date of Inspection: December 11, 2012 Time: 10:00 am

Structure No. N/A

Inspector(s): Loland Broussard, Dale Garber, Brandon Samson (NRCS)

Structure Description: Spoilbank Maintenance (Oaks Canal)

Water Level

Type of Inspection: Annual

Weater Conditions: sunny and cool

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			7	Plantings from recent maintenance event still in place. No growth due to short duration in soil and time of year.
Signage /Supports	N/A				
Rip Rap (fill)	N/A				
Earthen Embankment	Good			7	Spoilbank is built up to +5' elevation or greater. Earthen canal plug has experienced settlement and may need additional work.

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?

Annual Inspection Report
OAKS/AVERY CANALS HYDROLOGIC RESTORATION
State Project No. TV-13a

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-13a Oaks/Avery Canal Hydrologic Restoration — Date of Inspection: December 11, 2012 Time: 10:00 am

Structure No. N/A — Inspector(s): Loland Broussard, Dale Garber, Brandon Samson (NRCS)

Structure Description: Shoreline vegetation — Water Level

Type of Inspection: Annual — Weater Conditions: sunny and cool

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.
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?

Annual Inspection Report
OAKS/AVERY CANALS HYDROLOGIC RESTORATION
State Project No. TV-13a

MAINTENANCE INSPECTION REPORT CHECK SHEET

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

Date of Inspection: December 11, 2012 Time: 10:00 am

Structure No. N/A

Inspector(s): Loland Broussard, Dale Garber, Brandon Samson (NRCS)

Structure Description: Rock dike along southern bank of GIWW

Water Level

Type of Inspection: Annual

Weater Conditions: sunny and cool

Item	Condition	Pysical 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	Rock dike is in good 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?

Annual Inspection Report
OAKS/AVERY CANALS HYDROLOGIC RESTORATION
State Project No. TV-13a

MAINTENANCE INSPECTION REPORT CHECK SHEET

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

Date of Inspection: December 11, 2012 Time: 10:00 am

Structure No. N/A

Inspector(s): Loland Broussard, Dale Garber, Brandon Samson (NRCS)

Structure Description: Rock plug

Water Level

Type of Inspection: Annual

Weater Conditions: sunny and cool

Item	Condition	Pysical 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)	Poor				Not inspected on this trip. No access to rock plug.
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?

Annual Inspection Report
OAKS/AVERY CANALS HYDROLOGIC RESTORATION
State Project No. TV-13a

MAINTENANCE INSPECTION REPORT CHECK SHEET

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

Date of Inspection: December 11, 2012 Time: 10:00 am

Structure No. N/A

Inspector(s): Loland Broussard, Dale Garber, Brandon Samson (NRCS)

Structure Description: Spoilbank Maintenance

Water Level

Type of Inspection: Annual

Weater Conditions: sunny and cool

Item	Condition	Pysical 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				Earthen plugs look good.

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?

Annual Inspection Report
OAKS/AVERY CANALS HYDROLOGIC RESTORATION
State Project No. TV-13a

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-13a Oaks/Avery Canal Hydrologic Restoration — Date of Inspection: December 11, 2012 Time: 10:00 am

Structure No. Cowpath Structure — Inspector(s): Loland Broussard, Dale Garber, Brandon Samson (NRCS)

Structure Description: Fixed crest weir — Water Level

Type of Inspection: Annual — Weater Conditions: sunny and cool

Item	Condition	Pysical Damage	Corrosion	Photo #	Observations and Remarks
					Could not inpect due to low water.
Steel Bulkhead / Caps	Excellent			3	
Steel Grating	N/A				
Stop Logs	N/A				
Hardware	Good				Could not inspect due to low water.
				3	
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?

Annual Inspection Report
OAKS/AVERY CANALS HYDROLOGIC RESTORATION
State Project No. TV-13a

MAINTENANCE INSPECTION REPORT CHECK SHEET

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

Date of Inspection: December 11, 2012 Time: 10:00 am

Structure No. N/A

Inspector(s): Loland Broussard, Dale Garber, Brandon Samson (NRCS)

Structure Description: rock paving at Oaks Canal

Water Level

Type of Inspection: Annual

Weater Conditions: sunny and cool

Item	Condition	Pysical 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?