# Supplemental Environmental Impact Statement for Emergency Conservation Program


**Farm Service Agency**
**United States Department of Agriculture**

Draft

May 2008

# Draft Supplemental Environmental Impact Statement

**Expansion of the Emergency Conservation Program**
**Farm Service Agency**
**U.S. Department of Agriculture**
***Abstract***

The Emergency Conservation Program (ECP) provides emergency funding to farmers and ranchers who have suffered damage to their agricultural lands as a result of a natural disaster. The goal of ECP is to restore agricultural lands to a normal productive state after a natural disaster and provide assistance to producers to carry out emergency water conservation or enhancing measures in times of severe drought. Under the proposed action, the Farm Service Agency (FSA) would expand ECP eligibility to other types of farmland, namely timberland, farmsteads, roads, and feedlots. To implement the proposed action, FSA would develop a Proposed Rule meant to clarify current regulations and expand upon them to reflect changes to the policy. This draft Supplemental Environmental Impact Statement (SEIS) analyzes the impacts of the proposed action on the nation's environmental resources and economy. The no action alternative (continuation of current program) is also analyzed in this statement to provide an environmental baseline.

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# EXECUTIVE SUMMARY

## S.1.0 BACKGROUND

The Emergency Conservation Program (ECP) provides emergency funding to farmers and ranchers who have suffered damage to their agricultural lands as a result of natural disasters, such as, severe wind erosion, floods, hurricanes, or drought. ECP is permanently authorized by Title IV of the Agricultural Credit Act of 1978 and is administered by the U.S. Department of Agriculture (USDA) Farm Service Agency (FSA).

The goal of ECP is to provide assistance to agricultural producers to restore agricultural lands to a productive state following a natural disaster and to carry out emergency water conservation or water enhancing measures during periods of severe drought. Producers can apply for one time cost-share and technical assistance for authorized activities under the following emergency conservation (EC) practices:

- (EC 1) Removing Debris From Farmland
- (EC 2) Grading, Shaping, Releveling, or Similar Measures
- (EC 3) Restoring Permanent Fences
- (EC 4) Restoring Conservation Structures and Other Similar Installations
- (EC 5) Emergency Wind Erosion Control Measures
- (EC 6) Drought Emergency Measures
- (EC 7) Other Emergency Conservation Measures
- (EC 8) Field Windbreaks and Farmstead Shelterbelt Emergency Measures

The current ECP and the authorized practices were assessed for potential environmental impacts in accordance with the National Environmental Policy Act (NEPA) in an Environmental Impact Statement (EIS) finalized in March 2003. FSA is proposing a change to ECP which requires the preparation of a Supplemental Environmental Impact Statement (SEIS). The proposed change would expand land eligibility to include additional types of agricultural lands beyond pastureland, cropland, and hayland. Changes to the current practices or payment calculations are not being proposed.

## S.2.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

Eligibility is currently limited to farmland defined as cropland, hayland, and pastureland. The proposed action would expand that definition to include timberland, farmsteads, feedlots, farm roads, and farm buildings. The purpose of the proposed action is to expand

the eligibility requirements of the current ECP. The need for the proposed change is to better assist producers in recovering from a natural disaster.

## S.3.0 CURRENT PROGRAM

ECP was created in 1978 to provide financial and technical assistance to producers for restoring agricultural land to normal production following a natural disaster. Regulatory procedures for implementing ECP are addressed in 7 Code of Federal Regulations Part 701 and further outlined in the FSA Handbook for State and County Offices 1-ECP (USDA 2007).

### S.3.1 ELIGIBLE DISASTERS

A producer is eligible for ECP benefits if one of the following natural disasters has occurred:

- Hurricane or typhoon
- Tornado
- High winds, including micro-bursts
- Storms, including ice storms
- Floods
- High water
- Wind-driven water
- Tidal waves
- Earthquakes
- Volcanic eruptions
- Landslides
- Mudslides
- Severe snowstorms
- Drought
- Wildfire
- Other natural phenomenon

Following a disaster event, County Committees (COC) visit the site and make an assessment of the damage to ensure it meets the minimum ECP requirements. The COC then obtains concurrence from the State Committee (STC) before approving the disaster

for cost-share assistance. During periods of severe drought the determination to implement the program is made by the FSA National ECP Manager. The damage must:

- Create new conservation problems which, if not treated, would impair or endanger the land;
- Materially affect the productivity of the land;
- Represent unusual damage that does not occur frequently; or,
- Be so costly to repair that Federal assistance is required to return the land to productive agricultural use.

### S.3.2 ELIGIBLE PARTICIPANTS

A producer eligible for ECP must be a farmer or rancher who contributes part of the cost for implementing the approved practice and has an interest in the farm. An agricultural producer is defined as an owner, landlord, tenant, or sharecropper of a farm or ranch that is used to produce crops for food or fiber in a commercial operation that occurs on an annual basis. American Indian tribes or individuals that own eligible land are eligible for ECP benefits. Federal agencies, states, political subdivisions of states, state agencies, and districts with taxing authority are not eligible for ECP benefits.

### S.3.3 ELIGIBLE LAND

The land eligible for assistance must be located in the county in which ECP has been implemented, normally used for farming or ranching operations, and expected to have annual agricultural production. Eligible land is broadly defined as cropland, hayland, and pastureland. Additionally, land that is eligible under ECP includes land:

- Protected by levees or dikes built to U.S. Army Corps of Engineers, Natural Resource Conservation Service, or similar standards, that were effectively functioning before the disaster;
- Protected by permanent or temporary vegetative cover;
- Used for commercially producing orchards, citrus groves, and vineyards;
- Used for producing agricultural commodities;
- Where conservation structures are installed, including waterways, terraces, sediment basins, diversions, windbreaks, etc. not funded by other conservation programs.
- In Christmas tree plantations.
- Devoted to container-grown nursery stock if the nursery stock is grown commercially for wholesale purposes and is grown on land in containers for at least one year.

- In field windbreaks or farm shelterbelts where the practice is to remove debris and correct damages caused by the disaster.
- On which facilities are located in irrigation canals or facilities that are located on the inside of the canal's banks as long as the canal is not a channel subject to flooding.

### S.3.4 FUNDING

ECP funds are held in reserve at the national level and allocated after a natural disaster determination has been made authorizing ECP designation. Funds are allocated to states based on an estimate of funds needed to begin implementing the program. The states then allocate funds to the appropriate counties. The funds are distributed to applicants on a first-come, first-serve basis until they run out.

Agricultural producers applying for ECP assistance can receive reimbursement for up to 75 percent of the cost of activities covered under the approved conservation practices. The total cost-share provided to an individual participant per natural disaster cannot exceed $200,000. Financial assistance cannot be provided for activities that receive cost-shares under other FSA emergency or conservation programs.

Provisions are included in ECP to assure that special consideration is given to limited resource producers in order that the most beneficial use of ECP may be obtained. The definition of a "limited resource producer" is any producer: with direct or indirect gross farm sales not more than $100,000 in each of the previous two years; and has a total household income at or below the national poverty level for a family of four or less than 50 percent of the county median household income in each of the previous two years. Limited resource producers can receive up to 90 percent cost-share for implementing approved practices under ECP.

## S.4.0 PROPOSED ACTION

The proposed action is to expand the definition of farmland beyond cropland, pastureland, and hayland to make ECP available for rehabilitating other agricultural lands. Expanding the definition of farmland would add approximately 426 million acres to what is currently eligible (34 percent increase) across the U.S. The proposed action does not include changes to the practices or the funding provisions described in Section S.3.0.

Currently, eligible land for ECP benefits is limited to cropland, pastureland, and hayland. FSA is proposing to expand the eligibility requirement to include timberland, farmsteads, feedlots, farm roads, and farm buildings. This proposed change would allow producers to receive financial assistance for implementing approved practices on these lands to return the farm to normal operating conditions.

A farm requires several buildings and structures to make the farm operational. In addition, multiple roads are required to facilitate worker, equipment, and automotive access to crops, buildings, and fields. Debris resulting from damage to such structures can prohibit access to croplands and damage surrounding land, halting agricultural production and creating significant unexpected financial strain for the producer. Under the proposed ECP, the cost of repair of these structures is not covered, but repair and clearing of the land surrounding these structures would be eligible.

Timberland is forested land that is primarily dedicated to the commercial production of wood and fiber. Areas qualifying as timberland have the capability of producing more than 20 cubic feet per acre per year of industrial wood in natural stands. Natural disasters can cover land with debris, burn or otherwise destroy protective vegetation, contaminate soils, deposit sediment, increase runoff, and create landslides. All of these impacts could severely affect the commercial value of the timber.

## S.5.0 NO ACTION ALTERNATIVE

Under this alternative, ECP would continue as it is currently administered and described in Section S.3.0. ECP benefits would not be available for lands other than those currently eligible (namely cropland, hayland, and pastureland).

## S.6.0 AFFECTED ENVIRONMENT

The geographic scope of the environment potentially affected by ECP encompasses agricultural lands of the U.S. and its territories. As such, the 2003 ECP EIS provided descriptions of the natural environment as well as socioeconomics for all agricultural lands across the U.S. This SEIS focuses descriptions of the affected environment to the proposed expansion of ECP: timberlands, roads, farmsteads, feedlots, and farm buildings. Since the affected environment for implementation of ECP would be lands where a natural disaster has occurred, a brief review of the effect of natural disasters on each resource is provided in this document. A full description of the effects of natural disasters is provided in the 2003 ECP EIS.

Resource areas potentially affected by this proposed action and analyzed in detail in this SEIS include:

- Biological Resources
- Water Resources
- Soil Resources
- Cultural Resources
- Socioeconomics
- Environmental Justice

## S.7.0 ENVIRONMENTAL CONSEQUENCES

The environmental consequences from the proposed action and the no action alternative are addressed in this SEIS and summarized in **Table S.1**.

## Table S.1 Summary of Environmental Consequences

| Resource | No Action (Current Program) | Proposed Action (Expansion) |
|---|---|---|
| **Biological Resources** *vegetation, wildlife, and protected species* | Removing debris, shaping and leveling land, reestablishing vegetation, and restoring conservation structures after a natural disaster would have long term positive impacts to vegetation and wildlife. Reestablishing permanent vegetation and conservation structures would ultimately improve local water quality and wildlife habitat promoting biological diversity.<br><br>If protected species are present or suspected of being present, informal consultation with the U.S. Fish and Wildlife Service would occur during the site-specific environmental evaluation to ensure the protection of these species.<br><br>Temporary negative impacts could occur with the use of heavy machinery to establish some practices. These effects would be temporary and localized. The disturbance from heavy machinery would not be greater than the disturbance associated with normal agricultural practices. | Expanding the current program to include timberlands and other areas within the farmstead would have the same long term positive impacts as the current program. With the addition of timberland, there is a higher likelihood for encountering previously undisturbed land. Removing debris, shaping and leveling land, reestablishing vegetation and restoring conservation structures in these areas would promote vegetation growth and wildlife diversity.<br><br>Protected species that occur or have the potential to occur would be protected through informal consultation with the U.S. Fish and Wildlife Service during the site-specific environmental evaluation.<br><br>Temporary negative impacts from the use of heavy machinery could occur with some practices. Establishing access roads in timberland areas would temporarily remove vegetation in the immediate area. |
| **Water Resources** *surface water, groundwater and aquifers, floodplains, and wetlands* | The goal of many of the practices is to restore agricultural land to prohibit further erosion and degradation of local water quality. Positive impacts to surface water quality, groundwater quality, floodplains, and wetlands would be realized from implementation of the practices. Removing debris, restoring vegetation, repairing conservation structures, reestablishing windbreaks, and releveling the land would all provide erosion control and limit runoff potential.<br><br>The use of heavy machinery could temporarily increase runoff and erosion potential. These impacts would be localized and cease once construction has ended. | Similar to the current program, expanding the program would improve local water quality, floodplains, and improve nearby wetlands for newly eligible areas. Impacts to groundwater within timberlands are not expected since it is unlikely that any of the practices associated with wells would occur in timberlands.<br><br>The use of heavy machinery in timberlands could temporarily increase runoff and erosion potential. These impacts would be localized and cease once construction has ended. |

Table S.1 Summary of Environmental Consequences (cont'd.)

| Resource | No Action (Current Program) | Proposed Action (Expansion) |
|---|---|---|
| **Soil Resources** | Positive impacts to local soils are expected since most practices are designed to increase soil stability. Reestablishing vegetation, windbreaks, wind control measures, and removing gullies all reduce erosion potential.<br><br>The use of heavy machinery during implementation of some of the practices could compact soils impairing water infiltration and vegetation growth. | Potential impacts to soils in timberlands would be similar to those described for the current program with the exception that practices could be implemented in areas where soils have not been disturbed from routine farming activities. Reestablishing vegetation, wind control measures, and releveling land would all reduce erosion potential and protect the area from soil loss.<br><br>The use of heavy machinery, especially in timberland areas, could compact soils impairing water infiltration and vegetation growth. |
| **Cultural Resources** | Removing debris, releveling land, and establishing wind erosion measures on lands with historic significance would have beneficial effects to these areas by restoring access and removing potential contaminants that would threaten the integrity of the site.<br><br>The use of heavy equipment could negatively affect historic properties through ground disturbance.<br><br>Site specific environmental evaluation in accordance with 1-EQ would determine the presence of a specific property included or eligible for inclusion on the National Register of Historic Places and provide compliance with Section 106 of the National Historic Preservation Act. | Expanding the program eligibility to timberland, farmsteads and farm buildings would increase the potential for encountering a historic property. Potential beneficial and adverse impacts to these sites would be the same as those described under the current program.<br><br>Site specific environmental evaluation would determine the presence of a specific property included or eligible for inclusion on the National Register of Historic Places and provide compliance with Section 106 of the National Historic Preservation Act. |

Table S.1 Summary of Environmental Consequences (cont'd.)

| Resource | No Action (Current Program) | Proposed Action (Expansion) |
|---|---|---|
| **Socioeconomics** | The program provides financial assistance to producers to restore lands to normal farming production. Without the assistance of the program, these lands might be too costly to repair. The producer and the local economy experience a slightly positive economic impact as a result of the program. | Expanding the eligibility of the program would have similar socioeconomic impacts as the current program. The budgeted amount for the program and the individual operator cap of $200,000 would remain unchanged. Therefore, increasing the land eligible for cost-share assistance would either (1) allow for higher payment to a producer, not to exceed the cap, or (2) allow more producers to apply for assistance. |
| **Environmental Justice** | The program provides funding to a producer at a time when it is most needed and helps to maintain the local economy. A low income producer would benefit the most from the program since they may not be financially able to restore the land without the assistance and are eligible for a higher cost-share. Potential impacts to the natural environment would not be considered significant under the current program, therefore, there are no environmental justice concerns. | Similar to the current program, expanding the eligibility provides funding to producers at a time when it is most needed. Low income producers would continue to be eligible for a higher cost-share. Potential impacts to the natural environment would not be considered significant under the proposed expansion; therefore, there are no environmental justice concerns. |

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# Table of Contents

# Figures

Page



# Tables

Page

# Acronyms and Abbreviations

| | |
|---|---|
| AGI | Adjusted Gross Income |
| ARMS | Agricultural Resource Management Survey |
| BMPs | best management practices |
| CFR | Code of Federal Regulations |
| CEQ | Council on Environmental Quality |
| COC | County Committees |
| EC | emergency conservation practice |
| ECP | Emergency Conservation Program |
| EPA | Environmental Protection Agency |
| EWP | Emergency Watershed Protection |
| ESA | Endangered Species Act |
| EIS | Environmental Impact Statement |
| EI | Erodibility Index |
| EO | Executive Order |
| FSA | Farm Service Agency |
| FEMA | Federal Emergency Management Agency |
| HEL | Highly erodible lands |
| National Register | National Register of Historic Places |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservation Act |
| NPDES | National Pollutant Discharge Elimination System |
| NRCS | Natural Resource Conservation Service |
| RMA | Risk Management Agency |
| ROI | region of influence |
| STC | State Committee |
| SHPO | State Historic Preservation Officer |
| SEIS | Supplemental Environmental Impact Statement |
| TCP | traditional cultural properties |
| USACE | U.S. Army Corps of Engineers |
| USCB | U.S. Census Bureau |
| USDA | U.S. Department of Agriculture |
| USFWS | U.S. Fish and Wildlife Service |
| USGS | U.S. Geological Survey |

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# 1.0 PURPOSE AND NEED

> *The environmental impact statement shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives, including the proposed action.*
>
> 40 CFR 1502.13

## 1.1 BACKGROUND

The Emergency Conservation Program (ECP) provides emergency funding to farmers and ranchers who have suffered damage to their agricultural lands as a result of natural disasters, such as, severe wind erosion, floods, hurricanes, or drought. ECP is permanently authorized by Title IV of the Agricultural Credit Act of 1978 and is administered by the U.S. Department of Agriculture (USDA) Farm Service Agency (FSA).

The goal of ECP is to provide assistance to agricultural producers to restore agricultural lands to a productive state following a natural disaster and to carry out emergency water conservation or water enhancing measures during periods of severe drought. Producers can apply for one time cost-share and technical assistance for authorized activities under the following emergency conservation (EC) practices:

- (EC 1) Removing Debris From Farmland
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- (EC 7) Other Emergency Conservation Measures
- (EC 8) Field Windbreaks and Farmstead Shelterbelt Emergency Measures

The current ECP and the authorized practices were assessed for potential environmental impacts in accordance with the National Environmental Policy Act (NEPA) in an Environmental Impact Statement (EIS) finalized in March 2003 (hereinafter referred to as 2003 ECP EIS) (USDA 2003). FSA is proposing a change to ECP which requires the preparation of a Supplemental Environmental Impact Statement (SEIS). The proposed change would expand land eligibility to include additional types of agricultural lands beyond pastureland, cropland, and hayland. Changes to the current practices or payment calculations are not being proposed.

## 1.2 REGULATORY COMPLIANCE

This SEIS has been prepared by the USDA FSA in accordance with the requirements of NEPA of 1969, the Council on Environmental Quality (CEQ) regulations implementing NEPA, and FSA's implementing regulations 7 Code of Federal Regulations (CFR) 799 Environmental Quality and Related Environmental Concerns – Compliance with the National Environmental Policy Act.

## 1.3 PURPOSE AND NEED

Eligibility for ECP is currently limited to farmland defined as cropland, hayland, and pastureland. The proposed action would expand that definition to include timberland, farmsteads, feedlots, farm roads, and farm buildings. The purpose of the proposed action is to expand the eligibility requirements of the current ECP. The need for the proposed change is to better assist producers in recovering from natural disasters.

## 1.4 CURRENT EMERGENCY CONSERVATION PROGRAM

ECP was established in 1978 to provide financial and technical assistance to producers for restoring agricultural land to normal production following a natural disaster. Regulatory procedures for implementing ECP are addressed in 7 CFR Part 701 and further outlined in the FSA Handbook for State and County Offices 1-ECP (USDA 2008).

### 1.4.1 Eligibility

In order for ECP to be administered, several specific eligibility requirements must be met. The FSA Handbook (1-ECP) details the requirements and provides multiple tools to assist STC and COC in correctly administering the program. The basic eligibility requirements are reviewed in the following sections.

#### 1.4.1.1 *Eligible Natural Disasters*

A producer may be eligible for ECP benefits if one of the following natural disasters has occurred:

- Hurricane or typhoon
- Tornado
- High winds, including micro-bursts
- Storms, including ice storms
- Floods
- High water
- Wind-driven water

- Tidal waves
- Earthquakes
- Volcanic eruptions
- Landslides
- Mudslides
- Severe snowstorms
- Drought
- Wildfire
- Other natural phenomenon

Following a disaster event, a County Committees (COC) representative visits the site and makes an assessment of the damage to ensure it meets the minimum ECP requirements. The COC then obtains concurrence from the State Committee (STC) before approving the disaster for cost-share assistance. During periods of severe drought the determination to implement the program is made by the FSA National ECP Manager. Disasters may be declared regionally, statewide, by county, or on an individual farm. The damage must:

- Create new conservation problems which, if not treated, would impair or endanger the land;
- Materially affect the productivity of the land;
- Represent unusual damage that does not occur frequently; or,
- Be so costly to repair that Federal assistance is required to return the land to productive agricultural use.

#### 1.4.1.2 *Eligible Program Participants*

A producer eligible for ECP must be a farmer or rancher who contributes part of the cost for implementing the approved practice, and has an interest in the farm. An agricultural producer is defined as an owner, landlord, tenant, or sharecropper of a farm or ranch that is used to produce crops for food or fiber in a commercial operation that occurs on an annual basis. American Indian tribes or individuals are eligible for ECP benefits. Federal agencies, states, political subdivisions of states, state agencies, and districts with taxing authority are not eligible for ECP benefits.

#### 1.4.1.3 *Eligible Land*

The land eligible for receiving assistance must be physically located in the county in which ECP has been implemented, normally used for farming or ranching operations, and expected to have annual agricultural production. Eligible land is broadly defined as

cropland, hayland, and pastureland (refer to the Glossary Section 9.0 for definitions of these terms). Additionally, land that is eligible under ECP includes land:

- Protected by levees or dikes built to U.S. Army Corps of Engineers (USACE), Natural Resource Conservation Service (NRCS), or similar standards, that were effectively functioning before the disaster;
- Protected by permanent or temporary vegetative cover;
- Used for commercially producing orchards, citrus groves, and vineyards;
- Used for producing agricultural commodities;
- Where conservation structures are installed, including waterways, terraces, sediment basins, diversions, windbreaks, etc. not funded by other conservation programs;
- In Christmas tree plantations;
- Devoted to container-grown nursery stock if the nursery stock is grown commercially for wholesale purposes and is grown on land in containers for at least one year.
- In field windbreaks or farm shelterbelts where the practice is to remove debris and correct damages caused by the disaster;
- On which facilities are located in irrigation canals or facilities that are located on the inside of the canal's banks as long as the canal is not a channel subject to flooding.

#### 1.4.1.4 *Ineligible Land*

Ineligible land can be defined in a broad sense as land that is not considered to be in agricultural production, such as land devoted to stream banks, channels, levees, dikes, native woodland areas, roads, recreational uses, timberland, farmsteads, feedlots, and farm buildings. In addition, land owned or controlled by the U.S., states, state agencies, or other political subdivisions of a state is ineligible for ECP. Land that is subject to frequent damage or flooding, or where poor farming practices have contributed to the damage is not eligible for ECP.

ECP benefits are not approved for areas where implementation of practices would drain or negatively impact the quality of any wetland. To ensure the protection of these sensitive areas, site-specific environmental evaluations are done in conjunction with ECP applications as described in the FSA Handbook for Environmental Quality Programs (1-EQ) (USDA 2008).

### 1.4.2 Emergency Conservation Practices

Natural disasters can be detrimental to the land by covering the land with debris, destroying or damaging vegetation, contaminating soils, depositing sediment over croplands, increasing runoff, creating landslides, contaminating drinking water supplies, and affecting the local water supply. FSA has developed a group of conservation practices to assist producers in returning their land to agricultural production while maintaining conservation measures to protect or restore the natural environment. Specific activities authorized under each practice are detailed in **Table 1.4-1**. An overview of each practice is provided below.

***Debris removal*** **(EC 1)** provides cost-share assistance for physically removing debris on the farmland in an effort to return the land to normal agricultural production. Debris remaining after a natural disaster is unsightly and can have a wide range of effects such as, blocking farm roads and field access, burying cropland in a thick layer of sediment, or creating public health and environmental hazards. Debris can be disposed of on site, hauled off-site, or burned. Under this practice, all debris must be disposed of in a way that will not interfere with existing conservation facilities or create a health hazard or environmental problem.

***Grading, shaping, releveling, or similar measures*** **(EC 2)** allows producers to repair gullies, humps, ridges or depressions created from excessive erosion, scouring rains or flooding, uprooted vegetation, and debris. These changes to the farmland topography may cause water to pond on the ground surface, result in sand and silt deposits, and result in loss of protective vegetation. Restoration may require replanting vegetation in critical areas, mulching or planting hay or pastureland, mechanically smoothing or leveling the land to restore irrigation.

***Restoring permanent fences*** **(EC 3)** allows producers to restore damaged cross fences, boundary fences, and cattle gates less than 30 years old. The fence material may be reused for fence construction or disposed of as debris. Depending on the type of fence, heavy machinery may be involved with debris removal or construction.

***Restoring conservation structures*** **(EC 4)** allows producers to replace or repair structures or installments that provide irrigation water to fields and crops, vegetation for erosion control, water and waste storage, water source protection, and water supply for livestock and wildlife. These structures are needed to make farmland operational and their destruction can significantly halt farm operations. Restoration of these structures will often require the use of heavy machinery for earth moving activities, and removing sediment deposits and debris.

***Emergency wind erosion control measures*** **(EC 5)** such as contour or cross slope chiseling and deep plowing to bring subsoil clods to the surface can be applied to farmland

subject to serious wind erosion because of extended periods of drought or inadequate crop residue or stubble. Wind erosion can occur during high winds from severe storms, tornados, drought, and significantly fire damaged farmlands.

***Drought emergency measures*** **(EC 6)** provides water conservation and enhancement measures to: permit grazing of range, pasture, or forage by livestock; supply emergency water for existing irrigation systems serving orchards and vineyards; and provide emergency water for confined livestock operations. This practice can only be applied in times of drought and includes activities such as the installation of pipelines, wells, water storage facilities for livestock, water collection facilities, and springs or seeps. Installation of these measures requires the use of heavy machinery.

***Other emergency conservation measures*** **(EC 7)** such as replacing or restoring a conservation or pollution abatement practice damaged by the natural disaster may be approved under ECP. This practice allows for cost-share assistance for those impacts resulting from natural disasters that have not occurred before. These activities must be approved by the ECP Program Manager.

***Field windbreaks and farmstead shelterbelts emergency measures*** **(EC 8)** restore field windbreaks and farmstead shelterbelts to help stop wind erosion and provide energy conservation. Windbreaks or shelterbelts are linear plantings of trees and shrubs used to protect wind-sensitive crops, reduce wind erosion, and if properly planted around a farmstead can reduce heating and cooling costs and energy use. Typical activities under this practice include removing debris, purchasing tree and shrub seedlings, and planting trees and shrubs to re-establish the damaged windbreak.

## Table 1.4-1. Overview of ECP Practices

| Code | Practice | Authorized | Not Authorized |
|---|---|---|---|
| EC 1 | Debris Removal | Removing debris from farmland that meets all of the following criteria:<br>• Materially affects the productive capacity of the land<br>• Prevents carrying out effective conservation measures<br>• Prevents returning the land to productive agricultural use<br>• Is of a magnitude that requires the use of hired or personal:<br>o Labor not normally required in the operation of the farm or ranch<br>o Equipment that would not normally have been required in the operation of the farm or ranch<br>Removing debris from farmsteads and access roadways that could significantly interfere with normal farming operations. | Removing debris that will not interfere with normal farming operations. |
| EC 2 | Grading, Shaping, Releveling, or Similar Measures | • Grading, shaping, and filling gullies created by the disaster.<br>• Releveling of previously leveled irrigated farmland.<br>• Removing humps, ridges, or depressions if they cause water to pond on the land surface.<br>• Incorporating sand or silt deposits into the soil.<br>• Re-establishing permanent vegetative cover on areas where all of the following are present:<br>o Grading and shaping is required for rehabilitation of the area.<br>o The pre-existing permanent vegetative cover was destroyed.<br>The area involved would be subject to critical wind or water erosion unless the cover is re-established. | • Establishing vegetative cover on land where it did not previously exist, including drainage ways, even though grading and shaping is required to correct damage on the land.<br>• Releveling measures on irrigated farmland that constitute floating or land planing.<br>• Performing measures in connection with normal farming operations.<br>• Repairing and restoring roadways, including field roads if required to correct damage on the land. |

## Table 1.4-1. Overview of ECP Practices (cont'd.)

| Code | Practice | Authorized | Not Authorized |
|---|---|---|---|
| EC 3 | Restoring Permanent Fences | • Restoring or replacing fences needed to restore the land to productive agricultural use.<br>• Restoring or replacing the lesser of:<br>  o The same type of fence existing before the disaster.<br>  o Cost-share for the actual cost of the fence restored or replaced.<br>• Cross fences.<br>• Boundary fences.<br>• Cattle gates. | • Fence reconstruction with minor damage when materials from the previous fence are used.<br>• Reuse of material from the fence damaged by the disaster.<br>• Fences surrounding:<br>  o Corrals and feedlots.<br>  o Ornamental fences.<br>  o Holding pens.<br>  o Cattle guards.<br>  o For the purpose of enclosing or excluding livestock. |
| EC 4 | Restoring Conservation Structures and Other Installations | • Dams, ponds, and other water impoundments for agricultural use.<br>• Sod waterways.<br>• Installed open or closed drainage systems.<br>• Diversions or spreader ditches.<br>• Terrace systems.<br>• Structures for the protection of outlets or water channels before the disaster.<br>• Wells.<br>• Springs.<br>• Pipelines.<br>• Buried mainlines.<br>• Ditches and other permanently installed systems.<br>• Permanent vegetative cover including re-establishment where needed in conjunction with:<br>  o Eligible structures.<br>  o Installations to prevent critical erosion and siltation.<br>• Animal waste lagoons repaired or replaced outside the 100-year floodplain. | • Animal waste lagoons repaired or replaced in areas that flood more frequently than once in 100 years.<br>• Irrigation wells.<br>• Portable pumps.<br>• Motors.<br>• Portable pipe.<br>• Roadways including field roads.<br>• Wheel move systems.<br>• Hand move systems.<br>• Center pivot systems. |

Table 1.4-1. Overview of ECP Practices (cont'd.)

| Code | Practice | Authorized | Not Authorized |
|---|---|---|---|
| EC 5 | Emergency Wind Erosion Control Measures | • Contour or cross slope chiseling.<br>• Chiseling where impractical to perform on the contour or on the cross slope.<br>• Deep plowing or similar measures to bring subsoil clods to the surface. | Measures considered to be normal farming operations, such as those needed to prepare a seedbed for the next crop. |
| EC 6 | Drought Emergency Measures | • Installing pipe to another source of water because the primary source is inadequate.<br>• Storage facilities, including tanks and troughs above ground, if needed to supply water for immediate needs of livestock.<br>• Constructing and deepening wells for livestock water.<br>• Constructing tail water recovery pits for any irrigation system to orchards and vineyards.<br>• Developing springs or seeps for livestock water.<br>• Wells where there is no other source of emergency water available that could be developed at less expense.<br>• Measures to provide emergency water for livestock confinement operations on the farm that were in confinement before the drought.<br>• Permanently installed submersible pump of a size that would address the needs of livestock on hand at time of disaster.<br>• Solar panels to provide power to pump water for livestock and the solar panels are the least costly alternative. | • Constructing pipelines to supply water for vegetable or other short term crops.<br>• Establishing permanent or temporary vegetative cover.<br>• Livestock water facilities primarily for barns, recreation, wildlife, or corrals, except for livestock already in confinement.<br>• Livestock water facilities to make it possible to graze crop residues, field borders, temporary or supplemental pasture crops.<br>• Water facilities primarily for headquarters.<br>• Livestock water facilities to provide water on land on which the cover will be used for hay, silage, or field chopped and hauled to headquarters for feeding.<br>• Pipe other than well casing in connection with pumps, pumping equipment, and windmills.<br>• Dry well.<br>• Pumps or motors. |

## Table 1.4-1. Overview of ECP Practices (cont'd.)

| Code | Practice | Authorized | Not Authorized |
|---|---|---|---|
| EC 7 | Other Emergency Conservation Measures | • Replacing or restoring a conservation or pollution abatement practice damaged by the natural disaster.<br>• Restoring the land to its normal agricultural production capacity.<br>• Conserving or enhancing water resources.<br>• Silt removal from water retention structures during drought.<br>• Hauling water to livestock during drought conditions. | Measures for the solution of conservation or environmental problems existing before the disaster. |
| EC 8 | Field Windbreaks and Farmstead Shelterbelts Emergency Measures | • Removing debris from field windbreaks or farmstead shelterbelts.<br>• Replacing damaged field windbreaks or farmstead shelterbelts.<br>• Purchasing tree seedlings or young shrubs used for field windbreaks or farmstead shelterbelts.<br>• Establishing vegetative cover where needed to prevent serious erosion until trees or shrubs are established.<br>• Chemical or mechanical weed control measures:<br>  o Only where needed to establish trees for the windbreak.<br>  o Only during the first 24 months after planting. | • Windbreaks or shelterbelts that:<br>  o Were not pre-existing.<br>  o Were not damaged by the disaster.<br>  o Are in the Conservation Reserve Program.<br>• Planting orchard trees or ornamental plantings. |

## 1.4.3 Funding

ECP funds are held in reserve at the national level and allocated after a natural disaster determination has been made authorizing ECP designation. Funds are allocated to states based on an estimate of funds needed to begin implementing the program. The states then allocate funds to the appropriate counties. The funds are distributed to applicants on a first-come, first-serve basis until they run out.

Between 2002 and 2006, ECP allocated $617 million in assistance to over 247,000 farms across the country in order to rehabilitate agricultural lands damaged by natural disasters (**Figure 1.4-1 and Table 1.4-2**). Florida received the most funding during this time period ($77 million); however, the state with the most farms assisted (over 41,000) is North Carolina. From 2002 through 2006, hurricanes resulted in the highest total dollars, highest payout per participant, and highest payout per acre. However, drought has resulted in the highest number of participants (**Table 1.4-3**).

### 1.4.3.1 *Cost-share Specifications*

Agricultural producers applying for ECP assistance can receive reimbursement for 75 percent of the cost of activities covered under the approved conservation practices. The total cost-share provided to an individual participant per natural disaster cannot exceed $200,000. Financial assistance cannot be provided for activities that receive cost-shares under other FSA emergency or conservation programs.

Figure 1.4-1. Total Cost-Share Allocated by ECP from 2002 to 2006.

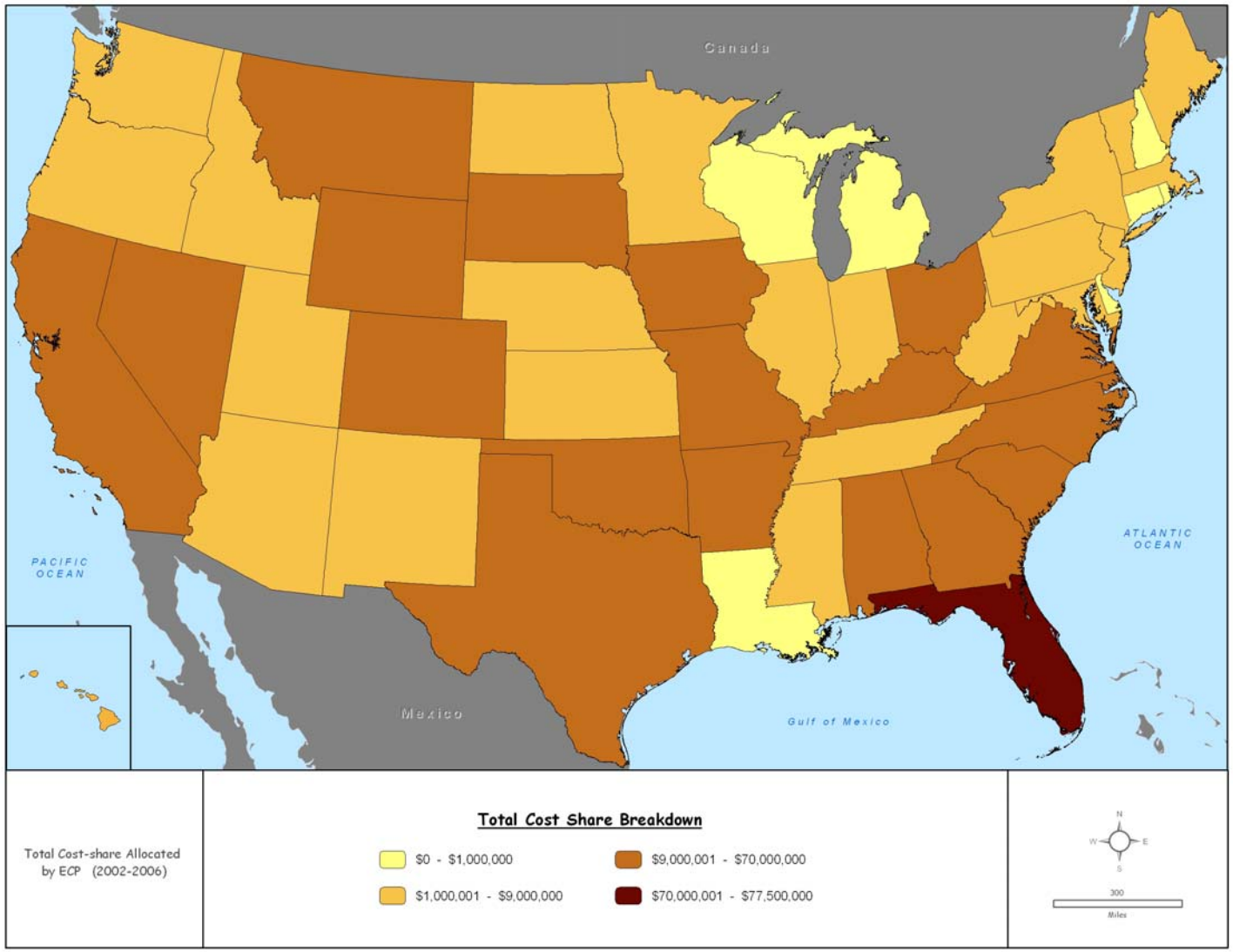


Table 1.4-2. Summary of ECP Cost-share Assistance per State from 2002-2006.

| State | Cost-share Assistance | Farms Assisted | Average Cost-share per Farm | % Utilization of the Program |
|---|---|---|---|---|
| Alabama | $43,108,680 | 19,639 | $2,195 | 6.9895% |
| Arizona | $3,021,630 | 1,671 | $1,808 | 0.4899% |
| Arkansas | $9,864,051 | 5,106 | $1,932 | 1.5993% |
| California | $12,603,714 | 1,145 | $11,008 | 2.0435% |
| Colorado | $13,439,304 | 3,421 | $3,928 | 2.1790% |
| Connecticut | $729,429 | 113 | $6,455 | 0.1183% |
| Delaware | $1,920 | 3 | $640 | 0.0003% |
| Florida | $77,489,379 | 12,277 | $6,312 | 12.5639% |
| Georgia | $53,390,847 | 11,983 | $4,456 | 8.6567% |
| Hawaii | $4,839,693 | 344 | $14,069 | 0.7847% |
| Idaho | $8,402,577 | 1,916 | $4,385 | 1.3624% |
| Illinois | $3,260,007 | 1,450 | $2,248 | 0.5286% |
| Indiana | $1,091,406 | 658 | $1,659 | 0.1770% |
| Iowa | $11,129,011 | 5,558 | $2,002 | 1.8044% |
| Kansas | $1,337,160 | 658 | $2,032 | 0.2168% |
| Kentucky | $15,595,596 | 8,138 | $1,916 | 2.5286% |
| Louisiana | $295,140 | 98 | $3,012 | 0.0479% |
| Maine | $1,308,519 | 567 | $2,308 | 0.2122% |
| Maryland | $2,443,524 | 820 | $2,980 | 0.3962% |
| Massachusetts | $2,699,490 | 555 | $4,864 | 0.4377% |
| Michigan | $335,238 | 40 | $8,381 | 0.0544% |
| Minnesota | $5,691,268 | 1,903 | $2,991 | 0.9228% |
| Mississippi | $1,303,356 | 1,247 | $1,045 | 0.2113% |
| Missouri | $22,569,615 | 9,321 | $2,421 | 3.6594% |
| Montana | $27,835,311 | 6,869 | $4,052 | 4.5131% |
| Nebraska | $5,092,852 | 2,256 | $2,257 | 0.8257% |
| Nevada | $10,101,867 | 895 | $11,287 | 1.6379% |
| New Hampshire | $723,915 | 202 | $3,584 | 0.1174% |
| New Jersey | $4,263,912 | 154 | $27,688 | 0.6913% |
| New Mexico | $4,069,500 | 1,027 | $3,963 | 0.6598% |
| New York | $6,065,874 | 2,456 | $2,470 | 0.9835% |
| North Carolina | $54,521,949 | 41,160 | $1,325 | 8.8400% |
| North Dakota | $1,604,223 | 850 | $1,887 | 0.2601% |
| Ohio | $13,337,196 | 8,983 | $1,485 | 2.1625% |
| Oklahoma | $22,204,555 | 12,604 | $1,762 | 3.6002% |
| Oregon | $4,073,118 | 854 | $4,769 | 0.6604% |
| Pennsylvania | $5,456,826 | 2,611 | $2,090 | 0.8848% |
| Rhode Island | $33,975 | 6 | $5,663 | 0.0055% |
| South Carolina | $13,444,824 | 13,913 | $966 | 2.1799% |
| South Dakota | $55,518,579 | 19,684 | $2,820 | 9.0016% |
| Tennessee | $7,259,535 | 4,363 | $1,664 | 1.1770% |

Table 1.4-2. Summary of ECP Cost-share Assistance per State from 2002-2006 (cont'd.)

| State | Cost-share Assistance | Farms Assisted | Average Cost-share per Farm | % Utilization of the Program |
|---|---|---|---|---|
| **Texas** | $16,340,175 | 7,174 | $2,278 | 2.6494% |
| **Utah** | $7,838,205 | 2,827 | $2,773 | 1.2709% |
| **Vermont** | $2,633,289 | 945 | $2,787 | 0.4270% |
| **Virginia** | $32,434,485 | 21,172 | $1,532 | 5.2588% |
| **Washington** | $8,610,636 | 1,444 | $5,963 | 1.3961% |
| **West Virginia** | $7,001,295 | 4,379 | $1,599 | 1.1352% |
| **Wisconsin** | $372,657 | 81 | $4,601 | 0.0604% |
| **Wyoming** | $9,971,412 | 2,278 | $4,377 | 1.6167% |
| **U.S.** | $616,760,719 | 247,818 | $2,489 | 100.0000% |

Table 1.4-3. ECP History by Major Disaster Type (2002 – 2006)

| Type of Disaster | No. Counties Receiving ECP Assistance | Total Acres Served | Total Number Participants | Total Dollars Paid for Disaster | Average Payout per Participant | Average Payout per Acre |
|---|---|---|---|---|---|---|
| Drought | 1,672 | 20,286,511 | 24,565 | $71,189,147 | $2,898 | $4 |
| Flood | 581 | 1,397,327 | 6,629 | $20,406,602 | $3,078 | $15 |
| Hurricane | 608 | 2,056,387 | 13,307 | $74,544,498 | $5,602 | $36 |
| Tornado | 292 | 416,676 | 3,504 | $10,343,057 | $2,952 | $25 |
| Other | 343 | 8,019,500 | 11,125 | $29,398,550 | $2,643 | $4 |

### 1.4.3.2 *Limited Resource Producer*

Provisions are included in ECP to assure that special consideration is given to limited resource producers in order that the most beneficial use of ECP may be obtained. The definition of a "limited resource producer" is any producer: with direct or indirect gross farm sales not more than $100,000 in each of the previous two years; and has a total household income at or below the national poverty level for a family of four or less than 50 percent of the county median household income in each of the previous two years. Limited resource producers can receive 90 percent cost-share for implementing approved practices under ECP.

# 2.0 PROPOSED ACTION AND ALTERNATIVES

*This section is the heart of the environmental impact statement. Based on information and analysis presented in the sections on the Affected Environment (1502.15) and the Environmental Consequences (1502.16), it should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining issues and providing a clear basis for choice among options by the decisionmaker and the public.*

40 CFR 1502.14

The proposed action is to expand the definition of farmland beyond cropland, pastureland, and hayland to make ECP available for rehabilitating other agricultural lands. The no action alternative, required by the CEQ will serve as the analytical environmental baseline against which other alternatives will be evaluated. The proposed action does not include changes to the approved practices described in Section 1.4.2 or the funding provisions described in Section 1.4.3. A comparison of the Proposed Action and No Action Alternatives are provided in **Table 2.0-1**.

**Table 2.0-1. Alternatives Comparison**

| **Program Components** | **No Action** (Current Program) | **Proposed Action** (Expansion) |
|---|---|---|
| Cost-Share Specifications | 75% for approved practices<br>90% for limited resource producer<br>$200,000 per person per disaster limit | No Change |
| Approved Practices | EC 1 Debris removal<br>EC 2 Grading and shaping<br>EC 3 Fence restoration<br>EC 4 Restoring conservation structures<br>EC 5 Emergency wind erosion control<br>EC 6 Water conservation<br>EC 7 Other conservation measures<br>EC 8 Field windbreaks and shelterbelts | No Change |
| Eligible Land | Cropland<br>Pastureland<br>Hayland | Expand definition to include:<br>Timberland<br>Farmsteads<br>Feedlots<br>Farm roads<br>Farm Buildings |

## 2.1 NO ACTION (CURRENT PROGRAM)

Under this alternative, ECP would continue as it is currently administered and described in Section 1.4. ECP benefits would not be available for lands other than those currently eligible (namely cropland, hayland, and pastureland).

## 2.2 PROPOSED ACTION (EXPANSION)

Currently, eligible land for ECP benefits is limited to cropland, pastureland, and hayland. FSA is proposing to expand the eligibility requirement to include timberland, farmsteads, feedlots, farm roads, and farm buildings. This proposed change would allow producers to receive financial assistance for implementing approved practices on these lands to return the farm to normal operating conditions.

A farm requires several buildings and structures to make the farm operational. In addition, multiple roads are required to facilitate worker, equipment, and automotive access to crops, buildings, and fields. Debris prohibiting access to croplands and damage to the land surrounding important facilities during a natural disaster can halt agricultural production and create significant unexpected financial strain for the producer. Under ECP, the cost of repair of these structures is not covered, but repair and clearing of the land surrounding these structures would be eligible.

Timberland is forested land that is primarily dedicated to the commercial production of wood and fiber. Areas qualifying as timberland have the capability of producing more than 20 cubic feet per acre per year of industrial wood in natural stands. Natural disasters can cover the land with debris, destroy or burn protective vegetation, contaminate soils, deposit sediment, increase runoff, and create landslides. All of these impacts could severely affect the commercial value of the timber.

Expanding the definition of farmland would add approximately 426 million acres to what is currently eligible (34 percent increase) across the U.S. (**Table 2.2-1**, **Figure 2.2-1**). Making ECP available to these additional acres of land represents a large increase in coverage of the program, however, a review of ECP funding data from 2002 through 2006 indicated that utilization of the program by individual states has varied from less than 0.001 percent (Delaware) to 12.5 percent (Florida) across the U.S. (refer to **Table 1.4-2**).

## Table 2.2-1. Currently Eligible Land and Proposed Expansion

| | Currently Eligible (acres) | | | Proposed Increase (acres) | | | |
|---|---|---|---|---|---|---|---|
| State | Cropland | Pastureland and Rangeland | Total | Timberland (Non-Federal) | Farmsteads, roads, feedlots, buildings[1] | Total | % Change |
| Alabama | 3,732,751 | 1,514,500 | 5,247,251 | 22,059,000 | 477,879 | 22,536,879 | 81 |
| Alaska | 98,131 | 730,478 | 828,609 | 7,114,000 | 29,862 | 7,143,862 | 90 |
| Arizona | 1,261,894 | 23,240,467 | 24,502,361 | 1,089,000 | 2,051,766 | 3,140,766 | 11 |
| Arkansas | 9,576,047 | 1,977,177 | 11,553,224 | 15,558,000 | 579,619 | 16,137,619 | 58 |
| California | 10,994,161 | 13,987,763 | 24,981,924 | 7,651,000 | 1,415,619 | 9,066,619 | 27 |
| Colorado | 11,530,700 | 17,341,749 | 28,872,449 | 3,587,000 | 875,657 | 4,462,657 | 13 |
| Connecticut | 170,673 | 21,988 | 192,661 | 1,689,000 | 37,262 | 1,726,262 | 90 |
| Delaware | 457,201 | 6,540 | 463,741 | 376,000 | 22,610 | 398,610 | 46 |
| Florida | 3,715,257 | 3,400,193 | 7,115,450 | 13,035,000 | 813,694 | 13,848,694 | 66 |
| Georgia | 4,676,567 | 1,173,187 | 5,849,754 | 22,416,000 | 608,777 | 23,024,777 | 80 |
| Hawaii | 211,120 | 852,626 | 1,063,746 | 700,000 | 119,068 | 819,068 | 44 |
| Idaho | 6,152,611 | 4,522,883 | 10,675,494 | 4,227,000 | 512,562 | 4,739,562 | 31 |
| Illinois | 24,171,260 | 770,995 | 24,942,255 | 3,774,000 | 831,932 | 4,605,932 | 16 |
| Indiana | 12,909,002 | 427,190 | 13,336,192 | 3,969,000 | 568,699 | 4,537,699 | 25 |
| Iowa | 27,153,291 | 1,735,421 | 28,888,712 | 1,900,000 | 1,504,026 | 3,404,026 | 11 |
| Kansas | 29,542,022 | 15,504,008 | 45,046,030 | 1,438,000 | 1,495,286 | 2,933,286 | 6 |
| Kentucky | 8,412,354 | 1,613,681 | 10,026,035 | 11,484,000 | 706,045 | 12,190,045 | 55 |
| Louisiana | 5,071,537 | 1,194,963 | 6,266,500 | 12,984,000 | 546,227 | 13,530,227 | 68 |
| Maine | 536,839 | 40,967 | 577,806 | 16,899,000 | 89,407 | 16,988,407 | 97 |
| Maryland | 1,487,218 | 120,419 | 1,607,637 | 2,346,000 | 113,367 | 2,459,367 | 60 |
| Massachusetts | 207,734 | 31,279 | 239,013 | 2,596,000 | 68,666 | 2,664,666 | 92 |
| Michigan | 7,983,574 | 254,062 | 8,237,636 | 16,024,000 | 681,085 | 16,705,085 | 67 |
| Minnesota | 22,729,158 | 1,187,082 | 23,916,240 | 12,704,000 | 1,620,535 | 14,324,535 | 37 |

Table 2.2-1. Currently Eligible Land and Proposed Expansion (cont'd.)

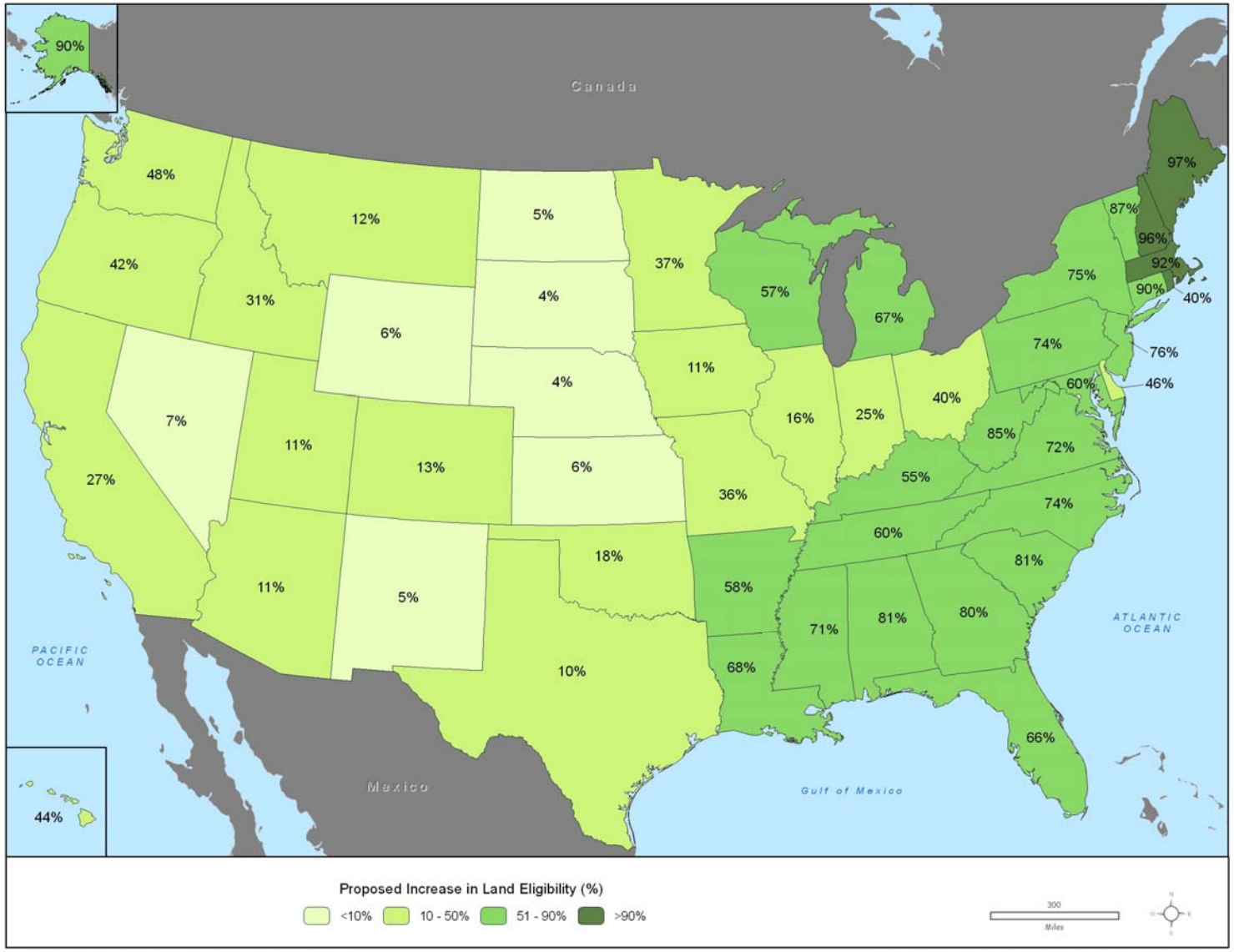
| State | Currently Eligible (acres) | | | Proposed Increase (acres) | | | |
|---|---|---|---|---|---|---|---|
| | Cropland | Pastureland and Rangeland | Total | Timberland (Non-Federal) | Farmsteads, roads, feedlots, buildings[1] | Total | % Change |
| **Mississippi** | 5,822,786 | 1,403,451 | 7,226,237 | 17,046,000 | 607,266 | 17,653,266 | 71 |
| **Missouri** | 18,884,920 | 4,854,438 | 23,739,358 | 11,804,000 | 1,354,103 | 13,158,103 | 36 |
| **Montana** | 18,315,514 | 38,241,382 | 56,556,896 | 6,679,000 | 854,945 | 7,533,945 | 12 |
| **Nebraska** | 22,520,874 | 21,940,679 | 44,461,553 | 850,000 | 1,059,412 | 1,909,412 | 4 |
| **Nevada** | 940,295 | 4,974,195 | 5,914,490 | 99,000 | 372,444 | 471,444 | 7 |
| **New Hampshire** | 129,388 | 19,848 | 149,236 | 3,961,000 | 29,175 | 3,990,175 | 96 |
| **New Jersey** | 547,668 | 41,579 | 589,247 | 1,822,000 | 66,406 | 1,888,406 | 76 |
| **New Mexico** | 2,575,107 | 39,136,229 | 41,711,336 | 1,530,000 | 550,368 | 2,080,368 | 5 |
| **New York** | 4,841,367 | 550,225 | 5,391,592 | 15,307,000 | 619,792 | 15,926,792 | 75 |
| **North Carolina** | 5,472,128 | 605,860 | 6,077,988 | 17,191,000 | 480,895 | 17,671,895 | 74 |
| **North Dakota** | 26,506,477 | 10,984,441 | 37,490,918 | 413,000 | 1,568,034 | 1,981,034 | 5 |
| **Ohio** | 11,424,499 | 796,078 | 12,220,577 | 7,348,000 | 676,651 | 8,024,651 | 40 |
| **Oklahoma** | 14,843,357 | 15,732,765 | 30,576,122 | 5,791,000 | 818,958 | 6,609,958 | 18 |
| **Oregon** | 5,417,387 | 8,855,459 | 14,272,846 | 9,637,000 | 641,175 | 10,278,175 | 42 |
| **Pennsylvania** | 5,120,685 | 526,723 | 5,647,408 | 15,355,000 | 518,099 | 15,873,099 | 74 |
| **Rhode Island** | 23,506 | 5,080 | 28,586 | 336,000 | 7,661 | 343,661 | 92 |
| **South Carolina** | 2,270,084 | 448,140 | 2,718,224 | 11,420,000 | 276,731 | 11,696,731 | 81 |
| **South Dakota** | 20,318,036 | 22,025,971 | 42,344,007 | 543,000 | 1,205,047 | 1,748,047 | 4 |
| **Tennessee** | 6,992,992 | 1,948,445 | 8,941,437 | 12,978,000 | 401,601 | 13,379,601 | 60 |
| **Texas** | 38,657,710 | 83,402,865 | 122,060,575 | 11,105,000 | 2,165,910 | 13,270,910 | 10 |
| **Utah** | 2,067,437 | 9,007,771 | 11,075,208 | 1,097,000 | 323,136 | 1,420,136 | 11 |
| **Vermont** | 567,509 | 89,095 | 656,604 | 4,196,000 | 65,101 | 4,261,101 | 87 |
| **Virginia** | 4,194,158 | 1,412,483 | 5,606,641 | 13,759,000 | 350,456 | 14,109,456 | 72 |

Table 2.2-1. Currently Eligible Land and Proposed Expansion (cont'd.)

| State | Currently Eligible (acres) | | | Proposed Increase (acres) | | | |
|---|---|---|---|---|---|---|---|
| | Cropland | Pastureland and Rangeland | Total | Timberland (Non-Federal) | Farmsteads, roads, feedlots, buildings[1] | Total | % Change |
| **Washington** | 8,038,469 | 4,847,324 | 12,885,793 | 11,244,000 | 499,421 | 11,743,421 | 48 |
| **West Virginia** | 1,173,032 | 754,045 | 1,927,077 | 10,868,000 | 175,524 | 11,043,524 | 85 |
| **Wisconsin** | 10,728,655 | 777,616 | 11,506,271 | 14,181,000 | 1,055,779 | 15,236,779 | 57 |
| **Wyoming** | 2,989,804 | 30,247,024 | 33,236,828 | 1,647,000 | 443,328 | 2,090,328 | 6 |
| **U.S.** | **434,164,946** | **395,278,829** | **829,443,775** | **393,823,000** | **32,957,068** | **426,780,068** | **34** |

Source: USDA 2002.
[1]Acreage for "land in house lots, ponds, roads, wasteland, etc." from USDA 2002 is used to represent these categories.

Figure 2.2-1. Proposed Increase in Land Eligibility



## 2.3 DEVELOPMENT OF ALTERNATIVES

The purpose of the scoping process is to determine the scope of issues to be addressed in the EIS and to identify significant issues relating to the action being proposed. The lead agency is required to invite input from Federal, state, and local agencies, affected Indian tribes, project proponents, and other interested parties.

### 2.3.1 Public Scoping

Public meetings were held in Mobile, Alabama; Naples, Florida; Atlanta, Georgia; Columbia, Missouri; Amarillo, Texas; Franklinton, Louisiana; and Dixon, California to solicit public input on the proposed changes to ECP prior to development of the SEIS. In order to reach a majority of interested parties, FSA performed ECP participation density modeling to determine those areas that utilized the program the most or received the most ECP funding since 2002 and meetings were planned for those seven states.

Announcements of the scoping meetings were posted in the Federal Register, state and County FSA offices, and local newspapers in those seven states prior to the meeting to generate public interest and increase meeting participation. In addition, a public website was created that offered program information, dates, locations of and driving directions to each of the meetings, and an electronic form for submitting comments via the internet. A presentation was given at each meeting and the public was given an opportunity to comment and ask questions. All meetings were attended by the FSA National Environmental Compliance Manager, National ECP Program Specialist, and State Environmental Coordinator, and were recorded by a court reporter.

### 2.3.2 Scoping Issues

All comments received during the scoping process were recorded and categorized based upon environmental resource area. The comments were evaluated by FSA to determine the scope and significance of each issue, and the depth at which it would be analyzed in this SEIS.

ECP received few comments during the scoping meetings and the comment period. Positive feedback supporting the program was provided by those producers who attended the meetings. Copies of the comments received are provided in **Appendix A**.

## 2.4 ALTERNATIVES ELIMINATED FROM FURTHER ANALYSIS

During the development of alternatives, FSA considered expanding eligibility to land supporting horses used for recreation, commercial or other purposes (such as race horses). This alternative was eliminated from further consideration because it would require a statutory change.

Under the current program, COC determine if a disaster is eligible for ECP assistance. FSA considered changing the program so that ECP would only be available to those counties that have been declared disaster areas by the President or Secretary of Agriculture. This would streamline the administrative process and make the application of the program more consistent across the U.S. However, records of disasters that are declared only by COC and not the President or Secretary of Agriculture do not exist. Therefore, it was eliminated from the SEIS due to insufficient information to perform a meaningful analysis.

Another option considered was combining ECP and Emergency Watershed Protection (EWP) into a single program. Currently EWP is administered by the NRCS while ECP is administered by FSA. The purpose of EWP is to undertake emergency measures for runoff retardation and soil erosion prevention to safeguard lives and property from floods, drought, and the products of erosion on any watershed damaged by a natural disaster. A combination of these programs is outside the scope of this SEIS and was therefore eliminated from analysis.

## 2.5 APPROACH TO ENVIRONMENTAL ANALYSIS

This EIS provides supplemental analysis from the 2003 EIS for ECP and addresses only the potential impacts associated with the proposed expansion of the definition of farmland. The affected environment for the SEIS is the same as that described in the 2003 EIS and is summarized in this document.

ECP is a voluntary program and specific acreages that may be enrolled for financial assistance in response to a natural disaster is not known. The potential impacts are addressed on a regional level. Site specific environmental evaluation is required when a producer applies for financial assistance under ECP. This evaluation determines if protected resources occur on the property and if they have the potential to be affected. Protected resources include: wetlands; floodplains; sole source aquifers; threatened and endangered species and their critical habitat; cultural resources; coastal barriers; coastal zone; and national natural landmarks. The site specific environmental evaluation process and definitions of protected resources are provided in the FSA Handbook for Environmental Quality (1-EQ) (USDA 2008).

## 2.6 RESOURCES ELIMINATED FROM FURTHER ANALYSIS

The potential environmental impacts from implementing the proposed action must be addressed on a regional level to ensure adequate NEPA coverage for the program. As such, the potential impacts on some environmental resources are no different than what was analyzed in the 2003 EIS which utilized the same approach for analysis. Applicants would still be required to complete site specific environmental evaluations prior to receiving assistance. This evaluation will ensure protection of sensitive environmental

resources protected by environmental laws, regulations, and executive orders. Resources that have been eliminated from further analysis in accordance with CEQ 1508.8 in this SEIS include:

*Air Quality*

The proposed action would not result in impacts to air quality outside of the scope of the 2003 EIS. The potential effects to air quality would be associated with implementation of the practices, which are not proposed for change under the SEIS. Therefore, the impacts discussion in the 2003 EIS is sufficient for both alternatives.

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# 3.0 AFFECTED ENVIRONMENT

> *The environmental impact statement shall succinctly describe the area(s) to be affected or created by the alternatives under consideration.*
>
> 40 CFR 1502.15

The geographic scope of the environment potentially affected by ECP encompasses agricultural lands of the U.S. and its territories. As such, the 2003 ECP EIS provided descriptions of the natural environment as well as socioeconomics for agricultural lands across the U.S. This SEIS focuses descriptions of the affected environment on the proposed expansion of ECP: timberlands, roads, farmsteads, feedlots, and farm buildings. Since the affected environment for implementation of ECP would be lands where a natural disaster has occurred, a brief review of the effect of natural disasters on each resource is provided in this document. A full description of the effects of natural disasters is provided in the 2003 ECP EIS.

Resource areas potentially affected by this proposed action and analyzed in detail in this SEIS include Biological Resources, Water Resources, Soil Resources, Cultural Resources, Socioeconomics, and Environmental Justice.

## 3.1 BIOLOGICAL RESOURCES

### 3.1.1 Definition of Resource

Biological resources include plant and animal species and the habitats in which they occur. For this analysis, biological resources are divided into the following categories: vegetation, wildlife, and protected species. Vegetation and wildlife refer to the plant and animal species, both native and introduced that characterize a region. Protected species refers to federally threatened and endangered species and their designated Critical Habitat, both of which are protected under the Endangered Species Act (ESA).

### 3.1.2 Effects of Natural Disaster on Resource

The primary effect of natural disasters on biological resources is modification of the existing habitat as described in the 2003 ECP EIS. Alteration of habitat has negative impacts to natural or planted vegetation and wildlife using or inhabiting the area. In the forest environment strong winds, fires, floods, landslides or mudslides, and earthquakes can uproot trees and shrubs creating disaster debris. This debris reduces wildlife food sources, cover, and security.

In the aquatic environment, such disasters can destabilize stream banks and accelerates erosion. Increased sedimentation from erosion prohibits sunlight from reaching bottom

dwelling plants and animals. Debris can also create gullies and dams which can become new aquatic habitat. Flooding of agricultural fields increases runoff of chemicals (pesticides, herbicides, and fertilizers) degrading aquatic habitat.

## 3.1.3 Affected Environment

### 3.1.3.1 *Vegetation and Wildlife*

Vegetation is often described in terms of ecoregions, areas of relatively homogenous soils, vegetation, climate and geology (Bailey 1995). There are four levels of ecoregions: domain, division, province and section (also called subregion). There are three domains in the continental U.S. which are large scale areas of similar climates: Humid Temperate, Dry, and Humid Tropical. Within domains, there are a number of divisions, delineated by finer-scale climatic differences. Divisions are subdivided into provinces which are differentiated based on vegetation (**Table 3.1-1**). Each ecoregion is characterized by wildlife common to that habitat. A description of each division and the associated vegetation and wildlife is provided in **Appendix B**.

The Humid Temperate Domain covers part of central U.S. to the east coast, and the outer west coast (California, Washington, and Oregon) (**Figure 3.1-1**). The climate of this domain is governed by both tropical and polar air masses. This domain experiences pronounced seasons, with strong annual cycles of temperature and precipitation. The variable importance of winter frost determines six divisions: warm continental, hot continental, subtropical, marine, prairie, and Mediterranean (Bailey 1995).

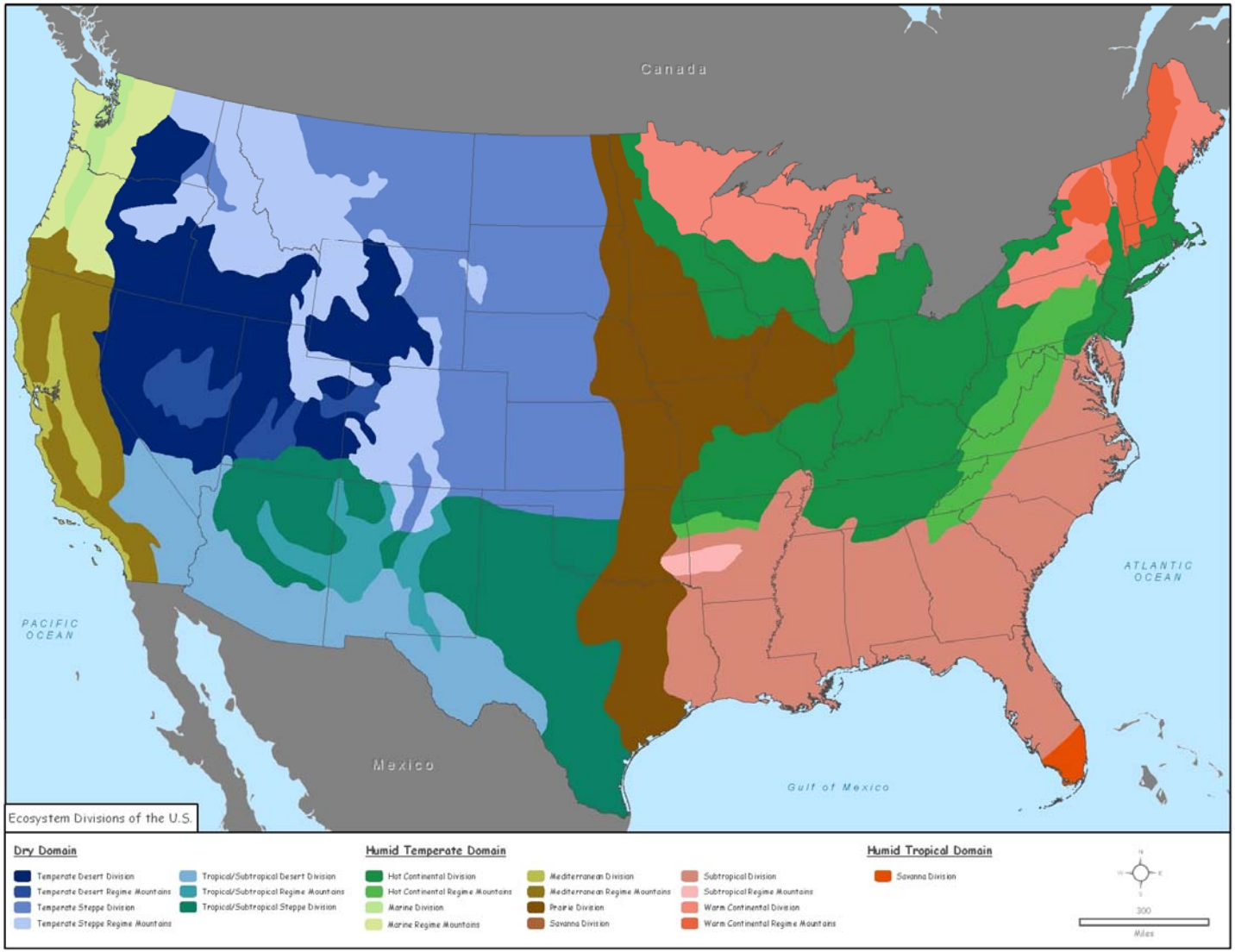
The Dry Domain covers the central U.S. where annual losses of water through evaporation exceed annual water gains from precipitation (**Figure 3.1-1**). Dry climates are the most extensive of all climatic groups covering a quarter or more of the earth's land surface. Two types of dry climates are commonly recognized: the arid desert, and the semiarid steppe. Generally, the steppe is a transitional belt surrounding the desert and separating it from humid climates. Divisions found within this domain include: tropical/subtropical steppe; tropical/subtropical desert; temperate steppe; and temperate desert (Bailey 1995).

## Table 3.1-1. Divisions and Provinces within the Continental U.S.

| Division | Province |
|---|---|
| **Humid Temperate Domain** | |
| Warm Continental | Laurentian Mixed Forest<br>Adirondack-New England Mixed Forest – Coniferous Forest – Alpine Meadow |
| Hot continental | Eastern Broadleaf Forest (Oceanic)<br>Eastern Broadleaf Forest (Continental)<br>Central Appalachian Broadleaf Forest – Coniferous Forest – Meadow<br>Ozark-Broadleaf Forest – Meadow |
| Subtropical | Southeastern Mixed Forest<br>Outer Coastal Plain Mixed Forest<br>Lower Mississippi Riverine Forest<br>Ouachita Mixed Forest – Meadow |
| Marine | Pacific Lowland Mixed Forest<br>Cascade Mixed Forest – Coniferous Forest – Alpine Meadow<br>Pacific Coastal Mountains Forest – Meadow<br>Pacific Gulf Coastal Forest – Meadow |
| Prairie | Prairie Parkland (Temperate)<br>Prairie Parkland (Subtropical) |
| Mediterranean | California Coastal Chaparral Forest and Shrub Province<br>California Dry Steppe<br>California Coastal Steppe, Mixed Forest, and Redwood Forest<br>Sierran Steppe – Mixed Forest – Coniferous Forest – Alpine Meadow<br>California Coastal Range Open Woodland Shrub – Coniferous Forest – Meadow |
| **Dry Domain** | |
| Tropical/Subtropical Steppe Division | Great Plains Steppe and Shrub<br>Colorado Plateau Semidesert<br>Southwest Plateau and Plains Dry Steppe and Shrub<br>Arizona-New Mexico Mountains Semidesert – Open Woodland –Coniferous Forest – Alpine Meadow |
| Tropical/Subtropical Desert Division | Chihuahuan Semidesert<br>American Semidesert and Desert |
| Temperate Steppe Division | Great Plains – Palouse Dry Steppe<br>Great Plains Steppe<br>Southern Rocky Mountain Steppe – Open Woodland – Coniferous Forest – Alpine Meadow<br>Middle Rocky Mountain Steppe – Coniferous Forest – Alpine Meadow<br>Northern Rocky Mountain Forest Steppe – Coniferous Forest – Alpine Meadow<br>Black Hills Coniferous Forest |
| Temperate Desert Division | Intermountain Semidesert and Desert<br>Intermountain Semidesert<br>Nevada-Utah Mountains Semidesert – Coniferous Forest – Alpine Meadow |
| **Humid Tropical Domain** | |
| Savanna Division | Everglades |

Source: Bailey 1995

## Figure 3.1-1. Ecoregion Divisions



The Humid Tropical Domain is found in the very southern tip of Florida where the climate is largely controlled by equatorial and tropical air masses. There is an average monthly temperature above 64F with no winter season. The savanna division is the only division of this domain found in the continental U.S. (Bailey 1995).

#### 3.1.3.2 *Protected Species*

The U.S. Fish and Wildlife Service (USFWS) is the lead agency governing threatened and endangered species. Federal agencies proposing activities that could potentially affect a protected species must consult with the USFWS. Protected species often have very specific living conditions based on their reproductive requirements. This section focuses on the protected species that may occur in a timberland (or forestland) environment. **Appendix C** provides a full list of protected species that occupy forestlands and should be used during site specific environmental evaluation.

Within the continental U.S. there are 120 protected species that could potentially occur within forestland habitat (**Table 3.1-2)**. **Appendix C** provides scientific and common names of these species, their listing status, states in which they are listed, and descriptions of their forestland habitat.

**Table 3.1-2. Protected Species within the Continental U.S.**

| | Total Number of Protected Species | Number of Protected Species with Forestland Habitat |
|---|---|---|
| Birds | 89 | 11 |
| Mammals | 81 | 33 |
| Amphibians | 23 | 6 |
| Reptiles | 37 | 4 |
| Insects/Arachnids | 69 | 6 |
| Clams/Snails | 145 | 3 |
| Plants | 744 | 57 |

Source: USFWS 2008.

## 3.2 WATER RESOURCES

### 3.2.1 Definition of Resource

The Clean Water Act, the Safe Drinking Water Act, and the Water Quality Act are the primary Federal laws that protect the nation's waters including lakes, rivers, aquifers, and wetlands. For this analysis, water resources include surface water, groundwater and aquifers, wetlands, and floodplains.

Surface water includes streams and rivers, lakes, and reservoirs. Surface runoff, the part of the precipitation, snow melt, or irrigation water that appears in uncontrolled surface

streams, rivers, drains or sewers (U.S. Geological Survey [USGS] 2005), can affect surface water quality by depositing sediment, minerals, or contaminants into surface water bodies. Surface runoff is influenced by meteorological factors such as rainfall intensity and duration, and physical factors such as vegetation, soil type, and topography.

Groundwater refers to subsurface hydrologic resources that are used for domestic, agricultural, and industrial purposes. Groundwater is stored in natural geologic formations called aquifers. In areas with few or no alternative sources to the groundwater resource, an aquifer may be designated as a sole source aquifer by the Environmental Protection Agency (EPA), which requires EPA review of any proposed projects that are receiving Federal financial assistance within the designated areas (EPA 2006b).

Wetlands are defined by the U.S. Army Corps of Engineers (USACE) as areas which are characterized by a prevalence of vegetation adapted to saturated soil conditions (USACE 1987). Wetlands can be associated with groundwater or surface water and are identified based on specific soil, hydrology, and vegetation criteria defined by USACE.

Floodplains are defined by the Federal Emergency Management Agency (FEMA) as those low lying areas that are subject to inundation by a 100-year flood, a flood that has a 1 percent chance of being equaled or exceeded in any given year. Federal agencies are required to avoid, to the extent possible, adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development.

### 3.2.2 Effects of Natural Disaster on Resource

Natural disasters can affect water resources in several ways. Severe weather may cause damage to farm structures and systems (for example, broken dams, sediment filled diversions, broken pipes, and water protection structures) thereby affecting water quality. Debris and eroded sediment caused by high winds may be deposited into surface water bodies, which can also affect water quality. Eroded sediment containing pesticides and other chemicals could impair wetland function.

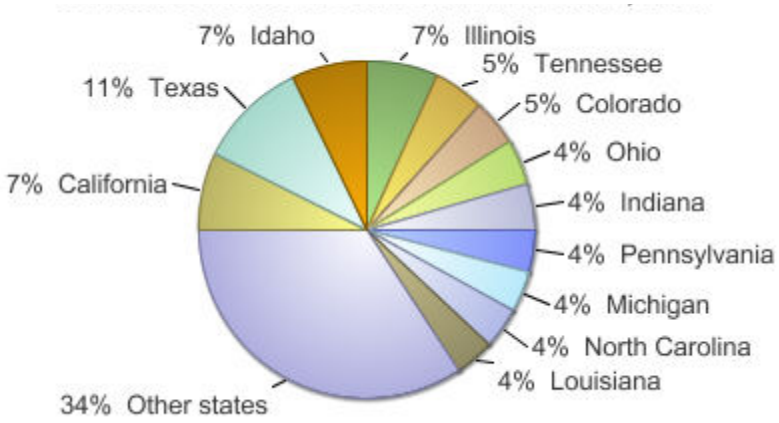
Droughts would likely cause a decrease in surface water flows, causing sediment buildup from erosion; pumping from the surface water bodies could therefore affect turbidity. Droughts may also require a greater reliance on groundwater as surface water supplies decrease. New wells may be installed or existing wells deepened that could affect aquifer and water table levels. Long term droughts would not allow groundwater levels to recharge sufficiently, which could affect future water supplies.

## 3.2.3 Affected Environment

### 3.2.3.1 *Surface Water*

Surface water in rivers, streams, creeks, lakes, and reservoirs supports everyday life through uses such as drinking water and other public uses, irrigation, and industrial uses. Of all the water used in the U.S. in 2000 (about 408 billion gallons per day), about 64 percent came from fresh surface water sources (USGS 2005). **Figure 3.2-1** shows surface water withdrawals throughout the U.S.; Texas uses the greatest amount of surface water relative to all other states.

**Figure 3.2-1. Total Fresh Surface Water Withdrawals, 2000**




Source: USGS 2005

Because of the large dependency on surface water for everyday use, surface water quality is of great importance. Runoff from farmlands may contain sediment, pesticides and fertilizers that can flow to surface waters, adversely affecting the water quality needed to support beneficial uses of the water body such as aquatic ecosystems, human uses of the water, and agriculture.

The Clean Water Act helps maintain water quality by giving the EPA authority to implement pollution control programs and by setting water quality standards for all contaminants in surface waters.

### 3.2.3.2 *Groundwater*

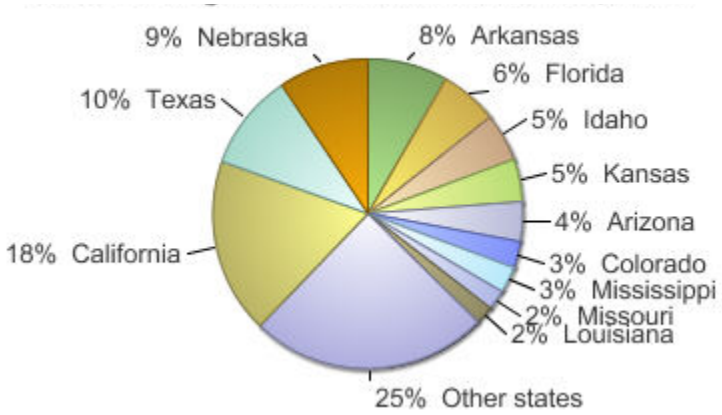
Groundwater is an important resource as it supplies water to people in areas with insufficient surface water. In 2000, approximately 70 billion gallons of groundwater were consumed daily (USGS 2005a). The majority of groundwater withdrawals, 68 percent,

were used for irrigation; 19 percent were used for public purposes, mainly to supply drinking water (USGS 2005a).

Figure 3.2-2 shows groundwater withdrawals throughout the U.S.; California uses the greatest amount of groundwater relative to all other states.

Groundwater is also ecologically important because it supplies water to wetlands, and through groundwater-surface water interaction, groundwater contributes flow to surface water bodies.

**Figure 3.2-2. Total Fresh Ground Water Withdrawals, 2000**




Source: USGS 2005a

Groundwater levels vary seasonally and annually depending on hydrologic conditions. If withdrawals are greater than recharge, groundwater levels may decline. Maintaining groundwater levels at a sustainable level is an important management issue throughout the country.

### 3.2.3.3 *Wetlands*

EPA Regulations (40 CFR 230.3(t)) define wetlands as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas."

Regional and local differences in soils, topography, climate, hydrology, water chemistry, and vegetation determine wetland type. Wetlands are grouped into two general categories: coastal or tidal wetlands and inland or non-tidal wetlands (EPA 2006c).

Coastal wetlands are found along the Atlantic, Pacific, Alaskan, and Gulf coasts. They are closely linked to our nation's estuaries, where sea water mixes with fresh water to form an environment of varying salinities.

Inland wetlands are most common on floodplains along rivers and streams, in isolated depressions surrounded by dry land, along the margins of lakes and ponds, and in other low-lying areas where the groundwater intercepts the soil surface or where precipitation sufficiently saturates the soil. Certain inland wetlands are common to specific regions:

- Bog and fens – northeastern and northcentral states and Alaska
- Wet meadows/wet prairies – midwest
- Inland saline and alkaline marshes and riparian wetlands – arid and semiarid west
- Prairie potholes – Iowa, Minnesota, and the Dakotas
- Alpine meadows – west
- Playa lakes – southwest and Great Plains
- Bottomland hardwood swamps – south
- Pocosins and Carolina Bays – southeast coastal states
- Tundra wetlands – Alaska

Wetlands support plant and animal life, provide flood protection, improve water quality as water filters through the wetland, and store carbon in plants and soil helping reduce effects of global climate change.

#### 3.2.3.4 *Floodplains*

Floodplains are flat or nearly flat land that border rivers, streams, oceans, lakes, or other bodies of standing water and experience periodic flooding. Floodplains are an important resource because they provide flood and erosion control, help maintain water quality, and contribute to sustaining groundwater levels. Floodplains also provide habitat for plant and animal species, recreational opportunities, and aesthetic benefits.

Although floodplains provide benefits, development within floodplains can result in structural damage. The National Flood Insurance Program regulates development in mapped floodplains based on the 100-year flood (a flood magnitude that has a one percent chance of occurring in a given year).

## 3.3 SOILS

### 3.3.1 Definition of Resource

Soil resources for this analysis include lands that are used for the normal production of agricultural commodities and livestock. These soils are formed mainly by the weathering of rocks, the decaying of plant matter, and the deposition of materials such as chemical and biological fertilizers, that are derived from other origins. Soils are differentiated based on characteristics such as particle size, texture and color, and classified taxonomically into

soil orders based on observable properties such as organic matter content and degree of soil profile development (Brady and Weil 1996).

Soil resources are greatly influenced by factors such as climate, soil properties, vegetative cover, and erodibility potential. Soils susceptible to erosion are identified using the Erodibility Index (EI). The EI provides a numerical expression of the potential for a soil to erode based on factors such as topography and climate. The index value is derived from the Universal Soil Loss Equation for water erosion, and the Wind Erosion Equation for wind erosion. The range is from one, the lowest erosion potential, to eight the highest. Highly erodible lands (HEL) have an index value of eight (USDA 2003, NRCS 2008). The list of soils considered highly erodible are developed and maintained for each soil survey. The 2002 Farm Bill, as amended, contains soil conservation compliance requirements for producers using HEL.

The proposed changes to ECP include making timberlands, farmsteads, farm roads, and farm buildings eligible for the program. Of these proposed additions to land eligibility, timberlands represent relatively undisturbed areas where soil properties and vegetative cover are well established and erosion potential is much lower compared to fields (Patric 1976).

### 3.3.2 Effects of Natural Disaster on Resource

Natural disasters can alter soil characteristics when large trees are uprooted by excessive winds; flooding, or excessive rainfall, promotes gullies, rills and sheet erosion; and hurricane wind speeds remove seedlings, topsoil, and other soil nutrients. Debris from storms, such as down trees or building materials, can create further erosive conditions during rain events by providing a linear path or trench for water to flow. Erosion naturally occurs when soil particles are transported to other locations. Factors that contribute to the erodibility of soil include climate, soil properties (infiltration capacity and structural stability) slope, and surface cover (Brady and Weil 1996, USDA 2003).

A thorough analysis of the effects of various types of natural disasters to soils, and their erodibility potential in fields was conducted for the 2003 ECP EIS.

### 3.3.3 Affected Environment

Bailey (1995) describes soils typically associated with the ecoregions of North America. Ecoregions of the U.S. are broadly classified by domains which are further defined by divisions. Soils within a division are characterized by latitudinal climate variations and vegetation. **Table 3.3-1** contains descriptions of the soil orders found within Bailey's divisions of the continental U.S. See Figure 3.1-1 (Biological Resources) for a map of Bailey's divisions of the U.S.

The 2003 ECP EIS contains a USDA NRCS map depicting HEL with an EI of 8 or more on cropland in the U.S. The most highly erodible soils are primarily in the Midwest and northern plain states, in areas that lie within the Mississippi and Missouri rivers watershed. These lands are located in Prairie and Temperate Steppe Divisions (**Table 3.3-1, Figure 3.1-1**). A description of the environmental and agricultural condition of these regions was provided in the 2003 ECP EIS. Erodible soils data for other types of land is provided on a county level by NRCS.

**Table 3.3-1. Descriptions of Soil Orders within the Continental U.S.**

| Domain | Division | Soil Orders | Description |
|---|---|---|---|
| Humid Temperate Domain | Warm Continental Division | Spodosols | Soils have an upper layer of humus in colder regions; are deficient in calcium, potassium, and magnesium; and, generally, acidic. |
| | Hot Continental Division | Inceptisols, Ultisols, and Alfisols | These soils are rich in humus and have a distinctive leach zone. Ultisols have a clayey horizon as well. |
| | Subtropical Division | Ultisols | Soils are warm and moist and rich in iron and aluminum but poor in plant nutrients. |
| | Marine Division | Inceptisols and Ultisols | Soils are generally poor in calcium, sodium and potassium but have large deposits of organic matter. |
| | Prairie Division | Mollisols | Soils have black organic surface horizons; are very fertile; and have a high content of calcium, sodium and potassium. |
| | Mediterranean Division | Alfisols and Mollisols | These soils are high in bases and are very fertile when water is available. |
| Dry Domain | Tropical/Subtropical Steppe Division | Mollisols and Aridisols | These soils contain some humus but are low in moisture. |
| | Temperate Steppe Division | Mollisols and Aridisols | Soils are rich in bases; have little organic content; and in some regions, have clayey horizons and salts. |
| | Temperate Desert Division | Aridisols | Soils are low in humus and high in calcium and in low areas develop salt deposits. |
| Humid Tropical Domain | Savanna Division | Histosols and Inceptisols | Soils are very moist; submerged in the rainy season; and have mud flats of sand and gravel. |

Source: Bailey (1995)

# 3.4 CULTURAL RESOURCES

## 3.4.1 Definition of Resource

Cultural resources include prehistoric and historic sites, structures, districts, artifacts, or any other physical evidence of human activities. Cultural resources can be divided into three major categories: archaeological sites (prehistoric and historic), architectural resources, and traditional cultural properties (TCP). Archaeological sites are locations and objects from past human activities. Architectural resources are those standing structures that are usually over 50 years of age, and can include farmsteads, bridges, irrigation canals, and other man-made structures. TCPs are places of importance or significance to the traditional culture of American Indians or other ethnic or community groups. Such resources include traditional locations to gather food or materials such as reeds for baskets or clay for pottery, locations to host traditional dances, mountain tops where ceremonies are performed, or places where religious events take place. Some cultural resources are significant; others are not. Significant cultural resources are those that are listed in or eligible for listing in the National Register of Historic Places (National Register) and are called *Historic Properties* under the National Historic Preservation Act, as amended (16 U.S.C. 470 et seq.).

To be eligible for inclusion in the National Register, an Historic Property should possess integrity of location, design, setting, materials, workmanship, feeling, and association. A historic-age building with numerous modern additions and little of its original materials would be determined, in most cases, to no longer possess integrity. In addition to integrity, the National Park Service also requires that a Historic Property meet one of four criteria:

- Association with events that have made a significant contribution to the broad patterns of our history;
- Association with the lives of persons significant in our past;
- Have distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; or
- Have yielded or may be likely to yield, information important in prehistory or history.

Evaluating the potential impacts to such resources relative to Section 106 of the National Historic Preservation Act (NHPA), the American Indian Religious Freedom Act, the Archaeological Resources Protection Act, Native American Graves Protection and Repatriation Act, and Executive Order (EO) 13007 is considered a part of the NEPA process. The regulations and procedures in 36 CFR 800, which implements Section 106 of

the NHPA, requires Federal agencies to consider the effects of proposed actions on properties listed in or eligible for listing in the National Register. Many cultural resources have been identified in advance of construction projects, particularly since the passage of the NHPA. However, many areas, especially in regions that have rural agricultural communities, have never been inventoried to determine what cultural resources are present.

### 3.4.2 Effects of Natural Disaster on Resource

Cultural resources are affected by natural disasters in much the same manner that modern man-made properties are affected. Archaeological sites that are partly or wholly above ground can be buried by debris or mud slides. Floods that slowly inundate the landscape may not have an adverse effect on any sites present, but those floods that arrive with great force can scatter the archeological materials from their original locations essentially destroying the site. Buried archaeological sites, commonly found on land that has been repeatedly flooded over centuries, usually have a natural protection of soil that is from a few inches to several feet thick. However, those buried near or on a riverbank that is subject to erosion during natural disasters will be lost to the erosion process just as the arable land will be lost from further agricultural pursuits.

Architectural resources over 50 years of age can be subject to great damage from natural disasters, depending on the severity of the disaster and the nature of the resource. Farmsteads, silos, barns and other structures can be destroyed by hurricanes, tornadoes, floods, heavy snowstorms, and many of the other types of disasters covered by the ECP. Even when not completely destroyed, architectural resources can be impacted and their integrity affected. For example, a bridge built 80 years ago may have withstood a flood but have its piers cracked rendering it unsafe for traffic. TCPs that are part of the built environment—such as a rural meeting hall—can be adversely affected by natural disasters in the same way as architectural properties are affected. Other traditional cultural properties, such as places where ceremonies are held out of doors, will not likely be adversely affected by most natural disasters. For these traditional cultural properties, the people are returning to a place, not a structure. Snow storms, floods, tornados, mud slides, and other natural disasters can cover the place, perhaps even adding a new layer of soil to it, but the place itself will remain and the people can return in the future. Exceptions could be disaster events that remove the place, such as erosion, or remove access to the place as could happen during a volcanic eruption.

## 3.4.3 Affected Environment

### 3.4.3.1 *Archaeological Sites*

People have occupied most regions of the U.S. for the last 13,000 years and during that time, the residue from their camps, homes, and activities are contained in the thousands of archaeological sites that exist in each state. Types and numbers of sites vary through time and from one region of the U.S. to another. The earliest sites, known as Paleoindian sites, are the fewest in number, both because they are the oldest and the residues at their sites have not preserved well, and because their populations were generally small. Paleoindian people lived relatively mobile lifestyles, moving to new camps when game to hunt or other resources such as plant foods, wood, or water around their existing camps were nearly exhausted. This general hunter-gatherer lifestyle persisted in some regions of the U.S. through historic times although food preferences, forms of shelter, language, and other aspects of individual groups varied. Its longevity as a way of life indicates that this was a successful lifestyle. The residue in the camp sites or special activity areas (i.e., areas where plant bulbs were cooked, reeds gathered for baskets, etc.) of the sites of hunters and gatherers is often limited indicating groups were usually small and limited to one or a few families. Larger campsites of hunters and gatherers are known, however. Some large campsites represent places where people came together either for events or for a season; others represent hunters and gatherers who lived in large communal groups. During the eighteenth century, Spanish visitors to Comanche camps in the Texas Panhandle reported small camps with a few tipis but camps with several hundred tipis and over a thousand people present were more frequently seen (Kavanagh 1986). Although the Comanche moved their campsites with some frequency, the hunters and gatherers who occupied the coasts of the Pacific Northwest resided in relatively permanent villages beginning as early as 1800 years ago. The fish, game, and plants along the coast and in the inland valleys of the Northwest provided ample food to allow them to reside in one place.

Prehistoric villages were common in many other parts of the U.S. The people in these villages still hunted, but they largely relied on cultivated crops of corn, squash, beans, and native plants they encouraged to grow near their fields. Some villages were small, consisting of only a few houses, while others, such as Cahokia—a large mound and village site located eight miles east of St. Louis where 10,000 people resided—were quite large. When Europeans arrived in North America, they documented people living in camps of Native American hunters and gatherers as well as villages. Over time, as the U.S. grew, farmers, ranchers, traders, miners, and others left their residue in campsites, homesteads, mines, battlefields, and settlements. Those that were abandoned are today's historic archaeological sites.

While historic and prehistoric sites are found in all environmental settings, they are often found close to dependable water sources. Cahokia, for example, was built on the terrace

above Cahokia Creek, a tributary of the Mississippi, and many other villages and towns were built in similar terrace settings. In the dry Southwest, pueblos and villages are also often situated along river terraces or near seeps, springs, or other places where water could be obtained. The large Comanche camps seen in the 18th century were situated along reliable water sources to provide adequate water for both humans and horses. Early historic settlement patterns tended to mirror the Native American patterns until modern techniques of well drilling, canal systems, and other technologies allowed settlement away from water bodies.

#### 3.4.3.2 *Architectural Resources*

Architectural resources refer to the built environment including houses, barns, outbuildings, silos, bridges, roads, irrigation systems, canals, dams, and other man-made structures. Generally, these resources must be at least 50 years of age to be considered eligible for inclusion in the National Register. Older architectural resources may no longer be used for their original purpose. Bridges that were once part of a county or state road system may now be located in a pasture or field and used by a farmer, and a structure that was once a horse barn may now be used for storage. Like archaeological sites, architectural resources are found in all environmental settings.

#### 3.4.3.3 *Traditional Cultural Properties*

TCPs that are eligible for inclusion in the National Register are those associated with the beliefs or cultural traditions of an existing community. Such beliefs or traditions are part of the history of the community and they are important in holding the community together. When places or structures are seen by the community to embody those traditions, those places are traditional cultural properties and may be eligible for listing on the National Register. They include, but are not limited to, locations to host traditional dances, mountain tops where ceremonies are performed, or an African Methodist Episcopal church on a country road that is a place of gathering for the rural community.

## 3.5 SOCIOECONOMIC RESOURCES

### 3.5.1 Definition of Resource

Socioeconomic analyses generally include detailed investigations of the prevailing population, income, employment, and housing conditions of a community or area of interest. The socioeconomic conditions of a region of influence (ROI) could be affected by changes in the rate of population growth, changes in the demographic characteristics of a ROI, or changes in employment within the ROI caused by the implementation of the proposed action.

Socioeconomic resources within this document include total population, rural population, farms receiving government payments, and farms receiving government disaster payments by states and for the entire U.S. These areas identify the components essential to describe the broad-scale demographic and economic components of the national agricultural operator population.

### 3.5.2 Effects of Natural Disaster on Resource

The general social effect of a natural disaster is that some level of stress is placed on the economic, social, or physical infrastructure of a given community. Either this stress results through the direct damage or destruction of a resource, or through the creation of a continuing threat to property or other resources. The effects of a natural disaster for producers include damage or loss of cropland, rangeland, or timberland, as well as potentially increased mortality rate for livestock or wildlife. Damages to cropland may affect productivity for several years and may significantly increase a producer's expenses to keep the farm in production. The loss of farm income can indirectly affect the local community through reduced agricultural sales and employment (USDA 2003).

### 3.5.3 Affected Environment

Between 1997 and 2006, the number of farms in the U.S. increased 8.99 percent; of this between 1997 and 2002, the number of farms increased 11.36 percent, while a decline in the number of farms was recorded between 2002 to 2006 (2.13 percent). **Table 3.5-1** illustrates data on population, rural population, total number of farms and average government payment per farm for each state.

## Table 3.5-1. 2002 Farms, Average Government Payments by State

| Location | Population[1] | Rural Population[1] (#) | Rural Population (%) | Farms (#)[2] | Average Government Payment/Farm[2] |
|---|---|---|---|---|---|
| Alabama | 4,447,100 | 1,981,427 | 44.56% | 45,126 | $6,058 |
| Alaska | 626,932 | 215,675 | 34.40% | 609 | $24,516 |
| Arizona | 5,130,632 | 607,097 | 11.83% | 7,294 | $38,127 |
| Arkansas | 2,673,400 | 1,269,221 | 47.48% | 47,483 | $30,544 |
| California | 33,871,648 | 1,881,985 | 5.56% | 79,631 | $23,340 |
| Colorado | 4,301,261 | 668,076 | 15.53% | 31,369 | $12,376 |
| Connecticut | 3,405,565 | 417,506 | 12.26% | 4,191 | $14,492 |
| Delaware | 783,600 | 155,842 | 19.89% | 2,391 | $14,009 |
| Florida | 15,982,378 | 1,712,358 | 10.71% | 44,081 | $8,543 |
| Georgia | 8,186,453 | 2,322,290 | 28.37% | 49,311 | $7,642 |
| Hawaii | 1,211,537 | 103,312 | 8.53% | 5,398 | $7,841 |
| Idaho | 1,293,953 | 434,456 | 33.58% | 25,017 | $13,234 |
| Illinois | 12,419,293 | 1,509,773 | 12.16% | 73,027 | $8,622 |
| Indiana | 6,080,485 | 1,776,474 | 29.22% | 60,296 | $8,372 |
| Iowa | 2,926,324 | 1,138,892 | 38.92% | 90,655 | $8,544 |
| Kansas | 2,688,418 | 767,749 | 28.56% | 64,414 | $8,375 |
| Kentucky | 4,041,769 | 1,787,969 | 44.24% | 86,541 | $4,121 |
| Louisiana | 4,468,976 | 1,223,311 | 27.37% | 27,413 | $16,345 |
| Maine | 1,274,923 | 762,045 | 59.77% | 7,196 | $6,965 |
| Maryland | 5,296,486 | 737,818 | 13.93% | 12,198 | $9,825 |
| Massachusetts | 6,349,097 | 547,730 | 8.63% | 6,075 | $10,284 |
| Michigan | 9,938,444 | 2,518,987 | 25.35% | 53,315 | $7,984 |
| Minnesota | 4,919,479 | 1,429,420 | 29.06% | 80,839 | $7,984 |
| Mississippi | 2,844,658 | 1,457,307 | 51.23% | 42,186 | $11,751 |
| Missouri | 5,595,211 | 1,711,769 | 30.59% | 106,797 | $6,097 |
| Montana | 902,195 | 414,317 | 45.92% | 27,870 | $17,011 |
| Nebraska | 1,711,263 | 517,538 | 30.24% | 49,355 | $10,858 |
| Nevada | 1,998,257 | 169,611 | 8.49% | 2,989 | $9,845 |
| New Hampshire | 1,235,786 | 503,451 | 40.74% | 3,363 | $10,648 |
| New Jersey | 8,414,350 | 475,263 | 5.65% | 9,924 | $7,630 |
| New Mexico | 1,819,046 | 455,545 | 25.04% | 15,170 | $15,466 |
| New York | 18,976,457 | 2,373,875 | 12.51% | 37,255 | $11,139 |
| North Carolina | 8,049,313 | 3,199,831 | 39.75% | 53,930 | $7,935 |
| North Dakota | 642,200 | 283,242 | 44.10% | 30,619 | $12,266 |
| Ohio | 11,353,140 | 2,570,811 | 22.64% | 77,797 | $6,843 |
| Oklahoma | 3,450,654 | 1,196,091 | 34.66% | 83,300 | $6,166 |
| Oregon | 3,421,399 | 727,255 | 21.26% | 40,033 | $11,757 |
| Pennsylvania | 12,281,054 | 2,816,953 | 22.94% | 58,105 | $7,155 |
| Rhode Island | 1,048,319 | 95,173 | 9.08% | 858 | $10,145 |

Table 3.5-1. 2002 Farms, Average Government Payments by State (cont'd.)

| Location | Population[1] | Rural Population[1] (#) | Rural Population (%) | Farms (#)[2] | Average Government Payment/Farm[2] |
|---|---|---|---|---|---|
| South Carolina | 4,012,012 | 1,584,888 | 39.50% | 24,541 | $6,280 |
| South Dakota | 754,844 | 363,417 | 48.14% | 31,736 | $10,617 |
| Tennessee | 5,689,283 | 2,069,265 | 36.37% | 87,595 | $3,694 |
| Texas | 20,851,820 | 3,647,539 | 17.49% | 228,926 | $12,530 |
| Utah | 2,233,169 | 262,825 | 11.77% | 15,282 | $8,928 |
| Vermont | 608,827 | 376,379 | 61.82% | 6,571 | $18,809 |
| Virginia | 7,078,515 | 1,908,560 | 26.96% | 47,606 | $5,939 |
| Washington | 5,894,121 | 1,063,015 | 18.04% | 35,939 | $18,244 |
| West Virginia | 1,808,344 | 975,564 | 53.95% | 20,812 | $3,093 |
| Wisconsin | 5,363,675 | 1,700,032 | 31.70% | 77,131 | $6,659 |
| Wyoming | 493,782 | 172,438 | 34.92% | 9,422 | $11,986 |
| U.S. | 280,849,847 | 59,061,367 | 21.03% | 2,128,982 | $9,251 |

[1] Source: USCB 2002
[2] Source: USDA 2002

USDA Agricultural Resource Management Survey (ARMS) data indicates that approximately 44.3 percent of all farms in 2006 received at least one type of government payment associated with agriculture. Table **3.5-2** illustrates the average government payment per farm by region. Only farms receiving government payments in Appalachia had an AGI less than the national mean household income ($66,570) in 2006. All other regions, excluding Mountain and Pacific had AGI less than $200,000 in 2006 for farms receiving government payments. Average government payments ranged from a low of $7,163 in the Appalachia region to a high of $23,192 in the Pacific region. In 2006, the average disaster and emergency assistance payments per farms receiving government payments were less than $1,000 in all regions, except the Southeast.

Table 3.5-2. 2006 Farms Receiving Government Payments by Production Region

| | All | Northeast | Lake States | Corn Belt | Northern Plains | Appalachia | Southeast | Delta | Southern Plains | Mountain | Pacific |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Farms receiving government payments | 923,636 | 37,696 | 123,053 | 233,509 | 140,960 | 149,099 | 32,977 | 39,409 | 94,895 | 48,297 | 23,743 |
| Percent of all farms (%) | 44.3 | 32.1 | 55.6 | 60.2 | 77.9 | 48.1 | 21.7 | 32.7 | 31.1 | 36.4 | 15.3 |
| Average gross cash income ($) | 154,835 | 196,556 | 144,517 | 148,896 | 171,384 | 64,743 | 138,489 | 122,864 | 135,966 | 258,821 | 607,644 |
| Average government payments ($) | 12,687 | 12,908 | 10,587 | 13,396 | 13,932 | 7,163 | 18,746 | 16,023 | 12,303 | 16,586 | 23,192 |
| Percent of gross cash income (%) | 8.2 | 6.6 | 7.3 | 9.0 | 8.1 | 11.1 | 13.5 | 13.0 | 9.0 | 6.4 | 3.8 |
| **Combined Average Government Payment by Program ($)** | | | | | | | | | | | |
| Direct payments | 4,691 | 2,630 | 3,886 | 5,565 | 6,392 | 1,172 | 5,525 | 7,778 | 4,800 | 4,536 | 9,129 |
| Counter-cyclical payments | 3,024 | 2,509 | 2,554 | 3,923 | 2,589 | 923 | 6,211 | 4,592 | 3,923 | 2,659 | 3,342 |
| Loan deficiency payments | 547 | 343 | 824 | 453 | 734 | 416 | 1,058 | 192 | 263 | 770 | 642 |

Table 3.5-2. 2006 Farms Receiving Government Payments by Production Region (cont'd.)

| | All | Northeast | Lake States | Corn Belt | Northern Plains | Appalachia | Southeast | Delta | Southern Plains | Mountain | Pacific |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Milk income loss contract payments | 434 | 2,728 | 1,284 | 100 | 78 | 150 | 131 | 89 | 66 | 446 | 1,996 |
| Disaster and emergency assistance payments | 364 | 336 | 122 | 42 | 648 | 1 | 2,247 | 881 | 643 | 406 | 753 |
| Conservation Program payments | 2,626 | 3,282 | 1,603 | 3,179 | 3,271 | 718 | 1,462 | 2,251 | 2,338 | 6,044 | 6,018 |
| Tobacco Transition Program payments | 594 | 120 | 21 | 33 | 0 | 3,212 | 1,356 | 0 | 0 | 105 | 233 |
| Other Federal program payments | 238 | 116 | 229 | 66 | 149 | 373 | 287 | 165 | 185 | 860 | 857 |
| State and local program payments | 169 | 845 | 63 | 34 | 72 | 197 | 468 | 75 | 86 | 760 | 221 |

**Table 3.5-3** illustrates only those farms receiving disaster and emergency assistance payments in 2006. In 2006, approximately three percent of all farms in the U.S. received disaster assistance with an average payment of $5,367. Rural residence farms receiving disaster assistance received approximately $1,900 per farm, intermediate farms received $3,750 per farm, and commercial farms received on average $20,434 in 2006. Disaster assistance accounted for approximately 61 percent of the government payments that rural residence farms received in 2006; approximately 46 percent for intermediate farms; and approximately 48 percent for commercial farms.

**Table 3.5-3. Government Disaster and Emergency Assistance by Farm Typology (2006)**

| | All | Rural residence farms | Intermediate farms | Commercial farms |
|---|---|---|---|---|
| Farms receiving disaster and emergency assistance payments | 62,680 | 26,364 | 27,326 | 8,990 |
| Percent of all farms (%) | 3.0 | 2.0 | 4.9 | 4.1 |
| Average gross cash income ($) | 147,651 | 40,973 | 83,179 | 656,477 |
| Average government payments ($) | 10,993 | 3,142 | 8,094 | 42,829 |
| Percent of gross cash income (%) | 7.4 | 7.7 | 9.7 | 6.5 |
| Average disaster and emergency assistance payments ($) | 5,367 | 1,905 | 3,750 | 20,434 |
| Percent of government payments (%) | 48.8 | 60.7 | 46.3 | 47.7 |

**Table 3.5-4** illustrates the estimated per farm average for emergency payments by state in 2006. These estimates are based on the percentage of farms receiving government payments by production region. The states receiving the highest average emergency payments in 2006 were Florida, Louisiana, and Mississippi.

## Table 3.5-4. Estimated Per Farm Average for Total Government Payments and ECP Payments (2006)

| State | Production Region | Total Farms | Average Percent Farms Receiving Government Payments | Total Government Payments ($,000) | Average Per Farm ($) | Farms Receiving ECP Payments | ECP Payments | Average Per Farm ($) |
|---|---|---|---|---|---|---|---|---|
| Alabama | Southeast | 43,000 | 21.7% | $219,263 | $23,498.37 | 9,127 | $20,226,777 | $2,216.15 |
| Alaska | na | 640 | na | $3,383 | $5,285.90 | 0 | $0 | $0.00 |
| Arizona 1/ | Mountain | 10,000 | 36.4% | $109,088 | $29,969.09 | 726 | $1,129,719 | $1,556.09 |
| Arkansas | Delta | 46,500 | 32.7% | $515,613 | $33,909.64 | 72 | $133,812 | $1,858.50 |
| California | Pacific | 76,000 | 15.3% | $530,193 | $45,596.26 | 416 | $6,045,723 | $14,532.99 |
| Colorado | Mountain | 30,700 | 36.4% | $244,612 | $21,889.65 | 410 | $2,033,253 | $4,959.15 |
| Connecticut | Northeast | 4,200 | 32.1% | $9,430 | $6,994.55 | 4 | $34,110 | $8,527.50 |
| Delaware | Northeast | 2,300 | 32.1% | $22,093 | $29,924.28 | 0 | $0 | $0.00 |
| Florida | Southeast | 41,000 | 21.7% | $140,767 | $15,821.86 | 6,369 | $40,449,648 | $6,351.02 |
| Georgia | Southeast | 49,000 | 21.7% | $483,093 | $45,433.37 | 4,612 | $22,908,069 | $4,967.06 |
| Hawaii | na | 5,500 | na | $3,796 | $690.22 | 132 | $1,886,745 | $14,293.52 |
| Idaho | Mountain | 25,000 | 36.4% | $140,790 | $15,471.40 | 128 | $558,348 | $4,362.09 |
| Illinois | Corn Belt | 72,400 | 60.2% | $1,045,199 | $23,980.81 | 140 | $398,424 | $2,845.89 |
| Indiana | Corn Belt | 59,000 | 60.2% | $541,283 | $15,239.67 | 236 | $350,091 | $1,483.44 |
| Iowa | Corn Belt | 88,600 | 60.2% | $1,252,368 | $23,480.19 | 1,502 | $3,159,375 | $2,103.45 |
| Kansas | Northern Plains | 64,000 | 77.9% | $648,182 | $13,001.08 | 44 | $68,049 | $1,546.57 |
| Kentucky | Appalachia | 84,000 | 48.1% | $494,867 | $12,247.98 | 1,143 | $1,861,002 | $1,628.17 |
| Louisiana | Delta | 26,800 | 32.7% | $340,987 | $38,909.47 | 34 | $141,591 | $4,164.44 |
| Maine | Northeast | 7,100 | 32.1% | $14,948 | $6,558.88 | 75 | $97,014 | $1,293.52 |
| Maryland | Northeast | 12,000 | 32.1% | $67,445 | $17,509.04 | 100 | $160,779 | $1,607.79 |
| Massachusetts | Northeast | 6,100 | 32.1% | $12,709 | $6,490.28 | 8 | $27,000 | $3,375.00 |
| Michigan | Lake States | 53,000 | 55.6% | $247,643 | $8,403.79 | 20 | $167,619 | $8,380.95 |
| Minnesota | Lake States | 79,300 | 55.6% | $767,576 | $17,408.99 | 199 | $715,554 | $3,595.75 |

Table 3.5-4. Estimated Per Farm Average for Total Government Payments and ECP Payments (2006) (cont'd.)

| State | Production Region | Total Farms | Average Percent Farms Receiving Government Payments | Total Government Payments ($,000) | Average Per Farm ($) | Farms Receiving ECP Payments | ECP Payments | Average Per Farm ($) |
|---|---|---|---|---|---|---|---|---|
| Mississippi | Delta | 42,000 | 32.7% | $633,490 | $46,125.70 | 251 | $334,584 | $1,333.00 |
| Missouri | Corn Belt | 105,000 | 60.2% | $510,223 | $8,071.87 | 504 | $2,015,502 | $3,999.01 |
| Montana | Mountain | 28,100 | 36.4% | $275,301 | $26,915.34 | 626 | $2,382,054 | $3,805.20 |
| Nebraska | Northern Plains | 47,600 | 77.9% | $812,068 | $21,900.19 | 531 | $1,255,395 | $2,364.21 |
| Nevada | Mountain | 3,000 | 36.4% | $8,620 | $7,894.22 | 214 | $3,332,652 | $15,573.14 |
| New Hampshire | Northeast | 3,400 | 32.1% | $7,558 | $6,925.35 | 0 | $0 | $0.00 |
| New Jersey | Northeast | 9,800 | 32.1% | $17,869 | $5,680.20 | 77 | $2,131,956 | $27,687.74 |
| New Mexico /1 | Mountain | 17,500 | 36.4% | $82,608 | $12,968.35 | 117 | $575,130 | $4,915.64 |
| New York | Northeast | 35,000 | 32.1% | $127,873 | $11,381.65 | 844 | $2,075,343 | $2,458.94 |
| North Carolina | Appalachia | 48,000 | 48.1% | $738,423 | $31,982.98 | 12,169 | $17,752,212 | $1,458.81 |
| North Dakota | Northern Plains | 30,300 | 77.9% | $453,076 | $19,195.14 | 12 | $23,718 | $1,976.50 |
| Ohio | Corn Belt | 76,200 | 60.2% | $441,641 | $9,627.60 | 2,325 | $3,675,201 | $1,580.73 |
| Oklahoma | Southern Plains | 83,000 | 31.1% | $243,297 | $9,425.38 | 117 | $248,106 | $2,120.56 |
| Oregon | Pacific | 39,300 | 15.3% | $118,215 | $19,660.19 | 88 | $622,641 | $7,075.47 |
| Pennsylvania | Northeast | 58,200 | 32.1% | $134,499 | $7,199.32 | 944 | $1,749,774 | $1,853.57 |
| Rhode Island | Northeast | 850 | 32.1% | $2,576 | $9,440.69 | 0 | $0 | $0.00 |
| South Carolina | Southeast | 24,600 | 21.7% | $184,247 | $34,514.78 | 5,648 | $3,811,161 | $674.78 |
| South Dakota | Northern Plains | 31,300 | 77.9% | $411,846 | $16,890.90 | 4,209 | $12,813,069 | $3,044.21 |

Table 3.5-4. Estimated Per Farm Average for Total Government Payments and ECP Payments– 2006 (cont'd.)

| State | Production Region | Total Farms | Average Percent Farms Receiving Government Payments | Total Government Payments ($,000) | Average Per Farm ($) | Farms Receiving ECP Payments | ECP Payments | Average Per Farm ($) |
|---|---|---|---|---|---|---|---|---|
| Tennessee | Appalachia | 81,000 | 48.1% | $326,258 | $8,373.97 | 389 | $760,995 | $1,956.29 |
| Texas | Southern Plains | 230,000 | 31.1% | $1,507,639 | $21,077.02 | 254 | $652,593 | $2,569.26 |
| Utah | Mountain | 15,100 | 36.4% | $40,184 | $7,310.90 | 674 | $2,106,615 | $3,125.54 |
| Vermont | Northeast | 6,300 | 32.1% | $19,844 | $9,812.47 | 19 | $45,048 | $2,370.95 |
| Virginia | Appalachia | 46,800 | 48.1% | $172,422 | $7,659.53 | 7,675 | $7,752,609 | $1,010.11 |
| Washington | Pacific | 34,000 | 15.3% | $196,466 | $37,767.39 | 334 | $2,666,175 | $7,982.56 |
| West Virginia | Appalachia | 21,200 | 48.1% | $16,188 | $1,587.48 | 760 | $1,690,653 | $2,224.54 |
| Wisconsin | Lake States | 76,000 | 55.6% | $414,088 | $9,799.50 | 0 | $0 | $0.00 |
| Wyoming | Mountain | 9,100 | 36.4% | $37,299 | $11,260.33 | 426 | $2,113,176 | $4,960.51 |
| U.S. | | 2,088,790 | 44.3% | $15,789,146 | $17,063.19 | 64,704 | $175,139,064 | $2,706.77 |

USDA 2006.

# 3.6 ENVIRONMENTAL JUSTICE

## 3.6.1 Definition of Resource

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires a Federal agency to "make achieving environmental justice part of its mission by identifying and addressing as appropriate, disproportionately high human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." A minority population can be defined by race, by ethnicity, or by a combination of the two classifications.

According to CEQ, a minority population can be described as being composed of the following groups: American Indian or Alaska Native, Asian or Pacific Islander, Black, not of Hispanic origin, or Hispanic and exceeding 50 percent of the population in an area or the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population (CEQ 1997). The U.S. Census Bureau (USCB) defines ethnicity as either being of Hispanic origin or not being of Hispanic origin. Hispanic origin is further defined as "a person of Cuban, Mexican, Puerto Rican, South or Central America, or other Spanish culture or origin regardless of race" (USCB 2001).

Each year the USCB defines the national poverty thresholds, which are measured in terms of household income and are dependent upon the number of persons within the household. Individuals falling below the poverty threshold are considered low-income individuals. USCB census tracts where at least 20 percent of the residents are considered poor are known as poverty areas (USCB 1995). When the percentage of residents considered poor is greater than 40 percent, the census tract is considered an extreme poverty area.

## 3.6.2 Effects of Natural Disaster on Resource

The effects of a disaster on minority or low-income populations are the same as those described under socioeconomics, that is, a natural disaster creates some level of stress on the economic, social, or physical infrastructure of a given community. The effects of a natural disaster for producers include damage or loss of cropland, rangeland, or timberland, as well as potentially increased mortality rate for livestock or wildlife. Damages to cropland may affect productivity for several years and may significantly increase a producer's expenses to keep the farm in production. The loss of farm income can indirectly affect the local community through reduced agricultural sales and employment (USDA 2003). The economic impacts to a low-income producer may be so great that they do not return to agricultural production.

## 3.6.3 Affected Environment

### *Minority Principal Operators*

In 2002, there were more than 2 million principal operators on farms in the U.S., including Puerto Rico. Of this, there were 61,603 principal operators that claimed they were one or more minority races in the U.S. (2.8 percent of principal operators) (USDA 2002). The 2002 Agriculture Census also found that 50,592 principal operators were of Spanish, Hispanic, or Latino origin (2.3 percent of principal operators) (USDA 2002). Additionally, 237,819 principal operators of farms were women (10.7 percent of principal operators) (USDA 2002). **Table 3.6-1** illustrates the number of minority operators by race and ethnicity as determined through the 1997 and 2002 Agriculture Census.

## Table 3.6-1. 2002 and 1997 Minority Principal Operators by Race and Ethnicity

| State | Black or African American | | | American Indian or Alaska Native | | | Asian, Native Hawaiian or Other Pacific Islander* | | | Spanish, Hispanic or Latino Origin | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2002 Principal Operators | 1997 Principal Operators | % Change | 2002 Principal Operators | 1997 Principal Operators | % Change | 2002 Principal Operators | 1997 Principal Operators | % Change | 2002 Principal Operators | 1997 Principal Operators | % Change |
| Alabama | 2,350 | 2,251 | 4.40% | 349 | 288 | 21.20% | 27 | 26 | 3.80% | 451 | 229 | 96.90% |
| Alaska | 1 | 1 | 0.00% | 32 | 19 | 68.40% | 2 | N/A | N/A | 8 | 6 | 33.30% |
| Arizona | 41 | 23 | 78.30% | 291 | 321 | -9.30% | 49 | 44 | 11.40% | 761 | 495 | 53.70% |
| Arkansas | 982 | 780 | 25.90% | 424 | 213 | 99.10% | 72 | 40 | 80.00% | 586 | 326 | 79.80% |
| California | 278 | 396 | -29.80% | 977 | 676 | 44.50% | 3,780 | 3,746 | 0.90% | 7,711 | 5,347 | 44.20% |
| Colorado | 47 | 39 | 20.50% | 256 | 156 | 64.10% | 71 | 87 | -18.40% | 1,747 | 988 | 76.80% |
| Connecticut | 5 | 7 | -28.60% | 5 | 13 | -61.50% | 3 | 3 | 0.00% | 72 | 36 | 100.00% |
| Delaware | 22 | 9 | 144.40% | 9 | 10 | -10.00% | 23 | 17 | 35.30% | 35 | 15 | 133.30% |
| Florida | 1,068 | 807 | 32.30% | 317 | 168 | 88.70% | 481 | 276 | 74.30% | 2,588 | 1,326 | 95.20% |
| Georgia | 1,988 | 1,487 | 33.70% | 180 | 102 | 76.50% | 92 | 53 | 73.60% | 406 | 390 | 4.10% |
| Hawaii | 12 | 8 | 50.00% | 30 | 18 | 66.70% | 2,514 | 3,212 | -21.70% | 241 | 176 | 36.90% |
| Idaho | 8 | 22 | -63.60% | 160 | 139 | 15.10% | 86 | 112 | -23.20% | 920 | 382 | 140.80% |
| Illinois | 59 | 123 | -52.00% | 61 | 65 | -6.20% | 21 | 34 | -38.20% | 366 | 312 | 17.30% |
| Indiana | 55 | 61 | -9.80% | 93 | 105 | -11.40% | 26 | 22 | 18.20% | 349 | 265 | 31.70% |
| Iowa | 31 | 40 | -22.50% | 61 | 66 | -7.60% | 27 | 30 | -10.00% | 380 | 362 | 5.00% |
| Kansas | 116 | 122 | -4.90% | 203 | 174 | 16.70% | 17 | 23 | -26.10% | 437 | 338 | 29.30% |
| Kentucky | 687 | 593 | 15.90% | 168 | 143 | 17.50% | 38 | 43 | -11.60% | 668 | 433 | 54.30% |
| Louisiana | 1,856 | 1,580 | 17.50% | 106 | 103 | 2.90% | 32 | 25 | 28.00% | 456 | 286 | 59.40% |
| Maine | N/A | N/A | N/A | 17 | 13 | 30.80% | 9 | 6 | 50.00% | 143 | 48 | 197.90% |
| Maryland | 239 | 219 | 9.10% | 56 | 26 | 115.40% | 35 | 19 | 84.20% | 118 | 94 | 25.50% |
| Massachusetts | 23 | 22 | 4.50% | 19 | 8 | 137.50% | 20 | 13 | 53.80% | 143 | 47 | 204.30% |
| Michigan | 184 | 133 | 38.30% | 146 | 120 | 21.70% | 43 | 35 | 22.90% | 828 | 315 | 162.90% |
| Minnesota | 16 | 36 | -55.60% | 111 | 123 | -9.80% | 46 | 45 | 2.20% | 502 | 268 | 87.30% |
| Mississippi | 5,145 | 3,925 | 31.10% | 78 | 74 | 5.40% | 39 | 32 | 21.90% | 388 | 216 | 79.60% |
| Missouri | 205 | 219 | -6.40% | 450 | 354 | 27.10% | 72 | 58 | 24.10% | 703 | 508 | 38.40% |
| Montana | 5 | 8 | -37.50% | 924 | 836 | 10.50% | 20 | 19 | 5.30% | 324 | 209 | 55.00% |

## Table 3.6-1. 2002 and 1997 Minority Principal Operators by Race and Ethnicity (cont'd.)

| State | Black or African American | | | American Indian or Alaska Native | | | Asian, Native Hawaiian or Other Pacific Islander* | | | Spanish, Hispanic or Latino Origin | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2002 Principal Operators | 1997 Principal Operators | % Change | 2002 Principal Operators | 1997 Principal Operators | % Change | 2002 Principal Operators | 1997 Principal Operators | % Change | 2002 Principal Operators | 1997 Principal Operators | % Change |
| Nebraska | 9 | 73 | -87.70% | 83 | 70 | 18.60% | 14 | 37 | -62.20% | 295 | 266 | 10.90% |
| Nevada | 7 | 3 | 133.30% | 85 | 123 | -30.90% | 8 | 2 | 300.00% | 140 | 119 | 17.60% |
| New Hampshire | 2 | N/A | N/A | 17 | 2 | 750.00% | 9 | 1 | 800.00% | 59 | 19 | 210.50% |
| New Jersey | 66 | 46 | 43.50% | 23 | 20 | 15.00% | 53 | 68 | -22.10% | 162 | 123 | 31.70% |
| New Mexico | 56 | 27 | 107.40% | 403 | 448 | -10.00% | 23 | 8 | 187.50% | 4,499 | 4,160 | 8.10% |
| New York | 70 | 62 | 12.90% | 85 | 49 | 73.50% | 57 | 64 | -10.90% | 413 | 265 | 55.80% |
| North Carolina | 1,686 | 2,212 | -23.80% | 455 | 707 | -35.60% | 95 | 78 | 21.80% | 615 | 366 | 68.00% |
| North Dakota | N/A | N/A | N/A | 205 | 208 | -1.40% | 2 | 2 | 0.00% | 175 | 148 | 18.20% |
| Ohio | 168 | 165 | 1.80% | 192 | 145 | 32.40% | 40 | 43 | -7.00% | 804 | 361 | 122.70% |
| Oklahoma | 840 | 889 | -5.50% | 4,546 | 3,982 | 14.20% | 64 | 41 | 56.10% | 1,498 | 635 | 135.90% |
| Oregon | 28 | 32 | -12.50% | 410 | 247 | 66.00% | 324 | 261 | 24.10% | 1,028 | 628 | 63.70% |
| Pennsylvania | 62 | 46 | 34.80% | 70 | 65 | 7.70% | 39 | 49 | -20.40% | 349 | 275 | 26.90% |
| Rhode Island | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 28 | 8 | 250.00% |
| South Carolina | 1,929 | 1,949 | -1.00% | 83 | 54 | 53.70% | 25 | 19 | 31.60% | 273 | 138 | 97.80% |
| South Dakota | 9 | 8 | 12.50% | 639 | 530 | 20.60% | 11 | 4 | 175.00% | 192 | 185 | 3.80% |
| Tennessee | 1,054 | 1,201 | -12.20% | 236 | 185 | 27.60% | 68 | 59 | 15.30% | 649 | 452 | 43.60% |
| Texas | 5,979 | 5,561 | 7.50% | 1,501 | 952 | 57.70% | 357 | 244 | 46.30% | 15,104 | 9,903 | 52.50% |
| Utah | 4 | 4 | 0.00% | 91 | 43 | 111.60% | 36 | 63 | -42.90% | 351 | 141 | 148.90% |
| Vermont | 2 | 7 | -71.40% | 18 | 9 | 100.00% | 13 | 1 | 1200.00% | 153 | 55 | 178.20% |
| Virginia | 1,583 | 1,456 | 8.70% | 112 | 61 | 83.60% | 52 | 53 | -1.90% | 371 | 273 | 35.90% |
| Washington | 43 | 58 | -25.90% | 426 | 377 | 13.00% | 324 | 395 | -18.00% | 1,107 | 974 | 13.70% |
| West Virginia | 37 | 31 | 19.40% | 43 | 40 | 7.50% | 6 | 9 | -33.30% | 177 | 100 | 77.00% |
| Wisconsin | 27 | 31 | -12.90% | 102 | 153 | -33.30% | 76 | 93 | -18.30% | 523 | 308 | 69.80% |
| Wyoming | 6 | 3 | 100.00% | 146 | 108 | 35.20% | 17 | 5 | 240.00% | 296 | 131 | 126.00% |
| U.S. | 29,090 | 26,785 | 8.60% | 15,494 | 12,911 | 20.00% | 9,358 | 9,620** | -2.70% | 50,592 | 33,450 | 51.20% |

Source USDA 2002. Adapted from Counting Diversity in American Agriculture.

### *Limited Resource Producers*

A limited resource producer is defined in the ECP handbook as a producer with gross farm sales of no more than $100,000 in each of the two years prior to the disaster, with a total household income below the National poverty level or less than 50 percent of the county median income.

**Tables 3.6-2 and 3.6-3** illustrate data on total number of farms, farms with sales less than $100,000, and median household income from the 1997 and 2002 Agriculture Census.

The number of farms with farm sales less than $100,000 per year increased at a faster rate than the total number of farms between 1997 and 2002 (16.1 percent). Additionally, the percentage of farms with sales less than $100,000 when compared to the total number of farms increased 3.5 percent from 81.9 percent of farms in 1997 to 85.4 percent of farms in 2002. Based on data from the 2000 Decennial Census, the average median household income amongst the region varied from 95.3 percent of the U.S. median household income to 74.6 percent of the U.S. median household income. The median U.S. household income was $41,994 in 2000.

The average poverty rate in the regions varied from 9.8 percent in the Midwest to 15.5 percent in the South Central. The U.S. poverty rate in 2000 was 12.4 percent.

**Table 3.6-2. 1997 Census of Agriculture Farm Sales Less Than $100,000 and Poverty Rate by Region**

| Parameter | Region | | | | | | |
|---|---|---|---|---|---|---|---|
| | Midwest | Northeast | Northern Plains | South Central | Southeast | West | All Regions |
| Total Farms (#)[1] | 574,206 | 143,202 | 236,614 | 337,480 | 417,616 | 202,705 | 1,911,823 |
| Farms with Sales <$100,000 (#)[1] | 442,406 | 117,475 | 174,846 | 299,960 | 369,998 | 161,154 | 1,565,839 |
| Farms with Sales <$100,000 (%)[1] | 77.05% | 82.03% | 73.90% | 88.88% | 88.60% | 79.50% | 81.90% |
| Average Median Household Income[2] | $38,035 | $40,028 | $33,639 | $31,309 | $33,473 | $37,817 | $35,288 |
| Percent of US Median Household Income | 90.57% | 95.32% | 80.10% | 74.56% | 79.71% | 90.05% | 84.03% |
| Total Population[2] | 58,247,862 | 60,831,654 | 11,493,963 | 31,444,850 | 56,408,043 | 57,297,140 | 247,423,512 |
| Total Population Below Poverty Threshold | 5,688,270 | 6,599,864 | 1,160,539 | 4,871,734 | 7,515,701 | 7,453,228 | 33,289,336 |
| Average Poverty Rate[2] | 9.77% | 10.85% | 10.10% | 15.49% | 13.32% | 13.01% | 13.45% |

[1] Source: USDA 1997
[2] Source: USCB 2002

## Table 3.6-3. 2002 Farms and Farms with Sales <$100,000 by State

| Location | Farms (#)[2] | Sales < $100,000 (#)[2] | Sales < $100,000 (%) | Median household income[1] |
|---|---|---|---|---|
| Alabama | 45,126 | 40,455 | 89.65% | 34,135 |
| Alaska | 609 | 538 | 88.34% | 51,571 |
| Arizona | 7,294 | 6,102 | 83.66% | 40,558 |
| Arkansas | 47,483 | 38,969 | 82.07% | 32,182 |
| California | 79,631 | 60,046 | 75.41% | 47,493 |
| Colorado | 31,369 | 27,439 | 87.47% | 47,203 |
| Connecticut | 4,191 | 3,752 | 89.53% | 53,935 |
| Delaware | 2,391 | 1,367 | 57.17% | 47,381 |
| Florida | 44,081 | 38,974 | 88.41% | 38,819 |
| Georgia | 49,311 | 43,039 | 87.28% | 42,433 |
| Hawaii | 5,398 | 4,913 | 91.02% | 49,820 |
| Idaho | 25,017 | 21,124 | 84.44% | 37,572 |
| Illinois | 73,027 | 53,553 | 73.33% | 46,590 |
| Indiana | 60,296 | 49,935 | 82.82% | 41,567 |
| Iowa | 90,655 | 63,240 | 69.76% | 39,469 |
| Kansas | 64,414 | 53,395 | 82.89% | 40,624 |
| Kentucky | 86,541 | 81,422 | 94.08% | 33,672 |
| Louisiana | 27,413 | 23,988 | 87.51% | 32,566 |
| Maine | 7,196 | 6,517 | 90.56% | 37,240 |
| Maryland | 12,198 | 10,099 | 82.79% | 52,868 |
| Massachusetts | 6,075 | 5,384 | 88.63% | 50,502 |
| Michigan | 53,315 | 46,824 | 87.83% | 44,667 |
| Minnesota | 80,839 | 62,297 | 77.06% | 47,111 |
| Mississippi | 42,186 | 37,829 | 89.67% | 31,330 |
| Missouri | 106,797 | 97,381 | 91.18% | 37,934 |
| Montana | 27,870 | 22,843 | 81.96% | 33,024 |
| Nebraska | 49,355 | 33,571 | 68.02% | 39,250 |
| Nevada | 2,989 | 2,408 | 80.56% | 44,581 |
| New Hampshire | 3,363 | 3,110 | 92.48% | 49,467 |
| New Jersey | 9,924 | 8,865 | 89.33% | 55,146 |
| New Mexico | 15,170 | 13,582 | 89.53% | 34,133 |
| New York | 37,255 | 30,804 | 82.68% | 43,393 |
| North Carolina | 53,930 | 45,139 | 83.70% | 39,184 |
| North Dakota | 30,619 | 21,790 | 71.16% | 34,604 |
| Ohio | 77,797 | 68,929 | 88.60% | 40,956 |
| Oklahoma | 83,300 | 76,850 | 92.26% | 33,400 |
| Oregon | 40,033 | 35,846 | 89.54% | 40,916 |
| Pennsylvania | 58,105 | 48,508 | 83.48% | 40,106 |
| Rhode Island | 858 | 746 | 86.95% | 42,090 |

Table 3.6-3. 2002 Farms and Farms with Sales <$100,000 by State (cont'd.)

| Location | Farms (#)[2] | Sales < $100,000 (#)[2] | Sales < $100,000 (%) | Median household income[1] |
|---|---|---|---|---|
| South Carolina | 24,541 | 22,881 | 93.24% | 37,082 |
| South Dakota | 31,736 | 22,070 | 69.54% | 35,282 |
| Tennessee | 87,595 | 83,747 | 95.61% | 36,360 |
| Texas | 228,926 | 214,262 | 93.59% | 39,927 |
| Utah | 15,282 | 13,695 | 89.62% | 45,726 |
| Vermont | 6,571 | 5,404 | 82.24% | 40,856 |
| Virginia | 47,606 | 43,685 | 91.76% | 46,677 |
| Washington | 35,939 | 29,344 | 81.65% | 45,776 |
| West Virginia | 20,812 | 20,117 | 96.66% | 29,696 |
| Wisconsin | 77,131 | 63,201 | 81.94% | 43,791 |
| Wyoming | 9,422 | 7,615 | 80.82% | 37,892 |

[1] Source: USCB 2002
[2] Source: USDA 2002

The USDA also provides data through the ARMS (07 December 2007, last update) for 2006. In 2006, approximately 83.8% of total farms had sales less than $100,000 (1,764,725 farms) (USDA 2007b). Only 666,387 farms with sales less than $100,000 in 2006 received some form of government payment (38.2 percent of all farms of this sales class) (USDA 2007c). Farms with sales less than $100,000 in 2006 accounted for 72.1 percent of all farms receiving government payments (USDA 2007c).

**Table 3.6-4** illustrates data by farm type and by region for the number of farm households, the average total household income, percentage of income from off-farm sources, and percentage of farms with negative household income. Only households classified as very large farms receive less than 50 percent of their household income from off-farm sources. All other farm types in all regions receive the majority of household income from off-farm sources, such as a primary occupation other than agriculture or income from another family member. Only Retirement farms had average total household income below the average U.S. household income.

The NRCS estimated that the number of limited resource producers in the U.S. was approximately 312,000 based on data from the 2002 Agriculture Census and the 2000 Decennial Census (NRCS 2005). The NRCS estimated that there are on average 99 limited resource producers in each county in the U.S., with a minimum being 0 per county and a maximum estimate being 1,158 per county.

## Table 3.6-4. 2006 Farm Household Income by Farm Typology and by Region

| Parameter | Region | | | | | |
|---|---|---|---|---|---|---|
| | Atlantic | South | Midwest | Plains | West | All Farms |
| **Retirement** | | | | | | |
| Number of Farm Households | 108,299 | 54,611 | 118,431 | 82,628 | 39,944 | 403,914 |
| Average Total Household Income ($) | 55,708 | 41,597 | 63,519 | 57,615 | 67,939 | 57,690 |
| Household Income from Off Farm Sources (%) | 98.8 | 105.4 | 94.4 | 98.2 | 97.8 | 97.8 |
| Average U.S. Household Income (%) | 83.7 | 62.5 | 95.4 | 86.5 | 102.1 | 86.7 |
| Farm Households Negative Household Income (%) | 7.5 | 4.8 | 2.5 | 3.5 | 3.5 | 4.4 |
| **Residential/Lifestyle** | | | | | | |
| Number of Farm Households | 194,260 | 130,877 | 254,615 | 210,175 | 114,903 | 904,831 |
| Average Total Household Income ($) | 81,602 | 80,158 | 76,461 | 97,032 | 90,082 | 84,608 |
| Household Income from Off Farm Sources (%) | 103.0 | 104.6 | 107.8 | 105.9 | 110.3 | 106.2 |
| Average U.S. Household Income (%) | 122.6 | 120.4 | 114.9 | 145.8 | 135.3 | 127.1 |
| Farm Households Negative Household Income (%) | 0 | 1.5 | 0.9 | 1.4 | 2.1 | 1.7 |
| **Farming Occupation - Lower Sales** | | | | | | |
| Number of Farm Households | 77,416 | 48,906 | 118,185 | 115,757 | 70,189 | 430,454 |
| Average Total Household Income ($) | 47,361 | 51,049 | 56,114 | 46,714 | 57,192 | 51,612 |
| Household Income from Off Farm Sources (%) | 108.1 | 96.8 | 95.0 | 102.7 | 95.3 | 99.3 |
| Average U.S. Household Income (%) | 71.1 | 76.7 | 84.3 | 70.2 | 85.9 | 77.5 |
| Farm Households Negative Household Income (%) | 8.8 | 8.9 | 10.1 | 13.3 | 8.5 | 10.3 |
| **Farming Occupation - Higher Sales** | | | | | | |
| Number of Farm Households | 18,217 | 9,919 | 47,182 | 31,340 | 18,573 | 125,230 |
| Average Total Household Income ($) | 56,405 | 53,455 | 70,544 | 54,683 | 79,194 | 64,447 |
| Household Income from Off Farm Sources (%) | 50.3 | 66.5 | 58.9 | 64.1 | 68.2 | 61.1 |
| Average U.S. Household Income (%) | 84.7 | 80.3 | 106 | 82.1 | 119 | 96.8 |
| Farm Households Negative Household Income (%) | 8.2 | 14.7 | 14.2 | 16.3 | 13.3 | 13.8 |

## Table 3.6-4. 2006 Farm Household Income by Farm Typology and by Region (cont'd.)

| Parameter | Region | | | | | |
|---|---|---|---|---|---|---|
| | Atlantic | South | Midwest | Plains | West | All Farms |
| **Large Farms** | | | | | | |
| Number of Farm Households | 11,590 | 9,291 | 34,149 | 19,129 | 12,023 | 86,182 |
| Average Total Household Income ($) | 79,761 | 96,592 | 100,311 | 131,945 | 98,135 | 103,864 |
| Household Income from Off Farm Sources (%) | 54.3 | 57.2 | 51.4 | 71.8 | 54.0 | 58.4 |
| Average U.S. Household Income (%) | 119.8 | 145.1 | 150.7 | 198.2 | 147.4 | 156 |
| Farm Households Negative Household Income (%) | 16.4 | 13.2 | 14.1 | 18 | 21.6 | 16.2 |
| **Very Large Farms** | | | | | | |
| Number of Farm Households | 10,270 | 12,509 | 22,016 | 13,202 | 13,893 | 71,890 |
| Average Total Household Income ($) | 228,058 | 200,334 | 228,071 | 222,264 | 371,088 | 249,815 |
| Household Income from Off Farm Sources (%) | 20.1 | 25.7 | 20.2 | 25.5 | 16.9 | 20.9 |
| Average U.S. Household Income (%) | 342.6 | 300.9 | 342.6 | 333.9 | 557.4 | 375.3 |
| Farm Households Negative Household Income (%) | 11.2 | 14.4 | 14.2 | 15.7 | 18.8 | 15 |

Source: USDA 2007b

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# 4.0 ENVIRONMENTAL CONSEQUENCES

*This section forms the scientific and analytic basis for the comparisons under (Chapter 2.0).*
40 CFR 1502.16

This chapter describes the potential direct and indirect environmental impacts associated with the proposed changes to ECP as compared to the current program. With the proposed action, the available practices under ECP have not changed, rather where these practices can be implemented. The proposed action redefines eligibility to include land devoted to timberland, farmsteads, roads, feedlots, and farm buildings. Table 4-1 provides a summary of the potential impacts on each resource associated with continuing the current program and implementing approved ECP practices within the proposed eligible areas.

**Table 4.0-1. Environmental Impacts Summary**

| Resources | No Action (Current Program) | Proposed Action (Expansion) |
|---|---|---|
| **Biological Resources**<br>*vegetation, wildlife, and protected species* | Removing debris, shaping and leveling land, reestablishing vegetation, and restoring conservation structures after a natural disaster would have long term positive impacts to vegetation and wildlife. Reestablishing permanent vegetation and conservation structures would ultimately improve local water quality and wildlife habitat promoting biological diversity.<br><br>If protected species are present or suspected of being present, informal consultation with the U.S. Fish and Wildlife Service would occur during the site-specific environmental evaluation to ensure the protection of these species.<br><br>Temporary negative impacts could occur with the use of heavy machinery to establish some practices. These effects would be temporary and localized. The disturbance from heavy machinery would not be greater than the disturbance associated with normal agricultural practices. | Expanding the current program to include timberlands and other areas within the farmstead would have the same long term positive impacts as the current program. With the addition of timberland, there is a higher likelihood for encountering previously undisturbed land. Removing debris, shaping and leveling land, reestablishing vegetation and restoring conservation structures in these areas would promote vegetation growth and wildlife diversity.<br><br>Protected species that occur or have the potential to occur would be protected through informal consultation with the U.S. Fish and Wildlife Service during the site-specific environmental evaluation.<br><br>Temporary negative impacts from the use of heavy machinery could occur with some practices. Establishing access roads in timberland areas would temporarily remove vegetation in the immediate area. |

## Table 4.0-1. Environmental Impacts Summary (cont'd.)

| Resources | No Action (Current Program) | Proposed Action (Expansion) |
|---|---|---|
| **Water Resources**<br>*surface water, groundwater and aquifers, floodplains, and wetlands* | The goal of many of the practices is to restore agricultural land to prohibit further erosion and degradation of local water quality. Positive impacts to surface water quality, groundwater quality, floodplains, and wetlands would be realized from implementation of the practices. Removing debris, restoring vegetation, repairing conservation structures, reestablishing windbreaks, and releveling the land would all provide erosion control and limit runoff potential.<br>The use of heavy machinery could temporarily increase runoff and erosion potential. These impacts would be localized and cease once construction has ended. | Similar to the current program, expanding the program would improve local water quality, floodplains, and improve nearby wetlands for newly eligible areas. Impacts to groundwater within timberlands are not expected since it is unlikely that any of the practices associated with wells would occur in timberlands.<br>The use of heavy machinery in timberlands could temporarily increase runoff and erosion potential. These impacts would be localized and cease once construction has ended. |
| **Soil Resources** | Positive impacts to local soils are expected since most practices are designed to increase soil stability. Reestablishing vegetation, windbreaks, wind control measures, and removing gullies all reduce erosion potential.<br>The use of heavy machinery during implementation of some of the practices could compact soils impairing water infiltration and vegetation growth. | Potential impacts to soils in timberlands would be similar to those described for the current program with the exception that practices could be implemented in areas where soils have not been disturbed from routine farming activities. Reestablishing vegetation, wind control measures, and releveling land would all reduce erosion potential and protect the area from soil loss.<br>The use of heavy machinery, especially in timberland areas, could compact soils impairing water infiltration and vegetation growth. |

Table 4.0-1. Environmental Impacts Summary (cont'd.)

| Resources | No Action (Current Program) | Proposed Action (Expansion) |
|---|---|---|
| **Cultural Resources** | Removing debris, releveling land, and establishing wind erosion measures on lands with historic significance would have beneficial effects to these areas by restoring access and removing potential contaminants that would threaten the integrity of the site.<br><br>The use of heavy equipment could negatively affect historic properties through ground disturbance.<br><br>Site specific environmental evaluation in accordance with 1-EQ would determine the presence of a specific property included or eligible for inclusion on the National Register of Historic Places and provide compliance with Section 106 of the National Historic Preservation Act. | Expanding the program eligibility to timberland, farmsteads, and farm buildings would increase the potential for encountering a historic property. Potential beneficial and adverse impacts to these sites would be the same as those described under the current program.<br><br>Site specific environmental evaluation would determine the presence of a specific property included or eligible for inclusion on the National Register of Historic Places and provide compliance with Section 106 of the National Historic Preservation Act. |
| **Socioeconomics** | The program provides financial assistance to producers to restore lands to normal farming production. Without the assistance of the program, these lands might be too costly to repair. The producer and the local economy experience a slightly positive economic impact as a result of the program. | Expanding the eligibility of the program would have similar socioeconomic impacts as the current program. The budgeted amount for the program and the individual operator cap of $200,000 would remain unchanged. Therefore, increasing the land eligible for cost-share assistance would either (1) allow for higher payment to a producer, not to exceed the cap, or (2) allow more producers to apply for assistance. |

Table 4.0-1. Environmental Impacts Summary (cont'd.)

| Resources | No Action (Current Program) | Proposed Action (Expansion) |
|---|---|---|
| **Environmental Justice** | The program provides funding to a producer at a time when it is most needed and helps to maintain the local economy. A low income producer would benefit the most from the program since they may not be financially able to restore the land without the assistance and are eligible for a higher cost-share. Potential impacts to the natural environment would not be considered significant under the current program, therefore, there are no environmental justice concerns. | Similar to the current program, expanding the eligibility provides funding to producers at a time when it is most needed. Low income producers would continue to be eligible for a higher cost-share. Potential impacts to the natural environment would not be considered significant under the proposed expansion, therefore, there are no environmental justice concerns. |

## 4.1 BIOLOGICAL RESOURCES

Impacts to biological resources would be considered significant if protected species or their designated critical habitats were adversely affected or if disturbances caused changes in the population size or distribution of wildlife or native vegetation.

### 4.1.1 No Action (Current Program)

#### 4.1.1.1 *Vegetation*

Under the current program, long term positive impacts from the restoration of permanent vegetation within the farmland would be realized through implementation of several ECP practices that allow for restoration of these areas. Under EC 2 farmers can receive cost-share assistance for restoring permanent vegetation once the land has been restored to its previous grade. EC 4 and EC 8 authorize using permanent vegetated cover in conjunction with eligible structures (water impoundments, sod waterways, drainage systems, field windbreaks, etc.) to prevent critical erosion and siltation.

During implementation of practices, temporary negative impacts to vegetation could occur from the use of heavy machinery (EC 1, EC 2, EC 3, EC 4, EC 6, and EC 7). Heavy machinery compacts soil which ultimately could impair plant growth. Debris removal (EC 1) may also require the creation of an access roadway which would remove existing vegetation in the area. Grading, leveling and reshaping (EC 2) could also impact vegetation in the project area and immediately surrounding the site. Since these practices would be used to return the land to its normal productive state, it is likely that vegetation

has already been damaged by the disaster and the impacts associated with establishing these practices would be minor.

#### 4.1.1.2 *Wildlife*

Under the current program, restoring farmland and conservation structures would have positive impacts to wildlife by improving damaged habitat and water sources. Damaged water impoundment structures may increase sedimentation in local waterways during a natural disaster. Restoring these structures (EC 4) would improve water habitat for aquatic species and provide water sources for wildlife in the area. An improperly functioning animal waste lagoon could be detrimental to the aquatic environment and create large fish kills. Restoring these lagoons (EC 4) would improve water habitat. Establishing field windbreaks and farmstead shelterbelts (EC 8) may provide habitat within the farmland. These activities would improve habitats and promote biodiversity in the farmland community.

Temporary disturbances or displacement of wildlife during the use of heavy machinery could occur during implementation of some practices (EC 1, EC 2, EC 3, EC 4, EC 6, and EC 7). This disturbance would cease once the practice was established and it is likely that the wildlife would move back into the area. Grading and leveling (EC 2) is a normal farming activity and should not significantly affect wildlife adapted to farmland.

Damaged fences from a natural disaster may have allowed access to the farmland that was not previously available providing possible food and water sources to local wildlife. Restoring these fences (EC 3) would prohibit this access. It is likely that these species would relocate to habitat outside of the fenced farmland.

Establishing wind erosion measures (EC 5) would alter existing habitat for farmland wildlife. While the alteration of habitat could displace some wildlife, it would create new types of habitat for other species. It is likely that displaced wildlife would migrate to other nearby areas.

#### 4.1.1.3 *Protected Species*

Implementation of practices would have the same potential impacts to protected species as those described for wildlife and vegetation. To protect the sensitive habitats utilized by protected species, FSA requires that site-specific environmental evaluation occur prior to approval of cost-share assistance. This evaluation would determine the presence and potential impact to a listed species. If a species is present or suspected to be present, consultation with USFWS would be required to adequately assess the potential impacts to that species. Cost-share is not provided if a potential to impact a protected species is identified.

## 4.1.2 Proposed Action (Expansion)

### 4.1.2.1 *Vegetation*

Potential impacts to vegetation associated with the proposed action are similar to those described for the current program with the exception that practices would be implemented in areas potentially undisturbed by farming activity, namely timberland. It is unlikely that native vegetation or wildlife occurs in any of the other newly eligible lands except timberland. Grading, shaping and leveling (EC 2) would allow for the establishment of permanent vegetation once the land has been restored. Other practices that allow for the establishment of permanent vegetation (EC 4 and EC 8) would not likely occur in timberlands.

During implementation of practices, temporary negative impacts to vegetation could occur from the use of heavy machinery (EC 1, EC 2, EC 6, and EC 7) in timberlands. Maneuvering heavy machinery in timberland can destroy herbaceous vegetation and compact soil which ultimately could impair plant growth. These effects would be temporary, and vegetation would grow after activity ceases in the area.

The application of some practices in timberlands may involve creating access roads (EC 1, EC 2, EC 6, and EC 7). Clearing debris from timberlands would likely result in removing understory vegetation. These activities would allow additional sunlight to reach the understory promoting new forest growth. Composting debris on site would deliver nutrients back to the soil and promote vegetation growth. There would be a temporary threat of invasive species while the understory is exposed until new forest growth is established. In the event of a natural disaster, specifically a hurricane or flood, the integrity and health of the forest has already been compromised and clearing debris may help to reestablish the forest to its original condition.

### 4.1.2.2 *Wildlife*

Implementation of EC 4 would have similar positive impacts to wildlife inhabiting nearby timberlands as those described for the current program. Damaged water impoundment structures may increase sedimentation in local waterways during a natural disaster. Restoring these structures (EC 4) would improve water habitat for aquatic species and provide water sources for wildlife in the area. An improperly functioning animal waste lagoon could be detrimental to the aquatic environment and create large fish kills. Restoring these lagoons (EC 4) would improve local water quality and aquatic environments.

Temporary disturbances or displacement of wildlife during the use of heavy machinery could occur during implementation of some practices (EC 1, EC 2, EC 3, EC 4, EC 6, and EC 7). This disturbance would cease once the practice was established and it is likely that the wildlife would move back into the area.

Expanding ECP practices to timberland has the potential to impact relatively undisturbed environments. Clearing the understory and creating access roads (EC 1 and EC 2) would displace ground-dwelling species. It is likely that these species would return after the habitat is restored or relocate to other nearby areas. New types of habitat that would result from vegetation clearing associated with debris removal (EC 1) would promote biodiversity.

#### 4.1.2.3 *Protected Species*

Implementation of practices would have the same potential impacts to protected species as those described for forestland wildlife and vegetation. Since timberlands are more likely to be previously undisturbed, encountering protected species, especially plants, is more likely. Unlike wildlife that can relocate and avoid disturbance, protected plants could be affected by the use of heavy machinery and the alteration of habitat. As with the current program, a site specific environmental evaluation is required prior to approval of cost-share assistance. This evaluation would identify and protect any species on the endangered species list or critical habitat. If a species is present or suspected to be present, consultation with USFWS would be required to adequately assess the potential impacts to that species. Cost-share is not provided if a potential to impact a protected species is identified.

### 4.1.3 Mitigation

Proper maintenance of heavy machinery to be used during implementation of the practices would limit the possibility of oil and gas leaks which may damage vegetation or wildlife habitats. During restoration of fences, avoiding irregular terrain and water crossings could limit the potential impacts on wildlife migration patterns.

Site specific environmental evaluation on the project site in conjunction with informal consultation with the appropriate USFWS office would protect species included on the endangered species list.

## 4.2 WATER RESOURCES

Impacts to water resources would be considered significant if the proposed activities resulted in changes to water quality or supply, threatened or damaged unique hydrologic characteristics, or violated established laws or regulations.

### 4.2.1 No Action (Current Program)

#### 4.2.1.1 *Surface Water*

Under the current program, positive effects on surface water quality would occur with implementation of several practices. Under EC 2 (grading, shaping, and leveling), water

quality would improve with better soil drainage. Re-establishment of permanent vegetation would reduce the potential for wind and water erosion that could transport sediment to nearby waterways. Revegetation as part of EC 4 (restoring structures and other installations), EC 5 (wind erosion control), and EC 8 (field windbreaks) would also improve water quality by reducing sediment runoff.

Negative effects of the practices would generally be temporary and associated with the implementation of the practice. Temporarily installing pipes to an alternative water source (EC 6) could increase the withdrawal of that water body. Construction equipment used for each practice could cause soil erosion or runoff, causing a buildup of sediment, pesticides, and other agriculture-related chemicals in adjacent waterways. Use of heavy machinery under several practices (EC 1, EC2, EC 4) could also leak substances such as oil and gasoline that could degrade surface water quality. Proper maintenance of the machinery would limit this effect.

#### 4.2.1.2 *Groundwater*

Under the current program, EC 1 (debris removal) would remove debris that would be likely to cause ponds to form in fields. Ponds collecting agricultural runoff, including pollutants, could infiltrate into the groundwater; EC 1 would remove debris to prevent this occurrence. Repairing damaged animal waste lagoons (EC 4) would remove potential contaminants that could infiltrate the groundwater supply.

Under EC 4 (restoring structures and other installations) and EC 6 (drought emergency measures) of the current program, restoring wells, or deepening or installing new wells could contaminate groundwater supplies if not constructed properly. An increased use of groundwater, especially during drought when there is little recharge, could decrease aquifer levels, which could affect groundwater supplies. However, because EC 4 would be restoring wells or springs to pre-disaster conditions, no change in groundwater use would occur with implementation of EC 4.

#### 4.2.1.3 *Wetlands*

Positive effects to wetlands under the current program would occur under EC 1 (debris removal), EC 4 (restoring structures and other installations), EC 5 (wind erosion control), and EC 8 (field windbreaks). EC 1 would remove debris that may be hindering water flow to wetlands. Debris in wetlands, such as downed trees, may degrade habitat; EC 1 would improve conditions within wetlands by removing such debris. EC 4, EC 5, and EC 8 would reduce the amount of sediment reaching wetlands by repairing drainage systems and vegetative cover, thereby reducing erosion.

Construction equipment used for each practice could temporarily affect wetlands. Increased amounts of sediment may be eroded to wetland ecosystems, causing sediment to build up faster than it normally would. Sediment may also carry pesticides and other

chemicals that would degrade water and habitat quality, further reducing the function of wetland ecosystems.

#### 4.2.1.4 *Floodplains*

Under the current program, EC 1 (debris removal) would restore floodplain function by removing disaster-related excess sediment deposited in the floodplain. Revegetation, as part of EC 2 (grading, shaping, and leveling), EC 4 (restoring structures and other installations), EC 5 (wind erosion control), and EC 8 (field windbreaks) would stabilize soils and prevent additional sediment from being deposited in the floodplain.

Removal of vegetation under EC 2 and EC 4 may temporarily increase erosion from floodplain areas, increasing turbidity and input of nutrients from agricultural lands.

### 4.2.2 Proposed Action (Expansion)

#### 4.2.2.1 *Surface water*

Potential impacts to surface water associated with the proposed action are similar to those described for the current program. Potential impacts on newly eligible farmsteads, roads, feedlots, and farm buildings would be within farmland and the same as those described for the current program under Section 4.2.1.1. Some practices that are applicable to farms would not likely occur in timberlands (e.g., restoring fences and drought emergency measures). Positive effects to surface water would occur from implementation of EC 1 and EC 2 in timberlands. These practices would remove debris, reshape the land, and revegetate, which would likely reduce the potential of ponding water and erosion. Erosion from timberlands would be greatest if a natural disaster such as a fire or landslide/mudslide destroyed large quantities of trees. Without the root systems to hold the topsoil in place, the soil would be highly susceptible to erosion during future wind and rain events, especially if on a hillside. Revegetation would substantially help to stabilize the soil and lessen impacts, such as turbidity, to surface water from acceptance of the sediment.

In the event of a disaster that deposited debris within a timberland or caused downed trees (e.g., tornado, hurricane, or flood), activities under EC 1 would be used to remove debris. Creating access roads and using heavy machinery could cause soil erosion and effect surface water quality. Use of heavy machinery under several practices (EC 1, EC2, EC 4) could also leak substances such as oil and gasoline that could degrade surface water quality. Proper maintenance of the machinery would limit this effect. The proximity of surface water to the timberland and whether the timberland was on sloped or flat terrain would determine the magnitude of potential effects from erosion.

#### 4.2.2.2 *Groundwater*

Potential impacts to farmsteads, roads, feedlots, and farm buildings would be the same as those described under the current program described under Section 4.2.1.2. It is unlikely

that practices on timberlands would have an effect (positive or negative) on groundwater. EC 4, which includes restoring structures such as wells, would return groundwater usage to pre-disaster conditions. However, it is unlikely that timberlands would be irrigated or that wells would be used in conjunction with timberland harvest. Therefore, no effects on groundwater from the proposed action are anticipated.

#### 4.2.2.3 *Wetlands*

Potential impacts to wetlands associated with the proposed action are similar to those described for the current program and those described under Section 4.2.2.1, Surface water. In addition to the positive effects listed in Section 4.2.2.1, implementation of EC 7 could restore conservation measures that were in place to protect wetlands prior to the disaster.

Wetlands are protected by Federal law from fill; therefore, if the timberland is currently being harvested, it is likely that best management practices (BMPs) are in place to minimize effects of sediment being deposited in the wetlands from erosion. Continued adherence to existing BMPs during implementation of EC 1, EC 2, and EC 4 would lessen potential effects on wetlands. If the timberland is not being harvested, there may not be access roads and other structural components established; therefore, implementation of EC 1 and EC 2 would cause a greater disturbance within the commercial timberland. Initial clearings may result in large volumes of soil movement with the potential for soil erosion and deposition in nearby wetlands. Establishment and adherence to BMPs would reduce this effect.

#### 4.2.2.4 *Floodplains*

Potential impacts to floodplains associated with the proposed action are similar to those described for the current program under Section 4.2.1.4. No additional effects on floodplains would be expected from expansion of eligibility.

### 4.2.3 Mitigation

Proper maintenance of heavy machinery to be used during implementation of the practices would limit the possibility of oil and gas leaks which may degrade surface water quality and wetlands. Best management practices during the establishment of access roads would reduce or eliminate impacts to surface water quality and wetlands.

### 4.2.4 Permits

Depending on the extent of work conducted under the practices, several permits may be required. The completion of site specific environmental evaluation would determine appropriate permits, in accordance with 1-EQ, which may include:

***Section 404 of the Clean Water Act***

The USACE regulates the placement of dredged or fill material in waters of the U.S., which includes some wetlands, pursuant to 33 CFR parts 320-3320. Work and structures that are located in, or that affect, navigable waters of the U.S, including work below the ordinary high water in non-tidal waters are also regulated by the USACE.

#### *Section 402 National Pollutant Discharge Elimination System*

EPA currently regulates storm water discharges from construction sites that are 1 acre or larger. Documenting project compliance with the National Pollutant Discharge Elimination System (NPDES) general permit involves the preparation of a storm water Pollution Prevention Plan and submittal of a Notice of Intent to Discharge to EPA.

#### *Section 401 Water Quality Certification*

Pursuant to Section 401 of the Clean Water Act, Federal permits for projects in wetlands or waterways must be certified by the state licensing or permitting agency to ensure that state water quality standards are met. Projects requiring a Section 404 or Section 402 also need a Section 401 permit.

## 4.3 SOIL RESOURCES

Impacts to soil resources would be considered significant if proposed activities resulted in increased erosion and sedimentation or affected unique soil conditions.

### 4.3.1 No Action (Current Program)

The no action alternative would be a continuation of the program as it currently exists: assisting farmers and ranchers in restoring agricultural fields damaged by natural disasters. During implementation of practices in all ecoregions of the US, temporary and minor effects to soil resources may occur when soils are compacted from the use of heavy machinery. Compacted soils prevent water infiltration which can increase the soil loss when water flows quickly across soil surface. Debris removal (EC 1) may require the creation of access roads which could remove existing vegetation. The root systems of plants hold soil in place, keeping it moist unlike un-vegetated dry soils that are exposed and susceptible to wind erosion. Other emergency conservation measures (EC 7) can also create erosive conditions if soils are exposed long term or remain in a compacted condition.

Emergency conservation practices are designed to increase soil stability and decrease soil loss from wind and water erosion. Additionally, the impacts to soils, such as compaction and soil loss, from implementing the practices are short term, temporary, and localized and specific to the disaster area. Long term benefits are realized when conservation measures such as emergency wind control measures (EC 5), and field windbreaks and farmstead

shelterbelts emergency measures (EC 8), are implemented. These conservation practices conserve soils by establishing or re-establishing vegetative buffers that "break" the wind from blowing over the fields and reduce wind erosion of soils. Emergency conservation measures are also designed to restore agricultural soils to pre-disaster condition. By removing debris accumulations (EC 1) after flooding events, seeds or saplings may grow quicker. Removing gullies, humps or depressions (EC 2) and returning land to its previous grade can divert water appropriately. Restoring conservation structures such as terrace systems and sod waterways (EC 4) would divert and catch sediment in designated areas.

HEL soils are innately more susceptible to erosion and generally require additional conservation measures to sustain agricultural production. These soils have the potential to erode faster than soils on other agricultural lands if additional erosive conditions are created during implementation of the practices. However, as described above, these lands would benefit in the long term when soil conservation measures are established and agricultural lands can return to normal production.

### 4.3.2 Proposed Action (Expansion)

Potential impacts to soils associated with the proposed action are similar to those described for the current program with the exception that practices could be implemented in areas where soils have not been disturbed from routine farming activities. Expanding the definition of farmlands to include other agricultural lands such as timberlands, farmsteads, feedlots, farm roads and buildings would increase the number of acres eligible for emergency conservation throughout the U.S. especially in the east (**Figure 2.2-1**). Soil resources would be negatively impacted from the natural disaster and implementing practices would provide long term soil conservation benefits to these areas. Debris can be composted on site (EC 1) to add beneficial organic materials to the soil surface, and grading, leveling, and reshaping (EC 2) where trees have been uprooted would eliminate areas that promote uneven distribution of water. Additionally, emergency conservation practices are designed to restore land to its original condition and treefall and sediment accumulations could impede regeneration of timberlands.

For HEL, impacts and benefits would be similar to what is described under the current program. HEL would benefit in the long term when soil conservation measures are established and lands can return to their normal condition. Additionally, the impacts to HEL from implementing the practices would be minor since the lands are likely to be substantially disturbed from the impact of the natural disaster.

### 4.3.3 Mitigation

Additional erosion control practices, such as the ones described below, would be considered appropriate on a site-specific basis when implementing the practices, especially

on lands designated as HEL. Additionally, a site-specific environmental evaluation to determine erodibility potential, and to ensure HEL compliance requirements are met, would be done.

Erosion control measures that may be utilized on a site-specific basis:

- Shorten the length of exposure of the erosive surface and prevent sediment from moving offsite by utilizing mulch, silt fences, gravel bags and vegetative barriers that trap sediment
- Clear smaller areas of vegetation at different intervals
- Schedule excavation during low-rainfall periods
- Cover disturbed soils with mulch or vegetation
- Control concentrated water flows that form rills and gullies
- Minimize the length and gradient of slopes
- Inspect and maintain all structural control measures
- Avoid soil compaction by restricting the use of heavy equipment and vehicles to limited areas
- Break up or till compacted soils prior to vegetating

## 4.4 CULTURAL RESOURCES

A significant effect on cultural resources listed in or eligible for listing in the National Register is one that alters the characteristics that make it eligible for the National Register. Adverse effects are described in 36 CFR 800.45, the regulations for Section 106 of the NHPA. In the case of an archeological site that is eligible for its research value (i.e., for its ability to yield information about prehistory or history), impacts to the site from heavy machinery to build a road or excavate a trench for a new pipeline would be an adverse effect because the impacts would significantly reduce the site's ability to yield new information. If the eligible or listed property is part of the built environment, impacts from heavy machinery that would affect the integrity of the structure or restoration that would alter the structure would be a significant adverse effect. If the eligible or listed property is a TCP that is a place out of doors rather than a structure, a significant adverse effect would be removal of the place (through erosion, barrowing, construction of a berm on it, etc.) or removal of access to the place.

The effects of ECP on cultural resources eligible for or listed in the National Register vary from one practice to another. Although the purpose of this SEIS is to expand the ECP to benefit other lands not previously covered including farmsteads and farm buildings, it should be noted that the practices authorized are not designed to remedy the impacts from

disasters to houses, barns, silos, or other outbuildings on agricultural land. ECP seeks to restore agricultural land impacted by natural disasters to production. Thus, architectural resources that consist of farmhouses, barns, silos, or other outbuildings will not be affected by the program.

### 4.4.1 No Action (Current Program)

Some practices can result in beneficial effects to National Register properties. Debris removed (EC 1) can restore access to a TCP, deter potential harm when debris rests against a structure that is a National Register property, and remove potential contaminants that would threaten the integrity of important archaeological sites. Under EC 2, efforts to fill in gullies where archaeological sites that are National Register properties are present can provide protection for such properties; other efforts authorized under this practice can help to stabilize such sites. TCPs, such as ditches that are ceremonially cleaned by a community but damaged during a natural disaster, can benefit under EC 4 which restores conservation structures. Wind erosion control practices (EC 5) to retard topsoil depletion can also result in beneficial effects for archaeological sites that are National Register listed or eligible properties. Archaeological sites subject to wind erosion are often deflated into a thin layer that greatly reduces their research value. Drought conditions can become sufficiently severe that families abandon their lands to seek other employment. Architectural properties that are present on such lands and listed in or eligible for the National Register would suffer neglect and disrepair. Therefore, EC 6 drought emergency control can provide benefits to such properties by encouraging farmers to remain on their lands and maintain their structures and buildings. EC 8 allows for the re-planting of windbreaks and farmstead shelterbelts that have been uprooted or broken during disasters. If the windbreak or shelterbelt is a contributing element of a farmstead or other property eligible for or listed on the National Register, re-planting would restore the long term integrity of the property.

Negative impacts from ECP can also occur and would cause adverse effects to cultural resources eligible for or listed on the National Register (historic property). An adverse effect is found when a Federal action may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register. ECP authorized activities can cause adverse effects to all three types of cultural resources that are listed in or eligible for the National Register: archaeological sites, TCPs, and architectural properties. Use of mechanical equipment to remove debris (EC 1), grade or re-shape land (EC 2), or restore conservation structures (EC 4) can result in ground disturbance. If archaeological sites are present and eligible for their research value (i.e., their ability to yield information important in history or prehistory), such ground disturbance is an adverse effect. Similarly, if conservation structures are re-located or new or enhanced water impoundment features are undertaken (EC 4 and EC 6), adverse effects

to archaeological sites eligible for or listed in the National Register would occur if they are present in the footprint of the new or enhanced structures.

Deep tilling or chiseling is sometimes authorized under EC 1 (debris removal) and EC 5 (wind erosion control). The practice of deep tilling may or may not have an adverse effect on significant archaeological sites. At times, this practice is authorized when flood deposits cover farmland. The deposits are first leveled and then deep tilling is used to mix the new deposits with old. If the farmland has been repeatedly tilled in the past, the upper deposits of any archaeological site present have already received such impacts and tilling to mix the old and new soils would not represent a significant impact. Moreover, some sites may be sufficiently buried that tilling will not reach them. Only those sites whose cultural materials are contained in the uppermost part of the soils that formerly lay on the surface and had not been tilled in the past would be adversely affected by deep tilling.

Potential adverse effects to TCPs under the ECP authorized activities would only occur to TCPs that represent places where ceremonies or activities take place. Other TCPs are structures or buildings used as focal points for a community. While such properties can be affected by natural disasters, they would not be adversely affected the practices. Four of the practices (EC 1, EC 2, EC 4, and EC 6) can adversely affect TCPs where ceremonies or activities occur. Under EC 1 or EC 2, vegetation may be cleared to provide access to farmlands. If the vegetation removed is part of a TCP (such as the reeds collected by a Tribe to construct traditional baskets), its removal would be considered an adverse effect to the resource. If a conservation structure is relocated under EC 4 and moved to an area used as a TCP, this would restrict the use of the TCP in the future. However, if the conservation structure is buried, it is likely the TCP could continue to be used. Similarly, the measures for drought control (EC 6) include construction of water tanks, troughs, pipelines and wells and enhancement of seeps and springs. If these occur within all or part of a TCP, an adverse effect would result from the visual effects of the structure or it may prevent or restrict the use of the TCP.

EC 3 authorizes the repair or replacement of fences. Fences can be eligible for the National Register usually as part of a larger farmstead, however, the practice is only authorized for fences that are less than 30 years old. Fences less than 30 years old do not meet the age criteria for listing in the National Register and thus, EC 3 would not have an adverse effect on fences that are listed or eligible for listing in the National Register. Structures and buildings eligible for or listed in the National Register can be adversely affected by EC 4 (restoring conservation structures). Conservation structures, including dams, irrigation systems, ditches, and drainage systems over 50 years of age, can be eligible for or listed in the National Register. If such properties are damaged by natural disasters, replacing them with a new structure, removing them, or repairing them without

consideration of their historic fabric will be adverse effects under Section 106 of the National Historic Preservation Act.

Under the no action alternative, the ECP will continue as it presently exists. At present, eligible land is restricted to cropland, hayland, rangeland/pastureland. Impacts to cultural resources eligible for or listed in the National Register are identified through the procedures described in the 1-EQ Handbook, Section 6 (Cultural Resources). Those procedures follow the requirements for compliance with Section 106 of the National Historic Preservation Act and 36 CFR 800. If the no action alternative is chosen, this process will continue.

### 4.4.2 Proposed Action (Expansion)

Expanding the definition of farmland would expand the potential for adverse and beneficial impacts to cultural resources eligible for or listed in the National Register. Farmsteads, timberlands, feedlots, farm roads, and farm buildings can either be or can contain a National Register property. Thus, this alternative would expand the range of National Register properties that are affected by practices, but the range of beneficial or adverse impacts are similar to those described for the current program with the exception that practices would be implemented in areas potentially undisturbed by farming activity.

Beneficial effects to National Register properties would still accrue when debris removed under EC 1 restores access to a TCP, removes debris resting against a structure that is a National Register property, or removes contaminants that threaten the integrity of archaeological sites. Under EC 2, stabilizing farmsteads where National Register properties are present can provide protection for such properties. Replanting of windbreaks on farmsteads can have beneficial effects if the windbreak or farmstead is eligible for or listed on the National Register. Replanting would restore the long term integrity of the property.

Negative effects from the expansion of ECP would also occur to all three types of cultural resources that are listed in or eligible for the National Register, and these adverse effects are similar to those that occur with the current program. Use of mechanical equipment (EC 1, EC 2, EC 3, EC 4, or EC 6) can result in ground disturbance that would adversely affect archaeological sites, if present. If new access roads are needed to clear timberland, their construction would impact any sites present. Construction of other types of features needed to restore farmsteads, feedlots, or timberlands to production will also adversely affect any sites present.

Potential adverse effects to TCPs under the expansion of lands eligible for ECP authorized activities would only occur to TCPs that represent places where ceremonies or activities take place and the potential impacts are similar to those that can occur under the current program. Four practices (EC 1, EC 2, EC 4, and EC 6) can adversely affect these TCPs.

Under EC 1, vegetation may be cleared to provide access to farmlands or timberlands. If the vegetation is an element of a TCP, its removal would be an adverse effect to the resource. If a conservation structure is relocated under EC 4 and moved to an area used as a TCP, this would restrict the use of the TCP in the future unless the conservation structure is buried. Similarly, construction of water tanks, troughs, pipelines and wells and enhancement of seeps and springs (EC 6) within all or part of a TCP, would represent an adverse effect to the TCP.

Conservation structures in farmsteads or feedlots over 50 years of age may be eligible for, or listed in, the National Register. If such properties are damaged by natural disasters, replacing them with a new structure, removing them, or repairing them without consideration of their historic fabric would be adverse effects under Section 106 of the NHPA.

### 4.4.3 Mitigation

The activities authorized under ECP are case-specific responses to natural disasters to aid farmers and ranchers in returning their lands to production. When such a disaster occurs, the COC visits the property to make the initial evaluation. This evaluation is submitted to the STC. The STC, following the 1-EQ Handbook procedures, consults with the State Historic Preservation Officer (SHPO) about whether the proposed funding would affect any cultural resource eligible for or listed in the National Register. In some cases, professional archaeologists or historians may need to visit the property to assist in making the determination whether there are or are not cultural resources eligible for or listed in the National Register that would be affected.

If a cultural resource eligible for or listed in the National Register is present and would be affected by the proposed practice, the STC, SHPO, and other consulting parties would develop project-specific mitigation measures. These may include avoidance, recordation of historic structures or buildings, repair in-kind, data recovery, or other measures to reduce or lessen the adverse effect to the resource. The measures to be followed would be detailed in a project-specific Memorandum of Agreement signed by the FSA, the SHPO, and any consulting party, and submitted to the Advisory Council on Historic Preservation.

## 4.5 SOCIOECONOMICS

For this analysis, socioeconomics impacts would be considered significant if a large percentage of gross income from farming operations was lost due to program changes or the farming operations were unrecoverable due to financial burdens wholly borne by the farm operators due to program changes.

### 4.5.1 No Action (Current Program)

As addressed in the 2003 ECP EIS, ECP provides financial assistance to farmers and ranchers for the restoration of farmlands on which normal farming operations have been impeded by natural disasters. Without the assistance of ECP these lands might otherwise be too costly to repair. The primary beneficial impact of the program is to provide repair funds and inject necessary capital into the local economy at a time when individual farms and their surrounding communities are under stress as a result of the disaster.

The local community benefits indirectly from the program through the conservation and maintenance of the productive capability of the land and through the money spent locally. With the assumption that ECP reimbursements are spent in the local community, the local trade and service sector of the economy can be expected to experience some effect in terms of the realization of additional income from sales of products and services.

The farming population that receives emergency funding is relatively small. In 2006, only 3% of all farms (over 62,000 farms) received disaster and emergency assistance payments with an average payout per farm of $5,367 (USDA 2006). Government payments averaged 5.6% of gross income for all farms, with rural residence farms receiving 10.4% of their gross income from government payments.

### 4.5.2 Proposed Action (Expansion)

The potential impacts associated with the proposed expansion would be similar to those described for the current program. From 2002 through 2006, 247,875 farms received ECP assistance with an average cost-share of $2,489 (USDA 2007c). Under the proposed expansion, more acreage would be eligible for approved ECP-related activities. This would either increase the number of eligible operators or the number of eligible operators would remain unchanged. Therefore, there would be only slight positive benefits associated with the proposed action. Activities allowed under ECP allow the operator to resume normal farming activities that were interrupted by some form of natural disaster. The expanded program would create an opportunity to spread the dollars spent on total recovery costs from a natural disaster over a greater range of activities with the cost-share assistance.

Under the proposed action, the budgeted amount for ECP outlays would remain unchanged, as well as the individual operator cap of $200,000. Therefore, individual operators meeting the criteria for ECP payments could either (1) receive additional cost-share funding for increased eligible acreage or (2) the total number of operators utilizing the program would increase. Overall, the effect to the site specific areas would remain similar to the current program.

### 4.5.3 Mitigation

No mitigation would be required

## 4.6 ENVIRONMENTAL JUSTICE

Environmental Justice is achieved when everyone, regardless of race, culture, or income, enjoys the same degree of protection from environmental and health hazards and has equal access to the decision-making process. Environmental Justice impacts would be considered significant if any adverse environmental effects occurred that would disproportionately affect minority and low-income populations.

### 4.6.1 No Action (Current Program)

Under the current program, potential impacts to the natural environment are not considered significant. As evaluated in the 2003 EIS, the implementation of practices to restore the land to normal farming production would have temporary and minor effects to the natural environment. The goal of ECP is to restore the land to its condition prior to the natural disaster and these activities would ultimately improve water quality, stabilize soil, and reestablish permanent vegetation. Similarly, ECP provides funding to producers at a time when it is most needed and helps to maintain the local economy. A low income producer would benefit the most from ECP benefits since they may not be financially able to restore the land to production without this assistance. No significant impacts to the natural or human environment are expected to occur through continuation of the current program; therefore, there are no environmental justice concerns.

### 4.6.2 Proposed Action (Expansion)

The proposed expansion could possibly make ECP assistance available to more producers and help to restore valuable timberland that has been damaged by a natural disaster. Similar to the current program, implementation of practices within timberland areas would have temporary and minor effects to the natural environment. Restoring these lands after a natural disaster would ultimately improve water quality, stabilize soil, and reestablish permanent vegetation. Providing financial assistance in times of a natural disaster to restore lands to normal agricultural production positively affects the producer as well as the local economy. Low income producers would benefit the most from ECP since they may not be financially able to the restore the land to production without this assistance. No significant impacts to the natural or human environment are expected to occur with the proposed expansion of the program; therefore, there are no environmental justice concerns.

### 4.6.3 Mitigation

Mitigation measures discussed within each resource area would be utilized to eliminate or minimize the potential environmental impacts associated with the proposed expansion of ECP eligibility. Disproportionate effects to minority or low-income populations are not expected.

# 5.0 CUMULATIVE EFFECTS ANALYSIS

> *Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions.*
>
> 40 CFR 1508.7

## 5.1 DEFINITION

CEQ regulations stipulate that the cumulative effects analysis consider the potential environmental impacts resulting from "the incremental impacts of the action when added to other past, present and reasonably foreseeable actions regardless of what agency or person undertakes such other actions." Cumulative effects most likely arise when a relationship exists between a proposed action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in proximity to the proposed action would be expected to have more potential for a relationship than those more geographically separated. Similarly, actions that coincide, even partially, in time tend to have potential for cumulative effects.

The ECP and practices are designed to provide financial aid to constrained producers in returning agricultural lands to production in the wake of a disaster, and implement emergency measures to ameliorate the effects of severe drought. The program scale is national and includes U.S. territories, yet ECP assistance may be granted to a single farm, if warranted. For purposes of this analysis, other USDA and Federal emergency assistance programs are the primary sources of information used in identifying past, present, and reasonably foreseeable future actions.

## 5.2 OTHER FEDERAL EMERGENCY ASSISTANCE PROGRAMS

In addition to ECP, there are several other Federal programs for disaster aid to farmers and for agricultural recovery activities. A brief overview of the relevant Federal programs is provided in **Table 5.2-1**. The primary goal of these programs is to assist agricultural producers in the event of a natural disaster.

## Table 5.2-1. Federal Emergency Assistance Programs

| Program | Summary |
|---|---|
| USDA Risk Management Agency (RMA) Crop Insurance Program | Crop insurance as administered by the USDA RMA. It covers loss of yield exceeding a deductible amount. Losses must be due to unavoidable perils beyond the farmer's control. Another type covers loss in value due to a change in market price during the insurance period. Farmers who accepted certain other Federal benefits must purchase crop insurance or otherwise waive their eligibility for any disaster benefits that might be made available for the crop year. |
| USDA FSA Crop Disaster Program | This program provides benefits to farmers who suffered quantity and quality losses to 2005, 2006, or 2007 crops from natural disasters. Only producers who obtained crop insurance coverage or coverage under the Non-insured Crop Disaster Assistance Program for the year of loss are eligible for these benefits. |
| USDA FSA Non-insured Crop Disaster Program | Provides financial assistance to producers for non-insurable crops when low yields, loss of inventory or prevented planting occur due to natural disasters. Only producers of annual gross revenue less than $2 million are eligible. |
| USDA FSA Disaster Debt Set-Aside Program | When a presidential or secretary of agriculture disaster is declared, borrowers who are unable to make their scheduled payments on any FSA debt may be granted set asides of some payments to allow operation to continue. |
| USDA FSA Emergency Loan Program | FSA provides emergency loans to producers suffering from disasters to restore or replace essential property, pay production costs associated with the disaster year, pay essential family living expenses, reorganize farming operations and refinance certain debts. |
| USDA FSA Emergency Forestry Conservation Reserve Program | Helps eligible landowners and operators restore and enhance forestland damaged by 2005 hurricanes Dennis, Katrina, Ophelia, Rita and Wilma. To be eligible merchantable timber loss of 35% or greater must have occurred, trees have a pre-hurricane trunk diameter of at least 6" at 4.5ft above ground, and be on private non-industrial forest land within the declared eligible counties. |

Table 5.2-1. Federal Emergency Assistance Programs (cont'd.)

| Program | Summary |
|---|---|
| USDA FSA Emergency Haying and Grazing Program | Haying and grazing of lands enrolled under the Conservation Reserve Program is authorized under certain conditions to provide emergency relief to livestock producers due to natural disasters. |
| USDA Emergency Watershed Protection Program | Administered by the NRCS, this program helps remove threats (watershed impairments) to life and property that remain in the nation's watersheds in the aftermath of natural disasters. |
| USDA Rural Development Direct Housing Natural Disaster Loans and Grants | To assist very-low income owner- occupants to repair or replace damaged property as a direct result of a natural disaster. Property must be in a rural area, the applicant must be 62 yrs of age or older, and funds under other programs are not available. |
| USDA Rural Development Disaster Loans and Grants | Administered by USDA Rural Development, Single Family Loan Borrowers or Grant Recipients are eligible for moratoriums on payments and re-amortization of loans in declared disaster areas. |
| Small Business Administration Economic Injury Loans | To assist small business (such as an agricultural cooperative or nursery) suffering economic injury due to disaster. Loans are 30 yrs and no greater than $1.5 million to address working capital needs for concerns unable to obtain funding elsewhere. |

## 5.3 CUMULATIVE EFFECTS ANALYSIS

All of the programs offered through USDA FSA and other Federal agencies for emergency or disaster assistance are voluntary and enrollment cannot be predicted. These programs provide additional money into local economies which could result in an increase in economic spending in these rural areas. No producer can receive duplicate payments for the same loss or activity and there is typically a cap on the amount one producer can receive for each program; therefore, the slight financial increase to the local economy would not be considered significant. It is also likely that those producers requesting assistance are not generating the income they were before the disaster.

These programs provide financial and other technical assistance to producers to restore the farm to normal agricultural production. Expanding the definition of farmland to include other types of agricultural land would allow more land to be restored under ECP that may not be covered under another Federal program. The activities associated with repairing damage, cleaning debris, and physically restoring the land to its previous condition could have short-term, localized impacts to the natural environment similar to those described in this SEIS. These impacts would cease once the land has been restored and there would be

a long term positive impact on water quality, soils, and wildlife habitat. No cumulative effect is expected.

## 5.4 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effect that the use of these resources has on future generations. Irreversible effects primarily result from the use or destruction of a specific resource that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action. For the proposed action, the use of gasoline for operating heavy equipment would be the only irreversible or irretrievable resource commitment expected from the implementation of the proposed action.

# 6.0 LIST OF PREPARERS

| Name | Organization | Experience | Project Role |
|---|---|---|---|
| **Dana Banwart**<br>***Senior Project Manager*** | Geo-Marine, Inc. | 9 years | Project management<br>Biological Resources |
| **Tony Cecchi**<br>***V.P. of Planning*** | Geo-Marine, Inc. | 18 years | Quality Assurance |
| **Nancy Kenmotsu**<br>***Principal Investigator*** | Geo-Marine, Inc. | 29 years | Cultural Resources |
| **Duane Peter**<br>***V.P. of Cultural Resources*** | Geo-Marine, Inc. | 30 years | Cultural Resources |
| **Susan Miller**<br>***Environmental Scientist*** | Geo-Marine, Inc. | 19 years | Cumulative Analysis |
| **Stephanie Breeden**<br>***Environmental Scientist*** | Geo-Marine, Inc. | 6 years | Soil Resources |
| **Robin Ives**<br>***Environmental Scientist*** | Geo-Marine, Inc. | 4 years | Research support |
| **Dave Brown**<br>***Document Manager*** | Geo-Marine, Inc. | 26 years | Document formatting and production |
| **Rae Lynn Schneider**<br>***Economist*** | Integrated Environmental Solutions | 8 years | Socioeconomics<br>Environmental Justice |
| **Michelle Wilen**<br>***Environmental Planner*** | CDM | 6 years | Water Resources |
| **Elizabeth Burak**<br>***Environmental Planner*** | Consultant | 11 years | Quality Assurance |

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# 7.0 PERSONS AND AGENCIES CONTACTED

| Name | Agency |
|---|---|
| ***Proponent*** | |
| **Matthew Ponish** | USDA FSA<br>*National Environmental Compliance Manager*<br>Washington, D.C. |
| **Bennett Horter** | USDA FSA<br>*Federal Preservation Officer*<br>Washington, D.C. |
| ***Agencies Contacted*** | |
| **Environmental Protection Agency** | |
| *EIS Filing Section* | Washington, D.C. |
| *Region 1* | Boston, MA |
| *Region 2* | New York, NY |
| *Region 3* | Philadelphia, PA |
| *Region 4* | Atlanta, GA |
| *Region 5* | Chicago, IL |
| *Region 6* | Dallas, TX |
| *Region 7* | Kansas City, KS |
| *Region 8* | Denver, CO |
| *Region 9* | San Francisco, CA |
| *Region 10* | Seattle, WA |
| **U.S. Fish and Wildlife Service** | |
| *Region 1* | Portland, OR |
| *Region 2* | Albuquerque, NM |
| *Region 3* | Fort Snelling, MN |
| *Region 4* | Atlanta, GA |
| *Region 5* | Hadley, MA |
| *Region 6* | Denver, CO |
| *Region 7* | Anchorage, AK |
| *Region 9* | Washington, D.C. |

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# 9.0 GLOSSARY

**Animal Waste Lagoons:** An earthen basin or pond used to collect, store, and treat the manure, flush water, and polluted runoff from livestock facilities for future land application.

**Boundary Fences:** A permanent barrier to fence livestock, wildlife or people to facilitate resource management measures and practices.

**Cattle Gates:** A cattle gate has a base frame adapted to rest on a ground surface and upright end frames that are secured to a base frame with a spring and chain mechanism to open and close the opening of a fence; allowing vehicles to pass through freely but not cattle.

**Contour/Cross Slope Chiseling:** Erosion control tillage practices that reduce the length of sloping land where crops are grown to minimize the transport of sediment or other water-borne contaminants.

**Cropland:** Two subcategories of cropland are recognized: cultivated and noncultivated. Cultivated cropland is land in row crops or close-grown crops, as well as land (e.g. hayland or pastureland) that is in a rotation with row or close-grown crops. Noncultivated cropland includes permanent hayland and horticultural cropland.

**Cross Fences:** Fences constructed to reduce the size of larger pastures and allow for re-growth for livestock grazing

**Diversions/Spreader Ditches:** Channels constructed across the slope to divert excess water from one area to another area for use or safe disposal.

**Emergency Conservation Practices:** A group of conservation practices that assist producers in returning their land to agricultural production while maintaining conservation measures to protect or restore the natural environment.

**Hayland:** Areas of dominantly perennial grasses, either native or non-native species, planted and/or intensively managed as pure or mixed stands.

**Limited Resource Producer:** Any producer with direct or indirect gross farm sales not to exceed $100,000 in each of the previous two years and has a total household income at or below the national poverty level for a family of four or a total household income of less than 50 percent of the county median in each of the previous two years.

**Pastureland:** Land managed primarily for the production of introduced forage plants for livestock grazing. Pastureland cover may consist of a single species in a pure stand, a grass mixture, or a grass-legume mixture.

**Sediment Basins:** An earth embankment that captures sediment and water runoff from sloping fields.

**Shelterbelts:** Single or multiple long, narrow strips of trees and shrubs planted in a variety of patterns to mitigate the movement of wind.

**Sod Waterways:** Natural or constructed grass waterways established to transport concentrated flow areas at safe velocities without causing erosion.

**Tail Water Recovery Pits:** A system designed to collect, store, and transport irrigation water that runs off a field for re-use.

**Terrace Systems:** Earth embankments, channels, or combination of ridges and channels, constructed across a slope to intercept runoff water.

**Timberland:** A forested land that is primarily dedicated to the commercial production of wood and fiber. Areas qualifying as timberland have the capability of producing more than 20 cubic feet per acre per year of industrial wood in natural stands.

**Windbreak:** A living barrier of trees, or trees and shrubs, established to protect soil resources, conserve energy or moisture, provide shelter, and reduce wind erosion.

**Woodland:** Forest land producing trees not typically used as saw timber products and not included in calculations of the commercial forest land.

# 10.0 INDEX

# APPENDIX A
# Public Scoping Comments

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# ECP scoping comments

Wednesday, April 23, 2008
11:06:52 AM

| ID | Name | Zip Code | State | Comment Date | Affiliation | Area of Concern | Comment |
|---|---|---|---|---|---|---|---|
| 4 | Edward O>Magee,Sr | 70450 | Louisiana | Oct 24 2007 | Private citizen | wildlife | First, I thank Mr. Graves and his staff for their efforts in serving the area as best possible. Wildlife is loosing much of their natural habitant due to many reasons. It is alleged that much of the meeting time of the board is devoted to gossip. The no till seed drill project for planting seeds should be reactivated. Communitation dealing with what is available to farmers can be improved. Again thanks. Ed Magee, Sr. Mt. Hermon |
| 3 | barb sachau | 7932 | New Jersey | Oct 24 2007 | Private citizen | Proposed Action | attention teresa lasseter - farm service agency noi seis emergency service program re public comment on federal register of 10/24/07 vol 72 #205 pg 60312 corrupt usda program for farm service agency - the corruption at this agency, which is oeprating under l931 laws and refuses to update in any way is massive. they pay dead people. i oppose alternate a. i oppose alternate c. please send me a full paper copy of the present program so that i can comment in more detail please also extend time to comment so the "public" gets fully involved in letting usda know what it thinks. b. schau 1 5 elm st florham park nj 07932 |
| 10 | Calvin Breland | | Alabama | 9/13/2007 | Other | Proposed Action | has used ECP in past and the funds saved his ranching business. |
| 38 | G.A. Gossett | | Texas | 10/24/2007 | Private citizen | water quality | requesting assistance for removing deceased animals from farm instead of burying on farm land. Considers burying carcasses a water quality hazard. |

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# APPENDIX B
# Descriptions of Ecoregion Divisions

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| | Division | General Description | Vegetation Species | Animal Species |
|---|---|---|---|---|
| **Humid Temperate Domain** | *Warm Continental Division* | Part of the humid temperate domain, this division is located from the continental interior to the east coast. The New England lowlands have low relief, but rolling and morainic hills, drumlins, eskers and outwash plains are typical of the area. Elevations range from sea level to 2,400 ft. | This area is transitional between boreal and broadleaf deciduous forests. Part of it contains mixed stands of a few coniferous species (white pine, eastern hemlock, and eastern redcedar) and a few deciduous species (mainly yellow birch, sugar maple, and American beech). | Short-tailed weasel (ermine), snowshoe hare, black bear, striped skunk, marmot, chipmunk, jumping mice, beaver, muskrat, badgers, and striped ground squirrels and ptarmigan. Many bird species migrate south during winter. Summer residents include the white-throated sparrow, northern junco, and yellow-bellied sapsuckers. |
| | *>Warm Continental Regime Mountain* | The Adirondack Mountains make up the New England Highlands along with broad valleys and numerous swamps and lakes. Elevations range from 500 to 4,000 ft .and a few isolated peaks are higher than 5,000 ft. | Valley regions contain hardwood forest (sugar maple, yellow birch, beech, and hemlock). Low mountain slopes support mixed forest of spruce, fir, maple, beech, and birch. Above the mixed forest, pure stands of balsam fir and red spruce occur. Alpine meadow occurs above the timberline. | This community contains many of the species that occur in the warm continental division. The alpine tundra region has unique fauna such as longtail shrews, boreal (southern) redback vole, gray-cheeked thrush, spruce grouse, and gray jay. |
| | *Hot Continental Division* | This landscape is south of the warm continental climate in the Humid Temperate Domain. This division includes the Appalachian Plateau, New England Lowlands, Mid-Atlantic Coastal Plain, Piedmont Plateau, East-Central Drift, Ozark Highlands, and the Eastern Interior Uplands and Basins. Low rolling hills, dissected plateaus, and basins are found in Tennessee and Kentucky. Sedimentary formation in the Appalachian Plateau are nearly horizontal, but are so elevated and dissected that the landforms are mostly hilly and mountainous. Elevations range from sea level (Coastal Plain) to 3,000 ft (Appalachian Plateau). | Vegetation in this division is winter deciduous forest, dominated by tall broadleaf trees. The eastern broadleaf province is described as oak-hickory. The Appalachian mountain valleys support mixed oak-pine forest, Above the valley lies the Appalachian oak forest dominated by white and black oak, Above this forest, the northeastern hardwood forest is composed of birch, beech, maple, elm, red oak, basswood, hemlock and white pine. Spruce-fir forest and meadows are found on the high peaks of the Alleghany and Great Smoky Mountains. Lower layers of small trees and shrubs are weakly developed. In spring, a luxuriant ground cover of herbs quickly develops, but is greatly reduced after trees reach full foliage and shade the ground. | Whitetail deer, black bear, bobcat, gray fox, raccoon, gray squirrel, fox squirrel, eastern chipmunk, white-footed mouse, pine voles, shorttail shrew, and cotton mouse. Bird populations are large. Turkey, ruffed grouse, bobwhite, and mourning doves are game birds. The most abundant breeding birds include cardinals, tufted titmouse, wood thrush, summer tanager, red-eyed vireo, blue-gray gnatcatcher, and Carolina wren. |

| | Division | General Description | Vegetation Species | Animal Species |
|---|---|---|---|---|
| | *>Hot Continental Regime Mountains* | Low mountains and open valleys make up the central Appalachian Highlands. Elevations range from 300-6,000 ft and are higher to the south. The Ozark Highland is an area of low dissected mountains with altitudes up to 2,000 ft. Valleys are narrow, with steep sides and gradients. | The valleys of the southern Appalachian Mountains support a mixed oak-pine forest that resembles its counterpart on the coastal plain. Appalachian oak forest lies above the valley and is dominated by a dozen species each in the black and white oak group. Above the oak forest is a northeastern hardwood forest, composed of birch, beech, maple, elm, red oak, and basswood. The Ozark Highlands support and oak-hickory forest with overstory species of red oak, white oak, and hickory. Shortleaf pine and eastern red cedar inhabit disturbed sites, shallow soils, and south and west facing slopes. | The southern limit of distribution of many northern forest mammals coincides with the boundaries of this regime. Many species are limited to scattered areas at higher elevations due to spruce-fir die-off. Black bear and white-tail deer are common. Abundant populations of several species of birds occupy the upper elevations of the boreal and hardwood forests. Areas with understory components of azaleas and rhododendrons host worm-eating warblers. |
| | *Subtropical Division* | Part of the Humid Temperate Domain, this division occupies the Southeastern US, Atlantic and Gulf Coast plains, and the lower Mississippi floodplains. Flat or gentle sloping plains encompass 50-80% of the Piedmont and Gulf Coastal Plains. In the Outer Coastal Plain over 50% of the area is gently sloping. The region contains numerous streams, marshes, swamps, and lakes. | Climax vegetation of the southeast is medium-tall broadleaf deciduous and needleleaf evergreen trees. At least 50% of the stands are made up of loblolly pine, shortleaf pine, and other pine species. Common associates include oak, hickory, sweetgum, blackgum, red maple, and winged elm. The temperate rainforest of the outer coastal plain has climax vegetation of evergreen-oak and magnolia forest. Bald Cypress and gum dominate inland swamps and lakes. Pecan, eastern sycamore, American elm and roughleaf dogwood inhabit the Mississippi River floodplains. Much of the sandy coastal region of the US is covered by second-growth forests of longleaf, loblolly, and slash pines. The West Gulf Coast is bordered by salt marshes characterized by the marsh grass *Spartina.* Lianas and epiphytes are common. | Fauna vary with the age and stocking of timber stands, percent of deciduous trees, proximity to openings, and presence of bottom-land forest types. Whitetail deer, cottontail rabbits, raccoon and fox are widespread. The eastern wild turkey, bobwhite, and mourning dove, warblers, white-eyed vireo, wood duck, yellow-billed cuckoo, and Louisiana waterthrush occur throughout. Nine-banded armadillos are frequently encountered in this region. |
| | *>Subtropical Regime Mountains* | This division is comprised of the Ouachita Mixed Forest - Meadow Province/Ouachita Highlands. Sedimentary rocks were compresses to form folds with ridges with maximum elevation of 2,700 ft. The folds and the mountains trend east-west. | This area supports oak-hickory-pine forests. Primary overstory species are southern red oak, black oak, white oak, and hickories. Shortleaf and loblolly pine provide 40% of the cover. Hardwoods populate the rich bottom lands of the valleys while pines populate the poorer lands. | Bird and mammal species are similar to those found in the surrounding southeastern mixed forest. One amphibian, the Ouachita dusky salamander, is found exclusively in the province's rocky, gravelly streams. |

| | Division | General Description | Vegetation Species | Animal Species |
|---|---|---|---|---|
| | *Marine Division* | Situated on the Pacific coast between latitudes 40 and 60 N. The pacific lowland mixed forest occupies a north-south depression between the Coast Ranges and the Cascade Mountains. Elevations range from sea level to 1,500 ft. The province includes isolated hills and low mountains. | Principles trees are western red cedar, western hemlock, and Douglas fir. In interior valleys, the coniferous forest is less dense along he coast where maple, ash, and black cottonwood are located. Prairies support open stands of oak broken up by Douglas fir. Indicator species are Oregon white oak and Pacific madrone. | Mule deer are the most common mammal. Chief predators are the mountain lion and bobcat. Gray squirrels, wood rats, rabbits and fox. Ruffed grouse are found in thickets. Periodically abundant acorn crops attract flocks of band-tailed pigeons, acorn woodpeckers, and mountain quail. |
| | *>Marine Regime Mountains* | The Cascade Range rises 5,000 ft above sea level along the coast and from 8,000-9,000 ft in the interior. The mountain range is dominated by a volcano that reaches higher elevations. The area is bordered by a narrow coastal plane. | Conifer forests of Douglas fir, western redcedar, western hemlock, grand and silver fir, Sitka Spruce, and Alaska cedar. Shrubs grow exceptionally well and are impenetrable in some places. Conifers dominate the region except in riparian zones where broadleaf species such as black cottonwood and red alder. Timberline varies from 7,700 - 10,000 ft and above this is an alpine zone covered with shrubs and herbs. | Common large mammals include elk, deer, mountain lion, bobcat, and black bear. Typical small mammals include mice, Douglas squirrels, Townsend chipmunks, red tree voles, and wood rats. A variety of birds and the Pacific tree frog and Pacific giant salamander live in the region's moist and cool forests. |
| | *Prairie Division* | Part of the humid temperate domain, prairies are typically associated with continental, mid-latitude climates that are designated as subhumid. This division occupies a broad belt extending from Texas northward to southern Alberta and Saskatchewan. Temperature characteristics correspond to those of adjacent humid climates, forming the basis for two types of prairies: temperate and subtropical. | Forest and prairie mix in a transitional belt on the eastern border of the division. Grasses dominate prairie vegetation with the most prevalent being bluestem. Vegetation in temperate prairie is forest-steppe, characterized by intermingled prairie, groves, and strips of deciduous trees. Trees are commonly found near streams and on northfacing slopes. Cottonwoods are found in floodplains. The subtropical prairie parkland is dominated by medium to tall grasses and a few hardy tree species. Post oak and blackjack oak dominate the cross timbers regions of Oklahoma and Texas. | Mink and river otter are indicative of riverine forests. Thirteen-lined ground squirrels and blacktail prairie dogs are commonly seen on the prairie. Birds of riverine forest include the belted kingfisher, bank swallow, spotted sandpiper, and green-backed heron. Upland birds include the horned lark, eastern meadowlark, and mourning dove. White-tailed deer and nine-banded armadillo are abundant. |

| | Division | General Description | Vegetation Species | Animal Species |
|---|---|---|---|---|
| | *Mediterranean Division* | Located on the Pacific coast between latitudes 30 and 45 N. the Mediterranean division is the transition zone between the dry west coast desert and the wet west coast. The land area includes the discontinuous coastal plain, low mountains, and interior valleys adjacent to the Pacific Ocean from San Francisco to San Diego. | The coastal plain and valleys of southern California have sagebrush and grassland communities. The central valley of California is composed of introduced annual grasses after overgrazing, farming, and fire destroyed native species. The redwood is characteristic on seaboard slopes in northern California. | Intensive agricultural development has changed the fauna of the grasslands. Larger species have been eliminated or pushed into the hills. Small rodents and rabbits remain and mule deer live in bushy areas. Streams and rivers are used by anadromous fish. The spotted owl can be found in old-growth and second-growth redwood forest. A variety of shore birds and waterfowl occur in the coastal part of the province. |
| | *>Mediterranean Regime Mountains* | This area in California and Oregon covers the southern most portion of the Cascade Mountains, the northern Coast range, the Klamath Mountains, and the Sierra Nevada. The western slope of the Sierra Nevada's rises gradually from 2,000 - 14,000 ft. The eastern slope drops abruptly to the Great Basin floor. The mountains of southern California are steep; elevations range from 2,000 - 8,000 ft. | Most low hills are covered by chaparral or close growing evergreen shrubs. On higher slopes digger pine and blue oak dominate. The montane zone lies between 2-6 thousand ft in the Cascades, 4-7 thousand ft in the central Sierras, and 5-8 thousand ft in the south. The most important species are ponderosa, Jeffrey, Douglas fir, sugar pine, white fir, red fir, and incense cedar. Vegetation in the California coastal range is dominated by chaparral and sclerophyll forest. | The common large mammals in this division are mule deer, mountain lion, coyote and black bear. Common rodents mentioned previously occur here. Small mammals peculiar to chaparral are Merriam chipmunk, California Mouse, and kangaroo rats. Common birds are mountain quail, Cassin's finch, Hammond's flycatcher, Lincoln's sparrow, Audubon's warbler, pine siskin, Oregon junco, blue goose, sapsuckers and wild chickadees. Screech owls, pygmy owls, gray owls and Cooper's hawk are common birds-of-prey. |
| **Dry Domain** | *Tropical/Subtropical Steppe Division* | Part of the Dry Domain, this division contains shrub-steppe, plateaus, and plains located from the horn of Texas, through Oklahoma and inland to the four corners region. Generally, steppes are transition zones between deserts and semiarid landscapes. | Vegetation composition is conspicuous with arid grasslands and xeric shrubs at lower elevations and pygmy forests at higher elevations. Vegetation at lower elevations grow in clumps or open stands, but seldom covers the ground completely leaving many bare areas. Several pinion and juniper species are found at middle elevations surrounded by vegetation found at lower elevations (sagebrush, yucca, saltbush, rabbitbrush and more). Ponderosa pine and Douglas fir carpet moist canyons and cottonwood dominates riparian areas. | White-tail and mule deer, pronghorn, coyote, and bobcat occupy all available habitats/landscape. The fox squirrel is hunted in wooded areas along streams. Several rodent species exploit available habitats along with hares, rabbits, gray fox, ringtail, and skunks. Many bird species inhabit the area year round while several migrate here in summer or winter. Rattlesnakes and lizards also live here. |

| | Division | General Description | Vegetation Species | Animal Species |
|---|---|---|---|---|
| | *>Tropical/Subtropical Steppe Regime Mountains* | The majority of this landscape contains steep foothills and mountains, but some deeply dissected high plateaus occur here. Elevations range from 4,500 - 10,000 ft, with some mountain peaks reaching 12,600 ft. In many areas, relief is higher than 3,000 ft. Isolated volcanic peaks rise to considerable heights in the northwest. | Lower elevations are characterized by mixed grasses, chaparral bush, oak-juniper and pinion-juniper woodlands. At about 7,000 ft open forests of ponderosa pine appear with pinion and juniper occupying southern slopes. Douglas fir replaces pinion and juniper at about 8,000 ft. Aspen and limber pine are also common in this area. | The most common large mammal is the mule deer. Predators include mountain lions, coyotes, and bobcats. Deer mice, longtail weasels, porcupine, golden-mantled ground squirrel, Colorado chipmunk, red and Abert squirrels, wood rats, pocket gophers, longtail voles, and cottontail rabbits. Common bird species are the northern pygmy owl, olive warbler, red-faced warbler, hepatic tanager, mountain bluebird, pygmy nuthatch, white-breasted nuthatch, Mexican junco, Steller's Jay, red-shafted flicker and Rocky Mountain sapsuckers. Goshawks and red-tail hawks are present. Short-horned lizards are the only lizards found here. |
| | *Tropical/Subtropical Desert Division* | Part of the Dry Domain, located south of the Arizona-New Mexico Mountains are the continental deserts. Deserts including the Chihuahuan, Mojave, Colorado, and Sonoran are characterized by plains from which isolated mountains and buttes rise abruptly. The Rio Grande, Pecos, and Colorado Rivers, and their larger tributaries, are the only perennial water sources available. | The region is characterized by dry-desert vegetation, a class of xerophytic plants that are widely dispersed and provide negligible ground cover. In dry periods, visible vegetation is limited to small hard-leaved or spiny shrubs, cacti, or hard grasses. Many species of small annuals may be present, but they appear only after the rare but heavy rains have saturated the soil. In the Mojave-Sonoran Deserts (American Desert), plants are often so large that some places have a near-woodland appearance. Well known are the treelike saguaro cactus, the prickly pear cactus, the ocotillo, creosote bush, and smoke tree. However, much of the desert of the Southwestern United States is in fact scrub, thorn scrub, savanna, or steppe grassland. Parts of this region have no visible plants; they are made up of shifting sand dunes or almost sterile salt flats. Some isolated mountains are high enough to carry a belt of pinion, juniper, Douglas fir, and white fir. | Pronghorn antelope and mule deer are the most widely distributed game animals. Whitetail deer inhabit parts of Texas. The collared peccary or javelina resides in southern parts of the area. Predators include coyote, bobcat, and several hawk, eagle, and owl species. Blacktail rabbits, desert cottontails, kangaroo rats, wood rats and other small rodents compete with domestic herbivores for grouse. Common birds include: black-throated sparrows, roadrunners, thrashers and raven. Several quail species occupy the area. Reptiles include numerous species of snakes and lizards. |

| | Division | General Description | Vegetation Species | Animal Species |
|---|---|---|---|---|
| | *Temperate Steppe Division* | Located in the Dry Domain, this divisions contains the Rocky Mountain Piedmont, Upper Missouri Basin Broken Lands, Palouse grassland of Washington and Idaho and the High Plains and Central Lowlands between the Prairie Parkland and the 104th meridian, from the Canadian Border through Oklahoma. | The vegetation transitions from mixed tall and short grass prairie in the east to mainly short grass in the west. The Great Plains grasslands east of the Rockies have scattered trees and shrubs. Many species of grasses and herbs grow in the Prairies. The Palouse grasslands of resembles the Great Plains, but contains no shrubs. Woody vegetation is rare except in cottonwood floodplains. | Pronghorn is the most abundant large mammal, but mule and whitetail deer are common. Lagomorphs, prairie dogs, and other small rodents are preyed upon by coyote and other avian predators. The thirteen-lined ground squirrel and prairie dogs are preyed upon by badgers. Two bird species are unique to short grass prairies east of the Rockies; the mountain plover and McCown's longspur. The northern |
| | *>Temperate Steppe Regime Mountains* | Located in the dry domain, this regime is in the southern, middle and northern Rocky Mountains. The Rocky Mountains are as high as 14,000 ft. Several sections have intermontane depressions ("parks") with floors as low as 6,000ft. Ranges in central Idaho are formed by granite intrusions called the Idaho Batholith, with altitudes ranging from 3,000 to 7,000 ft. The Black Hills have domal uplifts with an exposed core of Precambrian rock. | The Rocky Mountains are tallest in the southern region. They are characterized by the absence of trees in the tundra and dominated directly below by Englemenn spruce and subalpine fir. At lower elevations lies the montane zone with its characteristic ponderosa pine and Douglas-fir. At lower elevations the foothills have a growth of shrubs, of which, mountain-mahogany and several scrub oak species are conspicuous. In the middle Rocky Mountains below the subalpine zone Douglas firs the climax dominant, with grand fir associates west of the continental divide. Below this, ponderosa pine is the dominant with lodgepoll pines and grasses growing in basins. Sagebrush-steppe dominates the lower slopes of the mountains. In the northern Rocky Mountains, mixed evergreen-deciduous forest predominates, with Douglas fir and cedar-hemlock-Douglas fir being the two types of forest. | Large mammals in this division include black bear, deer, elk, mountain lion, and bobcat. Smaller mammals include squirrels, mice, rats, and lagomorphs. Familiar birds are hawks, jays, chestnut-backed chickadees, red-breasted nuthatches and owls. Harney Peak, in the Black hills province is inhabited by mountain goats recently introduced into the region. |

| | Division | General Description | Vegetation Species | Animal Species |
|---|---|---|---|---|
| | *Temperate Desert Division* | The Temperate deserts are located in the intermountain regions between the Pacific coast and Rocky Mountains. Temperate deserts climates support sparse xerotypical shrubs such as sagebrush vegetations. Recently, semidesert shrub vegetation has invaded areas of the western US that were formerly grasslands probably because of overgrazing and trampling by livestock. | Sagebrush dominates at lower elevations, but other important plants are antelope bitterbrush, shadscale, saltbush, rabbitbrush, horsebrush, and Gambel oak. Greasewood and saltgrass are the only plants that grow in salt-saturated environments. In plots protected from fire, grasses typical of the Palouse grassland or mixed-grass steppe become dominant. Above the sagebrush belt lies a woodland area dominated by Pinion and Juniper. Wet valley bottoms and riparian areas contain willows and sedges, cottonwood, and tamarisk. | Common large mammals that live here are pronghorn, mule deer, mountain lion, bobcat and badgers. Sagebrush provides ideal habitat for pronghorn and white-tailed prairie dogs. Small rodents (squirrels, mice, rats) and lagomorphs are common. Bird species range from common species - Jays, owls - specialized species such as the sage sparrow and sage thrasher. Reptiles include sagebrush lizard, horned lizard, and prairie rattlesnake. |
| | *>Temperate Desert Regime Mountains* | This province covers the highest areas of the Great Basin and Colorado Plateau. No perennial lakes occur, streams are rare and usually ephemeral. Ranges rise steeply and are mainly composed of folded and faulted sedimentary rock. Many linear mountain ranges reach altitudes of 13,000 ft. | Sagebrush dominates at lower elevations, but other important plants are antelope bitterbrush, shadscale, saltbush, rabbitbrush, horsebrush, and Gambel oak. All tolerate salt to some extent, but greasewood and saltgrass are the only plants that grow in salt-saturated environments. Pinion and juniper woodlands occupy lower mountain slopes. Ponderosa pine lies on exposed slopes above the pinion and juniper woodlands. Douglas fir typically grows in sheltered locations. Engelmann spruce are in subalpine landscapes. Only a few mountains | Sagebrush shrublands provide ideal habitat for pronghorn antelope and whitetail prairie dog. Many species of birds are found in sagebrush ranging from burrowing owls to sage sparrow and sage thrasher. American kestrel, ferruginous hawk, and golden eagle prey on jackrabbits. Collared lizards are also common. |
| **Humid Tropical Domain** | *Savanna Division* | Part of the Humid Temperate Domain this divisions covers the landscape in Southern Florida and the Florida Keys. Elevation ranges from sea level - 25 ft. The low coastal plain contains large areas of swamps and marshes, with low beach ridges and dunes. Streams, canals and ditches drain directly into the ocean. Hammocks rise a few feet above the surrounding area in the interior. | Twenty percent of the area is covered by tropical moist hardwood forest. Cypress forests are extensive and mangrove is widespread along the eastern and southern coasts. Within grasslands, hammocks contain groves of medium to tall broadleaf evergreen trees. Mahogany, redbay, and several palmettos are common. | Slight changes in water levels in the Everglades influences habitats and fauna. Mammals include the Florida panther, whitetail deer, black bear, bobcats, marsh and swamp rabbits. Manatees inhabit estuaries and interlacing channels. Numerous species of birds inhabit the area and the American alligator is a year-round resident. |

| | Division | General Description | Vegetation Species | Animal Species |
|---|---|---|---|---|
| | *>Savanna Regime Mountains* | Located in Puerto Rico, the easternmost peaks of a partly submerged mountain range is composed of Cretaceous and older rocks with granite intrusions. East-west ridges and peaks form the backbone of the island. Local relief is considerable with steep slopes. Elevations range from sea level to the highest peak in the Cordillera Central at 4,400 ft. | Most of Puerto Rico is under cultivation, but some rainforest remains. Forest trees include mahogany, ebony, mamey, tree ferns, tree ferns, sierra palm and mango. | Puerto Rico does not have any large wild animals. Along with native bats and lizards, the introduced mongoose and rats compose the majority of the island's vertebrates. The coqui is a distinctive frog. Considerable coral and sport fishes abound in coastal waters. |

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# APPENDIX C
# Protected Species

C-1 Animals
C-2 Plants

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# C-1. Protected Species – Animals

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
|---|---|---|---|---|---|---|
| Purple Bankclimber | Elliptoideus sloatianus | Clams | AL, GA, FL | T | Yes | Riparian forest removal in southeastern streams and subsequent sedimentation has been shown to be detrimental to fish communities. Particularly affected were benthic-dependent species (e.g., darters, benthic minnows, sculpins), which were found to decrease in abundance with longer deforested patches of riparian area. |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
|---|---|---|---|---|---|---|
| Chittenango ovate amber snail | Succinea chittenangoensis | Snails | NY | T | No | Cliff, Forest/Woodland. Inhabits the wet cliff walls and talus in a ravine at the base of Chittenango Falls (a 167 foot waterfall). The ravine ledges comprise an early successional sere that is periodically rejuvenated to a bare substrate by floodwaters. It has also been found in the vegetation both within the saturated spray of the falls, and surrounding a nearby springfed area. The species requires a substrate rich in calcium carbonate and appears to prefer green vegetation such as the various mosses, liverworts, and other low herbaceous vegetation found within the spray zone adjacent to the falls. |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
|---|---|---|---|---|---|---|
| Noonday snail | Mesodon clarki nantahala | Snails | NC | T | No | Known from only about 2 miles of high cliffs within the Nantahala Gorge. The cliffs in this region are very wet and intersected by many small streams and waterfalls. The forest is mature, with many large trees and a diverse plant community. The forest floor has a thick, rich humus layer, and the area has many exposed calcareous (rich in calcium) rocks. Calcium, which is generally scarce in other cliffs in the floor has a thick, rich humus layer, and the area has many exposed calcareous (rich in calcium) rocks. Calcium, which is generally scarce in other cliffs in the |
| American burying beetle | Nicrophorus americanus | Insects | Eastern States south to FL, west to SD and TX) | E | No | Conifer and Hardwood Forests |
| Karner blue butterfly | Lycaeides melissa samuelis | Insects | IL, IN, MA, MI, MN, NH, NY, OH, PA, WI | E | Yes | Conifer Woodland. |
| Mount Hermon June beetle | Polyphylla barbata | Insects | CA | E | No | Shrubland/chaparral, Woodland - Conifer |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
|---|---|---|---|---|---|---|
| Schaus swallowtail butterfly | Heraclides aristodemus ponceanus | Insects | FL | E | No | Forest - Hardwood, Woodland - Hardwood |
| Zayante band-winged grasshopper | Trimerotropis infantilis | Insects | CA | E | Yes | Conifer woodland. Habitat is open sparsely vegetated sandy parklands among chaparral or ponderosa pine stands on the Zayante sand hills. |
| Spruce-fir moss spider | Microhexura montivaga | Arachnids | NC,TN | E | Yes | Conifer forests. Lives in high-elevation spruce-fir forest communities on moist but well-drained moss mats growing on rocks and boulders in well-shaded locations. It is known from conifer forests dominated by red spruce and Fraser Fir. |
| Copperbelly water snake | Nerodia erythrogaster neglecta | Reptiles | IL, IN, KY, MI, OH | T | No | Forested wetland and hardwood forests. Swampy woodlands, river bottoms. Lowland swamps, oxbow lakes in floodplains, brushy ditches, and other warm, quiet waters; wooded lakes, streams, or other permanent waters; and wooded corridors between these habitats. Willow-buttonbush or cypress swamps adjacent to wooded cover for access to permanent wetlands and to wooded upland hibernation sites. Seeks |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
|---|---|---|---|---|---|---|
| | | | | | | permanent wetlands when woodland swamps seasonally begin to dry, or may stay near shallow swamp or move throughout surrounding woodland. May become difficult to find in mid-summer and early fall when active mainly in the terrestrial brushy part of the habitat. About 500-600 acres of continuous swamp-forest is needed to sustain a viable population (about 50 individuals with 12 breeding pairs). |
| Eastern indigo snake | Drymarchon corais couperi | Reptiles | AL, FL, GA, MS, SC | T | No | Conifer, hardwood, and mixed forests. Habitat includes sandhill regions dominated by mature longleaf pines, turkey oaks, and wiregrass; flatwoods; most types of hammocks; coastal scrub; dry glades; palmetto flats; prairie; brushy riparian and canal corridors; and wet fields (Matthews and Moseley 1990, Tennant 1997, Ernst and Ernst 2003). Occupied sites are often near wetlands and frequently are in association with gopher tortoise burrows. Pineland habitat is maintained by |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
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| | | | | | | periodic fires. Viable populations of this species require relatively large tracts of suitable habitat. Refuges include tortoise burrows, stump holes, land crab burrows, armadillo burrows, or similar sites. |
| New Mexican ridge-nosed rattlesnake | Crotalus willardi obscurus | Reptiles | AZ, NM | T | Yes | Primarily at high elevations in pine-oak woodland and pine-fir forest but also found in foothill canyons in pinyon-juniper woodland. Inhabits canyon bottoms with canopies of alder, box elder, and maple. Hides in leaf litter among cobbles and rocks; frequently climbs into trees and shrubs. |
| Plymouth red-bellied turtle | Pseudemys rubriventris bangsi | Reptiles | MA | E | Yes | Deep, permanent ponds with nearby sandy areas for nesting; surrounding vegetation consists of pine barrens or mixed deciduous forest. Wanders on land, fall and spring. Inactive at pond bottom in winter. Eggs are laid in nests dug in soft soil in open areas usually within 100 yards of water. Often nests in tilled or disturbed soil. |
| Arroyo toad | Bufo californicus | Amphibians | CA | E | Yes | On sandy banks in riparian woodlands (willow, |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
|---|---|---|---|---|---|---|
| | (=microscaphus) | | | | | cottonwood, sycamore, and/or coast live oak) in California. |
| Cheat Mountain salamander | Plethodon nettingi | Amphibians | WV | T | No | Conifer, hardwood, and mixed forests. Primarily in red spruce-yellow birch or spruce-dominated forests; occasionally collected in mixed deciduous hardwoods. Bryophytes and downed logs are usually common. Occurs under rocks and in or under logs during day; sometimes among wet leaves. Active on forest floor at night; may climb lower portions of tree trunks. Eggs have been found in and under rotting logs, and under rocks. |
| Flatwoods salamander | Ambystoma cingulatum | Amphibians | AL, FL, GA, SC | T | Yes | Forested wetlands and conifer forests. Post-larval individuals inhabit mesic longleaf pine (Pinus palustris)-wiregrass (Aristida stricta) flatwoods and savannas. The terrestrial habitat is best described as a topographically flat or slightly rolling wiregrass-dominated grassland having little to no midstory and an open overstory of widely scattered longleaf pine. Low-growing shrubs, such as saw palmetto (Serenoa |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
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| | | | | | | repens), gallberry (Ilex glabra) and blueberries (Vaccinium spp.), co-exist with grasses and forbs in the groundcover. Groundcover plant diversity is usually very high. The underlying soil is typically poorly drained sand that becomes seasonally inundated. Slash pine flatwoods is often cited as the preferred terrestrial habitat of the flatwoods salamander. In addition, slash pine now dominates or co-occurs with longleaf pine in many pine flatwoods communities as a result of fire suppression and preferential harvest of longleaf pine. Historically, however, fire-tolerant longleaf pine dominated the flatwoods, whereas slash pine was confined principally to wetlands. Post-larval individuals are fossorial (live underground) and occupy burrows. Presumably, they remain underground during the lightning-season (May through September). Adults are rarely encountered under cover |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
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| | | | | | | objects at or near breeding sites. |
| Houston toad | Bufo houstonensis | Amphibians | TX | E | Yes | Conifer and hardwood forests. Restricted to areas with soft sandy soils; pine forest, mixed deciduous forest, coastal prairie. Extant populations occur in sandy forested areas with pine. When inactive, occupies burrows in soil or seeks refuge in leaf litter or under objects. |
| Mississippi gopher frog | Rana capito sevosa | Amphibians | AL, FL, LA, MS | E | No | Forested wetland. Habitat includes both upland sandy habitats historically forested with longleaf pine and isolated temporary wetland breeding sites imbedded within this forested landscape. |
| Red Hills salamander | Phaeognathus hubrichti | Amphibians | AL | T | No | Hardwood forests. Slopes of mesic, shaded ravines dominated by hardwood trees (big-leaf magnolia and southern magnolia with mountain laurel and oak-leaf hydrangea). Often in moderately steep areas with a northern exposure. Most often on high, steep, uncut slopes with high soil moisture content and full tree canopy. Lives in burrows that often |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
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| | | | | | | open in leaf-litter-free areas near base of tree or under siltstone outcroppings. Eggs are laid probably in cavities inside burrows. |
| Bachman's Warbler | Vermivora bachmanii | Birds | Southeastern U.S.A. | E | No | Forested wetlands and hardwood forests. Moist deciduous woodland and swamp. In migration and winter also open woodland, pine, and scrub. Apparently adapted to swampy canebreaks or bamboo thickets. Variously has been regarded as a bird of virgin bottomland forests and swamp forests, and as a second-growth species. |
| Bell's Least Vireo | Vireo bellii pusillus | Birds | CA | E | Yes | Dense brush, mesquite, willow-cottonwood forest, streamside thickets, and scrub oak, in arid regions but often near water; moist woodland, bottomlands, woodland edge, scattered cover and hedgerows in cultivated areas. Willow-dominated riparian woodlands. Open woodland, brush in winter. |
| California Condor | GymNogyps californianus | Birds | AZ, CA, OR | E | Yes | Woodland - Conifer, Woodland - Hardwood, Woodland - Mixed |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
|---|---|---|---|---|---|---|
| Golden-Cheeked Warbler | Dendroica chrysoparia | Birds | TX | E | No | Mixed forests. BREEDING: Old-growth and mature regrowth Ashe juniper-oak woodlands in limestone hills and canyons, 180 to 520 meters elevation. Edges and open mosaics of Ashe juniper-scrub oak association in broken terrain in canyons and slopes; closed canopy stands with plenty of old junipers and a sufficient proportion of deciduous oaks in the canopy. occupied sites contain junipers at least 40 years old. May occupy habitat patches as small as perhaps 50 ha (larger if close to urban areas). NESTING: Nests usually in upright fork of mature juniper, about 1.5-9 m above ground. Depends on sloughed juniper bark for nesting material. Both males and females tend to return to the same territory to breed. NON-BREEDING: In migration and winter, occurs mainly in montane pine or pine-oak association; recently recorded also in broadleaf associations in lower montane wet and tropical forest. |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
|---|---|---|---|---|---|---|
| Ivory-billed Woodpecker | Campephilus principalis | Birds | Southcentral and Southeastern | E | No | Conifer, hardwood, and mixed forests. In U.S.: swampy forests, especially large bottomland river swamps of coastal plain and Mississippi Delta and cypress swamps of Florida, in areas with many dead and dying trees. |
| Marbled Murrelet | Brachyramphus marmoratus | Birds | AK, CA, OR | T | Yes | Conifer Forest. In central California, visited old-growth forest nesting areas (8-9 km from ocean) year-round; fall and winter visitation of nesting areas occurs regularly in other areas of North America as well; perhaps attendance in Nonbreeding season is important in maintenance of pair bonds and nest sites. Nests often are in mature/old growth coniferous forest near the coast: on large mossy horizontal branch, mistletoe infection, witches broom, or other structure providing a platform high in mature conifer (e.g., Douglas-fir, mountain hemlock). Most nesting occurs in large stands of old growth. Nest sites generally have good overhead protection. |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
|---|---|---|---|---|---|---|
| Mexican Spotted Owl | Strix occidentalis lucida | Birds | AZ, CO, NM, TX, UT | T | No | Conifer, hardwood, and mixed forests. Highest densities occur in mixed-conifer forests that have experienced minimal human disturbance. In the southwestern U.S., most common where unlogged closed canopy forests occur in steep canyons; uneven-aged stands with high basal area and many snags and downed logs are most favorable. In Arizona, occurs primarily in mixed-conifer, pine-oak, and evergreen oak forests; also occurs in ponderosa pine forest and rocky canyonlands. In Arizona, generally foraged more than or as frequently as expected (based on availability) in virgin mixed-conifer and ponderosa pine forests, and less than expected in managed forests; roosted primarily in virgin mixed-conifer forests; both foraging and especially roosting sites had more big logs, higher canopy closure, and greater densities and basal areas of both trees and snags than did random sites. In southern Utah, commonly used |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
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| | | | | | | mesa tops, benches and warm slopes above canyons in fall and winter; relatively cool canyons were the primary summer habitat. In New Mexico, breeding and roosting occurred in mixed-conifer forests that contained an oak component more frequently than expected by chance; generally did not use pinyon pine-alligator juniper woodlands for nesting or roosting; selected roost and nest sites in forests characterized by mature trees with high variation in tree heights and canopy closure greater than 75%. Basically intolerant of even-age forest management practices. Requires cool summer roosts near canyon bottoms, in dense forests, on shady cliffs or in caves. Sometimes occurs in deep canyons in areas that lack extensive forests. Sometimes may winter in comparatively open habitats at lower elevations. Breeding formerly occurred in desert riparian habitat, but occurrences are rare in this habitat today. In |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
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| | | | | | | general, foraging habitat requirements are not well known.<br>Nests on broken tree top, cliff ledge, in natural tree cavity, or in tree on stick platform, often the abandoned nest of hawk or mammal; sometimes in cave. In Utah and Colorado, most nests are in caves or on cliff ledges in steep-walled canyons; elsewhere, nests apparently most often are in trees, especially Douglas-fir. Exhibits high level of nest site fidelity. Typically selects cool, shady sites with high canopy closure and at least a few old-growth trees, usually on moderate to steep slopes. In New Mexico, 61% of nest structures were on clumps of limbs caused by dwarf mistletoe infections; nest trees averaged 164 years old and 60.6 cm in diameter. |
| Mississippi Sandhill Crane | Grus canadensis pulla | Birds | MS | E | Yes | Wetlands along edges of pine forests; associated trees and shrubs include longleaf pine, slash pine, bald cypress, gallberry, wax myrtle, black gum, sweet bay, and yaupon |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
|---|---|---|---|---|---|---|
| Northern Spotted Owl | Strix occidentalis caurina | Birds | CA, WA | T | Yes | Standing snag/hollow trees in mixed and conifer forests. Typical habitat characteristics include: "moderate to high canopy closure; a multilayered, multispecies canopy dominated by large overstory trees; a high incidence of large trees with large cavities, broken tops, and other indications of decadence; numerous large snags; heavy accumulations of logs and other woody debris on the forest floor; and considerable open space within and beneath the canopy." Generally these conditions are found in old growth (at least 150-200 years old), but sometimes they occur in younger forests that include patches of older growth; in Washington and Oregon, conifer forests begin to develop conditions suitable for spotted owls about 80-120 years after clearcutting; coastal redwood forests are exceptional in that stands that are 50-80 years old or so may provide suitable conditions. Can tolerate some degree of habitat fragmentation (e.g., as on BLM |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
|---|---|---|---|---|---|---|
| | | | | | | lands in western Oregon) (Thomas et al. 1990). In southwestern Oregon, almost all owls consistently selected old forest for foraging and roosting (Carey et al. 1992). In northwestern California, nest and roost sites had more old-growth and mature forest and were less fragmented than were random sites (Hunter et al. 1995).<br><br>Recent landscape-level analyses in portions of the California Klamath and Oregon Coast Province suggest that a mosaic of mid-seral and late-successional nesting habitat interspersed with other seral conditions may result in high fitness for spotted owls (see USFWS 2007), but other studies have not found that correlation (e.g., Dugger et al. 2005).<br><br>Nests on broken tree top, cliff ledge, in natural tree cavity, or in tree on stick platform, often the abandoned nest of hawk or mammal; sometimes in cave. In western Oregon, the |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
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| | | | | | | proportion of old-growth and mature forest was significantly greater at nest sites than at random sites (Ripple et al. 1991). Pairs tend to occupy the same nesting territories in successive years, as long as habitat remains suitable (Thomas et al. 1990). |
| Red-cockaded Woodpecker, | Picoides borealis | Birds | Southcentral and southeastern U.S.A. | E | No | Conifer woodlands. Habitat consists of open, mature pine woodlands, rarely deciduous or mixed pine-hardwoods located near pine woodlands. Optimal habitat is characterized as a broad savanna with a scattered overstory of large pines and a dense groundcover containing a diversity of grass, forb, and shrub species. Midstory vegetation is sparse or absent. |
| Southwestern Willow Flycatcher | Empidonax traillii extimus | Birds | AZ, CA, CO, NM, TX, UT | E | Yes | Riparian, forested wetland. |
| Thick-billed Parrot | Rhynchopsitta pachyrhyncha | Birds | AZ, NM | E | No | Standing snags/hollow trees in mixed and conifer forests. Highland pine-oak forest, foraging less frequently in pine forest at low elevations or in |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
|---|---|---|---|---|---|---|
| | | | | | | deciduous forest. Nomadic in response to variations in cone crop; requires extensive areas of suitable habitat. Roosts in densely crowned trees or on cliffs. In Arizona, the conifer species of the greatest importance include Chiricahua, Ponderosa, and Arizona pines. Nests usually in a cavity (natural or abandoned by woodpecker) in a standing dead tree or live pine; some nests as close as 2 m apart in same tree; nests 8-28 m above ground in trees 12-35 m tall. |
| Wood Stork | Mycteria americana | Birds | CA, AZ, TX, to Carolinas | E | No | Forested Wetland. Habitat includes both upland sandy habitats historically forested with longleaf pine and isolated temporary wetland breeding sites imbedded within this forested landscape. |
| American black bear | Ursus americanus | Mammals | USA | SAT (Similarity of Appearance, Threatened) | No | Forest - Conifer, Forest - Hardwood, Forest - Mixed, Woodland - Conifer, Woodland - Hardwood, Woodland - Mixed |
| Canada lynx | Lynx canadensis | Mammals | AK, CO, ID, ME, MI, MN, MT, | T | Yes | Generally occurs in boreal and montane regions dominated by |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
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| | | | NH, NY, OR, UT, VT, WA, WI, WY | | | coniferous or mixed forest with thick undergrowth, but also sometimes enters open forest, rocky areas, and tundra to forage for abundant prey. When inactive or birthing, occupies den typically in hollow tree, under stump, or in thick brush. Den sites tend to be in mature or old growth stands with a high density of logs.<br><br>Three primary habitat components for lynx in the Pacific Northwest: (1) foraging habitat (15-35-year-old lodgepole pine) to support snowshoe hare and provide hunting cover, (2) denning sites (patches of >200-year-old spruce and fir, generally less than 5 acres, and (3) dispersal/travel cover (variable in vegetation composition and structure). |
| Carolina northern flying squirrel | Glaucomys sabrinus coloratus | Mammals | NC, TN | E | No | Prefers coniferous and mixed forest, but will utilize deciduous woods; riparian woods; optimal conditions: cool, moist, mature forest with abundant standing and down snags. Occupies tree cavities, leaf nests, and |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
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| | | | | | | underground burrows. Prefers cavities in mature trees as den sites. Small outside twig nests sometimes used for den sites. Will use nest box. |
| Columbian white-tailed deer | Odocoileus virginianus leucurus | Mammals | WA, OR | E | No | Mixed Forests |
| Delmarva Peninsula fox squirrel | Sciurus niger cinereus | Mammals | Delmarva Peninsula to southeastern Pennsylvania | E | No | Mature, open parklike stands of deciduous or mixed deciduous-pine forest, especially near farmland; upland and bottomland locations. Most often among loblolly pines; restricted to larger groves along streams, bays, or salt marshes; prefers ecotones where forest grades into scrub or grasslands. Utilizes certain agricultural lands readily, and found in relatively small woodlots on occasion. Prefers dens in hollow trees, but also uses outside nests constructed of twigs and leaves, located in tree crotches, in tangles of vines in trees, or toward the ends of larger branches, 10-15 m above ground. More terrestrial than is the gray |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
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| | | | | | | squirrel. Young are born in a tree cavity or leaf nest. |
| Florida panther | Puma (=Felis) concolor coryi | Mammals | LA and AR east to SC and FL | E | No | Hardwood and wetland forests. Generally occurs in heavily forested areas in lowlands and swamps, also upland forests in some parts of range; areas with adequate deer or wild hog population. Habitats include tropical hammocks, pine flatwoods, cabbage palm forests, mixed swamp, cypress swamp, live oak hammocks, sawgrass marshes, and Brazilian pepper thickets; depends on large contiguous blocks of wooded habitat, though interspersed fields and early successional habitats may be beneficial through their positive effect on prey populations; day-use sites typically are dense patches of saw palmetto surrounded by swamp, pine flatwoods, or hammock. Strong selection for pine stands burned within one year.<br><br>Young are born in dense thickets or fallen timber, or in other sites providing adequate |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
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| | | | | | | cover. |
| Gray bat | Myotis grisescens | Mammals | Central and southeastern U.S.A. | E | No | Forested areas along the banks of streams and lakes provide important protection for adults and young. Young often feed and take shelter in forest areas near the entrance to cave roosts. Do Not feed in areas along rivers or reservoirs where the forest has been cleared. Roost sites are nearly exclusively restricted to caves throughout the year though only a few percent of available caves are suitable. Winter roosts are in deep vertical caves with domed halls. Large summer colonies utilize caves that trap warm air and provide restricted rooms or domed ceilings; maternity caves often have a stream flowing through them and are separate from the caves used in summer by males. |
| Gray wolf | Canis lupus | Mammals | North America | E | Yes | Conifer, hardwood, and mixed forests. No particular habitat preference. In Minnesota and Wisconsin, usually occurs in areas with few roads, which increase human access and |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
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| | | | | | | incompatible land uses, but apparently can occupy semi-wild lands if ungulate prey are abundant and if not killed by humans. Minimum of 10,000-13,000 sq km (with low road density) might be necessary to support a viable population; a single pack does not constitute a "minimum viable population". |
| Gulf Coast Jaguarundi | Herpailurus (=Felis) yagouaroundi cacomitli | Mammals | TX | E | No | Forest - Hardwood, Savanna, Shrubland/chaparral, Woodland - Hardwood. Thick brushlands (patchy or continuous). Habitat near water is favored. Spends most of time on ground, though climbs well. Sleeping and birthing occur in a den in a hollow log, treefall, or thicket. |
| Hualapai Mexican vole | Microtus mexicanus hualpaiensis | Mammals | AZ | E | No | Meadows of grasses, sedges, and forbs within ponderosa pine forests on steep mountain slopes; occurs in moist areas around springs and seeps but may be capable of occupying drier sites where ground cover is suitable. Associated with sites supporting pinyon/juniper and pine/oak vegetation. When inactive, occupies nest in clump |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
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| | | | | | | of vegetation, under log, in depression on ground, or underground. Young are born in a grass nest. |
| Indiana bat | Myotis sodalis | Mammals | Eastern and Midwestern U.S.A | E | Yes | Myotis sodalis hibernates in caves; maternity sites generally are behind loose bark of dead or dying trees or in tree cavities. Foraging habitats riparian areas, upland forests, ponds, and fields, but forested landscapes are the most important habitat in agricultural landscapes. |
| Jaguar | Panthera onca | Mammals | AZ, CA, LA, NM, TX | E | No | Hardwood and mixed forests. Habitat includes a wide variety of situations, such as tropical and subtropical forests, lowland scrub and woodland, thorn scrub, pampas/llanos, desert, swampy savanna, mangrove swamps, lagoons, marshland, and floating islands of vegetation. At the southern extreme of the range, this cat inhabits open savanna, flooded grasslands, and desert mountains; at the Northern extreme it may be found in chaparral and timbered areas. Young are born in a sheltered |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
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| | | | | | | place such as a cave or thicket, under an uprooted tree, among rocks, or under a river bank. |
| Key deer | Odocoileus virginianus clavium | Mammals | FL | E | No | Conifer, hardwood, and mixed forests. Islands with fresh water; prefers pinelands, then hardwood hammocks and mangroves. |
| Key Largo cotton mouse | Peromyscus gossypinus allapaticola | Mammals | FL | E | Yes | Hardwood forest. Mature tropical hardwood hammock, trunks of dominant trees with dbh of 10 inches or more; more mice in more mature hammocks. Nests in burrows, tree hollows, crevices in limestone rock, and in or under logs. |
| Key Largo woodrat | Neotoma floridana smalli | Mammals | Fl | E | Yes | Mature, undisturbed subtropical hardwood (hammock) forest. Optimal habitat: dominant trees must be at least 25-30 cm in diameter. Rat abundance increases with hammock maturity. Builds and nests within a large stick house on the ground; houses may remain in use for many years and often are built around a stump, log, boulder, or other similar object; |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
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| | | | | | | may occupy old buildings. |
| Lesser long-nosed bat | Leptonycteris curasoae yerbabuenae | Mammals | AZ, NM | E | No | Cliff, Desert, Forest - Hardwood, Forest/Woodland |
| Louisiana black bear | Ursus americanus luteolus | Mammals | LA, MS, AR | T | Yes | Conifer, hardwood, mixed and wetland forests. |
| Margay | Leopardus (=Felis) wiedii | Mammals | TX | E | No | Hardwood forests. Prefers heavily forested areas (evergreen and deciduous). Arboreal and terrestrial. Probably dens in thickets or other protected areas. |
| Mexican long-nosed bat | Leptonycteris nivalis | Mammals | NM, TX | E | No | Habitats include desert scrub, open conifer-oak woodlands, and pine forests in the Upper Sonoran and Transition Life Zones, generally arid areas where agave plants are present. Colonies roost in caves (or similar mines and tunnels), sometimes in culverts, hollow trees, or unused buildings. Roosting habitat requirements are Not well known. |
| Mount Graham red squirrel | Tamiasciurus hudsonicus grahamensis | Mammals | AZ | E | Yes | Conifer forests. Higher elevation stands of mature Engelmann spruce and corkbark fir; also inhabits Douglas-fir or white fir forests at slightly lower elevations. Prefers to |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
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| | | | | | | nest in tree cavities, but will also construct leaf nests and even use ground burrows. |
| Northern Idaho ground squirrel | Spermophilus brunneus brunneus | Mammals | ID | T | | Compared to the southern subspecies, the northern Idaho ground squirrel is found in higher elevation areas with shallow reddish parent soils of basaltic origin. The northern subspecies is associated with shallow rocky soils in xeric meadows surrounded by ponderosa pine and Douglas-fir forest. It may occur on slopes and rarely on ridges. It digs burrows (entrances often are under rocks and logs) and burrows extensively in shallow rocky soils, but nest burrows are located in adjacent areas with deeper (>1 m) well-drained soils. |
| Ocelot | Leopardus (=Felis) pardalis | Mammals | AZ, TX | E | No | Hardwood and wetland forests. Habitats with good cover; when active by day, tends to keep hidden in dense brush. Inhabits dense chaparral thickets in Texas. Elsewhere, occurs in humid tropical forests, mangrove forests, swampy savannas, brushland, and |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
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| | | | | | | riverine scrub in deserts. Where Not hunted, adapts well to disturbed habitats around villages; often uses man-made trails. Mainly terrestrial but climbs, jumps, and swims well. Dens are in caves, hollow trees, thickets, or the spaces between the closed buttress roots of large trees; rarely climbs but sometimes may sleep on tree branch. |
| Ozark big-eared bat | Corynorhinus (=Plecotus) townsendii ingens | Mammals | MO, OK, AR | E | Yes | Uses caves (or mines/other subterranean areas) for hibernation, roosting, and maternity colonies in locations dominated by mature hardwood forests of hickory, beech, maple, and hemlock. |
| Point Arena mountain beaver | Aplodontia rufa nigra | Mammals | CA | E | No | Riparian forests. Gulches and North-facing slopes within narrow coastal valleys. |
| Puma (=mountain lion) | Puma (=Felis) concolor (all subsp. except coryi) | Mammals | Canada to South America | SAT | No | Conifer, mixed, and hardwood forests. Now associated generally with mountainous or remote undisturbed areas. May occupy wide variety of habitats: swamps, riparian woodlands, broken country with good cover of brush or woodland. Habitat areas of at least 2200 sq km are |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
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| | | | | | | needed to ensure long-term population persistence; protection of corridors for immigration is highly desirable. Young are born in secluded places among rocks or dense vegetation. |
| Red wolf | Canis rufus | Mammals | SE U.S.A., west to central TX | E | No | Conifer, hardwood, and mixed forests. Forested wetlands. Suitable habitat for this habitat generalist includes upland and lowland forests, shrublands, and coastal prairies and marshes; areas with heavy vegetative cover. Young are born in a den in a hollow log, in a burrow, or in similar secluded sites. |
| Riparian brush rabbit | Sylvilagus bachmani riparius | Mammals | CA | E | No | Riparian forest with a dense shrub layer; dense thickets (e.g., wild rose, willows, blackberries) close to the San Joaquin River. |
| Riparian woodrat | Neotoma fuscipes riparia | Mammals | CA | E | No | Hardwood forests. Wooded riparian areas. |
| Sinaloan Jaguarundi | Herpailurus (=Felis) yagouaroundi tolteca | Mammals | AZ | E | No | Forest - Hardwood, Savanna, Shrubland/chaparral, Woodland - Hardwood. Sight record from Arizona was made in semidesert grassland |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
|---|---|---|---|---|---|---|
| | | | | | | intermixed with scattered Emory oaks (Hoffmeister 1986). Young are born in a den in a hollow log, treefall, or thicket. |
| Virginia big-eared bat | CoryNorhinus (=Plecotus) townsendii virginianus | Mammals | KY, NC, WV, VA | E | Yes | Uses caves (or mines/other subteranean areas) for hibernation, roosting, maternity colonies and partuation in locations dominated by mature hardwood forests of hickory, beech, maple, and hemlock. |
| Virginia northern flying squirrel | Glaucomys sabrinus fuscus | Mammals | VA, WV | E | No | Conifer, hardwood, and mixed forests. Spruce, fir, spruce-hardwood, and northern hardwood forests, with well-developed understory. Occurrence in hardwood forest generally is associated with nearby spruce/fir forest. Mostly in moist forest with widely spaced mature trees and an abundance of snags. Prefers cavities in mature trees as den sites. Small outside twig nests sometimes used for den sites. Will use nest box. |

| Scientific Name | Common Name | Species Group | States Where Listed | Listing Status | Critical Habitat* | Forest Habitat |
|---|---|---|---|---|---|---|
| Wood bison | Bison bison athabascae | Mammals | Northwestern U.S.A | E | No | Wood bison use different habitats depending on the season. In summer, they can be found in small willow pastures and uplands where they feed on sedges, forbes and willows. In winter, they move to frozen wet sedge meadows and lakeshores where they feed on sedges. In the fall, they can be found in the forest where they feed on lichens. |
| Woodland caribou | Rangifer tarandus caribou | Mammals | AK, ID, ME, MI, MN, MT, NH, VT, WA, WI | E | No | Conifer Forest |

Sources:
NatureServe Explorer. Accessed February 2008
States Fish and Wildlife Service
USFWS Online Services. Accessed March 2008

## C-2. Protected Species – Plants

| Scientific Name | Common Name | Species Group | States where listed | Listing Status | Critical Habitat * | Forest Habitat |
|---|---|---|---|---|---|---|
| Alabama streak-sorus Fern | Thelypteris pilosa var. alabamensis | Ferns and Allies | AL | T | No | Danger to the fern could come from logging of the bluff woodlands, this admitting too much light, reducing humidity, thus generally contributing to a drying out and destruction of the habitat (Kral 1983). |
| American Hart's-tongue Fern | Asplenium scolopendrium var. americanum | Ferns and Allies | AL, MI, NY, TN | T | No | Most occur in shady hardwood woodlands where sun flecks provide sufficient sunlight and where moisture is adequate. Most populations are associated with the cool, well-shaded, moist microclimates of woods, ravines, and steep north-facing hillsides. |
| Gowen cyprus | Cupressus goveniana ssp. goveniana | Conifers and Cycads | CA | T | No | Closed-cone pine forests with an understory of heaths on poorly drained, acidic soils. |
| Santa Cruz cyprus | Cupressus abramsiana | Conifers and Cycads | CA | E | No | Associated with coastal chaparral communities above the fog belt at 300-760 m. Some groves contain yellow pine and closed-cone pine forest elements. |

| Scientific Name | Common Name | Species Group | States where listed | Listing Status | Critical Habitat * | Forest Habitat |
|---|---|---|---|---|---|---|
| American Chaffseed | Schwalbea americana | Flowering Plants | AL, CT, DE, FL, GA, LA, MA, MD, MI, MS, NC, NJ, NY, SC, TN, VA | E | No | Acidic, sandy or peaty soils in open pine flatwoods, pitch pine lowland forests, seepage bogs, palustrine pine savannahs, and other grass- and sedge-dominated plant communities. Frequently grows in ecotonal areas between peaty wetlands and xeric sandy soils. Schwalbea americana is primarily a Coastal Plain species of the Atlantic and Gulf coasts, with historic locations ranging from Massachusetts to Florida to east Texas. |
| Apalachicola Rosemary | Conradina glabra | Flowering Plants | FL | E | No | Formerly occurred in the grassy understory of the upland longleaf pine-wiregrass vegetation, as well as steephead edges. Currently found on dry, sandy, well-drained soils of road edges, in planted pine plantations and along their cleared edges, and along the edges of ravines. It is an understory plant in open woodlands of pine and oaks or in small clearings therein. Wilson Baker suggested that Conradina may have naturally grown in the ecotone between the sandhills and the densely forested ravines; it spread into the sandhills only after their disturbance by the |

| Scientific Name | Common Name | Species Group | States where listed | Listing Status | Critical Habitat * | Forest Habitat |
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| | | | | | | establishment of pine plantations in the late 1950's. |
| Ash-grey paintbrush | Castilleja cinerea | Flowering Plants | CA | T | Yes | Known from pine forests, dry sagebrush scrublands, and other habitats. 1800-2800 m elevation. |
| Bear Valley sandwort | Arenaria ursina | Flowering Plants | CA | T | Yes | These are sparsely vegetated; they occur as openings in the surrounding forest at 1800-2300 m elevation. |
| Brooksville Bellflower | Campanula robinsiae | Flowering Plants | FL | E | No | Pond margins in wet prairies or in seepage areas of adjacent hardwood forests. |
| Clara Hunt's milk-vetch | Astragalus clarianus | Flowering Plants | CA | E | No | Openings in manzanita and oak woodlands, on thin, rocky clay soils derived from volcanic materials or on serpentine substrates. 75-225 m elevation. |
| Cooley's meadowrue | Thalictrum cooleyi | Flowering Plants | FL, NC | E | No | Sunny, moist places such as open, savanna-like forest edges and clearings, wet savannas over calcareous clays, and ecotones between wet savannas and non-riverine swamp forests. Soils are basic, sandy loams. Also on roadsides and power line rights-of-way in former savannas. |
| Cooley's water-willow | Justicia cooleyi | Flowering Plants | FL | E | No | Mesic hardwood hammocks and hardwood pine forests. |
| Crenulate lead-plant | Amorpha crenulata | Flowering Plants | OR, CA | E | No | Pine rocklands |
| Dwarf Lake iris | Iris lacustris | Flowering | MI, WI | T | No | While it has been found in full sun |

| Scientific Name | Common Name | Species Group | States where listed | Listing Status | Critical Habitat * | Forest Habitat |
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| | | Plants | | | | and nearly complete shade, optimal sexual reproduction appears to occur in partially shaded or sheltered forest edges. It is most often associated with coniferous forest dominated by northern white-cedar (Thuja occidentalis) and balsam fir (Abies balsamea). |
| Dwarf-flowered heartleaf | Hexastylis naniflora | Flowering Plants | NC, SC | T | No | Acidic soils on moist to rather dry north-facing slopes of ravines and along bluffs and hillsides in boggy areas next to streams. Vegetation is typically oak-hickory-pine forests of the Piedmont. |
| Few-flowered navarretia | Navarretia leucocephala ssp. pauciflora (=N. pauciflora) | Flowering Plants | CA | E | No | Vernal pools with a volcanic ash substrate in chaparral, grassland, or mixed coniferous forest communities. |
| Furbish lousewort | Pedicularis furbishiae | Flowering Plants | ME | E | No | The banks of a river (the St. John), mostly in a steep, highly diverse shrub- or forb-dominated zone between open river cobbles and boreal forest. The habitat is notable for the high frequency and the severity of disturbance by ice scour and vertical river bank slumping. (The St. John drains one of the largest watersheds in the northeast, yet it has relatively little headwater |

| Scientific Name | Common Name | Species Group | States where listed | Listing Status | Critical Habitat * | Forest Habitat |
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| | | | | | | storage, making it subject to dramatic seasonal and longer-term fluctuations in water level and to severe ice-jams.) The zone in which P. furbishiae occurs bears the brunt of the ice scour - tree establishment does not occur here and vegetation cover tends to be moderate. Disturbances vary over time and are typically "patchy" in both large and small spatial scales. |
| Haha | Cyanea remyi | Flowering Plants | AL, AR, FL, GA, LA, MO, MS, NC, SC | E | Yes | Seeping or saturated substrates in wet forests and shrublands. |
| Hairy rattleweed | Baptisia arachnifera | Flowering Plants | GA | E | No | It is now persisting in intensively managed slash and loblolly pine plantations, powerline right-of-ways, roadsides and a few small natural areas. |
| Harperella | Ptilimnium nodosum | Flowering Plants | AL, AR, GA, MD, NC, SC, WV | E | No | Typically occurs in two habitat types: rocky or gravelly shoals of clear, swift-flowing streams (usually in microsites that are sheltered from rapidly moving water); and the edges of intermittent pineland ponds or low, wet savannah meadows on the Coastal Plain. (The only known extant population in the state of Georgia occurs in a third habitat type - a granite outcrop seep.) In all habitat-types, the species occurs in a narrow |

| Scientific Name | Common Name | Species Group | States where listed | Listing Status | Critical Habitat * | Forest Habitat |
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| | | | | | | range of water depths; it is intolerant of deep water and of conditions that are too dry. However, the plants readily tolerate periodic, moderate flooding - something to which few potential competitors are adapted. In both major habitat types, P. nodosum seeds generally germinate during short-duration spring floods and the plants have completed their life cycle by late summer or fall, just as water levels are lowest and competing species are moving in. |
| Hickman's Potentilla | Potentilla hickmanii | Flowering Plants | CA | E | No | Coastal bluff scrub and closed-cone pine forest. Freshwater marshes, seeps and streamlets in open forested areas near the coast, 0-75 m. |
| Indian Knob mountain balm | Eriodictyon altissimum | Flowering Plants | CA | E | No | Maritime chaparral and oak woodlands, mostly on sandstone ridges. |
| Island bedstraw | Galium buxifolium | Flowering Plants | GA, TN | E | No | Sea cliffs, bluffs, and dry, rocky slopes in coastal sage scrub and closed-cone pine forest vegetation. |
| Knieskern's beaked-rush | Rhynchospora knieskernii | Flowering Plants | CA | T | No | Restricted to early successional habitats in pitch pine lowland forests within pine barrens. |
| Lakeside daisy | Hymenoxys herbacea | Flowering Plants | CA | T | No | Occurs nearly exclusively on alvars or on bare rock, in openings of a forest matrix. |
| Large-fruited | Abronia | Flowering | FL | E | NO | Post-Oak Woodlands |

| Scientific Name | Common Name | Species Group | States where listed | Listing Status | Critical Habitat * | Forest Habitat |
|---|---|---|---|---|---|---|
| sand-verbena | macrocarpa | Plants | | | | |
| Maguire daisy | Erigeron maguirei | Flowering Plants | UT | T | No | Formations in mountain shrub, Douglas-fir, ponderosa pine, and lower limits of juniper woodland communities between 5,400 and 7,100 feet elevation. |
| Mariposa pussypaws | Calyptridium pulchellum | Flowering Plants | FL, SC | T | No | Sandy soils of decomposed granite, primarily in foothill oak woodlands. 400-1100 m elevation. |
| McDonald's rock-cress | Arabis mcdonaldiana | Flowering Plants | CA | E | No | In dry open woods or brushy steep slopes or ledges. Usually at elevations of about 1200 m. |
| Miccosukee Gooseberry | Ribes echinellum | Flowering Plants | DE, GA, MD, NC, NJ, NY, SC, VA | T | No | Ribes echinellum is associated with a deciduous, mixed hardwood forest with an overstory canopy dominated by species of oak and hickory. |
| Michigan monkey-flower | Mimulus glabratus var. michiganensis | Flowering Plants | MI | E | No | Muck-covered sand in flowing water with summer temperatures no higher than 16.6 degrees Celsius. Full sun. The necessary combination of full sunlight and cold, clear, flowing water is found in aquatic habitats along forest edges and in small openings along streams and lakeshores. |
| Minnesota dwarf trout lily | Erythronium propullans | Flowering Plants | MN | E | No | The major populations occur on the slopes of the Straight and Cannon rivers near Faribault, Minnesota. The preferred habitat is the lower parts of wooded north-facing slopes that rise 15 to 27 m above streams |

| Scientific Name | Common Name | Species Group | States where listed | Listing Status | Critical Habitat * | Forest Habitat |
|---|---|---|---|---|---|---|
| | | | | | | or abandoned stream channels. Plants also grow on floodplains and less frequently near the tops of slopes. They occasionally inhabit northeast or northwest slopes, and rarely east or west slopes. |
| Mohr's Barbara button | Marshallia mohrii | Flowering Plants | AL, GA | T | No | Moist to wet prairie-like openings in woodlands (e.g. pine woods), along shale-bedded streams, and in meadows. Woodland clearings may be natural or artificial. Other populations are located in swales on roadside rights-of-way. Also found in Ketona dolomite glades. It prefers full sunlight or partial shade. The soils are sandy clays, which are alkaline, high in organic matter and seasonally wet. Common associates include various grasses, sedges, and prairie species. The surrounding forest type is mixed hardwoods with Shumard oak, willow oak, and pine. |
| Monterey clover | Trifolium trichocalyx | Flowering Plants | AL, IL, KY, MS, TN | E | No | Openings in and edges of Monterey pine forest. Ephemeral: plants persist for a few years following fire or other vegetation removal, but are shaded out or outcompeted after that. Soils are poorly drained, coarse loamy sands. < 100 m elevation. |
| Morefield's | Clematis | Flowering | AL | E | No | It occurs in patches on limestone |

| Scientific Name | Common Name | Species Group | States where listed | Listing Status | Critical Habitat * | Forest Habitat |
|---|---|---|---|---|---|---|
| leather flower | morefieldii | Plants | | | | bluffs within open red cedar-hardwood forests, and near springs, seeps and ephemeral streams in rocky limestone woods (USFWS 1994). |
| Many-flowered Navarretia | Navarretia leucocephala ssp. plieantha | Flowering Plants | CA | E | No | Margins of vernal pools and lakes with a volcanic ash substrate, and wet ground in forest openings. |
| No common name | Stenogyne angustifolia var. angustifolia | Flowering Plants | OR, WA | E | No | Found in xeric, upper forest habitat in Hawaii. |
| No common name | Mariscus pennatiformis | Flowering Plants | IL, MI, OH | E | Yes | On Laysan: dry sand dunes. On the main Hawaiian Islands: moist and wet forests and grasslands. |
| No common name | Poa siphonoglossa | Flowering Plants | CA | E | Yes | Shaded banks in moist forests on gulch slopes. |
| No common name | Hesperomannia arbuscula | Flowering Plants | AL | E | Yes | Slopes and ridges in mesic to wet forest. |
| No common name | Alsinidendron trinerve | Flowering Plants | CA | E | Yes | Slopes or ridges in wet forest or wetter portions of diverse mesic forest. Also found in drier forests. |
| Northern wild monkshood | Aconitum noveboracense | Flowering Plants | IA, NY, OH, WI | T | No | The northern wild monkshood is commonly associated with species typical of eastern deciduous forest, and marsh and swamp wetlands. |
| Okeechobee gourd | Cucurbita okeechobeensis ssp. okeechobeensis | Flowering Plants | CA | E | No | Originally found in swampy forests and hammocks on muck soils. Today, this species is restricted to disturbed areas that are not cultivated, such as ditch banks and wet road shoulders. |

| Scientific Name | Common Name | Species Group | States where listed | Listing Status | Critical Habitat * | Forest Habitat |
|---|---|---|---|---|---|---|
| Persistent trillium | Trillium persistens | Flowering Plants | GA, SC | E | No | Deciduous or mixed hemlock-pine-deciduous forests, typically on steep slopes near rhododendrons (Rhododendron maximum or R. minus). |
| Pondberry | Lindera melissifolia | Flowering Plants | CA | E | No | Seasonally flooded wetlands, such as floodplain hardwood forests and forested swales and (in coastal areas of the Carolinas) along the margins of sinks, ponds and depressions in pinelands. Usually in shade, but tolerates full sun. |
| Relict trillium | Trillium reliquum | Flowering Plants | AL, GA, SC | E | No | T. reliquum is a species of mesic hardwood forests. The forests can be on slopes of various aspects and inclinations or on bottomlands and floodplains. |
| Rock gnome lichen | Gymnoderma lineare | Lichens | NC,TN | E | No | It is primarily limited to vertical rock faces, where seepage water from forest soils above flows at (and only at) very wet times, and large stream side boulders, where it receives a moderate amount of light but not high-intensity solar radiation. Threatened by habitat change especially due to loss of Fraser-fir forests and by heavy recreational use of its habitat. |
| Round-leaved chaff-flower | Achyranthes splendens var. rotundata | Flowering Plants | CA | E | No | Scattered in low elevation, open, dry forest remnants and open thickets, on talus or rocky slopes, |

| Scientific Name | Common Name | Species Group | States where listed | Listing Status | Critical Habitat * | Forest Habitat |
|---|---|---|---|---|---|---|
| | | | | | | and on coralline plains with numerous sinkholes. |
| San Bernardino Mountains bladderpod | Lesquerella kingii ssp. bernardina | Flowering Plants | CA | E | Yes | Dolomite substrates, typically on open, gentle to moderate slopes within pine-juniper woodlands and fir forests at 2100-2700 m elevation. Soils typically have little accumulation of organic material. Tolerant of light disturbance: found on old roads and undeveloped lots. |
| San Francisco Peaks groundsel | Senecio franciscanus | Flowering Plants | AZ | T | Yes | Alpine tundra areas on sparsely vegetated loose talus slopes, at 3350-3750 m; usually just above southwestern montane spruce-fir or bristlecone pine (Pinus aristata) forests. |
| Schweinitz's sunflower | Helianthus schweinitzii | Flowering Plants | NC, SC | E | No | Clearings in, and edges of, upland oak-pine-hickory woods and piedmont longleaf pine forests in moist to dryish sandy loams. Requires the full to partial sun of an open habitat, which was formerly maintained over the species' range by wildfires and grazing by herds of bison and elk. Now most occurrences are confined to roadsides and powerline clearings. |
| Small whorled Pogonia | Isotria medeoloides | Flowering Plants | CT, DC, DE, GA, IL, MA, MD, ME, MI, MO, NC, NH, NJ, NY, PA, RI, | T | No | Acidic soils, in dry to mesic second-growth, deciduous or deciduous-coniferous forests; typically with light to moderate leaf litter, an open herb layer (occasionally dense |

| Scientific Name | Common Name | Species Group | States where listed | Listing Status | Critical Habitat * | Forest Habitat |
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| | | | SC, TN, VA, VT,WV | | | ferns), moderate to light shrub layer, and relatively open canopy (Flora of North America 2002). |
| Springville clarkia | Clarkia springvillensis | Flowering Plants | TX | T | No | Primarily on open sites, including roadbanks, in blue oak woodland communities. 360-910 m elevation |
| Stickseed showy | Hackelia venusta | Flowering Plants | WA | E | No | In openings within the Ponderosa pine and Douglas-fir forests which are maintained by occasional wildfires. |
| Swamp pink | Helonias bullata | Flowering Plants | DE, NJ | T | No | Restricted to forested wetlands that are groundwater influenced and are perennially water-saturated. These habitats include hummocks in Atlantic white cedar (Chamaecyparis thyoides) swamps, headwater seepage wetlands, red maple (Acer rubrum) swamps, and (rarely) black spruce-tamarack (Picea mariana-Larix laricina) bogs. |
| Texas Trailing Phlox | Phlox nivalis ssp. texensis | Flowering Plants | TX | E | No | Deep, sandy soils in fire-maintained openings in upland longleaf pine (Pinus palustris) savannahs or post oak-bluejack oak (Quercus stellata-Q. incana) woodlands. |
| Virginia round-leaf birch | Betula uber | Flowering Plants | VA | T | No | The only known natural population was found along the floodplain of a creek at an elevation of about 1160 m. The site is within a narrow strip of second-growth forest that includes many sweet and yellow birches (B. lenta and B. |

| Scientific Name | Common Name | Species Group | States where listed | Listing Status | Critical Habitat * | Forest Habitat |
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| | | | | | | alleghaniensis). The band of forest is nearly surrounded by agricultural land. |
| Western lily | Lilium occidentale | Flowering Plants | FL | E | No | Pacific coastal wetlands. Mostly restricted to the edges of early successional, wet sphagnum bogs and forest or thicket openings along the margins of ephemeral ponds and small streams. Also in coastal scrub and prairie, and other poorly drained soils near the ocean where fog is common. |
| Yadon's Piperia | Piperia yadonii | Flowering Plants | CA | E | Yes | Monterey pine forest and maritime chaparral communities, primarily on poorly drained sandstone and sandy soils. |

Sources:
NatureServe Explorer. Updated February 2008
USFWS Environmental Conservation Online Services, accessed March/April 2008
States Fish and Wildlife Service. Accessed March/April 2008

Notes:
* " Yes" under Critical Habitat describes either a final or proposed rule for Critical Habitat.