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# Programmatic Environmental Assessment

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## USDA TREE ASSISTANCE PROGRAM



Farm Service Agency  
United States Department of Agriculture

**FINAL**

May 2007



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## COVER SHEET

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**Proposed Action:** The United States Department of Agriculture (USDA) and Commodity Credit Corporation (CCC) have agreed to implement the 2005 Tree Assistance Program (TAP). USDA is provided the statutory authority by the provisions of the Food Security Act of 1985, as amended (16 U.S.Code 3830 et seq.), and the Regulations at 7 Code of Federal Regulations 1410. The Farm Service Agency (FSA) of USDA proposes to implement the 2005 TAP. Producers in counties that were designated disasters by the President or Secretary of Agriculture would be eligible for reimbursement of certain expenses associated with re-establishing tree crops lost during the hurricanes of 2005.

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**Lead Agency:** USDA, FSA

**Further Information:** Matthew Ponish  
National Environmental Compliance Manager  
USDA/FSA/CEPD  
1400 Independence Ave, SW  
Mail Stop 0513  
Washington, DC 20250

**Comments:** This Programmatic Environmental Assessment was prepared in accordance with USDA FSA National Environmental Policy Act implementation procedures found in 7 CFR 799, as well as the National Environmental Policy Act of 1969, Public Law 91-190, 42 U.S.C. 4321-4347, 1 January 1970, as amended. Once this document is finalized a Notice of Availability will be printed in the Federal Register. A copy of this Programmatic Environmental Assessment can be found at:  
<http://www.fsa.usda.gov/FSA/webapp?area=home&subject=ecrc&topic=nep-cd>

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## **EXECUTIVE SUMMARY**

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This Programmatic Environmental Assessment (PEA) describes the potential environmental consequences resulting from the implementation of the 2005 Hurricanes Tree Assistance Program (2005 TAP). The environmental analysis process is designed: to ensure the public is involved in the process and informed about the potential environmental effects of the proposed action; and to help decision makers take environmental factors into consideration when making decisions related to the proposed action.

This PEA has been prepared by the United States Department of Agriculture, Farm Service Agency (FSA) in accordance with the requirements of the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality regulations implementing NEPA, and 7 CFR 799 Environmental Quality and Related Environmental Concerns – Compliance with the National Environmental Policy Act.

### **Purpose and Need for the Proposed Action**

The purpose of the proposed action is to implement the 2005 TAP, which would provide financial assistance to producers in qualifying counties who experienced losses of tree (including Christmas trees, ornamental trees, nursery tree and potted trees), field grown bush (including shrubs) or vine crops as a result of hurricanes Katrina, Ophelia, Rita and Wilma. Reimbursement for the costs of certain activities associated with reestablishing lost crops would be made available by the program. The TAP is needed to fulfill FSA's responsibility under Title X Subtitle C of the FSRIA using funding authorized by Title III Section 3013 of the Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006.

### **Proposed Action and Alternatives**

The proposed action would implement the 2005 TAP, which would allow producers who lost tree crops to one of the hurricanes that occurred in 2005 to apply for reimbursement of certain expenses related to reestablishing lost crops. Only producers in primary and contiguous counties that were declared disasters by the President or Secretary of Agriculture are qualified for the program. Expenses that may be reimbursed under the 2005 TAP include: site preparation and including clean-up, debris removal and tillage; chemicals and nutrients required to reestablish crop; seedlings or cuttings for replanting; replacement, rehabilitation, and pruning; and labor required for replanting.

This PEA documents the analysis of the Proposed Action and the No Action Alternative. Under the No Action Alternative, producers would reestablish lost tree crops or other crops on their lands without the benefit of financial assistance from the program.

### **Summary of Environmental Consequences**

It is expected that there would be both positive and temporary minor negative impacts associated with implementation of the proposed action. A summary of the potential impacts is given in Table ES-1.

**Table ES – 1 Summary of Potential Impacts Resulting from the Proposed Action**

<u>Resource</u>	<u>Proposed Action</u>	<u>No Action Alternative</u>
<b>Biological Resources</b>	<p>No impacts to native vegetation or wildlife are expected to occur as a result of the 2005 TAP. All of the proposed activities would occur on land previously disturbed by agriculture, where native vegetative communities have been removed. Temporary minor impacts to wildlife may occur if planting occurred in fields that have been left fallow where primary vegetative succession could support wildlife species. These impacts are not considered major. Potential impacts to threatened and endangered species and designated critical habitat could occur if TAP activities take place adjacent to potential species habitat or designated critical habitat. Where activities occur near such habitat, consultation with the US Fish and Wildlife Service (USFWS) would be required to ensure no impacts to such species occur.</p>	<p>Impacts to vegetation and wildlife are expected to be the same under the no action alternative. Impacts to threatened and endangered species and critical habitats would not be subject to consultation with USFWS since replanting without the benefit of TAP funding is not a federal activity.</p>
<b>Cultural Resources</b>	<p>It is possible that the ground disturbing activities authorized by the TAP could impact archaeological resources. Where site preparation and planting activities do not disturb the soil beyond the depth of previous agricultural practices, it is unlikely that archaeological resources would be encountered. If archaeological resources were encountered during ground disturbing activities, the State Historic Preservation Office (SHPO) would be notified to ensure compliance with 36 CFR 800.11. Implementation of the 2005 TAP is not expected to impact protected architectural resources or traditional cultural properties, since no changes</p>	<p>Impacts to cultural resources are expected to be the same under the no action alternative however without the federal funding provided by the 2005 TAP, activities would not be subject to consultation with SHPO.</p>

**Table ES – 1 Summary of Potential Impacts Resulting from the Proposed Action**

<u>Resource</u>	<u>Proposed Action</u>	<u>No Action Alternative</u>
<b>Water Resources</b>	<p>to land use are proposed and 2005 TAP funds cannot be used to alter structures.</p> <p>No significant impacts to surface water, ground water, wetlands, floodplains, or coastal zone management are expected to occur. Reestablishing crops may slightly increase agricultural chemical input to local water sources, however, these chemicals would be used according to Environmental Protection Agency (EPA) regulations. The chemicals that would be used would likely not vary much from what was used before the crop was lost. Producers establishing crops near waters on the Section 303(d) impaired waters list must adhere to Total Maximum Daily Loads (TMDL) developed by the State.</p>	<p>Potential impacts from an increase in agricultural chemical inputs to local water sources would be the same as those described for Alternative A. All agricultural chemicals must be used in accordance with their EPA regulations. Adherence to TMDLs would be required for those producers establishing crops near waters currently on the Section 303(d) list.</p>
<b>Soil Resources</b>	<p>No significant impacts to soil resources are expected to occur since soils have been previously used for agricultural purposes. Activities associated with site preparation and debris removal may result in temporary increases in soil erosion but the potential for these impacts would be mitigated by the conservation plans required by each TAP contract.</p>	<p>Potential impacts during site preparation and debris removal would be the same as those described for Alternative A.</p>
<b>Air Quality</b>	<p>Site preparation and debris removal activities including tilling, controlled burning, and use diesel powered vehicles and equipment could result in temporary, localized impacts to air quality. Such activities could result in temporary increase in levels of PM10, PM2.5, CO, hydrocarbons and NO2.</p>	<p>Potential impacts to Air Quality are expected to be the same as under Alternative A. If TAP funding were not available, producers would likely utilize the same practices, burning and use of heavy equipment, to remove debris from their lands.</p>

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**Table ES – 1 Summary of Potential Impacts Resulting from the Proposed Action**

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<b><u>Resource</u></b>	<b><u>Proposed Action</u></b>	<b><u>No Action Alternative</u></b>
<b>Socioeconomics</b>	Slight positive effects within those respective TAP counties are expected to occur under Alternative A. Economic impacts of re-establishing agricultural commodities damaged by the 2005 hurricanes would be minor in the long-term.	Under the No Action Alternative, the federal dollars associated with the program would not flow into the regional economies of the affected states.
<b>Environmental Justice</b>	None of the TAP eligible counties is an area of concentrated minority population however the Arkansas TAP eligible counties are impoverished. No disproportionate adverse effects to low-income populations are expected to occur under the proposed action since impacts to economic and natural resources are expected to be minor, temporary and either positive or neutral with appropriate mitigation.	Selecting the no action alternative, would not result in disproportionate effects to minority or low-income populations since no federally funded activity would occur.

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## ACRONYMS AND ABBREVIATIONS

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ACHP	Advisory Council on Historic Preservation
BEA	Bureau of Economic Analysis
BLS	Bureau of Labor Statistics
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CZMA	Coastal Zone Management Act
CZMP	Coastal Zone Management Plan
EIS	Economic Impact Forecast System
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FSRIA	Farm Security and Rural Investment Act of 2002
FEMA	Federal Emergency Management Agency
FIRM	flood insurance rate maps
FSA	Farm Service Agency
HELC	Highly Erodible Land Conservation
NAAQS	National Ambient Air Quality Standards
NASS	National Agricultural Statistical Service
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NO <sub>2</sub>	nitrogen dioxide
NRCS	Natural Resource Conservation Service
O <sub>3</sub>	ozone
Pb	lead
PEA	Programmatic Environmental Assessment
PM <sub>2.5</sub>	fine particulate matter
PM <sub>10</sub>	coarse particulate matter
Secretary	Secretary of Agriculture
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO <sub>2</sub>	sulfur dioxide
TAP	Tree Assistance Program
TMDL	total maximum daily load
USACE	U.S. Army Corps of Engineers
USCB	U.S. Census Bureau

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USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
WC	Wetland Conservation
2005 TAP	2005 Hurricane Tree Assistance Program

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## **1.0 PURPOSE AND NEED FOR THE ACTION**

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### **1.1 BACKGROUND**

The United States Department of Agriculture (USDA) Farm Service Agency (FSA) administers the Tree Assistance Program (TAP), which provides financial assistance to producers of tree, bush or vine crops who experience losses to natural disasters. TAP is authorized by the Farm Security and Rural Investment Act of 2002 (FSRIA). TAP funding is authorized when needed to assist producers in areas impacted by disasters designated by the President or Secretary of Agriculture (Secretary). FSA County Committees administer the program, receive applications, verify qualifying losses, and make recommendations and eligibility determinations.

The 2005 Hurricane TAP (2005 TAP) would provide benefits to those who experienced tree, bush or vine loss during Hurricanes Katrina, Ophelia, Rita and Wilma. Qualified producers in eligible counties in nine states would be eligible for 2005 TAP benefits: Alabama, Arkansas, Florida, Louisiana, North Carolina, Mississippi, South Carolina, Tennessee, and Texas. The 2005 TAP is authorized by the Emergency Agricultural Disaster Assistance Act of 2006 (Public Law 109-234, Title III).

### **1.2 PURPOSE AND NEED**

The purpose of the proposed action is to implement the 2005 TAP, which would provide financial assistance to producers in qualifying counties who experienced losses of tree (including Christmas trees, ornamental trees, nursery tree and potted trees), field grown bush (including shrubs) or vine crops because of hurricanes Katrina, Ophelia, Rita and Wilma. Reimbursement for the costs of certain activities associated with reestablishing lost crops would be made available by the program. The TAP is needed to fulfill FSA's responsibility under Title X Subtitle C of the FSRIA using funding authorized by Title III Section 3013 of the Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006.

### **1.3 REGULATORY COMPLIANCE**

This PEA is prepared to satisfy the requirements of the National Environmental Policy Act (NEPA; Public Law 91-190, 42 U.S. Code 4321 et seq.); implementing regulations adopted by the Council on Environmental Quality (CEQ; 40 Code of Federal Regulations [CFR] 1500-1508); and FSA implementing regulations, Environmental Quality and Related Environmental Concerns – Compliance with NEPA (7 CFR 799). The intent of NEPA is to protect, restore, and enhance the human environment through well informed Federal decisions. A variety of laws, regulations, and Executive Orders apply to actions undertaken by Federal agencies and form the basis of the analysis presented in this PEA.

### **1.4 ORGANIZATION OF PEA**

This PEA assesses the potential impacts of the Proposed Action and the No Action Alternative on potentially affected environmental and economic resources. Chapter 1.0 provides background information relevant to the Proposed Action, and discusses its purpose and need. Chapter 2.0 describes the Proposed Action and alternatives. Chapter 3.0 describes the baseline conditions

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(i.e., the conditions against which potential impacts of the Proposed Action and alternatives are measured) for each of the potentially affected resources. Chapter 4.0 describes potential environmental consequences on these resources. Chapter 5.0 describes potential cumulative impacts and irreversible and irretrievable resource commitments. Chapter 6.0 contains recommended mitigation measures. Chapter 7.0 lists the preparers of this document. Chapter 8.0 contains a list of the persons and agencies contacted during the preparation of this document and Chapter 9.0 contains references.

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## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

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### 2.1 PROPOSED ACTION

FSA proposes to implement the 2005 TAP. The program would reimburse eligible producers for allowable expenses related to reestablishing tree, bush and vine crops lost to Hurricanes Katrina, Ophelia, Rita, and Wilma in 2005. For each of these hurricanes, there is a disaster period during which losses eligible for reimbursement under the 2005 TAP occurred. Eligibility criteria for the 2005 TAP are discussed below and summarized in Table 2.1-1.

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**Table 2.1-1. Summary of 2005 TAP Eligibility Requirements**

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<b>Locations</b>	<ul style="list-style-type: none"><li>• Counties designated by the Secretary or declared by the President as a disaster area</li><li>• Counties contiguous to and in the same state as these declared or designated disasters</li></ul>
<b>Crops</b>	Eligible crops: <ul style="list-style-type: none"><li>• Trees (fruit and nut trees, Christmas trees, ornamental trees, nursery trees, potted trees)</li><li>• Bushes (including shrubs)</li><li>• Vines</li></ul> Ineligible crops: <ul style="list-style-type: none"><li>• Trees, bushes or vines not planted for commercial purposes</li><li>• Those that would have normally been replanted within the 12-month period following the loss</li><li>• Timber</li></ul>
<b>Extent of loss/damage</b>	<ul style="list-style-type: none"><li>• At least 15% of an individual stand</li></ul>
<b>Owner</b>	<ul style="list-style-type: none"><li>• Must have owned crops at time of loss and application for benefit</li><li>• Must be in compliance with HELC and WC provisions</li><li>• Ownership of land where losses occurred is not required</li></ul>
<b>Expenses</b>	Eligible expenses: <ul style="list-style-type: none"><li>• site preparation and debris removal,</li><li>• chemicals and nutrients required to reestablish crop,</li><li>• seedlings or cuttings for replanting,</li><li>• replacement, rehabilitation, and pruning, and</li><li>• labor required for replanting.</li></ul> Ineligible expenses: <ul style="list-style-type: none"><li>• fencing,</li><li>• irrigation,</li><li>• protecting crops from wildlife,</li><li>• general improvements, and</li><li>• reestablishing structures or windscreens.</li></ul>

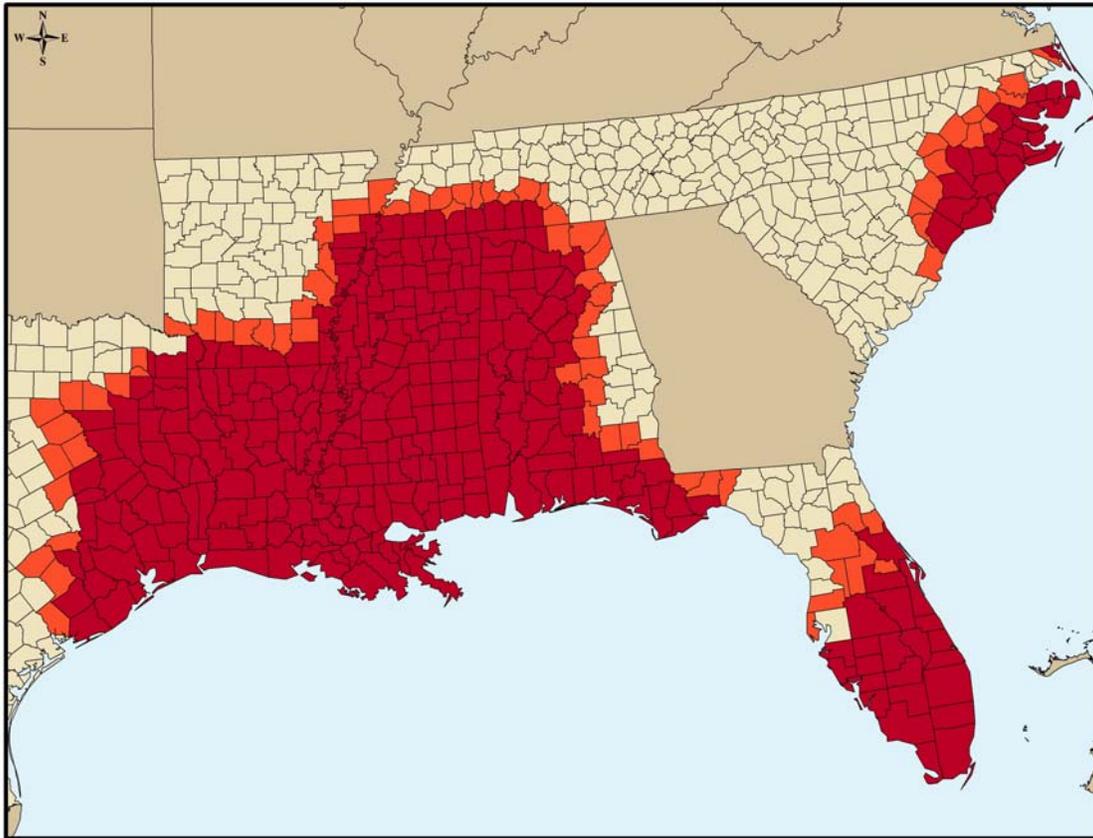
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*Source: Tree Assistance Program 1-TAP (Revision 2)*

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### 2.1.1 Eligibility for 2005 TAP

All or parts of nine states are eligible for benefits under TAP: Alabama, Arkansas, Florida, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Texas. Eligible counties are those that were declared by the President or designated by the Secretary as disaster areas as well as counties contiguous to those counties (Figure 2-1). Appendix A contains lists of eligible counties in each state.



**Figure 2-1. Counties Eligible for benefits under TAP**

Losses of trees (including fruit and nut trees, Christmas trees, ornamental trees, nursery trees, and potted trees), field grownbushes (including shrubs) and vine crops which were planted for commercial purposes are eligible for the 2005 TAP. At least 15% of a stand, defined as contiguous acreage of the same crop, must have been lost in order to qualify for TAP. Timber and short rotation woody crops are not eligible for TAP benefits nor are crops which would have normally been replanted during the 12-month period following the disaster. The 2005 TAP allows for the types of trees, bushes and vines replanted to be different than those lost and for crops to be planted in fields other than where losses occurred.

2005 TAP funding is available to producers who owned eligible trees, bushes, or vines at the time of the loss and when 2005 TAP benefits are applied for. It is not necessary for producers to own or to have owned the land on which these crops were grown. To qualify for TAP funding producers must have implemented conservation plans which ensure compliance with highly

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erodible land conservation (HELC) and wetland conservation (WC). Conservation plans describe measures taken by the producer to improve soil conditions and reduce soil erosion on highly erodible lands and to certify that they have not produced crops on wetlands converted to farmland after 1985 and have not converted a wetland to agricultural production after 1990.

Qualified producers of eligible crops may apply for reimbursement of expenses related to:

- site preparation and debris removal;
- chemicals and nutrients required to reestablish crop;
- seedlings or cuttings for replanting;
- replacement, rehabilitation, and pruning; and
- labor required for replanting.

Site preparation includes clean up, tree and debris removal, filling and leveling ground, and tilling. These activities could employ controlled burning and the use of heavy equipment including front-end loader, tractor, backhoe, stump grinder, skidder, and bucket truck. Expenses associated with fencing, irrigation, protecting crops from wildlife, general improvements, and reestablishing structures or windscreens are not eligible for funding under the 2005 TAP. TAP reimburses qualified producers for the lesser of 75% of qualified costs or the amount calculated using rates established by the Deputy Administrator. Producers who receive TAP funds cannot receive benefits from any other Federal program for the same loss.

### **2.1.2 Approach to Analysis**

The range of farming practices, environmental resources, economic conditions and activities permitted by the 2005 TAP require that certain assumptions be made in order to accurately assess the impacts of the program. The 2005 TAP covers a large geographic area including all of the Gulf Coast and much of the mid-Atlantic region. Within this area numerous tree, bush and vine crops are produced using various farming practices. Weather conditions, soil types, water resources, natural ecosystems, and economies vary widely over this large area.

This analysis evaluates the impacts of replanting the most common crops that are qualified for funding under the 2005 TAP. Table 2.1-2 lists the most common crops in each state. The 2005 TAP allows crops to be planted in fields other than where losses occurred. The Natural Resources Conservation Service (NRCS) defines field as “a part of a farm that is separated from the balance of the farm by permanent boundaries.” The analysis assumes that replanting would occur in TAP qualified counties in the same state, but not necessarily in the same stand (contiguous acres of the same crop), as where losses occurred.

Because TAP is a voluntary program, it is not known how funding will be distributed over the area or how many acres in each state will be enrolled. Funding for the 2005 TAP is unlimited and there are no caps on the acreages that can be enrolled by an individual producer or the benefit a producer can receive.

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**Table 2.1-2. Most Common Crops Eligible for 2005 TAP**

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<u>State</u>	<u>TAP Eligible Crops</u>	<u>Total Acres Planted</u>
<b>Alabama</b>	Pecans	22,266
	Peaches	4,042
	Cut Christmas Trees	1,020
<b>Arkansas</b>	Pecans	10,704
	Peaches	1,708
	Grapes	1,139
<b>Florida</b>	Oranges, all*	719,674
	Grapefruit	67,866
	Tangerines	19,696
<b>Louisiana</b>	Pecans	13,026
	Citrus fruit, all	1,397
	Cut Christmas Trees	1,387
<b>Mississippi</b>	Pecans	12,871
	Cut Christmas Trees	2,380
	Peaches	656
<b>North Carolina</b>	Cut Christmas Trees	30,694
	Apples	8,543
	Blueberries	5,009
<b>South Carolina</b>	Peaches	15,069
	Pecans	5,490
	Apples	2,880
<b>Tennessee</b>	Cut Christmas Trees	2,108
	Apples	1,627
	Peaches	734
<b>Texas</b>	Pecans	180,719
	Grapefruit	19,840
	Oranges, all	9,740

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\*Oranges, all is combined total acres of Valencia and other oranges

Source: *Census of Agriculture – 2002, National Agricultural Statistics Service*

[http://www.nass.usda.gov/Statistics\\_by\\_State/](http://www.nass.usda.gov/Statistics_by_State/)

Estimates of damaged acres that could be enrolled in the 2005 TAP and the potential cost associated with the program for each of the 2005 TAP states are shown in Table 2.1-3. These estimates were derived from the number of orchard acres in each state, enrollment in other USDA programs, an estimate of the severity of the damage, and estimated costs of practices that may be reimbursed under the 2005 TAP.

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**Table 2.1-3. Estimated Damage and Cost per TAP State**

<b>State</b>	<b>Estimated Damage (acres)</b>	<b>Estimated Cost(\$)</b>
Alabama	100	4,262
Alabama	3,533	678,010
Florida	17,337	3,497,631
Georgia	100	4,262
Louisiana	776	85,987
Mississippi	4,430	993,634
North Carolina	100	15,981
South Carolina	100	4,262
Tennessee	100	4,262
Texas	3,077	225,285
<b>TOTAL</b>	<b>29,352</b>	<b>5,513,574</b>

*Source: Cost Benefit Analysis: Tree Assistance Program, December 2006*

## **2.2 NO ACTION ALTERNATIVE**

Under the No Action Alternative, the 2005 TAP would not be implemented. Producers who experienced losses that would have qualified for reimbursement of expenses through the 2005 TAP would not receive financial assistance for reestablishing lost crops. This alternative does not satisfy the purpose and need of the proposed action and is carried forward to serve as a baseline against which the impacts of the proposed action can be measured.

In order to make the most accurate assessment of the impacts of the proposed action as is possible, this analysis assumes that it is unlikely that producers would not replant their lands in some agricultural commodity. In the absence of financial assistance from the 2005 TAP, it is assumed that producers would replant lands in either the same commodity that was lost (assumed to be one of the most common tree, bush or vine crops as defined in Table 2-2) or one of the most commonly grown row crops in the state. Table 2.2-1 shows the three most common row crops in each state in terms of harvested acres.

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**Table 2.2-1. Most Commonly Planted Row Crops in the 2005 TAP States**

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<u>State</u>	<u>Crop</u>	<u>Harvested Acres</u>
<b>Alabama</b>	Hay	730,000
	Cotton	545,000
	Peanuts	223,000
<b>Arkansas</b>	Soybeans	3,000,000
	Rice	1,635,000
	Hay	1,310,000
<b>Florida</b>	Sugarcane	401,000
	Hay	290,000
	Peanuts	152,000
<b>Louisiana</b>	Soybeans	850,000
	Cotton	600,000
	Rice	525,000
<b>North Carolina</b>	Soybeans	1,590,000
	Cotton	1,200,000
	Hay	730,000
<b>Mississippi</b>	Soybeans	1,460,000
	Cotton	810,000
	Corn (grain)	700,000
<b>South Carolina</b>	Soybeans	420,000
	Hay	290,000
	Corn (grain)	285,000
<b>Tennessee</b>	Hay	1,885,000
	Soybeans	1,100,000
	Corn (grain)	635,000
<b>Texas</b>	Cotton	5,500,000
	Hay	5,050,000
	Wheat	3,000,000

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*Source: State Agricultural Overview – 2005, National Agricultural Statistics Service*  
[http://www.nass.usda.gov/Statistics\\_by\\_State/](http://www.nass.usda.gov/Statistics_by_State/)

### **2.3 RESOURCES ELIMINATED FROM ANALYSIS**

CEQ regulations (40 CFR §1501.7) state that the lead agency shall identify and eliminate from detailed study the issues which are not important or which have been covered by prior environmental review, narrowing the discussion of these issues in the document to a brief presentation of why they would not have a dramatic effect on the human or natural environment.

In this analysis, land use and noise are resource areas not examined in detail. No changes to land use or activities that differ from those currently occur on potentially affected lands would occur if the proposed action were implemented. Noise generated from equipment used in land preparation activities could be somewhat different from normal planting and harvesting. These activities are expected to be short in duration and thus, temporary.

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## **3.0 EXISTING ENVIRONMENT**

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### **3.1 BIOLOGICAL RESOURCES**

#### **3.1.1 Description**

Biological Resources include plant and animal species and the habitats in which they occur. For this analysis, biological resources are divided in the following categories: vegetation; wildlife; and protected species including threatened and endangered species and their designated critical habitat. Vegetation and wildlife refer to the plant and animal species, both native and introduced which characterize a region. This section does not address invasive species or noxious weeds since these are controlled under the required conservation plan provided by the producer. Threatened and endangered species refer to those species that are protected by the Endangered Species Act (ESA). Critical habitat is designated by the US Fish and Wildlife Service (USFWS) as essential for the recovery of threatened and endangered species, and like those species, is protected under ESA.

#### **3.1.2 Affected Environment**

##### **3.1.2.1 *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 four domains in the United States which are large scale areas of similar climates. 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. Provinces are divided into sections based on geology and soils. Each ecoregion has wildlife common to that environment and the habitat. Table 3.1-1 provides the ecoregions found within the TAP eligible counties and Table 3.1-2 provides the vegetation and wildlife commonly associated with each ecological province.

##### **3.1.2.2 *Threatened and Endangered Species and Critical Habitat***

Each state covered in this EA has several species protected under ESA. Appendix B contains tables organized by State of those federally threatened or endangered plants and animals known to occur within the TAP counties, the status of the species, and the habitat where these species are found. In addition, Appendix B contains a table listing those counties where critical habitat has been designated for a protected species. A summary discussion for each state is presented here, for additional information on these species refer to Appendix B.

#### **Alabama**

There are 103 federally threatened or endangered plants and animals known to occur in the TAP counties in Alabama: 5 mammals, 5 birds, 14 fish, 7 reptiles, 2 amphibians, 50 invertebrates, and 20 plants. Table B-1 in Appendix B lists the species that could occur, and a description of their habitats, in each of the TAP counties. There are 16 listed species with critical habitat designations. Table B-10 in Appendix B shows those counties in which designated critical habitat for threatened and endangered species may occur. Consultation with USFWS is recommended in these counties to ensure that activities that may take place in critical habitat do not adversely affect it.

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**Table 3.1-1. Ecoregions in TAP Eligible Counties**

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<u>State</u>	<u>Provinces</u>
<b>Alabama</b>	Eastern Broadleaf (Continental)
	Eastern Broadleaf (Oceanic)
	Southern Mixed Forest
	Outer Coastal Plain Mixed Forest
<b>Arkansas</b>	Southern Mixed Forest
	Lower Mississippi Riverine Forest
<b>Florida</b>	Outer Coastal Plain Mixed Forest
	Everglades
<b>Louisiana</b>	Outer Coastal Plain Mixed Forest
	Southern Mixed Forest
	Lower Mississippi Riverine Forest
<b>Mississippi</b>	Outer Coastal Plain Mixed Forest
	Lower Mississippi Riverine Forest
	Southern Mixed Forest
<b>North Carolina</b>	Outer Coastal Plain Mixed Forest
<b>South Carolina</b>	Outer Coastal Plain Mixed Forest
<b>Tennessee</b>	Southern Mixed Forest
	Eastern Broadleaf (Continental)
<b>Texas</b>	Outer Coastal Plain Mixed Forest
	Southern Mixed Forest
	Prairie Parkland (Subtropical)

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*Source: Bailey 1995*

**Table 3.1-2. Ecoregions and Associated Vegetation and Wildlife**

<u>Province</u>	<u>Vegetation</u>	<u>Wildlife</u>
<b>Eastern Broadleaf (Continental)</b>	<p>Dominated by broadleaf deciduous trees of the draught tolerate oak-hickory association.</p> <p>The understory is well developed with flowering dogwood, sassafras, and hophornbeam.</p> <p>Wetter areas contain American elm, tuliptree and sweetgum.</p>	<p>Mammals include gray squirrel, fox squirrel, chipmunks, small rodents, white-tail deer, cottontail rabbits, raccoon, and fox.</p> <p>Birds include wild turkey, bobwhite, mourning dove, warblers, cardinal, summer tanager, Carolina wren, and blue jay.</p> <p>Reptiles include box turtle, red-ear slider, timber rattlesnake, garter snake, and worm snake.</p>
<b>Eastern Broadleaf (Oceanic)</b>	<p>This forest is deciduous and can be divided further into three major associations:</p> <p>(1) mixed mesophytic which includes American beech, tuliptree, several basswoods, sugar maple, sweet buckeye, red oak, white oak, and eastern hemlock</p> <p>(2) Appalachian oak association which includes white oak and northern red oak</p> <p>(3) pine-oak forest which is frequently exposed to naturally occurring fires and contains Atlantic white-cedar swamps sites.</p>	<p>Mammals include gray squirrel, fox squirrel, chipmunks, small rodents, white-tail deer, cottontail rabbits, raccoon, and fox.</p> <p>Birds include wild turkey, bobwhite, mourning dove, warblers, cardinal, summer tanager, Carolina wren, and blue jay.</p> <p>Reptiles include box turtle, common garter snake, and timber rattlesnake</p>
<b>Everglades</b>	<p>Tropical moist hardwood and cypress forests cover approximately one-fifth of the region. Mangrove is widespread along the eastern and southern coasts with much of the area an open marsh covered by grasses, reeds, sedges, and other aquatic herbaceous plants.</p> <p>The open marsh areas also contain hammocks with low to medium-tall broadleaf evergreen trees and shrubs.</p>	<p>Mammals include whitetail deer, Florida panther, black bear, raccoon, bobcat, various bats, marsh and swamp rabbits, and fox squirrel. Manatees inhabit estuaries and interlacing channels.</p> <p>Birds include woodstork, ibis, Everglades kite, barred owl, great white heron, brown pelican, osprey, roseate spoonbill, southern bald eagle, gray kingbird, blue-gray tanager, swallow-tailed kite, Caspian tern, stilt sandpiper, magnificent frigatebird, brown noddy, white-crowned pigeon, and short-tailed hawk.</p> <p>Reptiles include yellow-headed gecko, indigo-Pacific gecko, reef gecko, crested anole, bark anole, and brown anole.</p>

**T-able 3.1-2. Ecoregions and Associated Vegetation and Wildlife (cont'd.)**

<b><u>Province</u></b>	<b><u>Vegetation</u></b>	<b><u>Wildlife</u></b>
<b>Lower Mississippi Riverine Forest</b>	Largely cultivated but was once dominated by bottomland deciduous forests with an abundance of green and Carolina ash, elm, cottonwood, sugarberry, sweetgum, and water tupelo, as well as oak and bald cypress. Now, pecan, American elm, and roughleaf dogwood are the common forest trees. Vines are ubiquitous subcanopy species, especially along water courses.	Mammals include whitetail deer, cottontail rabbits, raccoon and fox. Birds include Louisiana waterthrush, yellow-billed cuckoo, prothonotary warbler, wood duck, wild turkey, bobwhite, mourning dove, warblers, cardinal, summer tanager, Carolina wren and blue jay. Reptiles include American alligator, box turtle, cottonmouth moccasin, copperhead, rough green snake, and rat snake.
<b>Outer Coastal Plain Mixed Forest</b>	Canopy species include evergreens, oaks and members of the laurel and magnolia families. The lower stratum includes tree ferns and small palms. Spanish "moss" is abundantly distributed in the trees. Along the coastal region, marshes and interior swamps are dominated by gum and cypress with an understory of grasses and sedges.	Mammals include whitetail deer, Florida panther, raccoons, flying squirrels, and numerous small rodents. Birds include bobwhite, wild turkey, migratory waterfowl, and numerous wintering birds. Reptiles include American alligator, box turtle, cottonmouth moccasin, copperhead, rough green snake, rat snake.
<b>Prairie Parkland (Subtropical)</b>	Part of the grassland-forest transition of the United States and supports prairies and savannas dominated by various short and medium-to-tall grasses such as big and little bluestems, indiagrass, and sunflower. Forest species include post, live, and blackjack oaks, and pignut and mockernut hickories.	Mammals include white-tailed deer, black bear, bobcat, gray fox, raccoon, cottontail rabbit, gray and fox squirrels, eastern chipmunk and numerous small rodents. Birds include the red-eyed vireo, cardinal, tufted titmouse, wood thrush, summer tanager, blue-gray gnatcatcher, hooded warbler, Carolina wren, wild turkey, bobwhite, and mourning dove. Reptiles include the box turtle, common garter snake and timber rattlesnake.

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**Table 3.1-2. Ecoregions and Associated Vegetation and Wildlife (cont'd.)**

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<u>Province</u>	<u>Vegetation</u>	<u>Wildlife</u>
<b>Southern Mixed Forest</b>	These forests are 50 percent loblolly pine and shortleaf pine and a mixture of broadleaf deciduous associates that include hickory, oak, sweetgum, red maple, and winged elm. Common subcanopy species include dogwood, blueberry, American beautyberry and numerous woody vines.	Mammals include whitetail deer, cottontail rabbits, raccoon and fox. Birds include wild turkey, bobwhite, mourning dove, warblers, cardinal, summer tanager, Carolina wren and blue jay. Reptiles include American alligator, box turtle, cottonmouth moccasin, copperhead, rough green snake, rat snakes.

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*Source: Bailey 1995, USFS 2007*

### **Arkansas**

There are 11 federally threatened or endangered plants and animals known to occur in the TAP counties in Arkansas: 3 birds, 2 fish, 5 invertebrates, and 1 plant. Four of the invertebrates are freshwater mollusks. Table B-2 in Appendix B lists the species that could occur, and a description of their habitats, in each of the TAP counties. No critical habitat for threatened or endangered species exists within the TAP counties of Arkansas.

### **Florida**

There are 101 federally threatened or endangered plants and animals known to occur in the TAP counties in Florida: 15 mammals, 10 birds, 4 fish, 11 reptiles, 1 amphibian, 9 invertebrates, and 51 plants. Table B-3 in Appendix B lists the species that could occur, and a description of their habitats, in each of the TAP counties. There are 10 listed species with critical habitat designations. Table B-10 in Appendix B shows those counties in which designated critical habitat for threatened and endangered species may occur. Consultation with USFWS is recommended in these counties to ensure that activities that may take place in critical habitat do not adversely affect it.

### **Louisiana**

There are 18 federally threatened or endangered plants and animals known to occur in the TAP counties in Louisiana: 1 mammal, 5 birds, 2 fish, 3 reptiles, 1 amphibian, 3 invertebrates, and 3 plants. Table B-4 in Appendix B lists the species that could occur, and a description of their habitats, in each of the TAP counties. No critical habitat for threatened or endangered species exists within the TAP counties of Louisiana.

### **Mississippi**

There are 31 federally threatened or endangered plants and animals known to occur in the TAP counties in Mississippi: 2 mammals, 5 birds, 4 fish, 6 reptiles, 1 amphibian, 9 invertebrates, and 4 plants. Table B-5 in Appendix B lists the species that could occur, and a description of their

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habitats, in each of the TAP counties. No critical habitat for threatened or endangered species exists within the TAP counties of Mississippi.

### **North Carolina**

There are 26 federally threatened or endangered plants and animals known to occur in the TAP counties in Florida: 2 mammals, 5 birds, 3 fish, 5 reptiles, 3 invertebrates, and 8 plants. Table B-6 in Appendix B lists the species that could occur, and a description of their habitats, in each of the TAP counties. There are 2 listed species with critical habitat designations. Table B-10 in Appendix B shows those counties in which designated critical habitat for threatened and endangered species may occur. Consultation with USFWS is recommended in these counties to ensure that activities that may take place in critical habitat do not adversely affect it.

### **South Carolina**

There are 9 federally threatened or endangered plants and animals known to occur in the TAP counties in Florida: 4 birds, 1 fish, 1 reptile, and 3 plants. Table B-7 in Appendix B lists the species that could occur, and a description of their habitats, in each of the TAP counties. There is 1 listed species with critical habitat designation. Table B-10 in Appendix B shows those counties in which designated critical habitat for threatened and endangered species may occur. Consultation with USFWS is recommended in these counties to ensure that activities that may take place in critical habitat do not adversely affect it.

### **Tennessee**

There are 33 federally threatened or endangered plants and animals known to occur in the TAP counties in Florida: 2 mammals, 3 birds, 4 fish, 20 invertebrates, and 4 plants. Table B-8 in Appendix B lists the species that could occur, and a description of their habitats, in each of the TAP counties. There is 4 listed species with critical habitat designation. Table B-10 in Appendix B shows those counties in which designated critical habitat for threatened and endangered species may occur. Consultation with USFWS is recommended in these counties to ensure that activities that may take place in critical habitat do not adversely affect it.

### **Texas**

There are 26 federally threatened or endangered plants and animals known to occur in the TAP counties in Florida: 4 mammals, 9 birds, 5 reptiles, 1 invertebrate, and 6 plants. Table B-9 in Appendix B lists the species that could occur, and a description of their habitats, in each of the TAP counties. There is 3 listed species with critical habitat designation. Table B-10 in Appendix B shows those counties in which designated critical habitat for threatened and endangered species may occur. Consultation with USFWS is recommended in these counties to ensure that activities that may take place in critical habitat do not adversely affect it.

## **3.2 CULTURAL RESOURCES**

### **3.2.1 Description**

Cultural resources consist of prehistoric and historic sites, structures, districts, artifacts, or any other physical evidence of human activities considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. Cultural resources can be divided into three major categories: archaeological resources (prehistoric and historic), architectural resources, and traditional cultural properties. Archaeological resources are locations and objects from past human activities. Architectural resources are those standing structures that are usually over 50 years of age and are of significant historic or aesthetic importance to be

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considered for inclusion in the National Register of Historic Places (National Register). Traditional cultural resources hold importance or significance to Native Americans or other ethnic groups in the persistence of traditional culture.

The significance of such resources relative to the American Indian Religious Freedom Act, the Archaeological Resources Protection Act, Native America Graves Protection and Repatriation Act, EO 13007, and/or eligibility for inclusion in the National Register is considered a part of the NEPA process. The regulations and procedures in 36 CFR 800, which implements Section 106 of the National Historic Preservation Act, requires Federal agencies to consider the effects on properties listed in or eligible for inclusion in the National Register. Prior to approval of the proposed action, Section 106 requires that the Advisory Council on Historic Preservation (ACHP) be afforded the opportunity to comment.

### **3.2.2 Affected Environment**

State Historic Preservation Offices (SHPO) act on behalf of the ACHP within individual states and U.S. territories to provide consultation and guidance, as well as to review project documents, in order to ensure that federal agencies are in compliance with 36 CFR 800. Table 3.2-1 lists the SHPO for each of the states within the proposed 2005 TAP program area..

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**Table 3.2-1. State Historic Preservation Offices**

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<u>State</u>	<u>State Historic Preservation Office</u>
Alabama	Alabama Historical Commission
Arkansas	Department of Arkansas Heritage
Florida	Division of Historical Resources, Florida Department of State
Louisiana	Louisiana Department of Culture, Recreation & Tourism
Mississippi	Mississippi Department of Archives & History
North Carolina	North Carolina Division of Archives & History
South Carolina	South Carolina Department of Archives & History
Tennessee	Tennessee Department of Environment and Conservation
Texas	Texas Historical Commission

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#### **3.2.2.1 Archaeological Resources**

Archaeological resources are widespread across the southeastern United States and occur in a variety of environments, including rural, agricultural areas. Several thousand prehistoric and historic archaeological sites have been previously recorded in the proposed 2005 TAP program eligible counties in the states of Alabama, Arkansas, Florida, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Texas. As such, all 2005 TAP program areas may be considered likely to contain archaeological resources.

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### **3.2.2.2 *Historic Architectural Resources***

Historic architectural resources in rural agricultural areas may include plantation houses, farm houses, barns, silos, and granaries on farm properties, as well as buildings and structures in surrounding communities. The latter may include churches, school houses, post offices, and courthouses, among other resources. Surrounding historic structures may also include bridges, water towers, and transportation networks, such as railroads.

Several thousand historic architectural resources have been previously recorded in the proposed 2005 TAP program eligible counties in the states of Alabama, Arkansas, Florida, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Texas. As such, all 2005 TAP program areas may be considered likely to contain historic architectural resources.

### **3.2.2.3 *Traditional Cultural Properties***

A traditional cultural property is defined as a property that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community. Traditional cultural properties may be difficult to recognize and may include a location of a traditional ceremonial location, a mountaintop, a lake, or a stretch of river, or culturally important neighborhood (U.S. Department of the Interior 1998). It is possible that traditional cultural properties are located in the proposed TAP 2005 program area.

## **3.3 WATER RESOURCES**

The Clean Water Act, the Safe Drinking Water Act, the Water Quality Act, and the Coastal Zone Management Act (CZMA) 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, floodplains, and coastal zone management.

### **3.3.1 Definition of Resource**

Surface water includes streams and rivers, lakes, and reservoirs. Impaired waters are defined by the Environmental Protection Agency (EPA) as those surface waters with levels of pollutants that exceed State water quality standards (EPA 2006a). Every two years, States must publish lists, called the 303(d) lists, of those rivers, streams, and lakes that do not meet their designated uses because of excess pollutants. Total maximum daily loads (TMDL) of pollutants must be established and approved by EPA for impaired streams (EPA 2006a).

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 EPA, which requires EPA review of any proposed projects within the designated areas that are receiving Federal financial assistance (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.

The CZMA of 1972 encourages States to preserve, protect, develop, and, where possible, restore or enhance valuable natural coastal resources such as wetlands, floodplains, estuaries, beaches, dunes, barrier islands, and coral reefs, as well as the fish and wildlife supported by those habitats.

### 3.3.2 Existing Environment

#### 3.3.2.1 Surface Water

There are numerous surface waters and associated watersheds in the TAP eligible counties. Each of these states prepares a Section 305(b) report every two years assessing the quality of their waters. Those waters not meeting their intended uses are included on the Section 303(d) list of impaired waters. States prepare TMDLs for those waters included on the impaired list to define how the state plans to attain water quality standards. County governments must adhere to TMDLs developed for impaired waters. A summary of water quality data for each state is provided in Table 3.3-1.

**Table 3.3-1. Overall Water Quality within TAP States**

<u>State</u>	<u>Percent of Assessed Waters Designated as Impaired</u>			
	<u>Rivers, Streams, and Creeks</u>	<u>Lakes, Ponds, and Reservoirs</u>	<u>Bays and Estuaries</u>	<u>Wetlands</u>
<b>Alabama<sup>1</sup></b>	n/a	n/a	n/a	n/a
<b>Arkansas</b>	15.33	-- <sup>2</sup>	--	--
<b>Florida</b>	0.00	0.00	0.00	--
<b>Louisiana</b>	82.75	93.94	49.85	42.56
<b>Mississippi</b>	69.13	--	--	--
<b>North Carolina<sup>1</sup></b>	n/a	n/a	n/a	n/a
<b>South Carolina</b>	52.26	16.59	22.47	--
<b>Tennessee</b>	30.10	21.46	--	--
<b>Texas</b>	19.72	29.83	13.05	--

<sup>1</sup> Electronic water quality data were not available for Alabama and North Carolina.

<sup>2</sup> Data were not reported.

Source: EPA 2006c

Chemical inputs for agriculture such as herbicides, fungicides, pesticides, and insecticides disperse through ground cover and can eventually reach local water resources and ground water. These chemicals can be toxic to the environment in high concentrations and are therefore regulated by the EPA. The primary chemicals used on the most commonly grown TAP crops and

row crops for each state and information for their specific regulation are provided in Tables C-1 and C-2 in Appendix C.

### 3.3.2.2 Ground Water

There are many aquifers and groundwater sources in the proposed TAP project area. Those areas that rely on sole source aquifers must coordinate their activities with the appropriate region of the EPA. Sole source aquifers have been designated in Florida, Louisiana, and Mississippi and are provided in Table 3.3-2.

**Table 3.3-2. Sole Source Aquifers**

<u>State</u>	<u>EPA Region</u>	<u>Sole Source Aquifer</u>
<b>Florida</b>	4	Volusia-Floridan Aquifer
	4	Biscayne Aquifer
<b>Louisiana</b>	4/6	Southern Hills Regional Aquifer System
	6	Chicot Aquifer System
<b>Mississippi</b>	4/6	Southern Hills Regional Aquifer System

*Source: EPA 2006d,e*

### 3.3.2.3 Wetlands

Wetlands in the TAP project area can broadly be categorized into those dominated by herbaceous plants and those dominated by woody trees and shrubs. There are over 48 million acres of wetlands within the TAP project area (Table 3.3-3).

**Table 3.3-3. Wetland Acreages within TAP Project Area**

<u>State</u>	<u>Emergent Herbaceous (acres)</u>	<u>Woody (acres)</u>	<u>Total</u>
<b>Alabama</b>	94,205	1,641,723	1,735,929
<b>Arkansas</b>	18,437	1,151,170	1,169,607
<b>Florida</b>	1,617,656	5,038,972	6,656,628
<b>Louisiana</b>	2,237,121	4,641,401	6,878,522
<b>Mississippi</b>	21,074,345	2,929,093	24,003,438
<b>North Carolina</b>	1,499,986	1,727,035	3,227,021
<b>South Carolina</b>	44,746	420,436	465,182
<b>Tennessee</b>	18,315	238,009	256,325
<b>Texas</b>	530,008	3,386,630	3,916,638
<b>Total</b>			<b>48,309,290</b>

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### 3.3.2.4 Floodplains

In accordance with EO 11988, Federal agencies must review FEMA flood insurance rate maps (FIRMs) or other available floodplain maps to determine whether a proposed action is located in or will impact 100-year floodplains. FIRMs are generally developed for developed communities and densely populated areas with flood potential and are not typically available for agricultural areas. The FIRM database is community based, since TAP is voluntary, it is not possible to search the database for specific floodplain maps of areas where TAP would be implemented. For those areas where FIRMs do not exist, additional floodplain studies and maps of the eligible counties in the project area may be available at the State's department of natural resources and town planning offices.

### 3.3.2.5 Coastal Zone Management

The CZMA requires Federal activities that are reasonably likely to affect use of lands or waters, or natural resources of the coastal zone to be consistent to the maximum extent practicable with the enforceable policies of the State's Coastal Zone Management Plan (CZMP). All of the States assessed in this EA except for Tennessee and Arkansas have coastal zone programs. The state agency responsible for the coastal zone program is provided in Table 3.3-4. TAP eligible counties within the designated coastal zone are shown in blue on Figure 3.3-1.

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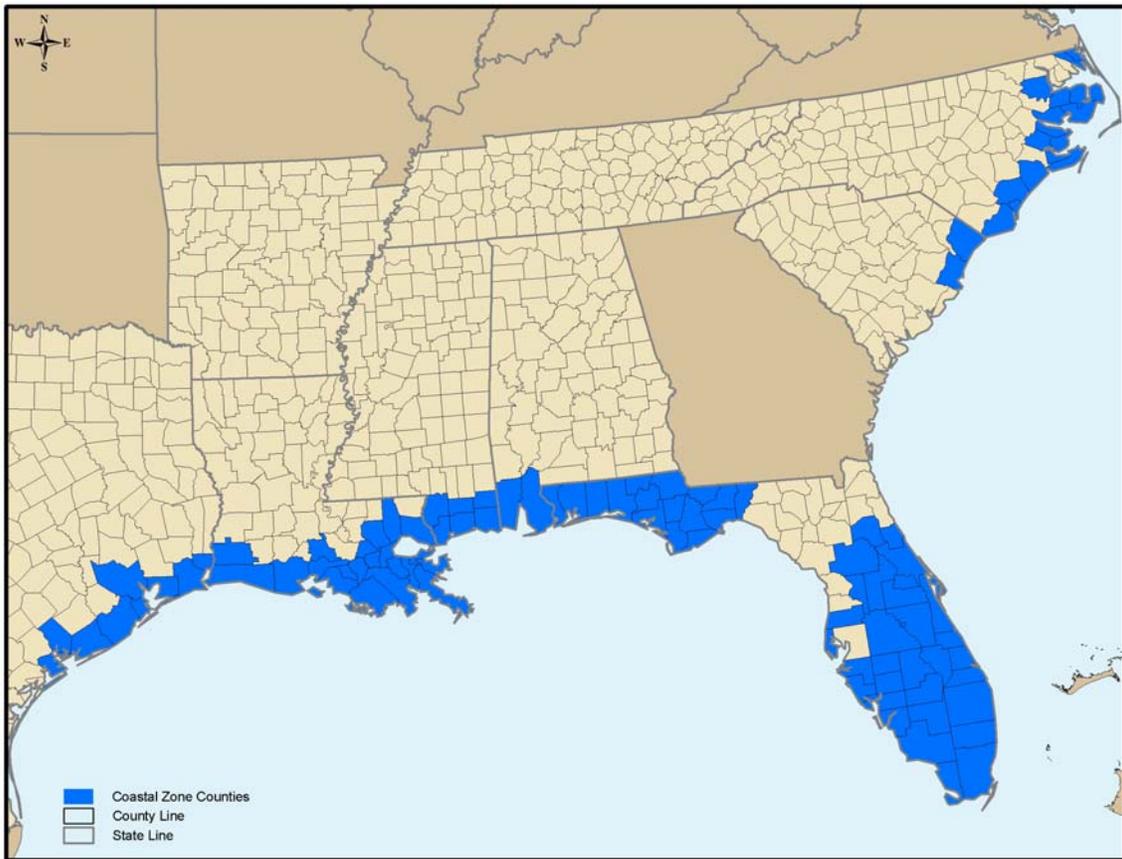
**Table 3.3-4. Coastal Zone Programs**

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<u>State</u>	<u>Management Authority</u>	<u>Website</u>
<b>Alabama</b>	Alabama Department of Conservation and Natural Resources – Coastal Section	<a href="http://www.adem.state.al.us/fieldops/coastal/coastal.htm">http://www.adem.state.al.us/fieldops/coastal/coastal.htm</a>
	Alabama Department of Environmental Management – Coastal Section	
<b>Florida</b>	Florida Department of Environmental Protection	<a href="http://www.dep.state.fl.us/cmp/federal/index.htm">http://www.dep.state.fl.us/cmp/federal/index.htm</a>
<b>Louisiana</b>	Coastal Management Division of the Louisiana Department of Natural Resources	<a href="http://dnr.louisiana.gov/crm/coastmgt/coastmgt.asp">http://dnr.louisiana.gov/crm/coastmgt/coastmgt.asp</a>
<b>Mississippi</b>	Department of Marine Resources	<a href="http://www.dmr.state.ms.us/">http://www.dmr.state.ms.us/</a>
<b>North Carolina</b>	North Carolina Department of Environment and Natural Resources Division of Coastal Management	<a href="http://dcm2.enr.state.nc.us/">http://dcm2.enr.state.nc.us/</a>
<b>South Carolina</b>	South Carolina Department of Health and Environmental Control – Ocean and Coastal Resource Management	<a href="http://www.scdhec.net/environment/ocrm/">http://www.scdhec.net/environment/ocrm/</a>
<b>Texas</b>	Coastal Coordination Council – Texas Coastal Management Program	<a href="http://www.glo.state.tx.us/coastal/cmp.html">http://www.glo.state.tx.us/coastal/cmp.html</a>

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**Figure 3.3-1. TAP Eligible Counties in Designated Coastal Zone**



### **3.4 SOIL RESOURCES**

#### **3.4.1 Description**

For this analysis, soil resources are defined according to Bailey’s Description of the Ecoregions of the United States (1995).

#### **3.4.2 Affected Environment**

Soils are differentiated based on characteristics such as particle size, texture and color, and classified using a systematic categorization based on those distinguishing characteristics. Classification also includes criteria that dictate choices in use. At the highest level, soil taxonomy places soils in one of 12 categories known as orders. Table 3.4-1 provides the soil orders associated with the ecoregions found within the TAP eligible counties and Table 3.4-2 provides a description of those soil orders.

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**Table 3.4-1 Soil Orders within Ecoregions of TAP States.**

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<u>State</u>	<u>Ecoregion</u>	<u>Soil Orders</u>
<b>Alabama</b>	Eastern Broadleaf Forest (Continental)	Alfisols, Mollisols, Ultisols
	Eastern Broadleaf Forest (Oceanic)	Alfisols, Ultisols
	Southern Mixed Forest	Ultisols, Inceptisols, Vertisols
	Outer Coastal Plain Mixed Forest	Entisols, Spodosols, Ultisols
<b>Arkansas</b>	Southern Mixed Forest	Ultisols, Inceptisols, Vertisols
	Lower Mississippi Riverine Forest	Alfisols, Inceptisols, Mollisols
<b>Florida</b>	Outer Coastal Plain Mixed Forest	Entisols, Spodosols, Ultisols
	Everglades	Histosols, Inceptisols
<b>Louisiana</b>	Outer Coastal Plain Mixed Forest	Entisols, Spodosols, Ultisols
	Southern Mixed Forest	Ultisols, Inceptisols, Vertisols
	Lower Mississippi Riverine Forest	Alfisols, Inceptisols, Mollisols
<b>Mississippi</b>	Outer Coastal Plain Mixed Forest	Entisols, Spodosols, Ultisols
	Southern Mixed Forest	Ultisols, Inceptisols, Vertisols
	Lower Mississippi Riverine Forest	Alfisols, Inceptisols, Mollisols
<b>North Carolina</b>	Outer Coastal Plain Mixed Forest	Entisols, Spodosols, Ultisols
<b>South Carolina</b>	Outer Coastal Plain Mixed Forest	Entisols, Spodosols, Ultisols
<b>Tennessee</b>	Southern Mixed Forest	Ultisols, Inceptisols, Vertisols
	Eastern Broadleaf Forest (Continental)	Alfisols, Mollisols, Ultisols
<b>Texas</b>	Outer Coastal Plain Mixed Forest,	Entisols, Spodosols, Ultisols
	Southern Mixed Forest	Ultisols, Inceptisols, Vertisols
	Prairie Parkland (Subtropical)	Alfisols, Mollisols, Vertisols

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Source: Bailey 1995

## **3.5 AIR QUALITY**

### **3.5.1 Definition of Resource**

The Clean Air Act (CAA) requires the maintenance of National Ambient Air Quality Standards (NAAQS). NAAQS, developed by the EPA to protect public health, establish limits for six criteria pollutants: ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), lead (Pb), and inhalable particulates (course particulate matter greater than 2.5 micrometers and less than 10 micrometers in diameter [PM<sub>10</sub>] and fine particles less than 2.5 micrometers in diameter [PM<sub>2.5</sub>]). The CAA requires states to achieve and maintain the NAAQS within their borders.

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**Table 3.4-2. Descriptions of Soil Orders within TAP States.**

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<u>Soil Order</u>	<u>Description</u>
Alfisols	Formed primarily under forest or mixed vegetative cover in semiarid to moist areas, moderately leached forest soils that have relatively high natural fertility. Soils are well developed and contain a subsurface horizon in which clays have accumulated. Found in temperate humid and subhumid regions.
Entisols	Parent material is quartz sand in which horizons do not easily form. They have a wide geographic distribution and can be found in any climate and under any vegetation but often found on floodplains, delta deposits, or steep slopes.
Histosols	High in organic matter and saturated most of the year. Found in many different environments in places where organic matter is slow to decompose and thus accumulates over time. Commonly called bogs, moors, peats, or mucks.
Inceptisols	Widely distributed, under a wide range of ecological settings. Often found on fairly steep slopes, young geomorphic surfaces, and on resistant parent materials.
Mollisols	High in dark brown to black organic rich surface layers and very fertile. Typically under grass in the drier regions. Soils are rich in calcium and others nutrients, and generally high moisture retention.
Spodosols	Commonly found in cool, moist environments under coniferous forest vegetation where pine needle litter breaks down in the presence of water to form a weak organic acid. Easily dissolved materials are leached from surface layers and layers at depth are stained with iron and aluminum oxides.
Ultisols	Clay enriched, acidic soils found in warm, rainy climates under broadleaf and evergreen vegetation. Soils are dominated by minerals such as quartz and iron oxides and have a moderately low capacity to retain additions of lime and fertilizer.
Vertisols	Dark, black soils of expanding clay minerals which swell when wet and shrink when dry. Often found in steppe and wet/dry tropical climates where the soil develops deep cracks as it dries. Soil profile is inverted with organic material found in deeper horizons.

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*Sources: University of Idaho 2007, Ritter 2006, and USDA 2007*

### **3.5.2 Existing Environment**

Each state is required by EPA to develop a State Implementation Plan (SIP) that contains strategies to achieve and maintain the national standard of air quality within the state. Areas that violate air quality standards are designated as nonattainment areas for the relevant pollutants. Areas that comply with air quality standards are designated as attainment areas for relevant pollutants. Table 3.5-1 provides a list of the TAP eligible counties that are currently in nonattainment and the pollutant for which they are in nonattainment. Air quality is typically managed at the state level Department of Environmental Quality. These divisions monitor the air quality in the region and report conditions to the public via websites, local newspapers, and news channels. Table 3.5-2 provides a list of air quality divisions for each state.

**Table 3.5-1. TAP Eligible Counties in Nonattainment**

<b><u>State</u></b>	<b><u>County</u></b>	<b><u>Pollutant</u></b>
<b>Alabama</b>	Jackson	PM <sup>2.5</sup>
	Jefferson	O <sup>3</sup>
	Shelby	O <sup>3</sup> , PM <sup>2.5</sup>
	Walker	PM <sup>2.5</sup>
<b>Arkansas</b>	Crittenden	O <sup>3</sup>
<b>Florida</b>	All in attainment	
<b>Louisiana</b>	Ascension	O <sup>3</sup>
	East Baton Rouge	O <sup>3</sup>
	Iberville	O <sup>3</sup>
	Livingston	O <sup>3</sup>
	West Baton Rouge	O <sup>3</sup>
<b>Mississippi</b>	All in attainment	
<b>North Carolina</b>	Cumberland	O <sup>3</sup>
	Franklin	O <sup>3</sup>
<b>South Carolina</b>	All in attainment	
<b>Tennessee</b>	Shelby	O <sup>3</sup>
<b>Texas</b>	Brazoria	O <sup>3</sup>
	Chambers	O <sup>3</sup>
	Ellis	O <sup>3</sup>
	Fort Bend	O <sup>3</sup>
	Galveston	O <sup>3</sup>
	Hardin	O <sup>3</sup>
	Jefferson	O <sup>3</sup>
	Kaufman	O <sup>3</sup>
	Liberty	O <sup>3</sup>
	Montgomery	O <sup>3</sup>
	Orange	O <sup>3</sup>
	Waller	O <sup>3</sup>

Source: EPA 2006

## **3.6 SOCIOECONOMICS**

### **3.6.1 Description**

For this analysis, socioeconomics includes investigations of farm and non-farm employment and income, farm production expenses and returns, and agricultural land use. The region of influence for analysis of impacts to socioeconomics includes those counties where lands eligible for enrollment in the proposed TAP are located.

**Table 3.5-2. Air Quality State Points of Contact**

<u>State</u>	<u>State Point of Contact</u>	<u>Website</u>
<b>Alabama</b>	Alabama Department of Environmental Management – Air Quality Information	<a href="http://www.adem.state.al.us/AirDivision/Ozone/AirQuality.htm">http://www.adem.state.al.us/AirDivision/Ozone/AirQuality.htm</a>
<b>Arkansas</b>	Arkansas Department of Environmental Quality - Air Division	<a href="http://www.adeq.state.ar.us/air/default.htm">http://www.adeq.state.ar.us/air/default.htm</a>
<b>Florida</b>	Florida Department of Environmental Protection – Division of Air Resource Management	<a href="http://www.floridadep.org/air/">http://www.floridadep.org/air/</a>
<b>Louisiana</b>	Louisiana Department of Environmental Quality – Air Quality Assessment Division	<a href="http://www.deq.louisiana.gov/portal/tabid/2457/Default.aspx">http://www.deq.louisiana.gov/portal/tabid/2457/Default.aspx</a>
<b>Mississippi</b>	Mississippi Department of Environmental Quality – Air Division	<a href="http://www.deq.state.ms.us/MDEQ.nsf/page/Air_Homepage?OpenDocument">http://www.deq.state.ms.us/MDEQ.nsf/page/Air_Homepage?OpenDocument</a>
<b>North Carolina</b>	North Carolina Department of Environment and Natural Resources – Division of Air Quality	<a href="http://daq.state.nc.us/">http://daq.state.nc.us/</a>
<b>South Carolina</b>	South Carolina Department of Health and Environmental Control – Air Quality	<a href="http://www.scdhec.net/environment/baq/">http://www.scdhec.net/environment/baq/</a>
<b>Tennessee</b>	Tennessee Department of Environment and Conservation – Air	<a href="http://state.tn.us/environment/air.shtml">http://state.tn.us/environment/air.shtml</a>
<b>Texas</b>	Texas Commission on Environmental Quality – Air	<a href="http://www.tceq.state.tx.us/subject/subject_air.html">http://www.tceq.state.tx.us/subject/subject_air.html</a>

### **3.6.2 Affected Environment**

The region of influence for this program required an extensive data collection and analysis of the socioeconomics of each of these States. A detailed discussion and analysis of current employment and income, farm sales, farm production expenses and returns, and agricultural land uses for each TAP eligible state is provided in Appendix D. The sections presented in this EA represent a brief overview and summary of that analysis.

#### **3.6.2.1 Employment and Income**

This section addresses the most current annual labor force (Bureau of Labor Statistics [BLS] 2006), annual unemployment rate (BLS 2006), full-time and part-time nonfarm and farm employment (Bureau of Economic Analysis [BEA] 2006a), median household income (U.S. Census Bureau [USCB] 1993, 2002), and earnings from farm and nonfarm sectors (BEA 2006b). Table 3.6-1 illustrates these metrics within the combined TAP eligible counties within each state. A detailed discussion of these figures is included in Appendix D.

**Table 3.6-1 Employment and Income within the Combined TAP Counties**

<u>State</u>	<u>Employment</u>				<u>Income</u>		
	<u>2005 Labor Force Estimate<sup>1</sup> (individuals)</u>	<u>2005 Annual Unemployment Rate<sup>1</sup> (%)</u>	<u>2004 Non-farm Employment<sup>2</sup> (individuals)</u>	<u>2004 Farm Employment<sup>2</sup> (individuals)</u>	<u>2000 Statewide Median Household Income<sup>3</sup> (\$)</u>	<u>2004 Farm Earnings<sup>2</sup> (\$000)</u>	<u>2004 Non-farm Earnings<sup>2</sup> (\$000)</u>
Alabama	1,333,585	4.05	1,479,672	33,176	34,135	922,933	57,036,707
Arkansas	121,624	6.91	126,614	6,247	32,182	353,108	4,149,864
Florida	5,739,706	3.79	6,342,373	55,355	38,819	1,340,051	247,716,450
Louisiana	2,071,486	7.15	2,426,623	34,498	32,566	687,145	90,601,325
Mississippi	1,343,287	7.89	1,438,990	50,907	31,330	1,499,332	48,296,972
North Carolina	562,668	5.17	634,014	14,089	39,184	656,991	20,886,062
South Carolina	121,671	5.53	131,956	1,551	37,082	16,227	4,100,812
Tennessee	519,740	6.71	704,485	9,434	36,360	(1,390)	33,240,176
Texas	3,388,954	5.64	3,742,888	53,863	39,927	800,287	195,431,974

<sup>1</sup>BLS 2006<sup>2</sup>BEA 2006a, BEA 2006b<sup>3</sup>USCB 2002**3.6.2.2 Farm Sales**

This section addresses the most current farms sales, change in farm sales, and sales of fruits, trees, nuts, and berries within the combined TAP eligible counties USDA National Agricultural Statistics Service [NASS] 2002). Table 3.6-2 illustrates these metrics. A detailed analysis of these figures is included in Appendix D.

**Table 3.6-2. 2002 Farm Sales within the Combined TAP Counties**

<u>State</u>	<u>Farm Sales (\$ billion)</u>	<u>Farm Sales Percent Change</u>	<u>Farm Sales: Fruits, trees, nuts, and berries (\$ million)</u>
Alabama	2.00	1.77	13.70
Arkansas	0.67	(19.38)	0.70
Florida	4.50	1.07	1,400.00
Louisiana	1.80	(15.25)	0.10
Mississippi	3.10	(10.60)	14.10
North Carolina	2.60	(11.91)	25.30
South Carolina	0.05	(37.86)	0.50
Tennessee	0.16	(16.34)	0.04
Texas	1.70	19.51	4.10

Source: USDA NASS 2002.

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**Table 3.6-2. 2002 Farm Sales within the Combined TAP Counties**

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<u>State</u>	<u>Farm Sales (\$ billion)</u>	<u>Farm Sales Percent Change</u>	<u>Farm Sales: Fruits, trees, nuts, and berries (\$ million)</u>
Alabama	2.00	1.77	13.70
Arkansas	0.67	(19.38)	0.70
Florida	4.50	1.07	1,400.00
Louisiana	1.80	(15.25)	0.10
Mississippi	3.10	(10.60)	14.10
North Carolina	2.60	(11.91)	25.30
South Carolina	0.05	(37.86)	0.50
Tennessee	0.16	(16.34)	0.04
Texas	1.70	19.51	4.10

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Source: USDA NASS 2002.

### **3.6.2.3 Farm Production and Expenses and Returns**

This section addresses the most current farm production expenses, average farm production expenses per acre and the average net cash income per farm within the combined TAP eligible counties (USDA NASS 2002). Table 3.6-3 illustrates these metrics. A detailed analysis of these figures is included in Appendix D.

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**Table 3.6-3. Farm Production Expenses and Returns within the Combined TAP Counties**

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<u>State</u>	<u>Farm Production Expenses (\$ billion)</u>	<u>Average Expenses (\$ pre acre)</u>	<u>Average Net Cash Income (\$ per farm)</u>
Alabama	1.500	218.37	16,601
Arkansas	0.006	246.31	57,799
Florida	3.300	386.73	50,421
Louisiana	1.600	206.21	14,000
Mississippi	2.800	249.53	14,865
North Carolina	2.200	654.78	46,918
South Carolina	0.056	295.68	8,477
Tennessee	0.170	113.69	2,709
Texas	1.600	152.76	5,511

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Source: USDA NASS 2002

### **3.6.2.4 Agricultural Land Use Conditions**

This section addresses the most current agricultural land use conditions within the combined TAP eligible counties (USDA NASS 2002). Table 3.6-4 illustrates these metrics. A detailed discussion of these figures is included in Appendix D, tables 1-16.

**Table 3.6-4. 2002 Agricultural Land Use Conditions within the Combined TAP Counties**

<u>State</u>	<u>Active Agricultural (acres)</u>	<u>Total Farms (acres)</u>	<u>Fruits, nuts, and trees (acres)</u>	<u>Bearing fruits, nuts, and trees (acres)</u>	<u>Berries (acres)</u>	<u>Total Christmas Trees (acres)</u>	<u>Total Christmas trees (cut)</u>
Alabama	5,023,875	5,641,588	18,255	4,398	159	343	14,296
Arkansas	2,178,597	2,270,004	715	240	(d)	(d)	(d)
Florida	6,580,583	7,301,783	2,246,067	1,906,091	742	134	410
Louisiana	7,284,437	7,830,664	36,625	12,943	707	1,387	43,742
Mississippi	10,490,277	11,097,543	32,404	10,766	1,408	2,380	39,594
North Carolina	1,979,642	2,066,187	825	552	4,161	67	6,302
South Carolina	178,509	188,311	248	157	77	7	(d)
Tennessee	1,373,638	1,422,198	45	6	31	173	(d)
Texas	10,152,059	10,485,444	19,056	11,749	725	2,162	37,898

(d) Due to privacy considerations within the 2002 Agricultural Census, the full land profile cannot be determined.

Source: USDA NASS 2002.

### 3.7 ENVIRONMENTAL JUSTICE

#### 3.7.1 Description

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 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.

#### 3.7.2 Affected Environment

Due to the extensive data collection to define the demographic profile of each state eligible for TAP, a detailed discussion and comprehensive data tables are included in Appendix D, Tables 17-34. The information provided in this EA represents a summary of that information.

This section addresses the demographic summary of the combined TAP counties (USCB 1993, 2002). Table 3.7-1 illustrates these metrics within the combined TAP eligible counties within each state. None of the combined county areas would be considered areas of concentrated minority populations. The TAP-eligible counties of Arkansas are the only combined county area that would be considered an area of concentrated low-income population.

**Table 3.7-1. 2000 Demographics Summary within the Combined TAP Counties.**

<u>State</u>	<u>Total Population</u>	<u>Percent of Population Living on Farms</u>	<u>Total Minority Population (%)</u>	<u>Minority Farm Operators (%)</u>	<u>Poverty Rate (%)</u>
Alabama	2,787,117	1.23	29.15	7.62	15.82
Arkansas	293,121	1.40	43.70	10.99	22.95
Florida	10,569,971	0.17	39.33	11.38	12.44
Louisiana	4,468,976	0.67	37.47	8.54	19.04
Mississippi	2,844,658	1.63	39.23	12.20	19.27
North Carolina	1,105,531	1.13	30.69	8.99	14.92
South Carolina	144,053	1.10	20.08	4.55	11.88
Tennessee	1,090,829	0.77	47.29	4.39	15.52
Texas	6,309,929	0.58	46.69	9.77	13.97

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## **4.0 ENVIRONMENTAL CONSEQUENCES**

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### **4.1 BIOLOGICAL RESOURCES**

Impacts to biological resources are considered significant if species or habitats of concern are adversely affected or disturbances reduce population, size, or distribution of wildlife or vegetation.

#### **4.1.1 Alternative A - Preferred**

Implementation of Alternative A would not impact the native vegetation communities in any of the TAP qualified counties or states. All proposed activities would occur in fields previously used for agricultural production where native vegetative communities have been removed.

Similarly, the proposed activities are not expected to have a large scale impact to native wildlife. It is anticipated that in most instances, TAP crops would be replanted on the same land where losses occurred. Though active agricultural fields may provide a food source to some wildlife, they do not provide for the habitat requirements of species. In cases where the fields where TAP crops are planted on fields that have not recently been cultivated and ecological succession (the natural establishment of grasses, forbs, and woody vegetation from native seed bank) has occurred, some impacts to wildlife species which have re-inhabited these areas may occur. These impacts are not expected to be widespread or major as impacted species would move into adjacent suitable habitats.

It is possible agricultural fields where TAP activities would occur could be located near locations of threatened and endangered species or designated critical habitat. Activities conducted to reestablish crops, such as site preparation, debris removal, and chemical application, could create disturbances for protected species in the immediate vicinity. When such activities occur near habitats that may support threatened and endangered species or near designated critical habitat, consultation with the U.S. Fish and Wildlife Service Field Office would be required to ensure that the potential for impacts to such resources are minimized.

#### **4.1.2 Alternative B – No Action**

Under the No Action alternative, there would be no change to the existing vegetation communities, wildlife, or threatened or endangered species within the TAP eligible area. Under this alternative, those fields that lost a crop during the hurricanes of 2005, would be replanted in the same commodity or one of the top row crops for their state. Since producers would not receive federal funding to reestablish crops on their lands, they would not be required to coordinate activities with U.S. Fish and Wildlife Service.

### **4.2 CULTURAL RESOURCES**

#### **4.2.1 Alternative A – Preferred**

It is possible that implementation of the proposed 2005 TAP program would have an adverse effect on prehistoric and/or historic archaeological resources, either known or unknown, through plowing for planting of crops or trees. However, the agricultural practices proposed for the 2005 TAP program are not expected to be ground disturbing beyond what is normally disturbed from agricultural plowing. As such, no formal archaeological surveys would be required to implement the 2005 TAP program. However, if archaeological resources are encountered during earth

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movement, the SHPO should be notified to ensure compliance with 36 CFR 800.11. All plowing activity in the area should be temporarily suspended until a qualified archeologist could determine the significance of the encountered resource(s).

The proposed 2005 TAP program area may contain locally, regionally, or nationally significant historic architectural resources; however, implementation of the program is not expected to result in change to these resources. As such, no formal historic architectural surveys would be required to implement the 2005 TAP program.

The proposed 2005 TAP program area may contain traditional cultural properties. However, implementation of the program would not result in a change to the current agricultural uses of these lands. As such, formal consultation with federally recognized tribes with traditional ties to 2005 TAP program areas would not be required to implement the program.

#### **4.2.1.1 *Alternative B – No Action***

The no action alternative would result in the same potential for impact to cultural resources as the Preferred Alternative. If federal funds are not used to conduct activities associated with reestablishing lost crops, those activities are not subject to consultation with SHPO.

### **4.3 WATER RESOURCES**

#### **4.3.1 Surface Water**

##### **4.3.1.1 *Alternative A***

Implementation of Alternative A would not significantly change the existing water quality of surface waters within the TAP states. This alternative would provide financial assistance to producers for replanting lost crops. Under this alternative, it is likely that producers would use various insecticides, pesticides, and herbicides in order to establish the new crop, however, these chemicals would not vary appreciably from what was used before the crop was lost. All agricultural chemicals would be used according to their specific EPA regulations. Site preparation following a hurricane could involve the removal of contaminated soils. These soils would be handled by licensed contractors and disposed of in licensed sanitary landfills according to local, state and Federal Clean Water Act rules, regulations, guidelines and requirements. If replanting occurs in a different field within a new watershed, there could be a slight increase in the agricultural chemical inputs to that watershed. Inversely, there would be a slight reduction in the agricultural chemical inputs to the watershed in which the crops were lost. Producers planting in those fields near a waterbody included on the impaired waters list must adhere to all EPA approved TMDLs developed by the State. Since the counties eligible for TAP benefits were previously used for agricultural purposes, it is unlikely that the reestablishment of lost crops would significantly change the water quality of these areas.

##### **4.3.1.2 *Alternative B***

Implementation of Alternative A would not significantly change the existing water quality of surface waters within the TAP states. Like Alternative A, it is likely that producers would use various chemicals to establish the new crop whether it be in the same commodity or one of the commonly grown row crops of the State. Although the types of chemicals used may vary somewhat between TAP crops and row crops, they are all regulated by EPA to ensure protection of the environment. In addition, producers with field located near waterbodies included on the impaired waters list must adhere to EPA approved TMDLs developed by the State. Since these

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areas were previously used for agricultural purposes, it is unlikely that replanting the lost field would change the water quality of the area.

### **4.3.2 Ground Water**

#### **4.3.2.1 *Alternative A***

Implementation of Alternative A would not have significant effects on groundwater resources in the TAP eligible states. Although the proposed action would involve the addition of chemicals such as herbicides, pesticides, and insecticides, these areas were previously used for agriculture and these chemicals already exist within the environment and groundwater. Likewise, the groundwater sources in these areas were previously used for irrigation and replanting these areas would not significantly change the amount of water drawn from these aquifers. To fulfill the requirements of NEPA, this EA will be coordinated with the appropriate EPA regions with sole source aquifers within the project area.

#### **4.3.2.2 *Alternative B***

Implementation of Alternative B, the no action alternative, would not have significant effects on groundwater resources in the TAP eligible states. Like Alternative A, these areas were previously used for agriculture and potential effects from chemical inputs and irrigation would not change from replanting lost crops.

### **4.3.3 Wetlands**

#### **4.3.3.1 *Alternative A***

Implementation of Alternative A would not have significant effects on wetlands within the TAP eligible counties. This alternative would provide financial assistance to producers for replanting lost crops in a field previously used for agriculture. No wetlands would be filled to support this proposed action. Regulations for protecting water resources would minimize potential impacts to wetland areas from agricultural runoff. Since these areas were previously used for agriculture, replanting these areas is not expected to affect the nearby wetlands. In addition, producers applying for assistance under TAP must have implemented a conservation plan that complies with wetland conservation programs.

#### **4.3.3.2 *Alternative B***

Implementation of Alternative B would not change the existing wetland areas. Replanting lost crops in the same commodity or in one of the commonly grown row crops would not damage or fill wetlands in the area. Producers would continue to adhere to regulations protecting water resources.

### **4.3.4 Floodplains**

#### **4.3.4.1 *Alternative A***

Implementation of Alternative A would not have significant effects to floodplains within the TAP eligible states. Under this alternative, producers would be reimbursed for designated, approved costs associated with replanting commercial crops. If crops are established in a new field that lies within the 100-year floodplain, producers must review local flood maps and coordinate plans with their local county office to ensure that land modifications will not affect the floodplain. The

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TAP program does not provide reimbursement for construction of fencing or other structures such as windscreens, which would be regulated within a 100-year floodplain.

#### **4.3.4.2 *Alternative B***

Under Alternative B, the TAP would not be implemented and producers would not receive financial assistance for reestablishing lost crops. It is assumed that producers would replant in the same commodity or one of the most commonly grown row crops in the state. Reestablishing crops in the same field would not have an effect on the floodplains in the area.

### **4.3.5 Coastal Zone Management**

#### **4.3.5.1 *Alternative A***

Implementation of Alternative A would not affect the coastal zone of Alabama, Florida, Louisiana, Mississippi, North Carolina, South Carolina, or Texas. Those producers applying for financial assistance under TAP must have implemented conservation plans which ensure compliance with HELC and WC. These programs are in place to protect environmentally sensitive lands and the natural resources of an area which are consistent with the goals of coastal zone management programs. Implementing the 2005 TAP would not have significant impacts on any natural resource; therefore, there are no coastal zone concerns. Consistency determinations for each coastal state are included in Appendix C.

#### **4.3.5.2 *Alternative B***

Under Alternative B, the no action alternative, financial assistance would not be provided to those producers that lost crops in 2005. It is assumed that these producers would replant in the same commodity or one of the most commonly grown crops of their state. Reestablishing lost crops in the same fields within the coastal states would not change existing natural resources and therefore, there are no coastal zone concerns.

## **4.4 SOIL RESOURCES**

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

### **4.4.1 *Alternative A***

Implementation of Alternative A would not likely have significant impacts to soil resources within TAP eligible counties. Since the areas where TAP practices could be implemented have been previously used for agricultural purposes, it is unlikely that they contain unique soil conditions. Activities for site preparation and debris removal may result in a slight increase in the amount of soil erosion and sedimentation in nearby water sources, however, this increase is expected to be minimal and temporary. The use of Filter Fencing or similar best management practices would reduce or eliminate these impacts. In addition, to qualify for TAP funding producers must have implemented conservation plans which ensure compliance with HELC.

### **4.4.2 *Alternative B***

Implementation of Alternative B, the No Action Alternative, would not have significant impacts to soil resources within TAP eligible counties. Potential impacts during site preparation and debris removal would be the same as those described for Alternative A.

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## **4.5 AIR QUALITY**

Any impacts to air quality in attainment areas would be considered significant if pollutant emissions associated with the proposed action: caused, or contributed to a violation of any national, state, or local ambient air quality standard; exposed sensitive receptors to substantially increased pollutant concentrations; or exceeded any significance criteria established by Louisiana's SIP.

### **4.5.1 Alternative A**

Implementation of Alternative A would result in replanting a TAP eligible crop on the field from which it was lost or another field in the same county. Activities that qualify for reimbursement that could have potential air quality effects include site preparation and debris removal. These activities could utilize tilling, controlled burning, and various diesel powered vehicles and equipment.

Tilling would temporarily increase the particulate matter concentrations in the immediate area; however, this increase is not expected to be significant. Watering exposed soils during and after tilling would reduce the release of particulate matter. Machinery used for the proposed activity would be in good working order and maintained to ensure minimal air emissions. The amount of open burning that would take place in conjunction with site preparation and debris removal is not known. Burning could release PM<sub>10</sub>, PM<sub>2.5</sub>, CO, hydrocarbons and NO<sub>2</sub> into the atmosphere (EPA 1992). The type and quantity of these pollutants would be determined by the type of vegetation being burned, the configuration of the burned material, and the weather conditions. It is not anticipated, however, that this burning would have a significant impact on the local air quality. Many states and local authorities, particularly those with counties in nonattainment for particulate matter or ozone, prohibit or restrict open burning and often require a permit. Producers that choose to use open burning for debris removal should consult with the air division of their state department of environmental quality to determine the open burning regulations for their county since these regulations can change each season. Often a permit from the local fire department is also required.

Site preparation and debris removal could be done with various types of equipment that could include front-end loaders, backhoes, tractors, stump grinders, and skidders. Heavy diesel powered equipment would release CO and PM<sub>10</sub>. Proper and routine maintenance of the equipment reduces the harmful emissions. Like tilling and burning, impacts from the use of heavy equipment is expected to be temporary and minor and limited to the immediate construction area.

### **4.5.2 Alternative B**

Under Alternative B, it is assumed that the producer would replant lands in the same commodity that was lost or one of the most commonly grown row crops in the state. Replanting the lands would likely utilize similar site preparation and debris removal techniques as Alternative A. The potential impacts would be the same as those described for Alternative A.

## **4.6 SOCIOECONOMICS**

Significance of an impact to socioeconomics varies depending on the setting of the proposed action, but 40 CFR 1508.8 states that indirect effects may include those that are growth inducing and others related to induce changes in the pattern of land use, population density, or growth rate. Under CEQ regulations, a socioeconomic impact, in and of itself, does not indicate that preparation of an Environmental Impact Statement (EIS) is warranted. However, a socioeconomic

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impact can contribute to the overall cumulative impacts of the project. These incremental impacts, which can include socioeconomic, may produce a significant impact and warrant an EIS.

The Economic Impact Forecast System (EIFS) model was run for each State to determine the range of effects of TAP dollars to be distributed to each. Tables 35 to 43 of Appendix D show the detailed analysis and results of the estimated effects of the TAP dollars through the regional economies of each state that support the conclusions presented in this EA.

#### **4.6.1 Alternative A - Preferred**

Implementing the preferred action would create slight positive effects within those respective TAP counties throughout the nine designated states. The socioeconomic effect would be neutral to minor positive in the long-term by re-establishing agricultural commodities damaged by the 2005 hurricanes within each region. Economic modeling indicates that TAP spending would not produce substantial changes to the regional economies.

#### **4.6.2 Alternative B – No Action**

Under the No Action Alternative, the TAP would not be implemented and the federal dollars associated with the program would not flow into the regional economies of the affected states. The TAP is a reimbursement for expenses to re-establish specific commodities within each state. Without this assistance, these producers could decide that the costs of re-establishment outweigh the benefits produced by the commodities. As such, depending on the level of individual damage, these producers could (1) reduce the size of their operations, (2) re-establish their previous operations, (3) choose to not produce the commodities and maintain the agricultural property by converting to another commodity, (4) maintain the property with no agricultural commodity, or (5) sell the agricultural property. The choice is individual, based on the level of damage sustained, and the opportunity costs associated with each alternative available to the producer. The effects could range from minimal positive, if the producer chooses to re-establish the commodities to negative, if the producer chooses to sell the property for the highest and best use, which excludes agricultural commodities. Each county will be unique based on the prevailing conditions for the entire region.

### **4.7 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. Significant environmental justice impacts would result if access to decision-making documents was denied or if any adverse environmental effects occurred that would disproportionately affect minority or low-income populations.

#### **4.7.1 Alternative A – Preferred**

None of the TAP eligible counties would be considered an area of concentrated minority population. The Arkansas TAP eligible counties are the only ones considered impoverished by definition of EO 12898. No disproportionate adverse effects to low-income populations are expected to occur under the proposed action since impacts to economic and natural resources are expected to be minor, temporary and either positive or neutral with appropriate mitigation.

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#### **4.7.2 Alternative B – No Action**

Selecting the no action alternative, would not result in disproportionate effects to minority or low-income populations since no federally funded activity would occur.

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## **5.0 CUMULATIVE IMPACTS**

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### **5.1 INTRODUCTION**

CEQ regulations stipulate that the cumulative effects analysis within a PEA should 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.” CEQ guidance in Considering Cumulative Effects affirms this requirement, stating that the first steps in assessing cumulative effects involve defining the scope of the other actions and their interrelationship with the Proposed Action. The scope must consider geographic and temporal overlaps among the Proposed Action and other actions. It must also evaluate the nature of interactions among these 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.

In this PEA, the affected environment for cumulative impacts is those counties where lands are eligible for enrollment in TAP. For the purposes of this analysis, the goals and plans of USDA FSA programs designed to mitigate the risks of degradation of natural resources are the primary sources of information used in identifying past, present, and reasonably foreseeable actions.

### **5.2 PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS**

In addition to TAP, several other USDA FSA programs provide financial assistance to tree, vine, or bush crop producers in those counties eligible for enrollment in TAP. These programs are designed to provide financial assistance with the costs of production losses, clean-up, debris removal, and rehabilitation of the lost crops. Most programs establish a maximum amount producers can receive and they cannot receive duplicate federal program payments for the same losses due to the 2005 hurricanes. Emergency Assistance Programs offered by USDA FSA include:

- Tropical Fruit Program
- Fruit and Vegetable Program
- Citrus Program
- Tree Indemnity Program
- Emergency Conservation Program
- Noninsured Crop Disaster Assistance Program
- Disaster Debt Set-Aside Program
- Emergency Loan Program

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### **5.3 CUMULATIVE ANALYSIS**

All of the programs offered through USDA FSA for emergency or disaster assistance are voluntary and enrollment cannot be predicted. These programs provide additional money into local economies, and the potential cumulative effect could be a significant increase in economic spending in these rural areas. However, since no producer can receive duplicate payments for the same losses and there is typically a cap on the amount one producer can receive; the slight financial increase to the local economy would not be considered significant. It is likely that those producers requesting assistance are not generating the income they were before the loss. TAP and the other emergency programs allow these producers to continue farming practices.

### **5.4 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES**

NEPA requires that environmental analysis include identification of any irreversible and irretrievable commitments of resources which would result from the Proposed Action should it be implemented. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects 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, no irreversible or irretrievable resource commitments are expected.

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## **6.0 MITIGATION MEASURES**

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### **6.1 INTRODUCTION**

The purpose of mitigation is to avoid, minimize, or eliminate negative impacts on affected resources to some degree. CEQ Regulations (40 CFR 1508.20) states that mitigation includes:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments.

### **6.2 ROLES AND RESPONSIBILITIES**

CEQ Regulations state that all relevant reasonable mitigation measures that could improve a project should be identified, even if they are outside the jurisdiction of the lead agency or the cooperating agencies. This serves to alert agencies or officials who can implement these extra measures, and will encourage them to do so. The lead agency for this proposed action is FSA.

### **6.3 MITIGATION MATRIX**

Potential negative impacts identified in the analysis for implementing the proposed action (Alternative A) and the proposed mitigation that would reduce or eliminate these impacts are presented in Table 6.3-1.

**Table 6.3-1. Mitigation Matrix**

<b><u>Resource Area</u></b>	<b><u>Potential Impact</u></b>	<b><u>Proposed Mitigation</u></b>
Biological Resources	Disturbance to Threatened and Endangered Species and Designated Critical Habitat	Consultation and coordination with USFWS Ecological Services Field Office
Cultural Resources	Disturbance to existing archaeological resources	Consultation with SHPO when archaeological resources are encountered
Water Resources		
Surface Water	Increase agricultural chemical inputs to impaired waters	Adherence to EPA approved TMDLs for waters on Section 303(d) list
Groundwater	Increase agricultural chemical inputs to sole source aquifers	Coordination with appropriate EPA region
Wetlands	Increase agricultural runoff	Producers must prepare conservation plans that adhere to wetland conservation programs
Floodplains	Alter 100-year floodplains	Producers must review local floodplain maps and coordinate activities if located in 100-year floodplain
Soil Resources	Increase sedimentation in local waters	Producers must develop conservation plans to adhere to Highly Erodible Land Conservation programs
Air Quality	Increase pollutants from open burning	Producers must obtain permits from State, county, or local fire department
Environmental Justice	In Arkansas, potential impacts to impoverished population in the TAP counties	Ensure any potential environmental impacts considered minor and temporary, using resource-appropriate mitigation measures where necessary

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## 7.0 LIST OF PREPARERS

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<u>Name</u>	<u>Experience</u>	<u>Geo-Marine, Inc.</u> <u>Title</u>	<u>Project Responsibility</u>
Dana Banwart	7 years	Project Manager	Project Management Air Quality Water Resources
Stephanie Breeden	4 years	Environmental Scientist	Biological Resources Soil Resources
Dave Brown	20 years	Production Manager	Formatting and Editing
Elizabeth Pruitt	8 years	Project Manager	Project Management DOPAA Technical Review Biological Resources
Tim Sara	19 years	Professional Archaeologist	Cultural Resources
Rae Lynn Schneider	10 years	Consultant	Socioeconomics Environmental Justice
Nicole Troyer	5	Environmental Scientist	Water Resources
Matthew Wryk	4	GIS Analyst	Graphics

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## 8.0 LIST OF AGENCIES CONTACTED

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<b>Name</b>	<b>Organization</b>
Matthew Ponish	USDA FSA National Office
Steven Peterson	USDA FSA National Office
Terry Hill	USDA FSA National Office
Kay Niner	USDA FSA National Office
Michael Jansky	USEPA Region 6, Regional NEPA Coordinator
Heinz Mueller	USEPA Region 4, NEPA Program Office
Regional Offices	USFWS Southeast and Southwest Region
Col. John Neubauer	SHPO and Executive Director, Alabama Historical Commission
Cathie Matthews	SHPO, Department of Arkansas Heritage
Frederick Gaske	SHPO and Division Director, Division of Historical Resources, Florida Department of State
Noel Holcomb	SHPO, Historic Preservation Division, Georgia DNR
Pamela Breaux	SHPO, Louisiana Department of Culture, Recreation and Tourism
H.T. Holmes	SHPO, Mississippi Department of Archives and History
Dr. Jeffrey Crow	SHPO, North Carolina Division of Archives and History
Dr. Rodger Stroup	SHPO, South Carolina Department of Archives and History
James Fyke	SHPO, Tennessee Department of Environment and Conservation
F. Lawrence Oaks	SHPO, Texas Historical Commission

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**APPENDIX A: TAP ELIGIBLE COUNTIES**

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## LIST OF TAP COUNTIES

State	President-Declared or Secretary-Designated Disaster Counties	Adjacent Counties	
<b>Alabama</b>	Baldwin Bibb Blount Butler Chilton Choctaw Clarke Colbert Conecuh Covington Cullman Dallas Escambia Fayette Franklin Geneva Greene Hale Jefferson Lamar	Lauderdale Lawrence Limestone Lowndes Marengo Marion Marshall Mobile Monroe Morgan Perry Pickens St. Clair Shelby Sumter Tuscaloosa Walker Washington Wilcox Winston	Autauga Calhoun Coffee Coosa Crenshaw Dale DeKalb Elmore Etowah Houston Jackson Madison Montgomery Talladega
<b>Arkansas</b>	Ashley Chicot Columbia Crittenden Desha Lafayette Lee Miller Phillips St. Francis Union	Arkansas Bradley Calhoun Cross Drew Hempstead Lincoln Little River Mississippi Monroe Nevada Ouachita Poinsett Woodruff	
<b>Florida</b>	Bay Brevard Broward Calhoun Charlotte Collier De Soto Escambia Franklin Glades	Liberty Manatee Martin Miami-Dade Monroe Okaloosa Okeechobee Orange Osceola Palm Beach	Flagler Gadsden Jefferson Lake Leon Marion Pasco Pinellas Putnam Seminole

State	President-Declared or Secretary-Designated Disaster Counties		Adjacent Counties
<b>Florida (cont'd)</b>	Gulf Hardee Hendry Highlands Holmes Indian River Jackson Lee	Polk St. Lucie Santa Rosa Sarasota Volusia Wakulla Walton Washington	Sumter
<b>Louisiana*</b>	Acadia Allen Ascension Assumption Avoyelles Beauregard Bienville Bossier Caddo Calcasieu Caldwell Cameron Catahoula Claiborne Concordia De Soto East Baton Rouge East Carroll East Feliciana Evangeline Franklin Grant Iberia Iberville Jackson Jefferson Jefferson Davis Lafayette Lafourche La Salle Lincoln Livingston	Madison Morehouse Natchitoches Orleans Ouachita Plaquemines Pointe Coupee Rapides Red River Richland Sabine St. Bernard St. Charles St. Helena St. James St. John the Baptist St. Landry St. Martin St. Mary St. Tammany Tangipahoa Tensas Terrebonne Union Vermilion Vernon Washington Webster West Baton Rouge West Carroll West Feliciana Winn	
<b>Mississippi*</b>	Adams Alcorn Amite Attala Benton Bolivar	Lincoln Lowndes Madison Marion Marshall Monroe	

State	President-Declared or Secretary-Designated Disaster Counties		Adjacent Counties
<b>Mississippi*</b> (cont'd)	Calhoun Carroll Chickasaw Choctaw Claiborne Clarke Clay Coahoma Copiah Covington De Soto Forrest Rankling George Greene Grenada Hancock Harrison Hinds Holmes Humphreys Issaquena Itawamba Jackson Jasper Jefferson Jefferson Davis Jones Kemper Lafayette Lamar Lauderdale Lawrence Leake Lee Leflore	Montgomery Neshoba Newton Noxubee Oktibbeha Panola Pearl River Perry Pike Pontotoc Prentiss Quitmann Rankin Scott Sharkey Simpson Smith Stone Sunflower Tallahatchie Tate Tippah Tishomingo Tunica Union Walthall Warren Washington Wayne Webster Wilkinson Winston Yalobusha Yazoo	
<b>North Carolina</b>	Beaufort Bladen Brunswick Carteret Columbus Craven Currituck Dare Duplin Hyde	Jones Lenoir New Hanover Onslow Pamlico Pender Pitt Sampson Tyrell Washington	Bertie Camden Cumberland Edgecombe Greene Harnett Johnston Martin Robeson Wayne Wilson

State	President-Declared or Secretary-Designated Disaster Counties		Adjacent Counties
<b>South Carolina</b>	Horry		Dillon Georgetown Marion
<b>Tennessee</b>	Fayette Hardeman Hardin Giles Lawrence McNairy Shelby Wayne		Chester Decatur Haywood Henderson Lewis Lincoln Madison Marshall Maury Perry Tipton
<b>Texas</b>	Anderson Angelina Austin Brazoria Cass Chambers Cherokee Fort Bend Galveston Gregg Grimes Hardin Harris Harrison Henderson Houston Jasper Jefferson Leon Liberty Madison		Marion Matagorda Montgomery Morris Nacogdoches Newton Orange Panola Polk Rusk Sabine San Augustine San Jacinto Shelby Smith Trinity Tyler Upshur Walker Waller Wharton

\*Entire State

Source: Draft Tree Assistance Program 1-TAP (Revision 2)

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**APPENDIX B: BIOLOGICAL RESOURCES**

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**Table B-1. Federally listed threatened and endangered species in TAP counties within Alabama.**

<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
<b>Animals</b>			
<i>West Indian Manatee</i> ( <i>Trichechus manatus</i> )	E	Baldwin, Mobile	Shallow coastal waters, estuaries, bays, rivers, and lakes, mangrove, seagrass, and nearshore reef. Prefers rivers and estuaries to marine habitats.
Gray Bat ( <i>Myotis grisescens</i> )	E	Calhoun, Bibb, Colbert, Conecuh, DeKalb, Franklin, Jackson, Jefferson, Lamar, Lauderdale, Lawrence, Limestone, Marshall, Madison, Monroe, Morgan, Shelby.	Roost sites are restricted to caves throughout the year. Maternity caves often have a stream flowing through and are separate from caves used in summer by males.
Indiana Bat ( <i>Myotis sodalis</i> )	E	Calhoun, Bibb (P), Blount, Colbert (P), Conecuh (P), DeKalb (P), Franklin (P), Jackson, Lauderdale (P), Lamar, Lawrence, Limestone (P), Marshall, Madison (P), Morgan, Monroe (P), Shelby	Hibernates in caves and maternity sites are behind loose bark of dead or dying trees or in tree cavities. Foraging habitats include riparian areas, upland forests, ponds, and fields but forested landscapes are important in agricultural landscapes.
Alabama Beach Mouse ( <i>Peromyscus polionotus ammobates</i> )	E	Found only in Baldwin County on coastal dunes from Mobile Bay to Perdido Bay and on the west end of Perdido Key	Favors dunes with grass/shrub cover,: primary dunes, interdune areas, secondary dunes, and scrub dunes sites. Utilizes underground burrows beneath sheltering vegetation when inactive or rearing young.
Perdido Key Beach Mouse ( <i>Peromyscus polionotus trissyllepsis</i> )	E(CH)	Perdido Key including the Gulf State Park, Baldwin County	Dry, sandy, sparsely vegetated frontal coastal dunes of medium height, with no or very few secondary dunes. Vegetation of inhabited dunes includes sea oats and bluestem at moderate densities. Young are born in underground burrows.
Least Tern ( <i>Sterna antillarum</i> )	E	Baldwin, Mobile	Breeds on seacoasts, beaches, bays, estuaries, lagoons, lakes, and rivers in areas with sparse or no vegetation. Rests and loafs on sandy beaches, mudflats, and salt-pond dikes. Also on dredge spoils, mainland or barrier island beaches, and flat gravel-covered rooftops.

**Table B-1. Federally listed threatened and endangered species in TAP counties within Alabama.**

<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Piping Plover ( <i>Charadrius melodus</i> )	T(CH)	Baldwin and Mobile beaches	Sandy upper beaches with scattered grass tufts, sparsely vegetated shores, and islands of shallow lakes, ponds, rivers, and impoundments. Nests can also be found on sandy open flats among shells or cobble.
Bald Eagle ( <i>Haliaeetus leucocephalus</i> )	T	Autauga, Baldwin, Chilton, Choctaw, Conecuh, Coosa, Covington, Dallas, Elmore, Hale, Houston, Jackson, Lamar, Lauderdale, Lawrence Limestone, Lowndes, Marshall, Mobile, Montgomery, Morgan, Marengo, Perry, Pickens, Shelby, Sumter, Tuscaloosa, Wilcox, Winston.	Breeding habitat includes areas close to coastal areas, bays, rivers, lakes, or other bodies of water for primary food sources. Preferentially roosts in conifers or other sheltered sites in winter and selects the larger, more accessible trees.
Wood Stork ( <i>Mycteria americana</i> )	E	Autauga, Baldwin, Butler, Chilton, Choctaw, Clarke, Coffee, Colbert, Conecuh, Covington, Crenshaw, Dallas, Escambia, Greene, Hale, Houston, Lauderdale, Lawrence, Limestone, Lowndes, Marengo, Mobile, Montgomery, Monroe, Morgan, Sumter, Tuscaloosa, Washington, Wilcox.(P)	Mainly freshwater marshes, swamps, lagoons, ponds, flooded fields and also occurs in brackish wetlands. Nests mostly in upper parts of cypress trees, mangroves, or dead hardwoods over water.
Red-Cockaded Woodpecker ( <i>Picoides borealis</i> )	E	Baldwin, Bibb, Calhoun, Chilton, Conecuh, Coosa, Covington, Dallas, Escambia, Geneva, Hale, Lawrence, Marshall, Mobile, Perry, Pickens, Talladega, Tuscaloosa, Winston.	Open, mature pine woodlands, rarely deciduous or mixed pine-hardwoods. Preferred habitat is a broad savanna with a scattered overstory of large pines and a dense groundcover containing a diversity of grass, forb, and shrub species with an absent or sparse midstory.
Gulf Sturgeon ( <i>Acipenser oxyrinchus desotoi</i> )	T(CH)	Baldwin, Choctaw, Coffee, Conecuh, Clarke, Covington, Dale, Escambia, Geneva, Houston, Mobile, Monroe, Washington, Wilcox.	Primarily marine and estuarine in winter and migrates to upper rivers in spring for spawning. First two years are spent in riverine habitats, sometimes tidal, usually over bottom of hard clay, rubble, gravel, or shell.
Alabama Sturgeon ( <i>Scphirhynchus suttkusi</i> )	E	Autauga, Bibb, Clarke, Dallas, Lowndes, Monroe, Wilcox	Main channels of major rivers in moderate to swift current at depths of 6-14 m, over sand and gravel or mud. Spawns on hard substrates in main channels or in deep-water habitats.

**Table B-1. Federally listed threatened and endangered species in TAP counties within Alabama.**

<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Goldline Darter ( <i>Percina aurolineata</i> )	E	Bibb, Jefferson, Shelby	Main channels of small to medium rivers in areas of white-water rapids to three or more feet deep, and on substrates of bedrock, boulders, rubble and gravel.
Watercress Darter ( <i>Etheostoma nuchale</i> )	E	Jefferson	Flowing springs and small streams with vegetation. Rests on mats of watercress stems and leaves well above soft substrate.
Snail Darter ( <i>Percina tanasi</i> )	T	Madison, Marshall, Lauderdale	Sand and gravel shoals of moderately flowing, vegetated, large creeks and in deeper portions of rivers and reservoirs where current is present. Young occur in slackwater habitats. Spawning is on gravel shoals.
Vermilion Darter ( <i>Etheostoma chermocki</i> )	E	Jefferson	Small to medium-sized gravel-bottomed streams with silty pools of moderate current and riffles of moderately swift current with vegetation such as watercress or pondweed.
Cahaba Shiner ( <i>Notropis cahabae</i> )	T	Bibb, Blount, Perry, Jefferson, Shelby	Slow-moderate current over sand substrate in main river channels. Moves into lower reaches of small tributaries during flood events.
Blue Shiner ( <i>Cyprinella caerulea</i> )	T	Calhoun, Coosa, Dekalb	Cool, clear, small to medium-sized rivers of moderate current, over firm substrates of sand, gravel, or rubble in pools and backwaters.
Slackwater Darter ( <i>Etheostoma boschungii</i> )	T(CH)	Coosa, Lauderdale, Limestone, Madison	Gravel-bottomed pools in sluggish areas of creeks and small rivers not more than 12m wide and 2m deep. Avoids riffles and rapids but will traverse swifter streams during migration to breeding habitat. Spawns in very shallow seepage water in fields and open woods.

**Table B-1. Federally listed threatened and endangered species in TAP counties within Alabama.**

<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Boulder Darter ( <i>Etheostoma wapiti</i> )	E	Limestone	Fast rocky riffles of small to medium rivers and sometimes in areas with a boulder substrate. Habitat comprises deep, rocky, flowing pools in rivers and lower portions of large tributaries.
Palezone Shiner ( <i>Notropis albizonatus</i> )	E	Jackson	Upland large creeks and small rivers with permanent flow, runs, and flowing upper portions of pools over clean substrates of bedrock, cobble, and gravel mixed with sand.
Pygmy Sculpin ( <i>Cottus pygmaeus</i> )	T	Calhoun	Impounded springs and spring runs with substrate of rock and gravel. Eggs are laid beneath flat rocks. Juveniles are often in areas of slow current with gravel bottom.
Spotfin Chub ( <i>Erimonax monachus</i> )	T	No county specific data is available for this species.	Cool and warm, typically clear, large creeks or medium-sized rivers of moderate gradient; in varied habitats except over heavily silted or sandy.
Alabama Cavefish ( <i>Speoplatyrhinus poulsoni</i> )	E	Lauderdale	Clear lentic subterranean water pools in Key Cave, Lauderdale County. Cave supports diverse aquatic fauna, a rich terrestrial fauna, and a summer colony of bats.
Alabama Red-bellied Turtle ( <i>Pseudemys alabamensis</i> )	E	Mobile, Baldwin, Monroe.	Abundant in backwaters of upper Mobile Bay in areas with dense submerged vegetation in water 1-2m deep, sometimes in river channels, brackish water and salt marsh areas of lower Mobile Bay. Uses dense beds of aquatic vegetation for basking. Nests on sand spoil banks, natural levees, and along rivers.
Flattened Musk Turtle ( <i>Sternotherus depressus</i> )	T	Blount, Cullman, Etowah, Jefferson, Marshall, Tuscaloosa, Walker, Winston	Free-flowing creek or small river with pools about 1m deep or more, hiding places among rocks, presence of mollusks, low silt load and deposits, moderate temperature. Also impoundments with similar characteristics.

**Table B-1. Federally listed threatened and endangered species in TAP counties within Alabama.**

<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Gopher Tortoise ( <i>Gopherus polyphemus</i> )	T	Choctaw, Washington, Mobile.	Found on a well-drained sandy substrate with herbaceous vegetation for food, and sunlit areas for nesting, in sandhill, pine scrub, xeric hammock, pine flatwoods, dry prairie, coastal grasslands and dunes, and mixed hardwood-pine communities. Can be found in disturbed habitats such as roadsides, fence-rows, old fields, and the edges of overgrown.
Atlantic Green Sea Turtle ( <i>Chelonia mydas</i> )	T	Baldwin and Mobile (P) beaches	Feeds in shallow, low-energy waters with abundant submerged vegetation. Migrates across open seas. Nests on beaches, usually on islands but also on mainland. Sand may be coarse to fine with little organic content. Prefers high energy beaches with deep sand.
Kemp's Ridley Sea Turtle ( <i>Lepidochelys kempii</i> )	E	Baldwin and Mobile (P) beaches	Shallow coastal and estuarine waters over sand or mud bottoms where crabs are numerous. Nests in elevated dune areas, especially on beaches backed up by large swamps or bodies of open water with seasonal, narrow ocean connections..
Loggerhead Sea Turtle ( <i>Caretta caretta</i> )	T	Baldwin and Mobile beaches	Open ocean, often near edge of continental shelf; also seas, gulfs, bays, and estuaries. Dives to depths of several thousand meters. May linger at the surface at midday but spends most of time submerged. Nests on sloping sandy beaches backed up by vegetation, near deep water and rough seas.

**Table B-1. Federally listed threatened and endangered species in TAP counties within Alabama.**

<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Eastern Indigo Snake ( <i>Drymarchon corais couperi</i> )	T	Baldwin	Habitat includes sandhill regions dominated by mature longleaf pines, turkey oaks, and wiregrass. Also flatwoods, hammocks, coastal scrub, dry glades, palmetto flats, prairie, brushy riparian and canal corridors, and wet fields. Found often near wetlands and frequently in association with gopher tortoise burrows.
Flatwoods Salamander ( <i>Ambystoma cingulatum</i> )	T	Baldwin, Covington, Houston (P), Mobile (P)	Post-larval individuals inhabit mesic longleaf pine wiregrass flatwoods and savannas. The terrestrial habitat is flat or slightly rolling wiregrass-dominated grassland having little to no midstory and an open overstory of widely scattered longleaf pine.
Red Hills Salamander ( <i>Phaeognathus hubrichti</i> )	E	Butler, Conecuh, Covington (P), Crenshaw, Monroe, Wilcox	Slopes of mesic, shaded ravines dominated by hardwood trees and 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 in leaf-litter-free areas near base of tree or under siltstone outcroppings.
Alabama Cave Shrimp ( <i>Palaemonis alabamae</i> )	E	Colbert, Madison	Found in subterranean aquatic pools with fine silt bottoms in caves with permanent darkness.
Fine-lined Pocketbook Mussel ( <i>Lampsilis altilis</i> )	T(CH)	Blount, Bibb, Calhoun, Chilton, Coosa, Cullman, Dallas, DeKalb, Elmore, Etowah, Fayette, Jefferson, Lawrence, Shelby, St. Clair, Talladega, Tuscaloosa, Fayette, Walker, Winston	Benthic, occupies creeks and smaller rivers associated with swift flowing riffles and gravel-cobble or sand-gravel substrates.
Upland Combshell Mussel ( <i>Epioblasma metastriata</i> )	E(CH)	Bibb, Jefferson, St. Clair	Benthic, in shoals in rivers and large streams, stable substrates in moderate to swift currents.

**Table B-1. Federally listed threatened and endangered species in TAP counties within Alabama.**

<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Southern Clubshell Mussel ( <i>Pleurobema decisum</i> )	E(CH)	Calhoun, Dallas, Etowah, Fayette, Greene, Lamar, Pickens, Shelby, St. Clair, Talladega, Tuscaloosa	Benthic, big river or creek, with high gradient or medium river with moderate gradient, in pools and riffles.
Alabama Moccasinshell Mussel ( <i>Medionidus acutissimus</i> )	T(CH)	Etowah, Greene, Lamar, Lawrence, Pickens, St. Clair, Shelby, Tuscaloosa, Winston	Benthic, big river and creek riffles with high gradient and medium river with moderate gradient. Found in sand on the margins of streams in clear water.
Gulf Moccasinshell ( <i>Medionidus penicillatus</i> )	E	Houston	Benthic, wide range of habitats, including sandy areas with a slight current in streams and rivers or a moderate current and sand and gravel substrate. Also, in muddy sand substrates around tree roots in medium-sized streams
Coosa Moccasinshell Mussel ( <i>Medionidus parvulus</i> )	E(CH)	Talladega, Winston	Benthic, found in sand and gravel in highly oxygenated, clear streams with moderate flow.
Cumberlandian Combshell Mussel ( <i>Epioblasma brevidens</i> )	E(CH)	Colbert, Etowah, Franklin	Benthic, ranges from large creeks to large rivers, in substrates ranging from coarse sand to mixtures of gravel, cobble, and boulder-sized particles. Occurs at depths of less than one meter but relict populations occur in deeper water.
Orangenacre Mucket Mussel ( <i>Lampsilis perovalis</i> )	T(CH)	Bibb, Dallas, Fayette, Greene, Jefferson, Lamar, Lawrence, Marion, Pickens, Shelby, Tuscaloosa, Winston	Benthic, big river and creek riffles with high gradient and medium river with moderate gradient. Inhabits gravel-cobble substrates and possibly coarse sand
Inflated Heelsplitter Mussel ( <i>Potamilus inflatus</i> )	T	Baldwin, Bibb, Choctaw, Clarke, Greene, Hale, Marengo, Pickens, Sumter, Tuscaloosa, Washington	Benthic, found in sand, mud, silt, and sandy-gravel substrates in slow to moderate currents.
Heavy Pigtoe Mussel ( <i>Pleurobema taitianum</i> )	E	Baldwin, Clarke (P), Dallas, Greene, Monroe, Sumter, Pickens, Wilcox (P)	Benthic, found in riffles and shoals on sandy gravel to gravel-cobble substrates, with moderate to fast currents.

**Table B-1. Federally listed threatened and endangered species in TAP counties within Alabama.**

<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Flat Pigtoe Mussel ( <i>Pleurobema marshallii</i> )	E	Greene, Pickens, Sumter	Benthic, big and medium river riffles and shoals on sandy gravel to gravel-cobble substrates, with moderate to fast currents. Requires clean water.
Southern Combshell Mussel ( <i>Epioblasma penita</i> )	E	Dallas, Etowah, Lamar, Marion	Benthic, found in riffles or shoals of medium rivers with sandy gravel to gravel-cobble substrates in moderate to swift current.
Shiny-rayed Pocketbook Mussel ( <i>Hamiota subangulata</i> )	E	Houston	Benthic, in muddy sand or sand in slight to moderate current, medium creek to medium river and often found in the interface of stream channel and sloping bank habitats.
Triangular Kidneyshell Mussel ( <i>Ptychobranchus greeni</i> )	E(CH)	Blount, Calhoun, Cullman, Etowah, Jefferson, Lawrence, Shelby, St. Clair, Talladega, Walker, Winston	Benthic, most prevalent in sections of river three feet in depth and having a good current and a firm substrate.
Stirrupshell Mussel ( <i>Quadrula stapes</i> )	E	Greene, Pickens, Sumter	Benthic, found in riffles and shoals on sandy gravel to gravel-cobble substrates and with moderate to fast current. Requires clean water
Southern Acornshell Mussel ( <i>Epioblasma othcaloogensis</i> )	E(CH)	Bibb, St. Clair, Shelby (P)	Benthic, typically found in strong currents and coarse particle substrates.
Cylindrical Lioplax ( <i>Lioplax cyclostomaformis</i> )	E	Bibb, Shelby	Benthic, under boulders and slabs in isolated mud deposits with moderate to fast current streams and river shoals.
Flat Pebblesnail ( <i>Lepyrium showalteri</i> )	E	Bibb, Shelby	Benthic, in rivers on smooth stones with rapid currents.
Round Rocksnail ( <i>Leptoxis ampla</i> )	T	Bibb, Shelby	Benthic, riffles and shoals with gravel, cobble, or other rocky substrates.
Tulotoma Snail ( <i>Tulotoma magnifica</i> )	E	Calhoun, Coosa, Elmore, Monroe, Shelby, St. Clair, Talladega	Benthic, riffles and shoals on the undersides of large rocks with varied substrate, velocities, and depth.

**Table B-1. Federally listed threatened and endangered species in TAP counties within Alabama.**

<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Ovate Clubshell Mussel ( <i>Pleurobema perovatum</i> )	E(CH)	Bibb, Cullman, Etowah, Greene, Jefferson, Perry, Pickens, St. Clair, Sumter, Tuscaloosa, Walker, Winston	Benthic, big river and creek with high gradient or medium river with moderate gradient, in pools and riffles.
Yellow Blossom ( <i>Epioblasma florentina florentina</i> )	E	No county specific data is available for this species.	Found in riffle and shoal areas of small to medium-sized streams
Catspaw ( <i>Epioblasma obliquata obliquata</i> ) -	E	No county specific data is available for this species.	Inhabits large river systems in sand and gravel substrates in runs and riffles.
Oyster Mussel ( <i>Epioblasma capsaeformis</i> )	E	No county specific data is available for this species.	Inhabits moderate to swift currents in large creeks and rivers in substrates composed of coarse sand and gravel to boulder-sized particles, rarely mud.
Fanshell ( <i>Cyprogenia stegaria</i> )	E	Lauderdale	Benthic, medium to large streams with gravel substrates, strong current, in both deep and shallow water.
Chipola Slabshell ( <i>Elliptio chipolaensis</i> )	T	No county specific data is available for this species.	In muddy sand in moderate current, medium-sized creeks to small rivers in silty sand with slow to moderate current.
Triangular Kidneyshell Mussel ( <i>Ptychobranchnus greenii</i> )	E	Blount, Cullman, Jefferson, Lawrence, St. Clair, Walker, Winston	Benthic, prevalent in sections of river three feet in depth and having a good current, firm substrate as opposed to coarse gravel and sand.
Pink Mucket Pearly Mussel ( <i>Lampsilis abrupta</i> )	E	Colbert, Madison, Morgan, Marshall, Jackson, Lauderdale, Lawrence, Limestone	Benthic, waters with strong currents, rocky substrates, with depths up to about 1m. Also found in deeper waters with slower currents, and sand-gravel substrates.
Alabama Lamp Pearly Mussel ( <i>Lampsilis virescens</i> )	E	Jackson	Benthic, large rivers with strong currents, rocky substrates, and depths up to 1m. Also found in deeper waters with slower currents and sand-gravel substrates.

**Table B-1. Federally listed threatened and endangered species in TAP counties within Alabama.**

<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Pale Lilliput Pearly Mussel <i>(Toxolasma cylindrellus)</i>	E	Jackson	Benthic, buried in firm rubble, gravel, and sand substrates in shallow riffles and shoals. Water is clean and fast-flowing.
Rough Pigtoe Mussel <i>(Pleurobema plenum)</i>	E	Colbert, Lauderdale, Madison, Morgan, Marshall, Lawrence, Limestone	Benthic, in medium to large rivers and shoals in sand, gravel, and cobble substrates. Occasionally found on flats and muddy sand.
Southern Pigtoe Mussel <i>(Pleurobema georgianum)</i>	E(CH)	Calhoun, Coosa, Etowah, St. Clair, Talladega	Benthic, high quality rivers with stable gravel and sandy-gravel substrates.
Fine-rayed Pigtoe Mussel <i>(Fusconaia cuneolus)</i>	E	Jackson, Marshall, Madison	Benthic, in clear, high gradient streams in firm cobble and gravel substrates.
Dark Pigtoe Pearly Mussel <i>(Pleurobema furvum)</i>	E(CH)	Fayette, Lawrence, Tuscaloosa, Winston, Jefferson	Benthic, highly oxygenated, clear streams with moderate flow and sand-gravel substrates.
Shiny Pigtoe Pearly Mussel <i>(Fusconaia cora)</i>	E	Jackson, Madison, Marshall	Benthic, in shoals and riffles in clear streams with moderate to fast current and well burrowed in sand and cobble substrates.
Oval Pigtoe <i>(Pleurobema pyriforme)</i>	E	Houston	Benthic, in medium-sized creeks to small rivers, silty sand to sand and gravel substrates, usually in slow to moderate current.
White Wartback Mussel <i>(Plethobasus cicatricosus)</i>	E	Colbert, Lauderdale	Benthic, in shoals and riffles in large rivers.
Cumberland Monkeyface <i>(Quadrula intermedia)</i>	E	Limestone	Benthic, shallow riffle and shoals of headwater streams and big rivers with clean, fast-flowing water and sand-gravel substrate.
Orange-footed Mussel <i>(Plethobasus cooperianus)</i>	E	Madison, Marshall	Benthic, in large rivers with sand, gravel, and cobble substrates, in riffles and shoals in deep water and steady currents.

**Table B-1. Federally listed threatened and endangered species in TAP counties within Alabama.**

<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Cracking Pearlymussel ( <i>Hemistena lata</i> )	E	Colbert, Lauderdale, Limestone	Benthic, sand, gravel, and cobble substrates in swift currents or mud and sand in slower currents.
Blossom Turgid Pearlymussel ( <i>Epioblasma turgidula</i> )	E	Colbert, Franklin, Lauderdale	Benthic, in clear, unpolluted water and buried in sand and gravel substrates of shallow, fast-flowing streams.
Pink Ring ( <i>Obovaria retusa</i> )	E	Colbert, Lauderdale, Limestone, Morgan	Benthic, large rivers in gravel and sand bars.
Anthony's Riversnail ( <i>Athearnia anthonyi</i> )	E	Colbert, Jackson, Lauderdale, Limestone	Benthic, in larger rivers and lower stretches of larger creeks on cobble/boulder substrates in the vicinity of riffles.
Slender Campeloma ( <i>Campeloma decampi</i> )	E	Limestone, Madison	Benthic, among submerged tree roots and bryophytes along stream margins in areas of slow to moderate flow. Occasionally, in the submerged detritus along pool edges.
Armored Snail ( <i>Pyrgulopsis pachyta</i> )	E	Limestone	Benthic, in shallow creeks, still water along the edge of pools, on tree roots and detritus. Probably also occurs on mud.
Plicate Rocksnail ( <i>Leptoxis plicata</i> )	E	Blount, Jefferson	Benthic, shallow flowing water over gravel, cobble, or bedrock.
Painted Rocksnail ( <i>Leptoxis taeniata</i> )	T	Calhoun, Chilton, Shelby, Talladega	Benthic, in the shoals and riffles of rivers on substrates of gravel and cobble.
Lacy Elimia Snail ( <i>Elimia crenatella</i> )	T	Talladega	Benthic, in highly oxygenated waters on rock shoals and gravel bars, under rock slabs in small headwater streams with moderate current and a substrate consisting of sand, gravel, cobble and rock slabs.
Mitchell's Satyr Butterfly ( <i>Neonympha mitchellii</i> )	E	Greene	Prairie fens of shrub and herb peatlands where calcium-rich groundwater seepage.

**Table B-1. Federally listed threatened and endangered species in TAP counties within Alabama.**

<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Hine's Emerald Dragonfly ( <i>Somatochlora hineana</i> )	E(P)	Jackson	Shallow calcareous, spring-fed marshes or the marshy margins of small, sluggish, calcareous streams.
<b>Plants</b>			
American Chaffseed ( <i>Schwalbea americana</i> )	E	Baldwin	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.
Mohr's Barbara's Buttons ( <i>Marshallia mohrii</i> )	T	Bibb, Calhoun, Etowah, Walker	Moist to wet openings in woodlands and along shale-bedded streams
Louisiana quillwort ( <i>Isoetrus louisianes</i> )	E	Baldwin	Restricted to shallow blackwater streams in riparian woodland and bayhead forest areas of pine flatwoods. Found on stable sand and gravel bars, moist overflow channels and on low, sloping banks near and below water level.
Tennessee Yellow-eyed Grass ( <i>Xyris tennesseensis</i> )	E	Bibb, Calhoun, Franklin, Shelby	Associated with ferns, willows, buttonbush, and bulrushes in seeps, springs, and on the banks of small streams.
Eggert's Sunflower ( <i>Helianthus eggertii</i> )	E	Blount	Uplands with full sun or partial shade near other tall herbs or small trees.
Alabama Canebrake Pitcher Plant ( <i>Sarracenia rubra ssp. alabamensis</i> )	E	Autauga, Chilton, Elmore	Sandhill seeps, swamps, and sloping bogs, soils are deep peaty sands or clays. It is most vigorous in open bogs and without overgrown woody vegetation..
Lyrate Bladder-Pod ( <i>Lesquerella lyrata</i> )	T	Colbert, Franklin, Lawrence	Red soils, limestone outcroppings, disturbed cedar glades or glade-like areas, and roadsides in calcareous areas.

**Table B-1. Federally listed threatened and endangered species in TAP counties within Alabama.**

<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Leafy Prairie-Clover ( <i>Dalea foliosa</i> )	E	Colbert, Franklin, Jefferson, Lawrence, Morgan	Open, thin-soiled limestone glades and limestone barrens, sometimes near a stream or where seepage from limestone provides seasonal moisture.
Pondberry ( <i>Lindera melissifolia</i> )	E	Covington	Bottomland and hardwoods, in interior areas, and the margins of sinks, ponds and other depressions in more coastal sites.
Green Pitcher Plant ( <i>Sarracenia oreophila</i> )	E	Dekalb, Etowah, Jackson, Marshall	Boggy areas, streambanks, or seeps in a community with grasses, sedges, sphagnum moss and cinnamon fern.
Harperella ( <i>Ptilimnium nodosum</i> )	E	Dekalb	Rocky or gravelly shoals of clear, swift-flowing streams sheltered from rapidly moving water, the edges of intermittent pineland ponds or low, wet savannah meadows in a narrow range of water depths.
Little Amphianthus ( <i>Amphianthus pusillus</i> )	T	No county specific data is available for this species.	Confined to vernal pools on granite outcrops of the southeastern Piedmont. Pools tend to be best developed in flatter outcrop areas.
Confederate Trillium ( <i>Trillium reliquum</i> )	T	No county specific data is available for this species.	Mesic hardwood forests with soils and subsoils ranging from rocky clays to alluvial sands with high organic matter content in the top level, in which the rhizomes grow.
Kral's Water Plantain ( <i>Sagittaria secundifolia</i> )	T	Dekalb, Coosa, Dekalb, Winston	Undammed riverine reaches on exposed shoals or among loose boulders in sands, gravels, and silts in pools up to 1m deep. Stream bottoms are narrow and bounded by steep slopes.
Alabama Leather Flower ( <i>Clematis socialis</i> )	E	Etowah, St. Clair	Silt and clay of alluvial, grass-sedge openings along a highway right-of-way, extending into the adjacent hardwood edge.

**Table B-1. Federally listed threatened and endangered species in TAP counties within Alabama.**

<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Morefield's Leather Flower ( <i>Clematis morefieldii</i> )	E	Jackson and Madison	Occurs in patches on limestone bluffs within open red cedar-hardwood forests, and near springs, seeps and ephemeral streams in rocky limestone woods. The vines root in clay-loam soils among massive limestone boulders, typically at elevations of 800 to 1700 feet, on the south and southwest facing slopes of mountains.
Gentian Pinkroot ( <i>Spigelia gentianoides</i> )	E	Geneva	Sandy or dry-mesic pine-oak woods moist or seasonally dry sandy loam, topped by a thin layer of dark, unincorporated humus. Sometimes found on the mowed area of a highway shoulder at the edge of woods.
American Hart's-tongue Fern ( <i>Phyllitis scolopendrium</i> )	T	Jackson, Morgan	Found only at sites on or near dolomitic limestone in moist crevices and mossy rock outcrops. Populations are associated with the cool, well-shaded, moist microclimates of woods, ravines, and steep north-facing hillsides.
Price's Potato-bean ( <i>Apios priceana</i> )	T	Autauga, Jackson, Madison, Marshall	Open, rocky, wooded slopes and floodplain edges under mixed hardwoods or in associated forest clearings, often where bluffs or ravine slopes meet creek or river bottoms. Soils are well-drained and loamy. Several populations extend onto road or powerline rights-of-way.
Alabama Streak-sorus Fern ( <i>Thelypteris pilosa</i> var. <i>alabamensis</i> )	T	Winston	Moist sandstone surfaces, usually under rock overhangs or on exposed cliff faces, and either directly above a stream or nearby. Shade is provided by a bluff and ravine forest of hemlock.

<b>Table B-2. Federally listed threatened and endangered species in TAP counties within Arkansas.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
<b>Animals</b>			
Least Tern, interior population ( <i>Sterna antillarum athalassos</i> )	E	Arkansas, Chicot, Crittenden, Desha, Lafayette, Lee, Miller, Phillips, Hempstead, Lincoln, Little River, Mississippi	Nesting habitat includes bare or sparsely vegetated sand, shell, and gravel beaches, sandbars, islands, and salt flats associated with rivers and reservoirs. Prefer open habitat, and avoid thick vegetation and narrow beaches. Nesting locations are often at the higher elevations away from the water. Highly adapted to nesting in disturbed sites.
Red Cockaded Woodpecker ( <i>Picoides borealis</i> )	E	Ashley, Columbia, Lafayette, Union, Bradley, Calhoun, Drew, Monroe	Open, mature pine woodlands, rarely deciduous or mixed pine-hardwoods. Preferred habitat is a broad savanna with a scattered overstory of large pines and a dense groundcover containing a diversity of grass, forb, and shrub species with an absent or sparse midstory.
Bald Eagle ( <i>Haliaeetus leucocephalus</i> )	T	Arkansas, Ashley, Crittenden, Cross, Desha, Drew, Hempstead, Lafayette, Union, Little River, Monroe, Mississippi, Poinsett	Breeding habitat includes areas close to coastal areas, bays, rivers, lakes, or other bodies of water for primary food sources. Preferentially roosts in conifers or other sheltered sites in winter and selects the larger, more accessible trees.
Arkansas River Shiner ( <i>Notropis girardi</i> )	T	Arkansas, Chicot, Crittenden, Desha, Hempstead, Lafayette, Lee, Lincoln, Little River, Miller, Mississippi, Phillips	Turbid waters of broad, shallow, unshaded channels and rivers, over mostly silt and shifting sand bottom.
Pallid Sturgeon ( <i>Scaphirhynchus albus</i> )	E	Phillips	Adapted for living close to the bottom of large, silty rivers with swift currents. The preferred habitat is comprised of sand flats and gravel bars.
American burying beetle ( <i>Nicrophorus americanus</i> )	E	Little River	Broad vegetational range from mature forests to grassland, old field shrubland, and hardwood forests. Adults live primarily above ground and eggs are laid in soil adjacent to buried carcass.
Pink Mucket Pearlymussel ( <i>Lampsilis abrupta</i> )	T	Arkansas, Ashley, Bradley, Calhoun, Little River, Ouachita, Woodruff	Benthic, waters with strong currents, rocky substrates, with depths up to 1m. Also found in deeper waters with slower currents and sand-gravel substrates.
Fat Pocketbook ( <i>Potamilus capax</i> )	E	Crittenden, Lee, Phillips, St. Francis, Cross, Mississippi, Poinsett	Benthic, found in sand, mud, and fine gravel substrates in riffles of big rivers or near the bank. Man-made ditches and existing bayous, sloughs, and streams also provide suitable habitat.

<b>Table B-2. Federally listed threatened and endangered species in TAP counties within Arkansas.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Scaleshell Mussel ( <i>Leptodea leptodon</i> )	E	St. Francis,	Benthic, riffles, relatively strong currents, and substrates of mud, sand, or assemblages of gravel, cobble, and boulder.
Ouachita Rock Pocketbook ( <i>Arkansia wheeleri</i> )	E	Hempstead, Little River, Ouachita,	Benthic, backwater areas of rivers with sluggish current and shallow waters in sand bars, and muddy bottoms of the river with little or no current.
<b>Plants</b>			
Pondberry ( <i>Lindera melissifolia</i> )	E	Ashley, Poinsett, Woodruff	Bottomland and hardwoods, in the interior areas, and the margins of sinks, ponds and other depressions in the more coastal sites.

<b>Table B-3. Federally listed threatened and endangered species in TAP counties within Florida.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
<b>Animals</b>			
West Indian Manatee ( <i>Trichechus manatus</i> )	E(CH)	Brevard, Broward, Charlotte, Collier, Glades, Flagler, Indian River, Lake, Lee, Manatee, Marion, Martin, Miami-Dade, Okeechobee, Palm Beach, Pasco, Pinellas, Putnam, St. Lucie, Sarasota, Seminole, Volusia	Shallow coastal waters, estuaries, bays, rivers, and lakes, mangrove, seagrass, nearshore reef. Prefers rivers and estuaries to marine habitats.
Gray Bat ( <i>Myotis grisescens</i> )	E	Jackson, Leon	Roost sites are restricted to caves throughout the year. Maternity caves often have a stream flowing through and are separate from caves used in summer by males.
Southeastern Beach Mouse ( <i>Peromyscus polionotus niveiventris</i> )	T	Brevard, Indian River, St. Lucie	Sea oats zone and associated dune systems with grasses, open sandy areas, scattered shrubs and coastal scrub.
Choctawhatchee Beach Deermouse ( <i>Peromyscus polionotus</i> )	T (CH)	Bay	Coastal sand dunes with sparse vegetation, including sea oats, bluestem, and bunch grass on the

<b>Table B-3. Federally listed threatened and endangered species in TAP counties within Florida.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
<i>allophrys</i> )			primary and secondary dunes, and scrubby oaks, dwarfed magnolia, and rosemary on the older dunes. Nests in burrows.
Perdido Key Beach Mouse ( <i>Peromyscus polionotus trissyllepsis</i> )	E(CH)	Escambia	Dry, sandy, sparsely vegetated frontal coastal dunes of medium height, with no or very few secondary dunes. Vegetation of inhabited dunes includes sea oats and bluestem at moderate densities. Young are born in underground burrows.
St. Andrews Beach Deermouse ( <i>Peromyscus polionotus peninsularis</i> )	E	Gulf	Occurs in well-developed high front dunes where the dominant plant cover is sea oats; also occurs on older and higher back dunes, where burrows often are at the base of blow-outs held up by roots of live oak shrubs (sea oats and rosemary also may be present); inhabits low front dunes and lower back dunes covered with bunch grass and beach grass.
Alabama Beach Mouse ( <i>Peromyscus polionotus ammobates</i> )	E (CH)	Escambia	Favors dunes with grass/shrub cover, primary dunes, interdune areas, secondary dunes, and scrub dunes sites. Utilizes underground burrows beneath sheltering vegetation when inactive or rearing young.
Florida Panther ( <i>Puma concolor coryi</i> )	E	Broward, Charlotte, Collier, Glades, Hendry, Highlands, Lee, Miami-Dade, Monroe, Osceola, Palm Beach, Polk	Primarily in swampland in southern Florida; historical range formerly throughout the southeastern U.S. Occupies less than 15,000 sq km primarily in southern Florida:

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Caribbean Monk Seal ( <i>Monachus tropicalis</i> )	E	No county specific data is available for this species.	Shallow lagoons and reefs, sandy beaches, and permanent islets or beaches above high tide. Young were born on sandy beaches; undoubtedly required undisturbed sites.
Cougar ( <i>Puma concolor</i> )	E	Broward, Charlotte, Collier, Glades, Hardee, Highlands, Lee, Miami-Dade, Monroe, Palm Beach	Mountainous or remote undisturbed areas and may occupy wide variety of other habitats such as swamps, riparian woodlands, broken country with good cover of brush or woodland.
Key Deer ( <i>Odocoileus virginianus clavium</i> )	E	Monroe	Saltmarsh and mesic hammocks of Lower Keys. Most of the population is on Big Pine and No Name Keys.
Key Largo Cotton Deermouse ( <i>Peromyscus gossypinus allapaticola</i> )	E	Monroe	Mature tropical hardwood hammock, trunks of dominant trees with dbh of 10 inches or more; Nests in burrows, tree hollows, crevices in limestone rock, and in or under logs.
Key Largo Woodrat ( <i>Neotoma floridana smalli</i> )	E	Monroe	Mature, undisturbed subtropical hardwood hammock forest. and dominant trees with dbh of 25-30 cm. Abundance increases with hammock maturity
Key Oryzomys ( <i>Oryzomys palustris natator</i> )	E (CH)	Monroe	Freshwater and tidal marshes, and mangrove. Restricted to the Lower Keys, from Little Pine Key to Saddlebunch Key, Monroe County, Florida
Lower Keys Rabbit ( <i>Sylvilagus palustris hefneri</i> )	E	Monroe	Freshwater and tidal marshes and adjacent upland habitat including

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			roadsides, especially sedges and grasses; requires fresh water and occasionally occupies burrows.
Cape Sable Seaside Sparrow ( <i>Ammodramus maritimus mirabilis</i> )	E (CH)	Collier, Miami-Dade, Monroe	Seasonally flooded, brushless, subtropical interior marshes, fresh to slightly brackish. Nests in wetter areas in tufts of herbaceous growth.
Bald Eagle ( <i>Haliaeetus leucocephalus</i> )	T	Brevard, Charlotte, Collier, Desoto, Glades, Flagler, Hardee, Hendry, Highlands, Lee, Indian River, Lake, Manatee, Marion, Martin, Miami-Dade, Monroe, Okeechobee, Orange, Osceola, Palm Beach, Pasco, Pinellas, Putnam, St. Lucie, Sarasota, Sumter, Seminole, Volusia	Breeding habitat includes areas close to coastal areas, bays, rivers, lakes, or other bodies of water for primary food sources Preferentially roosts in conifers or other sheltered sites in winter and selects the larger, more accessible trees.
Florida Grasshopper Sparrow ( <i>Ammodramus savannarum floridanus</i> )	E	Highlands, Okeechobee, Osceola, Polk	Dry prairie with stunted saw palmetto and dwarf oaks, bluestems and wiregrass as well as unimproved cattle pastures.
Everglade Snail Kite ( <i>Rostrhamus sociabilis plumbeus</i> )	E(CH)	Broward, Collier, Glades, Highlands, Indian River, Lake, Lee, Marion, Miami-Dade, Monroe, Okeechobee, Orange, Osceola, Palm Beach, Polk, St. Lucie, Sumter, Volusia	Large, open freshwater marshes and lakes with shallow (< 4 ft) open waters without emergent vegetation are required for foraging. Nesting is usually 1-5 m above water in low tree or shrub.
Piping Plover ( <i>Charadrius melodus</i> )	T (CH)	Bay, Charlotte, Collier, Dade, Duval, Franklin, Gulf, Lee, Manatee, Monroe, Pinellas, Volusia	Sandy upper beaches with scattered grass tufts, sparsely vegetated shores, and islands of shallow lakes, ponds, rivers, and impoundments. Nests can also be found on sandy open flats among shells or cobble.
Roseate Tern ( <i>Sterna dougallii dougallii</i> )	T	Miami-Dade, Monroe	Seacoasts, bays, estuaries, forages offshore and roosts in flocks near

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			tidal inlets. Nests on islands on sandy beaches, open bare ground, an grassy areas under or adjacent to objects that provide cover or shelter.
Florida Scrub-jay ( <i>Aphelocoma coerulescens</i> )	T	Brevard, Charlotte, Collier, Desoto, Glades, Flagler, Hardee, Hendry, Highlands, Indian River, Lake, Lee, Manatee, Marion, Martin, Okeechobee, Orange, Osceola Palm Beach, Pasco, Pinellas, Polk, Putnam, St. Lucie , Sarasota, Seminole, Sumter, Volusia	Oak scrub on drained sand in open areas without a dense canopy. Scrubby flatwoods and coastal scrub. Rarely in areas with greater than 50% canopy cover taller than 3 m.
Wood Stork ( <i>Mycteria americana</i> )	E	Brevard, Broward, Charlotte, Collier, Desoto, Glades, Hardee, Hendry, Highlands, Indian River, Lake, Lee, Manatee, Marion, Martin, Miami-Dade, Okeechobee, Orange, Osceola, Monroe, Palm Beach, Pasco, Pinellas, Polk, Putnam, Flagler, St. Lucie, Sarasota, Seminole, Sumter	Mainly freshwater marshes, swamps, lagoons, ponds, flooded fields and also occurs in brackish wetlands. Nests mostly in upper parts of cypress trees, mangroves, or dead hardwoods over water.
Red-cockaded Woodpecker ( <i>Picoides borealis</i> )	E	Brevard, Charlotte, Collier, Flagler, Glades, Highlands, Lake, Lee, Manatee, Marion, Martin, Monroe, Orange, Osceola, Palm Beach, Pasco, Pinellas, Polk, Putnam, St. Lucie, Sumter, Seminole, Volusia	Inhabit open, mature pine woodlands, rarely deciduous or mixed pine-hardwoods. Preferred habitat is a broad savanna with a scattered overstory of large pines, dense groundcover and a sparse midstory.
Audubon's Crested Caracara ( <i>Polyborus plancus audubinii</i> )	T	Brevard, Charlotte, Collier, Desoto, Glades, Hardee, Hendry, Highlands, Indian River, Manatee, Martin, Monroe, Okeechobee, Osceola, Orange, Palm Beach, Polk, St. Lucie	Open country, dry prairie with scattered cabbage palms, wetter prairies, and also improved pastures <b>ot</b> wooded areas with associated open grassland.
Gulf Sturgeon ( <i>Acipenser oxyrinchus desotoi</i> )	T(CH)	Bay, Calhoun, Escambia, Flagler, Franklin, Gadsden, Gulf, Holmes, Jackson, Jefferson, Leon, Manatee, Okaloosa, Pasco, Pinellas	Primarily marine and estuarine in winter and migrates to upper rivers in spring for spawning. First two years are spent in riverine habitats and sometimes tidal usually over bottom of hard clay, rubble, gravel, or shell.

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Smalltooth Sawfish <i>(Pristis pectinata)</i>	E	No county specific data is available for this species.	Shallow coastal, estuarine, and fresh waters; often in brackish water near river mouths and large embayments, in deeper holes on bottoms of mud or muddy sand. Mature individuals regularly occur in waters deeper than 50 m
Okaloosa Darter <i>(Etheostoma okaloosae)</i>	E	No county specific data is available for this species.	Typically occurs along the margins of small to medium (1.5-12.2 m wide, 0.15-1.2 m deep) clear creeks fed by groundwater seepage, with slow to swift current and bottom of clean sand and, in areas of reduced current.
Shortnose Sturgeon <i>(Acipenser brevirostrum)</i>	E	Putnam	Rivers, estuaries, and the sea but usually most abundant in estuaries, within a few miles of land when at sea. Prefer deep pools with soft substrates and vegetated bottoms, but individuals may vary in preference.
Eastern Indigo Snake <i>(Dymarchon corais couperi)</i>	T	Bay, Brevard, Broward, Calhoun, Charlotte, Collier, Desoto, Gadsden, Glades, Gulf, Hardee, Hendry, Highlands, Lake, Lee, Manatee, Martin, Miami-Dade, Okeechobee, Orange, Osceola, Palm Beach, Pasco, Pinellas, Polk, Putnam, Escambia, Flagler, Franklin, Gulf, Holmes, Jackson, Jefferson, Leon, Marion, Okaloosa, St. Lucie, Sarasota, Seminole, Sumter, Volusia	Habitat includes sandhill regions dominated by mature longleaf pines, turkey oaks, and wiregrass. Also flatwoods, hammocks; coastal scrub; dry glades; palmetto flats; prairie; brushy riparian and canal corridors; and wet fields, frequently in association with gopher tortoise burrows.
Atlantic Salt Marsh Snake <i>(Nerodia clarkii taeniata)</i>	T	Volusia, Brevard, Indian River	Brackish and salt marshes, shallow tidal creeks and pools, associated with glasswort and fiddler crab burrows. Also inhabits areas with black mangrove. intergrades.

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American Alligator ( <i>Alligator mississippiensis</i> )	T	Broward, Charlotte, Collier, Desoto, Glades, Hardee, Hendry, Indian River, Lee, Martin, Miami-Dade, Monroe, Okeechobee, Osceola, Palm Beach, Polk, St. Lucie, Sarasota	Fresh and brackish marshes and also ponds, lakes, rivers, swamps, bayous, and large spring runs. Dens are in river or lake margins or in marshes where it spends cold winters and drought periods.
American Crocodile ( <i>Crocodylus acutus</i> )	E (CH)	Broward, Collier, Lee, Miami-Dade, Monroe	In Florida, primary habitat is inland mangrove swamps protected from wave action. Females will use open waters of Florida Bay to access to nesting sites.
Sank Skink ( <i>Neoseps reynoldsi</i> )	T	Highlands, Lake, Marion, Orange, Osceola, Polk	Occurs only on Florida's central ridges, at elevations of 27m or more, in St. Lucie fine and Lakeland yellow loose sands of sand pine-rosemary scrub, and sometimes turkey oak "barrens" adjacent to scrub, especially high pine-scrub.
Bluetail Mole Skink ( <i>Eumeces egregius lividus</i> )	T	Highlands, Osceola, Polk	Sand pine-rosemary scrub or longleaf pine-turkey oak association with loose St. Lucie fine sands. Also scrub areas for sufficient leaf litter and moisture to provide abundant food and nesting sites.
Flatwoods Salamander ( <i>Ambystoma cingulatum</i> )	T	Bay, Calhoun, Escambia, Franklin, Holmes, Jackson, Okaloosa	Post-larval individuals inhabit mesic longleaf pine wiregrassflatwoods and savannas. The terrestrial habitat is flat or slightly rolling wiregrass-dominated grassland having little to no midstory and an open overstory of widely scattered longleaf pine.
Hawksbill Sea Turtle ( <i>Eretmochelys imbricata</i> )	E	Bay, Brevard, Broward, Escambia, Franklin, Gulf, Jefferson, Martin, Miami-Dade, Monroe, P Okaloosa,	Shallow coastal waters with rocky bottoms, coral reefs, and mangrove-

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		Palm Beach, Volusia	bordered bays and estuaries. Nests on undisturbed, deep-sand beaches, from high energy ocean beaches to small pocket beaches several meters wide.
Green Sea Turtle <i>(Chelonia mydas)</i>	E	Bay, Brevard, Broward, Collier, Charlotte, Escambia, Flagler, Franklin, Gulf, Indian River, Lee, Manatee, Martin, Miami-Dade, Monroe, Okaloosa, Palm Beach, Pasco, Pinellas, St. Lucie, Sarasota, Volusia	Feeds in shallow, low-energy waters with abundant submerged vegetation and migrates across open seas. Adults are tropical in distribution and juveniles range into temperate waters. Nests on beaches on islands and mainlands. Prefers high energy beaches with deep sand and returns to natal beach
Kemp's Ridley Sea Turtle <i>(Lepidochelys kempii)</i>	E	Bay, Brevard, Escambia, Franklin, Gulf, Lee, Manatee, Okaloosa, Pasco, Pinellas, Flagler	Shallow coastal and estuarine waters over sand or mud bottoms where crabs are numerous. Nests on in elevated dune areas, especially on beaches backed up by large swamps or bodies of open water with seasonal, narrow ocean connections.
Leatherback Sea Turtle <i>(Dermochelys coriacea)</i>	E	Bay, Broward, Escambia, Flagler, Franklin, Gulf, Indian River, Manatee, Martin, Miami-Dade, Monroe, Okaloosa, Palm Beach, Pasco, Pinellas, St. Lucie, Volusia	Open ocean, often near edge of continental shelf; also seas, gulfs, bays, and estuaries. Dives to depths of several thousand meters. May linger at the surface at midday but spends most of time submerged. Nests on sloping sandy beaches backed up by vegetation, near deep water and rough seas.
Loggerhead Sea Turtle <i>(Caretta caretta)</i>	T	Bay, Brevard, Broward, Charlotte, Collier, Escambia, Flagler, Franklin, Gulf, Indian River, Lee, Manatee, Martin, Miami-Dade, Monroe, Okaloosa, Palm Beach, Pasco, Pinellas, St. Lucie, Sarasota, Volusia	Open sea and in bays, estuaries, lagoons, creeks, and mouths of rivers. mainly warm temperate and subtropical regions not far from

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			shorelines. Nesting occurs on open sandy beaches above high-tide mark, seaward of well-developed dunes. Nests primarily on high-energy beaches on barrier strands.
Purple Bankclimber ( <i>Elliptoideus sloatianus</i> )	T	Calhoun, Franklin, Gadsden, Gulf, Jackson, Leon, Liberty, Wakulla	Found in sand, fine gravel or muddy sand substrates in moderate current in large rivers..
Shiny-rayed Pocketbook Mussel ( <i>Hamiota subangulata</i> )	E	Calhoun, Gadsden, Jackson, Leon	Benthic, in muddy sand or sand in slight to moderate current, medium creek to medium river and often found in the interface of stream channel and sloping bank habitats
Fat Threeridge ( <i>Amblema neislerii</i> )	E	Calhoun, Franklin, Gadsden, Gulf	Found in the main channels of small to large rivers in slow to moderate current.
Chipola Slabshell ( <i>Elliptio chipolaensis</i> )	T	Calhoun, Gulf, Jackson	Muddy sand in moderate current in medium-sized creeks to small rivers in silty sand with slow to moderate current. Juveniles may require sand and silt-free riffles.
Oval Pigtoe ( <i>Pleurobema pyriforme</i> )	E	Bay, Bradford, Calhoun, Gadsden, Gulf, Jackson, Leon, Union, Washington	Occurs in medium-sized creeks to small rivers where it inhabits silty sand to sand and gravel substrates, usually in slow to moderate current.
Schaus' Swallowtail ( <i>Papilio aristodemus ponceanus</i> )	E	Miami-Dade, Monroe	Tropical hardwood hammocks and their edges with the larval food plant torchwood. Adults do stray into nearby areas.
Stock Island Treesnail ( <i>Orthalicus reses</i> )	T	Monroe	Inhabit a wide variety of hammock trees, feeding on the lichens, fungi, and algae growing on the limbs and leaves.
Gulf Moccasinshell	E	Bay, Calhoun, Jackson	It Benthic, wide range of habitats,

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<i>(Medionidus penicillatus)</i>			including sandy areas with a slight current in streams and rivers or a moderate current and sand and gravel substrate. Also, in muddy sand substrates around tree roots in medium-sized streams.
Ochlockonee Moccasinshell <i>(Medionidus simpsonianus)</i>	E	Gadsden, Leon, Liberty	Muddy sand and sand in moderate current and from sand and gravel substrates in moderate current
<b>Plants</b>			
Wireweed <i>(Polygonella basiramia)</i>	E	Highlands, Polk	Restricted to bare patches within sand pine-evergreen oak scrub and Florida rosemary.
Harper's Beauty <i>(Harperocallis flava)</i>	E	Franklin, Liberty	Acidic boggy areas in full sun with soils high in sand and peat.
American Chaffseed <i>(Schwalbea americana)</i>	E	Gadsden, Leon, Putnam	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
Miccosukee Gooseberry ( <i>Ribes echinellum</i> )	T	Jefferson	Associated with a deciduous, mixed hardwood forest with an overstory canopy dominated by species of oak and hickory
Snakeroot <i>(Eryngium cuneifolium)</i>	E	Highlands	Generally in areas of open sand, including blowouts and other highly disturbed soil surfaces, e.g., road shoulders according to exposed sunny openings and areas in scrub, especially rosemary scrub.
Britton's Beargrass <i>(Nolina brittoniana)</i>	E	Highlands, Lake, Orange, Osceola, Polk	Deep, fine-textured, well-drained sands of sand pine-evergreen oak scrub or longleaf pine-turkey oak sandhill.

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Apalachicola Rosemary ( <i>Conradina glabra</i> )	E	Liberty	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.
Florida Bonamia ( <i>Bonamia grandiflora</i> )	T	Charlotte, Hardee, Hendry, Lake, Lee, Marion, Orange, Osceola, Polk	Locally abundant on deep, white, dry sands of ancient dunes and sandy ridges in clearings or openings of scrub habitat on the Central Ridge of Florida.
Florida Skullcap ( <i>Scutellaria floridana</i> )	T	Bay, Franklin, Gulf, Liberty	Dark, humus rich sands of pine-palmetto flatwoods, wet prairies, savannahs, seepage slopes.
Scrub Plum ( <i>Prunus geniculata</i> )	E	Highlands, Lake, Osceola, Polk	Deep, yellow sands of longleaf pine-turkey oak sandhill and white, excessively leached, wind-deposited soils of evergreen scrub oak-sand pine scrub.
Lewton's Polygala ( <i>Polygala lewtonii</i> )	E	Highlands, Lake, Marion, Osceola, Polk	Sandhills of longleaf pine and low scrub oaks, including low turkey oak woods, and transitional sandhill/scrub habitats. Sometimes inhabits powerline clearings or new roadsides
Tiny Polygala ( <i>Polygala smallii</i> )	E	Broward, Martin, Miami-Dade, Osceola, Palm Beach, St. Lucie	Open grassy pineland; sandy pine rockland, scrubby flatwoods, and sandhills. Often in disturbed areas.
Florida Golden Aster ( <i>Chrysopsis floridana</i> )	E	Hardee, Hendry, Pinellas	Sand pine scrub with sunny openings or on the ecotonal edges of scrub.
White Birds-in-a-nest ( <i>Macbridea alba</i> )	T	Bay, Franklin, Gulf, Liberty	Grassy vegetation on poorly drained, infertile sandy peat soils. Also in seepage bogs and savannahs and, sparingly, on drier sites with longleaf pine and runner oaks.

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Fringed Campion ( <i>Silene polypetala</i> )	E	Gadsden, Jackson	Well-drained, sandy-loam soils of deciduous woods, usually hillsides
Godfrey Violet-flowered Butterwort ( <i>Pinguicula ionantha</i> )	T	Bay, Calhoun, Franklin, Gulf, Liberty	Open, acidic soils of seepage bogs on gentle slopes, deep quagmire bogs, ditches, and depressions in grassy pine flatwoods and grassy savannas, often occurring in shallow standing water.
Rugel's Pawpaw ( <i>Deeringothamnus rugelii</i> )	E	Volusia	Slash pine-wiregrass flatwoods with areas of dwarfed saw palmetto, on deep, fine-textured, poorly drained sands or sandy peats.
Four-petal Pawpaw ( <i>Asimina tetramera</i> )	E	Martin, Palm Beach, St. Lucie	Sand pine scrub on old dunes inland from the Atlantic coast. Responds well to the occasional severe fires and hurricane damage.
Okeechobee Gourd ( <i>Cucurbita okeechobeensis</i> )	E	Okeechobee, Palm Beach, Volusia	Restricted to disturbed areas not cultivated, such as ditch banks and wet road shoulders
Carter's Mustard ( <i>Warea carteri</i> )	E	Brevard, Highlands, Polk	Carter's mustard occurs primarily on yellow sands, in oak-hickory scrub and sandhill, and on gray sands in scrubby flatwoods.
Wide-leaf Warea ( <i>Warea Amplexifolia</i> )	E	Lake, Osceola, Polk	Limited to sunny openings with exposed sand in longleaf pine/turkey oak sandhills and sand pine-scrub oak scrub.
Papery Whitlow-wort ( <i>Paronychia chartacea pulvinata</i> )	T	Highlands, Lake, Orange, Osceola, Polk	Found in rosemary scrub where it colonizes disturbed, open, sandy sites. It prefers the well-drained, white sand of the St. Lucie or Archbold soil types.

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Scrub Wild Buckwheat <i>(Eriogonum longifolium var. gnaphalifolium)</i>	T	Highlands, Lake, Marion, Orange, Osceola, Polk	Dry pinelands, sandhills, and scrub or in transition habitats between scrub and high pine and in turkey oak barrens.
Pigeon Wings <i>(Clitoria fragrans)</i>	T	Highlands, Lake, Polk	Commonly found in the sandhill or sandhill/scrub ecotones. Also in undisturbed clearings in scrub but occurs in very open scrub as well.
Florida Perforate Cladonia <i>(Cladonia perforata)</i>	E	Manatee, Martin, Palm Beach, Polk	Sandy openings in stabilized sand dunes with scrub vegetation and often associated with Ceratiola
Scrub Lupine <i>(Lupinus aridorum)</i>	E	Manatee, Miami-Dade	Sand pine in well-drained sandy soils of the Lakewood or St. Lucie series. The sands are white or yellow where the turkey oak woods have invaded the sand pine scrub.
Beautiful Pawpaw <i>(Deeringothamnus pulchellus)</i>	E	Charlotte, Lee, Manatee	Grassy pine flatwoods with saw palmetto and wiregrass on Immokalee sand and Punta fine sand soils. Sometimes abundant on road edges and partly developed subdivision lots.
Sandlace <i>(Polygonella myriophylla)</i>	E	Desoto, Highlands, Manatee, Osceola, Polk	Restricted to pure white sandy ridges in the scrub of the southern part of the Florida Lakes region with St. Lucie fine sand or Lakewood soil series and little organic matter. Forty to fifty percent of is open, bare sand.
Etonia Rosemary <i>(Conradina etonia)</i>	E	Manatee	Florida scrub vegetation with sand pine, shrubby evergreen oaks; in openings, edges, and disturbed areas.

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Beach Jacquemontia ( <i>Jacquemontia reclinata</i> )	E	Broward, Miami-Dade, Palm Beach	Inhabits disturbed or sunny areas in tropical maritime hammocks or coastal strand vegetation. Associated with sea grape and dwarfed trees, and sometimes occurs in the beach dune community with sea oats.
Johnson's Seagrass ( <i>Halophila johnsonii</i> )	T	Broward, Indian River, Martin, Miami-Dade, Palm Beach, St. Lucie	Rhizomatous seagrass forming low mats either in pure stands or with shoalgrass in intertidal areas (6" to 6' depth).
Short-leaved Rosemary ( <i>Conradina brevifolia</i> )	E	Highlands, Polk	White sands of sand pine-oak scrub of the Lake Wales Ridge, and also occurring with many other endemics.
Fragrant Prickly-apple ( <i>Cereus eriophorus</i> var. <i>fragrans</i> )	E	St. Lucie	Open coastal hammocks and shell middens, scrubby flatwoods, maritime and xeric hammocks.
Lakaela's Mint ( <i>Dicerandra immaculate</i> )	E	St. Lucie	Small sandhills of ancient coastal dunes with sand pine scrub vegetation.
Yellow Scrub Balm ( <i>Dicerandra christmanii</i> )	E	Highlands	Openings in sand pine-oak scrub on yellow soils of the Central Florida Ridge.
Scrub Mint ( <i>Dicerandra frutescens</i> )	E	Highlands	Well-drained soils of scrub or sandhill vegetation. Locally abundant in and around the sand pine-evergreen oak scrub where it may occur in open stands, clearings, or adjacent sandy places.
Longspurred Mint ( <i>Dicerandra cornutissima</i> )	E	Marion	Scattered in openings in longleaf pine-turkey oak scrub/sandhill or on low rises in slash pine-palmetto scrub.
Scrub Blazing Star	E	Highlands, Polk	Occurs almost exclusively on xeric

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<i>(Liatris ohlingerae)</i>			white sands in rosemary and oak scrub and scrubby flatwoods.
Chapman's Rhododendron <i>(Rhododendron chapmanii)</i>	E	Clay, Gadsden, Gulf, Liberty	Acidic, moist to wet, highly organic sands of ecotones between flatwoods and titi bogs in the drainage tributaries.
Pygmy Fringe-tree <i>(Chionanthus pygmaeus)</i>	E	Highlands, Lake, Osceola, Polk	Generally found in the xeric, coarse white sand of scrub/oak scrub and also found occasionally in longleaf pine-turkey oak vegetation, high pineland, and dry hammocks.
Highlands Scrub Hypericum <i>(Hypericum cumulicola)</i>	E	Highlands, Polk	Patches of open, nutrient-poor sand within oak and rosemary scrub. Often occurs with raindeer lichen and the rare wedge-leaved button snakeroot.
Florida Ziziphus <i>(Ziziphus celata)</i>	E	Highlands, Polk	Scrub, on gently rolling hills and vegetation dominated by <i>Carya floridana</i> , <i>Quercus</i> sp. Prefers open, sunny areas.
Avon Park Harebells <i>(Crotalaria avonensis)</i>	E	Highlands	Upland habitats of scrub and sandhill often along trails or open edges. Grows in full sun or partial shade. Commonly found with other local endemics on Archbold and Satellite sands.
Crenulate Lead-plant <i>(Amorpha crenulata)</i>	E	Miami-Dade	Inhabits marl prairies and wet pine rocklands in a small area of Miami-Dade County.
Deltoid Spurge <i>(Chamaesyce deltoidea ssp. Deltoidea)</i>	E	Miami-Dade, Monroe	Pine rocklands located along the south Florida limestone ridge. The substrate consists of porous limestone

<b>Table B-3. Federally listed threatened and endangered species in TAP counties within Florida.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
			known as Miami oolite. Soils are poorly developed with a thin layer of sand.
Garber's Spurge ( <i>Chamaesyce garberi</i> )	T	Miami-Dade	Dry, sandy soil in ecotones between hammocks and pinelands or coastal hammocks and sea-oats dunes.
Telephus Spurge ( <i>Euphorbia telephoides</i> ) -	T	Bay, Franklin, Gulf	Wiregrass dominated, longleaf pine-slash pine savanna/flatwoods or on contiguous low, sandy rises dominated by pine-scrub oak near the coast.
Small's Milkpea ( <i>Galactia smallii</i> )	E	Miami-Dade	Miami Ridge pine rocklands and rockland hammocks
Florida Torreya ( <i>Torreya taxifolia</i> )	E	Gadsden, Jackson, Liberty	Rich, dark, sandy loam soils of hardwood hammock slopes, ravines, and bluffs. Usually in steephead ravines.
Cooley's Water-willow ( <i>Justicia cooleyi</i> )	E	Sumter	Fine sandy loams or silty clay loams of shady, moist, deciduous hammocks underlain by limestone, along small gullies or meandering streams, low rises in swamp woodlands, and hammocks
Key Tree-cactus ( <i>Pilosocereus robinii</i> )	E	Monroe	Tropical hardwood hammocks occurring on limestone, cactus hammock/thorn scrub habitats and in sandy soils in thickets just above high tide levels. Soils typically consist of a layer of partially decomposed organic material over a limestone substrate

<b>Table B-4. Federally listed threatened and endangered species in TAP counties within Louisiana.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
<b>Animal</b>			
Louisiana Black Bear ( <i>Ursus americanus luteolus</i> )	T	Franklin, Iberia, Madison, Pointe Coupee, Richland, St. Landry, St. Mary, St. Tammany, Tensas	Requires diverse, productive bottomland forest with diverse food resources, including a variety of hard-mast-producing species. Winter den sites include hollow trees, brush piles, and ground nests. High quality habitat in remote areas with little or no human activity.
Least Tern, interior population ( <i>Sterna antillarum athalassos</i> )	E	Bossier, Caddo, Concordia, East Carroll, Madison, Natchitoches, Red River, Tensas	Nesting habitat includes bare or sparsely vegetated sand, shell, and gravel beaches, sandbars, islands, and salt flats associated with rivers and reservoirs.
Piping Plover ( <i>Charadrius melodus</i> )	T	Cameron, Jefferson, Lafourche, Plaquemines, St. Bernard, St. Mary, Terrebonne, Vermilion	Sandy upper beaches with scattered grass tufts, sparsely vegetated shores, and islands of shallow lakes, ponds, rivers, and impoundments. Nests can also be found on sandy open flats among shells or cobble.
Brown Pelican ( <i>Pelecanus occidentalis</i> )	E	Cameron, Jefferson, Lafourche, Plaquemines, St. Bernard, Terrebonne	Nesting occurs in colonies mostly on small coastal islands. Sand spits and offshore sand bars are used as daily loafing and nocturnal roost areas.
Red-cockaded Woodpecker ( <i>Picoides borealis</i> )	E	Allen, Beauregard, Bienville, Bossier, Caddo, Calcasieu, Catahoula, De Soto, Evangeline, Grant, Jackson, La Salle, Livingston, Morehouse, Natchitoches, Ouachita, Rapides, Sabine, St. Tammany, Tangipahoa, Union, Vernon, Webster, Winn.	Inhabit open, mature pine woodlands, rarely deciduous or mixed pine-hardwoods. Preferred habitat is a broad savanna with a scattered overstory of large pines, dense groundcover and a sparse midstory.
Bald Eagle ( <i>Haliaeetus leucocephalus</i> )	T	Ascension, Assumption, Avoyelles, Bossier, Calcasieu, Concordia, De Soto, East Baton Rouge, Franklin, Iberia, Iberville, Jackson, Jefferson, La Salle, Lafourche, Livingston, Morehouse, Natchitoches, Orleans, Ouachita, Plaquemines, Pointe Coupee, Rapides, Richland, Sabine, St. Bernard, St. Charles, St. James, St. John the	Breeding habitat includes areas close to coastal areas, bays, rivers, lakes, or other bodies of water for primary food sources Preferentially roosts in conifers or other sheltered sites in winter and selects the larger, more accessible trees.

<b>Table B-4. Federally listed threatened and endangered species in TAP counties within Louisiana.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
		Baptist, St. Landry, St. Martin, St. Mary, St. Tammany, Tangipahoa, Tensas, Terrebonne, Union, Vermilion, West Baton Rouge, West Feliciana	
Pallid Sturgeon <i>(Scaphirhynchus albus)</i>	E	Concordia, East Baton Rouge, East Carroll, Pointe Coupee, St. Bernard, St. Charles, St. Landry, St. Martin, Tensas	Adapted for living close to the bottom of large, silty rivers with swift currents. The preferred habitat is comprised of sand flats and gravel bars.
Ringed Map Turtle <i>(Graptemys oculifera)</i>	T	St. Tammany, Washington	Most abundant in streams with moderate to fast current, numerous basking logs, nearby sand and gravel bars, in channels wide enough to allow sun to reach basking logs.
Gulf Sturgeon <i>(Acipenser oxyrinchus desotoi)</i>	T	Livingston, Orleans, St. Bernard, St. Tammany, Tangipahoa, Washington	Primarily marine and estuarine in winter and migrates to upper rivers in spring for spawning. First two years are spent in riverine habitats and sometimes tidal usually over bottom of hard clay, rubble, gravel, or shell.
Loggerhead Sea Turtle <i>(Caretta caretta)</i>	T	St. Bernard	Open ocean, often near edge of continental shelf; also seas, gulfs, bays, and estuaries. Dives to depths of several thousand meters. May linger at the surface at midday but spends most of time submerged. Nests on sloping sandy beaches backed up by vegetation, near deep water and rough seas.
Gopher Tortoise <i>(Gopherus polyphemus)</i>	T	St. Tammany, Tangipahoa, Washington	Found on a well-drained sandy substrate with ample herbaceous vegetation for food. Sunlit areas for nesting which include sandhill, pine scrub, xeric hammock, pine flatwoods, dry prairie, coastal grasslands and dunes, and mixed hardwood-pine communities. Can be found in disturbed habitats such as roadsides, fence-rows, old fields, and the edges of overgrown.

<b>Table B-4. Federally listed threatened and endangered species in TAP counties within Louisiana.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Mississippi Gopher Frog ( <i>Rana capito sevosa</i> )	E	St. Tammany	Habitat includes both upland sandy habitats in longleaf pine and isolated temporary wetland breeding sites imbedded within forest landscape. Spends the majority of its life in or near underground refugia such as mammal and gopher tortoise burrows
Pink Mucket Pearly Mussel ( <i>Lampsilis abrupta</i> )	E	Morehouse	Benthic, waters with strong currents, rocky substrates, with depths up to about 1m. Also found in deeper waters with slower currents and sand and gravel substrates.
Louisiana Pearlshell ( <i>Margaritifera hembeli</i> )	T	Grant, Rapides	Small sandy creeks with stable sand and gravel substrates in clear-flowing shallow water. Mussels more common in wide areas of streams with higher current velocities.
Inflated Heelsplitter Mussel ( <i>Potamilus inflatus</i> )	T	Ascension, East Baton Rouge, Livingston, St. Tammany	Benthic, found in sand, mud, silt, and sandy-gravel substrates in slow to moderate currents.
<b>Plants</b>			
American Chaffseed ( <i>Schwalbea Americana</i> )	E	Allen	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.
Tiny Tim ( <i>Geocarpon minimum</i> )	T	Winn	Sandstone glades and saline prairies on very thin soils high in sodium and magnesium. Habitat is barren-like, with little vegetation.
Louisiana Quillwort ( <i>Isoetes louisianensis</i> )	E	St. Tammany, Washington	Restricted to shallow blackwater streams in riparian woodland and bayhead forest areas of pine flatwoods. Found on stable sand and gravel bars, moist overflow channels and on low, sloping banks near and below water level.

<b>Table B-5. Federally listed threatened and endangered species in TAP counties within Mississippi.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
<b>Animals</b>			
Indiana Bat ( <i>Myotis sodalis</i> )	E	Tishomingo	Hibernates in caves and maternity sites are behind loose bark of dead or dying trees or in tree cavities. Foraging habitats include riparian areas, upland forests, ponds, and fields. Forested landscapes are important in agricultural landscapes.
Louisiana Black Bear ( <i>Ursus americanus luteolus</i> )	T	Claiborne, George, Issaquena, Jackson, Lamar, Marion, Neshoba, Perry, Scott, Sharkey, Stone, Sunflower, Wilkinson	Requires diverse, productive bottomland forest with diverse food resources, including a variety of hard-mast-producing species. Winter den sites include hollow trees, brush piles, and ground nests. High quality habitat in remote areas with little or no human activity.
Least Tern, interior population ( <i>Sterna antillarum athalassos</i> )	E	Harrison, Jackson	Nesting habitat includes bare or sparsely vegetated sand, shell, and gravel beaches, sandbars, islands, and salt flats associated with rivers and reservoirs.
Bald Eagle ( <i>Haliaeetus leucocephalus</i> )	T	Bolivar, Clay, George, Hancock, Harrison, Holmes, Itawamba, Jackson, Lafayette, Lowndes, Madison, Monroe, Noxubee, Pearl River, Rankin, Tishomingo, Tunica, Warren, Wilkinson, Yazoo	Breeding habitat includes areas close to coastal areas, bays, rivers, lakes, or other bodies of water for primary food sources Preferentially roosts in conifers or other sheltered sites in winter and selects the larger, more accessible trees.
Mississippi Sandhill Crane ( <i>Grus canadensis pulla</i> )	E	Harrison, Jackson	Open savannas, swamp edges, young pine plantations, and wetlands along edges of pine forests Associated with longleaf pine, slash pine, bald cypress, gallberry, wax myrtle, black gum, sweet bay, and yaupon.
Piping Plover ( <i>Charadrius melodus</i> )	T	Harrison	Sandy upper beaches with scattered grass tufts, sparsely vegetated shores, and islands of shallow lakes, ponds, rivers, and impoundments. Nests can also be found on sandy open flats among shells or cobble.

<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Red Cockaded Woodpecker ( <i>Picoides borealis</i> )	E	Amite, Choctaw, Forrest, Franklin, Greene, Harrison, Jackson, Jasper, Jones, Lafayette, Lincoln, Marion, Noxubee, Oktibbeha, Perry, Scott, Stone, Wayne, Wilkinson, Winston	Inhabit open, mature pine woodlands, rarely deciduous or mixed pine-hardwoods. Preferred habitat is a broad savanna with a scattered overstory of large pines, dense groundcover and a sparse midstory
Mississippi Gopher Frog ( <i>Rana capito sevosa</i> )	E	Forrest, Harrison, Jackson	Habitat includes both upland sandy habitats in longleaf pine and isolated temporary wetland breeding sites imbedded within forest landscapes. Spends the majority of its life in or near underground refugia such as mammal and gopher tortoise burrows
Bayou Darter ( <i>Etheostoma rubrum</i> )	T	Claiborne, Copiah, Hinds	Creeks and small to medium rivers. Prefers stable, moderately swift riffles of large gravel and rock. Associated in winter with logs, cobble, and boulders.
Alabama Sturgeon ( <i>Scaphirhynchus suttkusi</i> )	E	Monroe, Itawamba, Lowndes, Noxubee	Main channels of major rivers in moderate to swift current at depths of 6-14m, over sand and gravel or mud. Spawns in areas with current associated with hard substrates in main channels or in deep-water habitats.
Gulf Sturgeon ( <i>Acipenser oxyrinchus desotoi</i> )	T	Forrest, Hancock, Harrison, Hinds, Jackson, Pike, Rankin, Walthall	Primarily marine and estuarine in winter and migrates to upper rivers in spring for spawning. First two years are spent in riverine habitats and sometimes tidal, usually over bottom of hard clay, rubble, gravel, or shell.
Pallid Sturgeon ( <i>Scaphirhynchus albus</i> )	E	Claiborne, Issaquena, Sharkey	Adapted for living close to the bottom of large, silty rivers with swift currents. The preferred habitat is comprised of sand flats and gravel bars.
Ringed Map Turtle ( <i>Graptemys oculifera</i> )	T	Copiah, Hinds, Lawrence, Leake, Madison, Marion, Neshoba, Pearl River, Rankin, Scott, Simpson	Most abundant in streams with moderate to fast current, numerous basking logs, nearby sand and gravel bars, in channels wide enough to allow sun to reach basking logs.
Yellow Blotched Map Turtle	T	Clarke, Covington, Forrest, George, Greene, Jackson, Jones, Perry, Wayne	Live in riverine-riparian systems and associated floodplain lakes, ponds, and sloughs. Nest on sandy

<b>Table B-5. Federally listed threatened and endangered species in TAP counties within Mississippi.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
<i>(Graptemys flavimaculata)</i>			banks or sand bars sometimes up to about 100m from water.
Kemp's Ridley Sea turtle <i>(Lepidochelys kempii)</i>	E	Harrison	Shallow coastal and estuarine waters over sand or mud bottoms where crabs are numerous. Nests on elevated dune areas, especially on beaches backed up by large swamps or bodies of open water with seasonal, narrow ocean connections.
Green Sea turtle <i>(Chelonia mydas)</i>	T	Jackson	Feeds in shallow, low-energy waters with abundant submerged vegetation and migrates across open seas. Adults are tropical in distribution and juveniles range into temperate waters. Nests on beaches on islands and mainlands. Prefers high energy beaches with deep sand and returns to natal beach.
Leatherback Sea Turtle <i>(Dermochelys coriacea)</i>	E	Harrison	Open ocean, often near edge of continental shelf; also seas, gulfs, bays, and estuaries. Dives to depths of several thousand meters. May linger at the surface at midday but spends most of time submerged. Nests on sloping sandy beaches backed up by vegetation, near deep water and rough seas..
Loggerhead Sea turtle <i>(Caretta caretta)</i>	T	Jackson	Open sea and in bays, estuaries, lagoons, creeks, and mouths of rivers. mainly warm temperate and subtropical regions not far from shorelines. Nesting occurs on open sandy beaches above high-tide mark, seaward of well-developed dunes. Nests primarily on high-energy beaches on barrier strands.
Black Clubshell <i>(Pleurobema curtum)</i>	E	Monroe	Benthic, found in riffles and shoals on sandy gravel to gravel-cobble substrates with moderate to fast clean water currents.
Ovate Clubshell <i>(Pleurobema perovatum)</i>	E	Clay, Itawamba, Lowndes, Monroe	Benthic, big river, creek, with high gradient or medium river with moderate gradient, benthic in pools and riffles.
Southern Clubshell <i>(Pleurobema decisum)</i>	E	Clay, Itawamba, Lowndes, Monroe	Benthic, big river, creek, with high gradient or medium river with moderate gradient, in pools and riffles.

<b>Table B-5. Federally listed threatened and endangered species in TAP counties within Mississippi.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Southern Combshell ( <i>Epioblasma penita</i> )	E	Clay, Itawamba, Lowndes, Monroe	Benthic, found in riffles or shoals of medium rivers with sandy gravel to gravel-cobble substrates in moderate to swift current.
Alabama Moccasinshell ( <i>Medionidus acutissimus</i> )	T	Lowndes, Monroe	Benthic, big river, creek riffles with high gradient and medium river with moderate gradient. Found in sand on the margins of streams with a sand and gravel substrate in clear water.
Orangenacre Mucket ( <i>Lampsilis perovalis</i> )	T	Itawamba, Lowndes, Monroe	Benthic, big river, creek riffles with high gradient and medium river with moderate gradient. Inhabits gravel-cobble substrates and possibly coarse sand
Flat Pigtoe ( <i>Pleurobema marshalli</i> )	E	Lowndes	Benthic, big and medium river riffles and shoals on sandy gravel to gravel-cobble substrates with moderate to fast currents; requires clean water.
Fat Pocketbook ( <i>Potamilus capax</i> )	E	Adams, Issaquena, Jefferson	Benthic, found in sand, mud, and fine gravel substrates in riffles of big rivers or near the bank. Man-made ditches and existing bayous, sloughs, and streams also provide suitable habitat.
Stirrupshell ( <i>Quadrula stapes</i> )	E	Lowndes	Benthic, found in riffles and shoals on sandy gravel to gravel-cobble substrates with moderate to fast current; requires clean water.
<b>Plants</b>			
Pondberry ( <i>Lindera melissifolia</i> )	E	Bolivar, Sharkey, Sunflower, Tallahatchie	Bottomland and hardwoods, in the interior areas, and the margins of sinks, ponds and other depressions in the more coastal sites.
Price's Potato-bean ( <i>Apios priceana</i> )	T	Clay, Kemper, Lee, Oktibbeha	Open, rocky, wooded slopes and floodplain edges under mixed hardwoods or in associated forest clearings, often where bluffs or ravine slopes meet creek or river bottoms. Soils are well-drained and loamy. Several populations extend onto road or powerline rights-of-way.
American Chaffseed ( <i>Schwalbea americana</i> )	E	Jackson	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.

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<b>Table B-5. Federally listed threatened and endangered species in TAP counties within Mississippi.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Louisiana Quillwort <i>(Isoetes louisianensis)</i>	E	Forrest, Greene, Harrison, Jackson, Perry	Restricted to shallow blackwater streams in riparian woodland and bayhead forest areas of pine flatwoods. Found on stable sand and gravel bars, moist overflow channels and on low, sloping banks near and below water level.

<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Cougar ( <i>Puma concolor</i> )	E	Brunswick, Onslow	Mountainous or remote undisturbed areas and may occupy wide variety of other habitats such as swamps, riparian woodlands, broken country with good cover of brush or woodland.
West Indian Manatee ( <i>Trichechus manatus</i> )	E	Beaufort, Brunswick, Carteret, Craven, Currituck, Dare, Hyde, New Hanover, Onslow, Pamlico, Pender, Pitt	Shallow coastal waters, estuaries, bays, rivers, and lakes, mangrove, seagrass, nearshore reef. Prefers rivers and estuaries to marine habitats.
Bald Eagle ( <i>Haliaeetus leucocephalus</i> )	T	Beaufort, Bertie , Bladen, Brunswick, Camden , Columbus, Craven, Cumberland , Currituck,Dare, Edgecombe , Harnett , Hyde, Johnston , Lenoir, Martin , Onslow, Pamlico, Pender, Pitt, Tyrrell, Washington, Wayne, Wilson	Breeding habitat includes areas close to coastal areas, bays, rivers, lakes, or other bodies of water for primary food sources Preferentially roosts in conifers or other sheltered sites in winter and selects the larger, more accessible trees..
Roseate tern ( <i>Sterna dougallii dougallii</i> )	T	Carteret, Dare	Seacoasts, bays, estuaries, forages offshore and roosts in flocks near tidal inlets. Nests on islands on sandy beaches, open bare ground, an grassy areas under or adjacent to objects that provide cover or shelter.
Red-cockaded Woodpecker ( <i>Picoides borealis</i> )	E	Beaufort, Bertie , Bladen, Brunswick, Camden , Carteret, Columbus, Craven, Cumberland , Currituck, Dare, Duplin, Edgecombe , Greene , Harnett , Hyde, Johnston , Jones, Lenoir, New Hanover, Onslow, Pamlico, Pender, Pitt, Robeson , Sampson, Tyrrell, Wayne , Wilson	Inhabit open, mature pine woodlands, rarely deciduous or mixed pine-hardwoods. Preferred habitat is a broad savanna with a scattered overstory of large pines, dense groundcover and a sparse midstory
Piping Plover ( <i>Charadrius melodus</i> )	T (CH)	Brunswick, Carteret, Currituck, Dare, Hyde, New Hanover, Onslow, Pender	Sandy upper beaches with scattered grass tufts, sparsely vegetated shores, and islands of shallow lakes, ponds, rivers, and impoundments. Nests can also be found on sandy open flats among shells or cobble.

**Table B-6. Federally listed threatened and endangered species in TAP counties within North Carolina.**

Species	Status	Counties	Habitat
Wood Stork ( <i>Mycteria Americana</i> )	E	Brunswick, Columbus	Mainly freshwater marshes, swamps, lagoons, ponds, flooded fields and also occurs in brackish wetlands. Nests mostly in upper parts of cypress trees, mangroves, or dead hardwoods over water.
Cape Fear Shiner ( <i>Notropis mekistocholas</i> )	E	Harnett	Small rivers to medium-sized creeks, in areas of moderate gradient and riffles alternating with long deep pools, and substrate of sand-gravel, rubble, and boulders. Also occurs in slow pools, riffles, slow runs.
Waccamaw Silverside ( <i>Menidia extensa</i> )	T(CH)	Columbus	Near surface in open water, over a dark sand bottom but not associated with aquatic vegetation. Spawns in open water near shoreline.
Smalltooth Sawfish ( <i>Pristis pectinata</i> )	E	No county specific data is available for this species.	Shallow coastal, estuarine, and fresh waters; often in brackish water near river mouths and large embayments, in deeper holes on bottoms of mud or muddy sand. Mature individuals regularly occur in waters deeper than 50m
Shortnose Sturgeon ( <i>Acipenser brevirostrum</i> )	E	Bertie , Bladen, Brunswick, Camden , Carteret, Columbus, Currituck, Dare, Hyde, New Hanover, Onslow, Pamlico, Pender	Rivers, estuaries, and the sea but usually most abundant in estuaries, within a few miles of land when at sea. Prefer deep pools with soft substrates and vegetated bottoms, but individuals may vary in preference.
Green Sea Turtle ( <i>Chelonia mydas</i> )	T	Brunswick, Carteret, Dare, New Hanover, Onslow, Pender	Feeds in shallow, low-energy waters with abundant submerged vegetation and migrates across open seas. Adults are tropical in distribution and juveniles range into temperate
Hawksbill Sea Turtle ( <i>Eretmochelys imbricata</i> )	E	Carteret, Dare	Shallow coastal waters with rocky bottoms, coral reefs, and mangrove-bordered bays and estuaries. Nests on undisturbed, deep-sand beaches, from high energy ocean beaches to small pocket beaches several meters wide.

**Table B-6. Federally listed threatened and endangered species in TAP counties within North Carolina.**

Species	Status	Counties	Habitat
Kemp's Ridley Sea Turtle ( <i>Lepidochelys kempii</i> )	E	Beaufort, Brunswick, Carteret, Dare, Hyde, Pamlico	Shallow coastal and estuarine waters over sand or mud bottoms where crabs are numerous. Nests in elevated dune areas, especially on beaches backed up by large swamps or bodies of open water with seasonal, narrow ocean connections..
Leatherback Sea Turtle ( <i>Dermochelys coriacea</i> )	E	Brunswick, Carteret, Craven, Currituck, Dare, Hyde, Onslow	Open ocean, often near edge of continental shelf; also seas, gulfs, bays, and estuaries. Dives to depths of several thousand meters. May linger at the surface at midday but spends most of time submerged. Nests on sloping sandy beaches backed up by vegetation, near deep water and rough seas..
Loggerhead Sea Turtle ( <i>Caretta caretta</i> )	T	Brunswick, Carteret, Currituck, Dare, Hyde, New Hanover, Onslow, Pender	Open ocean, often near edge of continental shelf; also seas, gulfs, bays, and estuaries. Dives to depths of several thousand meters. May linger at the surface at midday but spends most of time submerged. Nests on sloping sandy beaches backed up by vegetation, near deep water and rough seas
Tar River Spiny mussel ( <i>Elliptio steinstansana</i> )	E	Edgecombe, Johnston, Pitt	Benthic, in rivers and large creeks, unconsolidated beds of coarse sand and pea gravel below consolidated beds of similar substrates. Less often, this species can be found in the consolidated beds or in finer substrates.
Dwarf Wedgemussel ( <i>Alasmidonta heterodon</i> )	E	Johnston, Wilson	Benthic, in shallow to deep quick running water on cobble, fine gravel, or on firm silt or sandy bottoms, amongst submerged aquatic plants, and near stream banks underneath overhanging tree limbs.
St. Francis' Satyr Butterfly ( <i>Neonympha mitchellii francisci</i> )	E	Cumberland	Sedge wetlands of seepage areas. Habitat is successional or disclimax with beaver and fires being apparently critical factors in maintaining it.

**Table B-6. Federally listed threatened and endangered species in TAP counties within North Carolina.**

Species	Status	Counties	Habitat
<b>Plants</b>			
Seabeach Amaranth ( <i>Amaranthus pumilus</i> )	T	Brunswick, Carteret, Currituck, Dare, Hyde, New Hanover, Onslow, Pender	Barrier islands, on coastal overwash flats at the accreting ends of the islands, lower foredunes and on ocean beaches above mean high tide (occasionally on sound-side beaches). Does not occur on well-vegetated sites.
American Chaffseed ( <i>Schwalbea americana</i> )	E	Bladen, Cumberland, Duplin, Pender, Sampson	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.
Sensitive Joint-vetch ( <i>Aeschynomene virginica</i> )	T	Beaufort, Craven, Hyde, Lenoir	Fresh to slightly brackish tidal river shores and estuarine-river marsh borders. Grows within 2 m of low water mark on raised banks on peaty, sandy or gravelly substrates. Has also been found in a few ditches and wet fields.
Rough-leaved Loosestrife ( <i>Lysimachia asperulaefolia</i> )	E	Beaufort, Bladen, Brunswick, Carteret, Columbus, Cumberland, Harnett, New Hanover, Onslow, Pamlico, Pender	Ecotones or edges between longleaf pine uplands and pond pine pocosins, on moist to seasonally saturated sands and on shallow organic soils overlaying sand.
Cooley's Meadowrue, ( <i>Thalictrum cooleyi</i> )	E	Brunswick, Columbus, Onslow, Pender	Circumneutral soils in wet pine savannas, grass-sedge bogs, and savannalike areas, often at the border of intermittent drainages or swamp forests on fine loamy sands. Also, found in boggy savannah-like borders of low woodlands, roadside ditches, and power line rights-of-way.
Pondberry ( <i>Lindera melissifolia</i> )	E	Bladen, Cumberland, Onslow, Sampson	Bottomland and hardwoods, in the interior areas, and the margins of sinks, ponds and other depressions in the more coastal sites.
Golden Sedge ( <i>Carex lutea</i> )	E	Onslow, Pender	Wet savannahs with sandy soils underlain by coquina limestone mostly in the somewhat shaded

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<b>Table B-6. Federally listed threatened and endangered species in TAP counties within North Carolina.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
			ecotone between savannah and swamp.
Michaux's Sumac <i>(Rhus michauxii)</i>	E	Cumberland, Johnston, Robeson , Wilson	Sandy or rocky open woods, sometimes in association with circumneutral soils but also occurs in submesic loamy swales, sand soils derived from granite, and clayey soils derived from mafic rocks.

<b>Table B-7. Federally listed threatened and endangered species in TAP counties within South Carolina.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
<b>Animals</b>			
Bald Eagle ( <i>Haliaeetus leucocephalus</i> )	T	Horry, Dillon , Georgetown , Marion	Breeding habitat includes areas close to coastal areas, bays, rivers, lakes, or other bodies of water for primary food sources Preferentially roosts in conifers or other sheltered sites in winter and selects the larger, more accessible trees.
Wood Stork ( <i>Mycteria americana</i> )	E	Horry, Georgetown	Mainly freshwater marshes, swamps, lagoons, ponds, flooded fields and also occurs in brackish wetlands. Nests mostly in upper parts of cypress trees, mangroves, or dead hardwoods over water..
Red-Cockaded Woodpecker ( <i>Picoides borealis</i> )	E	Horry, Georgetown	Inhabit open, mature pine woodlands, rarely deciduous or mixed pine-hardwoods. Preferred habitat is a broad savanna with a scattered overstory of large pines and a dense groundcover containing a diversity of grass, forb, and shrub species.with an absent or sparse midstory.
Piping Plover ( <i>Charadrius melodus</i> )	T(CH)	No county specific data is available for this species.	Sandy upper beaches with scattered grass tufts, sparsely vegetated shores, and islands of shallow lakes, ponds, rivers, and impoundments. Nests can also be found on sandy open flats among shells or cobble.
Shortnose Sturgeon ( <i>Acipenser brevirostrum</i> )	E	Georgetown	Rivers, estuaries, and the sea but usually most abundant in estuaries, within a few miles of land when at sea. Prefer deep pools with soft substrates and vegetated bottoms, but individuals may vary in preference.

<b>Table B-7. Federally listed threatened and endangered species in TAP counties within South Carolina.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Loggerhead Sea Turtle ( <i>Caretta caretta</i> )	T	Horry, Georgetown	Open ocean, often near edge of continental shelf; also seas, gulfs, bays, and estuaries. Dives to depths of several thousand meters. May linger at the surface at midday but spends most of time submerged. Nests on sloping sandy beaches backed up by vegetation, near deep water and rough seas.
<b>Plants</b>			
Seabeach Amaranth ( <i>Amaranthus pumilus</i> )	T	Horry, Georgetown	Barrier islands, on coastal overwash flats at the accreting ends of the islands, lower foredunes and on ocean beaches above mean high tide (occasionally on sound-side beaches). Does not occur on well-vegetated sites.
American Chaffseed ( <i>Schwalbea americana</i> )	E	Horry	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.
Schweinitz's Sunflower ( <i>Helianthus schweinitzii</i> )	E	Horry	Clearings and edges of upland woods on moist to dryish clays, clay-loams, or sandy clay-loams with high gravel content and are moderately podzolized.

<b>Table B- 8. Federally listed threatened and endangered species in TAP counties within Tennessee.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
<b>Animals</b>			
<i>Gray Bat</i> ( <i>Myotis grisescens</i> )	E	Hardeman, Hardin, Lawrence, Wayne, Decatur, Lincoln, Maury, Perry	Roost sites are restricted to caves throughout the year. Maternity caves often have a stream flowing through and are separate from the caves used in summer by males.
<i>Indiana Bat</i> ( <i>Myotis sodalis</i> )	E	Shelby, Lincoln, Maury, Perry	Hibernates in caves and maternity sites are behind loose bark of dead or dying trees or in tree cavities. Foraging habitats include riparian areas, upland forests, ponds, and fields but forested landscapes are important in agricultural landscapes.
<i>Bald Eagle</i> ( <i>Haliaeetus leucocephalus</i> )	T	Hardin, Shelby, Decatur, Perry	Breeding habitat includes areas close to coastal areas, bays, rivers, lakes, or other bodies of water for primary food sources Preferentially roosts in conifers or other sheltered sites in winter and selects the larger, more accessible trees.
<i>Least Tern, interior population</i> ( <i>Sterna antillarum athalassos</i> )	E	Shelby, Tipton	Nesting habitat includes bare or sparsely vegetated sand, shell, and gravel beaches, sandbars, islands, and salt flats associated with rivers and reservoirs.
<i>Red-cockaded Woodpecker</i> ( <i>Picooides borealis</i> )	E	Hardeman, Hardin, McNairy, Chester	Inhabit open, mature pine woodlands, rarely deciduous or mixed pine-hardwoods. Preferred habitat is a broad savanna with a scattered overstory of large pines, dense groundcover and a sparse midstory
<i>Spotfin Chub</i> ( <i>Erimonax monachus</i> )	T(CH)	Lewis	Cool and warm, clear, large creeks or medium-sized rivers of moderate gradient; in varied habitats. Favors moderate and swift currents over gravel to bedrock, avoids silt.

<b>Table B- 8. Federally listed threatened and endangered species in TAP counties within Tennessee.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Boulder Darter ( <i>Etheostoma wapiti</i> )	E	Giles, Lincoln	Fast rocky riffles of small to medium rivers and sometimes in areas of boulder substrate. Habitat comprises deep, rocky, flowing pools in rivers and lower portions of large tributaries.
Slackwater Darter ( <i>Etheostoma boschungii</i> )	T(CH)	Lawrence, Wayne, Lincoln	Gravel-bottomed pools in sluggish areas of creeks and small rivers not more than 12m wide and 2m deep. Avoids riffle and rapids but will traverse swifter streams during migrations to breeding habitat. Spawns in very shallow seepage water in fields and open woods.
Snail Darter ( <i>Percina tanasi</i> )	T	Giles	Sand and gravel shoals of moderately flowing, vegetated, large creeks and in deeper portions of rivers and reservoirs where current is present. Young occur in slackwater habitats. Spawning is on gravel shoals.
Blossom Turgid Pearlymussel ( <i>Epioblasma turgidula</i> )	E	Shelby, Maury	Benthic, in clear, unpolluted water and buried in sand and gravel substrates of shallow, fast-flowing streams.
Yellow Blossom Pearlymussel ( <i>Epioblasma florentina florentina</i> )	E	Lincoln, Marshall, Maury	Found in riffle and shoals of small to medium-sized streams
Cumberlandian Combshell Mussel ( <i>Epioblasma brevidens</i> )	E(CH)	Marshall	Benthic, ranges from large creeks to large rivers, in substrates ranging from coarse sand to mixtures of gravel, cobble, and boulder-sized particles. Occurs at depths of less than 1m but relict populations occur in deeper water
Fanshell ( <i>Cyprogenia stegaria</i> )	E	Hardin, Decatur	Benthic, medium to large streams with gravel substrates and a strong current, in both deep and shallow water.
Pale Lilliput Pearly Mussel ( <i>Toxolasma cylindrellus</i> )	E	Giles, Wayne, Lewis, Marshall, Maury, Perry	Benthic, buried in firm rubble, gravel, and sand substrates in shallow riffles and shoals. Water is clean and fast-flowing.

<b>Table B- 8. Federally listed threatened and endangered species in TAP counties within Tennessee.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Cumberland Monkeyface ( <i>Quadrula intermedia</i> )	E	Lincoln, Marshall, Maury	Benthic, shallow riffle and shoals of headwater streams and big rivers with clean, fast-flowing water and sand -gravel substrate.
Pink Mucket Pearly Mussel ( <i>Lampsilis abrupta</i> )	E	Hardin, Wayne, Decatur, Perry	Benthic, waters with strong currents, rocky substrates, with depths up to about 1 m. Also found in deeper waters with slower currents and sand and gravel substrates
Oyster Mussel ( <i>Epioblasma capsaeformis</i> )	E(CH)	Marshall	Moderate to swift currents in large creeks and rivers with substrates of coarse sand and gravel to boulder-sized particles, rarely mud.
Birdwing Pearlymussel ( <i>Conradilla caelata</i> )	E	Giles, Wayne, Lincoln, Marshall, Maury	Found in riffle areas with sand and gravel substrates in moderate to fast currents.
Cracking Pearlymussel ( <i>Hemistena lata</i> )	E	Giles, Hardin, Wayne, Lincoln	Benthic, in sand, gravel, and cobble substrates in swift currents or mud and sand in slower currents.
Dromedary Pearlymussel ( <i>Dromus dromas</i> )	E	Giles	Benthic, riffles occurring at shoals with sand and gravel and moderate current velocities, but also found in deeper, slower moving water.
Fine-rayed Pigtoe Mussel ( <i>Fusconaia cuneolus</i> )	E	Lincoln	Benthic, in clear, high gradient streams in firm cobble and gravel substrates.
Rough Pigtoe Mussel ( <i>Pleurobema plenum</i> )	E	Hardin, Wayne, Decatur, Perry	Benthic, in medium to large rivers and shoals in sand, gravel, and cobble substrates. Occasionally found on flats and muddy sand.
Shiny Pigtoe Pearly Mussel ( <i>Fusconaia cora</i> )	E	Lincoln	Benthic, in shoals and riffles in clear streams with moderate to fast current well burrowed in sand and cobble substrates.
Orange-footed Mussel ( <i>Plethobasus cooperianus</i> )	E	Hardin, Wayne, Decatur, Marshall, Maury, Perry	Benthic, in large rivers with sand, gravel, and cobble substrates in riffles and shoals in deep water and steady currents.

<b>Table B- 8. Federally listed threatened and endangered species in TAP counties within Tennessee.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Tan Riffleshell Riffleshell ( <i>Epioblasma florentina walkeri</i> )	E	Lincoln, Marshall, Maury, Perry	Benthic, found in headwaters, riffles, and shoals in sand and gravel substrates
Pink Ring ( <i>Obovaria retusa</i> )	E	Hardin, Decatur	Benthic, large rivers in gravel and sand bars
White Wartyback Mussel ( <i>Plethobasus cicatricosus</i> )	E	Hardin, Wayne, Decatur, Perry	Benthic, in shoals and riffles in large rivers.
Clubshell ( <i>Pleurobema clava</i> )	E	Hardin	Small to medium-sized rivers and streams in sand and fine gravel, and is deeply buried in sand/gravel substrate in riffle/run situations in less than 1.5 feet of water.
Blossom Tuberculed Pearlymussel ( <i>Epioblasma torulosa torulosa</i> )	E	Lincoln	Riffles of large rivers and streams with swiftly moving water, perhaps linked to high oxygen concentrations and sand/gravel substrate.
<b>Plants</b>			
Tennessee Purple Coneflower ( <i>Echinacea tennesseensis</i> )	E	Marshall	Open limestone cedar glades and sometimes found on calcareous barrens, which have deeper soils than glades.
Tennessee Yellow-eyed Grass ( <i>Xyris tennesseensis</i> )	E	Lewis	Associated with ferns, willows, buttonbush, and bulrushes in seeps, springs, and on the banks of small streams.
Price's Potato-bean ( <i>Apios priceana</i> )	T	Giles	Open, rocky, wooded slopes and floodplain edges under mixed hardwoods or in associated forest clearings, often where bluffs or ravine slopes meet creek or river bottoms. Soils are well-drained and loamy. Several populations extend onto road or powerline rights-of-way.

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<b>Table B- 8. Federally listed threatened and endangered species in TAP counties within Tennessee.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Leafy Prairie-clover <i>(Dalea foliosa)</i>	E	Marshall, Maury	Open, thin-soiled limestone glades and wet calcareous barrens and moist prairies or cedar glades, near a stream or where seepage from limestone provides seasonal moisture.

<b>Table B-9. Federally listed threatened and endangered species in TAP counties within Texas.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
<b>Animals</b>			
Louisiana Black Bear ( <i>Ursus americanus luteolus</i> )	T	Anderson, Angelina, Austin, Brazoria, Cass, Chambers, Cherokee, Fort Bend, Galveston, Gregg, Grimes, Hardin, Harris, Harrison, Houston, Jasper, Jefferson, Leon, Liberty, Madison, Marion, Matagorda, Montgomery, Nacogdoches, Newton, Orange, Panola, Polk, Rusk, Sabine, San Augustine, San Jacinto, Shelby, Smith, Trinity, Tyler, Walker, Waller, Wharton, Brazos, Calhoun, Colorado, Jackson, Washington	Requires diverse, productive bottomland forest with diverse food resources, including a variety of hard-mast-producing species. Winter den sites include hollow trees, brush piles, and ground nests. High quality habitat in remote areas with little or no human activity.
Gulf Coast Jaguarundi ( <i>Puma yagouaroundi cacomitli</i> )	E	Brazoria, Calhoun	Thick brushlands patchy or continuous near water. Spends most of time on ground. Sleeping and birthing occur in a den in a hollow log, treefall, or thicket.
West Indian Manatee ( <i>Trichechus manatus</i> )	E	Brazoria, Galveston, Matagorda, Calhoun, Jackson	Shallow coastal waters, estuaries, bays, rivers, and lakes, mangrove, seagrass, nearshore reef. Prefers rivers and estuaries to marine habitats.
Ocelot ( <i>Leopardus pardalis</i> )	E	Brazoria, Matagorda, Calhoun	Habitats with good cover; when active by day, keeps hidden in dense brush chaparral thickets in Texas. Dens are in caves, hollow trees, thickets, or the spaces between the closed buttress roots of large trees.
Whooping Crane ( <i>Grus americana</i> )	E(CH)	Austin, Brazoria, Fort Bend, Galveston, Grimes, Harris, Henderson, Leon, Matagorda, Waller, Wharton, Brazos, Calhoun, Colorado, Ellis, Fayette, Freestone, Jackson, Kaufman, Limestone, Navarro, Robertson, Washington	Freshwater marshes and wet prairies in migration and also in grain and stubble fields, on shallow lakes and lagoons. Winters on salt flats, marshes, and barrier islands.

<b>Table B-9. Federally listed threatened and endangered species in TAP counties within Texas.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Eskimo Curlew ( <i>Numenius borealis</i> )	E	Brazoria, Galveston, Matagorda, Calhoun	Grasslands, pastures, plowed fields, and less frequently, marshes and mudflats. Favors headlands and hills within a few kilometers of the sea and burned prairies and marshes during migration. Roosts on beaches along coast.
Bald Eagle ( <i>Haliaeetus leucocephalus</i> )	T	Anderson, Angelina, Austin, Brazoria, Cass, Chambers, Cherokee, Fort Bend, Galveston, Gregg, Grimes, Hardin, Harris, Harrison, Henderson, Houston, Jasper, Jefferson, Leon, Liberty, Madison, Marion, Matagorda, Montgomery, Morris, Nacogdoches, Newton, Orange, Panola, Polk, Rusk, Sabine, San Augustine, San Jacinto, Shelby, Smith, Trinity, Tyler, Upshur, Walker, Waller, Wharton, Bowie, Brazos, Calhoun, Camp, Colorado, Ellis, Fayette, Freestone, Jackson, Kaufman, Limestone, Navarro, Robertson, Titus, Van Zandt, Washington, Wood	Breeding habitat includes areas close to coastal areas, bays, rivers, lakes, or other bodies of water for primary food sources Preferentially roosts in conifers or other sheltered sites in winter and selects the larger, more accessible trees.
Brown Pelican ( <i>Pelecanus occidentalis</i> )	E	Brazoria, Chambers, Galveston, Harris, Jefferson, Matagorda, Orange, Calhoun, Jackson	Nesting occurs in colonies mostly on small coastal islands. Sand spits and offshore sand bars are used as daily loafing and nocturnal roost areas.
Piping Plover ( <i>Charadrius melodus</i> )	T(CH)	Brazoria, Chambers, Galveston, Jefferson, Matagorda, Orange, Calhoun	Sandy upper beaches with scattered grass tufts, sparsely vegetated shores, and islands of shallow lakes, ponds, rivers, and impoundments. Nests can also be found on sandy open flats among shells or cobble.

<b>Table B-9. Federally listed threatened and endangered species in TAP counties within Texas.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Attwater's Greater Prairie-Chicken ( <i>Tympanuchus cupido attwateri</i> )	E	Austin, Fort Bend, Galveston, Waller, Wharton, Colorado	Coastal prairie; uses shorter grasses for courtship and feeding and tall grasses for nesting, feeding, and loafing. Also uses fallow rice fields and other combinations of pasture and croplands.
Least Tern, interior population ( <i>Sterna antillarum athalassos</i> )	E	Anderson, Austin, Cass, Cherokee, Fort Bend, Gregg, Grimes, Harrison, Henderson, Houston, Leon, Madison, Marion, Morris, Panola, Rusk, Shelby, Smith, Upshur, Waller, Wharton, Bowie, Brazos, Camp, Colorado, Ellis, Fayette, Freestone, Jackson, Kaufman, Limestone, Navarro, Robertson, Titus, Van Zandt, Washington, Wood	Nesting habitat includes bare or sparsely vegetated sand, shell, and gravel beaches, sandbars, islands, and salt flats associated with rivers and reservoirs.
Golden Cheeked Warbler ( <i>Dendroica chrysoparia</i> )	E	Ellis	Old-growth and mature regrowth Ashe juniper-oak woodlands in limestone hills and canyons, 180 to 520 meters elevation. Nests in upright fork of mature juniper, 1.5-9 m above ground. Depends on juniper bark for nesting material.
Red Cockaded Woodpecker ( <i>Picoides borealis</i> )	E	Anderson, Angelina, Cherokee, Grimes, Hardin, Harris, Houston, Jasper, Liberty, Montgomery, Nacogdoches, Newton, Panola, Polk, Sabine, San Augustine, San Jacinto, Trinity, Tyler, Walker,	Inhabit open, mature pine woodlands, rarely deciduous or mixed pine-hardwoods. Preferred habitat is a broad savanna with a scattered overstory of large pines, dense groundcover and a sparse midstory.

<b>Table B-9. Federally listed threatened and endangered species in TAP counties within Texas.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Houston Toad <i>(Bufo houstonensis)</i>	E(CH)	Austin, Fort Bend, Harris, Leon, Liberty, Waller, Brazos, Colorado, Freestone, Robertson, Washington	Restricted to areas with soft sandy soils; pine and mixed deciduous forest, and coastal prairie. Burrows in soil or seeks refuge in leaf litter or under objects. Eggs and larvae develop in shallow water in ditches, temporary ponds, and pastures, and other seasonally flooded low spots.
Green Sea Turtle <i>(Chelonia mydas)</i>	T	Brazoria, Chambers, Galveston, Harris, Jefferson, Matagorda, Calhoun	Feeds in shallow, low-energy waters with abundant submerged vegetation and migrates across open seas. Adults are tropical in distribution and juveniles range into temperate waters. Nests on beaches on islands and mainlands. Prefers high energy beaches with deep sand and returns to natal beach.
Hawksbill Sea Turtle <i>(Eretmochelys imbricata)</i>	E	Brazoria, Chambers, Galveston, Jefferson, Matagorda, Calhoun	Shallow coastal waters with rocky bottoms, coral reefs, and mangrove-bordered bays and estuaries. Nests on undisturbed, deep-sand beaches, from high energy ocean beaches to small pocket beaches several meters wide.
Kemp's Ridley Sea Turtle <i>(Lepidochelys kempii)</i>	E	Brazoria, Chambers, Galveston, Jefferson, Matagorda, Calhoun	Shallow coastal and estuarine waters over sand or mud bottoms where crabs are numerous. Nests on in elevated dune areas, especially on beaches backed up by large swamps or bodies of open water with seasonal, narrow ocean connections.

<b>Table B-9. Federally listed threatened and endangered species in TAP counties within Texas.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Leatherback Sea Turtle <i>(Dermochelys coriacea)</i>	E	Brazoria, Chambers, Galveston, Harris, Jefferson, Matagorda, Calhoun	Open ocean, often near edge of continental shelf; also seas, gulfs, bays, and estuaries. Dives to depths of several thousand meters. May linger at the surface at midday but spends most of time submerged. Nests on sloping sandy beaches backed up by vegetation, near deep water and rough seas.
Loggerhead Sea Turtle <i>(Caretta caretta)</i>	T	Brazoria, Chambers, Galveston, Harris, Jefferson, Matagorda, Calhoun, Jackson	Open sea and in bays, estuaries, lagoons, creeks, and mouths of rivers. mainly warm temperate and subtropical regions not far from shorelines. Nesting occurs on open sandy beaches above high-tide mark, seaward of well-developed dunes. Nests primarily on high-energy beaches on barrier strands.
American burying beetle <i>(Nicrophorus americanus)</i>	E	Bowie	Broad vegetational range from mature forests to grassland, old field shrubland, and hardwood forests. Adults live primarily above ground and eggs are laid in soil adjacent to buried carcass.
<b>Plants</b>			
White Bladderpod <i>(Lesquerella pallida)</i>	E	San Augustine	Open areas associated with exposed calcareous Weches Formation outcrops, seepy and wet, thin, poorly drained, and alkaline. The surrounding vegetation is pine-oak-hickory.

<b>Table B-9. Federally listed threatened and endangered species in TAP counties within Texas.</b>			
<b>Species</b>	<b>Status</b>	<b>Counties</b>	<b>Habitat</b>
Prairie Dawn ( <i>Hymenoxys texana</i> )	E	Fort Bend, Harris, Trinity	Poorly drained, sparsely vegetated areas at the bases of small mounds in open grassland or in almost barren areas. Soils are slightly saline, sticky when wet and powdery when dry.
Navasota Ladies'-tresses ( <i>Spiranthes parksii</i> )	E	Grimes, Jasper, Leon, Madison, Brazos, Fayette, Freestone, Limestone, Washington	Endemic to the Oak Woodlands and Prairies region of east-central Texas in seasonally moist soils along open wooded margins of creeks, drainages, and intermittent tributaries of the Brazos and Navasota Rivers.
Texas Trailing Phlox ( <i>Phlox nivalis ssp. texensis</i> )	E	Hardin, Polk, Tyler	Deep sandy to sandy-loam soils, in open, grassy areas of long-leaf pine savannah or mixed pine/hardwood forest . Relatively open canopy and understory is preferred.
Large-fruited Sand-verbena ( <i>Abronia macrocarpa</i> )	E	Leon, Freestone, Robertson	Deep, well-drained sands on actively blowing sand dunes within post oak-grassland mosaic vegetation.
Tiny Tim ( <i>Geocarpon minimum</i> )	T	Anderson	Sandstone glades and saline prairies on very thin soils high in sodium and magnesium. Habitat is barren-like, with little vegetation.

<b>Table B-10. Federally listed threatened and endangered species with Critical Habitat status for each state.</b>			
<b>Species</b>	<b>State</b>	<b>Status</b>	<b>Counties</b>
Perdido Key Beach Mouse <i>(Peromyscus polionotus trissyllepsis)</i>	AL	E	Perdido Key including the Gulf State Park, Baldwin County
Piping Plover <i>(Charadrius melodus)</i>	AL	T	Baldwin and Mobile beaches
Gulf Sturgeon <i>(Acipenser oxyrinchus desotoi)</i>	AL	T	Baldwin, Choctaw, Coffee, Conecuh, Clarke, Covington, Dale, Escambia, Geneva, Houston, Mobile, Monroe, Washington, Wilcox
Slackwater Darter <i>(Etheostoma boschungii)</i>	AL	T	Coosa, Lauderdale, Limestone, Madison
Fine-lined Pocketbook Mussel <i>(Lampsilis altilis)</i>	AL	T	Blount, Bibb, Calhoun, Chilton, Coosa, Cullman, Dallas, DeKalb, Elmore, Etowah, Fayette, Jefferson, Lawrence, Shelby, St. Clair, Talladega, Tuscaloosa, Fayette, Walker, Winston
Upland Combshell Mussel <i>(Epioblasma metastrata)</i>	AL	E	Bibb, Jefferson, St. Clair
Southern Clubshell Mussel <i>(Pleurobema decisum)</i>	AL	E	Calhoun, Dallas, Etowah, Fayette, Greene, Lamar, Pickens, Shelby, St. Clair, Talladega, Tuscaloosa
Alabama Moccasinshell Mussel <i>(Medionidus acutissimus)</i>	AL	T	Etowah, Greene, Lamar, Lawrence, Pickens, St. Clair, Shelby, Tuscaloosa, Winston
Coosa Moccasinshell Mussel <i>(Medionidus parvulus)</i>	AL	E	Talladega, Winston
Cumberlandian Combshell Mussel <i>(Epioblasma brevidens)</i>	AL	E	Colbert, Etowah, Franklin
Orangenacre Mucket Mussel <i>(Lampsilis perovalis)</i>	AL	T	Bibb, Dallas, Fayette, Greene, Jefferson, Lamar, Lawrence, Marion, Pickens, Shelby, Tuscaloosa, Winston
Triangular Kidneyshell Mussel <i>(Ptychobranchnus greeni)</i>	AL	E	Blount, Calhoun, Cullman, Etowah, Jefferson, Lawrence, Shelby, St. Clair, Talladega, Walker, Winston
Southern Acornshell Mussel <i>(Epioblasma othcaloogensis)</i>	AL	E	Bibb, St. Clair, Shelby (P)
Ovate Clubshell Mussel <i>(Pleurobema perovatium)</i>	AL	E	Bibb, Cullman, Etowah, Greene, Jefferson, Perry, Pickens, St. Clair, Sumter, Tuscaloosa, Walker, Winston

<b>Table B-10. Federally listed threatened and endangered species with Critical Habitat status for each state.</b>			
<b>Species</b>	<b>State</b>	<b>Status</b>	<b>Counties</b>
Southern Pigtoe Mussel ( <i>Pleurobema georgianum</i> )	AL	E	Calhoun, Coosa, Etowah, St. Clair, Talladega
Dark Pigtoe Pearly Mussel ( <i>Pleurobema furvum</i> )	AL	E	Fayette, Lawrence, Tuscaloosa, Winston, Jefferson
West Indian Manatee ( <i>Trichechus manatus</i> )	FL	E	Brevard, Broward, Charlotte, Collier, Glades, Flagler, Indian River, Lake, Lee, Manatee, Marion, Martin, Miami-Dade, Okeechobee, Palm Beach, Pasco, Pinellas, Putnam, St. Lucie, Sarasota, Seminole, Volusia
Choctawhatchee Beach Deermouse ( <i>Peromyscus polionotus alloparys</i> )	FL	T	Bay
Perdido Key Beach Mouse ( <i>Peromyscus polionotus trissyllepsis</i> )	FL	E	Escambia
Alabama Beach Mouse ( <i>Peromyscus polionotus ammobates</i> )	FL	E	Escambia
Key Oryzomys ( <i>Oryzomys palustris natator</i> )	FL	E	Monroe
Cape Sable Seaside Sparrow ( <i>Ammodramus maritimus mirabilis</i> )	FL	E	Collier, Miami-Dade, Monroe
Everglade Snail Kite ( <i>Rostrhamus sociabilis plumbeus</i> )	FL	E	Broward, Collier, Glades, Highlands, Indian River, Lake, Lee, Marion, Miami-Dade, Monroe, Okeechobee, Orange, Osceola, Palm Beach, Polk, St. Lucie, Sumter, Volusia
Piping Plover ( <i>Charadrius melodus</i> )	FL	T	Bay, Charlotte, Collier, Dade, Duval, Franklin, Gulf, Lee, Manatee, Monroe, Pinellas, Volusia
Gulf Sturgeon ( <i>Acipenser oxyrinchus desotoi</i> )	FL	T	Bay, Calhoun, Escambia, Flagler, Franklin, Gadsden, Gulf, Holmes, Jackson, Jefferson, Leon, Manatee, Okaloosa, Pasco, Pinellas
American Crocodile	FL	E	Broward, Collier, Lee, Miami-Dade, Monroe

<b>Table B-10. Federally listed threatened and endangered species with Critical Habitat status for each state.</b>			
<b>Species</b>	<b>State</b>	<b>Status</b>	<b>Counties</b>
<i>(Crocodylus acutus)</i>			
Piping Plover <i>(Charadrius melodus)</i>	NC	T	Brunswick, Carteret, Currituck, Dare, Hyde, New Hanover, Onslow, Pender
Waccamaw Silverside <i>(Menidia extensa)</i>	NC	T	Columbus
Piping Plover <i>(Charadrius melodus)</i>	SC	T	No county specific data is available for this species.
Spotfin Chub <i>(Erimonax monachus)</i>	TN	T	Lewis
Slackwater Darter <i>(Etheostoma boschungii)</i>	TN	T	Lawrence, Wayne, Lincoln
Cumberlandian Combshell Mussel <i>(Epioblasma brevidens)</i>	TN	E	Marshall
Oyster Mussel <i>(Epioblasma capsaeformis)</i>	TN	E	Marshall
Whooping Crane <i>(Grus americana)</i>	TX	E	Austin, Brazoria, Fort Bend, Galveston, Grimes, Harris, Henderson, Leon, Matagorda, Waller, Wharton, Brazos, Calhoun, Colorado, Ellis, Fayette, Freestone, Jackson, Kaufman, Limestone, Navarro, Robertson, Washington
Piping Plover <i>(Charadrius melodus)</i>	TX	T	Brazoria, Chambers, Galveston, Jefferson, Matagorda, Orange, Calhoun
Houston Toad <i>(Bufo houstonensis)</i>	TX	E	Austin, Fort Bend, Harris, Leon, Liberty, Waller, Brazos, Colorado, Freestone, Robertson, Washington

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**APPENDIX C: WATER**

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**Table C-1. Primary Chemicals Used for Tree, Bush, and Vine Crops**

<b>Crop</b>	<b>TAP States Where Grown</b>	<b>Chemical</b>	<b>Chemical Type</b>	<b>Regulations</b>
Apples	North Carolina South Carolina Tennessee	Azinphos-methyl	Insecticide	<a href="http://www.epa.gov/pesticides/op/azinphos/azm_02.pdf">http://www.epa.gov/pesticides/op/azinphos/azm_02.pdf</a>
		Mancozeb	Fungicide	<a href="http://www.epa.gov/REDs/mancozeb_red.pdf">http://www.epa.gov/REDs/mancozeb_red.pdf</a>
Blueberries	North Carolina	Phosmet	Insecticide	<a href="http://www.epa.gov/REDs/phosmet_ired.pdf">http://www.epa.gov/REDs/phosmet_ired.pdf</a>
		Fenbuconazole	Fungicide	<a href="http://epa.gov/pesticides/foia/reviews/129011.htm">http://epa.gov/pesticides/foia/reviews/129011.htm</a>
Christmas Trees	Alabama Louisiana Mississippi North Carolina Tennessee	Chlorpyrifos	Insecticide	<a href="http://www.epa.gov/REDs/chlorpyrifos_ired.pdf">http://www.epa.gov/REDs/chlorpyrifos_ired.pdf</a>
		Chlorothalonil	Fungicide	<a href="http://www.epa.gov/REDs/0097red.pdf">http://www.epa.gov/REDs/0097red.pdf</a>
Citrus Fruits	Florida Louisiana Texas	Petroleum distillate	Insecticide	<a href="http://www.epa.gov/oppsrrd1/REDs/aliphatic_solvents_red.pdf">http://www.epa.gov/oppsrrd1/REDs/aliphatic_solvents_red.pdf</a>
		Copper hydroxide	Fungicide	<a href="http://www.epa.gov/oppsrrd1/registration_review/conventionals.pdf">http://www.epa.gov/oppsrrd1/registration_review/conventionals.pdf</a>
Grapes	Arkansas	Petroleum distillate	Insecticide	<a href="http://www.epa.gov/oppsrrd1/REDs/aliphatic_solvents_red.pdf">http://www.epa.gov/oppsrrd1/REDs/aliphatic_solvents_red.pdf</a>
		Sulfur	Fungicide	<a href="http://www.epa.gov/oppsrrd1/registration_review/conventionals.pdf">http://www.epa.gov/oppsrrd1/registration_review/conventionals.pdf</a>
Peaches	Alabama Arkansas Mississippi South Carolina Tennessee	Phosmet	Insecticide	<a href="http://www.epa.gov/REDs/phosmet_ired.pdf">http://www.epa.gov/REDs/phosmet_ired.pdf</a>
		Sulfur	Fungicide	<a href="http://www.epa.gov/oppsrrd1/registration_review/conventionals.pdf">http://www.epa.gov/oppsrrd1/registration_review/conventionals.pdf</a>
Pecans	Alabama, Arkansas, Louisiana, Mississippi, South Carolina, and Texas	Chlorpyrifos	Insecticide	<a href="http://www.epa.gov/REDs/chlorpyrifos_ired.pdf">http://www.epa.gov/REDs/chlorpyrifos_ired.pdf</a>
		Triphenyltin hydroxide	Fungicide	<a href="http://www.epa.gov/oppsrrd1/REDs/0099red.pdf">http://www.epa.gov/oppsrrd1/REDs/0099red.pdf</a>

**Table C-2. Primary Chemicals Used for Row Crops**

<b>Crop</b>	<b>TAP States Where Grown</b>	<b>Chemical</b>	<b>Chemical Type</b>	<b>Regulations</b>
Corn	Mississippi South Carolina Tennessee	Atrazine	Herbicide	<a href="http://www.epa.gov/oppsrrd1/reregistration/atrazine/efed_redchap_2_2apr02.pdf">http://www.epa.gov/oppsrrd1/reregistration/atrazine/efed_redchap_2_2apr02.pdf</a>
		Tefluthrin	Insecticide	<a href="http://www.epa.gov/pesticides/foia/reviews/128912.htm">http://www.epa.gov/pesticides/foia/reviews/128912.htm</a>
Cotton	Alabama Louisiana Mississippi North Carolina Texas	Glyphosate isopropylamine salt	Herbicide	<a href="http://www.epa.gov/espp/effects/glyphosate-red.pdf">http://www.epa.gov/espp/effects/glyphosate-red.pdf</a>
		Acephate	Insecticide	<a href="http://www.epa.gov/oppsrrd1/op/acephate/efedrra.pdf">http://www.epa.gov/oppsrrd1/op/acephate/efedrra.pdf</a>
		PCNB	Fungicide	<a href="http://epa.gov/pesticides/foia/reviews/129011.htm">http://epa.gov/pesticides/foia/reviews/129011.htm</a>
Hay	Alabama Arkansas Florida North Carolina South Carolina Tennessee Texas	Carbofuran	Insecticide	<a href="http://www.epa.gov/oppsrrd1/REDs/carbofuran_ired.pdf">http://www.epa.gov/oppsrrd1/REDs/carbofuran_ired.pdf</a>
		Picloram	Herbicide	<a href="http://www.epa.gov/oppsrrd1/REDs/0096.pdf">http://www.epa.gov/oppsrrd1/REDs/0096.pdf</a>
Peanuts	Alabama Florida	Aldicarb	Insecticide	<a href="http://epa.gov/pesticides/foia/reviews/098301.htm">http://epa.gov/pesticides/foia/reviews/098301.htm</a>
		Pendimethalin	Herbicide	<a href="http://www.epa.gov/REDs/0187red.pdf">http://www.epa.gov/REDs/0187red.pdf</a>
Rice	Arkansas Louisiana	Lambda-cyhalothrin	Insecticide	<a href="http://epa.gov/pesticides/foia/reviews/128897.htm">http://epa.gov/pesticides/foia/reviews/128897.htm</a>
		Methyl parathion	Insecticide	<a href="http://www.epa.gov/oppsrrd1/REDs/methylparathion_ired.pdf">http://www.epa.gov/oppsrrd1/REDs/methylparathion_ired.pdf</a>
		Paraquat	Herbicide	<a href="http://www.epa.gov/REDs/0262red.pdf">http://www.epa.gov/REDs/0262red.pdf</a>
Soybeans	Arkansas, Louisiana, Mississippi, North Carolina, South Carolina,	Azoxystrobin	Fungicide	<a href="http://epa.gov/pesticides/foia/reviews/128810.htm">http://epa.gov/pesticides/foia/reviews/128810.htm</a>

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<b>Crop</b>	<b>TAP States Where Grown</b>	<b>Chemical</b>	<b>Chemical Type</b>	<b>Regulations</b>
	and Tennessee			
		Glyphosate isopropylamine salt	Herbicide	<a href="http://www.epa.gov/espp/effects/glyphosate-red.pdf">http://www.epa.gov/espp/effects/glyphosate-red.pdf</a>
Sugarcane	Florida	Azinphos-methyl	Pesticide	<a href="http://www.epa.gov/pesticides/op/azinphos/azm_02.pdf">http://www.epa.gov/pesticides/op/azinphos/azm_02.pdf</a>
Winter Wheat	Texas	Metsulfuron-methyl	Herbicide	<a href="http://www.epa.gov/pesticides/foia/reviews/122010.htm">http://www.epa.gov/pesticides/foia/reviews/122010.htm</a>
		Chlorpyrifos	Insecticide	<a href="http://www.epa.gov/REDs/chlorpyrifos_ired.pdf">http://www.epa.gov/REDs/chlorpyrifos_ired.pdf</a>

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**APPENDIX D: ECONOMIC ANALYSIS**

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## **Socioeconomics and Environmental Justice Analysis**

### *Employment and Income*

#### **ALABAMA**

Within the combined counties the civilian labor force fluctuated between a low of 1,320,565 individuals in 2002 (unemployment rate 5.58 percent) to a high of 1,347,572 individuals in 2000 (unemployment rate 4.09 percent) (Bureau of Labor Statistics [BLS] 2006). The BLS annual labor force estimate in 2005 was 1,333,585 individuals with an annual unemployment rate of 4.05 percent (BLS 2006). The annual unemployment rate within the combined counties increased 1.57 percent between 2000 and 2003 to a high of 5.66 percent; the annual unemployment rate for 2004 showed a decrease of 0.36 percent and the rate in 2005 fell another 1.25 percent to a low of 4.05 percent, approximately equal to the annual unemployment rate in 2000. This trend matched the overall employment trend within the state of Alabama; however, the combined counties experienced deeper unemployment during the period from 2000 to 2005 BLS 2006).

Using Bureau of Economic Analysis (BEA) data the employment profile within the combined counties and the State of Alabama can be further detailed. Between 2001 to 2004 non-farm employment increased 1.35 percent to 1,479,672 individuals (BEA 2006a). This was slightly lower than the State increase of 2.27 percent (BEA 2006a). The greatest increase in the number of employment opportunities within the ROI was observed within the Management of Companies and Enterprises (21.44 percent increase, 8,053 positions); Real Estate and Rental and Leasing (12.65 percent, 47,817 positions); and Military (10.20 percent, 19,260 positions). Farm employment within the ROI declined by 2.53 percent to 33,176 positions, this was roughly equivalent to the decline in statewide farm employment (BEA 2006a).

Total personal income within the combined counties increased 12.62 percent between 2001 to 2004 (BEA 2006b). Nonfarm earnings increased 13.99 percent and farm earnings increased by 30.67 percent (BEA 2006b). Within the state of Alabama, total personal income increased by 13.50 percent (BEA 2006b). Nonfarm earnings increased 15.47 percent and farm earnings increased 27.08 percent (BEA 2006b). Median household income within the ROI ranged from a low of \$16,646 to a high of \$55,440, with an average increase of 47.57 percent between 1990 and 2000 (U.S. Census Bureau [USCB] 1993, 2002). Within the State of Alabama, the median household income was \$34,135 in 2000 a 44.66 percent increase over 1990 (USCB 1993, 2002).

#### **ARKANSAS**

Within the combined counties the civilian labor force fluctuated between a low of 118,768 individuals in 2003 (unemployment rate 7.72 percent) to a high of 121,884 individuals in 2000 (unemployment rate 5.40 percent) (BLS 2006). The BLS annual labor force estimate in 2005 was 121,624 individuals with an annual unemployment rate of 6.91 percent (BLS 2006). The annual unemployment rate within the combined counties increased 2.32 percent between 2000 to 2003 to a high of 7.72 percent; the annual unemployment rate for 2004 showed a decrease of 0.08 percent and the rate in 2005 fell another 0.73 percent to 6.91 percent. This trend matched the overall employment trend within the state of Alabama; however, the combined counties experienced deeper unemployment during the period from 2000 to 2005 BLS 2006).

Using BEA data the employment profile within the combined counties and the State of Arkansas can be further detailed. Between 2001 to 2004 non-farm employment declined by 3.83 percent to 126,614 individuals (BEA 2006a). The State of Arkansas during this period experienced an increase of 1.89 percent in the number of employment positions (BEA 2006a). The greatest increase in the number of employment opportunities within the ROI was observed within the

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Educational Services (47.78 percent, 764 positions); Health Care and Social Assistance (24.39 percent increase, 8,436 positions); and Administrative and Waste Services (14.01 percent, 4,884 positions). The Utilities sector lost the greatest percentage of positions (35.83 percent, 154 positions), followed by Wholesale Trade (30.74 percent, 2,483 positions). Farm employment within this period declined by 3.60 percent to 6,247 positions, this was roughly equivalent to the decline in statewide farm employment (BEA 2006a).

Total personal income within the combined counties increased 10.96 percent between 2001 to 2004 (BEA 2006b). Nonfarm earnings increased 6.98 percent and farm earnings increased by 125.82 percent (BEA 2006b). Within the State of Arkansas, total personal income increased by 14.56 percent (BEA 2006b). Nonfarm earnings increased 14.56 percent and farm earnings increased 95.10 percent (BEA 2006b). Median household income within the ROI ranged from a low of \$20,510 to a high of \$31,758, with an average increase of 60.39 percent between 1990 and 2000 (USCB 1993, 2002). Within the State of Arkansas, the median household income was \$32,182 in 2000, a 52.18 percent increase over 1990 (USCB 1993, 2002).

## **FLORIDA**

Within the combined counties the civilian labor force fluctuated between a low of 5,171,608 individuals in 2000 (unemployment rate 4.04 percent) to a high of 5,739,706 individuals in 2005 (unemployment rate 3.79 percent) (BLS 2006). The annual unemployment rate within the combined counties increased 1.78 percent between 2000 to 2002 to a high of 5.82 percent; the annual unemployment rate for 2003 showed a decrease of 0.48 percent and the rate in 2005 fell another 1.55 percent to 3.79 percent. This trend matched the overall employment trend within the state of Florida; however, the combined counties experienced deeper unemployment during the period from 2000 to 2005 BLS 2006).

Using BEA data the employment profile within the combined counties and the State of Florida can be further detailed. Between 2001 to 2004 non-farm employment increased by 6.85 percent to 6,342,373 individuals (BEA 2006a). The State of Florida during this period experienced an increase of 6.45 percent in the number of employment positions (BEA 2006a). The greatest increase in the number of employment opportunities within the ROI was observed within the Real Estate and Rental and Leasing (20.79 percent, 341,756 positions); Management of Companies and Enterprises (19.51 percent increase, 48,196 positions); and Educational Services (17.75 percent, 100,079 positions). Farm employment within this period declined by 5.37 percent to 55,355 positions, this was slightly more than the decline in statewide farm employment (BEA 2006a).

Total personal income within the combined counties increased 13.72 percent between 2001 to 2004 (BEA 2006b). Nonfarm earnings increased 18.99 percent and farm earnings declined by 0.38 percent (BEA 2006b). Within the State of Florida, total personal income increased by 14.31 percent (BEA 2006b). Nonfarm earnings increased 19.10 percent and farm earnings declined by 0.99 percent (BEA 2006b). Median household income within the ROI ranged from a low of \$26,575 to a high of \$348,289, with an average increase of 42.67 percent between 1990 and 2000 (USCB 1993, 2002). Within the State of Florida, the median household income was \$38,819 in 2000, a 41.25 percent increase over 1990 (USCB 1993, 2002).

## **LOUISIANA**

Within the State of Louisiana the civilian labor force fluctuated between a low of 2,017,035 individuals in 2002 (unemployment rate 5.93 percent) to a high of 2,071,486 individuals in 2005 (unemployment rate 7.15 percent) (BLS 2006). The annual unemployment rate increased 1.35 percent between 2000 to 2003; the annual unemployment rate for 2004 showed a decrease of 0.57 percent; however, the annual unemployment rate climbed in 2005 to 7.15 percent (BLS 2006).

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Using BEA data the employment profile for the State of Louisiana can be further detailed. Between 2001 to 2004 non-farm employment increased by 2.31 percent to 2,426,623 individuals (BEA 2006a). The greatest increase in the number of employment opportunities within the state was observed within the Educational Services (15.37 percent, 45,789 positions); and Health Care and Social Assistance (10.03 percent increase, 247,683 positions). Farm employment within this period declined by 7.85 percent to 34,498 positions (BEA 2006a).

Total personal income within the State of Louisiana increased 11.58 percent between 2001 to 2004 (BEA 2006b). Nonfarm earnings increased 13.36 percent and farm earnings increased by 47.09 percent (BEA 2006b). Within the State of Louisiana, the median household income was \$32,566 in 2000, a 48.37 percent increase over 1990 (USCB 1993, 2002).

## **MISSISSIPPI**

Within the State of Mississippi the civilian labor force fluctuated between a low of 1,302,564 individuals in 2001 (unemployment rate 5.58 percent) to a high of 1,343,287 individuals in 2005 (unemployment rate 7.89 percent) (BLS 2006). The annual unemployment rate increased 1.04 percent between 2000 to 2002; the annual unemployment rate for 2003 showed a decrease of 0.33 percent; however, the annual unemployment rate climbed in 2005 to 7.89 percent (BLS 2006).

Using BEA data the employment profile for the State of Mississippi can be further detailed. Between 2001 to 2004 non-farm employment increased by 1.58 percent to 1,438,990 individuals (BEA 2006a). The greatest increase in the number of employment opportunities within the state was observed within the Administrative and Waste Services (18.96 percent, 64,481 positions); Educational Services (12.69 percent, 19,930 positions); and Real Estate, and Rental, and Leasing (12.27 percent increase, 36,006 positions). Farm employment within this period declined by 4.06 percent to 50,907 positions (BEA 2006a).

Total personal income within the State of Mississippi increased 13.36 percent between 2001 to 2004 (BEA 2006b). Nonfarm earnings increased 14.09 percent and farm earnings increased by 65.65 percent (BEA 2006b). Within the State of Mississippi, the median household income was \$31,330 in 2000, a 55.59 percent increase over 1990 (USCB 1993, 2002).

## **NORTH CAROLINA**

Within the combined counties the civilian labor force fluctuated between a low of 521,360 individuals in 2000 (unemployment rate 4.48 percent) to a high of 562,668 individuals in 2005 (unemployment rate 5.17 percent) (BLS 2006). The annual unemployment rate within the combined counties increased 2.39 percent between 2000 to 2002 to a high of 6.87 percent; the annual unemployment rate for 2003 showed a decrease of 0.49 percent and the rate in 2005 fell another 1.21 percent to 5.17 percent. This trend matched the overall employment trend within the State of North Carolina; however, the combined counties experienced slightly deeper unemployment during the period from 2000 to 2005 BLS 2006).

Using BEA data the employment profile within the combined counties and the State of North Carolina can be further detailed. Between 2001 to 2004 non-farm employment increased 5.53 percent to 634,014 individuals (BEA 2006a). The State of North Carolina during this period experienced an increase of 2.01 percent in the number of employment positions (BEA 2006a). The greatest increase in the number of employment opportunities within the ROI was observed within the Administrative and Waste Services (39.18 percent, 33,698 positions); Health Care and Social Assistance (27.80 percent increase, 49,547 positions); and Real Estate, and Rental, and Leasing (25.03 percent, 26,342 positions). Farm employment within this period declined by 8.18 percent to 14,089 positions, this was roughly equivalent to the decline in statewide farm employment (BEA 2006a).

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Total personal income within the combined counties increased 13.30 percent between 2001 to 2004 (BEA 2006b). Nonfarm earnings increased 15.60 percent and farm earnings increased by 2.03 percent (BEA 2006b). Within the State of North Carolina, total personal income increased by 11.11 percent (BEA 2006b). Nonfarm earnings increased 12.29 percent and farm earnings declined by 16.19 percent (BEA 2006b). Median household income within the ROI ranged from a low of \$25,684 to a high of \$42,411, with an average increase of 49.01 percent between 1990 and 2000 (USCB 1993, 2002). Within the State of North Carolina, the median household income was \$39,184 in 2000, a 47.05 percent increase over 1990 (USCB 1993, 2002).

## **SOUTH CAROLINA**

Within Horry County the civilian labor force fluctuated between a low of 102,816 individuals in 2001 (unemployment rate 4.90 percent) to a high of 121,671 individuals in 2005 (unemployment rate 5.53 percent) (BLS 2006). The annual unemployment rate within Horry County increased 2.21 percent between 2000 to 2004 to a high of 5.74 percent; the annual unemployment rate for 2005 showed a decrease of 0.21 percent to 5.53 percent. This trend matched the overall employment trend within the State of South Carolina; however, Horry County experienced lighter unemployment during the period from 2000 to 2005 (BLS 2006).

Using BEA data the employment profile for Horry County and the State of South Carolina can be further detailed. Between 2001 to 2004 non-farm employment increased by 8.52 percent to 131,956 individuals (BEA 2006a). The State of South Carolina during this period experienced an increase of 2.13 percent in the number of employment positions (BEA 2006a). The greatest increase in the number of employment opportunities within the ROI was observed within the Management of Companies and Enterprises (29.83 percent, 544 positions); Educational Services (24.31 percent increase, 634 positions); and Administrative and Waste Services (21.96 percent, 6,848 positions). Farm employment within this period increased by 2.38 percent to 1,551 positions, this was roughly equivalent to the increase in statewide farm employment (BEA 2006a).

Total personal income within Horry County increased 16.93 percent between 2001 to 2004 (BEA 2006b). Nonfarm earnings increased 20.47 percent and farm earnings declined by 58.14 percent (BEA 2006b). Within the State of South Carolina, total personal income increased by 12.47 percent (BEA 2006b). Nonfarm earnings increased 13.15 percent and farm earnings increased 5.10 percent (BEA 2006b). Median household income within Horry County was \$36,470, an increase of 46.12 percent between 1990 and 2000 (USCB 1993, 2002). Within the State of South Carolina, the median household income was \$37,082 in 2000, a 41.23 percent increase over 1990 (USCB 1993, 2002).

## **TENNESSEE**

Within the combined counties the civilian labor force fluctuated between a low of 519,740 individuals in 2005 (unemployment rate 6.71 percent) to a high of 532,114 individuals in 2000 (unemployment rate 4.30 percent) (BLS 2006). The annual unemployment rate within the combined counties increased 2.41 percent between 2000 to 2005 to a high of 6.71 percent. This trend matched the overall employment trend within the State of Tennessee; however, the combined counties experienced deeper unemployment during the period from 2000 to 2005 (BLS 2006).

Using BEA data the employment profile within the combined counties and the State of Tennessee can be further detailed. Between 2001 to 2004 non-farm employment declined by 0.35 percent to 704,485 individuals (BEA 2006a). The State of Tennessee during this period experienced an increase of 2.61 percent in the number of employment positions (BEA 2006a). The greatest increase in the number of employment opportunities within the ROI was observed within the

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Arts, Entertainment, and Recreation (17.36 percent, 9,411 positions); Educational Services (12.01 percent increase, 8,282 positions); and Real Estate, and Rental, and Leasing (10.81 percent, 26,103 positions). The Information sector lost the greatest percentage of positions (12.07 percent, 9,764 positions), followed by the Management of Companies and Enterprises (10.05 percent, 4,691 positions). Farm employment within this period declined by 2.62 percent to 9,434 positions, this was roughly equivalent to the decline in statewide farm employment (BEA 2006a).

Total personal income within the combined counties increased 11.57 percent between 2001 to 2004 (BEA 2006b). Nonfarm earnings increased 14.13 percent and farm earnings declined by 120.36 percent (BEA 2006b). Within the State of Tennessee, total personal income increased by 13.90 percent (BEA 2006b). Nonfarm earnings increased 16.93 percent and farm earnings declined by 46.17 percent (BEA 2006b). Median household income within the ROI ranged from a low of \$26,576 to a high of \$40,279, with an average increase of 55.74 percent between 1990 and 2000 (USCB 1993, 2002). Within the State of Tennessee, the median household income was \$36,360 in 2000, a 46.57 percent increase over 1990 (USCB 1993, 2002).

## **TEXAS**

Within the combined counties the civilian labor force fluctuated between a low of 3,109,353 individuals in 2000 (unemployment rate 4.60 percent) to a high of 3,388,954 individuals in 2005 (unemployment rate 5.64 percent) (BLS 2006). The annual unemployment rate within the combined counties increased 2.29 percent between 2000 to 2003 to a high of 6.89 percent; the annual unemployment rate for 2004 showed a decrease of 0.56 percent and the rate in 2005 fell another 0.69 percent to 5.64 percent. This trend matched the overall employment trend within the State of Texas; however, the combined counties experienced deeper unemployment during the period from 2000 to 2005 BLS 2006).

Using BEA data the employment profile within the combined counties and the State of Texas can be further detailed. Between 2001 to 2004 non-farm employment increased by 2.61 percent to 3,742,888 individuals (BEA 2006a). The State of Texas during this period experienced an increase of 2.59 percent in the number of employment positions (BEA 2006a). The greatest increase in the number of employment opportunities within the ROI was observed within the Management of Companies and Enterprises (28.32 percent, 15,604 positions); Health Care and Social Assistance (13.60 percent increase, 316,324 positions); and Arts, Entertainment, and Recreation (11.55 percent, 55,456 positions). Farm employment within this period declined by 4.39 percent to 53,863 positions, this was roughly equivalent to the decline in statewide farm employment (BEA 2006a).

Total personal income within the combined counties increased 11.02 percent between 2001 to 2004 (BEA 2006b). Nonfarm earnings increased 10.13 percent and farm earnings increased by 23.62 percent (BEA 2006b). Within the State of Texas, total personal income increased by 11.45 percent (BEA 2006b). Nonfarm earnings increased 11.39 percent and farm earnings increased 39.53 percent (BEA 2006b). Median household income within the ROI ranged from a low of \$25,347 to a high of \$63,831, with an average increase of 51.67 percent between 1990 and 2000 (USCB 1993, 2002). Within the State of Texas, the median household income was \$39,927 in 2000, a 50.49 percent increase over 1990 (USCB 1993, 2002).

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## *Farm Sales*

### **ALABAMA**

Total farm sales increased 1.77 percent to \$2.0 billion in 2002 within the combined counties (U.S. Department of Agriculture [USDA], National Agricultural Statistics Service [NASS] 2002). Total farm sales within the State of Alabama increased by 2.07 percent, slightly higher than the ROI (USDA NASS 2002). Total sales of fruits, trees, nuts, and berries increased 121.31 percent within the ROI to \$13.7 million in 2002 and increased 148.31 percent in the State of Alabama to \$20.5 million (USDA NASS 2002). The ROI accounted for approximately 66.73 percent of the total value of sales of fruits, trees, nuts, and berries within the state.

### **ARKANSAS**

Total farm sales decreased 19.38 percent to \$673.9 million in 2002 within the combined counties (USDA NASS 2002). Total farm sales within the State of Arkansas decreased by 13.39 percent, slightly less than the ROI (USDA NASS 2002). Total sales of fruits, trees, nuts, and berries decreased 21.63 percent within the ROI to \$0.7 million in 2002 and increased 31.46 percent in the State of Arkansas to \$12.9 million (USDA NASS 2002). The ROI accounted for approximately 5.67 percent of the total value of sales of fruits, trees, nuts, and berries within the state.

### **FLORIDA**

Total farm sales increased 1.07 percent to \$4.5 billion in 2002 within the combined counties (USDA NASS 2002). Total farm sales within the State of Florida increased by 1.70 percent, slightly more than the ROI (USDA NASS 2002). Total sales of fruits, trees, nuts, and berries increased 4.24 percent within the ROI to \$1.4 billion in 2002 and increased 6.95 percent in the State of Florida to \$1.6 billion (USDA NASS 2002). The ROI accounted for approximately 85.19 percent of the total value of sales of fruits, trees, nuts, and berries within the state.

### **LOUISIANA**

Total farm sales decreased 15.25 percent to \$1.8 billion in 2002 within the State of Louisiana (USDA NASS 2002). Total sales of fruits, trees, nuts, and berries did not comprise a large enough portion of the total sales of agricultural products within the state in 1997 to be released. The total value of sales of fruits, trees, nuts, and berries was \$113,000 in 2002 (USDA NASS).

### **MISSISSIPPI**

Total farm sales decreased 10.60 percent to \$3.1 billion in 2002 within the State of Mississippi (USDA NASS 2002). Total sales of fruits, trees, nuts, and berries increased 247.29 percent to \$14.1 million in 2002 the State of Mississippi (USDA NASS 2002).

### **NORTH CAROLINA**

Total farm sales decreased 11.91 percent to \$2.6 billion in 2002 within the combined counties (USDA NASS 2002). Total farm sales within the State of North Carolina decreased by 11.12 percent, approximately the same as the ROI (USDA NASS 2002). Total sales of fruits, trees, nuts, and berries increased 141.91 percent within the ROI to \$25.3 million in 2002 and increased 83.31 percent in the State of North Carolina to \$55.8 million (USDA NASS 2002). The ROI accounted for approximately 45.34 percent of the total value of sales of fruits, trees, nuts, and berries within the state.

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## **SOUTH CAROLINA**

Total farm sales decreased 37.86 percent to \$54.5 million in 2002 within Horry County (USDA NASS 2002). Total farm sales within the State of South Carolina decreased by 11.28 percent, less than the ROI (USDA NASS 2002). Total sales of fruits, trees, nuts, and berries increased 178.14 percent within the ROI to \$0.5 million in 2002 and increased 19.49 percent in the State of South Carolina to \$40.0 million (USDA NASS 2002). The ROI accounted for approximately 1.27 percent of the total value of sales of fruits, trees, nuts, and berries within the state.

## **TENNESSEE**

Total farm sales decreased 16.34 percent to \$160.3 million in 2002 within the combined counties (USDA NASS 2002). Total farm sales within the State of Tennessee decreased by 2.79 percent, less than the ROI (USDA NASS 2002). Total sales of fruits, trees, nuts, and berries decreased 91.63 percent within the ROI to \$43,000 in 2002 and increased 6.58 percent in the State of Tennessee to \$6.3 million (USDA NASS 2002). The ROI accounted for approximately 0.68 percent of the total value of sales of fruits, trees, nuts, and berries within the state.

## **TEXAS**

Total farm sales increased 19.51 percent to \$1.7 billion in 2002 within the combined counties (USDA NASS 2002). Total farm sales within the State of Texas increased by 0.85 percent, less than the ROI (USDA NASS 2002). Total sales of fruits, trees, nuts, and berries increased 4.21 percent within the ROI to \$4.1 million in 2002 and increased 24.64 percent in the State of Texas to \$114.8 million (USDA NASS 2002). The ROI accounted for approximately 3.58 percent of the total value of sales of fruits, trees, nuts, and berries within the state.

### *Farm Production Expenses and Returns*

#### **ALABAMA**

In 2002, farm production expenses exceeded \$1.5 billion within the ROI with an average of \$48,915 in farm production expenses per farm or \$218.37 per acre on the average sized farm (USDA 2002). Average net cash income from operations within the ROI was \$16,601 per farm in 2002 (USDA 2002). Within the State of Alabama, farm production expenses exceeded \$2.5 billion with an average per farm expense of \$57,366 or \$291.20 per acre on average size farm (USDA 2002). Average net cash income from operations within the State was \$20,077 in 2002 (USDA 2002).

#### **ARKANSAS**

In 2002, farm production expenses exceeded \$5.6 billion within the ROI with an average of \$168,966 in farm production expenses per farm or \$246.31 per acre on the average sized farm (USDA 2002). Average net cash income from operations within the ROI was \$57,799 per farm in 2002 (USDA 2002). Within the State of Arkansas, farm production expenses exceeded \$3.9 billion with an average per farm expense of \$82,114 or \$269.23 per acre on average size farm (USDA 2002). Average net cash income from operations within the State was \$29,158 in 2002 (USDA 2002).

#### **FLORIDA**

In 2002, farm production expenses exceeded \$3.3 billion within the ROI with an average of \$137,676 in farm production expenses per farm or \$386.73 per acre on the average sized farm (USDA 2002). Average net cash income from operations within the ROI was \$50,421 per farm in 2002 (USDA 2002). Within the State of Florida, farm production expenses exceeded \$4.7 billion with an average per farm expense of \$107,407 or \$455.11 per acre on average size farm

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(USDA 2002). Average net cash income from operations within the State was \$37,482 in 2002 (USDA 2002).

### **LOUISIANA**

In 2002, farm production expenses in the State of Louisiana exceeded \$1.6 billion with an average of \$58,977 in farm production expenses per farm or \$206.21 per acre on the average sized farm (USDA 2002). Average net cash income from operations within the state was \$14,000 per farm in 2002 (USDA 2002).

### **MISSISSIPPI**

In 2002, farm production expenses in the State of Mississippi exceeded \$2.8 billion within the ROI with an average of \$65,626 in farm production expenses per farm or \$249.53 per acre on the average sized farm (USDA 2002). Average net cash income from operations within the ROI was \$14,865 per farm in 2002 (USDA 2002). Within the State of Alabama, farm production expenses exceeded \$2.5 billion with an average per farm expense of \$57,366 or \$291.20 per acre on average size farm (USDA 2002). Average net cash income from operations within the State was \$20,077 in 2002 (USDA 2002).

### **NORTH CAROLINA**

In 2002, farm production expenses exceeded \$2.2 billion within the ROI with an average of \$233,101 in farm production expenses per farm or \$654.78 per acre on the average sized farm (USDA 2002). Average net cash income from operations within the ROI was \$46,918 per farm in 2002 (USDA 2002). Within the State of North Carolina, farm production expenses exceeded \$5.6 billion with an average per farm expense of \$104,672 or \$623.05 per acre on average size farm (USDA 2002). Average net cash income from operations within the State was \$28,869 in 2002 (USDA 2002).

### **SOUTH CAROLINA**

In 2002, farm production expenses in Horry County exceeded \$55.9 million within the ROI with an average of \$56,474 in farm production expenses per farm or \$295.68 per acre on the average sized farm (USDA 2002). Average net cash income from operations within the ROI was \$8,477 per farm in 2002 (USDA 2002). Within the State of South Carolina, farm production expenses exceeded \$1.3 billion with an average per farm expense of \$53,525 or \$271.70 per acre on average size farm (USDA 2002). Average net cash income from operations within the State was \$12,712 in 2002 (USDA 2002).

### **TENNESSEE**

In 2002, farm production expenses exceeded \$166.6 million within the ROI with an average of \$21,374 in farm production expenses per farm or \$113.69 per acre on the average sized farm (USDA 2002). Average net cash income from operations within the ROI was \$2,709 per farm in 2002 (USDA 2002). Within the State of Tennessee, farm production expenses exceeded \$2.2 billion with an average per farm expense of \$22,798 or \$171.41 per acre on average size farm (USDA 2002). Average net cash income from operations within the State was \$4,185 in 2002 (USDA 2002).

### **TEXAS**

In 2002, farm production expenses exceeded \$1.6 billion within the ROI with an average of \$33,454 in farm production expenses per farm or \$152.76 per acre on the average sized farm (USDA 2002). Average net cash income from operations within the ROI was \$5,511 per farm in 2002 (USDA 2002). Within the State of Texas, farm production expenses exceeded \$13.7 billion

with an average per farm expense of \$60,007 or \$105.83 per acre on average size farm (USDA 2002). Average net cash income from operations within the State was \$6,324 in 2002 (USDA 2002).

### *Current Agricultural Land Use Conditions*

#### **ALABAMA**

In 2002, 5.3 million acres of land within the ROI were actively used for agricultural purposes including cropland, hay land, and pastureland; this was a decrease of approximately 47.41 percent from the 1997 figures (5.6 million acres) (USDA 2002). Table 1 lists the acreage for different agricultural land uses in 2002 and 1997 and the percent change during the period.

**Table 1. Agricultural Land Use Acreage within the Alabama ROI**

Land Use	State of Alabama			Combined Counties		
	2002 Acreage	1997 Acreage	Percent Change	2002 Acreage	1997 Acreage	Percent Change
Cropland <sup>1</sup>	1,256,389	3,257,660	-61.43%	665,394	1,265,226	-47.41%
Hay land <sup>2</sup>	823,039	na	na	524,551	na	na
Pastureland <sup>3</sup>	3,498,868	3,699,921	-5.43%	2,132,956	2,252,374	-5.30%
Woodland <sup>4</sup>	2,375,880	2,568,274	-7.49%	1,402,960	1,507,858	-6.96%
House lots, ponds, roads, wasteland, etc.	477,879	474,697	0.67%	295,725	288,458	2.52%
CRP & WRP <sup>5</sup>	472,332	483,175	-2.24%	298,014	327,672	-9.05%
Active Agriculture <sup>6</sup>	8,426,508	10,009,030	-15.81%	5,023,875	5,353,130	-6.15%
Total Land in Farms <sup>7</sup>	8,904,387	16,751,922	-46.85%	5,319,600	5,641,588	-5.71%

- 1 Cropland excludes all harvested hay land and cropland used for pasture or grazing
  - 2 Hay land includes all harvested cropland used for alfalfa, other tame, small grain, wild, grass silage, green chop, etc.
  - 3 Pastureland includes all pasture, including cropland, grazed woodland, and rangeland not considered cropland or woodland
  - 4 Woodland excludes all wooded pasture lands
  - 5 CRP & WRP acreages are included as active agricultural lands
  - 6 Active agricultural lands include the sum of cropland, hay land, and pastureland
  - 7 Total land in farms include the sum of cropland, hay land, pastureland, woodland, and house lots, etc.
- na not applicable

Source: USDA 2002

Table 2 indicates the acreage of fruits, nuts, berries, and Christmas trees produced within the ROI during 2002. As shown in Table 2, the ROI produces 67.80 percent of the fruits and nuts within Alabama, 27.13 percent of the berries, and 40.08 percent of the cut Christmas trees on 33.63 percent of the available Christmas tree acreage (USDA 2002).

**Table 2. 2002 Acreage of TAP-eligible Products within the Alabama ROI**

Location	Total Acres of Fruits and Nuts	Total Acres of Bearing Fruits and Nuts	Total Acres of Berries	Total Acres of Christmas Trees	Total Cut Christmas Trees
State of Alabama	27,980	21,236	586	1,020	35,670
ROI - Combined Counties	18,255	4,398	159	343	14,296
ROI - Percent of State Total	65.24%	67.80%	27.13%	33.63%	40.08%

Source: USDA 2002

**ARKANSAS**

In 2002, 2.2 million acres of land within the ROI were actively used for agricultural purposes including cropland, hay land, and pastureland; this was a decrease of approximately 4.48 percent from the 1997 figures (2.4 million acres) (USDA 2002). Table 3 lists the acreage for different agricultural land uses in 2002 and 1997 and the percent change during the period.

**Table 3. Agricultural Land Use Acreage within the Arkansas ROI**

Land Use	State of Arkansas			Combined Counties		
	2002 Acreage	1997 Acreage	Percent Change	2002 Acreage	1997 Acreage	Percent Change
Cropland <sup>1</sup>	6,307,589	8,413,043	-25.03%	1,758,984	1,940,901	-9.37%
Hay land <sup>2</sup>	1,414,857	na	na	57,847	na	na
Pastureland <sup>3</sup>	4,592,696	4,619,172	-0.57%	223,532	198,039	12.87%
Woodland <sup>4</sup>	1,460,154	1,441,886	1.27%	116,890	122,207	-4.35%
House lots, ponds, roads, wasteland, etc.	579,619	538,666	7.60%	91,407	86,239	5.99%
CRP & WRP <sup>5</sup>	147,878	188,902	-21.72%	21,344	28,962	26.30%
Active Agriculture <sup>6</sup>	13,923,174	14,663,003	-5.05%	2,178,597	2,290,109	-4.87%
Total Land in Farms <sup>7</sup>	14,502,793	21,262,727	-31.79%	2,270,004	2,376,348	-4.48%

1 Cropland excludes all harvested hay land and cropland used for pasture or grazing

2 Hay land includes all harvested cropland used for alfalfa, other tame, small grain, wild, grass silage, green chop, etc.

3 Pastureland includes all pasture, including cropland, grazed woodland, and rangeland not considered cropland or woodland

4 Woodland excludes all wooded pasture lands

5 CRP & WRP acreages are included as active agricultural lands

6 Active agricultural lands include the sum of cropland, hay land, and pastureland

7 Total land in farms include the sum of cropland, hay land, pastureland, woodland, and house lots, etc.

na not applicable

Source: USDA 2002

Table 4 indicates the acreage of fruits, nuts, berries, and Christmas trees produced within the ROI during 2002. As shown in Table 4, the ROI produces 2.23 percent of the fruits and nuts within Arkansas (USDA 2002).

**Table 4. 2002 Acreage of TAP-eligible Products within the Arkansas ROI**

Location	Total Acres of Fruits and Nuts	Total Acres of Bearing Fruits and Nuts	Total Acres of Berries	Total Acres of Christmas Trees	Total Cut Christmas Trees
State of Arkansas	29,110	10,779	832	562	18,146
ROI - Combined Counties	715	240	(d)	(d)	(d)
ROI - Percent of State Total	2.46%	2.23%	(d)	(d)	(d)

(d) Due to privacy considerations within the 2002 Agricultural Census, the full land profile cannot be determined. There are currently 284 farms (3.87 percent of state total) within the ROI that produce berries and 1 farm (1.54 percent of state total) that produces Christmas trees.

Source: USDA 2002

## FLORIDA

In 2002, approximately 6.6 million acres of land within the ROI were actively used for agricultural purposes including cropland, hay land, and pastureland, this was a decrease of approximately 7.22 percent from the 1997 figures (7.1 million acres) (USDA 2002). Table 5 lists the acreage for different agricultural land uses in 2002 and 1997 and the percent change during the period.

**Table 5. Agricultural Land Use Acreage within the Florida ROI**

Land Use	State of Florida			Combined Counties		
	2002 Acreage	1997 Acreage	Percent Change	2002 Acreage <sup>8</sup>	1997 Acreage	Percent Change
Cropland <sup>1</sup>	2,213,665	2,882,875	-23.21%	1,806,263	2,088,871	-13.53%
Hay land <sup>2</sup>	299,435	na	na	114,585	na	na
Pastureland <sup>3</sup>	6,064,344	6,173,741	-1.77%	4,261,099	4,400,387	-3.17%
Woodland <sup>4</sup>	926,472	1,092,092	-15.17%	333,823	526,239	-36.56%
House lots, ponds, roads, wasteland, etc.	813,694	651,201	24.95%	468,063	441,970	5.90%
CRP & WRP <sup>5</sup>	97,267	140,132	-30.59%	64,813	76,954	-15.78%
Active Agriculture <sup>6</sup>	9,601,183	10,288,840	-6.68%	6,580,583	7,092,451	-7.22%
Total Land in Farms <sup>7</sup>	10,414,877	18,205,874	-42.79%	7,301,783	7,534,421	-3.09%

1 Cropland excludes all harvested hay land and cropland used for pasture or grazing

2 Hay land includes all harvested cropland used for alfalfa, other tame, small grain, wild, grass silage, green chop, etc.

3 Pastureland includes all pasture, including cropland, grazed woodland, and rangeland not considered cropland or woodland

4 Woodland excludes all wooded pasture lands

5 CRP & WRP acreages are included as active agricultural lands

6 Active agricultural lands include the sum of cropland, hay land, and pastureland

7 Total land in farms include the sum of cropland, hay land, pastureland, woodland, and house lots, etc.

8 Due to privacy considerations within the 2002 Agricultural Census, the full land use profile cannot be determined. Approximately 253,137 additional acres are located in farms within the ROI; however, how that land use is currently undetermined.

na not applicable

Source: USDA 2002

Table 6 indicates the acreage of fruits, nuts, berries, and Christmas trees produced within the ROI during 2002. As shown in Table 6, the ROI produces 81.32 percent of the fruits and nuts within Florida, 8.84 percent of the berries, and 2.68 percent of the cut Christmas trees on 18.46 percent of the available Christmas tree acreage (USDA 2002).

**Table 6. 2002 Acreage of TAP-eligible Products within the Florida ROI**

Location	Total Acres of Fruits and Nuts	Total Acres of Bearing Fruits and Nuts	Total Acres of Berries	Total Acres of Christmas Trees	Total Cut Christmas Trees
State of Florida	4,421,265	2,343,868	8,389	726	15,320
ROI - Combined Counties	2,246,067	1,906,091	742	134	410
ROI - Percent of State Total	50.80%	81.32%	8.84%	18.46%	2.68%

Source: USDA 2002

## LOUISIANA

In 2002, approximately 7.3 million acres of land within the State of Louisiana were actively used for agricultural purposes including cropland, hay land, and pastureland, this was a decrease of approximately 5.80 percent from the 1997 figures (7.7 million acres) (USDA 2002). Table 7 lists the acreage for different agricultural land uses in 2002 and 1997 and the percent change during the period. The State of Louisiana produces 12,943 bearing acres of fruits and nuts, 707 acres of berries, and 43,742 cut Christmas trees on 1,387 acres (USDA 2002).

**Table 7. Agricultural Land Use Acreage within the Louisiana ROI**

Land Use	2002 Acreage	1997 Acreage	Percent Change
Cropland <sup>1</sup>	3,549,250	4,477,224	-20.73%
Hay land <sup>2</sup>	406,827	na	na
Pastureland <sup>3</sup>	2,336,408	2,346,660	-0.44%
Woodland <sup>4</sup>	718,113	726,550	-1.16%
House lots, ponds, roads, wasteland, etc.	546,227	635,030	-13.98%
CRP & WRP <sup>5</sup>	273,839	182,379	50.15%
Active Agriculture <sup>6</sup>	7,284,437	7,732,813	-5.80%
Total Land in Farms <sup>7</sup>	7,830,664	11,441,053	-31.56%

1 Cropland excludes all harvested hay land and cropland used for pasture or grazing

2 Hay land includes all harvested cropland used for alfalfa, other tame, small grain, wild, grass silage, green chop, etc.

- 3 Pastureland includes all pasture, including cropland, grazed woodland, and rangeland not considered cropland or woodland
- 4 Woodland excludes all wooded pasture lands
- 5 CRP & WRP acreages are included as active agricultural lands
- 6 Active agricultural lands include the sum of cropland, hay land, and pastureland
- 7 Total land in farms include the sum of cropland, hay land, pastureland, woodland, and house lots, etc.
- na not applicable
- Source: USDA 2002

## MISSISSIPPI

In 2002, approximately 10.5 million acres of land within the State of Mississippi were actively used for agricultural purposes including cropland, hay land, and pastureland, this was a decrease of approximately 2.55 percent from the 1997 figures (7.7 million acres) (USDA 2002). Table 8 lists the acreage for different agricultural land uses in 2002 and 1997 and the percent change during the period. The State of Mississippi produced 10,766 bearing acres of fruits and nuts, 1,408 acres of berries, and 39,594 cut Christmas trees on 2,380 acres (USDA 2002).

**Table 8. Agricultural Land Use Acreage within the Mississippi ROI**

Land Use	2002 Acreage	1997 Acreage	Percent Change
Cropland <sup>1</sup>	3,476,544	4,348,913	-20.06%
Hay land <sup>2</sup>	641,924	na	na
Pastureland <sup>3</sup>	3,107,914	3,138,554	-0.98%
Woodland <sup>4</sup>	2,456,555	2,547,813	-3.58%
House lots, ponds, roads, wasteland, etc.	607,266	671,694	-9.59%
CRP & WRP <sup>5</sup>	807,340	729,313	10.70%
Active Agriculture <sup>6</sup>	10,490,277	10,764,593	-2.55%
Total Land in Farms <sup>7</sup>	11,097,543	17,122,654	-35.19%

- 1 Cropland excludes all harvested hay land and cropland used for pasture or grazing
- 2 Hay land includes all harvested cropland used for alfalfa, other tame, small grain, wild, grass silage, green chop, etc.
- 3 Pastureland includes all pasture, including cropland, grazed woodland, and rangeland not considered cropland or woodland
- 4 Woodland excludes all wooded pasture lands
- 5 CRP & WRP acreages are included as active agricultural lands
- 6 Active agricultural lands include the sum of cropland, hay land, and pastureland
- 7 Total land in farms include the sum of cropland, hay land, pastureland, woodland, and house lots, etc.
- na not applicable
- Source: USDA 2002

## NORTH CAROLINA

In 2002, approximately 2.0 million acres of land within the ROI were actively used for agricultural purposes including cropland, hay land, and pastureland, this was an increase of approximately 1.55 percent from the 1997 figures (1.9 million acres) (USDA 2002). Table 9 lists

the acreage for different agricultural land uses in 2002 and 1997 and the percent change during the period.

**Table 9. Agricultural Land Use Acreage within the North Carolina ROI**

Land Use	State of North Carolina			Combined Counties		
	2002 Acreage	1997 Acreage	Percent Change	2002 Acreage	1997 Acreage	Percent Change
Cropland <sup>1</sup>	3,905,256	4,932,856	-20.83%	1,389,003	1,433,685	-3.12%
Hay land <sup>2</sup>	715,519	na	na	62,863	na	na
Pastureland <sup>3</sup>	1,746,914	1,853,778	-5.76%	139,237	146,537	-4.98%
Woodland <sup>4</sup>	2,047,417	2,277,143	-10.09%	363,443	357,620	1.63%
House lots, ponds, roads, wasteland, etc.	480,895	533,926	-9.93%	86,545	109,616	-21.05%
CRP & WRP <sup>5</sup>	183,000	152,836	19.74%	25,096	11,514	117.96%
Active Agriculture <sup>6</sup>	8,598,106	9,216,613	-6.71%	1,979,642	1,949,356	1.55%
Total Land in Farms <sup>7</sup>	9,079,001	13,881,460	-34.60%	2,066,187	2,058,972	0.35%

- 1 Cropland excludes all harvested hay land and cropland used for pasture or grazing
  - 2 Hay land includes all harvested cropland used for alfalfa, other tame, small grain, wild, grass silage, green chop, etc.
  - 3 Pastureland includes all pasture, including cropland, grazed woodland, and rangeland not considered cropland or woodland
  - 4 Woodland excludes all wooded pasture lands
  - 5 CRP & WRP acreages are included as active agricultural lands
  - 6 Active agricultural lands include the sum of cropland, hay land, and pastureland
  - 7 Total land in farms include the sum of cropland, hay land, pastureland, woodland, and house lots, etc.
- na not applicable  
Source: USDA 2002

Table 10 indicates the acreage of fruits, nuts, berries, and Christmas trees produced within the ROI during 2002. As shown in Table 10, the ROI produces 5.09 percent of the fruits and nuts within North Carolina, 66.97 percent of the berries, and 0.22 percent of the cut Christmas trees on 0.22 percent of the available Christmas tree acreage (USDA 2002).

**Table 10. 2002 Acreage of TAP-eligible Products within the North Carolina ROI**

Location	Total Acres of Fruits and Nuts	Total Acres of Bearing Fruits and Nuts	Total Acres of Berries	Total Acres of Christmas Trees	Total Cut Christmas Trees
State of North Carolina	30,185	10,838	6,213	30,694	2,915,507
ROI - Combined Counties	825	552	4,161	67	6,302
ROI - Percent of State Total	2.73%	5.09%	66.97%	0.22%	0.22%

Source: USDA 2002

## SOUTH CAROLINA

In 2002, approximately 0.17 million acres of land within the ROI were actively used for agricultural purposes including cropland, hay land, and pastureland, this was a decrease of approximately 2.86 percent from the 1997 figures (0.18 million acres) (USDA 2002). Table 11 lists the acreage for different agricultural land uses in 2002 and 1997 and the percent change during the period.

**Table 11. Agricultural Land Use Acreage within the South Carolina ROI**

Land Use	State of South Carolina			Horry County		
	2002 Acreage	1997 Acreage	Percent Change	2002 Acreage	1997 Acreage	Percent Change
Cropland <sup>1</sup>	1,304,384	2,297,497	-43.23%	81,282	112,986	-28.06%
Hay land <sup>2</sup>	342,207	na	na	4,179	na	na
Pastureland <sup>3</sup>	1,219,915	1,167,197	4.52%	24,071	19,371	24.26%
Woodland <sup>4</sup>	1,474,243	1,455,622	1.28%	62,098	49,728	24.88%
House lots, ponds, roads, wasteland, etc.	276,731	298,310	-7.23%	9,802	13,290	-26.25%
CRP & WRP <sup>5</sup>	228,443	244,488	-6.56%	6,879	1,678	309.95%
Active Agriculture <sup>6</sup>	4,569,192	5,164,804	-11.53%	178,509	183,763	-2.86%
Total Land in Farms <sup>7</sup>	4,845,923	8,085,933	-40.07%	188,311	197,053	-4.44%

1 Cropland excludes all harvested hay land and cropland used for pasture or grazing

2 Hay land includes all harvested cropland used for alfalfa, other tame, small grain, wild, grass silage, green chop, etc.

3 Pastureland includes all pasture, including cropland, grazed woodland, and rangeland not considered cropland or woodland

4 Woodland excludes all wooded pasture lands

5 CRP & WRP acreages are included as active agricultural lands

6 Active agricultural lands include the sum of cropland, hay land, and pastureland

7 Total land in farms include the sum of cropland, hay land, pastureland, woodland, and house lots, etc.

na not applicable

Source: USDA 2002

Table 12 indicates the acreage of fruits, nuts, berries, and Christmas trees produced within the ROI during 2002. As shown in Table 12, the ROI produces 0.88 percent of the fruits and nuts within South Carolina, 10.98 percent of the berries, and 0.35 percent of the available Christmas tree acreage (USDA 2002).

**Table 12. 2002 Acreage of TAP-eligible Products within the South Carolina ROI**

Location	Total Acres of Fruits and Nuts	Total Acres of Bearing Fruits and Nuts	Total Acres of Berries	Total Acres of Christmas Trees	Total Cut Christmas Trees
State of South Carolina	49,889	17,922	701	2,019	38,871
ROI - Horry County	248	157	77	7	(d)*
ROI - Percent of State Total	0.50%	0.88%	10.98%	0.35%	na

\* Due to privacy considerations associated with the 2002 Agricultural Census, the number of trees cut cannot be detailed.

na not applicable

Source: USDA 2002

## TENNESSEE

In 2002, approximately 1.4 million acres of land within the ROI were actively used for agricultural purposes including cropland, hay land, and pastureland, this was a decrease of approximately 6.69 percent from the 1997 figures (1.5 million acres) (USDA 2002). Table 13 lists the acreage for different agricultural land uses in 2002 and 1997 and the percent change during the period.

**Table 13. Agricultural Land Use Acreage within the Tennessee ROI**

Land Use	State of Tennessee			Combined Counties		
	2002 Acreage	1997 Acreage	Percent Change	2002 Acreage	1997 Acreage	Percent Change
Cropland <sup>1</sup>	2,781,576	5,264,214	-47.16%	331,694	505,585	-34.39%
Hay land <sup>2</sup>	1,917,323	na	na	174,629	na	na
Pastureland <sup>3</sup>	4,865,055	4,729,470	2.87%	590,549	574,849	2.73%
Woodland <sup>4</sup>	1,487,982	1,859,677	-19.99%	205,116	275,673	-25.59%
House lots, ponds, roads, wasteland, etc.	401,601	526,178	-23.68%	48,560	63,822	-23.91%
CRP & WRP <sup>5</sup>	227,996	393,281	-42.03%	71,650	116,029	-38.25%
Active Agriculture <sup>6</sup>	11,279,932	12,246,642	-7.89%	1,373,638	1,472,136	-6.69%
Total Land in Farms <sup>7</sup>	11,681,533	19,361,967	-39.67%	1,422,198	1,535,958	-7.41%

1 Cropland excludes all harvested hay land and cropland used for pasture or grazing

2 Hay land includes all harvested cropland used for alfalfa, other tame, small grain, wild, grass silage, green chop, etc.

3 Pastureland includes all pasture, including cropland, grazed woodland, and rangeland not considered cropland or woodland

4 Woodland excludes all wooded pasture lands

5 CRP & WRP acreages are included as active agricultural lands

6 Active agricultural lands include the sum of cropland, hay land, and pastureland

7 Total land in farms include the sum of cropland, hay land, pastureland, woodland, and house lots, etc.

na not applicable

Source: USDA 2002

Table 14 indicates the acreage of fruits, nuts, berries, and Christmas trees produced within the ROI during 2002. As shown in Table 14, the ROI produces 0.27 percent of the fruits and nuts within Tennessee, 5.14 percent of the berries, and 8.21 percent of the available Christmas tree acreage (USDA 2002).

**Table 14. 2002 Acreage of TAP-eligible Products within the Tennessee ROI**

Location	Total Acres of Fruits and Nuts	Total Acres of Bearing Fruits and Nuts	Total Acres of Berries	Total Acres of Christmas Trees	Total Cut Christmas Trees
State of Tennessee	8,514	2,194	603	2,108	149,770
ROI - Combined Counties	45	6	31	173	(d)*
ROI - Percent of State Total	0.53%	0.27%	5.14%	8.21%	na

\* Due to privacy considerations associated with the 2002 Agricultural Census, the number of trees cut cannot be detailed.

na not applicable

Source: USDA 2002

**TEXAS**

In 2002, approximately 10.2 million acres of land within the ROI were actively used for agricultural purposes including cropland, hay land, and pastureland, this was an increase of approximately 0.90 percent from the 1997 figures (10.1 million acres) (USDA 2002). Table 15 lists the acreage for different agricultural land uses in 2002 and 1997 and the percent change during the period.

**Table 15. Agricultural Land Use Acreage within the Texas ROI**

Land Use	State of Texas			Combined Counties		
	2002 Acreage	1997 Acreage	Percent Change	2002 Acreage	1997 Acreage	Percent Change
Cropland <sup>1</sup>	17,520,936	30,512,688	-42.58%	1,166,789	2,130,048	-45.22%
Hay land <sup>2</sup>	4,896,017	na	na	944,624	na	na
Pastureland <sup>3</sup>	100,543,193	103,140,955	-2.52%	7,365,222	7,201,747	2.27%
Woodland <sup>4</sup>	1,448,844	1,511,943	-4.17%	633,079	695,416	-8.96%
House lots, ponds, roads, wasteland, etc.	2,165,910	2,486,419	-12.89%	333,385	317,900	4.87%
CRP & WRP <sup>5</sup>	3,302,766	3,695,646	-10.63%	42,345	34,019	24.47%
Active Agriculture <sup>6</sup>	127,711,756	138,861,232	-8.03%	10,152,059	10,061,230	0.90%
Total Land in Farms <sup>7</sup>	129,877,666	246,000,549	-47.20%	10,485,444	10,379,130	1.02%

1 Cropland excludes all harvested hay land and cropland used for pasture or grazing

2 Hay land includes all harvested cropland used for alfalfa, other tame, small grain, wild, grass silage, green chop, etc.

3 Pastureland includes all pasture, including cropland, grazed woodland, and rangeland not considered cropland or woodland

4 Woodland excludes all wooded pasture lands

5 CRP & WRP acreages are included as active agricultural lands

6 Active agricultural lands include the sum of cropland, hay land, and pastureland

7 Total land in farms include the sum of cropland, hay land, pastureland, woodland, and house lots, etc.

na not applicable

Source: USDA 2002

Table 16 indicates the acreage of fruits, nuts, berries, and Christmas trees produced within the ROI during 2002. As shown in Table 16, the ROI produces 5.53 percent of the fruits and nuts within Texas, 52.84 percent of the berries, and 46.84 percent of the cut Christmas trees on 57.18 percent of the available Christmas tree acreage (USDA 2002).

**Table 16. 2002 Acreage of TAP-eligible Products within the Texas ROI**

Location	Total Acres of Fruits and Nuts	Total Acres of Bearing Fruits and Nuts	Total Acres of Berries	Total Acres of Christmas Trees	Total Cut Christmas Trees
State of Texas	523,971	212,567	1,372	3,781	80,914
ROI - Combined Counties	19,056	11,749	725	2,162	37,898
ROI - Percent of State Total	3.64%	5.53%	52.84%	57.18%	46.84%

Source: USDA 2002

## Environmental Justice

### *Demographic Profile*

#### **ALABAMA**

Table 17 illustrates the demographic profile of both the State of Alabama and the ROI. The total population within the ROI increased almost 10.00 percent with approximately 3.85 percent more of the population living in rural areas (USCA 1993, 2002). Approximately 1.23 percent of the population in 2000 lived on farms, which was approximately equal to the statewide percentage. In both the ROI and the State of Alabama, the total minority population is approximately 29.00 percent (USCB 2002). This indicates that neither population is an area of concentrated minority population. Additionally, the population of linguistically isolated individuals is less than one percent in both the state and the ROI.

**Table 17. Demographic Profile of the State of Alabama and the ROI**

Metric	State of Alabama			ROI - Combined Counties		
	1990	2000	Percentage Change	1990	2000	Percentage Change
Population	4,040,587	4,447,100	10.06%	2,541,358	2,787,117	9.67%
Households	1,506,009	1,737,385	15.36%	947,925	1,087,492	14.72%
Persons Per Household	2.68	2.56	-4.60%	2.68	2.56	-4.40%
Urban	2,437,715	2,465,539	1.14%	1,494,249	1,531,495	2.49%
Percent of Population within Urban Areas	60.33%	55.44%	-4.89%	58.80%	54.95%	-3.85%
Rural	1,602,872	1,981,561	23.63%	1,047,109	1,255,622	19.91%
Percent of Population within Rural Areas	39.67%	44.56%	4.89%	41.20%	45.05%	3.85%
Farm	59,349	54,171	-8.72%	36,106	34,363	-4.83%
Percent Population on Farms	1.47%	1.22%	-0.25%	1.42%	1.23%	-0.19%
<b>Race/Ethnicity:</b>						
White alone	73.25%	70.32%	-2.94%	73.59%	70.85%	-2.75%
Black or African American alone	25.17%	25.81%	0.64%	25.00%	25.43%	0.42%
American Indian and Alaska Native alone/Asian/Native Hawaiian	0.98%	1.19%	0.21%	0.89%	1.15%	0.26%
Other	0.02%	1.05%	1.03%	0.02%	0.94%	0.92%
Hispanic or Latino	0.58%	1.63%	1.05%	0.49%	1.64%	1.14%
Total Minority Population	26.75%	29.68%	2.94%	26.41%	29.15%	2.75%
Linguistic Isolation - Households	6,012	12,374	105.82%	3,433	8,065	134.93%
Linguistic Isolation - Individuals	16,130	31,673	96.36%	9,204	20,670	124.58%
Percent Linguistically Isolated	0.40%	0.71%	0.31%	0.36%	0.74%	0.38%

Source: USCB 1993, 2002

Table 18 shows the number of farms operated by race/ethnicity profile. In 2002, there were 62,572 farm operators managing 45,126 farms in Alabama; of these, Hispanics operated 355 farms within the ROI; Black or African Americans operated 1,739 farms; Native Americans operated 258 farms; Native Hawaiians operated 5 farms; Asians operated 34 farms; and those operators that reported more than one race operated 217 farms (USDA 2002). The ROI accounts for 67.40 percent of all minority farm operators within the State of Alabama, while these 2,608 farms account for 9.18 percent of the total number of farms within the ROI (USDA 2002).

**Table 18. Demographic Profile of the Farm Operators within the State of Alabama and the ROI**

Metric	State of Alabama				Combined Counties			
	Number of Farms	Percentage of Farms	Number of Operators	Percentage of Operators	Number of Farms	Percentage of Farms	Number of Operators	Percentage of Operators
White	42,407	93.97%	57,863	92.47%	26,497	93.29%	36,209	92.09%
Black	2,460	5.45%	2,889	4.62%	1,739	6.12%	2,024	5.15%
American Indian	428	0.95%	502	0.80%	258	0.91%	303	0.77%
Native Hawaiian	10	0.02%	10	0.02%	5	0.02%	5	0.01%
Asian	49	0.11%	51	0.08%	34	0.12%	34	0.09%
More than one race	338	0.75%	376	0.60%	217	0.76%	242	0.62%
Hispanic	614	1.36%	614	0.98%	355	1.25%	386	0.98%
Total Number of Farms	45,126				28,403			
Total Operators			62,572				39,321	

Source: USDA 2002

## ARKANSAS

Table 19 illustrates the demographic profile of both the State of Arkansas and the ROI. The total population within the ROI decreased approximately 1.53 percent with approximately 0.81 percent more of the population living in rural areas (USCA 1993, 2002). Approximately 1.40 percent of the population in 2000 lived on farms, which was slightly less than the statewide percentage. The percent minority population within the ROI is substantially greater than the percent minority population within the State of Arkansas. In general these trends can be summarized as a declining total population within the ROI that is becoming more diverse. Neither the statewide population nor the ROI is an area of concentrated minority population. The population of linguistically isolated individuals is less than one percent within the ROI and slightly greater than one percent within the State of Arkansas.

**Table 19. Demographic Profile of the State of Arkansas and the ROI**

Metric	State of Arkansas			ROI - Combined Counties		
	1990	2000	Percentage Change	1990	2000	Percentage Change
Population	2,350,725	2,673,400	13.73%	297,677	293,121	-1.53%
Households	891,665	1,042,807	16.95%	102,740	109,994	7.06%
Persons Per Household	2.64	2.56	-2.76%	2.90	2.66	-8.02%
Urban	1,258,198	1,401,840	11.42%	165,419	160,508	-2.97%
Percent of Population within Urban Areas	53.52%	52.44%	-1.09%	55.57%	54.76%	-0.81%
Rural	1,092,527	1,271,560	16.39%	132,258	132,613	0.27%
Percent of Population within Rural Areas	46.48%	47.56%	1.09%	44.43%	45.24%	0.81%
Farm	63,589	51,377	-19.20%	6,409	4,099	-36.04%
Percent Population on Farms	2.71%	1.92%	-0.78%	2.15%	1.40%	-0.75%
<b>Race/Ethnicity:</b>						
White alone	82.21%	78.55%	-3.66%	59.81%	56.30%	-3.51%
Black or African American alone	15.84%	15.56%	-0.28%	38.91%	40.08%	1.17%
American Indian and Alaska Native alone/Asian/Native Hawaiian	1.10%	1.41%	0.32%	0.59%	0.73%	0.14%
Other	0.01%	1.27%	1.26%	0.01%	0.84%	0.83%
Hispanic or Latino	0.83%	3.20%	2.37%	0.68%	2.05%	1.37%
Total Minority Population	17.79%	21.45%	3.66%	40.19%	43.70%	3.51%
Linguistic Isolation - Households	4,045	11,780	191.22%	442	649	46.83%
Linguistic Isolation - Individuals	10,664	30,200	183.20%	1,281	1,730	35.05%
Percent Linguistically Isolated	0.45%	1.13%	0.68%	0.43%	0.59%	0.16%

Source: USCB 1993, 2002

Table 20 shows the number of farms operated by race/ethnicity profile. In 2002, there were 69,504 farm operators managing 47,483 farms in Arkansas; of these, Hispanics operated 749 farms within the ROI; Black or African Americans operated 1,008 farms; Native Americans operated 584 farms; Native Hawaiians operated 8 farms; Asians operated 93 farms; and those operators that reported more than one race operated 519 farms (USDA 2002). The ROI accounts for 17.92 percent of all minority farm operators within the State of Arkansas, while these 497 farms account for 13.88 percent of the total number of farms within the ROI (USDA 2002).

**Table 20. Demographic Profile of the Farm Operators within the State of Arkansas and the ROI**

Metric	State of Arkansas				Combined Counties			
	Number of Farms	Percentage of Farms	Number of Operators	Percent of Operators	Number of Farms	Percentage of Farms	Number of Operators	Percent of Operators
White	45,834	96.53%	65,838	94.73%	3,196	89.25%	4,536	88.08%
Black	1,008	2.12%	1,155	1.66%	379	10.58%	440	8.54%
American Indian	584	1.23%	662	0.95%	32	0.89%	38	0.74%
Native Hawaiian	8	0.02%	8	0.01%	-	0.00%	-	0.00%
Asian	93	0.20%	121	0.17%	8	0.22%	8	0.16%
More than one race	519	1.09%	376	0.54%	30	0.84%	30	0.58%
Hispanic	749	1.58%	837	1.20%	48	1.34%	50	0.97%
Total Number of Farms	47,483				3,581			
Total Operators			69,504				5,150	

Source: USDA 2002.

**FLORIDA**

Table 21 illustrates the demographic profile of both the State of Florida and the ROI. The total population within the ROI increased approximately 24.85 percent with approximately 3.84 percent less of the population living in rural areas (USCA 1993, 2002). Approximately 0.17 percent of the population in 2000 lived on farms, which was slightly less than the statewide percentage. The percent minority population within the ROI is slightly more than the percent minority population within the State of Florida. Neither the statewide population nor the ROI is an area of concentrated minority population. The population of linguistically isolated individuals is 7.73 percent within the ROI and slightly less within the State of Florida.

**Table 21. Demographic Profile of the State of Florida and the ROI**

Metric	State of Florida			ROI - Combined Counties		
	1990	2000	Percentage Change	1990	2000	Percentage Change
Population	12,937,926	15,982,378	23.53%	8,466,412	10,569,971	24.85%
Households	5,138,360	6,341,121	23.41%	3,345,424	4,145,916	23.93%
Persons Per Household	2.52	2.52	0.10%	2.53	2.55	0.74%
Urban	10,970,445	14,274,392	30.12%	7,505,696	9,776,568	24.43%
Percent of Population within Urban Areas	84.79%	89.31%	4.52%	88.65%	92.49%	3.84%
Rural	1,967,481	1,707,986	-13.19%	960,716	793,403	-17.42%
Percent of Population within Rural Areas	15.21%	10.69%	-4.52%	11.35%	7.51%	-3.84%
Farm	47,436	38,567	-18.70%	22,049	17,862	-18.99%
Percent Population on Farms	0.37%	0.24%	-0.13%	0.26%	0.17%	-0.09%
<b>Race/Ethnicity:</b>						
White alone	73.34%	65.42%	-7.92%	69.51%	60.67%	-8.84%
Black or African American alone	13.17%	14.04%	0.88%	13.11%	14.02%	0.91%

Metric	State of Florida			ROI - Combined Counties		
	1990	2000	Percentage Change	1990	2000	Percentage Change
American Indian and Alaska Native alone/Asian/Native Hawaiian	1.42%	1.94%	0.52%	1.39%	1.84%	0.45%
Other	0.05%	1.82%	1.77%	0.07%	1.94%	1.87%
Hispanic or Latino	12.02%	16.77%	4.75%	15.91%	21.53%	5.62%
Total Minority Population	26.66%	34.58%	7.92%	30.49%	39.33%	8.84%
Linguistic Isolation - Households	237,512	372,259	56.73%	208,284	320,363	53.81%
Linguistic Isolation - Individuals	598,034	938,254	56.89%	527,114	816,762	54.95%
Percent Linguistically Isolated	4.62%	5.87%	1.25%	6.23%	7.73%	1.50%

Source: USCB 1993, 2002

Table 22 shows the number of farms operated by race/ethnicity profile. In 2002, there were 64,363 farm operators managing 44,081 farms in Florida; of these, Hispanics operated 1,977 farms within the ROI; Black or African Americans operated 366 farms; Native Americans operated 221 farms; Native Hawaiians operated 17 farms; Asians operated 374 farms; and those operators that reported more than one race operated 110 farms (USDA 2002). The ROI accounts for 58.65 percent of all minority farm operators within the State of Florida, while these 3,065 farms account for 13.21 percent of the total number of farms within the ROI (USDA 2002).

**Table 22. Demographic Profile of the Farm Operators within the State of Florida and the ROI**

Metric	State of Florida				Combined Counties			
	Number of Farms	Percentage of Farms	Number of Operators	Percent of Operators	Number of Farms	Percentage of Farms	Number of Operators	Percent of Operators
White	42,358	96.09%	60,195	93.52%	22,442	96.74%	31,363	93.76%
Black	1,132	2.57%	1,363	2.12%	366	1.58%	432	1.29%
American Indian	412	0.93%	477	0.74%	221	0.95%	276	0.83%
Native Hawaiian	32	0.07%	38	0.06%	17	0.07%	19	0.06%
Asian	557	1.26%	689	1.07%	374	1.61%	465	1.39%
More than one race	196	0.44%	223	0.35%	110	0.47%	126	0.38%
Hispanic	2,962	6.72%	3,696	5.74%	1,977	8.52%	2,486	7.43%
Total Number of Farms	44,081				23,199			
Total Operators			64,363				33,449	

Source: USDA 2002.

## LOUISIANA

Table 23 illustrates the demographic profile of the State of Louisiana. The total population increased approximately 5.90 percent with approximately 4.60 percent less of the population living in rural areas (USCA 1993, 2002). Approximately 0.67 percent of the population in 2000 lived on farms. The percent minority population increased by 3.26 percent; however, the state would not be considered an area of concentrated minority population. The population of linguistically isolated individuals is 0.64 percent.

**Table 23. Demographic Profile of the State of Louisiana**

Metric	State of Louisiana		
	1990	2000	Percentage Change
Population	4,219,973	4,468,976	5.90%
Households	1,531,251	1,657,107	8.22%
Persons Per Household	2.76	2.70	-2.14%
Urban	2,872,038	3,246,994	13.06%
Percent of Population within Urban Areas	68.06%	72.66%	4.60%
Rural	1,347,935	1,221,982	-9.34%
Percent of Population within Rural Areas	31.94%	27.34%	-4.60%
Farm	40,103	29,860	-25.54%
Percent Population on Farms	0.95%	0.67%	-0.28%
<b>Race/Ethnicity:</b>			
White alone	65.79%	62.53%	-3.26%
Black or African American alone	30.63%	32.16%	1.53%
American Indian and Alaska Native alone/Asian/Native Hawaiian	1.37%	1.81%	0.43%
Other	0.06%	1.10%	1.03%
Hispanic or Latino	2.15%	2.41%	0.27%
Total Minority Population	34.21%	37.47%	3.26%
Linguistic Isolation - Households	32,880	28,552	-13.16%
Linguistic Isolation - Individuals	90,614	77,001	-15.02%
Percent Linguistically Isolated	0.78%	0.64%	-0.14%

Source: USCB 1993, 2002

Table 24 shows the number of farms operated by race/ethnicity profile. In 2002, there were 38,207 farm operators managing 27,413 farms in Louisiana; of these, Hispanics operated 558 farms; Black or African Americans operated 1,943 farms; Native Americans operated 155 farms; Native Hawaiians operated 6 farms; Asians operated 35 farms; and those operators that reported more than one race operated 93 farms (USDA 2002). The farms operated by minorities (2,790 farms) account for 10.18 percent of the total number of farms within the state (USDA 2002).

**Table 24. Demographic Profile of the Farm Operators within the State of Louisiana**

Metric	State of Louisiana			
	Number of Farms	Percentage of Farms	Number of Operators	Percent of Operators
White	25,475	92.93%	35,170	91.33%
Black	1,943	7.09%	2,317	6.02%
American Indian	155	0.57%	169	0.44%
Native Hawaiian	6	0.02%	6	0.02%
Asian	35	0.13%	46	0.12%
More than one race	93	0.34%	110	0.29%
Hispanic	558	2.04%	634	1.65%
Total Number of Farms	27,413			
Total Operators			38,507	

Source USDA 2002.

## MISSISSIPPI

Table 25 illustrates the demographic profile of the State of Mississippi. The total population increased approximately 10.55 percent with approximately 1.74 percent less of the population living in rural areas (USCA 1993, 2002). Approximately 1.63 percent of the population in 2000 lived on farms. The percent minority population increased by 2.32 percent; however, the state would not be considered an area of concentrated minority population. The population of linguistically isolated individuals is 0.55 percent.

**Table 25. Demographic Profile of the State of Mississippi**

Metric	State of Mississippi		
	1990	2000	Percentage Change
Population	2,573,216	2,844,658	10.55%
Households	910,574	1,047,555	15.04%
Persons Per Household	2.83	2.72	-3.91%
Urban	1,211,271	1,388,560	14.64%
Percent of Population within Urban Areas	47.07%	48.81%	1.74%
Rural	1,361,945	1,456,098	6.91%
Percent of Population within Rural Areas	52.93%	51.19%	-1.74%
Farm	56,225	46,359	-17.55%
Percent Population on Farms	2.19%	1.63%	-0.56%
<b>Race/Ethnicity:</b>			
White alone	63.09%	60.77%	-2.32%
Black or African American alone	35.51%	36.17%	0.66%
American Indian and Alaska Native alone/Asian/Native Hawaiian	0.82%	1.04%	0.22%
Other	0.01%	0.70%	0.69%
Hispanic or Latino	0.57%	1.33%	0.76%

Metric	State of Mississippi		
	1990	2000	Percentage Change
Total Minority Population	36.91%	39.23%	2.32%
Linguistic Isolation - Households	3,970	5,786	45.74%
Linguistic Isolation - Individuals	11,219	15,712	40.05%
Percent Linguistically Isolated	0.44%	0.55%	0.12%

Source: USCB 1993, 2002

Table 26 shows the number of farms operated by race/ethnicity profile. In 2002, there were 57,778 farm operators managing 42,186 farms in Mississippi; of these, Hispanics operated 488 farms; Black or African Americans operated 5,266 farms; Native Americans operated 113 farms; Native Hawaiians operated 3 farms; Asians operated 50 farms; and those operators that reported more than one race operated 100 farms (USDA 2002). The farms operated by minorities (6,020 farms) account for 14.27 percent of the total number of farms within the state (USDA 2002).

**Table 26. Demographic Profile of the Farm Operators within the State of Mississippi**

Metric	State of Mississippi			
	Number of Farms	Percentage of Farms	Number of Operators	Percent of Operators
White	37,104	87.95%	50,069	86.66%
Black	5,266	12.48%	6,194	10.72%
American Indian	113	0.27%	123	0.21%
Native Hawaiian	3	0.01%	3	0.01%
Asian	50	0.12%	52	0.09%
More than one race	100	0.24%	118	0.20%
Hispanic	488	1.16%	563	0.97%
Total Number of Farms	42,186			
Total Operators			57,778	

Source: USDA 2002.

## NORTH CAROLINA

Table 27 illustrates the demographic profile of both the State of North Carolina and the ROI. The total population within the ROI increased approximately 17.90 percent with approximately 8.49 percent less of the population living in rural areas (USCA 1993, 2002). Approximately 1.13 percent of the population in 2000 lived on farms, which was slightly more than the statewide percentage. The percent minority population within the ROI is slightly more than the percent minority population within the State of North Carolina. Neither the statewide population nor the ROI is an area of concentrated minority population. The population of linguistically isolated individuals is 1.27 percent within the ROI and slightly more within the State of North Carolina.

**Table 27. Demographic Profile of the State of North Carolina and the ROI**

Metric	State of North Carolina			ROI - Combined Counties		
	1990	2000	Percentage Change	1990	2000	Percentage Change
Population	6,628,637	8,049,313	21.43%	937,686	1,105,531	17.90%
Households	2,517,098	3,133,282	24.48%	341,727	430,163	25.88%
Persons Per Household	2.63	2.57	-2.45%	2.74	2.57	-6.34%
Urban	3,335,570	4,847,075	45.31%	405,931	572,466	41.03%
Percent of Population within Urban Areas	50.32%	60.22%	9.90%	43.29%	51.78%	8.49%
Rural	3,293,067	3,202,238	-2.76%	531,755	533,065	0.25%
Percent of Population within Rural Areas	49.68%	39.78%	-9.90%	56.71%	48.22%	-8.49%
Farm	116,801	80,553	-31.03%	22,434	12,540	-44.10%
Percent Population on Farms	1.76%	1.00%	-0.76%	2.39%	1.13%	-1.26%
<b>Race/Ethnicity:</b>						
White alone	75.09%	70.18%	-4.91%	71.38%	69.31%	-2.07%
Black or African American alone	21.87%	21.37%	-0.49%	25.78%	23.73%	-2.06%
American Indian and Alaska Native alone/Asian/Native Hawaiian	1.97%	2.62%	0.64%	1.25%	1.48%	0.23%
Other	0.03%	1.20%	1.17%	0.04%	1.20%	1.16%
Hispanic or Latino	1.04%	4.63%	3.59%	1.55%	4.29%	2.74%
Total Minority Population	24.91%	29.82%	4.91%	28.62%	30.69%	2.07%
Linguistic Isolation - Households	13,854	60,839	339.14%	1,593	5,457	242.56%
Linguistic Isolation - Individuals	36,484	156,294	328.39%	4,371	14,025	220.85%
Percent Linguistically Isolated	0.55%	1.94%	1.39%	0.47%	1.27%	0.80%

Source: USCB 1993, 2002

Table 28 shows the number of farms operated by race/ethnicity profile. In 2002, there were 75,684 farm operators managing 53,930 farms in North Carolina; of these, Hispanics operated 128 farms within the ROI; Black or African Americans operated 531 farms; Native Americans operated 59 farms; Native Hawaiians operated 1 farm; Asians operated 15 farms; and those operators that reported more than one race operated 35 farms (USDA 2002). The ROI accounts for 21.66 percent of all minority farm operators within the State of North Carolina, while these 769 farms account for 11.12 percent of the total number of farms within the ROI (USDA 2002).

**Table 28. Demographic Profile of the Farm Operators within the State of North Carolina and the ROI**

Metric	State of North Carolina				Combined Counties			
	Number of Farms	Percentage of Farms	Number of Operators	Percent of Operators	Number of Farms	Percentage of Farms	Number of Operators	Percent of Operators
White	51,705	95.87%	71,052	93.88%	6,348	91.83%	8,666	90.77%
Black	1,797	3.33%	2,121	2.80%	531	7.68%	606	6.35%
American Indian	518	0.96%	612	0.81%	59	0.85%	62	0.65%
Native Hawaiian	12	0.02%	12	0.02%	1	0.01%	1	0.01%
Asian	117	0.22%	152	0.20%	15	0.22%	15	0.16%
More than one race	243	0.45%	280	0.37%	35	0.51%	35	0.37%
Hispanic	739	1.37%	780	1.03%	128	1.85%	138	1.45%
Total Number of Farms	53,930				6,913			
Total Operators			75,684				9,547	

Source: USDA 2002.

### SOUTH CAROLINA

Table 29 illustrates the demographic profile of both the State of South Carolina and the ROI. The total population within the ROI increased approximately 36.50 percent with approximately 0.86 percent less of the population living in rural areas (USCA 1993, 2002). Approximately 1.10 percent of the population in 2000 lived on farms, which was slightly more than the statewide percentage. The percent minority population within the ROI is less than the percent minority population within the State of South Carolina. Neither the statewide population nor the ROI is an area of concentrated minority population. The population of linguistically isolated individuals is 1.23 percent within the ROI and slightly more within the State of South Carolina.

**Table 29. Demographic Profile of the State of South Carolina and the ROI**

Metric	State of South Carolina			ROI - Horry County		
	1990	2000	Percentage Change	1990	2000	Percentage Change
Population	3,486,703	4,012,012	15.07%	144,053	196,629	36.50%
Households	1,258,783	1,534,334	21.89%	55,665	81,785	46.92%
Persons Per Household	2.77	2.61	-5.60%	2.59	2.40	-7.10%
Urban	1,905,740	2,427,021	27.35%	85,807	118,817	38.47%
Percent of Population within Urban Areas	54.66%	60.49%	5.84%	59.57%	60.43%	0.86%
Rural	1,580,963	1,584,991	0.25%	58,246	77,812	33.59%
Percent of Population within Rural Areas	45.34%	39.51%	-5.84%	40.43%	39.57%	-0.86%
Farm	48,565	37,293	-23.21%	2,701	2,157	-20.14%
Percent Population on Farms	1.39%	0.93%	-0.46%	1.88%	1.10%	-0.78%
<b>Race/Ethnicity:</b>						
White alone	68.60%	66.16%	-2.44%	80.91%	79.92%	-0.99%
Black or African American alone	29.73%	29.33%	-0.39%	17.42%	15.33%	-2.09%
American Indian and Alaska	0.84%	1.27%	0.43%	0.87%	1.20%	0.32%

Metric	State of South Carolina			ROI - Horry County		
	1990	2000	Percentage Change	1990	2000	Percentage Change
Native alone/Asian/Native Hawaiian						
Other	0.02%	0.92%	0.90%	0.04%	1.03%	0.99%
Hispanic or Latino	0.81%	2.31%	1.50%	0.75%	2.52%	1.77%
Total Minority Population	31.40%	33.84%	2.44%	19.09%	20.08%	0.99%
Linguistic Isolation - Households	5,591	15,889	184.19%	232	1,008	334.48%
Linguistic Isolation - Individuals	15,487	41,547	168.28%	600	2,423	303.65%
Percent Linguistically Isolated	0.44%	1.04%	0.59%	0.42%	1.23%	0.82%

Source: USCB 1993, 2002.

Table 30 shows the number of farms operated by race/ethnicity profile. In 2002, there were 33,610 farm operators managing 24,541 farms in South Carolina; of these, Hispanics operated 10 farms within Horry County; Black or African Americans operated 39 farms; Native Americans operated 0 farms; Native Hawaiians operated 0 farms; Asians operated 0 farms; and those operators that reported more than one race operated 3 farms (USDA 2002). The ROI accounts for 2.10 percent of all minority farm operators within the State of South Carolina, while these 52 farms account for 5.26 percent of the total number of farms within the ROI (USDA 2002).

**Table 30. Demographic Profile of the Farm Operators within the State of South Carolina and the ROI**

Metric	State of South Carolina				Horry County			
	Number of Farms	Percentage of Farms	Number of Operators	Percent of Operators	Number of Farms	Percentage of Farms	Number of Operators	Percent of Operators
White	22,592	92.06%	30,303	90.16%	950	96.15%	1,269	94.77%
Black	1,987	8.10%	2,262	6.73%	39	3.95%	47	3.51%
American Indian	107	0.44%	113	0.34%	-	0.00%	-	0.00%
Native Hawaiian	11	0.04%	14	0.04%	-	0.00%	-	0.00%
Asian	32	0.13%	35	0.10%	-	0.00%	-	0.00%
More than one race	84	0.34%	101	0.30%	3	0.30%	3	0.22%
Hispanic	343	1.40%	373	1.11%	10	1.01%	11	0.82%
Total Number of Farms	24,541				988			
Total Operators			33,610				1,339	

Source: USDA 2002.

## TENNESSEE

Table 31 illustrates the demographic profile of both the State of Tennessee and the ROI. The total population within the ROI increased approximately 9.60 percent with approximately 0.04 percent more of the population living in rural areas (USCA 1993, 2002). Approximately 0.77 percent of the population in 2000 lived on farms, which was less than the statewide percentage. The percent minority population within the ROI is substantially greater than the percent minority population within the State of Tennessee. Neither the statewide population nor the ROI is an area

of concentrated minority population. The population of linguistically isolated individuals is 1.25 percent within the ROI and slightly more within the State of Tennessee.

**Table 31. Demographic Profile of the State of Tennessee and the ROI**

Metric	State of Tennessee			ROI - Combined Counties		
	1990	2000	Percentage Change	1990	2000	Percentage Change
Population	4,877,185	5,689,283	16.65%	995,300	1,090,829	9.60%
Households	1,853,515	2,234,229	20.54%	366,247	411,969	12.48%
Persons Per Household	2.63	2.55	-3.23%	2.72	2.65	-2.57%
Urban	2,968,743	3,618,968	21.90%	828,528	907,602	9.54%
Percent of Population within Urban Areas	60.87%	63.61%	2.74%	83.24%	83.20%	-0.04%
Rural	1,908,442	2,070,315	8.48%	166,772	183,227	9.87%
Percent of Population within Rural Areas	39.13%	36.39%	-2.74%	16.76%	16.80%	0.04%
Farm	111,680	91,597	-17.98%	8,609	8,431	-2.07%
Percent Population on Farms	2.29%	1.61%	-0.68%	0.86%	0.77%	-0.09%
<b>Race/Ethnicity:</b>						
White alone	82.59%	79.25%	-3.35%	59.55%	52.71%	-6.83%
Black or African American alone	15.88%	16.27%	0.39%	38.73%	42.35%	3.62%
American Indian and Alaska Native alone/Asian/Native Hawaiian	0.86%	1.23%	0.37%	0.96%	1.64%	0.69%
Other	0.03%	1.15%	1.12%	0.04%	1.07%	1.03%
Hispanic or Latino	0.64%	2.10%	1.46%	0.73%	2.23%	1.50%
Total Minority Population	17.41%	20.75%	3.35%	40.45%	47.29%	6.83%
Linguistic Isolation - Households	8,226	21,692	163.70%	2,279	5,147	125.84%
Linguistic Isolation - Individuals	21,645	55,237	155.19%	6,193	13,628	120.05%
Percent Linguistically Isolated	0.44%	0.97%	0.53%	0.62%	1.25%	0.63%

Source: USCB 1993, 2002.

Table 32 shows the number of farms operated by race/ethnicity profile. In 2002, there were 123,277 farm operators managing 87,595 farms in Tennessee; of these, Hispanics operated 77 farms within the ROI; Black or African Americans operated 271 farms; Native Americans operated 25 farms; Native Hawaiians operated 3 farms; Asians operated 10 farms; and those operators that reported more than one race operated 38 farms (USDA 2002). The ROI accounts for 16.27 percent of all minority farm operators within the State of Tennessee, while these 424 farms account for 5.19 percent of the total number of farms within the ROI (USDA 2002).

**Table 32. Demographic Profile of the Farm Operators within the State of Tennessee and the ROI**

Metric	State of Tennessee				Combined Counties			
	Number of Farms	Percentage of Farms	Number of Operators	Percent of Operators	Number of Farms	Percentage of Farms	Number of Operators	Percent of Operators
White	86,268	98.49%	118,922	96.47%	7,896	96.62%	10,776	94.18%
Black	1,117	1.28%	1,266	1.03%	271	3.32%	323	2.82%
American Indian	326	0.37%	367	0.30%	25	0.31%	28	0.24%
Native Hawaiian	14	0.02%	17	0.01%	3	0.04%	6	0.05%
Asian	107	0.12%	126	0.10%	10	0.12%	10	0.09%
More than one race	333	0.38%	389	0.32%	38	0.47%	42	0.37%
Hispanic	836	0.95%	927	0.75%	77	0.94%	94	0.82%
Total Number of Farms	87,595				8,172			
Total Operators			123,277				11,442	

Source: USDA 2002.

**TEXAS**

Table 33 illustrates the demographic profile of both the State of Texas and the ROI. The total population within the ROI increased approximately 21.36 percent with approximately 3.28 percent less of the population living in rural areas (USCA 1993, 2002). Approximately 0.58 percent of the population in 2000 lived on farms, which was less than the statewide percentage. The percent minority population within the ROI is slightly less than the percent minority population within the State of Texas. Neither the statewide population nor the ROI is an area of concentrated minority population. The population of linguistically isolated individuals is 6.68 percent within the ROI and slightly more within the State of Texas.

**Table 33. Demographic Profile of the State of Texas and the ROI**

Metric	State of Texas			ROI - Combined Counties		
	1990	2000	Percentage Change	1990	2000	Percentage Change
Population	16,986,510	20,851,820	22.76%	5,199,527	6,309,929	21.36%
Households	6,079,341	7,397,294	21.68%	1,879,449	2,244,357	19.42%
Persons Per Household	2.79	2.82	0.88%	2.77	2.81	1.62%
Urban	13,637,248	17,204,073	26.16%	4,079,067	5,157,137	26.43%
Percent of Population within Urban Areas	80.28%	82.51%	2.22%	78.45%	81.73%	3.28%
Rural	3,349,262	3,647,747	8.91%	1,120,460	1,152,792	2.89%
Percent of Population within Rural Areas	19.72%	17.49%	-2.22%	21.55%	18.27%	-3.28%
Farm	192,392	185,803	-3.42%	36,266	36,833	1.56%
Percent Population on Farms	1.13%	0.89%	-0.24%	0.70%	0.58%	-0.11%
<b>Race/Ethnicity:</b>						
White alone	60.76%	52.41%	-8.35%	62.47%	53.31%	-9.15%
Black or African American alone	11.71%	11.27%	-0.44%	18.23%	17.29%	-0.94%
American Indian and Alaska Native alone/Asian/Native Hawaiian	2.14%	3.02%	0.88%	2.92%	4.07%	1.15%

Metric	State of Texas			ROI - Combined Counties		
	1990	2000	Percentage Change	1990	2000	Percentage Change
Other	0.11%	1.31%	1.20%	0.11%	1.35%	1.24%
Hispanic or Latino	25.28%	31.99%	6.71%	16.27%	23.98%	7.71%
Total Minority Population	39.24%	47.59%	8.35%	37.53%	46.69%	9.15%
Linguistic Isolation - Households	353,884	532,550	50.49%	82,771	149,966	81.18%
Linguistic Isolation - Individuals	988,800	1,501,176	51.82%	228,987	421,624	84.13%
Percent Linguistically Isolated	5.82%	7.20%	1.38%	4.40%	6.68%	2.28%

Source: USCB 1993, 2002.

Table 34 shows the number of farms operated by race/ethnicity profile. In 2002, there were 335,326 farm operators managing 228,926 farms in Texas; of these, Hispanics operated 1,825 farms within the ROI; Black or African Americans operated 3,082 farms; Native Americans operated 368 farms; Native Hawaiians operated 24 farms; Asians operated 112 farms; and those operators that reported more than one race operated 244 farms (USDA 2002). The ROI accounts for 25.30 percent of all minority farm operators within the State of Texas, while these 5,655 farms account for 11.92 percent of the total number of farms within the ROI (USDA 2002).

**Table 34. Demographic Profile of the Farm Operators within the State of Texas and the ROI**

Metric	State of Texas				Combined Counties			
	Number of Farms	Percentage of Farms	Number of Operators	Percent of Operators	Number of Farms	Percentage of Farms	Number of Operators	Percent of Operators
White	221,687	96.84%	317,543	94.70%	44,262	93.27%	64,041	91.31%
Black	6,223	2.72%	7,755	2.31%	3,082	6.49%	3,895	5.55%
American Indian	2,073	0.91%	2,338	0.70%	368	0.78%	404	0.58%
Native Hawaiian	101	0.04%	110	0.03%	24	0.05%	29	0.04%
Asian	440	0.19%	500	0.15%	112	0.24%	132	0.19%
More than one race	942	0.41%	1,081	0.32%	244	0.51%	282	0.40%
Hispanic	17,314	7.56%	20,988	6.26%	1,825	3.85%	2,113	3.01%
Total Number of Farms	228,926				47,457			
Total Operators			335,326				70,135	

Source: USDA 2002.

## *Income and Poverty*

### **ALABAMA**

Median household income within the ROI ranged from a low of \$16,646 to a high of \$55,440, with an average increase of 47.57 percent between 1990 and 2000 (U.S. Census Bureau [USCB] 1993, 2002). Within the State of Alabama, the median household income was \$34,135 in 2000 a 44.66 percent increase over 1990 (USCB 1993, 2002). The poverty rate declined both within the ROI and the State of Alabama between 1990 and 2000. The poverty rate declined 2.73 percent to

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15.82 percent in 2000 within the ROI (USCB 1993, 2002). Within the State of Alabama, the poverty rate declined by 2.21 percent to 15.70 in 2000 (USCB 1993, 2002).

## **ARKANSAS**

Median household income within the ROI ranged from a low of \$20,510 to a high of \$31,758, with an average increase of 60.39 percent between 1990 and 2000 (U.S. Census Bureau [USCB] 1993, 2002). Within the State of Arkansas, the median household income was \$32,182 in 2000, a 52.18 percent increase over 1990 (USCB 1993, 2002). The poverty rate declined both within the ROI and the State of Arkansas between 1990 and 2000. The poverty rate declined 6.21 percent to 22.95 percent in 2000 (USCB 1993, 2002). Within the State of Arkansas, the poverty rate declined by 3.19 percent to 15.40 in 2000 (USCB 1993, 2002). The high poverty rate within the ROI borders on an area of concentrated low-income population; however, the poverty rate trend appears to be declining at a much faster rate than the statewide average.

## **FLORIDA**

Median household income within the ROI ranged from a low of \$26,575 to a high of \$348,289, with an average increase of 42.67 percent between 1990 and 2000 (U.S. Census Bureau [USCB] 1993, 2002). Within the State of Florida, the median household income was \$38,819 in 2000, a 41.25 percent increase over 1990 (USCB 1993, 2002). The poverty rate declined within the State of Florida by 0.18 percent to 12.22 in 2000 (USCB 2002). However, the poverty rate increased slightly during the period within the ROI from 12.35 percent in 1990 to 12.44 percent in 2000 (USCB 1993, 2002). Neither area would be considered an area of concentrated low-income population.

## **LOUISIANA**

Within the State of Louisiana, the median household income was \$32,566 in 2000, a 48.37 percent increase over 1990 (USCB 1993, 2002). The poverty rate declined 12.81 percent within the state during the period to 19.04 percent (USCB 1992, 2002). The State of Louisiana would not be considered an area of concentrated low-income population.

## **MISSISSIPPI**

Within the State of Mississippi, the median household income was \$31,330 in 2000, a 55.59 percent increase over 1990 (USCB 1993, 2002). The poverty rate declined 5.26 percent within the state during the period to 19.27 percent (USCB 1993, 2002). The State of Mississippi would not be considered an area of concentrated low-income population.

## **NORTH CAROLINA**

Median household income within the ROI ranged from a low of \$25,684 to a high of \$42,411, with an average increase of 49.01 percent between 1990 and 2000 (U.S. Census Bureau [USCB] 1993, 2002). Within the State of North Carolina, the median household income was \$39,184 in 2000, a 47.05 percent increase over 1990 (USCB 1993, 2002). The poverty rate declined both within the ROI and the State of North Carolina between 1990 and 2000. The poverty rate declined 0.95 percent to 14.92 percent in 2000 within the ROI (USCB 1993, 2002). Within the

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State of North Carolina, the poverty rate declined by 0.61 percent to 11.91 in 2000 (USCB 1993, 2002). Neither geographic area would be considered an area of concentrated low-income population.

### **SOUTH CAROLINA**

Median household income within Horry County was \$36,470, an increase of 46.12 percent between 1990 and 2000 (U.S. Census Bureau [USCB] 1993, 2002). Within the State of South Carolina, the median household income was \$37,082 in 2000, a 41.23 percent increase over 1990 (USCB 1993, 2002). The poverty rate declined both within the ROI and the State of South Carolina between 1990 and 2000. The poverty rate declined 2.95 percent to 11.88 percent in 2000 within the ROI (USCB 1993, 2002). Within the State of South Carolina, the poverty rate declined by 1.19 percent to 13.66 in 2000 (USCB 1993, 2002). Neither geographic area would be considered an area of concentrated low-income population.

### **TENNESSEE**

Median household income within the ROI ranged from a low of \$26,576 to a high of \$40,279, with an average increase of 55.74 percent between 1990 and 2000 (U.S. Census Bureau [USCB] 1993, 2002). Within the State of Tennessee, the median household income was \$36,360 in 2000, a 46.57 percent increase over 1990 (USCB 1993, 2002). The poverty rate declined both within the ROI and the State of Tennessee between 1990 and 2000. The poverty rate declined 2.49 percent to 15.52 percent in 2000 within the ROI (USCB 1993, 2002). Within the State of Tennessee, the poverty rate declined by 2.15 percent to 13.13 in 2000 (USCB 1993, 2002). Neither geographic area would be considered an area of concentrated low-income population.

### **TEXAS**

Median household income within the ROI ranged from a low of \$25,347 to a high of \$63,831, with an average increase of 51.67 percent between 1990 and 2000 (U.S. Census Bureau [USCB] 1993, 2002). Within the State of Texas, the median household income was \$39,927 in 2000, a 50.49 percent increase over 1990 (USCB 1993, 2002). The poverty rate declined both within the ROI and the State of Texas between 1990 and 2000. The poverty rate declined 1.87 percent to 13.97 percent in 2000 within the ROI (USCB 1993, 2002). Within the State of Texas, the poverty rate declined by 2.71 percent to 14.95 in 2000 (USCB 1993, 2002). Neither geographic area would be considered an area of concentrated low-income population.

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## Socioeconomic Analysis – Model Results

The model used, Economic Impact Forecast System (EIFS), to assess the regional economic effects from the TAP disbursements was created by the U.S. Army Corps of Engineers in the early to mid-1970s. The EIFS model was developed utilizing economic and social flows both into and out of a specific region. This type of model is known as an economic base model. The revised EIFS guidance (2001) describes this model as being based on the idea that, “a local economy depends upon an external demand for its services and supplies to sustain its internal welfare.” The primary technique used by this model to determine socioeconomic effects is the location quotient (LQ). The LQ is a method to calculate the ratio between the local economy and the economy of a reference unit (i.e., the United States or the State of Texas). The EIFS model defines local economic activity as either an export (basic) sector or a service sector. The export sector is comprised of those economic activities that surpass the local need (i.e., self-sufficiency). The LQ is used to develop regional economic multipliers, which in turn describe how additional investment in one portion of the regional economy would spread throughout. Therefore, the EIFS model output is the regional effect from the specific project additional investment in dollars and people.

The EIFS model was run for three point estimates – high, mid-, and low estimates of TAP dollars to be distributed to each ROI. Tables 35 to 43 show the estimated effects of the TAP dollars through the regional economies of each ROI. Each table illustrates the minor effects generated by the inflow of TAP dollars into each ROI. In general, there is no percentage change from the rational threshold value (RTV) of each ROI, indicating that the dollars flowing into each regional economy is not enough to shift the long-term RTV. The RTV is based on data from 1969 to 2000 for total business volume (sales volume), personal income (income), and employment. The range of values generated shows that only TAP spending above \$26,000 generates new employment positions, thereby creating personal income effects. Sales volume is directly related to the regional multiplier, where direct effects to sales volume are equal to the TAP spending and the induced sales volume, generally, is the flow through of dollars into the rest of the economy. For example, within the Alabama ROI the TAP estimated mid-point spending is \$678,010 dollars, which will be spent as direct sales dollars. The induced dollars are the additional \$4.04 spent for each initial dollar of spending (i.e., \$2,739,160) for a total sales volume of \$3,417,170.

**Table 35. Modeled Regional Economic Effects – Alabama ROI**

Metric	Mid-Point		High		Low	
	Number	Percent Change from Rational Threshold for the ROI	Number	Percent Change from Rational Threshold for the ROI	Number	Percent Change from Rational Threshold for the ROI
Change in Expenditures (TAP)	\$678,010		\$1,061,233		\$560,095	
Multiplier	5.04		5.04		5.04	
Sales Volume - Direct	\$678,010		\$1,061,233		\$560,095	
Sales Volume - Induced	\$2,739,160		\$4,287,382		\$2,262,784	
Sales Volume - Total	\$3,417,170	0.00%	\$5,348,615	0.00%	\$2,822,879	0.00%
Income - Direct	\$114,901		\$179,845		\$94,918	
Income - Induced	\$464,199		\$726,573		\$383,469	
Income - Total	\$579,100	0.00%	\$906,418	0.00%	\$478,387	0.00%
Employment - Direct	3		5		2	
Employment - Induced	12		18		10	
Employment - Total	15	0.00%	23	0.00%	12	0.00%

**Table 36. Modeled Regional Economic Effects – Arkansas ROI**

Metric	Mid-Point		High		Low	
	Number	Percent Change from Rational Threshold for the ROI	Number	Percent Change from Rational Threshold for the ROI	Number	Percent Change from Rational Threshold for the ROI
Change in Expenditures (TAP)	\$4,262		\$6,670		\$3,520	
Multiplier	2.59		2.59		2.59	
Sales Volume - Direct	\$4,262		\$6,670		\$3,520	
Sales Volume - Induced	\$6,777		\$10,605		\$5,597	
Sales Volume - Total	\$11,039	0.00%	\$17,275	0.00%	\$9,117	0.00%
Income - Direct	\$730		\$1,142		\$603	
Income - Induced	\$1,161		\$1,817		\$959	
Income - Total	\$1,891	0.00%	\$2,959	0.00%	\$1,562	0.00%
Employment - Direct	-		-		-	
Employment - Induced	-		-		-	
Employment - Total	0	0.00%	0	0.00%	0	0.00%

**Table 37. Modeled Regional Economic Effects – Florida ROI**

Metric	Mid-Point		High		Low	
	Number	Percent Change from Rational Threshold for the ROI	Number	Percent Change from Rational Threshold for the ROI	Number	Percent Change from Rational Threshold for the ROI
Change in Expenditures (TAP)	\$3,497,631		\$5,474,552		\$2,889,347	
Multiplier	4.74		4.74		4.74	
Sales Volume - Direct	\$3,497,631		\$5,474,552		\$2,889,347	
Sales Volume - Induced	\$13,081,140		\$20,474,820		\$10,806,160	
Sales Volume - Total	\$16,578,771	0.00%	\$25,949,372	0.01%	\$13,695,507	0.00%
Income - Direct	\$636,379		\$996,071		\$525,704	
Income - Induced	\$2,380,058		\$3,725,307		\$1,966,134	
Income - Total	\$3,016,437	0.00%	\$4,721,378	0.00%	\$2,491,838	0.00%
Employment - Direct	16		25		13	
Employment - Induced	60		94		49	
Employment - Total	76	0.00%	119	0.00%	62	0.00%

**Table 38. Modeled Regional Economic Effects – Louisiana ROI**

Metric	Mid-Point		High		Low	
	Number	Percent Change from Rational Threshold for the ROI	Number	Percent Change from Rational Threshold for the ROI	Number	Percent Change from Rational Threshold for the ROI
Change in Expenditures (TAP)	\$85,987		\$134,588		\$71,032	
Multiplier	4.40		4.40		4.40	
Sales Volume - Direct	\$85,987		\$134,588		\$71,032	
Sales Volume - Induced	\$292,356		\$457,599		\$241,509	
Sales Volume - Total	\$378,343	0.00%	\$592,187	0.00%	\$312,541	0.00%
Income - Direct	\$14,585		\$22,828		\$12,048	
Income - Induced	\$49,589		\$77,617		\$40,964	
Income - Total	\$64,173	0.00%	\$100,445	0.00%	\$53,012	0.00%
Employment - Direct	-		1		-	
Employment - Induced	1		2		1	
Employment - Total	2	0.00%	3	0.00%	1	0.00%

**Table 39. Modeled Regional Economic Effects – Mississippi ROI**

Metric	Mid-Point		High		Low	
	Number	Percent Change from Rational Threshold for the ROI	Number	Percent Change from Rational Threshold for the ROI	Number	Percent Change from Rational Threshold for the ROI
Change in Expenditures (TAP)	\$993,634		\$1,555,253		\$820,828	
Multiplier	3.66		3.66		3.66	
Sales Volume - Direct	\$993,634		\$1,555,253		\$820,828	
Sales Volume - Induced	\$2,643,066		\$4,136,973		\$2,183,402	
Sales Volume - Total	\$3,636,700	0.00%	\$5,692,226	0.01%	\$3,004,230	0.00%
Income - Direct	\$172,909		\$270,640		\$142,838	
Income - Induced	\$459,938		\$719,903		\$379,949	
Income - Total	\$632,847	0.00%	\$990,543	0.00%	\$522,787	0.00%
Employment - Direct	5		8		4	
Employment - Induced	13		20		11	
Employment - Total	18	0.00%	28	0.00%	15	0.00%

**Table 40. Modeled Regional Economic Effects – North Carolina ROI**

Metric	Mid-Point		High		Low	
	Number	Percent Change from Rational Threshold for the ROI	Number	Percent Change from Rational Threshold for the ROI	Number	Percent Change from Rational Threshold for the ROI
Change in Expenditures (TAP)	\$15,981		\$25,013		\$13,201	
Multiplier	3.25		3.25		3.25	
Sales Volume - Direct	\$15,981		\$25,013		\$13,201	
Sales Volume - Induced	\$35,957		\$56,279		\$29,702	
Sales Volume - Total	\$51,938	0.00%	\$81,292	0.00%	\$42,903	0.00%
Income - Direct	\$2,969		\$4,647		\$2,452	
Income - Induced	\$6,680		\$10,455		\$5,518	
Income - Total	\$9,649	0.00%	\$15,102	0.00%	\$7,970	0.00%
Employment - Direct	-		-		-	
Employment - Induced	-		-		-	
Employment - Total	0	0.00%	0	0.00%	0	0.00%

**Table 41. Modeled Regional Economic Effects – South Carolina ROI**

Metric	Mid-Point		High		Low	
	Number	Percent Change from Rational Threshold for the ROI	Number	Percent Change from Rational Threshold for the ROI	Number	Percent Change from Rational Threshold for the ROI
Change in Expenditures (TAP)	\$4,262		\$6,670		\$3,520	
Multiplier	2.60		2.60		2.60	
Sales Volume - Direct	\$4,262		\$6,670		\$3,520	
Sales Volume - Induced	\$6,819		\$10,672		\$5,632	
Sales Volume - Total	\$11,081	0.00%	\$17,342	0.00%	\$9,152	0.00%
Income - Direct	\$816		\$1,277		\$674	
Income - Induced	\$1,306		\$2,044		\$1,078	
Income - Total	\$2,122	0.00%	\$3,321	0.00%	\$1,753	0.00%
Employment - Direct	-		-		-	
Employment - Induced	-		-		-	
Employment - Total	0	0.00%	0	0.00%	0	0.00%

**Table 42. Modeled Regional Economic Effects – Tennessee ROI**

Metric	Mid-Point		High		Low	
	Number	Percent Change from Rational Threshold for the ROI	Number	Percent Change from Rational Threshold for the ROI	Number	Percent Change from Rational Threshold for the ROI
Change in Expenditures (TAP)	\$4,262		\$6,670		\$3,520	
Multiplier	3.91		3.91		3.91	
Sales Volume - Direct	\$4,262		\$6,670		\$3,520	
Sales Volume - Induced	\$12,402		\$19,410		\$10,243	
Sales Volume - Total	\$16,664	0.00%	\$26,080	0.00%	\$13,763	0.00%
Income - Direct	\$665		\$1,040		\$549	
Income - Induced	\$1,935		\$3,028		\$1,598	
Income - Total	\$2,599	0.00%	\$4,068	0.00%	\$2,147	0.00%
Employment - Direct	-		-		-	
Employment - Induced	-		-		-	
Employment - Total	0	0.00%	0	0.00%	0	0.00%

**Table 43. Modeled Regional Economic Effects – Texas ROI**

Metric	Mid-Point		High		Low	
	Number	Percent Change from Rational Threshold for the ROI	Number	Percent Change from Rational Threshold for the ROI	Number	Percent Change from Rational Threshold for the ROI
Change in Expenditures (TAP)	\$225,285		\$352,621		\$186,105	
Multiplier	5.30		5.30		5.30	
Sales Volume - Direct	\$225,285		\$352,621		\$186,105	
Sales Volume - Induced	\$968,726		\$1,516,270		\$800,252	
Sales Volume - Total	\$1,194,011	0.00%	\$1,868,891	0.00%	\$986,356	0.00%
Income - Direct	\$35,815		\$56,058		\$29,586	
Income - Induced	\$154,004		\$241,050		\$127,220	
Income - Total	\$189,818	0.00%	\$297,108	0.00%	\$156,806	0.00%
Employment - Direct	1		1		1	
Employment - Induced	4		6		3	
Employment - Total	4	0.00%	7	0.00%	4	0.00%

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## ACRONYMS AND ABBREVIATIONS

BEA	Bureau of Economic Analysis
BLS	Bureau of Labor Statistics
EIFS	Economic Impact Forecast System
EIS	environmental impact statement
LQ	location quotient
ROI	Region of Influence
RTV	Rational Threshold Value
TAP	Tree Assistance Program
USCB	U.S. Census Bureau
USDA	U.S. Department of Agriculture
NASS	National Agriculture Statistics Service

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**APPENDIX E: AGENCY CORRESPONDENCE**

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March 27, 2007

U.S. Fish and Wildlife Service  
Southeast Regional Office  
1875 Century Blvd, Suite 400  
Atlanta, GA 30345

Attn: Ecological Services

The United States Department of Agriculture, Farm Services Agency is preparing an environmental assessment (EA) to assess the impacts of implementing the 2005 Hurricanes Tree Assistance Program (TAP) in the states of Alabama, Arkansas, Florida, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Texas. TAP provides funding to producers in qualifying counties for certain practices associated with re-establishing tree, bush and vine crops lost because of the hurricanes of 2005.

You may review the draft EA at:

<http://www.fsa.usda.gov/FSA/webapp?area=home&subject=ecrc&topic=nep-cd>

Please review the proposed program and provide comments on any issues that would be of concern to your office regarding Endangered Species Act compliance. We have asked the southeast region to review the document as well.

We appreciate your review of this material and look forward to receiving your comments. Please provide your comments to me by April 21, 2007.

Sincerely yours,

Matthew T. Ponish  
National Environmental Compliance Manager  
United States Department of Agriculture  
Farm Service Agency

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March 27, 2007

Col. John Neubauer  
Executive Director and SHPO  
Alabama Historical Commission  
468 South Perry Street  
Montgomery, AL 36130-0900

Dear Mr. Neubauer,

The United States Department of Agriculture, Farm Services Agency is preparing an environmental assessment (EA) to assess the impacts of implementing the 2005 Hurricanes Tree Assistance Program (TAP) in the states of Alabama, Arkansas, Florida, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Texas. TAP provides funding to producers in qualifying counties for certain practices associated with re-establishing tree, bush and vine crops lost because of the hurricanes of 2005.

The activities associated with the proposed activities are not expected to be ground disturbing beyond what is normally disturbed by plowing, no historic architectural resources would be altered or removed as part of the proposed action, and no changes in land use that would affect the landscape would occur. As such, it is our recommendation that no formal cultural resources surveys would be required in order to implement the program.

You may review the draft EA at:

<http://www.fsa.usda.gov/FSA/webapp?area=home&subject=ecrc&topic=nep-cd>

Please review the proposed program and provide comments on any potential historic preservation issues that would be of concern to your office and our recommendations regarding Section 106 compliance.

We appreciate your review of this material and look forward to receiving your comments as part of the Section 106 consultation process. Please provide your comments to me by April 21, 2007.

Sincerely yours,

Matthew T. Ponish  
National Environmental Compliance Manager  
United States Department of Agriculture  
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March 27, 2007

Ms. Cathie Matthews, SHPO  
Department of Arkansas Heritage  
323 Center Street  
Suite 1500  
Little Rock, AR 72201

Dear Ms. Matthews,

The United States Department of Agriculture, Farm Services Agency is preparing an environmental assessment (EA) to assess the impacts of implementing the 2005 Hurricanes Tree Assistance Program (TAP) in the states of Alabama, Arkansas, Florida, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Texas. TAP provides funding to producers in qualifying counties for certain practices associated with re-establishing tree, bush and vine crops lost because of the hurricanes of 2005.

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Please review the proposed program and provide comments on any potential historic preservation issues that would be of concern to your office and our recommendations regarding Section 106 compliance.

We appreciate your review of this material and look forward to receiving your comments as part of the Section 106 consultation process. Please provide your comments to me by April 21, 2007.

Sincerely yours,

Matthew T. Ponish  
National Environmental Compliance Manager  
United States Department of Agriculture  
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March 27, 2007

Mr. Frederick Gaske  
SHPO and Division Director  
Division of Historical Resources, Department of State  
500 South Bronough Street  
Room 305  
Tallahassee, FL 32399-0250

Dear Mr. Gaske,

The United States Department of Agriculture, Farm Services Agency is preparing an environmental assessment (EA) to assess the impacts of implementing the 2005 Hurricanes Tree Assistance Program (TAP) in the states of Alabama, Arkansas, Florida, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Texas. TAP provides funding to producers in qualifying counties for certain practices associated with re-establishing tree, bush and vine crops lost because of the hurricanes of 2005.

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We appreciate your review of this material and look forward to receiving your comments as part of the Section 106 consultation process. Please provide your comments to me by April 21, 2007.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Matthew T. Ponish".

Matthew T. Ponish  
National Environmental Compliance Manager  
United States Department of Agriculture  
Farm Service Agency

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March 27, 2007

Mr. Noel A. Holcomb, SHPO  
Historic Preservation Division/DNR  
34 Peachtree Street NW  
Suite 1600  
Atlanta, GA 30303-2316

Dear Mr. Holcomb,

The United States Department of Agriculture, Farm Services Agency is preparing an environmental assessment (EA) to assess the impacts of implementing the 2005 Hurricanes Tree Assistance Program (TAP) in the states of Alabama, Arkansas, Florida, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Texas. TAP provides funding to producers in qualifying counties for certain practices associated with re-establishing tree, bush and vine crops lost because of the hurricanes of 2005.

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Sincerely yours,

Matthew T. Ponish  
National Environmental Compliance Manager  
United States Department of Agriculture  
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March 27, 2007

Ms. Pamela A. Breaux, SHPO  
Department of Culture, Recreation and Tourism  
PO Box 44247  
Baton Rouge, LA 70804

Dear Ms. Breaux,

The United States Department of Agriculture, Farm Services Agency is preparing an environmental assessment (EA) to assess the impacts of implementing the 2005 Hurricanes Tree Assistance Program (TAP) in the states of Alabama, Arkansas, Florida, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Texas. TAP provides funding to producers in qualifying counties for certain practices associated with re-establishing tree, bush and vine crops lost because of the hurricanes of 2005.

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We appreciate your review of this material and look forward to receiving your comments as part of the Section 106 consultation process. Please provide your comments to me by April 21, 2007.

Sincerely yours,

Matthew T. Ponish  
National Environmental Compliance Manager  
United States Department of Agriculture  
Farm Service Agency

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March 27, 2007

Mr. H.T. Holmes, SHPO  
Mississippi Department of Archives and History  
PO Box 571  
Jackson, MS 39205-0571

Dear Mr. Holmes,

The United States Department of Agriculture, Farm Services Agency is preparing an environmental assessment (EA) to assess the impacts of implementing the 2005 Hurricanes Tree Assistance Program (TAP) in the states of Alabama, Arkansas, Florida, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Texas. TAP provides funding to producers in qualifying counties for certain practices associated with re-establishing tree, bush and vine crops lost because of the hurricanes of 2005.

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Sincerely yours,

Matthew T. Ponish  
National Environmental Compliance Manager  
United States Department of Agriculture  
Farm Service Agency

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March 27, 2007

Dr. Jeffrey J. Crow, SHPO  
Division of Archives and History  
4610 Mail Service Center  
Raleigh, NC 27699-4610

Dear Dr. Crow,

The United States Department of Agriculture, Farm Services Agency is preparing an environmental assessment (EA) to assess the impacts of implementing the 2005 Hurricanes Tree Assistance Program (TAP) in the states of Alabama, Arkansas, Florida, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Texas. TAP provides funding to producers in qualifying counties for certain practices associated with re-establishing tree, bush and vine crops lost because of the hurricanes of 2005.

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Sincerely yours,

Matthew T. Ponish  
National Environmental Compliance Manager  
United States Department of Agriculture  
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20250-0513

March 27, 2007

Dr. Rodger E. Stroup, SHPO  
Department of Archives and History  
8301 Parklane Road  
Columbia, SC 29223-4905

Dear Dr. Stroup,

The United States Department of Agriculture, Farm Services Agency is preparing an environmental assessment (EA) to assess the impacts of implementing the 2005 Hurricanes Tree Assistance Program (TAP) in the states of Alabama, Arkansas, Florida, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Texas. TAP provides funding to producers in qualifying counties for certain practices associated with re-establishing tree, bush and vine crops lost because of the hurricanes of 2005.

The activities associated with the proposed activities are not expected to be ground disturbing beyond what is normally disturbed by plowing, no historic architectural resources would be altered or removed as part of the proposed action, and no changes in land use that would affect the landscape would occur. As such, it is our recommendation that no formal cultural resources surveys would be required in order to implement the program.

You may review the draft EA at:

<http://www.fsa.usda.gov/FSA/webapp?area=home&subject=ecrc&topic=nep-cd>

Please review the proposed program and provide comments on any potential historic preservation issues that would be of concern to your office and our recommendations regarding Section 106 compliance.

We appreciate your review of this material and look forward to receiving your comments as part of the Section 106 consultation process. Please provide your comments to me by April 21, 2007.

Sincerely yours,

Matthew T. Ponish  
National Environmental Compliance Manager  
United States Department of Agriculture  
Farm Service Agency

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United States  
Department of  
Agriculture

Farm and Foreign  
Agricultural  
Services

Farm Service  
Agency

1400 Independence  
Ave, SW  
Stop 0513  
Washington, DC  
20250-0513

March 27, 2007

Mr. James H. Fyke, SHPO  
Department of Environment and Conservation  
401 Church Street  
L&C Tower 1<sup>st</sup> Floor  
Nashville, TN 37243-0435

Dear Mr. Fyke,

The United States Department of Agriculture, Farm Services Agency is preparing an environmental assessment (EA) to assess the impacts of implementing the 2005 Hurricanes Tree Assistance Program (TAP) in the states of Alabama, Arkansas, Florida, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Texas. TAP provides funding to producers in qualifying counties for certain practices associated with re-establishing tree, bush and vine crops lost because of the hurricanes of 2005.

The activities associated with the proposed activities are not expected to be ground disturbing beyond what is normally disturbed by plowing, no historic architectural resources would be altered or removed as part of the proposed action, and no changes in land use that would affect the landscape would occur. As such, it is our recommendation that no formal cultural resources surveys would be required in order to implement the program.

You may review the draft EA at:

<http://www.fsa.usda.gov/FSA/webapp?area=home&subject=ecrc&topic=nep-cd>

Please review the proposed program and provide comments on any potential historic preservation issues that would be of concern to your office and our recommendations regarding Section 106 compliance.

We appreciate your review of this material and look forward to receiving your comments as part of the Section 106 consultation process. Please provide your comments to me by April 21, 2007.

Sincerely yours,

Matthew T. Ponish  
National Environmental Compliance Manager  
United States Department of Agriculture  
Farm Service Agency

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Stop 0513  
Washington, DC  
20250-0513

March 27, 2007

Mr. F. Lawrence Oaks, SHPO  
Texas Historical Commission  
PO Box 12276  
Austin, TX 78711-2276

Dear Mr. Oaks,

The United States Department of Agriculture, Farm Services Agency is preparing an environmental assessment (EA) to assess the impacts of implementing the 2005 Hurricanes Tree Assistance Program (TAP) in the states of Alabama, Arkansas, Florida, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Texas. TAP provides funding to producers in qualifying counties for certain practices associated with re-establishing tree, bush and vine crops lost because of the hurricanes of 2005.

The activities associated with the proposed activities are not expected to be ground disturbing beyond what is normally disturbed by plowing, no historic architectural resources would be altered or removed as part of the proposed action, and no changes in land use that would affect the landscape would occur. As such, it is our recommendation that no formal cultural resources surveys would be required in order to implement the program.

You may review the draft EA at:

<http://www.fsa.usda.gov/FSA/webapp?area=home&subject=ecre&topic=nep-cd>

Please review the proposed program and provide comments on any potential historic preservation issues that would be of concern to your office and our recommendations regarding Section 106 compliance.

We appreciate your review of this material and look forward to receiving your comments as part of the Section 106 consultation process. Please provide your comments to me by April 21, 2007.

Sincerely yours,

Matthew T. Ponish  
National Environmental Compliance Manager  
United States Department of Agriculture  
Farm Service Agency

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Washington, DC  
20250-0513

March 27, 2007

Heinz Mueller  
NEPA Program Office  
U.S. Environmental Protection Agency  
Region 4  
Atlanta Federal Center  
61 Forsyth Street, SW  
Atlanta, GA 30303

Dear Mr. Mueller,

The United States Department of Agriculture, Farm Services Agency is preparing an environmental assessment (EA) to assess the impacts of implementing the 2005 Hurricanes Tree Assistance Program (TAP) in the states of Alabama, Arkansas, Florida, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Texas. TAP provides funding to producers in qualifying counties for certain practices associated with re-establishing tree, bush and vine crops lost because of the hurricanes of 2005.

You may review the draft EA at:

<http://www.fsa.usda.gov/FSA/webapp?area=home&subject=ecrc&topic=nep-cd>

Please review the proposed program and provide comments on any issues that would be of concern to your office. We have asked the Region 6 Office to review the document as well.

We appreciate your review of this material and look forward to receiving your comments. Please provide your comments to me by April 21, 2007.

Sincerely yours,

Matthew T. Ponish  
National Environmental Compliance Manager  
United States Department of Agriculture  
Farm Service Agency

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Washington, DC  
20250-0513

March 27, 2007

Michael P. Jansky, Regional NEPA Coordinator  
U.S. Environmental Protection Agency  
Region 6  
1445 Ross Avenue  
Dallas, TX 75202

Dear Mr. Jansky,

The United States Department of Agriculture, Farm Services Agency is preparing an environmental assessment (EA) to assess the impacts of implementing the 2005 Hurricanes Tree Assistance Program (TAP) in the states of Alabama, Arkansas, Florida, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Texas. TAP provides funding to producers in qualifying counties for certain practices associated with re-establishing tree, bush and vine crops lost because of the hurricanes of 2005.

You may review the draft EA at:

<http://www.fsa.usda.gov/FSA/webapp?area=home&subject=ecrc&topic=nep-cd>

Please review the proposed program and provide comments on any issues that would be of concern to your office. We have asked the Region 6 Office to review the document as well.

We appreciate your review of this material and look forward to receiving your comments. Please provide your comments to me by April 21, 2007.

Sincerely yours,

Matthew T. Ponish  
National Environmental Compliance Manager  
United States Department of Agriculture  
Farm Service Agency

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STATE OF ALABAMA  
ALABAMA HISTORICAL COMMISSION  
468 SOUTH PERRY STREET  
MONTGOMERY, ALABAMA 36130-0900

COLONEL (RET.) JOHN A. NEUBAUER  
EXECUTIVE DIRECTOR

April 25, 2007

TEL: 334-242-3184  
FAX: 334-240-3477

Matthew T. Ponish  
USDA  
1400 Independence Avenue, SW  
Stop 0513  
Washington, D.C. 20250-0513

Re: AHC 07-0653  
2005 Hurricane Trees Assistance Program  
Multiple Counties, Alabama

Dear Mr. Ponish:

Upon review of the information forwarded by your office, we have determined the following. We can concur with the proposed activities provided land disturbance is limited to no more than regular plowing as stated in your letter. Should greater disturbance be required or should archaeological resources be discovered during project activities, further consultation with our office will be required.

We appreciate your efforts on this project. Should you have any questions, my point of contact for this matter is Greg Rhinehart at (334) 230-2662. Please have the AHC tracking number referenced above available and include it with any correspondence.

Sincerely,

A handwritten signature in black ink, appearing to read "John A. Neubauer".

Colonel (Ret.) John A. Neubauer  
State Historic Preservation Officer

JAN/SME/GCR/gcr

THE STATE HISTORIC PRESERVATION OFFICE  
[www.preserveala.org](http://www.preserveala.org)



The Department of  
**Arkansas  
Heritage**

Mike Beebe  
Governor

Cathie Matthews  
Director

Arkansas Arts Council

Arkansas Natural Heritage  
Commission

Delta Cultural Center

Historic Arkansas Museum

Mosaic Templars  
Cultural Center

Old State House Museum



Arkansas Historic  
Preservation Program

1500 Tower Building  
323 Center Street  
Little Rock, AR 72201  
(501) 324-9880  
fax: (501) 324-9184  
tdd: (501) 324-9811  
e-mail:

[info@arkansaspreservation.org](mailto:info@arkansaspreservation.org)

website:

[www.arkansaspreservation.com](http://www.arkansaspreservation.com)

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May 10, 2007

Mr. Matthew T. Ponish  
National Environmental Compliance Manager  
USDA Farm Service Agency  
1400 Independence Avenue SW  
Stop 0513  
Washington, D.C. 20250-0513

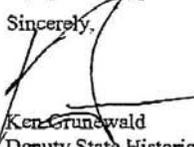
RE: Multi County - General  
Section 106 Review - FSA  
2005 Hurricanes Tree Assistance Program (TAP)  
AHPP Tracking No: 62543

Dear Mr. Ponish:

My staff has reviewed the Draft Programmatic Environmental Assessment for implementing the USDA Tree Assistance Program. We agree, if ground disturbance will not exceed that resulting from normal agricultural practices (i.e., 4 - 6 inches), that these activities will have no adverse effect on historic properties. However, if ripping below that depth is planned, this office should be afforded the opportunity to comment on individual undertakings.

Thank you for the opportunity to comment on this undertaking. If you have any questions, please contact Steve Imhoff of my staff at (501) 324-9880.

Sincerely,

  
Ken Grunewald  
Deputy State Historic Preservation Officer

cc: Mr. Earl J. Barbry, Tunica-Biloxi Tribe of Louisiana, Inc.  
Mr. Robert Cast, Caddo Nation  
Dr. Ann M. Early, Arkansas Archeological Survey  
Mr. Jim Roan Gray, Osage Nation  
Ms. Carrie V. Wilson, Quapaw Tribe of Oklahoma

TOTAL P.002



The Department of  
**Arkansas  
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1509 Tower Building  
323 Center Street  
Little Rock, AR 72201  
(501) 324-9880  
fax: (501) 324-9184  
tdd: (501) 324-9811  
e-mail:

[info@arkansaspreservation.org](mailto:info@arkansaspreservation.org)

website:

[www.arkansaspreservation.com](http://www.arkansaspreservation.com)

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April 6, 2007

Mr. Matthew T. Ponish  
National Environmental compliance Manager  
USDA Farm Service Agency  
1400 Independence Avenue SW  
Stop 0513  
Washington, D.C. 20250-0513

RE: Multi County - General  
Section 106 Review - FSA  
2005 Hurricanes Tree Assistance Program (TAP)  
AHPP Tracking No: 62543

Dear Mr. Ponish:

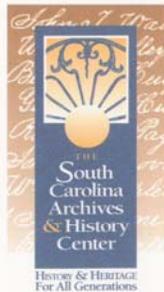
This letter is written in response to your announcement of the availability of a draft environmental assessment (EA) implementing the 2005 Hurricanes Tree Assistance Program (TAP). We attempted to access this document via the web address provided in your letter, but it was not among any of the documents listed. Please provide this document to us, or a link where it can be found on the FSA website.

Thank you for the opportunity to comment on this undertaking. If you have any questions, please contact Steve Imhoff of my staff at (501) 324-9880.

Sincerely,

Ken Grunewald  
Deputy State Historic Preservation Officer

*called Steve Imhoff  
and walked him through  
getting the document. 4-17/07  
1590*



April 27, 2007

Mr. Matthew Ponish  
National Environmental Compliance Manager  
USDA—Farm Service Agency  
1400 Independence Ave., SW  
Stop 0513  
Washington, DC 20250-0513

Re: 2005 Hurricanes Tree Assistant Program  
Environmental Assessment  
South Carolina

Dear Mr. Ponish:

Thank you for your letter of March 27, which we received on March 29, regarding the above-referenced Environmental Assessment. We understand that Farm Service Agency funds will be used to assist landowners in replanting of trees and crops damaged by the 2005 hurricanes.

We concur with your assessment that it is unlikely that properties listed in or eligible for listing in the National Register of Historic Places will be affected by the proposed undertaking. We recommend that applicants in South Carolina consult the maps and files available at our office and at the South Carolina Institute of Archaeology and Anthropology to determine if any known historic properties are located in their project area. Additional information about consulting the files can be found at: <http://www.state.sc.us/scdah/hpculturalresource.htm>.

We understand that our office will be notified immediately if archaeological materials are encountered during any undertaking. Archaeological materials consist of any items, fifty years old or older, which were made or used by man. These items include, but are not limited to, stone projectile points (arrowheads), ceramic sherds, bricks, worked wood, bone and stone, metal and glass objects, and human skeletal materials.

These comments are provided by the State Historic Preservation Office pursuant to Section 106 of the National Historic Preservation Act, as amended. If you have questions, please contact me at (803) 896-6169 or [dobrasko@scdah.state.sc.us](mailto:dobrasko@scdah.state.sc.us).

Sincerely,

*Rebekah Dobrasko*

Rebekah Dobrasko  
Review and Compliance Coordinator  
State Historic Preservation Office

S.C. Department of Archives & History • 8301 Parklane Road • Columbia • South Carolina • 29223-4905 • 803-896-6100 • [www.state.sc.us/scdah](http://www.state.sc.us/scdah)



**TENNESSEE HISTORICAL COMMISSION**  
DEPARTMENT OF ENVIRONMENT AND CONSERVATION  
2941 LEBANON ROAD  
NASHVILLE, TN 37243-0442  
(615) 532-1550

April 12, 2007

Mr. Matthew Ponish  
Farm Services Agency  
1400 Independence Ave., SW  
Stop 0513  
Washington, DC 20250-0513

RE: FSA, 2005 TREE ASSISTANCE PROGRAM, UNINCORPORATED, MULTI COUNTY

Dear Mr. Ponish:

The Tennessee State Historic Preservation Office has reviewed the above-referenced undertaking received on Monday, April 2, 2007 for compliance by the participating federal agency or applicant for federal assistance with Section 106 of the National Historic Preservation Act. The Procedures for implementing Section 106 of the Act are codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

After considering the documentation submitted, we concur that there are no National Register of Historic Places listed or eligible properties affected by this undertaking. This determination is made either because of the location, scope and/or nature of the undertaking, and/or because of the size of the area of potential effect; or because no listed or eligible properties exist in the area of potential effect; or because the undertaking will not alter any characteristics of an identified eligible or listed property that qualify the property for listing in the National Register or alter such property's location, setting or use. Therefore, this office has no objections to your proceeding with the project.

If you are applying for federal funds, license or permit, you should submit this letter as evidence of compliance with Section 106 to the appropriate federal agency, which, in turn, should contact this office as required by 36 CFR 800. You may direct questions or comments to Jennifer M. Barnett (615) 741-1588, ext. 17. This office appreciates your cooperation.

Sincerely,

Richard G. Tune  
Deputy State Historic  
Preservation Officer

RGT/jmb



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 4  
ATLANTA FEDERAL CENTER  
61 FORSYTH STREET  
ATLANTA, GEORGIA 30303-8960

APR 26 2007

Ms. Elizabeth Pruitt, TAP EA Project Manager  
2713 Magruder Blvd, Suite D  
Hampton, VA 23666-1572

Subject: Mr. Matthew T. Ponish's March 27, 2007 Letter  
Related to the Draft Environmental Assessment (DEA)  
For the 2005 Hurricanes Tree Assistance Program (TAP)  
For the EPA Region 4 states of Alabama, Florida, Mississippi,  
North Carolina, South Carolina, and Tennessee

Dear Ms. Pruitt:

We reviewed the above project in accordance with Section 102(2)(C) of the National Environmental Policy Act and Section 309 of the Clean Air Act and we offer the following comments which are related to the EPA states in R4 only:

The DEA estates:

**"Purpose and Need for the Proposed Action**

The purpose of the proposed action is to implement the 2005 TAP, which would provide financial assistance to producers in qualifying counties who experienced losses of tree (including Christmas trees, ornamental trees, nursery tree and potted trees), field grown bush (including shrubs) or vine crops as a result of hurricanes Katrina, Ophelia, Rita and Wilma. Reimbursement for the costs of certain activities associated with reestablishing lost crops would be made available by the program. The TAP is needed to fulfill FSA's responsibility under Title X Subtitle C of the FSRIA using funding authorized by Title III Section 3013 of the Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006.

**Proposed Action and Alternatives**

The proposed action would implement the 2005 TAP, which would allow producers who lost tree crops to one of the hurricanes that occurred in 2005 to apply for reimbursement of certain expenses related to reestablishing lost crops. Only producers in primary and contiguous counties that were declared disasters by the President or Secretary of Agriculture are qualified for the program. Expenses that may be reimbursed under the 2005 TAP include: site preparation and including clean-up, debris removal and

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tillage; chemicals and nutrients required to reestablish the crop; seedlings or cuttings for replanting; replacement, rehabilitation, and pruning; and labor required for replanting.

This PEA documents the analysis of the Proposed Action and the No Action Alternative. Under the No Action Alternative, producers would reestablish lost tree crops or other crops on their lands without the benefit of financial assistance from the program.”

**EPA Comments:**

**Page 7**

The DEA should include an estimate of the Number of Producers that will receive financial assistance from TAP.

**Page 8; Last Paragraph**

The DEA states “Noise from equipment used in land preparation activities is not expected to differ from that resulting from the planting and harvesting that would normally occur on those agricultural lands.”

EPA recommends it should read “Temporary noise from equipment used in land preparation activities could be somewhat different from the normal planting and harvesting but it should have a short duration” or something to this effect.

**Page 29; Section 4.1.1 Alternative A; Preferred**

The DEA states: “Implementation of Alternative A would not impact the native vegetation communities in any of the TAP qualified counties or states.”

EPA recommends the DEA should address Executive Order 13112, Invasive Species issued on 2/3/99.

**Page 29, Section 4.2 – Cultural Resources**

In addition to the list of agencies notified (Page 43), EPA recommends Consultation with the American Indian Tribes/Organizations and should address the Graves and Repatriation Act – (NAGPRA) so that during ground-disturbing activities, the proper procedures for unexpected discoveries are followed.

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**Page 30, Section 4.3 Water Resources, Line 3**

The DEA states “Under this alternative, it is likely that producers would use various insecticides, pesticides, and herbicides in order to establish the new crop, however, these chemicals would not vary appreciably from what was used before the crop was lost. All agricultural chemicals would be used according to their specific EPA regulations.”

In addition, EPA recommends that contaminated soils, solid wastes, chemicals and hazardous materials should be properly handled by licensed contractors and disposed in licensed sanitary landfills according to the type of waste; that chemicals and hazardous material be disposed of according to local, state, Federal and Clean Water Act (including RCRA and CERCLA) rules, regulations, guidelines and requirements.

**Page 32; Section 4.4.1; Alternative A**

The DEA states: “Implementation of Alternative A would not have significant impacts to soil resources within TAP eligible counties. Since the areas where TAP practices could be implemented have been previously used for agricultural purposes, it is unlikely that they contain unique soil conditions.”

Since temporary increases in soil disturbances associated with the debris removal; site preparation and rehabilitation of the lost crops may require disturbance to the existing site soils topography, it could generate soil erosion, sedimentation, storm water, and runoff impacts. We recommend that the owner monitor the contractor to apply stringent controls to minimize potential adverse impacts on wetlands, groundwater, aquifers, creeks/streams, lakes, ponds, reservoirs, and water quality per local and state erosion and sediment rules and guidelines; per the Clean Water Act; the required state and COE permits; the Executive Order 11988 - Flood Plain Management and the Executive Order 11990 - Protection of Wetlands. Runoff controls should be updated periodically for the duration of the construction (e.g., every 2-3 months) and maintained to help ensure success (e.g., silt fences emptied and hay bales replaced).

**Page 33; Section 4.5.1; Alternative A; Line 2**

The DEA states: “Activities that qualify for reimbursement that could have potential air quality effects include site preparation and debris removal. These activities could utilize tilling, controlled burning, and various diesel powered vehicles and equipment.

Tilling would temporarily increase the particulate matter concentrations in the immediate area; however, this increase is not expected to be significant. Watering exposed soils during and after tilling would reduce the release of particulate matter.”

EPA recommends that the owner encourage the contractor to maintain and operate all construction equipment per manufacturer’s specifications and

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recommendations to minimize air emissions. The owner should also consider offering incentives for contractors to specify the use of retrofitted diesel equipment or purchase of available ultra-low diesel fuel in their bids.

In addition the owner should ensure that the contractor properly handle hazardous materials removal and disposal (asbestos, PCBs, lead from paint), and waste management (e.g., reuse or recycling as opposed to landfill dumping); wastewater management, indoor air quality, energy and water conservation (e.g., low flow toilets, energy efficient windows and doors, efficient lighting, etc.); other pollution prevention measures (e.g., use of materials with recycled content) as well as impacts to noise, traffic, air, water quality, vegetation, and impacts to historic resources.

EPA recommends that since a large number of producer sites are involved and for accountability purposes, the DEA should include a check list of best management practices (BMP) items to simplify the producer/applicant's self monitoring and compliance.

The long-term and indirect impacts of the proposed action should be considered. Best management practices and appropriate erosion and sedimentation controls should be used in all construction projects, with stringent performance standards enforced. Impacts to wetlands, floodplains, and other sensitive resources should be avoided. The affected area should be re-vegetated with indigenous species if possible.

For future projects, enclosed you will find a check list of items that could help facilitate your compliance with the NEPA regulations.

The EPA supports your projects and we thank you for the opportunity to provide comments for your consideration in the development of the Final EA. Should you have questions regarding our comments, you may wish to contact Rafael Santamaria at [santamaria.rafael@epamail.epa.gov](mailto:santamaria.rafael@epamail.epa.gov) or at (404) 562-8376 of my staff.

Sincerely,



Heinz Mueller, Chief  
NEPA Program Office

Enclosure

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ENVIRONMENTAL PROTECTION AGENCY REGION 4  
NEPA CHECK LIST

Consistent with our responsibilities under Section 102(2)(C) of the National Environmental Policy Act and Section 309 of the Clean Air Act, the U.S. Environmental Protection Agency (EPA), Region 4 offers the following general comments/suggestions for your consideration/inclusion into the proposed Draft Environmental Impact Statement (DEIS) and/or Draft Environmental Assessment (DEA) on **USDA 2005 Hurricanes Tree Assistance Program (TAP) for EPA R4 states:**

1. DEA development must be consistent with Section 309 of the Clean Air Act
2. Should include clear conclusions why the Preferred Alternative was selected. The "Preferred Alternative" should be individually evaluated, i.e., without solely referencing to the impacts attendant to other alternatives.
3. The DEA should have a complete list of abbreviations, definitions, acronyms and symbols
4. Similar subjects/terminologies should be cross-referenced with like definition shown/found on other document's pages.
5. The DEA should be specific and describe what facilities or portions of the facilities will be demolished and when. Any deconstruction (demolition) should be done according to the state Historic Preservation Officer (SHPO), the National Historic Preservation Act (NHPA)'s rules, regulations and guidelines and should ensure disposal of federal property is done according to federal regulations for disposal of federal property. Ensure the demolition and construction debris be properly handled by licensed contractors (if needed) and disposed in licensed sanitary landfills for each type of debris.

In construction/demolition projects the DEA should address: proper handling of hazardous materials removal and disposal (asbestos, PCBs, lead from paint), and waste management (e.g., reuse or recycling as opposed to landfill dumping); wastewater management, indoor air quality, energy and water conservation (e.g., low flow toilets, energy efficient windows and doors, efficient lighting, etc.); other pollution prevention measures (e.g., use of materials with recycled content) as well as impacts to noise, traffic, air and water quality, wildlife and vegetation (could any endangered or threatened species be impacted?), erosion, sedimentation control, and impacts to historic resources.

6. The DEA and draft FONSI should be made available for public inspection at various public locations. It would be very beneficial to ensure the public is well informed at all times through frequent public meetings, flyers, announcements and public hearings.
7. The DEA should address the needed and required permits, how to obtain them from the associated regulatory agencies and how to implement and comply with them.
8. The DEA should address land cleared or forested clear-cut harvested trees and should describe the type and age of trees present; will the trees be harvested? Concerning cumulative impacts, recently (in the near past/present/future) how many other sites and cumulative number of acres of land will or have been cleared at the facility?
9. The DEA should make sure decisions made based on archaeological surveys done in previous years are still valid. Also, the area should be re-vegetated with indigenous species.

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10. The DEA should address impacts to traditional American Indian resources, if any, under the various alternatives. Consultation with the American Indian Tribes/organizations should be made and it should include a list of Tribes and or Native American Indian Organizations consulted about this project along with their responses and comments.
  11. The DEA should address the Graves and Repatriation Act – (NAGPRA) to identify National Register-eligible archaeological sites; to ensure proper evaluations are carried out in order to minimize the adverse impacts to historic properties in the project areas; and so that in the event burials are located during ground-disturbing activities, the proper procedures for unexpected discoveries are followed.
  12. The FEIS should discuss in some detail if there was any EJ community involvement, follow-up analyses, and/or outreach efforts performed. Also, what impact will the project have on minority businesses?
  13. In addition to the noise analyses to be done related to the entire site, the DEA should also discuss what noise effects can be attributed to the temporary (state type and length of time) demolition and construction that will take place on the site.
  14. The DEA should establish the contractor's procedures for borrow materials which should be according to local and state soil conservation rules and regulations to ensure the quality of the fill to be used and where the fill is borrowed from (to ensure protection of that environment).
  15. If there are any reasons to expect the contractor to encounter any contaminated soils, this should be discussed in detail in the DEA and the proper studies of the site should be done along with the corrections before any work on the project is done by the contractor. In addition, contaminated soils, solid wastes, chemicals and hazardous materials should be properly handled by licensed contractors and disposed in licensed sanitary landfills according to the type of waste; that chemicals and hazardous material be disposed of according to local, state, Federal and Clean Water Act (including RCRA and CERCLA) rules, regulations, guidelines and requirements.
  16. The DEA should address handling of above ground/underground storage tanks (AST/UST), if any, according to the State and Federal rules regulations and guidelines. The DEA should address the issue of removing or not removing them and should include state and federal documentation concurring/not concurring with the final decision.
  17. The DEA should address the potential for impacts from air toxics associated with the project.
  18. In general, construction activities should be restricted to existing rights-of-way, if possible and best management practices should be utilized. Impacts to wetlands, floodplains, and other sensitive resources should be avoided. If avoidance is not possible, mitigation must be offered to minimize adverse impacts. If construction must run through a wetland, the area should be restored to its "natural" state. That is, the affected area should be returned to its original soil horizon as well as original contours. Also, the area should be re-vegetated with indigenous species.

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If structures must be placed in a floodplain, they should be constructed to minimize the infiltration/inflow (I/I) of flood waters and should be sturdy enough to withstand the uplift and velocity forces of such waters. To minimize impacts to prime farmland and public health, water and sewer lines should not run directly through fields or obstruct the flow of water to crops. The land should be returned to its original contour and re-vegetated with indigenous plant life. Ancillary facilities (e.g., pump stations) should be designed so not to impede the natural flow of flood waters.

Since soil disturbance associated with the demolition and construction would require disturbance to the existing site soils topography it could generate considerable amounts of storm water, erosion and environmental harm, the owner should require and monitor the contractor to apply stringent controls to minimize potential adverse impacts on wetlands, groundwater, aquifers, creeks/rivers, lakes, ponds, reservoirs, and water quality per local and state erosion and sediment rules and guidelines; the Clean Water Act; the required state and COE permits; the Executive Order 11988 - Flood Plain Management and the Executive Order 11990 - Protection of Wetlands. Runoff controls should be updated periodically for the duration of the construction (e.g., every 2-3 months) and maintained to help ensure success (e.g., silt fences emptied and hay bales replaced).

19. The DEA should include the latest cumulative impacts (past, present and future and also the total direct and indirect impacts) analysis as they affect the air quality in the area.

20. The owner should encourage the contractors to maintain and operate all construction equipment per manufacturer's specifications and recommendations to minimize air emissions. The owner should also consider offering incentives for contractors to specify the use of retrofitted diesel equipment or purchase of available ultra-low diesel fuel in their bids. The DEA should address the impact of the construction on the air quality if some of the construction could be done at night.

21. The long-term and indirect impacts of the proposed action should be considered. If the extension of service to the proposed users could cause further development of an environmentally sensitive area, alternate alignments/sites should be considered.



FLORIDA DEPARTMENT OF STATE  
**Kurt S. Browning**  
Secretary of State  
DIVISION OF HISTORICAL RESOURCES

Mr. Mathew T. Ponish  
USDA/Farm Service Agency  
1400 Independence Avenue, SW  
Stop 0513  
Washington, DC 20250-0513

May 9, 2007

RE: DHR Project File No: 2007-2061  
Received by DHR: March 29, 2007  
Environmental Assessment to Assess the Impacts from the 2005 Hurricanes Tree  
Assistance Program  
All Florida

Dear Mr. Ponish:

Our office received and reviewed the above referenced submittal in order to identify historic properties listed, or eligible for listing, in the *National Register of Historic Places*, or otherwise of historical, architectural or archeological value that could be affected by the proposal. We conducted the review in accordance with Section 106 of the *National Historic Preservation Act of 1966*, as amended, and *36 C.F.R., Part 800: Protection of Historic Properties*, and all implementing state regulations. The State Historic Preservation Officer is to advise and assist federal agencies and applicants when identifying historic properties, assessing effects to historic properties, and considering alternatives to avoid or minimize adverse effects to such properties.

Based on the information provided, this office concludes that the project will have no effect on historic properties, provided that the USDA makes contingency plans in the case of fortuitous finds or unexpected discoveries during ground disturbing activities on the property. If prehistoric or historic artifacts, such as pottery or ceramics, projectile points, or any other physical remains that could be associated with early Native American, European, or American settlement are encountered at any time within the project site area, the permitted project shall stop all activities involving subsurface disturbance in the immediate vicinity of such discoveries. The applicant shall contact the Florida Department of State, Division of Historical Resources, Review and Compliance Section at (850) 245-6333 as well as the U.S. Department of Agriculture. Project activities shall not resume without verbal and/or written authorization. In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately and the proper authorities notified in accordance with Section 872.05, *Florida Statutes*.

500 S. Bronough Street • Tallahassee, FL 32399-0250 • <http://www.flheritage.com>

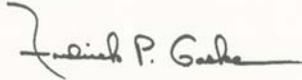
<input type="checkbox"/> Director's Office (850) 245-6300 • FAX: 245-6436	<input type="checkbox"/> Archaeological Research (850) 245-6444 • FAX: 245-6452	<input checked="" type="checkbox"/> Historic Preservation (850) 245-6333 • FAX: 245-6437	<input type="checkbox"/> Historical Museums (850) 245-6400 • FAX: 245-6433
<input type="checkbox"/> Southeast Regional Office (561) 416-2115 • FAX: 416-2149	<input type="checkbox"/> Northeast Regional Office (904) 825-5045 • FAX: 825-5044	<input type="checkbox"/> Central Florida Regional Office (813) 272-3843 • FAX: 272-2340	

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Mr. Ponish  
May 9, 2007  
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If you have any questions, please contact James Toner, Historic Sites Specialist, by electronic mail at [jtoner@dos.state.fl.us](mailto:jtoner@dos.state.fl.us), or at 850-245-6333.

Sincerely,

A handwritten signature in black ink that reads "Frederick P. Gaske". The signature is written in a cursive style with a long horizontal line extending to the right.

Frederick P. Gaske, Director, and  
State Historic Preservation Officer