

Coastal Wetlands Planning, Protection and Restoration Act

6<sup>th</sup> Priority Project List Report

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Coastal Wetlands Planning, Protection and  
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6th Priority Project List Report

Appendix A

Summary and Complete Text of the CWPPRA



COASTAL WETLANDS PLANNING, PROTECTION & RESTORATION ACT  
Public Law 101-646, Title III

**SECTION 303. Priority Louisiana Coastal Wetlands Restoration Projects.**

- Section 303a. Priority Project List
- NLT 13 Jan 91, Sec. of Army (Secretary) will convene a Task Force
  - Secretary
  - Administrator, EPA
  - Governor, Louisiana
  - Secretary, Interior
  - Secretary, Agriculture
  - Secretary, Commerce
- NLT 28 Nov. 91, Task Force will prepare and transmit to Congress a Priority List of wetland restoration projects based on cost effectiveness and wetland quality.
- Priority List is revised and submitted annually as part of President's budget.
- Section 303b. Federal and State Project Planning
  - NLT 28 Nov. 93, Task Force will prepare a comprehensive coastal wetlands Restoration Plan for Louisiana.
  - Restoration Plan will consist of a list of wetland projects, ranked by cost effectiveness and wetland quality.
  - Completed Restoration Plan will become Priority List.
  - Secretary will ensure that navigation and flood control projects are consistent with the purpose of the Restoration Plan.
  - Upon submission of the Restoration Plan to Congress, the Task Force will conduct a scientific evaluation of the completed wetland restoration projects every 3 years and report findings to Congress.

**SECTION 304. Louisiana Coastal Wetlands Conservation Planning.**

- Secretary, Administrator, EPA, and Director, USFWS will:
  - Sign an agreement with the Governor specifying how Louisiana will develop and implement the Conservation Plan.
  - Approve the Conservation Plan.
  - Provide Congress with periodic status reports on Plan implementation.
- NLT 3 years after agreement is signed, Louisiana will develop a Wetland Conservation Plan to achieve no net loss of wetlands resulting from development.

**SECTION 305. National Coastal Wetlands Conservation Grants.**

- Director, USFWS, will make matching grants to any coastal state to implement Wetland
- Conservation Projects (projects to acquire, restore, manage, and enhance real property interest in coastal lands and waters).
- Cost sharing is 50% Federal / 50% State.

**SECTION 306. Distribution of Appropriations.**

- 70 % of annual appropriations not to exceed (NTE) \$70 million used as follows:
  - NTE \$15 million to fund Task Force completion of Priority List and Restoration Plan -- Secretary disburses the funds.
  - NTE \$10 million to fund 75% of Louisiana's cost to complete Conservation Plan Administrator disburses funds.
  - Balance to fund wetland restoration projects at 75% Federal/ 25% Louisiana Secretary disburses funds.
- 15% of annual appropriations, NTE \$15 million for Wetland Conservation Grants -- Director, USFWS disburses funds.
- 15% of annual appropriations, NTE \$15 million for projects authorized by the North American Wetlands Conservation Act -- Secretary, Interior disburses funds.

**SECTION 307. Additional Authority for the Corps of Engineers.**

- Section 307a. Secretary authorized to:
  - Carry out projects to protect, restore, and enhance wetlands and aquatic/coastal ecosystems.
- Section 307b. Secretary authorized and directed to study feasibility of modifying MR&T to increase flows and sediment to the Atchafalaya River for land building wetland nourishment.
  - 25% if the state has dedicated trust fund from which principal is not spent.
  - 15% when Louisiana's Conservation Plan is approved.

## TITLE III--WETLANDS

### Sec. 301. SHORT TITLE.

This title may be cited as the "Coastal Wetlands Planning, Protection and Restoration Act".

### Sec. 302. DEFINITIONS.

As used in this title, the term--

- (1) "Secretary" means the Secretary of the Army;
- (2) "Administrator" means the Administrator of the Environmental Protection Agency;
- (3) "development activities" means any activity, including the discharge of dredged or fill material, which results directly in a more than de minimus change in the hydrologic regime, bottom contour, or the type, distribution or diversity of hydrophytic vegetation, or which impairs the flow, reach, or circulation of surface water within wetlands or other waters;
- (4) "State" means the State of Louisiana;
- (5) "coastal State" means a State of the United States in, or bordering on, the Atlantic, Pacific, or Arctic Ocean, the Gulf of Mexico, Long Island Sound, or one or more of the Great Lakes; for the purposes of this title, the term also includes Puerto Rico, the Virgin Islands, Guam, the Commonwealth of the Northern Mariana Islands, and the Trust Territories of the Pacific Islands, and American Samoa;
- (6) "coastal wetlands restoration project" means any technically feasible activity to create, restore, protect, or enhance coastal wetlands through sediment and freshwater diversion, water management, or other measures that the Task Force finds will significantly contribute to the long-term restoration or protection of the physical, chemical and biological integrity of coastal wetlands in the State of Louisiana, and includes any such activity authorized under this title or under any other provision of law, including, but not limited to, new projects, completion or expansion of existing or on-going projects, individual phases, portions, or components of projects and operation, maintenance and rehabilitation of completed projects; the primary purpose of a "coastal wetlands restoration project" shall not be to provide navigation, irrigation or flood control benefits;
- (7) "coastal wetlands conservation project" means--
  - (A) the obtaining of a real property interest in coastal lands or waters, if the obtaining of such interest is subject to terms and conditions that will ensure that the real property will be administered for the long-term conservation of such lands and waters and the hydrology, water quality and fish and wildlife dependent thereon; and

(B) the restoration, management, or enhancement of coastal wetlands ecosystems if such restoration, management, or enhancement is conducted on coastal lands and waters that are administered for the long-term conservation of such lands and waters and the hydrology, water quality and fish and wildlife dependent thereon;

(8) "Governor" means the Governor of Louisiana;

(9) "Task Force" means the Louisiana Coastal Wetlands Conservation and Restoration Task Force which shall consist of the Secretary, who shall serve as chairman, the Administrator, the Governor, the Secretary of the Interior, the Secretary of Agriculture and the Secretary of Commerce; and

(10) "Director" means the Director of the United States Fish and Wildlife Service.

SEC. 303. PRIORITY LOUISIANA COASTAL WETLANDS RESTORATION PROJECTS.

(a) PRIORITY PROJECT LIST.--

(1) PREPARATION OF LIST.--Within forty-five days after the date of enactment of this title, the Secretary shall convene the Task Force to initiate a process to identify and prepare a list of coastal wetlands restoration projects in Louisiana to provide for the long-term conservation of such wetlands and dependent fish and wildlife populations in order of priority, based on the cost-effectiveness of such projects in creating, restoring, protecting, or enhancing coastal wetlands, taking into account the quality of such coastal wetlands, with due allowance for small-scale projects necessary to demonstrate the use of new techniques or materials for coastal wetlands restoration.

(2) TASK FORCE PROCEDURES.--The Secretary shall convene meetings of the Task Force as appropriate to ensure that the list is produced and transmitted annually to the Congress as required by this subsection. If necessary to ensure transmittal of the list on a timely basis, the Task Force shall produce the list by a majority vote of those Task Force members who are present and voting; except that no coastal wetlands restoration project shall be placed on the list without the concurrence of the lead Task Force member that the project is cost effective and sound from an engineering perspective. Those projects which potentially impact navigation or flood control on the lower Mississippi River System shall be constructed consistent with section 304 of this Act.

(3) TRANSMITTAL OF LIST.--No later than one year after the date of enactment of this title, the Secretary shall transmit to the Congress the list of priority coastal wetlands restoration projects required by paragraph (1) of this subsection. Thereafter, the list shall be updated annually by the Task Force members and transmitted by the Secretary to the Congress as part of the President's annual budget submission. Annual transmittals of the list to the Congress

shall include a status report on each project and a statement from the Secretary of the Treasury indicating the amounts available for expenditure to carry out this title.

(4) LIST OF CONTENTS.--

(A) AREA IDENTIFICATION; PROJECT DESCRIPTION--The list of priority coastal wetlands restoration projects shall include, but not be limited to--

(i) identification, by map or other means, of the coastal area to be covered by the coastal wetlands restoration project; and

(ii) a detailed description of each proposed coastal wetlands restoration project including a justification for including such project on the list, the proposed activities to be carried out pursuant to each coastal wetlands restoration project, the benefits to be realized by such project, the identification of the lead Task Force member to undertake each proposed coastal wetlands restoration project and the responsibilities of each other participating Task Force member, an estimated timetable for the completion of each coastal wetlands restoration project, and the estimated cost of each project.

(B) PRE-PLAN.--Prior to the date on which the plan required by subsection (b) of this section becomes effective, such list shall include only those coastal wetlands restoration projects that can be substantially completed during a five-year period commencing on the date the project is placed on the list.

(C) Subsequent to the date on which the plan required by subsection (b) of this section becomes effective, such list shall include only those coastal wetlands restoration projects that have been identified in such plan.

(5) FUNDING.--The Secretary shall, with the funds made available in accordance with section 306 of this title, allocate funds among the members of the Task Force based on the need for such funds and such other factors as the Task Force deems appropriate to carry out the purposes of this subsection.

(b) FEDERAL AND STATE PROJECT PLANNING.--

(1) PLAN PREPARATION.--The Task Force shall prepare a plan to identify coastal wetlands restoration projects, in order of priority, based on the cost-effectiveness of such projects in creating, restoring, protecting, or enhancing the long-term conservation of coastal wetlands, taking into account the quality of such coastal wetlands, with due allowance for small-scale projects necessary to demonstrate the use of new techniques or materials for coastal wetlands restoration. Such restoration plan shall be completed within three years from the date of enactment of this title.

(2) PURPOSE OF THE PLAN.--The purpose of the restoration plan is to develop a comprehensive approach to restore and prevent the loss of, coastal wetlands in Louisiana. Such plan shall

coordinate and integrate coastal wetlands restoration projects in a manner that will ensure the long-term conservation of the coastal wetlands of Louisiana.

(3) INTEGRATION OF EXISTING PLANS.--In developing the restoration plan, the Task Force shall seek to integrate the "Louisiana Comprehensive Coastal Wetlands Feasibility Study" conducted by the Secretary of the Army and the "Coastal Wetlands Conservation and Restoration Plan" prepared by the State of Louisiana's Wetlands Conservation and Restoration Task Force.

(4) ELEMENTS OF THE PLAN.--The restoration plan developed pursuant to this subsection shall include--

(A) identification of the entire area in the State that contains coastal wetlands;

(B) identification, by map or other means, of coastal areas in Louisiana in need of coastal wetlands restoration projects;

(C) identification of high priority coastal wetlands restoration projects in Louisiana needed to address the areas identified in subparagraph (B) and that would provide for the long-term conservation of restored wetlands and dependent fish and wildlife populations;

(D) a listing of such coastal wetlands restoration projects, in order of priority, to be submitted annually, incorporating any project identified previously in lists produced and submitted under subsection (a) of this section;

(E) a detailed description of each proposed coastal wetlands restoration project, including a justification for including such project on the list;

(F) the proposed activities to be carried out pursuant to each coastal wetlands restoration project;

(G) the benefits to be realized by each such project;

(H) an estimated timetable for completion of each coastal wetlands restoration project;

(I) an estimate of the cost of each coastal wetlands restoration project;

(J) identification of a lead Task Force member to undertake each proposed coastal wetlands restoration project listed in the plan;

(K) consultation with the public and provision for public review during development of the plan; and

(L) evaluation of the effectiveness of each coastal wetlands restoration project in achieving long-term solutions to arresting coastal wetlands loss in Louisiana.

(5) PLAN MODIFICATION.--The Task Force may modify the restoration plan from time to time as necessary to carry out the purposes of this section.

(6) PLAN SUBMISSION.--Upon completion of the restoration plan, the Secretary shall submit the plan to the Congress. The restoration plan shall become effective ninety days after the date of its submission to the Congress.

(7) PLAN EVALUATION.--Not less than three years after the completion and submission of the restoration plan required by this subsection and at least every three years thereafter, the Task Force shall provide a report to the Congress containing a scientific evaluation of the effectiveness of the coastal wetlands restoration projects carried out under the plan in creating, restoring, protecting and enhancing coastal wetlands in Louisiana.

(c) COASTAL WETLANDS RESTORATION PROJECT BENEFITS.--Where such a determination is required under applicable law, the net ecological, aesthetic, and cultural benefits, together with the economic benefits, shall be deemed to exceed the costs of any coastal wetlands restoration project within the State which the Task Force finds to contribute significantly to wetlands restoration.

(d) CONSISTENCY.--(1) In implementing, maintaining, modifying, or rehabilitating navigation, flood control or irrigation projects, other than emergency actions, under other authorities, the Secretary, in consultation with the Director and the Administrator, shall ensure that such actions are consistent with the purposes of the restoration plan submitted pursuant to this section.

(2) At the request of the Governor of the State of Louisiana, the Secretary of Commerce shall approve the plan as an amendment to the State's coastal zone management program approved under section 306 of the Coastal Zone Management Act of 1972 (16 U.S.C. 1455).

(e) FUNDING OF WETLANDS RESTORATION PROJECTS.--The Secretary shall, with the funds made available in accordance with this title, allocate such funds among the members of the Task Force to carry out coastal wetlands restoration projects in accordance with the priorities set forth in the list transmitted in accordance with this section. The Secretary shall not fund a coastal wetlands restoration project unless that project is subject to such terms and conditions as necessary to ensure that wetlands restored, enhanced or managed through that project will be administered for the long-term conservation of such lands and waters and dependent fish and wildlife populations.

(f) COST-SHARING.--

(1) FEDERAL SHARE.--Amounts made available in accordance with section 306 of this title to carry out coastal wetlands restoration projects under this title shall provide 75 percent of the cost of such projects.

(2) FEDERAL SHARE UPON CONSERVATION PLAN APPROVAL.--Notwithstanding the previous paragraph, if the State develops a Coastal Wetlands Conservation Plan pursuant to this title, and such conservation plan is approved pursuant to section 304 of this title, amounts made available in accordance with section 306 of this title for any coastal wetlands restoration project under this section shall be 85 percent of the cost of the project. In the event that the Secretary, the Director, and the Administrator jointly determine that the State is not taking reasonable steps to implement and administer a conservation plan developed and approved pursuant to this

title, amounts made available in accordance with section 306 of this title for any coastal wetlands restoration project shall revert to 75 percent of the cost of the project: Provided, however, that such reversion to the lower cost share level shall not occur until the Governor, has been provided notice of, and opportunity for hearing on, any such determination by the Secretary, the Director, and Administrator, and the State has been given ninety days from such notice or hearing to take corrective action.

(3) FORM OF STATE SHARE.--The share of the cost required of the State shall be from a non-Federal source. Such State share shall consist of a cash contribution of not less than 5 percent of the cost of the project. The balance of such State share may take the form of lands, easements, or right-of-way, or any other form of in-kind contribution determined to be appropriate by the lead Task Force member.

(4) Paragraphs (1), (2), and (3) of this subsection shall not affect the existing cost-sharing agreements for the following projects: Caernarvon Freshwater Diversion, Davis Pond Freshwater Diversion, and Bonnet Carre Freshwater Diversion.

#### SEC. 304. LOUISIANA COASTAL WETLANDS CONSERVATION PLANNING.

##### (a) DEVELOPMENT OF CONSERVATION PLAN.--

(1) AGREEMENT.--The Secretary, the Director, and the Administrator are directed to enter into an agreement with the Governor, as set forth in paragraph (2) of this subsection, upon notification of the Governor's willingness to enter into such agreement.

##### (2) TERMS OF AGREEMENT.--

(A) Upon receiving notification pursuant to paragraph (1) of this subsection, the Secretary, the Director, and the Administrator shall promptly enter into an agreement (hereafter in this section referred to as the "agreement") with the State under the terms set forth in subparagraph (B) of this paragraph.

##### (B) The agreement shall--

(i) set forth a process by which the State agrees to develop, in accordance with this section, a coastal wetlands conservation plan (hereafter in this section referred to as the "conservation plan");

(ii) designate a single agency of the State to develop the conservation plan;

(iii) assure an opportunity for participation in the development of the conservation plan, during the planning period, by the public and by Federal and State agencies;

(iv) obligate the State, not later than three years after the date of signing the agreement, unless extended by the parties thereto, to submit the conservation plan to the Secretary, the

Director, and the Administrator for their approval;  
and

(v) upon approval of the conservation plan,  
obligate the State to implement the conservation  
plan.

(3) GRANTS AND ASSISTANCE.--Upon the date of signing the  
agreement--

(A) the Administrator shall, in consultation with the  
Director, with the funds made available in accordance  
with section 306 of this title, make grants during the  
development of the conservation plan to assist the  
designated State agency in developing such plan. Such  
grants shall not exceed 75 percent of the cost of  
developing the plan; and

(B) the Secretary, the Director, and the Administrator  
shall provide technical assistance to the State to  
assist it in the development of the plan.

(b) CONSERVATION PLAN GOAL.--If a conservation plan is developed  
pursuant to this section, it shall have a goal of achieving no  
net loss of wetlands in the coastal areas of Louisiana as a  
result of development activities initiated subsequent to approval  
of the plan, exclusive of any wetlands gains achieved through  
implementation of the preceding section of this title.

(c) ELEMENTS OF CONSERVATION PLAN.--The conservation plan authorized  
by this section shall include--

(1) identification of the entire coastal area in the State  
that contains coastal wetlands;

(2) designation of a single State agency with the  
responsibility for implementing and enforcing the plan;

(3) identification of measures that the State shall take  
in addition to existing Federal authority to achieve a goal  
of no net loss of wetlands as a result of development  
activities, exclusive of any wetlands gains achieved through  
implementation of the preceding section of this title;

(4) a system that the State shall implement to account for  
gains and losses of coastal wetlands within coastal areas for  
purposes of evaluating the degree to which the goal of no net  
loss of wetlands as a result of development activities in  
such wetlands or other waters has been attained;

(5) satisfactory assurance that the State will have  
adequate personnel, funding, and authority to implement the  
plan;

(6) a program to be carried out by the State for the  
purpose of educating the public concerning the necessity to  
conserve wetlands;

(7) a program to encourage the use of technology by  
persons engaged in development activities that will result in  
negligible impact on wetlands; and

(8) a program for the review, evaluation, and  
identification of regulatory and nonregulatory options that  
will be adopted by the State to encourage and assist private  
owners of wetlands to continue to maintain those lands as  
wetlands.

(d) APPROVAL OF CONSERVATION PLAN.--

(1) IN GENERAL.--If the Governor submits a conservation plan to the Secretary, the Director, and the Administrator for their approval, the Secretary, the Director, and the Administrator shall, within one hundred and eighty days following receipt of such plan, approve or disapprove it.

(2) APPROVAL CRITERIA.--The Secretary, the Director, and the Administrator shall approve a conservation plan submitted by the Governor, if they determine that -

(A) the State has adequate authority to fully implement all provisions of such a plan;

(B) such a plan is adequate to attain the goal of no net loss of coastal wetlands as a result of development activities and complies with the other requirements of this section; and

(C) the plan was developed in accordance with terms of the agreement set forth in subsection (a) of this section.

(e) MODIFICATION OF CONSERVATION PLAN.--

(1) NONCOMPLIANCE.--If the Secretary, the Director, and the Administrator determine that a conservation plan submitted by the Governor does not comply with the requirements of subsection (d) of this section, they shall submit to the Governor a statement explaining why the plan is not in compliance and how the plan should be changed to be in compliance.

(2) RECONSIDERATION.--If the Governor submits a modified conservation plan to the Secretary, the Director, and the Administrator for their reconsideration, the Secretary, the Director, and Administrator shall have ninety days to determine whether the modifications are sufficient to bring the plan into compliance with requirements of subsection (d) of this section.

(3) APPROVAL OF MODIFIED PLAN.--If the Secretary, the Director, and the Administrator fail to approve or disapprove the conservation plan, as modified, within the ninety-day period following the date on which it was submitted to them by the Governor, such plan, as modified, shall be deemed to be approved effective upon the expiration of such ninety-day period.

(f) AMENDMENTS TO CONSERVATION PLAN.--If the Governor amends the conservation plan approved under this section, any such amended plan shall be considered a new plan and shall be subject to the requirements of this section; except that minor changes to such plan shall not be subject to the requirements of this section.

(g) IMPLEMENTATION OF CONSERVATION PLAN.--A conservation plan approved under this section shall be implemented as provided therein.

(h) FEDERAL OVERSIGHT.--

(1) INITIAL REPORT TO CONGRESS.--Within one hundred and eighty days after entering into the agreement required under subsection (a) of this section, the Secretary, the Director, and the Administrator shall report to the Congress as to the status of a conservation plan approved under this section and the progress of the State in carrying out such a plan,

including and accounting, as required under subsection (c) of this section, of the gains and losses of coastal wetlands as a result of development activities.

(2) REPORT TO CONGRESS.--Twenty-four months after the initial one hundred and eighty day period set forth in paragraph (1), and at the end of each twenty-four-month period thereafter, the Secretary, the Director, and the Administrator shall, report to the Congress on the status of the conservation plan and provide an evaluation of the effectiveness of the plan in meeting the goal of this section.

#### SEC. 305 NATIONAL COASTAL WETLANDS CONSERVATION GRANTS.

(a) MATCHING GRANTS.--The Director shall, with the funds made available in accordance with the next following section of this title, make matching grants to any coastal State to carry out coastal wetlands conservation projects from funds made available for that purpose.

(b) PRIORITY.--Subject to the cost-sharing requirements of this section, the Director may grant or otherwise provide any matching moneys to any coastal State which submits a proposal substantial in character and design to carry out a coastal wetlands conservation project. In awarding such matching grants, the Director shall give priority to coastal wetlands conservation projects that are--

(1) consistent with the National Wetlands Priority Conservation Plan developed under section 301 of the Emergency Wetlands Resources Act (16 U.S.C. 3921); and

(2) in coastal States that have established dedicated funding for programs to acquire coastal wetlands, natural areas and open spaces. In addition, priority consideration shall be given to coastal wetlands conservation projects in maritime forests on coastal barrier islands.

(c) CONDITIONS.--The Director may only grant or otherwise provide matching moneys to a coastal State for purposes of carrying out a coastal wetlands conservation project if the grant or provision is subject to terms and conditions that will ensure that any real property interest acquired in whole or in part, or enhanced, managed, or restored with such moneys will be administered for the long-term conservation of such lands and waters and the fish and wildlife dependent thereon.

(d) COST-SHARING.--

(1) FEDERAL SHARE.--Grants to coastal States of matching moneys by the Director for any fiscal year to carry out coastal wetlands conservation projects shall be used for the payment of not to exceed 50 percent of the total costs of such projects: except that such matching moneys may be used for payment of not to exceed 75 percent of the costs of such projects if a coastal State has established a trust fund, from which the principal is not spent, for the purpose of acquiring coastal wetlands, other natural area or open spaces.

(2) FORM OF STATE SHARE.--The matching moneys required of a coastal State to carry out a coastal wetlands conservation project shall be derived from a non-Federal source.

(3) IN-KIND CONTRIBUTIONS.--In addition to cash outlays and payments, in-kind contributions of property or personnel services by non-Federal interests for activities under this section may be used for the non-Federal share of the cost of those activities.

(e) PARTIAL PAYMENTS.--

(1) The Director may from time to time make matching payments to carry out coastal wetlands conservation projects as such projects progress, but such payments, including previous payments, if any, shall not be more than the Federal pro rata share of any such project in conformity with subsection (d) of this section.

(2) The Director may enter into agreements to make matching payments on an initial portion of a coastal wetlands conservation project and to agree to make payments on the remaining Federal share of the costs of such project from subsequent moneys if and when they become available. The liability of the United States under such an agreement is contingent upon the continued availability of funds for the purpose of this section.

(f) WETLANDS ASSESSMENT.--The Director shall, with the funds made available in accordance with the next following section of this title, direct the U.S. Fish and Wildlife Service's National Wetlands Inventory to update and digitize wetlands maps in the State of Texas and to conduct an assessment of the status, condition, and trends of wetlands in that State.

#### SEC. 306. DISTRIBUTION OF APPROPRIATIONS.

(a) PRIORITY PROJECT AND CONSERVATION PLANNING EXPENDITURES.--Of the total amount appropriated during a given fiscal year to carry out this title, 70 percent, not to exceed \$70,000,000, shall be available, and shall remain available until expended, for the purposes of making expenditures--

(1) not to exceed the aggregate amount of \$5,000,000 annually to assist the Task Force in the preparation of the list required under this title and the plan required under this title, including preparation of--

- (A) preliminary assessments;
- (B) general or site-specific inventories;
- (C) reconnaissance, engineering or other studies;
- (D) preliminary design work; and
- (E) such other studies as may be necessary to identify and evaluate the feasibility of coastal wetlands restoration projects;

(2) to carry out coastal wetlands restoration projects in accordance with the priorities set forth on the list prepared under this title;

(3) to carry out wetlands restoration projects in accordance with the priorities set forth in the restoration plan prepared under this title;

(4) to make grants not to exceed \$2,500,000 annually or \$10,000,000 in total, to assist the agency designated by the State in development of the Coastal Wetlands Conservation Plan pursuant to this title.

(b) COASTAL WETLANDS CONSERVATION GRANTS.--Of the total amount appropriated during a given fiscal year to carry out this title, 15 percent, not to exceed \$15,000,000 shall be available, and shall remain available to the Director, for purposes of making grants--

(1) to any coastal State, except States eligible to receive funding under section 306(a), to carry out coastal wetlands conservation projects in accordance with section 305 of this title; and

(2) in the amount of \$2,500,000 in total for an assessment of the status, condition, and trends of wetlands in the State of Texas.

(c) NORTH AMERICAN WETLANDS CONSERVATION.--Of the total amount appropriated during a given fiscal year to carry out this title, 15 percent, not to exceed \$15,000,000, shall be available to, and shall remain available until expended by, the Secretary of the Interior for allocation to carry out wetlands conservation projects in any coastal State under section 8 of the North American Wetlands Conservation Act (Public Law 101-233, 103 Stat. 1968, December 13, 1989).

#### SEC. 307. GENERAL PROVISIONS.

(a) ADDITIONAL AUTHORITY FOR THE CORPS OF ENGINEERS.--The Secretary is authorized to carry out projects for the protection, restoration, or enhancement of aquatic and associated ecosystems, including projects for the protection, restoration, or creation of wetlands and coastal ecosystems. In carrying out such projects, the Secretary shall give such projects equal consideration with projects relating to irrigation, navigation, or flood control.

(b) STUDY.--The Secretary is hereby authorized and directed to study the feasibility of modifying the operation of existing navigation and flood control projects to allow for an increase in the share of the Mississippi River flows and sediment sent down the Atchafalaya River for purposes of land building and wetlands nourishment.

#### SEC. 308. CONFORMING AMENDMENT.

16 U.S.C. 777c is amended by adding the following after the first sentence: "The Secretary shall distribute 18 per centum of each annual appropriation made in accordance with the provisions of section 777b of this title as provided in the Coastal Wetlands Planning, Protection and Restoration Act: Provided, That, notwithstanding the provisions of section 777b, such sums shall remain available to carry out such Act through fiscal year 1999.".

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6th Priority Project List Report

Appendix B

Wetland Value Assessment Methodology and Community  
Models



Appendix B

Wetland Value Assessment Methodology and Community Models

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# WETLAND VALUE ASSESSMENT METHODOLOGY AND COMMUNITY MODELS

## INTRODUCTION

The Wetland Value Assessment (WVA) methodology is a quantitative, habitat-based assessment methodology developed for use in prioritizing project proposals submitted for funding under the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA). The WVA quantifies changes in fish and wildlife habitat quality and quantity that are projected to be brought about as a result of a proposed wetland enhancement project. The results of the WVA, measured in Average Annual Habitat Units (AAHU's), can be combined with economic data to provide a measure of the effectiveness of a proposed project in terms of annualized cost per AAHU gained.

The WVA was developed by the Environmental Work Group (Group) assembled under the Planning and Evaluation Subcommittee of the CWPPRA Technical Committee; the Group includes members from each agency represented on the CWPPRA Task Force. The WVA was designed to be applied, to the greatest extent possible, using only existing or readily obtainable data.

The WVA has been developed strictly for use in ranking proposed CWPPRA projects; it is not intended to provide a detailed, comprehensive methodology for establishing baseline conditions within a project area. Some aspects of the WVA have been defined by policy and functional considerations of the CWPPRA; therefore, user-specific modifications may be necessary if the WVA is used for other purposes.

The WVA is a modification of the Habitat Evaluation Procedures (HEP) developed by the U.S. Fish and Wildlife Service (U.S. Fish and Wildlife Service 1980). HEP is widely used by the Fish and Wildlife Service and other Federal and State agencies in evaluating the impacts of development projects on fish and wildlife resources. A notable difference exists between the two methodologies, however, in that HEP generally uses a species-oriented approach, whereas the WVA utilizes a community approach.

The WVA has been developed for application to the following coastal Louisiana wetland types: fresh marsh (including intermediate marsh), brackish marsh, saline marsh, and cypress-tupelo swamp. Future reference in this document to "wetland" or "wetland type" refers to one or more of those four communities.

## WVA CONCEPT

The WVA operates under the assumption that optimal conditions for fish and wildlife habitat within a given coastal wetland type can be characterized, and that existing or predicted conditions can be compared to that optimum to provide an index of habitat quality. Habitat quality is estimated or expressed through the use of a mathematical model developed specifically for each wetland type. Each model consists of 1) a list of variables that are considered important in characterizing fish and wildlife habitat, 2) a Suitability Index graph for each variable, which defines the assumed relationship between habitat quality (Suitability Index) and different variable values, and 3) a mathematical formula that combines the Suitability Index for each variable into a single value for wetland habitat quality; that single value is referred to as the Habitat Suitability Index, or HSI.

The Wetland Value Assessment models (Attachments 1-4) have been developed for determining the suitability of Louisiana coastal wetlands in providing resting, foraging, breeding, and nursery habitat to a diverse assemblage of fish and wildlife species. Models have been designed to function at a community level and therefore attempt to define an optimum combination of habitat conditions for all fish and wildlife species utilizing a given marsh type over a year or longer. Earlier attempts to capture other wetland functions and values such as storm-surge protection, flood water storage, water quality functions, and nutrient import and export were abandoned due to the difficulty in defining unified model relationships and meaningful model outputs for such a variety of wetland benefits. However, the ability of a Louisiana coastal wetland to provide those functions and values may be generally assumed to be positively correlated with fish and wildlife habitat quality as predicted through the WVA.

The output of each model (the HSI) is assumed to have a linear relationship with the suitability of a coastal wetland system in providing fish and wildlife habitat.

### COMMUNITY MODEL VARIABLE SELECTION

Habitat variables considered appropriate for describing habitat quality in each wetland type were selected according to the following criteria:

1) the condition described by the variable had to be important in characterizing fish and wildlife habitat quality in the wetland type under consideration;

2) values had to be easily estimated and predicted based on existing data (e.g., aerial photography, LANDSAT, GIS systems, water quality monitoring stations, and interviews with knowledgeable individuals); and

3) the variable had to be sensitive to the types of changes expected to be brought about by typical wetland projects proposed under the CWPRA.

Variables for each model were selected through a two-part procedure. The first involved a listing of environmental variables thought to be important in characterizing fish and wildlife habitat in coastal marsh or swamp systems.

The second part of the selection procedure involved reviewing variables used in species-specific HSI models published by the U.S. Fish and Wildlife Service. Review was limited to models for those fish and wildlife species known to inhabit Louisiana coastal wetlands, and included models for 10 estuarine fish and shellfish, 4 freshwater fish, 12 birds, 3 reptiles and amphibians, and 2 mammals (Attachment 7). The number of models included from each species group was dictated by model availability.

Selected HSI models were then grouped according to the wetland type(s) used by each species. Because most species for which models were considered are not restricted to one wetland type, most models were included in more than one wetland type group. Within each wetland type group, variables from all models were then grouped according to similarity (e.g., water quality, vegetation, etc.). Each variable was evaluated based on 1) whether it met the variable selection criteria; 2) whether another, more easily measured or predicted variable in the same or a different similarity group functioned as a surrogate; and 3) whether it was deemed suitable for the WVA application (e.g., some freshwater fish model variables dealt with riverine or lacustrine environments). Variables that did not satisfy those conditions were eliminated from further consideration. The remaining variables, still in their similarity groups, were then further eliminated or refined by combining similar variables and culling those that were functionally duplicated by variables from other models (i.e., some variables were used frequently in different models in only slightly different format, such as percent marsh coverage, salinity, etc.).

Variables selected from the HSI models were then compared to those identified in the first part of the selection procedure to arrive at a final list of variables to describe wetland habitat quality. That list includes six variables for each of the marsh types and three for the cypress-tupelo swamp (Attachments 1-4).

#### SUITABILITY INDEX GRAPHS

Suitability Index graphs were constructed for each variable selected within a wetland type. A Suitability Index (SI) graph is a graphical representation of how fish and wildlife habitat quality or "suitability" of a given wetland type is predicted to change as values of the given variable change, and allows the model user to describe numerically, through a Suitability Index,

the habitat quality of a wetland area for any variable value. Each Suitability Index ranges from 0.0 to 1.0, with 1.0 representing the optimum condition for the variable in question.

A variety of resources were utilized to construct each Suitability Index (SI) graph, including personal knowledge of Group members, the species HSI models from which the final list of variables was partially derived, consultation with other professionals and researchers outside the Group, and published and unpublished data and studies. An important "non-biological" constraint on SI graph development was the need to insure that graph relationships were not counter to the purpose of the CWPPRA, that is, the long term creation, restoration, protection, or enhancement of coastal vegetated wetlands. That constraint was most operative in defining SI graphs for Variable 1 under each marsh model (see discussion below).

The process of graph development was one of constant evolution, feedback, and refinement; the form of each Suitability Index graph was decided upon through consensus among Group members.

#### SUITABILITY INDEX GRAPH ASSUMPTIONS

Suitability Index graphs were developed according to the assumptions discussed below.

##### Fresh/Intermediate Marsh Model.

Variable  $V_1$ --Percent of wetland covered by persistent emergent vegetation ( $\geq 10$  percent canopy cover).

Persistent emergent vegetation plays an important role in coastal wetlands by providing foraging, resting, and breeding habitat for a variety of fish and wildlife species; and by providing a source of detritus and energy for lower trophic organisms that form the basis for the food chain. An area with no marsh (i.e., shallow open water) is assumed to have minimal habitat suitability in terms of this variable, and is assigned an SI of 0.1.

Optimum vegetation coverage in a fresh/intermediate marsh is assumed to occur at 100 percent persistent emergent vegetation cover (SI=1.0). That assumption is dictated primarily by the constraint of not having graph relationships conflict with the CWPPRA's purpose of long-term creation, restoration, protection, or enhancement of coastal vegetated wetlands. The Group had originally developed a strictly biologically-based graph defining optimum habitat conditions at marsh cover values between 60 and 80 percent, and sub-optimum habitat conditions at 100 percent cover. However, application of that graph, in combination with the time analysis used later in the evaluation process, often reduced project benefits or generated a net loss of habitat quality through time with the project. Those situations arose primarily when: existing (baseline) emergent vegetation cover exceeded the optimum ( $> 80$  percent); the project was predicted to maintain baseline cover values; and without the project the marsh was

predicted to degrade, with a concurrent decline in percent emergent vegetation cover into the optimum range (60-80 percent). The time factor aggravated the situation when the without-project degradation was not rapid enough to reduce marsh cover values significantly below the optimum range, or below the baseline SI, within the 20-year evaluation period. In those cases, the analysis would show net negative benefits for the project, and positive benefits for letting the marsh degrade rather than maintaining the existing marsh. Coupling that situation with the presumption that marsh conditions are not static, and that Louisiana will continue to lose coastal emergent marsh, and taking into account the purpose of the CWPPRA, the Group decided that, all other factors being equal, the WVA should favor projects that maximize emergent marsh creation, maintenance, and protection. Therefore, the Group agreed to deviate from a strict biologically-based habitat suitability graph for  $V_1$  by setting optimum habitat conditions at 100 percent marsh cover.

Variable  $V_2$ --Percent of open water area dominated (> 50 percent canopy cover) by aquatic vegetation.

Fresh and intermediate marshes often support diverse communities of floating-leaved and submerged aquatic plants that provide important food and cover to a wide variety of fish and wildlife species. A fresh/intermediate open water area with no aquatics is assumed to have low suitability ( $SI=0.1$ ). Optimum condition ( $SI=1.0$ ) is assumed to occur when 100 percent of the open water is dominated by aquatic vegetation. Habitat suitability may be assumed to decrease with aquatic plant coverage approaching 100 percent due to the potential for mats of aquatic vegetation to hinder fish and wildlife utilization; to adversely affect water quality by reducing photosynthesis by phytoplankton and other plant forms due to shading; and to contribute to oxygen depletion spurred by warm-season decay of large quantities of aquatic vegetation. The Group recognized, however, that those effects were highly dependent on the dominant aquatic plant species, their growth forms, and their arrangement in the water column; thus, it is possible to have 100 percent cover of a variety of floating and submerged aquatic plants without the above-mentioned problems due to differences in plant growth form and stratification of plants through the water column. Because predictions of which species may dominate at any time in the future would be tenuous at best, the Group decided to simplify the graph and define optimum conditions at 100 percent aquatic cover.

Variable  $V_3$ --Marsh edge and interspersions.

This variable takes into account the relative juxtaposition of marsh and open water for a given marsh:open water ratio, and is measured by comparing the project area to sample illustrations (Attachment 5) depicting different degrees of interspersions. Interspersions are assumed to be especially important when considering the value of an area as foraging and nursery habitat for freshwater and estuarine fish and shellfish; the marsh/open water interface represents an ecotone where prey species often concentrate, and where post-larval and juvenile organisms can find cover. Isolated marsh ponds are often more productive in terms of

aquatic vegetation than are larger ponds due to decreased turbidities, and thus may provide more suitable waterfowl habitat. However, interspersions can be indicative of marsh degradation, a factor taken into consideration in assigning suitability indices to the various Interspersion Types.

A relatively high degree of interspersions in the form of stream courses and tidal channels (Interspersion Type 1, Attachment 5) is assumed to be optimal (SI=1.0); streams and channels offer interspersions, yet are not indicative of active marsh deterioration. Areas exhibiting a high degree of marsh cover are also ranked as optimum, even though interspersions may be low, to avoid conflicts with the premises underlying the SI graph for variable  $V_1$ . Without such an allowance, areas of relatively healthy, solid marsh, or projects designed to create marsh, would be penalized with respect to interspersions. Numerous small marsh ponds (Interspersion Type 2) offer a high degree of interspersions, but are also usually indicative of the beginnings of marsh break-up and degradation, and are therefore assigned a more moderate SI of 0.6. Large open water areas (Interspersion Types 3 and 4) offer lower interspersions values and usually indicate advanced stages of marsh loss, and are thus assigned SI's of 0.4 and 0.2, respectively. The lowest expression of interspersions (i.e., no emergent marsh at all within the project area) is assumed to be least desirable and is assigned an SI=0.1.

Variable  $V_4$ --Percent of open water area  $\leq$  1.5 feet deep in relation to marsh surface.

Shallow water areas are assumed to be more biologically productive than deeper water due to a general reduction in sunlight, oxygen, and temperature as water depth increases. Also, shallower water provides greater bottom accessibility for certain species of waterfowl, better foraging habitat for wading birds, and more favorable conditions for aquatic plant growth. Optimum depth in a fresh/intermediate marsh is assumed to occur when 80 to 90 percent of the open water area is less than or equal to 1.5 feet deep. The value of deeper areas in providing drought refugia for fish, alligators and other marsh life is recognized by assigning an SI=0.6 (i.e., sub-optimal) if all of the open water is less than or equal to 1.5 feet deep.

Variable  $V_5$ --Mean high salinity during the growing season.

It is assumed that periods of high salinity are most detrimental in a fresh/intermediate marsh when they occur during the growing season (defined as March through November, based on dates of first and last frost contained in Soil Conservation Service soil surveys for coastal Louisiana). Mean high salinity is defined as the average of the upper 33 percent of salinity readings taken during a specified period of record. Optimum condition in fresh marsh is assumed to occur when mean high salinity during the growing season is less than 2 parts per thousand (ppt). Optimum condition in intermediate marsh is assumed to occur when mean high salinity during the growing season is less than 4 ppt.

Variable V<sub>6</sub>--Aquatic organism access.

Access by aquatic organisms, particularly estuarine fishes and shellfishes, is considered to be a critical component in assessing the "quality" or suitability of a given marsh system to provide habitat to those species. Additionally, a marsh with a relatively high degree of access by default also exhibits a relatively high degree of hydrologic connectivity with adjacent systems, and therefore may be considered to contribute more to nutrient exchange than would a marsh exhibiting a lesser degree of access. The Suitability Index for V<sub>7</sub> is determined by calculating an "Access Value" based on the interaction between the percentage of the project area wetlands considered accessible by estuarine organisms during normal tidal fluctuations, and the type of man-made structures (if any) across identified points of ingress and egress (bayous, canals, etc.). Standardized procedures for calculating the Access Value have been established (Attachment 6). The optimum condition is assumed to exist when all of the study area is accessible and the access points are entirely open and unobstructed. A fresh/intermediate marsh with no access is assigned an SI=0.3, reflecting the assumption that, while fresh/intermediate marshes are important to some species of estuarine fishes and shellfish, such a marsh lacking access continues to provide benefits to a wide variety of other wildlife and fish species, and is not without habitat value.

#### Brackish Marsh Model.

Variable V<sub>1</sub>--Percent of wetland covered by persistent emergent vegetation ( $\geq 10$  percent canopy cover).

Refer to the V<sub>1</sub> discussion under the fresh/intermediate marsh model for a discussion of the importance of persistent emergent vegetation in coastal marshes. The V<sub>1</sub> Suitability Index graph in the brackish marsh model is identical to that in the fresh/intermediate model.

Variable V<sub>2</sub>--Percent of open water area dominated ( $> 50$  percent canopy cover) by aquatic vegetation.

Like fresh/intermediate marshes, brackish marshes have the potential to support aquatic plants that serve as important sources of food and cover for a wide variety of wildlife. However, brackish marshes generally do not support the amounts and kinds of aquatic plants that occur in fresh/intermediate marshes (although certain species, such as widgeon-grass, can occur abundantly under certain conditions). Therefore, a brackish marsh entirely lacking aquatic plants is assigned an SI=0.3. It is assumed that optimum open water coverage of aquatic plants in a brackish marsh occurs at 100 percent aquatic cover.

Variable V<sub>3</sub>--Marsh edge and interspersion.

The Suitability Index graph for edge and interspersion in the brackish marsh model is the same as that in the fresh/intermediate marsh model.

Variable V<sub>4</sub>--Open water depth in relation to marsh surface.

As in the fresh/intermediate model, shallow water areas in brackish marsh habitat are assumed to be important. However, brackish marsh generally exhibits deeper open water areas than fresh marsh due to tidal scouring. Therefore, the SI graph is constructed so that lower percentages of shallow water receive higher SI values relative to fresh/intermediate marsh. Optimum open water depth condition in a brackish marsh is assumed to occur when 70 to 80 percent of the open water area is less than or equal to 1.5 feet deep.

Variable V<sub>5</sub>--Average annual salinity.

The suitability index graph is constructed to represent optimum average annual salinity condition at between 0 ppt and 10 ppt. The Group acknowledges that average annual salinities below 6 ppt will effectively define a marsh as fresh or intermediate, not brackish. However, the suitability index graph makes allowances for lower salinities (i.e., < 6 ppt) to account for occasions when there is a trend of decreasing salinities through time toward a more intermediate condition. Implicit in keeping the graph at optimum for salinities less than 6 ppt is the assumption that lower salinities are not detrimental to a brackish marsh. However, average annual salinities greater than 10 ppt are assumed to be progressively more harmful to brackish marsh vegetation, as illustrated in the downward sloping right leg of the suitability index graph. Average annual salinities greater than 16 ppt are assumed to be representative of those found in a saline marsh, and thus are not considered in the brackish marsh model.

Variable V<sub>6</sub>--Aquatic organism access.

The general rationale and procedure behind the V<sub>6</sub> Suitability Index graph for the brackish marsh model are identical to those established for the fresh/intermediate model. However, brackish marshes are assumed to be more important as providers of habitat to estuarine fish and shellfish than fresh/intermediate marshes. Therefore, a brackish marsh providing no access is assigned an SI of 0.1.

#### Saline Marsh Model.

Variable V<sub>1</sub>--Percent of wetland covered by persistent emergent vegetation ( $\geq$  10 percent canopy cover).

Refer to the V<sub>1</sub> discussion under the fresh/intermediate marsh model for a discussion of the importance of persistent emergent vegetation in coastal marshes. The V<sub>1</sub> Suitability Index graph in the saline marsh model is identical to that in the fresh/intermediate and brackish models.

Variable V<sub>2</sub>--Percent of open water area dominated (> 50 percent canopy cover) by aquatic vegetation.

Refer to the V<sub>2</sub> discussion under the brackish marsh model for a discussion of persistent emergent vegetation in more saline coastal marshes. The V<sub>2</sub> Suitability Index graph in the saline marsh model is identical to that in the brackish model.

Variable V<sub>3</sub>--Marsh edge and interspersions.

The Suitability Index graph for edge and interspersions in the saline marsh model is the same as that in the fresh/intermediate and brackish marsh models.

Variable V<sub>4</sub>--Open water depth in relation to marsh surface.

The Suitability Index graph for open water depth in the saline marsh is similar to that for brackish marsh, where optimum conditions are assumed to occur when 70 to 80 percent of the open water area is less than or equal to 1.5 feet deep. However, at 100 percent shallow water, the saline graph yields an SI= 0.5 rather than 0.6 for the brackish model. That change reflects the increased abundance of tidal channels and generally deeper water conditions prevailing in a saline marsh due to increased tidal influences, and the importance of those tidal channels to estuarine organisms.

Variable V<sub>5</sub>--Average annual salinity.

The Suitability Index graph is constructed to represent optimum salinity conditions at between 9 ppt and 21 ppt. The Group acknowledges that average annual salinities between 9 and 12 ppt will effectively define a marsh as brackish, not saline. However, the suitability index graph makes allowances for lower salinities (i.e., < 12 ppt) to account for occasions when there is a trend of decreasing salinities through time toward a more brackish condition. Implicit in keeping the graph at optimum for salinities less than 12 ppt is the assumption that lower salinities (9-12 ppt) are not detrimental to a saline marsh. Average annual salinities greater than 21 ppt are assumed to be slightly stressful to saline marsh vegetation, as illustrated in the downward sloping right leg of the suitability index graph.

Variable V<sub>6</sub>--Aquatic organism access.

The Suitability Index graph for aquatic organism access in the saline marsh model is the same as that in the brackish marsh model.

#### Cypress-Tupelo Swamp Model.

Variable V<sub>1</sub>--Water regime.

Four water regime categories are described for the cypress-tupelo swamp model. The optimum water regime for a cypress-tupelo swamp is assumed to be seasonal flooding (SI=1.0); seasonal flooding with periodic drying cycles is assumed to contribute to increased nutrient cycling (primarily through oxidation and decomposition of accumulated detritus), increased vertical structure complexity (due to growth of other plants on the swamp floor), and increased recruitment of dominant overstory trees. Semipermanent flooding is also assumed to be desirable, as reflected in the SI=0.8 for that water regime category. Permanent flooding is assumed to be the least desirable (SI=0.2).

Variable  $V_2$ --Water flow/exchange.

This variable attempts to take into consideration the amounts and types of water inputs into a cypress-tupelo swamp. The Suitability Index graph is constructed under the assumption that abundant and consistent riverine input and water flow-through is optimum (SI=1.0), because under that regime the full functions and values of a cypress-tupelo swamp in providing fish and wildlife habitat are assumed to be maximized. Habitat suitability is assumed to decrease as water exchange between the swamp and adjacent systems is reduced. A swamp system with no water exchange (e.g., an impounded swamp where the only water input is through rainfall and the only water loss is through evapotranspiration and ground seepage) is assumed to be least desirable, and is assigned an SI= 0.2.

Variable  $V_3$ --Average high salinity.

Average high salinity is defined as the average of the upper 33 percent of salinity measurements taken during a specified period of record. Because baldcypress is salinity-sensitive, optimum conditions for baldcypress survival are assumed to occur at average high salinities less than 1 ppt. Habitat suitability is assumed to decrease rapidly at average high salinities in excess of 1 ppt.

#### HABITAT SUITABILITY INDEX FORMULA

The final step in WVA model development was to construct a mathematical formula that combines all Suitability Indices for each wetland type into a single Habitat Suitability Index (HSI) value. Because the Suitability Indices range in value from 0.0 to 1.0, the HSI also ranges from 0.0 to 1.0, and is a numerical representation of the overall or "composite" habitat quality of the particular wetland study area being evaluated. The HSI formula defines the aggregation of Suitability Indices in a manner unique to each wetland type depending on how the formula is constructed.

Within an HSI formula, any Suitability Index can be weighted by various means to increase the power or "importance" of that variable relative to the other variables in determining the HSI. Additionally, two or more variables can be grouped together into subgroups to further isolate variables for weighting.

In constructing HSI formulas for the marsh models, the Group recognized that the primary focus of the CWPPRA is on vegetated wetlands, and that some marsh protection strategies could have adverse impacts to estuarine organism access. Therefore, the Group made an a priori decision to emphasize variables  $V_1$ ,  $V_2$ , and  $V_6$  by grouping and weighting them together. Weighting was facilitated by treating the grouped variables as a geometric mean. Variables  $V_3$ ,  $V_4$ , and  $V_5$  were grouped to isolate their influence relative to  $V_1$ ,  $V_2$ , and  $V_6$ .

For all marsh models,  $V_1$  receives the strongest weighting. The relative weights of  $V_2$  and  $V_6$  differ by marsh model to reflect differing levels of importance for those variables among the marsh types. For example, the amount of aquatic vegetation was deemed more important in the context of a fresh/intermediate marsh than in a saline marsh, due to the relative contributions of aquatic vegetation between the two marsh types in terms of providing food and cover. Therefore,  $V_2$  receives more weight in the fresh/intermediate HSI formula than in the saline HSI formula. Similarly, the degree of estuarine organism access was considered more important in a saline marsh than in a fresh/intermediate marsh, and  $V_6$  receives more weight in the saline HSI formula than in the fresh/intermediate formula.

As with the Suitability Index graphs, the Habitat Suitability Index formulas were developed by consensus among the Group members.

#### BENEFIT ASSESSMENT

The net benefits of a proposed project are estimated by predicting future habitat conditions under two scenarios: with the proposed project in place and without the proposed project. Specifically, predictions are made as to how the model variables will change through time under the two scenarios. Through that process, HSI's are established for baseline (pre-project) conditions and for future with- and future without-project scenarios for selected "target years" throughout the expected life of the project. Those HSI's are then multiplied by the acreage of wetland type known or expected to be present in the target years to arrive at Habitat Units.

Habitat Units (HU's) represent a numerical combination of quality (HSI) and quantity (acres) existing at any given point in time. The "benefit" of a project can be quantified by comparing HU's between the future with- and future without-project scenarios. The difference in HU's between the two scenarios represents the net benefit attributable to the project in terms of habitat quantity and quality.

The HU's resulting from the future with- and future without-project scenarios are annualized, averaged out over the project life, and compared to determine the net gain in average annual HU's (AAHU's) attributable to the project. The net gain in AAHU's is then combined with annualized cost data to arrive at a cost per AAHU for the evaluated project. That figure is compared to the same figure from other projects in order to rank all proposed projects in order of cost per AAHU.

LITERATURE CITED

U. S. Fish and Wildlife Service. 1980. Habitat evaluation procedures (HEP). Div. Ecol. Serv. ESM 102, U. S. Fish and Wildl. Serv., Washington, DC. 141pp.

WETLAND VALUE ASSESSMENT COMMUNITY MODEL

Revised June 2, 1993

FRESH/INTERMEDIATE MARSH

Vegetation:

Variable V<sub>1</sub>      Percent of wetland area covered by emergent  
vegetation (≥ 10 percent canopy cover).

Variable V<sub>2</sub>      Percent of open water area dominated (> 50 percent  
canopy cover) by aquatic vegetation.

Interspersion:

Variable V<sub>3</sub>      Marsh edge and interspersion.

Water Depth:

Variable V<sub>4</sub>      Percent of open water area ≤ 1.5 feet deep, in  
relation to marsh surface.

Water Quality:

Variable V<sub>5</sub>      Mean high salinity during the growing season (March  
through November).

Aquatic Organism Access:

Variable V<sub>6</sub>      Aquatic organism access.

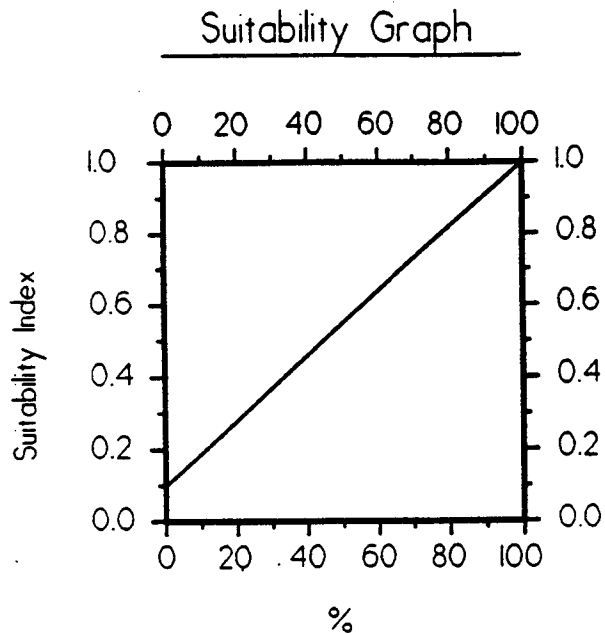
HSI Calculation:

$$HSI = \frac{[3.5 \times (SIV_1^3 \times SIV_2^{1.2} \times SIV_6^{0.5})^{1/4.7}] + \left[ \frac{(SIV_3 + SIV_4 + SIV_5)}{3} \right]}{4.5}$$

Attachment 1

FRESH/INTERMEDIATE MARSH

Variable  $V_1$       Percent of wetland area covered by emergent  
vegetation ( $\geq 10$  percent canopy cover).

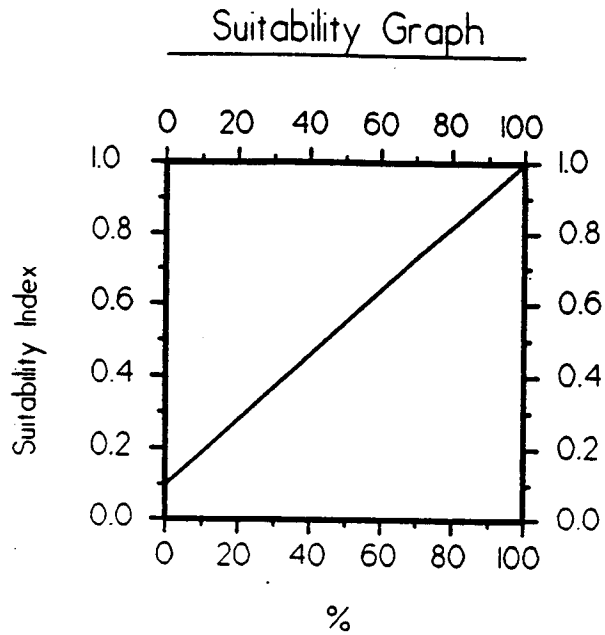


Line Formula

$$SI = (0.009 \times \%) + 0.1$$

FRESH/INTERMEDIATE MARSH

Variable V<sub>2</sub>      Percent of open water area dominated (> 50 percent canopy cover) by aquatic vegetation.

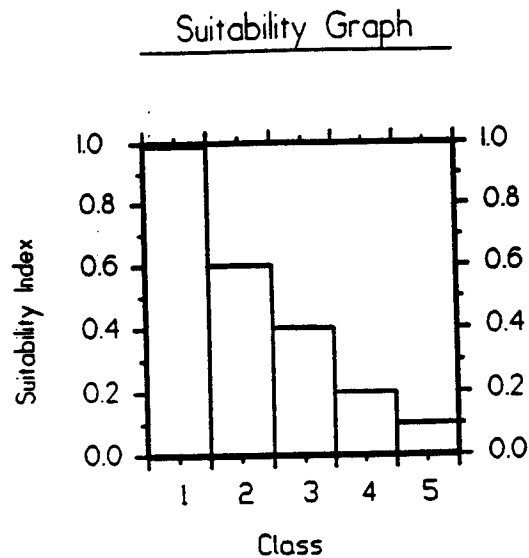


Line Formula

$$SI = (0.009 \times \%) + 0.1$$

## FRESH/INTERMEDIATE MARSH

Variable V<sub>3</sub> Marsh edge and interspersions.

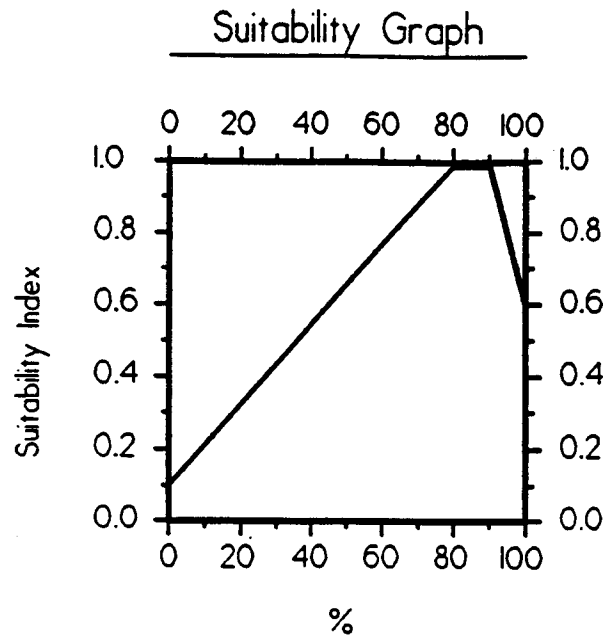


### Instructions for Calculating SI for Variable 3:

1. Refer to Attachment 5 for examples of the different interspersions classes (=types).
2. Estimate percent of project area in each class and compute a weighted average to arrive at SIV<sub>3</sub>. If the entire project area is solid marsh, assign an interspersions class #1 (SI=1.0). Conversely, if the entire project area is open water, assign an interspersions class #5 (SI=0.1).

FRESH/INTERMEDIATE MARSH

Variable  $V_4$       Percent of open water area  $\leq$  1.5 feet deep, in relation to marsh surface.



Line Formula

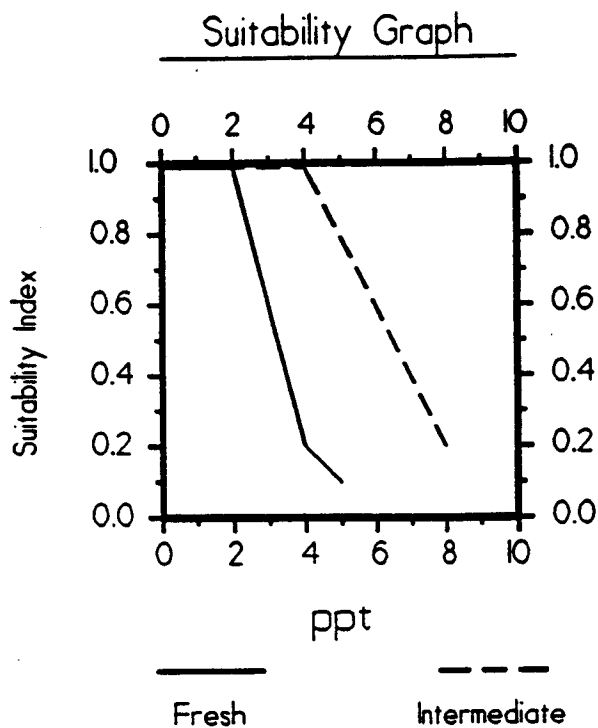
If  $0 \leq \% < 80$ , then  $SI = (0.01125 \times \%) + 0.1$

If  $80 \leq \% < 90$ , then  $SI = 1.0$

If  $\% \geq 90$ , then  $SI = (-0.04 \times \%) + 4.6$

## FRESH/INTERMEDIATE MARSH

Variable  $V_5$  Mean high salinity during the growing season (March through November).



### Line Formula

#### Fresh Marsh:

- If  $0 \leq \text{ppt} < 2$ , then  $SI = 1.0$
- If  $2 \leq \text{ppt} < 4$ , then  $SI = (-0.4 \times \text{ppt}) + 1.8$
- If  $4 \leq \text{ppt} \leq 5$  then  $SI = (-0.1 \times \text{ppt}) + 0.6$

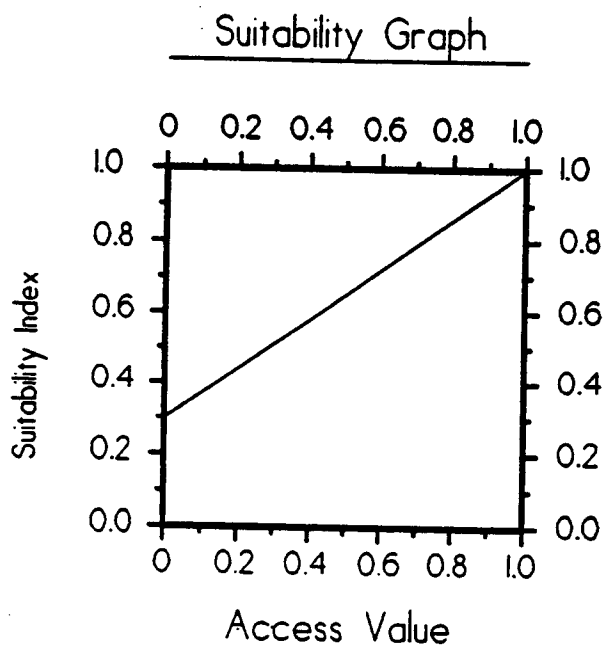
#### Intermediate Marsh:

- If  $0 \leq \text{ppt} < 4$ , then  $SI = 1.0$
- If  $4 \leq \text{ppt} \leq 8$ , then  $SI = (-0.2 \times \text{ppt}) + 1.8$

**NOTE:** Mean high salinity is defined as the average of the upper 33 percent of salinity readings taken during the period of record.

FRESH/INTERMEDIATE MARSH

Variable V<sub>6</sub> Aquatic organism access.



Line Formula

$$SI = (0.7 \times \text{Access Value}) + 0.3$$

NOTE: Access Value = P x R, where "P" = percentage of wetland area considered accessible by estuarine organisms during normal tidal fluctuations, and "R" = Structure Rating.

Refer to Attachment 6, "Procedure For Calculating Access Value," for complete information on calculating "P" and "R" values.

WETLAND VALUE ASSESSMENT COMMUNITY MODEL

Revised May 2, 1994

BRACKISH MARSH

Vegetation:

- Variable V<sub>1</sub>      Percent of wetland area covered by emergent vegetation (≥ 10 percent canopy cover).
- Variable V<sub>2</sub>      Percent of open water area dominated (> 50 percent canopy cover) by aquatic vegetation.

Interspersion:

- Variable V<sub>3</sub>      Marsh edge and interspersion.

Water Depth:

- Variable V<sub>4</sub>      Percent of open water area ≤ 1.5 feet deep, in relation to marsh surface.

Water Quality:

- Variable V<sub>5</sub>      Average annual salinity.

Aquatic Organism Access:

- Variable V<sub>6</sub>      Aquatic organism access.

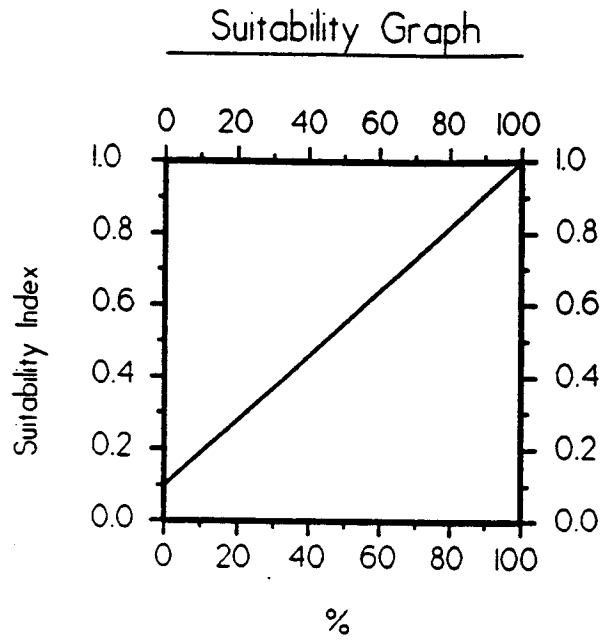
HSI Calculation:

$$HSI = \frac{[3.5 \times (SIV_1^3 \times SIV_2 \times SIV_6)^{1/5}] + \left[ \frac{(SIV_3 + SIV_4 + SIV_5)}{3} \right]}{4.5}$$

Attachment 2

BRACKISH MARSH

Variable V<sub>1</sub>      Percent of wetland area covered by emergent  
vegetation (≥ 10 percent canopy cover).

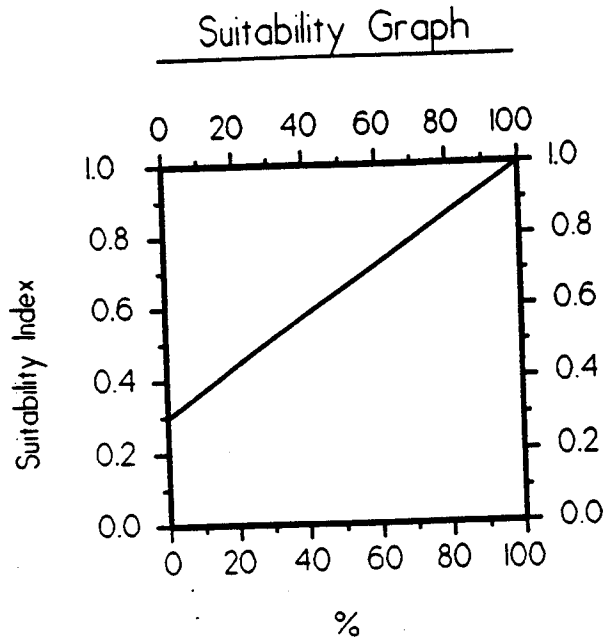


Line Formula

$$SI = (0.009 \times \%) + 0.1$$

BRACKISH MARSH

Variable V<sub>2</sub>      Percent of open water area dominated (> 50 percent canopy cover) by aquatic vegetation.

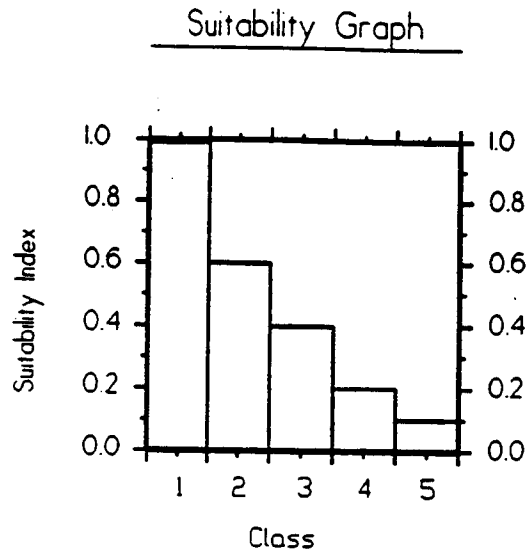


Line Formula

$$SI = (0.007 \times \%) + 0.3$$

BRACKISH MARSH

Variable V<sub>3</sub> Marsh edge and interspersions.

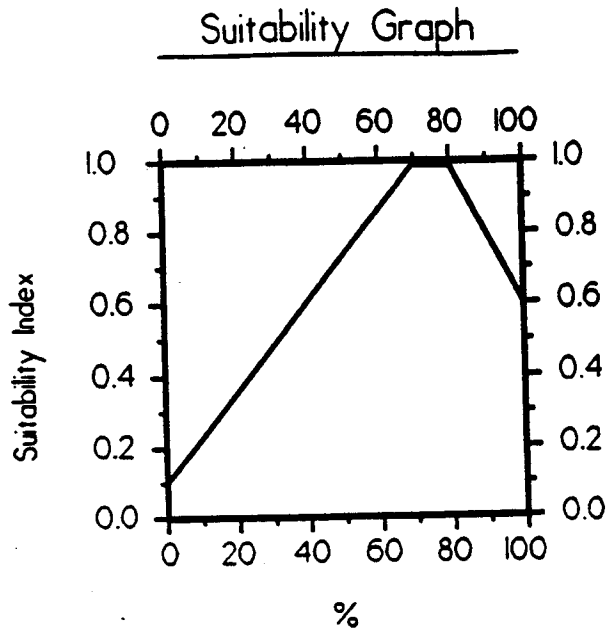


Instructions for Calculating SI for Variable 3:

- 1 Refer to Attachment 5 for examples of the different interspersions classes (=types).
2. Estimate percent of project area in each class and compute a weighted average to arrive at SIV<sub>3</sub>. If the entire project area is solid marsh, assign an interspersions class #1 (SI=1.0). Conversely, if the entire project area is open water, assign an interspersions class #5 (SI=0.1).

BRACKISH MARSH

Variable  $V_4$       Percent of open water area  $\leq 1.5$  feet deep, in relation to marsh surface.



Line Formula

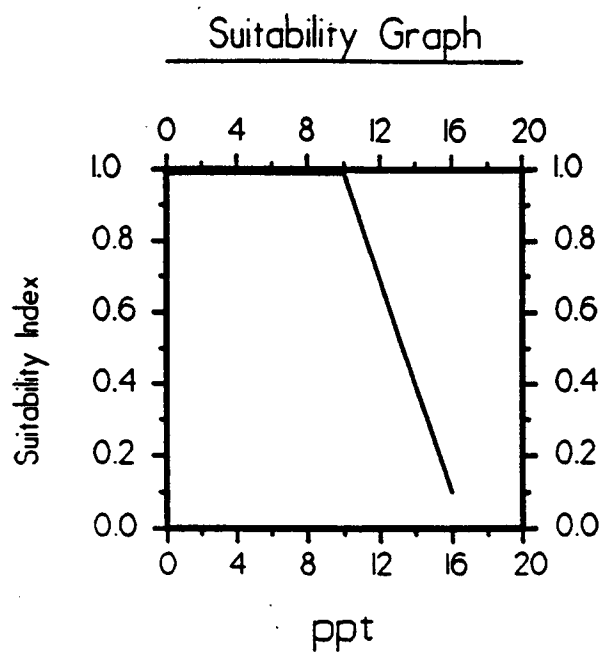
If  $0 \leq \% < 70$ , then  $SI = (0.01286 \times \%) + 0.1$

If  $70 \leq \% < 80$ , then  $SI = 1.0$

If  $\% \geq 80$ , then  $SI = (-0.02 \times \%) + 2.6$

BRACKISH MARSH

Variable V<sub>5</sub> Average annual salinity.



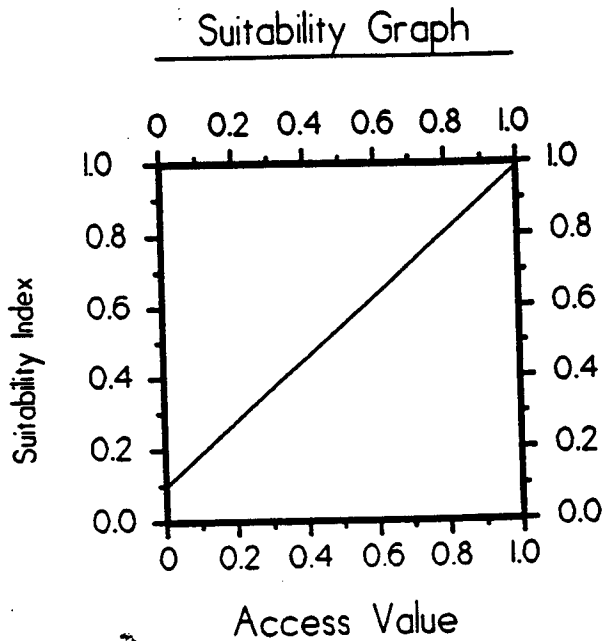
Line Formula

If  $0 \leq \text{ppt} < 10$ , then  $SI = 1.0$

If  $\text{ppt} \geq 10$ , then  $SI = (-0.15 \times \text{ppt}) + 2.5$

BRACKISH MARSH

Variable V<sub>6</sub> Aquatic organism access.



Line Formula

$$SI = (0.9 \times \text{Access Value}) + 0.1$$

Note: Access Value = P x R, where "P" = percentage of wetland area considered accessible by estuarine organisms during normal tidal fluctuations, and "R" = Structure Rating.

Refer to Attachment 6, "Procedure For Calculating Access Value," for complete information on calculating "P" and "R" values.

WETLAND VALUE ASSESSMENT COMMUNITY MODEL

Revised May 2, 1994

SALINE MARSH

Vegetation:

Variable V<sub>1</sub>      Percent of wetland area covered by emergent  
vegetation (≥ 10 percent canopy cover).

Variable V<sub>2</sub>      Percent of open water area dominated (> 50 percent  
canopy cover) by aquatic vegetation.

Interspersion:

Variable V<sub>3</sub>      Marsh edge and interspersion.

Water Depth:

Variable V<sub>4</sub>      Percent of open water area      1.5 feet deep, in  
relation to marsh surface.

Water Quality:

Variable V<sub>5</sub>      Average annual salinity.

Aquatic Organism Access:

Variable V<sub>6</sub>      Aquatic organism access.

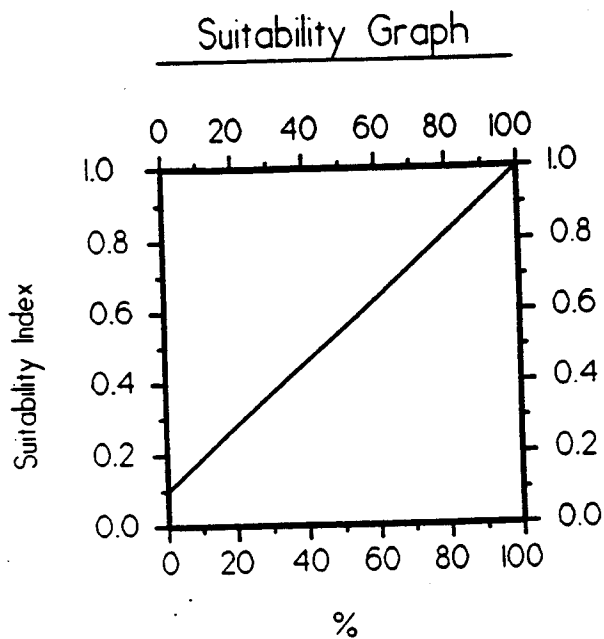
HSI Calculation:

$$\text{HSI} = \frac{[3.5 \times (\text{SIV}_1^3 \times \text{SIV}_2^{0.5} \times \text{SIV}_6^{1.2})^{1/4.7}] + \left[ \frac{(\text{SIV}_3 + \text{SIV}_4 + \text{SIV}_5)}{3} \right]}{4.5}$$

SALINE MARSH

Variable V<sub>1</sub>

Percent of wetland area covered by emergent vegetation (≥ 10 percent canopy cover).

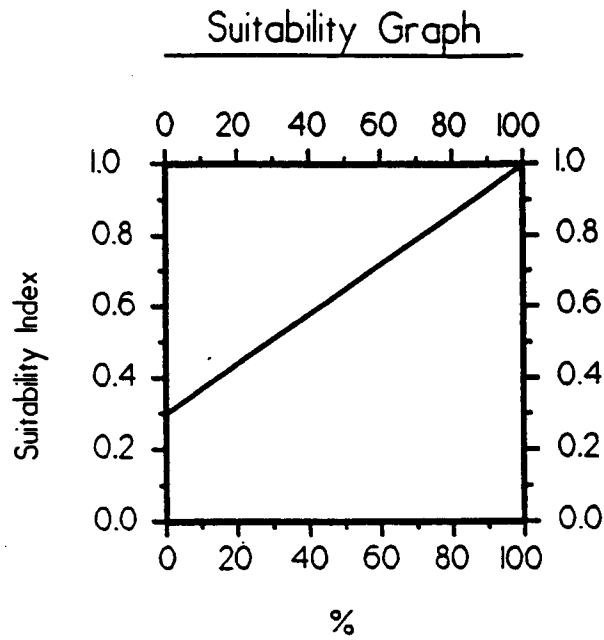


Line Formula

$$SI = (0.009 \times \%) + 0.1$$

SALINE MARSH

Variable V<sub>2</sub>      Percent of open water area dominated (> 50 percent canopy cover) by aquatic vegetation.

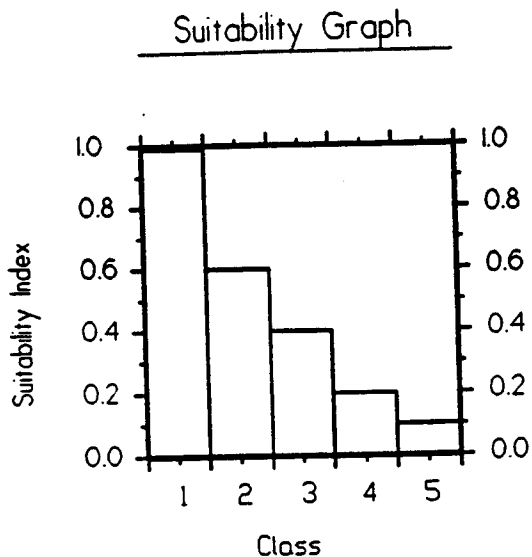


Line Formula

$$SI = (0.007 \times \%) + 0.3$$

SALINE MARSH

Variable V<sub>3</sub> Marsh edge and interspersions.

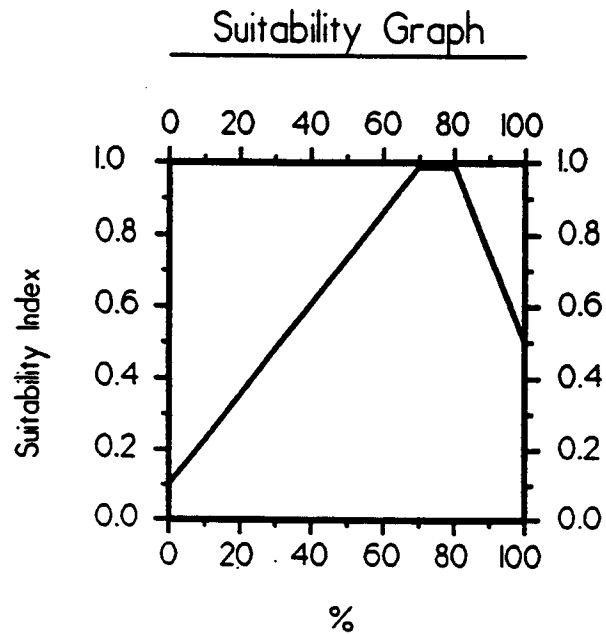


Instructions for Calculating SI for Variable 3:

1. Refer to Attachment 5 for examples of the different interspersions classes (=types).
2. Estimate percent of project area in each class and compute a weighted average to arrive at SIV<sub>3</sub>. If the entire project area is solid marsh, assign an interspersions class #1 (SI=1.0). Conversely, if the entire project area is open water, assign an interspersions class #5 (SI=0.1).

SALINE MARSH

Variable  $V_4$       Percent of open water area  $\leq 1.5$  feet deep, in relation to marsh surface.



Line Formula

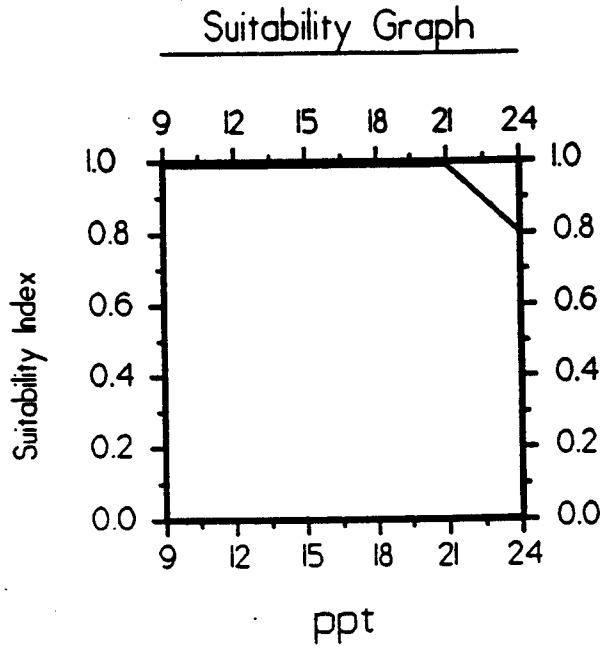
If  $0 \leq \% < 70$ , then  $SI = (0.01286 \times \%) + 0.1$

If  $70 \leq \% < 80$ , then  $SI = 1.0$

If  $\% \geq 80$ , then  $SI = (-0.025 \times \%) + 3.0$

SALINE MARSH

Variable V<sub>5</sub> Average annual salinity.



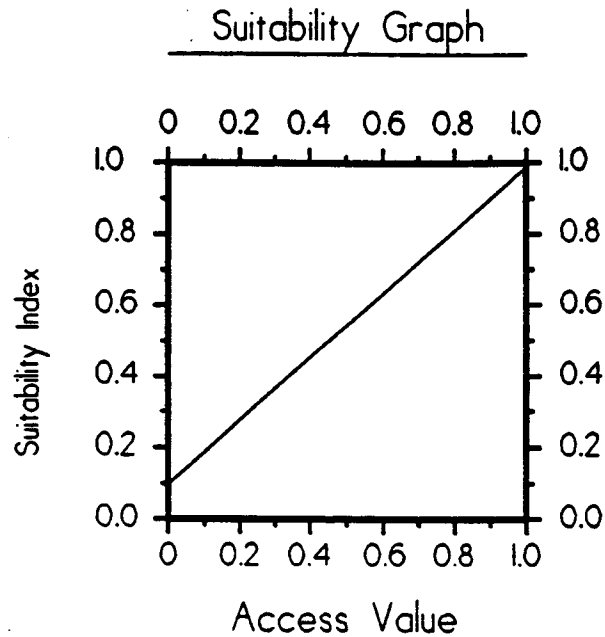
Line Formula

If  $9 \leq \text{ppt} < 21$ , then  $SI = 1.0$

If  $\text{ppt} \geq 21$ , then  $SI = (-0.067 \times \text{ppt}) + 2.4$

SALINE MARSH

Variable V<sub>6</sub> Aquatic organism access.



Line Formula

$$SI = (0.9 \times \text{Access Value}) + 0.1$$

Note: Access Value = P x R, where "P" = percentage of wetland area considered accessible by estuarine organisms during normal tidal fluctuations, and "R" = Structure Rating.

Refer to Attachment 6, "Procedure For Calculating Access Value," for complete information on calculating "P" and "R" values.

WETLAND VALUE ASSESSMENT COMMUNITY MODEL

Revised August 6, 1992

CYPRESS-TUPELO SWAMP

Water Depth and Duration:

Variable V<sub>1</sub>      Water regime.

Water Quality:

Variable V<sub>2</sub>      Water flow/exchange.

Variable V<sub>3</sub>      Average high salinity.

HSI Calculation:

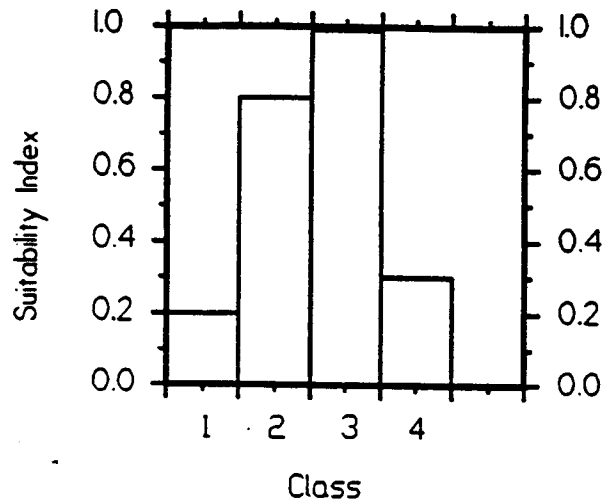
$$HSI = (SIV_1 \times SIV_2 \times SIV_3)^{1/3}$$

Attachment 4

CYPRESS-TUPELO SWAMP

Variable V<sub>1</sub> Water regime.

Suitability Graph

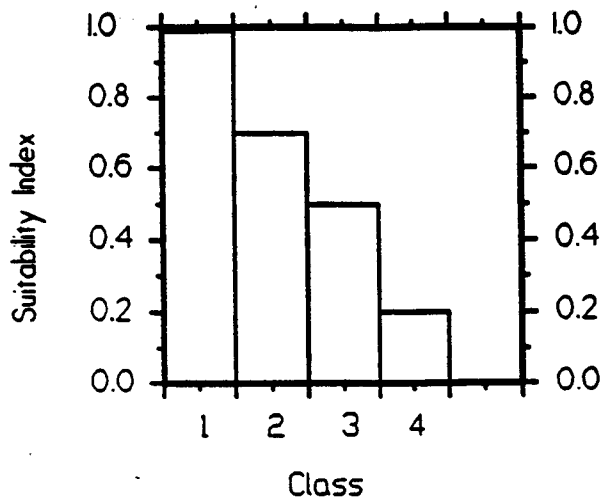


1. Permanently Flooded: water covers the substrate throughout the year in all years.
2. Semipermanently Flooded: surface water is present throughout the growing season in most years.
3. Seasonally Flooded: surface water is present for extended periods, especially in the growing season, but is absent by the end of the growing season in most years.
4. Temporarily Flooded: surface water is present for brief periods during the growing season, but the water table usually lies well below the surface for most of the season.

CYPRESS-TUPELO SWAMP

Variable V<sub>2</sub>      Water flow/exchange.

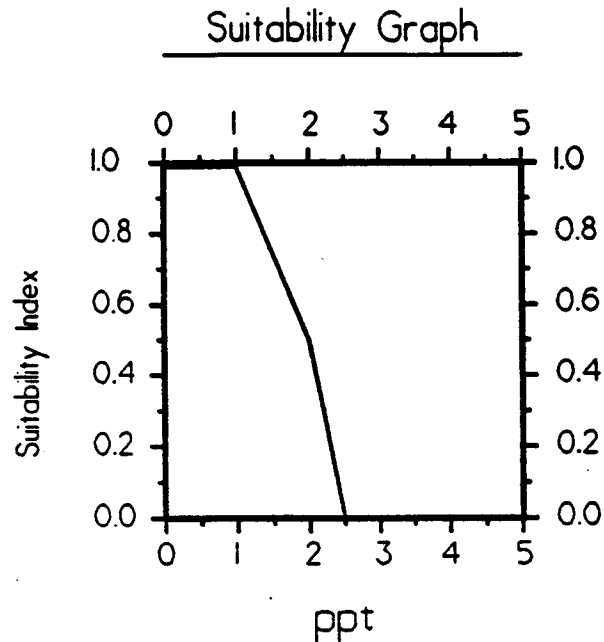
Suitability Graph



1. Receives abundant and consistent riverine input and through-flow.
2. Moderate water exchange, through riverine or tidal input.
3. Limited water exchange, through riverine or tidal input.
4. No water exchange (stagnant, impounded).

CYPRESS-TUPELO SWAMP

Variable V<sub>3</sub> Average high salinity.



Line Formula

If  $0 \leq \text{ppt} < 1$ , then  $SI = 1.0$

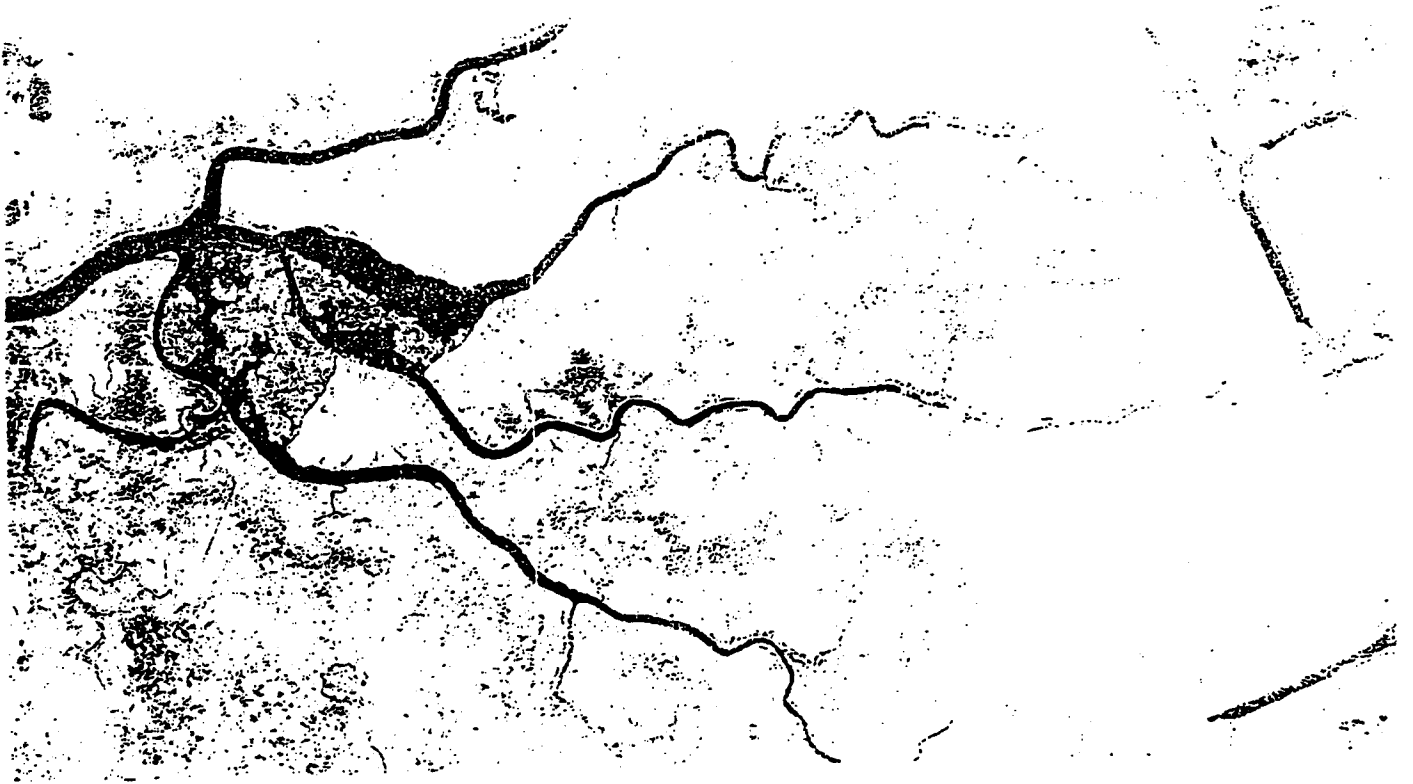
If  $1 \leq \text{ppt} < 2$ , then  $SI = (-0.5 \times \text{ppt}) + 1.5$

If  $2 \leq \text{ppt} < 2.5$ , then  $SI = (-1.0 \times \text{ppt}) + 2.5$

If  $\text{ppt} \geq 2.5$ , then  $SI = 0$

Average high salinity is defined as the average of the upper 33 percent of salinity readings taken during the period of record.

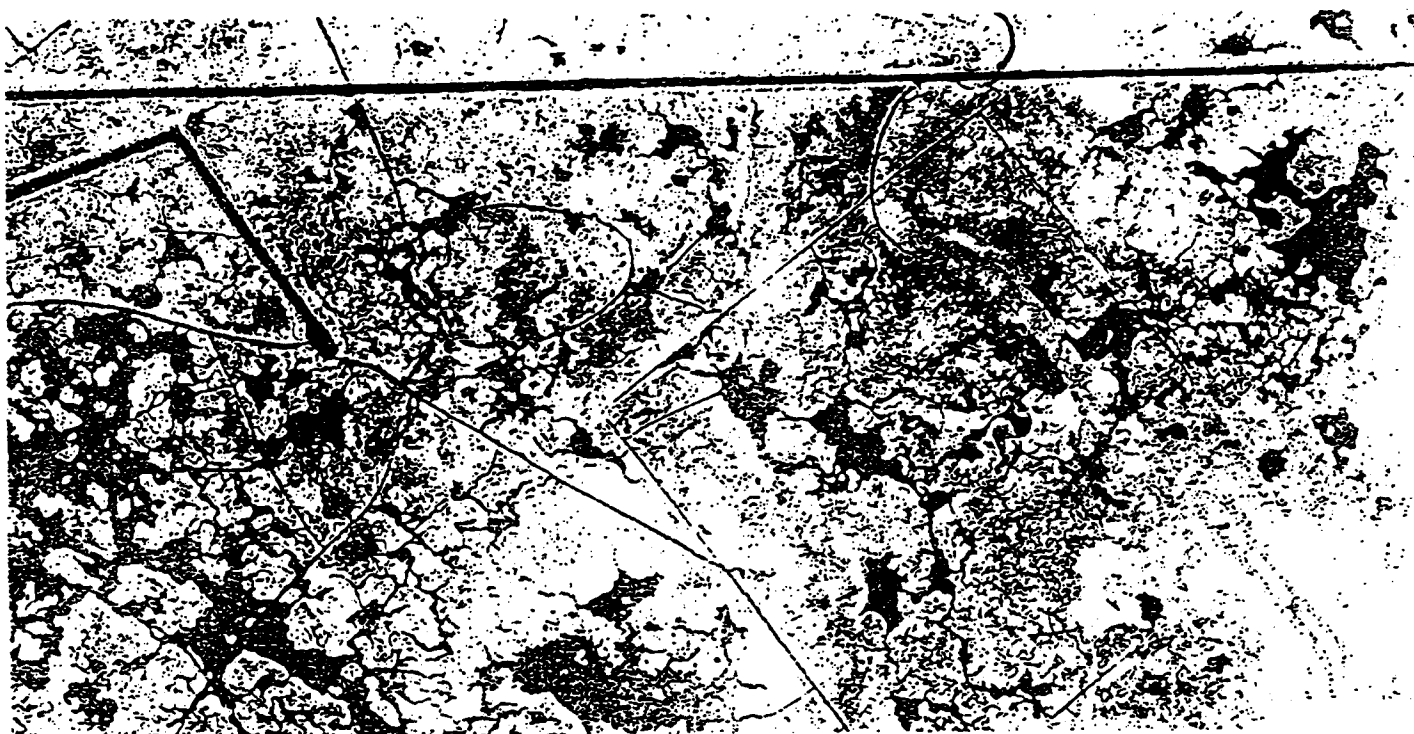
Variable 3-Marsh Interspersion Type 1  
Scale 1" = 2000'



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Attachment 5

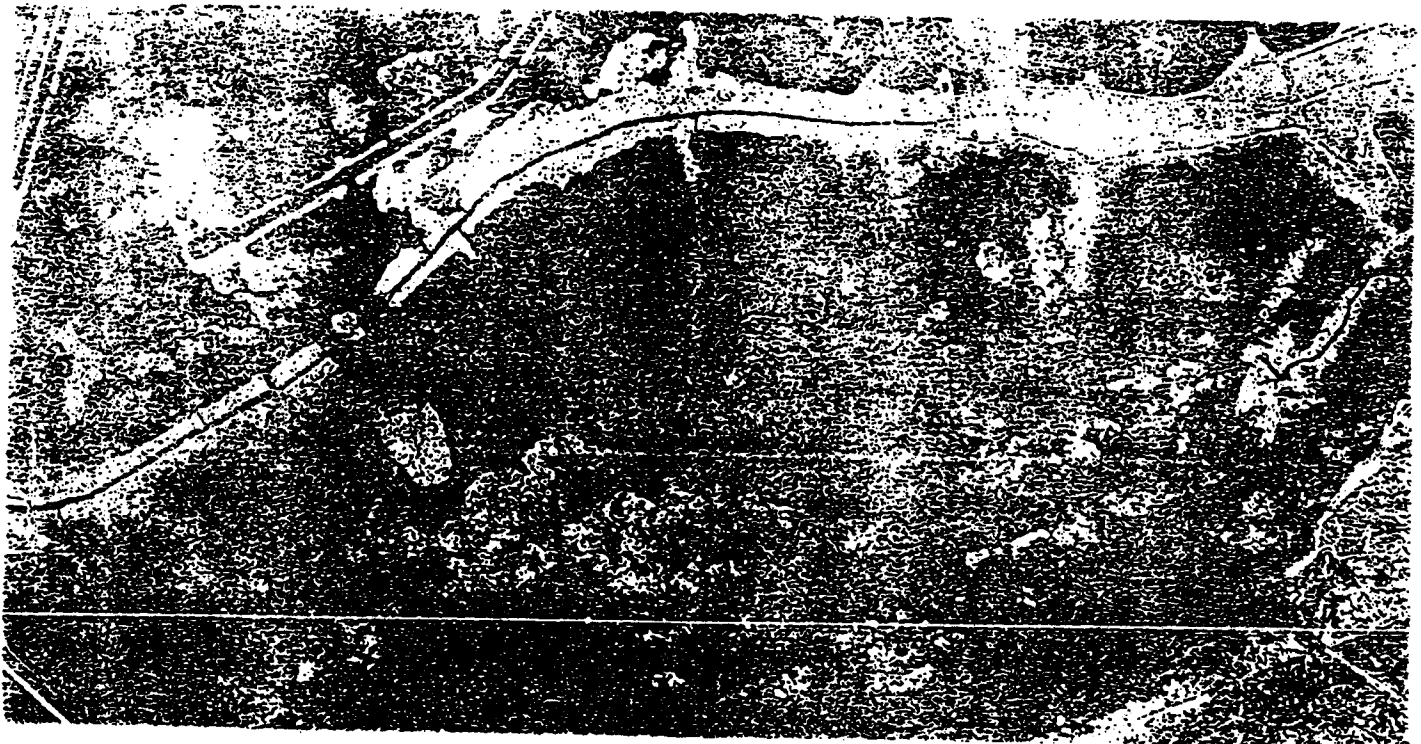
Variable 3 - Marsh Interspersion Type 2  
Scale 1" = 2000'



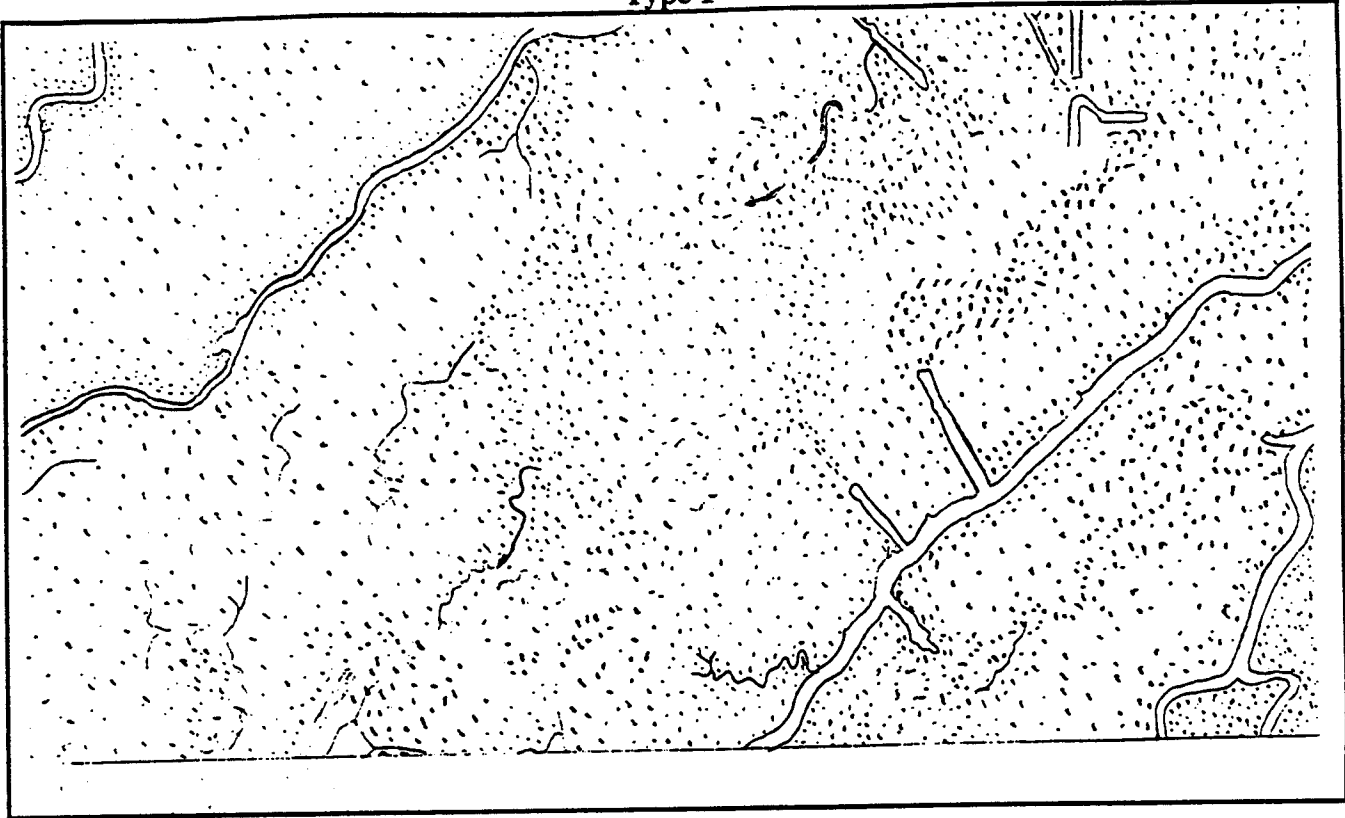
Variable 3 - Marsh Interspersion Type 3  
Scale 1" = 2000'



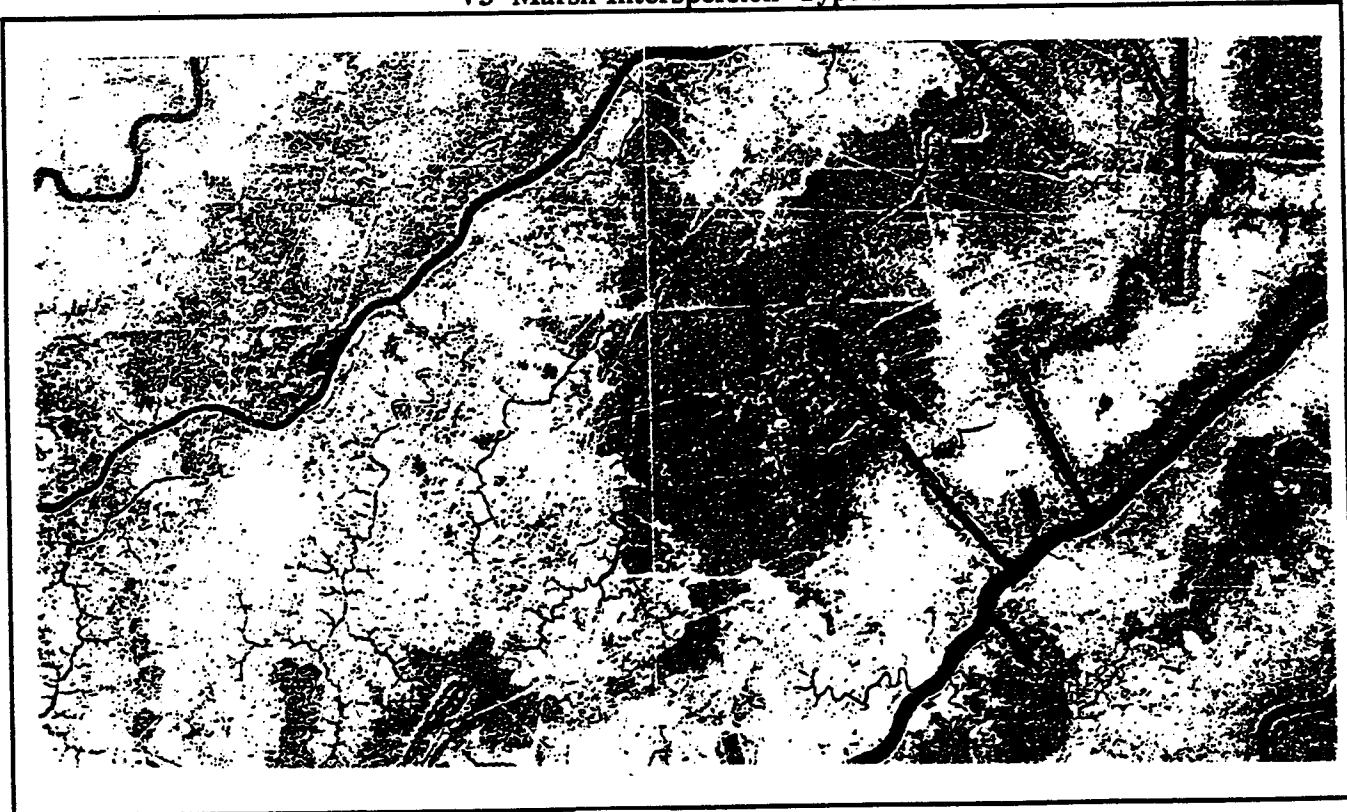
Variable 3 - Marsh Interspersion Type 4  
Scale 1" = 2000'



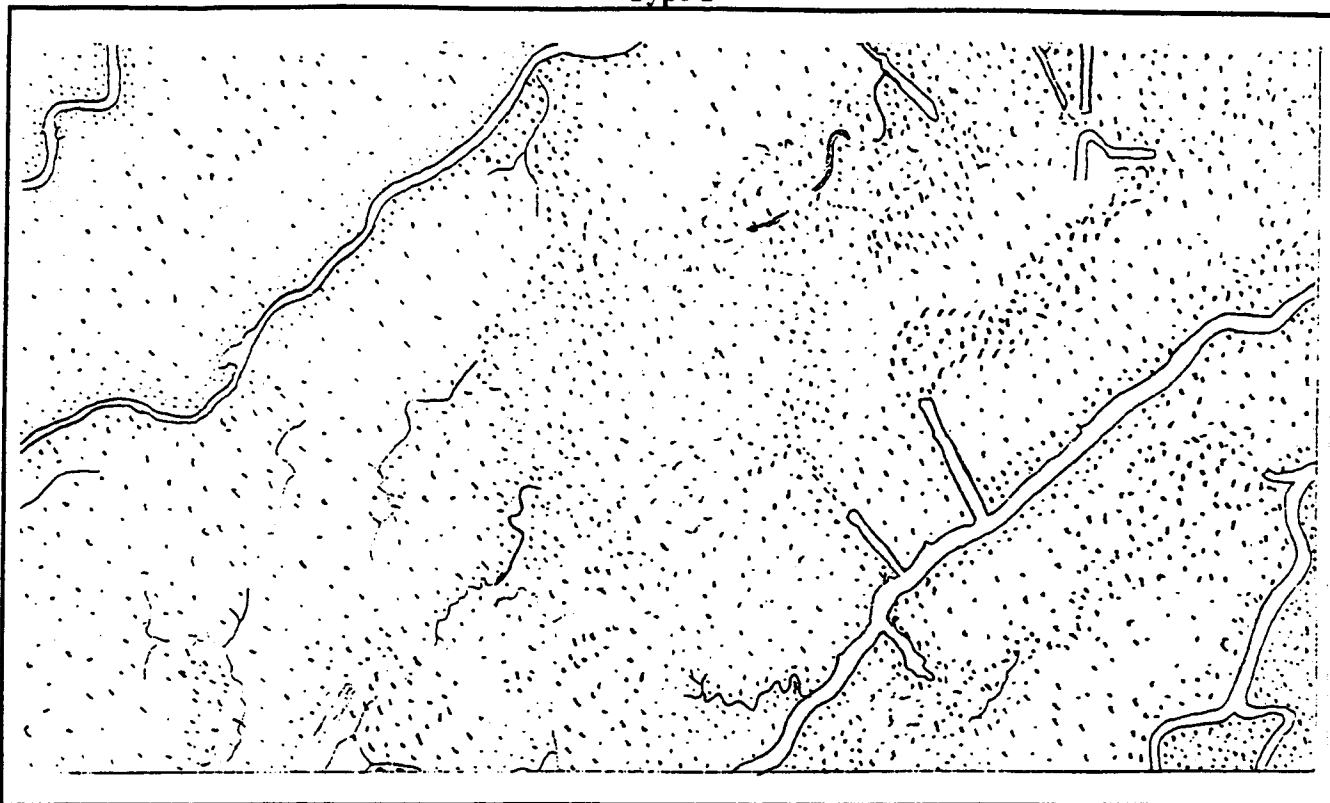
V3 Marsh Interspersion  
Type 1



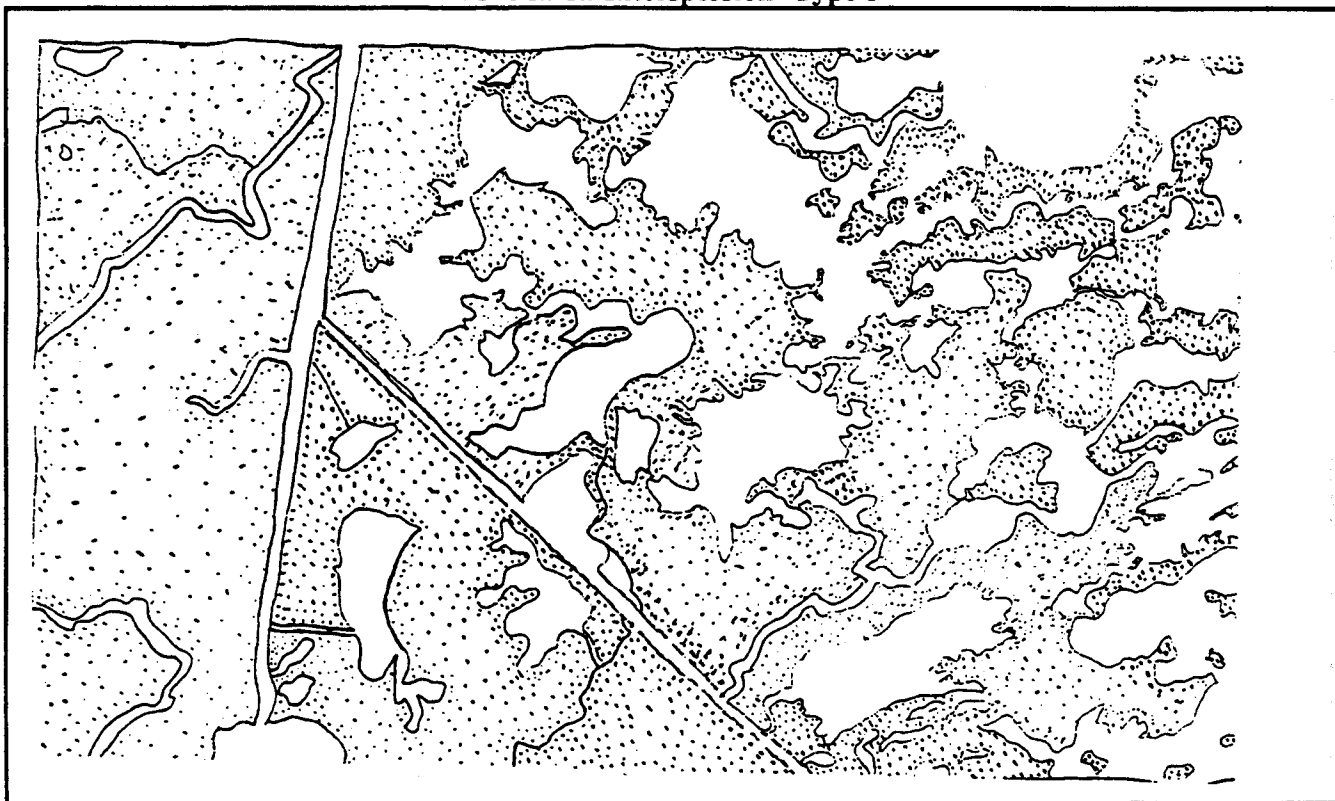
V3 Marsh Interspersion Type 1



V3 Marsh Interspersion  
Type 1



V3 Marsh Interspersion Type 3



# PROCEDURE FOR CALCULATING ACCESS VALUE

Revised June 2, 1993

1. Determine the percent of wetland area accessible by estuarine organisms during normal tidal fluctuations (P) for baseline (TY0) conditions. P may be determined by examination of aerial photography, knowledge of field conditions, or other appropriate methods.
2. Determine the Structure Rating (R) for each project structure as follows:

Structure Type	Rating
open system	1.0
rock weir set at 1ft BML <sup>1</sup> , w/boat bay	0.8
rock weir with boat bay	0.6
rock weir set at $\geq$ 1ft BML	0.6
slotted weir with boat bay	0.6
open culverts	0.5
weir with boat bay	0.5
weir set at $\geq$ 1ft BML	0.5
slotted weir	0.4
flapgated culvert with slotted weir	0.35
variable crest weir	0.3
flapgated variable crest weir	0.25
flapgated culvert	0.2
rock weir	0.15
fixed crest weir	0.1
solid plug	0.0001

## <sup>1</sup> Below Marsh Level

For each structure type, the rating listed above pertains only to the standard structure configuration and assumes that the structure is operated according to common operating schedules consistent with the purpose for which that structure is designed. In the case of a "hybrid" structure or a unique application of one of the above-listed types (including unique or "non-standard" operational schemes), the WVA analyst(s) may assign an appropriate Structure Rating between 0.0001 and 1.0 that most closely approximates the relative degree to which the structure in question would allow ingress and egress of estuarine organisms. In those cases, the rationale used in developing the new Structure Rating shall be documented.

3. Determine the Access Value. Where multiple openings equally affect a common "accessible unit," the Structure Rating (R) of the structure proposed for the "major" access point for the unit will be used to calculate Access Value. The designation

Attachment 6

of "major" will be made by the Environmental Work Group. An "accessible unit" is defined as a portion of the total accessible area that is served by one or more access routes (canals, bayous, etc.), yet is isolated in terms of estuarine organism access to or from other units of the project area. Isolation factors include physical barriers that prohibit further movement of estuarine organisms, such as natural levee ridges and spoil banks; and dense marsh that lacks channels, trenasses, and similar small connections that would, if present, provide access and intertidal refugia for estuarine organisms.

Access Value should be calculated according to the following examples (note: for all examples, P for TY0 = 90 percent. That designation is arbitrary and is used only for illustrative purposes; P could be any percentage from 0 percent to 100 percent):

- a. One opening into area; no structure.

$$\begin{aligned}\text{Access Value} &= P \\ &= .90\end{aligned}$$

- b. One opening into area that provides access to the entire 90 percent of the project area deemed accessible. A flapgated culvert with slotted weir is placed across the opening.

$$\begin{aligned}\text{Access Value} &= P \times R \\ &= .90 \times .6 \\ &= .54\end{aligned}$$

- c. Two openings into area, each capable by itself of providing full access to the 90 percent of the project area deemed accessible in TY0. Opening #2 is determined to be the major access route relative to opening #1. A flapgated culvert with slotted weir is placed across opening #1. Opening #2 is left unaltered.

$$\begin{aligned}\text{Access Value} &= P \\ &= .90\end{aligned}$$

Note: Structure #1 had no bearing on the Access Value calculation because its presence did not reduce access (opening #2 was determined to be the major access route, and access through that route was not altered).

- d. Two openings into area. Opening #1 provides access to an accessible unit comprising 30 percent of the area. Opening #2 provides access to an accessible unit comprising the remaining 60 percent of the project area. A flapgated culvert with slotted weir is placed across #1. Opening #2 is left open.

Access Value = weighted avg. of Access Values of the two accessible units

$$\begin{aligned} &= ([P1 \times R1] + [P2 \times R2]) / (P1 + P2) \\ &= ( [.30 \times 0.6] + [.60 \times 1.0] ) / (.30 + .60) \\ &= (.18 + .60) / .90 \\ &= .78 / .90 \\ &= .87 \end{aligned}$$

Note:  $P1 + P2 = .90$ , because only 90 percent of the study area was determined to be accessible at TY0.

- e. Three openings into area, each capable of providing full access to the entire area independent of the others. Opening #3 is determined to be the major access route relative to openings #1 and #2. Opening #1 is blocked with a solid plug. Opening #2 is fitted with a flapgated culvert with slotted weir, and opening #3 is left open.

$$\begin{aligned} \text{Access Value} &= P \\ &= .90 \end{aligned}$$

Note: Structures #1 and #2 had no bearing on the Access Value calculation because their presence did not reduce access (opening #3 was determined to be the major access route, and access through that route was not altered).

- f. Three openings into area, each capable of providing full access to the entire area independent of the others. Opening #2 is determined to be the major access route relative to openings #1 and #3. Opening #1 is blocked with a solid plug. Opening #2 is fitted with a flapgated culvert with slotted weir, and opening #3 is fitted with a fixed crest weir.

$$\begin{aligned} \text{Access Value} &= P \times R2 \\ &= .90 \times .6 \\ &= .54 \end{aligned}$$

Note: Structures #1 and #3 had no bearing on the Access Value calculation because their presence did not reduce access. Opening #2 was determined beforehand to be the major access route; thus, it was the flapgated culvert with slotted weir across that opening that actually served to limit access.

- g. Three openings into area. Opening #1 provides access to an accessible unit comprising 20 percent of the area. Openings #2 and #3 provide access to an accessible unit comprising the remaining 70 percent of the area, and within that area, each is capable by itself of providing full

access. However, opening #3 is determined to be the major access route relative to opening #2. Opening #1 is fitted with an open culvert, #2 with a flapgated culvert with slotted weir, and #3 with a fixed crest weir.

$$\begin{aligned}\text{Access Value} &= ([P1 \times R1] + [P2 \times R3]) / (P1 + P2) \\ &= ([.20 \times .7] + [.70 \times .6]) / (.20 + .70) \\ &= (.14 + .42) / .90 \\ &= .56 / .90 \\ &= .62\end{aligned}$$

- h. Three openings into area. Opening #1 provides access to an accessible unit comprising 20 percent of the area. Opening #2 provides access to an accessible unit comprising 40 percent of the area, and opening #3 provides access to the remaining 30 percent of the area. Opening #1 is fitted with an open culvert, #2 a flapgated culvert with slotted weir, and #3 a fixed crest weir.

$$\begin{aligned}\text{Access Value} &= \frac{([P1 \times R1] + [P2 \times R2] + [P3 \times R3])}{(P1 + P2 + P3)} \\ &= \frac{([.20 \times .7] + [.40 \times .6] + [.30 \times .1])}{(.20 + .40 + .30)} \\ &= \frac{(.14 + .24 + .03)}{.90} \\ &= .41 / .90 \\ &= .46\end{aligned}$$

PUBLISHED HABITAT SUITABILITY INDEX (HSI) MODELS CONSULTED  
FOR VARIABLES FOR POSSIBLE USE IN THE  
WETLAND VALUE ASSESSMENT MODELS

Estuarine Fish and Shellfish

pink shrimp  
white shrimp  
brown shrimp  
spotted seatrout  
Gulf flounder  
southern flounder  
Gulf menhaden  
juvenile spot  
juvenile Atlantic croaker  
red drum

Reptiles and Amphibians

American alligator  
slider turtle  
bullfrog

Mammals

mink  
muskrat

Freshwater Fish

channel catfish  
largemouth bass  
red ear sunfish  
bluegill

Birds

clapper rail  
great egret  
northern pintail  
mottled duck  
coot  
marsh wren  
great blue heron  
laughing gull  
snow goose  
red-winged blackbird  
roseate spoonbill  
white-fronted goose

Coastal Wetlands Planning, Protection and  
Restoration Act

6<sup>th</sup> Priority Project List Report

Appendix C

Engineering Designs and Cost Estimates  
For Candidate Projects



## Appendix C

### Engineering Designs and Cost Estimate, For Candidate Projects

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**Legend**

LF = Linear Feet  
EA = Each  
CY = Cubic Yard  
SY = Square Yard  
TN = Ton  
LS = Lump Sum

Table C-1  
Estimated Construction Cost  
Black Bayou Hydrologic Restoration, XCS-48

Item	Description	Quantity	Unit	Unit Cost (\$)	Amount (\$)
1	Foreshore Dike/GIWW	20,000	LF	100.00	2,000,000.00
2	Plantings	53,200	EA	6.50	350,000.00
3	Weir w/ Boatbay	1	LS	237,000.00	237,000.00
4	Plugs w/ Culverts @ Gates-Burton Canal	1	LS	224,500.00	224,500.00
5	Plugs w/ Culverts @ Gates-Vinton Ditch	1	LS	193,000.00	193,000.00
6	Rockliner in Black Bayou	1,280	TN	25.00	32,000.00
7	Replace Culverts & Rd.	1	LS	93,000.00	93,000.00
8	Rock Weir w/ Black Bayou @ Blocks Creek	1	LS	20,000.00	20,000.00
	TOTAL				3,149,500.00

Table C-2  
Estimated Construction Cost\*  
Bayou Boeuf Pump Station, XTE-32, XTE-32i

Item	Description	Quantity	Unit	Unit Cost (\$)	Amount (\$)
N/A	N/A	N/A	N/A	N/A	N/A

\*Funding approved by the Task Force is for an evaluation to determine the additional pumping costs of the project.

Table C-3  
Estimated Construction Cost  
Delta-Wide Crevasses, PMR-10

Item	Description	Quantity	Unit	Unit Cost (\$)	Amount (\$)
1	New Crevasse 100'X6'X600'/27	13,333	CY	3.00	40,000.00
2	New Crevasse 100'X6'X350'/27	7,778	CY	3.00	23,335.00
3	New Crevasse 100'X6'X100'/27	2,222	CY	3.00	6,667.00
4	New Crevasse 100'X6'X300'/27	6,667	CY	3.00	20,000.00
5	New Crevasse 100'X6'X380'/27	8,444	CY	3.00	25,332.00
6	Mobilization Fee	1	LS	60,000.00	60,000.00
7	Rehab of Existing Crevasse 13'X100'X5'X700'/27	168,519	CY	3.00	505,556.00
	TOTAL				680,890.00

Table C-4  
Estimated Construction Cost  
Ft. Jackson/Boothville Diversion, PBA-44

Item	Description	Quantity	Unit	Unit Cost (\$)	Amount (\$)
1	Levee Excavation	326,000	CY	3.68	1,200,000.00
2	Channel Excavation	743,000	CY	3.00	2,230,000.00
3	Rip Rap	16,600	TN	16.27	270,000.00
4	Rip Rap	19,200	TN	19.79	380,000.00
5	Bridge Relocations	1	LS	6,000,000.00	6,000,000.00
6	General Relocations	1	LS	600,000.00	600,000.00
	TOTAL				10,080,000.00

Table C-5  
Estimated Construction Cost  
Marsh Island Restoration and Marsh Creation, TV/7

Item	Description	Quantity	Unit	Unit Cost (\$)	Amount (\$)
1	Mob and Demob	1	LS	200,000.00	200,000.00
2a	Earthen Core #1	400	CY	2.00	800.00
2b	Geotextile #1	685	SY	2.50	1,712.50
2c	2' Armor Stone #1	478	TN	22.60	10,802.80
3a	Earthen Core #2	1,600	CY	2.00	3,200.00
3b	Geotextile #2	1,240	SY	2.50	3,100.00
3c	2' Armor Stone #2	885	TN	22.60	20,001.00
4	Backfill Canal #3	30,000	CY	1.30	39,000.00
5	Refurbish Spoil Dikes Adjacent to #3	2,000	LF	5.05	10,100.00
6	Rear Closure #3	120	LF	9.90	1,188.00
7	Earthen Closure @ Mouth of Canal #3	1,565	CY	2.00	3,130.00
8a	Earthen Core #3	885	CY	2.00	1,770.00
8b	Geotextile #3	1,100	SY	2.50	2,750.00
8c	2' Armor Stone #3	790	TN	22.60	17,854.00
9	Backfill Canal #4	26,000	CY	1.30	33,800.00
10	Refurbish Spoil Dikes Adjacent to #4	1,800	LF	5.05	9,090.00
11	Rear Closure #4	130	LF	6.75	877.50
12	Earthen Closure @ Mouth of Canal #4	1,340	CY	2.70	3,618.00
13a	Earthen Core #4	740	CY	2.00	1,480.00
13b	Geotextile #4	1,055	SY	2.50	2,637.50
13c	2' Armor Stone #4	730	TN	22.60	16,500.00
14a	Earthen Core #5	16,980	CY	2.00	33,960.00
14b	Geotextile #5	9,345	SY	2.50	23,362.50
14c	2' Armor Stone #5	4,550	TN	22.60	102,830.00
15a	Earthen Core #6	750	CY	2.00	1,500.00
15b	Geotextile #6	950	SY	2.50	2,375.00
15c	2' Armor Stone #6	675	TN	22.60	15,255.00
16a	Earthen Core #7	1,550	CY	2.00	3,100.00
16b	Geotextile #7	1,480	SY	2.50	3,700.00
16c	2' Armor Stone #7	1,075	TN	22.60	24,295.00
17a	Earthen Core #8 & #9	775	CY	2.00	1,550.00
17b	Geotextile #8 & #9	950	SY	2.50	2,375.00
17c	2' Armor Stone #8 & #9	675	TN	22.60	15,255.00
18	Backfill Canal #9	47,000	CY	1.70	79,900.00
19	Refurbish Dikes Around #9	3,700	LF	5.05	18,685.00
20	Closure of Retention Dikes	8,000	LF	10.10	80,800.00
21	Dredging-Closure Construction	585,000	CY	1.30	760,500.00
22	Filter Fabric	27,200	SY	2.50	68,000.00
23	12" Armor Stone	16,150	TN	22.60	364,990.00
	TOTAL				1,985,943.50

Table C-6  
 Estimated Construction Cost  
 Perchant Basin, PTE-26, PTE-26i

Item	Description	Quantity	Unit	Unit Cost(\$)	Amount(\$)
1	Mobilization	1	LS	100,000.00	100,000.00
2	Rock Weir w/ Barge Bay(1-1)	1	LS	528,000.00	528,000.00
3	Steel Sheetpile Weir(1-2)	1	LS	668,000.00	668,000.00
4	Rock Weir w/ Barge Bay(1-3)	1	LS	528,000.00	528,000.00
5	Shell Plug w/ Rock Cover(1-7)	1	LS	84,000.00	84,000.00
6	Steel Sheetpile Weir(1-8)	1	LS	181,000.00	181,000.00
7	Steel Sheetpile Weir(1-9)	1	LS	181,000.00	181,000.00
8	Steel Sheetpile Weir (1-10)	1	LS	181,000.00	181,000.00
9	Steel Sheetpile Weir (1-12)	1	LS	181,000.00	181,000.00
10	Steel Sheetpile Weir (1-13)	1	LS	181,000.00	181,000.00
11	Rock Liner(A)	1	LS	28,000.00	28,000.00
12	Rock Weir w/ Barge Bay(1-15)	1	LS	528,000.00	528,000.00
13	Steel Sheetpile Weir (1-16)	1	LS	351,000.00	351,000.00
14	Rock Bank Stabilization	3,600	LF	226.00	813,600.00
15	Rock Bank Stabilization	59,600	LF	37.00	2,205,200.00
16	Marsh Creation	1	LS	350,000.00	350,000.00
	TOTAL				7,088,800.00

Table C-7  
 Estimated Construction Cost  
 Sediment Trapping at "The Jaws", PTV-19b

Item	Description	Quantity	Unit	Unit Cost(\$)	Amount(\$)
1	Mob and Demob	1	LS	50,000.00	50,000.00
2	Dredging	1	LS	1,165,000.00	1,165,000.00
3	Plantings	1	LF	355,200.00	355,200.00
	TOTAL				1,570,200.00

Table C-8  
Estimated Construction Cost  
Oaks/Avery Canal Hydrologic Restoration & Bankline Protection, XTV-25

Item	Description	Quantity	Unit	Unit Cost (\$)	Amount (\$)
1	Mob & Demob	1	LS	25,000.00	25,000.00
2	Low Sill Structure (Oaks)	1	LS	186,000.00	186,000.00
3	Bank Stabilization (Oaks)	800	LF	180.00	144,000.00
4	Bank Stabilization (Intracoastal)	6,000	LF	70.00	420,000.00
5	Rock Weir	1	LS	21,000.00	21,000.00
6	Earth Plug	1	EA	22,000.00	22,000.00
7	Spoil Bank Maintenance	1,000	LF	5.00	5,000.00
8	Low Sill Structure (Avery)	1	LS	465,000.00	465,000.00
9	Vegetative Plantings	26,400	LF	3.50	92,400.00
10	Sediment Fencing	3,300	LF	6.00	19,800.00
	TOTAL				1,400,200.00

Table C-9  
Estimated Construction Cost  
Myrtle Grove Freshwater Diversion, PBA-48

Item	Description	Quantity	Unit	Unit Cost (\$)	Amount (\$)
1	Bond & Insurance	1	LS	95,000.00	95,000.00
2	Mobilization	1	LS	378,000.00	378,000.00
3	Temporary Facilities	1	LS	214,200.00	241,200.00
4	Cleaning and Grubbing	15	AC	11,086.67	166,300.00
5	Demob, Sitework, & Cleanup	1	LS	10,000.00	10,000.00
6	Pipeline Excavation	37,000	CY	5.86	217,000.00
7	Discharge Structure Excavation	38,900	CY	5.85	227,400.00
8	Levee Embankment	32,600	CY	3.00	97,800.00
9	Sand Bedding & Hauling	26,500	CY	10.08	267,100.00
10	Shell	5,550	CY	25.21	139,900.00
11	Backfill from Spoil	70,400	CY	1.00	70,400.00
12	Outfall Channel Excavation	171,100	CY	5.85	1,001,000.00
13	72" Steel Pipe	16,000	LF	183.54	2,936,700.00
14	72" Pipe Labor	16,000	LF	21.39	342,300.00
15	Highway Crossing Material	960	LF	294.69	282,900.00
16	Highway Crossing Labor	960	LF	328.13	315,000.00
17	Steel Sheet Pile M&L	330	LF	560.30	184,900.00
18	Concrete	165	CY	267.27	44,100.00
19	Rip Rap	4,600	TN	23.00	105,800.00
20	Steel Pipe Piles M&L	1	LS	369,500.00	369,500.00
21	Structural Steel & Steel Details M&L	1	LS	423,400.00	423,400.00
22	72" Pipe Structure Installation	1	LS	109,000.00	109,000.00
23	Misc. Steel	1	LS	63,000.00	63,000.00
24	Painting	1	LS	50,400.00	50,400.00
25	Electrical	1	LS	19,400.00	19,400.00
26	Vacuum System	1	LS	126,500.00	126,500.00
27	Access Road	1	LS	82,500.00	82,500.00
28	X-Ray Marine Welds	1	LS	1,400.00	1,400.00
29	Two Pump Stations	1	LS	500,000.00	500,000.00
	TOTAL				8,867,900.00

Table C-10  
Estimated Construction Cost  
Channel Armor Gap, XME-10b

Item	Description	Quantity	Unit	Unit Cost(\$)	Amount(\$)
1	Modification of Existing Outlet	1	LS		40,100.00
2a	Armor Stone Addition	20,300	TN	22.00	447,000.00
2b	Filter Stone Addition	4,400	CY	31.00	136,000.00
2c	Shell or Shell Substitute Addition	12,300	CY	24.00	295,000.00
3a	Removal and Relocation of Sheetpile (Re-used)	315	LF	100.00	32,000.00
3b	Removal and Relocation of Sheetpile (New)	105	LF	300.00	32,000.00
4	Clearing	5	AC	4,520.00	24,000.00
5	Excavation of Small Cut	5,500	CY	4.00	22,000.00
6	Dredging & Disposal	24,000	CY	2.00	48,000.00
	TOTAL				487,100.00

Table C-11  
Estimated Construction Cost  
Lake Boudreaux Basin Freshwater Introduction and  
Outfall Management, TE-7f

Item	Description	Quantity	Unit	Unit Cost(\$)	Amount(\$)
1	Enlarge Inflow Trenasse	19,300	CY	2.60	51,000.00
2	Enlarge Inflow Portion of St. Louis Canal	136,800	CY	2.60	356,000.00
3	Enlarge Outflow Portion of St. Louis Canal	126,000	CY	2.60	328,000.00
4	St. Louis Canal Structure	7	LF	100,000.00	700,000.00
5	St. Louis Canal Bridge	1	LF	600,000.00	600,000.00
6	Grand Caillou Structure	1	LF	400,000.00	400,000.00
7	Other Outfall Management Features	2	LF	500,000.00	500,000.00
8	Grand Caillou "Clean-out" North of St. Louis Canal	1	LF	300,000.00	300,000.00
9	Flood protection South of St. Louis Canal	1	LF	1,000,000.00	1,000,000.00
	TOTAL				4,235,000.00

Table C-12  
 Estimated Construction Cost  
 Lafourche Dedicated Dredging, CW-6i, CW-6ii, CW-6iii, CW-6iv, CW-6v

	Item	Description	Quantity	Unit	Unit Cost (\$)	Amount (\$)
6" Aquatics Unlimited Aquamog SRX-109	1	Dredge (6" SRX-109)	1	LS	150,300.00	150,300.00
	2	Augerhead (5' X 6")	1	LS	33,000.00	33,000.00
	3	Clam Bucket (48")	1	LS	6,200.00	6,200.00
	4	Dredge Trailer	1	LS	24,000.00	24,000.00
	5	17' Polar Skiff	1	LS	10,000.00	10,000.00
	6	Trucks	2	LS	15,000.00	30,000.00
	7	6" Polyethylene Discharge Pipe	1	LS	6,000.00	6,000.00
		TOTAL				259,500.00
6" Aquatics Unlimited Aquamog SRX-109	1	Dredge (6" SRX-109)	2	LS	150,300.00	300,600.00
	2	Augerhead (5' X 6")	2	LS	33,000.00	66,000.00
	3	Clam Bucket (48")	2	LS	6,200.00	12,400.00
	4	Dredge Trailer	2	LS	24,000.00	48,000.00
	5	17' Polar Skiff	1	LS	10,000.00	10,000.00
	6	Trucks	2	LS	15,000.00	30,000.00
	7	6" Polyethylene Discharge Pipe	2	LS	6,000.00	12,000.00
		TOTAL				479,000.00
8" Aquatics Unlimited Aquamog PRX-163	1	Dredge (6" SRX-109)	1	LS	175,500.00	175,500.00
	2	Augerhead (5' X 6")	1	LS	41,000.00	41,000.00
	3	Clam Bucket (48")	1	LS	6,200.00	6,200.00
	4	Dredge Trailer	1	LS	40,000.00	40,000.00
	5	17' Polar Skiff	1	LS	10,000.00	10,000.00
	6	Trucks	2	LS	15,000.00	30,000.00
	7	8" Polyethylene Discharge Pipe	1	LS	14,000.00	14,000.00
		TOTAL				316,700.00
8" Aquatics Unlimited Aquamog PRX-163	1	Dredge (6" SRX-109)	2	LS	175,500.00	351,000.00
	2	Augerhead (5' X 6")	2	LS	41,000.00	82,000.00
	3	Clam Bucket (48")	2	LS	6,200.00	12,400.00
	4	Dredge Trailer	2	LS	40,000.00	80,000.00
	5	17' Polar Skiff	1	LS	10,000.00	10,000.00
	6	Trucks	2	LS	15,000.00	30,000.00
	7	8" Polyethylene Discharge Pipe	2	LS	14,000.00	28,000.00
		TOTAL				593,400.00
8" Aquatics Unlimited Aquamog PRX-163 (24 HR operation)	1	Dredge (6" SRX-109)	1	LS	175,500.00	175,500.00
	2	Augerhead (5' X 6")	1	LS	41,000.00	41,000.00
	3	Clam Bucket (48")	1	LS	6,200.00	6,200.00
	4	Dredge Trailer	1	LS	40,000.00	40,000.00
	5	17' Polar Skiff	1	LS	10,000.00	10,000.00
	6	Trucks	2	LS	15,000.00	30,000.00
	7	8" Polyethylene Discharge Pipe	1	LS	14,000.00	14,000.00
	8	Lighting/Safety Equipment	1	LS	15,000.00	15,000.00
		TOTAL				331,700.00

Table C-13  
 Estimated Construction Cost  
 Barataria Bay Waterway East Bank Protection, PBA-12b

Item	Description	Quantity	Unit	Unit Cost (\$)	Amount (\$)
1	Mobilization	1	LS	30,000.00	30,000.00
2	Foreshore Rock Dike	118,200	TN	23.00	2,719,000.00
3	Geo-textile	79,000	SY	3.00	237,000.00
4	Excavation	94,000	CY	1.25	117,500.00
	TOTAL				3,103,500.00

Table C-14  
 Estimated Construction Cost  
 Dedicated Dredging for Marsh Creation in the  
 Mississippi River Delta, CW-1

	Item	Description	Quantity	Unit	Unit Cost (\$)	Amount (\$)
<b>Dead Woman</b>	1	Mob & Demob	1	LS	100,000.00	100,000.00
<b>Outside Pond</b>	2	Retention Dikes & Closures	1500	LF	15.25	22,900.00
	3	Excavation and Placement of Dredged Material	2,400,000	CY	0.85	2,040,000.00
		TOTAL				2,162,900.00
<b>Little 27 Pond</b>	1	Mob & Demob	1	LS	100,000.00	100,000.00
	2	Retention Dikes & Closures	8,000	LF	15.25	122,000.00
	3	Excavation and Placement of Dredged Material	520,000	CY	0.90	468,000.00
		TOTAL				690,000.00
<b>Spanish Island</b>	1	Mob & Demob	1	LS	100,000.00	100,000.00
	2	Retention Dikes & Closures	9,000	LF	15.25	137,300.00
	3	Excavation and Placement of Dredged Material	260,000	CY	0.90	234,000.00
		TOTAL				471,300.00
<b>Post Pond</b>	1	Mob & Demob	1	LS	100,000.00	100,000.00
	2	Retention Dikes & Closures	9,000	LF	15.25	137,300.00
	3	Excavation and Placement of Dredged Material	970,000	CY	0.90	873,000.00
		TOTAL				1,110,300.00

Table C-14  
 Estimated Construction Cost  
 Dedicated Dredging for Marsh Creation in the  
 Mississippi River Delta, CW-1

	Item	Description	Quantity	Unit	Unit Cost (\$)	Amount (\$)
<b>Alberts Pond</b>	1	Mob & Demob	1	LS	100,000.00	100,000.00
	2	Retention Dikes & Closures	6500	LF	15.25	99,100.00
	3	Excavation and Placement of Dredged Material	780,000	CY	0.90	702,000.00
		TOTAL				901,100.00
<b>Morgan Pond</b>	1	Mob & Demob	1	LS	100,000.00	100,000.00
	2	Retention Dikes & Closures	7,000	LF	15.25	106,800.00
	3	Excavation and Placement of Dredged Material	520,000	CY	0.90	468,000.00
		TOTAL				674,800.00
<b>Stone Pond</b>	1	Mob & Demob	1	LS	150,000.00	150,000.00
	2	Retention Dikes & Closures	11,000	LF	15.25	167,800.00
	3	Excavation and Placement of Dredged Material	1,650,000	CY	1.65	2,722,500.00
		TOTAL				3,040,300.00
<b>Fresh-water Reservoir East of South Pass</b>	1	Mob & Demob	1	LS	250,000.00	250,000.00
	2	Retention Dikes & Closures	N/R	LF	0.00	
	3	Excavation and Placement of Dredged Material	5,000,000	CY	0.95	4,750,000.00
		TOTAL				5,000,000.00
<b>Buras Bayou Site</b>	1	Mob & Demob	1	LS	300,000.00	300,000.00
	2	Retention Dikes	22,000	LF	10.50	231,000.00
	3	Dredging of Oilwells	85,000	CY	2.00	170,000.00
	4	Excavation and Placement of Material	11,000,000	CY	1.00	11,000,000.00
		TOTAL	0			11,701,000.00

Table C-15  
Estimated Construction Cost  
Marsh Creation Using Dredged Materials  
East of the Atchafalaya River, CW-5i

Item	Description	Quantity	Unit	Unit Cost(\$)	Amount(\$)
Avoca Island	1 Mob & Demob	1	LS	400,000.00	400,000.00
Increment 1	2 Dredging	3,000,000	CY	4.50	13,500,000.00
	TOTAL				13,900,000.00
Creole Bayou	1 Mob & Demob	1	LS	100,000.00	100,000.00
Increment 2	2 Dredging	2,400,000	CY	1.25	3,000,000.00
	TOTAL				3,100,000.00

Table C-16  
Estimated Construction Cost  
Spanish Pass Diversion, PBA-11

Item	Description	Quantity	Unit	Unit Cost(\$)	Amount(\$)
	1 Raise Highway Elev.	1	LS	1,278,120.00	1,278,120.00
	2 Pre-stressed Concrete Bridge	8,750	SP	75.00	656,250.00
	3 Raise Roadway	8,298	LS	40.00	420,100.00
	4 Dredging	1	LS	257,650.00	257,650.00
	5 Temp. Roads & Culvert	1	LS	319,530.00	319,530.00
	6 Crevasse	13,333	CY	4.00	53,332.00
	7 Sediment Trapping	6,000	LF	101.00	606,000.00
	8 Clearing & Grubbing	1	LS	100,000.00	100,000.00
	9 Soil	6,667	CY	4.00	26,667.00
	TOTAL				3,717,649.00

Table C-17  
Estimated Construction Cost  
Dedicated Dredging and Marsh Creation at  
West Point A La Hache, CW-4

Item	Description	Quantity	Unit	Unit Cost(\$)	Amount(\$)
	1 Mob & Demob	1	LS	300,000.00	300,000.00
	2 Jack & Bore	1	LS	45,000.00	45,000.00
	3 Perimeter Retention Dikes & Closures	30000	LF	10.50	315,000.00
	4 Borrow and Placement of Dredged Material for Wetland Creation	6,800,000	CY	0.95	6,460,000.00
	TOTAL				7,120,000.00

Table C-18  
Estimated Construction Cost  
Coastal Breakwater Placement at Rockefeller Refuge, PME-2

Item	Description	Quantity	Unit	Unit Cost(\$)	Amount(\$)
	1 Mob & Demob	1	LS	30,000.00	30,000.00
	2 Stone(5,000# Max)	65,000	TN	35.00	2,275,000.00
	3 Geo-textile (300 Lb)	18,500	SY	5.00	92,500.00
	TOTAL				23,975,000.00

Table C-19  
 Estimated Construction Cost  
 Dustpan/Cutterhead Dredging for Marsh Creation  
 in the Mississippi River Delta Region  
 Demonstration Project, XMR-12b

Item	Description	Quantity	Unit	Unit Cost (\$)	Amount (\$)
1	Dustpan/Cutterhead Dredging (Incremental Cost Above O & M Cost of Navigation-Channel Maintenance Base Plan TOTAL	1	LS	926,000	926,000
					926,000

Table C-20  
 Estimated Construction Cost  
 Nutria Harvest and Wetland Restoration Demonstration Project, CW-7

Trapping Season/ Fiscal Year	Year 1 (1997-1998)	Year 2 (1998- 1999)	Year 3 (1999-2000)	Year 5 (2001- 2002)
LDWF	80,000	100,000	100,000	50,000
Nutria Meat	100,000	100,000	50,000	50,000
Marketing Plan				
Trapper Payments <sup>(1)</sup>		100,000	100,000	100,000
Nutria Meat Processor Payment <sup>(2)</sup>		350,000	350,000	350,000
NEPA Compliance	20,000			
CWPPRA Oversight	15,000	15,000	15,000	10,000
TOTAL	215,000	665,000	615,000	60,000

<sup>(1)</sup> \$1.00 Per Nutria Suitable for Human Consumption

<sup>(2)</sup> \$0.75 Per Pound of Nutria Meat Sold for Human Consumption

Table C-21  
 Estimated Construction Cost  
 Sediment Trapping Device Demonstration Project at Cheniere Au Tigre, PTV-5

Item	Description	Quantity	Unit	Unit Cost (\$)	Amount (\$)
1	Mob & Demob	1	LS	40,000.00	40,000.00
2	Sediment Trapping & Installation	1	LS	341,000.00	341,000.00
	TOTAL				381,000.00



Coastal Wetlands Planning, Protection and  
Restoration Act

6<sup>th</sup> Priority Project List Report

Appendix D

Economics Computational Summary  
For Candidate Projects



## Appendix D

### Economics Computational Summary For Candidate Projects

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**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Black Bayou Hydrologic Restoration (XCS-48, CS-5a/12)**

Project Construction Years:	5	Total Project Years	25
Interest Rate	7.38%	Amortization Factor	0.097161602
Total First Costs	\$5,014,200	Total Fully Funded Costs	\$6,316,800

	Present Worth	Average Annual
Annual Charges		
Interest & Amortization	\$5,341,700	\$519,000
Monitoring	\$303,500	\$29,500
O & M Costs	\$141,500	\$13,700
Other Costs	\$5,100	\$500
<b>Total</b>	<b>\$5,791,800</b>	<b>\$562,700</b>
Average Annual Habitat Units		2,812
Cost Per Habitat Unit		\$200
Average Annual Acres of Emergent Marsh		2,084

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**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Black Bayou Hydrology Restoration (XCS-48, CS-5a/12)**

**First Costs and Annual Charges**

Year	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal		Contingency	First Cost Construction	Total First Cost
				LDNR Administration	Supervision & Inspection			
5 Compound	1997	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4 Compound	1998	\$25,000	\$125,000	\$0	\$0	\$0	\$0	\$150,000
3 Compound	1999	\$256,000	\$0	\$66,250	\$26,246	\$0	\$0	\$348,496
2 Compound	2000	\$0	\$0	\$79,500	\$31,495	\$666,240	\$2,614,962	\$3,484,507
1 Compound	2001	\$0	\$0	\$13,250	\$19,249	\$7,692	\$538	\$645,805
Base Year								
<b>TOTAL</b>		<b>\$281,000</b>	<b>\$125,000</b>	<b>\$153,000</b>	<b>\$76,990</b>	<b>\$787,375</b>	<b>\$3,141,000</b>	<b>\$4,628,865</b>

Year	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
2 Discount	2003	\$29,492	\$13,750	\$500
3 Discount	2004	\$29,492	\$13,750	\$500
4 Discount	2005	\$29,492	\$13,750	\$500
5 Discount	2006	\$29,492	\$13,750	\$500
6 Discount	2007	\$29,492	\$13,750	\$500
7 Discount	2008	\$29,492	\$13,750	\$500
8 Discount	2009	\$29,492	\$13,750	\$500
9 Discount	2010	\$29,492	\$13,750	\$500
10 Discount	2011	\$29,492	\$13,750	\$500
11 Discount	2012	\$29,492	\$13,750	\$500
12 Discount	2013	\$29,492	\$13,750	\$500
13 Discount	2014	\$29,492	\$13,750	\$500
14 Discount	2015	\$29,492	\$13,750	\$500
15 Discount	2016	\$29,492	\$13,750	\$500
16 Discount	2017	\$29,492	\$13,750	\$500
17 Discount	2018	\$29,492	\$13,750	\$500
18 Discount	2019	\$29,492	\$13,750	\$500
19 Discount	2020	\$29,492	\$13,750	\$500
20 Discount	2021	\$29,492	\$13,750	\$500
<b>Total</b>		<b>\$589,840</b>	<b>\$275,000</b>	<b>\$10,000</b>

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**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Black Bayou Hydrologic Restoration (XCS-48, CS-5a/12)**

Present Valued Costs		Total Discounted Costs		Amortized Costs		Total First Cost			
Year	Compound Rates	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Supervision & Administration	LDNR Supervision & Administration & Inspection	Contingency	Construction	Cost
5	1.427	1997	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	1.329	1998	\$33,232	\$166,159	\$0	\$0	\$0	\$0	\$199,390
3	1.238	1999	\$316,920	\$0	\$82,015	\$32,492	\$0	\$0	\$431,427
2	1.153	2000	\$0	\$0	\$91,659	\$36,312	\$48,778	\$3,072,538	\$4,017,421
1	1.074	2001	\$0	\$0	\$14,227	\$20,669	\$8,260	\$130,068	\$693,497
<b>Total</b>			<b>\$350,152</b>	<b>\$166,159</b>	<b>\$187,901</b>	<b>\$89,472</b>	<b>\$57,038</b>	<b>\$3,592,811</b>	<b>\$5,341,736</b>

Year	Discount Rates	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
-1	0.931	2002	\$27,466	\$12,806	\$466
-2	0.867	2003	\$25,580	\$11,926	\$434
-3	0.808	2004	\$23,823	\$11,107	\$404
-4	0.752	2005	\$22,187	\$10,344	\$376
-5	0.701	2006	\$20,663	\$9,634	\$350
-6	0.653	2007	\$19,244	\$8,972	\$326
-7	0.608	2008	\$17,922	\$8,356	\$304
-8	0.566	2009	\$16,691	\$7,782	\$283
-9	0.527	2010	\$15,544	\$7,247	\$264
-10	0.491	2011	\$14,477	\$6,749	\$245
-11	0.457	2012	\$13,482	\$6,286	\$229
-12	0.426	2013	\$12,556	\$5,854	\$213
-13	0.397	2014	\$11,694	\$5,452	\$198
-14	0.369	2015	\$10,891	\$5,078	\$185
-15	0.344	2016	\$10,143	\$4,729	\$172
-16	0.320	2017	\$9,446	\$4,404	\$160
-17	0.298	2018	\$8,797	\$4,102	\$149
-18	0.278	2019	\$8,193	\$3,820	\$139
-19	0.259	2020	\$7,630	\$3,557	\$129
-20	0.241	2021	\$7,106	\$3,313	\$120
<b>Total</b>			<b>\$303,536</b>	<b>\$141,517</b>	<b>\$5,146</b>

Average Annual	\$29,492	\$13,750	\$500
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3/14/97

Costs amortized over 20 year operation life

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Black Bayou Hydrologic Restoration (XCS-48, CS-5a/12)**

Fully Funded Costs		Total Fully Funded Costs				Amortized Costs				Total First Cost
Year	Inflation Factor	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Supervision & Administration	LDNR Supervision & Administration	Supervision & Inspection	Contingency	Construction	Total First Cost
5	1.000	1997	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	1.027	1998	\$25,675	\$128,375	\$0	\$0	\$0	\$0	\$0	\$154,050
3	1.055	1999	\$270,011	\$0	\$69,876	\$27,682	\$0	\$0	\$0	\$367,569
2	1.083	2000	\$0	\$0	\$86,115	\$34,116	\$45,828	\$721,676	\$2,886,704	\$3,774,439
1	1.112	2001	\$0	\$0	\$14,733	\$21,403	\$8,553	\$134,691	\$538,764	\$718,144
<b>TOTAL</b>			<b>\$295,686</b>	<b>\$128,375</b>	<b>\$170,724</b>	<b>\$83,201</b>	<b>\$54,381</b>	<b>\$856,367</b>	<b>\$3,425,468</b>	<b>\$5,014,202</b>

Total Fully Funded Costs \$6,316,806

\$613,751

Year	Inflation Factor	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
-1	1.142	2002	\$33,694	\$15,709	\$571
-2	1.173	2003	\$34,604	\$16,133	\$587
-3	1.205	2004	\$35,538	\$16,569	\$603
-4	1.238	2005	\$36,498	\$17,016	\$619
-5	1.271	2006	\$37,483	\$17,476	\$635
-6	1.305	2007	\$38,495	\$17,948	\$653
-7	1.341	2008	\$39,535	\$18,432	\$670
-8	1.377	2009	\$40,602	\$18,930	\$688
-9	1.414	2010	\$41,698	\$19,441	\$707
-10	1.452	2011	\$42,824	\$19,966	\$726
-11	1.491	2012	\$43,981	\$20,505	\$746
-12	1.532	2013	\$45,168	\$21,059	\$766
-13	1.573	2014	\$46,388	\$21,627	\$786
-14	1.615	2015	\$47,640	\$22,211	\$808
-15	1.659	2016	\$48,926	\$22,811	\$829
-16	1.704	2017	\$50,247	\$23,427	\$852
-17	1.750	2018	\$51,604	\$24,059	\$875
-18	1.797	2019	\$52,997	\$24,709	\$899
-19	1.846	2020	\$54,428	\$25,376	\$923
-20	1.895	2021	\$55,898	\$26,061	\$948
<b>Total</b>			<b>\$878,250</b>	<b>\$409,465</b>	<b>\$14,890</b>

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**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Bayou Boeuf Pumping Station (XTE-32)**

Project Construction Years:	14	Total Project Years	34
Interest Rate	7.38%	Amortization Factor	0.0971616
Total First Costs	\$5,268,100	Total Fully Funded Costs	\$7,402,600

	Present Worth	Average Annual
Annual Charges		
Interest & Amortization	\$5,243,200	\$508,400
Monitoring	\$303,500	\$29,500
O & M Costs	\$271,700	\$26,400
Other Costs	\$5,100	\$500
<b>Total</b>	<b>\$5,823,500</b>	<b>\$565,800</b>
Average Annual Habitat Units		1,678
Cost Per Habitat Unit		\$337
Average Annual Acres of Emergent Marsh		N/A

Costs amortized over 20 year moratorium

Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI

Bayou Boeuf Pumping Station (XTE-32)

First Costs and Annual Charges

Year	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal		Contingency	First Cost Construction	Total First Cost
				Supervision & Administration	Supervision & Inspection			
14 Compound	1997	\$0	\$0	\$0	\$0	\$0	\$0	\$0
13 Compound	1998	\$471,428	\$0	\$0	\$0	\$0	\$0	\$471,428
12 Compound	1999	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11 Compound	2000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10 Compound	2001	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9 Compound	2002	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8 Compound	2003	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7 Compound	2004	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6 Compound	2005	\$24,400	\$0	\$8,133	\$8,133	\$0	\$0	\$40,667
5 Compound	2006	\$24,400	\$0	\$8,133	\$8,133	\$0	\$0	\$40,667
4 Compound	2007	\$24,400	\$0	\$8,133	\$8,133	\$0	\$0	\$40,667
3 Compound	2008	\$0	\$0	\$8,133	\$8,133	\$203,333	\$813,333	\$1,114,267
2 Compound	2008	\$0	\$0	\$8,133	\$8,133	\$203,333	\$813,333	\$1,114,267
1 Compound	2010	\$0	\$0	\$8,133	\$8,133	\$203,333	\$813,333	\$1,132,267
Base Year				\$48,800	\$66,800	\$610,000	\$2,440,000	\$3,954,228
TOTAL		\$544,828	\$0	\$48,800	\$66,800	\$610,000	\$2,440,000	\$3,954,228

Year	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
2 Discount	2012	\$29,492	\$26,400	\$500
3 Discount	2013	\$29,492	\$26,400	\$500
4 Discount	2014	\$29,492	\$26,400	\$500
5 Discount	2015	\$29,492	\$26,400	\$500
6 Discount	2016	\$29,492	\$26,400	\$500
7 Discount	2017	\$29,492	\$26,400	\$500
8 Discount	2018	\$29,492	\$26,400	\$500
9 Discount	2019	\$29,492	\$26,400	\$500
10 Discount	2020	\$29,492	\$26,400	\$500
11 Discount	2021	\$29,492	\$26,400	\$500
12 Discount	2022	\$29,492	\$26,400	\$500
13 Discount	2023	\$29,492	\$26,400	\$500
14 Discount	2024	\$29,492	\$26,400	\$500
15 Discount	2025	\$29,492	\$26,400	\$500
16 Discount	2026	\$29,492	\$26,400	\$500

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Costs amortized over 20 year operation life

17 Discount	2027	\$29,492	\$26,400	\$500
18 Discount	2028	\$29,492	\$26,400	\$500
19 Discount	2029	\$29,492	\$26,400	\$500
20 Discount	2030	\$29,492	\$26,400	\$500
	<b>Total</b>	<b>\$569,840</b>	<b>\$528,000</b>	<b>\$10,000</b>

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Bayou Boeuf Pumping Station (XTE-32)**

Present Valued Costs		Total Discounted Costs	\$5,823,630	Amortized Costs	\$565,833				
Year	Compound Rates	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Supervision & Administration	LDNR Supervision & Inspection	Contingency	First Cost Construction	Total First Cost
14	2.708	1997	\$0	\$0	\$0	\$0	\$0	\$0	\$0
13	2.522	1998	\$1,188,931	\$0	\$0	\$0	\$0	\$0	\$1,188,931
12	2.346	1998	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11	2.187	2000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	2.037	2001	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9	1.897	2002	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8	1.767	2003	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7	1.646	2004	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6	1.533	2005	\$37,395	\$0	\$12,465	\$0	\$0	\$0	\$62,324
5	1.427	2006	\$34,826	\$0	\$11,609	\$0	\$0	\$0	\$58,044
4	1.329	2007	\$32,434	\$0	\$10,811	\$0	\$0	\$0	\$54,057
3	1.238	2008	\$0	\$0	\$10,069	\$100,688	\$251,720	\$1,006,881	\$1,379,427
2	1.153	2009	\$0	\$0	\$9,377	\$93,772	\$234,431	\$937,724	\$1,284,682
1	1.074	2010	\$0	\$0	\$8,733	\$28,061	\$218,329	\$873,317	\$1,215,771
<b>Total</b>			<b>\$1,293,586</b>	<b>\$0</b>	<b>\$63,064</b>	<b>\$82,392</b>	<b>\$704,480</b>	<b>\$2,817,921</b>	<b>\$5,243,236</b>

Year	Discount Rates	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
-1	0.931	2011	\$27,466	\$24,587	\$468
-2	0.867	2012	\$25,580	\$22,898	\$434
-3	0.808	2013	\$23,823	\$21,325	\$404
-4	0.752	2014	\$22,187	\$19,861	\$376
-5	0.701	2015	\$20,663	\$18,496	\$350
-6	0.653	2016	\$19,244	\$17,226	\$326
-7	0.608	2017	\$17,922	\$16,043	\$304
-8	0.566	2018	\$16,691	\$14,941	\$283
-9	0.527	2019	\$15,544	\$13,915	\$264
-10	0.491	2020	\$14,477	\$12,953	\$245
-11	0.457	2021	\$13,482	\$12,065	\$229
-12	0.426	2022	\$12,556	\$11,240	\$213
-13	0.397	2023	\$11,694	\$10,468	\$198
-14	0.368	2024	\$10,891	\$9,749	\$185
-15	0.344	2025	\$10,143	\$9,079	\$172
-16	0.320	2026	\$9,446	\$8,458	\$160
-17	0.298	2027	\$8,797	\$7,875	\$149

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Costs amortized over 20 year operation life

-18	0.278	2028	\$6,193	\$7,334	\$139
-19	0.259	2029	\$7,630	\$6,830	\$129
-20	0.241	2030	\$7,106	\$6,361	\$120
		<b>Total</b>	<b>\$303,536</b>	<b>\$271,712</b>	<b>\$5,146</b>
	<b>Average Annual</b>		<b>\$29,492</b>	<b>\$26,400</b>	<b>\$500</b>

Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI

Bayou Boeuf Pumping Station (XTE-32)

Fully Funded Costs		Total Fully Funded Costs		Amortized Costs		Total First Cost			
Year	Inflation Factor	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Administration	Supervision & Inspection	Contingency	First Construction	Total Cost
14	1.025	1997	\$0	\$0	\$0	\$0	\$0	\$0	\$0
13	1.027	1998	\$484,180	\$0	\$0	\$0	\$0	\$0	\$484,180
12	1.055	1999	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11	1.083	2000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	1.112	2001	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9	1.143	2002	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8	1.173	2003	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7	1.205	2004	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6	1.238	2005	\$30,198	\$0	\$10,066	\$10,066	\$0	\$0	\$50,330
5	1.271	2006	\$31,013	\$0	\$10,338	\$10,338	\$0	\$0	\$51,688
4	1.305	2007	\$31,850	\$0	\$10,817	\$10,817	\$0	\$0	\$53,084
3	1.341	2008	\$0	\$0	\$10,903	\$10,903	\$272,587	\$1,090,346	\$1,493,775
2	1.377	2009	\$0	\$0	\$11,198	\$11,198	\$279,946	\$1,119,786	\$1,534,106
1	1.414	2010	\$0	\$0	\$11,500	\$36,951	\$115,002	\$287,505	\$1,600,979
<b>TOTAL</b>			<b>\$577,241</b>	<b>\$0</b>	<b>\$64,622</b>	<b>\$90,073</b>	<b>\$336,015</b>	<b>\$3,360,152</b>	<b>\$5,266,142</b>

Year	Inflation Factor	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
-1	1.452	2011	\$42,826	\$38,336	\$726
-2	1.481	2012	\$43,983	\$39,371	\$746
-3	1.532	2013	\$45,170	\$40,434	\$766
-4	1.573	2014	\$46,390	\$41,526	\$786
-5	1.615	2015	\$47,642	\$42,647	\$808
-6	1.659	2016	\$48,929	\$43,799	\$830
-7	1.704	2017	\$50,250	\$44,981	\$852
-8	1.750	2018	\$51,607	\$46,186	\$875
-8	1.797	2019	\$53,000	\$47,443	\$899
-10	1.846	2020	\$54,431	\$48,724	\$923
-11	1.895	2021	\$55,901	\$50,040	\$948
-12	1.947	2022	\$57,410	\$51,391	\$973
-13	1.999	2023	\$58,960	\$52,778	\$1,000
-14	2.053	2024	\$60,552	\$54,203	\$1,027
-15	2.109	2025	\$62,187	\$55,667	\$1,054
-16	2.168	2026	\$63,866	\$57,170	\$1,083
-17	2.224	2027	\$65,590	\$58,714	\$1,112

3/31/97

Costs amortized over 20 year operation life

-18	2-284	2028	\$67,361	\$60,299	\$1,142
-19	2-346	2029	\$89,190	\$61,927	\$1,173
-20	2-408	2030	\$71,048	\$63,589	\$1,205
		<b>Total</b>	<b>\$1,116,281</b>	<b>\$998,248</b>	<b>\$18,925</b>

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Bayou Boeuf Pumping Station Increment 1 (XTE-32I)**

<b>Project Construction Years:</b>	14	<b>Total Project Years</b>	34
<b>Interest Rate</b>	7.38%	<b>Amortization Factor</b>	0.0971616
<b>Total First Costs</b>	\$577,800	<b>Total Fully Funded Costs</b>	\$2,961,900

	<u>Present Worth</u>	<u>Average Annual</u>
<b>Annual Charges</b>		
Interest & Amortization	\$1,281,600	\$124,500
Monitoring	\$303,500	\$29,500
O & M Costs	\$339,600	\$33,000
Other Costs	\$5,100	\$500
<b>Total</b>	<b>\$1,929,800</b>	<b>\$187,500</b>

**Average Annual Habitat Units**

**Cost Per Habitat Unit**

**Average Annual Acres of Emergent Marsh**

1,458  
\$129  
N/A

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Bayou Boeuf Pumping Station Increment 1 (XTE-32)**

**First Costs and Annual Charges**

Year	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Supervision & Administration	LDNR Supervision & Administration	Contingency	First Cost Construction	Total First Cost
14	Compound	\$0	\$0	\$0	\$0	\$0	\$0	\$0
13	Compound	\$471,428	\$0	\$0	\$0	\$0	\$0	\$471,428
12	Compound	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11	Compound	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	Compound	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9	Compound	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8	Compound	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7	Compound	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6	Compound	\$12,320	\$0	\$0	\$0	\$0	\$0	\$0
5	Compound	\$12,320	\$0	\$880	\$1,760	\$0	\$0	\$14,960
4	Compound	\$12,320	\$0	\$880	\$1,760	\$0	\$0	\$14,960
3	Compound	\$0	\$0	\$880	\$1,760	\$0	\$0	\$14,960
2	Compound	\$0	\$0	\$880	\$1,760	\$0	\$0	\$2,640
1	Compound	\$0	\$0	\$880	\$1,760	\$0	\$0	\$2,640
	Base Year			\$880	\$19,760			\$20,640
<b>TOTAL</b>		<b>\$508,388</b>	<b>\$0</b>	<b>\$5,280</b>	<b>\$28,560</b>	<b>\$0</b>	<b>\$0</b>	<b>\$542,228</b>

Year	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
1	Discount	\$29,492	\$33,000	\$500
2	Discount	\$29,492	\$33,000	\$500
3	Discount	\$29,492	\$33,000	\$500
4	Discount	\$29,492	\$33,000	\$500
5	Discount	\$29,492	\$33,000	\$500
6	Discount	\$29,492	\$33,000	\$500
7	Discount	\$29,492	\$33,000	\$500
8	Discount	\$29,492	\$33,000	\$500
9	Discount	\$29,492	\$33,000	\$500
10	Discount	\$29,492	\$33,000	\$500
11	Discount	\$29,492	\$33,000	\$500
12	Discount	\$29,492	\$33,000	\$500

13 Discount	2023	\$29,492	\$33,000	\$500
14 Discount	2024	\$29,492		\$500
15 Discount	2025	\$29,492		\$500
16 Discount	2026	\$29,492	\$33,000	\$500
17 Discount	2027	\$29,492	\$33,000	\$500
18 Discount	2028	\$29,492	\$33,000	\$500
19 Discount	2029	\$29,492	\$33,000	\$500
20 Discount	2030	\$29,492	\$33,000	\$500
<b>Total</b>		<b>\$589,840</b>	<b>\$660,000</b>	<b>\$10,000</b>

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Bayou Boeuf Pumping Station Increment 1 (XTE-321)**

Present Valued Costs		Total Discounted Costs		Amortized Costs		Total First Cost				
Year	Compound Rates	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Administration	LDNR Supervision & Administration	Supervision & Inspection	Contingency	Firer Cost Construction	Total First Cost
14	2.708	1987	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
13	2.522	1998	\$1,188,931	\$0	\$0	\$0	\$0	\$0	\$0	\$1,188,931
12	2.349	1998	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11	2.187	2000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	2.037	2001	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9	1.887	2002	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8	1.767	2003	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7	1.646	2004	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6	1.533	2005	\$16,881	\$0	\$1,349	\$2,697	\$0	\$0	\$0	\$0
5	1.427	2006	\$17,584	\$0	\$1,258	\$2,512	\$0	\$0	\$0	\$22,927
4	1.329	2007	\$16,377	\$0	\$1,170	\$2,340	\$0	\$0	\$0	\$21,352
3	1.238	2008	\$0	\$0	\$1,088	\$2,179	\$0	\$0	\$0	\$19,886
2	1.153	2009	\$0	\$0	\$1,015	\$2,029	\$0	\$0	\$0	\$3,268
1	1.074	2010	\$0	\$0	\$945	\$2,217	\$0	\$0	\$0	\$3,044
<b>Total</b>			<b>\$1,241,773</b>	<b>\$0</b>	<b>\$6,823</b>	<b>\$32,974</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,281,571</b>

Year	Discount Rates	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
-1	0.931	2011	\$27,466	\$30,733	\$466
-2	0.867	2012	\$25,580	\$28,823	\$434
-3	0.808	2013	\$23,823	\$26,657	\$404
-4	0.752	2014	\$22,187	\$24,828	\$376
-5	0.701	2015	\$20,883	\$23,121	\$350

-6	0.653	2016	\$19,244	\$21,533	\$326
-7	0.606	2017	\$17,922	\$20,054	\$304
-8	0.566	2018	\$16,681	\$18,676	\$283
-9	0.527	2019	\$15,544	\$17,383	\$264
-10	0.491	2020	\$14,477	\$16,199	\$245
-11	0.457	2021	\$13,462	\$15,086	\$229
-12	0.426	2022	\$12,558	\$14,050	\$213
-13	0.397	2023	\$11,694	\$13,085	\$198
-14	0.368	2024	\$10,891	\$12,186	\$185
-15	0.344	2025	\$10,143	\$11,349	\$172
-16	0.320	2026	\$9,446	\$10,570	\$160
-17	0.298	2027	\$8,797	\$9,844	\$149
-18	0.278	2028	\$8,193	\$9,168	\$139
-19	0.259	2029	\$7,630	\$8,538	\$129
-20	0.241	2030	\$7,108	\$7,952	\$120
		<b>Total</b>	<b>\$303,536</b>	<b>\$339,640</b>	<b>\$5,146</b>
	<b>Average Annual</b>		<b>\$26,492</b>	<b>\$33,000</b>	<b>\$500</b>

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Delta Wide Crevasses (PMR-10)**

Project Construction Years:	3	Total Project Years	23
Interest Rate	7.36%	Amortization Factor	0.0971616
Total First Costs	\$1,156,900	Total Fully Funded Costs	\$5,473,900

	Present Worth	Average Annual
Annual Charges		
Interest & Amortization	\$1,192,000	\$115,800
Monitoring	\$303,500	\$29,500
O & M Costs	\$1,262,500	\$124,600
Other Costs	\$5,100	\$500
<b>Total</b>	<b>\$2,783,100</b>	<b>\$270,400</b>

Average Annual Habitat Units

Cost Per Habitat Unit

Average Annual Acres of Emergent Marsh

927  
\$292  
1,229

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Delta Wide Crevasses (PMR-10)**

**First Costs and Annual Charges**

Year	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal			Contingency	First Cost Construction	Total First Cost
				LDNR Administration	Supervision & Inspection	Supervision & Inspection			
5 Compound		\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4 Compound		\$0	\$0	\$0	\$0	\$0	\$0	\$0	
3 Compound	1997	\$25,000	\$20,000	\$0	\$0	\$0	\$0	\$45,000	
2 Compound	1998	\$34,050	\$0	\$2,724	\$3,686	\$0	\$0	\$40,460	
1 Compound	1999	\$51,075	\$0	\$7,491	\$24,138	\$68,100	\$691,215	\$1,014,823	
Base Year									
<b>TOTAL</b>		<b>\$110,125</b>	<b>\$20,000</b>	<b>\$10,215</b>	<b>\$27,824</b>	<b>\$68,100</b>	<b>\$172,804</b>	<b>\$1,100,283</b>	

Year	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs															
					1 Discount	2 Discount	3 Discount	4 Discount	5 Discount	6 Discount	7 Discount	8 Discount	9 Discount	10 Discount	11 Discount	12 Discount	13 Discount	14 Discount	15 Discount
1 Discount	2000	\$29,492	\$0	\$500															
2 Discount	2001	\$29,492	\$0	\$500															
3 Discount	2002	\$29,492	\$0	\$500															
4 Discount	2003	\$29,492	\$0	\$500															
5 Discount	2004	\$29,492	\$835,272	\$500															
6 Discount	2005	\$29,492	\$0	\$500															
7 Discount	2006	\$29,492	\$0	\$500															
8 Discount	2007	\$29,492	\$0	\$500															
9 Discount	2008	\$29,492	\$0	\$500															
10 Discount	2009	\$29,492	\$835,272	\$500															
11 Discount	2010	\$29,492	\$0	\$500															
12 Discount	2011	\$29,492	\$0	\$500															
13 Discount	2012	\$29,492	\$0	\$500															
14 Discount	2013	\$29,492	\$0	\$500															
15 Discount	2014	\$29,492	\$835,272	\$500															
16 Discount	2015	\$29,492	\$0	\$500															
17 Discount	2016	\$29,492	\$0	\$500															
18 Discount	2017	\$29,492	\$0	\$500															
19 Discount	2018	\$29,492	\$0	\$500															
20 Discount	2019	\$29,492	\$0	\$500															
<b>Total</b>		<b>\$569,840</b>	<b>\$2,505,816</b>	<b>\$10,000</b>															

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Delta Wide Crevasse (PMR-10)**

Present Value Costs		Total Discounnd Costs		Amortized Costs		Total First Cost			
Year	Compound Rates	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Supervision & Administration	LDNR Supervision & Administration	Contingency	Construction	Total First Cost
5	1.427	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	1.329	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	1.238	1997	\$30,940	\$24,759	\$0	\$0	\$0	\$0	\$0
2	1.153	1998	\$39,258	\$0	\$3,141	\$4,250	\$0	\$0	\$55,709
1	1.074	1999	\$54,842	\$0	\$8,043	\$25,918	\$73,122	\$185,548	\$46,948
<b>Total</b>			\$125,049	\$24,759	\$11,184	\$30,168	\$73,122	\$742,192	\$1,089,686

Year	Discount Rates	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs	Total
-1	0.931	2000	\$27,466	\$0	\$466	
-2	0.867	2001	\$25,580	\$0	\$434	
-3	0.808	2002	\$23,823	\$0	\$404	
-4	0.752	2003	\$22,187	\$0	\$376	
-5	0.701	2004	\$20,663	\$585,210	\$350	
-6	0.653	2005	\$19,244	\$0	\$328	
-7	0.608	2006	\$17,922	\$0	\$304	
-8	0.568	2007	\$16,891	\$0	\$283	
-9	0.527	2008	\$15,544	\$0	\$264	
-10	0.491	2009	\$14,477	\$410,012	\$245	
-11	0.457	2010	\$13,482	\$0	\$229	
-12	0.426	2011	\$12,558	\$0	\$213	
-13	0.397	2012	\$11,694	\$0	\$198	
-14	0.369	2013	\$10,891	\$0	\$185	
-15	0.344	2014	\$10,143	\$287,263	\$172	
-16	0.320	2015	\$9,446	\$0	\$160	
-17	0.298	2016	\$8,797	\$0	\$149	
-18	0.275	2017	\$8,193	\$0	\$139	
-19	0.259	2018	\$7,630	\$0	\$129	
-20	0.241	2019	\$7,108	\$0	\$120	
<b>Total</b>			\$303,536	\$1,282,485	\$5,146	
<b>Average Annual</b>			\$29,492	\$124,608	\$500	

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Costs amortized over 20 year operation life

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Delta Wide Crevasse (PMR-10)**

Fully Funded Costs		Total Fully Funded Costs	Amortized Costs		Total First Cost					
Year	Inflation Factor	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Administration	LDNR Supervision & Administration	Supervision & Inspection	Contingency	First Construction	Total First Cost
5	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	1.000	1997	\$25,000	\$20,000	\$0	\$0	\$0	\$0	\$0	\$45,000
2	1.027	1998	\$34,969	\$0	\$2,798	\$3,786	\$0	\$0	\$0	\$41,553
1	1.055	1999	\$53,870	\$0	\$7,901	\$25,459	\$71,827	\$182,261	\$729,045	\$1,070,383
<b>TOTAL</b>			<b>\$113,840</b>	<b>\$20,000</b>	<b>\$10,699</b>	<b>\$29,245</b>	<b>\$71,827</b>	<b>\$182,261</b>	<b>\$729,045</b>	<b>\$1,156,916</b>

Year	Inflation Factor	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
-1	1.083	2000	\$31,946	\$0	\$542
-2	1.112	2001	\$32,792	\$0	\$556
-3	1.142	2002	\$33,694	\$0	\$571
-4	1.173	2003	\$34,604	\$0	\$587
-5	1.205	2004	\$35,538	\$1,006,517	\$603
-6	1.238	2005	\$36,498	\$0	\$619
-7	1.271	2006	\$37,483	\$0	\$635
-8	1.305	2007	\$38,495	\$0	\$653
-9	1.341	2008	\$39,535	\$0	\$670
-10	1.377	2009	\$40,602	\$1,149,935	\$688
-11	1.414	2010	\$41,698	\$0	\$707
-12	1.452	2011	\$42,824	\$0	\$726
-13	1.491	2012	\$43,981	\$0	\$746
-14	1.532	2013	\$45,168	\$0	\$766
-15	1.573	2014	\$46,388	\$1,313,788	\$786
-16	1.615	2015	\$47,640	\$0	\$808
-17	1.659	2016	\$48,926	\$0	\$829
-18	1.704	2017	\$50,247	\$0	\$852
-19	1.750	2018	\$51,604	\$0	\$875
-20	1.797	2019	\$52,997	\$0	\$899
<b>Total</b>			<b>\$832,663</b>	<b>\$3,470,239</b>	<b>\$14,117</b>

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**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Delta Wide Crevasses (PMR-10 - I)**

Project Construction Years:	3	Total Project Years:	23
Interest Rate	7.38%	Amortization Factor	0.0971616
Total First Costs	\$363,200	Total Fully Funded Costs	\$2,029,800

	Present Worth	Average Annual
Annual Charges		
Interest & Amortization Monitoring	\$378,700	\$36,800
O & M Costs	\$212,500	\$20,600
Other Costs	\$395,300	\$38,400
<b>Total</b>	<b>\$991,600</b>	<b>\$500</b>
Average Annual Habitat Units		\$96,300
Cost Per Habitat Unit		315
Average Annual Acres of Emergent Marsh		\$306
		341

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Delta Wide Crevasses (PMR-10 - I)**

**First Costs and Annual Charges**

Year	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal		Contingency	First Cost Construction	Total First Cost
				Supervision & Administration	Supervision & Administration			
5	Compound	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	Compound	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	Compound	\$25,000	\$10,000	\$0	\$0	\$0	\$0	\$35,000
2	Compound	\$9,722	\$0	\$600	\$1,053	\$0	\$0	\$11,575
1	Compound	\$14,584	\$0	\$2,200	\$16,898	\$19,445	\$197,445	\$299,831
	Base Year							
	<b>TOTAL</b>	<b>\$48,306</b>	<b>\$10,000</b>	<b>\$3,000</b>	<b>\$17,949</b>	<b>\$19,445</b>	<b>\$49,361</b>	<b>\$346,506</b>

Year	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs	
					1
2	Discount	2001	\$20,645	\$0	\$500
3	Discount	2002	\$20,645	\$0	\$500
4	Discount	2003	\$20,645	\$0	\$500
5	Discount	2004	\$20,645	\$257,445	\$500
6	Discount	2005	\$20,645	\$0	\$500
7	Discount	2006	\$20,645	\$0	\$500
8	Discount	2007	\$20,645	\$0	\$500
9	Discount	2008	\$20,645	\$0	\$500
10	Discount	2009	\$20,645	\$257,445	\$500
11	Discount	2010	\$20,645	\$0	\$500
12	Discount	2011	\$20,645	\$0	\$500
13	Discount	2012	\$20,645	\$0	\$500
14	Discount	2013	\$20,645	\$0	\$500
15	Discount	2014	\$20,645	\$257,445	\$500
16	Discount	2015	\$20,645	\$0	\$500
17	Discount	2016	\$20,645	\$0	\$500
18	Discount	2017	\$20,645	\$0	\$500
19	Discount	2018	\$20,645	\$0	\$500
20	Discount	2019	\$20,645	\$0	\$500
	<b>Total</b>		<b>\$412,900</b>	<b>\$772,335</b>	<b>\$10,000</b>

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Costs amortized over 20 year operation life

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Delta Wide Crevasses (PMR-10 - I)**

Present Valued Costs		Total Discounted Costs				Amortized Costs				Total First Cost
Year	Compound Rates	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Administration	LDNR Supervision & Administration	Supervision & Inspection	Contingency	Construction	Cost
5	1.427	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	1.328	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	1.238	1997	\$30,949	\$12,380	\$0	\$0	\$0	\$0	\$0	\$0
2	1.153	1998	\$11,209	\$0	\$922	\$1,214	\$0	\$0	\$0	\$43,329
1	1.074	1999	\$15,659	\$0	\$2,362	\$18,142	\$20,878	\$53,002	\$212,007	\$13,346
<b>Total</b>			<b>\$57,818</b>	<b>\$12,380</b>	<b>\$3,285</b>	<b>\$19,356</b>	<b>\$20,878</b>	<b>\$53,002</b>	<b>\$212,007</b>	<b>\$322,051</b>

Year	Discount Rates	Fiscal Year	Monitoring Costs	ORM Costs	Other Costs
-1	0.931	2000	\$19,227	\$0	\$466
-2	0.867	2001	\$17,906	\$0	\$434
-3	0.808	2002	\$18,977	\$0	\$404
-4	0.752	2003	\$15,531	\$0	\$376
-5	0.701	2004	\$14,484	\$180,372	\$350
-6	0.653	2005	\$13,471	\$0	\$326
-7	0.608	2006	\$12,546	\$0	\$304
-8	0.566	2007	\$11,884	\$0	\$283
-9	0.527	2008	\$10,881	\$0	\$264
-10	0.491	2009	\$10,134	\$126,373	\$245
-11	0.457	2010	\$9,438	\$0	\$229
-12	0.426	2011	\$8,790	\$0	\$213
-13	0.397	2012	\$8,198	\$0	\$198
-14	0.369	2013	\$7,624	\$0	\$185
-15	0.344	2014	\$7,100	\$88,539	\$172
-16	0.320	2015	\$6,612	\$0	\$160
-17	0.298	2016	\$6,158	\$0	\$149
-18	0.278	2017	\$5,735	\$0	\$139
-19	0.259	2018	\$5,341	\$0	\$129
-20	0.241	2019	\$4,975	\$0	\$120
<b>Total</b>			<b>\$212,481</b>	<b>\$385,284</b>	<b>\$5,146</b>

Average Annual \$20,845 \$38,406 \$500

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Costs amortized over 20 year operation life

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Delta Wide Grevbases (PMR-10 - I)**

Fully Funded Costs		Total Fully Funded Costs		Amortized Costs		Total First Cost			
Year	Inflation Factor	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Administration	LDNR Supervision & Inspection	Contingency	First Cost Construction	Total First Cost
5	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	1.000	1997	\$25,000	\$10,000	\$0	\$0	\$0	\$0	\$35,000
2	1.027	1998	\$9,985	\$0	\$622	\$1,081	\$0	\$0	\$11,888
1	1.055	1999	\$15,392	\$0	\$2,320	\$17,821	\$20,508	\$208,251	\$316,346
<b>TOTAL</b>			<b>\$50,367</b>	<b>\$10,000</b>	<b>\$3,142</b>	<b>\$18,902</b>	<b>\$52,063</b>	<b>\$208,251</b>	<b>\$363,234</b>

\$197,220

Year	Inflation Factor	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
-1	1.083	2000	\$22,363	\$0	\$542
-2	1.112	2001	\$22,855	\$0	\$558
-3	1.142	2002	\$23,587	\$0	\$571
-4	1.173	2003	\$24,224	\$0	\$587
-5	1.205	2004	\$24,878	\$310,225	\$603
-6	1.238	2005	\$25,549	\$0	\$619
-7	1.271	2006	\$26,239	\$0	\$635
-8	1.305	2007	\$26,948	\$0	\$653
-9	1.341	2008	\$27,675	\$0	\$670
-10	1.377	2008	\$28,422	\$354,429	\$688
-11	1.414	2010	\$29,190	\$0	\$707
-12	1.452	2011	\$29,978	\$0	\$726
-13	1.491	2012	\$30,787	\$0	\$746
-14	1.532	2013	\$31,619	\$0	\$766
-15	1.573	2014	\$32,472	\$404,932	\$786
-16	1.615	2015	\$33,349	\$0	\$808
-17	1.659	2016	\$34,249	\$0	\$829
-18	1.701	2017	\$35,174	\$0	\$852
-19	1.750	2018	\$36,124	\$0	\$875
-20	1.797	2019	\$37,099	\$0	\$899
<b>Total</b>			<b>\$582,881</b>	<b>\$1,069,587</b>	<b>\$14,117</b>

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TOTAL P.015

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Costs amortized over 20 year operation life

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Fort Jackson /Boothville Diversion (PBA-44)**

Project Construction Years:	13	Total Project Years	33
Interest Rate	7.38%	Amortization Factor	0.097161602
Total First Costs	\$41,952,800	Total Fully Funded Costs	\$45,518,100

Annual Charges	<u>Present Worth</u>	<u>Average Annual</u>
Interest & Amortization	\$68,331,000	\$6,639,100
Monitoring	\$303,500	\$29,500
O & M Costs	\$687,000	\$66,800
Other Costs	\$5,100	\$500
Total	\$69,326,600	\$6,735,900

Average Annual Habitat Units

Cost Per Habitat Unit

Average Annual Acres of Emergent Marsh

7,308  
\$922  
6,249

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

Fort Jackson /Boothville Diversion (PBA-44)

**First Costs and Annual Charges**

Year	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal		Contingency	First Cost Construction	Total First Cost
				Supervision & Administration	Supervision & Inspection			
13 Compound	1997	\$150,000	\$0	\$0	\$0	\$0	\$0	\$150,000
12 Compound	1998	\$102,692	\$4,784,211	\$5,000	\$1,643	\$0	\$0	\$4,893,546
11 Compound	1999	\$1,232,308	\$6,378,947	\$60,000	\$19,717	\$0	\$0	\$7,690,972
10 Compound	2000	\$0	\$6,378,947	\$60,000	\$19,717	\$0	\$0	\$6,458,664
9 Compound	2001	\$0	\$2,057,895	\$60,000	\$19,717	\$39,175	\$440,412	\$3,327,302
8 Compound	2002	\$0	\$0	\$60,000	\$19,717	\$117,526	\$1,321,237	\$1,848,789
7 Compound	2003	\$0	\$0	\$60,000	\$19,717	\$117,526	\$1,321,237	\$1,848,789
6 Compound	2004	\$0	\$0	\$60,000	\$19,717	\$117,526	\$1,321,237	\$1,848,789
5 Compound	2005	\$0	\$0	\$60,000	\$19,717	\$117,526	\$1,321,237	\$1,848,789
4 Compound	2006	\$0	\$0	\$60,000	\$19,717	\$117,526	\$1,321,237	\$1,848,789
3 Compound	2007	\$0	\$0	\$60,000	\$19,717	\$117,526	\$1,321,237	\$1,848,789
2 Compound	2008	\$0	\$0	\$60,000	\$19,717	\$117,526	\$1,321,237	\$1,848,789
1 Compound	2009	\$0	\$0	\$45,000	\$30,788	\$88,144	\$990,928	\$1,402,592
<b>Base Year</b>		<b>\$1,485,000</b>	<b>\$20,200,000</b>	<b>\$650,000</b>	<b>\$229,600</b>	<b>\$950,000</b>	<b>\$10,680,000</b>	<b>\$36,864,600</b>

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Year	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
1 Discount	2010	\$29,492	\$66,750	\$500
2 Discount	2011	\$29,492	\$66,750	\$500
3 Discount	2012	\$29,492	\$66,750	\$500
4 Discount	2013	\$29,492	\$66,750	\$500
5 Discount	2014	\$29,492	\$66,750	\$500
6 Discount	2015	\$29,492	\$66,750	\$500
7 Discount	2016	\$29,492	\$66,750	\$500
8 Discount	2017	\$29,492	\$66,750	\$500
9 Discount	2018	\$29,492	\$66,750	\$500
10 Discount	2019	\$29,492	\$66,750	\$500
11 Discount	2020	\$29,492	\$66,750	\$500
12 Discount	2021	\$29,492	\$66,750	\$500
13 Discount	2022	\$29,492	\$66,750	\$500
14 Discount	2023	\$29,492	\$66,750	\$500
15 Discount	2024	\$29,492	\$66,750	\$500

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Costs amortized over 20 year operation life

16 Discount	2025	\$29,492	\$66,750	\$500
17 Discount	2026	\$29,492	\$66,750	\$500
18 Discount	2027	\$29,492	\$66,750	\$500
19 Discount	2028	\$29,492	\$66,750	\$500
20 Discount	2029	\$29,492	\$66,750	\$500
	<b>Total</b>	<b>\$589,840</b>	<b>\$1,335,000</b>	<b>\$10,000</b>

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Fort Jackson /Boothville Diversion (PBA-44)**

Present Valued Costs		Total Discounted Costs		Amortized Costs		Total First Cost			
Year	Compound Rates	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Administration	LDNR Supervision & Inspection	Supervision & Contingency	Construction	Total First Cost
13	2.522	1997	\$378,297	\$0	\$0	\$0	\$0	\$0	\$378,297
12	2.349	1998	\$241,199	\$11,236,949	\$11,744	\$3,859	\$0	\$0	\$11,493,751
11	2.187	1999	\$2,695,592	\$13,953,526	\$131,246	\$43,129	\$0	\$0	\$16,823,493
10	2.037	2000	\$0	\$12,995,135	\$122,231	\$40,167	\$0	\$0	\$13,157,533
9	1.897	2001	\$0	\$5,042,738	\$113,836	\$37,408	\$208,895	\$835,580	\$6,312,783
8	1.767	2002	\$0	\$0	\$106,017	\$34,839	\$207,663	\$2,334,566	\$3,266,727
7	1.646	2003	\$0	\$0	\$98,736	\$32,446	\$193,400	\$2,174,218	\$3,042,353
6	1.533	2004	\$0	\$0	\$91,954	\$30,217	\$180,116	\$2,024,882	\$2,833,390
5	1.427	2005	\$0	\$0	\$85,638	\$28,142	\$167,745	\$1,885,804	\$2,638,780
4	1.329	2006	\$0	\$0	\$79,756	\$26,209	\$156,223	\$1,756,279	\$2,457,537
3	1.238	2007	\$0	\$0	\$74,278	\$24,409	\$145,493	\$1,635,650	\$2,288,742
2	1.153	2008	\$0	\$0	\$69,176	\$22,732	\$135,500	\$1,523,306	\$2,131,541
1	1.074	2009	\$0	\$0	\$48,319	\$33,058	\$94,645	\$1,064,009	\$1,506,033
<b>Total</b>			<b>\$3,315,088</b>	<b>\$43,228,347</b>	<b>\$1,032,932</b>	<b>\$356,617</b>	<b>\$1,355,110</b>	<b>\$3,808,573</b>	<b>\$68,330,961</b>

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Year	Discount Rates	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
-1	0.931	2010	\$27,466	\$62,165	\$466
-2	0.867	2011	\$25,580	\$57,896	\$434
-3	0.808	2012	\$23,823	\$53,919	\$404
-4	0.752	2013	\$22,187	\$50,216	\$376
-5	0.701	2014	\$20,663	\$46,767	\$350
-6	0.653	2015	\$19,244	\$43,554	\$326
-7	0.608	2016	\$17,922	\$40,563	\$304
-8	0.566	2017	\$16,691	\$37,777	\$283
-9	0.527	2018	\$15,544	\$35,182	\$264
-10	0.491	2019	\$14,477	\$32,766	\$245
-11	0.457	2020	\$13,482	\$30,515	\$229
-12	0.426	2021	\$12,556	\$28,419	\$213
-13	0.397	2022	\$11,694	\$26,467	\$198
-14	0.369	2023	\$10,891	\$24,649	\$185
-15	0.344	2024	\$10,143	\$22,956	\$172
-16	0.320	2025	\$9,446	\$21,380	\$160

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Costs amortized over 20 year operation life

-17	0.298	2026	\$8,797	\$19,911	\$149
-18	0.278	2027	\$8,193	\$18,544	\$139
-19	0.259	2028	\$7,630	\$17,270	\$129
-20	0.241	2029	\$7,106	\$16,084	\$120
	Total		\$303,536	\$687,000	\$5,146
	Average Annual		\$29,492	\$66,750	\$500

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

Fort Jackson /Boothville Diversion (PBA-44)

Fully Funded Costs		Total Fully Funded Costs		Amortized Costs		Total First Cost				
Year	Inflation Factor	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Supervision & Administration	LDNR Supervision & Administration	Supervision & Inspection	Contingency	Construction	Cost
13	1.000	1997	\$150,000	\$0	\$0	\$0	\$0	\$0	\$0	\$150,000
12	1.027	1998	\$105,465	\$4,913,384	\$5,135	\$1,687	\$0	\$0	\$0	\$5,025,672
11	1.055	1999	\$1,299,751	\$6,728,061	\$63,284	\$20,796	\$0	\$0	\$0	\$8,111,891
10	1.083	2000	\$0	\$6,909,716	\$64,992	\$21,358	\$0	\$0	\$0	\$6,996,068
9	1.112	2001	\$0	\$2,955,344	\$66,715	\$21,923	\$43,559	\$122,425	\$489,700	\$3,699,666
8	1.142	2002	\$0	\$0	\$68,549	\$22,526	\$134,272	\$377,375	\$1,509,499	\$2,112,222
7	1.173	2003	\$0	\$0	\$70,400	\$23,135	\$137,897	\$387,564	\$1,550,256	\$2,169,252
6	1.205	2004	\$0	\$0	\$72,301	\$23,759	\$141,620	\$398,028	\$1,592,113	\$2,227,821
5	1.238	2005	\$0	\$0	\$74,253	\$24,401	\$145,444	\$408,775	\$1,635,100	\$2,287,973
4	1.271	2006	\$0	\$0	\$76,258	\$25,060	\$149,371	\$419,812	\$1,679,247	\$2,349,748
3	1.305	2007	\$0	\$0	\$78,317	\$25,736	\$153,404	\$431,147	\$1,724,587	\$2,413,191
2	1.341	2008	\$0	\$0	\$80,431	\$26,431	\$157,546	\$442,788	\$1,771,151	\$2,478,347
1	1.377	2009	\$0	\$0	\$61,952	\$42,386	\$121,350	\$341,057	\$1,364,229	\$1,930,974
<b>TOTAL</b>			<b>\$1,555,216</b>	<b>\$21,506,508</b>	<b>\$782,588</b>	<b>\$279,198</b>	<b>\$1,184,465</b>	<b>\$3,328,970</b>	<b>\$13,315,881</b>	<b>\$41,952,825</b>

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Year	Inflation Factor	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
-1	1.414	2010	\$41,698	\$94,377	\$707
-2	1.452	2011	\$42,824	\$96,925	\$726
-3	1.491	2012	\$43,981	\$99,542	\$746
-4	1.532	2013	\$45,168	\$102,230	\$766
-5	1.573	2014	\$46,388	\$104,990	\$786
-6	1.615	2015	\$47,640	\$107,825	\$808
-7	1.659	2016	\$48,926	\$110,736	\$829
-8	1.704	2017	\$50,247	\$113,726	\$852
-9	1.750	2018	\$51,604	\$116,797	\$875
-10	1.797	2019	\$52,997	\$119,950	\$899
-11	1.846	2020	\$54,428	\$123,189	\$923
-12	1.895	2021	\$55,898	\$126,515	\$948
-13	1.947	2022	\$57,407	\$129,931	\$973
-14	1.999	2023	\$58,957	\$133,439	\$1,000
-15	2.053	2024	\$60,549	\$137,042	\$1,027
-16	2.108	2025	\$62,184	\$140,742	\$1,054

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Costs amortized over 20 year operation life

-17	2,165	2026	\$63,863	\$144,542	\$1,083
-18	2,224	2027	\$65,587	\$148,445	\$1,112
-19	2,284	2028	\$67,358	\$152,453	\$1,142
-20	2,346	2029	\$69,176	\$156,569	\$1,173
	Total		<u>\$1,086,881</u>	<u>\$2,459,965</u>	<u>\$18,427</u>

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Marsh Island Hydrologic Restoration and Marsh Creation Increment 3 (TV-5/7 (i3))**

Project Construction Years:	2	Total Project Years	22
Interest Rate	7.38%	Amortization Factor	0.0971616
Total First Costs	\$3,281,100	Total Fully Funded Costs	\$4,094,900

Annual Charges	<u>Present Worth</u>	<u>Average Annual</u>
Interest & Amortization	\$3,442,700	\$334,500
Monitoring	\$242,800	\$23,600
O & M Costs	\$55,500	\$5,400
Other Costs	<u>\$5,100</u>	<u>\$500</u>
Total	\$3,746,100	\$364,000

Average Annual Habitat Units

452

Cost Per Habitat Unit

\$805

Average Annual Acres of Emergent Marsh

233

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Marsh Island Hydrologic Restoration and Marsh Creation Increment 3 (TV-5/7 (13))**

**First Costs and Annual Charges**

Year	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Supervision & Administration	LDNR Supervision & Inspection	Contingency	First Cost Construction	Total First Cost
5 Compound		\$0	\$0	\$0	\$0	\$0	\$0	\$0
4 Compound		\$0	\$0	\$0	\$0	\$0	\$0	\$0
3 Compound		\$0	\$0	\$0	\$0	\$0	\$0	\$0
2 Compound	1997	\$38,000	\$76,000	\$0	\$0	\$0	\$0	\$0
1 Compound	1998	\$225,000	\$0	\$190,000	\$52,060	\$238,000	\$1,903,000	\$114,000
Base Year						\$475,750		\$3,083,810
<b>TOTAL</b>		<b>\$263,000</b>	<b>\$76,000</b>	<b>\$190,000</b>	<b>\$52,060</b>	<b>\$475,750</b>	<b>\$1,903,000</b>	<b>\$3,197,810</b>

Year	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
1 Discount	1999	\$23,593	\$0	\$500
2 Discount	2000	\$23,593	\$0	\$500
3 Discount	2001	\$23,593	\$0	\$500
4 Discount	2002	\$23,593	\$0	\$500
5 Discount	2003	\$23,593	\$0	\$500
6 Discount	2004	\$23,593	\$0	\$500
7 Discount	2005	\$23,593	\$0	\$500
8 Discount	2006	\$23,593	\$0	\$500
9 Discount	2007	\$23,593	\$0	\$500
10 Discount	2008	\$23,593	\$113,000	\$500
11 Discount	2009	\$23,593	\$0	\$500
12 Discount	2010	\$23,593	\$0	\$500
13 Discount	2011	\$23,593	\$0	\$500
14 Discount	2012	\$23,593	\$0	\$500
15 Discount	2013	\$23,593	\$0	\$500
16 Discount	2014	\$23,593	\$0	\$500
17 Discount	2015	\$23,593	\$0	\$500
18 Discount	2016	\$23,593	\$0	\$500
19 Discount	2017	\$23,593	\$0	\$500
20 Discount	2018	\$23,593	\$0	\$500
<b>Total</b>		<b>\$471,860</b>	<b>\$113,000</b>	<b>\$10,000</b>

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**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Marsh Island Hydrologic Restoration and Marsh Creation Increment 3 (TV-517 (I3))**

Present Valued Costs		Total Discounted Costs	\$3,746,113	Amortized Costs	\$363,978				
Year	Compound Rates	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Administration	LDNR Supervision & Inspection	Contingency	First Cost Construction	Total First Cost
5	1.427	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	1.329	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	1.238	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	1.153	1997	\$43,812	\$87,623	\$0	\$0	\$0	\$0	\$131,435
1	1.074	1998	\$241,594	\$0	\$204,013	\$55,899	\$510,837	\$2,043,346	\$3,311,241
<b>Total</b>			<b>\$285,405</b>	<b>\$87,623</b>	<b>\$204,013</b>	<b>\$55,899</b>	<b>\$510,837</b>	<b>\$2,043,346</b>	<b>\$3,442,676</b>

Year	Discount Rates	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
-1	0.931	1999	\$21,973	\$0	\$466
-2	0.867	2000	\$20,463	\$0	\$434
-3	0.808	2001	\$19,058	\$0	\$404
-4	0.752	2002	\$17,749	\$0	\$376
-5	0.701	2003	\$16,530	\$0	\$350
-6	0.653	2004	\$15,394	\$0	\$326
-7	0.608	2005	\$14,337	\$0	\$304
-8	0.566	2006	\$13,352	\$0	\$283
-9	0.527	2007	\$12,435	\$0	\$264
-10	0.491	2008	\$11,581	\$55,469	\$245
-11	0.457	2009	\$10,786	\$0	\$229
-12	0.426	2010	\$10,045	\$0	\$213
-13	0.397	2011	\$9,355	\$0	\$198
-14	0.369	2012	\$8,712	\$0	\$185
-15	0.344	2013	\$8,114	\$0	\$172
-16	0.320	2014	\$7,557	\$0	\$160
-17	0.298	2015	\$7,038	\$0	\$149
-18	0.278	2016	\$6,554	\$0	\$139
-19	0.259	2017	\$6,104	\$0	\$129
-20	0.241	2018	\$5,685	\$0	\$120
<b>Total</b>			<b>\$242,822</b>	<b>\$55,469</b>	<b>\$5,146</b>

Average Annual \$23,593      \$5,389      \$500

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Costs amortized over 20 year operation life

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Marsh Island Hydrologic Restoration and Marsh Creation Increment 3 (TV-5/7 (I3))**

Fully Funded Costs		Total Fully Funded Costs		Amortized Costs		Total First Cost			
Year	Inflation Factor	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Administration	LDNR Supervision & Administration	Contingency	First Construction Cost	Total First Cost
5		0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4		0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3		0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	1.000	1997	\$38,000	\$76,000	\$0	\$0	\$0	\$0	\$0
1	1.027	1998	\$231,075	\$0	\$195,130	\$53,466	\$244,426	\$0	\$114,000
<b>TOTAL</b>			<b>\$269,075</b>	<b>\$76,000</b>	<b>\$195,130</b>	<b>\$53,466</b>	<b>\$244,426</b>	<b>\$488,595</b>	<b>\$3,167,073</b>

Year	Inflation Factor	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
-1	1.055	1999	\$24,884	\$0	\$527
-2	1.083	2000	\$25,556	\$0	\$542
-3	1.112	2001	\$26,233	\$0	\$556
-4	1.142	2002	\$26,955	\$0	\$571
-5	1.173	2003	\$27,683	\$0	\$587
-6	1.205	2004	\$28,430	\$0	\$603
-7	1.238	2005	\$29,198	\$0	\$619
-8	1.271	2006	\$29,986	\$0	\$635
-9	1.305	2007	\$30,796	\$0	\$653
-10	1.341	2008	\$31,627	\$151,479	\$670
-11	1.377	2009	\$32,481	\$0	\$688
-12	1.414	2010	\$33,358	\$0	\$707
-13	1.452	2011	\$34,259	\$0	\$726
-14	1.491	2012	\$35,184	\$0	\$746
-15	1.532	2013	\$36,134	\$0	\$766
-16	1.573	2014	\$37,109	\$0	\$786
-17	1.615	2015	\$38,111	\$0	\$808
-18	1.659	2016	\$39,140	\$0	\$829
-19	1.704	2017	\$40,197	\$0	\$852
-20	1.750	2018	\$41,282	\$0	\$875
<b>Total</b>			<b>\$648,601</b>	<b>\$151,479</b>	<b>\$13,746</b>

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**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Penchant Basin (PTE-26)**

Project Construction Years:	4	Total Project Years	24
Interest Rate	7.38%	Amortization Factor	0.0971616
Total First Costs	\$11,379,800	Total Fully Funded Costs	\$21,180,200

Annual Charges	Present Worth	Average Annual
Interest & Amortization	\$11,921,400	\$1,158,300
Monitoring	\$303,500	\$29,500
O & M Costs	\$3,092,900	\$300,500
Other Costs	\$5,100	\$500
<b>Total</b>	<b>\$15,322,900</b>	<b>\$1,488,800</b>

Average Annual Habitat Units

Cost Per Habitat Unit

Average Annual Acres of Emergent Marsh

1,445  
\$1,030  
865

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Penchant Basin (PTE-26)**

**First Costs and Annual Charges**

Year	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Supervision & Administration	LDNR Supervision & Administration	Contingency	First Cost Construction	Total First Cost
5 Compound	1997	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4 Compound	1998	\$250,000	\$150,000	\$0	\$0	\$0	\$0	\$400,000
3 Compound	1999	\$353,889	\$0	\$85,192	\$19,231	\$0	\$0	\$458,312
2 Compound	2000	\$283,111	\$0	\$204,462	\$46,154	\$632,946	\$2,531,786	\$3,769,887
1 Compound	2000	\$0	\$0	\$153,346	\$52,615	\$1,139,304	\$4,557,214	\$6,031,051
Base Year								
<b>TOTAL</b>		<b>\$887,000</b>	<b>\$150,000</b>	<b>\$443,000</b>	<b>\$118,000</b>	<b>\$1,772,250</b>	<b>\$7,089,000</b>	<b>\$10,659,250</b>

Year	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
D-37	2001	\$29,492	\$244,000	\$500
1 Discount	2002	\$29,492	\$305,000	\$500
2 Discount	2003	\$29,492	\$244,000	\$500
3 Discount	2004	\$29,492	\$305,000	\$500
4 Discount	2005	\$29,492	\$401,000	\$500
5 Discount	2006	\$29,492	\$305,000	\$500
6 Discount	2007	\$29,492	\$244,000	\$500
7 Discount	2008	\$29,492	\$305,000	\$500
8 Discount	2009	\$29,492	\$244,000	\$500
9 Discount	2010	\$29,492	\$462,000	\$500
10 Discount	2011	\$29,492	\$244,000	\$500
11 Discount	2012	\$29,492	\$305,000	\$500
12 Discount	2013	\$29,492	\$244,000	\$500
13 Discount	2014	\$29,492	\$305,000	\$500
14 Discount	2015	\$29,492	\$401,000	\$500
15 Discount	2016	\$29,492	\$305,000	\$500
16 Discount	2017	\$29,492	\$244,000	\$500
17 Discount	2018	\$29,492	\$305,000	\$500
18 Discount	2019	\$29,492	\$244,000	\$500
19 Discount	2020	\$29,492	\$462,000	\$500
20 Discount		\$589,840	\$6,118,000	\$10,000
<b>Total</b>				

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

Pechant Basin (PTE-26)

Present Valued Costs		Total Discounted Costs		Amortized Costs		Total First Cost			
Year	Compound Rates	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Administration	LDNR Supervision & Inspection	Contingency	First Cost Construction	Total First Cost
5	1.427	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	1.329	1997	\$332,317	\$199,390	\$0	\$0	\$0	\$0	\$531,707
3	1.238	1998	\$438,103	\$0	\$105,465	\$23,807	\$0	\$0	\$567,376
2	1.153	1999	\$326,410	\$0	\$235,732	\$53,213	\$82,353	\$2,918,995	\$4,346,450
1	1.074	2000	\$0	\$0	\$164,655	\$56,496	\$138,054	\$4,893,309	\$6,475,841
<b>Total</b>			<b>\$1,096,830</b>	<b>\$199,390</b>	<b>\$505,853</b>	<b>\$133,515</b>	<b>\$220,406</b>	<b>\$7,812,303</b>	<b>\$11,921,374</b>

\$1,488,804

\$15,322,972

Year	Discount Rates	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
-1	0.931	2001	\$27,466	\$227,241	\$466
-2	0.867	2002	\$25,580	\$264,541	\$434
-3	0.808	2003	\$23,823	\$197,097	\$404
-4	0.752	2004	\$22,187	\$229,450	\$376
-5	0.701	2005	\$20,663	\$280,950	\$350
-6	0.653	2006	\$19,244	\$199,013	\$326
-7	0.608	2007	\$17,922	\$148,275	\$304
-8	0.566	2008	\$16,691	\$172,613	\$283
-9	0.527	2009	\$15,544	\$128,606	\$264
-10	0.491	2010	\$14,477	\$226,783	\$245
-11	0.457	2011	\$13,482	\$111,546	\$229
-12	0.426	2012	\$12,556	\$129,111	\$213
-13	0.397	2013	\$11,694	\$96,749	\$198
-14	0.369	2014	\$10,891	\$112,630	\$185
-15	0.344	2015	\$10,143	\$137,910	\$172
-16	0.320	2016	\$9,446	\$97,690	\$160
-17	0.298	2017	\$8,797	\$72,784	\$149
-18	0.278	2018	\$8,193	\$84,731	\$139
-19	0.259	2019	\$7,630	\$63,129	\$129
-20	0.241	2020	\$7,106	\$111,321	\$120
<b>Total</b>			<b>\$303,536</b>	<b>\$3,092,916</b>	<b>\$5,146</b>

Average Annual

\$29,492

\$300,513

\$500

Costs amortized over 20 year operation life

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Penchant Basin (PTE-26)**

Fully Funded Costs			Total Fully Funded Costs			Amortized Costs			Total First Cost
Inflation Factor	Fiscal Year	Year	Engineering & Design	Easements & Land Rights	Federal Supervision & Administration	LDNR Supervision & Inspection	Contingency	First Cost Construction	Total First Cost
5	0		\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	1.000	1997	\$250,000	\$150,000	\$0	\$0	\$0	\$0	\$0
3	1.027	1998	\$363,444	\$0	\$87,493	\$19,750	\$0	\$0	\$400,000
2	1.055	1999	\$298,605	\$0	\$215,652	\$48,680	\$75,338	\$0	\$470,686
1	1.083	2000	\$0	\$0	\$166,106	\$56,993	\$139,269	\$2,670,348	\$3,976,209
<b>TOTAL</b>			<b>\$912,049</b>	<b>\$150,000</b>	<b>\$469,250</b>	<b>\$125,423</b>	<b>\$214,607</b>	<b>\$7,606,753</b>	<b>\$11,379,770</b>

\$21,180,199

\$2,057,902

Year	Inflation Factor	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
-1	1.112	2001	\$32,792	\$271,306	\$556
-2	1.142	2002	\$33,694	\$348,459	\$571
-3	1.173	2003	\$34,604	\$286,294	\$587
-4	1.205	2004	\$35,538	\$367,530	\$603
-5	1.238	2005	\$36,498	\$496,258	\$619
-6	1.271	2006	\$37,483	\$387,645	\$635
-7	1.305	2007	\$38,495	\$318,489	\$653
-8	1.341	2008	\$39,535	\$408,860	\$670
-9	1.377	2009	\$40,602	\$335,919	\$688
-10	1.414	2010	\$41,698	\$653,217	\$707
-11	1.452	2011	\$42,824	\$354,304	\$726
-12	1.491	2012	\$43,981	\$454,838	\$746
-13	1.532	2013	\$45,168	\$373,695	\$766
-14	1.573	2014	\$46,388	\$479,730	\$786
-15	1.615	2015	\$47,640	\$647,757	\$808
-16	1.659	2016	\$48,926	\$505,986	\$829
-17	1.704	2017	\$50,247	\$415,718	\$852
-18	1.750	2018	\$51,604	\$533,678	\$875
-19	1.797	2019	\$52,997	\$438,470	\$899
-20	1.846	2020	\$54,428	\$852,633	\$923
<b>Total</b>			<b>\$855,145</b>	<b>\$8,930,785</b>	<b>\$14,498</b>

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**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Penchant Basin (PTE-26i), Increment 1**

Project Construction Years:	4	Total Project Years	24
Interest Rate	7.38%	Amortization Factor	0.0971616
Total First Costs	\$11,377,600	Total Fully Funded Costs	\$14,103,100

Annual Charges	Present Worth	Average Annual
Interest & Amortization	\$11,919,200	\$1,158,100
Monitoring	\$303,500	\$29,500
O & M Costs	\$581,600	\$56,500
Other Costs	\$5,100	\$500
<b>Total</b>	<b>\$12,809,400</b>	<b>\$1,244,600</b>

Average Annual Habitat Units

1,204

Cost Per Habitat Unit

\$1,034

Average Annual Acres of Emergent Marsh

629

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Penchant Basin (PTE-26i), Increment 1**

**First Costs and Annual Charges**

Year	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal		Contingency	First Cost Construction	Total First Cost
				Supervision & Administration	LDNR Supervision & Inspection			
5	Compound	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	Compound	\$250,000	\$150,000	\$0	\$0	\$0	\$0	\$400,000
3	Compound	\$353,889	\$0	\$85,192	\$19,231	\$0	\$0	\$458,312
2	Compound	\$283,111	\$0	\$204,462	\$46,154	\$632,946	\$2,531,786	\$3,769,887
1	Compound	\$0	\$0	\$153,346	\$50,615	\$1,139,304	\$4,557,214	\$6,029,051
	Base Year							
<b>TOTAL</b>		<b>\$887,000</b>	<b>\$150,000</b>	<b>\$443,000</b>	<b>\$116,000</b>	<b>\$1,772,250</b>	<b>\$7,089,000</b>	<b>\$10,657,250</b>

Year	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
2	Discount	\$29,492	\$61,000	\$500
3	Discount	\$29,492	\$0	\$500
4	Discount	\$29,492	\$61,000	\$500
5	Discount	\$29,492	\$157,000	\$500
6	Discount	\$29,492	\$61,000	\$500
7	Discount	\$29,492	\$0	\$500
8	Discount	\$29,492	\$61,000	\$500
9	Discount	\$29,492	\$0	\$500
10	Discount	\$29,492	\$218,000	\$500
11	Discount	\$29,492	\$0	\$500
12	Discount	\$29,492	\$61,000	\$500
13	Discount	\$29,492	\$0	\$500
14	Discount	\$29,492	\$61,000	\$500
15	Discount	\$29,492	\$157,000	\$500
16	Discount	\$29,492	\$61,000	\$500
17	Discount	\$29,492	\$0	\$500
18	Discount	\$29,492	\$61,000	\$500
19	Discount	\$29,492	\$0	\$500
20	Discount	\$29,492	\$218,000	\$500
<b>Total</b>		<b>\$589,840</b>	<b>\$1,238,000</b>	<b>\$10,000</b>

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**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Penchant Basin (PTE-26I), Increment 1**

Present Valued Costs		Total Discounted Costs		Amortized Costs		Total First Cost		
Year	Compound Rates	Fiscal Year	Engineering & Design	Easements & Land Rights	Supervision & Administration	Contingency	Construction	Total First Cost
5	1.427	0	\$0	\$0	\$0	\$0	\$0	\$0
4	1.329	1997	\$332,317	\$199,390	\$0	\$0	\$0	\$531,707
3	1.238	1998	\$438,103	\$0	\$105,465	\$23,807	\$0	\$567,376
2	1.153	1999	\$326,410	\$0	\$235,732	\$53,213	\$82,353	\$4,346,450
1	1.074	2000	\$0	\$0	\$164,655	\$54,348	\$138,054	\$4,893,309
<b>Total</b>			<b>\$1,096,830</b>	<b>\$199,390</b>	<b>\$505,853</b>	<b>\$131,368</b>	<b>\$220,406</b>	<b>\$7,812,303</b>

Year	Discount Rates	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
-1	0.931	2001	\$27,466	\$0	\$466
-2	0.867	2002	\$25,580	\$52,908	\$434
-3	0.808	2003	\$23,823	\$0	\$404
-4	0.752	2004	\$22,187	\$45,890	\$376
-5	0.701	2005	\$20,663	\$109,998	\$350
-6	0.653	2006	\$19,244	\$39,803	\$326
-7	0.608	2007	\$17,922	\$0	\$304
-8	0.566	2008	\$16,691	\$34,523	\$283
-9	0.527	2009	\$15,544	\$0	\$264
-10	0.491	2010	\$14,477	\$107,010	\$245
-11	0.457	2011	\$13,482	\$0	\$229
-12	0.426	2012	\$12,556	\$25,971	\$213
-13	0.397	2013	\$11,694	\$0	\$198
-14	0.369	2014	\$10,891	\$22,526	\$185
-15	0.344	2015	\$10,143	\$53,995	\$172
-16	0.320	2016	\$9,446	\$19,538	\$160
-17	0.298	2017	\$8,797	\$0	\$149
-18	0.278	2018	\$8,193	\$16,946	\$139
-19	0.259	2019	\$7,630	\$0	\$129
-20	0.241	2020	\$7,106	\$52,528	\$120
<b>Total</b>			<b>\$303,536</b>	<b>\$581,636</b>	<b>\$5,146</b>
<b>Average Annual</b>			<b>\$29,492</b>	<b>\$56,513</b>	<b>\$500</b>

3/17/97

Costs amortized over 20 year operation life

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Penchant Basin (PTE-26), Increment 1**

Fully Funded Costs		Total Fully Funded Costs		Amortized Costs		Total First Cost				
Year	Inflation Factor	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Administration	LDNR Supervision & Administration	Supervision & Inspection	Contingency	Construction	Total First Cost
5		0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	1.000	1997	\$250,000	\$150,000	\$0	\$0	\$0	\$0	\$0	\$0
3	1.027	1998	\$363,444	\$0	\$87,493	\$19,750	\$0	\$0	\$0	\$400,000
2	1.055	1999	\$298,605	\$0	\$215,652	\$48,680	\$75,338	\$0	\$0	\$470,686
1	1.083	2000	\$0	\$0	\$166,106	\$54,827	\$139,269	\$667,587	\$2,670,348	\$3,976,209
<b>TOTAL</b>			<b>\$912,049</b>	<b>\$150,000</b>	<b>\$469,250</b>	<b>\$123,257</b>	<b>\$214,607</b>	<b>\$1,234,101</b>	<b>\$7,606,753</b>	<b>\$6,530,708</b>
		<b>Total Fully Funded Costs</b>		<b>\$14,103,051</b>						<b>\$1,370,275</b>

Year	Inflation Factor	Fiscal Year	Monitoring Costs	OBM Costs	Other Costs
-1	1.112	2001	\$32,792	\$0	\$556
-2	1.142	2002	\$33,694	\$69,692	\$571
-3	1.173	2003	\$34,604	\$0	\$587
-4	1.205	2004	\$35,538	\$73,506	\$603
-5	1.238	2005	\$36,498	\$194,296	\$619
-6	1.271	2006	\$37,483	\$77,529	\$635
-7	1.305	2007	\$38,495	\$0	\$653
-8	1.341	2008	\$39,535	\$81,772	\$670
-9	1.377	2009	\$40,602	\$0	\$688
-10	1.414	2010	\$41,698	\$308,228	\$707
-11	1.452	2011	\$42,824	\$0	\$726
-12	1.491	2012	\$43,981	\$90,968	\$746
-13	1.532	2013	\$45,168	\$0	\$766
-14	1.573	2014	\$46,388	\$95,946	\$786
-15	1.615	2015	\$47,640	\$253,611	\$808
-16	1.659	2016	\$48,926	\$101,197	\$829
-17	1.704	2017	\$50,247	\$0	\$852
-18	1.750	2018	\$51,604	\$106,736	\$875
-19	1.797	2019	\$52,997	\$0	\$899
-20	1.846	2020	\$54,428	\$402,325	\$923
<b>Total</b>			<b>\$855,145</b>	<b>\$1,855,804</b>	<b>\$14,498</b>

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Sediment Trapping at "The Jaws" (PTV-19b)**

Project Construction Years:	4	Total Project Years	24
Interest Rate	7.38%	Amortization Factor	0.0971616
Total First Costs	\$2,995,800	Total Fully Funded Costs	\$3,167,400

	<u>Present Worth</u>	<u>Average Annual</u>
Annual Charges		
Interest & Amortization	\$3,268,800	\$317,600
Monitoring	\$50,700	\$4,900
O & M Costs	\$4,900	\$500
Other Costs	\$5,100	\$500
<b>Total</b>	<b>\$3,329,500</b>	<b>\$323,500</b>
Average Annual Habitat Units		754
Cost Per Habitat Unit		\$429
Average Annual Acres of Emergent Marsh		1,048

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Sediment Trapping at "The Jaws" (PTV-19b)**

**First Costs and Annual Charges**

Year	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Supervision & Administration	LDNR Supervision & Administration	Supervision & Inspection	Contingency	First Cost Construction	Total First Cost
5	Compound	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	Compound	\$48,684	\$50,000	\$6,429	\$4,205	\$0	\$0	\$0	\$109,317
3	Compound	\$94,737	\$0	\$25,714	\$16,819	\$0	\$0	\$0	\$137,270
2	Compound	\$31,579	\$0	\$25,714	\$16,819	\$41,667	\$408,792	\$1,635,167	\$2,159,737
1	Compound	\$0	\$0	\$2,143	\$12,402	\$8,333	\$81,758	\$327,033	\$431,669
	Base Year								
	<b>TOTAL</b>	<b>\$175,000</b>	<b>\$50,000</b>	<b>\$60,000</b>	<b>\$50,244</b>	<b>\$50,000</b>	<b>\$490,550</b>	<b>\$1,962,200</b>	<b>\$2,637,994</b>

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Year	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
1	Discount	\$4,929	\$0	\$500
2	Discount	\$4,929	\$0	\$500
3	Discount	\$4,929	\$0	\$500
4	Discount	\$4,929	\$0	\$500
5	Discount	\$4,929	\$0	\$500
6	Discount	\$4,929	\$0	\$500
7	Discount	\$4,929	\$0	\$500
8	Discount	\$4,929	\$0	\$500
9	Discount	\$4,929	\$0	\$500
10	Discount	\$4,929	\$10,000	\$500
11	Discount	\$4,929	\$0	\$500
12	Discount	\$4,929	\$0	\$500
13	Discount	\$4,929	\$0	\$500
14	Discount	\$4,929	\$0	\$500
15	Discount	\$4,929	\$0	\$500
16	Discount	\$4,929	\$0	\$500
17	Discount	\$4,929	\$0	\$500
18	Discount	\$4,929	\$0	\$500
19	Discount	\$4,929	\$0	\$500
20	Discount	\$4,929	\$0	\$500
	<b>Total</b>	<b>\$98,580</b>	<b>\$10,000</b>	<b>\$10,000</b>

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Sediment Trapping at "The Jaws" (PTV-19b)**

Present Valued Costs		Total Discounted Costs	\$3,329,583	Amortized Costs		\$323,508			
Year	Compound Rates	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Supervision & Administration	LDNR Supervision & Inspection	Contingency	First Cost Construction	Total First Cost
5	1.427	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	1.329	1997	\$64,714	\$66,463	\$8,545	\$5,589	\$0	\$0	\$145,312
3	1.238	1998	\$117,281	\$0	\$31,833	\$20,821	\$0	\$0	\$169,936
2	1.153	1999	\$36,409	\$0	\$29,647	\$19,391	\$48,039	\$1,885,248	\$2,490,045
1	1.074	2000	\$0	\$0	\$2,301	\$13,316	\$8,948	\$87,788	\$351,152
<b>Total</b>			<b>\$218,404</b>	<b>\$66,463</b>	<b>\$72,327</b>	<b>\$59,118</b>	<b>\$56,987</b>	<b>\$2,236,400</b>	<b>\$3,268,798</b>

Year	Discount Rates	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
-1	0.931	2001	\$4,590	\$0	\$466
-2	0.867	2002	\$4,275	\$0	\$434
-3	0.808	2003	\$3,982	\$0	\$404
-4	0.752	2004	\$3,708	\$0	\$376
-5	0.701	2005	\$3,453	\$0	\$350
-6	0.653	2006	\$3,216	\$0	\$326
-7	0.608	2007	\$2,995	\$0	\$304
-8	0.566	2008	\$2,790	\$0	\$283
-9	0.527	2009	\$2,598	\$0	\$264
-10	0.491	2010	\$2,420	\$4,909	\$245
-11	0.457	2011	\$2,253	\$0	\$229
-12	0.426	2012	\$2,099	\$0	\$213
-13	0.397	2013	\$1,954	\$0	\$198
-14	0.369	2014	\$1,820	\$0	\$185
-15	0.344	2015	\$1,695	\$0	\$172
-16	0.320	2016	\$1,579	\$0	\$160
-17	0.298	2017	\$1,470	\$0	\$149
-18	0.278	2018	\$1,369	\$0	\$139
-19	0.259	2019	\$1,275	\$0	\$129
-20	0.241	2020	\$1,188	\$0	\$120
<b>Total</b>			<b>\$50,730</b>	<b>\$4,909</b>	<b>\$5,146</b>
Average Annual			\$4,929	\$477	\$500

3/14/97

Costs amortized over 20 year operation life

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Sediment Trapping at "The Jaws" (PTV-19b)**

Fully Funded Costs		Total Fully Funded Costs		Amortized Costs		Total First Cost			
Year	Inflation Factor	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Supervision & Administration	LDNR Supervision & Inspection	Contingency	Construction	Total First Cost
5		0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	1.000	1997	\$48,684	\$50,000	\$6,429	\$4,205	\$0	\$0	\$109,317
3	1.027	1998	\$97,295	\$0	\$26,409	\$17,273	\$0	\$0	\$140,976
2	1.055	1999	\$33,307	\$0	\$27,122	\$17,739	\$43,947	\$1,724,658	\$2,277,937
1	1.083	2000	\$0	\$0	\$2,321	\$13,433	\$9,027	\$354,245	\$467,587
<b>TOTAL</b>			<b>\$179,286</b>	<b>\$50,000</b>	<b>\$62,280</b>	<b>\$52,650</b>	<b>\$52,974</b>	<b>\$519,726</b>	<b>\$2,078,902</b>

Year	Inflation Factor	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
-1	1.112	2001	\$5,481	\$0	\$556
-2	1.142	2002	\$5,631	\$0	\$571
-3	1.173	2003	\$5,783	\$0	\$587
-4	1.205	2004	\$5,940	\$0	\$603
-5	1.238	2005	\$6,100	\$0	\$619
-6	1.271	2006	\$6,265	\$0	\$635
-7	1.305	2007	\$6,434	\$0	\$653
-8	1.341	2008	\$6,607	\$0	\$670
-9	1.377	2009	\$6,786	\$0	\$688
-10	1.414	2010	\$6,969	\$14,139	\$707
-11	1.452	2011	\$7,157	\$0	\$726
-12	1.491	2012	\$7,350	\$0	\$746
-13	1.532	2013	\$7,549	\$0	\$766
-14	1.573	2014	\$7,753	\$0	\$786
-15	1.615	2015	\$7,962	\$0	\$808
-16	1.659	2016	\$8,177	\$0	\$829
-17	1.704	2017	\$8,398	\$0	\$852
-18	1.750	2018	\$8,625	\$0	\$875
-19	1.797	2019	\$8,857	\$0	\$899
-20	1.846	2020	\$9,097	\$0	\$923
<b>Total</b>			<b>\$142,920</b>	<b>\$14,139</b>	<b>\$14,498</b>

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Oaks/Avery Canals Hydrologic Restoration (XTV-25)**

Project Construction Years: 3      Total Project Years: 23  
 Interest Rate: 7.38%      Amortization Factor: 0.0971616  
 Total Final Costs: \$2,316,300      Total Fully Funded Costs: \$3,319,500

	Present Worth	Average Annual
<b>Annual Charges</b>		
Interest & Amortization	\$2,395,200	\$232,700
Monitoring	\$242,800	\$23,600
O & M Costs	\$120,200	\$11,700
Other Costs	\$5,100	\$500
<b>Total</b>	<b>\$2,763,300</b>	<b>\$268,500</b>
<b>Average Annual Habitat Units</b>		<b>305</b>
<b>Cost Per Habitat Unit</b>		<b>\$880</b>
<b>Average Annual Acres of Emergent Marsh</b>		<b>102</b>

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Costs amortized over twenty years

4/18/97

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Oaks/Avery Canals Hydrologic Restoration (XTV-25)**

**First Costs and Annual Charges**

Year	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Supervision & Administration	LDNR Supervision & Inspection	Contingency	First Cost Construction	Total First Cost
5 Compound		\$0	\$0	\$0	\$0	\$0	\$0	\$0
4 Compound		\$0	\$0	\$0	\$0	\$0	\$0	\$0
3 Compound	1997	\$30,000	\$65,000	\$0	\$0	\$0	\$0	\$95,000
2 Compound	1998	\$110,000	\$0	\$28,586	\$12,353	\$0	\$0	\$150,941
1 Compound	1999	\$55,000	\$0	\$52,412	\$36,647	\$85,000	\$1,400,000	\$1,959,059
Base Year								
<b>TOTAL</b>		<b>\$186,000</b>	<b>\$65,000</b>	<b>\$81,000</b>	<b>\$49,000</b>	<b>\$350,000</b>	<b>\$1,400,000</b>	<b>\$2,205,000</b>

Year	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
1 Discount	2000	\$23,593	\$0	\$500
2 Discount	2001	\$23,593	\$0	\$500
3 Discount	2002	\$23,593	\$0	\$500
4 Discount	2003	\$23,593	\$0	\$500
5 Discount	2004	\$23,593	\$92,000	\$500
6 Discount	2005	\$23,593	\$0	\$500
7 Discount	2006	\$23,593	\$0	\$500
8 Discount	2007	\$23,593	\$0	\$500
9 Discount	2008	\$23,593	\$0	\$500
10 Discount	2009	\$23,593	\$49,000	\$500
11 Discount	2010	\$23,593	\$0	\$500
12 Discount	2011	\$23,593	\$0	\$500
13 Discount	2012	\$23,593	\$0	\$500
14 Discount	2013	\$23,593	\$0	\$500
15 Discount	2014	\$23,593	\$92,000	\$500
16 Discount	2015	\$23,593	\$0	\$500
17 Discount	2016	\$23,593	\$0	\$500
18 Discount	2017	\$23,593	\$0	\$500
19 Discount	2018	\$23,593	\$0	\$500
20 Discount	2019	\$23,593	\$0	\$500
<b>Total</b>		<b>\$471,860</b>	<b>\$233,000</b>	<b>\$10,000</b>

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Oaks/Avery Canals Hydrologic Restoration (XTV-25)**

Present Value Costs		Total Discounted Costs		Amortized Costs		Total First Cost			
Year	Compend Rate	Fiscal Year	Engineering & Design	Easements & Land Rights	Supervision & Administration	LDNR Supervision & Inspection	Contingency	Construction	Total Cost
5	1.427	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	1.229	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	1.206	1997	\$37,139	\$80,468	\$0	\$0	\$0	\$0	\$117,607
2	1.153	1998	\$126,823	\$0	\$32,980	\$14,242	\$0	\$0	\$174,026
1	1.074	1999	\$59,056	\$0	\$56,277	\$39,350	\$69,794	\$1,503,250	\$2,103,539
<b>Total</b>			<b>\$223,019</b>	<b>\$80,468</b>	<b>\$89,238</b>	<b>\$53,582</b>	<b>\$375,813</b>	<b>\$1,503,250</b>	<b>\$2,395,172</b>

Year	Discount Rates	Fiscal Year	Monitoring Costs		O&M Costs		Other Costs	
			Costs	Costs	Costs	Costs		
-1	0.991	2000	\$21,973	\$0	\$486			
-2	0.967	2001	\$20,463	\$0	\$434			
-3	0.908	2002	\$19,059	\$0	\$404			
-4	0.752	2003	\$17,749	\$0	\$376			
-5	0.701	2004	\$16,530	\$64,457	\$350			
-6	0.653	2005	\$15,394	\$0	\$326			
-7	0.608	2006	\$14,337	\$0	\$304			
-8	0.566	2007	\$13,352	\$0	\$283			
-9	0.527	2008	\$12,435	\$0	\$264			
-10	0.491	2009	\$11,581	\$24,053	\$245			
-11	0.457	2010	\$10,786	\$0	\$229			
-12	0.426	2011	\$10,045	\$0	\$213			
-13	0.397	2012	\$9,355	\$0	\$198			
-14	0.369	2013	\$8,712	\$0	\$185			
-15	0.344	2014	\$8,114	\$31,840	\$172			
-16	0.320	2015	\$7,557	\$0	\$160			
-17	0.298	2016	\$7,036	\$0	\$149			
-18	0.275	2017	\$6,554	\$0	\$139			
-19	0.259	2018	\$6,104	\$0	\$129			
-20	0.241	2019	\$5,685	\$0	\$120			
<b>Total</b>			<b>\$242,622</b>	<b>\$120,150</b>	<b>\$5,146</b>			

Average Annual

\$23,593

\$500

4/18/97

Costs amortized over twenty years

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Oake/Avery Canals Hydrologic Restoration (XTV-25)**

Fully Funded Costs		Total Fully Funded Costs		Authorized Costs		Total First Cost			
Year	Inflation Factor	Fiscal Year	Engineering & Design	Essements & Land Rights	Federal Supervision & Administration	LDNR Supervision & Inspection	Contingency	Construction	Cost
5		0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4		0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	1.000	1997	\$30,000	\$65,000	\$0	\$0	\$0	\$0	\$95,000
2	1.027	1998	\$112,970	\$0	\$29,360	\$12,688	\$0	\$0	\$155,017
1	1.065	1999	\$58,010	\$0	\$55,260	\$38,853	\$369,155	\$1,476,621	\$2,066,278
<b>TOTAL</b>			<b>\$200,980</b>	<b>\$65,000</b>	<b>\$84,640</b>	<b>\$51,339</b>	<b>\$369,155</b>	<b>\$1,476,621</b>	<b>\$2,316,293</b>

Year	Inflation Factor	Fiscal Year	Monitoring Costs	Other Costs	Total
-1	1.063	2000	\$25,558	\$542	\$26,100
-2	1.112	2001	\$26,233	\$558	\$26,791
-3	1.142	2002	\$28,955	\$571	\$29,526
-4	1.173	2003	\$27,683	\$587	\$28,270
-5	1.205	2004	\$28,430	\$603	\$29,033
-6	1.236	2005	\$29,198	\$619	\$29,817
-7	1.271	2006	\$29,966	\$635	\$30,601
-8	1.305	2007	\$30,798	\$653	\$31,451
-9	1.341	2008	\$31,627	\$670	\$32,297
-10	1.377	2009	\$32,481	\$688	\$33,169
-11	1.414	2010	\$33,358	\$707	\$34,065
-12	1.452	2011	\$34,259	\$726	\$34,985
-13	1.491	2012	\$35,184	\$746	\$35,930
-14	1.532	2013	\$36,134	\$766	\$36,900
-15	1.573	2014	\$37,109	\$786	\$37,895
-16	1.615	2015	\$38,111	\$808	\$38,919
-17	1.659	2016	\$39,140	\$829	\$39,969
-18	1.704	2017	\$40,197	\$852	\$41,049
-19	1.750	2018	\$41,282	\$875	\$42,157
-20	1.797	2019	\$42,397	\$899	\$43,296
<b>Total</b>			<b>\$666,113</b>	<b>\$14,117</b>	<b>\$680,230</b>

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**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Oaks/Avery Canals Hydrologic Restoration Increment 1 (XTV-25-f)**

Project Construction Years	3	Total Project Years	23
Interest Rate	7.38%	Amortization Factor	0.0971616
Total First Costs	\$1,384,500	Total Fully Funded Costs	\$2,367,700

Annual Charges	Present Worth	Average Annual
Interest & Amortization	\$1,420,800	\$138,000
Monitoring	\$242,800	\$23,600
O & M Costs	\$120,200	\$11,700
Other Costs	\$5,100	\$500
<b>Total</b>	<b>\$1,788,900</b>	<b>\$173,800</b>
Average Annual Habitat Units		192
Cost Per Habitat Unit		\$905
Average Annual Acres of Emergent Marsh		96

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4/18/87

Cost amortized over twenty years

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Oaks/Avery Canals Hydrologic Restoration Increment 1 (XTV-25-I)**

**First Costs and Annual Charges**

Year	Fiscal Year	Engineering & Design	Easements Land Rights	Federal Administration	Supervision & Administration	LDNR Inspection	Contingency	Construction	First Cost	Total First Cost
5	Compound	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	Compound	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	Compound	\$30,000	\$65,000	\$0	\$0	\$0	\$0	\$0	\$0	\$95,000
2	Compound	\$71,333	\$0	\$22,941	\$6,708	\$0	\$0	\$0	\$0	\$100,980
1	Compound	\$35,667	\$0	\$42,059	\$26,294	\$85,000	\$187,250	\$749,000	\$749,000	\$1,105,270
	Base Year									
	<b>TOTAL</b>	<b>\$137,000</b>	<b>\$65,000</b>	<b>\$65,000</b>	<b>\$33,000</b>	<b>\$85,000</b>	<b>\$187,250</b>	<b>\$749,000</b>	<b>\$749,000</b>	<b>\$1,301,250</b>

Year	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
1	Discount	\$23,593	\$0	\$500
2	Discount	\$23,593	\$0	\$500
3	Discount	\$23,593	\$0	\$500
4	Discount	\$23,593	\$0	\$500
5	Discount	\$23,593	\$92,000	\$500
6	Discount	\$23,593	\$0	\$500
7	Discount	\$23,593	\$0	\$500
8	Discount	\$23,593	\$0	\$500
9	Discount	\$23,593	\$0	\$500
10	Discount	\$23,593	\$49,000	\$500
11	Discount	\$23,593	\$0	\$500
12	Discount	\$23,593	\$0	\$500
13	Discount	\$23,593	\$0	\$500
14	Discount	\$23,593	\$0	\$500
15	Discount	\$23,593	\$92,000	\$500
16	Discount	\$23,593	\$0	\$500
17	Discount	\$23,593	\$0	\$500
18	Discount	\$23,593	\$0	\$500
19	Discount	\$23,593	\$0	\$500
20	Discount	\$23,593	\$0	\$500
	<b>Total</b>	<b>\$471,860</b>	<b>\$233,000</b>	<b>\$10,000</b>

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**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Oaks/Avery Canals Hydrologic Restoration Increment 1 (XTV-25-I)**

Present Value Costs	Total Discouraged Costs	Amortized Costs	\$173,816
\$1,788,833			

Year	Compound Rates	Fiscal Year	Engineering & Design	Easements Land Rights	Supervision & Administration	LDNR Supervision & Administration	Inspection & Supervision	Contingency	Construction	First Cost	Total First Cost
5	1.427	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	1.329	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	1.238	1997	\$37,139	\$80,468	\$0	\$0	\$0	\$0	\$0	\$0	\$117,607
2	1.153	1998	\$82,243	\$0	\$26,450	\$7,732	\$0	\$0	\$0	\$0	\$116,424
1	1.074	1999	\$38,297	\$0	\$45,161	\$28,233	\$68,794	\$201,060	\$804,239	\$1,166,784	\$1,166,784
<b>Total</b>			<b>\$157,679</b>	<b>\$80,468</b>	<b>\$71,610</b>	<b>\$35,966</b>	<b>\$68,794</b>	<b>\$201,060</b>	<b>\$804,239</b>	<b>\$1,420,814</b>	

Year	Discount Rates	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
-1	0.931	2000	\$21,973	\$0	\$468
-2	0.887	2001	\$20,463	\$0	\$434
-3	0.808	2002	\$19,068	\$0	\$404
-4	0.752	2003	\$17,748	\$0	\$376
-5	0.701	2004	\$16,530	\$84,457	\$350
-6	0.653	2005	\$15,394	\$0	\$326
-7	0.606	2006	\$14,337	\$0	\$304
-8	0.566	2007	\$13,352	\$0	\$283
-9	0.527	2008	\$12,435	\$0	\$264
-10	0.491	2009	\$11,581	\$24,053	\$245
-11	0.457	2010	\$10,788	\$0	\$229
-12	0.428	2011	\$10,045	\$0	\$213
-13	0.397	2012	\$9,355	\$0	\$198
-14	0.369	2013	\$8,712	\$0	\$185
-15	0.344	2014	\$8,114	\$31,640	\$172
-16	0.320	2015	\$7,557	\$0	\$160
-17	0.298	2016	\$7,038	\$0	\$149
-18	0.278	2017	\$6,554	\$0	\$139
-19	0.259	2018	\$6,104	\$0	\$129
-20	0.241	2019	\$5,685	\$0	\$120
<b>Total</b>			<b>\$242,822</b>	<b>\$120,150</b>	<b>\$5,146</b>

Average Annual      \$23,593      \$11,674      \$500

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Oaks/Avery Canals Hydrologic Restoration Increment 1 (XTV-25-I)**

Federal Funded Costs: \$2,357,723      Amortized Costs: \$230,052

Year	Inflation Factor	Fiscal Year	Engineering & Design	Easements Land Rights	Supervision & Administration	LDNR		Inspection	Contingency	First Construction	Total First Cost
						Supervision & Administration	Inspection				
6		0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4		0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	1.000	1997	\$30,000	\$65,000	\$0	\$0	\$0	\$0	\$0	\$0	\$95,000
2	1.027	1998	\$73,259	\$0	\$23,560	\$6,887	\$0	\$0	\$0	\$0	\$103,706
1	1.056	1999	\$37,619	\$0	\$44,361	\$27,733	\$68,557	\$197,498	\$789,992	\$0	\$1,165,760
<b>TOTAL</b>			<b>\$140,878</b>	<b>\$65,000</b>	<b>\$67,921</b>	<b>\$34,620</b>	<b>\$68,557</b>	<b>\$197,498</b>	<b>\$789,992</b>	<b>\$0</b>	<b>\$1,364,467</b>

Year	Inflation Factor	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
-2	1.112	2001	\$26,233	\$0	\$556
-3	1.142	2002	\$26,955	\$0	\$571
-4	1.173	2003	\$27,653	\$0	\$587
-5	1.205	2004	\$28,430	\$110,862	\$603
-6	1.238	2005	\$29,198	\$0	\$619
-7	1.271	2006	\$29,988	\$0	\$635
-8	1.305	2007	\$30,798	\$0	\$653
-9	1.341	2008	\$31,627	\$0	\$670
-10	1.377	2009	\$32,481	\$67,459	\$688
-11	1.414	2010	\$33,358	\$0	\$707
-12	1.452	2011	\$34,259	\$0	\$726
-13	1.491	2012	\$35,184	\$0	\$746
-14	1.532	2013	\$36,134	\$0	\$766
-15	1.573	2014	\$37,109	\$144,706	\$786
-16	1.615	2015	\$38,111	\$0	\$808
-17	1.659	2016	\$39,140	\$0	\$829
-18	1.704	2017	\$40,197	\$0	\$852
-19	1.750	2018	\$41,282	\$0	\$875
-20	1.797	2019	\$42,397	\$0	\$898
<b>Total</b>			<b>\$666,113</b>	<b>\$323,026</b>	<b>\$14,117</b>

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**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Myrtle Grove Siphon Enlargement (P8A-48)**

**First Costs and Annual Charges**

Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Supervision & Administration	LDNR Supervision & Administration	Supervision & Inspection	Contingency	First Cost Construction	Total First Cost
5 Compound	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4 Compound	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3 Compound	\$297,186	\$1,544,833	\$22,536	\$18,726	\$0	\$0	\$0	\$1,883,281
2 Compound	\$985,930	\$7,724,167	\$270,426	\$224,712	\$0	\$0	\$0	\$9,205,235
1 Compound	\$0	\$0	\$180,284	\$165,808	\$354,935	\$4,915,578	\$19,662,313	\$25,278,919
Base Year								
<b>TOTAL</b>	<b>\$1,283,116</b>	<b>\$9,269,000</b>	<b>\$473,246</b>	<b>\$409,246</b>	<b>\$354,935</b>	<b>\$4,915,578</b>	<b>\$19,662,313</b>	<b>\$36,387,435</b>

Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
1 Discount	\$29,492	\$26,000	\$500
2 Discount	\$29,492	\$26,000	\$500
3 Discount	\$29,492	\$26,000	\$500
4 Discount	\$29,492	\$26,000	\$500
5 Discount	\$29,492	\$26,000	\$500
6 Discount	\$29,492	\$26,000	\$500
7 Discount	\$29,492	\$26,000	\$500
8 Discount	\$29,492	\$26,000	\$500
9 Discount	\$29,492	\$26,000	\$500
10 Discount	\$29,492	\$26,000	\$500
11 Discount	\$29,492	\$26,000	\$500
12 Discount	\$29,492	\$26,000	\$500
13 Discount	\$29,492	\$26,000	\$500
14 Discount	\$29,492	\$26,000	\$500
15 Discount	\$29,492	\$26,000	\$500
16 Discount	\$29,492	\$26,000	\$500
17 Discount	\$29,492	\$26,000	\$500
18 Discount	\$29,492	\$26,000	\$500
19 Discount	\$29,492	\$26,000	\$500
20 Discount	\$29,492	\$26,000	\$500
<b>Total</b>	<b>\$589,840</b>	<b>\$520,000</b>	<b>\$10,000</b>

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**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

Myrtle Grove Siphon Enlargement (PBA-48)

Present Valued Costs		Total Discounted Costs				Amortized Costs			
Year	Compound Rates	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Supervision & Administration	LDNR Supervision & Administration	Contingency	First Cost Construction	Total First Cost
5	1.427	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	1.329	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	1.238	1997	\$367,907	\$1,912,455	\$27,898	\$23,182	\$0	\$0	\$2,331,442
2	1.153	1998	\$1,136,717	\$8,905,493	\$311,785	\$259,079	\$0	\$0	\$10,613,075
1	1.074	1999	\$0	\$0	\$193,580	\$178,036	\$5,278,102	\$21,112,409	\$27,143,239
<b>Total</b>			\$1,504,624	\$10,817,948	\$533,263	\$460,298	\$5,278,102	\$21,112,409	\$40,087,756

\$3,850,953

\$10,554,033

Year	Discount Rates	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
-1	0.931	2000	\$27,486	\$24,214	\$466
-2	0.867	2001	\$25,580	\$22,551	\$434
-3	0.808	2002	\$23,823	\$21,002	\$404
-4	0.752	2003	\$22,187	\$19,560	\$376
-5	0.701	2004	\$20,663	\$18,216	\$350
-6	0.653	2005	\$19,244	\$16,965	\$326
-7	0.608	2006	\$17,922	\$15,800	\$304
-8	0.566	2007	\$16,691	\$14,715	\$283
-9	0.527	2008	\$15,544	\$13,704	\$264
-10	0.491	2009	\$14,477	\$12,763	\$245
-11	0.457	2010	\$13,482	\$11,886	\$229
-12	0.426	2011	\$12,556	\$11,070	\$213
-13	0.397	2012	\$11,694	\$10,309	\$198
-14	0.369	2013	\$10,891	\$9,601	\$185
-15	0.344	2014	\$10,143	\$8,942	\$172
-16	0.320	2015	\$9,446	\$8,328	\$160
-17	0.298	2016	\$8,797	\$7,756	\$149
-18	0.278	2017	\$8,193	\$7,223	\$139
-19	0.259	2018	\$7,630	\$6,727	\$129
-20	0.241	2019	\$7,106	\$6,265	\$120
<b>Total</b>			\$303,536	\$267,595	\$5,146

\$29,492

\$26,000

Average Annual

Costs amortized over 20 year operation life

23/3/1998

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Myrtle Grove Siphon Enlargement (PBA-48)**

Fully Funded Costs		Total Fully Funded Costs					Amortized Costs			Total First Cost
Year	Inflation Factor	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Supervision & Administration	LDNR Supervision & Administration	Contingency	First Cost Construction	Contingency	Total First Cost
5		0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4		0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	1.000	1997	\$297,186	\$1,544,833	\$22,536	\$18,726	\$0	\$0	\$0	\$1,883,281
2	1.027	1998	\$1,012,550	\$7,932,719	\$277,728	\$230,779	\$0	\$0	\$0	\$9,453,776
1	1.055	1999	\$0	\$0	\$190,151	\$174,883	\$374,360	\$5,184,603	\$20,738,412	\$26,962,408
<b>TOTAL</b>			<b>\$1,309,736</b>	<b>\$9,477,553</b>	<b>\$490,414</b>	<b>\$424,388</b>	<b>\$374,360</b>	<b>\$5,184,603</b>	<b>\$20,738,412</b>	<b>\$37,999,466</b>

Year	Inflation Factor	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
-1	1.083	2000	\$31,946	\$28,163	\$542
-2	1.112	2001	\$32,792	\$28,910	\$556
-3	1.142	2002	\$33,694	\$29,706	\$571
-4	1.173	2003	\$34,804	\$30,507	\$587
-5	1.205	2004	\$35,538	\$31,330	\$603
-6	1.238	2005	\$36,498	\$32,176	\$619
-7	1.271	2006	\$37,483	\$33,045	\$635
-8	1.305	2007	\$38,495	\$33,937	\$653
-9	1.341	2008	\$39,535	\$34,854	\$670
-10	1.377	2009	\$40,602	\$35,795	\$688
-11	1.414	2010	\$41,698	\$36,761	\$707
-12	1.452	2011	\$42,824	\$37,754	\$726
-13	1.491	2012	\$43,981	\$38,773	\$746
-14	1.532	2013	\$45,168	\$39,820	\$766
-15	1.573	2014	\$46,388	\$40,895	\$786
-16	1.615	2015	\$47,640	\$41,999	\$808
-17	1.659	2016	\$48,926	\$43,133	\$829
-18	1.704	2017	\$50,247	\$44,298	\$852
-19	1.750	2018	\$51,604	\$45,494	\$875
-20	1.797	2019	\$52,997	\$46,722	\$899
<b>Total</b>			<b>\$832,663</b>	<b>\$734,071</b>	<b>\$14,117</b>

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**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Channel Armor Gap West (XMR-10b)**

**First Costs and Annual Charges**

Year	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal		Contingency	Fire Cost Construction	Total First Cost
				Supervision & Administration	LDNR Supervision & Inspection			
5 Compound		\$0	\$0	\$0	\$0	\$0	\$0	\$0
4 Compound	1997	\$25,000	\$99,000	\$0	\$0	\$0	\$0	\$124,000
3 Compound	1998	\$199,200	\$0	\$25,600	\$22,400	\$0	\$0	\$247,200
2 Compound	1999	\$49,800	\$0	\$36,400	\$33,600	\$337,250	\$1,349,000	\$1,881,050
1 Compound	2000	\$0	\$0	\$16,000	\$26,000	\$337,250	\$1,349,000	\$1,801,250
<b>Base Year</b>		<b>\$274,000</b>	<b>\$99,000</b>	<b>\$80,000</b>	<b>\$82,000</b>	<b>\$674,500</b>	<b>\$2,698,000</b>	<b>\$4,053,500</b>

Year	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
1 Discount	2001	\$9,831	\$0	\$500
2 Discount	2002	\$9,831	\$0	\$500
3 Discount	2003	\$9,831	\$0	\$500
4 Discount	2004	\$9,831	\$0	\$500
5 Discount	2005	\$9,831	\$0	\$500
6 Discount	2006	\$9,831	\$0	\$500
7 Discount	2007	\$9,831	\$0	\$500
8 Discount	2008	\$9,831	\$0	\$500
9 Discount	2009	\$9,831	\$0	\$500
10 Discount	2010	\$9,831	\$0	\$500
11 Discount	2011	\$9,831	\$0	\$500
12 Discount	2012	\$9,831	\$0	\$500
13 Discount	2013	\$9,831	\$0	\$500
14 Discount	2014	\$9,831	\$0	\$500
15 Discount	2015	\$9,831	\$0	\$500
16 Discount	2016	\$9,831	\$0	\$500
17 Discount	2017	\$9,831	\$0	\$500
18 Discount	2018	\$9,831	\$0	\$500
19 Discount	2019	\$9,831	\$0	\$500
20 Discount	2020	\$9,831	\$0	\$500
<b>Total</b>		<b>\$198,620</b>	<b>\$0</b>	<b>\$10,000</b>

3/14/97

Costs amortized over 20 year operation life

**Coastal Wetlands Conservation and Restoration Plan  
Priority Project List VI**

**Channel Armor Gap West (XMR-10b)**

Present Valued Costs		Total Discounted Costs		Amortized Costs		Total First Cost	
Compound Year	Fiscal Year	Engineering & Design	Easements & Land Rights	Federal Administration	LDNR Supervision & Inspection	Construction	Total First Cost
5	1997	\$0	\$131,588	\$0	\$0	\$0	\$0
4	1997	\$33,232	\$131,588	\$0	\$0	\$0	\$164,829
3	1998	\$246,603	\$0	\$31,692	\$27,730	\$0	\$306,026
2	1999	\$57,416	\$0	\$44,273	\$38,739	\$1,555,315	\$2,168,736
1	2000	\$0	\$0	\$17,160	\$27,918	\$362,122	\$1,934,092
<b>Total</b>		<b>\$337,251</b>	<b>\$131,588</b>	<b>\$93,145</b>	<b>\$94,387</b>	<b>\$162,548</b>	<b>\$4,573,683</b>

Year	Discount Rates	Fiscal Year	Monitoring Costs	O&M Costs	Other Costs
-1	0.931	2001	\$9,156	\$0	\$466
-2	0.867	2002	\$8,527	\$0	\$434
-3	0.806	2003	\$7,941	\$0	\$404
-4	0.752	2004	\$7,396	\$0	\$376
-5	0.701	2005	\$6,888	\$0	\$350
-6	0.653	2006	\$6,415	\$0	\$326
-7	0.608	2007	\$5,974	\$0	\$304
-8	0.568	2008	\$5,564	\$0	\$283
-9	0.527	2009	\$5,182	\$0	\$264
-10	0.491	2010	\$4,826	\$0	\$245
-11	0.457	2011	\$4,494	\$0	\$229
-12	0.426	2012	\$4,186	\$0	\$213
-13	0.397	2013	\$3,898	\$0	\$198
-14	0.368	2014	\$3,630	\$0	\$185
-15	0.344	2015	\$3,381	\$0	\$172
-16	0.320	2016	\$3,149	\$0	\$160
-17	0.296	2017	\$2,933	\$0	\$149
-18	0.278	2018	\$2,731	\$0	\$139
-19	0.259	2019	\$2,544	\$0	\$129
-20	0.241	2020	\$2,369	\$0	\$120
<b>Total</b>			<b>\$101,182</b>	<b>\$0</b>	<b>\$5,146</b>

Average Annual

\$9,631

\$500