



26th PRIORITY PROJECT LIST REPORT

PREPARED BY:

LOUISIANA COASTAL WETLANDS CONSERVATION AND RESTORATION

TASK FORCE

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Executive Summary of PPL 26 and Status of CWPPRA Program

In 1990, Congress established the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA, PL 101-646, Title III) to provide for the long-term conservation of Louisiana's coastal wetlands (see Appendix A). Section 303(a) of the CWPPRA directed the Secretary of the Army to convene the Louisiana Coastal Wetlands Conservation and Restoration 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 upon 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.

Section 303(a) also requires that the list of priority projects be updated and transmitted to Congress annually. According to Section 303 (a), the Task Force initiated an annual Priority Project List (PPL) process in 1991. This report transmits the 26th PPL (PPL 26) and fulfills the requirements of CWPPRA Section 303(a).

Under the development of PPL 26, the public, parish officials, along with state and federal agencies met at four regional coastal meetings to propose projects from the nine identified hydrologic basins. Of the 62 project proposals and 5 demonstration project proposals, 21 projects and five demonstration projects were nominated by CWPPRA agencies and qualifying parish representatives via electronic vote on February 23, 2016. Ten candidate projects and three candidate demonstration projects were selected from the list of nominees at the Technical Committee meeting held on April 5, 2016. These PPL 26 candidate projects were evaluated to determine the long-term net wetlands benefits based on a 20-year project life. Benefits were measured in both net acres and net Average Annual Habitat Units (AAHUs). The candidate projects were also evaluated to determine conceptual project designs and cost estimates. Economic analyses were conducted to determine the total fully funded cost estimate for feasibility planning, construction, and 20 years of operations and maintenance. Cost-effectiveness was calculated for each project using the fully funded cost estimate and net wetland benefits over the 20 year project life.

At the end of the PPL 26 development process the Task Force authorized the following four new coastal restoration projects:

- Bayou DeCade Ridge and Marsh Creation (TE-138)
- St. Catherine Island Marsh Creation and Shoreline Protection (PO-179)
- Bayou La Loutre Ridge and Marsh Restoration (PO-178)
- Salvinia Weevil Propagation Facility (LA-284)

These PPL 26 projects will be implemented in two phases. Phase I will include data collection, engineering and design, environmental impact assessment and regulatory compliance, pre-construction monitoring, and real estate planning. The total Phase I cost for the four new PPL 26 coastal restoration

projects is estimated to be \$12,711,300. Phase II would include real estate acquisition, construction, operation and maintenance, and post-construction monitoring. The total Phase II cost for these four projects is estimated to be \$91,253,957. The total net wetland benefit that would be derived by implementing the four PPL 26 projects is estimated to be 805 acres or 926 AAHUs over a 20-year period. The Task Force will consider approving Phase II funding for individual PPL 26 projects after Phase I requirements have been met for each.

Since the last PPL report to Congress, the Task Force de-authorized or transferred the following two projects because they did not represent the best strategy for addressing the immediate and/or long term coastal restoration needs as compared to other priority projects, and/or the project scope was beyond the funding capability of the CWPPRA program:

- Central Terrebonne Freshwater Enhancement (TE-66)
- Terrebonne Bay Marsh Creation and Nourishment (TE-83)

With the addition of the four new PPL 26 projects and the removal of one deauthorized, and one transferred project, there are a total of 153 active Louisiana coastal restoration projects in the CWPPRA Program. The current estimate for the 210 CWPPRA projects combined is \$2.39B. The current funded estimate for approved phases for all projects is \$1.6B. At the time of the production of this PPL 26 report, \$1.28B has been obligated and \$1.05B had been expended on all CWPPRA coastal restoration projects in Louisiana since inception of the program in 1991. Of the 153 active projects, 102 projects have completed construction, 23 projects are under construction, 23 projects are in various stages of planning and design, and 5 projects are general support projects to the program. The Task Force has determined that these active projects represent the best strategy for addressing the immediate and/or long term needs of Louisiana's coastal wetlands within the available and projected future funding limits of the CWPPRA Program. Given the significant need for coastal wetlands restoration in Louisiana, the Task Force often generates more projects than the CWPPRA program has funding in hand to build. As such, Phase II funding of projects will be based on CWPPRA program funding availability at the time of funding request. Although Congress in 2004 reauthorized CWPPRA through 2019, the program is expected to reach its capacity to authorize new PPL projects within the next few years. Even though CWPPRA has received more than \$73 million each year over the last several years, there continues to be a backlog of construction-ready projects. To offset this back-log, the Task Force continues to de-authorize projects that are beyond the funding capability of the CWPPRA program or do not represent the best strategy for addressing the immediate and long term needs of Louisiana's coastal wetlands.

Coastal Wetlands Planning, Protection, and Restoration Act

26th Priority Project List Report

Table of Contents

VOLUME 1 MAIN REPORT
VOLUME 2 APPENDICES

MAIN REPORT – VOLUME 1

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
I.	INTRODUCTION	1
	STUDY AUTHORITY	2
	STUDY PURPOSE	2
	PROJECT AREA	2
	STUDY PROCESS	2
	The Interagency Planning Groups	2
	Involvement of the Academic Community	3
	Public Involvement	3
II.	PLAN FORMULATION PROCESS FOR THE 25th PRIORITY PROJECT LIST	4
	IDENTIFICATION & SELECTION OF CANDIDATE & DEMONSTRATION PROJECTS	4
	EVALUATION OF CANDIDATE PROJECTS	10
	Benefit Analysis (WVA)	10
	Designs and Cost Analysis	11
	Economic Analysis	12
III.	DESCRIPTION OF CANDIDATE PROJECTS	13
	Bayou La Loutre Ridge and Marsh Restoration	16
	St. Catherine Island Marsh Creation and Shoreline Protection	18
	Elmer’s Island Backbarrier Marsh Creation	22
	East Bayou Lafourche Marsh Creation	24
	Bayou Terrebonne Freshwater Diversion	28
	West LA Highway 1 Marsh Creation and Terracing	30
	Bayou DeCade Ridge and Marsh Creation	32
	East Pecan Island Marsh Creation	36
	North Mud Lake Marsh Creation and Nourishment	38
	Southwest Louisiana Salvinia Weevil Propagation	41
IV.	DESCRIPTION OF CANDIDATE DEMONSTRATION PROJECTS	43
	Ecobale Shoreline Protection	46
	Enhancing Restoration Transplant Survival via Stress Acclimation	48
	Shore-links	50
V.	PROJECT SELECTION	53
VI.	DESCRIPTION OF PROJECTS SELECTED FOR PHASE I FUNDING	55
	Bayou DeCade Ridge and Marsh Creation	56
	St. Catherine Island Marsh Creation and Shoreline Protection	58
	Bayou La Loutre Ridge and Marsh Restoration	60
	Southwest Louisiana Salvinia Weevil Propagation	63
VII.	SUMMARY AND CONCLUSIONS	65

Coastal Wetlands Planning, Protection, and Restoration Act

26th Priority Project List Report

Table of Contents

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
MAIN REPORT – LIST OF TABLES AND FIGURES		
TABLE 1	RPT Meetings to Nominate Projects	4
TABLE 2	26 th Priority Project List – Candidate Nominee Project Matrix by Basin	5
TABLE 2b	26 th Priority Project List – Demonstration Nominee Project Matrix	6
TABLE 3	26 th Priority Project List Candidate Demonstration Projects	8
TABLE 4	26 th Priority Project List Candidate Project Evaluation Matrix	9
TABLE 5	26 th Priority Project List Candidate Selection Process – Agency Voting Record	10
MAIN REPORT – LIST OF PLATES		
PLATE 1	Map of Coastal Louisiana with Basin and Region Boundaries	67
PLATE 2	Summary of Projects, 1 st thru 26 th Priority Project List	68
PLATE 3	Map of Coastal Louisiana, 1 st thru 26 th Priority Project List	76
PLATE 4	Map of Coastal Louisiana, Region 1, 1 st thru 26 th Priority Project List	77
PLATE 5	Map of Coastal Louisiana, Region 2, 1 st thru 26 th Priority Project List	78
PLATE 6	Map of Coastal Louisiana, Region 3, 1 st thru 26 th Priority Project List	79
PLATE 7	Map of Coastal Louisiana, Region 4, 1 st thru 26 th Priority Project List	80
APPENDICES – VOLUME 2		
A	Summary and Complete Text of the CWPPRA	
B	Wetland Value Assessment Methodology and Community Models	
C	Wetland Value Assessment for Candidate Projects	
D	Economic Analyses for Candidate Projects	
E	Public Support for Candidate Projects	
F	Project Status Summary Report by Lead Agency, Priority List, and Basin	

Coastal Wetlands Planning, Protection, and Restoration Act

26th Priority Project List Report

Main Report – Volume 1

I. INTRODUCTION

Approximately 90 percent of the total coastal marsh loss within the lower 48 states occurs in the State of Louisiana. These losses are due to a combination of human and natural factors, including subsidence, shoreline erosion, freshwater and sediment deprivation, saltwater intrusion, oil and gas production and canals, navigation channels, and herbivory. Louisiana's coastal zone contains 45 percent of all intertidal coastal marshes in the lower forty-eight states; however, it is suffering 80 percent of the entire Nation's annual coastal wetland loss. Since the 1930s, coastal Louisiana has lost over 1,875 square miles, an area more than 25 times larger than Washington D.C. As recently as the year 2000, the annual loss rate was quantified as 24 square miles per year. From 2000 to 2050, 513 square miles are projected to be lost. In addition, the U.S. Geological Survey (USGS) estimated the Hurricanes Katrina and Rita (2005) alone accounted for converting 217 square miles (138,880 acres) of coastal marsh to open water along the Louisiana coast. Concern over this loss exists because of the living resources and national economies dependent on Louisiana's coastal wetlands. These wetlands provide habitat for fisheries, waterfowl, neotropical birds, and furbearers; amenities for recreation and tourism; a buffer for coastal flooding; and a natural landscape for a culture unique to the world. Consequently, benefits go well beyond the local and state levels by providing positive economic impacts to the entire nation.

The coastal wetland loss problem in Louisiana is extensive and complex. Agencies of diverse purposes and missions involved with addressing the problem have proposed many alternative solutions. These proposals have had a wide spectrum of approaches for diminishing, neutralizing, or reversing these losses. An observation of these efforts by federal, state and local governments and the public has led to the conclusion that a comprehensive approach is needed to address this significant environmental problem. In response to this, the Coastal Wetlands Planning, Protection, and Restoration Act (Public Law 101-646) – also known as the Breaux Act – was signed into law by President George H.W. Bush on November 29, 1990. This report documents the implementation of Section 303(a) of the cited legislation.

STUDY AUTHORITY

Section 303(a) of the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA, or the Breaux Act), displayed in Appendix A, directs the Secretary of the Army to convene the Louisiana Coastal Wetlands Conservation and Restoration 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 upon 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.

STUDY PURPOSE

The purpose of this study effort was to prepare the 26th Priority Project List (PPL) and transmit the list to Congress, as specified in Section 303(a)(3) of the CWPPRA. Section 303(b) of the Act calls for preparation of a comprehensive restoration plan for coastal Louisiana. In November 1993, the Louisiana Coastal Wetlands Restoration Plan was submitted. In December 1998, *Coast 2050: Toward a Sustainable Coastal Louisiana* was signed by all federal and state Task Force members. This plan consisted of several regional ecosystem strategies, which if all implemented could maintain a self-sustaining ecosystem along the Louisiana coast. A broad coalition of federal, state, and local entities, landowners, environmentalists, and wetland scientists developed the plan. In addition, all 20 coastal parishes approved the Coast 2050 plan.

PROJECT AREA

The entire coastal area, which comprises all or part of 20 Louisiana parishes, is considered to be the CWPPRA project area. To facilitate the study process, the coastal zone was divided into four regions with nine hydrologic basins (Plate 1). Plate 2 contains a listing of project names for each PPL, referenced by number and grouped by sponsoring agency. A map of the Louisiana coastal zone is presented in Plates 3-7, indicating project locations by number of Priority Project Lists 1 through 26. All Plates can be found at the end of this report.

STUDY PROCESS

The Interagency Planning Groups. Section 303(a)(1) of the CWPPRA directs the Secretary of the Army to convene the Louisiana Coastal Wetlands Conservation and Restoration Task Force (the Task Force), to consist of the following members:

- The Secretary of the Army (Chairman)
- The Administrator, Environmental Protection Agency
- The Governor, State of Louisiana
- The Secretary of the Interior
- The Secretary of Agriculture
- The Secretary of Commerce

The State of Louisiana is a full voting member of the Task Force, with the exception of budget matters, as stipulated in President George H.W. Bush's November 29, 1990, signing statement (Appendix A). In addition, the State of Louisiana may not serve as a "lead" Task Force agency for design and construction of wetlands projects of the PPL.

In practice, the Task Force members named by the law have delegated their responsibilities to other members of their organizations. For instance, the Secretary of the Army authorized the Commander of the U.S. Army Corps of Engineers (USACE) New Orleans District to act in his place as chairman of the Task Force. The other federal agencies on the CWPPRA Task Force include: U.S. Fish and Wildlife Service (USFWS) of the U.S. Department of Interior, the Natural Resources Conservation Service (NRCS) of the U.S. Department of Commerce, and the U.S. Environmental Protection Agency (USEPA). The Governor's Office of the State of Louisiana represents the state as a Task Force member.

The Task Force established the Technical Committee and the Planning and Evaluation (P&E) Subcommittee, to assist it in putting the CWPPRA into action. Each of these bodies

contains the same representation as the Task Force – one member from each of the five federal agencies and one from the state. The P&E Subcommittee is responsible for the actual planning of projects, as well as the other details involved in the CWPPRA process (such as development of schedules, budgets, etc.). This subcommittee makes recommendations to the Technical Committee and lays the groundwork for decisions that will ultimately be made by the Task Force. The Technical Committee reviews all materials prepared by the subcommittee, makes appropriate revisions, and provides recommendations to the Task Force. The Technical Committee operates at an intermediate level between the planning details considered by the subcommittee and the policy matters dealt with by the Task Force, and often formalizes procedures and formulates policy for the Task Force.

The P&E Subcommittee established several working groups to evaluate projects for priority project lists. The Environmental Work Group was charged with estimating the benefits (in terms of wetlands created, protected, enhanced, or restored) associated with various projects. The Engineering Work Group reviewed project and design cost estimates for consistency. The Economic Work Group performed the economic analysis, which permitted comparison of projects on the basis of their cost effectiveness. The Monitoring Work Group established a standard procedure for monitoring of CWPPRA projects, developed a monitoring cost estimating procedure based on project type, and a review of all monitoring plans.

Involvement of the Academic Community. While the agencies sitting on the Task Force possess considerable expertise regarding Louisiana’s coastal wetlands problems, the Task Force recognized the need to incorporate another invaluable resource: the state’s academic community. The Task Force therefore retained the services of the Louisiana Universities Marine Consortium (LUMCON) to provide scientific advisors to aid the Environmental Work Group in performing Wetland Value Assessments (WVAs). This Academic Advisory Group (AAG) also assisted in carrying out feasibility studies authorized by the Task Force. These include:

- The Louisiana Barrier Shoreline study – March 1995 - March 1999 (managed by the Louisiana Department of Natural Resources [LDNR]*)
- The Mississippi River Sediment, Nutrient, and Freshwater Redistribution study – March 1995 – July 2000 (managed by the USACE)

Public Involvement. The CWPPRA public involvement program provides an opportunity for all interested parties to express their concerns and opinions and to submit their ideas concerning the problems facing Louisiana’s wetlands. The Task Force and the Technical Committee held six public meetings annually to obtain input from the public. In addition, the Task Force distributes a quarterly newsletter (“Watermarks”) with information on the CWPPRA program and on individual projects.

*Because of the devastation of hurricanes Katrina and Rita, in December 2005, the Louisiana Legislature restructured the State’s Wetland Conservation and Restoration Authority to form the Coastal Protection and Restoration Authority (CPRA). Agencies in the CPRA membership include Louisiana Department of Natural Resources (LDNR).

II. PLAN FORMULATION PROCESS FOR THE 26th PRIORITY PROJECT LIST

IDENTIFICATION & SELECTION OF CANDIDATE & DEMONSTRATION PROJECTS

Regional Planning Team (RPT) meetings were held during the period of January 26 through January 28, 2016 to provide a forum for the public and their local government representatives to identify potential projects for implementation under the priority list process. The RPT met to examine basin maps, discuss areas of need and strategies, and to propose projects and demonstration projects determined to be consistent with the 2012 State Master Plan*. All projects that were deemed consistent with the State Master Plan by the CPRA staff present at the RPT meetings, were granted eligibility for voting consideration. Electronic voting was held on February 23, 2016 for the 26th PPL to choose four projects in Terrebonne and Barataria based on the high loss rates (1985-2006) in those basins, three projects in Pontchartrain, , two projects in the Teche/Vermilion, Mermentau, and Calcasieu/Sabine, and one coastwide project. In addition, four demonstration projects were selected as nominees. A total of 21 projects and 5 demonstration projects were nominated. A schedule of meetings is shown in Table 1.

Table 1: RPT Meetings to Propose/Nominate Projects

Region 1: Lacombe, LA	January 28, 2016
Region 2: Lacombe, LA	January 28, 2016
Region 3: Gray, LA	January 27, 2016
Region 4: Lafayette, LA	January 26, 2016
Electronic Voting	February 24, 2016

The Engineering and Environmental Work Groups and the AAG met March 19 and March 20, 2016 to review and reach consensus on preliminary project features, benefits, and fully-funded cost estimates for the twenty onenominated projects as well as evaluate the five demonstration project nominees. The Engineering and Environmental Work Groups also identified any potential issues associated with each nominee. The P&E Subcommittee prepared a matrix of nominated projects' cost estimates and benefits and furnished it to the Technical Committee and Coastal Protection and Restoration Authority (CPRA) on April 5, 2016. The matrix is included as Table 2.

*CWPPRA Task Force voted in June 2012 to approve the Technical Committee's recommendation that the PPL 23 Planning Process Standard Operating Procedures and future PPL's include selecting projects that would be consistent with the 2012 State Master Plan.

Table 2: 26th Project Priority List - Candidate Nominee Project Matrix by Basin

Rg	Basin	Type	Project	Preliminary Fully- Funded Cost Range	Preliminary Benefits (Net Acres Range)	Potential Issues				
						Oysters	Land Rights	Pipelines /Utilities	O&M	Other Issues
1	PO	MC	Bayou La Loutre Ridge and Marsh Restoration	\$25M - \$30M	150 - 200	X	X	X		X
1	PO	MC/ SP	St. Catherine Island Marsh Creation & Shoreline Protection	\$30M - \$35M	200 - 250				X	X
1	PO	MC	North Shell Beach Marsh Creation	\$20M - \$25M	200 - 250	X	X	X		X
2	BA	MC	Barataria Bay Waterway East Marsh Creation	\$45M - \$50M	200 - 250			X		
2	BA	MC	Elmer's Island Backbarrier Marsh Creation	\$30M - \$35M	200 - 250	X		X		X
2	BA	MC	East Bayou Lafourche Marsh Creation	\$35M - \$40M	300 - 350	X	X	X		
2	BA	BI	Grand Pierre Island Restoration	\$25M - \$30M	100 - 150			X		X
3	TE	MC	North Terrebonne Marsh Creation	\$45M - \$50M	400 - 450	X	X	X		
3	TE	MC/ TR	West LA Hwy 1 Marsh Creation and Terracing	\$25M - \$30M	250 - 300	X		X		
3	TE	MC	Bayou DeCade Bankline and Marsh Restoration	\$35M - \$40M	350 - 400			X		
3	TE	FD	Bayou Terrebonne Freshwater Diversion	\$20M - \$25M	100 - 150				X	
3	TV	SP/ MC	West Vermilion Marsh Creation & Shoreline Protection	\$20M - \$25M	300 - 350	X		X	X	
3	TV	MC	Belle Isle Marsh Creation and Nourishment	\$45M - \$50M	400 - 450		X	X		
4	ME	MC	East Pecan Island Marsh Creation	\$55M - \$60M	400 - 450			X		
4	ME	MC	North Big Marsh Restoration	\$40M - \$45M	350 - 400			X		
4	CS	MC	North Mud Lake Marsh Creation and Nourishment	\$45M - \$50M	600 - 700	X		X		
4	CS	MC	West Cove Bank Stabilization and Marsh Creation	\$30M - \$35M	150 - 200	X			X	
	Coast wide		Southwest Louisiana Salvinia Weevil Propagation	\$0M - \$5M	100 - 150				X	

Basin codes are: PO=Pontchartrain; MR=Mississippi River Delta; BS=Breton Sound; BA=Barataria; TE=Terrebonne; AT=Atchafalaya; TV=Teche/Vermilion; ME=Mermentau; CS=Calcasieu/Sabine.

Type codes: FD=Freshwater Diversion; HR=Hydrologic Restoration; MC=Marsh Creation; O&M= Operation and Maintenance; SP=Shoreline Protection; TR=Terracing; BI=Barrier Island; VP=Vegetative Plantings.

Table 2b: 26th Project Priority List Demonstration Nominee Project Matrix

Demonstration Project Name	Meets Demonstration Project Criteria?	Lead Agency	Technique Demonstrated
Shore-links	Yes	NRCS	This project seeks to demonstrate the feasibility and utility of the Shore Links product as a scalable tool for economically and effectively mitigate the effects of scour and erosion. The product can be used on coastwide on eroding banks as well as to armor constructed features such as earthen berms, terraces and containment dikes. The project will demonstrate the effectiveness of an approach to shoreline erosion that combines armored protection with establishment of wetland vegetation to both protect and restore shorelines.
Enhancing Restoration Transplant Survival via Stress Acclimation	Yes	CPRA	Improve upon current barrier island planting methods by increasing survival rates of two dune and three swale plant species using salt conditioning and drought conditioning prior to transplant. This project will incorporate a scientific element with a barrier island restoration planting effort to improve understanding of plant stress dynamics and inform nursery practices.
Sediment Accretion and Marsh Restoration Using Modified Reefblk Design	Yes	NRCS	This demo project seeks to promote sediment accretion and marsh progradation in turbid fresh to brackish environments through the installation of ReefBlk(SM) devices, which have previously been deployed for the primary purpose of shoreline protection in saline environments. ReefBlks will be installed in combination with vegetative plantings, which is expected to encourage sediment retention and marsh restoration.
Ecobale Shoreline Protection	Yes	USACE	Evaluate the effectiveness of using Ecobales to protect shorelines and broken marsh areas from erosion- not limited to but perhaps in areas where poor soils preclude the use of heavier materials such as rocks and riprap.
Novel Techniques for the Efficient Use of Spoil Material in the Backfilling of Canals	Yes	EPA	This demonstration project would optimally reconfigure local spoil bank sediments to create specific lobes of high quality emergent marsh and SAV while retaining deeper channels for nekton and invertebrate access and material exchange. It would restore marsh buried by spoil bank material and improve the hydrologic exchange of existing marsh next to the project area. This project would demonstrate cost effectiveness and quantify benefits in order to determine the efficacy of this technique on a much larger scale

The CWPPRA Technical Committee met publicly on April 5, 2016 to consider the preliminary costs, wetland benefits, and potential issues of the twenty one nominees. Ten candidate projects were selected for detailed assessment by the Environmental, Engineering, and Economic Work Groups, and the AAG (Table 4).

Phase 0 analysis of the ten candidate projects took place May 2016 through October 2016. The Environmental and Engineering Work Groups and AAG met to refine the projects and develop boundaries on May 18, 2016. Interagency field visits were conducted during May and June 2016 at each project site/area with members of the Engineering and Environmental Work Groups and the AAG. Detailed project information packages were developed by the Environmental, Engineering, and Economics Work Groups. These packages included fact sheets, Project Information Sheets containing the benefits analyses, Preliminary Engineering and Design Reports containing the preliminary design and cost estimates, and Economic Analyses containing fully-funded twenty-year project costs. On August 14 through August 16, 2016, the Engineering Work Group met to review and approve the Phase I and II cost estimates developed by the agencies for the eleven PPL 26 candidates. In September 2016, the Environmental Work Group finalized WVAs for each project. The Engineering Work Group reviewed and finalized the final project cost estimates for each project on September 6, 2016. The Economics Work Group reviewed the final project cost estimates and developed annualized costs in the month of October 2016.

The Environmental and Engineering Work Groups and AAG also met on October 2, 2016 to evaluate and rank the one demonstration project. The demonstration projects were evaluated using defined parameters. Within each of these parameters a project was graded as low, medium or high and assigned point scores of 1, 2, or 3, respectively. The summary of the evaluation from the Environmental and Engineering Work Groups and AAG is shown in Table 3.

The parameters used to evaluate the demonstration projects were:

(P₁) Innovativeness - The demonstration project should contain technology that has not been fully developed for routine application in coastal Louisiana or in certain regions of the coastal zone. The technology demonstrated should be unique and not duplicative in nature to traditional methods or other previously tested techniques for which the results are known. Techniques which are similar to traditional methods or

other previously tested techniques should receive lower scores than those which are truly unique and innovative.

(P₂) Applicability or Transferability - Demonstration projects should contain technology which can be transferred to other areas of the coastal zone. However, this does not imply that the technology must be applicable to all areas of the coastal zone. Techniques, which can only be applied in certain wetland types or in certain coastal regions, are acceptable but may receive lower scores than techniques with broad applicability.

(P₃) Potential Cost Effectiveness - The potential cost-effectiveness of the demonstration project's method of achieving project objectives should be compared to the cost-effectiveness of traditional methods. In other words, techniques which provide substantial cost savings over traditional methods should receive higher scores than those with less substantial cost savings. Those techniques which would be more costly than traditional methods, to provide the same level of benefits, should receive the lowest scores. Information supporting any claims of potential cost savings should be provided.

(P₄) Potential Environmental Benefits - Does the demonstration project have the potential to provide environmental benefits equal to traditional methods? Somewhat less than

traditional methods? Above and beyond traditional methods? Techniques with the potential to provide benefits above and beyond those provided by traditional techniques should receive the highest scores.

(P₅) Recognized Need for the Information to be Acquired - Within the restoration community, is there a recognized need for information on the technique being investigated? Demonstration projects which provide information on techniques for which there is a great need should receive the highest scores.

(P₆) Potential for Technological Advancement - Would the demonstration project significantly advance the traditional technology currently being used to achieve project objectives? Those techniques which have a high potential for completely replacing an existing technique at a lower cost and without reducing wetland benefits should receive the highest scores.

Table 3: Review of 26th Priority Project List Candidate Demonstration Projects

Demonstration Project Name	Total Fully-Funded Cost	P1	P2	P3	P4	P5	P6	Total Score
Ecobale Shoreline Protection DEMO Project	\$2,714,293	2	2	2	2	2	2	12
Enhancing Restoration Transplant Survival via Stress Acclimation DEMO Project	\$1,044,632	1	2	1	2	1	2	9
SHORE LINKS® DEMO Project	\$3,404,704	2	2	3	2	2	2	13

Demonstration Project Parameters: (P₁) Innovativeness; (P₂) Applicability or Transferability; (P₃) Potential Cost Effectiveness; (P₄) Potential Environmental Benefits; (P₅) Recognized Need for the Information to be Acquired; (P₆) Potential for Technological Advancement. Parameter Grading as to effect: 1= low; 2 = medium; 3 = high

The Environmental and Engineering Work Groups prepared a candidate project information package for the CWPPRA Technical Committee, consisting of updated Project Information Sheets and matrix. The matrix included average annual habitat units (AAHUs), acres created, restored, and/or protected, and costs. The matrix is included as Table 4 on the following page.

Table 4: 26th Priority Project List Candidate Project Evaluation Matrix

Project Name	AAHUs	WVA Net Acres	Total Fully-Funded Cost	Average Annual Cost (AAC)	Cost Effectiveness (AAC/AAHU)	Cost Effectiveness (Cost/Net Acre)
Bayou La Loutre Ridge Restoration and Marsh Creation	104	187	\$29,762,138	\$1,882,905	\$18,105	\$159,156
St. Catherine Island Marsh Creation and Shoreline Protection	91	214	\$35,996,522	\$1,974,900	\$21,702	\$168,208
Elmer's Island Back Barrier Marsh Creation	121	222	\$27,774,583	\$1,759,298	\$14,540	\$125,111
East Bayou Lafourche Marsh Creation	175	325	\$36,784,975	\$2,326,760	\$13,296	\$113,185
Bayou Terrebonne Freshwater Diversion	55	173	\$22,636,335	\$1,290,130	\$23,457	\$130,846
West LA Hwy 1 Marsh Creation	148	267	\$31,868,399	\$2,029,315	\$13,712	\$119,357
Bayou DeCade Ridge and Marsh Creation	133	378	\$34,403,849	\$2,166,067	\$16,286	\$91,015
East Pecan Island Marsh Creation	177	459	\$54,825,078	\$3,552,003	\$20,068	\$119,445
North Mud Lake Marsh Creation and Nourishment	298	590	\$59,930,304	\$3,883,605	\$13,032	\$101,577
Salvinia Weevil Propagation Facility	597	26	\$3,802,748	\$169,877	\$285	\$146,260

The CWPPRA Technical Committee met on December 7, 2016 to select projects for recommendation to the CWPPRA Task Force for Phase I funding. Each agency cast a total of six weighted votes, used to rank the ten candidate projects. Projects were ranked by number of agency votes first and total weighted score second. The top four projects were selected for recommendation to the CWPPRA Task Force for Phase I funding approval. The Technical Committee did not rank or recommend any demonstration projects for the CWPPRA Task Force to approve funding. The results of the CWPPRA Technical Committee vote are outlined in Table 5 shown on the following page. On January 12, 2017, the CWPPRA Task Force reviewed the Technical Committee recommendations and moved to adopt the recommendation without change.

Table 5: 26th Priority Project List Candidate Selection Process – Agency Voting Record

*Project No.	Nominee Project Name	Coast 2050 Region	USACE	STATE	EPA	FWS	NMFS	NRCS	No. of Votes	Sum of Point Score
TE-138	Bayou DeCade Bankline and Marsh Restoration	R3	1	6		5	3	4	5	19
PO-179	St. Catherine Island Marsh Creation & Shoreline Protection	R1	5		4	6	1	2	5	18
PO-178	Bayou La Loutre Ridge and Marsh Restoration	R1	6	4	2			3	4	15
LA-284	Salvinia Weevil Propagation Facility	CW		1		4	5	5	4	15
+	West LA Hwy 1 Marsh Creation and Terracing	R3	3	3		2	6		4	14
+	East Bayou Lafourche Marsh Creation	R2	4		1	3	4		4	12
+	Elmer's Island Backbarrier Marsh Creation	R2			6	1	2	1	4	10
+	Bayou Terrebonne Freshwater Diversion	R3		2	5			6	3	13
+	East Pecan Island Marsh Creation	R4	2		3				2	5
+	North Mud Lake Marsh Creation and Nourishment	R4		5					1	5

*Each selected project received a two-letter code to identify its basin; these codes are: PO-Ponchartrain; BS-Breton Sound, MR-Mississippi River Delta; BA-Barataria; TE-Terrebonne; AT-Atchafalaya; TV-Teche/Vermilion; ME-Mermentau; CS-Calcasieu/Sabine.
 + These projects were not selected for funding.

EVALUATION OF CANDIDATE PROJECTS

Benefit Analysis (WVA). The WVA is a quantitative, habitat-based assessment methodology developed for use in analyzing benefits of project proposals submitted for funding under the Breaux Act. The WVA quantifies changes in fish and wildlife habitat quality and quantity that are projected to emerge or develop as a result of a proposed wetland enhancement project. The results of the WVA, measured in AAHUs, can be combined with economic data to provide a measure of the effectiveness of a proposed project in terms of annualized cost per AAHU protected and/or gained.

The Environmental Work Group developed a WVA for each project. 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. It is a modification of the Habitat Evaluation Procedures (HEP) developed by the USFWS (USFWS, 1980). HEP is widely used by the USFWS 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. The HEP generally uses a species-oriented approach, whereas the WVA uses a community approach.

The following coastal Louisiana wetland types can be evaluated using WVA models: fresh marsh (including intermediate marsh), brackish marsh, saline marsh, cypress-tupelo swamp,

barrier headland, barrier island, coastal chenier ridge, and bottomland hardwoods. Future reference in this document to "wetland" or "wetland type" refers to one or more of these four communities.

These models operate 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 the following components:

1. A list of variables that are considered important in characterizing fish and wildlife habitat:
 - a. V_1 --percent of wetland covered by emergent vegetation,
 - b. V_2 --percent open water dominated by submerged aquatic vegetation,
 - c. V_3 --marsh edge and interspersion,
 - d. V_4 --percent open water less than or equal to 1.5 feet deep,
 - e. V_5 --salinity, and
 - f. V_6 --aquatic organism access.
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 WVA models have been developed for determining the suitability of Louisiana coastal wetlands for 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.

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. A comprehensive discussion of the WVA methodology is presented in Appendix B.

Designs and Cost Analysis. During the plan formulation process, each of the Task Force agencies assumed responsibility for developing designs and estimates of costs and benefits for a number of candidate projects. The cost estimates for the projects were to be itemized as follows:

1. Construction Cost
2. Contingencies Cost (25%)
3. Engineering and Design
4. Environmental Compliance
5. Supervision and Administration (Federal and Non-Federal)
6. Supervision and Inspection (Construction Contract)
7. Real Estate
8. Operations and Maintenance
9. Monitoring

In addition, each lead agency provided a detailed itemized construction cost estimate for each project.

An Engineering Work Group was established by the P&E Subcommittee, with each federal agency and the State of Louisiana represented. The Engineering Work Group reviewed each estimate for accuracy and consistency.

When reviewing the construction cost estimates, the Engineering Work Group verified that each project feature had an associated cost and that the quantity and unit prices for those items were reasonable. In addition, the Engineering Work Group reviewed the design of the projects to determine whether the method of construction was appropriate and the design was feasible.

A 25% contingency was applied to construction, operations and maintenance costs on all projects because detailed project specific information such as soil borings, surveys, and hydrologic data were not collected. Construction unit costs, engineering and design, environmental compliance, real estate acquisition, supervision and administration, and supervision and inspection costs were reviewed for reasonableness.

Economic Analysis. The Breaux Act directed the Task Force to develop a prioritized list of wetland projects "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." The Task Force satisfied this requirement through the integration of a traditional time-value analysis of life-cycle project costs and other economic impacts, and an evaluation of wetlands benefits using the WVA. The product of these two analyses was an Average Annual Cost per AAHU for each project. These values are used as the primary ranking criterion. The method permits incremental analysis of varying scales of investment and also accommodates the varying salinity types and habitat quality characteristics of projected wetland outputs.

The major inputs to the cost effectiveness analysis are the products of the lead Task Force agencies and the Engineering and Environmental Work Groups. The various plans were refined into estimates of annual implementation costs and respective AAHUs.

Financial costs chiefly consist of the resources needed to plan, design, construct, operate, monitor, and maintain the project. These are the costs, when adjusted for inflation, which the Task Force uses in budgeting decisions.

The stream of costs for each project was brought to present value and annualized at the current discount rate, based on a 20-year project life. Beneficial environmental outputs were annualized at a zero discount rate and expressed as AAHUs. These data were then used to rank each plan based on cost per AAHU produced. Annual costs were also calculated on a per-acre basis. Costs were adjusted to account for projected levels of inflation and used to monitor overall budgeting and any future cost escalations in accordance with rules established by the Task Force.

Following the review by the Engineering Work Group, costs were expressed as first costs, fully-funded costs, present worth costs, and average annual costs. The Cost per Habitat Unit criterion was derived by dividing the average annual cost for each wetland project by the AAHU for each wetland project. The average annual cost figures are based on price levels for the current year, the most current published discount rate, and a project life of 20 years. The fully-funded cost estimates include operation and maintenance and other compensated financial costs. Fully-funded cost estimates are developed for each project to determine how many projects could be supported through the Authorized program lifetime.

III. DESCRIPTION OF CANDIDATE PROJECTS

This section provides a concise narrative of each candidate project. The project details provided include the Coast 2050 strategy, project location, problem, goals, proposed solution, benefits, costs, sponsoring agency and contact persons, and a map identifying the project area and features if applicable.

Candidate Projects Located in Region 1

PPL26 Bayou La Loutre Ridge Restoration and Marsh Creation

Project Location:

Region 1, Lake Pontchartrain Basin and Breton Basin, St. Bernard Parish

Problem:

Historic and current ridge habitat loss occurs in the form of subsidence and shoreline erosion along Bayou La Loutre. The shoreline erosion is caused by increased boat traffic diverted due to the closure of the MRGO channel. Ridge habitat consists of Live Oak Hackberry Maritime forest which is utilized by trans-gulf migratory bird species as a first and last stop when crossing the Gulf of Mexico. This critical habitat is rated as S1-Most Critically Imperiled (State Natural Heritage Program) and S2 priority by the state of Louisiana. Interior marsh loss along Lena Lagoon is caused by subsidence, sediment deprivation, increased wave fetch and construction of access and navigational canals. The integrity of the Lena Lagoon shoreline has been breached, and loss of this wetland buffer will expose the La Loutre ridge to highly erosional winter storm events.

Goals:

The goal of the project is to create and approximately 31.7 acre ridge feature with material from bucket dredging Bayou La Loutre. Additionally dredged material from Lake Borgne will create 163 acres of marsh and nourish approximately 258 acres of marsh along Lena Lagoon (421 acres total).

Proposed Solution:

The proposed project will create approximately 5.46 miles (28,855 ft) of ridge along Bayou La Loutre and 24.4 acres of Live Oak/Hackberry Maritime forest habitat (Figure 1). The ridge habitat will be built centerline along the bank of the bayou. The structure will have a +4 elevation with a 5:1 slope on the bayou side and 3:1 slope on the marsh side. Additionally the newly created ridge will include herbaceous and woody plantings with smooth cord plantings along the toe. The Lena Lagoon site will create and nourish approximately 421 acres of marsh using sediment dredged from Lake Borgne. Lena Lagoon will have a semi-confined south and east flank and a fully confined north flank. Containment will be degraded as necessary to re-establish hydrologic connectivity with adjacent wetlands.

Project Benefits:

The project would result in approximately 167 net acres of marsh and approximately 20 acres of forested ridge over the 20-year project life.

Project Costs: The total fully-funded cost is \$29,762,138.

Preparer of Fact Sheet

Ron Boustany, NRCS, (337) 291-3067, ron.boustany@la.usda.gov




Cody Colvin, NRCS-Engineer, (225) 665-4253, cody.colvin@la.usda.gov

Blaise Pezold, LDAF-CRVP, 985-447-3871 ext. 3, Blaise.Pezold@la.nacdn.net



Bayou La Loutre Ridge Restoration and Marsh Creation (PPL26 Candidate)

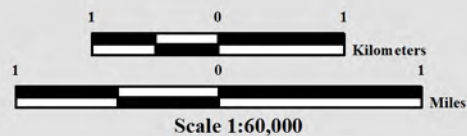


-  Ridge Restoration *
 -  Marsh Creation *
 -  Project Boundary
- * denotes proposed features



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 Wetland and Aquatic Research Center
 Coastal Restoration Assessment Branch
 Baton Rouge, La

Image Source:
 2012 DOQQ



Map ID: USGS-NWRC 2016-11-0030
 Map Date: June 30, 2016

PPL26 St. Catherine Island Marsh Creation and Shoreline Protection

Project Location:

Region 1, Pontchartrain Basin, St. Tammany Parish

Problem:

The eastern shoreline of Lake Pontchartrain experienced extensive loss of interior emergent wetlands and severe damage to the lake shorelines from Hurricane Katrina passing directly over the area in 2005. The continued loss of the weakened project area shorelines has increased the vulnerability of the New Orleans Landbridge and U.S. Highway 90. Based on the hyper-temporal analysis conducted by USGS for the extended project boundary, interior loss rates in the project area are estimated to be -0.26% per year for the period 1984 to 2016.

Goals:

The primary goals of this project are to protect a portion of the Lake Pontchartrain shoreline and restore/protect interior marsh habitat with the placement of dredged material (hydraulic dredge).

The specific goals of the project are; 1) halt shoreline erosion by protecting approximately 13,000 ft. of Lake Pontchartrain shoreline with shoreline revetment and construct approximately 7,000 ft. of foreshore dike and 2) create approximately 93 acres of marsh and nourish an additional 126 acres of marsh with material dredged from Lake Pontchartrain.

Proposed Solution:

Sediments from a Lake Pontchartrain borrow site will be hydraulically dredged and pumped via pipeline to create/nourish approximately 219 acres of marsh. The proposed design is to place the dredged material to a fill height of +0.85 ft. NAVD88 based on CRMS station 002. Dewatering and compaction of dredged sediments should produce marsh elevations conducive to the establishment of emergent marsh and within the intertidal range. Containment dikes will be constructed as necessary. Perimeter containment dikes exposed to high wave energy (Lake Pontchartrain) will be overlain with articulated concrete mats (ACM) and planted.

Approximately 13,000 ft. of Lake Pontchartrain shoreline would be protected with the construction of shoreline revetment. In areas that do not contain existing marsh, approximately 7,000 ft. of rock foreshore dike would be constructed. Along the open water areas adjacent to the marsh creation cells, approximately 4,000 feet of containment dike will be constructed and armored with ACM.

Project Benefits:

The project would result in approximately 214 net acres over the 20-year project life.

Project Costs:

The total fully-funded cost is \$35,996,522.






Preparer of Fact Sheet:

Robert Dubois, FWS, Robert_Dubois@fws.gov, 337-291-3127

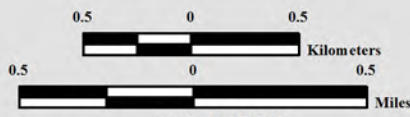


St. Catherine Island Marsh Creation and Shoreline Protection (PPL26 Candidate)



-  Shoreline Protection *
-  Marsh Creation *
-  Marsh Nourishment *
-  Borrow Site *
-  Project Boundary

* denotes proposed features



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 Baton Rouge, La

Image Source:
 2012 DOQQ

Map ID: USGS-NWRC 2016-11-0034
 Map Date: August 29, 2016

Candidate Projects Located in Region 2

PPL26 Elmer's Island Back Barrier Marsh Creation

Project Location:

Region 2, Barataria Basin, Jefferson Parish

Problem:

As part of an erosional headland, Elmer's Island is dominated by marine processes including over wash. The island narrowed and decreased in elevation escalating the rate of over wash and breaching near the confluence with the headland as well as along Caminada Pass. The spit along the pass is breached. Resiliency to over wash and breaching is related to both island height and width. Construction of beach and dune under Caminada Beach and Dune Restoration Increment 2 Project (BA-143) is addressing sand and dune height needs. Residual vulnerability from breaching may remain due to island width. The 1985 to 2009 USGS loss rate for the Port Fourchon mapping unit is -0.92% per year. The loss rate in the project area is estimated to be -0.79%/yr based on USGS hyper temporal data from 1984 to 2016.

Goals:

The project goal is to create/nourish approximately 265 acres (ac) of back-barrier marsh and maintain or improve hydrology by connecting the lagoon to the Bayou Thunder Von Tranc and Moreau watershed west of Elmer's Road.

Proposed Solution:

Marsh creation via dedicated dredging of sediment is the primary technique along with culvert placement to restore hydrologic connectivity to marsh located west of the project area. Sediment would be mined from an offshore borrow site and placed in the project area to create approximately 228 acres and nourish approximately 37 acres of saline marsh. The borrow site would be located to avoid inducing wave refraction/diffraction impacts on the shoreline. Material would be placed to achieve a settled target elevation of +0.87 feet NAVD 88, GEOID 12A based on CRMS station 0167. The marsh creation would be confined disposal with the dike along the lagoon gapped no later than three years after construction at a rate of 25 ft wide every 250 ft. Half of the created elevations (228 acres) would be planted with smooth cordgrass plugs. Two 36 inch culverts would be installed in four locations under Elmer's Road (total of eight culverts) to improve connection of marsh with the lagoon and vice versa.

Project Benefits:

The project would result in approximately 222 net acres over the 20-year project life.

Project Costs:

The total fully-funded cost is \$27,774,583.

Preparer(s) of Fact Sheet:

Twyla Cheatwood, NOAA's National Marine Fisheries Service, (225) 389-0508, ext 209;

Twyla.Cheatwood@noaa.gov.

Brandon Howard, NOAA's National Marine Fisheries Service, (225) 389-0508, ext. 207;

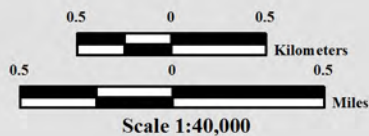
Brandon.Howard@noaa.gov



Elmer's Island Back Barrier Marsh Creation (PPL26 Candidate)



-  Culverts *
 -  Marsh Creation *
 -  Project Boundary
- * denotes proposed features



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 Baton Rouge, La

Image Source:
 2012 DOQQ

Map ID: USGS-NWRC 2016-11-0036
 Map Date: August 01, 2016

PPL26 East Bayou Lafourche Marsh Creation

Project Location:

Region 2, Barataria Basin, Lafourche Parish

Problem:

The Leeville area has experienced extensive loss of emergent wetlands from subsidence, storms, oil/gas canal dredging, and altered hydrology. Wetland loss has increased the vulnerability of Leeville and Louisiana Highway 1 to damage from tropical storms. Based on the hyper-temporal analysis conducted by USGS for the extended project boundary, loss rates in the project area are estimated to be -1.42% per year for the period 1984 to 2016.

Goals:

The primary goal of this project is to restore marsh habitat in open water and in deteriorated marsh via hydraulic dredging and placement of dredged material.

The specific goal of the project is create approximately 417 acres (368 acres of marsh creation and 49 acres of marsh nourishment) of marsh with dredged material.

Proposed Solution:

Sediments from a Little Lake borrow site will be hydraulically dredged and pumped via pipeline to create/nourish approximately 417 acres of marsh. Dewatering and compaction of dredged sediments should produce elevations conducive to the establishment of emergent marsh and within the intertidal range. Perimeter containment dikes will be constructed. Containment dikes exposed to open water will be planted with appropriate vegetation. Containment dikes will be gapped at the end of construction or by target year 3.

Project Benefits:

The project would result in approximately 325 net acres over the 20-year project life.

Project Costs:

The total fully-funded cost is \$36,784,975.

Preparer of Fact Sheet:

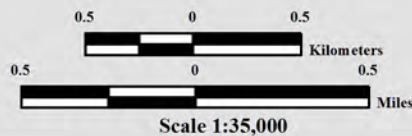
Kevin Roy, FWS, Kevin_Roy@fws.gov, 337-291-3120



East Bayou Lafourche Marsh Creation (PPL26 Candidate)



- Marsh Creation *
 - Project Boundary
- * denotes proposed features



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Image Source:
 2012 DOQQ

Map ID: USGS-NWRC 2016-11-0026
 Map Date: June 20, 2016

Candidate Projects Located in Region 3

PPL26 Bayou Terrebonne Freshwater Diversion

Project Location:

Region 3, Terrebonne Basin, Terrebonne Parish along Bayou Terrebonne between the towns of Montegut and Pointe aux Chenes in Terrebonne Parish. The primary project area is located within the Louisiana Department of Wildlife and Fisheries Pointe aux Chenes WMA.

Problem:

The Central and Eastern Terrebonne marshes are greatly deprived of freshwater, nutrients and sediments from riverine sources. Consequently, subsidence and saltwater intrusion have resulted in high rates of land loss. More recently, efforts have been underway to try to optimize freshwater flows to some of these areas where possible; however, the sources of freshwater are greatly limited. The Gulf Intracoastal Waterway (GIWW) has been recognized as a lateral source of freshwater from the Atchafalaya River extending from west to east across the entire Terrebonne Basin. This resource provides the potential to reroute freshwater through the bayous to the Central and East Terrebonne marshes.

Goals:

The project goals are 1) convey freshwater, nutrients and sediments from the Atchafalaya River east via the GIWW and Bayou Terrebonne into the Central and Eastern Terrebonne marshes and 2) create marsh habitat through construction of marsh terracing.

Proposed Solution:

Freshwater Diversion: The project will construct a freshwater diversion to move freshwater, nutrients and sediments originating largely from the Atchafalaya River via the GIWW and Bayou Terrebonne into the Montegut Unit and Pointe aux Chenes marshes in Central and Eastern Terrebonne Parish. The project will include rerouting water from Bayou Terrebonne through an existing canal system where a series of forced drainage pumps will be used to move freshwater into two adjacent marsh complexes. Two additional project-specific pumps will be installed at existing pump facilities to divert freshwater when forced drainage systems are not in service.

Terraces: Approximately 26,000 linear feet of terraces will be constructed in the Montegut Unit to create approximately 16 acres of marsh.

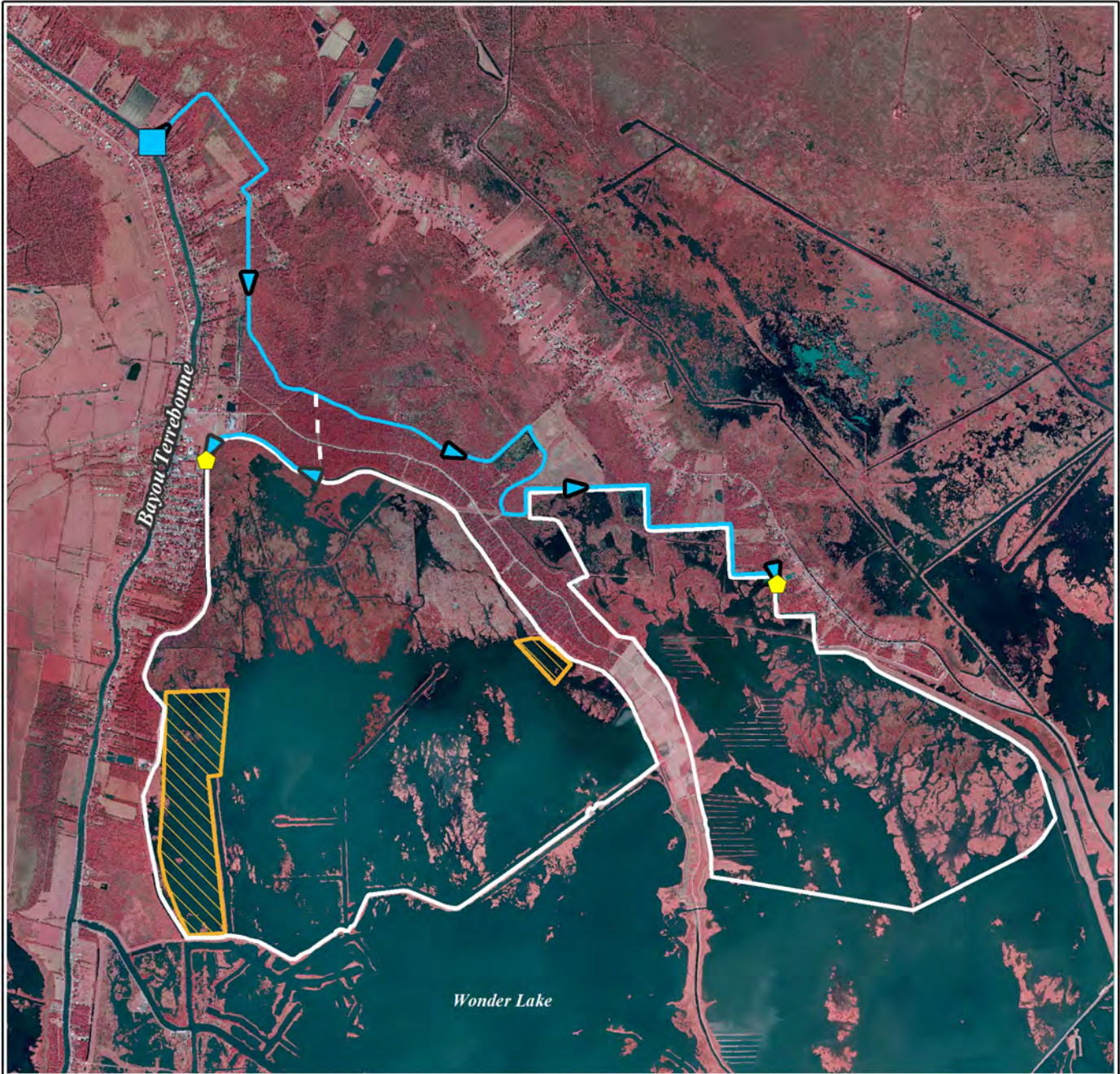
Project Benefits:

The project would result in approximately 173 net acres of marsh over the 20-year project life.

Project Costs:







The total fully-funded cost is \$22,636,335.

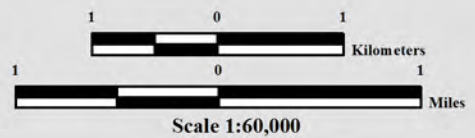
Preparer(s) of Fact Sheet: Ron Boustany, NRCS, (337) 291-3067, ron.boustany@la.usda.gov
Loland Broussard, NRCS-Engineer, (337) 291-3069, loland.broussard@la.usda.gov
Todd Baker, LA Dept. of Wildlife and Fisheries, (225) 765-2814, tbaker@wlf.la.gov



Bayou Terrebonne Freshwater Diversion (PPL26 Candidate)



- | | | | |
|---|----------------------|---|---|
|  | Freshwater Diversion |  | Channel Cleanout * |
|  | Pump |  | Terrace Field * |
|  | Freshwater Flow * |  | Freshwater Influence/
Project Boundary |
- * denotes proposed features



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Baton Rouge, La

Image Source:
2012 DOQQ

Map ID: USGS-NWRC 2016-11-0028
Map Date: September 09, 2016

PPL26 West Louisiana Highway 1 Marsh Creation

Project Location:

Region 3, Terrebonne Basin, Lafourche Parish

Problem:

The Terrebonne Basin is an abandoned delta complex, characterized by a thick section of unconsolidated sediments that are undergoing dewatering and compaction contributing to high subsidence, and a network of old distributary ridges extending southward from Houma. Historically, subsidence and numerous oil and gas canals and pipelines in the area have contributed significantly to wetland losses. Since 1932, the Terrebonne Basin has lost approximately 20% of its wetlands. Current loss rates range from approximately 4,500 to 6,500 acres/year. This loss amounts to up to 130,000 acres during the next 20 years. One-third of the Terrebonne Basin's remaining wetlands would be lost to open water by the year 2040. The wetland loss rate for the project area is -1.05%/year based on USGS hyper temporal data from 1984 to 2016.

Goals:

The project goal is to create and/or nourish up to 346 acres of saline marsh.

Proposed Solution:

Sediment will be hydraulically pumped from a borrow source in Catfish Lake to create and/or nourish approximately 346 acres of emergent marsh (292 acres of marsh creation and 54 acres of marsh nourishment). Material would be placed to achieve a settled target elevation of +0.64 ft NAVD88 Geoid 12A. Containment dikes will be constructed around the marsh creation area to retain sediment during pumping. The containment dikes will be degraded and/or gapped no later than three years post construction. The project will include planting smooth cordgrass plugs installed in strategic locations based on 10% of the acreage. A robust engineering and design cost is included for full flexibility during Phase 1 to investigate additive or alternate marsh creation features to the west and possibly north of the proposed project.

Project Benefits:

The project would result in approximately 267 net acres over the 20-year project life.

Project Costs:

The total fully-funded cost is \$31,868,399.

Preparer(s) of Fact Sheet:

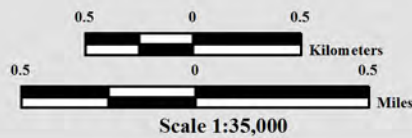
Dawn Davis, NOAA Fisheries, (225) 389-0508, ext. 206; dawn.davis@noaa.gov;
Patrick Williams, NOAA Fisheries, 225-389-0508, ext. 208, patrick.williams@noaa.gov



West Louisiana Highway 1 Marsh Creation (PPL26 Candidate)



- Marsh Creation *
 - Project Boundary
- * denotes proposed features



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 Wetland and Aquatic Research Center
 Coastal Restoration Assessment Branch
 Baton Rouge, La

Image Source:
 2012 DOQQ

Map ID: USGS-NWRC 2016-11-0032
 Map Date: July 01, 2016

PPL26 Bayou DeCade Ridge and Marsh Creation

Project Location:

Region 3, Terrebonne Basin, Terrebonne Parish, Lake Mechant Mapping Unit

Problem:

The Terrebonne Basin is an abandoned delta complex, characterized by a thick section of unconsolidated sediments that are undergoing dewatering and compaction, contributing to high subsidence, and a network of old distributary ridges extending southward from Houma. Historically, subsidence and numerous oil and gas canals and pipelines in the area have contributed to wetland loss. Since 1932, the Terrebonne Basin has lost approximately 20% of its wetlands. Current loss rates range from approximately 4,500 to 6,500 acres/year. This loss amounts to up to 130,000 acres during the next 20 years. One-third of the Terrebonne Basin's remaining wetlands would be lost to open water by the year 2040. The wetland loss rate for the project area is -0.79%/year based on USGS data from 1984 to 2016.

Goals:

The project goals are to construct 11,726 linear feet of ridge along the northern bank of Bayou DeCade and create and/or nourish approximately 501 acres of intermediate marsh along the northern bank of Bayou DeCade.

Proposed Solution:

The proposed project's primary feature is to restore 11,726 feet of Bayou DeCade northern ridge, create approximately 398 acres, and nourish approximately 107 acres of intermediate marsh adjacent to Lake DeCade. The ridge will be constructed to a crown elevation of +5.0 feet NAVD88, 15 feet wide, and will be planted on the crown and slopes. The ridge will be constructed by bucket dredging material from inside the marsh creation area and/or within Bayou DeCade. Sediment for marsh creation will be hydraulically pumped from a borrow source in Lake DeCade. The borrow area in Lake DeCade will be located and designed in a manner to avoid and minimize environmental impacts to the maximum extent practicable. Containment dikes will be constructed around the marsh creation area to retain sediment during pumping. Containment dikes will be gapped within three years post construction.

Project Benefits:

The project is would result in approximately 378 net acres over the 20-year project life.

Project Costs:

The total fully-funded cost is \$34,403,849.

Preparer(s) of Fact Sheet:

Kent Bollfrass, CPRA, 225-342-4733, kent.bollfrass@la.gov




Dawn Davis, NOAA Fisheries, 225-389-0508 ext 206, dawn.davis@noaa.gov

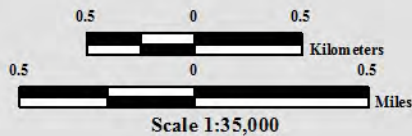
Patrick Williams, NOAA Fisheries, 225-389-0508, ext 208, patrick.williams@noaa.gov



Bayou De Cade Ridge and Marsh Creation (PPL26 Candidate)



-  Bankline Restoration *
 -  Marsh Creation *
 -  Project Boundary
- * denotes proposed features



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 Coastal Restoration Assessment Branch
 Baton Rouge, La
 Image Source:
 2012 DOQQ

Map ID: USGS-NWRC 2016-11-0031
 Map Date: September 20, 2016

Candidate Projects Located in Region 4

PPL26 East Pecan Island Marsh Creation

Project Location:

Region 4, Mermentau Basin, Vermilion Parish, and west of the Freshwater Bayou Navigation Channel

Problem:

The marshes to the west of the Freshwater Bayou Navigation Channel have experienced severe land loss and habitat conversion. What was once a productive freshwater marsh has been converted to open water due to the negative effects of exchange from the Freshwater Bayou Navigation Canal on soils followed by major hurricane impacts. Based on USGS hyper temporal data analysis (1984 to 2014), land loss for the area is -0.85% per year. The subsidence rate is estimated at 3.8 mm per year according to the 2012 Louisiana State Master Plan Appendix C.

Goals:

The primary goal of this project is to create marsh through dedicated dredging and vegetative plantings on the western side of the Freshwater Bayou Navigation Channel. This project will also help to reduce the potential for exchange between the target marshes and the Freshwater Bayou Navigation Channel by working synergistically with the ME-31 Freshwater Bayou Marsh Creation Project.

Proposed Solution:

This project will create and/or nourish 521 acres of marsh using approximately 3.5 million cubic yards of dredged fill material from an offshore borrow site within state waters. Once material is in place and adequately dewatered, containment dikes will be adequately gapped to allow tidal exchange of nutrients and aquatic organisms with the marsh. Additionally the project site would be planted at a 50% density at project year one in order to reestablish the plant productivity within the marsh. Material would be placed to achieve a settled target elevation of +1.1 feet NAVD88 based on CRMS station 0580. Temporary dikes, where necessary, would be constructed to contain the fill. If the dikes do not naturally degrade to marsh elevation within three years, they would be gapped.

Project Benefits:

The project would result in approximately 459 net acres over the 20-year project life.

Project Costs:

The total fully-funded cost is \$54,825,078.

Preparer(s) of Fact Sheet:

Adrian Chavarria, EPA; (214) 665-3103; chavarria.adrian@epa.gov

Sharon Osowski, Ph.D., EPA; (214) 665-7506; osowski.sharon@epa.gov

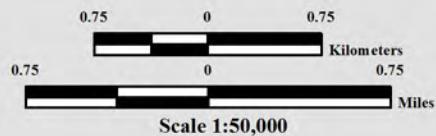
Scott Wandell, USACE; (504) 862-1878; scott.f.wandell@usace.army.mil



East Pecan Island Marsh Creation (PPL26 Candidate)



- Marsh Creation *
 - ME-31 Project Boundary
 - Project Boundary
- * denotes proposed features



Produced by:
 U.S. Department of the Interior
 U.S. Geological Survey
 Wetland and Aquatic Research Center
 Coastal Restoration Assessment Branch
 Baton Rouge, La
 Image Source:
 2012 DOQQ

Map ID: USGS-NWRC 2016-11-0027
 Map Date: June 20, 2016

PPL26 North Mud Lake Marsh Creation and Nourishment

Project Location:

Region 4, Calcasieu-Sabine Basin, Cameron Parish

Problem:

Altered hydrology, saltwater intrusion, conversion of marsh to open water, and other anthropogenic changes have caused the area to undergo interior marsh breakup. Impacts from Hurricane Rita in 2005 and Hurricane Ike in 2008 increased wetland loss north of Mud Lake. Based on USGS data from the extended boundary during 1984 to 2016, the Mud Lake project area loss rate was -0.76% per year. The subsidence rate is estimated at 3.8 mm per year according to the 2012 Louisiana State Master Plan Appendix C.

Goals:

The primary goals of the project are to create and nourish approximately 492 acres of brackish marsh and convert 168 acres of an upland disposal area to saline marsh. One quarter of the created acres in the CDF marsh creation area will be planted with vegetation.

Proposed Solution:

Sediment would be mined from an upland former confined disposal facility (CDF) along the Calcasieu Ship Channel to create 466 acres and nourish 26 acres of brackish marsh; an additional 168 acres of saline marsh would be created in the upland disposal area. Material would be placed to achieve a settled target elevation of +1.5 feet NAVD88 (GEOID12A) based on CRMS station 0685. Containment dikes would be constructed around the marsh creation area to keep material on-site during pumping. To facilitate estuarine fisheries access, containment dikes will be degraded and/or gapped no later than three years post-construction if the dikes do not naturally degrade, and approximately 10,000 linear feet (5.3 acres) of tidal creeks will be constructed. A portion of the former CDF will be mined to approximately +1.5 feet NAVD88 (GEOID12A), reestablishing approximately 168 acres as emergent saline marsh from its current state (upland disposal). The CDF containment dike at the borrow area marsh creation area would be gapped on the Calcasieu Lake side to improve hydrologic access to the created marsh. A quarter of the CDF marsh creation area will be planted using bare root plugs.

Project Benefits:

The project would result in approximately 590 net acres over the 20-year project life.

Project Costs:

The total fully-funded cost is \$59,930,304.

Preparer(s) of Fact Sheet:

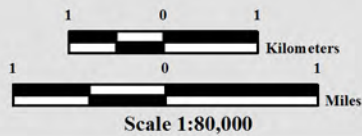
Donna Rogers, NOAA National Marine Fisheries Service; (225) 636-2095;
donna.rogers@noaa.gov.



North Mud Lake Marsh Creation (PPL26 Candidate)



- Marsh Creation ***
 - Borrow Site ***
 - Project Boundary**
- * denotes proposed features



Produced by:
 U.S. Department of the Interior
 U.S. Geological Survey
 Wetland and Aquatic Research Center
 Coastal Restoration Assessment Branch
 Baton Rouge, La

Image Source:
 2012 DOQQ

Map ID: USGS-NWRC 2016-11-0033
 Map Date: September 29, 2016

Coastwide Candidate Project

PPL26 *Salvinia* Weevil Propagation Facility

Project Location:

Coastwide project in fresh and low salinity marshes

Problem:

The invasive plant, giant *Salvinia*, was first observed in Chenier Plain marshes in 2009. Since then it has spread throughout most the Louisiana Chenier Plain marshes. This plant can stack up above the water surface to as much as 6 to 12 inches. Under such conditions, oxygen exchange is greatly reduced, and decay of shaded *Salvinia* can easily cause anoxic conditions in affected areas. As a result, habitat quality of badly infested areas is severely degraded, and may affect many species typical of fresh and intermediate marshes, including many species of management concern (alligator snapping turtle, mottled duck [including critical brood rearing habitat], wintering migratory waterfowl, black rail, king rail, little blue heron, whooping crane, and peregrine falcon). Because of anoxic conditions, estuarine-dependent fish and shellfish that would normally use these marshes may be precluded from using them.

Goals:

Operate a weevil propagation facility in Jeanerette, like that previously operated by LSU in Houma, to make weevils available free of charge to landowners in coastal Louisiana.

Proposed Solution:

The project would fund the LSU Ag. Center to operate a pond in Jeanerette to produce weevil-infested *Salvinia*. Costs associated with this project consist primarily of supplies and one part-time position to operate the pond, coordinate public weevil harvests, keep records of release locations, monitor *Salvinia* problem areas, assist landowners conduct weevil releases, relay infested *Salvinia* to new locations, and conduct public outreach to promote the program.

Project Benefits:

Although *Salvinia* mats deposited on the marsh surface may smother and kill marsh vegetation, its primary impact is to severely degrade the fish and wildlife habitat functions provided by marsh ponds and waterbodies. The proposed project would help to prevent marsh smothering impacts and restore habitat and fisheries nursery functions lost as a result of *Salvinia* infestations. The project is projected to result in 26 net acres over the 20-year project life.

Project Costs:

The total fully funded cost is \$3,802,748.

Preparer of Fact Sheet:

Ronny Paille, FWS, Ronald.Paille@fws.gov, 337-291-3117

IV. DESCRIPTION OF CANDIDATE DEMONSTRATION PROJECTS

This section provides a concise narrative of each demonstration project. The project details provided include the Coast 2050 strategy, project location, problem, goals, proposed solution, benefits, cost sponsoring agency, and contact persons.

Candidate Demonstration Projects

PPL26 EcoBale Shoreline Protection Demonstration Project

Potential Demonstration Project Location:

Coastwide: Eroding Shorelines

Problem:

Louisiana is experiencing rapid land loss along the shorelines of lakes, bays, and channels. Historically, heavy materials such as rock and rip rap have been used to protect shorelines from erosion. Yet, in many shoreline areas, underlying soils are poor and not able to support the weight of rock and rip rap. The demonstration project would introduce an innovative solution for protecting shores from erosive wave energy and help prevent nearby broken marsh areas from converting to larger open water areas, maintaining and enhancing marsh habitat & function.

Goals:

The goal of an EcoBale demonstration project would be to demonstrate its application and versatility for protecting shorelines by reducing wave energy and aid in restoring marshes and shorelines by re-establishing or creating new growth of vegetation in areas protected from erosion. The EcoBale would serve as an alternative to rock, rip rap & concrete shoreline protection applications.

Proposed Solution:

One EcoBale unit consists of 20 ft of plastic matrix rolls positioned onto a 4" diameter x 21' marine coated schedule 40 pipe (FIGURE 1). A pad eye welded onto each end serves as the anchor point. Each EcoBale is anchored in place using a helical anchor system. Standard roll diameter is four and a half feet however the diameter can be customized to project site water depths (FIGURE 2). The pre-installed weight of one EcoBale unit is 40 pounds per foot or 800 pounds. A vegetated matrix strip will be attached to the surface of each EcoBale. The plugs are planted in 2 rows with 4 plants/ft. There will be 2520' of pre-planted strip for 2700' of EcoBales (20' of strip per EcoBale). 10,080 total plugs are planted in 2520' of pre-planted strips. The demonstration would include 3-900' sections of EcoBale (42 units in each 900' section). Each 20' EcoBale unit would be separated by an 18" gap. Water depths would range from 2 to 4 feet. The total project would be 2700 linear feet. Project effectiveness would be monitored and evaluated. See conceptual treatment in Figure 3.

Project Benefits:

Project benefits include a non-rock alternative to shoreline protection in locations where underlying soils will not support traditional rock or other hard structures.

Project Costs:

The total fully-funded cost is \$2,714,293.

Preparer of Fact Sheet:

Ted Martin, Martin Ecosystems, (225) 292-6750, ted@martinecosystems.com
Susan M. Hennington, (504) 862-2504, susan.m.hennington@usace.army.mil

FIGURE 1: Front View

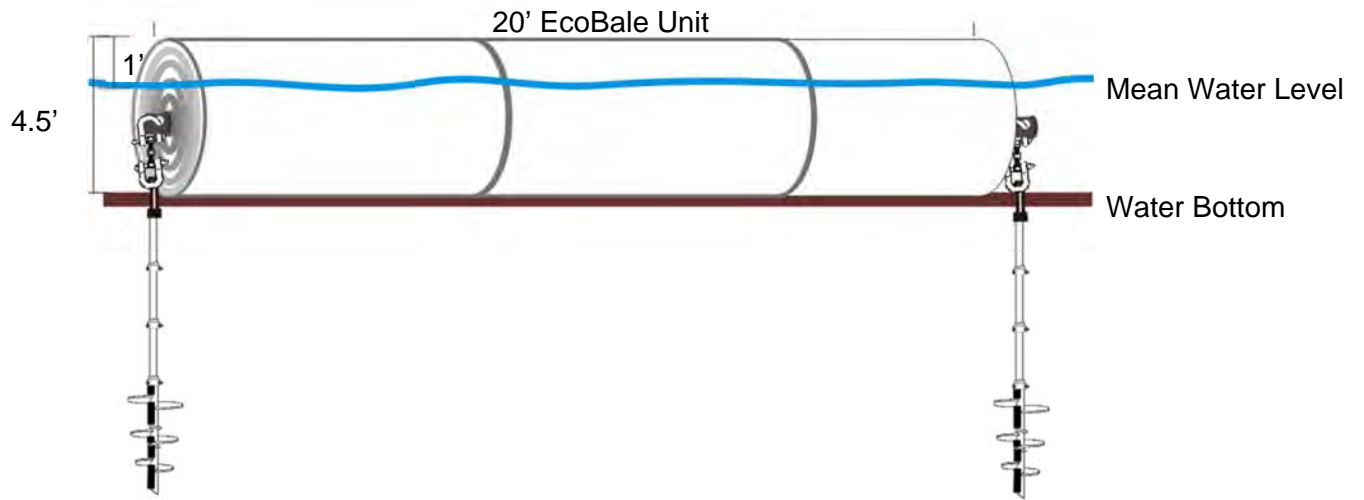


FIGURE 2: Side View

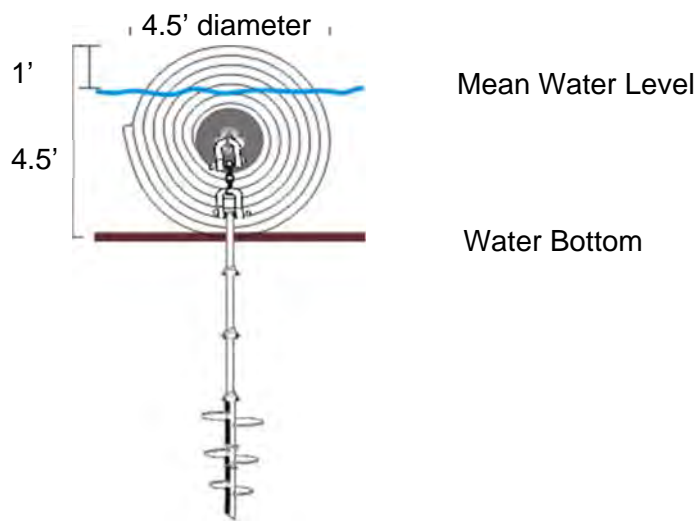
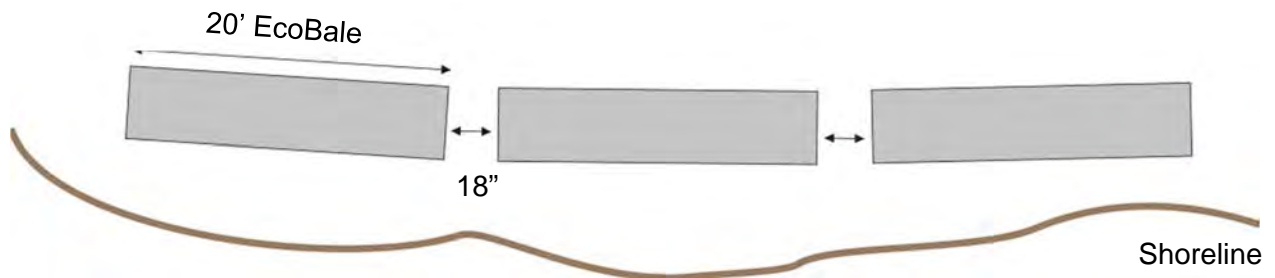


FIGURE 3: Placement near shoreline (900' = 42 EcoBale Units)



PPL26 Enhancing Restoration Transplant Survival via Stress Acclimation Demonstration Project

Potential Demonstration Project Location:

Coastwide

Problem:

Barrier island restoration projects represent a \$1B investment to provide important habitat for migrating bird species and storm protection for coastal Louisiana. The success of these projects depends on the successful installation and survival of vegetation to secure freshly established dredge spoil sediment. This demonstration project would explore the use of drought and salt conditioning in dune and swale species to improve transplant success and survival.

Goals:

Incorporate a barrier island planting effort with an experimental approach to determine the effect of using pre-transplantation salt and drought conditioning techniques to enhance survival of five barrier island dune and swale species.

Proposed Solution:

Scientifically test the practice of salt conditioning and progressive drought conditioning as a means to enhance barrier island transplant survival through stress acclimation in five plant species commonly used for barrier island restoration plantings. Salinity treatments would characterize various durations of pre-transplant salinity exposure, including gradual increments of salinity. Drought conditioning would consist of three watering regimes representing ambient conditions and two degrees of drought. Following the stress conditioning period, plants will be relocated to each of four transplant scenarios. Scientific monitoring of plant survival, morphology, and physiology will be done to assess and compare experimental units. Findings from these studies are expected to inform restoration practices and enhance restoration planting success in future efforts.

Project Benefits:

1. Enhanced knowledge of stress physiology of common restoration species
2. Development of new plant nursery methods or justification of current methods
3. Enhance transplant survival success in future restoration efforts

Project Costs:

The total fully-funded cost is \$1,044,632.

Preparer(s) of Fact Sheet:

Taylor Sloey, PhD. Coastal Environments, Inc. (402) 580-9002; tsloey@coastalenv.com
Kent Bollfrass, CPRA, (225) 342-4733; kent.bollfrass@la.gov

PPL26 SHORE|LINKS® Demonstration Project

Potential Demonstration Project Location:

Coastwide

Problem:

Many Louisiana coastal restoration projects are faced with the combined challenges of foundation issues and shallow, environmentally sensitive access routes. Often, shorelines and similar man-made features are subject to erosion from waves and currents. Combating erosion with heavy materials (e.g. rock) often requires access dredging. Depending on the project scale, the equipment and dredging requirements may make projects impracticable. Additionally, poor foundations may not support heavier stabilization materials.

Goals:

The specific goal of this proposal is to equip the CWPPRA program with the SHORE|LINKS® system, a scalable tool for economically and effectively mitigating the effects of scour and erosion. SHORE|LINKS® will allow the CWPPRA program to efficiently create vegetated earthen-core berms resistant to erosion.

Proposed Solution:

Patented by the LSU AgCenter with exclusive license rights to Delta Land Services, SHORE|LINKS® consists of lightweight, clay aggregate in a poly mesh fabric casing. The mesh contains multiple, aggregate-filled lobes, which minimizes the weight of the units while maximizing unit height. These features allow for interlocking of the units and the entrapment of sediments. The SHORE|LINKS® system offers Articulating Revetments (10' x 10' x 3") and Tiling Mats (26" x 17" x 3") for armoring and vegetating shorelines and embankments and a Breakwater Log (10" height x 6' long) to aid in dissipation of wave energy at earthen berms, terraces or containment dikes. More information can be found at www.shore-links.com.

Project Benefits:

Project benefits include:

- 1) A non-rock alternative for armoring earthen berms, terraces or containment dikes in locations where wave energy makes these features vulnerable to excessive erosion.
- 2) Combines armored protection with living shoreline by allowing for easy planting and establishment of vegetation.
- 3) Offers at least three configurations of the material (articulation revetments, tiling mats and breakwater logs) for flexible design to suite location.

Project Costs:

The fully-funded cost is \$3,404,704.

Preparer of Fact Sheet:

Ron Boustany, NRCS, 337-291-3067, ron.boustany@la.usda.gov

Cody Colvin, 225-665-4253, x112, cody.colvin@la.usda.gov

Tyler Ortego, Delta Land-Services, 337-591-6110, tyler@oratechnologies.com

Tyler Thigpen, Delta Land-Services, 337-591-6110, tyler@deltaland-services.com



Installed

SHORE | LINKS®



After Planting



1 Year Later

Laying out SHORE | LINKS® on newly constructed berm and planting smooth cord-grass and seashore paspalum



V. Project Selection

On January 12th, 2017 the CWPPRA Task Force made its selection for the 26th PPL. The CWPPRA Task Force selection for the 26th PPL is shown in Table 6.

Table 6: The 26th Priority Project List

Project Number	Project Name	Physical Type	Sponsoring Agency	Total Fully Funded Cost	Fully-Funded Phase I Cost	Fully-Funded Phase II Cost	Average Annual Habitat Units (AAHU)
TE-138	Bayou DeCade Ridge and Marsh Creation	MC	NMFS	\$34,403,849	\$3,282,292	\$31,121,557	133.37
PO-179	St. Catherine Island Marsh Creation and Shoreline Protection	MC/SP	NMFS	\$35,996,522	\$2,389,308	\$33,604,214	91.39
PO-178	Bayou La Loutre Ridge and Marsh Restoration	MC	NMFS	\$29,762,138	\$3,236,952	\$26,525,186	103.87
LA-284	Salvinia Weevil Propagation Facility		NMFS	\$3,802,748	\$3,802,748	\$0	597.49
TOTALS				\$103,965,257	\$12,711,300	\$91,253,957	926.12

Project Physical Type:
MC = Marsh Creation

Sponsoring Agencies:
NMFS = National Marine Fisheries Service

VI. DESCRIPTION OF PROJECTS SELECTED FOR PHASE I FUNDING

This section provides a concise narrative of each selected project that was funded for Phase I. The project details provided include the project location, problem, goals, solution, benefits, costs, sponsoring agency and contact persons and a map identifying the project area and features if applicable.

PPL26 Bayou DeCade Ridge and Marsh Creation

Project Location:

Region 3, Terrebonne Basin, Terrebonne Parish, Lake Mechant Mapping Unit

Problem:

The Terrebonne Basin is an abandoned delta complex, characterized by a thick section of unconsolidated sediments that are undergoing dewatering and compaction, contributing to high subsidence, and a network of old distributary ridges extending southward from Houma. Historically, subsidence and numerous oil and gas canals and pipelines in the area have contributed to wetland loss. Since 1932, the Terrebonne Basin has lost approximately 20% of its wetlands. Current loss rates range from approximately 4,500 to 6,500 acres/year. This loss amounts to up to 130,000 acres during the next 20 years. One-third of the Terrebonne Basin's remaining wetlands would be lost to open water by the year 2040. The wetland loss rate for the project area is -0.79%/year based on USGS data from 1984 to 2016.

Goals:

The project goals are to construct 11,726 linear feet of ridge along the northern bank of Bayou DeCade and create and/or nourish approximately 501 acres of intermediate marsh along the northern bank of Bayou DeCade.

Proposed Solution:

The proposed project's primary feature is to restore 11,726 feet of Bayou DeCade northern ridge, create approximately 398 acres, and nourish approximately 107 acres of intermediate marsh adjacent to Lake DeCade. The ridge will be constructed to a crown elevation of +5.0 feet NAVD88, 15 feet wide, and will be planted on the crown and slopes. The ridge will be constructed by bucket dredging material from inside the marsh creation area and/or within Bayou DeCade. Sediment for marsh creation will be hydraulically pumped from a borrow source in Lake DeCade. The borrow area in Lake DeCade will be located and designed in a manner to avoid and minimize environmental impacts to the maximum extent practicable. Containment dikes will be constructed around the marsh creation area to retain sediment during pumping. Containment dikes will be gapped within three years post construction.

Project Benefits:

The project is would result in approximately 378 net acres over the 20-year project life.

Project Costs:

The total fully-funded cost is \$34,403,849.

Preparer(s) of Fact Sheet:

Kent Bollfrass, CPRA, 225-342-4733, kent.bollfrass@la.gov




Dawn Davis, NOAA Fisheries, 225-389-0508 ext 206, dawn.davis@noaa.gov

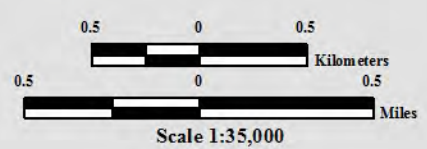
Patrick Williams, NOAA Fisheries, 225-389-0508, ext 208, patrick.williams@noaa.gov



Bayou De Cade Ridge and Marsh Creation (PPL26 Candidate)



-  Bankline Restoration *
 -  Marsh Creation *
 -  Project Boundary
- * denotes proposed features



Produced by:
 U.S. Department of the Interior
 U.S. Geological Survey
 Wetland and Aquatic Research Center
 Coastal Restoration Assessment Branch
 Baton Rouge, La
 Image Source:
 2012 DOQQ

Map ID: USGS-NWRC 2016-11-0031
 Map Date: September 20, 2016

PPL26 St. Catherine Island Marsh Creation and Shoreline Protection

Project Location:

Region 1, Pontchartrain Basin, St. Tammany Parish

Problem:

The eastern shoreline of Lake Pontchartrain experienced extensive loss of interior emergent wetlands and severe damage to the lake shorelines from Hurricane Katrina passing directly over the area in 2005. The continued loss of the weakened project area shorelines has increased the vulnerability of the New Orleans Landbridge and U.S. Highway 90. Based on the hyper-temporal analysis conducted by USGS for the extended project boundary, interior loss rates in the project area are estimated to be -0.26% per year for the period 1984 to 2016.

Goals:

The primary goals of this project are to protect a portion of the Lake Pontchartrain shoreline and restore/protect interior marsh habitat with the placement of dredged material (hydraulic dredge).

The specific goals of the project are; 1) halt shoreline erosion by protecting approximately 13,000 ft. of Lake Pontchartrain shoreline with shoreline revetment and construct approximately 7,000 ft. of foreshore dike and 2) create approximately 93 acres of marsh and nourish an additional 126 acres of marsh with material dredged from Lake Pontchartrain.

Proposed Solution:

Sediments from a Lake Pontchartrain borrow site will be hydraulically dredged and pumped via pipeline to create/nourish approximately 219 acres of marsh. The proposed design is to place the dredged material to a fill height of +0.85 ft. NAVD88 based on CRMS station 002. Dewatering and compaction of dredged sediments should produce marsh elevations conducive to the establishment of emergent marsh and within the intertidal range. Containment dikes will be constructed as necessary. Perimeter containment dikes exposed to high wave energy (Lake Pontchartrain) will be overlain with articulated concrete mats (ACM) and planted.

Approximately 13,000 ft. of Lake Pontchartrain shoreline would be protected with the construction of shoreline revetment. In areas that do not contain existing marsh, approximately 7,000 ft. of rock foreshore dike would be constructed. Along the open water areas adjacent to the marsh creation cells, approximately 4,000 feet of containment dike will be constructed and armored with ACM.

Project Benefits:

The project would result in approximately 214 net acres over the 20-year project life.

Project Costs:

The total fully-funded cost is \$35,996,522.

Preparer of Fact Sheet:

Robert Dubois, FWS, Robert_Dubois@fws.gov, 337-291-3127








St. Catherine Island Marsh Creation and Shoreline Protection (PPL26 Candidate)



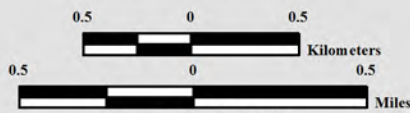
Produced by:
 U.S. Department of the Interior
 U.S. Geological Survey
 Wetland and Aquatic Research Center
 Coastal Restoration Assessment Branch
 Baton Rouge, La

Image Source:
 2012 DOQQ



-  Shoreline Protection *
-  Marsh Creation *
-  Marsh Nourishment *
-  Borrow Site *
-  Project Boundary

* denotes proposed features



Map ID: USGS-NWRC 2016-11-0034
 Map Date: August 29, 2016

PPL26 Bayou La Loutre Ridge Restoration and Marsh Creation

Project Location:

Region 1, Lake Pontchartrain Basin and Breton Basin, St. Bernard Parish

Problem:

Historic and current ridge habitat loss occurs in the form of subsidence and shoreline erosion along Bayou La Loutre. The shoreline erosion is caused by increased boat traffic diverted due to the closure of the MRGO channel. Ridge habitat consists of Live Oak Hackberry Maritime forest which is utilized by trans-gulf migratory bird species as a first and last stop when crossing the Gulf of Mexico. This critical habitat is rated as S1-Most Critically Imperiled (State Natural Heritage Program) and S2 priority by the state of Louisiana. Interior marsh loss along Lena Lagoon is caused by subsidence, sediment deprivation, increased wave fetch and construction of access and navigational canals. The integrity of the Lena Lagoon shoreline has been breached, and loss of this wetland buffer will expose the La Loutre ridge to highly erosional winter storm events.

Goals:

The goal of the project is to create and approximately 31.7 acre ridge feature with material from bucket dredging Bayou La Loutre. Additionally dredged material from Lake Borgne will create 163 acres of marsh and nourish approximately 258 acres of marsh along Lena Lagoon (421 acres total).

Proposed Solution:

The proposed project will create approximately 5.46 miles (28,855 ft) of ridge along Bayou La Loutre and 24.4 acres of Live Oak/Hackberry Maritime forest habitat (Figure 1). The ridge habitat will be built centerline along the bank of the bayou. The structure will have a +4 elevation with a 5:1 slope on the bayou side and 3:1 slope on the marsh side. Additionally the newly created ridge will include herbaceous and woody plantings with smooth cord plantings along the toe. The Lena Lagoon site will create and nourish approximately 421 acres of marsh using sediment dredged from Lake Borgne. Lena Lagoon will have a semi-confined south and east flank and a fully confined north flank. Containment will be degraded as necessary to re-establish hydrologic connectivity with adjacent wetlands.

Project Benefits:

The project would result in approximately 167 net acres of marsh and approximately 20 acres of forested ridge over the 20-year project life.

Project Costs: The total fully-funded cost is \$29,762,138.

Preparer of Fact Sheet

Ron Boustany, NRCS, (337) 291-3067, ron.boustany@la.usda.gov




Cody Colvin, NRCS-Engineer, (225) 665-4253, cody.colvin@la.usda.gov

Blaise Pezold, LDAF-CRVP, 985-447-3871 ext. 3, Blaise.Pezold@la.nacdn.net



Bayou La Loutre Ridge Restoration and Marsh Creation (PPL26 Candidate)

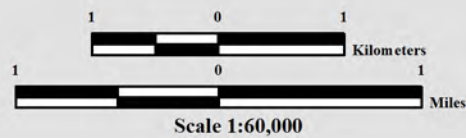


-  Ridge Restoration *
 -  Marsh Creation *
 -  Project Boundary
- * denotes proposed features



Produced by:
 U.S. Department of the Interior
 U.S. Geological Survey
 Wetland and Aquatic Research Center
 Coastal Restoration Assessment Branch
 Baton Rouge, La

Image Source:
 2012 DOQQ



Map ID: USGS-NWRC 2016-11-0030
 Map Date: June 30, 2016

PPL26 *Salvinia* Weevil Propagation Facility

Project Location:

Coastwide project in fresh and low salinity marshes

Problem:

The invasive plant, giant *Salvinia*, was first observed in Chenier Plain marshes in 2009. Since then it has spread throughout most the Louisiana Chenier Plain marshes. This plant can stack up above the water surface to as much as 6 to 12 inches. Under such conditions, oxygen exchange is greatly reduced, and decay of shaded *Salvinia* can easily cause anoxic conditions in affected areas. As a result, habitat quality of badly infested areas is severely degraded, and may affect many species typical of fresh and intermediate marshes, including many species of management concern (alligator snapping turtle, mottled duck [including critical brood rearing habitat], wintering migratory waterfowl, black rail, king rail, little blue heron, whooping crane, and peregrine falcon). Because of anoxic conditions, estuarine-dependent fish and shellfish that would normally use these marshes may be precluded from using them.

Goals:

Operate a weevil propagation facility in Jeanerette, like that previously operated by LSU in Houma, to make weevils available free of charge to landowners in coastal Louisiana.

Proposed Solution:

The project would fund the LSU Ag. Center to operate a pond in Jeanerette to produce weevil-infested *Salvinia*. Costs associated with this project consist primarily of supplies and one part-time position to operate the pond, coordinate public weevil harvests, keep records of release locations, monitor *Salvinia* problem areas, assist landowners conduct weevil releases, relay infested *Salvinia* to new locations, and conduct public outreach to promote the program.

Project Benefits:

Although *Salvinia* mats deposited on the marsh surface may smother and kill marsh vegetation, its primary impact is to severely degrade the fish and wildlife habitat functions provided by marsh ponds and waterbodies. The proposed project would help to prevent marsh smothering impacts and restore habitat and fisheries nursery functions lost as a result of *Salvinia* infestations. The project is projected to result in 26 net acres over the 20-year project life.

Project Costs:

The total fully funded cost is \$3,802,748.

Preparer of Fact Sheet:

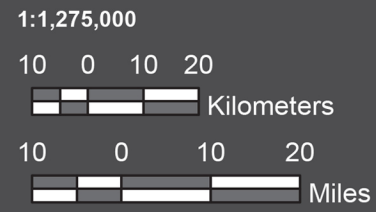
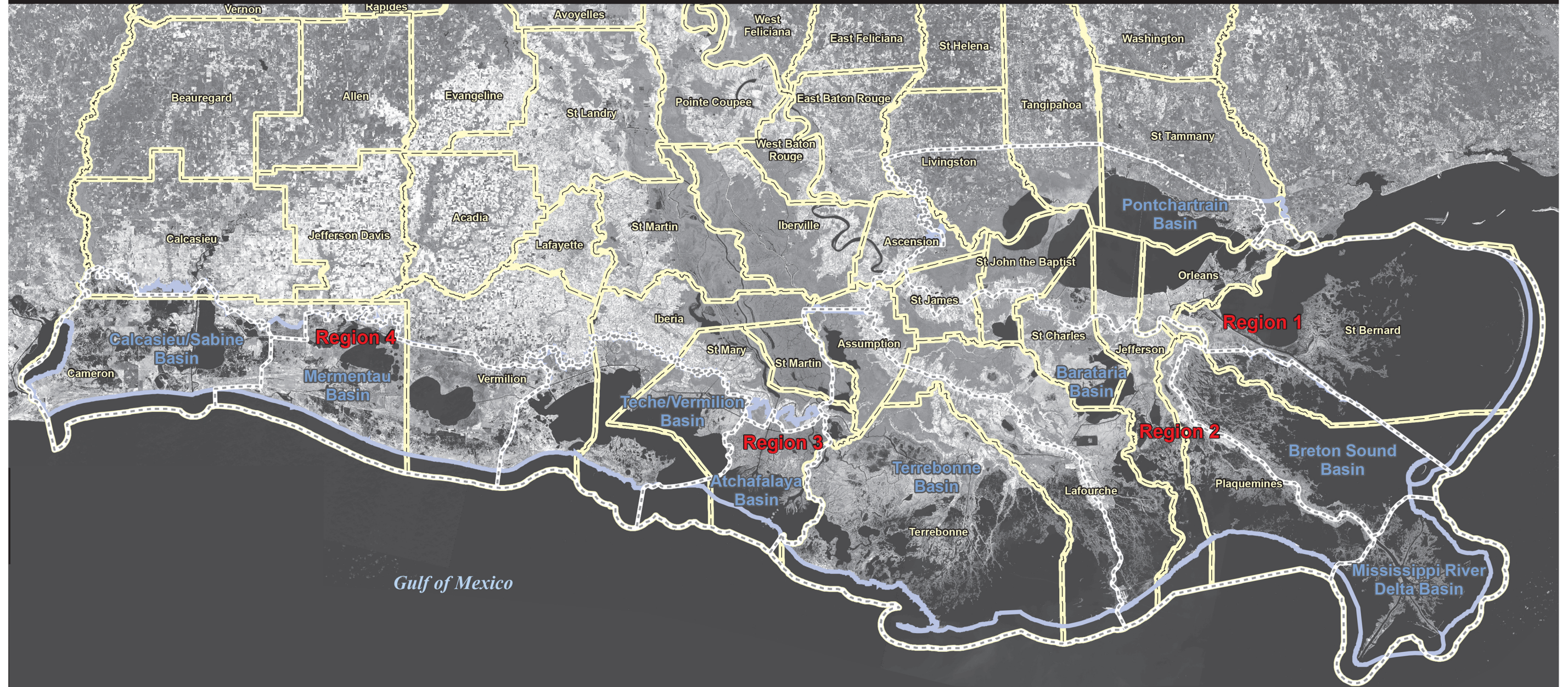
Ronny Paille, FWS, Ronald.Paille@fws.gov, 337-291-3117

VII. SUMMARY AND CONCLUSIONS

The 26th PPL consists of 4 projects, for a Phase I cost of \$12,711,300 and a Phase II cost of \$91,253,957 which will be funded as these projects mature. The total net wetland benefits of the implementing the four PPL 26 projects is estimate to be 805 acres or 926 AAHUs, based on a comparison of future with and without-project conditions over the 20-year project life.

The CWPPRA Task Force believes the recommended projects represent the best strategy for addressing the immediate needs of Louisiana's coastal wetlands. The CWPPRA Task Force will conduct a final review of the plans and specifications for each project prior to the award of construction contracts by the lead Task Force agency and the allocation of construction funds by the Task Force.

Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) Hydrologic Basins and Coast 2050 Regions



- Hydrologic Basin
- Region Boundary
- Parish Boundary

Image Source:
2014 Landsat 8 OLI Imagery
Band 5 Mosaic

Produced by:
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Coastal Restoration Assessment Branch
Baton Rouge, La.

Map ID: USGS-NWRC 2015-11-0019
Map Date: June 05, 2015

PLATE 2. SUMMARY OF PROJECTS 1-26 PRIORITY PROJECT LISTS

Deauthorized = underlined; Coastal Impact Assistance Program (CIAP) = *italics*

1st Priority Project List

U.S. Environmental Protection Agency

TE-20 Isles Dernieres Restoration East Island

U.S. Department of the Army

MR-03 West Bay Sediment Diversion

PO-17 Bayou LaBranche Wetland Creation

BA-19 Barataria Bay Waterway Wetland Creation

TV-03 Vermilion River Cutoff Bank Protection

U.S. Department of Commerce

BA-18 Fourchon Hydrologic Restoration

TE-19 Lower Bayou laCache Hydrologic Restoration

U.S. Department of Agriculture

BA-02 GIWW to Clovelly Hydrologic Restoration

TE-18 Vegetative Plantings - Timbalier Island Planting Demonstration

TE-17 Vegetative Plantings - Falgout Canal Planting Demonstration

CS-19 Vegetative Plantings - West Hackberry Planting Demonstration

ME-08 Vegetative Plantings - Dewitt-Rollover Planting Demonstration

U.S. Department of the Interior

PO-16 Bayou Sauvage National Wildlife Refuge Hydrologic Restoration, Phase 1

ME-09 Cameron Prairie Refuge National Wildlife Refuge Shoreline Protection

CS-18 Sabine National Wildlife Refuge Erosion Protection

CS-17 Cameron Creole Plugs

2nd Priority Project List

U.S. Environmental Protection Agency

TE-24 Isles Dernieres Restoration Trinity Island

U.S. Department of the Army

TE-23 West Belle Pass Headland Restoration

CS-22 Clear Marais Bank Protection

U.S. Department of Commerce

AT-02 Atchafalaya Sediment Delivery

TE-22 Point Au Fer Canal Plugs

AT-03 Big Island Mining

U.S. Department of Agriculture

ME-04 Freshwater Bayou Wetland Protection

CS-09 Brown Lake Hydrologic Restoration

BA-20 Jonathan Davis Wetland Restoration

CS-20 East Mud Lake Marsh Management

CS-21 Hwy. 384 Hydrologic Restoration

PO-06 Fritchie Marsh Creation

TV-09 Vermilion Bay/Boston Canal Shoreline Stabilization

BS-03a Caernarvon Diversion Outfall Management

U.S. Department of the Interior

PO-18 Bayou Sauvage National Wildlife Refuge Hydrologic Restoration, Phase 2

3rd Priority Project List

U.S. Environmental Protection Agency

TE-27 Whiskey Island Restoration

PO-20 Red Mud Demonstration

U.S. Department of the Army

PO-19 MRGO Disposal Area Marsh Protection

MR-06 Channel Armor Gap Crevasse

MR-07 Pass-a-Loutre Crevasse

U.S. Department of Commerce

BA-21 Bayou Perot/Bayou Rigolettes Marsh Restoration

TE-26 Lake Chapeau Sediment Input and Hydrologic Restoration

TE-25 East Timbalier Island Sediment Restoration, Phase 1

BA-15 *Lake Salvador Shore Protection Demonstration*

U.S. Department of Agriculture

BA-04c West Pointe-a-la Hache Outfall Management

TV-04 Cote Blanche Hydrologic Restoration

CS-04a Cameron - Creole Maintenance

BS-04a White's Ditch Outfall Management

TE-28 Brady Canal Hydrologic Restoration

PO-09a Violet Freshwater Distribution

ME-12 Southwest Shore White Lake Demonstration

U.S. Department of the Interior

CS-23 Sabine Refuge Structure Replacement (Hog Island)

4th Priority Project List

U.S. Environmental Protection Agency

CS-26 Compost Demonstration

U.S. Department of the Army

BS-07 Grand Bay Crevasse

MR-08 Beneficial Use of Hopper Dredge Material Demonstration

U.S. Department of Commerce

PO-21 Eden Isles East Marsh Restoration

TE-30 East Timbalier Island Sediment Restoration, Phase 2

U.S. Department of Agriculture

CS-24 Perry Ridge Shore Protection

BA-22 Bayou L'Ours Ridge Hydrologic Restoration

BA-23 Barataria Bay Waterway West Side Shoreline Protection

CS-25 Plowed Terraces Demonstration

TE-31 Flotant Marsh Fencing Demonstration

5th Priority Project List

U.S. Environmental Protection Agency

BA-25a Bayou Lafourche Siphon

BA-25b Mississippi River Reintroduction into Bayou Lafourche

U.S. Department of the Army

PO-22 Bayou Chevee Shoreline Protection

U.S. Department of Commerce

TV-12 Little Vermilion Bay Sediment Trapping

BA-24 Myrtle Grove Siphon

U.S. Department of Agriculture

BA-03c Naomi Outfall Management

CS-11b Sweet Lake/Willow Lake Hydrologic Restoration

TE-29 Raccoon Island Breakwaters Demonstration

ME-13 Freshwater Bayou Bank Stabilization

U.S. Department of the Interior

TE-10 Grand Bayou Hydrologic Restoration

6th Priority Project List

U.S. Environmental Protection Agency

TE-33 Bayou Boeuf Pump Station

U.S. Department of the Army

TV-14 Marsh Island Hydrologic Restoration

TE-35 Marsh Creation East of the Atchafalaya River - Avoca Island

MR-10 Flexible Dustpan Demo at Head of Passes (Demo)

U.S. Department of Commerce

CS-27 Black Bayou Hydrologic Restoration

MR-09 Delta-Wide Crevasses

TV-15 Sediment Trapping at "The Jaws"

U.S. Department of Agriculture

TE-34 Penchant Basin Natural Resources Plan, Increment 1

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

BA-26 Barataria Bay Waterway East Side Shoreline Protection

TV-16 Cheniere au Tigre Sediment Trapping Demonstration

U.S. Department of the Interior

TE-32a Lake Boudreaux Freshwater Introduction

LA-03a Nutria Harvest for Wetland Restoration Demonstration

7th Priority Project List

U.S. Department of Commerce

BA-28 Grand Terre Vegetative Plantings

ME-14 Pecan Island Terracing

U.S. Department of Agriculture

BA-27 Barataria Basin Landbridge Shoreline Protection, Phase 1 and 2

TE-36 Thin Mat Floating Marsh Enhancement Demonstration

8th Priority Project List

U.S. Environmental Protection Agency

CS-28-1 Sabine Refuge Marsh Creation, Cycle 1

CS-28-2 Sabine Refuge Marsh Creation, Cycle 2

CS-28-3 Sabine Refuge Marsh Creation, Cycle 3

CS-28-4 Sabine Refuge Marsh Creation, Cycle 4

CS-28-5 Sabine Refuge Marsh Creation, Cycle 5

U.S. Department of Commerce

PO-25 Bayou Bienvenue Pump Station Diversion and Terracing

PO-24 Hopedale Hydrologic Restoration

U.S. Department of Agriculture

BA-27 Barataria Basin Landbridge, Shoreline Protection, Phase 2 Increment A

BA-27 Barataria Basin Landbridge, Shoreline Protection, Phase 2 Increment B

BA-27 Barataria Basin Landbridge, Shoreline Protection, Phase 2 Increment C

(These projects were merged BA-27 after PPL 8 approval and are subsequently numbered as BA-27)

ME-11 Humble Canal Hydrologic Restoration

BS-09 Upper Oak River Freshwater Siphon

TV-17 Lake Portage Landbridge

9th Priority Project List

U.S. Environmental Protection Agency

BA-29 LA Highway 1 Marsh Creation
TE-40 Timbalier Island Dune and Marsh Restoration
TE-37 New Cut Dune and Marsh Restoration

U.S. Department of the Army

PO-26 Opportunistic Use of the Bonnet Carre Spillway
TV-11b Freshwater Bayou Bank Stabilization - Belle Isle Canal to Lock
MR-11 Periodic Introduction of Sediment and Nutrients at Selected Diversion Sites Demonstration
TV-19 Weeks Bay MC and SP/Commercial Canal/Freshwater Redirection

U.S. Department of Commerce

PO-27 Chandeleur Islands Marsh Restoration
AT-04 Castille Pass Channel Sediment Delivery
TV-18 Four Mile Canal Terracing and Sediment Trapping
PO-28 LaBranche Wetlands Terracing, Planting, and Shoreline Protection
BA-30 East Grand Terre Islands Restoration

U.S. Department of Agriculture

TE-39 South Lake Decade Freshwater Introduction
CS-29 Black Bayou Bypass Culverts Hydrologic Restoration
CS-30 Perry Ridge West Bank Stabilization
ME-17 Little Pecan Bayou Hydrologic Restoration
BA-27c Barataria Basin Landbridge Shoreline Protection, Phase 3

U.S. Department of the Interior

ME-16 Freshwater Introduction South of Hwy. 82
TE-41 Mandalay Bank Protection Demonstration

10th Priority Project List

U.S. Environmental Protection Agency

PO-30 Lake Borgne Shoreline Protection
BA-34 Small Freshwater Diversion to the Northwestern Barataria Basin

U.S. Department of the Army

MR-13 Benneys Bay Diversion
BA-33 Delta Building Diversion at Myrtle Grove
BS-10 Delta Building Diversion North of Fort. St. Phillip

U.S. Department of Commerce

ME-18 Rockefeller Refuge Gulf Shoreline Stabilization

U.S. Department of Agriculture

TE-43 GIWW Bank Restoration of Critical Areas in Terrebonne

U.S. Department of the Interior

ME-19 Grand-White Lake Landbridge Restoration
TE-44 North Lake Mechant Landbridge Restoration
BS-11 Delta Management at Fort St. Phillip
CS-32 East Sabine Lake Hydrologic Restoration
TE-45 Terrebonne Bay Shore Protection Demonstration

11th Priority Project List

U.S. Environmental Protection Agency

- PO-29 River Reintroduction into Maurepas Swamp
PO-31 Lake Borgne Shoreline Protection at Bayou Dupre
(This project merged with PO-30 after PPL 11 approval and is subsequently numbered as PO-30)
TE-47 Ship Shoal: Whiskey West Flank Restoration

U.S. Department of the Army

- ME-21a Grand Lake Shoreline Protection, Tebo Point
ME-21b Grand Lake Shoreline Protection, O&M Only (Transferred)

U.S. Department of Commerce

- BA-35 Pass Chaland to Grand Bayou Pass Barrier Shoreline Restoration
BA-37 Little Lake Shoreline Protection/Dedicated Dredging near Round Lake
BA-38 Barataria Barrier Island: Pelican Island and Pass La Mer to Chaland Pass

U.S. Department of Agriculture

- BA-27d Barataria Basin Landbridge Shoreline Protection, Phase 4
LA-03b Coastwide Nutria Control Program
CS-31 Holly Beach Sand Management
TE-48 Raccoon Island Shoreline Protection/Marsh Creation, Phase 2

U.S. Department of the Interior

- BA-36 Dedicated Dredging on the Barataria Basin Landbridge
ME-20 South Grand Chenier Hydrologic Restoration
TE-46 West Lake Boudreaux Shoreline Protection and Marsh Creation

12th Priority Project List

U.S. Environmental Protection Agency

- BA-39 Bayou Dupont Sediment Delivery System

U.S. Department of the Army

- TE-49 Avoca Island Diversion and Land Building
PO-32 Lake Borgne and MRGO Shoreline Protection
ME-22 South White Lake Shoreline Protection
MR-12 Mississippi River Sediment Trap

U.S. Department of Agriculture

- LA-05 Freshwater Floating Marsh Creation Demonstration

13th Priority Project List

U.S. Environmental Protection Agency

- TE-50 Whiskey Island Back Barrier Marsh Creation

U.S. Department of the Army

- MR-14 Spanish Pass Diversion
LA-06 Shoreline Protection Foundation Improvements Demonstration

U.S. Department of Agriculture

- TV-20 Bayou Sale Ridge Protection

U.S. Department of the Interior

- PO-33 Goose Point/Point Platte Marsh Creation

14th Priority Project List

U.S. Department of Commerce

- BA-40 Riverine Sand Mining/Scotfield Island Restoration

U.S. Department of Agriculture

- BS-12 White Ditch Resurrection
BA-41 South Shore of the Pen Shoreline Protection and Marsh Creation
TV-21 East Marsh Island Marsh Creation

15th Priority Project List

U.S. Environmental Protection Agency

MR-15 Venice Ponds Marsh Creation and Crevasses

U.S. Department of the Army

BS-13 Bayou Lamoque Freshwater Diversion

U.S. Department of Commerce

ME-23 South Pecan Island Freshwater Introduction

U.S. Department of Interior

BA-42 Lake Hermitage Marsh Creation

16th Priority Project List

U.S. Environmental Protection Agency

TE-53 Enhancement of Barrier Island Vegetation Demonstration

U.S. Department of the Army

ME-24 Southwest Louisiana Gulf Shoreline Nourishment and Protection

U.S. Department of Commerce

TE-51 Madison Bay Marsh Creation and Terracing

TE-52 West Belle Pass Barrier Headland Restoration Project

U.S. Department of Agriculture

PO-34 Alligator Bend Marsh Restoration and Shoreline Protection

17th Priority Project List

U.S. Environmental Protection Agency

BS-15 Bohemia Mississippi River Reintroduction

U.S. Department of Commerce

BA-48 Bayou Dupont Ridge Creation and Marsh Restoration

LA-08 Bioengineered Oyster Reef Demonstration

U.S. Department of Agriculture

LA-09 Sediment Containment System for Marsh Creation Demonstration

BA-47 West Pointe-a-la Hache Marsh Creation

U.S. Department of the Interior

BS-16 Caernarvon Outfall Management/Lake Lery Shoreline Restoration

18th Priority Project List

U.S. Environmental Protection Agency

BS-18 Bertrandville Siphon

U.S. Department of Commerce

BA-68 Grand Liard Marsh and Ridge Restoration

U.S. Department of Agriculture

TE-66 Central Terrebonne Freshwater Enhancement

CS-49 Cameron-Creole Freshwater Introduction

LA-16 Non-Rock Alternatives to Shoreline Protection Demonstration

19th Priority Project List

U.S. Department of Commerce

BA-76 Cheniere Ronquille Barrier Island Restoration

U.S. Department of Agriculture

ME-31 Freshwater Bayou Marsh Creation

PO-75 LaBranche East Marsh Creation

U.S. Department of the Interior

TE-72 Lost Lake Marsh Creation and Hydrologic Restoration

20th Priority Project List

U.S. Department of Agriculture

LA-39 Coastwide Planting
CS-53 Kelso Bayou Marsh Creation

U.S. Department of the Interior

PO-104 Bayou Bonfouca Marsh Creation
CS-54 Cameron-Creole Watershed Grand Bayou Marsh Creation
TE-83 Terrebonne Bay Marsh Creation - Nourishment

21st Priority Project List

U.S. Department of Commerce

CS-59 Oyster Bayou Marsh Restoration
TV-63 Cole's Bayou Marsh Restoration

U.S. Department of Agriculture

PO-133 LaBranche Central Marsh Creation

U.S. Department of the Interior

BA-125 Northwest Turtle Bay Marsh Creation

22nd Priority Project List

U.S. Environmental Protection Agency

BA-164 Bayou Dupont Sediment Delivery- Marsh Creation #3

U.S. Department of Commerce

CS-66 Cameron Meadows Marsh Creation and Terracing

U.S. Department of Agriculture

TE-112 North Catfish Lake Marsh Creation

U.S. Department of the Interior

BS-24 Terracing and Marsh Creation South of Big Mar

23rd Priority Project List

U.S. Department of Commerce

TE-117 Island Road Marsh Creation and Nourishment

U.S. Environmental Protection Agency

BA-171 Caminada Headlands Back Barrier Marsh Creation

U.S. Department of the Interior

BA-173 Bayou Grande Cheniere Marsh & Ridge Restoration

U.S. Department of Agriculture

ME-32 South Grand Chenier Marsh Creation - Baker Tract

24th Priority Project List

U.S. Department of Commerce

CS-78 No Name Bayou Marsh Creation and Nourishment
TE-134 West Fourchon Marsh Creation and Marsh Nourishment

U.S. Environmental Protection Agency

PO-168 Shell Beach South Marsh Creation

U.S. Department of the Interior

PO-169 New Orleans Landbridge Shoreline Stabilization and Marsh Creation

25th Priority Project List

U.S. Department of Commerce

PO-173 Fritchie Marsh Creation and Terracing
CS-79 Oyster Lake Marsh Creation and Nourishment
BA-194 East Leeville Marsh Creation and Nourishment

U.S. Environmental Protection Agency

BA-193 Caminada Headlands Back Barrier Marsh Creation Increment #2

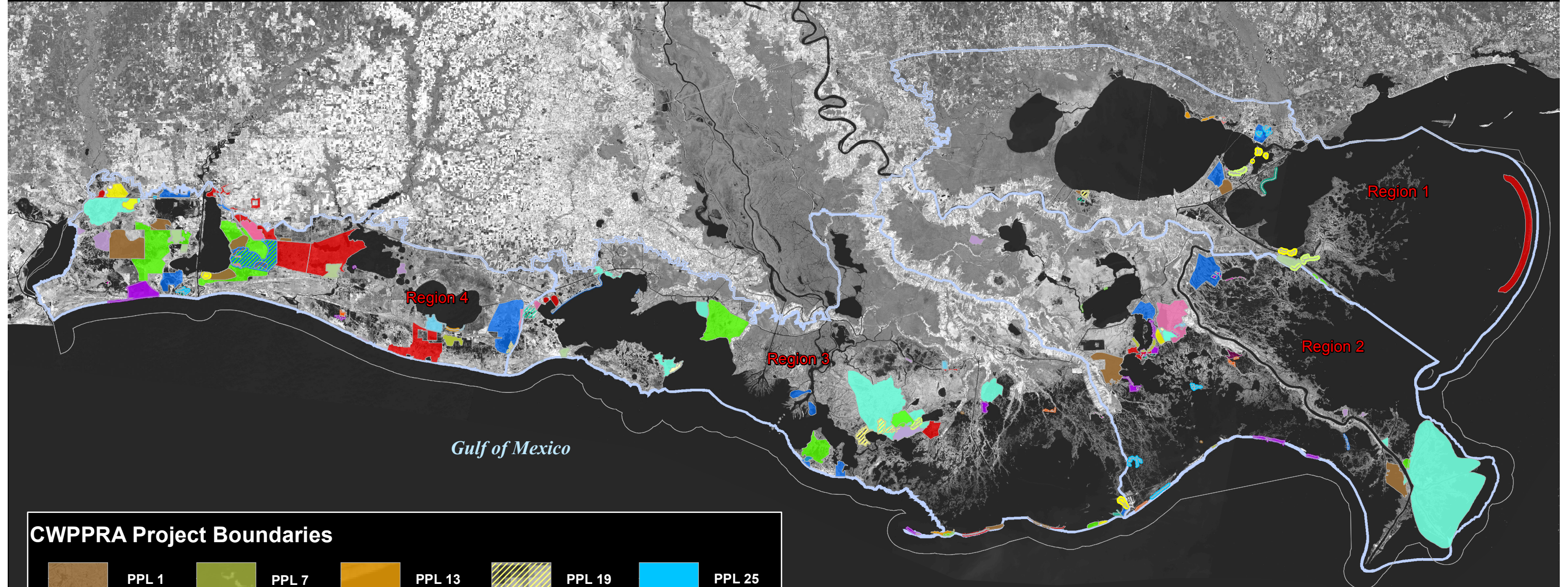
U.S. Department of Agriculture

BA-195 Barataria Bay Rim Marsh Creation

26th Priority Project List

U.S. Department of Commerce

TE-138 Bayou DeCade Ridge and Marsh Creation
PO-179 St. Catherine Island Marsh Creation and Shoreline Protection
PO-178 Bayou La Loutre Ridge and Marsh Restoration
LA-284 Salvinia Weevil Propagation Facility



CWPPRA Project Boundaries

	PPL 1		PPL 7		PPL 13		PPL 19		PPL 25
	PPL 2		PPL 8		PPL 14		PPL 20		PPL 26
	PPL 3		PPL 9		PPL 15		PPL 21		
	PPL 4		PPL 10		PPL 16		PPL 22		
	PPL 5		PPL 11		PPL 17		PPL 23		
	PPL 6		PPL 12		PPL 18		PPL 24		

Region Boundary

1:1,275,000

10 0 10 20
 Kilometers

10 0 10 20
 Miles



Image Source:
2014 Landsat 8 OLI Imagery
Band 5 Mosaic

Produced by:
U.S. Department of the Interior
U.S. Geological Survey
Wetland and Aquatic Research Center
Coastal Restoration Assessment Branch
Baton Rouge, La.

Map ID: USGS-NWRC 2017-11-0011
Map Date: February 08, 2017
Data accurate as of January 19, 2017

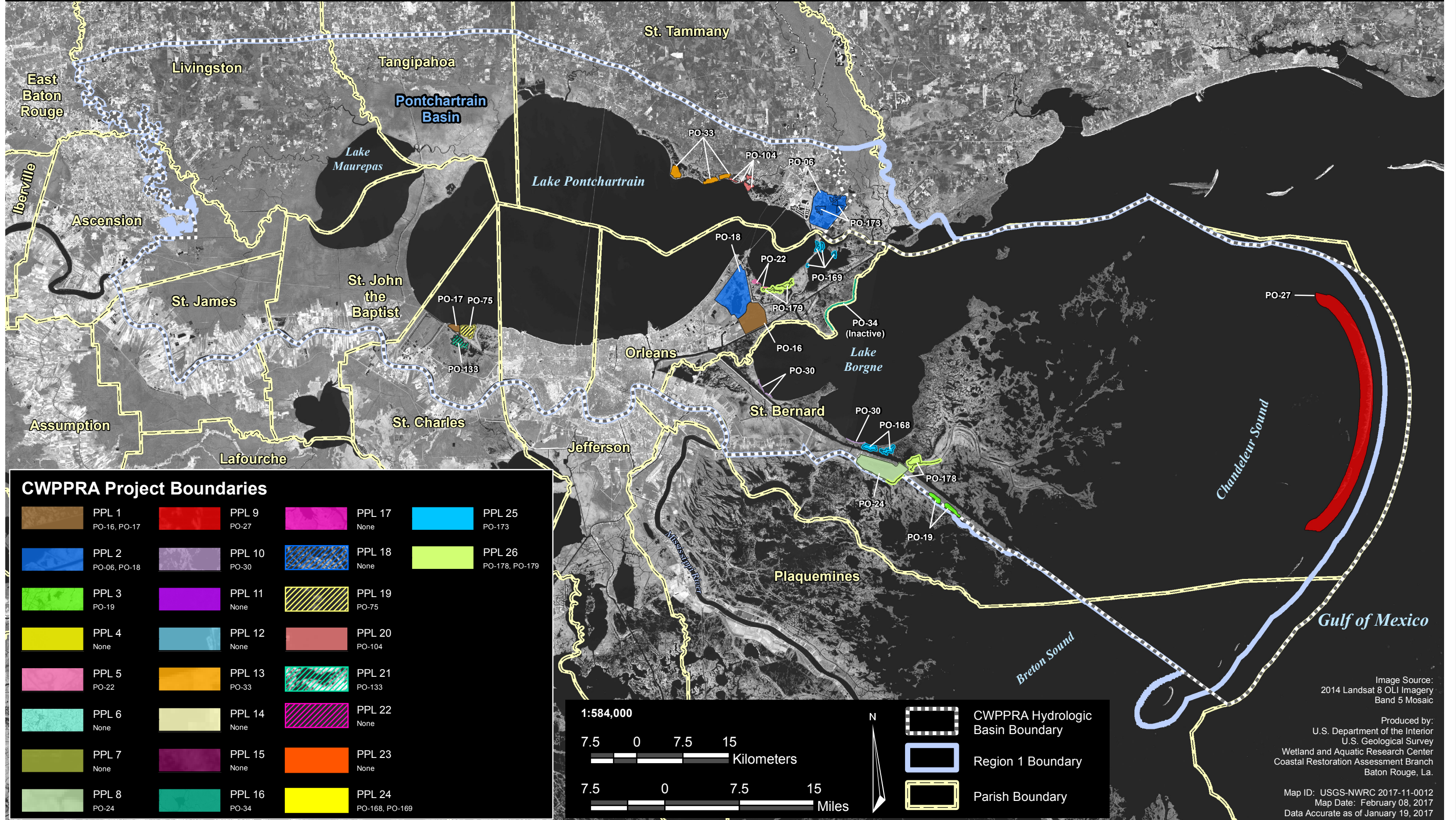
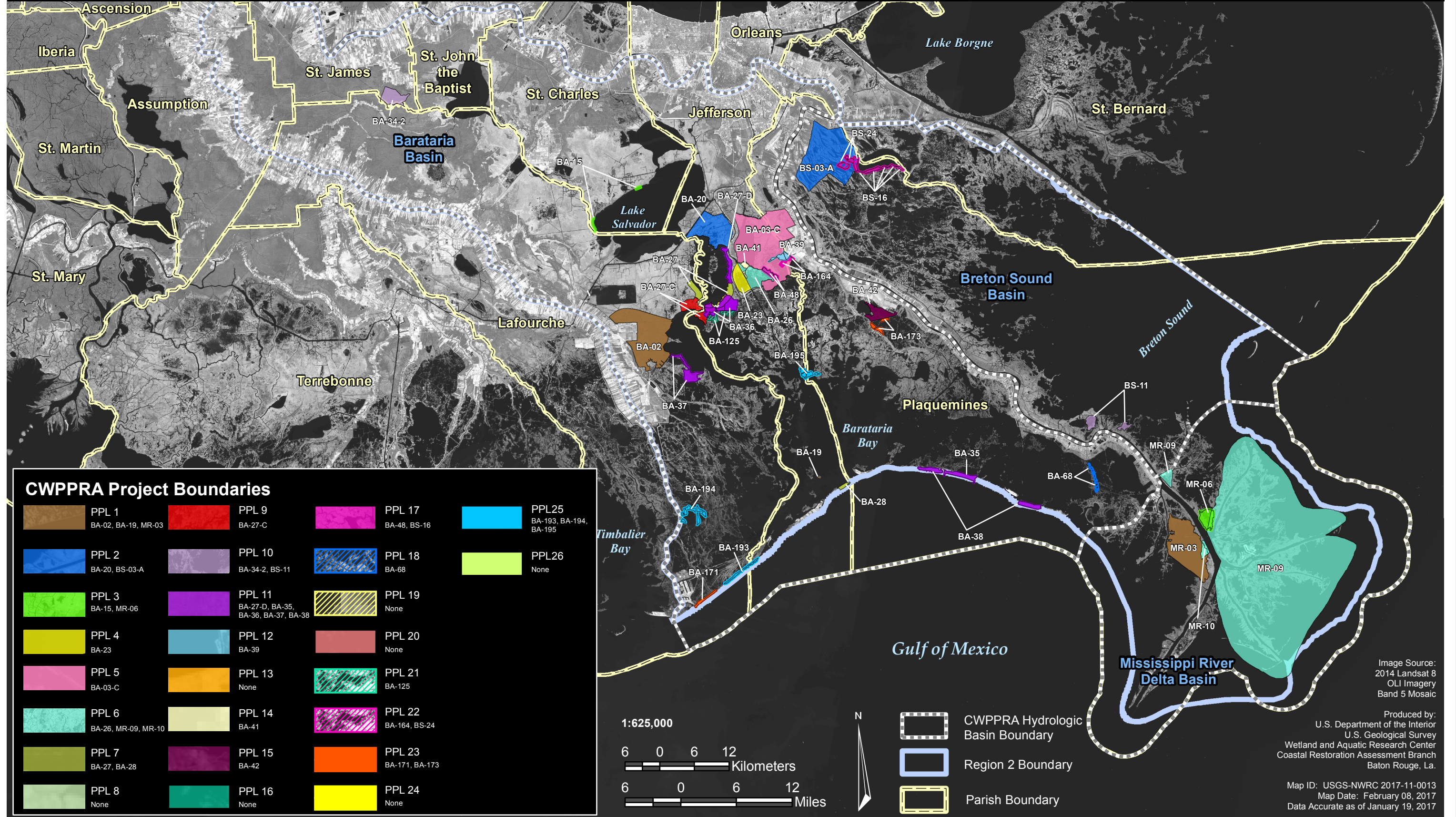
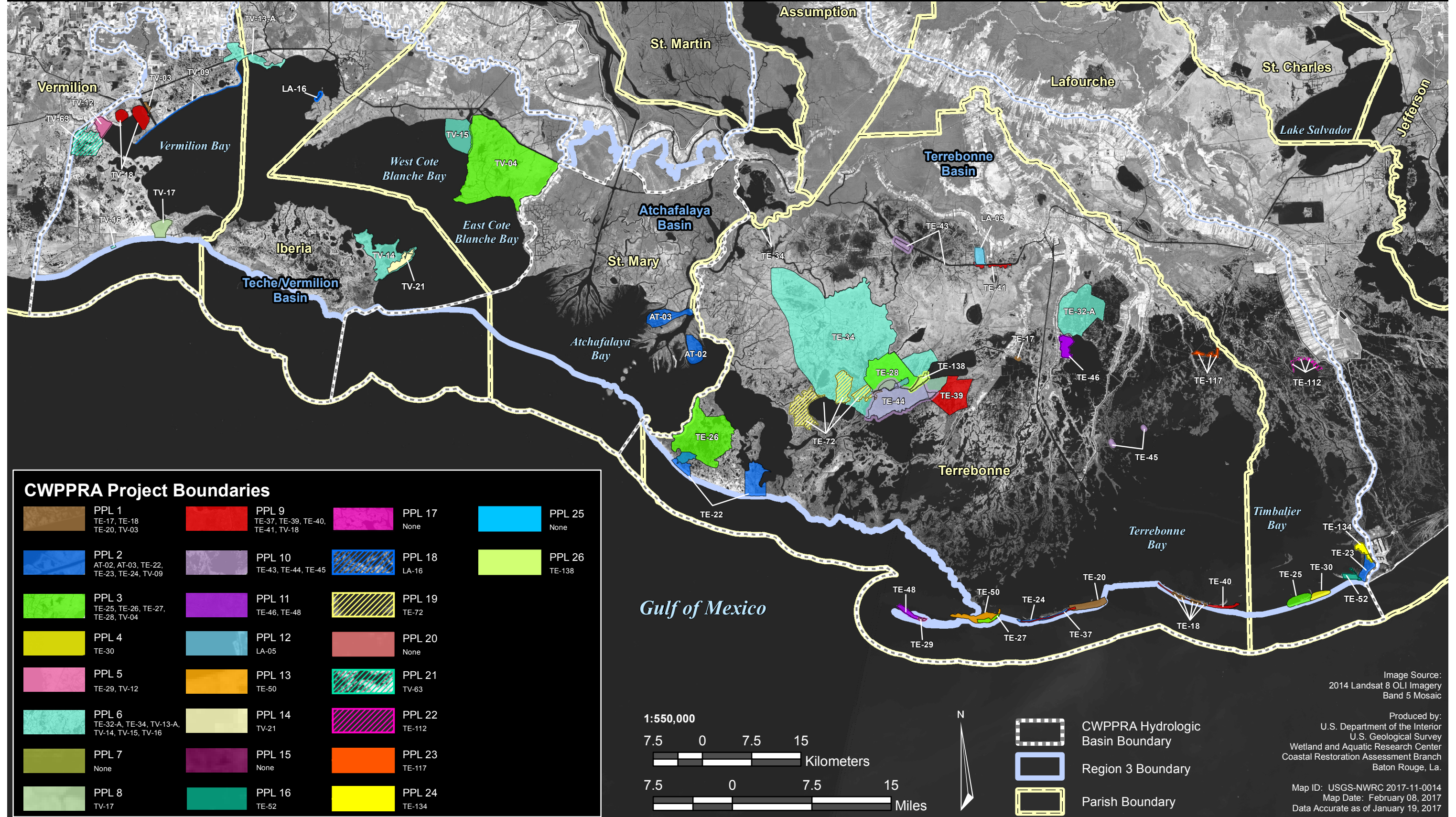


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CWPPRA Project Boundaries

	PPL 1 TE-17, TE-18 TE-20, TV-03		PPL 9 TE-37, TE-39, TE-40, TE-41, TV-18		PPL 17 None		PPL 25 None
	PPL 2 AT-02, AT-03, TE-22, TE-23, TE-24, TV-09		PPL 10 TE-43, TE-44, TE-45		PPL 18 LA-16		PPL 26 TE-138
	PPL 3 TE-25, TE-26, TE-27, TE-28, TV-04		PPL 11 TE-46, TE-48		PPL 19 TE-72		
	PPL 4 TE-30		PPL 12 LA-05		PPL 20 None		
	PPL 5 TE-29, TV-12		PPL 13 TE-50		PPL 21 TV-63		
	PPL 6 TE-32-A, TE-34, TV-13-A, TV-14, TV-15, TV-16		PPL 14 TV-21		PPL 22 TE-112		
	PPL 7 None		PPL 15 None		PPL 23 TE-117		
	PPL 8 TV-17		PPL 16 TE-52		PPL 24 TE-134		

Image Source:
2014 Landsat 8 OLI Imagery
Band 5 Mosaic

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