



**United States Department of Agriculture
Natural Resources Conservation Service**

Interim Final Benefit-Cost Analysis

for the

Wetlands Reserve Program (WRP)

**Food, Conservation, and Energy Act of 2008
Title II – Conservation
Subtitle C – Wetlands Reserve Program**

January 9, 2009

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Interim Final Benefit-Cost Analysis Wetlands Reserve Program (WRP)

Executive Summary

Pursuant to Executive Order 12866, Regulatory Planning and Review, the Natural Resources Conservation Service (NRCS) has conducted an interim final benefit-cost analysis of the Wetlands Reserve Program (WRP) as formulated for the Interim Final Rule. This requirement provides decision makers with the opportunity to develop and implement a program that is beneficial, cost effective, and that minimizes negative impacts to health, human safety, and the environment. Congress passed amendments to the program that requires the Secretary of Agriculture, within 90 days after the enactment of the WRP amendments, to promulgate regulations necessary to carry out the program.

In considering alternatives for implementing WRP, the United States Department of Agriculture (USDA) followed the legislative intent to optimize environmental benefits, address natural resource concerns and problems, establish an open participatory process, and provide flexible assistance to producers who apply appropriate conservation measures that enable the satisfaction of Federal and State environmental requirements. Because WRP is a voluntary program, the program will not impose any obligation or burden upon agricultural producers who choose not to participate. The program has been authorized by the Congress with an acreage target for program participation. Funding for WRP comes from the Commodity Credit Corporation.

WRP provides technical and financial assistance to eligible landowners to address wetland, wildlife habitat, soil, water, and related natural resource concerns on private lands in an environmentally beneficial and cost-effective manner. As will be discussed later, WRP costs include the purchase of easements and wetland restoration expenses which are the main costs to consider in this analysis. WRP is an important tool in restoring and protecting wetlands along with the efforts of other governmental agencies, non-profit organizations, and landowners. Land enrolled in WRP can produce substantial improvements in on-site resource conditions and at the same time substantial off-site environmental benefits for the public-at-large can also accrue. These on-site and off-site benefits could include: creation of high value wetlands, control of sheet and rill erosion as lands are converted from cropland to wetlands, creation and protection of habitat for fish and wildlife, including threatened and endangered species and migrating birds; improving water quality by filtering sediments and chemicals; reducing flooding; recharging groundwater; protecting biological diversity; controlling invasive species with planting of natural vegetation; as well as providing opportunities for educational, scientific, and recreational activities. To some extent, air quality could be improved by reduced wind erosion and by an increase in carbon stored in the soil and reestablished vegetation, leading to reduced atmospheric amounts of carbon. Many of these benefits are difficult to quantify, although several studies have attempted to do so. One such study, published in 2008, found that the “public willingness to pay to enroll an additional acre of typical fresh water marsh in WRP is about \$425 annually.” Capitalizing this benefit flow at a seven percent rate produced a per-acre value of over \$5,800 for permanent easement agreements; a value of over \$5,200 for 30-year easement agreements; and, a value of almost \$3,000 on 10-year restoration agreements. Using a three percent discount rate,

these values become, \$10,935, \$8,330, and \$3,625, for the three types of agreements discussed above, respectively. These values take into consideration private benefits that may be derived, such as income from any fishing, hunting fees, and other recreational activities that may be realized by WRP landowners.

The main program costs include the purchase of easements and wetland restoration expenses with the program. Although agricultural production ceases from lands enrolled in WRP, this output effect is expected to be small given that WRP parcels are usually marginal agricultural lands poorly suited for efficient agricultural production. Agricultural production from lands better suited to agricultural use can easily compensate for reduced production from newly enrolled WRP land. Approximately 89.8 percent of the WRP funding has been used for permanent easement projects; about 7.9 percent for 30-year easement projects and about 2.4 percent for restoration cost-share agreement projects. The associated FY 2007 average per-acre program costs for these projects were estimated at \$3,000 for permanent easements, almost \$1,100 for 30-year easements, and nearly \$670 for restoration cost-share agreements.

A comparison of total economic benefits and costs related to restoring and protecting wetlands on a “typical acre” suggests that WRP can produce substantial economic net benefits.

Method of Analysis and Key Results

The method of analysis for this study relied heavily on program manager’s experience and assumptions. For example, the analysis team relied on program managers to identify important variables to consider when developing plausible scenarios. The analysis team took this information and constructed a small spreadsheet model. The current policy scenario for this analysis is program performance similar to those in FY 2007 persisting throughout FY 2009 – FY 2012. A key variable in this scenario was the FY 2007 easement acquisition valuation methodology: primarily by an appraisal of the fair market value of a parcel before the easement was in place minus the fair market value of the parcel after the easement was in place – an approach adopted by NRCS on recommendations from the USDA Inspector General’s Office. Program managers felt that the post-FY 2007 valuation methodology was the main driver that caused the appraised value of parcels in many states to fall below the state’s geographic cap and in turn causing a shift in program acres across states as compared to past years. These changes shifted WRP acreage from states with relatively low acquisition costs to those with relatively high acquisition costs which increased average national per-acre WRP costs significantly. The switch in methodology did not result in NRCS paying more for the same easement than it would have paid under the old methodology, but rather significantly reduced the amount the agency could offer to landowners for an easement in some states causing landowners to lose interest in the program. The current policy scenario assumes that FY 2007 valuation method will be employed and drives model results that suggest total national WRP acreage would only increase by 294,200 acres over the FY 2009 – FY 2012 period.

The changes in the 2008 Act returns the valuation methodology to the valuation practices used before FY 2007. As a result, program managers expect the distribution of acres enrolled in the program to revert back to its previous pattern. This geographic re-positioning is expected to be associated with lower average easement costs (assumed to be the fair market value of land using

the Uniform Standards of Professional Appraisal Practices or an area-wide market analysis) and for geographic caps to be the primary means used to determine compensation rates. With the lower geographic per acre project costs becoming more relevant (assumed to be 25 percent lower than FY 2007 levels and those assumed in the baseline scenario), WRP acreage is expected to increase by 600,000 acres over the FY 2009 – FY 2012 period, a substantial increase over the continuation of existing valuation method.

Because per-acre benefits exceed costs regardless of policy scenario assumed, all model results suggest that net benefits from WRP are positive.

Conclusions

This WRP interim final benefit-cost analysis assumes that the major driver in program costs over the FY 2009 – FY 2012 period will be the method of easement evaluation. The single discretionary policy item available to NRCS does not alter this result. This item pertains to the creation of the Wetland Reserve Enhancement Program (WREP) that would allow States, non-governmental organizations, or Indian tribes to partner with USDA in the selection and funding of contracts, as long as selected contracts meet the purposes of WRP.

Data on past WRP enrollment suggests that the 2008 Act changes related to easement compensation could lead to lower national average per-acre offer prices paid for easements when compared to pre-fiscal year (FY) 2007. This prediction is dependent upon where acreage is predominantly enrolled. NRCS anticipates that the new compensation methodology will encourage re-establishment of historic enrollment patterns. The assumptions in this analysis suggest the per-acre average costs on WRP could be reduced by about 25 percent. Although costs are expected to be reduced, there are no environmental studies to suggest that environmental benefits from such a change will be altered. Additional technical information from such sources as the Conservation Effects Assessment Project, plus empirical data on the nature of the types of environmental benefits being generated on WRP land across the United States would be necessary.

Although benefits of wetlands have been estimated on specific sites in a generalized fashion, researchers of many of these past studies caution in transferring benefits to other areas or to be interpreted as “average” values of a typical wetland type. That caveat notwithstanding, the conclusions of this analysis suggests that the monetary and non-monetary benefits from WRP in restoring and placing easements on wetlands can exceed total program costs.

Background

Legislative Authority

Title XIV of the Food Agriculture, Conservation, and Trade Act of 1990 (the 1990 Farm Bill), amended the Food Security Act of 1985 (P.L. 99-198) to provide for the establishment of the Wetlands Reserve Program (WRP). The Secretary of Agriculture delegated responsibility for the WRP to the Agricultural Stabilization and Conservation Service (ASCS). The 1994 Department of Agriculture Reorganization Act transferred administrative authority to NRCS for the program in 1995. The Federal Agriculture Improvement and Reform Act of 1996 (the 1996 Farm Bill), Public Law (P.L.) 104-387, reauthorized WRP and modified several aspects of WRP implementation, including creating a non-easement option, placing equal priority on the three enrollment methods, and requiring that eligible lands maximize wildlife benefits. WRP was again reauthorized in the Farm Security and Rural Investment Act of 2002 (P.L. 107-171), which expanded the ability of the Secretary to grant a waiver for certain ownership changes and enabled the Secretary of Agriculture to enroll up to 250,000 additional acres annually into the program.

Rational for Rule

The rationale for NRCS activities in restoring, enhancing, and protecting wetlands acreage on eligible land through the use of easements and restoration agreements is based on the agency's strategic goal for healthy plant and animal communities.

The current market fails to fully recognize the indirect value of benefits arising from the existence of wetlands. Real estate markets are based on many individual decisions which may not fully incorporate indirect and nonmarket benefits, and can therefore result in excess destruction of wetlands. Excess conversion of wetlands can result in less utilization of rural amenities and a diminution of ecological goods and services (EGS) generated from wetlands. The EGS provided by wetlands include the beneficial relationship of that land to: climate regulation, flood control, disease prevention, water purification, carbon sequestration, biodiversity and wildlife habitat, including certain endangered species, and a host of others¹. Because these outcomes are indirect and because many of the EGS can be classified as positive externalities, common property resources, or public goods², they will be under-valued in private decision makers' actions. Without intervention, or assistance to create values for EGS to correct this undervaluation, wetland conversion rates to agricultural and non-agricultural uses will exceed the socially desirable amount.

¹For a background on ecosystem services and their assessment, please see "Millennium Ecosystem Assessment, 2005, Ecosystems and Human Well-Being: Synthesis", Island Press, Washington, DC. World Resources Institute.

²Public goods differ from private goods in many respects. With public goods, the market can not exclude non-paying consumers from enjoying their provision (non-excludability) and one person's use of them does not deprive other consumers from using them (non-rivalry). Traditional examples include: public television, national defense, public health programs, public firework displays on the Fourth of July in the United States and to some extent, lighthouses.

WRP Program Description and Features³

Program Objective

The objective of WRP is to achieve the greatest wetland functions and values, along with optimum wildlife habitat, on every acre enrolled in the program.

The goals of WRP are to provide habitat for wildlife; decrease flood damages; improve water quality; enhance cultural opportunities for American Indians; create opportunities for producers to generate alternative incomes; help recover threatened and endangered species; and allow farmers and others to maintain ownership of lands suited for wetland restoration.

Program Overview

WRP is a Commodity Credit Corporation (CCC) program administered by the Natural Resources Conservation Service (NRCS) in consultation with the Farm Service Agency (FSA) and other federal agencies. WRP is a voluntary program offered nationally. It is available in all 50 states, the District of Columbia, the Commonwealth of Puerto Rico, Guam, the Virgin Islands of the United States, American Samoa, the Commonwealth of the Northern Mariana Islands, and the Trust Territories of the Pacific Islands. It provides technical assistance (TA) and financial assistance (FA) to eligible landowners to restore, enhance, and protect wetlands. The program is offered on a continuous sign-up basis.

The existing program offers three enrollment options⁴:

- 1) **Permanent Easement:** Prior to the enactment of the 2008 Act, easement payments for this enrollment option were determined based on the lowest of three amounts: the difference in the appraised fair market value of the larger parcel before the easement was in place and the appraised fair market value of the larger parcel after the easement is in place, an established payment cap, or an amount offered by the landowner. In addition to paying for the easement, the U.S. Department of Agriculture (USDA) pays up to 100 percent of the cost of restoring the wetland.
- 2) **30-Year Easement:** Easement payments through this enrollment option are 75 percent of what would be paid for a permanent easement. USDA also pays up to 75 percent of restoration costs. For both permanent and 30-year easements, USDA pays all costs associated with recording the easement in the local land records office, including recording fees, charges for abstracts, survey and appraisal fees, and title insurance.
- 3) **Restoration Cost-share Agreement:** This is an agreement (generally for a minimum of ten years) to re-establish degraded or lost wetland functions and values. USDA pays up to 75 percent of the cost of the restoration activity. This enrollment option does not place an easement on the property.

³Based on Program rules prior to passage of 2008 Act. The changes in the program authorized by the 2008 Act are described in the “Highlights of the Statute” section.

⁴Changes in determination of fair market value authorized by the 2008 Act are described below in the “Highlights of the Statute” section.

WRP offers landowners an opportunity to establish, at minimal cost, long-term conservation and wildlife habitat enhancement practices and protection. WRP has an acreage enrollment limitation rather than a funding limit. Congress determines on a year-to-year basis how many acres can be enrolled in the program and funding is somewhat flexible. The NRCS estimates program funding needs based on the national average cost per acre. Main program features include:

Eligible Landowners:

For conservation easements, landowners must have owned the land offered for easement for at least 12 months⁵ prior to enrolling in WRP, unless (1) the land was inherited, (2) the landowner exercised the landowner's right of redemption after foreclosure, or (3) the NRCS State Conservationist determines the landowner did not obtain the land for the purpose of enrolling in WRP. With respect to restoration cost-share agreements, landowners merely need to show evidence of ownership.

In addition, the Adjusted Gross Income (AGI) provision of the 2002 Farm Bill affects eligibility for WRP and several other 2002 Farm Bill programs. Individuals or entities that have an average AGI exceeding \$2.5 million for the three tax years immediately preceding the year the contract is approved are not eligible to receive program benefits or payments. However, an exemption is provided in cases where 75 percent of the adjusted gross income is derived from farming, ranching, or forestry operations.

Eligible Land:

Private and Tribal land is eligible provided that such land is restorable and it maximizes wildlife benefits and wetland functions and values. Eligible land would include the following land uses: wetlands farmed under natural conditions; farmed wetlands; prior converted cropland; farmed wetland pasture; agricultural land that has become a wetland as a result of flooding; range land, pasture, or production forest land where the hydrology has been significantly degraded and can be restored; riparian areas which link protected wetlands; lands adjacent to protected wetlands that contribute significantly to wetland functions and values; and previously restored wetlands that need long-term protection.

Ineligible Land:

Lands that are not be eligible for WRP include: wetlands converted after December 23, 1985; lands with timber stands established or pasture land established to trees under a Conservation Reserve Program (CRP) contract; public lands; and, lands where conditions make restoration impossible.

Filing Applications:

Private landowners and Tribes may file an application for participation with NRCS to restore and protect wetlands through WRP at any time. Participants voluntarily comply with all the terms of the easement, contract or agreement including allowing the restoration of the wetland acreage and any associated adjacent lands, ceasing agricultural activities on the enrolled land and for easement projects, agree to the permanent retirement of any existing cropland base and allotment

⁵Changed to seven years under the 2008 Act.

history. The land remains in private or Tribal ownership. Easements are held by the United States of America, by and through the CCC.

Application Selection:

After applications are filed, NRCS makes a land and landowner eligibility determinations. A site visit is made to collect data associated with the ranking process, prepare a preliminary restoration plan, complete National Environmental Policy Act (NEPA) requirements, and evaluate the site and surrounding area for the presence of hazardous substances. State Conservationists, with input from State Technical Committees, develop ranking criteria based on broad national guidelines. Offers are ranked based on cost and ecological considerations. Separate ranking lists are kept for each enrollment type.

Funding:

Funding decisions are made at the State level and are generally based on the applications' total point score. State Conservationists have the authority to enroll projects outside of the ranking process if the area has been designated by the State Conservationist as a "special project" area. Special project priority may be provided to a particular geographic area or to a specific project even though the individual offer might not otherwise rank high enough to be accepted.

Easement Payments:

NRCS State Conservationists, with advice from the State Technical Committees, will establish a process to determine easement values. Prior to the 2008 Act the easement value could not exceed the difference in the appraised fair market value of the larger parcel before the easement is in place and the appraised fair market value of the larger parcel after the easement is in place.

Easement Acquisition:

After an easement application is selected for funding, NRCS arranges for an appraisal to provide the applicant with a contracted payment amount using an option agreement to purchase. The option agreement is the obligating document. After the landowner accepts the amount offered on the agreement and NRCS provides approval for CCC, NRCS obligates the funds for the project in the financial system. The option agreement generally has an effective period of 12 months from the date of execution. The effective period may be extended when necessary. The landowner's signature on the option agreement authorizes NRCS to proceed with the easement acquisition process. The acreage amount placed on the option agreement is an estimate of the easement acreage. This acreage value may have to be adjusted after a survey is complete.

Determination of WRP Acreage Allocations:

Congress directs NRCS to enroll a specific annual acreage amount nationally. The NRCS national office utilizes a resource-based formula when determining State allocations. This formula includes the prior year's WRP performance along with factors related to ecological considerations, including: the number of wetlands lost in a state; whether the state affects migratory birds; the number of potential acres of restorable wetlands in the state; water quality conditions in the state; and, the number of threatened and endangered species in the state.

WRP Program History Highlights

The WRP funds have been acquiring easements on agricultural lands since 1992 (table 1). NRCS maintains these easement contracts on nearly two million acres of land which have incurred over \$2 billion since 1992. The majority of this land is found in the Midwest, Southeast, and Western United States (Figure 1).

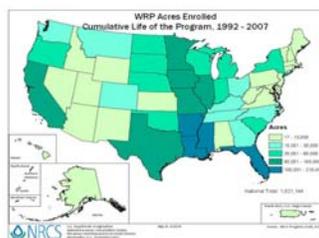
Table 1. WRP cost summary FY 1992–FY 2007.

	<u>Contracts</u>		<u>ACRES</u>		<u>OBLIGATIONS*</u>		<u>DOLLARS PER</u>	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Dollars</u>	<u>Percent</u>	<u>Contract</u>	<u>Acre</u>
Permanent Easements	7,570	74.5	1,491,228	77.6	\$1,942,307,626	89.8	\$256,580	\$1,302
30-year Easements	1,392	13.7	255,774	13.3	\$170,677,887	7.9	\$122,613	\$667
Restoration Cost-share	1,202	11.8	174,134	9.1	\$51,107,659	2.4	\$42,519	\$293
Totals	10,164		1,921,136		\$2,164,093,172			

*Total cost estimated based on total appropriations and FY 2001 to FY 2006 actual values as actual for prior years and unavailable for FY 2007.

Source: NRCS, National Wetlands Reserve Program Manager, Tony Puga, September 11 2008.

Figure 1. WRP Acres Program, FY 1992 – FY
Source: USDA NRCS, 2008.



Enrolled–Cumulative Life of the 2007.
Available:

http://www.nrcs.usda.gov/programs/wrp/2007_ContractInfo/WRPAcresCumul07.jpg

Regulatory Changes

The 2008 Act, § 1237- includes both mandatory or statutory required changes and policy or discretionary changes. These changes are discussed below.

Mandatory Items

The 2008 Act included eight statutory changes to WRP. These changes can be grouped into the following four categories:

Category 1 – Compensation: In previous years, NRCS considered three values when accepting WRP applications (listed below).

- 1) The difference in the fair market value of the parcel before the easement is in place and the appraised fair market value of the parcel after the easement is in place;
- 2) The geographic area rate cap as determined by the Secretary of Agriculture; or
- 3) The landowner's offer.

The 2008 Act states that under the first option the Secretary must take into consideration the fair market value of the land according to the Uniform Standards of Professional Appraisal Practices or an area-wide market analysis. Based on this NRCS has changed the first option by

eliminating the requirement that the appraised fair market value of the parcel be adjusted by the residual value of parcel after the easement is in place.

Category 2 – Enrollment Limitations: The 2008 Act raised the total program enrollment cap to 3.041 million acres. This represents an additional acreage enrollment authorization of 766,200 acres above the existing 2.275 million acres. No more than 10 percent of a county’s cropland acreage may be subject to a WRP easement. Previously, WRP easement acreage and Crop Reserve Program (CRP) acreage was grouped together and could not exceed 25 percent. Additionally, eligibility expands for Indian tribes in that NRCS can now extend 30-year contracts to them⁶. Finally, the 2008 Act removed the annual acreage enrollment goal of enrolling 250,000 acres each calendar year.

Category 3 – Land Eligibility Changes: The 2008 Act increased the required length that a parcel of land be held without changing ownership before land is eligible for an easement from 12 months to seven years. Additionally, eligible lands are limited to private and Tribal lands. The 2008 Act expands eligible land in WRP to include cropland or grassland that was used for agricultural production prior to flooding from natural overflow of closed basin lakes or potholes.

Category 4 – Payment Limitations and Schedules: The 2008 Act identifies the payment schedule for easements valued at more than \$500,000 shall be made in five to thirty annual payments unless the Secretary grants a waiver allowing a lump-sum payment. Easements, valued at \$500,000 or less, are allowed to be paid in one to 30 annual installments. For the restoration cost-share agreements, the annual payments can not exceed \$50,000 per year to an individual or legal entity, directly or indirectly.

Discretionary Items

The main WRP discretionary requirement in the 2008 Act is:

Addition of WREP: The 2008 Act creates the Wetland Reserve Enhancement Program (WREP) to allow States (including political subdivision or agency of State), non-governmental organizations, or Indian tribes to partner with USDA in selection and funding of contracts, as long as selected contracts meet purposes of WRP. WREP includes the authority for a pilot program that allows landowners to retain grazing rights when consistent with long-term wetland enhancement and protection goals.

Description of Baseline Resource Conditions

Wetlands generally include swamps, marshes, bogs and similar areas (National Archives and Records Administration, 2006). They act to modulate hydrologic extremes, provide wildlife habitat, filter pollutants, retain sediment, store carbon and cycle nutrients.

⁶Note that there exists another enrollment option in the case of land owned by Indian Tribes: a variant of the 30-year contract. In these cases, the Tribe has the option of enrolling land in a 30-year contract, a restoration cost-share agreement or a combination of both. The 30-year contract shall have a value equivalent to the value of a 30-year easement.

Wetlands vary widely in hydrologic regime, plant and animal assemblages, and the extent and number of services they provide -- from bottomland hardwoods that play a major role in floodplain management to estuarine wetlands that serve as valuable nursery habitat for important commercial fisheries. Their functions and condition are influenced profoundly by their location in the landscape, their proximity to other wetlands and surrounding stresses. Moreover, more than 43 percent of all species that are Federally-designated as endangered or threatened in the United States are wetland dependent for food, shelter, or breeding at some point in their life cycle.

Historically, wetlands were viewed by many as land with little value or as a wasteland. As a result, wetlands were drained and filled for farmland, housing and other types of development. As a result, much of the wetlands in the United States have been altered or destroyed.

Since the 1870s, 22 states have lost at least 50 percent of their original wetlands (Figure 2). Seven states - Indiana, Illinois, Missouri, Kentucky, Iowa, California and Ohio - have lost over 80 percent of their wetlands. Since the 1970s, Louisiana, Mississippi, Arkansas, Florida, South Carolina and North Carolina have lead the nation in the states with the most wetland losses.

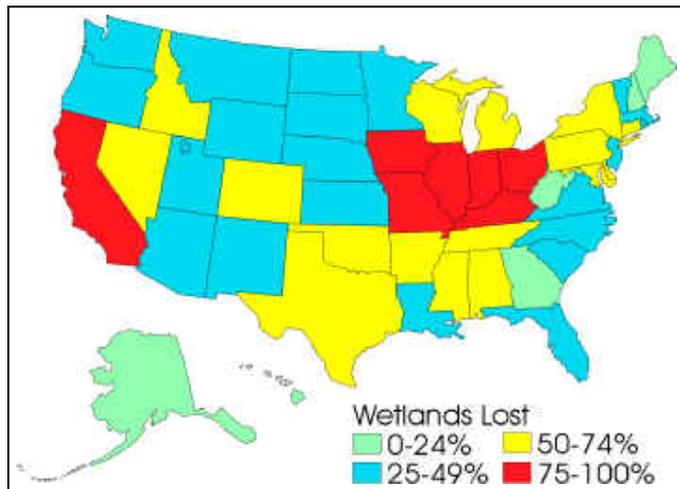


Figure 2. Percent Wetland Acreage Lost, 1870s-1980s.

The amount of wetland acres drained for agricultural purposes has been reduced in recent years, making non-agricultural development account a larger and larger percentage of newly drained wetlands (Mitsch and Gosselink, 1993).

Resource Base with Respect to United States Wetlands

The Fish and Wildlife Service (Dahl, 2005) reported there were an estimated 107.7 million acres, approximately 5.5 percent of the surface area, of wetlands in the conterminous United States in 2004. The vast majority, 95 percent, of the nation's wetlands are freshwater wetlands; the remaining 5 percent being estuarine or marine systems. These wetlands are distributed over the United States with a heavy concentration in the eastern half of the United States (Figure 3).

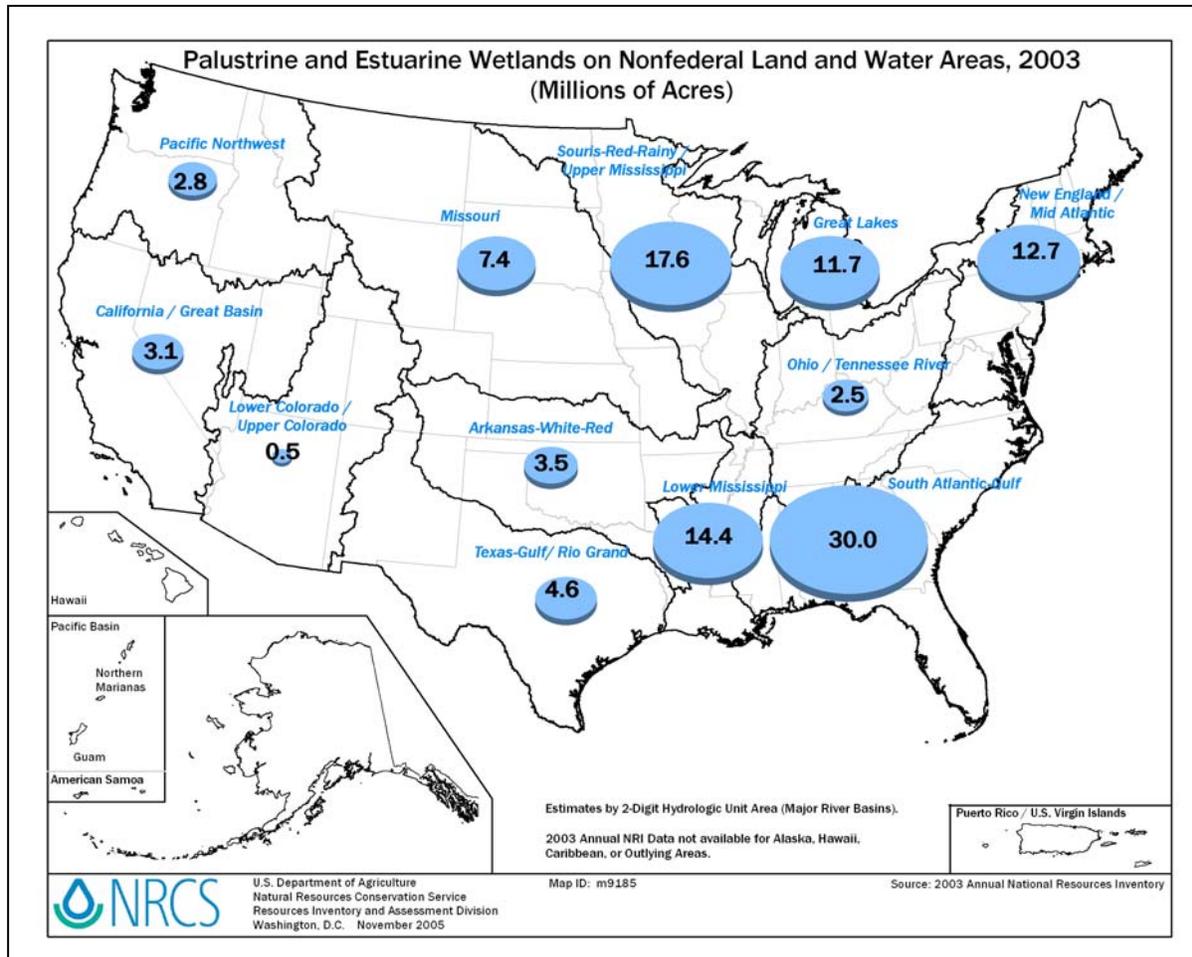


Figure 3. Palustrine and Estuarine Wetlands on Nonfederal Land and Water Areas, 2003.

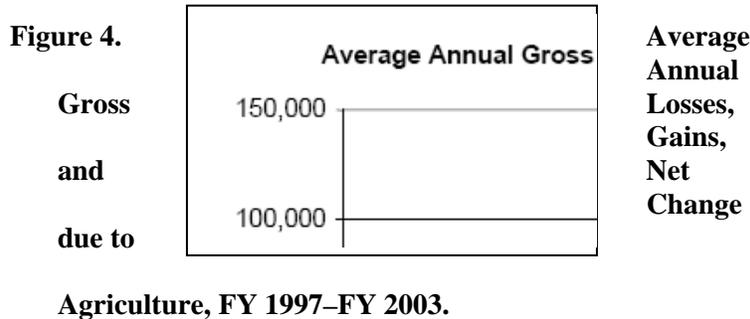
Almost four million acres or 73 percent of the marine and estuarine systems are estuarine emergent (salt marsh) dominated systems. The remaining percentage of marine or estuarine systems is comprised of estuarine shrub and non-vegetated saltwater wetlands.

Forested wetlands made up 51 percent of United States freshwater wetlands (Dahl, 2005). The remaining freshwater wetlands were comprised of freshwater emergent (25.5 percent), shrub wetlands (17 percent), and freshwater ponds (6.5 percent). About 15 percent of wetlands are found on cropland, pastureland and CRP land (USDA, NRCS, 2006).

Resource Condition Trends

Based upon data collected for the 1998 to 2004 Status and Trends Report (Dahl, 2005) it was concluded that for the first time net wetland gains, acquired through the contributions of restoration activities, surpassed net wetland losses. The report estimates net wetland acres gained nationwide, during the aforementioned period, at 191.75 thousand acres, an average annual net gain of 32 thousand acres. While the report indicates a net gain in acreage it makes no attempt to draw conclusions regarding trends in quality of the nation's wetlands.

Agriculture has been an important component of this trend, achieving net gains within the sector and helping to offset losses from other sources. Agriculture, once the major cause of wetlands conversion, achieved a net gain of nearly 100,000 acres, FY 1997–FY 2003 (USFWS, 2006)



Although net gains in wetland acreage have recently been registered reflecting years of accomplishments in wetland conservation by landowners, conservation groups, States, and federal agencies, the need for additional wetlands has been recognized around the United States. For example, a recent report from the U.S. Environmental Protection Agency (EPA) highlighted five integrated approaches to reduce large amounts of nitrogen (N) and phosphorous (P) runoff into the Gulf of Mexico. These five approaches are: (1) promotion, via research and economic incentives, of environmentally sustainable approaches to bio-fuel production and associated cropping systems; (2) improved management of nutrients by emphasizing infield nutrient management efficiency and effectiveness to reduce losses; (3) construction and restoration of wetlands, as well as criteria for targeting those wetlands that may have a higher priority for reducing nutrient losses; (4) introduction of tighter nitrogen and phosphorous (N and P) limits on municipal and private industrial point sources; and (5) improved targeting of conservation buffers, including riparian buffers, filter strips and grassed waterways, to control surface-borne nutrients. The report noted that, “More wetlands are needed, especially in those areas that promise the greatest N and P reductions. Since the greatest N and P runoff is coming from upper Mississippi and Ohio-Tennessee River sub-basins, where the highest proportion of tile drainage occurs, measures to improve drainage water management are urgently needed. In fact, improved targeting of almost all agricultural conservation practices in the region [e.g., conservation buffers, wetlands, land set aside in the Conservation Reserve Program (CRP), drainage water management, etc.] could achieve greater local water quality benefits and simultaneously contribute to hypoxia reduction.” (US EPA, 2007).

Analytical Model

Model Assumptions

WRP has been operating since 1992 with steady participation and interest in the program. The model assumes continued participation levels that will satisfy the acreage targets identified in any policy alternative and that needed program funding will be available. The model also assumes that the WRP has no impact on agricultural commodity markets or land values.

Development of Expected Program Costs

NRCS has used several methods over the years for determining the value for WRP easements. Market value, agricultural value and market value adjusted for residual value of land after the wetland is in place have all been used.

For FY 2005 and years prior, easement acquisition costs were determined primarily by the lower of the agricultural value or the State's established geographic cap. The geographic cap represented the maximum amount NRCS was willing to pay for an easement. It usually was determined by conducting a market analysis to determine the value of agricultural land in the state or region and then reducing that estimate by 20 to 30 percent. The 20 to 30 percent reduction represented the Agency's estimate of the residual value of the parcel to the owner after the easement was in place.

In FY 2006 and FY 2007 easement acquisition costs were determined primarily by an appraisal of the fair market value of a parcel before the easement was in place minus the fair market value of the parcel after the easement was in place. This was caused by a change in FY 2006 in the Agency's easement valuation methodology based on recommendations from the USDA Inspector General's Office. The new valuation methodology caused the appraised value of parcels in many states to fall below the state's geographic cap.

The change in easement valuation methodology caused a significant shift in the distribution of acres enrolled in the program among the states. In addition, the distribution of acres shifted from states with relatively low acquisition costs to those with relatively high acquisition costs. As a result of this shift in the geographic location of easements average per acre acquisition costs nationally, increased significantly. The switch in methodology did not result in NRCS paying more for the same easement than it would have paid under the old methodology, but rather significantly reduced the amount the agency could offer to landowners for an easement in some states causing them to lose interest in the Program.

The changes in the 2008 Act returns the valuation methodology to the valuation practices used before 2006. As a result Program managers expect the distribution of acres enrolled in the program to revert back to its previous pattern.

Baseline Scenario

Costs associated with WRP easement and restoration agreements for the baseline scenario are assumed to be similar to FY 2007 costs. This assumption reflects the cost structure as would be expected given a continuation of the 2002 Farm Bill and the easement valuation methodology put in place in FY 2006. These costs are listed in the following general grouping and include a discussion of expected producer costs, as well as the costs to the government.

Permanent Easement Costs: NRCS provides 100 percent of the restoration costs for permanent easements therefore, an assumption was made that landowners incur no costs for implementation of restoration practices. Landowners may have costs for local and state permits, attorney's fees, or other transactions costs for the filing of the easement. Because the need for these costs varies according to local and state laws; these are not included in the landowner's costs.

30-year Easement Costs: NRCS provide landowners with 75 percent of what the value of a permanent easement on the parcel would be and 75 percent of the cost of restoration practices on the parcel. Landowner's incur 25 percent of the restoration costs.

Restoration Cost-share Agreement Costs: NRCS incurs no acquisition costs with this program. Restoration cost sharing assumes the level of practice installation needed to ensure the expected wetland benefits. For this analysis, NRCS' and landowners' costs are based on a 75 percent cost-share agreement.

For all three enrollment programs restoration includes the conservation practices normally used to restore wetlands (wetland restoration; wetland enhancement; and wetland creation) along with the management and supporting/facilitating practices necessary for the wetland to function as designed, including associated upland acreage. Cost sharing for these practices varies from 75 percent to 100 percent depending on the type of easement. The Program typically provides 100 percent cost share for restoration on permanent easements and 75 percent cost share for restoration practices implemented on 30-year easements and restoration cost-share agreements.

Table 2. Baseline scenario: per-acre WRP costs^{1/}.

Item	Permanent Easement	30-year Easement	Restoration Cost-share
	----- dollars per acre -----		
Easement cost	\$1,824	\$307	\$ 0
Administration costs ^{2/}	\$ 176	\$ 71	\$ 0
Restoration costs (Government)	\$ 471	\$ 81	\$ 38
Technical Assistance (TA)	\$ 618	\$618	\$618
Total Government Cost	\$3,089	\$1,077	\$656
Landowners restoration cost	\$ 0	\$ 27	\$ 13
Total Economic Cost	\$3,089	\$1,104	\$669

^{1/}Based on estimated FY 2007 obligations.

^{2/}Appraisal and closing costs.

Non-Baseline Scenarios

The 2008 Act's change pertaining to the methodology for determining value of easements is expected to lower average easement costs compared to the baseline. Because the changes in the valuation methodology mandated by the Act are similar to the methodology used by NRCS prior to FY 2006 the analysis uses the Program's easement acquisition costs in FY 2005 adjusted to 2007 dollars to approximate the fair market value of land using the Uniform Standards of Professional Appraisal Practices or an area-wide market analysis.

The geographic caps used are calculated by reducing the fair market value by 25 percent. Accordingly, they are expected to be lower and similar to the relationship between fair market values and geographic caps during the pre-2006 period. WRP managers believe that geographic caps will be the primary means used to determine compensation rates under the valuation

methodologies mandated by the 2008 Act. As a result this analysis uses the geographic caps as calculated above to determine easement acquisition costs.

Table 3. Alternative scenarios: per-acre WRP costs^{1/}.

Item	Permanent Easement	30-year Easement	Restoration Cost-share
	----- dollars per acre -----		
Easement cost	\$1,147	\$ 697	\$ 0
Administration costs ^{2/}	\$ 129	\$ 108	\$ 0
Restoration costs (Government)	\$ 582	\$ 376	\$522
Technical Assistance (TA)	<u>\$ 459</u>	<u>\$ 459</u>	<u>\$459</u>
Total Government Cost	\$2,317	\$1,640	\$981
Landowners restoration cost	<u>\$ 0</u>	<u>\$ 125</u>	<u>\$174</u>
Total Economic Cost	\$2,317	\$1,765	\$1,155

^{1/}Based on FY 2005 obligations brought to 2007 dollars using a GDP deflator of 1.05998 and reduced 25% to reflect the geographical cap.

^{2/}Appraisal and closing costs.

Other Program Costs for the Government and Society

The assumed per-acre costs associated with the administration, easement purchase, and restoration efforts are discussed above and presented in tables 2 and 3. Total costs would depend on these assumed costs and their associated enrolled acreage.

It should be noted that program costs may be reduced through the use of a reverse-auction to value wetlands and enroll acreage. In such a program, eligible applicants could submit per-acre bids along with information on their land's potential ability to supply environmental benefits if it was returned to wetlands. The bids could then be evaluated based on their corresponding "environmental score". These scores would then be compared across all applicants to help select the most desirable acreage for the program. An advantage of a reverse auction is that the bidding process selects land parcels with the highest environmental value per dollar of government cost. This advantage would need to off-set the potentially higher cost in administering such an auction, its potential effect to increase bids on some parcels of land (such as those that receive an initial high environmental score in a two-bid auction program), and its perception of favoring applicants with the greatest potential to bid lower than others based on their income and initial wealth. Theory and limited evidence of a 2006 and 2007 pilot NRCS program suggest that this approach could lower over-all program costs while self-selecting parcels producing high levels of environmental benefits. This option is not included in the policy scenario section although the authority to conduct such auctions already exists in 1237A (f)(5): "Enrollment Procedure.-Lands may be enrolled under this subchapter through the submission of bids under a procedure established by the Secretary." NRCS retains the right to implement WRP, in part or in whole, through reverse auctions or other bidding types of processes in the future.

The national average costs for easements and restoration costs vary from year to year based on changes in market conditions and changes in the geographic location of easements acquired. The effect of geographical shifts in the location of easements on the national average can vary

dramatically. As a result, it would not be appropriate to assume that the differences in national average costs reported in tables 2 and 3 reflect only the effect of the different appraisal methods. The appraisal method used indirectly affects the national average cost to the extent that it contributes to a shift in the geographic location of the easements.

In addition average costs for 30-year easements and restoration cost-share agreements vary widely from year to year because they represent a small portion of acreage enrolled in program in any one year. Their use also varies widely from year to year in each state. As a result the national average in any year is highly sensitive to the states that these easements happen to occur.

National average technical assistance costs vary from year to year mainly due to changes in the number of easements enrolled, rather than from changes in geographic location of easements. Technical assistance costs for an easement are basically the same regardless of the size of the parcel enrolled. This means that the larger the parcel or the lower the per acre cost for technical assistance. Thus, the cost of technical assistance in table 3 is lower than the cost of technical assistance in table 2 because more acres are expected to be enrolled in Program when table 3 costs are used than when table 2 costs are used.

Expected Environmental and Economic Benefits

Wetlands benefit the nation by providing habitat for fish and wildlife, including threatened and endangered species; improving water quality by filtering sediments and chemicals; reducing flooding; recharging groundwater; protecting biological diversity; as well as providing opportunities for educational, scientific, and recreational activities.

The value of non-market or public services provided by wetlands may be significant. If this is the case, then the value of these non-market services to society could be greater than their value in their apparent next-best private use alternative. In rural areas the next-best use is typically agriculture. In areas on the urban fringe it is most likely to be development.

Table 4. Wetland bioeconomic linkages^{1/}.

Wetland	<u>Private Values</u>		<u>Mixed Values</u>	<u>Public Values</u>		
	Forestry	Fisheries	Recreation	Flood control	Water quality	Endangered species
Function	Tree growth medium	Fish habitat	Wildlife habitat	Flood retention	Water filtration	Wildlife habitat
Service	Commercial timber harvest	Commercial fish harvest	Recreational waterfowl harvest	Reduced flood flows/peaks	Cleaner water	Biodiversity
Economic value	Net economic value of timber	Net economic value of commercial catch	Net economic value of hunting experience	Net economic value of reduced damages	Net economic value of reduced damages	Net option and existence values

Source: Adapted from Bergstrom and Brazeel (1991)

^{1/}Heimlich et al., 1998

Unfortunately, many of these values are very difficult to measure since they are site specific. In this case, some researchers have used “meta-analysis” as a basis for transferring the value of benefits from one site to another, and to develop estimates for national programs. Tree recent meta-analyses have studied wetland valuation worldwide: Brouwer et al., 1999; Woodward and Wui, 2000; Brander et al., (2006). A more recent study by Borisova-Kidder (2006) conducted a meta-analysis using only studies of wetlands in the United States. This study was updated and refined by Randall et al. (2008).

Randall et al. (2008) found in their study that the “public willingness to pay to enroll an additional acre of typical fresh water marsh in the Wetland Reserve Program is about \$425 annually...” They based their estimate on a meta-analysis of 72 valuations of wetlands drawn from 32 studies of wetland values in the United States. This estimate has a high degree of uncertainty around it. Wetland values within the 90 percent confidence interval constructed around the \$425 estimate ranged from \$255 to \$707 per acre. This estimate represents a national average that would vary considerable depending on location and other site-specific attributes. Although we use the \$425 per acre estimate for calculation of benefits for all easements and restoration cost-share agreements, we are not intending to imply a high degree of certainty. The Woodward and Wui (2000) study and Brander (2006) used valuation of wetlands from around the world. Woodward and Wui estimated the mean value of per acre of wetland to be about \$200. The Brander study estimated the pre acre value of wetlands to be \$1,938. The Borisova-Kidder, which was based only on US wetlands, estimated the mean value for an average wetland to be \$262.

The present value of this stream of benefits was calculated for each type of easement based on the contract life of the practice. For permanent easements this produced a \$5,865 per acre value; for 30-year easements this produced a \$5,274 per acre value; and for restoration cost-share agreements (10-year) a \$2,985 per acre value. These values were generated using a seven percent discount rate. These values become \$10,935, \$8,330, and \$3,625, for permanent

easement, 30-year easement, and restoration cost-share agreement using a three percent discount rate. The benefit value using the seven percent discount rate is applied to the enrolled acreage in this analysis.

Current Policy Scenario – Continuation of the 2002 Farm Bill WRP Provisions⁷
(total acres enrolled equals 2.275 million)

The baseline scenario (no-action scenario) involves not proceeding with the implementation of program changes to WRP as required by Congress in the 2008 Act, but obligating new contracts at the same annual rate as the FY 2007 annual funding/acreage rate over the four-year period, FY 2009–FY 2012. Thus, this scenario assumes the WRP continues to operate under the rules of the 2002 Farm Bill. The expected annual acreage increases and cumulative totals over FY 2009–FY 2012 assumes that the participation and acreage by permanent, 30-year easement, and restoration cost-share agreements are understood to be distributed as they were during FY 2001 through FY 2007 (table 5). NRCS program personnel expect that annual acreage enrollment would increase by 100,000 acres per year or approximately what was enrolled in FY 2007. NRCS program personnel expectations are based on the FY 2007 experience with the use of the revised appraisal method which better reflected the fair market value of the land before the easement was in place minus the fair market of land after the easements. We believe that this method increased the average cost of easements, lowering the level of total acreage enrolled in the program. Fiscal year 2007 was used because it was the only year that this appraisal method was fully in effect. In addition, the enrollment cap of 2.275 million acres, as stated in the 2002 Farm Bill, is assumed to exist and restricts this annual increase throughout the entire period.

Table 5. Expected annual and cumulative acreage changes (baseline scenario)

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2009–FY 2012
	----- Acres -----				
Permanent Easements	77,600	77,600	73,200	0	228,400
30-year Easements	13,300	13,300	12,500	0	39,100
Restoration Cost-share	9,100	9,100	8,500	0	26,700
Annual Totals	100,000	100,000	94,200	0	294,200
Cumulative	2,081,000	2,181,000	2,275,000	2,275,000	N/A

Baseline Scenario – Costs: Total obligations over FY 2009–FY 2012 are estimated at \$765.2 million with 294,200 acres enrolled (table 6). All costs (and benefits) are expressed in constant 2007 dollars. Costs are adjusted to account for the contract life. Enrollment and restoration expenditures are assumed to be incurred in the same year⁸. The values for easements (or program costs) are based on the national average obligated for the WRP for FY 2007 using the same logic as discussed above for the baseline calculations.

⁷Note that all policy scenarios are analyzed relative to the “Continuation of the 2002 Farm Bill WRP Provisions” baseline, in order to compare the total costs and benefits of the acres enrolled under the existing and new policy regimes.

⁸This assumption is made in order to simplify the analysis. It usually takes two to three years for restoration to be completed once the easement has been closed. So in reality, costs would be extended into future years, even though no acres were being enrolled in the program. The easiest way to handle these costs is to assume they all occur the same year as the easement is closed.

Participant costs include direct costs over the FY 2009–FY 2012 baseline period which are projected to total \$1.4 million (table 6). For both the 30-year easement and restoration contracts, it is assumed that 25 percent of the restoration costs, including materials, equipment services, and labor to install the practices, are borne by the participant. The average participant costs are estimated to at \$27 for 30-year easements and \$13 for restoration cost-share agreements (table 6). This represents a direct cost to the participant even when the costs are provided by a partner organization at no cost to the participant. Participants will also incur additional administration costs and maintenance costs over the life of the program, but these costs were not included in this analysis.

Program (government costs) plus participant costs represent the total economic costs of the program. Under the baseline (FY 2009–FY 2012) economic costs are estimated to total \$766.6 million.

Table 6. Estimated WRP costs over the FY 2009–FY 2012 period (baseline scenario)

	Initial obligations per acre^{1/}	Total Acres	Total Obligations (Govt Costs)	Participant Costs^{2/}	Total Government and Producer Costs
Permanent Easements	\$3,089	228,400	\$705,527,600	\$0	\$705,527,600
30-year Easements	\$1,077	39,100	\$42,110,700	\$1,055,700	\$43,166,400
Restoration Cost-share	\$656	26,700	\$17,515,200	\$347,100	\$17,862,300
Totals	\$4,822	294,200	\$765,153,500	\$1,402,800	\$766,556,300

^{1/}Costs based on FY 2007 obligations. Includes estimated cost of NRCS technical assistance of \$618 per acre.

^{2/}Participant costs are calculated assuming that the average per-acre cost-share paid by participants are: \$0 for permanent easements; \$27 for 30-year easements; and, \$13 for restoration cost-share agreements.

Baseline Scenario - Benefits: Assuming the per-acre benefit values produced with a seven percent discount rate, the benefits of maintaining the baseline are expected to generate more than \$1.6 billion over the four-year period FY 2009–FY 2012. These results suggest that the federal outlays for WRP produce positive net benefits, even when acreage is constrained at the historical funding and acreage target levels (table 7).

Table 7. Estimated total WRP benefits and costs during FY 2009–FY 2012 (baseline scenario).

	Total Benefits	Total Costs	Net Benefits
Permanent Easements	\$1,339,638,442	\$705,527,600	\$634,110,842
30-year Easements	\$206,207,241	\$43,166,400	\$163,040,841
Restoration Cost-share	\$79,700,091	\$17,862,300	\$61,837,791
Totals	\$1,625,545,774	\$766,556,300	\$858,989,474

Policy Scenario 1 – Implement the 2008 Act changes for FY 2009–FY 2012 (total acres enrolled equals 2.581 million).

The policy scenarios described in the following sections reflect NRCS best estimate of the program changes given the 2008 Act. All mandatory items are incorporated in the analysis where possible. The only discretionary item concerns the introduction of WREP which is assumed to be incorporated in these changes implicitly.

In policy scenario 1, the enrollment cap of 2.275 million acres, as stated in the 2002 Farm Bill, is replaced with a higher cap of 3.041 million. The annual acreage target is set at 150,000 acres. We assume that WRP is funded sufficiently to enroll this annual total and makes the cumulative total at the end of FY 2012 almost 2.581 million acres – under the new cap of 3.041 million acres mentioned above (table 8).

The 150,000 acres per year target represents the average amount of acreage enrolled in WRP from FY 1996 through FY 2005. The FY 1996 to FY 2005 average was used because the payment rates used during that period reflect the payment method outlined in the 2008 Act. Thus, acreage or participation levels were assumed to increase to reflect to the pre-FY 2006 average. The distribution of acreage by permanent, 30-year easement, and restoration cost-share agreements for this scenario is assumed to be the same as previously stated (e.g. FY 2001 to FY 2007 WRP acreage distribution was used).

Table 8. Expected annual and cumulative acreage changes (policy scenario 1)

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2009–FY 2012
	----- Acres -----				
Permanent Easements	116,400	116,400	116,400	116,400	465,600
30-year Easements	20,000	20,000	20,000	20,000	80,000
Restoration Cost-share	<u>13,600</u>	<u>13,600</u>	<u>13,600</u>	<u>13,600</u>	<u>54,400</u>
Annual Totals	150,000	150,000	150,000	150,000	600,000
Cumulative	2,131,000	2,281,000	2,431,000	2,581,000	N/A

Policy Scenario 1 – Costs: Total obligations over the four-year period FY 2009–FY 2012 are estimated to total \$1.26 billion with 600,000 acres enrolled (table 9). All costs (and benefits) are expressed in constant 2007 dollars. Costs are adjusted to account for the contract life. Easement costs are assumed to be similar to the national average obligated for the WRP for FY 2005 (updated to reflect 2007 dollars) using the same logic as discussed above. Participant costs are direct costs associated with their obligations to match the government cost-share rate. For 30-year and restoration contracts, 25 percent of materials, equipment services, and labor to install the practices are born by the participant. In total, participant costs are estimated at \$4.87 million per year and projected over the FY 2009–FY 2012 period to add up to \$19.47 million (note: participants are also likely to incur additional administration costs and maintenance costs over the life of the program, but these costs were not included in this analysis).

Table 9. Estimated WRP costs over the FY 2009–FY 2012 period (policy scenario 1)

	Initial obligations per acre^{1/}	Total Acres	Total Obligations (Govt Costs)	Participant Costs^{2/}	Total Government and Producer Costs
Permanent Easements	\$2,317	465,600	\$1,078,795,200	\$0	\$1,078,795,200
30-year Easements	\$1,640	80,000	\$131,200,000	\$10,000,000	\$141,200,000
Restoration Cost-share	<u>\$981</u>	<u>54,400</u>	<u>\$53,366,400</u>	<u>\$9,465,600</u>	<u>\$62,832,000</u>
Totals	\$4,398	600,000	\$1,263,361,600	\$19,465,600	\$1,282,827,200

^{1/}Includes estimated cost of NRCS technical assistance of \$459 per acre.

^{2/}Participant costs are calculated assuming that the per-acre cost-share paid by participants are: \$0 for permanent easements; \$125 for 30-year easements; and, \$174 for restoration cost-share agreements.

Policy Scenario 1 - Benefits: The benefits of policy scenario 1 are expected to continue at the same annual rate as was assumed during the FY 2003–FY 2007 WRP program years. Per-acre costs are lower than under the baseline, producing higher net benefits estimates (table 10).

Table 10. Estimated total WRP benefits and costs during FY 2009–FY 2012 (policy scenario 1)

	Total Benefits	Total Costs	Net Benefits
Permanent Easements	\$2,730,891,677	\$1,078,795,200	\$1,652,096,477
30-year Easements	\$421,907,400	\$141,200,000	\$280,707,400
Restoration Cost-share	<u>\$162,385,205</u>	<u>\$62,832,000</u>	<u>\$99,553,205</u>
Totals	\$3,315,184,282	\$1,282,827,000	\$2,032,357,082

Policy Scenario 2 – Implement the 2008 Act changes for FY 2009–FY 2012 (total acres enrolled equals 3.041 million).

WRP is funded sufficiently to enroll 265,000 acres per year increasing the total enrollment to 3.041 million acres. This alternative assumes that WRP rules are changed in accordance with the 2008 Act as was the case in policy scenario 1, but enrollment jumps to 265,000 acres per year to permit the program to reach the enrollment cap by the last year of the Farm Bill (table 11).

Table 11. Expected annual and cumulative acreage changes (policy scenario 2)

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2009–FY 2012
	----- Acres -----				
Permanent Easements	205,700	205,700	205,700	205,700	822,800
30-year Easements	35,300	35,300	35,300	35,300	141,200
Restoration Cost-share	<u>24,000</u>	<u>24,000</u>	<u>24,000</u>	<u>24,000</u>	<u>96,000</u>
Annual Totals	265,000	265,000	265,000	265,000	1,060,000
Cumulative	2,246,000	2,511,000	2,776,000	3,041,000	N/A

Policy Scenario 2 – Costs: Total obligations over FY 2009–FY 2012 are estimated at \$2.27 billion and cover over nearly 1,060,000 acres (table 12). All costs (and benefits) are expressed in constant 2007 dollars. Costs are adjusted to account for the contract life. Enrollment and restoration expenditures are assumed to be incurred in the same year⁹. The values for easements (or program costs) are based on the national average obligated for the WRP for FY 2005 using the same logic as discussed above. Costs to participants are direct costs associated with matching the NRCS cost-share rate and in this case, are estimated at over \$8.6 million per year or \$34.4 million over FY 2009–FY 2012. For 30-year and restoration contracts, 25 percent of materials, equipment services, and labor to install the practices are born by the participant (note: additional administration costs and maintenance costs over the life of the program are not included in this analysis).

Table 12. Estimated WRP costs over the FY 2009–FY 2012 period (policy scenario 2)

	Initial obligations per acre^{1/}	Total Acres	Total Obligations (Govt Costs)	Participant Costs^{2/}	Total Government and Producer Costs
Permanent Easements	\$2,317	822,800	\$1,906,427,600	\$0	\$1,906,427,600
30-year Easements	\$1,640	141,200	\$231,568,000	\$17,650,000	\$249,218,000
Restoration Cost-share	<u>\$981</u>	<u>96,000</u>	<u>\$94,176,000</u>	<u>\$16,704,000</u>	<u>\$110,880,000</u>
Totals	\$4,398	1,060,000	\$2,232,171,600	\$34,354,000	\$2,266,525,600

^{1/}Includes estimated cost of NRCS technical assistance of \$459 per acre.

^{2/}Participant costs are calculated assuming that the per-acre cost-share paid by participants are: \$0 for permanent easements; \$125 for 30-year easements; and, \$174 for restoration cost-share agreements.

Policy Scenario 2 - Benefits: The benefits realized in policy scenario 2 are simply the results of policy scenario 1 multiplied by the acreage expansion factor reflecting the higher acreage targets (table 13).

Table 13. Estimated total WRP benefits and costs during FY 2009–FY 2012 (policy scenario 2)

	Total Benefits	Total Costs	Net Benefits
Permanent Easements	\$4,825,982,972	\$1,906,427,600	\$2,919,555,372
30-year Easements	\$744,666,561	\$249,218,000	\$495,448,561
Restoration Cost-share	<u>\$286,562,127</u>	<u>\$110,880,000</u>	<u>\$175,682,127</u>
Totals	\$5,857,211,660	\$2,266,525,600	\$3,590,686,060

⁹This assumption is made in order to simplify the analysis. It usually takes two to three years for restoration to be completed once the easement has been closed. So in reality, costs would be extended into future years, even though no acres were being enrolled in the program. The easiest way to handle these costs is to assume they all occur the same year as the easement is closed.

Discussion of Scenarios

Current Policy Scenario: This scenario establishes a benchmark for comparing policy alternatives. In this scenario, annual acreage targets can not be met throughout the future period because of the Farm Bill 2002 enrollment cap. The enrollment cap is hit in FY 2011 when the program is limited by the cap to enrolling only 294,200 acres. In FY 2012, no new acres can be enrolled in the program.

Policy Scenario 1: The major change in WRP brought about by the 2008 Act (the suggested use the fair market value appraisal or market analysis approach) is expected to lead program managers to rely more heavily on geographic caps in making easement offers. The reason behind this is that the use of the fair market value appraisal approach does not take into account the residual value of the land after the easement is placed. In many areas this will lead to higher appraised values than would have been the case before. As a result the appraised value of land being considered for enrollment will now be higher than the established geographic caps.

As a consequence of this change enrollment in the program would shift to areas where the appraised values using the previous method were significantly lower than the geographic cap. The net results of these actions are (1) lower national average costs for easements on a per-acre basis and (2) a shift of WRP acreage to regions with lower land prices.

Policy Scenario 2: This scenario produces similar acreage shifts as described under Scenario 1, but acreage enrolled is expected to increase to the maximum allowed under the cap. Total costs for both the government and participants will increase proportionately with the increase in acreage.

Conclusions

Wetlands benefit the nation by providing habitat for fish and wildlife, including threatened and endangered species; improving water quality by filtering sediments and chemicals; reducing flooding; recharging groundwater; protecting biological diversity; as well as providing opportunities for educational, scientific, and recreational activities.

Changes made to WRP by the 2008 Act will likely result in an additional 600,000 to 1 million acres being enrolled in the program. Total economic costs of this expansion of the program could range from \$1.3 to \$2.3 billion. Continuation of the program under the 2002 Farm Bill would have increased acreage by an additional 294,200 acres at an economic cost of \$767 million.

There is a growing knowledge base concerning the benefits of wetlands. In a few cases these benefits have been monetized. Although benefits can be estimated on a generalized basis from selected study sites, caution must be exercised in using these benefits. That caveat notwithstanding it appears that the monetary and non-monetary benefits from wetland restoration under the WRP exceed their costs.

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Appendix A. Legislative History of Wetlands Reserve Program, 1990-2002

1990 Farm Bill, § 1438 - Establishes program requiring Secretary to acquire one million acres of wetlands in long-term easements by the end of the 1990 Farm Bill.

The 1990 Farm Bill authorized the Wetlands Reserve Program (WRP). WRP was designed to prohibit destructive activities on defined wetlands by paying landowners to obtain 30-year or perpetual easement payments to landowners. Priority for enrollment was given to permanent easements. It has been reauthorized or amended in every Farm Bill since.

WRP had a cap of 1 million acres total with no more than 200 thousand acres being allowed into the program in any one year. Eligible lands included:

- 1) Farmed wetlands or converted wetland, together with adjacent land, where the conversion commenced before December 23, 1985.
- 2) Farmed wetlands enrolled in Conservation Reserve Program (CRP) and that were likely to return to production after they leave CRP.
- 3) Riparian areas linking wetlands that were protected by easements or some other device.

The Farm Bill provided that those lands enrolled in CRP could be converted over to a WRP easement before the expiration of the contract.

Easements were required to be in accord with a conservation plan made through an agreement with the Natural Resources Conservation Service. The conservation plan must prohibit:

- 1) The alteration of wildlife habitat, unless specifically permitted by the plan.
- 2) Chemical spraying.
- 3) Any activities on adjacent land that diminishes the functional value of the wetland.
- 4) The adoption of any other practice the Secretary determines would defeat the purpose of WRP.

A restoration plan must also be developed through an agreement with a local representative of the Natural Resources Conservation Service. The easement may allow for compatible uses, such as hunting and fishing, and even periodic haying and grazing, as long as the activity is consistent with the long-term protection of the wetland.

The Farm Bill stated that compensation for the wetland shall not “exceed the fair market value of the land less the fair market value of such land encumbered by the easement.” Owners are given the opportunity to bid for enrollment into WRP. The easement will be paid for in five to 20 annual payments, unless it is a permanent easement, in which case the payment can be in a lump sum. Easement payments for any year were limited to \$50 thousand, and the payments would not count against any other payment limitation in the Farm Bill commodity programs.

If the owner violates the terms of the easement, the easement will remain in force and the owner may be required to refund all or part of the payments. WRP requires the owner to agree to retire any existing cropland base and allotment history for the land in the easement.

The Secretary will pay 50 to 100 percent of the cost of the improvements to the land, with greater cost share going to longer easements. The Secretary may modify the easement if the present owner agrees and the modification is consistent with the goals of WRP. The easement may be terminated if the Secretary and current owner agrees and the Secretary determines such termination is in the public interest.

1996 Farm Bill, § 333 – Limits the number of acres in WRP to 975 thousand and designates a new type of legal arrangement (restoration cost-share agreements) that can be used in WRP besides easements.

The 1996 Farm Bill scaled back to 975 thousand the total number of acres that could be enrolled in WRP. The bill created a new type of legal arrangement that could be used under WRP called a “restoration cost-share agreement,” which required the owner to restore wetlands but did not include an easement. The program offered three enrollment and payment options:

- 1) Permanent Easement, payment was figured on the lowest of three amounts: the difference in the appraised fair market value of the larger parcel after the easement is in place; an established payment cap, or an amount offered by the landowner. In addition to paying for the easement, USDA paid up to 100 percent of the cost of restoring the wetland.
- 2) 30-year easement, payments were based on 75 percent of what would have been paid for a permanent easement. For both permanent and 30-year easements, USDA paid all of the administrative and acquisition cost.
- 3) Restoration Cost-share Agreement payments were base on 75 percent of the cost of the restoration activity.

The 1996 Farm Bill required the Secretary to divide enrollment evenly between permanent easements, 30-year easements, and restoration cost-share agreements and prohibited the Secretary from entering into additional permanent easements until he or she has enrolled at least 75 thousand acres in temporary easements. The bill also added a wildlife component to eligibility requirements by requiring that the easements maximize “wildlife benefits and wetlands values and functions.”

As to cost share, the bill allowed for the Secretary to pay 50 to 75 percent of improvements on land under 30-year easement or restoration cost-share agreements, and 75 to 100 percent of improvements to land in permanent easements.

The 1999 Omnibus Appropriations Act (P.L. 105-277, § 730 (October 21, 1998)) restricted USDA from enrolling more than 120 thousand acres in WRP in fiscal year 1999. The 2000 Agricultural Appropriations Act (P.L. 106-78, § 728 (October 22, 1999)) restricted USDA from enrolling more than 150 thousand acres in fiscal year 2000.

The 2000 Agricultural Appropriations Bill provided the Secretary the authority to enter in to cooperative agreements for the acquisition of goods or services from states, political subdivisions, public or private organization, or any other person if the agreements served the purpose of carrying out WRP. P.L. 106-78 § 717 (October 22, 1999).

The 2001 Appropriations Bill P.L. 106-387 § 808 (October 28, 2000) allowed for up to 1.075 million acres to be enrolled in WRP, as long as funding for technical assistance provided by USDA would be paid for by the Commodity Credit Corporation (CCC). The Bill also required that the amount necessary to enroll the 1.075 million acres would be designated as emergency moneys.

2002 Farm Bill, § 2201- Increases the maximum enrollment to 2.275 million acres and removes the quotas under the different types of legal instruments.

2002 - The 2002 Farm Bill more than doubled the maximum amount of enrollment in WRP to 2.275 million acres. The bill removed the 1996 quotas that required newly enrolled land should be equally distributed among permanent easements, 30-year easements, and restoration cost-share agreements.

In 2004, President George W. Bush announced a new strategy for increasing wetlands acres and their quality by establishing an aggressive new national goal, moving beyond the “no net loss” of wetlands to an overall increase of wetlands each year. President’s Bush, goal was to create, improve, and protect at least 3 million wetland acres through year 2007. It enabled WRP to continue to be a viable option for the nation’s private landowners who wanted to restore wetlands.

Appendix B. Wetland Policy Highlights

Getting To “No Net Loss”: The Economic Research Service (Heimlich et al.) reported that prior to European colonization of America there were approximately 224 million acres of wetlands in what was to become the continental (lower 48 states) United States. Between first settlement and 1954, approximately 42 percent of original wetlands were drained or filled.

Most of this wetland conversion was for agricultural purposes, with as much as 50 million acres drained between the late 19th and early 20th centuries. Government policies and local cooperative encouragement during this period resulted in the converting of wetlands, to agriculture, at an average net rate of 850 thousand acres a year.

The pace of wetland net conversion slowed to approximately 460 thousand acres a year for the two decades following 1954. Federal policy changes, such as the Clean Water Act’s Section 404 and Executive Order 11990, and State wetland laws further reduced the wetland conversion rate starting in the 1970’s.

By the 1980’s, with the Swampbuster provisions of the 1985 Food Security Act, more rigorous enforcement of Section 404 permitting, changes in preferential income tax and State wetland regulations, as well as, falling agricultural prices, net wetland conversion was further reduced. From 1982 to 1992 net wetland conversion averaged less than 80 thousand acres per year.

Gross conversion to agricultural use was only 31 thousand acres a year and the country was approaching a “No Net Loss” of wetlands goal.

“No Net Loss” and Beyond: In 1987 the Environmental Protection Agency (EPA) asked the Conservation Foundation’s president, William Reilly, to convene a forum of environmental, agricultural, business, academic, and government leaders to consider ways to improve wetland regulation (Heimlich et al.). From this forum came the idea that “No Net Loss” was a reasonable goal. “No Net Loss” was later adopted as a policy goal by both the Bush and Clinton administrations (1991 and 1993). And Vice-President Gore’s Clean Water Action plan would call for achieving a net gain of 100 thousand acres of wetlands by 2005 (Gore, 1997).

President Bush, Earth Day 2004, announced a wetlands initiative that established a federal policy of beyond “No Net Loss” (Dahl). The policy seeks to obtain an overall increase in both wetland quality and quantity while setting a goal of restoring, improving, or protecting more than 3 million acres in five years. The President further directed the Fish and Wildlife service to provide an updated wetlands status and trends study in 2005.

Highlights of Past WRP Acreage Enrollment and Expenditures: Approximately 50 thousand acres were enrolled in the WRP Nine-State Pilot Program in FY 1992. No funding was provided in FY 1993. For FY 1994, funding of more than \$66 million was approved to enroll 75 thousand acres in 20 states. In FY 1995, Congress provided \$93 million to enroll an estimated 100 thousand acres nationwide. More than \$66 million was approved to enroll 75 thousand acres in 20 States. Congress provided \$93 million to enroll an estimated 100 thousand acres nationwide. More than 575 thousand acres were offered for enrollment. The top states were Louisiana (66.3

thousand acres) and Texas (64.6 thousand acres). Also, additional acres were enrolled when emergency funding was appropriated to respond to the floods of 1993 in the upper Midwest (Zinn, 1995). The FY 1996 Agriculture Appropriations legislation combined two water planning programs together in a single line item to fund the WRP at \$77 million, to enroll up to 100 thousand acres.

The WRP met the acreage limit established prior to the 2002 Farm Bill. However, Congress raised the program's total acreage enrollment limit to 2.3 million acres. This action enabled WRP to continue to be a viable option for the nation's private landowners who wanted to restore wetlands through 2007. In FY 2006, 9,951 projects have been enrolled on 1.9 million acres. Landowner interest in the program remains strong. NRCS anticipated enrolling 150 thousand acres in FY 2007. The 2008 Act will raise the WRP area cap to 3.0 million acres through FY 2012.

Enrolled lands are mostly marginal, high-risk, flood prone restorable agricultural wetlands. All states and Puerto Rico have active WRP projects. The top 10 states in terms of enrollment are Louisiana, Arkansas, Mississippi, California, Florida, Missouri, Iowa, Texas, Minnesota, and Oklahoma.

From 1992 through 2007 the WRP average size of a wetland enrolled per year was 197 acres for permanent easements, 184 acres for 30-year easements, and 145 acres for restoration cost-share agreements.

The average cost per contract is as follows: \$1,302 for permanent easements, \$667 for 30-year easements, and \$293 per acre for restoration cost-share agreements. Total costs were \$256,580 per permanent easement, \$122,613 per 30-year easement and \$42,519 per restoration cost-share agreement.