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Natural Resources Conservation Service**

Interim Final Benefit-Cost Analysis

for the

Grassland Reserve Program (GRP)

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Interim Final Benefit-Cost Analysis Grassland Reserve Program (GRP)

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 Grassland Reserve program (GRP) 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.

GRP is a voluntary program for landowners and operators to protect, restore, and enhance grassland, including rangeland, pastureland, shrubland, and certain other lands. The program emphasizes support for grazing operations; enhancement of plant and animal biodiversity; and protection of grassland and land containing shrubs and forbs under threat of conversion.

GRP is one tool in the suite of agricultural land retention mechanisms available to agricultural producers and local communities. Producers and local communities are the main drivers in agricultural land retention efforts and incur the greatest costs and potential benefits. These efforts are driven by local decision makers and involve site-specific impacts which affect a host of non-use valued attributes (scenic views, environmental amenities, etc), making it difficult to accurately quantify the costs and benefits of various policy alternatives. This analysis recognizes these problems and offers an analysis weighed heavily on identifying the main costs and benefits in qualitative terms to explore policy and program alternatives.

The main costs of this agricultural land retention effort include the restriction on the range of activities placed on the grazing land on landowners and the initial contract cost (in the case of easements) and annual payments (in the case of rental contracts) to the government. These costs must then be compared with the benefits of preserving its current land use in grazing or forage production. These benefits include: the maintenance (and possible improvement) of the flow of ecological goods and services (EGS) emanating from its current use in agriculture; the possibility of increased forage production; and difficult to quantify non-use values associated with the provision of scenic views and recreational opportunities; wildlife habitat; and the preservation of current land-use patterns.

In many cases, the funding provided through GRP leverages landowner donations, local governmental monies, and non-governmental contributions to preserve its' current land use in grazing. This qualitative benefit-cost analysis suggests that GRP assistance to local agricultural land preservation programs can bear positive net benefits. A main determinant of the realization of positive net benefits would be the actual fate of the current land use (grazing) in the future with respect to its conversion to non-agricultural and non-grazing agricultural use. Programs such as GRP could play an important role in keeping this land in its most highly valued grazing use (taking into account its non-use value attributes).

Interim Final Benefit-Cost Analysis Grassland Reserve Program (GRP)

Background

Legislative Authority

GRP was authorized by the Farm Security and Rural Investment Act of 2002 (2002 Act), P.L. 107-171 Statute 134 (May 13, 2002), and was amended by the Food, Conservation, and Energy Act of 2008, P.L. 110-234 (May 22, 2008) (hereafter referred to as “the 2008 Act”). The 2008 Act mandates establishment of the Grassland Reserve Program (GRP) as a voluntary program for the purpose of assisting private and Tribal landowners and operators in protecting grazing uses and related conservation values by restoring and conserving grassland, land that contains forbs, or shrubland through rental contracts, easements, and associated restoration agreements. Participants are provided technical and financial assistance to restore eligible grassland functions and values.

Rationale for the Rule

The rationale for the Natural Resources Conservation Service (NRCS) activities in preserving farm and ranch land through the use of easements and rental contracts is based on the agency’s strategic goal of maintaining connected landscapes to sustain a viable agricultural sector and a healthy environment.

The current market fails to recognize fully the indirect value of benefits arising from the protection of working agricultural lands. In the absence of comprehensive land-use planning, real estate markets are based on many individual decisions which do not incorporate fully indirect and non-market benefits, and can result in excess conversion of agricultural lands. Excess conversion of agricultural lands to non-agricultural lands and non-agricultural use that may not be appropriate for the local conditions results in the loss of human enjoyment of rural amenities and a diminution of ecological goods and services (EGS) emulating from that land. The EGS provided by maintaining agricultural land in its most appropriate land use include the beneficial relationship of that land to: climate regulation, flood control, disease prevention, water purification, carbon sequestration, biodiversity and wildlife habitat, and a host of others¹. Because these outcomes are indirect and because many of the EGS can be classified as public goods², the market can be expected to fall short in supplying society’s desirable level and they appear “under-valued” or “under-appreciated” in private decision makers’ actions. When markets fail, they do not provide the proper signals to adjust current production practices accordingly and they fail to inform consumers of the true nature of the products they are consuming. Without some intervention, or assistance to establish markets or market-like

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.

structures, this situation would be expected to have rates of agricultural land conversion to inappropriate agricultural and non-agricultural uses.

GRP Description and Features

Program Objective

The GRP objective is to help landowners and operators restore and protect grassland, including rangeland, pastureland, shrub land, and certain other lands. The program emphasizes support for grazing operations; enhancement of plant and animal biodiversity; and protection of grassland and land containing shrubs and forbs under threat of conversion to cropping, urban development, and other non-grazing uses.

Program Overview

Under the 2002 Act, the Secretary of Agriculture delegated the authority to administer GRP on behalf of the USDA's Commodity Credit Corporation (CCC) to the NRCS and the Farm Service Agency (FSA). NRCS has the lead responsibility for easements and FSA has the lead responsibility for rental contracts. The Secretary of Agriculture maintained the current delegation of responsibilities subsequent to the 2008 Act. GRP is available nationwide, including the District of Columbia, the Commonwealth of Puerto Rico, Guam, the Virgin Islands, American Samoa, and the Commonwealth of the Northern Mariana Islands.

GRP, as authorized in the 2002 Act, provided two kinds of easements (a 30-year and a permanent easement) and four kinds of rental contracts (a 10-year, 15-year, 20-year, and 30-year rental contract). For permanent easements, USDA provides a one-time easement payment of the fair-market value, less the grassland value of the land encumbered by the easement. On 30-year easements, USDA produces an easement payment equal to 30 percent of the fair-market value of the land, less the grassland value of the land encumbered by the easement. For both easement options, USDA provides all administrative costs associated with recording the easement, including the appraisal fees, survey costs, title insurance, and recording fees. For rental contracts, USDA provides annual payments in an amount that is not more than 75 percent of the grazing value of the land covered by the contract for the life of the contract. Payments are paid on the contract anniversary date each year. There is another program feature, restoration agreements, which can be incorporated in either easement or rental contracts. Restoration agreements are optional and have not been a major program cost outlay.

As was the case with GRP under the 2002 Act, the Secretary establishes the criteria to evaluate and rank applications for rental contracts and easements. USDA provides broad national guidelines for establishing State specific project selection criteria at the State level. The 2008 Act specifies that in establishing the criteria, the Secretary will emphasize support for:

- Grazing operations;
- Plant and animal biodiversity; and
- Grassland, land that contains forbs, and scrubland under the greatest threat of conversion to uses other than grazing.

This change in the 2008 Act elevates support for grazing operations while maintaining support for plant and animal biodiversity and grasslands under greatest threat of conversion to uses other than grazing.

The 2008 Act Rule changes to GRP: NRCS incorporates into the interim final rule several changes to GRP implementation in response to mandatory and discretionary provisions in the 2008 Act and in response to changes in policy recommended from the experience gained through implementation of the 2002 Act. These are discussed below.

The 2008 Act – GRP Statutory Requirements

Change in purpose: The 2008 Act modified the definition of GRP’s purpose from one of “protection, conservation and restoration of grassland resources on private lands” as stated in the 2002 Act, to one of “assisting owners and operators in protecting grazing uses and related conservation values by restoring and conserving eligible lands through rental contracts, easements, and restoration agreements.” The program continues to emphasize support for working grazing operations as well as enhancement of grassland functions and values, thus the prohibition on breaking soils was removed.

Acreages: The 2008 Act specifies an additional 1.22 million acres of eligible land shall be enrolled in GRP during fiscal years (FY) 2009 through 2012. This represents an acreage enrollment rate reduction from the levels authorized through the 2002 Act which had a two million acre statutory cap for a six year period versus a 1.22 million cap for a four year period. However, the new cap elevates the overall program acreage if realized.

Removal of 30-year easements and 30-year rental contracts: The 2008 Act removed the 30-year rental contract and 30-year easement enrollment options. Also, the 2008 Act changed the term ‘rental agreements’ to ‘rental contracts’. Under GRP, as amended by the 2008 Act, the Secretary is authorized to enroll eligible lands in the program through the use of:

- a 10-year, 15-year, or 20-year rental contract,
- a permanent easement; or
- in a State that imposes a maximum duration for easements, an easement for the maximum duration allowed under the law of that State.

Funding distribution goal: The 2008 Act sets a goal for NRCS to acquire, to the extent practicable, rental contracts and easements in such a way so as to reach a goal of 40 percent for rental contracts and 60 percent for easements by funding totals (referred to henceforth as the “40/60 Percent Mix Provision”).

Previously enrolled CRP land provision: The 2008 Act requires the Secretary to place a priority for enrollment to land previously enrolled in the Conservation Reserve Program (CRP) providing the land is eligible as defined by statute, and the Secretary determines that the land is of high ecological value and under significant threat of conversion to uses other than grazing. There is, however, a limit to this enrollment priority; that the number of acres shall not exceed ten percent of the total number of acres enrolled in GRP in each calendar year.

Expansion of eligible lands: The 2008 Act expanded the land eligibility criteria from the amendments made by the 2002 Act to include land that has been historically dominated by grassland, forbs, or shrubland and the land contains historical or archaeological resources; or the land would address issues raised by State, regional, and national conservation priorities. Also, the 2008 Act removed the minimum eligible acreage enrollment of 40 contiguous acres.

Eligible lands are currently defined by the 2008 Act as private or tribal lands that--

- (1) is grassland, land that contains forbs, or scrubland (including improved rangeland and pastureland) for which grazing is the predominant use;
- (2) is located in an area that has been historically dominated by grassland, forbs, or shrubland, and the land:
 - (A) could provide habitat for animal or plant populations of significant ecological value if the land--
 - (i.) is retained in its current use; or
 - (ii.) is restored to a natural condition.
 - (B) contains historical or archaeological resources; or
 - (C) would address issues raised by State, regional, and national conservation priorities;or
- (3) is incidental to land described above, if the incidental land is determined by the Secretary to be necessary for the efficient administration of a rental contract or easement under the program.

Added discretion to include prohibited activities: The 2008 Act includes 'Prohibited' as well as 'Permissible' activities. The Secretary has the discretion to adopt additional provisions as the Secretary determines appropriate to carry out or facilitate the purposes and administration of the program.

Permissible activities include the following:

- common grazing practices, including maintenance and necessary cultural practices, on the land in a manner that is consistent with maintaining the viability of grassland, forb, and shrub species appropriate to that locality;
- haying, mowing, or harvesting for seed production, subject to appropriate restrictions during the nesting season for birds in the local area that are in significant decline or are conserved in accordance with Federal or State law, as determined by the State Conservationist;
- fire pre-suppression, rehabilitation, and construction of fire breaks; and
- grazing related activities, such as fencing and livestock watering.

Prohibited activities include:

- the production of crops (other than hay), fruit trees, vineyards, or any other agricultural commodity that is inconsistent with maintaining grazing land; and
- except as permitted under a restoration plan, the conduct of any other activity that would be inconsistent with maintaining grazing land enrolled in the program.

Payments: Several changes were made regarding payments and limitations. The 2008 Act contains separate payment limitations for rental contracts and restoration agreements, a reduction of the maximum allowable cost-share amount to 50 percent for practices implemented through restoration agreements; and a defined fair-market value determination process for easement compensation.

Compensation for easements: Under the 2008 Act amendments, the Secretary will make easement payments in an amount not to exceed the fair-market value of the land less the grazing value of the land encumbered by the easement as determined by an appraisal. In determining the compensation for an easement, the Secretary will pay the lowest of:

- the fair-market value of the land encumbered by the easement, as determined by the Secretary;
- the amount corresponding to a geographical cap, as determined by the Secretary in regulations; or
- the offer made by the landowner.

Rental contract payment cap: GRP allows the participant to receive annual payments during the contract term in an amount not to exceed 75 percent of the grazing value of the land covered by the contract. A payment limitation was added, through the 2008 Act amendments that specifies that a payment amount made under one or more rental contracts to a person or legal entity, directly or indirectly, may not exceed, in the aggregate, \$50,000 per year.

The 2008 Act – GRP Discretionary Requirement

Cooperative agreements with eligible entities: GRP allows an agency of State or local government or an Indian Tribe, or an eligible non-government organization (land trust) to write, own, and enforce GRP conservation easements similar to the Farm and Ranch Lands Protection Program (FRPP). GRP will pay a maximum of 50 percent of the purchase price which is defined as the fair-market value of the land minus the grazing value minus the landowner donation. Priority will be given to applications which provide more than 50 percent of the purchase price.

Description of Baseline Conditions:

Grassland in the United States: Before settlement in the United States, grasslands occupied approximately one billion acres, about one-half the landmass of the contiguous United States. Approximately 50 percent of these lands have been converted to cropland, urban, and other uses. The remaining 533 million grassland acres continue to be at risk of conversion as population and crop production pressures increase. The expansiveness and many uses and values of grasslands make them economically and environmentally important. Based on U.S Geological Survey (USGS) estimates (table 1), the percentage of prairie grasslands lost in selected States is significant.

Table 1. Estimated percentage decline in prairie acreage since 1830.

State	Tall Grass*	Mixed Grass*	Short Grass*
Illinois	99.9	---	---
Indiana	99.9	---	---
Iowa	99.9	---	---
Kansas	82.6	---	---
Minnesota	99.4	---	---
Missouri	99.5	---	---
Nebraska	98.0	75.3	---
North Dakota	99.9	68.3	---
South Dakota	99.2	70.0	35.0
Texas	90.0	30.5	79.5
Wisconsin	99.9	---	---
Wyoming	---	---	20.0

* "----" indicate that grassland type did not exist in the State.

Between 1992 and 1997 about 24 million acres (4.6 percent) of grasslands were converted to cropland or non-agricultural uses, such as development. However, because cropland, forestland, and other lands are also converted to grassland, the net change in grassland may be much less. Between 1992 and 1997 net grassland loss totaled about 5.5 million acres, or 1.1 percent.³

Past trends and current resource conditions suggest a need to preserve grasslands to capture the benefits which will be described in this analysis.

Analytical Model

Model Assumptions

Given the current backlog of GRP applicants, full producer participation is expected up to the acreage constraint (an additional 1.22 million acres over the simulation period of FY 2009 through FY 2012).

NRCS has been charged with implementing GRP as authorized and funded by Congress to “protecting and restoring eligible grasslands through easement purchases and rental contracts with private landowners and operators.” As the scope of the proposed action is for a national program, this analysis evaluates the potential costs and benefits at a broad scale.

Environmental, economic and social costs and benefits will be identified for the land user, the general public, and the government. This analysis will be used in determining whether the benefits of implementing GRP contracts will outweigh the program costs.

³1997 National Resources Inventory. Available:
http://www.nrcs.usda.gov/programs/grp/pdf_files/GRPCostBenefitAnalysisFinalRule.pdf

Development of Expected Producer Costs

Producer costs are expected to be minimal and would include the time and effort of developing and following a grazing management plan. This plan involves plan development, record keeping, and implementation. It is assumed that most landowners already have grazing plans and would simply need to document their activities to meet program requirements.

Program Costs for the Government and Social Costs

The number of easement and rental contracts finalized during FY 2003 through FY 2007 totaled nearly 2,900 (table 2). The associated financial assistance costs for these contracts were over \$140 million. The corresponding amount of money spent on technical assistance (TA) is difficult to calculate for a number of reasons. Based on historical records and discussion with the program personnel, an annual estimate of TA was calculated based of seven percent of annual FA. Thus, total government cost for GRP was estimated at \$150.6 million for the period of FY 2003 to FY 2007.

In the table below, the term “true cost” is explained as follows: Because GRP obligations represent all the funding required to be made over the contract life, some adjustment in these outlays needs to be made in order to compare costs. That is, permanent easements and other long-term financial commitments by the government will always appear higher than shorter-life contracts because they represent only the initial year outlay. For this reason, obligations are divided by the contract duration to obtain “true cost”. For example related to permanent easements, initial outlays are divided by 50 years to account for their longevity; likewise 30-year easements or 30-year contracts are divided by 30; and so on.

Table 2. Selected GRP performance and cost summary FY 2003–FY 2007.

	<u>Contracts</u>	<u>ACRES</u>		<u>Obligations</u>	<u>\$/Contract</u>	<u>\$/Acre</u>	<u>\$/Acre/Year**</u>
		<u>Number</u>	<u>Percent*</u>				
30-year Easement	22	9,785	1.4	\$4,000,000	\$181,818	\$409	\$13.63
Permanent Easement	222	105,563	15.6	\$46,000,000	\$207,207	\$436	\$8.72
Sub-total Easements	244	115,348	17.0	\$50,000,000	\$204,918	\$433	\$8.99
10-year Contract	1,766	312,625	46.2	\$37,373,936	\$21,163	\$120	\$11.95
15-year Contract	320	80,117	11.8	\$12,480,565	\$39,002	\$156	\$10.39
20-year Contract	259	79,308	11.7	\$15,570,222	\$60,117	\$196	\$9.82
30-year Contract	287	89,973	13.3	\$25,324,789	\$88,240	\$281	\$9.38
Sub-total Contracts	2,632	562,023	83.0	\$90,749,512	\$34,479	\$161	\$11.72
Total – FA	2,876	677,371		\$140,749,512	\$48,939	\$208	\$11.49
Total – TA				\$ 9,852,466	N/A	N/A	N/A
Grand Total–FA + TA				\$150,601,978			

*Percentage of total acreage.

**This column takes the life of the contract into account; see cost section above for more explanation.

Costs borne by society at large (excluding producer cost discussed above) could include partner-supplied forms of assistance, such as their technical assistance, financial assistance, use of their

equipment. Partners may include: public agencies, non-profit organizations corporate and private entities. Also, restricting land use changes could possibly reduce the tax base and locally discourage economic development. However, we assume that future economic activity would move to a more suitable location, perhaps a renovated urban area and the opportunity cost of lower local economic activity is off-set by a reduction in needed public infrastructure.

Expected Ecological and Economic Benefits

Direct and Indirect Beneficial Effects – Qualitative Discussion

Ecological benefits are hard to measure because variables making up the ecology are often inter-related. Improvements to one function often affects others in non-evident ways, and can take years or even decades to aggregate or appear. Four inherent grassland characteristics especially make estimating their benefits difficult. First, each grassland has unique characteristics with their own unique set of values. Second, even though some characteristics may be clearly identified, quantifying the beneficial effect may be problematic. Third, because grasslands also help maintain water quality on lands not enrolled in GRP and air quality, fully accounting for all benefits is difficult. Finally, problems associated with identifying specific bio-geochemical grassland benefits and the difficulty in assigning monetary values to these non-market goods and services make it extremely difficult to evaluate using strict monetary benefit-cost techniques. Regardless of whether many grassland benefits can be adequately quantified, their importance is still recognized.

Benefits of Delaying or Preventing Grassland Conversion

Much of the ecological benefit derived from GRP stems from the value society places on delaying grassland conversion. Care must be taken in attributing these benefits to land solely because it is enrolled in GRP. If GRP enrollment simply results in the conversion of other non-enrolled grasslands to other uses, then little is accomplished. On the other hand, if grasslands with unique and highly valued qualities (e.g., native grasslands, including native prairie) are enrolled and protected from conversion, GRP enrollments can provide significant ecological benefits.

Native grasslands are variable in their quality and characteristics, ranging from virgin prairie to heavily grazed rangeland. By identifying and selecting ecologically significant and unique grasslands, GRP can secure many of the environmental benefits that grasslands provide.

Converting cropland to permanent vegetation provides many soil, wildlife habitat, and water and air quality benefits. For each year that grassland is not converted to development or more intensive agricultural use, these benefits are maintained. While GRP enrollment may be targeted to lands threatened with conversion, it is difficult to determine whether conversion is actually delayed or prevented. More on the environmental benefits is provided in another section below.

Intergenerational Wealth Transfer: Agricultural easements represent an inter-generational transfer of economic and environmental wealth. A lump-sum payment to compensate a current land owner to relinquish their development rights benefits future generations of farmers and ranchers as parcels of land will never face development pressures and the current generation bestows a financial benefit to future generations. These benefits include lower land prices (and

the possibility of profiting from even higher land values in the future) in exchange for never being able to use that value to raise capital or when land is re-sold.

Displacement Effect: It is difficult to say with certainty if greater net benefits are generated for the national economy and environment with or without the actions of agricultural easements. The essence of this argument is, “Does the effect of agricultural easements simply force development pressures to go elsewhere at even greater economic and environmental costs?” Indirectly, consumers, both in the current and future generations, gain in potentially lower food prices and lower resource intensity because the relative price for one agricultural input (land) is effectively lowered – through the actions of the current generation. To the extent that agricultural easements bolster local actions to preserve such amenities (or in areas where no other means are available), they are probably beneficial.

Location Specific Benefits: The main benefits from grassland retention were those mentioned in the rationale for the rule, that is, the benefits from: 1) open space in and around metropolitan areas; and 2) the continued provision of ecological goods and services derived from that operation in that locality will be the core of benefits estimation of this rule. These benefits are location specific, but accrue to society indirectly and are difficult to quantify compared to the direct-use benefits whose value is readily observable in the sale of agricultural products and other traded outputs (i.e. fess from hunting and fishing). In addition, land retention programs, such as GRP, preserves current land use patterns and can maintain a core of agricultural activities vital to many small communities to sustain their economies and their identities.

NRCS Role in GRP Easements: Landowners with easements can invest more in their agricultural operations. Surveys indicate that producers who have easement-protected lands reinvested at least some of the easement money into their operations, such as paying off mortgages or loans, purchasing equipment, improving buildings and/or spending money on other farm business purposes. For example, “sixty nine percent of the respondents said that they spent most of their proceeds on agricultural expenses or spent as much on farm business-related items as on personal or household needs⁴.” In addition to providing an opportunity for participants to re-invest in farm operation, current and new agricultural producers may be able to purchase land in the future at a somewhat lower price. Older landowners will stay on the land longer and transfer knowledge, skills, and innovation to the next generation of farmers. Land under easements help secure any NRCS investments in conservation practices that were implemented as part of other NRCS conservation programs. Finally, NRCS assistance in these efforts can supplement or leverage the funds of others, including producers and other entities, in their preservation efforts.

Improved Forage Production Benefits

Modification of grazing practices can often increase forage production. Based research by the USDA Agricultural Research Service (Spaeth, 2000), improved grassland management could provide an estimated 1,013 additional pounds of forage per acre per year. This translates into about 1.3 animal unit months per acre.

⁴American Farmland Trust, An Evaluation of the Federal Farm and Ranch Lands Protection Program, May 2006.

Greater Environmental Benefits

Participants are required to implement and maintain a NRCS approved conservation plan on grasslands enrolled in GRP. Conservation plans will result in improved grassland management enhancing infiltration, reducing soil erosion, increasing carbon sequestration, and reducing water runoff.

Infiltration: Higher water infiltration rates could be the most important ecological benefit of improved grazing land management. Infiltration is determined by soil structure, amount of cover, and type of cover. More water infiltration means more forage production. Before and after infiltration rates for six different regions including pasture lands were used to calculate a weighted average of 2.58 acre-inches per year (Spaeth, 2000; Namken, 2002). Besides improving production, higher water infiltration rates can improve site ecology. Water infiltration is also important for the recharge of underground aquifers and above ground springs.

Soil Erosion: Improved grazing management reduces average soil erosion 0.69 ton per acre per year (Spaeth, 2000). Additional erosion reductions result if GRP prevents grassland conversion to cropland.

Carbon Sequestration: Improved grassland management can increase carbon sequestration. Data indicates that an additional 0.11 tons of carbon per acre per year is sequestered (Follett, et al., 2000; Namken, 2002).

Runoff: The amount of grassland runoff will generally be reduced if forage is in better condition. Average runoff reduction was estimated to be 2.58 acre-inches per year (Namken, 2002). Less runoff increases water infiltration, enhancing forage production, aquifer recharge, and spring water production. Less runoff also means less erosion and sediment in the rivers and streams, improved water quality, enhanced recreational opportunities downstream, less reservoir silting, and reduced dredging.

Increased Wildlife Benefits

Slowing the loss of grassland habitats will help reduce the precipitous decline of wildlife species. Grasslands provide forage and habitat for many wildlife species, including declining populations of native grassland dependent birds and mammals such as the Greater Sage Grouse and Black-tailed Prairie Dog, of which have undergone decline commensurate with the overall decline in native grassland habitat (USGS). Prairie dogs are an indicator species for reduced grassland biodiversity. Since settlement of the United States, prairie dog populations have declined an estimated 98 percent. Endemic grassland bird species have also shown significant declines, such as species of significant decline. Species adversely impacted include sage grouse, prairie chickens, mountain plover, western meadowlark, and ferruginous hawk. A similar program, the Conservation Reserve Program, is estimated to provide annual wildlife-related benefits of \$30 per acre (FSA, 2003).

Recreational Benefits

Besides providing livestock and wildlife forage, grasslands generate income for landowners who lease their acreage for hunting, fishing, wildlife observation, and other recreational activities. Improved management that increases forage production can benefit wildlife populations on

participating acreage. Decreased runoff from maintaining grass cover will result in decreased sedimentation that will benefit downstream water quality and on- or off-site recreational benefits.

Direct and Indirect Beneficial Effects: Quantitative Discussion

The benefits of protecting and restoring grasslands through easement purchases and rental contracts are variable between locations and often difficult to measure. It is also difficult to place a monetary value on all environmental and social benefits. However, it is possible to place a dollar value on improved forage production, wildlife habitat, and carbon sequestration. Table 3 summarizes the monetary beneficial values for GRP assumed in this analysis.

Table 3. Selected benefits from GRP.

<u>Benefit Category</u>	<u>Source of Benefit</u>	<u>Benefit per unit (2007 dollars)</u>	<u>Citation</u>
Grazing land productivity*	Productivity increase with grazing management plan	\$8.63 per acre per year	Namken and Flanagan 2000
Wildlife habitat*	Use value (improved wildlife viewing, and improved pheasant hunting)	\$7.10 per acre per year	Feather et al. 1999
Carbon sequestration	Additional carbon sequestered, based on CCX carbon credit values	\$0.47 per acre per year	NRCS
Total Monetary Benefits: \$16.20 per acre per year			

*Only 50 percent of the estimated benefits are credited to GRP, as GRP lands are working lands and most studies involved benefits derived from retiring lands.

The following sections discuss how these benefits were estimated.

Grazing land productivity

A grazing management plan was not required for GRP during FY 2003–FY 2007, though a conservation plan was required. However, most land under a GRP contract had a minimal level of grazing and wildlife management as a result of the landowner working closely with NRCS technical specialists that resulted in increased forage production.

Namken and Flanagan (2000) report that typical grazing land conservation practices increased average productivity by 1.3 animal unit months (AUMs) per acre per year. The AUMs were valued at \$11.10 each, resulting in a per acre value of \$14.43. The \$14.43 value was updated from year 2000 to year 2007, resulting in a grazing land improvement benefit of \$17.25/acre/year. The move to a grazing plan and an emphasis on grazing productivity with the 2008 Act is the basis for an assumed increased benefit of productivity of \$8.63/acre/year (one-half of the value found in the literature).

Wildlife habitat

GRP keeps grazed land available for wildlife habitat. A great deal has been written about the values of wildlife conservation (Gibilisco and Filipek, 1998). The National Survey of Fishing, Hunting, and Wildlife-Associated Recreation⁵ conducted by the U.S. Fish and Wildlife Service, contains extensive data on consumer expenditures relating to wildlife-based activities.

For this analysis, benefits are calculated based on Feather, et al. where benefits are based on the value of using the resource. Specifically, benefits are calculated for wildlife viewing and pheasant hunting.

Although improvements in wildlife habitat benefit a number of avian species, the demand for pheasant hunting was easiest to quantify. The ERS model evaluated the quantity and quality of the cover available for specific avian species, and then estimated the surplus resulting from converting land to CRP. Since establishing grassland or forest cover creates suitable habitat for birds, small and large game hunters and wildlife viewers then benefit from these increased populations (Feather, p. 10). The model also incorporated travel costs, landscape diversity, and population density.

There are similarities in calculating the benefits resulting from GRP based on the CRP. For example, CRP land is retired from production and planted into grass and forbs. GRP land either remains in grass and forbs or is restored to grass and forbs. Even though it may be grazed, it is still available for wildlife. The minimum contract lengths for both programs are similar.

The annual benefits for improved wildlife habitat are based on ERS studies of the CRP program. They involve two components: improved wildlife viewing (\$10.02 per acre), and improved pheasant hunting (\$2.36 per acre). These benefit estimates were reduced 50 percent (\$6.19 per acre) to account for factors such as expected lower per acre benefits on “working” lands versus retired lands, different spatial proximity of GRP lands than CRP lands, longer contract length, etc. Adjusting the value from 2002 to 2007, the resulting benefit is \$7.10 per acre.

Other recreational activities are not covered such as nature walking, or big game hunting. In addition, *non-use values* are not quantified, or were values given to the existence of an environmental resource even though it is not currently used, such as existence value, bequest value, or option value (Smith, 1996).

The benefits are based on expenditure or use data for the identified recreational purposes, and the surplus resulting from GRP. There are significant benefits for other uses that are not quantified, such as small and large game hunting. Benefits that are more difficult to quantify are not included because they are non-monetary and include values given to existence of resources not currently used.

⁵2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation available at: <http://www.census.gov/prod/2008pubs/fhw06-errata.pdf>

Carbon sequestration

The value of carbon benefits are based on the discussion of the “social cost of carbon” contained in EPA’s “Technical Support Document on Benefits of Reducing GHG Emissions.”⁶ In addition to direct effects, wildlife habitat and range improvement practices are expected to increase carbon sequestration. In addition, residue and tillage practices associated with erosion control are expected to reduce oxidation of carbon from cropland, and in some cases actually increase carbon sequestration on those lands as well.

For the purposes of this analysis, USDA utilizes the three percent discount rate mid-range domestic estimate of the social cost of carbon of \$2.00 per metric ton, which yields a value per acre of carbon sequestration of 47¢ per acre per year.

Benefit Transfer Values Used in this Analysis: All GRP contracts and easements will include an on-site environmental evaluation and a grazing management plan that integrate and access economic, social, and ecological considerations to meet private and public needs. The expected effects of a conservation plan are assessed in the context of ecological, economic, and social considerations as documented locally in the Field Office Technical Guide (FOTG). The expected impacts of those effects on natural resource quality, economic needs, and social objectives are then used to help develop and evaluate individual management alternatives on each farm/ranch. This approach enables USDA to enhance the program's ability to address national grassland resource concerns, and enables States to address unique grassland concerns within the context of a specific grassland ecosystem within their State. The efforts above, plus the fact that GRP retains the current “benefits kept in place”, supports the assumption that some additional environmental benefits can accrue to existing grazing lands as a result of landowners entering into easement and rental contracts with NRCS. In this analysis, it is assumed that the following three items increase: 1) lands realize a 50 percent gain in grazing land productivity (\$8.63); and 2) in wildlife habitat improvement (\$7.10); and 3) carbon sequestration increases by a small amount (\$0.47).

Discounting the Flow of Costs and Benefits over Time

Benefits and costs were not discounted over time because both were assumed to be affected by the social preference for money in the same way. Also, it must be kept in mind that GRP land is kept in production with minimal additional land treatments and additional incurred costs. In fact, the only costs considered are the government outlays related to GRP payments.

GRP Policy Scenarios Considered

Two baselines were considered in this analysis: 1) “baseline one” which assumes that no action is made in altering GRP according to the 2008 Act; and 2) “baseline two” which assumes that actions have been taken to incorporate all changes mandated by the 2008 Act into GRP. This analysis examines one scenario against baseline one and two scenarios against baseline two as described below and in table 4 below.

⁶Available at: www.regulations.gov. Please search on the full title of the document.

Baseline one assumes no action

- “Policy scenario one” examines how the existing program would affect program outcomes within the expanded acreage targets outlined in the 2008 Act.

Baseline two gives estimates of program outcomes with the full implementation of the 2008 Act

- “Policy scenario two” examines program outcomes when GRP reflects the changes in the 2008 Act, but funding and acreage targets are set at the pre-2008 Act levels with the accompanying acreage target levels.
- “Policy scenario three” highlights the estimated program outcomes when the 40-60 Percent Mix is dropped.

Table 4. Summary of GRP policy scenarios in this analysis.

<u>Baseline / Scenario</u>	<u>Description of Baseline / Scenario</u>	<u>Information for FY 2009–FY 2012</u>
A Baseline One	No action on the 2008 Act GRP changes (baseline), GRP will continue at FY 2007 acreage goal levels through FY 2009–FY 2012.	Baseline of old program.
B Policy Scenario One	No action on the 2008 Act GRP changes (baseline), GRP to reflect the 2008 Act acreage goal levels through FY 2009–FY 2012.	Outcomes given the 2008 Act GRP funding acreage levels using baseline one program provisions.
C Baseline Two	Full implementation of the 2008 Act GRP changes.	Outcomes given full implementation of the 2008 Act GRP changes.
D Policy Scenario Two	Full implementation of the 2008 Act GRP changes, but funding/acreage goals set at FY 2007 acreage goal levels through FY 2009–FY 2012.	Outcomes given the 2008 Act GRP statutory provisions with previous funding, acreage levels.
E Policy Scenario Three	Implement the 2008 Act GRP changes without 40-60 Percent Mix.	Outcomes given implementation of the 2008 Act without the 40-60 provision in GRP.

Baseline One – No action on the 2008 Act GRP changes; GRP will continue at FY 2007 funding levels through FY 2009–FY 2012

The No-Action scenario involves not proceeding with the implementation of program changes to GRP as required by Congress in the 2008 Act, but maintaining the existing contracts signed from FY 2003 to FY 2007 (a five-year period) and obligating new contracts at the same annual rate as the FY 2007 annual acreage rate over the FY 2009–FY 2012 period (a four-year period). This option provides a baseline to compare changes in the program, divorced of program changes and acreage goals set out in the 2008 Act. The expected annual acreage increases and cumulative totals over FY 2009–FY 2012 under these assumptions are given in table 5.

Table 5. Baseline one – annual and cumulative acreage changes.

	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2009–FY 2012</u>
	----- Acres -----				
30-year Easement	1,957	1,957	1,957	1,957	7,828
Permanent Easement	<u>21,113</u>	<u>21,113</u>	<u>21,113</u>	<u>21,113</u>	<u>84,452</u>
Sub-Total – Easements	23,070	23,070	23,070	23,070	92,280
10-year Contract	62,525	62,525	62,525	62,525	250,100
15-year Contract	16,023	16,023	16,023	16,023	64,092
20-year Contract	15,862	15,862	15,862	15,862	63,448
30-year Contract	<u>17,995</u>	<u>17,995</u>	<u>17,995</u>	<u>17,995</u>	<u>71,980</u>
Sub-Total – Contracts	112,405	112,405	112,405	112,405	449,620
Annual Grand Totals	135,475	135,475	135,475	135,475	541,900

Baseline One – Costs:

Total obligations over the FY 2009–FY 2012 period are estimated at \$120.5 million over nearly 542 thousand acres (table 6). All costs (and benefits) are expressed in constant 2007 dollars.

Table 6. Baseline one – annual cost estimates assumed in this analysis, FY 2009–FY 2012.

	<u>Initial obligations/ Acre</u>	<u>Annualized Costs/ Year</u>	<u>Acres/ Year</u>	<u>Obligations/ Initial Year</u>	<u>Annualized Costs/Year</u>
30-year Easement	\$416	\$13.88	1,957	\$815,073	\$27,169
Permanent Easement	\$443	\$8.86	<u>21,113</u>	<u>\$9,352,103</u>	<u>\$187,042</u>
Sub-Total – Easements			23,070	\$10,167,176	\$214,211
10-year Contract	\$139	\$13.89	62,525	\$8,684,763	\$868,476
15-year Contract	\$169	\$11.30	16,023	\$2,715,361	\$181,024
20-year Contract	\$208	\$10.38	15,862	\$3,291,498	\$164,575
30-year Contract	\$292	\$9.75	<u>17,995</u>	<u>\$5,261,596</u>	<u>\$175,387</u>
Sub-Total – Contracts			112,405	\$19,953,219	\$1,389,462
Annual Grand Totals			135,475	\$30,120,395	\$1,603,673
Totals for FY 2009 – FY 2012			541,900	\$120,481,580	\$6,414,692

Baseline One – Benefits:

The per-acre annual benefits of baseline one are expected to be the same as was assumed during GRP FY 2003–FY 2007 (\$16.20 per acre). The annualized costs of the program from table 6 are compared to benefits on an annual basis and in the aggregate (table 7). These results suggest that increased federal government outlays for GRP, even if the program did not mirror the changes in the 2008 Act, produce positive net benefits.

Table 7. Baseline one – estimated annual total benefits and costs, FY 2009–FY 2012.

	Total Benefits per Year	Annualized Costs per Year	Net Benefits per Year
30-year Easement	\$31,703	\$27,169	\$4,534
Permanent Easement	<u>\$342,024</u>	<u>\$187,042</u>	<u>\$154,982</u>
Sub-Total – Easements	\$373,728	\$214,211	\$159,516
10-year Contract	\$1,012,905	\$868,476	\$144,429
15-year Contract	\$259,579	\$181,024	\$78,555
20-year Contract	\$256,958	\$164,575	\$92,383
30-year Contract	<u>\$291,513</u>	<u>\$175,387</u>	<u>\$116,126</u>
Sub-Total – Contracts	\$1,820,955	\$1,389,462	\$431,493
Annual Grand Totals	\$2,194,682	\$1,603,673	\$591,009
Totals for FY 2009 – FY 2012	\$8,776,019	\$6,414,692	\$2,361,327

Policy Scenario One – Implement FY 2007 GRP Requirements with the 2008 Act GRP acreage goals

Policy scenario one involves not proceeding with the implementation of any structural program changes to GRP as required by Congress in the 2008 Act but obligating new contracts in order to attain the acreage goals prescribed in the 2008 Act (1.22 million acres over the four years). This effectively more than doubles the program acreage accrued over the same period if it proceeded at the rate during the FY 2003–FY 2007 period. These results provide estimates of the costs and benefits involved in attaining the acreage goals of the 2008 Act while NOT adopting any policy changes required under it.

Table 8. Policy scenario one – annual and cumulative acreage changes.

	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2009–FY 2012</u>
	----- Acres -----				
30-year Easement	4,406	4,406	4,406	4,406	17,624
Permanent Easement	<u>47,532</u>	<u>47,532</u>	<u>47,532</u>	<u>47,532</u>	<u>190,128</u>
Sub-Total – Easements	51,938	51,938	51,938	51,938	207,752
10-year Contract	140,766	140,766	140,766	140,766	563,064
15-year Contract	36,074	36,074	36,074	36,074	144,296
20-year Contract	35,710	35,710	35,710	35,710	142,840
30-year Contract	<u>40,512</u>	<u>40,512</u>	<u>40,512</u>	<u>40,512</u>	<u>162,048</u>
Sub-Total – Contracts	253,062	253,062	253,062	253,062	1,012,248
Annual Grand Totals	305,000	305,000	305,000	305,000	1,220,000

Policy Scenario One – Costs:

The cost per acre was assumed to remain at the same levels as contracts made in the period from FY 2003– FY 2007. This more-than doubling of program acres, however, implies that obligations would grow to be over \$271 million covering over the acreage goal of 1.22 million acres (table 9).

Table 9. Policy scenario one – annual cost estimates assumed in this analysis, FY 2009–FY 2012.

	<u>Initial obligations/ Acre</u>	<u>Annualized Costs/ Year</u>	<u>Acres/ Year</u>	<u>Obligations/ Initial Year</u>	<u>Annualized Costs/Year</u>
30-year Easement	\$416	\$13.88	4,406	\$1,835,016	\$61,167
Permanent Easement	\$443	\$8.86	<u>47,532</u>	<u>\$21,054,869</u>	<u>\$421,097</u>
Sub-Total – Easements			51,938	\$22,889,885	\$482,264
10-year Contract	\$139	\$13.89	140,766	\$19,552,452	\$1,955,245
15-year Contract	\$169	\$11.30	36,074	\$6,113,232	\$407,549
20-year Contract	\$208	\$10.38	35,710	\$7,410,319	\$370,516
30-year Contract	\$292	\$9.75	<u>40,512</u>	<u>\$11,845,700</u>	<u>\$394,857</u>
Sub-Total – Contracts			253,062	\$44,921,703	\$3,128,167
Annual Grand Totals			305,000	\$67,811,588	\$3,610,431
Totals for FY 2009 – FY 2012			1,220,000	\$271,246,352	\$14,441,724

Policy Scenario One – Benefits:

As with costs, the per-acre benefit level (\$16.20 per acre) is assumed to remain constant over the FY 2009–FY 2012 period as the rate in the FY 2003–FY 2007 period. With the acreage increase implied in policy scenario one, total net benefits of GRP are expected to more than double to over \$5.3 million, from \$2.3 million in baseline one (table 10).

Table 10. Policy scenario one – estimated annual total benefits and costs, FY 2009–FY 2012.

	<u>Total Benefits per Year</u>	<u>Annualized Costs per Year</u>	<u>Net Benefits per Year</u>
30-year Easement	\$71,353	\$61,167	\$10,186
Permanent Easement	<u>\$769,729</u>	<u>\$421,097</u>	<u>\$348,681</u>
Sub-Total – Easements	\$841,132	\$482,264	\$358,868
10-year Contract	\$2,279,701	\$1,955,245	\$324,456
15-year Contract	\$584,223	\$407,549	\$176,675
20-year Contract	\$578,324	\$370,516	\$207,808
30-year Contract	<u>\$656,094</u>	<u>\$394,857</u>	<u>\$261,238</u>
Sub-Total – Contracts	\$4,098,343	\$3,128,167	\$970,176
Annual Grand Totals	\$4,939,475	\$3,610,431	\$1,329,044
Totals for FY 2009 – FY 2012	\$19,757,900	\$14,441,724	\$5,316,175

Baseline Two – Full Implementation of the 2008 Act GRP Requirements

This scenario involves implementing GRP under the Interim Final Rule developed by NRCS and according to the statutory requirements that Congress has placed on the program.

This scenario incorporates the provision that 30-year easements and 30-year contracts are no longer available and that 40 percent of the funding will be allocated to rental contracts and 60 percent to permanent easements, to the extent practicable

NRCS will promulgate the Interim Final Rule at the National level to ensure consistency of program implementation across the nation. As such, it is assumed that the initial acreage distribution would be very much the same as under policy scenario one if the 40-60 Percent Mix provision was not followed. From that backdrop, one then must assume how the acreage that would have been enrolled in 30-year contracts and 30-year easements would be allocated across the other contract types.

Initially, all of the 30-year contracts and 30-year easements were placed in the 20-year contract category. The underlying assumption made was that participants prefer long-term arrangements and that the 20-year contract was the only alternative for them to replace the 30-year contract or

30-year easement that is now no longer available to them. This placement of this acreage resulted in an annual easement/contract mix of 15-85 for program acreage and 35-65 for program obligations. This program obligation percentage for permanent easements fell far short of the goal of 60 percent.

To move to an allocation solution which produces a 40-60 Percent Mix, program enrollments need to move away from the apparently higher-cost contracts (long-term) to lower-cost ones (short-term) to off-set the higher-cost permanent easement contracts. This movement is necessary to satisfy the 40-60 Percent Mix while keeping overall program as low as possible. Nearly 45,000 acres (which formally would have enrolled either in a 30-year contract or easement) would need to move into the permanent easement category or short-term contracts. A feasible solution was found and resulted in the acreage shifts depicted in table 11. This placement of this acreage resulted in an annual easement/contract percent mix of 33-67 for program acreage and 40-60 for program obligations meeting the requirements of the 2008 Act.

Table 11. Baseline two – annual and cumulative acreage changes.

	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2009–FY 2012</u>
	----- Acres -----				
30-year Easement	0	0	0	0	0
Permanent Easement	<u>100,000</u>	<u>100,000</u>	<u>100,000</u>	<u>100,000</u>	<u>400,000</u>
Sub-Total – Easements	100,000	100,000	100,000	100,000	400,000
10-year Contract	140,000	140,000	140,000	140,000	560,000
15-year Contract	25,000	25,000	25,000	25,000	100,000
20-year Contract	40,000	40,000	40,000	40,000	160,000
30-year Contract	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Sub-Total – Contracts	205,000	205,000	205,000	205,000	820,000
Annual Grand Totals	305,000	305,000	305,000	305,000	1,220,000

Baseline Two – Costs:

The per-acre cost was assumed to remain at the same levels as contracts made in the period of FY 2003–FY 2007. The resultant obligations and annualized costs are calculated by simple multiplication of acres times costs (table 12).

Table 12. Baseline two – annual cost estimates assumed in this analysis, FY 2009–FY 2012.

	<u>Initial obligations/ Acre</u>	<u>Annualized Costs/ Year</u>	<u>Acres/ Year</u>	<u>Obligations/ Initial Year</u>	<u>Annualized Costs/Year</u>
30-year Easement	\$416	\$13.88	0	\$0	\$0
Permanent Easement	\$443	\$8.86	<u>100,000</u>	<u>\$44,296,313</u>	<u>\$885,926</u>
Sub-Total – Easements			100,000	\$44,296,313	\$885,926
10-year Contract	\$139	\$13.89	140,000	\$19,446,091	\$1,944,609
15-year Contract	\$169	\$11.30	25,000	\$4,236,556	\$282,437
20-year Contract	\$208	\$10.38	40,000	\$8,300,546	\$415,027
30-year Contract	\$292	\$9.75	<u>0</u>	<u>\$0</u>	<u>\$0</u>
Sub-Total – Contracts			205,000	\$31,983,193	\$2,642,073
Annual Grand Totals			305,000	\$76,279,506	\$3,527,999
Totals for FY 2009 – FY 2012			1,220,000	\$305,118,024	\$14,111,996

Baseline Two – Benefits:

The per-acre benefit level (\$16.20 per acre) is assumed to remain the same, over the period of FY 2009–FY 2012, as the rate in the FY 2003–FY 2007 period. With the acreage increase implied in baseline two, total net benefits of GRP are expected to be \$1.4 million per year or \$5.6 million over the FY 2009–FY 2012 period (table 13).

Table 13. Baseline two – estimated annual total benefits and costs, FY 2009–FY 2012.

	<u>Total Benefits per Year</u>	<u>Annualized Costs per Year</u>	<u>Net Benefits per Year</u>
30-year Easement	\$0	\$0	\$0
Permanent Easement	<u>\$1,619,500</u>	<u>\$885,926</u>	<u>\$733,574</u>
Sub-Total – Easements	\$1,619,500	\$885,926	\$733,574
10-year Contract	\$2,267,500	\$1,944,609	\$322,691
15-year Contract	\$404,875	\$282,437	\$122,438
20-year Contract	\$647,800	\$415,027	\$232,773
30-year Contract	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>
Sub-Total – Contracts	\$3,319,975	\$2,642,073	\$677,902
Annual Grand Totals	\$4,939,475	\$3,527,999	\$1,411,475
Totals for FY 2009 – FY 2012	\$19,757,900	\$14,111,996	\$5,645,901

Policy Scenario Two – Implement the 2008 Act GRP Requirements at Previous Acreage Targets

Keeping in mind that GRP is driven by an annual acreage target, this scenario looks at what would have occurred if the 2008 Act was enacted under the previous acreage target (135,500 acres per year). Acreage moves out of 30-year contracts and 30-year easement and migrate to other enrollment categories while still aiming to hit the acreage target. A feasible solution which satisfies the obligation 40-60 Percent Mix is provided below (table 14).

Table 14. Policy scenario two – annual and cumulative acreage changes.

	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2009–FY 2012</u>
	----- Acres -----				
30-year Easement	0	0	0	0	0
Permanent Easement	<u>43,500</u>	<u>43,500</u>	<u>43,500</u>	<u>43,500</u>	<u>174,000</u>
Sub-Total – Easements	43,500	43,500	43,500	43,500	174,000
10-year Contract	63,000	63,000	63,000	63,000	252,000
15-year Contract	10,000	10,000	10,000	10,000	40,000
20-year Contract	19,000	19,000	19,000	19,000	76,000
30-year Contract	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Sub-Total – Contracts	92,000	92,000	92,000	92,000	368,000
Annual Grand Totals	135,500	135,500	135,500	135,500	542,000

Policy Scenario Two – Costs:

The per-acre cost was assumed to remain at the same levels as contracts made in the period of FY 2003–FY 2007 period. The resultant obligations and annualized costs are calculated by simple multiplication of acres times the per-acre cost estimates (table 15).

Table 15. Policy scenario two – annual cost estimates assumed in this analysis, FY 2009–FY 2012.

	<u>Initial obligations/ Acre</u>	<u>Annualized Costs/ Year</u>	<u>Acres/ Year</u>	<u>Obligations/ Initial Year</u>	<u>Annualized Costs/Year</u>
30-year Easement	\$416	\$13.88	0	\$0	\$0
Permanent Easement	\$443	\$8.86	43,500	\$19,268,896	\$385,378
Sub-Total – Easements			43,500	\$19,268,896	\$385,378
10-year Contract	\$139	\$13.89	63,000	\$8,750,741	\$875,074
15-year Contract	\$169	\$11.30	10,000	\$1,694,622	\$112,975
20-year Contract	\$208	\$10.38	19,000	\$3,942,759	\$197,138
30-year Contract	\$292	\$9.75	0	\$0	\$0
Sub-Total – Contracts			92,000	\$14,388,122	\$1,185,187
Annual Grand Totals			135,500	\$33,657,018	\$1,570,565
Totals for FY 2009 – FY 2012			542,000	\$134,628,072	\$6,282,260

Policy Scenario Two – Benefits:

Because the pre-acre value of benefits is constant on all acres regardless of the type of contract, total benefits under policy scenario two are roughly identical to benefits under baseline one. With slightly lower annualized costs moving to longer-term contracts, net benefits are marginally higher (table 16).

Table 16. Policy scenario two – estimated annual total benefits and costs, FY 2009–FY 2012.

	<u>Total Benefits per Year</u>	<u>Annualized Costs per Year</u>	<u>Net Benefits per Year</u>
30-year Easement	\$0	\$0	\$0
Permanent Easement	\$704,483	\$385,378	\$319,105
Sub-Total – Easements	\$704,483	\$385,378	\$319,105
10-year Contract	\$1,020,285	\$875,074	\$145,211
15-year Contract	\$161,950	\$112,975	\$48,975
20-year Contract	\$307,705	\$197,138	\$110,567
30-year Contract	\$0	\$0	\$0
Sub-Total – Contracts	\$1,489,940	\$1,185,187	\$304,753
Annual Grand Totals	\$2,194,423	\$1,570,565	\$623,858
Totals for FY 2009 – FY 2012	\$8,777,690	\$6,282,260	\$2,495,431

Policy Scenario Three – Implement the 2008 Act GRP Requirements without 40-60 Percent Mix

This scenario involves implementing GRP under the Interim Final Rule developed by NRCS and according to the statutory requirements that Congress has placed on the program with one important provision missing: it does not consider the 40-60 Percent Rule discussed previously.

This scenario takes the information from the initial acreage allocation attempted in constructing baseline two and uses it for the acreage allocation. That is, the total initial acreage exiting the 30-year rental and 30-year easement type contracts are assumed to fully move into 20-year contracts unrestricted.

Table 17. Policy scenario three – annual and cumulative acreage changes.

	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2009–FY 2012</u>
	----- Acres -----				
30-year Easement	0	0	0	0	0
Permanent Easement	<u>47,532</u>	<u>47,532</u>	<u>47,532</u>	<u>47,532</u>	<u>190,128</u>
Sub-Total – Easements	47,532	47,532	47,532	47,532	190,128
10-year Contract	140,766	140,766	140,766	140,766	563,064
15-year Contract	36,074	36,074	36,074	36,074	144,296
20-year Contract	80,628	80,628	80,628	80,628	322,512
30-year Contract	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Sub-Total – Contracts	257,468	257,468	257,468	257,468	1,029,872
Annual Grand Totals	305,000	305,000	305,000	305,000	1,220,000

Policy Scenario Three – Costs:

Again, the assumption was made that the obligation cost per acre remained at the same levels as contracts made in the period FY 2003–FY 2007 and that there would be an additional 1.22 million acres as specified under the 2008 Act. Given the acreage shifts noted above, the resultant obligations would be expected to be lower (as the mix of contracts move away from apparently more expensive longer-term contracts) while annualized costs would be expected to be lower (as the mix of contracts would be expected to be higher as they move to shorter-term contracts with effectively higher annual costs). Obligations decrease to almost \$63 million while annualized costs rise marginally (table 18). Because the obligation cost per contract for a 20-year contract is lower than a 30-year easement or 30-year contract, movement of acreage from the 30-year easement and 30-year contract category to the 20-year contract category appears to lower program cost. However, given the assumptions used to construct “annualized costs”, it will be seen that net benefits are actually lowered when the 40-60 Percent Mix is relaxed.

Table 18. Policy scenario three – annual cost estimates assumed in this analysis, FY 2009–FY 2012.

	<u>Initial obligations/ Acre</u>	<u>Annualized Costs/ Year</u>	<u>Acres/ Year</u>	<u>Obligations/ Initial Year</u>	<u>Annualized Costs/Year</u>
30-year Easement	\$416	\$13.88	0	\$0	\$0
Permanent Easement	\$443	\$8.86	<u>47,532</u>	<u>\$21,054,869</u>	<u>\$421,097</u>
Sub-Total – Easements			47,532	\$21,054,869	\$421,097
10-year Contract	\$139	\$13.89	140,766	\$19,552,452	\$1,955,245
15-year Contract	\$169	\$11.30	36,074	\$6,113,232	\$407,549
20-year Contract	\$208	\$10.38	80,628	\$16,731,429	\$836,571
30-year Contract	\$292	\$9.75	<u>0</u>	<u>\$0</u>	<u>\$0</u>
Sub-Total – Contracts			257,468	\$42,397,113	\$3,199,365
Annual Grand Totals			305,000	\$63,451,982	\$3,620,462
Totals for FY 2009 – FY 2012			1,220,000	\$253,807,928	\$14,481,848

Policy Scenario Three – Benefits:

Because the pre-acre value of benefits is constant on all acres regardless of the type of contract, total benefits under this scenario are identical to benefits under baseline two. With slightly higher annualized costs, net benefits are marginally lowered (table 19) under this scenario than under baseline two.

Table 19. Policy scenario three – estimated annual total benefits and costs, FY 2009–FY 2012.

	<u>Total Benefits per Year</u>	<u>Annualized Costs per Year</u>	<u>Net Benefits per Year</u>
30-year Easement	\$0	\$0	\$0
Permanent Easement	<u>\$769,779</u>	<u>\$421,097</u>	<u>\$348,681</u>
Sub-Total – Easements	\$769,779	\$421,097	\$348,681
10-year Contract	\$2,279,701	\$1,955,245	\$324,456
15-year Contract	\$584,223	\$407,549	\$176,675
20-year Contract	\$1,305,772	\$836,571	\$469,200
30-year Contract	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>
Sub-Total – Contracts	\$4,169,696	\$3,199,365	\$970,331
Annual Grand Totals	\$4,939,475	\$3,620,462	\$1,319,012
Totals for FY 2009 – FY 2012	\$19,757,900	\$14,481,848	\$5,276,049

Results

The results of this interim final benefit-cost analysis suggest that GRP creates positive net benefits. Given the assumptions on the calculations related to “annualized costs”, any scenario which maximizes the amount of long-term contracts and easements are most favorable in rising net benefits. This reasoning seems to suggest that the shift to permanent easements as specified in the 2008 Act lowers long-term government costs and raises net benefits. This reasoning is confirmed when one compares the results of baseline one (which does not require a 40-60 Percent Mix) and policy scenario two (which does) and when one compares baseline two (which requires a 40-60 Percent Mix.) and policy scenario three (which does not).

It is interesting to note that the 40-60 Percent Mix rule has the greatest impact on past program performance purely based on the movement of GRP contracts moving away from 30-year contracts/easements to permanent easements. Actually one would imagine that benefits would be greater with longer-term contracts given the increased certainty that the land will stay in grazing and must be managed accordingly. No analysis was conducted on the discretionary policy item involving cooperative agreements with eligible entities. This analysis was not possible given the limited program data to base any assumptions on the likely extent of any increased activity due to this change.

Summary of Baseline / Policy Scenarios

Baseline two is the preferred policy option because it meets the objectives that Congress emphasized in the statute and lowers the annualized, annual costs associated with GRP contracts.

Table 20. Comparison of Baseline / Policy Scenarios.

Baseline / Scenario	Description	Annual Acre Levels			Annual Obligations			Net Benefits
		Total	Percent in:		Total	Percent in:		
			Ease-ments	Agree-ments		Ease-ments	Agree-ments	
Baseline One	As acreage increase rate as in FY 2003–FY 2007 period	135,475	17%	83%	\$30,120,395	34%	66%	\$591,009
Policy Scenario One	Increase acreage as prescribes in the 2008 Act	305,000	17%	83%	\$67,811,588	34%	66%	\$970,176
Baseline Two	Full Implementation of the 2008 Act	305,000	33%	67%	\$76,279,506	58%	42%	\$1,411,475
Policy Scenario Two	The 2008 Act changes with previous acreage targets	135,500	32%	68%	\$33,657,018	57%	43%	\$623,858
Policy Scenario Three	Implement the 2008 Act without 40-60 Percent Mix	305,000	16%	84%	\$63,451,982	33%	67%	\$1,319,012

Conclusions and Recommendations

Substantial social, economic, and environmental benefits are associated with preserving grasslands in and around metropolitan and rural communities. These benefits include: maintenance of ecological goods and services (such as those affecting ground water recharge; storm water management; carbon emissions and capture of carbon through agricultural systems; air quality; water quality; and biodiversity and habitat); social or human valued amenities (such as protecting: cultural resources and community heritage; recreational opportunities; scenic vistas and sound stewardship of the land) and economic (such as fostering a: diverse local economy; agro-tourism; possibly less “inputs” used and less needed for “restorative” conservation practices through the preservation of prime and state wide important farmlands for agricultural use; a more sustainable development pattern; fewer losses from natural resources disasters by not putting people in harms way; and stewardship ethic and practices of agricultural landowner versus lack of stewardship on non-agricultural lands (over use of fertilizers)).

There are tradeoffs involved in actions that protect grasslands from development to the local community and social at large. Development may simply be displaced to another location, perhaps creating even greater economic and environmental damage. However, if one assumes that agricultural producers and local communities are the chief decision makers in this choice of whether to develop or preserve grass land for the current and later generations, there is a strong possibility that alternative agricultural enterprises or non-agricultural land use (displaced by GRP contracts) will be eventually driven to a location with less detrimental impacts.

NRCS’s GRP may be able to play a special role in grass land retention programs. Through its leveraging of its money, GRP can reach out to more acres than would be possible and might encourage similar actions on the part of others. Money received from GRP by producers could allow them to invest in their agricultural operation and secure past conservation investments that producers on easement-protected farmlands could have been taken on solely by the producer or as a participant in other NRCS programs.

The benefits exceed the costs of protecting grassland when ecological goods and services are included in the analysis. Benefits will be maintained (and possibly increase) by keeping current grasslands in agriculture. Non-market valued amenities on working lands will be maintained and core agricultural activities in local communities will be preserved into the future. Development on grasslands is largely irreversible and would permanently close off these benefits to future generations.

NRCS would recommend baseline two with assurances to OMB that every effort will be made to place agricultural easements on grassland facing extreme conversion to alternative agricultural or non-agricultural land use pressure and where local easement programs may benefit from NRCS efforts to supplement their efforts and funding sources.

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