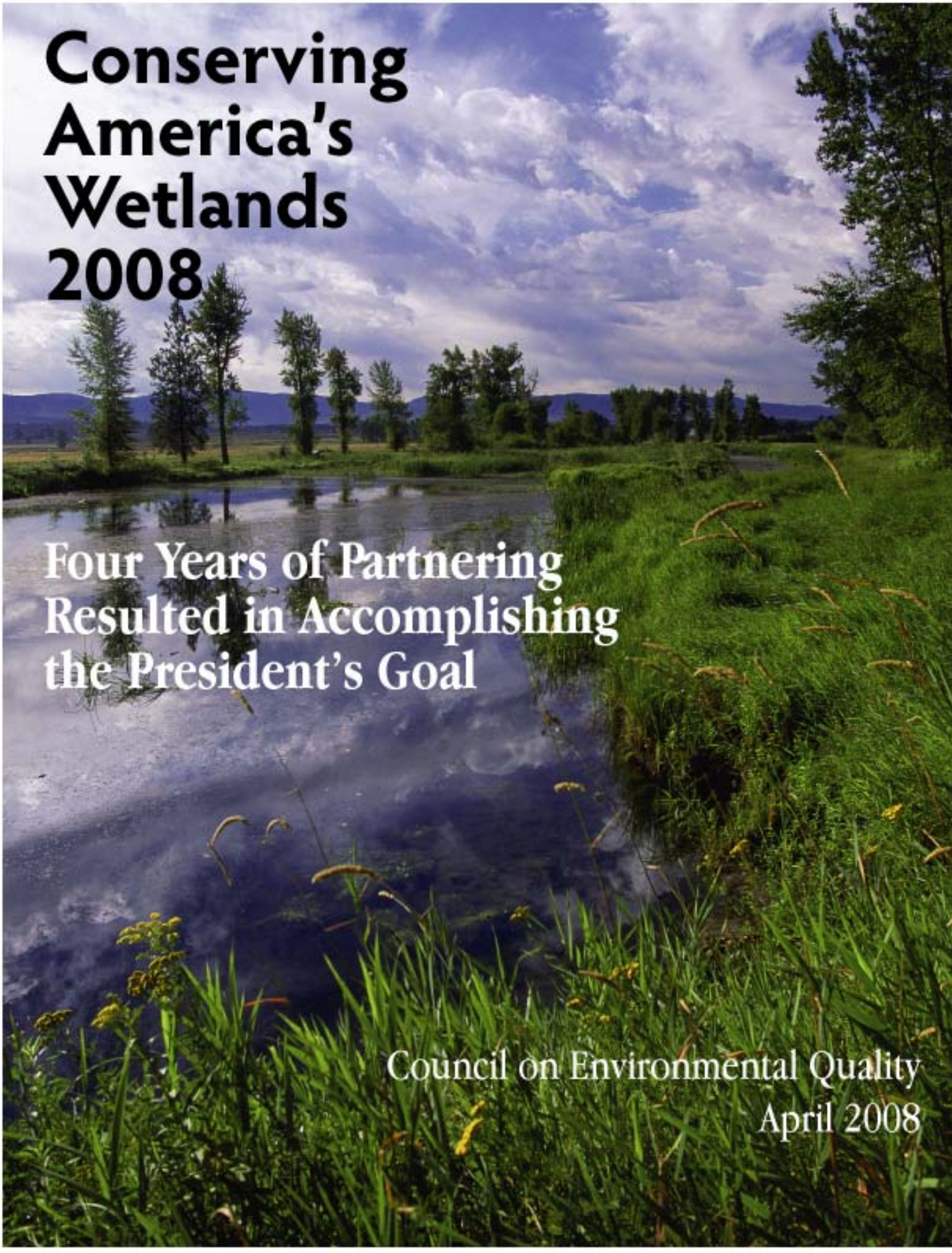

Conserving America's Wetlands 2008

Four Years of Partnering Resulted in Accomplishing the President's Goal

Council on Environmental Quality

April 2008

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This report to Congress shows how federal agencies implemented President George W. Bush's 2004 Earth Day goal to "work to restore and to improve and to protect at least three million acres of wetlands over the next five years." The report includes the accomplishments of the first four years and the requested budget and planned accomplishments for FY 2009, with descriptions of contributing federal programs.

The White House Council on Environmental Quality
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Cover photo: Lee Metcalf National Wildlife Refuge, Montana. (Hillebrand, FWS)

Conserving America's Wetlands 2008:
Four Years of Partnering Resulted in Accomplishing the President's Goal

Department of Agriculture

Department of Commerce

Department of Transportation

Department of the Army

Department of the Interior

Environmental Protection Agency

Council on Environmental Quality

April 2008

EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL ON ENVIRONMENTAL QUALITY
WASHINGTON, D.C. 20503

Members of Congress:

On Earth Day 2004, the President set a bold new goal to move beyond the national policy of "no net loss" of wetlands to one of achieving an overall gain by creating, improving, and protecting three million acres of wetlands by Earth Day 2009. I am pleased to inform you, in this fourth annual progress report on President George W. Bush's Wetlands Initiative, that the President's goal has been achieved and exceeded. And we have accomplished this goal one year ahead of schedule. More than 3.6 million acres of wetlands have been restored, protected, or improved in the four years since the President established our new national goal. By Earth Day 2009, the original date set forth in the President's initiative, we anticipate that nearly 4.5 million acres of wetlands will likely be restored, protected, or improved, exceeding the President's goal by 50 percent.

This report chronicles the contributions of federal agencies—working together and in partnership with state and local governments, corporations, and a wide range of nongovernmental organizations and individuals—to achieve the President's conservation vision.

Our collective accomplishments are a testament to the effectiveness of proactive conservation programs, such as the Wetlands Reserve Program, National Wildlife Refuge System, North American Wetlands Conservation Act, Aquatic Ecosystem Restoration Program, and the National Estuary Program. These programs cover 20 times more area than our regulatory mitigation programs that replace wetlands developed for other uses. Regulatory agency programs deliver on the "no overall net loss of wetlands" policy by replacing the ecological functions of wetlands developed, which amounts to about two acres of wetlands conservation for every acre of development, or a total of 46,000 acres of mitigation for about 23,000 acres of wetlands developed in a given year. The real large-scale conservation, however, is taking place through programs contributing to the President's Wetland Goal, which have conserved approximately 900,000 acres annually.

Cooperative Conservation continues to be the cornerstone of our ongoing success. Under the Cooperative Conservation Executive Order 13352, the Departments of Interior, Agriculture, Commerce, and Defense, and the Environmental Protection Agency, work in partnership with each other and with state, local, and tribal governments; private institutions; and other nongovernmental entities and individuals to meet conservation goals. These partnerships leverage the best of what each has to offer. Through Coastal America's Corporate Wetlands Restoration Partnership, more than 400 corporations and NGOs work together to provide matching funds and in-kind services, resulting in significant contributions to wetlands restoration and protection.

While we have achieved much in these past four years, we must continue our conservation efforts with the same sense of purpose that has resulted in exceeding the aggressive goal set by the President in 2004. Future progress will depend on our close attention to the types and quality of wetlands. Many of the wetlands we are restoring or improving through the cross-cutting programs of this initiative involve planting grasses and trees, or flooding areas to create habitat for wetland species. Over time, as plants mature, shallow-water wetlands will become meadow or forested wetlands. We must ensure this succession of growth results in a distribution of wetland types serving diverse ecological roles that benefit wildlife as well as communities and people. The success of future wetlands conservation will continue to rely on the teamwork and dedication that has brought us this far. The President appreciates the time and efforts of all, both in and outside of government, who work together to conserve, protect, and enhance our nation's valuable wetlands.

Sincerely,

James L. Connaughton
Chairman

Contents

Executive Summary

On Earth Day 2004, President Bush celebrated the opportunity to move beyond the federal policy of "no net loss" of wetlands and called for a new commitment to attain an overall increase in the quality and quantity of wetlands in America.

	President's Earth Day 2009 Goals	Accomplishments in the First Four Years after Earth Day 2004*	Projected Accomplishments by Earth Day 2009
Acres Restored or Created	1,000,000	1,197,000	1,476,000
Acres Improved	1,000,000	1,079,000	1,317,000
Acres Protected	1,000,000	1,324,000	1,700,000
Total Acres	**3,000,000**	**3,600,000**	**4,493,000**

**As adjusted by actual results*

As President Bush said in April 2004, "The old policy of wetlands was to limit the loss of wetlands. Today, I'm going to announce a new policy and a new goal for our country: Instead of just limiting our losses...we will move beyond the no net loss of wetlands in America to having an overall increase of Americans' wetlands over the next five years."

President Bush described achieving his goal for expanding wetlands acreage by restoring or creating, improving and protecting "at least three million acres of wetlands over the next five years." The goal is to achieve at least one million acres in each of these separate categories between Earth Day 2004 and Earth Day 2009. This goal reflects federal agency performance in restoring, improving, and protecting wetland acres. The three million acre target does not reflect a net acreage total (*i.e.,* only additional wetlands are tabulated, not losses of wetlands).

After four years of working toward the President's five-year goal, the team of six federal agencies working with multiple states, communities, tribes, and private landowners have exceeded the three million acre target a year early.

Since the President established the goal, 3,600,000 acres of wetlands have been restored or created, improved, or protected.

This report also highlights anticipated progress between Earth Day 2008 and Earth Day 2009, during which time the Bush Administration expects an additional 893,000 wetland acres to be restored or created, improved, or protected.

The President's focus on wetlands has prompted these accomplishments, as well as improvements in cooperation and understanding among the many federal departments, states, communities, tribes, and landowners that care for and manage wetlands. The federal government team includes the Environmental Protection Agency and the Departments of Agriculture, Commerce, Interior, Transportation, and the Army.

Many government agencies contribute to the continuing goal of "no net loss" by ensuring mitigation for wetlands that are developed for other uses. Even though mitigation for wetlands replaces more wetland acres than are lost, these numbers are not included in the three categories reported here. The report describes these and other programs that contribute to maintaining the nation's wetlands base.

This report chronicles the major contributions of federal agencies, working together and in partnership with others, that have exceeded each of the categories—and have done it a full year ahead of schedule.

Wetlands have long been recognized as critical to a clean, properly functioning environment and to ecosystem health. They provide a protective buffer for our towns and cities against floods and storm surges, and they provide important ecological benefits, contributing to water quality, supplying life-sustaining habitat for hundreds of species, and connecting aquatic and terrestrial ecosystems. The nation's wetlands provide an array of benefits to society, and their continued ability to function and thrive affects the economic, ecological, and cultural heritage of all Americans.

Wetlands Loss in Coastal Areas: Bucking the National "Net Gain" Trend

Coastal wetlands are all wetlands in coastal watersheds, *i.e.,* local watersheds that drain to the ocean, the Great Lakes, or an estuary or bay. Coastal wetlands include salt marshes, bottomland hardwood swamps, fresh marshes, seagrass beds, mangrove swamps, and shrubby depressions known in the southeast United States as "pocosins." Coastal wetlands and estuaries are extremely important as nursery, refuge, foraging, and spawning areas for estuarine, marine, and anadromous fish. Coastal wetlands currently make up about 38 percent of the wetlands in the lower 48 states, or approximately 41 million acres.

Wetland trends in the conterminous United States have been measured and reported periodically by the U.S. Fish and Wildlife Service (FWS). Nationwide, net wetland loss has decreased from about 458,000 acres per year in the 1960s to 58,500 acres in the late 1990s. In the most recent period, 1998–2004, there was a slight increase in wetlands in the conterminous United States.

Because coastal wetlands have not been tracked as a distinct category in the existing FWS reports, the National Oceanic and Atmospheric Administration (NOAA) partnered with the FWS to assess the status and trends of wetlands in the coastal watersheds of the Great Lakes, Atlantic Ocean, and Gulf of Mexico, for the period 1998–2004. Initial indications from the effort reflect that during this period coastal watersheds possibly were losing a substantial amount of wetlands, despite the national trend of net gain. Final results of the study are expected to be released in a joint NOAA/FWS report during the summer of 2008.

Although the wetlands targets presented by the President in 2004 have been met nationwide, it is almost certain that wetlands will continue to be lost in coastal watersheds. Because people enjoy living near the coast, they continue to build roads, homes, and other structures in coastal watersheds. Emphasis on coastal wetland conservation—both protection and restoration—in federal, state, and other wetland programs will be needed to address this loss of coastal wetlands.

Volunteers at a restoration project in the Lafourche Parish, Louisiana, work to plant salt marsh grasses and place sand fencing, which will help stabilize new habitat conditions created by the project. (NOAA)

Introduction

The importance of wetlands stewardship is reflected in the array of public–private partnerships that have formed, enhanced through efforts at the federal level. Recognizing the need for more effective use and coordination of federal wetlands activities, on April 22, 2004, President George W. Bush announced a new national policy and goal on wetlands to achieve an overall increase of U.S. wetlands each year, by restoring or creating, improving, or protecting at least three million wetland acres between Earth Day 2004 and 2009. The Departments of the Interior, Agriculture, Commerce, Transportation, and the Army, and the Environmental Protection Agency have exceeded this target a year ahead of schedule in partnership with state, local, and tribal governments; private institutions; other nongovernmental entities; and individuals.

To achieve the President's wetlands goal for Earth Day 2009, the President specifically called for:

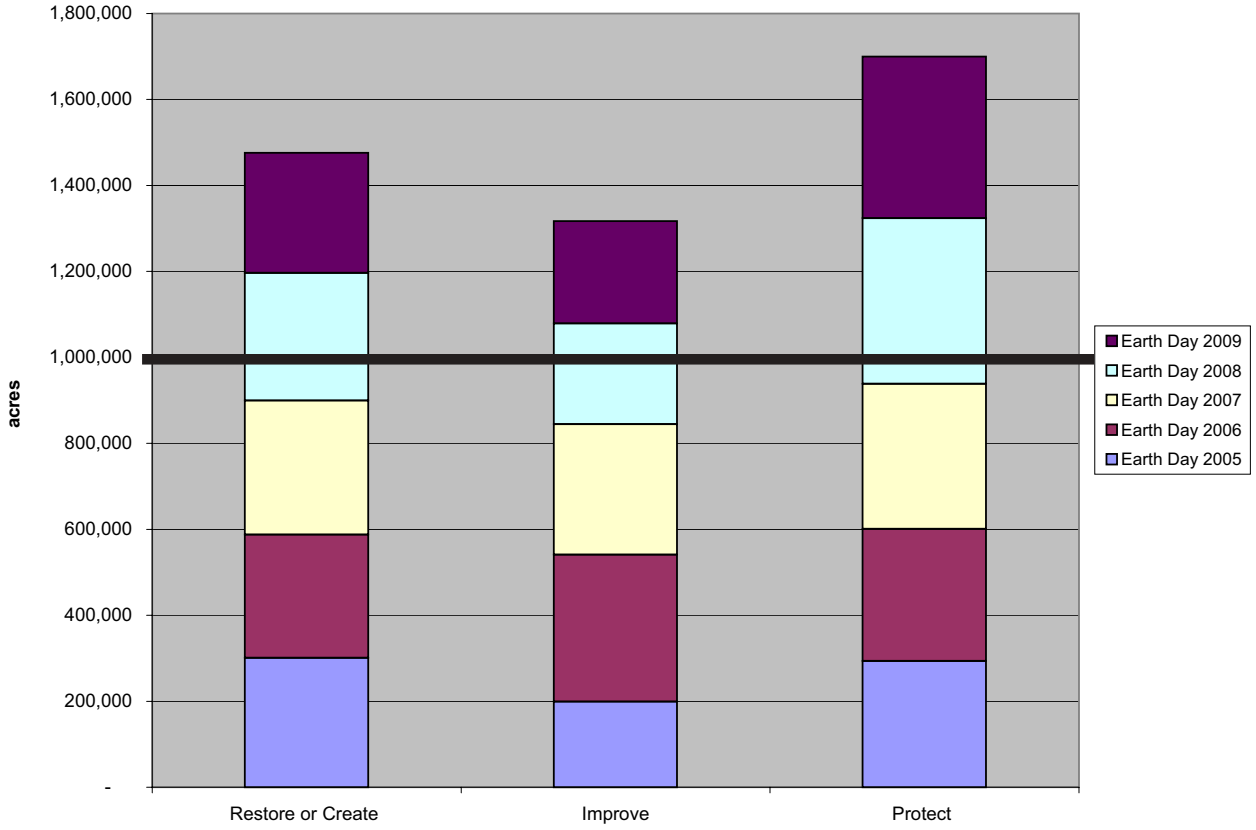
- Restoring or creating at least one million wetland acres;
- Improving or enhancing at least one million wetland acres;
- Protecting at least one million wetland acres.

All three of these targets have been met a year early. Between Earth Day 2004 and 2008, approximately 1,197,000 acres have been restored or created, 1,079,000 acres have been improved, and 1,324,000 acres have been protected *(Figure 1).* Agencies expect to add an additional 893,000 acres through Earth Day 2009.

Since Earth Day 2004, the primary programs making contributions to restoration or creation are:

- Wetlands Reserve Program (USDA/NRCS);
- North American Wetlands Conservation Act (DOI/FWS);
- National Wildlife Refuge System (DOI/FWS);
- Conservation Reserve Program (USDA/FSA);
- Conservation Technical Assistance (USDA/NRCS);
- Partners for Fish and Wildlife Program (DOI/FWS);
- Coastal Wetland Planning, Protection, and Restoration Projects, LA (USACE, EPA, FWS, NOAA, NRCS);
- Aquatic Ecosystem Restoration Program (DOA/Civil Works);

Figure 1. Anticipated Progress Toward the President's Wetlands Goal



Note: Values have been adjusted for double-counted acres.

- North American Waterfowl Management Plan–Joint Ventures (DOI/FWS); and
- National Estuary Program (EPA).

The primary contributors to wetlands improvement are:

- North American Wetlands Conservation Act;
- Coastal Wetland Planning, Protection, and Restoration Act, La.;
- Wetlands Reserve Program;
- National Wildlife Refuge System;
- Conservation Technical Assistance;
- Partners for Fish and Wildlife Program;
- North American Waterfowl Management Plan–Joint Ventures;
- Aquatic Ecosystem Restoration Program; and
- National Estuary Program.

Wetlands protection through acquisitions or long-term easements is being accomplished by:

- North American Wetlands Conservation Fund;
- Wetlands Reserve Program;
- National Wildlife Refuge System;
- National Estuary Program; and
- Migratory Bird Conservation Fund (DOI/FWS).

Because more than 85 percent of our nation's wetlands are on non-federal lands, the effectiveness of federal efforts to improve the health, quality, and use of the nation's wetlands will be greatly enhanced by expanding public–private partnerships. Through cooperative conservation, the federal government can facilitate these partnerships by providing matching grants, technical assistance, and opportunities for the re-establishment, rehabilitation, enhancement, and protection of wetlands.

Federal agencies must continue to encourage and partner with non-federal parties (state and local governments, tribes, and nongovernmental organizations). Well-coordinated public–private partnerships focused on wetlands opportunities will yield significant ecological benefits. Our ecology and economy are interdependent; a healthy environment and strong economy must both flourish.

About This Report

Conserving America's Wetlands 2008: Four Years of Partnering Resulted in Accomplishing the President's Goal documents attempted progress toward the President's goal to expand our nation's wetlands by creating, improving, and protecting at least three million acres of wetlands. In providing information, the participating agencies used terminology similar to that developed by the White House Wetlands Working Group and the same terminology used in previous editions of this report. Agencies reported all notable accomplishments toward the President's goal in the year the project was completed, or projected to be completed, rather than the year the project was funded. Adjustments were made to account for projects reported by multiple agencies ("double-counting"). Projected estimates in the 2007 report were adjusted in this year's report as actual results became available. Appendix A provides a thorough discussion of terminology and methodology, Appendix B describes efforts that help maintain the wetlands base, and Appendices C through I present program-level information and descriptions by agency.

Accomplishments

The President's goal for wetlands has led the responsible federal agencies to focus their resources to achieve meaningful results. Agencies do this by managing programs more strategically, leveraging resources, and partnering with others whenever possible. The following sections summarize accomplishments planned for each of the three goal areas. Major contributing programs in FY 2009 are identified and highlighted. Wetland Reserve accomplishments reflect the anticipated increase in the wetland enrollment acreage cap and mandatory funding under the new Farm Bill, assuming that all authorized acres are enrolled.

Restore or Create

After Four Years of Accomplishment: 1,197,000 acres
Estimated Accomplishment Earth Day 2009: 279,000 acres
(totals adjusted for double-counting)

Wetlands can be added by creating new wetlands or by restoring former wetlands lost to drainage or inundation. New wetlands are created in upland areas or deepwater sites. A gain in wetland acres may also be achieved by re-establishing former wetlands to restore functions and values approximating natural/historic conditions. Because of difficulties in establishing wetlands in upland areas, agencies have preferred to re-establish former wetlands when possible. In many cases, the necessary soils and seed stock still exist, and wetlands flourish once more as soon as the hydrology is restored.

During the first four years (April 2004 through April 2008), federal agencies reported restoring or creating 1,197,000 acres of new wetlands. By Earth Day 2009, federal agencies plan to restore or create an additional 279,000 acres of wetlands. During the first four years, 95 percent of the gains resulted from re-establishing former wetlands, and five percent from establishing (*i.e.,* creating new) wetlands (primarily on upland sites).

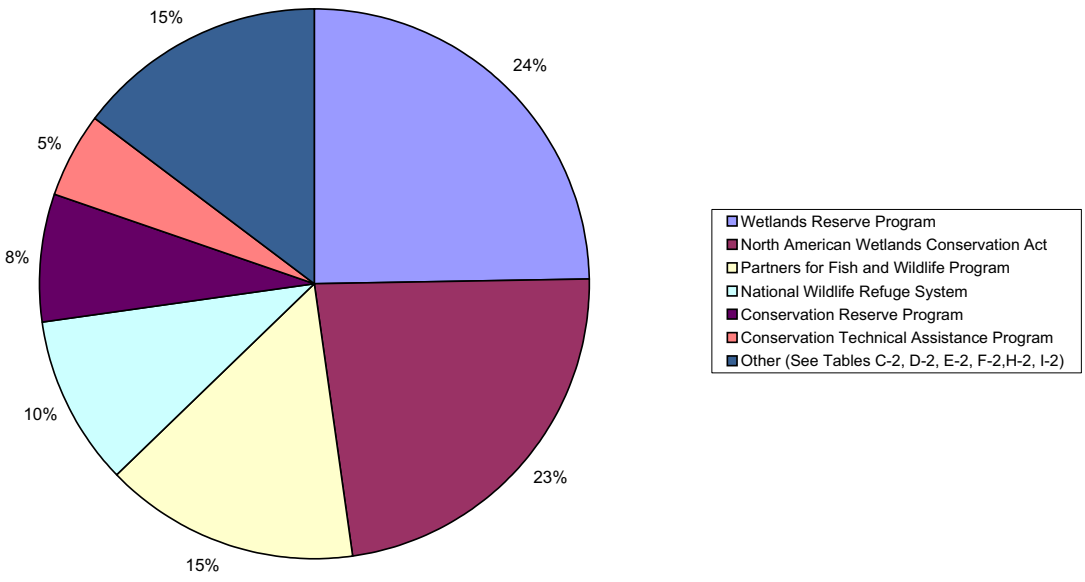
The federal government will restore wetlands in FY 2009 primarily through the Wetlands Reserve Program, North American Wetlands Conservation Act, Partners for Fish and Wildlife Program, National Wildlife Refuge System, Conservation Reserve Program, and Conservation Technical Assistance Program *(Figure 2).*

Wetlands Reserve Program

This voluntary program provides technical and financial assistance to eligible landowners to address wetland, wildlife habitat, soil, water, and related natural resource concerns on private lands. The program provides financial incentives for landowners to restore, protect, and enhance wetlands in exchange for retiring marginal land from agriculture. Enrollment options include permanent easements, 30-year easements, and restoration cost-share agreements.

The Wetlands Reserve Program (WRP) was reauthorized in the Farm Security and Rural Investment Act of 2002 (Farm

Figure 2. Proportion of Wetland Acres Anticipated to be Restored or Created by Major Programs in FY 2009



Bill). The program is administered by NRCS and funded by the Commodity Credit Corporation. In FY 2007, NRCS state offices secured 379 easements on approximately 74,508 acres.

The types of wetlands restored by NRCS through this program vary, from floodplain forest to prairie potholes to coastal marshes. Historically, floodplain forest and associated sloughs and small emergent marsh wetlands account for approximately 65 percent of the program's restoration activity. A majority of the enrolled floodplain acres offered into the program occur in areas subject to frequent flooding that were originally drained or cleared for agricultural production.

WRP expects to restore or create approximately 79,000 acres of wetlands in FY 2008 and 84,000 acres in FY 2009.

North American Wetlands Conservation Act

This FWS program promotes long-term conservation of North American wetland ecosystems for the benefit of waterfowl and other migratory birds, fish, and other wildlife. Funds are provided by appropriations and by nonappropriated sources such as the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA); interest earned on Pittman-Robertson Wildlife Restoration program funds; and fines collected under the Migratory Bird Treaty Act.

In FY 2007, NAWCA initiated the Sonoma Baylands Wetlands Restoration Project in California, a planned multi-phase program headed by the Sonoma Land Trust to protect and restore wetland and associated upland habitats in the north San Pablo Bay area of Sonoma County. The project will permanently protect 4,064 acres of wetland habitat via fee title acquisitions, and re-establish or rehabilitate a minimum of 1,019 acres of these acquired acres. The wetlands to be restored include estuarine and freshwater emergent and forested habitats. One of the primary restoration projects will occur on Sears Point, part of the San Pablo Bay National Wildlife Refuge, where the partners will restore tidal flows to 970 acres to re-establish estuarine intertidal wetlands and streams, rehabilitate 149 acres of palustrine wetland habitat, and link these wetlands to 2,000 acres of previously restored wetland habitat in the refuge.

Six partners—including state and county agencies, conservation organizations, and a private foundation—are providing $9,722,000 in contributions to match the $1 million NAWCA grant. $941,750 of the NAWCA grant will be allocated to habitat restoration. The partnership's protection and restoration plans will support other ongoing regional conservation efforts in Sonoma County and will improve habitat connectivity between completed and future wetland restoration projects.

Six partners will restore tidal flows to 970 acres to re-establish estuarine intertidal wetlands and streams and link these wetlands to 2,000 acres of previously restored wetland habitat on San Pablo Bay National Wildlife Refuge in Sonoma County, California. This project was made possible by a NAWCA grant. (FWS)

NAWCA expects to restore or create approximately 79,000 acres of wetlands in FY 2008 and FY 2009.

Partners for Fish and Wildlife Program

The Partners for Fish and Wildlife Program is a popular and effective FWS program for voluntary and citizen-based wetlands restoration and enhancement activities. The Partners program serves as a bridge to owners and managers of private lands to develop partnerships for improvement of fish and wildlife populations and their habitats. Its approach is simple: engage willing partners, through nonregulatory incentives, to

conserve and protect wildlife values on their property. As the delivery mechanism for strategic habitat conservation, the Partners program staff coordinates with public and private partners to reach national conservation goals. By working cooperatively with private landowners to restore and enhance habitat on private lands, the Partners program helps reduce the reliance on regulation to achieve the FWS mission of conserving Trust species and keeping common species common.

The Partners for Fish and Wildlife Program in South Dakota restored three wetlands totaling 11.3 acres in association with a grassland seeding in a Conservation Reserve Program field. The wetland restorations were designed by a Partners' biologist, and construction was completed by FWS personnel and equipment. This project is part of a decade-long partnership between USDA, Ducks Unlimited, and the Partners program to restore wetlands in Conservation Reserve Program (CRP) tracts. Over the past 10 years, this partnership has resulted in 406 restored wetlands totaling 1,339 acres. In addition, the Partners program is actively working with landowners to develop options for retaining CRP grasslands for grazing, as opposed to converting the grassland back to tillage agriculture. Upon expiration of a CRP contract, Partners' biologists work closely with landowners to develop a grazing management plan for the area. The goal is to provide a suite of conservation practices and technical assistance to help landowners optimize rangeland health on expired CRP tracts.

The Partners program expects to restore or create approximately 51,000 acres of wetlands in FY 2008 and FY 2009.

National Wildlife Refuge System

The mission of the National Wildlife Refuge System, managed by FWS, is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans. In Oregon, FWS and partners completed an 82-acre tidal marsh restoration project on Nestucca Bay National Wildlife Refuge in the fall of 2007. The project site is located in the upper estuary along the Little Nestucca River and was composed of five private ownerships prior to acquisition by the refuge. Over a century ago, this area was diked and drained, converting the marsh to pastures for dairy farms. The restoration project was designed and implemented by the FWS, Ducks Unlimited, and the Confederated Tribes of the Siletz Indians. Partners contributing funds to the FWS for the restoration included Ducks Unlimited, Oregon Watershed Enhancement Board, National Fish and Wildlife Foundation, Oregon Coastal Program, Pacific Coast Joint Venture, James H. Stanard Family Foundation, The Nature Conservancy, and Tillamook People's Utility District. Siuslaw National Forest, Oregon Department of Fish and Wildlife, and William L. Finley National Wildlife Refuge provided in-kind services and materials. A diverse assemblage of wildlife species including migratory waterfowl, wading birds, and raptors are responding rapidly to the recovering intertidal habitats. Fish documented using the area since restoration include juvenile coho and Chinook salmon, cutthroat trout, and other estuarine-dependent fish.

The NWRS anticipates restoring 34,000 acres of wetlands in FY 2008 and FY 2009 through re-establishing wetlands on former sites.

This wetland restoration project—in a focus area of the South Dakota Partners for Fish and Wildlife Program—benefits high-priority migratory bird species. (FWS)

Conservation Reserve Program

This USDA program restores wetlands, ranging from prairie potholes to floodplains to bottomland hardwood forest. Currently, one million acres of wetlands and 1.4 million acres of associated buffers are under long-term contracts. CRP wetland successes include partnerships with states through the Conservation Reserve Enhancement Program (CREP), which has enrolled over 87,000 acres of wetlands and associated buffers. In addition, in August 2004, President Bush announced the Non-Floodplain Wetland Restoration Initiative to encourage landowners to enroll 250,000 acres of large wetland prairie pothole complexes and playa lakes located outside the 100-year floodplain. These wetlands provide important environmental benefits, including critical breeding habitat for ducks and grassland birds. Wildlife biologists at the Department of the Interior estimate that CRP efforts have resulted in a 30 percent increase in duck populations and significant increases in grassland bird populations on CRP lands compared to cropland.

Other CRP wetland restoration initiatives include the prairie pothole duck nesting initiative and the constructed treatment wetlands implemented in the Iowa CREP. The duck nesting initiative, which began in 2006, provides for enrollment of up to 100,000 acres in prairie pothole lands targeted to wetland and surrounding nesting habitat. The Iowa CREP project creates wetlands in tile-drained cropland that remove nitrogen from the drainage water, while providing other wetland benefits.

The Conservation Reserve Program anticipates restoring or creating 17,000 acres of wetlands in FY 2008 and another 26,000 acres in FY 2009.

Conservation Technical Assistance Program

The broad purpose of NRCS's Conservation Technical Assistance (CTA) Program is to help private landowners, conservation districts, tribes, and other organizations by providing technical assistance through a national network of locally respected, technically skilled, professional conservationists. These conservationists deliver consistent, science-based, site-specific solutions to help private landowners conserve, maintain, and improve the nation's natural resource base. The CTA Program provides the foundation for NRCS to assist farmers, ranchers, other landowners, local groups, tribes, and local governments to plan and implement natural resource conservation systems.

In FY 2007, CTA was the major source of technical assistance for planning and applying conservation practices and systems to conserve and enhance natural resources on non-federal land. These conservation actions delivered public benefits in the form of better soil quality, reduced delivery of sediment and nutrients to surface and ground waters, increased conservation of water supplies, healthier grazing and forest land ecosystems, diverse and healthier wildlife habitat, and improved wetlands condition and function.

An example of the success NRCS has attained in creating and re-establishing wetlands is the construction of duck wing shaped terraces in Jefferson Parish, Louisiana. In 2007, the CTA Program partnered with Ducks Unlimited, Louisiana Department of Natural Resources, Crescent Soil and Water Conservation District, Barataria-Terrebonne National Estuary Program, Louisiana State University Extension Service, and Jefferson Parish local government to plan, design, construct, and vegetate 18,750 linear feet of earthen terraces in Jefferson Parish, Louisiana. The terraces were constructed 2.5 miles south of Lafitte, Louisiana, along Barataria Waterway east and west of Dupree Cut. Thirty-six duck wing terraces averaging 500 linear feet were constructed to calm wind effect in open water areas, to re-establish submersed aquatic vegetation to restore wetlands, and to reduce erosion along adjacent shorelines. Existing berms and levees were repaired to maintain adequate water levels in the project area. This wetland restoration project also enhanced a total 5,437.5 acres of intermediate to brackish coastal marsh, thus benefiting a diverse array of migratory birds and other wildlife in the area.

The Conservation Technical Assistance Program expects to restore or create approximately 17,000 acres of wetlands in FY 2008 and FY 2009.

Improve Wetlands

After Four Years of Accomplishment: 1,079,000 acres
Estimated Accomplishment Earth Day 2009: 238,000 acres
(totals adjusted for double-counting)

Some degraded wetlands do not function properly because of past or present stressors. Agencies can improve wetlands by modifying the physical, chemical, or biological characteristics of a degraded wetland site with the goal of repairing its natural/historic functions and associated values (referred to as rehabilitation). They also can modify the

physical, chemical, or biological site characteristics to heighten, intensify, or improve specific functions or to change the growth stage or composition of vegetation. These actions are taken with a specific goal in mind, such as improving water quality, floodwater retention, or wildlife habitat. This type of improvement, called enhancement, results in a change in wetland functions and associated values, may lead to a decline in other wetland functions and values, and does not result in a gain in wetland acres.

During the first four years (April 2004 through April 2008), federal agencies reported improving the quality of 1,079,000 acres of existing wetlands. By Earth Day 2009, federal agencies plan to improve an additional 238,000 acres of wetlands. During the first four years, 86 percent of the gains in wetland quality resulted from enhancing specific functions and values of degraded or fully functioning wetlands and 14 percent of the gains resulted from rehabilitating the natural/historic functions and associated values of degraded wetlands.

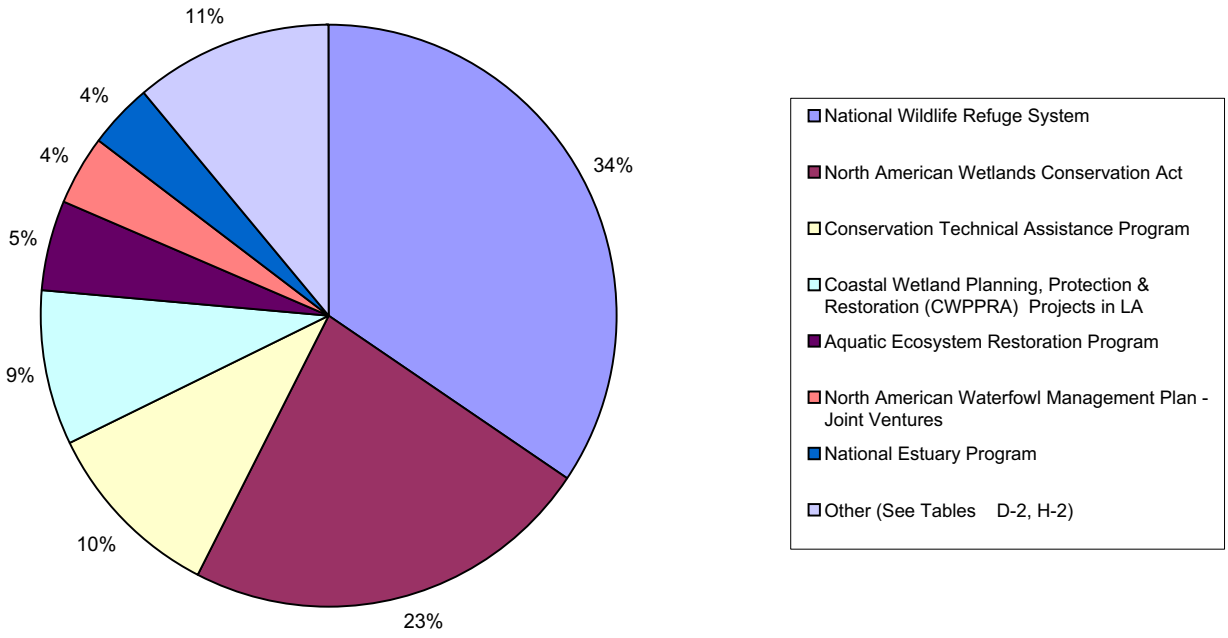
The major programs that are planning FY 2009 wetland improvements include the National Wildlife Refuge System; North American Wetlands Conservation Act; Conservation Technical Assistance Program; Coastal Wetlands Planning, Protection and Restoration Act; Aquatic Ecosystem Restoration Program; North American Waterfowl and Management Plan–Joint Ventures; and National Estuary Program *(Figure 3).*

At the Nestucca Bay National Wildlife Refuge in Oregon, the FWS worked with multiple federal, state, tribal, and local agencies, as well as with conservation groups and a private foundation, to remove dikes and thereby restore 82 acres of estuarine wetlands benefiting migratory birds, salmon, and other species. (FWS)

National Wildlife Refuge System

The National Wildlife Refuge System rehabilitates or enhances wetlands to provide quality habitat for wildlife. When Hurricane Isabel hit in 2003, its winds destroyed most of the

Figure 3. Proportion of Wetlands Acres Anticipated to be Improved by Major Programs in FY 2009



remnant stands of mature Atlantic white cedar in the Great Dismal Swamp NWR in southeastern Virginia and northeastern North Carolina. An FWS forester and other refuge staff have worked to bring back some of the lost forest. A helicopter company is removing the damaged trees, while leaving standing trees to produce seed. This makes room for naturally regenerating seedlings to sprout and thrive. To augment natural regeneration, especially in some areas affected by the record-breaking drought of 2007, seedlings grown from seeds collected in the refuge will be planted.

Atlantic white cedar forests are a globally rare community type. The Atlantic white cedar wetlands at Great Dismal Swamp NWR provide habitat for the rare Hessel's hairstreak and the declining black-throated green warbler (Wayne's race). Historically, enslaved laborers harvested the durable cedar in the Great Dismal Swamp and cut it into roof shingles and barrel staves. The cathedral-like stands reminiscent of diminutive redwood forests will be reestablished for the enjoyment of future generations through this project, which will rehabilitate more than 900 acres of the damaged wetlands.

The National Wildlife Refuge System expects to rehabilitate or enhance approximately 112,000 acres of wetlands on refuges throughout the United States in FY 2008 and FY 2009.

At the Great Salt Lake in Utah, NAWCA removed common reed (Phragmites) and carp to improve habitat for waterfowl and shorebirds at the Farmington Bay Wildlife Management Area. (FWS)

North American Wetlands Conservation Act

The FWS awards NAWCA grants to improvement projects that modify a functioning wetland ecosystem to provide additional long-term wetland conservation benefits. For example, Phase III of the Great Salt Lake Wetlands Project represents the long-term effort to conserve wetlands and promote wetland-dependent migratory bird populations within the Great Salt Lake watershed. This project focuses on the enhancement of 10,842 acres of wetlands immediately associated with and adjacent to the Great Salt Lake. One of the most pressing wetland conservation needs is the immediate control of widespread infestations of invasive species, particularly common reed (*Phragmites australis*) and carp (*Cyprinus carpio*). This proposal includes a diverse partnership working to improve wetland habitat and local breeding populations of waterfowl, shorebirds, and other waterbirds by controlling these invasive species. Twelve partners—including federal and state agencies, conservation organizations, private landowners, and corporations—are providing $873,686 to match the $932,178 NAWCA grant. The landowners and managers included in this proposal are currently investing in substantial chemical control of common reed. NAWCA grant funding will be almost entirely dedicated to the installation of physical improvements to habitat management infrastructure that will allow for long-term control of invasive species. These will include fish barrier structures to exclude carp, reconstruction of failing dikes and water control structures, construction of new sub-dikes for improved water management, and rehabilitating outlet channels to improve water management capabilities.

NAWCA expects to improve approximately 75,000 acres of wetlands in FY 2008 and FY 2009.

Conservation Technical Assistance Program

The NRCS Conservation Technical Assistance Program continues to be the major source of technical assistance for planning and applying conservation practices and systems to conserve and

enhance natural resources on non-federal land. These conservation actions deliver public benefits in the form of better soil quality, reduced delivery of sediment and nutrients to surface and ground waters, increased conservation of water supplies, healthier grazing and forest land ecosystems, diverse and healthier wildlife habitat, and improved wetlands condition and function.

The Conservation Technical Assistance Program expects to improve approximately 34,000 acres of wetlands in FY 2008 and FY 2009.

The USACE water retention area and feeder canal of the Seminole Big Cypress Water Conservation Project will enhance the quality of water in the 52,000-acre Big Cypress Reservation of the Seminole Tribe in Florida and nearby Big Cypress National Reserve and Everglades. The project will also improve wetlands by returning more natural hydroperiods. (USACE)

Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) Projects in Louisiana

The Coastal Wetlands Planning, Protection and Restoration Act program restores and enhances coastal wetlands in coastal states. Construction of the Goose Point/Point Platte Marsh re-establishment and enhancement project started in spring 2008. It is being sponsored by the Fish and Wildlife Service and the Louisiana Department of Natural Resources. Located along the northern shoreline of Lake Pontchartrain, north of the city of New Orleans, the project will enhance 593 acres of wetland habitat and re-establish an additional 551 acres. It also will preserve the integrity of the northern Lake Pontchartrain shoreline, thereby preventing the lake from breaching into fragile interior marshes and ponds. The total project cost is $20.9 million.

Louisiana CWPPRA projects are expected to improve approximately 2,000 acres in FY 2008 and 28,000 acres in FY 2009.

Aquatic Ecosystem Restoration Program

The U.S. Army Corps of Engineers uses both project-specific and programmatic authorities for implementing aquatic ecosystem restoration projects. One of these projects—the Seminole Big Cypress Water Conservation Project in Florida—will provide important benefits to the Big Cypress Swamp. The freshwaters of the Big Cypress Swamp are essential to the health of the neighboring Everglades, and they support the rich marine estuaries along Florida's southwest coast. Protecting more than 720,000 acres of this vast swamp, Big Cypress National Preserve contains a mixture of tropical and temperate plant communities that are home to a diversity of wildlife, including the elusive Florida panther.

When completed, the Seminole Big Cypress Water Conservation Project will contribute to the reinstatement of a more natural hydroperiod over much of the 52,160-acre Big Cypress Reservation and enhance the quality of water entering the Big Cypress National Preserve to the south, as well as other adjacent properties. The project also calls for the creation of additional wetlands to replace some losses of this South Florida critical habitat and enhancement of uplands, which also support many threatened and endangered species. As a result of these hydrologic modifications, habitat diversity will be enhanced throughout the entire region. It will allow opportunities for better control of water, enhancement of environmental features, and improvement of the reservation lands and future land use by the Seminole Tribe.

A minimum of 14,000 acres of existing wetlands will be enhanced by the reinstatement of a more natural hydrologic regime. In addition, a total of 205 acres of poor-quality uplands, which are currently in pasture, will be transitioned to function-

ing wetland habitat. The establishment of water retention cells totaling 656 acres will aid in control of flooding throughout the Reservation and provide much-needed water for irrigation during periods of drought.

This project is designed to improve the quality of water and runoff from all phosphorus-generating agricultural sources within the reservation. A phosphorus level of 50 ppb is the goal, which is the current performance level designed for the stormwater treatment areas. Should design performance levels for phosphorus become more stringent, the project is designed to incorporate additional alternative technology to meet stricter levels.

The Aquatic Ecosystem Restoration Program expects to improve approximately 2,000 acres of wetlands in FY 2008 and 16,000 acres in FY 2009.

The Intermountain West Joint Venture, composed of multiple partners under the North American Waterfowl Management Plan, worked with ranchers to install 12 miles of wildlife-friendly fencing to improve 1,200 acres of riparian wetlands along the Big Hole River in Montana. (FWS)

North American Waterfowl Management Plan–Joint Ventures

This tri-national strategic plan fosters the creation of partnerships between the federal government, states, tribes, corporations, private organizations, and individuals to cooperate in the planning, funding, and implementation of projects to conserve and enhance wetland habitat in high-priority "joint venture" regions.

The Intermountain West Joint Venture provided project funding and coordination assistance to incorporate strategic bird habitat conservation into a watershed-based effort to restore fluvial arctic grayling in the Big Hole Valley of southwest Montana. The McDowell Reach Riparian Restoration Project improved 1,200 acres of riparian wetlands along the Big Hole River through 12 miles of wildlife-friendly riparian fencing and other rehabilitation activities. The project was the centerpiece of a larger initiative of federal, state, non-profit, and private partners to restore and protect critical habitats throughout the watershed in a manner that benefits the livestock operations of the Valley's ranching families.

Joint Ventures expect to improve approximately 16,000 acres of wetlands in FY 2008 and 13,000 acres in FY 2009.

Protect Wetlands

After Four Years of Accomplishment: 1,324,000 acres
Estimated Accomplishment Earth Day 2009: 376,000 acres
(totals adjusted for double-counting)

Priority wetlands are protected from activities that may imperil their existence or condition. In this report, protection refers to acquisition of land or easements of at least 30 years. Because protection maintains the base of existing wetlands, it does not result in a gain of wetland acres or function.

During the first four years (April 2004 through April 2008), federal agencies reported protecting 1,324,000 acres of existing wetlands. By Earth Day 2009, federal agencies plan to protect an additional 376,000 acres of wetlands.

The major programs planning wetland protection in FY 2009 are the North American Wetlands Conservation Act, Wetlands Reserve Program, National Estuary Program, and National Wildlife Refuge System's Migratory Bird Conservation Fund program *(Figure 4)*.

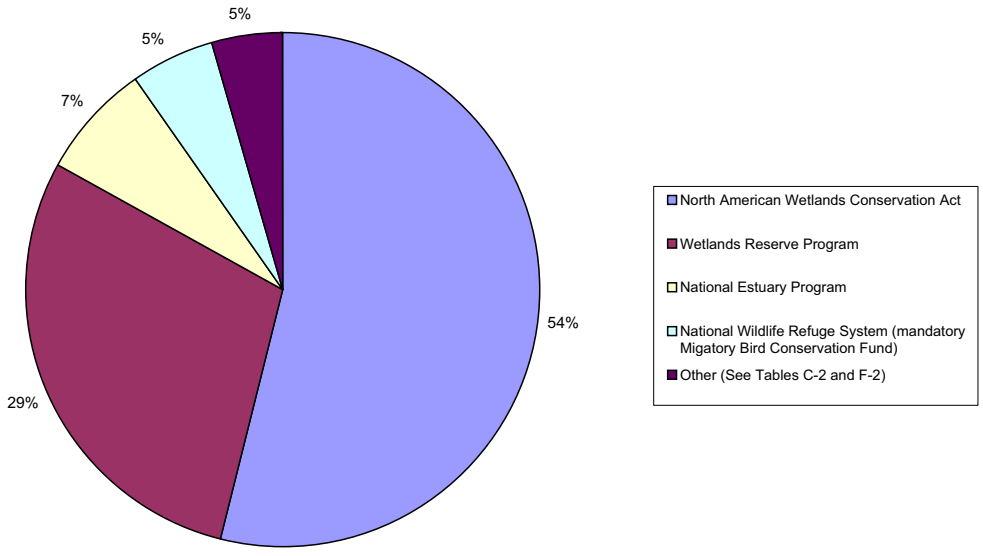
A NAWCA grant, matched by a local Chamber of Commerce, will acquire and protect at least 3,000 core acres of historic Drummond Flat in Oklahoma (at the confluence of the Turkey, Elm, and Salt Creeks) for management by the Oklahoma Department of Wildlife Conservation. (FWS)

North American Wetlands Conservation Act

NAWCA projects often involve partnerships of state and local governments and nongovernmental and private organizations seeking to acquire wetland habitat. These acquisitions may be incorporated into the FWS National Wildlife Refuge System or into a state's protected area system, or they may be included in holdings protected by a nonprofit conservation organization (*e.g.,* The Nature Conservancy).

One such project is the historic Drummond Flat in Garfield County, Oklahoma. It is in the first of at least four phases to acquire, restore, and subsequently manage a total of 7,000 acres of historical freshwater vegetated wetlands and wetland-associated uplands. Seventeen partners—including federal, state, and local government agencies; conservation organizations; private landowners; corporations; and a local Chamber of Commerce—are providing $1,407,482 to match the $700,000 NAWCA grant. The core area of this proposal is at the confluence of three watershed drainages—Turkey, Elm, and Salt creeks. Historically, this low-lying area maintained standing water for long periods through the spring and summer. The work in this initial phase involves the acquisition and protection of at least 3,000 core acres of Drummond Flat by the Oklahoma Department of Wildlife Conservation for future use as a wildlife management area. Acquisition of these core wetlands will enable future acquisition actions and set the

Figure 4. Proportion of Wetland Acres Anticipated to be Protected by Programs in FY 2009



stage for the restoration of historic wetland values in a region where limited habitat is heavily used by migratory waterfowl, shorebirds, and wading birds and other wildlife.

NAWCA expects to protect approximately 227,000 acres of wetlands in FY 2008 and FY 2009.

Wetlands Reserve Program

NRCS is especially proud of the partnership efforts that have been generated as a result of this program's activities. Restoration of two Wetlands Reserve Program easements in 2007 owned by Twin Oaks Land Company in Winnebago County, Iowa, have not only restored and enhanced wetlands and wildlife to the local area, but are serving as a water quality filter for area farmers. The easements, totaling over 300 acres, comprise nearly 120 acres of wetland soils that have been restored and/or enhanced. Of those acres, 50 acres will offer a natural filter to six drainage tile lines. The lines were brought to the surface so the wetlands could filter out any sediments, nutrients, and contaminants from surrounding farmland before entering the drainage system downstream.

EPA's National Estuary Program worked with partners to purchase 61 acres of McAllis Point marsh, part of a larger wetland protection and conservation project in West Galveston Bay, Texas, for use by sandhill cranes, such as these. (FWS)

The Wetlands Reserve Program expects to protect approximately 100,000 acres of wetlands in FY 2008 and an additional 122,000 acres in FY 2009.

National Estuary Program

At the 28 National Estuary Program (NEP) sites around the country, local stakeholders work together to identify and prioritize the problems in their estuaries. NEP community stakeholders include citizens; educators; government representatives at the state, local, and federal levels; environmental advocates; business leaders; scientists; farmers; and people who fish. Each community develops and implements a Comprehensive Conservation and Management Plan with specific actions designed to protect the estuary and its resources. The plan addresses all aspects of environmental conservation for the estuary, including water quality, habitat, living resources, and land use practices, which leads to restoration/creation, improvement, and protection activities including land protection and acquisition projects.

For example, the Galveston Bay Estuary Program and several partners joined together to purchase 61 acres along a 1,850-foot-wide parcel that fronts on West Galveston Bay. The land is located roughly three-quarters of the way down the length of Galveston Island, a 32-mile barrier island about three miles off the Texas mainland at McAllis Point. McAllis Point is one of the last undisturbed, large prairie and marsh habitats left on Galveston Island's West End. Its conservation ensures the preservation of the various habitats found on the Island, and offers refuge for wildlife and a variety of bird species, including the sandhill crane, which roosts in Galveston's remaining prairie areas from November to March. The conserved portion of the site will be open to the public as a nature preserve. The overall project—combined with recently completed wetland restoration/protection efforts at Delehide Cove, Jumbile Cove, and the Galveston Island State Park—will help preserve the integrity of the entire marsh ecosystem along the southern shoreline of West Bay. The Galveston Bay Estuary Program, one of the original 28 NEPs established in 1989, guides the conservation and restoration of Texas' largest estuary. The Galveston Bay Estuary Program is committed to preserving Galveston Bay for generations to come.

NEP expects to protect approximately 30,000 acres of wetlands in FY 2008 and FY 2009.

National Wildlife Refuge System (Migratory Bird Conservation Fund Program)

The FWS Migratory Bird Conservation Fund program acquires wetlands and associated habitats from willing sellers to benefit waterfowl species and other migratory birds most in need of habitat protection. FWS focuses its efforts on migratory bird breeding areas, resting places, and wintering areas under the authority of the Migratory Bird Conservation Act and the Migratory Bird Hunting and Conservation Stamp Act ("Duck Stamp Act"). Many of the lands and interests acquired are small natural wetlands located in the Prairie Pothole region of the Upper Midwest and northern Great Plains portion of the Central Flyway. Wetlands and migratory bird habitats located within the Atlantic, Mississippi, and Pacific Flyways are also targeted.

A recent acquisition in Monroe County, Arkansas, added 226 acres to the White River National Wildlife Refuge, thereby permanently protecting these acres. The Refuge was authorized in 1935 as a refuge and breeding ground for migratory birds and other wildlife. It is located within the White River floodplain near where it meets the Mississippi River, and is one of the largest remaining bottomland hardwood forests in the Mississippi River Valley. One of the refuge's primary purposes is to preserve and protect habitat for wintering waterfowl, including the mallard, gadwall, and green-winged teal.

Migratory Bird Conservation Funds are expected to protect approximately 17,000 acres of wetlands in FY 2008 and 22,000 acres of wetlands in FY 2009.

Wetlands acquired from willing sellers in Arkansas for White River NWR include 226 acres of bottomland hardwoods and cypress-lined lakes that provide habitats for migratory birds year-round. (FWS)

Perspective

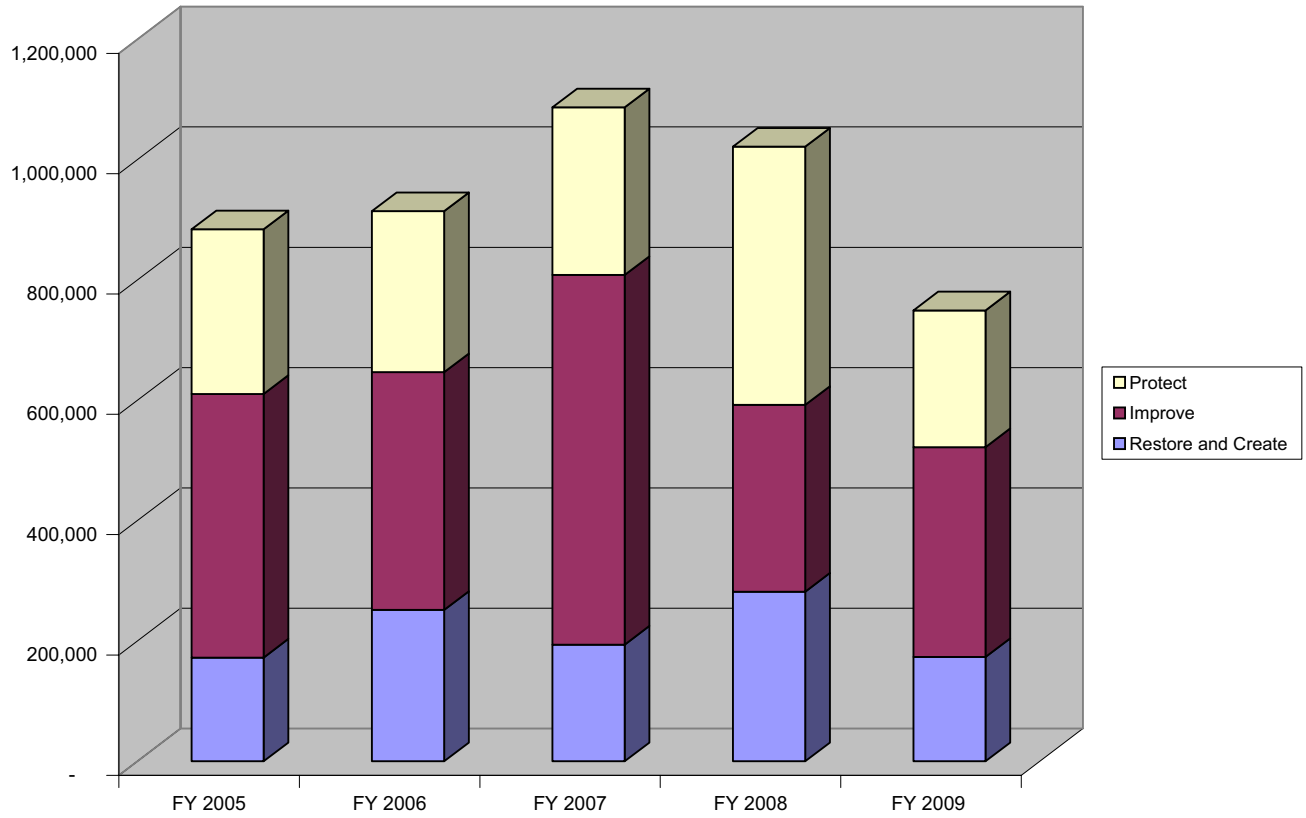
Federal agencies have accomplished the acreage targets of the President's five-year goal in four years—a full year ahead of schedule. Each of the agencies developed creative solutions, with particular emphasis on public–private partnerships and cooperative conservation. These partnerships involve federal, state, and local governments; corporations; a wide range of nongovernmental conservation organizations; and, in many cases, individuals.

The ability to meet in four years the President's targets to restore or create, improve, or protect one million acres in each of these three categories was supported by over $3.9 billion in agency funding *(Figure 5).*

Cooperative conservation made important contributions to accomplishing the President's wetlands goal. Voluntary programs that work directly with individual landowners, including Partners for Fish and Wildlife (FWS) and the Wetlands Reserve and Conservation Reserve programs (USDA), continue to be key to restoring, improving, and protecting wetlands.

Large-scale ecosystem restoration partnerships between federal and state entities in south Florida and coastal Louisiana continue to help address wetlands issues. Holistic approaches are employed to restore these critical habitats. Integrating wetlands restoration into the larger recovery plans for the Gulf Coast in the aftermath of Katrina, Rita, and other hurricanes makes good ecological sense, but it also makes good economic sense. Conserving and restoring wetlands is not only critical for recovery efforts along the Gulf Coast, but is also an important part of our national approach to community planning and development, as more and more of the population lives in coastal counties. Integrating coastal restoration with hurricane protection plans for the future has been legislatively mandated in Louisiana and embraced by its citizens as essential to the survival of Louisiana's economy and unique culture. Coastal wetlands will become even more important as buffers to ameliorate erosion and reduce the height of storm surges as we experience the impacts of climate change.

Figure 5. Budget for Wetlands Goal in FY 2005 through FY 2009
(thousands of dollars)



Note: Estimated values have been adjusted when actual accomplishments became available.

The Energy Policy Act of 2005, through its Coastal Impact Assistance Program (CIAP) section 384, may provide $250 million in each fiscal year from 2007 through 2010 to eligible coastal states and their coastal political subdivisions for projects and activities to: protect, restore, or conserve coastal areas, including wetlands; mitigate damage to natural habitats; administer the program; implemental federally approved marine, coastal, or comprehensive conservation management plans; and mitigate the impact of Outer Continental Shelf activities through funding of onshore infrastructure projects and public service needs. A maximum of 23 percent of the funds can be spent on two of those uses—administration of the program and mitigation of Outer Continental Shelf activities. In November 2007, DOI's Minerals Management Service approved Louisiana's CIAP State Plan, making Louisiana the first eligible coastal state to receive federal approval under this program. Louisiana's Plan is dominated by wetland restoration and conservation projects and programs, such as creating marshes with dredged material, restoring Mississippi River inflows into adjacent wetlands, protecting and restoring barrier and interior shorelines that help protect adjacent wetlands, and conserving coastal forests.

Increased federal attention to wetlands efforts has heightened public awareness of the importance of wetlands and their role in sustaining a resilient coast. The devastating hurricanes of 2005 have served to increase the sense of urgency among the American public for conserving, restoring, and creating coastal wetlands. An informed public working in partnership with federal, state, tribal, and local agencies provides an opportunity to ensure wetlands are conserved for future generations.

These cooperative conservation and stewardship efforts depend on accurate, timely, and reliable data that provide a common working map of where restoration efforts have been realized, are in progress, or need to be initiated. Although the National Wetlands Inventory and National Resources Inventory provide a base of information for this purpose, an integrated national, regional, and local information system to capture, manage, and share the site information on restoration efforts would improve the value of this information for decision makers. This system could provide real-time access to information that can be viewed and validated by a community of partners in the context of map location, landscape position, and focus areas.

This restored oxbow lake in the Mississippi River watershed in Iowa can hold floodwaters to reduce flooding downriver, settle out sediments that would otherwise smother fish-spawning beds, and filter out pollutants to provide clean water and reduce the dead zone in the Gulf of Mexico. (USDA)

To satisfy these requirements, the system must be geospatially enabled with geographic information systems (GIS) technology and it must take advantage of the power of the Internet for promoting collaboration. Such a system could significantly improve the tracking of accomplishments, management of data, dissemination of information, environmental analyses, and decision making. Progress toward the President's wetlands goal was estimated using the best means available, but this was a challenge because of weaknesses in the reporting system that required an adjustment for over-reporting of acreage resulting from partnerships and shared responsibilities. We can

Restored wetlands, such as this bottomland hardwood forest near the White River in Arkansas, provide breeding, nesting, and resting areas for ducks and other waterfowl, wading birds, shorebirds, and other wetlands-dependent wildlife, as well as opportunities for outdoor recreation and reduced costs to communities for clean water. (FWS)

significantly improve the reporting system and move forward from estimating accomplishments to measuring them through the use of GIS technology. A proof-of-concept project has been funded by the Environmental Protection Agency (see *Tracking and Sharing Wetlands Restoration, Creation, and Improvement Data Using GIS, page 24*).

Such a system will allow state and federal agencies and private sector partners to share GIS-based information concerning wetlands using national and international standards-based solutions. Decision makers and managers at all levels inside and outside the government will be able to make better-informed and more timely wetland decisions. We are making progress in linking and publishing data for the public and for partner agencies. The National Wetland Inventory now delivers mapped wetland data for 56 percent of the nation in real time over the Internet to the U.S. Army Corps of Engineers wetland permit tracking system and the FWS Environmental Conservation Online System (ECOS). Almost 44 million users viewed, printed, or downloaded wetlands data through the FWS state-of-the-art Wetlands Mapper with its array of analytical tools. For citizen access, National Wetlands Inventory data are now also viewable through Google Earth. Through expanded use of standards-based web services, FWS is promoting on-demand access to current wetlands information for decision support.

Last year, we correctly estimated that we would achieve wetlands acreage targets of the President's Earth Day 2004 goal a year earlier than our target date of Earth Day 2009. To ensure that the strides made not only continue, but increase, decision makers and individual citizens should have browser-based access to the information they need to track past accomplishments and make decisions that leverage our limited resources to protect and enhance our nation's wetlands. As we strive to increase both the quantity and quality of wetlands while facing the challenges of environmental changes, we know the success of this endeavor lies with public–private partnerships and the support of Congress and the American public.

Appendix A. Methodology and Definitions

Data Call to the Agencies

The data call for wetlands performance and budget data went to the Departments of Agriculture, Army, Commerce, the Interior, and Transportation and to the Environmental Protection Agency. The Working Group improved interagency guidance based on lessons learned last year. The guidance increased the consistency and accuracy of the estimates developed.

Reporting Period

Performance and funding data for programs covered the following time periods:

- FY 2007 actual budget and performance results
- FY 2008 enacted budget and estimated performance results
- FY 2009 President's requested budget and estimated performance results.

To assess progress for the fourth year since the President's April 2004 announcement, half of the reported achievements for FY 2007 were combined with half of the planned accomplishments for FY 2008. Projected estimates in the previous report were adjusted using actual results for FY 2007.

Year Performance and Budget Data Reported

Performance data are reported in the year the project is completed, land acquired, or easement purchased. However, funding is reported in the year it is appropriated. For example, funding for a multi-year wetlands improvement project would be reported in FY 2007 and FY 2008 when funding is appropriated, but the number of acres improved would be accrued in FY 2009 and FY 2010 as the accomplishments are realized.

Scope of Funding Included in the Report

Wetlands activities funded by both discretionary and mandatory funds are included. Discretionary funds are controlled by appropriations acts, and mandatory funds are controlled by laws other than appropriations acts (*e.g.,* Coastal Wetlands Planning, Protection, and Restoration Act funds, and funds collected from the sale of Migratory Bird Conservation Stamps ["Duck Stamps"]). All annually appropriated funds are considered to be discretionary funds. The funding amounts identified in this report are estimates that were available at the time the President's FY 2009 Budget Request was presented to Congress. For future reports, estimates should be adjusted based on enacted budgets.

Definitions of Accomplishments

In 2000, the White House Wetlands Working Group (WHWWG)—composed of representatives from all major federal agencies involved in wetlands work—agreed to use wetlands terminology and definitions that had been developed during the mid-1990s. Information was provided by the participating agencies using terminology similar to that previously developed by the WHWWG and the same terminology used in previous Earth Day wetlands reports.

To "restore or create" wetlands results in a gain of wetland acres and includes:

- Creation of wetlands that did not previously exist on an upland or deepwater site. These actions are referred to as "establishment" by the WHWWG.
- Restoration of a former wetland to its natural/historic function and resulting value. Typically, such a former wetland had been drained for some purpose. These actions are known as "re-establishment" by the WHWWG.

To "improve" wetlands results in a gain of wetlands functions or quality, rather than additional acreage, and includes:

- Repair of the natural/historic functions and associated values of a degraded wetland. The WHWWG refers to these actions as "rehabilitation" of wetlands. Rehabilitation results in a gain in wetlands quality.
- Heightening, intensification, or improvement of one or more selected functions and associated values. The WHWWG called these types of actions "enhancement." Enhancement is undertaken for a purpose such as water quality improvement, flood water retention, or wildlife habitat. Enhancement results in the gain of selected wetland functions and associated values but may also lead to a decline in other wetland functions and values.

To "protect" wetlands includes acquisition of land or easements of at least 30 years' duration.

Limitations to Activities Counted toward the President's Goal

Wetlands only

Programs that perform both wetlands activities and non-wetlands activities reported funding and performance related only to the wetlands component, not their entire program. For example, when land is purchased for waterfowl management it may include both wetlands and associated upland nesting cover. These upland acres were deducted from the acres reported as contributing to the President's wetlands goal, and the cost of these acres was generally deducted from the funds expended for the project. The number of acres of wetlands contributed by a program to the President's wetlands goal will be smaller than the number of habitat acres reported in other budget documents because the habitat acres typically include upland buffer strips, associated upland cover, and nesting islands.

Eradication and abatement activities in wetlands

The first year an invasive plant or animal is eradicated or its population abated, the acreage will be reported as a gain under "improve." Additional eradication or abatement work on the same area is considered to be maintenance and is not counted in the improve category.

Winter flooding of agricultural lands

Whether this acreage is counted depends on (1) whether the land is wetland or upland before the flooding and (2) whether the land is being newly flooded or the land is within a footprint that has been flooded in past winters. If the field is upland before being artificially flooded during the winter and upland after the water is removed in the spring, the acres are not counted. If the field is a farmed wetland before the flooding and this is the first year the field has been flooded, the acres are counted. Subsequent years of winter flooding are considered management and are not counted. The first year the acreage will be reported as an improvement in quality through enhancement, because adding winter water results in the improvement of wildlife habitat. Farmed wetlands are defined as areas where the soil surface has been mechanically or physically altered for production of crops, but hydrophytes will become established if farming is discontinued.

Accomplishments outside the United States

Due to the migratory nature of birds, some programs work to restore, improve, and protect wetlands in Canada, Mexico, and the Caribbean. International portions of programs were not included in the data reported.

Uplands work

Many programs carry out activities in upland areas that are crucial to the health and sustainability of wetlands. These upland acres were not counted toward the President's wetlands goal.

Wetland Conservation On-the-Ground Activities That Maintain the Nation's Wetland Base

Many important on-the-ground wetland activities are not counted toward meeting the President's goal because they are focused on maintaining or managing the nation's wetlands base and do not add acres, increase wetland quality, or fall within the definition of "protect." Many agencies spend far more funds maintaining and managing the existing wetlands base than they do making additions to the base. The base is critically important, because wetland gains can only be built on a stable foundation. Other activities that help sustain the wetlands base are included in *Appendix B, Conserving Wetlands*.

Cyclical work

This work is carried out to sustain wetlands (e.g., habitat maintenance on a National Wildlife Refuge to maximize wetland habitat values). Cyclic water-level management and other cyclic wetland activities are used to mimic naturally occurring flood regimes for the benefit of wildlife. Only new activities on a footprint of wetlands not previously manipulated for increased value were counted in the "improved" category as rehabilitation or an enhancement.

Management and maintenance activities

Effective management and maintenance activities are critical to sustain wildlife and plant populations. Management activities involve periodic manipulation of the physical, chemical, or biological characteristics critical to maintaining habitat quality. These manipulations mimic natural regimes through periodic flooding, mowing, or prescribed burns. Maintenance activities include the repair of water control structures, fences, or structural protection. Cessation of management and maintenance activities triggers loss in targeted

wetland values. Maintenance activities do not result in an increase in wetlands acreage or quality.

Compensatory mitigation

Wetlands created or improved as mitigation for the loss or degradation of other wetland values are not counted toward the President's goal. Programs that provide compensatory mitigation for wetland losses are not counted as contributing to the new wetlands goal because they maintain the nation's wetlands base. Examples of these types of programs are the Federal Highway Administration programs that mitigate the impacts of highways on wetlands, the Clean Water Act provisions that require the mitigation of permitted wetland losses, and the Natural Resources Damage Assessment and Restoration Program, which restores and improves wetlands at former hazardous waste sites.

Shoreline stabilization

The preservation of a marsh or channel using shoreline stabilization techniques (*e.g.,* rock revetments, or steel or plastic sheet pile protection) is called armored or hard shoreline stabilization. Partial preservation from shoreline erosion using vegetative plantings is called soft shoreline protection. Shoreline stabilization prevents loss of wetland acreage due to subsidence; erosion by tides, wind, and boat traffic; and similar factors. Because it does not increase the quantity or quality of wetlands and does not meet the definition of protect, this acreage is not counted toward the President's goal.

Correcting for Over-Reporting of Acreage

More and more programs are participating in cooperative conservation partnerships. They have proven to be effective and efficient mechanisms to leverage resources and expertise. Many programs work cooperatively with both internal and external federal partners as well as non-federal partners. Correcting for over-reporting of acreage is a challenge to accurately reporting accomplishments. One partner may provide materials and equipment, another labor, another technical assistance, and yet another land. For example, a 100-acre project with four partners could be reported by each of the partners, and could appear to be 400 acres when combined. In some cases, one partner may not be aware that a landowner is working with multiple partners.

These partnerships may result in over-reporting of performance. To correct for this "double-counting," partnership worksheets were used. Programs were asked to identify partnership groups separately on the worksheets. Some agencies do not collect partnership data, and of those that do, most do not collect this data to the level of detail necessary to make refined adjustments for double-counting. Although all the performance data was accounted for on the partnership worksheets, the resolution was not sufficient to make adjustments to individual program accomplishments. Therefore, an overarching correction was necessary to avoid over-reporting the acres created or restored, improved, and protected.

To calculate this double-counting adjustment, all the acreage reported as accomplished through federal partnerships was summed by category. The calculation assumed two federal partners were involved in situations where at least one additional federal partner was reported by the reporting agency. Half of the total acreage accomplished through multiple federal partnerships by category was subtracted from the raw total, by category. The partnership adjustment for FY 2008 was used for FY 2009.

Moving Toward a Performance Measurement and Tracking System

This document reflects the lessons learned in developing the progress reports over the past four years. Over-reporting due to partnerships remains a significant concern. The consensus is that the best solution to the problem would involve the use of geographic information system (GIS) technology or other geo-enabled technologies.

The use of GIS technology to track wetland programs and their contribution toward the national goal would simplify the problem of adjusting for double-counting. The digital project boundaries could be entered into a GIS, analyzed for multiple overlaps, and overlaid on a digital map of the United States. The map would facilitate the development of monitoring programs to ensure wetlands are restored, improved, and protected and that they provide the intended functions and values.

Tracking systems require agreement on common performance measures and definitions. The definitions in this report have been in place since the mid-1990s. A proof-of-concept project has been funded by the Environmental Protection Agency (see *Tracking and Sharing Wetlands Restoration, Creation, and Improvement Data Using GIS*).

Tracking and Sharing Wetlands Restoration, Creation, and Improvement Data Using GIS

Agencies' progress to meet the President's Earth Day goal was tracked using the best means available. This was a challenge because of a lack of coordination between the reporting systems each agency maintains that required an adjustment for over-reporting of acreage from partnerships and shared responsibilities. Use of GIS technology would provide a significant improvement for reporting of wetlands restoration and improvement, moving agencies from estimating accomplishments to measuring them. For this to occur, two things will be needed in the future:

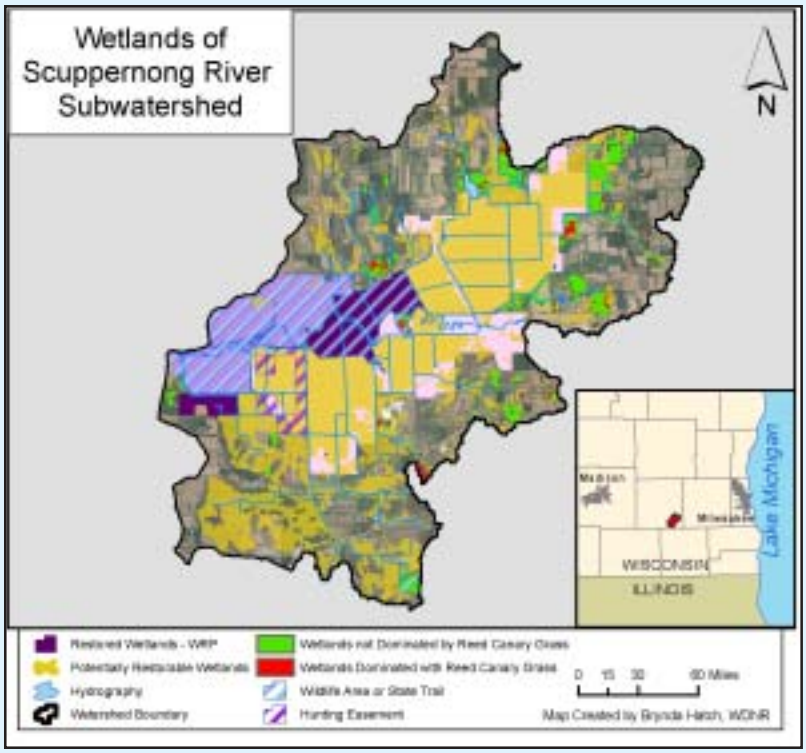
- a national geospatial tracking mechanism for restoration reporting, and
- a coordinated effort by federal and state agencies, as well as local public and private partners, to submit consistently formatted data to a common geospatial database.

GIS would provide accuracy. It allows accurate adjustments to be made for double counting resulting from partnerships and makes spatial analysis possible. It allows the identification of gains in acres resulting from re-establishment of wetlands on formerly drained or deepwater sites to be distinguished from "acre-neutral" enhancement or rehabilitation projects that take place in existing, sometimes degraded, wetlands.

GIS would provide capabilities to improve effectiveness and efficiency. It allows the information to be viewed on a digital map of the United States and will facilitate tracking of current projects, planning for types and locations for future restoration, monitoring, and analysis to determine if projects are providing needed functions and values, and adapting activities to a changing environment. This will, in turn, allow agencies and programs to direct the location of future activities to areas with the greatest need.

FWS is participating in a proof-of-concept tracking project funded by EPA and will incorporate data on restored wetlands from Wisconsin and California into the national wetlands map data layer (National Spatial Data Infrastructure), to be available online through the Wetlands Mapper, and to other data users through a web mapping service. This wetlands dataset of "restored" and "improved" wetlands will be designed to integrate digital map data with other resource information to produce timely and relevant management and decision-support tools. Included in the project are the Wisconsin Department of Natural Resources and the Southern California Coastal Waters Research Project, as well as other state and local agencies, which have been tracking the status of their wetlands restoration projects.

This proof-of-concept effort will be completed by the end of 2009, at the conclusion of which federal agencies will review the results and determine recommendations and next steps for a combined wetlands conservation reporting mechanism.



Example of wetland restoration project tracking from the Wisconsin Department of Natural Resources' Natural Resource Restoration Tracking Database.

Appendix B. Conserving Wetlands

Other Activities that Help Maintain the Wetlands Base

Federal agencies engage in various actions that help maintain the existing base of wetlands. The President's goal helped sharpen focus on these activities. A policy of having an "overall increase" of wetlands must be built on a strong foundation of "no net loss." Key programs that contribute to the base, but that are outside the President's initiative, fall into the following categories:

- Managing wetlands,
- Cooperative conservation,
- Regulation and mitigation,
- Support activities.

Managing Wetlands

Approximately 13 percent of the nation's current base of wetlands is managed by federal agencies. Many units of FWS's National Wildlife Refuge System were established for their wetland values, and FWS spends approximately $25 million annually to actively manage more than 1.1 million acres of wetlands. Wetlands management activities include creating desired conditions through the use of canals, levees, water control structures, and pumps. Cyclical water level and management activities–including mechanical disturbance, prescribed burning, or chemical treatment–also are used to produce native wildlife foods in wetlands. Other federal agencies managing wetlands include the National Park Service, U.S. Forest Service, Bureau of Land Management, National Oceanic and Atmospheric Administration, Bureau of Reclamation, Bureau of Indian Affairs, and Department of Defense. All of these wetlands are being conserved for sustainable benefits.

Cooperative Conservation

Seventy-four percent of the land in the United States is privately owned. To better conserve privately owned wetlands, the federal government relies on voluntary, incentive-based conservation programs. For example, technical and financial assistance provided by the Natural Resources Conservation Service and FWS help private landowners apply needed conservation techniques on their land. When private landowners use these programs to restore, protect, and improve wetlands on their property, they serve as stewards of our environment. Other cooperative conservation efforts include:

Public–private partnerships

The success of federal actions to encourage and partner with non-federal parties—including state and local governments, Indian tribes, and nongovernmental entities—increases opportunities to make progress through cooperative endeavors. Recent trends are encouraging. For example, through Coastal America's Corporate Wetland Restoration Partnership (CWRP), more than 400 corporations, non-governmental organizations, and other

Coastal America and the Corporate Wetlands Restoration Partnership

Throughout the four years of progress toward the President's wetlands goal, interagency cooperation has been highly effective in achieving results on the ground. Formalized cooperative processes, such as CWPPRA and the FWS Joint Ventures, have played an important role, as have informal cross-agency cooperative efforts such as Coastal America. Working on wetlands projects that span multiple federal agencies and programs, Coastal America serves as a facilitator and provides a virtual meeting place where multiple federal programs come together to work on projects of mutual interest.

The efficiencies gained through collaboration have not been limited to federal agencies alone. Through Coastal America's Corporate Wetlands Restoration Partnership (CWRP), more than 400 corporations, non-governmental organizations, and other partners contributed to the President's wetlands goal by providing matching funds and in-kind services for wetlands restoration and protection projects. These CWRP members and partners helped leverage federal dollars for vital wetlands restoration projects throughout our nation (see *http://www.coastalamerica.gov/text/cwrp.html*). The CWRP is expected to continue to grow over the next several years. The coordinated use of such public–private wetlands restoration and protection efforts should yield major ecological benefits.

partners contributed to the President's wetlands goal by providing matching funds and in-kind services for wetlands restoration and protection projects.

Another example of successful public–private partnerships is the FWS Joint Ventures (JVs). Formed to implement the North American Waterfowl Management Plan, they are self-directed partnerships involving federal, state, and local governments; corporations; and a wide range of nongovernmental conservation organizations. JVs have proven to be successful tools for developing cooperative conservation efforts to protect waterfowl and other bird habitat. JVs address multiple local, regional, and continental goals for sustaining migratory bird populations by developing scientifically based habitat projects that benefit waterfowl and other migratory bird populations.

Technical assistance

Most federal agencies involved with wetlands activities provide federal, state, and local partners with technical (biological, engineering, hydrological, etc.) expertise to support various development, conservation, and restoration projects across the country. These programs offer technical assistance to help conserve, restore, and protect a variety of fish and wildlife and their habitats. Among the laws providing a foundation for technical assistance and conservation partnerships are the Fish and Wildlife Coordination Act, National Environmental Policy Act, Clean Water Act, Federal Power Act, Estuary Restoration Act, and Environmental Restoration Act.

Regulation and Mitigation

Water quality

An important aspect of the President's Wetlands Initiative is its continued emphasis on the goal of "no net loss" of wetlands. Section 404 of the Clean Water Act regulates the discharge of dredged or fill material into waters of the United States, including wetlands, and is jointly administered by the U.S. Army Corps of Engineers (USACE) and the Environmental Protection Agency. The USACE has primary responsibility for day-to-day permitting of activities in jurisdictional "waters of the United States," a broad category of aquatic resources that includes wetlands. A comprehensive permit review requires applicants to first avoid and then minimize impacts, and finally use compensatory mitigation to replace aquatic resource functions lost. Regulated activities under this program include fills for development, water resource projects (such as dams and levees), and infrastructure development. During the past three years, more than 260,000 permit applications were processed requiring applicants to avoid impacts to more than 21,000 acres of wetlands, and maintaining a ratio of more than two acres of mitigation for every acre of permitted impacts to wetlands.

The USACE has recently converted to a new database and management tool that allows it to better track project actions, including both impacts and compensatory mitigation. This tool also includes a spatial database with maps supported by GIS, which facilitates a watershed approach for evaluation of projects. The USACE is currently working with its Federal, State and local partners, and the general public, to share data and to ensure public accessibility to the system. The USACE and EPA have recently promulgated a joint rule that proposes integrating the watershed approach in mitigation planning. For more information on the compensatory mitigation rule visit *http://www.usace.army.mil/inet/functions/cw/cecwo/reg/* or *http://www.epa.gov/wetlandsmitigation*.

Farmland

The Wetland Conservation ("Swampbuster") provision established in the 1985 Farm Bill, and amended in the 1990 Farm Bill, requires all agricultural producers to protect the wetlands on the farms they own or operate if they wish to be eligible for certain USDA farm program benefits. Producers are not eligible if they have planted an agricultural commodity on a wetland that was converted by drainage, leveling, or any other means after December 23, 1985, or if they have converted a wetland for the purpose of agricultural commodity production, or for making such production possible, after November 28, 1990. NRCS Conservation Technical Assistance staff make wetlands determinations, develop wetlands mitigation and restoration plans, and administer other Swampbuster-related provisions.

Transportation

Under Federal Aid Highway legislation, state transportation agencies may use national Highway System and Surface Transportation Program funds to finance wetland and natural habitat conservation planning and implementation, as well as compensatory mitigation and restoration projects that offset unavoidable losses from transportation projects. The Department of Transportation has a goal of 1-to-1 wetland acre mitigation; under the Federal Aid Highway Program it has achieved more than 49,000 acres of wetland mitigation since 1996, with mitigation exceeding

National Wetland Condition Assessment

Our nation's wetland goals have traditionally been based on extent of wetland area as a means to measure progress toward achieving the national policy goal of "net gain" in wetland acreage. The Fish and Wildlife Service (FWS) has a 51-year history of determining the status and trends of the nation's wetland habitats.

The FWS published the first report on wetland status and classification in 1956, indicating that wetland habitat for migratory waterfowl had experienced substantial declines. In 1986, the Emergency Wetlands Resources Act (Public Law 99-645) was enacted to promote the conservation of our nation's wetlands. The Act requires the FWS to conduct status and trends studies of the nation's wetlands at 10-year intervals. On Earth Day 2004, President Bush directed the FWS to accelerate the pace of the Status and Trends Report. The first Status and Trends Report issued under this accelerated pace, released in 2006, indicated that for the first time in the five decades of measurement, wetland gains exceeded wetland losses, at a rate of approximately 32,000 acres per year for the period 1998–2004.

To complement the work of the Status and Trends Report, the Environmental Protection Agency is planning to conduct a National Wetland Condition Assessment, a statistical survey of the quality of our nation's wetlands and one of a series of water resource surveys being conducted by EPA, states, tribes, and other partners.

The assessment is designed to:

- Determine regional and national ecological integrity of wetlands.
- Achieve a robust, statistically valid set of wetland condition data.
- Promote collaboration across jurisdictional boundaries.
- Build state and tribal capacity for monitoring and analyses.
- Develop baseline information to evaluate progress.

EPA will work in partnership with FWS throughout the design and implementation of the national assessment. The FWS's Wetlands Status and Trends plots will provide the starting point for the condition assessment, as they provide the best national data set suitable for a probabilistic survey that will provide statistically valid estimates of condition for a population of wetlands with a known confidence.

EPA is currently in the research phase of the National Wetland Condition Assessment and is scheduled to conduct fieldwork in 2011 and issue a report in 2013. When paired with the FWS Status and Trends study, decision-makers will for the first time have a comprehensive, scientifically defensible evaluation of the quantity and quality of wetlands across the nation that will inform national wetlands policy.

Freshwater emergent marsh with healthy forested buffer (photo by Jim Newton).

acres affected by more than 31,000 acres. The 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users requires that metropolitan and statewide plans reflect environmental mitigation and coordination with resource agencies. The Federal Highway Administration also funds research on wetlands mitigation in connection with highways, and wetlands mitigation is an eligible project cost for federal transit and airport assistance.

Support Activities

Wetland mapping

The FWS strategically maps the nation's wetlands and deepwater habitats to gather information on their characteristics, extent, and status and trends through the National Wetlands Inventory. The legislative mandates for the National Wetlands Inventory come from the Emergency Wetlands Resources Act (Public Law 99-645). OMB Circular A-16 also directs the FWS to build the wetlands layer of the National Spatial Data Infrastructure. The goal of the NWI is to produce information on the characteristics, extent, and status of the nation's wetlands and deepwater and riparian habitats in order to promote understanding and conservation of these resources. The program currently has wetland data for 56 percent of the nation available on-demand and is updating one percent per year. Wetlands data are used in planning for emerging conservation issues such as energy development, species population declines, and global climate change where they are used to model sea-level rise. The National Wetlands Inventory is making progress in linking and publishing data for the public and for partner agencies. The wetlands data are viewable and downloadable by anyone with a computer and access to the Internet through the Wetlands Mapper and the National Map. The National Wetland Inventory also delivers mapped wetland data in real time over the Internet through its web mapping service, e.g., the U.S. Army Corps of Engineers wetland permit tracking system and the FWS Environmental Conservation Online System. For people with only a casual interest in wetlands, National Wetlands Inventory data are also viewable through Google Earth. Through expanded use of standards-based web services, the Fish and Wildlife Service is promoting access to current wetlands information for decision support.
http://www.fws.gov/nwi/

Wetland status and trends analyses

The Emergency Wetlands Resources Act of 1986 also mandated that the Fish and Wildlife Service produce a report to Congress on the status and trends of the nation's wetlands on a 10-year cycle. As part of the President's Wetlands Initiative, the FWS completed an updated national wetlands status and trends report in 2005. The study found that there are about 107.7 million acres of wetlands in the conterminous United States. Between 1998 and 2004, there was an estimated gain in wetlands acreage of 191,750 acres, or about 32,000 acres per year. The net gain in wetlands acreage was attributed to an increase in freshwater ponds, conversion of agricultural lands or former agricultural lands that had been idled in combination with wetland restorations. Freshwater wetland losses to silviculture and to urban and rural development offset some acreage gains. The report did not document or address changes in wetlands quality. There is additional work to be done to ensure that the nation's wetlands base is sustained and provides the necessary functions, diversity, and structure to improve the quality of our wetland resources as outlined in the President's 2004 message, and that all federal contributing activities are tracked as the nation races to address community safety, energy development, clean water, and wildlife conservation in a changing environment. The fourth update of this report will be produced in 2010.
http://www.fws.gov/nwi/statusandtrends.htm

National Resources Inventory

The NRCS conducts the National Resources Inventory (NRI), a scientifically based statistical survey of the nation's natural resources that provides updated information on the status, condition, and trends of land, soil, water, and related resources on the nation's non-federal land. The NRI is unique in that it is a nationally consistent database constructed specifically to estimate five-, 10-, and 15-year trends for natural resources. The NRI process has reported that between 1997 and 2003 there was an estimated net gain of 263,000 acres of wetlands due to agricultural activities—an average annual increase of 44,000 acres.
http://www.nrcs.usda.gov/technical/nri/

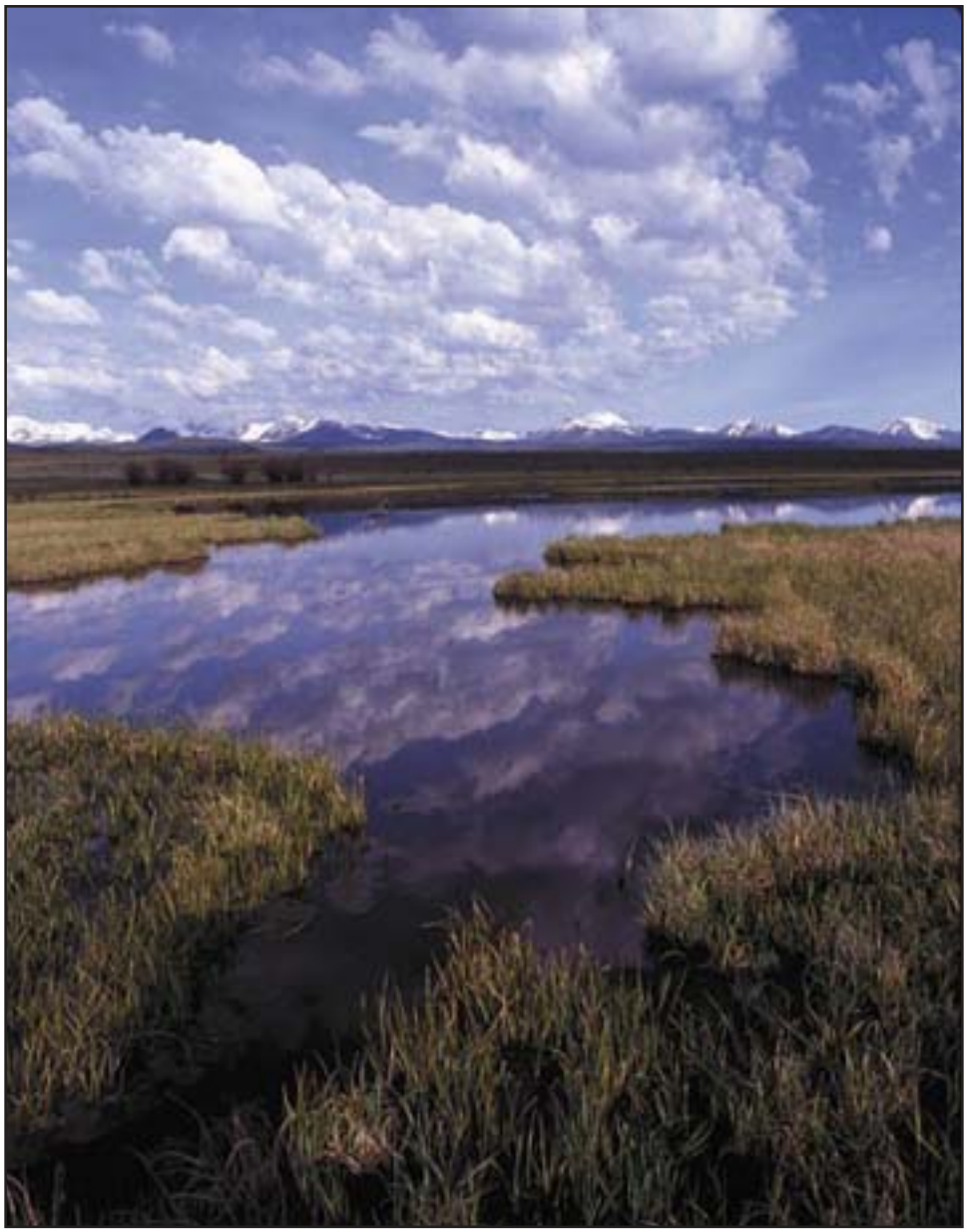
Research and education

Federal agencies also are engaged in research to better understand wetlands, wetland plants, and their responses to targeted actions and outside influences. Among the most prominent programs are the national Wetlands Research Center

(USGS), Engineer Research and Development Center (USACE), Plant Materials Centers (NRCS), the Center for Forested Wetlands Research (USFS), and the Office of Research and Development (EPA). These are discussed more fully in Appendices C through I.

Monitoring and evaluation

When actions are taken to restore or enhance natural resources or ecosystems, a considerable amount of time may pass before the full effects are evident. For this reason, the responsible federal agencies monitor the targeted wetlands to measure and track progress. Results from monitoring are useful for evaluating the effectiveness of the actions taken; in some cases, management goals or actions to meet them may be modified. In addition, the federal government provides both financial and technical assistance to states and tribes to help them monitor their wetlands conservation work.



Planning, modeling, tracking accomplishments, monitoring effectiveness, research, and adaptive management will become increasingly important as federal agencies, working with partners, continue to restore or create, improve, and protect wetlands and embark on habitat adaptation to climate change. (FWS)

Appendix C.
U.S. Department of Agriculture

Table C-1. USDA Programs Supporting the President's Wetlands Goal in FY 2009. Funding (millions of dollars)

Agency	Program	Restore or Create	Improve	Protect	Total Wetlands Funding for goal FY 2009	Difference from FY 2008
FSA	Conservation Reserve Program	13.900	5.200	0.000	19.100	3.100
NRCS	Conservation Technical Assistance Program	10.870	16.083	0.000	26.953	0.000
NRCS	Environmental Quality Incentives Program	0.160	0.030	0.000	0.190	0.000
NRCS	Farm and Ranchlands Protection Program	0.000	0.000	7.000	7.000	0.000
NRCS	Grasslands Reserve Program	0.000	0.000	0.000	0.000	-0.461
NRCS	Wetlands Reserve Program	45.905	3.707	131.388	181.000	-274.000
NRCS	Wildlife Habitat Incentives Program	0.700	0.140	0.000	0.840	0.000
Totals		**71.535**	**25.160**	**138.388**	**235.083**	**-271.361**

Table C-2. USDA Programs Supporting the President's Wetlands Goal in FY 2009. Planned Accomplishments (in acres)

Agency	Program	Restore or Create	Improve	Protect	Total Wetlands FY 2009	Difference from FY 2008
FSA	Conservation Reserve Program	25,800	1,900	0	27,700	8,500
NRCS	Conservation Technical Assistance Program	17,442	33,858	0	51,300	0
NRCS	Environmental Quality Incentives Program	500	250	0	750	0
NRCS	Farm and Ranchlands Protection Program	0	0	5,000	5,000	0
NRCS	Grasslands Reserve Program	0	0	0	0	-760
NRCS	Wetlands Reserve Program	84,175	6,825	122,126	213,126	27,637
NRCS	Wildlife Habitat Incentives Program	8,050	352	0	8,402	0
Total		**135,967**	**43,185**	**127,126**	**306,278**	**35,377**

USDA Programs Supporting the President's Wetlands Goal

Farm Service Agency

Conservation Reserve Program (CRP): This program establishes permanent vegetative cover on environmentally sensitive lands (including cropped and prior converted wetlands) through long-term rental agreements. Currently, 2.4 million wetland acres, including upland buffers, have been restored and are being maintained under 10- and 15-year contracts with annual rental payments of $126 million. The 2002 Farm Bill authorized that, at any one time, up to 39.2 million acres may be enrolled in CRP during 2002 through 2007, an increase from 36.4 million acres authorized to be enrolled through 2002.
http://www.fsa.usda.gov/FSA/webapp?area=home&subject=copr&topic=landing

Natural Resources Conservation Service

Conservation Technical Assistance (CTA) Program: In FY 2007, CTA helped landowners protect water quality on 6,374,280 acres; improve fish and wildlife habitat quality on 2,781,782 acres; and create, restore, or enhance 58,595 acres of wetlands.
http://www.nrcs.usda.gov/programs/cta

Environmental Quality Incentives Program (EQIP): As a voluntary conservation program, EQIP promotes agricultural production and environmental quality as compatible national goals. Through EQIP, farmers and ranchers may receive financial and technical help to install and maintain conservation practices that enhance soil, water, and related natural resources, including wetlands. The program has restored 33,808 acres of wetlands, and an additional 147,302 acres have been enhanced or improved since the program was established in 1996. The 2002 Farm Bill authorized $400 million for FY 2002, $700 million for FY 2003, $1 billion for FY 2004, $1.2 billion for both FY 2005 and FY 2006, and $1.3 billion for FY 2007 and FY 2008.
http://www.nrcs.usda.gov/programs/eqip

Farm and Ranchlands Protection Program: This program provides matching funds to help purchase development rights to keep productive farm and ranchland in agricultural uses for protecting topsoil by limiting conversion to nonagricultural uses of land.
http://www.nrcs.usda.gov/programs/frpp

Grasslands Reserve Program: This voluntary program offers landowners the opportunity to protect, restore, and enhance grasslands on their property. The program will conserve vulnerable grasslands from conversion to cropland or other uses and conserve valuable grasslands by helping maintain viable ranching operations. The program is jointly administered by NRCS and FSA (NRCS has lead responsibility on technical issues and easement administration, and FSA has lead responsibility for rental agreement administration and financial activities). In FY 2007, program staff processed 239 new applications totaling 135,996 acres valued at approximately $12,893,272. Of these totals, farmers and ranchers preserved 13,000 acres of wetlands using common management practices to maintain the viability of the conserved grassland.
http://www.nrcs.usda.gov/programs/grp

Wetlands Reserve Program (WRP): WRP is a voluntary program that assists landowners with restoring and protecting wetlands through conservation easements and cost-share agreements. Since 1992, 1,921,144 wetland and associated upland acres have been enrolled in the program. The 2002 Farm Bill requires, to the maximum extent practicable, an additional 250,000 acres to be enrolled in the program each year, for a total program enrollment of 2,275,000 acres by the end of 2007. Total program enrollment at the end of FY 2007 exceeded 1.92 million wetland acres and associated upland acres.
http://www.nrcs.usda.gov/programs/wrp

Wildlife Habitat Incentives Program (WHIP): WHIP is a voluntary program that provides technical and financial assistance to enable eligible participants to develop upland wildlife, wetland wildlife, threatened and endangered species, fish, and other types of wildlife habitat in an environmentally beneficial and cost-effective manner. The purpose of the program is to create high-quality wildlife habitats that support wildlife populations of local, state, and national significance. In FY 2006 through 2008, approximately 15,000 acres of wetlands will have been protected, restored, developed, or enhanced under WHIP.
http://www.nrcs.usda.gov/programs/whip/

USDA Programs that Maintain the Wetlands Base

NRCS programs help private landowners apply needed conservation techniques on their land. When private landowners use these programs to restore, protect, and improve wetlands on their property, they serve as stewards of our environment. Other cooperative conservation efforts include:

Plant Materials Program: This program focuses on development of plants and technology to help conserve natural resources, including improving the function of wetlands. There are currently 27 plant materials centers (PMC) located across the country. Each PMC develops vegetative solutions to natural resource challenges within its service area. In the wetlands arena, PMCs have selected over 56 improved plants for restoration work, wetland enhancement, and nutrient filtering in constructed wetlands. Forty of these improved plants are useful for revegetation within the Wetlands Reserve Program. The PMCs also develop the technology to successfully propagate, establish, and manage plant materials in wetland settings.

In FY 2008, PMCs are working on 50 studies directly associated with furthering the technology of vegetation in wetlands, as well as an additional 100 studies that will indirectly benefit wetlands. These benefits include technology to protect and restore coastal marshes, improve the establishment of submerged aquatic vegetation, restore or enhance wetlands, protect the shorelines and buffer zones of wetlands, and enhance wetlands for wildlife uses and to support the Wetlands Reserve Program. FY 2009 funding request is $10.9 million.

National Resources Inventory: NRCS conducts the National Resources Inventory (NRI) in cooperation with Iowa State University's Center for Survey Statistics and Methodology. The NRI is a scientifically based longitudinal (statistical) survey of the nation's natural resources that provides information on status and trends of land use and soil, water, and related resources for the nation's non-federal land. The NRI is unique in that it provides nationally consistent statistical data that are explicitly linked to the NRCS Soil Interpretations database and that support analysis of resource trends on rural and developed land over all regions of the United States since 1982. The NRI shows that between 1997 and 2003 there was an estimated net gain of 263,000 acres of wetlands due to agricultural activities—an average annual increase of 44,000 acres. *http://www.nrcs.usda.gov/technical/nri*

Appendix D. Department of Commerce

National Oceanic and Atmospheric Administration (NOAA)

Table D-1. NOAA Programs Supporting the President's Wetlands Goal in FY 2009. Funding (millions of dollars)

Agency	Program	Restore or Create	Improve	Protect	Total Wetlands Funding for goal FY 2009	Difference from FY 2008
NOAA	Fisheries Habitat Restoration	0.842	14.578	0.000	15.420	-0.655

Table D-2. NOAA Programs Supporting the President's Wetlands Goal in FY 2009. Planned Accomplishments (in acres)

Agency	Program	Restore or Create	Improve	Protect	Total Wetlands FY 2009	Difference from FY 2008
NOAA	Fisheries Habitat Restoration	7,000	2,000	0	9,000	1,000

NOAA Programs Supporting the President's Wetlands Goal

Community-based Restoration Program (CRP): Under Fisheries and Habitat Restoration, the CRP applies a grassroots approach to restoration by actively engaging community members in on-the-ground restoration of coastal fishery habitats around the nation. The CRP embraces cooperative conservation, providing funding and technical expertise and establishing partnerships that collaboratively restore NOAA trust resources to improve environmental quality and strengthen stewardship within local communities. FY 2009 funding request is $13.1 million.
http://www.nmfs.noaa.gov/habitat/restoration/projects_ programs/crp/

Great Lakes Habitat Restoration Program: In FY 2009, NOAA will establish a cross-NOAA program to coordinate habitat restoration and protection efforts. Taking into account the priority needs identified by the Great Lakes Interagency Task Force, NOAA will focus its restoration and protection support on ongoing efforts at watersheds within Great Lakes Areas of Concern. FY 2009 funding request is $1.5 million.
http://www.corporateservices.noaa.gov/~nbo/08bluebook_highlights.html

NOAA Programs that Maintain the Wetlands Base

National Estuarine Research Reserve System: This network of protected areas was established for long-term research, education, and stewardship. The partnership program between NOAA and the coastal states protects more than one million acres of estuarine land and water, which provides essential habitat for wildlife; offers educational opportunities for students, teachers, and the public; and serves as living

laboratories for scientists. FY 2009 funding request for operations and program support is $17.1 million. Additionally, $6.89 million is requested for land acquisition and construction activities (lands acquired with these funds will be incorporated into reserve boundaries), and $5.2 million is requested for a competitive research program that will be administered by the NERRS program.
http://nerrs.noaa.gov

Coastal Zone Management Program: The Coastal Zone Management (CZM) program is a voluntary federal–state partnership dedicated to comprehensive management of the nation's coastal resources. State CZM programs contain provisions for the protection of estuaries, coastal wetlands, and other natural resources. Funding supports implementation of state CZM programs, which include numerous state and local coastal habitat protection and restoration projects. FY 2009 funding request is $66.1 million.
http://coastalmanagement.noaa.gov/

Coastal and Estuarine Land Conservation Program (CELCP): The CELCP was established to protect coastal and estuarine lands considered important for their ecological, conservation, recreational, historical, or aesthetic values, giving priority to lands with significant ecological values that can be effectively managed and protected. The program provides funding to state and local governments to acquire such lands to ensure they are permanently conserved for the benefit of future generations. FY 2009 funding request is $15 million.
http://coastalmanagement.noaa.gov/land

Pacific Coastal Salmon Recovery Fund (PCSRF): Congress established the PCSRF to contribute to the restoration and conservation of Pacific salmon and steelhead populations and their habitats. The states of Washington, Oregon, California, Idaho, and Alaska, and the Pacific Coastal and Columbia River tribes receive Congressional PCSRF appropriations from NOAA's National Marine Fisheries Service each year. The fund supplements existing state, tribal, and local programs to foster development of federal-state-tribal-local partnerships in salmon and steelhead recovery and conservation. The President's FY 2009 request for the fund is $35 million.
http://nwr.nmfs.noaa.gov/salmon-recovery-planning/pcsrf/

National Estuaries Restoration Inventory: This program was created to track estuary habitat restoration projects across the nation. The purpose of the inventory is to provide information on restoration projects in order to improve restoration methods, as well as to track acreage restored toward the million-acre goal of the Estuary Restoration Act.
http://neri.noaa.gov

Damage Assessment, Remediation, and Restoration Program (DARRP): As a natural resource trustee, NOAA acts on behalf of the public to restore resources injured by oil spills, releases of other hazardous substances, and vessel groundings. DARRP collaborates with other federal, state, and tribal natural resource trustees in assessing and quantifying injuries to natural resources, seeking damages for those injuries, implementing restoration actions, and monitoring progress to ensure restoration goals are met. FY 2009 funding request is $11.3 million.
http://response.restoration.noaa.gov/
http://www.darrp.noaa.gov/

Large-scale coastal modifications and hurricane events closed South Carolina's 35-acre Sandpiper Pond to tidal flows (above), *which lowered the levels of dissolved oxygen and led to several fish kill events. The South Carolina State Parks and several community groups rallied together to reopen the inlet* (below) *to allow tidal exchange and fish access at high tide. (photos by John Murphy)*

Appendix E. Department of the Army

U.S. Army Corps of Engineers, Civil Works

Table E-1. USACE Programs Supporting the President's Wetlands Goal in FY 2009. Funding (millions of dollars)

Agency	Program	Restore or Create	Improve	Protect	Total Wetlands Funding for goal FY 2009	Difference from FY 2008
USACE	Aquatic Ecosystem Restoration Program	39.200	203.000	0.800	243.000	0.000

Table E-2. USACE Programs Supporting the President's Wetlands Goal in FY 2009. Planned Accomplishments (in acres)

Agency	Program	Restore or Create	Improve	Protect	Total Wetlands FY 2009	Difference from FY 2008
USACE	Aquatic Ecosystem Restoration Program	1,642	15,741	0	17,383	-76

USACE Projects Supporting the President's Wetlands Goal

Aquatic Ecosystem Restoration

The U.S. Army Corps of Engineers (USACE) has numerous study, project-specific, and programmatic authorities for implementing aquatic ecosystem restoration projects. The goal is to help restore aquatic habitat to a less degraded and more natural condition in ecosystems whose structure, function, and dynamic processes have become degraded. In addition, activities contributing to the President's goal may occur on the 12 million acres of water and land managed by the USACE for other purposes, such as flood damage reduction, navigation, and recreation. Another contribution is the use of dredged material to create, restore, or improve wetland habitat as part of routine maintenance dredging of federal channels.

The data in the tables above represent a subset of the total USACE commitment to achieving the President's goals. Because most USACE restoration projects take several years to complete, the funds appropriated in any one fiscal year have a minimal correlation to the number of acres that count toward the President's goal in that fiscal year. Projects are included in the budget based on their effectiveness in addressing significant regional or national aquatic ecological problems. The aquatic ecosystem studies and projects proposed by the USACE for funding in FY 2009 include the following examples.

Comprehensive Everglades Restoration Plan (CERP): The primary and overarching purpose of CERP is to restore the South Florida ecosystem, which includes the Everglades. The plan provides the framework and guidance to re-establish, rehabilitate, protect, and preserve the water resources of the greater Everglades ecosystem. CERP has been described as the world's largest ecosystem restoration effort, and includes

providing more natural flows of water, improved water quality, and more natural hydro-periods within the remaining natural areas. The plan is intended to help restore the ecosystem while ensuring clean and reliable water supplies, and providing flood protection in urban areas.
http://www.evergladesplan.org

Louisiana Coastal Area, La. Ecosystem Restoration: More than one million acres of Louisiana's coastal wetlands have been lost since the 1930s; another third of a million acres could be lost over the next 50 years unless large-scale corrective actions are taken. The ecosystem restoration program will construct significant restoration features; undertake demonstration projects; study potentially promising large-scale, long-term concepts; and take other needed actions to restore the ecosystem. A 10-year plan of studies and projects was developed through a public involvement process, and working closely with other federal agencies and the state of Louisiana.
http://www.mvn.usace.army.mil/prj/lca/

Also in support of the projects is a science and technology program. This program provides the necessary science and technology to effectively address coastal ecosystem restoration needs; provides analytical tools and recommendations to the program management team for appropriate studies to reduce uncertainties; integrates the roles and resources of the scientific community and other coastal protection agencies and partners at the state, local, and federal level; and provides for internal and external technical review and a systematic approach for coordination with other ongoing and planned related research activities.
http://el.erdc.usace.army.mil/lcast/

Upper Mississippi River Environmental Restoration Program: Originally authorized in 1986 but significantly modified in 1999, the Environmental Restoration Program (ERP) provides for planning, construction, and evaluation of measures for fish and wildlife habitat rehabilitation. Multiple habitat projects are helping to revitalize the side channels and to re-establish or rehabilitate island, aquatic, and riparian habitat in the Upper Mississippi River. The program also includes funds for the collection of project and systemic baseline data and monitoring.
http://www.mvr.usace.army.mil/emp

Over the past 18 years, the ERP's Habitat Rehabilitation and Enhancement Project (HREP) component has evolved into a successful program that combines a broad range of construction techniques with approaches that strive to use or mimic natural riverine processes, providing benefits to the river at system, reach, pool, and local scales. Since its 1999 reauthorization, the HREP program has continued to build upon the successful foundation established in the program's first years.

USACE Programs that Maintain the Wetlands Base

Environmental Stewardship: Together with its partners, the USACE provides environmental stewardship of nearly 12 million acres of public land and water and oversees the natural resources management of 456 operating civil works water resources projects nationwide. The USACE strives to provide sound environmental stewardship of lands and waters entrusted to its care, while accomplishing multiple authorized project purposes. Its natural resources management mission is to manage and conserve those natural resources (including fish and wildlife, woodlands and grasslands, wetlands, soils, and water) consistent with ecosystem sustainability principles, to serve the needs of present and future generations.

The stewardship of wetland resources is an integral part of the USACE stewardship responsibility. Although the classification and quantity of wetland acreage under USACE stewardship has not yet been determined, an inventory of natural resources (including wetlands) is required for each project. This effort is underway and is being accomplished as fiscal resources allow. Information from the inventories is incorporated into master plans and operational management plans, and is used to help manage, conserve, and/or protect wetland resources. Where feasible, wetland resources management is integrated to provide mutual benefits, such as for efforts to manage wetland-dependent plants and animals, including endangered species. In addition, the effects of existing and proposed land-use activities are monitored or evaluated to guard against wetland degradation or loss. Opportunities to enhance wetland quality and quantity are implemented where feasible, employing partnerships and volunteer assistance where possible.
http://corpslakes.usace.army.mil/employees/envsteward/envsteward.html

U.S. Army Engineer Research and Development Center (ERDC): Within the Environmental Laboratory, the Wetlands and Coastal Ecology group conducts field and laboratory investigations on biotic and abiotic resources in wetlands and coastal systems and develops products/systems

supporting assessment, restoration, and management of wetlands and coastal ecosystems. Examples of wetlands research include the development of improved standards, techniques, and guidelines for the planning, design, and construction of USACE wetland restoration and creation projects, as well as exploration of innovative plant harvesting/installation methods for the large-scale restoration of submerged aquatic vegetation ecosystems in the Chesapeake Bay. In addition, state-of-the-art tools and methods for wetlands restoration will be integrated to forecast physical, chemical, and biological responses to water resource management activities and to manage these resources within a watershed-scale perspective. Approximately $2.2 million is included in the FY 2009 budget for wetlands research.
http://el.erdc.usace.army.mil/org.cfm?Code=EE-W

Regulatory Clean Water Act 404 Program: The USACE manages the nation's wetlands through a regulatory program requiring permits for the discharge of dredged and fill material into jurisdictional waters of the United States. In a typical year the USACE receives permit requests to fill about 25,000 acres of jurisdictional waters. Of these, about 5,000 acres are not permitted and, with respect to the 20,000 acres that are permitted, the USACE requires mitigation on average of more than two acres for each permitted acre lost. This important regulatory program helps maintain the wetland base so other federal programs can achieve gains. FY 2009 funding request is $180 million.
http://www.usace.army.mil/inet/functions/cw/cecwo/reg

Appendix F. Department of the Interior

Table F-1. DOI Programs Supporting the President's Wetlands Goal in FY 2009. Funding (millions of dollars)

Agency	Program	Restore or Create	Improve	Protect	Total Wetlands Funding for goal FY 2009	Difference from FY 2008
FWS	Coastal Program	1.500	3.500	1.500	6.500	-1.500
FWS	Fish and Wildlife Management Assistance	0.000	0.300	0.000	0.300	-0.400
FWS	National Coastal Wetlands Grant Program (mandatory CWPPRA funds)	4.175	0.000	16.702	20.877	0.000
FWS	National Wildlife Refuge System	4.484	5.148	3.250	12.882	-8.409
FWS	National Wildlife Refuge System (mandatory Migratory Bird Conservation Fund)	0.000	0.000	23.235	23.235	6.072
FWS	North American Wetlands Conservation Act appropriated	3.926	2.955	14.859	21.740	0.227
FWS	North American Wetlands Conservation Act (non-appropriated)	5.204	3.917	19.396	28.517	0.000
FWS	North American Waterfowl Management Plan - Joint Ventures	0.114	0.169	0.084	0.367	0.000
FWS	Partners for Fish and Wildlife Program	4.500	8.000	0.000	12.500	-2.500
Total		**19.403**	**23.989**	**83.526**	**126.918**	**-6.510**

Table F-2. DOI Programs Supporting the President's Wetlands Goal in FY 2009. Planned Accomplishments (in acres)

Agency	Program	Restore or Create	Improve	Protect	Total Wetlands FY 2009	Difference from FY 2008
FWS	Coastal Program	10,100	5,000	1,000	16,100	0
FWS	Fish and Wildlife Management Assistance	0	4,000	0	4,000	-11,000
FWS	National Coastal Wetlands Grant Program (mandatory CWPPRA funds)	1,018	0	5,330	6,348	0
FWS	National Wildlife Refuge System	33,805	111,825	1,105	146,735	-4,706
FWS	National Wildlife Refuge System (mandatory Migratory Bird Conservation Fund)	0	0	21,576	21,576	4,570
FWS	North American Wetlands Conservation Act appropriated	29,502	28,062	84,811	142,375	0
FWS	North American Wetlands Conservation Act (non-appropriated)	49,329	46,922	141,810	238,061	0
FWS	North American Waterfowl Management Plan - Joint Ventures	8,814	13,221	6,535	28,570	-105
FWS	Partners for Fish and Wildlife Program	51,000	10,000	0	61,000	0
Total		**183,568**	**219,030**	**262,167**	**664,765**	**-11,241**

DOI Programs Supporting the President's Wetlands Goal

Fish and Wildlife Service (FWS)

Coastal Program: The Coastal Program works in 22 specific coastal communities to improve the health of watersheds for fish, wildlife, and people by building partnerships; identifying, evaluating, and mapping important habitats; restoring habitats; and providing technical assistance and financial support to help protect important coastal habitats. Since 1994, the program has re-established or rehabilitated 115,000 acres of coastal wetlands, 28,000 acres of coastal uplands, and more than 1,150 miles of coastal streamside habitat. It has also helped protect 1.35 million acres of coastal habitat. FWS also provides technical assistance to other federal, state, and local agencies under this program.
http://www.fws.gov/coastal

Fish and Wildlife Management Assistance (FWMA): This program delivers scientific information and projects that support cooperative efforts to conserve America's fisheries and wildlife resources. FWMA includes on-the-ground conservation activities, such as assessing the condition of habitats, restoring stream and wetland habitats, restoring fish passage, and controlling aquatic nuisance species through physical, chemical, and biological means.
http://www.fws.gov/fisheries/fwma/

National Coastal Wetlands Conservation Grants Program: Since 1990, the program has made available more than $202 million to 25 coastal states and one U.S. territory to acquire, conserve, or restore over 244,000 acres of coastal wetland ecosystems. Typically, between $17 and $20 million is awarded annually through a national competitive process. Grants for an individual project are limited to $1 million. Funding for this program comes from excise taxes on fishing equipment and motorboat and small engine fuels. States are required to provide either 50 or 75 percent of the total cost of the project, depending on whether the state has established and maintains a special fund for acquiring coastal wetlands, other natural areas, and open space. The program does not provide grants to support planning, research, monitoring activities, or construction or repair of structures for recreational purposes.
http://www.fws.gov/coastal/coastalgrants

National Wildlife Refuge System: The mission of the National Wildlife Refuge System, managed by FWS, is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans. Approximately one-quarter of the 96-million-acre National Wildlife Refuge System consists of wetlands. The Refuge System protects, restores, rehabilitates, enhances, and conducts research on these wetlands. The Refuge System sustains wetlands to enhance their value for migratory waterfowl and shorebirds, threatened and endangered species, and a myriad of native fish, wildlife, and plants. The wetland restoration and conservation programs of the Refuge System sustain the biodiversity and environmental health of these habitats across diverse landscapes, and provide wildlife-dependent recreational opportunities for the American public.
http://www.fws.gov/refuges/

National Wildlife Refuge System, Migratory Bird Conservation Fund program: The Migratory Bird Conservation Fund program finances two land acquisition programs that protect wetlands. Financed by the sale of Federal Migratory Bird Hunting and Conservation Stamps (commonly known as Federal Duck Stamps), import duties, and refuge rights-of-way fees, the Fund purchases major areas for migratory birds under the authority of the Migratory Bird Conservation Act, and small, natural wetlands and interests under authority of the Migratory Bird Hunting and Conservation Stamp Act.

North American Wetlands Conservation Act Program: This program supports voluntary public–private partnerships to conserve North American wetland ecosystems. It provides matching grants to public and private groups and agencies for wetlands restoration and protection in the United States, Canada, and Mexico. More than 14.7 million acres of wetlands and associated uplands have been protected, restored, or enhanced by program activities since 1991.
http://birdhabitat.fws.gov/nawca/grants.htm

North American Waterfowl Management Plan–Joint Ventures: This tri-national strategic plan fosters the creation of partnerships among the federal government, states, tribes, corporations, private organizations, and individuals to cooperate in the planning, funding, and implementation of projects to conserve and enhance wetland habitat in high-priority "joint venture" regions. The plan calls for 16.1 million acres of

wetlands and associated uplands to be protected and 12.1 million acres to be restored or enhanced.
http://www.fws.gov/birdhabitat/nawmp

Partners for Fish and Wildlife Program: Authorized by the Partners for Fish and Wildlife Act, this voluntary program, begun in 1987, works with landowners to restore fish and wildlife habitat including wetlands on private lands using cooperative agreements. The FWS has entered into more than 41,000 agreements with partners. The program has restored 800,000 acres of wetlands and rehabilitated more than 1.6 million acres of uplands and more than 6,000 miles of riparian and in-stream habitat. FWS also provides technical assistance to other federal, state, and local agencies under this program.
http://www.fws.gov/partners

DOI Programs that Maintain the Wetlands Base

Fish and Wildlife Service

National Wildlife Refuge System: In FY 2007, the National Wildlife Refuge System managed 135,174 acres for moist soils and 848,302 acres received other water-level manipulation. In FY 2008, those management activity accomplishments are expected to include 127,274 moist soil acres managed, with water-level manipulation achieved on 841,459 acres of water impoundments.
http://www.fws.gov/refuges/

National Wetlands Inventory (NWI): The goal of the NWI is to produce information on the characteristics, extent, and status of the nation's wetlands and deepwater and riparian habitats in order to promote the understanding and conservation of these resources. The program currently has data for 56 percent of the nation available on-demand and is updating one percent per year. Federal, state, and local government agencies; tribes; academic institutions; Congress; and the private sector use this information and digital maps to guide natural resource planning, management, and project development. Wetlands data are used in planning for emerging conservation issues such as energy development, species population declines, avian influenza, and global climate change (where they are used to model sea-level rise). The wetlands data are available over the Internet. Wetlands status and trend data and reports provide contemporary information for decision-making and for wetlands policy formulation, assessment, and performance monitoring.
http://www.fws.gov/nwi

Natural Resource Damage Assessment and Restoration (NRDAR) Program: The FWS's NRDAR Program, as part of the Environmental Contaminants Program, restores wetland acres that have been harmed by the release of contaminants from former hazardous waste sites and oil and chemical spills. In FY 2007, the NRDAR program was responsible for the restoration and enhancement of nearly 5,000 wetland acres and for the protection of 2,400 wetland acres. In addition, the Program restored or enhanced 171 riparian stream miles and managed or protected 157 riparian stream miles. Where possible, the FWS partners with other federal agencies, other FWS programs, states, tribes, or non-governmental organizations to enlarge these ongoing restoration efforts, which increases the value of the restoration to fish and wildlife. Such efforts are critical to maintaining high-quality base wetland acres. The Division of Environmental Quality provides approximately $1.5 million in toxicology, ecology, and habitat restoration expertise to EPA and other federal and state partners to minimize impacts to wetlands during the cleanup of contaminated areas. The division makes substantial contributions to maintaining the base of wetland acres as well as restoring and improving wetlands at former hazardous waste sites and areas impacted by oil and chemical spills.
http://contaminants.fws.gov/issues/restoration.cfm

U.S. Geological Survey (USGS)

Healthy wetland ecosystems provide habitat for diverse fish and wildlife communities, protection from erosion and flood attenuation from extreme storm events, water quality, and recreational opportunities. Studies conducted by USGS scientists describe factors that control wetland ecosystem structure, dynamics, function, interactions with the surrounding landscapes, and the provision of goods and services. This information is used to predict future changes to ecosystems and describe the results of management alternatives. In support of federal and state resource managers, USGS provides scientific expertise that helps decision makers build and implement adaptive management strategies to support wetlands restoration and creation and to effectively improve and protect coastal, forested, and freshwater wetlands and identify measures to adapt management to climate change.
http://biology.usgs.gov/ecosystems/wetlands.html

Areas of wetlands research by USGS include:

Prairie Pothole Region/Great Plains: Research in this region expands the ecological understanding of processes that influence wetland functions and values in agriculture land-

scapes. Research on global climate change, sediment and nutrient dynamics, the effectiveness of wetland restoration and enhancement for flood storage and wildlife habitat, and the potential of prairie pothole wetlands to sequester carbon are also being addressed.
http://www.npwrc.usgs.gov/about/factsheet/wetlands.htm

Great Lakes: In this region, the effects of Great Lakes water-level fluctuations on wetlands are being researched, in addition to global climate change studies that focus on interactions between climate change, lake levels, groundwater hydrology, and wetland response. This research provides scientific information to support the restoration, conservation, and management of wetlands and fisheries habitats.
http://www.glsc.usgs.gov

Gulf Coast: Hurricanes Katrina and Rita placed a high priority on research, spatial analyses, predictive modeling, technology development, and information synthesis and outreach related to the impacts to the nation's critical Gulf Coast coastal and freshwater wetlands and habitats. USGS wetlands science in this region provides scientific information that resource managers and planners need to stabilize, restore, rehabilitate, and manage wetlands, including seagrass beds, mangrove forests, coastal saltwater and freshwater marshes, and forested wetlands. In addition, global climate change studies focus on riverine and coastal wetland response to CO_2 levels in the Lower Mississippi River Valley and the response of coastal wetlands to sea level rise and extreme events along the coast.
http://www.nwrc.usgs.gov

Atlantic Coast: Wetlands research in the Atlantic region provides scientific information on restoration, enhancement, and creation of coastal and estuarine wetlands; wetlands health; and sustainability for the goods and services they provide. A major focus in this area includes global climate change studies, which focus on wetland response to sea level rise and wetland management options in maintaining healthy wetlands and critical habitat for migrating waterfowl and fisheries species. Other investigations include the effects of varying fire regimes on wetland habitats in maintaining elevation in response to sea level rise.
http://www.pwrc.usgs.gov/wetlands

Puget Sound: Wetlands research in the Puget Sound focuses on understanding nearshore ecosystem processes and linkages to watersheds and wetlands, decision support and adaptive management strategies for coastal marsh and associated near-shore habitat restoration for benthic and aquatic organisms such as fisheries, and integrated research to improve restoration techniques for vegetated estuarine and coastal wetlands. The role of wetlands in urban and rural settings and the relationship to fisheries will also be investigated.
http://puget.usgs.gov/

Montane Wetlands: Wetlands and related riparian research in the montane regions of the West focuses on the relationship of sedimentation and vegetation dynamics in agricultural landscapes, the effectiveness of restoration efforts in meeting the habitat needs of wildlife and migratory birds, cumulative effects of groundwater withdrawal on wetland processes, water level management on wildlife areas in relation to wetland dynamics and climate patterns, and wetland and riparian restoration for management in a changing climate.
http://www.nrmsc.usgs.gov/research/montane_wetlands.htm

Restoring the Nation's Greater Everglades and Coastal Ecosystems: Restoring the nation's Greater Everglades and adjacent Florida Bay and Biscayne Bay coastal ecosystems in south Florida, over half of which is under the stewardship of the Department of the Interior, is the largest environmental restoration project ever attempted in the United States. USGS continues to be a key partner in Greater Everglades restoration by providing fundamental and applied scientific information on ecosystem history, water quality and contaminants, surface and groundwater flows, and species responses to hydropattern dynamics. A major USGS thrust continues to be the development of new and improved ecosystem models such as hydrologic, ecological, landscape, and water quality/ contaminant models. These models are being integrated into decision support tools to aid in restoration-related planning decisions by the Fish and Wildlife Service, National Park Service, U.S. Army Corps of Engineers, Florida Department of Environmental Protection, EPA, and the South Florida Water Management District to predict the consequences of varied management alternatives, set ecological goals by providing yardsticks to measure restoration success, and manage the natural resources of the system.
http://sofia.usgs.gov/

California Bay-Delta: Activities in the San Francisco bay and delta focus on providing status and trend information on water quality in the San Joaquin River, Sacramento River watersheds, and San Francisco estuary; wetlands restoration; and unbiased and reliable scientific information and tools that explain the occurrence and effects of toxic substances in the Bay-Delta hydrologic environment. These activities support or

have related and overlapping objectives with the state/federal agencies' CALFED Bay-Delta Program and the South Bay Salt Pond Restoration Project. CALFED is a multi-agency, multi-billion-dollar, 30-year plan to restore ecosystem functions, improve water supply reliability, provide wetland restoration for water quality improvement and wildlife habitat, and sustain water quality for California watersheds. USGS provides leadership for CALFED's scientific aspects and specific studies that develop new knowledge meant to improve program decisions and be relevant to CALFED proposed actions. In FY 2008 and FY 2009, USGS will continue to work on identifying the effects of the changing hydrology, infrastructure, and climate on the physical, chemical, and biological processes of the system. USGS will also address the interaction between important processes of the marshes and adjacent bays, with a focus on current declines of pelagic fish species and the restoration of salt ponds in ecosystems compatible with the needs of the San Francisco bay and freshwater delta.
http://sfbay.wr.usgs.gov/

The San Francisco Bay and Delta: An Estuary Undergoing Change

The San Francisco Bay estuary, at the confluence of the Sacramento and San Joaquin rivers in central California, is renowned for its natural beauty, international commerce, recreation, and sport fishing. However, the estuary has been greatly modified by 150 years of intensifying human activity *(Nichols et al. 1986).*

More than 95 percent of the historic tidal marshes have been leveed and filled, with attendant losses in fish and wildlife habitat. The flow of freshwater into the estuary has been greatly reduced by water diversions, largely to support irrigated agriculture. Harbor and channel dredging has changed both the dredged and disposal sites and altered water flow patterns and salinity. Contaminants enter the estuary in municipal and industrial sewage and urban and agricultural runoff. Introduced exotic species continue to change the Bay's biota by altering its food webs. All of these changes have had marked effects on the estuary's biological resources, particularly well documented by declines in abundance of fish species *(San Francisco Estuary Project Management Committee 1994).*

The loss of 95 percent of the estuary's wetlands since 1850 (Fig. 1) has placed increased importance on the remaining 125 km^2 of wetlands that continue to be threatened by development, erosion, pollution, and rising sea levels. Wetland management agencies (*e.g.,* the U.S. Army Corps of Engineers and the San Francisco Bay Conservation and Development Commission) must also develop viable strategies for creating new wetlands in leveed areas used as farmland or as salt evaporating ponds that have subsided since being isolated from Bay waters. As an example, the use of dredge spoils to fill these areas raises questions about release of contaminants and changes in wetland habitat values. The U.S. Geological Survey (USGS) is participating in the restoration of a 350-acre tract of land on San Pablo Bay by monitoring the development of tidal channels and flow patterns, changes in geotechnical and geochemical properties of the pre-existing and new sediment (dredge spoils), and sedimentation patterns within the restored wetlands and adjacent areas. USGS is also mapping wetlands distributions using remotely sensed image data and monitoring

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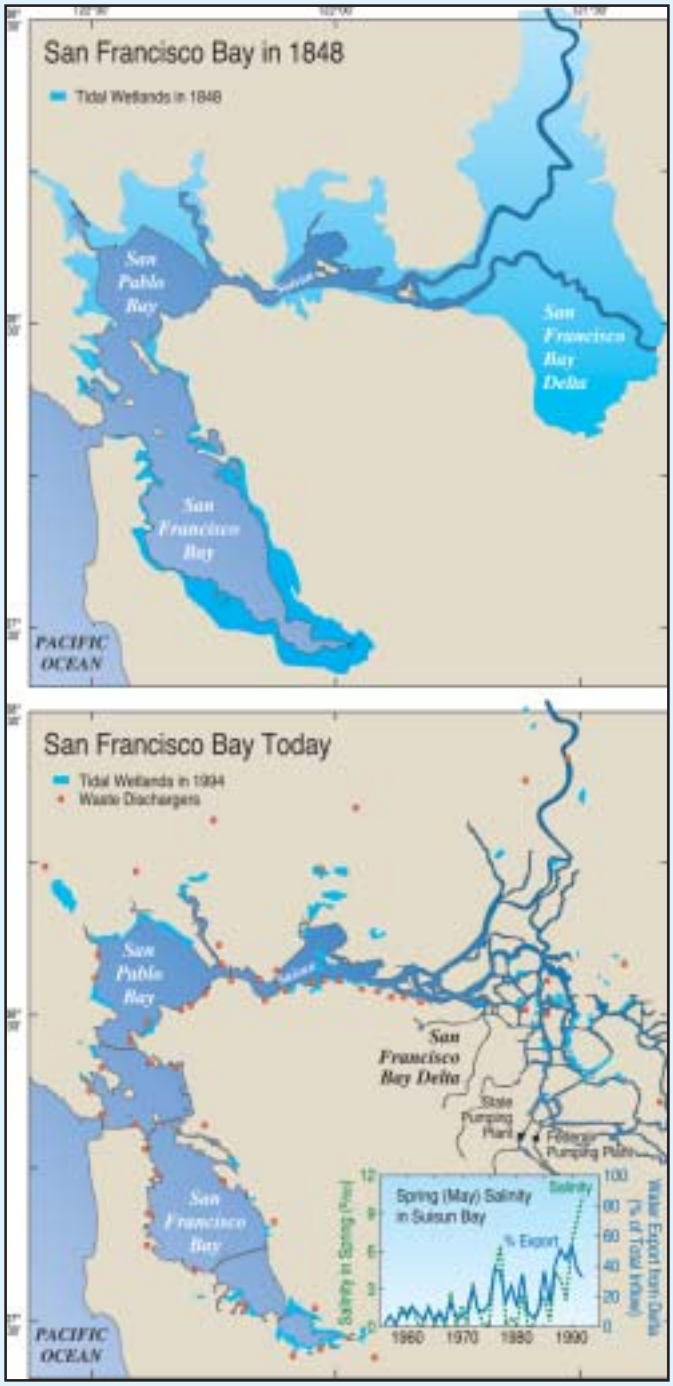

The San Francisco Bay estuary and Delta at the time of the discovery of gold in the Sierra Nevada foothills (first panel) and at present (second panel). (USGS)

The San Francisco Bay and Delta: An Estuary Undergoing Change

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physical processes including currents, wind, and waves that alter wetlands and adjacent shallows. USGS is quantifying the distribution and elevations of the shoreline and developing models that characterize the physical forces acting upon wetlands.

Recognition of the conflicts among the many uses of the Bay/Delta system have brought the public, resource managers and regulators, and elected officials together to recognize the great need for credible, unbiased scientific information on the significance of river flow diversion, contaminant inputs, dredging, and habitat alteration *(San Francisco Estuary Project Management Committee 1994).*

USGS, as a long-time leader in studies of the San Francisco Bay estuary, has provided much of the fundamental knowledge of interrelations among the hydrology, geology, chemistry, and ecology of this complex estuarine system. The USGS is now focusing field, laboratory, and modeling studies on the effects of freshwater flow on the estuary's chemistry and biology, the distribution and influence of contaminants on estuarine invertebrates, and the processes influencing the character and stability of remaining wetlands.

References:

Nichols, F. H., Cloern, J. E., Luoma, S. N., and Peterson, D. H. 1986. The modification of an estuary. Science 231:567–573.

San Francisco Estuary Project Management Committee. 1994. Comprehensive Conservation and Management Plan: San Francisco Estuary Project.

http://biology.usgs.gov/ecosystems/interdecosci.html

Appendix G. Department of Transportation

Federal Highway Administration (FHWA) Programs Maintaining the Wetlands Base

Under the Federal-aid highway legislation (Title 23, United States Code, Highways), state transportation agencies may use national Highway System and Surface Transportation Program funds to finance wetland and natural habitat conservation planning and implementation, as well as compensatory mitigation and re-establishment projects that offset unavoidable wetlands and natural habitat losses from transportation projects. The Department of Transportation/Federal Highway Administration has a goal of 1.5-to-1 wetland acre mitigation. Under the Federal-Aid Highway Program, FHWA has achieved over 52,000 acres of wetland mitigation since 1996, with the mitigation amount exceeding the amount impacted by over 33,000 acres. Through FHWA, the Department of Transportation also funds research on wetlands mitigation in connection with highways.

Eligibility

In 1980, FHWA issued 23 CFR Part 777, Mitigation of Impacts to Privately Owned Wetlands, which gave sponsors of federally assisted highway projects the flexibility to use Federal-aid funds to mitigate impacts to wetlands. The regulation was updated in 2000 to include more recent legislative, regulatory, and policy developments. The regulation specifies that funds eligible for mitigation and enhancement apply to all projects carried out under the Federal-Aid Highway Program.

Funding

Because federal aid highway programs operate under contract authority implemented through the states, total annual expenditures of federal assistance are at the discretion of the states within obligation limits established by Congress for each program. The total of all expenditures each year for a given program must be at or below the congressional obligation limit. But the federal government does not direct program expenditures under the annual limit; instead, the states determine how and where the funds are spent based on levels allocated to them by formula each year. Therefore, the states determine what portion of their total allocated funding authority will go to finance wetland mitigation and enhancement.

Performance

As a measure of performance under FHWA's net gain policy and commitments made under the Clean Water Action Plan, FHWA monitors annual wetlands impacts and mitigation under the Federal-aid highway programs nationwide. Monitoring began in FY 1996. Program-wide, the FY 2007 figures from 34 states indicate that Federal-aid highway projects provided 3.27 acres of compensatory wetland mitigation for each acre of impact, excluding preservation data from Florida. Florida reported approximately 2,700 acres of mitigation through preservation, in addition to the mitigation acreage they provided through re-establishment, enhancement, and creation. These data were not included in the Federal-aid program 2007 mitigation total. Data collected by FHWA over the past 12 years indicate that, nationwide, Federal-aid highway programs have achieved over a 170 percent gain in wetlands acreage (2.74:1 gain/loss ratio). Nationwide, between 1996 and 2007, Federal-aid highway programs reported a total of 33,141 additional acres of wetlands mitigation above the acres impacted. We believe this represents a substantial increase in wetlands functions and values over impacts.

Fiscal Years 1996-2007 Total	Acres of Compensatory Wetland Mitigation	Acres of Wetland Impacts	Mitigation Ratio/Percent Increase	Acreage Gain
Total	52,167	19,026	2.74:1	33,141*

**Gains from mitigation programs are not counted as acres toward the President's Wetlands Goal.*
Note: FHWA discontinued its collection of nationwide data in 2005. This data is not representative of mitigation in all 50 states.

While these data are important indicators, it should be noted that FHWA has not collected data on long-term mitigation success, ecological effectiveness, and other similar measures, which would be required for a complete assessment of a sustained net gain in wetland area, functions, and performance.

Costs of wetlands mitigation have increased several-fold during the past 25 years. Costs of mitigation were estimated in 1995 as approximately $16,000 per acre of mitigation nationwide, based on available data obtained from 1992 to 1994. This results in an estimated total cost from 1996 to 1999 for all federally assisted highway programs of approximately $50 to $80 million per year for replacement of wetlands (in pre-1995 dollars). A Government Accountability Office report to the Transportation Subcommittee on Highway Planning (August 1994) quotes data from 1992 for wetlands costs from 37 states. Annual costs reported for 1988 to 1992 averaged $79 million.

Research and Other Cooperative Efforts to Maintain the Wetlands Base

The FHWA coordinates wetlands programs and research initiatives with other federal agencies, including EPA and DOI. FHWA wetlands research is not identified separately. FHWA, EPA, and USACE implemented guidance on how the TEA-21 preference on the use of mitigation banks can be exercised under the Section 404, Clean Water Act permitting process, one of the first actions completed under the National Wetlands Mitigation Action Plan.

Planning

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), enacted in 2005, requires metropolitan and statewide transportation plans (highway and transit) to include a discussion of potential environmental mitigation activities and potential areas to carry out these activities, developed in consultation with federal, state, and tribal wildlife, land management, and regulatory agencies.

In December 2007, FHWA announced 14 cooperative agreements totaling approximately $1.4 million with transportation and resource agencies and non-government organizations to promote integration of transportation and resource planning. These pilot projects will demonstrate methods and best practices to implement the multi-agency publication, *Eco-Logical: An Ecosystem Approach to Developing Infrastructure Projects.* These projects will encourage federal, state, and local partners to integrate environmental solutions and goals into planning for infrastructure development. *Eco-Logical* puts forth the conceptual groundwork for integrating environmental and infrastructure plans across agency and geographical boundaries, and endorses ecosystem-based mitigation approaches to compensate for unavoidable impacts caused by infrastructure projects. The selected pilot projects include wetlands mitigation activities.

Federal Aviation and Transit Programs

The programs of the Federal Transit Administration provide federal funding for wetlands mitigation related to assisted transit projects as part of project costs. As noted above, under SAFETEA-LU, transportation plans must address environmental mitigation.

Wetlands mitigation related to airport projects receiving federal assistance under Federal Aviation Administration (FAA) programs is an eligible project expense. In 1996, FAA issued a Wetlands Banking Mitigation Strategy to provide guidance to ensure that federally assisted airport projects and FAA projects effectively and efficiently meet Section 404 permit requirements and environmental responsibilities. This document provides a framework for the FAA to mitigate unavoidable impacts before they occur by purchasing credits from a wetlands bank. The use of wetlands mitigation banking is voluntary, and is considered on a project-by-project basis. If chosen as an option for an airport project, the airport sponsor may recover the cost of purchasing wetlands bank credits from Federal Airport Improvement Program funding. In July 2003, FAA signed an interagency memorandum of agreement that addresses wetlands mitigation and re-establishment projects near airports and ways to reduce aircraft-wildlife strikes and maintain aviation safety.

Appendix H. Environmental Protection Agency

Table H-1. EPA Programs Supporting the President's Wetlands Goal in FY 2009. Funding (millions of dollars)

Agency	Program	Restore or Create	Improve	Protect	Total Wetlands Funding for goal FY 2009	Difference from FY 2008
EPA	Five Star Program	0.013	0.237	0.000	0.250	0.000
EPA	National Estuary Program	0.966	1.793	4.641	7.400	0.600
EPA	Nonpoint Source Management Program	33.060	4.901	0.000	37.961	0.000
Total		**34.039**	**6.931**	**4.641**	**45.611**	**0.600**

Table H-2. EPA Programs Supporting the President's Wetlands Goal in FY 2009. Planned Accomplishments (in acres)

Agency	Program	Restore or Create	Improve	Protect	Total Wetlands FY 2009	Difference from FY 2008
EPA	Five Star Program	350	6,203	0	6,553	0
EPA	National Estuary Program	6,290	11,681	30,222	48,193	0
EPA	Nonpoint Source Management Program	3,177	471	0	3,648	0
Total		**9,817**	**18,355**	**30,222**	**58,394**	**0**

EPA Programs Supporting the President's Wetlands Goal

Five Star Challenge Grants Program: EPA and its partners—National Fish and Wildlife Federation, National Association of Counties, Southern Company, Wildlife Habitat Council, and Pacific Gas & Electric—have helped catalyze over 475 projects in all 50 states, the District of Columbia, and the U.S. Virgin Islands. Each year, 40 to 50 grants of $5,000 to $20,000 are awarded. The purpose of the Five Star Restoration Program is to support community-based efforts to restore wetlands, river streams/corridors, and coastal habitat; build diverse partnerships within the community; and foster local stewardship of resources through outreach.
http://www.epa.gov/owow/wetlands/restore/5star

National Estuary Program (NEP): This program works to restore and protect these sensitive and vital ecosystems. The NEP provides funding and technical assistance to citizens, governments, businesses, researchers, and organizations in local communities to create and implement plans they develop collectively. These plans address problems facing their estuaries, such as excess nutrients, pathogens, toxic chemicals, introduced species, overfishing, and habitat loss and degradation. With its partners, the NEP works to safeguard the health of some of our nation's most productive natural resources, and transfers the lessons learned to other watersheds.
http://www.epa.gov/owow/estuaries

Nonpoint Source Management Plan: Under Section 319 of the Clean Water Act, states, territories, and Indian tribes receive grant money that supports a wide variety of activities, including technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and monitoring to assess the success of specific nonpoint-source implementation projects, some of which include wetlands restoration projects.
http://www.epa.gov/owow/nps/cwact.html

EPA Programs That Maintain the Wetlands Base

Wetlands Grants Program: The EPA annually has provided funding to states, local governments, tribes, and nongovernmental organizations to strengthen and build comprehensive non-federal regulatory and nonregulatory wetlands programs. FY 2009 funding request is $16.8 million.
http://www.epa.gov/owow/wetlands

Clean Water Act Section 404 Program: EPA and USACE share regulatory responsibility pursuant to Clean Water Act Section 404. EPA and USACE establish the regulations and policies for implementation of the program, including development and implementation of the Section 404(b)(1) guidelines. The guidelines establish the substantive environmental criteria used to evaluate applications for permits to discharge under Section 404. FY 2009 funding request is $22.2 million.
http://www.epa.gov/owow/wetlands/

Ecological Research Program: EPA's Office of Research and Development conducts research on survey design, monitoring methods, and analyses used in the assessment of the quality of the nation's waters, including wetlands. Research is conducted in partnership with states and tribes to demonstrate how assessments of wetland condition can be used to more effectively protect wetland resources and evaluate the effectiveness of management actions including restoration. EPA awarded $1.1 million in 2007 to develop and test methods for assessing wetland condition in the Mid-Atlantic and Southeast. Approximately $400,000 has been set aside in FY 2008 dollars to fund wetland projects in states in the Upper Midwest and Rocky Mountain regions. In addition, technical assistance is being provided in support of the 2011 National Wetland Condition Assessment, including the funding of a pilot assessment of coastal wetlands in the Gulf of Mexico region. Other technical assistance, including training and data analysis support, is being provided to states and tribes to aid in the development of wetland monitoring and assessment programs. The overall research program is increasing its focus on evaluating ecosystem services provided by wetlands at multiple scales.
http://www.epa.gov/ord

Appendix I. Coastal Wetlands Planning, Protection and Restoration Act

Table I-1. CWPPRA Funding Supporting the President's Wetlands Goal in FY 2009. Funding (millions of dollars)

Program	Restore or Create	Improve	Total Wetlands Funding for goal FY 2009	Difference from FY 2008
CWPPRA	8.426	74.993	83.419	7.004

Table I-2. CWPPRA Acres by Agency Supporting the President's Wetlands Goal for FY 2009. Planned Accomplishments (in acres)

Program	Restore or Create	Improve	Total Wetlands FY 2009	Difference from FY 2008
EPA	7	0	7	0
FWS	1,557	2,643	4,200	3,473
NOAA	745	25	770	-316
NRCS	78	25,545	25,623	23,848
USACE	755	0	755	261
Total	**3,142**	**28,213**	**31,355**	**27,266**

The Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) is funded by the Aquatic Resources Trust Fund (Wallop-Breaux fund), which was passed in 1990 and is authorized until 2019. The fund is created from excise taxes on fishing equipment and on motorboat and small engine fuels. Funds are distributed to the Louisiana Coastal Wetlands Conservation and Restoration Task Force, North American Wetlands Conservation Act Program, and the National Wetlands Conservation Grant Program at rates of 70 percent, 15 percent, and 15 percent, respectively.

The CWPPRA funding distributed to the Louisiana Coastal Wetlands Conservation and Restoration Task Force is used to design and construct projects to preserve, re-establish, and enhance Louisiana's coastal landscape. Over the past 17 years, the Louisiana portion of CWPPRA has provided an average of $60 million per year. However, the funding has increased steadily in recent years. Between FY 2005 and FY 2008 the funding for the Louisiana portion of CWPPRA increased from about $58 million to $81 million. The USACE administers the funding and tracks project status of all CWPPRA projects. With the USACE as chair, a task force consisting of NOAA's National Marine Fisheries Service, FWS, NRCS, EPA, and the State of Louisiana (the non-federal sponsor) manages the program. Currently, the program has 175 approved projects, of which 74 are complete and 19 are under construction. *http://www.mvn.usace.army.mil/pd/cwppra_mission.htm*

The Louisiana CWPPRA accomplishments are presented in this appendix. The other CWPPRA accomplishments are presented in Appendix F under the appropriate FWS program areas. In addition to the 31,355 acres of coastal wetlands restored, created, and improved reported above in Table I-2, the Louisiana CWPPRA will conserve 316 acres in FY 2009 that

would otherwise be lost by protecting shorelines, diverting freshwater and nutrients, and reinstating hydrology. A map of Louisiana restoration sites is available at *http://lacoast.gov/maps/coastal_la_2008_restoration_ projects.pdf.*

Shoreline Stabilization

High rates of erosion are destroying wetland habitats along Louisiana's coastal areas. Coastline erosion rates on the order of 10 to 30 feet per year have been experienced in Louisiana due to wind-produced waves and/or vessel wakes. The main objective of shoreline protection projects in Louisiana is to stop or significantly reduce the erosion of the shoreline.

Pre-construction view of the project area in southern White Lake, Vermilion Parish, Louisiana, showing the severely eroded shoreline in the foreground. (FWS)

These shoreline stabilization projects generally include constructing a rock breakwater (sometimes also called a foreshore dike) in shallow water parallel to the shoreline. An access channel is dredged alongside the new breakwater to provide sufficient navigational clearance for barges delivering rock. The rock is placed on geotextile fabric, typically situated on soft organic materials, and is expected to experience rapid settlement; therefore, future maintenance lifts of additional stone are planned.

The Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) South White Lake Shoreline Protection Project is located along the southern shoreline of White Lake in Vermilion Parish, La. This shoreline had been retreating at an estimated average of 15 feet per year as a result of wind-driven wave energy. Continued shoreline erosion would have likely breached low marsh management levees and increased interior marsh loss rates in this area.

The construction of segmented breakwaters along 61,500 linear feet of shoreline is expected to preserve 687 acres of shoreline and interior marsh over 20 years. These breakwaters were gapped periodically throughout their length, allowing free movement of aquatic organisms and water. Approximately 270,000 tons of stone was placed on geotextile fabric. About 172 acres of emergent marsh was created landward of the breakwaters through the beneficial use of dredged material from the digging of the site access channel.

The Louisiana Coastal Wetlands Conservation and Restoration Task Force approved engineering and design funding in January 2003 and construction funding in October 2004. Project construction was completed in 2006. The CWPPRA South White Lake project demonstrates that shoreline protection through stabilization and erosion prevention is a proven technique for protecting Louisiana's coastal wetlands.

Acronyms

BLM	Bureau of Land Management, DOI
CBBEP	Coastal Bend Bays and Estuaries Program
CEAP	Conservation Effects Assessment Project, USDA
CELCP	Coastal and Estuarine Land Conservation Program, DOC/NOAA
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CERP	Comprehensive Everglades Restoration Plan
CIAP	Coastal Impact Assistance Program
CREP	Conservation Reserve Enhancement Program
CRP/NOAA	Community-based Restoration Program, DOC/NOAA
CRP/FSA	Conservation Reserve Program, USDA/FSA
CTA	Conservation Technical Assistance Program, USDA/NRCS
CWA	Clean Water Act
CWPPRA	Coastal Wetlands Planning, Protection and Restoration Act
CWRP	Corporate Wetland Restoration Partnership, USDA/Coastal America
CZM	Coastal Zone Management Program, NOAA
DARRP	Damage Assessment, Remediation, and Restoration Program, DOC/NOAA
DOA	Department of the Army
DOC	Department of Commerce
DOI	Department of the Interior
DOT	Department of Transportation
ECOS	Environmental Conservation Online System, DOI/FWS
EMAP	Environmental Monitoring and Assessment Program, EPA
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program, USDA/NRCS
ERDC	Engineer Research and Development Center, DOA/USACE
ERP	Environmental Restoration Program, DOA/USACE
FAA	Federal Aviation Administration, DOT
FHWA	Federal Highway Administration, DOT
FSA	Farm Service Agency, USDA
FWMA	Fish and Wildlife Management Assistance
FWS	Fish and Wildlife Service, DOI
GAO	Government Accountability Office, Congress
GIS	Geographic information system
HREP	Habitat Rehabilitation and Enhancement Project, DOA/USACE
JVs	Joint Venture Partnerships, DOI/FWS
NAWCA	North American Wetlands Conservation Act, DOI/FWS
NEP	National Estuary Program, EPA
NERRS	National Estuarine Research Reserve System, DOC/NOAA
NOAA	National Oceanic and Atmospheric Administration, DOC
NPS	National Park Service, DOI
NRCS	Natural Resources Conservation Service, USDA
NRDAR	Natural Resource Damage Assessment and Restoration, DOI/FWS
NRI	National Resources Inventory, USDA/NRCS
NSDI	National Spatial Data Infrastructure
NWI	National Wetlands Inventory, DOI/FWS
NWRS	National Wildlife Refuge System, DOI/FWS
OMB	Office of Management and Budget
OPA	Oil Pollution Act of 1990
PCSRF	Pacific Coastal Salmon Recovery Fund, DOC/NOAA
PMC	Plant Materials Center, USDA/NRCS
SAFETEA	Safe, Accountable, Flexible, Efficient Transportation Equity Act
USACE	U.S. Army Corps of Engineers, DOA
USBR	U.S. Bureau of Reclamation, DOI
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service, USDA
USGS	U.S. Geological Survey, DOI
WHIP	Wildlife Habitat Incentives Program, USDA/NRCS
WHWWG	White House Wetlands Working Group
WRP	Wetlands Reserve Program, USDA/NRCS


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