AT-04 - Castille Pass Channel Sediment Delivery

CWPPRA
Castille Pass Sediment Delivery (AT-04)
Phase II Request

Technical Committee Meeting

December 6, 2006

Baton Rouge, LA

Project Overview

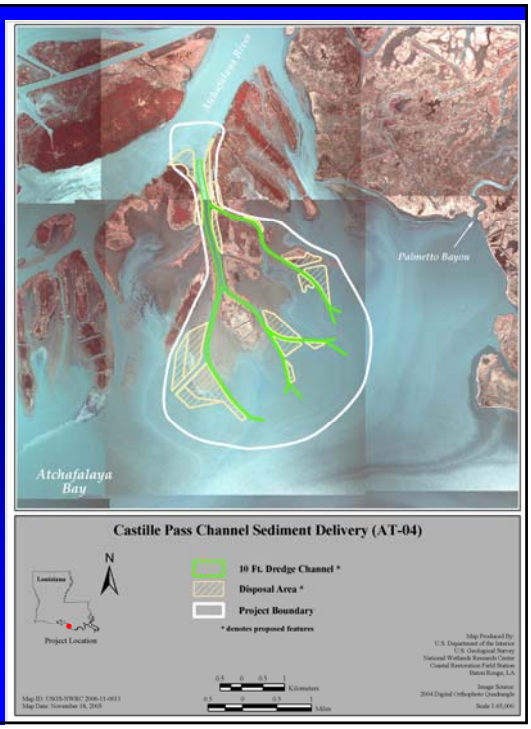
Project Location: Region 3 , Atchafalaya Basin, St. Mary Parish Parish, Atchafalaya Delta.

Problem: Dredged spoil placement has restricted natural flow to the eastern delta which has substantially reduced natural marsh creation

Goals:

- Increase riverine flow into the eastern delta into Fourleague bay to promote natural marsh creation
- Initially create 150 acres of marsh (PPL9)
- Create 220 acres of marsh through maintenance activities (PPL9)

Project Map



Project Features Overview

- **Hydraulically dredge 2.1 million cubic yards of material from Castille, East and Natal Passes to an elevation of -10.0 NAVD.**

- **Construct over 25,000 liner feet of containment dikes to varying elevations and widths.**

- **Initially create over 570 acres of intertidal marsh varying in elevation from +2.5 to +3.0 NAVD.**

Project Benefits & Costs

- **Dredging activities will initially create over 500 acres of marsh with an additional 100+ acres created from maintenance events over 20 years. Anticipated long term (20yr) accretion from increased sediment transport to the project area will create approximately 200 acres**

- **The Total Fully Funded Cost is $30,892,080**
  (Dec. 2005 = $19,657,695)

- **The Total Fully Funded Cost is has not changed significantly from what was originally projected while increasing created acres by 60%**

- **The Prioritization Score is: 59.5**

Project Comparison/Contrast

The Present **vs.** PPL 9

Authorized Project – PPL 9

- Create a 10 ft deep, 400 ft wide channel 5 miles long extending southerly into Fourleague Bay.
- 150 acres created from initial construction
- 220 acres created from maintenance activities

Currently Proposed Project

- Dredge and extend Castille, East and Natal Channels, including bifurcation channels, in varying widths to elevation -10 NAVD.
- 500+ acres created from initial construction
- 100+ acres created from maintenance activities

Questions?

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
SEFC/Estuarine Habitats & Coastal Fisheries Center
646 Cajundome Boulevard
Lafayette, Louisiana 70506

November 22, 2005

Mr. Tom Podany (Chairman)
CWPPRA Technical Committee
Assistant Chief of Planning, Programs and Projects Management
U.S. Army Engineer District, New Orleans
P.O. Box 60267
New Orleans, LA 70160-0267

Dear Mr. Podany,

As the lead federal agency for the Castille Pass Sediment Delivery project authorized by the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) Task Force on the 9th Project Priority List, the National Marine Fisheries Service (NMFS) is requesting, in accordance with CWPPRA's Standard Operating Procedure (SOP), approval to proceed with construction of this project.

At the Phase I approval meeting in January 2000 the project design consisted of dredging Castille Pass 400 feet wide by 10 feet deep (NGVD) extending it eastward towards Fourleague Bay ending near South Point for a total length of approximately 25,000 feet. This channel would have bifurcated several times to provide water and sediment delivery through four channels that were to be 160 feet wide by 10 feet deep totaling 21,500 feet. As designed, this effort was calculated to create 150 acres initially, and 370 acres after 20 years. As presented at the 95% design meeting, the project will now consist of improving four areas of the East Pass Delta Channel. The entrance to East Pass will be widened and the bottom ramped up to enhance diversion of fresh water and sediments from the Atchafalaya River into East Pass. The existing East Pass channel will be widened and deepened from the entrance to the Castille Pass bifurcation. The dredged material will be placed to create new emergent marsh. The existing Natal Channel branch channel will be extended and diked to direct the channel flows toward the southeast into bay bottoms to extend the Delta Lobe building process. The existing Castille Pass branch channel will be extended southeastward into the bay with diking placed to extend the Delta Lobe and build new marsh acreage. Extending the southeast branch exit channel toward the southeast will also reconfigure the mouth of East Pass. A complete dike will be placed along the southwestern channel bank to redirect flows into the shallow bay bottom to create a still-water cove area enhancing sediment deposition, eventually leading to the creation of emergent marsh in the newly created bay between Castille Pass and the East Pass extension. As presented, the proposed project is expected to create 570 acres of marsh initially, and an additional 150 acres after 20 years.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
SEFC/Estuarine Habitats & Coastal Fisheries Center
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Lafayette, Louisiana 70506

Attached please find the statement of local sponsor concurrence for construction approval request and brief description of the status of compliance with the various SOP requirements for construction approval. Please do not hesitate to contact me at 301-713-0174 if you have any questions regarding this matter.

Sincerely,

Erik Zobrist, Ph. D.
NMFS Program Manager

cc:

Julie Z. LeBlanc, USACE
Sharon Parrish, EPA
Wes McQuiddy, EPA
Britt Paul, NRCS
John Jurgensen, NRCS
Richard Hartman, NMFS
Rachel Sweeney, NMFS
Gerry M. Duszynski, DNR
Daniel Llewellyn, DNR
Maury Chatellier, DNR
Darryl Clark, USFWS
Kevin Roy, USFWS
Project File
NMFS, Galveston
Erik Zobrist, NMFS

UNITED STATES DEPARTMENT OF COMMERCE
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NATIONAL MARINE FISHERIES SERVICE
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DECEMBER 1, 2006

Mr. Tom Podany (Chairman)
CWPPRA Technical Committee
Assistant Chief of Planning, Programs and Projects Management
U.S. Army Engineer District, New Orleans
P.O. Box 60267
New Orleans, LA 70160-0267

Subject: Second Phase II Authorization Request for the Castille Pass Sediment Delivery (AT-04).

Dear Mr. Podany,

As the lead federal agency for the Castille Pass Sediment Delivery (AT-04) project the National Marine Fisheries Service (NMFS) hereby submit a second request for phase II authorization, in accordance with the CWPPRA Project Standard Operating Procedures (SOP) Manual. The initial request from the December 2005 Phase II request process is attached.

1.) Description of Phase I Project

A description of the Castille Pass Sediment Delivery Project candidate project as selected for Phase I authorization is found in Enclosure 1. Enclosure 1 contains the original Fact Sheet and map depicting the project boundary and project features. It includes a description of the conceptual features of the project as authorized for Phase I, a summary of the benefits attributed to the Phase I project and project budget information as estimated at the time of Phase I authorization.

2.) Overview of Phase I Tasks, Process and Issues

After receiving Phase I approval in January 2000, the project team was assembled with representatives from the NOAA and the LDNR. Contracts were awarded to prepare a hydrographic model. Engineering and design was contracted to BCG. A 30% design review meeting was held on January 20, 2005, which resulted in a letter November 21, 2005 from the LDNR concurring to proceed with final design. During design, issues incurred were concerns about hydrologic and sedimentation for navigation canals, concern over dredge disposal areas, retention dike materials, and blocking water flow. Minor changes were made for East Pass, Natal Pass and Castille Pass alignments. Changes were made to the East Pass extension channel length, width, diking lengths and elevations and alignments prior to the 95% design meeting. The design revision considers only cast earthen dike construction for the channel and disposal area configurations. Because hydrologic modeling indicated no changes in the East Pas

flows, stages, sediment transport, or coves with or without a dam across the Southwest Branch at the mouth of East Pass, the dam was removed from the project.
All NEPA documentation was completed and circulated November 23, 2005 resulting in a final Environmental Assessment and a Finding of No Significant Impact (FONSI). The plans and Specifications were prepared and the design report finalized. The LDNR confirm landrights with the state were completed in a letter dated December 11, 2005. The LDNR prepared the Ecological Review. A 95% design meeting was held October 13, 2005. No comments were made at the meeting, therefore no changes were made to the design.

3.) Description of the Phase II Candidate Project

A. Enclosure 3-A contains the current Fact Sheet and map depicting the project boundary and project features. It includes a detailed description of the features of the project, a summary of the benefits and project budget information.

B. The project features have not changed since the 95% design meeting of October 13, 2005 where no comments were made or received. A revised WVA was prepared to incorporate the changes in benefits that occurred from changes made prior to the 95% design meeting.

C. A table containing the current project cost estimates is provided in enclosure 3-C.

4.) Checklist of phase II requirements

A. List of Goals and Strategies

- Facilitate natural sub-delta formation in the shallow water areas between East Pass and Four League Bay to build approximately 556 acres of land over the 20-year project life.
- Create approximately 570 acres of emergent land suitable for establishment of marsh plant vegetation over the 20-year project life using dredged material.
- As a result of these goals, approximately 2,121 acres of marsh will exist in the project area at the end of the 20-year project life representing an approximate net gain of 556 acres of marsh.
-

B. Cost Sharing Statement
A cost sharing agreement was signed for Phase I costs October, 2000.

C. Notification that landrights are finalized.
Landrights were secured prior to December 10, 2004 from the Louisiana Department of Wildlife and Fisheries (enclosure 4-C).

D. A favorable Preliminary Design Review
A preliminary Design Review was held January 20, 2005. Comments are discussed above in item #2 and #3, and are detailed in the 95% report. The LDNR letter of concurrence is included as enclosure 4-D.

E. Final Project Design Review

A favorable 95% design meeting was held October 13, 2005. No comments were made at the meeting, therefore no changes were made to the design.

F. Draft EA
A draft EA was circulated November 23, 2005 concluding in a FONSI (enclosure 4-F).

G. Written summary of Ecological Review

Castille Pass Channel Sediment Delivery (AT-04)
Ecological Review Summary
September 2005

Summary/Conclusions
The following four types of marshlands are expected to be created within the Castille Pass Channel Sediment Delivery project area:
1. Uplands - having an elevation greater than +3.0 feet NAVD-88.
2. Shrub/Scrub marsh - having an elevation range from +2.0 feet to +3.0 feet NAVD-88.
3. Intertidal marsh - having an elevation range from +0.75 feet to +2.0 feet NAVD-88.
4. Subaqueous marsh - having elevations at less than +0.75 feet NAVD-88.

The planned project diking will be mostly upland acreage with some shrub/scrub acreage along their slopes. The resulting elevation of the hydraulic material in the DAs post-shrinkage (20% anticipated in the first year) will be between +0.75 feet NAVD-88 to +2.0 feet NAVD-88, thereby falling in the intertidal marsh category. This approximates the Penland et al. (1996) conclusion that the maximum elevation for the establishment of intertidal marsh vegetation is +2.0 feet NGVD (~MSL) which can be interpolated as corresponding to +1.8 feet NAVD-88 using USACE CORPSCON for Windows, Version 5.11.08. The projected accretion within the three cove areas will be classified as subaqueous marsh.

This project is to be constructed in a river-mouth which may be classified as a dynamic area and as such, the impacting conditions (wind, wave, rain, and flow) will cause the channels, diking, and disposal areas to be in states of flux undergoing continuous changes. Thus, to sustain the integrity and effectiveness of this project, maintenance of project features will be required on average of every 6 years with dredging to re-establish dikes and dredging of shoals within the channels. This recommendation is based upon the observations made of the channel shoaling on the Big Island Mining (AT-03) project, which showed that a shoaling of channel bottoms to elevation from -3.0 feet to -5.0 feet NAVD-88 has occurred in six years (BCG 2005).

Recommendations
Based on the evaluation of available ecological, geophysical, and engineering information, in addition to the investigation of similar restoration projects, the proposed strategies of the Castille Pass Channel Sediment Delivery (AT-04) project will likely achieve the desired ecological goals. It is recommended that this project progress toward construction authorization pending a favorable 95% Design Review.

H. Application for or Issuance of Public Notices for Permits

Submitted to the U.S. Army Corps of Engineers November 7, 2005.

I. HTRW

HTRW is not required for the project location.

J. Section 303

Section 303E approval was received July 12, 2005 from the Corps (enclosure 4-I).

K. Overgrazing

A favorable overgrazing determination was received June 9, 2005 (enclosure 4-K).

L. Fully funded cost

A revised fully-funded cost estimate of Phase II activities or economic analyses, based on the current Project design has been included as enclosure 3-C and summarized directly below.

1.) The specific Phase II funding request (construction cost estimate and three years of O&M) is $20,780,294.

2.) The fully-funded 20-year cost estimate is $30,892,080.

M. WVA

A revision to the 1999 WVA was Re-drafted November 2, 2005 and accepted after revision by the Environmental Work Group (enclosure 4-M). In summary, the project area would contain 965 acres of emergent marsh after 20 years providing a net increase of 407 acres. The average annual habitat unit is 256 and the estimated annual cost $7992.

N. Prioritization

	Cost Effectiveness	Area of Need	Implementability	Certainty of Benefits	Sustainablity	HGM Riverine Input	HGM Sediment Input	HGM Sturcute And Function
Score	10	0	10.5	7.6	10	7	0	5
Total	50.1							

Sincerely,

FOR Erik Zobrist, Ph. D.
NMFS Program Manager

ENCLOSURE 1

October 2003

Castille Pass Channel Sediment Delivery (AT-04)

Project Status

Approved Date: 2000 **Project Area:** 5,051 acres
Approved Funds: $1.9 M **Total Est. Cost:** $31.1 M
Net Benefit After 20 Years: 589 acres
Status: Engineering and Design
Project Type: Water Diversion

Location

Castille Pass is located off of East Pass in the Atchafalaya Delta in St. Mary Parish, Louisiana.

Problems

Growth of the lower Atchafalaya Delta has been reduced as a result of maintenance of the Atchafalaya River navigation channel. Delta development in the shallow waters of Atchafalaya Bay is dependent on distributary flows and the diversion of sediments into overbank areas through crevasse (an opening within a levee)channels.

The open crevasse channels are frequently short-lived because sediment accumulation within the channels decreases flow efficiency. Also, maintenance dredging, the placement of material dredged from the navigation channel has an effect on riverflow efficiency. As riverflow through a crevasse channel is reduced, the amount of sediment that can be deposited in the delta is likewise reduced, resulting in decreased marsh development.

This restoration technique is an example of what is proposed in the Castille Pass.

Restoration Strategy

The Castille Pass project will re-establish the sedimentation processes that lead to subdelta development in this area of the Atchafalaya Delta.This project consists of dredging and extending Castille Pass to promote subdelta development. Castille Pass would be dredged, extending it towards Fourleague Bay and ending near South Point. This channel will provide water and sediment through distributary channels to the area among several U.S. Army Corps of Engineers' beneficial use disposal islands located on the east side of the Atchafalaya River. Excavated sediment would be placed to create delta lobes between the confluence of the main and distributary channels. Approximately 150 acres of marsh would be created from the initial construction of the Castille Pass and distributary channels.

Scheduled maintenance activities are expected to create another 73 acres of marsh.

Progress to Date

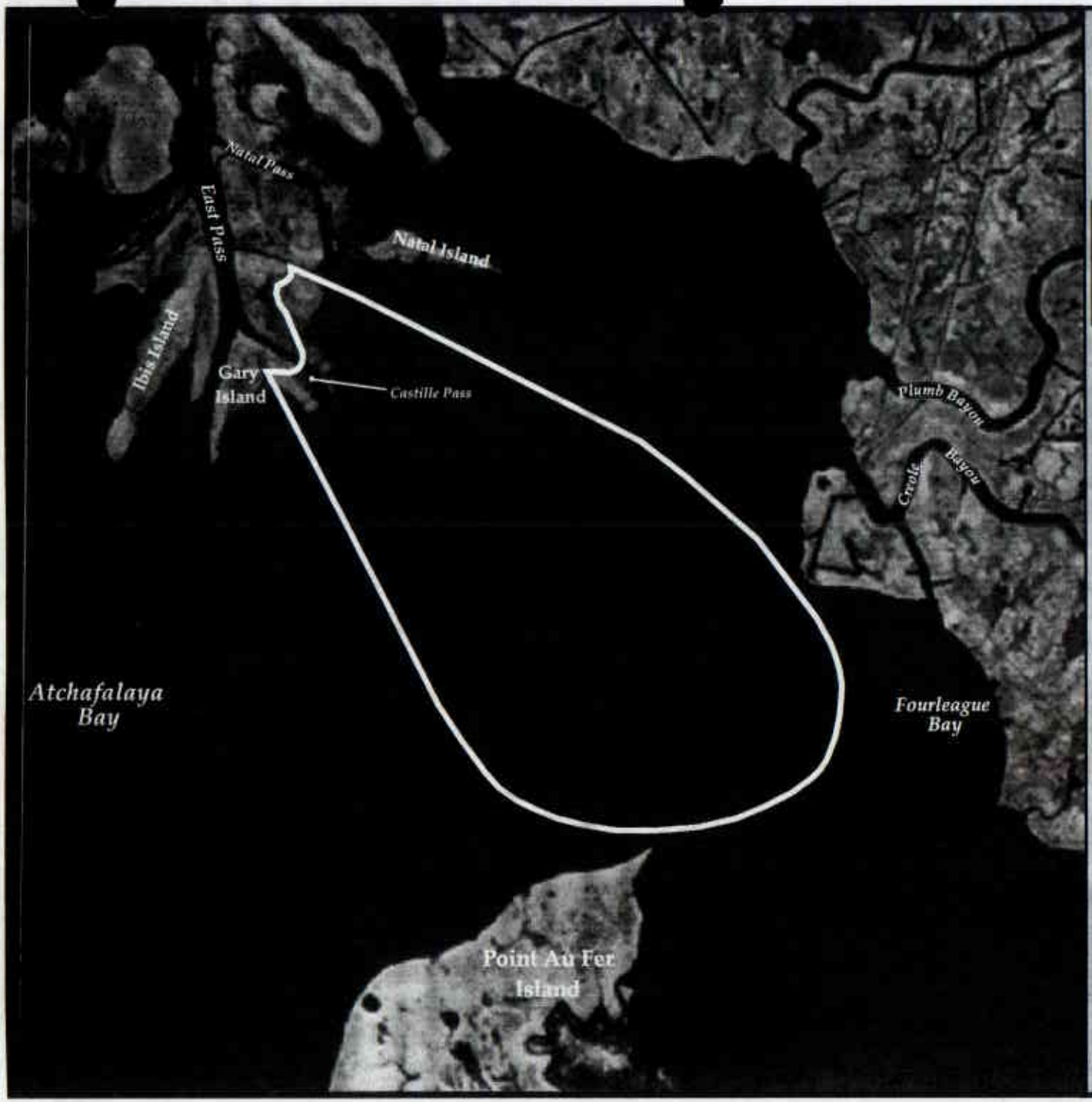
The cooperative agreement was awarded September 29, 2000. Hydrodynamic modeling and engineering and design are underway.

This project is listed on Priority Project List 9.

For more project information, please contact:

Federal Sponsor:
National Marine Fisheries Service
Baton Rouge, LA
(225) 389-0508

Local Sponsor:
Louisiana Department of Natural Resources
Baton Rouge, LA
(225) 342-7308



Castille Pass Channel Sediment Delivery (AT-04)

Project Boundary

USGS
science for a changing world

Louisiana

Project Location

N

0.5 0 0.5 1 Miles

0.4 0 0.4 0.8 Kilometers

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

Background Imagery:
2002 Thematic Mapper Imagery

Map Date: October 16, 2003
Map ID: USGS-NWRC 2003-11-040
Data accurate as of: April 18, 2003

ENCLOSURE
3-A

FACT SHEET
revised 12-4-06

Project Name and Number: Castille pass Channel Sediment Delivery (AT-04)
(Project Priority List 9)

Problem: Spoil dredged form the Atchafalaya River Channel has been placed east of the channel, thus restricting riverine flow into shallow water areas east of the channel, which has substantially reduced natural marsh creation. Without riverine replenishment, subsidence and wave erosion will increase deltaic marsh loss.

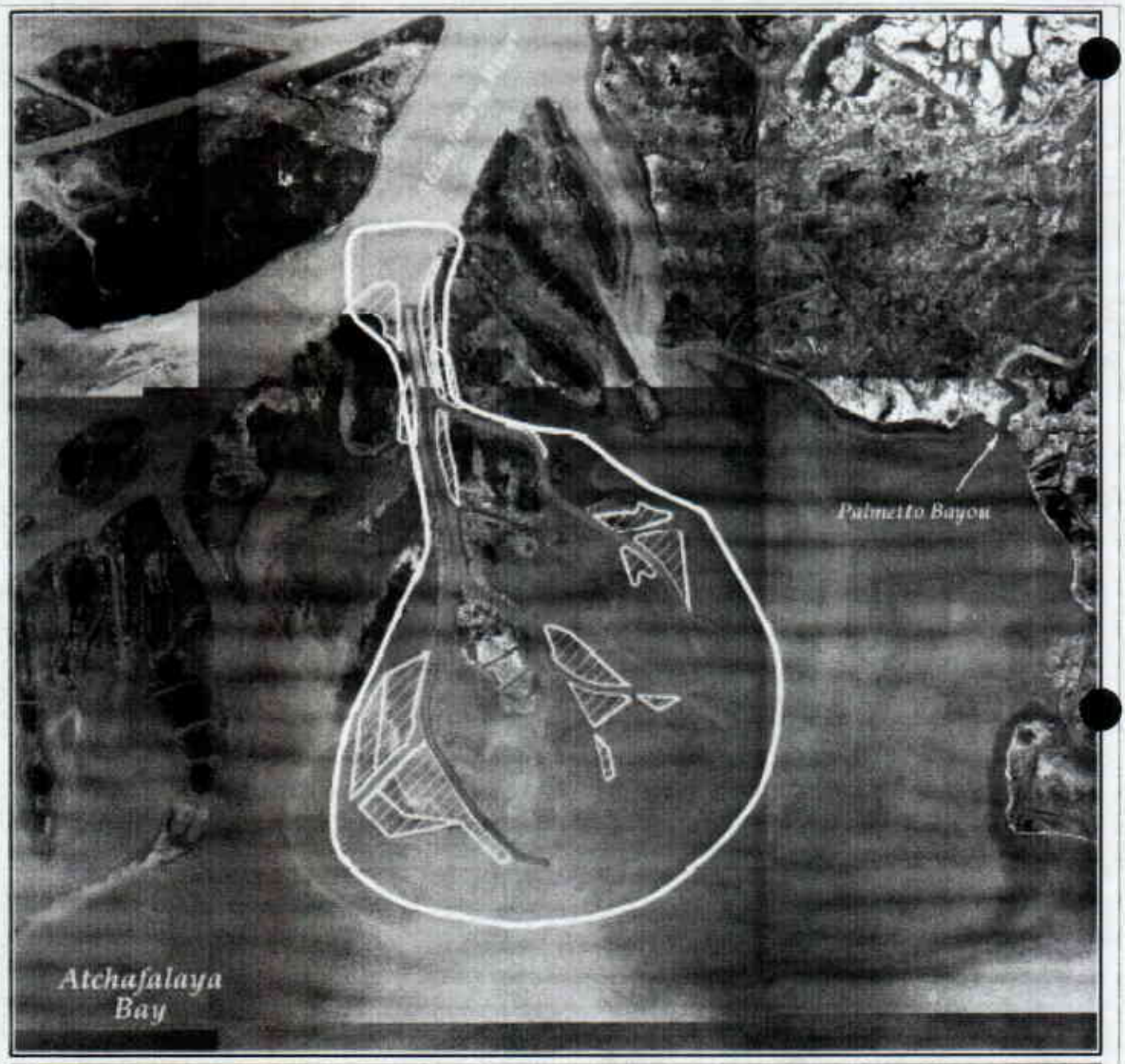
Goals : Increase the conveyance of silt laden river flows via East Pass and Castille Pass in the eastern area of the Atchafalaya Bay.

Project Status: The project has completed design and is requesting construction approval.

Proposed Solution: The entrance to East Pass will be widened and the bottom ramped up to enhance diversion of fresh water and sediments from the Atchafalaya River into East Pass. The existing East Pass channel will be widened and deepened from the entrance to the Castille Pass bifurcation. The dredged material will be placed to create new emergent marsh. The existing Natal Pass branch channel will be extended and diked to direct the channel flows toward the southeast into bay bottoms to extend the Delta Lobe building process. The existing Castille Pass branch channel will be extended southeastward into the bay with diking placed to extend the Delta Lobe and build new marsh acreage. The mouth of East Pass will also be reconfigured by extending the southeast branch exit channel toward the southeast. A complete dike will be placed along the southwestern channel bank to redirect flows into the shallow bay bottom to create a still-water cove area enhancing sediment deposition, eventually leading to the creation of emergent marsh in the newly created bay between Castille Pass and the East Pass extension.

Issues: One pipeline passes through the channel alignment, which will be avoided during construction.

Estimated Costs and Benefits: Fully funded the cost is estimated to be $30,892,080, which will create over 960 acres of wetland over 20-years.



Castille Pass Channel Sediment Delivery (AT-04)

N

Louisiana

Project Location

10 Ft. Dredge Channel *

Disposal Area *

Project Boundary

* denotes proposed features

0.5 0 0.5 1
Kilometers

0.5 0 0.5 1
Miles

Map Printed and Pu
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Coastal Restoration Field Station
Baton Rouge, LA

Image Source:
2004 Digital Orthophoto Quadrangle

Scale 1:60,000

Map ID: USGS/NWRC 2006-24-1061
Map Date: November 16, 2006

ENCLOSURE 3-C

ENCLOSURE 4-C

State of Louisiana

KATHLEEN BABINEAUX BLANCO
GOVERNOR

SCOTT A. ANGELLE
SECRETARY

DEPARTMENT OF NATURAL RESOURCES
OFFICE OF COASTAL RESTORATION AND MANAGEMENT

December 10, 2004

Dr. Erik Zobrist
U.S. Department of Commerce
National Marine Fisheries Service
Restoration Center, 7th Floor, Room 7120
Silver Spring, MD 20910

Re: Castille Pass Sediment Delivery Project AT-04
St. Mary Parish, Louisiana
Letter Agreement
Louisiana Department of Wildlife and Fisheries

Dear Dr. Zobrist:

Enclosed for your records is a copy of a certified original of the above referenced agreement between the Louisiana Department of Wildlife and Fisheries and the Department of Natural Resources. A fully executed original has also been recorded by the Clerk of Court of St. Mary Parish, Louisiana.

If I can be of any further assistance, please do not hesitate to contact me or Mr. V. J. Marretta in the CRD Land Section (225) 342-5260. Thank you for your cooperation in our coastal restoration efforts.

Sincerely,

William K. Rhinehart
Administrator

WKR/VJM

Attachment
c(with attachment): John Foret, NMFS Project Manager, Lafayette
Maury Chatellier, CED Project Manager
V. J. Marretta, Land Specialist III

AT-04\DWF letter agreement NMFS-DWF-KL final transmittal.wpd

State of Louisiana

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ENCLOSURE 4-D

State of Louisiana

KATHLEEN BABINEAUX BLANCO
GOVERNOR

SCOTT A. ANGELLE
SECRETARY

DEPARTMENT OF NATURAL RESOURCES
OFFICE OF COASTAL RESTORATION AND MANAGEMENT

November 21, 2005

Dr. John Foret
National Marine Fisheries Service
Estuarine Habitats and Coastal Fisheries Center
646 Cajundome Blvd., Rm. 175
Lafayette, LA 70506

RE: 95% Design Review for Castille Pass Sediment Delivery
Statement of Local Sponsor Concurrence

Dear Dr. Foret:

The 95% Design Review Conference was held on October 13th, 2005 for the Castille Pass Sediment Delivery project. Based on our review of the project information compiled to date, and, in response to your letter of support for the project, we, as local sponsor, concur with the 95% Design Package. LDNR recommends that Phase II funds be requested from the CWPPRA Task Force at the next available opportunity.

In accordance with the CWPPRA Project Standard Operating Procedures Manual, we request that you forward this letter of concurrence along with the revised project cost estimate to the Technical Committee and the Planning and Evaluation Subcommittee. We also request that our project manager, Maury Chatellier, be copied on that and other correspondence concerning this project.

Please do not hesitate to contact me if I may be of any assistance.

Sincerely,

Christopher P. Knotts, P.E.
Director

cc: William K. Rhinehart, CRD Administrator
John Hodnett, P.E., Engineer Manager
Luke E. LeBas, P.E., Engineer Manager
Maury Chatellier, P.E., Project Manager

COASTAL ENGINEERING DIVISION
P. O. BOX 44027 • BATON ROUGE, LA 70804-4027 • 617 N. THIRD STREET • 10TH FLOOR • BATON ROUGE, LA 70802
PHONE (225) 342-7308 • FAX (225) 342-9417 • WEB http://www.dnr.state.la.us
AN EQUAL OPPORTUNITY EMPLOYER

ENCLOSURE
4-F

Finding of No Significant Impact For Implementation of the Castille Pass Sediment Delivery Project

National Oceanic and Atmospheric Administration Order 216-6 (May 20,1999) contains criteria for determining the significance of the impacts of a proposed action. In addition, the Council on Environmental Quality regulations at 40 C.F.R. '1508.27 state that the significance of an action should be analyzed both in terms of "context" and "intensity." Each criterion listed below is relevant to making a finding of no significant impact and has been considered individually, as well as in combination with the others as described in the attached Environmental Assessment (EA) for this project. The significance of this action is analyzed based on the NAO 216-6 criteria and CEQ's context and intensity criteria. These include:

1) Can the proposed action reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identified in FMPs?

No. Short-term, adverse impacts would occur during the construction as described in section 5.2.2 of the attached Environmental Assessment (EA). However, post-construction increases in quantity of the marsh would offset these impacts.

In the long term, the proposed action would increase the quality of essential fish habitat.

2) Can the proposed action be expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?

No. With the proposed action, the natural deltaic process that builds productive habitat would be assisted. An increase in marsh, and increase in shallow open water would result. See sections 5.1 and 5.2 of the attached EA.

3) Can the proposed action reasonably be expected to have a substantial adverse impact on public health or safety?

No. The proposed project area is remote. The impact to human health would be negligible. Temporary adverse impacts would result from the noise and exhaust of construction equipment. See sections 5.1.3 and 5.3.5 of the attached EA.

4) Can the proposed action reasonably be expected to adversely affect endangered or threatened species, their critical habitat, marine mammals, or other non-target species?

No. Direct impacts to threatened and endangered species would be confined to the short-term displacement of species during construction activities. The net result would be an increase in coastal wetland habitats available to these species. See section 5.2.5 of the attached EA.

5) Are significant social or economic impacts interrelated with natural or physical environmental effects?

No. The proposed action would not be expected to adversely affect economic resources. Marshes created would provide forage, nursery, and grow-out sites for a variety of commercially and recreationally important fisheries species. During the period of construction, a small increase in employment of dredge operators, crew members, and other construction-related technicians would occur. See section 5.3.2 of the attached EA.

6) Are the effects on the quality of the human environment likely to be highly controversial?

No. The intent of the proposed project is to promote delta growth along the Louisiana coast, which will improve the human environment. The project was proposed with public input through the annual process of the CWPPRA program to develop a project priority list. See section 1.0 of the attached EA.

7) Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers, essential fish habitat, or ecologically critical areas?

No. The proposed action is expected to improve the quality and quantity of wetlands. Some existing submerged aquatic vegetation, marsh and water bottom habitats designated as EFH would be dredged or filled with the proposed action. Impacts to EFH are expected to be more than offset by the increase in acreage of those categories of EFH most supportive of marine fishery resources, as described in Chapter 5 of the attached EA.

8) Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

No. The proposed action is similar to previous actions and involves known and avoidable risks, as described in section 1.3 of the attached EA.

9) Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts?

No. The proposed action would have individually insignificant adverse impacts and cumulatively insignificant adverse impacts. The proposed action is expected to protect ecologically important areas in combination with other state restoration efforts. See section 5.5 of the attached EA.

10) Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources?

No. Creating emergent marsh would benefit the infrastructure in the project are by providing protection to a gas pipeline, as described in section 5.3.

11) Can the proposed action reasonably be expected to result in the introduction or spread of a nonindigenous species?

No. The proposed action would not introduce or spread nonindigenous species. The action would increase the ability of the area to support indigenous species by protecting natural habitat, as described in section 5.0 of the attached EA.

12) Is the proposed action likely to establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration?

No. The proposed action is independent of future actions, is similar in context to other delta restoration activities in coastal Louisiana, and would not be precedent setting.

13) Can the proposed action reasonably be expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment?

No. The proposed action was discussed with appropriate congressional, Federal, state, and local agencies and other interested parties, as discussed in section 1.0 and 5.0 of the attached EA.

14) Can the proposed action reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?

No. Cumulative impacts were considered and no adverse impacts are expected to either target or non-target species. The long-term impact would be beneficial as described in section 5.2 and 5.5.

DETERMINATION

In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment prepared for the implementation of the Castille Pass Sediment Delivery Project, it is hereby determined that the proposed action will not significantly impact the quality of the human environment as described above and in the Environmental Assessment. In addition, all beneficial and adverse impacts of the proposed action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an EIS for this action is not necessary.

Assistant Administrator for Fisheries, NOAA
William T. Hogarth, PhD.

Date

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1315 East-West Highway
Silver Spring, Maryland 20910
THE DIRECTOR

MEMORANDUM FOR: Rodney F. Weiher, Ph.D.
Chief Economist, NOAA Program Planning and Integration

FROM: William T. Hogarth, Ph.D.
Assistant Administrator for Fisheries

SUBJECT: Finding of No Significant Impact (FONSI) for the Castille Pass Sediment Delivery Project, St. Mary Parish, Louisiana

Based on the subject Environmental Assessment, I have determined that no significant environmental impacts will result from the proposed action. I request your concurrence in this determination by signing below. Please return this memorandum for our files.

1. I concur. _____ 10/16/06
Date

2. I do not concur. _____
Date

Attachments

THE ASSISTANT ADMINISTRATOR
FOR FISHERIES

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
PROGRAM PLANNING AND INTEGRATION
Silver Spring, Maryland 20910

OCT 16 2006

TO ALL INTERESTED GOVERNMENT AGENCIES AND PUBLIC GROUPS:

Under the National Environmental Policy Act, an Environmental Assessment (EA) has been performed on the following action:

TITLE: Castille Pass Sediment Delivery Project

LOCATION: St. Mary Parish, Louisiana

SUMMARY: The Castille Pass Sediment Delivery Project (CWPPRA Project No. AT-04), is funded under the Coastal Wetlands Planning, Protection, and Restoration Act or CWPPRA (16 U.S.C. §§ 777c, 3951-3956). The U.S. Department of Commerce, represented by the National Marine Fisheries Service, is one of five Federal agencies (i.e., the CWPPRA Task Force) responsible for coordinating projects to restore and prevent the loss of coastal wetlands in Louisiana. The other members of the Task Force are: the U.S. Army Corps of Engineers; the U.S. Environmental Protection Agency; the U.S. Department of Interior, represented by the U.S. Fish and Wildlife Service; the U.S. Department of Agriculture, represented by the Natural Resource Conservation Service; and the State of Louisiana. Thus far, over 140 projects have been authorized by the Task Force. As stipulated by CWPPRA, all projects are funded through a grant or cost-share agreement between the sponsoring Federal agency and the Louisiana Department of Natural Resources. A Programmatic Environmental Impact Statement addressing the Louisiana Coastal Wetlands Restoration Plan was prepared by the CWPPRA Task Force and a Record of Decision to proceed with the plan was signed March 18, 1994.

The major goal of CWPPRA is to restore and prevent the loss of coastal wetlands in Louisiana. The Castille Pass Sediment Delivery Project would use dedicated dredged materials to create over 577 acres of wetlands with additional accretion of acres expected after twenty years. The project will improve the quality of Essential Fish Habitat (EFH) by conversion of 523 acres of water bottom and 54 acres of submersed aquatic vegetation to wetlands. Short-term impacts related to construction are considered temporary or reversible. This conclusion is based on a comprehensive review of literature, site-specific data, and project-specific engineering reports related to biological, physical and cultural resources. The

natural resource benefits anticipated from implementing this project would enhance and sustain wetland, dune, and swale habitat within the project area. The maintenance of fisheries habitat is expected to have long-term beneficial impacts on the local economy, as it relates to recreational and commercial fishing. All together, these project features will increase the value of the area for local fisheries and are expected to enhance and sustain the area's diverse ecosystem.

RESPONSIBLE OFFICIAL: William T. Hogarth, Ph.D.
Assistant Administrator for Fisheries
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, Maryland 20910
301/713-2239

The environmental review process led us to conclude that this action will not have a significant effect on the human environment. Therefore, an environmental impact statement will not be prepared. A copy of the finding of no significant impact (FONSI) including the supporting EA is enclosed for your information.

Although NOAA is not soliciting comments on this completed EA/FONSI we will consider any comments submitted that would assist is in preparing future NEPA documents. Please submit any written comments to the responsible official named above.

Sincerely,

Rodney F. Weiher, Ph.D.
NOAA NEPA Coordinator

Enclosure

ENCLOSURE
4-J

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P. O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO ATTENTION OF

JUL 12 2005

Office of Counsel

Erik C. Zobrist, Ph.D.
CWPPRA Program Office
National Oceanic and Atmospheric Administration
1315 East West Highway, Room 15219
Silver Spring, MD 20910-6233

Dear Dr. Zobrist:

We have reviewed your request for Section 303(e) approval for the Castille Pass Sediment Delivery Project (AT-04), Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA).

Our Office of Counsel has examined the May 12, 2005, package for this project. The package includes a letter of no objection from the State Land Office and a letter agreement between the Louisiana Department of Natural Resources (DNR) and the Louisiana Department of Wildlife and Fisheries (DWF) as well as the Application for the Department of the Army Permit to the Department of Natural Resources (DNR) Coastal Management Division.

Please be advised that prior to construction of the project, appropriate land rights, subject to such terms and conditions as necessary to ensure that wetlands restored, enhanced or managed through this project will be administered for the long-term conservation of the lands and waters and the dependent fish and wildlife populations, must be acquired from all persons or entities with ownership or other property interests of affected land, including oyster leaseholders whose leases will be adversely affected by the project.

The project map indicates that there are pipelines within the project boundary. If any existing pipeline or utility will be adversely affected by the project, requiring any relocation, alteration, or lowering of the pipeline, the appropriate land rights must be acquired from the owners of such facilities, including the subordination of their rights, title, and interests in their facilities to the interests necessary for the construction, operation and maintenance of the CWPPRA project.

Additionally, please note that the letter agreement includes an indemnification clause. This indemnification responsibility cannot be passed on to the United States, including The National Oceanic and Atmospheric Administration or any other federal agency. Therefore, by accepting this indemnification clause, DNR is accepting all associated risks.

Furthermore, please note that the letter agreement is subject to a lease contract between the State of Louisiana and the Department of Wildlife and Fisheries dated January 16, 2003. If the provisions of the lease interfere with the objectives of the project, this lease must be released prior to the construction of the project.

We further note that the letter agreement sets forth a 20-year term commencing November 22, 2004. If it is deemed necessary to extend either of these terms in order to meet the long-term conservation objectives, you will need to coordinate such extension with DNR.

We also have considered the determination that overgrazing does not occur on the project lands or lands affected thereby. If overgrazing should occur in the future, a grazing plan must be established for the project.

Accordingly, by the authority delegated to me by the Secretary of the Army, and given compliance with the provisions set forth above, I approve the project in accordance with Section 303(e) of CWPPRA.

Sincerely,

STEPHEN E. JESELINK
Lieutenant Colonel, EN
Commanding

Copies Furnished:

Mr. Gerry Duszynski
Acting Assistant Secretary, Coastal Restoration Division
Louisiana Department of Natural Resources
Post Office Box 44027
Baton Rouge, LA 70804

ENCLOSURE
4-K

United States Department of Agriculture

NRCS
Natural Resources Conservation Service
3737 Government Street
Alexandria, LA 71302

June 9, 2004

Mr. John D. Foret
National Oceanic and Atmospheric Administration
Estuarine Habitats & Coastal Fisheries Center
646 Cajundome Boulevard
Lafayette, Louisiana 70508

Dear Mr. Foret:

RE: Castille Pass Channel Sediment Delivery (AT-04)

I am in receipt of your request for an overgrazing determination for the Castille Pass Channel Sediment Delivery (AT-04). I contacted our local district conservationist and our state resource conservationist to discuss the grazing in the project area. Currently, livestock are not grazing in the area, nor do we see a potential for grazing once the project is installed. Therefore, it is our opinion that overgrazing is not a problem in this project area. If you have any questions, please let me know.

Sincerely,

W. Britt Paul
Assistant State Conservationist
for Water Resources and Rural Development

cc: Randolph Joseph, Area Conservationist, NRCS, Lafayette, Louisiana
Terrell Rabalais, District Conservationist, NRCS, Franklin, Louisiana
John Jurgensen, Civil Engineer, NRCS, Alexandria, Louisiana

WBP/gb

ENCLOSURE 4-M

Project Information Sheet Format for Wetland Value Assessment

Re-draft November 2, 2005
Revision to the 1999 WVA Information Sheet

Project Name: Castille Pass Channel Sediment Delivery At-04

Project Type(s): Sediment Delivery and Marsh Creation via dedicated dredging.

Sponsoring Agency:
Project Manager: John Foret, National Marine Fisheries Service
Project Manager: Maury Chatellier, Louisiana Department of Natural Resources
Preparer of Information sheet: Patrick Williams, National Marine Fisheries Service, Environmental and Engineering Workgroup Representative

Project Area: Total acreage = 5368; See USGS data for acreage by habitat type broken down into emergent wetlands and open water. See Figure 1 for project feature and boundary map.

Problem: Subaerial wetland development from accretion is being hindered by subsidence, wind erosion, distribution of sediment conveyance through the Lower Atchafalaya River delta, and herbivory. Subsidence rates are estimated to be 1.1 - 2.0 ft/century for the Atchafalaya Marshes Mapping Unit (Coast 2050). Both waterfowl and nutria affect vegetation developing and persisting in the delta (Evers et al. 1998).

Goals: Adapted from the draft Ecological Review (Cowan and Balkum 2004):

- Facilitate natural sub-delta formation in the shallow water areas between East Pass and Fourleague Bay to build approximately 577 acres of land over the 20-year project life.
- Create approximately 570 acres of emergent land suitable for establishment of marsh plant vegetation over the 20-year project life using dredged material.
- As a result of these goals, approximately 2,121 acres of marsh will exist in the project area at the end of the 20-year project life representing an approximate net gain of 577 acres of marsh.

Project Features:
Three design alternatives were evaluated in addition to the no action condition. Alternative 3 (Alt 3) was selected as the preferred alternative for advanced design. The following changes were made since the 30% design report:

1. Reconfigure channel diking to utilize only cast dredged materials
2. Increase the top elevation of diking to eliminate overtopping during headwater flood conditions
3. Rerun the LDNR hydrodynamic model to determine the new flows, stages and sediment transport predictions for the revised project design – results only available as applied and reported in the 95% Design Report
4. Compare model runs for changes in flows and sediment transport for the East Pass improvements with and without a closure dam placed across the Southwest Branch channel at the mouth of East Pass.

The 95% design consists of the following:

1. Dike Designs

   Type A – along existing and new channel alignments dredged to a –10-ft contour; 90-ft offset for stability; constructed with a barge mounted dredge

   Type B – (small) perimeter dike in shallow water; constructed with a marsh buggy backhoe

   Type C – permanent off main channel dike constructed in deeper water; constructed six to eight feet high with a barge mounted dredge.

2. East Pass Entrance Improvement

   Entrance to be widened into a ramped transition channel to enhance sediment diversion into East Pass (presently narrow "V" shaped channel). Dimensions include an 800-ft wide bottom beginning at the 15-ft contour in the Atchafalaya River transitioning to a 400-ft wide bottom at -10-ft within 2,000 ft along the centerline. (no change since 30% design)

   Disposal Area

   DA-E1: Type A dike (+4 ft elevation) front dike with a Type B rear dike; create 48.5 acres at ±2.5 ft.

3. East Pass Channel Enlargement

   Enlarge East pass to 400-ft wide at –10-ft for approximately 9,670 ft between the entrance channel improvement and the exiting confluence with Castille Pass. Downstream of the confluence, East Pass would be dredged 200-ft wide to –10-ft for 6,400 ft.

   Disposal Areas

   DA-E2 – DA-E5 – placement to ±2.5 ft behind the front dikes and will slope to an elevation of +1.0 at the rear dikes.

   DA-E-7 and DA-E8 – contingency disposal areas

4. East Pass Channel Extension

   The extension will consist of extending the eastern branch channel approximately 6,400 ft to form East Pass Cove. This will include a 200-ft wide channel at –10-ft for 1,930 ft into Atchafalaya Bay where it will be reduced to –150 ft for 4,4000 ft.

   Disposal Areas

   DA-E6 (shape has been changed since the 30% meeting) – Type A front dike with a gap just north of DA-E5 for flushing; Type C rear dike; placement to ±2.5 ft behind the front dikes and will slope to an elevation of +1.0 at the rear dikes.

5. Natal Channel Improvements

Post 30% design, channel improvements to Natal Channel were included based on the amount of its previous shoaling. A 150-ft wide channel at –10 ft for a distance of 8,680 ft would be dredged from East Pass extending beyond a Trunkline Pipeline. The distance of the channel improvements has been increased since the 30% design to enable delivery of sediment further into the target area and provide more protection for the Natal Cove.

Disposal Areas

DA-N1 – DA-N5 - placement to ±2.5 ft behind the front dikes and will slope to an elevation of +1.0 at the rear dikes. DA-N4 also functions as a closure dam to the open waterway north of Teal Island to redirect flow towards the southeast alignment of the improved Natal Channel and towards the project target area of Natal Cove.

6. Castille Pass Channel Improvements

Consists of constructing a 200-ft wide –10 ft channel from the confluence of East Pass for approximately 5,248 ft with a bifurcation at the mouth. The eastern bifurcation channel, C1, would extend into the bay 5,278 ft with two secondary bifurcation channels C-6 (800 ft) and C-5 (2,000 ft). The southern bifurcation channel, C-2, would extend 5,204 ft ending with two secondary bifurcation channels, C-3 (1,500 ft) and C-4 (800 ft). C-1 and C-2 would be 100 ft wide and –10 ft deep and the four secondary bifurcation channels would be 75-ft wide and –10 ft deep.

Disposal Areas

Disposal areas have continuous dikes except the noted gaps. Dikes would be Type A, B, or C as shown on the 95% drawings.

7. Operations and Maintenance

At the time of drafting this document, assumed three maintenance events at TY6, TY12, and TY18.

Figure 1. Project boundary and 30% feature map (boundary slightly cropped). An official USGS project boundary map is pending. SEE SEPARATE EMAIL

Figure 2. 95% Design feature map SEE SEPARATE EMAIL

Existing and constructed projects are located adjacent and within the proposed project. These include AT-02, Atchafalaya Sediment Delivery (ASD), and AT-03, Big Island Mining. AT-04, would greatly expand the AT-02 project by including work to Natal Pass. Other work in the vicinity includes the ongoing Corps of Engineers maintenance dredging of the Atchafalaya River (Bay and Bar Channel) and beneficial use disposal. Corps activities within the revised project boundary include the extension of Gary, Ibis, and Natal Islands. Each of those islands are being constructed to +4.0 NAVD88 300 ft wide. The order in which these are extended is presently up to the contractor's discretion. The project would provide synergistic wetland effects with AT-02 and the Corps' beneficial use disposal. There is some concern by the Corps that the project may affect the availability of long term disposal options. NMFS and LDNR continue to coordinate with the Corps Operations Division on this matter.

Monitoring Information:
The majority of the below monitoring data was obtained from Cowan and Balkum (2004).

Sediment Delivery

S Atchafalaya Sediment Delivery - suggest that sediment delivery in the delta should be able to offset subsidence if the channel is maintained (Raynie and Visser 2002).

S Emergent land being created at a rate of +78.4 acres/year, which is twice the rate of pre-project conditions (1988 - 2001). The duration of a growth rate is uncertain based on when constructed distributary channels silt in (Cowan and Balkum 2004).

River Transport

S sediment carried by river dominated by silt-clay fractions and concentrations increase in a non-linear fashion with regard to discharge (Cowan and Balkum 2004)

Marsh Creation

target elevations -

Cowan and Balkum (2004) discuss the particular importance in target elevations in controlling the variability in vegetation associations in deltas.

BUMP Monitoring - consequences of a +4 ft NAVD88 unconfined elevation created predominantly forested wetlands and shrub/scrub and little intertidal marsh

- optimal elevation for intertidal marsh +1.56 ft to +2.0 ft MSL

Atchafalaya Sediment Delivery, AT-02 (Raynie and Visser 2002)

S Natal disposal areas were mapped as-built and three growing seasons following construction - flat (0.165 - 0.525 ft decrease) and fresh marsh (0.51 - 1.43 ft; 0.1 - 0.34 ft decrease) decreased in elevation over 2 years

S predominant vegetation is willows and not the desired intertidal vegetation although willow communities are common at the heads of delta islands.

S incorrect elevations built in one of three disposal areas - insufficient supervision and inspection

Lake Chapeau, TE-26

S failed to meet the final target elevations with portions of the fill areas subsiding/dewatering below the average water level. Issues associated with achieving the initial fill elevation and constructing and maintaining sufficient containment dikes were encountered. The project created elevations conducive to establishment of saline marsh instead of brackish marsh vegetation and created less acreage than intended.

BUMP - (UNO 2003)

S measured the growth in the delta with and without corps disposal to date. Time series of data analyzed and method of analysis differ from that of the USGS.

V1 - Emergent Vegetation

Historical and present vegetative community

The project area historically has consisted of prograding deltaic habitat. Dominant vegetation includes delta duck potato, bulltongue, bullwhip, cutgrass, cattail, alligatorweed, and Olney's three-square. Submerged aquatic vegetation includes water star grass, longleaf pondweed, curly pondweed, and water celery.

Soil types in the project area

Modeling Conducted

Hydrodynamic modeling was conducted by Louisiana State University (LSU) using the TABS-MD finite-element model. The Surface-water Modeling Software was used to model the bay and the RMA2 software was used for East Pass. To make predictions of the sediment transport within the East Pass delta lobe, LSU used the SED2D-WES software (Brown Cunningham and Gannuch 2003). The no-action and three design alternatives were fully modeled with other alternatives also being assessed. Results were provided to the design firm, BCG, for additional runs and feature specific assessments. Modeling indicated:

Base (no action): approximately 7% of Atchafalaya River flow at East Pass is currently diverted down East Pass.

Alt3: Increasing from approximately 7% of river flow to 10% would be diverted down East Pass resulting in an approximate 40% increase for flow and the channel enlargements, extensions, and disposal areas as configured (as modeled) would improve the hydraulic efficiency over the existing channel regime of East Pass. The diverted amount from the Atchafalaya River was the maximum diversion amount by requested by the NOD, as AT-03 (Big Island Mining) was used as a precedent. Further modeling indicated that the increase to 10% would not add an appreciable amount of shoaling in the Federal navigation channel.

Deposition of silt was modeled during a 370 hr simulation for SED-2D Model Sediment Reporting Areas (SRA) near channels (adapted from Mashriqui et al. 2004). See Figure 2 for the SRA and Table 1 (in the V1 Section) for silt projections. The 30% design report (BCG 2003) indicates the modeling results suggest better trapping efficiency of suspended silt in the project area under FWP based on predictions at specific nodes. However, sand are not expected to be conveyed in greater amounts FWP than FWOP other than directly by dedicated dredging and disposal. BCG took this modeling information, overlaid the project features, then took a percent of SRAs to come up with the sedimentation rates for portions of the project area designated as the East Pass, Castille and Natal coves (0.0815"/month, 0.01772"/month, 0.0823"/month, respectively) to project accretion benefits Future With Project. Siltation was estimated to occur during four months of the years (i.e., average annual flood months per year). BCG assumed 50% retainage, which could be a conservative estimate (i.e. safety factor) because LSU's model already takes into account the percent silts/clays leaving a particular cove area. The BCG

Figure 2. Sediment Reporting Areas from Mashriqui 2004 and BCG 2003. (SEE SEPARATE EMAIL JPG)

Table 1. Land loss data from USGS

1956	Acres
Out	0
Water (Natural)	5368
	5368

1978	Acres
Out	0
Water (Natural)	4996
Fresh Marsh	47
Shrub/Scrub	34
Inert	291
	5368

1988	Acres
Out	0
Aquatic Bed Submerged	629
Fresh Water	2801
Estuarine Water	1331
Fresh Marsh	547
Bottomland Forest	44
Bottomland Shrub/Scrub	6
Shore/Flat	11
	5369

2000	Acres
Out	0
Fresh Marsh	878
Gap Wetland Forest	26
Gap Weltand Shrub/Scrub	2
Water	3437
Water-fresh zone	1025
	5368

1990		Acres
Water	94%	5036
Land	6%	332
	100%	5368

2000		Acres
Water	83%	4462
Land	17%	906
	100%	5368

The land change formulas found in Barras et al. 2003 were used in accordance to the new guidelines being adopted by the Environmental Workgroup. However, post workgroup review and adoption of these methods, an error was discovered in the land gain formula on page 28 of that document. Through consultation with Kevin Roy and his coordination with John Barras and Steve Hartley during 2004, confirmation was received as follows: 1) we should use water loss in an area projecting land gain to avoid maxing out the project area with land during the project life and 2) the water loss formula for use with projects with land gain should be corrected to:

Example $\text{water2050} = \text{water2000}*(1+\text{Rate})^{\text{years}}$

Table 2. Non-adjusted and adjusted land change rates for the project area.

	Non-adjusted Land Change	Adjusted Land Change - subtracted out Corps Operations created land (i.e., -32 acres for Natal Island created in 1999 = 4462-32 = 4430 ac)
USGS 78 - 88 =	-0.48%/yr loss of water	N/A

FWOP
Assumptions:
Original WVA

1. EnvWG assumed 10% trapping efficiency
2. The Castille Pass project area was estimated to be 1/3 the size of the Atchafalaya Sediment Delivery project where annual net gain from accretion had been monitored. An updated figure for 1998 - 2001 shows a 26.1 ac/yr growth which result in 8.6 ac/yr growth for the Castille Pass project. The boundary has been revised for Castille Pass, but we still estimate it to be 1/3 that of the ASD project area.

Proposed Revised WVA

1. Accretion rate: adjusted the USGS water loss rate by treating the land created by the Corps during the 88-2000 time period as "water" (Approximately 32 acres for Natal Island as measured on 2003 infrared as compared against 2002 UNO imagery). This would result in 403 acres of gain FWOP and therefore more net gain FWP from accretion (330 ac net FWP-FWOP).

2. Based on a July 30, 2004 meeting with the Corps Operations Division and the Louisiana Department of Wildlife and Fisheries, a projected 20-year expansion of the Corps disposal areas was included for Natal and Gary Islands within the CWPPRA project boundary. Based on Corps design dimensions (300-ft wide crown @ +4.5 MLG), assumed 100% of the crown would be marsh (Gary Island Extension = 4000 ft x 300 ft wide .28 ac; Natal Island = 900 ft x 200 ft = 6 ac). Additional area will be included under V4 FWOP. Assumed all this acreage is created by TY10.

3. Note: Output from modeling conducted was not prepared/provided for FWOP conditions.

TY0 The 2000 USGS acreage was rolled forward to 2005 using the -0.48%/yr water loss rate (see Appendix Table 1). Additionally, the amount of 2005 water was reduced by the amount of Gary Island acreage created by the Corps in 2002. Gary Island was measured to be 131 acres by cross referencing Figure 3 in UNO 2003 and digitally planimetering the footprint on the 2003 aerial infrared of the project area. Therefore, subtracted 131 ac in 2003 (i.e., 4267 - 131 = 4136 see loss spreadsheet)

Water: 4226 ac
Marsh: 1142 ac (21%)
Total: 5368 ac

TY1 Water: 4206 ac applied one year of change at -0.48%/yr
Marsh: 1162 ac (22%)

TY10 Water: 4013 ac 4047 projected at -0.48%/yr minus 34 acres created by the Corps
Marsh: 1355 ac (25%) manually inserted 4013 into loss spreadsheetTY20 Water: 3824 ac

Marsh: 1544 ac (29%)

FWP

Note: Project is being designed and specified to be built and paid on the volume cut and not volume in place for the disposal areas.

Assumptions:

1. Marsh creation via dedicated dredging: Based on the 95% Design Report, 570 acres created from initial construction dredging. Maintenance dredging to occur at TY6, 12, and 18 during which approximately 106 acres of marsh would be created with the dredged sediment. It is not known how much would be created with each individual event; therefore, it is assumed to be 35 acres/event.

   No planting is proposed, but because it is fresh marsh in the delta, a high rate of colonization is expected. Propose 10% at TY1 and 100% at TY3. *No losses were assumed to the created marsh due to the potential to allow thin layer disposal on previously created marsh with each maintenance event or wetland loss is expected within the project area with subsidence and wave erosion, but the gain outweighs these loses. Note: no settlement curve analysis of the marsh creation areas were conducted.*

2. Accretion in Cove Areas:
   See Section 5.4 Emergent Marsh Accretion of the 95% Design Report and above summary of modeling conducted *(only available for FWP).*

Castille Pass Sediment Delivery Cove Areas - 20 Year Accretion Predictions.

ITEM	EAST PASS	CASTILLE PASS	NATAL CHANNEL
AREA	683 AC	227 AC	416 AC
Revised Model Graph Run	0.0815"/month	0.01772"/month	0.0823"/month
Deposition			
Monthly	7,484 CY	542 CY	4,603 CY
Annually	29,935 CY	2,161 CY	18,412 CY
20-year	598,700 CY	43,220 CY	368,240 CY
Depth	3.26"	0.71"	3.3"
Model Predicted Sediment Delivery Volume that Accretes	50%	50%	50%

3. See Appendix Table 2 of the 95% Design Report. Stipulates 75.4 ac of dike construction.

Project area: 5368 ac

TY1
Water: 3581 ac
4226 ac (TY0 water acres) - 570 ac - 75 ac of dikes(assumed to be shrub/scrub or upland)
Marsh: 1225 ac/23%
(10%)(570 ac created) + 0% accretion credit in East Pass, Castille Pass, and Natal Channel Coves + 1,168 existing = 1225 ac

TY3
Water: 3581 ac 4226 ac (TY0 water acres) - 570 ac - 75 ac of dikes(assumed to be shrub/scrub or upland)
Marsh: 1783 ac/32%
(570 ac created)(100% vegetated) + 0% accretion + 1,168 existing = 1783 ac

TY6 *1st maintenance event*
Assumed insufficient accretion until TY6 in the Natal, Castille and East Pass coves to enable the establishment of marsh..
Water: 3470 ac 4226 – 570 – 75 – 35 - 76 (accretion ac) = 3470
Marsh: 1817 ac/ 34%
(570 ac created)(100% vegetated) + (5% accretion)(683 ac) + (0%)(227 ac) + (10% accretion)(416 ac) + (10%)(35 ac created from maintenance dredging) + 1168 existing = 1817 ac

TY9
Water: 3422 ac 4226 – 570 – 75(85% for gapping) – 35 - 135 (accretion) = 3422
Marsh: 1908 ac/36%
(570 ac created) + (35 ac created) + (10%)(683 ac) + (2%)(227 ac) + (15%)(416 ac) + 1168 existing = 1908 ac

TY12 *2nd maintenance event*
Water: 3353 ac 4226 – 570 – 75(85% for gapping) – 70 – 169 (accretion) = 3353
Marsh: 1962 ac/37%
(570 ac created) + (35 ac) + (10%)(35 ac) + (15%)(683 ac) + (2%)(227) + (15%)(416 ac) + 1168 existing = 1946 ac

TY15
Water: 3303 ac 4226 – 570 – 75(85% for gapping) – 70 – 219 (accretion) = 3303
Marsh: 2057 ac/38%
(570 ac initially created) + (70 ac MD created) + (20%)(683 ac) + (5%)(227 ac) + (17%)416 ac + 1168 existing = 2027 ac

TY18 *3rd maintenance event*
Water: 3216 ac 4226 – 570 – 75(85% for gapping) – 106 – 270 (accretion) = 3216

Marsh: 2081 ac/39%
(570 ac initially created) + (70 ac MD created) +(10%)(35 ac) + (25%)(683 ac) + (7%)(227 ac) + (20%)416 ac + 1168 existing = 2081 ac

TY20
Water: 3209 ac 4226 – 570 – 75(85% for gapping) – 106 – 277 (accretion) = 3209
Marsh: 2121 ac/40%
(570 ac initially created) + (106 ac MD created) + (25%)(683 ac) + (10%)(227 ac) + (20%)416 ac + 1168 ac = 2121 ac

V2 - Submerged Aquatic Vegetation
There tends to be a substantial amount of annual variability of SAV cover in the project area. With the revised boundary, approximately 1653 acres (~39% of the water area) is in the photic zone and is less than -1.5 ft deep and could support SAV. Based on GIS interpretation of the SAV cover in the 2003 imagery, survey data, and observations by agency staff during 2004 and 2005 site inspections and waterfowl season, we estimate approximately 20% cover.

FWOP
Original WVA: TY1 1%; TY20 3% (different project boundary)

Proposed
TY0 20%
TY1 20%

TY10 30%
TY20 30% SAV should increase as delta progrades, but some will be filled with the extension of the Corps' disposal areas.

FWP
Original WVA: TY3%; TY20 17%

Proposed
TY1 22% 840 ac - 0.39 ac (SAV dredged) - 54.2 (SAV filled within the disposal areas) = 785 ac/3581 ac = 22%
TY3 25%

TY6 35% Assumed an increase in SAV to a maximum of 40%, but reduced in % cover with each maintenance event due to construction activities.
TY9 40%
TY12 35%
TY15 40%
TY18 35%
TY20 40%

V3 - Interspersion
Original WVA: all Class 1 and 4 FWOP and FWP

FWOP

TY0	15% Class 1; 85% Class 4	21% marsh
TY1	15% Class 1; 85% Class 4	22% marsh
TY10	20% Class 1; 80% Class 4	25% marsh
TY20	25% Class 1; 75% Class 4	29% marsh

FWP

TY1	30% Class 1; 70% Class 4	32% land	(does not include dike acres)
TY3	30% Class 1; 70% Class 4	32% land	
TY6	30% Class 1; 70% Class 4	34% land	
TY9	35% Class 1; 65% Class 4	36% land	
TY12	35% Class 1; 65% Class 4	37% land	
TY15	35% Class 1; 65% Class 4	38% land	
TY18	35% Class 1; 65% Class 4	39% land	
TY20	37% Class 1; 63% Class 4	40% land	

V4 - Shallow Open Water Habitat
Based on phase 1 surveys and site knowledge by sponsoring staff, acreage for open water < 1.5' is approximately 1653 acres as depicted on the "Bath pw edit.jpg" file (SEPARATE EMAIL). Note that bathymetry data was not available for all portions of the project area. Some areas adjacent to existing marsh were not included to minimize the amount of GIS drafting time. Based on some areas not being included outside the bathymetry data while some areas were based on site knowledge, this should be a reasonable estimate.

TY0 30% 1653/5368 = 31%

FWOP

TY1	30%	
TY10	35%	
TY20	40%	staff with specific knowledge of the site changes over time suggested 30%, 15%, 60% would be <1.5 ft deep in the East Pass, Castille Pass, and Natal Channel Coves Areas, respectively.

FWP

TY1	30%	1653 - 570 (assume TY1 land created all in water <1.5 ft) = 1083/3581 = 30%
TY3	30%	
TY6	30%	1653 - 570 - 50 = 1033/3470 = 30%; however six years of accretion

Refer to Assumption 2 FWP under V1: 3.26" East Pass Cove, 0.71" Castille Pass Cove, 3.3" Natal Channel Cove FWP TY 20 net accretion

TY9	30%	
TY12	35%	1653 - 570 - 100 = 983/3353 = 29%
TY15	35%	
TY18	35%	1653 - 570 - 150 = 933/3216 = 29%
TY20	40%	staff guestimated that (60%)(683) + (15%)(227) + (20%)(416) = 527/3315 = 16% would be shallow in the coves. However, this overlaps with some of the original shallow acreage of 1653.

V5 - Salinity

No hydraulic analysis or otherwise was conducted on project affects on salinity. Propose the same salinity values as the phase 0 WVA based primarily on personal communication with Gary Holm (LSU Coastal Ecology Institute) and the similarities in the project boundaries.

FWOP 3
FWP 2.5

V6 - Fish Access

TY0 1
FWOP
TY1 - TY20 1

FWP

Fishery access and use is a function of hydroperiod (Rozas 1995). The created elevation after compaction determines the hydroperiod. Based on personal communication with Dr. Bruce Thompson (LSU, Coastal Fisheries Institute), fish use of the habitats in the delta created by CWPPRA and the Corps is dependent on habitat heterogeneity including depth and duration of flooding, proximity to foraging habitat, cover (water depth or vegetation) for avoidance of predation, and susceptibility to temperature extremes. His observations are based on fisheries research in the delta from 1983 to present.

Assumptions:

1. 20-ft wide gaps to 0.0 ft NAVD88 will be constructed by degrading the containment dike in strategic locations (e.g., at least every 1,000 ft) upon demobilization.
2. However, the disposal area design section consists of extending approximately 100 ft from the channel side dikes at + 2.5 ft NAVD88 then sloping down based on its natural angle of repose. The channel side length of all the disposal areas were measured from the plan view using a digital planimeter and determined to be approximately 45,200 linear feet. Therefore, assumed all channel side portions of all disposal areas were constructed at TY1 (45,200)(100 ft)/43560 sq ft .104 ac would be supratidal or not supportive of a hydroperiod to allow fish use of the surface area. Disposal area DA-E1 will be supratidal as will the containment dikes.

104 ac + DA-E1= 48.5 acres of shrub/scrub + 75 ac dikes= 228 ac

3. Interior or backside low level training dikes would be constructed initially and with each maintenance event. Assumed these would be breach manually or by erosion by the time of contractor demobilization.

TY1 228 ac /5368 . 4.2%
(4.2%)(0.0001) + (95.7%)(1) = 0.957
TY3 0.957
TY6 0.957
TY9 0.979
(2.1%)(0.0001) + (97.8%)(1) = 0.979
Assume 50% of the supratidal acreage persists throughout the remainder of the project life in the absence of settlement curves and based on the performance of other creation sites in the delta
TY12 0.979
TY15 0.979
TY18 0.979
TY20 0.979

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Appendix

Appendix Table 1. Castille Pass Sediment Delivery FWOP change projections.

Total Acres	2000 Water Acres	TY0 Marsh Acres
5,368	4462	906

FWOP

YR	TY	Loss Rate (water)	Water (acres)	% Water	Land (acres)	% Land
2000		-0.0048	4462.00	83%	906	17%
2001		-0.0048	4440.58	83%	927	17%
2002		-0.0048	4419.27	82%	949	18%
2003		-0.0048	4267.06	79%	1,101	21%
2004		-0.0048	4246.57	79%	1,121	21%
2005	0	-0.0048	4226.19	79%	1,142	21%
2006	1	-0.0048	4205.90	78%	1,162	22%
2007	2	-0.0048	4185.72	78%	1,182	22%
2008	3	-0.0048	4165.62	78%	1,202	22%
2009	4	-0.0048	4145.63	77%	1,222	23%
2010	5	-0.0048	4125.73	77%	1,242	23%
2011	6	-0.0048	4105.93	76%	1,262	24%
2012	7	-0.0048	4086.22	76%	1,282	24%
2013	8	-0.0048	4066.60	76%	1,301	24%
2014	9	-0.0048	4047.08	75%	1,321	25%
2015	10	-0.0048	4013.00	75%	1,355	25%
2016	11	-0.0048	3993.74	74%	1,374	26%
2017	12	-0.0048	3974.57	74%	1,393	26%
2018	13	-0.0048	3955.49	74%	1,413	26%
2019	14	-0.0048	3936.50	73%	1,431	27%
2020	15	-0.0048	3917.61	73%	1,450	27%
2021	16	-0.0048	3898.80	73%	1,469	27%
2022	17	-0.0048	3880.09	72%	1,488	28%
2023	18	-0.0048	3861.46	72%	1,507	28%
2024	19	-0.0048	3842.93	72%	1,525	28%
2025	20	-0.0048	3824.48	71%	1,544	29%
			3856.97			