

**U.S. DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE**

WETLANDS

**MEETING
THE
PRESIDENT'S
CHALLENGE**

**1990
WETLANDS ACTION PLAN**

CONTENTS

PAGE	
5	EXECUTIVE SUMMARY
9	PURPOSE
11	THE PRESIDENT'S CHALLENGE
12	CHALLENGE TO THE SERVICE
13	WHY IS A MAJOR WETLANDS CONSERVATION EFFORT NEEDED?
16	"NO NET LOSS"
17	"NO NET LOSS" MAKES SENSE
18	THREE-PRONGED APPROACH TO "NO NET LOSS" OF WETLANDS
20	IMPLEMENTATION STRATEGIES
20	I. WETLANDS PROTECTION
25	II. WETLANDS RESTORATION, ENHANCEMENT, AND MANAGEMENT
27	III. WETLANDS RESEARCH, INFORMATION, AND EDUCATION
30	FUNDING
31	PRIMARY SOURCES
32	APPENDICES

RECENTLY, THE PRESIDENT CHALLENGED THE NATION to achieve the goal of no overall net loss of wetlands in the United States. That challenge has generated considerable activity at all levels of government. The Department of the Interior has initiated a broad-based effort to address wetlands issues and work towards the President's goal. The U.S. Fish and Wildlife Service's Wetlands Action Plan (*ACTION PLAN*) was prepared in response to the President's goal of no net loss of wetlands. The *ACTION PLAN* draws on the Service's existing legislative authorities, regulations, and directives to focus and emphasize the Service's wetland conservation activities toward the goal of eliminating net loss of wetlands. The Service supports the numerous wetlands programs and initiatives underway in other bureaus and agencies; the *ACTION PLAN* identifies the need and specific opportunities for cooperative approaches to wetlands conservation.

EXECUTIVE SUMMARY

The *ACTION PLAN* draws upon existing legislative authorities, regulations, and directives and identifies strategies the Service will pursue, under existing authorities, to fulfill its responsibilities to protect and enhance wetlands. These strategies include regulatory mechanisms, such as enhanced technical support to the Army Corps of Engineers (Corps) and the Environmental Protection Agency (EPA) through the section 404 permitting process, and non-regulatory efforts, such as incentive programs, increased public education and outreach, and partnerships with private organizations. Furthermore, the Service has identified some problems with existing wetlands programs that result in wetland losses; the *ACTION PLAN* proposes solutions to many of those problems. The *ACTION PLAN* also outlines new opportunities to conserve wetlands through Federal programs that have been developed recently, such as those under the Financial Institutions Reform, Recovery and Enforcement Act (FIRREA), as administered by the Resolution Trust Corporation. Implementation of significant new policies or resulting strategies will be subject to Departmental approval.

This Executive Summary follows the organization of the *ACTION PLAN*.

Purpose The purpose of the *ACTION PLAN* is to consolidate and facilitate coordination of the Service's existing wetland programs to contribute to the President's goal of no net loss of wetlands. This section recognizes the Service's long-standing mission as a steward of wetland resources as it relates to the President's goal of no overall net loss of wetlands. The *ACTION PLAN* emphasizes achieving the President's goal through a coordinated effort within the Department of the Interior, and in cooperation with other agencies, States, Tribes, local governments, and private organizations and individuals.

The President's Challenge This section sets forth the President's call to action regarding wetlands and no net loss.

Challenge to the Service This section presents the Director's challenge to the Service to contribute to the President's goal of eliminating net loss of the Nation's wetlands.

Why is a Major Wetlands Conservation Effort Needed?

The Department of the Interior and the Fish and Wildlife Service have long recognized the critical role wetlands play in the environment. Wetlands provide unequalled biological, social, economic, and recreational benefits to the people of the United States. However, wetland ecosystems are threatened by continued loss and degradation, 56 percent of our Nation's wetlands have already been lost. Based on current estimates, the Nation will lose an additional 4,250,000 acres of wetlands by the year 2000.

President Bush's pledge to work toward the goal of "no net loss of wetlands" recognizes the consequences of wetlands losses. Similarly, the Department and the Service have recognized that historic wetland conservation efforts have not succeeded in all instances. These conclusions, derived from data contained in the Department's 1988 report *The Impact of Federal Programs on Wetlands: Volume 1*; the Service's 1984 Status and Trends report; and the 1989 National Wetlands Priority Conservation Plan, are among the sources for the suggestions and solutions set forth in the *ACTION PLAN*.

What is No Net Loss? This section presents the Service's working definition of "no net loss of wetlands," to be followed by the Service in fulfilling its obligation to protect and enhance wetlands. For the purposes of the *ACTION PLAN*, the Service defines "no net loss" as meaning that wetlands losses must be offset by wetlands gains in terms of actual acreage and, to the extent possible, ecosystem function. The definition is primarily based on President Bush's June 6, 1989 speech at the Waterfowl Symposium in Washington, D.C. This is an interim definition that may need future refinement and revision.

No Net Loss Makes Sense This section outlines the social, economic, and ecological setting for President Bush's call to action. The primary sources of information are the Department's 1988 report *The Impacts of Federal Programs on Wetlands*; and the Service's 1985 National Survey of Fishing, Hunting and Wildlife Associated Recreation.

Three-pronged Approach to No Net Loss of Wetlands This section presents the Service's three-pronged approach to no net loss of wetlands: (1) wetlands protection, (2) wetlands restoration, enhancement and management, and (3) Wetlands research, information, and education.

Implementation Strategies of the Fish and Wildlife Service

Current Strategies This subsection describes existing policies, programs, and authorities through which the Service currently contributes to the goal of no net loss of wetlands. Some of these strategies are based on existing authorities (e.g., the National Wildlife Refuge System Administration Act, the Emergency Wetlands Resource Act, the Fish and Wildlife Coordination Act, the Migratory Bird

Conservation Act, the North American Wetlands Conservation Act, and the North American Waterfowl Conservation Act) that establish or mandate major wetlands conservation efforts specific to the Service. Other strategies are based on statutes and authorities (e.g., the Clean Water Act, the Food Security Act, and the Water Resource Development Act) that establish cooperative roles between the Service and other Federal agencies to further wetland conservation. Both current and future strategies (discussed below) represent the Service's effort to better focus and re-emphasize existing policies and programs in light of the President's goal of no net loss.

Future Strategies This sub-section discusses additional activities that the Service can carry out under existing authorities that will contribute to the President's "no net loss" goal. Many of these strategies address the threats to the Nation's remaining wetlands, discussed previously in the *ACTION PLAN* and detailed in the Department's 1988 report *The Impact of Federal Programs on Wetlands: Volume 1* and the 1989 *National Wetlands Priority Conservation Plan*. Other strategies are recommendations made by the Service's Regional and Field Offices based on their experiences in implementing current policies and programs. This section also proposes new concepts to improve wetland conservation. Proposals for new programs will be submitted to normal Departmental and Administrative procedures for approval.

Department and Service roles in protecting and enhancing wetlands are longstanding and fully consistent with the President's challenge. The *ACTION PLAN* provides direction for the Service in implementing its obligation to accept and meet the President's call to action. As further policy directives are developed by the Department or by the Domestic Policy Council, and as specific Department-wide policies are established, the *ACTION PLAN* will be revised and future strategies will be refined as necessary to ensure consistency with all new policy directives.

Funding Current Service expenditures and increases requested in the President's 1991 Budget for wetland activities are noted in the *ACTION PLAN*.

Appendices The appendices to the *ACTION PLAN* provide additional information on specific issues and activities that will be addressed by the Service in carrying out its statutory responsibilities and in contributing to the President's goal of "no net loss" of wetlands.

THIS DOCUMENT DESCRIBES the role of the U.S. Fish and Wildlife Service (Service) in contributing to meeting the President's goal of "no net loss" of this Nation's wetlands. The Service is recognized as a leader in wetlands science and conservation, with expertise developed through unique and varied wetlands stewardship responsibilities including wetlands mapping and research, wetlands restoration and management, and wetlands mitigation science. Over half of the Service's funding and programs are directed toward wetlands conservation. Because of the traditional importance of wetlands to the Service and the Service's role in wetland conservation, it is critical that the Service assess its programs and authorities to make certain they are effectively applied toward the President's goal of no overall net loss of wetlands.

The Wetlands *ACTION PLAN* describes the commitment of the Service to the goal of eliminating net loss of wetlands. Implementation of the *ACTION PLAN* will be coordinated with broad-based efforts by the Department of the Interior to protect and enhance our Nation's wetland resources more effectively. The bureaus of the Department of the Interior, which include the U.S. Geological Survey, the Bureau of Indian Affairs, the Bureau of Land Management, the Minerals Management Service, the Bureau of Mines, the National Park Service, the Bureau of Reclamation, and the Office of Surface Mining, have extensive and varied wetlands responsibilities and expertise. The Service will seek all opportunities to work cooperatively with other Departmental bureaus in planning and implementing the specific activities identified in the *ACTION PLAN* that impact their individual programs. In addition, the Service will actively participate in the development of Department-wide policies and programs designed to eliminate overall net loss of wetlands. The *ACTION PLAN* also includes activities that will be conducted cooperatively with other Federal, State, and local agencies, as well as with public organizations and private individuals.

The Service will demonstrate that the goal of

no overall net loss of wetlands can be achieved by:

- Fully and effectively implementing existing legislative and Treaty mandates.
- Aggressively developing and applying incentive programs to protect, enhance and restore wetlands, in cooperation with other bureaus and agencies.
- Renewing efforts to provide the public with information on the benefits of wetland ecosystems and developing new public outreach initiatives.
- Continuing basic research on wetlands functions and wetlands mitigation and restoration, and developing new tools for the assessment of wetlands functions and values, in cooperation with other bureaus and agencies.
- Using the natural resources expertise of the Service and other Federal, state, local, and private agencies and organizations to the fullest.
- Seeking new strategies and tools to meet the President's challenge.
- Cooperating with other Federal, State, and local bureaus and agencies that have authorities, mandates, and expertise related to wetland conservation.

PURPOSE

The Service's *ACTION PLAN* describes a comprehensive wetlands initiative that includes all elements of the Service that contribute to a long-term increase in the quality and quantity of wetlands across the Nation. The *ACTION PLAN* uses the term "wetlands" as defined in the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (Federal Interagency Committee for Wetland Delineation 1989), which provides a technical identification for use in programs of the Service, as well as USDA/SCS, the COE and EPA, according to the decisionmaking criteria and priorities associated with those specific programs. The *ACTION PLAN* highlights existing Service operations and activities (e.g., the National Wildlife

Refuge System, regulatory programs, Farm Bill programs, and the North American Waterfowl Management Plan) and identifies new initiatives and opportunities (e.g., coastal wetlands, urban wetlands, and private lands) for a unified wetlands conservation effort. These activities and initiatives will also act as a catalyst for working with other Federal agencies to conserve the Nation's wetlands. The Department of the Interior is already coordinating programs and fiscal and staff resources to protect and enhance wetland resources more effectively.

The strategies and activities presented in this *ACTION PLAN* have not been ranked in priority order. The Service, through its Washington staff and Regional Offices, will establish relative priorities and schedules for accomplishing these activities consistent with administrative, budgetary, and resource priorities. As the Department and the Service continue these efforts, this document will be modified to reflect new policy directives and programs that may result from these actions or from the Domestic Policy Council's Interagency Task Force on Wetlands.

This *ACTION PLAN* provides an outline of activities to guide the Service in meeting the President's challenge of "no net loss" of wetlands. Each of the activities presented will require further detailed planning by program and/or Regional and Field Offices prior to implementation. During such planning, the Service must coordinate with other bureaus and agencies whose programs and activities may be affected.

This plan contains recommendations that may require additional resources to implement. Any such recommendations will be considered in the context of the Service's overall mission and funding needs as part of normal budget processes.

Together, the activities and strategies outlined in this *ACTION PLAN* will maximize the Service's contribution to eliminating overall net loss of America's wetlands. This contribution will continue the Service's tradition of protecting fish and wildlife resources and will improve the quality of life for all Americans.

"You may remember my pledge, that our national goal would be no overall net loss of wetlands. Together, we're going to deliver on the promise of renewal. I will keep that pledge . . . I've set up an interagency task force, under the Domestic Policy Council, to work with you – with government at all levels – and with the private sector – to stop the destruction of these precious habitats . . .

" . . . I want to ask you today what the generations to follow will say of us forty years from now. It could be that they will report the loss of many millions acres more of wetlands. The extinction of species. The disappearance of wilderness and wildlife. Or they could report that, sometime around 1989, things began to change. That we began to hold on to our parks and refuges. That we protected our species. And that, in that year, the seeds of a new policy about our valuable wetlands were sown – a policy summed up in three simple words: 'no net loss.' I prefer the second vision of America's environmental future."

PRESIDENT BUSH'S SPEECH
TO DUCKS UNLIMITED
Sixth International Waterfowl Symposium
June 6, 1989

WITH THESE WORDS, the President challenged the Nation to get serious about wetlands conservation, to build upon the steps taken in the past decade and to work toward the national goal of "no overall net loss of wetlands." The President's pledge is sound public policy because of the ecological and economic significance of wetland resources, as reflected by growing public concern about the environment in the United States and around the world.

THE PRESIDENT'S CHALLENGE

Actions at all levels of government reflect this Administration's concern for wetlands. Executive Branch interest in wetlands conservation has been demonstrated by the efforts of the Domestic Policy Council and the Department of the Interior's Wetlands Working Group. Congressional interest in wetlands conservation has been demonstrated by recent legislation, such as the 1990 North American Wetlands Conservation Act, the Emergency Wetlands Resources Act of 1986, the Water Resources Development Act of 1986, the 1985 Food Security Act, and U.S. ratification of the Convention on Wetlands of International Importance, as well as the dozen new wetlands-related proposals before the 101st Congress. Numerous recent State wetlands laws and initiatives (e.g., New Jersey and North Dakota) demonstrate strong and growing State interest in wetlands conservation.

OUR MISSION IS TO provide Federal leadership to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the people. For many years, Service employees have worked to fulfill this mission with commitment and ingenuity. Many of you have dedicated entire careers to fulfill the Service's mission; others of you have just

CHALLENGE TO THE SERVICE

begun. The President has now pledged that our national goal will be to eliminate the net loss of wetlands so that future generations can benefit from them. We should look upon the President's pledge as a challenge to the Service. It is a challenge we must accept. To fulfill our mission, we cannot do less.

There are contributions only we can make that are fundamental to achieving the President's goal. We must go beyond the Service's historic role in wetlands conservation. Every decision we make that affects wetlands must be evaluated in the context of no overall net loss. We must ask ourselves: "Will this help prevent wetland losses? Will this help restore wetlands? Will this improve decisions that affect wetlands?"

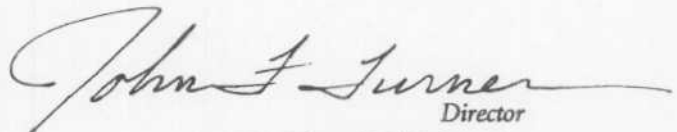
I ask every Service employee from the Directorate, to biologists in the field, to our support staff to look upon the President's goal as a challenge. All of us must work together to:

- Be proud of the role the Service can play in helping our Nation work toward the goal of no net loss of wetlands.
- Seek out and implement those actions that clearly contribute to no overall net loss.
- Challenge the system with good biology and innovative ways to protect, restore, or enhance wetlands.
- Achieve a net gain in wetlands quantity and quality on lands administered by the Service.
- Reduce wetlands losses on public and private lands influenced by Service programs.
- Undertake restoration, enhancement, and man-

agement projects on and off Service lands to increase the acres restored and the value of degraded wetlands.

- Develop educational, training, and research programs that contribute to a long-term, national commitment to increase the quality and quantity of our Nation's wetlands.
- Recognizing that other agencies and organizations must balance between wetlands protection and other environmental and program needs, work with these agencies organizations and private individuals to pursue the goal of no overall net loss of wetlands.

The Nation can achieve the President's goal. Working together, we can make the President's vision of America's environmental future a reality.



Director

U.S. Fish and Wildlife Service

DESPITE PAST EFFORTS by government agencies and private interests, wetlands losses continue at nearly one-half million acres annually because:

- The Nation's economic and public policy climate often encourages wetland conversions.

- To a large extent, wetland benefits accrue to the public while the cost of conservation falls largely on the private wetlands owner. Incentives for private wetlands protection are generally lacking.

- Laws and regulations designed to protect wetlands have not always been fully implemented and enforced and, in some cases, are not adequate to prevent net losses of wetlands.

Until recently, the cumulative impact of wetlands loss has not been fully recognized. However, cumulative impacts have been extreme in some areas of the country (Table 1).

Based on Fish and Wildlife Service National Wetlands Inventory estimates of past wetlands losses, the Nation will lose an additional 4,250,000 acres of wetlands by the year 2000. This represents an area larger than the States of Connecticut and Rhode Island combined. Approximately 56 percent of wetlands in the contiguous states have already been lost. A successful effort to reverse wetlands loss must focus on the major sources of the problem. Seventy-four percent of all wetlands in the contiguous 48 States are in private ownership, and private sector involvement will be a key to reaching the no overall net loss goal. According to the most recent trends data developed by the Service, 87 percent of overall wetlands losses are due to agriculture in the contiguous 48 States; the agricultural community must be a major part of the solution. Coastal wetlands must also be a focal point. The majority of our population lives within fifty miles of an ocean or one

of the Great Lakes. As a result, wetlands loss due to urban development in coastal areas is high and must be decreased or offset by wetland restoration.

Maintaining the quality of our Nation's wetlands is as important as maintaining the acreage of wetlands because many wetland functions result from wetland quality. These functions can be impaired when wetland quality diminishes. For example, wetlands can assimilate contaminants; however, the amount that can be assimilated is limited. When the

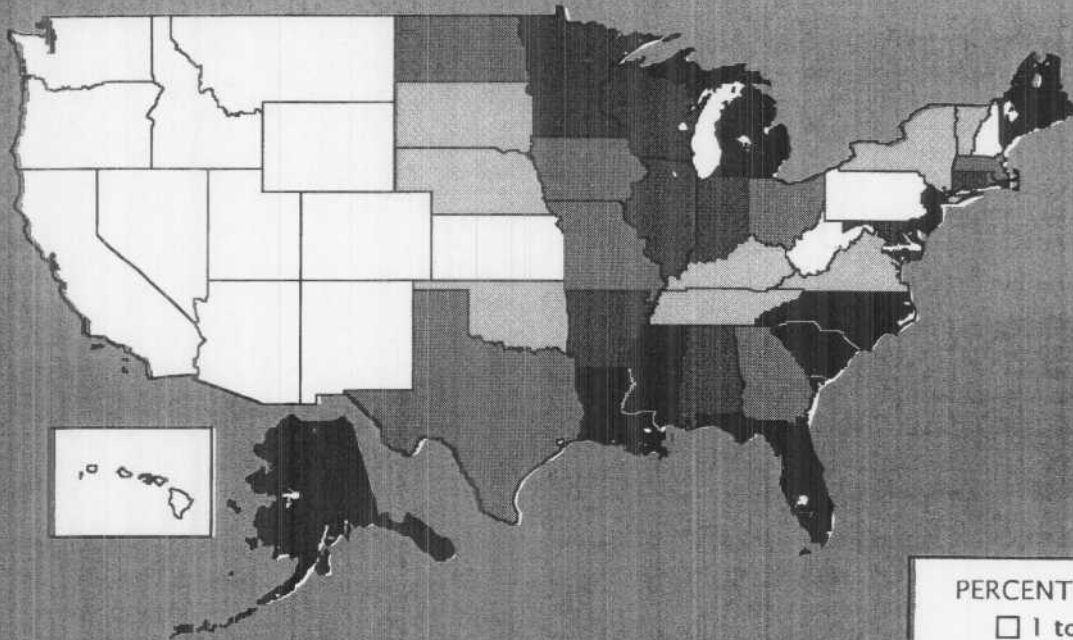
assimilative capacity of a wetland is exceeded, many other wetland functions are diminished. Water quality benefits associated with wetlands can be lost by over-enrichment or introduction of toxic chemicals, resulting in a loss of wetland productivity. Severe die-offs or reductions in the reproductive capabilities of wetland-related fish and wildlife can also occur. Bioaccumulation of toxic chemicals has resulted in health warnings against consumption of fish and waterfowl species in many parts of the Nation.

Wetland ecosystems are resilient, but cumulative effects from numerous contaminant sources can overwhelm natural wetland processes. Point source discharges from industries and municipalities, manifested as air, water, and solid waste discharges, can adversely affect wetlands. Although water pollution and solid waste are examples of wetlands problems cited most often, the adverse impacts of acid rain on fish and wildlife have been documented by the Service and by others. Nonpoint source runoff of contaminants can also adversely affect wetlands. Urban runoff (e.g., stormwater, industrial, and sewer overflows that contain fertilizers, waste oil and other organic debris and contaminants) can contribute large quantities of contaminants to wetlands. Runoff and drainage from agricultural areas can include numerous pesticides, nutrients, and other contami-

WHY IS A MAJOR WETLANDS CONSERVATION EFFORT NEEDED?

**TABLE 1: COMPARISON OF WETLAND ACREAGE
IN THE U.S. BETWEEN THE 1780's AND 1980's**

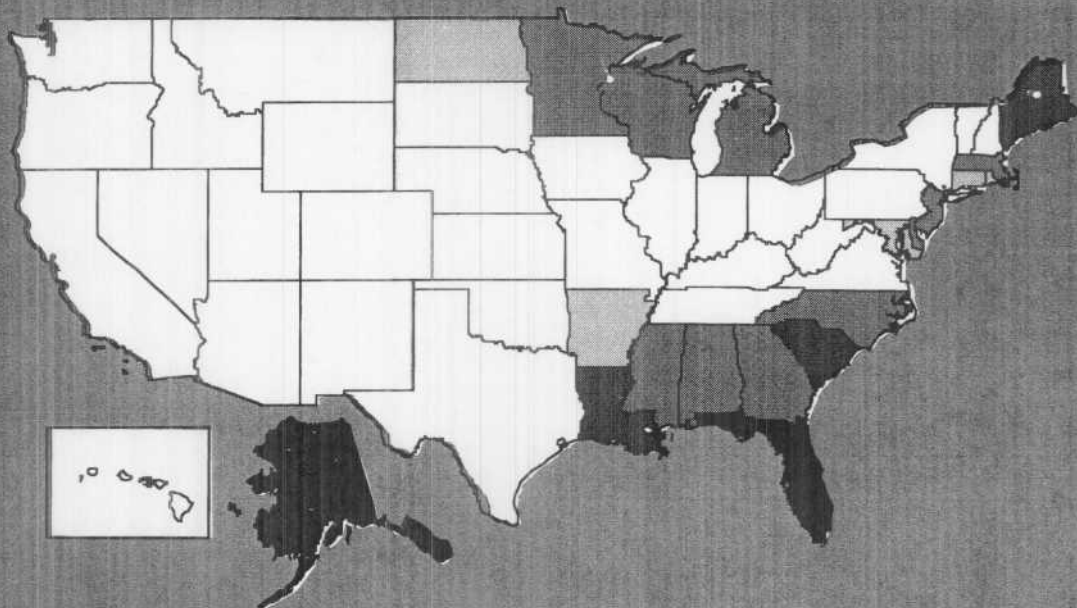
1780's



PERCENT SURFACE

- 1 to 2
- 2 to 5
- 5 to 9
- 9 to 20
- 20 to 29
- 29 to 54

1980's



Adapted from T.E. Dahl 1990. *Wetland Losses In the United States 1780's to 1980's*, U.S. Department of the Interior, Fish and Wildlife Service, Washington, DC.

nants. Impacts to migratory bird reproduction and mortality have been documented from irrigation drainwater.

Society pays for the loss of wetlands in very direct ways. Wetland losses increases the need for water treatment facilities and multi-billion dollar flood control projects. Wetland losses also represent the loss of habitats of animals and plants of aesthetic, commercial, recreational, and medicinal value. Society pays for the loss of wetlands that had helped replenish and cleanse bays, estuaries, and rivers that contribute significantly to the spawning and rearing of hundreds of estuarine, anadromous, and oceanic species valued by commercial and recreational fishermen. America now recognizes the value of wetlands and is calling for a change in past practices so that "no net loss" of wetlands can be achieved.

BASED ON ESTIMATES developed by the Service's National Wetlands Inventory, wetlands are being lost in the conterminous United States at a rate approximately 20 times greater than they are being gained. An estimated 400,000 acres are lost while only about 25,000 acres are gained on an annual basis. In addition, many wetlands that

remain have been degraded by pollution and habitat alteration. To focus the Service's contribution to

"NO NET LOSS"

the President's goal, we need to develop a working definition of no overall net loss. The Service will use as its working definition the principle that "no overall net loss" means that wetland losses must be offset by wetlands gains. This statement may need future refinement or revision after the Domestic Policy Council's Task Force on Wetlands completes its deliberations. Until the Council completes its analyses and policy deliberations regarding no net loss, the Service will continue to operate within existing programs and policies to protect, enhance and restore wetlands, using this interim definition to direct its actions toward the President's goal.

Simply stated, losses must decrease and gains must increase to work toward the goal of no overall net loss. At the same time, steps must be taken to protect and restore the quality of the Nation's remaining wetlands. In practical terms, the Service's contribution to working toward no overall net loss of wetlands requires several commitments:

- Adherence to the spirit and substance of section 404 of the Clean Water Act as set forth in

the section 404 (b)(1) guidelines promulgated by EPA. The Service must improve and expand its efforts to provide scientifically-sound and timely technical assistance to the Corps of Engineers and EPA in the section 404 regulatory process.

- The Service must use its authorities and capabilities in cooperation with other Federal agencies and the public to restore, enhance, and manage wetlands on public lands and must work toward conservation of wetlands on private and public property, both through regulatory and non-regulatory means.
- Recognition that wetland ecosystems provide many vital ecological functions and economic values.
- A commitment by the Service, working with other agencies and organizations, to provide information to the public on the benefits of wetlands and their potential role in wetlands conservation.

A program whose goal is to eliminate overall net loss of wetlands must address wetland quantity (physical loss of acreage) and wetland quality (loss of wetland function and value). Currently, we quantify wetlands gains and losses in acreage with relative ease, while assessing functions and values remains much more difficult. Therefore, continued development of appropriate methods for assessing wetlands quality (i.e., wetland functions and values) is a key element in implementing programs and policies to eliminate overall net loss of wetlands.

SOCIALLY Among the general public, there is growing recognition of the multiple values of wetlands. For example, the Service's 1985 National Survey of Fishing, Hunting, and Wildlife Associated Recreation estimated that 141 million Americans participated in wildlife-associated recreation, spending \$55 billion. This was a 41 percent increase from 1980 estimates. The majority of these activities depend on productive wetlands. The public is also becoming increasingly aware of the societal cost of replacing wetlands once they are lost.

ECONOMICALLY Multi-billion dollar Federal expenditures have been made for flood protection projects, contaminant clean-ups, sediment and salinity control, fisheries and wildlife restoration, endangered species recovery, and water quality treatment. Multi-billion dollar expenses are incurred by the private sector for soil erosion measures, flood damage, flood control measures, surface water contamination, and sediment control. Healthy wetlands provide many of these same types of functions at little or no cost.

The loss of wetlands that are important to fisheries (i.e., spawning, nursery, feeding, and staging areas) has resulted in diminished populations of commercial and recreational fish stocks, and a dwindling multi-billion dollar industry involved in fishing and fish processing.

In flood-prone areas, agricultural conversion of wetlands through drainage and other activities has often resulted in cropland that is less productive. For example, bottomland hardwood wetlands in the southeastern United States that have been converted to croplands are generally productive only in exceptionally dry years.

Wetlands are changing from liabilities to assets in the public eye. Economic uses are being explored and implemented that range from hunting, fishing, bird-watching, and aesthetic values to water table maintenance and erosion control.

ECOLOGICALLY Wetlands are important ecosystems that help regulate and maintain hydrologic regimes in rivers, lakes, and groundwater systems. Wetlands help maintain water quality and improve degraded waters in several ways by: (1) assimilating nutrients, (2) reducing sediment loads, and (3) processing some chemical and organic wastes.

Compared with many other ecosystems, wetlands are havens for a large number

of species. For example, wetlands are important habitat for about one third of the 553 species listed as threatened or endangered. More than 50 percent of the 800 or more species of protected migratory birds depend upon or frequent wetlands and associated habitats. Preserving wetlands helps maintain the diversity of our Nation's rich biological heritage and the integrity of our aquatic and terrestrial ecosystems. Wetlands include the most biologically productive ecosystems. Wetlands support the majority of the Nation's coastal fisheries and provide essential breeding, nesting, migration, or wintering habitat for the continent's waterfowl, wading birds, shore birds, and many other bird species.

"NO NET LOSS" MAKES SENSE

TO WORK TOWARD THE GOAL of no overall net loss of wetlands, the Service will employ a three-pronged plan of action that emphasizes on-the-ground solutions:

- Wetlands protection.
- Wetlands restoration, enhancement, and management.
- Wetlands research, information, and education.

THREE-PRONGED APPROACH TO "NO NET LOSS" OF WETLANDS

To be effective in contributing to the goal of no overall net loss of wetlands, the Service will balance its available

resources among these three prongs. By protecting wetlands, the Service will help safeguard the Nation's remaining wetlands. By restoring, enhancing, and more effectively managing wetlands, the Service will help reclaim wetlands that have been lost or degraded. By developing new information on wetland functions and values, and through public education and outreach, the Service will help promote wetland conservation for the benefit of future generations of Americans.

WETLANDS PROTECTION The first prong of the Service's plan of action focuses on substantially reducing the rapid rate of wetland losses. The Service will use existing tools such as regulatory programs, land acquisition programs, technical advice, review and modification of Federal projects and programs, and cooperative agreements with other government agencies, public organizations, and private individuals. Using these tools, the Service will seek to eliminate unnecessary wetland loss or degradation. Reducing the rate of wetlands loss is essential to achieving the no net loss goal because the Nation

can never restore enough wetlands to replace wetland acres and values at the rate they are currently being lost.

To assure wetlands protection, the Service will address the major source of wetland loss: agriculture. Put simply, the Nation cannot successfully achieve the no overall net loss goal without reducing wetland losses associated with wetlands conversions for agricultural uses. It is not economically feasible to protect wetlands from agricultural impacts through wetlands acquisition programs alone. However, agricultural losses can be reduced significantly by encouraging agricultural practices that conserve wetlands and by seeking new opportunities to protect wetlands through easements, leases, economic incentives, regulatory improvements, and the voluntary participation of private individuals.

WETLANDS RESTORATION, ENHANCEMENT, AND MANAGEMENT

The Service has extensive wetlands restoration, enhancement, and management experience and expertise. In recent years, through the Farm Bill programs, private land initiatives, the North American Waterfowl Management Plan, and the National Wildlife Refuge System, the Service has significantly increased the amount of wetlands acreage that has been restored and enhanced. The Service will intensify its wetlands restoration, enhancement, and management efforts in the coming years.

Many Service programs, such as Environmental Contaminants, focus on restoring and enhancing wetlands quality. The Service will manage specific wetlands to increase important functions and values, such as waterfowl production or endangered species protection.

In some areas of the country, wetlands creation can contribute to achieving no overall net loss. However, the many technical problems affecting the success of wetlands creation projects (e.g., suitable hydrology, availability of hydric soils) makes wetlands creation a tool of limited application at this time.

WETLANDS RESEARCH, INFORMATION, AND EDUCATION

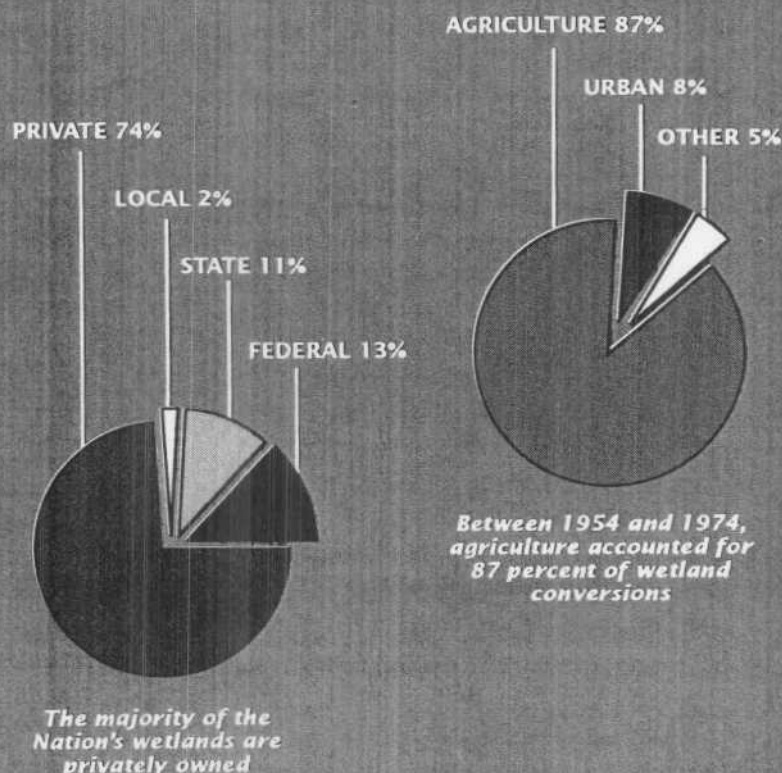
The Service's National Wetlands Inventory, migratory bird surveys, and wetlands research centers nationwide support and enhance the wetlands conservation efforts of the Service and other government agencies. In addition, most of the 41 cooperative research units at major State universities address important resource issues related to wetlands ecosystems. These programs will continue and, where possible, will be expanded to better meet the needs of the no overall net loss challenge. Developing additional information on the benefits and values of wetlands, and the broad dissemination of such information, is critical to the protection, restoration, enhancement, and management aspects of this

ACTION PLAN.

The Service will conduct research, information, and education programs abroad under the Convention on Wetlands of International Importance, with particular focus on the Western Hemisphere, to benefit international species dependent upon wetlands.

The Service has launched a new public information and education effort to educate the Nation about the values of wetlands. This effort focuses on letting each American know how they can assist in reaching the goal of no net loss of wetlands.

TABLE 2: WETLAND CONVERSION AND OWNERSHIP



THE PURPOSE OF THIS SECTION is to identify broad strategies for achieving no overall net loss of wetlands. Specific strategies, programs and policies which can contribute toward that goal are also identified. These strategies will be implemented primarily by Regional and Field Offices so that they reflect the specific needs and priorities of different areas of the

Nation. Flexibility is a key element for implementation of the Service's wetland programs, since new policies and strategies are

evolving through the Department of the Interior and government-wide organizations such as the Domestic Policy Council. However, it is important that the Service act promptly to implement no overall net loss strategies. We know that significant losses continue to reduce our wetland resources (the last national study conducted on wetlands trends indicated a loss of 458,000 acres/year). In addition, over half of the Service's funding and programs are directed toward wetlands conservation. To be most effective, the Service needs to act now to re-tool its programs toward the no overall net loss goal.

These broad strategies include:

- Cooperation with other agencies and organizations. This includes bureaus within the Department of the Interior, the Corps of Engineers (Corps) and the Environmental Protection Agency (EPA); State, tribal and local governments and agencies; and private conservation groups. Because of the important role of the agricultural community and wetlands restoration on private lands in achieving the goal of no overall net loss of wetlands, the Service will particularly focus on cooperation with the agricultural community and the United States Department of Agriculture.
- Developing more effective incentives to encour-

age private sector involvement in wetland conservation, particularly within the agricultural community. Service experience to date has shown that incentives programs are a cost-effective mechanism for protecting wetland habitats.

- A continued emphasis on public education and outreach regarding the benefits and values of wetlands. Efforts by the Service and other agencies and organizations have changed public perceptions of wetlands considerably. Once considered wastelands to be drained and filled for more "useful" purposes, wetlands are now understood to be valuable and productive natural resources deserving protection and wise management.

IMPLEMENTATION STRATEGIES OF THE FISH & WILDLIFE SERVICE

I. WETLANDS PROTECTION

Current Strategies

- Participate in regulatory programs that protect wetlands including section 404 and section 402 Clean Water Act permits, section 10 River and Harbor Act permits, and the Food Security Act's Swampbuster provision. This includes Service participation in EPA's advance identification of wetlands under section 404 of the Clean Water Act (*FISH AND WILDLIFE ENHANCEMENT, FISHERIES*).
- Pursuant to the Fish and Wildlife Coordination Act and Section 404(m) of the Clean Water Act, provide assistance during section 404 permit reviews that identifies the impacts of proposed projects on fish, wildlife, and their habitats in a manner consistent with statutory requirements, regulatory procedures, and policies established in the section 404(b)(1) guidelines, the section 404 regulations, and the Service's Mitigation Policy. This assistance will include providing information and recommendations on: (1) measures that avoid impacts to fish, wildlife, and their habitats; (2) appropriate and practicable steps that minimize adverse impacts to fish,

The names in parentheses identify the element(s) of the Service responsible for implementing a strategy

wildlife, and their habitats that cannot be avoided; and (3) compensatory mitigation for the loss of fish, wildlife, and their habitats where impacts cannot be avoided or minimized (*FISH AND WILDLIFE ENHANCEMENT*).

- Maintain and enhance wetlands on Service lands (37 percent of the 90 million acre National Wildlife Refuge System is wetlands) (*REFUGES AND WILDLIFE*).
- Acquire high priority wetlands using the Migratory Bird Conservation Fund and the Land and Water Conservation Fund; establish acquisition priorities using the Land Acquisition Priority System and Regional Wetlands Concept Plans developed under the National Wetlands Priority Conservation Plan (*REFUGES AND WILDLIFE*).
- Provide technical and management assistance to other Federal agencies to implement Executive Order 11990 (*WETLAND PROTECTION*) and Executive Order 11988 (*FLOODPLAIN MANAGEMENT*). For example, the Service has provided assistance to Farmers Home Administration (FmHA) that has resulted in more than 100,000 acres of wetlands being proposed for conservation easements in 1988 and 1989 (*FISH AND WILDLIFE ENHANCEMENT, REFUGES AND WILDLIFE*).
- Provide technical assistance and undertake cooperative programs with land management agencies both within the Department of the Interior (E.G., BUREAU OF LAND MANAGEMENT, BUREAU OF RECLAMATION) and in other branches of government (*FOREST SERVICE*) for wetlands protection, restoration, and enhancement. Encourage specific efforts for highly threatened western riparian wetlands (*REFUGES AND WILDLIFE, FISHERIES, FISH AND WILDLIFE ENHANCEMENT*).
- Provide technical assistance to the Department of Defense to protect wetlands on lands that may be disposed of as surplus military lands (*FISH AND WILDLIFE ENHANCEMENT, REFUGES AND WILDLIFE*).
- Provide Federal Aid for State wetlands acqui-

tions. To date, this program has resulted in State acquisition of 2 million acres of wetlands. Implementation of this strategy will be coordinated with other affected agencies and bureaus that have initiated their own wetland protection programs, particularly agencies with land management responsibility, such as the Bureau of Reclamation, Bureau of Land Management and the Forest Service (*FISH AND WILDLIFE ENHANCEMENT*).

- Continue to work with USDA under the Swampbuster, Conservation Easement, Farm Debt Restructure and Conservation Set-aside provisions of the 1985 Food Security Act, and related authorities to protect, enhance and restore wetlands potentially impacted by agricultural activities. For example, the Conservation Reserve Program has resulted in approximately one million acres of wetland being set aside to date (*FISH AND WILDLIFE ENHANCEMENT*).
- Develop partnerships with other Federal, State, and local agencies to conserve wetlands using the partnerships developed by the North American Waterfowl Management Plan as a model (*REFUGES AND WILDLIFE*).
- Incorporate wetlands protection strategies into Fishery Management Plans (*FISHERIES*).
- Include recommendations that protect wetlands when providing technical assistance and pre-development coordination to other Federal agencies during reviews of development projects and permit and license activities. In particular, take advantage of opportunities available through the Water Resources Development Act, the Fish and Wildlife Coordination Act, the Sikes Act, the Coastal Barrier Resources Act, the Fish and Wildlife Act, and the Magnuson Fishery Conservation and Management Act (*FISH AND WILDLIFE ENHANCEMENT, FISHERIES*).
- Use the authority of the Endangered Species Act, including the critical habitat designation

process, to protect wetlands upon which listed species depend, and through Recovery Plans, enhance, restore and protect such wetland habitats (*FISH AND WILDLIFE ENHANCEMENT, REFUGES AND WILDLIFE, FISHERIES*).

- In cooperation with appropriate bureaus and agencies, promote international efforts to protect and conserve wetlands (e.g., the Convention on Wetlands of International Importance, the United Nations Biosphere Reserve Program, the Western Hemisphere Convention, the North American Waterfowl Management Plan, the U.S.-Mexico-Canada Tripartite Wetlands Agreement, Pacific Salmon Treaty, the Convention on Great Lakes Fisheries, and the U.S.-U.S.S.R. Migratory Bird Convention) (*EXTERNAL AFFAIRS, FISH AND WILDLIFE ENHANCEMENT, REFUGES AND WILDLIFE, FISHERIES, RESEARCH AND DEVELOPMENT*).

Future Strategies

- Continue to work cooperatively with other agencies to improve the effectiveness and enforcement of regulatory programs associated with sections 404, 402, and 401 of the Clean Water Act and section 10 of the River and Harbor Act:
 - ◆ Provide technical assistance to help EPA and the Corps implement the principles and intent of their February 7, 1990, Memorandum of Agreement concerning the determination of mitigation under section 404 of the Clean Water Act. The mitigation principles in the MOA are consistent with the Service's established Mitigation Policy (*FISH AND WILDLIFE ENHANCEMENT*).
 - ◆ Promote an agreement among Department of the Interior agencies, the Corps, EPA, and the National Marine Fisheries Service to establish a periodic reporting system that measures the effectiveness of regulatory programs that protect wetlands (*FISH AND WILDLIFE ENHANCEMENT*).
 - ◆ In cooperation with the Corps, EPA, and other Interior agencies, develop closer coordination with the State of Alaska, Native Corporations, and native villages during implementation of regulatory programs and resource conservation activities that affect land use and land ownership patterns in Alaska (*FISH AND WILDLIFE ENHANCEMENT*).
 - ◆ Provide recommendations to the Corps and EPA in the upcoming review of Nationwide permits. The Service will identify and recommend modification or deletion of those Nationwide permits which have resulted in a significant loss of wetlands through individual or cumulative actions (*FISH AND WILDLIFE ENHANCEMENT*).
 - ◆ Cooperate with the Corps and EPA to develop alternative wetland mitigation strategies, such as mitigation banking, that may have application to the section 404 permitting process (*FISH AND WILDLIFE ENHANCEMENT*).
 - ◆ Provide technical support to the Corps and EPA in monitoring and ensuring compliance with permit conditions and other aspects of the Clean Water Act, and verifying the effectiveness of mitigation measures (*FISH AND WILDLIFE ENHANCEMENT*).
 - ◆ Provide technical assistance to EPA and to States in exploring improvements to section 402 programs including programs that regulate discharges of mining wastes into wetlands under section 402 (*FISH AND WILDLIFE ENHANCEMENT*).
 - ◆ Provide technical assistance to the States and EPA in developing policy and guidance regarding development and implementation of State section 401 Water Quality Certification programs (*FISH AND WILDLIFE ENHANCEMENT*).
 - ◆ Provide technical and policy support to EPA and the Corps of Engineers in devel-

oping guidance to ensure the full implementation of the section 404 program, including regulating wetlands excavation and draining activities that involve the deposition of dredged or fill material (FISH AND WILDLIFE ENHANCEMENT).

- ◆ Work with EPA and the Corps of Engineers to clarify policies regarding *de minimis* fill activities, specifically with regard to *de minimis* fill and wetlands conversion for agricultural uses (FISH AND WILDLIFE ENHANCEMENT).
- ◆ Seek an interagency agreement or other mechanism with EPA to allow transfer funding for technical assistance and other work related to routine project review, advanced or reactive section 404(c) activities, "advance identification" projects, and enforcement actions. Under such an agreement, the Service will only provide technical assistance and will not assume any new authorities regarding section 404 (FISH AND WILDLIFE ENHANCEMENT).
- ◆ Work with EPA, and, where appropriate, coordinate with other agencies and bureaus in the Department of the Interior, in developing policy and guidance to improve protection of wetlands through the Comprehensive Environmental Response, Compensation, and Liability Act and the Resource Conservation and Recovery Act programs (FISH AND WILDLIFE ENHANCEMENT).
- ◆ As a natural resource trustee under the Comprehensive Environmental Response, Compensation and Liability Act, exercise the Service's responsibilities to ensure restoration of natural resources that have been injured by a release of hazardous substances, and to seek compensation for damages to natural resources (FISH AND WILDLIFE ENHANCEMENT).
- ◆ Work with the Federal Highway Administration in developing policy and

guidance to emphasize opportunities to protect wetlands protection through the Federal Transportation Act (FISH AND WILDLIFE ENHANCEMENT).

■ Improve implementation and enforcement of Farm Bill programs through actions to:

- ◆ Work with USDA to develop an effective formal appeals process on Swampbuster commenced determinations for conservation agencies and other interested groups (FISH AND WILDLIFE ENHANCEMENT).
- ◆ Continue coordination with the Soil Conservation Service (SCS) in the development of Swampbuster wetland identification conventions for various ecological regions, based on biological and hydrological determinants (FISH AND WILDLIFE ENHANCEMENT).
- ◆ Encourage SCS to administer Swampbuster wetland determination appeals through SCS State Biologists in order to provide technical wetland expertise in making Swampbuster wetland determinations (FISH AND WILDLIFE ENHANCEMENT).
- ◆ Work with SCS to ensure that areas that still retain wetland characteristics will not be identified as "prior converted cropland" under section 512.15(a)(3) of the National Food Security Act Manual (FISH AND WILDLIFE ENHANCEMENT).
- ◆ Encourage the Department of Agriculture to modify the definition of abandonment in the National Food Security Act Manual such that if after five years no agricultural commodity is produced on an area, and the area meets the definition for "wetland" in the Food Security Act, then these areas should be classified as wetlands (FISH AND WILDLIFE ENHANCEMENT).
- ◆ Encourage landowners to enroll wetlands and highly erodible lands into a restoration program such as the Conservation Reserve Program (FISH AND WILDLIFE

ENHANCEMENT, FISHERIES, REFUGES AND WILDLIFE).

- ◆ Work with the Department of Agriculture to explore ways to protect Conservation Reserve Program lands beyond the current 10-year contract period (*FISH AND WILDLIFE ENHANCEMENT, REFUGES AND WILDLIFE*). .
- ◆ Work with the Department of Agriculture to explore ways to treat all existing wetlands as eligible for the Conservation Reserve Program, including those currently classified as "prior converted cropland" (*FISH AND WILDLIFE ENHANCEMENT*).
- ◆ Work with FmHA to obtain section 1318 conservation easements on properties as a prerequisite for debt write-downs (*FISH AND WILDLIFE ENHANCEMENT*).
- ◆ Work with the Department of Agriculture and land management agencies within the Department of the Interior to develop demonstration projects for wetlands protection, enhancement and restoration. Current examples include cooperative landowner agreements developed between farmers and State and federal Wildlife Extension Offices in North Dakota (*FISH AND WILDLIFE ENHANCEMENT, REFUGES AND WILDLIFE*).
- ◆ Thoroughly review FmHA inventory lands to identify all wetlands having viable natural wetland values or that are suitable for restoration. Propose conservation easements or fee title transfers for these wetlands and administer them as part of the National Wildlife Refuge System (*REFUGES AND WILDLIFE, FISH AND WILDLIFE ENHANCEMENT*).
- Seek ways to better protect fishery spawning, nursery, and feeding areas (*FISHERIES*).
- Provide technical assistance and financial incentives to private landowners to protect privately owned wetlands (*FISH AND WILDLIFE ENHANCEMENT, REFUGES AND WILDLIFE, FISHERIES*).
- In cooperation with other bureaus within the Department of the Interior, expand the use of land acquisition tools to protect high priority wetlands under the Migratory Bird Conservation Fund and Land and Water Conservation Fund authorities. Establish acquisition priorities through the Regional Wetlands Concept Plans and the Land Acquisition Priority System (*REFUGES AND WILDLIFE*).
- Work with States and local units of government to encourage the use of State and locally administered easements to protect wetlands (*FISH AND WILDLIFE ENHANCEMENT, REFUGES AND WILDLIFE*).
- Review the Refuge Operations Manual to ensure that all policies are consistent with achieving the goal of no overall net loss of wetlands and strive for an net gain on Service lands (*REFUGES AND WILDLIFE*).
- Participate, in coordination with other Department of the Interior bureaus, in efforts to develop a National Wetlands Protection Policy, as recommended by the National Wetlands Policy Forum (*FISH AND WILDLIFE ENHANCEMENT, REFUGES AND WILDLIFE*).
- Provide recommendations, through the Department, to assist the Domestic Policy Council in their revision of Executive Order 11990 (*WETLAND PROTECTION, FISH AND WILDLIFE ENHANCEMENT*).
- Work with the Resolution Trust Corporation and Farm Credit System in the application of Executive Order 11990 to facilitate wetland protection and restoration. This would require programs modeled after the FmHA easement program, which screens properties and recommends and manages conservation easements (*FISH AND WILDLIFE ENHANCEMENT, REFUGES AND WILDLIFE*).
- Establish a surface water management effort and/or pursue the acquisition of water rights to obtain and protect adequate water supplies for existing and restored wetlands (*FISH AND WILDLIFE ENHANCEMENT, REFUGES AND WILDLIFE, FISHERIES*).

- Expand the Service's Recreational Fisheries Policy to include the goals and objectives of the Service's Wetlands Policy (FISHERIES).
- Increase cooperation with Fishery Management Councils to plan for the conservation of wetlands important to domestic fishery stocks (FISHERIES).
- Increase technical and management assistance to Native Americans and territorial government to protect wetlands (FISH AND WILDLIFE ENHANCEMENT).

II. WETLANDS RESTORATION, ENHANCEMENT, AND MANAGEMENT

Current Strategies

- Increase restoration, enhancement, and management of wetlands on Service lands (REFUGES AND WILDLIFE).
- Restore, enhance, and manage wetlands in North American Waterfowl Management Plan Joint Venture areas through partnerships with States, local governments, public organizations, and private individuals (REFUGES AND WILDLIFE).
- Restore, enhance, and manage wetlands on FmHA lands (7,781 wetland acres were restored in 1988 and 13,047 acres in 1989) (REFUGES AND WILDLIFE, FISH AND WILDLIFE ENHANCEMENT).
- Restore, enhance, and manage wetlands in the Conservation Reserve Program (7,474 wetland acres were restored in 1988 and 23,607 acres in 1989) (REFUGES AND WILDLIFE, FISH AND WILDLIFE ENHANCEMENT).
- Develop a voluntary, cooperative program which focuses on protecting natural resources, including wetlands, on private lands. Provide technical and financial assistance for wetlands restoration and management on private lands through cooperative wildlife agreements and other avenues (REFUGES AND WILDLIFE, FISH AND WILDLIFE ENHANCEMENT).
- Identify and address wetlands contaminant problems on and off Service lands. Work with other appropriate bureaus and agencies to address these problems, for example, through the Service's Agricultural Drainwater Program (FISH AND WILDLIFE ENHANCEMENT, REFUGES AND WILDLIFE).
- Provide Federal Aid to States for sport fish and wildlife restoration projects that benefit wetlands (FISH AND WILDLIFE ENHANCEMENT).
- Work closely with the Corps of Engineers to develop and implement specific actions under the mitigation and enhancement provisions of the 1986 Water Resources Development Act, and other authorities. (FISH AND WILDLIFE ENHANCEMENT, FISHERIES).
- Implement actions to maintain and recover wetland-dependent species including endangered and threatened species and migratory birds (FISH AND WILDLIFE ENHANCEMENT, REFUGES AND WILDLIFE).
- Participate with EPA, National Oceanic and Atmospheric Administration, and the States in the National Estuary Program (FISH AND WILDLIFE ENHANCEMENT, FISHERIES).
- Provide technical assistance to States and private landowners that encourages wetlands restoration and enhancement (FISH AND WILDLIFE ENHANCEMENT, REFUGES AND WILDLIFE, FISHERIES).
- Under the Sikes Act, provide technical assistance to the Department of Defense to develop improved fish and wildlife management on military lands, with a specific focus on wetlands (FISHERIES).
- Provide international leadership in the restoration of important wetlands ecosystems (e.g., through the North American Waterfowl Management Plan, the Compact on Fisheries with Soviet Union, the Convention on

Wetlands of International Importance, the U.S.-Mexico-Canada-Tripartite Wetlands Agreement, and the U.S.-U.S.S.R. Migratory Bird Convention) (*EXTERNAL AFFAIRS, REFUGES AND WILDLIFE, FISH AND WILDLIFE ENHANCEMENT*).

- Implement wetlands restoration, enhancement, and management through the North American Waterfowl Management Plan's cooperative agreements between the Service and the Corps and between the Service and the Bureau of Reclamation (*REFUGES AND WILDLIFE*).

Future Strategies

- Establish cooperative programs with other agencies to jointly take advantage of wetlands restoration, enhancement, and management opportunities (*FISH AND WILDLIFE ENHANCEMENT, REFUGES AND WILDLIFE*).
- Foster restoration and management of private and public wetlands through a Challenge Grant Program (*REFUGES AND WILDLIFE*).
- Emphasize eliminating net loss of wetlands in the National Wildlife Refuge System Environmental Impact Statement, particularly when setting goals for wetlands acquisition, enhancement, restoration, and management when no net loss is consistent with the major purposes for which the refuges were created (*REFUGES AND WILDLIFE*).
- Examine the current distribution of operational funding on refuge lands to identify opportunities to expand or shift funding to increase wetlands restoration, enhancement, and management (*REFUGES AND WILDLIFE*).
- Assign Fishery Coordinators to work with Fish and Wildlife Enhancement, other Departmental bureaus, and the States to target restoration of wetlands important to commercial and sport fish (*FISHERIES, FISH AND WILDLIFE ENHANCEMENT*).
- Coordinate closely with the Corps of Engineers to maximize opportunities for environmental restoration, including wetlands restoration, through existing authorities such as the 1886 Water resources development Act (*FISH AND WILDLIFE ENHANCEMENT*).
- In cooperation with other Department of the Interior bureaus and other government agencies (e.g., NOAA, EPA, the Corps, State Coastal Zone Management programs) develop goals and objectives to protect and restore the Nation's coastal and marine living resources (*FISH AND WILDLIFE ENHANCEMENT, RESEARCH AND DEVELOPMENT, FISHERIES, REFUGES AND WILDLIFE*).
- As a natural resource trustee under the Comprehensive Environmental Response, Compensation and Liability Act, exercise the Service's responsibilities to ensure restoration of natural resources that have been injured by a release of hazardous substances, and to seek compensation for damages to natural resources (*FISH AND WILDLIFE ENHANCEMENT*).
- Support the use of agricultural programs to actively manage and restore wetlands (*FISH AND WILDLIFE ENHANCEMENT, REFUGES AND WILDLIFE*).
- Coordinate with the United States Department of Agriculture through their recent Water Quality Initiative to identify and address wetland contamination problems (*FISH AND WILDLIFE ENHANCEMENT*).
- Provide technical assistance to Tribal governments, the Bureau of Indian Affairs, the Bureau of Land Management, and the States to restore, enhance, and manage wetlands ecosystems that are important to Native Americans (*FISH AND WILDLIFE ENHANCEMENT, FISHERIES, REFUGES AND WILDLIFE*).
- Work with the Office of Surface Mining and other appropriate agencies to develop programs to address the restoration and enhancement of wetlands on mined lands and to maximize their value to fish and wildlife (*FISH AND WILDLIFE ENHANCEMENT*).
- Increase technical and management assistance to other countries under the Convention on Wetlands of International Importance (*EXTERNAL AFFAIRS*).

III. WETLANDS RESEARCH, INFORMATION, AND EDUCATION

Current Strategies

- Complete the National Wetlands Inventory mapping before the 1998 target date to support national efforts to conserve wetlands (*FISH AND WILDLIFE ENHANCEMENT*).
- Prepare the wetlands status and trends report, which is due to Congress in September 1990 (*FISH AND WILDLIFE ENHANCEMENT*).
- Measure and predict the long-term ecological consequences of various wetlands management practices (*RESEARCH AND DEVELOPMENT*).
- Conduct population surveys of wetland-dependent migratory birds. Prepare and distribute data on population trends resulting from these surveys (*REFUGES AND WILDLIFE*).
- Assess the status of fish populations that are dependent on the Nation's wetlands (*FISHERIES*).
- Conduct research on the ecological requirements of wetland-dependent species and the habitat requirements of viable populations (*RESEARCH AND DEVELOPMENT*).
- Conduct research on ways to mitigate adverse effects of acid deposition and other chemical contamination on wetlands (*RESEARCH AND DEVELOPMENT*).
- Encourage States to use their Federal Aid funds (Wallop-Breaux funds and anadromous fish grants) for wetland education and information activities (10 percent of Wallop-Breaux funds may be used to develop information on aquatic resources) (*FISH AND WILDLIFE ENHANCEMENT*).
- Prepare a multi-media public education program that includes publications, video productions, and other materials that promotes public awareness of wetlands values. Prepare publications and other information on the characteristics, functions, and values of specific wetlands that are currently the subject of strong public interest and debate, such as Alaska wetlands, coastal Louisiana wetlands, and wetlands of

southern Florida. As part of this public outreach/education program, the Service will also work with ASCS, SCS, and the Extension Service to provide farmers and rural communities with information concerning the economic and environmental benefits of wetlands (*EXTERNAL AFFAIRS*).

- Provide assistance to the Department of the Interior on Volume 2 of the Report to Congress, "The Impact of Federal Programs on Wetlands," which is mandated by the Emergency Wetlands Resources Act of 1986 (*FISH AND WILDLIFE ENHANCEMENT*).
- Evaluate wetland assessment methods to develop management and restoration methods that improve on technologies currently available to resource managers (*RESEARCH AND DEVELOPMENT*).
- Provide educational opportunities to the public through programs on National Wildlife Refuges and National Fish Hatcheries (*RESEARCH AND DEVELOPMENT*).
- Operate the National Contaminant Biomonitoring Program (*FISH AND WILDLIFE ENHANCEMENT*).
- In consultation with affected governmental land managers, designate U.S. Wetlands of International Importance (RAMSAR) that meet the criteria of the Wetlands Convention (*EXTERNAL AFFAIRS, FISH AND WILDLIFE ENHANCEMENT*).

Future Strategies

- Develop and implement an Urban Wetlands Initiative that provides educational opportunities and programs to promote an understanding of wetlands values and functions for urban populations (*FISH AND WILDLIFE ENHANCEMENT, REFUGES AND WILDLIFE, FISHERIES, RESEARCH AND DEVELOPMENT*).
- Accelerate the schedule for completing NWI's mapping effort, especially for Alaska, beginning with wetland types that are most threatened by

urban and natural resource development activities (*FISH AND WILDLIFE ENHANCEMENT*).

- Develop and implement an aggressive domestic and international program to increase public awareness about the functions and values of wetlands (*EXTERNAL AFFAIRS*).
- Increase media coverage aimed at increasing public appreciation of wetland values (e.g., fish and wildlife habitat, water quality, flood prevention, and ground water recharge) (*EXTERNAL AFFAIRS*).
- Increase wetland information transfer activities through the following actions:
 - ◆ Establish a nationwide clearinghouse and a 1-900-WET-LAND number that will make information on wetlands data and activities available to the public (*FISH AND WILDLIFE ENHANCEMENT*).
 - ◆ Through all Service Field Offices, provide information on wetlands values and management to the public (*ALL*).
 - ◆ Publish a "Who's Who in Wetlands" guide on a State-by-State basis to help owners of wetlands identify individuals and agencies with information and expertise in wetland regulations, management, and restoration (*FISH AND WILDLIFE ENHANCEMENT*).
- Develop and distribute information on compatible economic uses of wetlands (*RESEARCH AND DEVELOPMENT*).
- Develop a wetlands digital database consisting of all wetlands maps for the United States. This effort should be undertaken with the cooperation of other bureaus and agencies having digital spatial information and the capacity for developing and/or digitizing the information,

such as the U.S. Geological Survey, the Bureau of Land Management, the Environmental Protection Agency, the Soil Conservation Service, the National Oceanic and Atmospheric Administration (*FISH AND WILDLIFE ENHANCEMENT*).

- Develop demonstration projects on Service and private lands that illustrate innovative uses of wetlands that are fully compatible with long-term conservation objectives (*REFUGES AND WILDLIFE, FISHERIES*).
- Produce multi-disciplinary, audio-visual exhibits and teaching materials on wetland protection, restoration, and management to train domestic and foreign educators (*EXTERNAL AFFAIRS, REFUGES AND WILDLIFE, FISHERIES, FISH AND WILDLIFE ENHANCEMENT*).
- Work with other bureaus and agencies to increase the ability of existing technology (e.g., modeling, remote sensing, and identification and quantification systems) to assess the functions, wildlife values, and stability of wetlands ecosystems (*RESEARCH AND DEVELOPMENT*).
- Conduct training for Service and Departmental Bureaus on the use of the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (*FISH AND WILDLIFE ENHANCEMENT*).
- Work with the Departmental Working Group on Climate Change and others to develop a better understanding of how wetlands may be affected by phenomena related to large-scale environmental change, such as global climate change and acid deposition, and identify methods to mitigate these effects. Service actions regarding no overall net loss of wetlands will focus on man-induced losses in wetlands, pending policy directives from the Domestic Policy Council concerning losses resulting from global climate change and/or natural losses (*RESEARCH AND DEVELOPMENT*).
- Investigate the effectiveness of alternative mitigation strategies, such as mitigation banking

and fee mitigation, on wetland resources. This effort can focus on studying and monitoring current mitigation banking and fee programs that have been conducted privately, through State programs, or through experimental Federal programs or demonstration projects (*FISH AND WILDLIFE ENHANCEMENT, RESEARCH AND DEVELOPMENT*).

- Initiate a highly visible effort (with the aid of administration and/or other public figures) to increase the sale of migratory bird conservation stamps as an immediate source of wetlands acquisition funds (*EXTERNAL AFFAIRS, REFUGES AND WILDLIFE*).
- Work with U.S. Geological Survey and other appropriate bureaus and agencies to establish a wetlands quality (e.g., contaminants, water supply, etc.) monitoring plan to document the status and trends in quality of wetlands and to promote no overall net loss of wetlands quality (*FISH AND WILDLIFE ENHANCEMENT, RESEARCH AND DEVELOPMENT*).
- Work with other appropriate bureaus and agencies to develop a habitat assessment tool that is based on wetlands functions and values and be used for wetlands acquisitions, management, permit review, and mitigation (*RESEARCH AND DEVELOPMENT*).
- Work with other appropriate bureaus and agencies to develop approaches that assess wetlands functions and values, with emphasis on hydrologic, geologic, biological and other relevant factors. In particular, questions on the functions and values of Alaskan wetlands must be addressed (*RESEARCH AND DEVELOPMENT, FISH AND WILDLIFE ENHANCEMENT*).
- Work with other appropriate bureaus and agencies to develop techniques that provide information on long-term ecological impacts

from chemical contamination (*RESEARCH AND DEVELOPMENT*).

- Work with U.S. Geological Survey, EPA and other agencies to develop more efficient techniques for rapid remote monitoring and assessment of wetlands habitat and the fish and wildlife species inhabiting them (*RESEARCH AND DEVELOPMENT*).
- Work with U.S. Geological Survey to determine the role of hydrology in maintaining habitat for wetland-dependent species (*RESEARCH AND DEVELOPMENT*).
- Explore the development of Employee Incentive and Conservation Award Programs for wetlands conservation accomplishments (*EXTERNAL AFFAIRS, POLICY, BUDGET, AND ADMINISTRATION*).
- Develop an awards program that would recognize the accomplishments of private landowners and members of the agriculture community who foster wetlands conservation (*REFUGES AND WILDLIFE, FISH AND WILDLIFE ENHANCEMENT*).
- Develop a national system for tracking and evaluating the Service's progress in implementing this ACTION PLAN (*POLICY, BUDGET, AND ADMINISTRATION (LEAD); FISHERIES; EXTERNAL AFFAIRS; REFUGES AND WILDLIFE; RESEARCH AND DEVELOPMENT; FISH AND WILDLIFE ENHANCEMENT*).

THE SERVICE'S BUDGET has historically contained substantial funding for wetlands protection and related work. Work areas that are now receiving special attention, or that are expected to receive such attention in the future, include: expanding high priority bay and estuary habitat assessment and protection; securing water necessary for main-

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tenance of lands administered by the Service; restoring and managing wetlands on Service lands; expanding wetlands restoration activities associated with Farm Bill and private lands; consolidating wetlands/migratory bird databases; instituting continuous wetlands status and trends monitoring; expanding the Louisiana wetlands loss study; and analyzing the effects of contaminants on the value of prairie pothole wetlands to breeding waterfowl.

Additional efforts in the three major areas discussed in this *ACTION PLAN* (wetlands protection, restoration and enhancement, and information and research) translate into additional acres of wetlands protected and restored by the Service. This document outlines a multi-year approach and additional efforts will be necessary to take advantage of all the opportunities identified.

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RIVER AND HARBOR ACT (33 U.S.C. 403)

NATIONAL ENVIRONMENTAL POLICY ACT (42 U.S.C. 4321-4347)

APPENDICES

THE FOLLOWING APPENDICES describe specific issues and activities to be addressed by the Service in implementing this Wetlands *ACTION PLAN*. The material contained in these appendices provides more information on the challenges faced by the Service in contributing to the President's pledge to achieve no net loss of wetlands and the types of actions that the Service will take to meet its responsibilities in pursuing that goal. Where particular programs are involved, or where the Service's analyses of particular issues or activities are concerned, greater detail is provided.

PAGE		
33	Appendix 1	North American Waterfowl Management Plan
34	Appendix 2	North American Wetlands Conservation Act
35	Appendix 3	Coastal Estuary-Bay Program
36	Appendix 4	Urban Wetlands Initiative
37	Appendix 5	Service Private Lands Initiative
38	Appendix 6	U.S.-Mexico-Canada Tripartite Wetlands Agreement
39	Appendix 7	Clean Water Act and Section 10 of the River and Harbor Act
40		7.A: Section 402, the National Pollutant Discharge Elimination System (NPDES) Permit Program
42	Appendix 8	Hazardous Waste Sites and Wetlands
43	Appendix 9	Monitoring Wetlands Quality Relative to Contaminants
45	Appendix 10	Water Resources Development Act of 1986: Cooperation with the U. S. Army Corps of Engineers
46		10.A: Atchafalaya Basin, Louisiana, Protection Easement
47	Appendix 11	Mitigation and Achieving "No Net Loss" of Wetlands
48		11.A Application of "No Net Loss" to Alaska's North Slope Wetlands
50		11.B Applying the "No Net Loss" of Wetlands Goal to Louisiana Coastal Wetlands
52	Appendix 12	Farm Bill Program
54	Appendix 13	Agricultural Wetlands Reserve System
55	Appendix 14	Draft Executive Order on Protection of Wetlands
56	Appendix 15	Wetland Protection in the S&L Crisis
57	Appendix 16	Wetlands Protection and Military Lands
58	Appendix 17	National Wetlands Digital Database
59	Appendix 18	Assistance to States to Develop Comprehensive Wetlands Protection Plans
60	Appendix 19	Public Information and Education About Wetlands
61	Appendix 20	Wetlands Training for Field and Management Staff
62	Appendix 21	Wetland Incentive Award Program
63	Appendix 22	Creating Wetlands on Reclaimed Coal Mining Areas

**NORTH AMERICAN
WATERFOWL MANAGEMENT PLAN**

THE NORTH AMERICAN WATERFOWL MANAGEMENT PLAN (NAWMP) is an international response to drastic declines in waterfowl and other wetland-dependent species during the past decade. Drought and continual habitat destruction has taken a toll on wildlife in North America. The NAWMP provides a blueprint for conserving wetland habitats throughout North America that are critical to waterfowl and other wetland-dependent species.

The NAWMP benefits wetlands because it:

- Builds on Federal, State, and private partnerships to restore, enhance, manage, and protect wetlands for waterfowl and other wetlands-dependent species.
- Is carried out as regional and grass-roots joint ventures and partnerships that allow local organizations and concerned citizens to participate in wetlands conservation.
- Encourages volunteerism and advocacy for wetlands conservation through public education.
- Encourages regional planning by the public and land management agencies to induce positive, long-term changes in land use on private and public lands to benefit waterfowl and other wetland-dependent species.
- Encourages private-sector fund raising.
- Provides a continent-wide wetlands conservation theme.
- Involves agricultural interests as a primary partner in protecting and restoring wetlands.
- Promotes research on wetlands restoration, the effects of contaminants on wetlands, and fish and wildlife benefits.
- Promotes wetland status surveys and wetland inventories.

APPENDIX 2

NORTH AMERICAN WETLANDS CONSERVATION ACT

THE NORTH AMERICAN WETLANDS CONSERVATION ACT (ACT) is intended to encourage partnerships among public agencies and other interests and to: Protect, enhance, restore, and manage wetland ecosystems and other habitats for migratory birds and other fish and wildlife.

- Maintain current or improved distributions of migratory bird populations.
- Sustain an abundance of waterfowl and other migratory birds consistent with the goals of the North American Waterfowl Management Plan and the international obligations contained in treaties and conventions and other agreements with Canada, Mexico, and other countries.
- Through wetlands conservation projects in the United States, Canada, and Mexico, the Act provides for:
 - Obtaining real property interests in land or waters, including water rights.
 - Restoration, management, or enhancement of wetland ecosystems and other habitats for migratory birds and other fish and wildlife species.
 - Technical training and development of the infrastructure necessary to conserve and manage wetlands in Mexico.
 - Studies on the sustainable use of wetland resources for projects in Mexico.

Federal matching funds for these wetlands conservation projects will be approved by the Migratory Bird Conservation Commission after reviewing recommendations submitted by the nine-member North American Wetlands Conservation Council. No funds, however, may be used for fish and wildlife mitigation projects developed pursuant to the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) or the 1986 Water Resources Development Act, (Public Law 99-662, 1986, 100 Stat. 4235).

Through annual and biannual reports to Congress, the Act provides for:

- An assessment of the estimated number of acres of wetlands and habitat for waterfowl and other migratory birds that were restored, protected, or enhanced by Federal, State, and local agencies and other entities in the United States, Canada, and Mexico.
- An assessment of trends in the population size and distribution of North American migratory birds.
- An assessment of the status of wetlands conservation projects, including an accounting of expenditures by Federal, State, private, Canadian, and Mexican sources to carry out these projects.

By revising section 401(a) of the Emergency Wetlands Resources Act of 1986 (16 U.S.C. 3931(a)), the Act requires the Secretary of the Interior, through the Director of the U.S. Fish and Wildlife Service, to produce a report by April 30, 1990, that provides:

An estimate of the total number of acres of wetland habitat, as of the 1780's, in the areas that now comprise each State.

An estimate of the total number of acres of wetlands in each State, as of the 1980's, and the percentage of wetlands lost in each State between the 1780's and the 1980's.

COASTAL ESTUARY BAY PROGRAM

THE SERVICE IS CONSIDERING A NATIONAL PROGRAM for coastal estuaries and bays which will be modeled after the Chesapeake Bay Program. The purposes of the program include:

- Protecting wetlands by coordinating Federal, State, local, and private protection efforts.
- Identifying trends in emergent and submerged aquatic vegetation.
- Supporting habitat restoration in wetlands and shallow water habitat, particularly emergent and submerged aquatic vegetation.
- Promoting public education of coastal and inland wetlands values in relation to fish and wildlife.
- Encouraging research efforts on restoration techniques, wetlands values, and the interrelationship of wildlife and fishery populations to wetlands.

The Service's Coastal Estuary Program would complement existing EPA and NOAA estuarine programs by focusing on restoring living resources of the Nation's bays and estuaries. Adequate funding should be considered for appropriate Service field offices to allow them to be active participants in the estuarine planning efforts of other agencies. The program would be a phased-in effort, initially concentrating on:

- Delaware Bay (Delaware and New Jersey).
- Long Island Sound (New York and Connecticut).
- Narragansett Bay (Rhode Island).
- New York/New Jersey Estuary (New York and New Jersey).
- Albemarle and Pamlico Sounds (North Carolina).
- Gulf Coast (particularly Mobile Bay, Galveston Bay and coastal Louisiana).
- San Francisco Bay (California).
- Puget Sound (Washington).

Future efforts may include the 17 bays and estuaries currently being addressed by the EPA estuary programs. A detailed prospectus on the full scope of the Estuary Program is currently being developed.

URBAN WETLANDS INITIATIVE

THE SERVICE IS DEVELOPING AN INITIATIVE consisting of public education programs directed at urban populations to promote an awareness of wetlands functions and values. This effort would emphasize:

- Protecting urban wetlands by promoting and supporting Federal, State, local, and private wetlands protection efforts.
- Establishing educational programs to promote an awareness of wetlands values and functions in urban areas of the country. This could be accomplished in some areas by establishing interpretive programs and facilities on National Wildlife Refuges and National Fish Hatcheries with wetlands that are located near major urban centers.
- Cooperative efforts with the National Park Service to develop wetlands education programs in urban parks and facilities managed by that agency.
- Acquiring, establishing, and/or managing urban wetlands (independently or cooperatively with private organizations, State governments, and/or local governments) to establish interpretive programs and facilities, conduct research, and facilitate local wetlands education programs.

OVER 74 PERCENT OF WETLANDS in the contiguous 48 states are on lands controlled by private landowners, both individual and corporate. The Fish and Wildlife Service has been increasingly active in helping these landowners manage their lands to benefit fish and wildlife, particularly wetland-dependent species. Several diverse but compatible activities are involved, including the North American Waterfowl Management Plan, and wetlands restoration on private lands through Farm Bill activities. The Private Lands Initiative seeks to broaden the scope of these activities and to involve all appropriate elements of the Service, with the goal of achieving a net gain of fish and wildlife on private lands through voluntary action. The initiative could facilitate habitat restoration and management on 10 million acres of private land by the year 2000 through direct technical or financial assistance and public education. Private land use must remain profitable if this program is to succeed. The Private Lands Initiative also envisions a Service effort to instill a wise and lasting land use ethic in all Americans.

The "Partners for Waterfowl Tomorrow" program in the Southeast Region is a good example of the Service providing technical assistance to private landowners, as is the extensive technical assistance provided to private landowners in coastal Louisiana to help reduce losses of wetlands to erosion, subsidence, and salt-water intrusion.

**U.S.-MEXICO-CANADA TRIPARTITE
WETLANDS AGREEMENT**

WETLANDS IN MEXICO ARE VITALLY IMPORTANT as wintering habitat for millions of waterfowl and other migratory birds that breed in the United States and Canada. Coastal wetlands, in particular, provide critically needed wintering habitat for pintails, redheads, brant, and other species whose numbers have been declining dramatically throughout North America. In a tripartite agreement signed in March 1988, officials of the Fish and Wildlife Service, Canadian Wildlife Service, and Mexico's Director General of Ecological Conservation of Natural Resources agreed to undertake cooperative efforts to conserve Mexican wetlands and the migratory birds and other fish and wildlife that utilize them. Many of these wetlands are being affected by pollution, development, and the activities of rural people.

The agreement benefits wetlands because it:

- Provides training for managers of wetlands habitats in Mexico that are important to waterfowl breeding in the United States and Canada.
- Brings focused attention and expertise to the problem of wetlands conservation in Mexico.
- Integrates Mexican rural community economic interests with wetlands conservation in that country.
- Provides for cooperation in establishing and developing the necessary financial and technical support for conservation of Mexican wetlands.

**CLEAN WATER ACT AND SECTION 10
OF THE RIVER AND HARBOR ACT**

SECTION 404 OF THE CLEAN WATER ACT is one of the most important Federal regulatory programs for protecting wetlands and other waters of the U.S., although section 404 regulates only the deposition of dredged and fill material. Most wetlands lost due to human activity have associated impacts from fill material (e.g., sidecast material, clearing and leveling of forested wetlands).

To improve implementation and enforcement of section 404 and 10 permits, the following should be pursued:

- Provide assistance to EPA and the Corps of Engineers (Corps) to assist to wetlands enforcement activities with the goal of establishing a more consistent and effective national regulatory program.
- Develop a national Memorandum of Agreement between the Service and EPA for transfer funding of technical assistance for work related to permit review, advanced or reactive section 404(c) activities, "advance identification" projects, and enforcement actions.
- Work cooperatively with EPA and the Corps to apply the principles contained in the February 7, 1990, Memorandum of Agreement on the determination of mitigation under the section 404(b)(1) guidelines to ensure sequential application of wetlands avoidance, minimization of impacts that cannot be avoided, reduction of impacts over time, and compensation of unavoidable impacts to projects requiring a section 404 permit.
- Work cooperatively with EPA and the Corps to ensure that the alternative analysis of the section 404(b)(1) guidelines is applied rigorously. Permit applicants should clearly demonstrate that their proposals are the least damaging practicable alternative.
- Provide recommendations to the Corps and EPA in the upcoming review of Nationwide permits. The Service will identify and recommend modification or deletion of those Nationwide permits which have resulted in a significant loss of wetlands through individual or collective actions.
- Work cooperatively with the Corps to ensure increased monitoring of permitted actions to determine if: (1) permit conditions and stipulations have been met; and (2) mitigative measures have achieved the desired results.
- Promote development of an annual report that documents the effect of the section 404 and section 10 regulatory programs on wetlands loss.

SECTION 402, THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT PROGRAM

SECTION 402 OF THE CLEAN WATER ACT, which addresses the chemical quality of the Nation's water and associated wetlands, establishes a program which complements the section 404 program. The section 402 program requires a permit for most discharges into surface waters and can require discharge limits for various pollutants. Generally, this Federal program is administered by the States with EPA having overview authority as the lead agency. The Service comments on the National Pollutant Discharge Elimination System (NPDES) permits because of its responsibilities, which include:

- A legislative mandate to facilitate conservation of endangered and threatened species, including the ecosystems on which they depend.
- Fish husbandry research and fish production at National Fish Hatcheries and fish cultural and research centers. The quality of receiving waters for hatchery fish is critical to stocking objectives, and the Service must be concerned about the quality of effluent from hatcheries.
- Protection, conservation, and enhancement of anadromous fish.
- Direct stewardship of living resources and habitats on National Wildlife Refuges.
- An advisory relationship in the management of habitat on other Federal lands (NPS, BR, BLM, Indian, and DOD) under various interagency agreements.
- Responsibility for advising the Secretary of the Interior on environmental aspects of mineral leasing and management activities, particularly oil and gas on the Outer Continental Shelf and coal on Interior lands. (See Departmental Manual 655 and interagency agreement with BLM on coal leasing.)
- International treaty obligations. Water quality directly affects the health and productivity of fish and wildlife populations protected by treaties.
- The Service is a biological research and information transfer agency with much scientific knowledge to contribute to the conservation and protection of living organisms. It is in the public interest to bring this expertise to bear on water-quality questions.
- Habitat preservation when the Service's trustee interests, (e.g., migratory birds and endangered species) are threatened by pollutant discharge activities.
- The North American Waterfowl Management Plan calls for improved quality of wetlands habitat to better support the migratory bird resource.
- Current review of NPDES permits is limited to major discharges directly affecting important resources. The Service attempts to prioritize NPDES permit review and to limit review to those discharges that have the potential to significantly impact fish and wildlife resources. Many State environmental and natural resource agencies have the responsibility to review and monitor NPDES permits. In many cases, the Service defers NPDES review to the responsible State agency.

Suggestions to make the Service's role in the NPDES program more effective include:

- Establish a joint EPA-Service task force to assess the existing program and develop policy and guidance recommendations to more fully protect the water quality of the Nation's wetlands and the waters that flow into them.
- Increase Service involvement in helping the States and EPA develop State Water Quality Standards under section 303 of the Clean Water Act. Developing descriptive criteria for both water and sediments would assist the review process by setting workable standards by which data can be interpreted.
- In addition to providing a regulatory mechanism to protect water quality, the section 402 program also has a direct connection to physical wetlands protection. Based on an EPA-Corps agreement regarding the definition of fill, deposition of mining wastes (such as tailings from placer mining operations) into wetlands is currently supposed to be regulated under the section 402 program, not the section 404 program. However, these wetlands losses are not being consistently regulated under either program. The Service should encourage review and modification of the current EPA-Corps agreement to ensure adequate regulation of the deposition of solid waste into waters of the United States (which include wetlands).

HAZARDOUS WASTE SITES AND WETLANDS

THE COMPREHENSIVE ENVIRONMENTAL Response, Compensation, and Liability Act (CERCLA or Superfund) and the Resource Conservation and Recovery Act (RCRA) both require assessment of environmental impacts. The Service is involved in the CERCLA process as a trustee for natural resources, which include migratory birds, endangered species, anadromous fishes, and lands owned and managed by the Service. As a trustee, the Service is the primary agency within the Department of the Interior involved in granting covenants regarding lawsuits under CERCLA. EPA has estimated that between 80 and 85 percent of Superfund sites either have already polluted wetlands or have definite potential to do so. There are currently over 1,100 Superfund sites and over 30,000 abandoned hazardous waste sites tentatively identified. In some instances, Service recommendations regarding remediation of pollutant impacts to wetlands and impacts of cleanup activities have not been addressed adequately. Suggestions to correct this situation include:

- Work with EPA to develop policy and guidance regarding wetlands protection in CERCLA and RCRA programs.
- Establish a joint EPA/Service task force to evaluate the current situation and develop policy and guidance recommendations to address wetlands concerns.
- Develop procedures to facilitate Service reimbursement from Superfund for wetlands review and natural resource damage assessments and claims.
- Remediation of pollutant impacts to wetlands and the impacts of cleanup activities are addressed by interagency bioassessment work groups to evaluate environmental impacts at Superfund sites. This approach should be considered for implementation nationwide.
- Work within the Department to support the Department's and the Service's roles and responsibilities as natural resource trustees.

MONITORING WETLANDS QUALITY
RELATIVE TO CONTAMINANTS

IN ADDITION TO MAINTAINING THE ACREAGE of wetlands, many wetlands values are related to the quality of wetlands with respect to contaminants in wetlands and their associated biota. Wetlands values can be compromised by the impacts of contaminants that originate from a variety of sources. Although one of the values of wetlands is their ability to assimilate contaminants, excessive amounts of contaminants impair the functions of wetlands and diminishes all of their values. For instance, flood control benefits can be impaired by nonpoint and point sources of sediment resulting in reduced holding capacity and conversion to uplands; water quality benefits can be lost by over-enrichment or introduction of toxics resulting in loss of productivity; and benefits to fish and wildlife resources can be adversely affected by acute mortalities or reduction in reproductive capabilities. Bioaccumulation of toxics has resulted in health warnings against consumption of fish and some waterfowl species in many areas of the Nation.

Wetlands areas are resilient, but the cumulative effect of numerous contaminant sources can overwhelm natural processes. Point source discharges from industry and municipalities, via air, water, and solid waste discharges, have adversely affected wetlands. Although water and solid waste are most often cited as problems, acid rain impacts to fish and wildlife have been documented and aerial source estimates for PCB's into the Great Lakes are over 50 percent. Some wetlands have been used for wastewater treatment; however, potential problems with bioaccumulation of toxic substances should be evaluated on a case-by-case basis. Nonpoint sources of contaminants can also adversely affect wetlands. Urban runoff leachate from hazardous waste sites and combined sewer overflows can contribute large quantities of contaminants to wetlands. Runoff from agricultural areas can include numerous pesticides and other contaminants. For instance, impacts to migratory bird reproduction and other effects have been documented from agricultural irrigation drainwater.

The existing wetlands need to be maintained, or be improved, from an environmental contaminants perspective. No net loss applies to quality as well as acreage, because wetlands impacted by contaminants could eliminate values to a similar degree as physical destruction. In some cases, the damage can be even greater than physical destruction (i.e., Kesterson).

In order to maintain wetlands quality, a measurement of the status and trends is required. The Service has been monitoring the levels of organochlorine pesticides, PCB's, and some metals in birds and fish since 1964, as part of the National Contaminant Biomonitoring Program (NCBP). Additionally, the Service is currently working with the U.S. Geological Survey on the National Water Quality Assessment (NAWQA) Program. Based partly on the results of the NCBP, many of the formerly used pesticides have been banned. However, a new generation of pesticides have been developed and are affecting wetlands and their associated biota. The Service has

developed new bioassessment methodologies; however, no current program fully evaluates wetlands quality. Recommendations to correct this situation include:

- Develop a new initiative that will evaluate trust species, wetlands quality, and additional priority habitats not addressed by NAWQA or other monitoring programs. This initiative would supplement the NCBP.
- Refine and standardize biological indicators of wetlands quality with emphasis on indicators of the chemical quality of wetlands.
- Ensure that this new initiative complements the existing NAWQA program. It should be coordinated with other internal and external monitoring efforts to eliminate duplication of effort and should be driven by bioassessment methods.
- Implement a contaminant monitoring program in the National Wildlife Refuge System.

**WATER RESOURCES DEVELOPMENT
ACT OF 1986: COOPERATION WITH
THE U. S. ARMY CORPS OF ENGINEERS**

THE WATER RESOURCES DEVELOPMENT ACT OF 1986 (86 Act) provided broad authority for the Corps of Engineers to redirect its water resources development program to emphasize fish and wildlife conservation, including mitigation, enhancement, and restoration, as a primary goal. Several provisions of the 86 Act are collectively known as the "environmental reforms of the 86 omnibus water bill." In addition, the 86 Act authorized numerous fish and wildlife mitigation and enhancement projects including acquisition of over 585,000 acres of wetlands.

The 86 Act and the new environmental mission envisioned by it for the Corps have provided one of the most promising areas of interagency cooperation for the Service on wetlands. The Director and the Chief of Engineers should cooperate to develop priority areas of interagency cooperation from the list of potential actions below:

- Develop mitigation/enhancement projects authorized in the 86 Act such as the following high priority examples:
- Assist in the development of mitigation projects authorized in the 1986 Act, including the Tennessee-Tombigbee Waterway mitigation (Alabama/Mississippi), Atchafalaya Basin Enhancement Project (Louisiana), Missouri River mitigation (Missouri, Kansas, Iowa, Nebraska), and Yazoo Backwater Area mitigation (Mississippi).
- Emphasize the 1989 cooperative agreement with the Corps in support of the North American Waterfowl Management Plan. This agreement enjoys a high level of support within the Corps and the Department of the Army. It can also set the stage for broader cooperation on habitat protection, management, and restoration issues beyond the scope of the NAWMP.
- Promote implementation of the environmental authorities of the 86 Act, which include developing candidate projects, funding, and internal guidance to promote cooperative action. Examples of those authorities are:
 - ◆ Section 704: Authorizes the Corps to study, in consultation with the Service and NOAA, the feasibility of using its capabilities for fish and wildlife conservation (including habitat creation and improvement).
 - ◆ Section 906(e): Authorizes the Corps to implement fish and wildlife enhancement actions on projects at 100 percent federal cost for species of national significance. Operation and maintenance for such measures requires 25% cost-sharing by non-federal interests.
 - ◆ Section 1135: Authorizes the Corps to review modifications of existing projects needed to improve environmental quality. \$25 million was authorized for demonstration projects under this section, with a report to Congress.
 - ◆ Section 906(b): Establishes a continuing authority fund of \$30 million per year for mitigation of fish and wildlife resource losses on previously authorized or constructed projects.
- Assist the Corps in the revision and development of fish and wildlife management plans for all Corps lands.

**ATCHAFALAYA BASIN, LOUISIANA,
PROTECTION EASEMENT**

THE 1986 WATER RESOURCES DEVELOPMENT ACT authorized the Corps to acquire 315,000 acres of environmental protection easements in the Atchafalaya Floodway forested wetlands complex. In 1981, the State of Louisiana, the Service, and the Corps agreed to the basic components of the easement. The easement may be altered by the Corps to exclude timber management criteria that the Service considers necessary.

Field studies involving the State of Louisiana, the Service, and the Corps are nearly completed. Reasonably accurate estimates of the costs associated with timber management criteria proposed by the Corps and those proposed by the Service and the State of Louisiana will be available soon. As soon as these cost data are available, discussions with the Corps should begin. Sound timber management requirements must be incorporated in the easement to protect the wetland and other environmental values of the Atchafalaya Basin's forested wetlands.

MITIGATION AND ACHIEVING
NO NET LOSS OF WETLANDS

THE PRESIDENT'S GOAL OF ELIMINATING NET LOSS of wetlands has raised many questions about definitions, principles, and approaches applicable to the goal. Some of these questions will require clarification by the Domestic Policy Council's Interagency Wetlands Working Group. Other questions can be addressed by drawing on existing policies and guidance for principles on wetland mitigation. The following draft set of mitigation principles has been developed from a combination of existing policies (e.g., the Service's Mitigation Policy, EPA's section 404(b)(1) guidelines) and the Service's extensive experience in wetlands conservation:

- Avoidance of adverse impacts is the preferred form of wetlands protection. Generally, adverse impacts to wetlands should be limited to those activities for which there is no practicable alternative.
- Mitigation of impacts should follow the sequential steps outlined in the Council on Environmental Quality's guidelines for the National Environmental Policy Act and the Fish and Wildlife Service's Mitigation Policy (i.e., avoidance, minimization, rectification, reduction or elimination over time, and compensation). Generally, wetlands compensation, which is the restoration or creation of wetlands to offset losses, should be allowed only when losses are determined to be unavoidable and compensation is known or believed to be technically feasible. Wetlands restoration should be the preferred form of compensatory mitigation, followed by wetlands creation.
- Generally, wetlands compensation should occur as close to the specific impact area as possible or practicable and should provide the same type of wetlands and associated values as those being lost. Compensation that involves restoration or creation of a wetlands type that is different from the one being affected should be considered only if the substitute type is scarce, especially valuable, or otherwise faces a high level of threat in the watershed, drainage, river basin or ecoregion. No compensation should be allowed for losses of unique and irreplaceable wetlands.
- Whenever the impacts of a project result in a need for compensatory mitigation, the site of the mitigation should be monitored on a regular basis to ensure that the ecosystem is self-sustaining and provides the intended functions and values. If the ecosystem is not viable and does not provide the intended functions, remedial action should be taken to provide those functions and values.
- Ongoing wetlands conservation and restoration programs (e.g., Land and Water Conservation Fund, Food Security Act, North American Waterfowl Management Plan) should not be used as credit for wetlands losses that occur due to the administration of other unrelated programs (e.g., section 404 of the Clean Water Act or a Federal water development project).

Two areas of the United States deserve specific attention because of their unique environmental conditions: Alaska and Louisiana. These areas will be treated in more detail in the two attachments to this appendix.

**APPLICATION OF NO NET LOSS POLICY
TO ALASKA'S NORTH SLOPE WETLANDS**

APPROXIMATELY 63 PERCENT OF THE WETLANDS remaining in the United State occur in Alaska. Forty-three percent of Alaska's 375 million acres are classified as wetlands and only a small percentage of this total has been affected by human encroachment. The majority of Alaska's wetlands (approximately 55 percent) are not Arctic tundra. Wetlands ecosystems in southeastern, south central, and southwestern Alaska are ecologically similar to wetland types found in the contiguous 48 states and can be addressed by the same procedures and strategies used for their lower latitude counterparts. However, a large percentage of Alaska's wetlands (approximately 45 percent) are tundra, which presents unique environmental conditions and problems to conservation efforts and development activities. The unique environmental conditions presented by tundra require special consideration and different mitigation strategies.

Introduction

The majority of the 14 million acres in the area of Alaska north of the Brooks Range is classified as wetlands due to its soil, moisture, and vegetation characteristics. Wetlands in this region, which is called the North Slope, are an important public resource providing valuable habitat for a variety of wildlife. The region is not uniform, but consists of a wide variety of wetlands with associated resource values that vary with habitat type and geography. Over 100 species of migratory birds, including ducks, geese, swans, loons, shorebirds, gulls, terns, raptors, and passerines use North Slope wetlands for nesting, feeding, brood-rearing, or staging during migration. Some lakes and streams on Alaska's North Slope provide spawning and overwintering habitat for several species of freshwater and anadromous fish, including arctic char, arctic grayling, arctic and least cisco, and broad and round whitefish. North Slope wetlands also provide habitat for several mammals such as caribou, moose, musk-ox, brown bear, wolf, wolverine, and red and arctic fox.

Because of the distribution of wetlands on the North Slope, any development in this area would occur, to a large extent, in wetlands. However, with thorough pre-project mitigation planning and the flexibility to use out-of-kind mitigation (i.e., when in-kind mitigation is not available), development can continue on Alaska's North Slope with no net loss of wetland values beyond existing conditions.

Fish and Wildlife Service Mitigation Policy

The Fish and Wildlife Service's Mitigation Policy provides a framework for applying appropriate mitigation techniques (avoidance, minimization, rectification, reduction or elimination over time, and compensation) to offset wetland losses resulting from development, based on an assessment of the relative abundance of various

wetland types and the importance of those wetlands to species of concern. Application of the Mitigation Policy can achieve the goal of no net loss of wetland values on Alaska's North Slope.

Some North Slope wildlife habitat areas in wetlands are unique and irreplaceable. For example, wetland habitat in the Sagavanirktok River delta sustains the only known snow goose nesting colony in the United States. Other wetland types have high resource value and are relatively scarce in the region: large ponds or lakes with emergent grass vegetation along the littoral zone, which provide the highest value nesting and brood-rearing habitat for waterfowl, and coastal saline meadows, which provide high value brood-rearing and staging habitat for brant, snow geese, and shorebirds.

In general, areas along the coast (where most development has occurred to date) contain the greatest proportion of high value wetlands on the North Slope. This area consists of a mosaic of wetland types, including deep and shallow lakes, ponds, and streams. Development activities should be avoided in these areas; however, if development is necessary, it should be minimized and mitigation for impacts should be in-kind and commensurate with the value and scarcity of the habitat impacted.

Further inland, complex wetlands are less prevalent than along the coast. Overall areas away from the coast support fewer species and lower densities of migratory birds. Wetlands in moist tundra are relatively abundant and support a range of habitat values for wildlife species. Development impacts to these wetlands may be minimized in these areas by consolidation of facilities, appropriate facility design, and environmentally sensitive technologies developed for current North Slope development activities. Although loss of wetlands will still occur, these losses can be offset through a variety of mitigation techniques. Rectification, or the rehabilitation of disturbed areas over time, and habitat enhancement methods offer a range of opportunities for compensation of unavoidable wetlands losses.

**APPLYING THE "NO NET LOSS"
OF WETLANDS GOAL TO
LOUISIANA COASTAL WETLANDS**

LOUISIANA'S COASTAL WETLANDS are of national and international importance to fish and wildlife. These wetlands winter 20 to 25 percent of North America's puddle ducks, support nearly 30 percent of the Nation's commercial fishery harvest, and yield North America's largest fur and alligator harvests. Louisiana's coastal wetlands also reduce hurricane-related tidal surges and remove pollutants from coastal waters.

Louisiana's coastal wetlands are being lost at an alarming rate due to a number of human induced and natural factors. Over two-thirds (32,000 acres) of the entire Nation's annual losses of coastal wetlands occurs in Louisiana. The causes of the problem include:

- Federal and non-federal flood control levees along the Mississippi River have eliminated the inflow of freshwater and sediment into coastal marshes. This is the primary cause of the dramatic loss of wetlands in Louisiana. Freshwater inflow to coastal wetlands is necessary to maintain proper salinity levels and promote healthy vegetation. Sediment deposition in coastal wetlands is necessary to counter man-induced and natural subsidence of the marsh floor. This problem will become more severe if predictions of sea-level rise are accurate.
- Maintenance of navigation in the Mississippi River system results in the creation of deeper, straighter channels. The engineering objective of these projects is to confine flow into self-maintaining channels. This forces the sediment-laden water to bypass the wetlands system and deposit its silt into deeper Gulf of Mexico waters.
- The Atchafalaya River is the major tributary of the Mississippi River. Atchafalaya Bay is one of the few marsh-building shallow bays in the Nation. Maintenance dredging of the navigation channel through Atchafalaya Bay has been particularly detrimental to these natural marsh-building processes. The dredge spoil deposited along the navigation channel constricts the river flow and thus reduces the amount of deposition in the levy; the amount of newly-formed marsh is therefore reduced.
- Activities such as extraction of sulfur and oil and gas, and forced drainage, sometimes accelerate subsidence, which lowers the marsh floor, resulting in the eventual elimination of marsh vegetation.
- Sea-level rise due to global climate change would, in the long run, increase water-logging of vegetation and raise salinity levels. This would result in the destruction of those wetlands that are not being built up by sediment inflow.
- Manmade canals increase the movement of saltwater into interior wetlands, killing the salt-intolerant vegetation and accelerating the loss of organic soils and conversion of wetlands to open water.
- Dredging and filling activities associated with urban and industrial development result in the loss of wetlands.

Significant progress can be made toward the goal of no net loss of wetlands in Louisiana if the tremendous freshwater and sediment resources of the Mississippi

and Atchafalaya Rivers are constructively and efficiently utilized. No net loss of wetlands will only occur as a result of a commitment to preserve and enhance existing wetlands, restore degraded wetlands, and create wetlands in shallow open water. The Service will work with the other involved Federal and State agencies and private entities to encourage and facilitate the following actions:

- Past development actions have severely altered the hydrology of the Mississippi River. These actions can be partially offset by:
 - ◆ constructing freshwater and sediment diversion projects to maintain proper salinity levels for wetlands vegetation and to supply sediments necessary to enable existing wetlands to keep pace with subsidence and to create new wetlands in shallow open water;
 - ◆ backfilling and plugging certain dredged canals to prevent saltwater intrusion;
 - ◆ establishing salt-tolerant vegetation in areas where the natural vegetation is threatened by saltwater;
 - ◆ effectively using maintenance dredge materials to restore proper marsh elevations for wetlands vegetation;
 - ◆ implementing improved management of water levels and salinities by using levees and water control structures to preserve and enhance existing wetlands and to restore degraded wetlands;
 - ◆ restoring wetlands drained for grazing purposes; and
 - ◆ reducing the widespread use of forced drainage of wetland areas, thereby reducing sediment compaction and subsidence.
- Future development actions should be carefully planned to protect coastal wetlands. Emphasis should be on use of directional drilling to reduce canal dredging from oil and gas exploration and production, and on offsetting unavoidable canal impacts. Proposals should comply with stringent section 404 program standards designed to minimize and offset coastal Louisiana wetlands losses. All development proposals should incorporate wetlands compensation and, possibly, enhancement features.
- Maintenance of navigation in the Mississippi River system, particularly in the active Mississippi River Delta and in Atchafalaya Bay, should also be addressed to reflect the serious wetlands loss situation and the opportunity to restore and create wetlands in those areas. Efforts should be pursued to increase the effectiveness of the marsh building processes in Atchafalaya Bay and in the active Mississippi River Delta. The North American Waterfowl Management Plan through its Gulf Coast Joint Venture will serve as a major action program to bring together the Federal, State, and private efforts.

FARM BILL PROGRAM

TWO OF THE MAJOR OBJECTIVES of the Food Security Act of 1985 (Farm Bill) were: to help reverse the decline of the American farm economy and to reverse the loss of wetlands in the United States. The Farm Bill contains six major provisions that are commonly referred to as the "conservation provisions:" (1) Swampbuster, (2) Sodbuster, (3) Conservation Reserve, (4) Conservation Set-Aside (Section 1318), (5) Conservation Easements (Section 1314) and (6) Conservation Compliance. In addition to the six Farm Bill conservation provisions additional opportunities for Service involvement with the Department of Agriculture farm programs include: an agreement between the Service and FmHA to work cooperatively to protect wetlands under the Executive Orders 11990 (Protection of Wetlands) and 11998 (Floodplain Management) and provisions of the Agricultural Credit Act of 1987 authorizing land transfers for conservation purposes.

These provisions offer opportunities to conserve and restore millions of acres of upland and wetland habitat for the benefit of migratory birds, anadromous fish, resident fish and wildlife, and threatened and endangered species. These opportunities are underscored by the fact that 87 percent of the wetlands loss in the contiguous states is related to agricultural activities. The Farm Bill also has the potential for making significant contributions to the President's goal of no net loss of wetlands. The challenge to the Service in realizing these opportunities is to effectively support and assist the U.S. Department of Agriculture (USDA) and work cooperatively with State, local, and private conservation entities in putting the conservation provisions of the Farm Bill into practice.

To fully protect wetlands through the various programs authorized by the Farm Bill, the following items should be accomplished:

- Work with USDA to develop an effective formal appeals process on Swampbuster commenced determinations for conservation agencies and other interested groups.
- Coordinate with the Soil Conservation Service (SCS) in the development of Swampbuster wetland identification conventions for various ecological regions, based on biological and hydrological determinants.
- Encourage SCS to administer Swampbuster wetland determination appeals through SCS State Biologists in order to provide technical wetland expertise in making Swampbuster wetland determinations.
- Work with SCS to ensure that areas that still retain wetland characteristics will not be identified as "prior converted cropland" under Section 512.15(a)(3) of the National Food Security Act Manual.
- Encourage the Department of Agriculture to modify the definition of abandonment in the National Food Security Act manual such that if, after five years, no agricultural commodity is produced on an area and the area meets the

definition of "wetland" in the Food Security Act, the area will be classified as wetlands.

- Encourage landowners to enroll wetlands and highly erodible lands into a restoration program such as the Conservation Reserve Program.
- Work with the Department of Agriculture to explore ways to protect Conservation Reserve Program lands beyond the current 10-year contract period.
- Work with the Department of Agriculture to explore ways to consider all existing wetlands, including those currently classified as "prior converted cropland," as eligible for the Conservation Reserve Program.
- Work with FmHA to obtain section 1318 conservation easements on properties as a prerequisite for debt write-downs.
- Aggressively review FmHA inventory lands to identify all wetlands having viable natural wetlands values or that are suitable for restoration. Propose conservation easements or fee title transfer for such and administer these areas as part of the National Wildlife Refuge System.

**AGRICULTURAL WETLANDS
RESERVE SYSTEM**

THE NATIONAL WETLANDS POLICY FORUM REPORT recommended establishing a National Agricultural Wetlands Reserve Program that, in addition to protecting existing wetlands (targeting 5 million acres), would fund restoration of 2.5 million acres of former agricultural wetlands over the next ten years. The proposal would require new legislation and would rely on permanent conservation easements through acquisition, donation, and exchanges. Owners donating wetlands to such a program would be eligible for certain technical and financial assistance (including tax benefits) and the conditions of the easements would place limits on how properties that are placed in the system could be used. Private, tax-free trusts should be encouraged to provide wetlands protection and restoration.

The Service should support efforts to use existing authorities to develop a reserve system for agricultural wetlands. Such a system would directly address agricultural conversions of wetlands, which are the primary cause of wetlands losses. If a reserve system for agricultural wetlands is developed as part of the current Conservation Reserve Program the Service should provide assistance by:

- Planning and implementing wetlands restoration activities.
- Conducting oversight and/or management to ensure that the system benefits fish and wildlife.

APPENDIX 14

DRAFT EXECUTIVE ORDER ON PROTECTION OF WETLANDS

EXECUTIVE ORDER 11990, PROTECTION OF WETLANDS, signed by President Jimmy Carter on May 24, 1977, provided wetlands with much needed protection.

A new Executive Order (E.O.) should be developed to direct all Federal agencies to implement the President's "no net loss of wetlands" agenda.

The Service is working through the Department's Wetlands Working Group to identify, review, and recommend modifications to all draft executive orders presently being considered but focusing on the draft being prepared by Interior's Wetlands Working Group for transmittal to the Domestic Policy Council.

Request that the Domestic Policy Council appoint a subcommittee to finalize a new wetlands E.O. for issuance by the President.

APPENDIX 15

WETLANDS PROTECTION IN SAVINGS AND LOAN CRISIS

WORK TO ESTABLISH A WETLANDS PROTECTION and restoration program on lands under the jurisdiction of the Resolution Trust Corporation.

There are several hundred billion dollars of Savings and Loan Industry assets included in the recent Federal bailout. Some lands affected by the Federal financial bailout efforts will be wetlands, either existing or restorable. The Wetlands Executive Order requires agencies to protect and enhance federally owned wetlands that are proposed for lease or sale to non-federal parties. The alternative is to withhold such properties from disposal.

Where applicable, a wetlands protection and restoration program similar to the Farmers Home Administration effort should be established.

The Resolution Trust Corporation should be contacted to begin discussions to explore MOU's or other agreements to implement such a program.

**WETLANDS PROTECTION
AND MILITARY LANDS**

THE DEPARTMENT OF DEFENSE (DOD) is closing military installations and disposing of lands containing wetlands. Section 4 of Executive Order 11990, Protection of Wetlands, requires that when federally owned wetlands are proposed for lease or sale to non-federal parties, restrictions be placed in the lease or conveyance that will protect and enhance the wetlands on the property. The alternative is to withhold such properties from disposal. The Service should work with DOD to ensure the protection of wetland values for any disposition of lands. Similar action should be taken to target all opportunities to effectively implement Executive Order 11990 including all land disposals by GSA and other Federal agencies.

Working with DOD to protect, restore, and manage wetlands on their lands is another priority area for the Service. A cooperative agreement to implement the North American Waterfowl Management Plan has been developed with the DOD. Additional similar agreements will be sought.

NATIONAL WETLANDS DIGITAL DATABASE

THE FEDERAL INTERAGENCY COORDINATING COMMITTEE on Digital Cartography (FICCDC), Office of Management and Budget, recommended in its 1986 Annual Report to the Director of OMB that wetlands data be considered as a national mapping base category thematic data set with the Service taking the lead role as national coordinator. The FICCDC believes FWS has existing agency authority and has in-place the necessary management structure to carry out the responsibilities for coordination of a national digital data category among all Federal agencies. Currently, the Service's efforts are being coordinated with the Bureau of Land Management.

This Federal role should serve to bring attention to the importance of wetlands data throughout the Federal Government and should assist the Service in accelerating the building of this data base to help achieve the no net loss goal and the conservation programs of various State, Federal and private organizations.

Since the 1986 report was released, the Service's National Wetlands Inventory has:

- developed digital standards for national wetlands data categories;
- established procedures for collecting, storing, maintaining, and distributing digital data;
- developed mechanisms to provide information on data holdings.

Through the exclusive use of reimbursable funds from States, Federal agencies, and other organizations, the National Wetlands Inventory has transferred the mapped wetlands information into a digital database for 4300 maps or almost 8 percent of the coterminous United States.

Once digitized and into the National Wetlands Inventory database, the data can be provided to numerous users at a modest cost for shipping, handling and materials. The National Wetlands Inventory has already provided digital data files to over 50 users with a variety of software and hardware configurations.

The Service recommends provision of funding to digitize wetlands maps not currently in the wetlands inventory digital data base at a rate adequate to complete the digital data base by 1999, one year after the wetlands mapping is completed. To date, nearly all of the funding for digitizing has been provided by States and other agencies. In order to increase the use of digital wetlands data in the Service beyond Research, the National Wetlands Inventory would conduct a two year pilot Regional Digital Wetland Data Center. The purpose of this pilot would be to implement the use of digital wetlands data into daily Service activities at the operational level. A major new thrust of this database will be the wetlands and migratory bird data center to be established to support North American Waterfowl Management Plan implementation and evaluation efforts in the U.S. and Canada.

APPENDIX 18

ASSISTANCE TO STATES TO DEVELOP COMPREHENSIVE WETLANDS PROTECTION PLANS

SUCCESSFUL IMPLEMENTATION OF A NATIONAL WETLANDS protection program also requires comprehensive wetlands planning efforts by State and local governments. At present, State wetlands protection efforts are highly variable with differing wetlands definitions and varying levels of intensity and effectiveness of resource protection. A mechanism under the Federal Aid program could be developed to provide guidance and financial support to the States to bring about comprehensive wetlands planning.

The Service will work with the States to communicate the elements necessary in their planning processes to help meet the no net loss goal.

**PUBLIC INFORMATION
AND EDUCATION ABOUT WETLANDS**

THE SERVICE HAS THE OPPORTUNITY TO ENCOURAGE a new age of wetlands conservation awareness in the U.S. and should establish a course of action to meet that responsibility. To accomplish this, the Service will need to train and assist its personnel to conduct public education and outreach activities in order to take the lead in communicating the importance of wetland resources. Actions to accomplish this goal include:

Public Awareness

- Encourage volunteerism and advocacy for wetlands habitat through public education.
- Conduct workshops on how to deal with media. Encourage media exposure aimed at building public appreciation for wetlands values in maintaining water quality, flood prevention, and ground water recharge, etc.
- Produce multi-discipline, audio-visual exhibits and teaching materials to train educators.
- Produce wetlands habitat conservation programs for television. The programs should be general interest, non-credit continuing education programs targeting educators and programs culminating in graduate level credit for professionals, educators and students.

Information Transfer

- Explore the establishment of a nationwide clearinghouse for wetlands data and activities and a 1-900-WET-LAND public information system.
- Through all Service Field Offices, provide information on wetlands values and management to the public.
- Publish a *Who's Who in Wetlands* guide on a State-by-State basis to assist wetlands owners in regulatory, management, and restoration projects.
- Develop and distribute information on compatible economic uses of wetlands.
- Conduct international workshops and seminars to transfer technologies useful in inventory, classification, monitoring, restoration, and management, and other techniques required for effective wetlands conservation efforts.

Demonstration

The Service should take the lead in actions, not just words. Wetlands restoration projects (Wetlands Learning Center) should be open for public tours. Activities on both public and private lands should be advertised so that the public not only hears about what the Service is doing for wetlands, but has ample opportunity to see the Service working from coast-to-coast to meet the President's challenge of no net loss of America's wetlands. Appropriate Service projects and installations should be used as demonstration areas for wetlands management. These projects should focus on results that clearly depict biological success.

**WETLANDS TRAINING FOR
FIELD AND MANAGEMENT STAFF**

DURING THE PREVIOUS 2 DECADES THERE HAS BEEN a continuous evolution of Federal and State policies, roles, and responsibilities related to wetlands. Wetlands considerations now affect the programs of most Federal and State agencies with land management, development, and/or regulatory responsibilities.

In the Service it is increasingly important for staff and management at all levels to be up to date in knowledge of ecological theory, and well versed in evolving wetlands policy and legislative mandates, as they affect Service programs.

Existing wetlands training is targeted primarily for field staff and includes:

- Wetlands Classification Training. Provides training in wetlands classification under the system of Cowardin, et al. (1979).
- Wetlands Delineation Training. Provides training in use of the Wetlands Delineation Manual jointly developed by the Service, Corps of Engineers, and Soil Conservation Service.
- Development of a wetlands training program including specific courses for field and management staff should be considered. Wetlands training plans could be developed to include topics such as:
 - The evolution of Federal wetlands legislation and policy.
 - The roles of State and local governments in wetlands policy and regulation.
 - Federal and State agency roles in wetlands protection, management, and regulation.
 - Current wetlands ecological theory and principles of biological conservation as related to Service programs.
 - The role of wetlands considerations in development and evolution of Service policies, mandates, and programs.
 - The status and trends of wetlands in the U. S. and worldwide.
 - The status and trends of wetlands-dependent species in the U.S. and worldwide.
 - Wetlands management and restoration concepts and techniques.
 - Methodologies for wetlands management planning and impact assessment.
 - Implementation of the concept of no net loss of wetlands.

WETLANDS INCENTIVE AWARD PROGRAM

THE SERVICE COULD ESTABLISH A Conservation Incentive Award Program for employees and private or public organizations to encourage and recognize outstanding contributions to wetlands conservation. Examples of activities that could be recognized include:

- The most innovative and progressive water management program on a Refuge.
- The section 404 permit package that has the most positive benefits on wetlands.
- The most progressive private land restoration project.
- The most innovative program that promotes economic uses of wetlands that are compatible with conservation objectives.
- The most innovative and progressive State wetlands conservation program.
- The most innovative and effective wetlands conservation education program.
- The most innovative and effective contribution to the North American Waterfowl Management Plan.

**CREATING WETLANDS ON
RECLAIMED COAL MINING AREAS**

THE FEDERAL GOVERNMENT, generally operating through the States, exercises responsibility for the reclamation of active and abandoned coal surface mining areas. The Office of Surface Mining (OSM) established by the Surface Mining Control and Reclamation Act of 1977, is the Federal agency that oversees this activity. Both the Act and OSM's implementing regulations allow reclaimed areas to be restored in such a way that they provide fish and wildlife habitat. Furthermore, opportunities exist for creating wetlands as part of mine reclamation, and for creating conditions favorable for wildlife in these wetlands. However, potential contaminant impacts can be associated with mining waste especially on abandoned mining areas. Therefore an evaluation regarding potential contaminant concerns should be made on a case-by-case basis and the Service should provide assistance in this area. Constructed wetlands have also been used to treat acid mine drainage in both active and abandoned surface coal mined areas.

Since State regulatory agencies essentially run the regulatory programs, the States generally determine what constitutes an acceptable postmining land use, in consultation with the landowner and affected county. On federally owned land, the Federal land management agency determines the post-mining land use. Preliminary OSM research indicates creating wetlands lowers some types of reclamation costs by as much as 66 percent, due to reduced earth-moving and revegetation costs.

The Service can encourage wetlands creation as part of mine reclamation by:

- Helping OSM evaluate, and publicize the results of research on wetlands construction.
- Developing for OSM a pamphlet and audio-visual presentation targeted to the coal mining industry and landowners on the economic, environmental, and public relations advantages of wetlands construction.
- Encouraging State and County governments, through the International Association of Fish and Wildlife Agencies, the National Governors Association, and the National Association of Counties to consider wetlands as an advantageous post-mining land use.
- Together with OSM, supporting and encouraging States in wetlands construction as an appropriate post-mining land use.
- Encouraging policies that identify wetlands construction as a post-mining land use on Federal land.

**NATIONAL WETLANDS
PRIORITY CONSERVATION PLAN**

THE NATIONAL WETLANDS PRIORITY CONSERVATION PLAN (Wetlands Plan), was approved by the Service on February 8, 1989. Mandated by section 3201 of the Emergency Wetlands Resources Act of 1986, the Wetlands Plan will assist decision-makers in identifying the types and locations of wetlands, and interests in wetlands that warrant consideration for Federal and State acquisition through the Land and Water Conservation Fund.

In general, wetlands given priority consideration for acquisition will be those that provide a high degree of public benefit, that are representative of rare or declining wetland types within an ecoregion, and that are subject to identifiable threat of loss or degradation. Criteria to be considered in determining acquisition priorities include functions and values of wetlands (including wildlife, Federally listed endangered and threatened species, and outdoor recreation), historical wetlands loss and threat of future wetlands loss.

The Service will implement the Wetlands Plan in Regional Offices by developing Regional Wetlands Concept Plans (Concept Plans). Although these Concept Plans will include lists of wetlands sites warranting priority for acquisition, ranking will not occur until each site has been processed through the Service's Land Acquisition Priority System.