BIOMASS CROP ASSISTANCE PROGRAM

Environmental Assessment

Proposed BCAP Giant Miscanthus (*Miscanthus X giganteus*) Establishment and Production in Arkansas, Missouri, Ohio, and Pennsylvania

Sponsored by Aloterra Energy LLC and MFA Oil Biomass LLC

United States Department of Agriculture

Farm Service Agency

MAY 2011

FINAL

MITIGATED FINDING OF NO SIGNIFICANT IMPACT

ENVIRONMENTAL ASSESSMENT

Proposed BCAP Giant Miscanthus Establishment and Production in Arkansas, Missouri, Ohio and Pennsylvania

Farm Service Agency

U.S. Department of Agriculture

The United States Department of Agriculture Farm Service Agency (FSA) on behalf of the Commodity Credit Corporation (CCC) has prepared an Environmental Assessment (EA) to evaluate the environmental consequences associated with establishing Biomass Crop Assistance Program (BCAP) project areas that support the establishment and production of giant miscanthus (*Miscanthus x giganteus*) on 50,000 acres per proposed project area (200,000 acres total) by 2014. The BCAP is a new program authorized by the Food, Conservation, and Energy Act of 2008 (2008 Farm Bill) that provides financial assistance to contract producers in approved project areas for the establishment and production of perennial bioenergy crops and annual bioenergy crops that show exceptional promise for producing bioenergy or biofuels that preserve natural resources and that are not primarily grown for food or animal feed.

The purpose of the Proposed Action is to support the establishment and production of giant miscanthus as a crop for energy production to be grown by BCAP participants in the project areas proposed in Arkansas, Missouri, Ohio, and Pennsylvania. The need for the Proposed Action is to provide renewable biomass feedstock to a Biomass Conversion Facility (BCF) for use in energy production within and potentially outside the immediate region(s).

PROPOSED ACTION

Aloterra Energy LLC and MFA Oil Biomass LLC (Project Sponsors) are proposing that FSA establish BCAP project areas that support the establishment and production of giant miscanthus on 50,000 acres per proposed project area (200,000 total acres) by 2014, with crop longevity of 20 to 30 years. The acreage projected to be enrolled within the proposed project areas are marginal croplands and pastureland. The proposed project areas are located in four states in four distinct proposed project areas. Missouri contains two proposed project areas; Columbia and Aurora. Arkansas contains one proposed project area, Paragould. Ohio and Pennsylvania contain the final proposed project area, Ashtabula. Each proposed project area is named for the approximate location of the BCF that will be utilized to process the giant miscanthus biomass into pellets to be shipped to other facilities or users for use in bioenergy products. Each proposed project area was developed as an approximate 50-mile radius from the approximate location of each BCF. The establishment and production of giant miscanthus would begin with centralized propagation acres on each farm, which would be distributed to plantation acres during the next growing season. During this planting season (2011), this initial establishment would require a centralized location within each proposed project area with center-pivot irrigation due to the late planting this growing season. This centralized propagation area for the entire proposed project area would only occur for the 2011 planting season; all other planting season would follow the on-farm model with the initial establishment of propagation acres, followed by plantation acres the following growing season. Equipment to be used to establish giant miscanthus would be modified equipment from existing perennial grass industries. Equipment used to harvest and bale giant miscanthus would be similar to existing types of agricultural machinery used for hay crops; however, they would need to be more heavy-duty due to the increased biomass amounts being harvested and baled.

REASONS FOR MITIGATED FINDING OF NO SIGNIFICANT IMPACT

In consideration of the analysis documented in the EA and the reasons outlined in this Mitigated Finding of No Significant Impact (FONSI), the Proposed Action would not constitute a major Federal action that would significantly affect the human environment. Therefore, an environmental impact statement will not be prepared. The determination is based on the following:

1. The Proposed Action as outlined in the EA would provide minor beneficial effects to socioeconomics, soil resources, and water quality and quantity of the local areas due to a diversified agricultural production, establishment of perennial vegetation on highly erodible soils, and estimated higher water use efficiency of the species to be established.

2. The Proposed Action could result in minor negative effects from land use changes associated with marginal and idle croplands and pasturelands returning to agricultural production; vegetation composition on pasturelands, which in turn could alter wildlife habitat, and water quantity due to increased water use of the species when compared to annual species, such as traditional row crops. These potential negative effects would be minimized through the use of the Mitigation and Monitoring Plan, described in the EA.

3. The Proposed Action would require site specific environmental screening for each producer contract initiated with FSA for inclusion as a producer within the proposed project areas, which would identify field level resources that would be need to be avoided or the effects could be minimized through mitigation efforts as described in the EA.
4. Potential beneficial and adverse impacts of implementing the Proposed Action have been fully considered within the EA. No significant adverse direct or indirect effects were identified, based on the resource analyses provided.
5. The Proposed Action would not involve effects to the quality of the human environment that are likely to be highly controversial.
6. The Proposed Action would not establish a precedent for future actions with significant effects and does not represent a decision in principle about a future consideration.
7. The Proposed Action does not result in cumulative significant impacts when considered with other actions that also individually have insignificant impacts. Cumulative impacts of implementing the Proposed Action were determined to be not significant.
8. The Proposed Action would not have adverse effects on threatened or endangered species or designated critical habitat since site specific analyses would be undertaken for each producer contract within each proposed BCAP project area to avoid adverse effects to these protected species.
9. The Proposed Action does not threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

OVERVIEW OF THE MITIGATION AND MONITORING PLAN

To avoid more than minor adverse effects to the human and natural environment, a mitigation and monitoring plan was developed to address each of the resource areas analyzed in detail within the EA. One of the primary components of the Mitigation and Monitoring Plan is producer education. This education component, to be held twice annually for active producers with an orientation program for new producers, outlines best practice standards across an array of resource areas and topics to ensure effective establishment and management of the giant miscanthus fields. In addition to the educational components, producers would be required to submit annual reports to the Project Sponsors detailing many aspects of production and allows for a greater understanding of how this species will grow in a production setting. More specifically, FSA with cooperation from the Natural Resource Conservation Service (NRCS), the Agricultural Research Service (ARS) and the Project Sponsors are proposing the following mitigation and monitoring measures. These monitoring and mitigation measures have been developed based on the prevailing literature and in some cases, conservative estimates relating to existing standards for other conservation programs and practices, but not specific to giant miscanthus.

- Biannual Producer meetings to discuss new developments in production, management, pest/disease treatment, and eradication;
- New Producer orientation to discuss production methods, management activities, potential for spread of giant miscanthus, treatment methods, and responsibilities, pest/disease identification, treatment methods, and responsibilities, eradication methods, if necessary, and reporting requirements;
- Producer Conservation Plans to include site specific best management practices (BMPs), which could include, but not be limited to, NRCS Conservation Practice Standards (CPS) for soil erosion, pesticide use and application, fertilizer use and application, and other relevant areas for each specific site;
- Setbacks/buffers to manage the giant miscanthus stand and to prevent unintentional spread of the giant miscanthus shall follow all local, State, or Federal regulations for containment of biomass plantings in existence at the time of the development of the producer’s Conservation Plan or through an amendment of the Conservation Plan initiated by the producer and approved by FSA and NRCS, if determined appropriate for the site-specific conditions. If no such guidance exists, minimum procedures to prevent unintentional spread of giant miscanthus shall include:
    - Establish or maintain a minimum 25 feet of setback/border around a giant miscanthus stand, unless the field is adjacent to existing cropland or actively managed pasture with the same operator.
    - Setback/border areas may be planted to an annual row crop such as corn or soybeans; may be planted to a site-adapted, perennial cool-season or warm-season forage or turf grass; may be kept in existing vegetation; or kept clear by disking, rotovating, or treating with a non-selective burn down herbicide at

least once a year. The method used may be dependent on slope and the potential for erosion.

- The use of only the sterile variety of giant miscanthus cultivar known as the “Illinois Clone” for producers included within the proposed project areas; all Illinois Clone cultivars must be approved for planting under Aloterra’s membership through the Ohio Seed Improvement Association’s Quality Assurance program;
- The initiation of a seed sampling program to determine the on-going sterility of seeds produced from the BCAP acres within the project areas. The seed sampling program includes recommended actions, including eradication, if a seed sample returns viable seed.
- Exclusion of planting giant miscanthus on certain acreage within approximately 1,300 feet from any known *Miscanthus sinensis* or *Miscanthus sacchariflorus* to limit the potential for cross-pollination resulting in viable seed.
- Exclusion of planting giant miscanthus on certain acreage within the project areas, depending upon certain site-specific conditions, like those lands subject to frequent flooding events;
- Monitoring program developed to identify (1) spread of giant miscanthus outside of planted fields with notification provided to both USDA and the Project Sponsors as soon as possible after identification of the issue, (2) identification of diseases and pests with notification provided to the Project Sponsors as soon as possible after identification of the issue; and (3) wildlife use or changes in use, all to be included in the annual producer reporting; a USDA representative will conduct an annual field visit to monitor the site and to look for potential spread of giant miscanthus beyond the site; the USDA will work with local weed control districts to provide additional monitoring/evaluation of these sites as appropriate; and
- Annual producer reporting, which would include land use tracking with the average and total size of enrolled fields; prior land use; rationale for land use change; spread of giant miscanthus outside of planted fields; any pests/diseases identification; the use of pesticides/herbicides to control unwanted spread of giant miscanthus or pests/diseases; BMP and CPS incorporated into field management, such as erosion control structures or materials, vegetative barriers, etc.; fertilizer usage and application methods; and cost data.

DETERMINATION

In accordance with the National Environmental Policy Act and FSA's environmental regulations at 7 Code of Federal Regulations (CFR) part 799 implementing the regulations of the Council on Environmental Quality, 40 CFR parts 1500-1508, I find the Proposed Action and associated mitigation measures do not constitute a major Federal action significantly affecting the quality of the human environment. Therefore, no environmental impact statement will be prepared.

_____________________________,

Acting Executive Vice President,

Commodity Credit Corporation, and

Acting Administrator,

Farm Service Agency

EXECUTIVE SUMMARY

INTRODUCTION AND BACKGROUND

The U.S. Department of Agriculture (USDA) Commodity Credit Corporation (CCC) implements the Biomass Crop Assistance Program (BCAP) authorized by the Food, Conservation, and Energy Act of 2008 (the 2008 Farm Bill). On October 27, 2010, the CCC published the Record of Decision (ROD) for the BCAP Final Programmatic Environmental Impact Statement (PEIS) and the BCAP Final Rule (7 Code of Federal Regulations [CFR] Part 1450) in the Federal Register (FR 75:207, 65995-66007; 66202-66243). As part of the mitigation measures detailed in the ROD, each project proposal is subject to a National Environmental Policy Act (NEPA) (Public Law [PL] 91-190, 42 U.S. Code [USC] 4321 *et seq*.) analysis prior to approval of the project area proposal. The initial environmental evaluation of a project area proposal is developed through the completion of Forms BCAP-19, BCAP-20, BCAP-21, and BCAP-22 and supporting information. After this initial evaluation FSA can conclude that no additional environmental analyses are applicable due to no potential for the proposed BCAP activity to significantly impact the environment or that additional environmental analyses in the form of an environmental assessment (EA) or environmental impact statement (EIS) are necessary, depending upon the potential level of significance.

This EA analyzes the proposed establishment of BCAP project areas supporting the proposed establishment and production of giant miscanthus hybrid (*Miscanthus X giganteus)* by Aloterra Energy LLC and MFA Oil Biomass LLC (Project Sponsors) in Arkansas, Missouri, Ohio, and Pennsylvania, which is being completed to meet the requirements of the NEPA environmental evaluation of the BCAP or to determine if an EIS would be required.

PURPOSE AND NEED

The primary purpose of BCAP is to promote the cultivation of perennial bioenergy crops and annual bioenergy crops that show exceptional promise for producing bioenergy or biofuels that preserve natural resources and that are not primarily grown for food or animal feed. The purpose of the Proposed Action is to support the establishment and production of giant miscanthus as a crop for energy production to be grown by BCAP participants in the project areas proposed in Arkansas, Missouri, Ohio, and Pennsylvania. The need for the Proposed

Action is to provide renewable biomass feedstock to a Biomass Conversion Facility (BCF) for use in energy production within and potentially outside the immediate region(s).

ALTERNATIVES

As part of the BCAP Project Area Selection Process, the Project Sponsors develop a proposal application for submittal to FSA. Prior to this submittal, the Project Sponsors have likely determined the economic feasibility of their proposal, including developing alternatives for location and crop species. The Project Sponsors developed selection criteria to meet the overall purpose and need for the Proposed Action, the establishment and production of giant miscanthus as a dedicated energy crop for energy production under the incentives of the BCAP. As part of the alternatives development process the Project Sponsors analyzed both alternative crops and alternative locations for the proposed project areas; however, each of these was determined not to be feasible. As such, this EA is analyzing the implementation of the Proposed Action or the selection of the No Action Alternative, that FSA would not establish the proposed project areas supporting the establishment and production of giant miscanthus.

PROPOSED ACTION

Aloterra Energy LLC and MFA Oil Biomass LLC (Project Sponsors) are proposing that FSA establish BCAP project areas that support the establishment and production of giant miscanthus on 50,000 acres per proposed project area (200,000 total acres) by 2014, with crop longevity of 20 to 30 years. The acreage projected to be enrolled within the proposed project areas are marginal croplands and pastureland. The proposed project areas are located in four states in four distinct proposed project areas. Missouri contains two proposed project areas; Columbia and Aurora. Arkansas contains one proposed project area, Paragould. Ohio and Pennsylvania contain the final proposed project area, Ashtabula. Each proposed project area is named for the approximate location of the BCF that will be utilized to process the giant miscanthus biomass into pellets to be shipped to other facilities or users for use in bioenergy products. Each proposed project area was developed as an approximate 50-mile radius from the approximate location of each BCF. The establishment and production of giant miscanthus would begin with centralized propagation acres on each farm, which would be distributed to plantation acres during the next growing season. During this planting season (2011), this initial establishment would require a centralized location within each proposed project area with center-pivot irrigation due to the timing of planting.

This centralized propagation area for the entire proposed project area would only occur in the 2011 planting season; all other planting seasons would follow the on-farm model with the initial establishment of propagation acres, followed by plantation acres the following growing season. No irrigation will be required after 2011.

Equipment to be used to establish giant miscanthus would be modified equipment from existing perennial grass industries. Equipment used to harvest and bale giant miscanthus would be similar to existing types of agricultural machinery used for hay crops; however, they would need to be more heavy-duty due to the increased biomass amounts being harvested and baled. **Table ES-1** lists the proposed propagation and planting schedule within each of the proposed project areas, totaling 50,000 acres per proposed project area by 2014, which is the maximum planting goal under this action.

Table ES-1. Proposed Giant Miscanthus Acres Added by Growing Season 2011-2014

Project Area	2011	2012	2013	2014	Total Acres 2011-2014
	Propagation Acres Range	Total Giant Miscanthus Acres Added			
Ashtabula	50-300	2,275	13,500	35,000	50,000
Aurora	100-400	7,950	13,500	31,000	50,000
Columbia	100-300	6,450	13,500	33,000	50,000
Paragould	100-600	10,850	13,500	28,400	50,000

NOTE: 2011 is the only year that will have only propagation acres planted, total additional acreage per year includes both propagation acres and plantation acres (2012-2014)

ENVIRONMENTAL CONSEQUENCES

Table ES-2 provides a tabular summary of the potential effects from both the Proposed Action and No Action Alternative. Implementing the Proposed Action would result in minor positive and negative effects to the local and regional area; however, many of these effects would be minimized through the use of the Mitigation and Monitoring Plan. FSA has a framework for defining the components of the Mitigation and Monitoring Plan. The Mitigation and Monitoring Plan is included in section 6.0 of this document.

The Proposed Action would result in additional diversified income for a participating producers, as well as technical assistance from the Project Sponsors in the production and harvesting of giant miscanthus. The Project Sponsors have proposed a BCF in each of the proposed project areas ensuring that producers will have a demand for their products. Also, ancillary agricultural services should expect an increase due to the Project Sponsors goal of primarily contracting idle acres and not active cropland. The Proposed Action would result in a changed local landscape with the addition of the giant miscanthus fields; however, most contract acreage would range in size between 38 to 100 acres.

Table ES-2. Comparison of the Alternatives

Resource Area	Proposed Action	No Action Alternative
Socioeconomics	+ minor	0
Land Use	- minor	0
Biological Resources		
Vegetation	- minor	0
Wildlife	- minor	0
Protected Species	0	0
Soil Resources	+/- minor	0/- minor
Water Quality/Quantity		
Water Quality	+/- minor	0
Water Quantity	+/- minor	0

Note: +=positive -=negative 0=neutral

The Mitigation and Monitoring Plan would be used to ensure that adverse effects from this new crop are minimized or avoided. Similarly, minor negative effects would be anticipated for biological diversity as pastureland is converted into giant miscanthus croplands. The Mitigation and Monitoring Plan would be essential to provide mechanisms such as reasonable and economically feasible buffers and field edges to provide for continued wildlife and vegetative diversity in these areas. Recent research has indicated that giant miscanthus is susceptible to some plant pests; the Mitigation and Monitoring Plan monitoring and buffer efforts would be essential to ensure that any occurrence is identified and treated early to avoid transmission to local croplands, such as corn.

Giant miscanthus, which has an extensive perennial root system, would be anticipated to have positive effects on soil retention, soil organic matter, and soil carbon sequestration. Water quality should improve relative to other crops typically grown in the project areas due to improved nutrient uptake, low fertilizer requirements, and reduced sediment transport. Also, due to its growth patterns, giant miscanthus would be anticipated to require more water than corn grown for grain, but less water than grass hay and improved pasture. The majority of the acres that enroll in the program are expected to be pastureland and idle cropland. The project may also see some conversion of irrigated lands to the non-irrigated miscanthus, which will reduce regional water use from those irrigated acres. The plant has much higher water use efficiency, generating high amounts of biomass per volume of water consumed, indicating it uses rainfall efficiently.

The No Action Alternative would result in no adverse effects to the local and regional area since there would be no giant miscanthus planted in any of the proposed project areas as described in this BCAP Project Proposal. However, the No Action Alternative would not assist in meeting the overall goal of BCAP, which is to develop dedicated energy crops for conversion to bioenergy.

DATA GAPS IN CURRENT UNITED STATES ESTABLISHMENT AND PRODUCTION

Giant miscanthus is a new agronomic crop species in the United States, and also still relatively new in Europe, where the oldest cultivation areas are approximately 30 years old or less. The *Miscanthus* genus was introduced to the United States over 100 years ago in ornamental plantings and was first described by Beal in 1896 in the *Grasses of North America*. Several universities (i.e., University of Illinois, Mississippi State University, University of Wisconsin, Michigan State University, and the University of Georgia) in the United States are currently cultivating giant miscanthus on a trial basis or conducting research on giant miscanthus or the *Miscanthus* genus. Additionally, large-scale acreages of giant miscanthus have not been cultivated in the United States; although commercial production of giant miscanthus for bioenergy production in co-fired systems have been established within the last few years in the United Kingdom. Given, that giant miscanthus has only been grown in large-scale trials in Europe, the data on giant miscanthus planting in the United States is limited.

In light of the lack of data applicable to the proposed project areas, an adaptive Mitigation and Monitoring Plan has been developed, which includes best management practices (BMPs) for the establishment and production of giant miscanthus. These BMPs are designed to ensure avoidance and/or minimization of potential effects to the immediate environment and the larger landscape. The Mitigation and Monitoring Plan is a living document that is highly dependent on routine monitoring of the fields to determine the success of giant miscanthus plantings, its overall effects to the immediate environment, and any potential effects to the larger landscape based on observation and measurement. This document contains information on appropriate and effective eradication methods that would be updated over time as new data become available. Likewise, other metrics or observable measurements will be adapted over time based on past observations, new research findings, and new regulations.

The following information related to the growth and production of giant miscanthus in the United States has been found to be lacking complete detail. .

- Potential effects to socioeconomics are focused on the information provided in the pro forma analyses of the Project Sponsors. Data from Europe indicates a high cost of establishment due to the vegetative propagation of the species; however, the BCAP combined with the model undertaken by the Project Sponsors and technical assistance to be provided to producers addresses most of these concerns.

- Landscape scale analyses of giant miscanthus are generally lacking since there have not been any commercial-scale field trials in the United States.
- Literature documenting the potential for invasiveness of the fertile species of the *Miscanthus* genus has been discussed along with documentation supporting that giant miscanthus should not be considered invasive due to its sterility and slow rhizome spread within the United States. The growth and management of giant miscanthus has been studied extensively by the University of Illinois and commercial-scale production has been implemented and monitored in the United Kingdom, but commercial-scale production of the plant has not yet been implemented in the United States. Although the preponderance of evidence indicates that the plant is sterile and slow spreading, documentation of sterility and spread is needed for commercial-scale operations in United States' environments.
- Literature discussing potential plant pests has been recently published relating to the western corn root worm, several species, of aphids, and rust; those studies along with recommendations have been included.
- There is little peer-reviewed literature concerning the effects of giant miscanthus plantings on biological diversity in the United States; however, some specific studies have been published in Europe. These studies are primarily focused on bird species with some small mammal observations. These studies also looked at young-aged giant miscanthus stands, so there was little information available on biodiversity found in mature stands.
- Information concerning the nutrient uptake, nutrient addition trials, and root structure has been included to discuss the potential for soil erosion, soil organic matter, and soil carbon sequestration based on the available literature.
- Literature concerning nutrient uptake, water use efficiency, and irrigation needs (one time application in 2011 due to late planting) during establishment has been discussed based on the available literature.

TABLE OF CONTENTS

This Page Intentionally Left Blank

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

AOSCA	Association of Seed Certifying Agencies
APHIS	USDA Animal and Plant Health Inspection Service
ARS	USDA Agricultural Research Service
AQCR	Air Quality Control Region
BCAP	Biomass Crop Assistance Program
BCF	biomass conversion facilities
BMP	best management practice
C	carbon
CAA	Clean Air Act
CCC	Commodity Credit Corporation
CEQ	Council on Environmental Quality
CDM	Clean Development Mechanism
CFR	Code of Federal Regulations
cm	centimeter
CO	carbon monoxide
CPS	Conservation Practice Standard
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
CWA	Clean Water Act
EA	environmental assessment
EIA	Economic Impact Analysis
EIS	environmental impact statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ERS	Economic Research Service
ET	evapotranspiration
FAO	Food and Agricultural Organization
FONSI	finding of no significant impact
FR	Federal Register
FS	USDA Forest Service
FSA	USDA Farm Service Agency
g	gram

GHG	greenhouse gases
HEL	highly erodible lands
HILD	high-input low diversity
HUC	hydrologic unit
IPCC	Intergovernmental Panel on Climate Change
IPM	integrated pest management
ISO	International Standards Organization
kg	kilograms
kPA	kilo Pascal
LIHD	low-input high diversity
LMM	Lower Missouri-Moreau
$\mu g/m^3$	micrograms per cubic meter
m	meter
m^2	square meter
MDNRAPCD	Missouri Department of Natural Resources Air Pollution Control Division
MSU	Michigan State University
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NISC	National Invasive Species Council
NO_2	nitrogen dioxide
NRCS	USDA Natural Resources Conservation Service
NZERMA	New Zealand Environmental Risk Management Authority
OEPA	Ohio Environmental Protection Agency
ODNR	Ohio Department of Natural Resources
OSIA	Ohio Seed Improvement Association
Pb	lead
PEIS	Programmatic Environmental Impact Statement
PDD	Project Design Documentation
PL	Public Law
$PM_{2.5}$	particulate matter of less than 2.5 microns
PM_{10}	particulate matter of less than 10 microns
PPA	Plant Protection Act
QAP	Quality Assurance Program
RES	Renewable Energy Standard

ROD	Record of Decision
ROI	Region of Influence
SHPO	State Historical Preservation Offices
SIP	State Implementation Plan
SO_2	sulfur dioxide
SWAT	Soil Water Assessment Tool
tpy	tons per year
TSP	Technical Service Providers
UNFCCC	United Nations Framework Convention on Climate Change
USACE	U.S. Army Corp of Engineers
USC	U.S. Code
USCB	U.S. Census Bureau
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WRA	Weed Risk Assessment
WRI	World Resources Institute
WRP	Wetland Reserve Program

This Page Intentionally Left Blank

1 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION AND BACKGROUND

The U.S. Department of Agriculture (USDA) Commodity Credit Corporation (CCC) implements the Biomass Crop Assistance Program (BCAP) authorized by the Food, Conservation, and Energy Act of 2008 (the 2008 Farm Bill). This legislation, which was passed into law on June 18, 2008, creates the BCAP and authorizes the program through September 30, 2012. BCAP is intended to assist agricultural and forest land owners and operators with the establishment and production of eligible crops including woody biomass in selected project areas for conversion to bioenergy, and the collection, harvest, storage, and transportation of eligible material to designated biomass conversion facilities (BCF) that produce or intending to produce heat, power, biobased products, or advanced biofuels. The BCAP is administered by the Deputy Administrator for Farm Programs of the Farm Service Agency (FSA) on behalf of the CCC with the support of other Federal and local agencies. On October 27, 2010, the CCC published the Record of Decision (ROD) for the BCAP Final Programmatic Environmental Impact Statement (PEIS) and the BCAP Final Rule (7 Code of Federal Regulations [CFR] Part 1450) in the Federal Register (FR 75:207, 65995-66007; 66202-66243).

As part of the mitigation measures detailed in the ROD, each project proposal is subject to a National Environmental Policy Act (NEPA) (Public Law [PL] 91-190, 42 U.S. Code [USC] 4321 *et seq*.) analysis prior to approval of the project area proposal. The initial environmental evaluation of a project area proposal is developed through the completion of Forms BCAP-19, BCAP-20, BCAP-21, and BCAP-22 and supporting information. After this initial evaluation FSA can conclude that no additional environmental analyses are applicable due to no potential for the proposed BCAP activity to significantly impact the environment or that additional environmental analyses in the form of an environmental assessment (EA) or environmental impact statement (EIS) are necessary, depending upon the potential level of significance.

This EA analyzes the proposed establishment of BCAP project areas supporting the proposed establishment and production of giant miscanthus hybrid (*Miscanthus X giganteus)* by Aloterra Energy LLC and MFA Oil Biomass LLC (Project Sponsors) in Arkansas, Missouri, Ohio, and Pennsylvania, which is being completed to meet the requirements of the NEPA environmental evaluation of the BCAP or to determine if an EIS would be required.

In 2008, the owners of Aloterra Energy LLC began laying the groundwork to expand their fuel marketing, distribution, and logistics operations into the emerging biomass renewable energy market. In 2010, Aloterra Energy's owners purchased a farm in Conneaut, Ohio and, with the help of an enthusiastic community, planted stock giant miscanthus. During this same period, Aloterra Energy secured the largest stock of giant miscanthus rhizomes in the United States and combined that with specialized giant miscanthus rhizome harvesting and planting equipment manufactured in the United States. Aloterra Energy's owners are now leveraging four decades of commodities and energy experience to form a vertically integrated energy supply chain, focused on giant miscanthus. Aloterra Energy's proposed project area will provide farmers an energy crop rhizome source, harvesting and planting equipment for the crop's rhizomes, specialty harvesting for the mature cane, processing technology, and marketing services for the cooperative's biomass fuel.

Formed in 1929, MFA Oil Company is the largest farmer owned energy cooperative in the State of Missouri. In 2008, MFA Oil began laying the groundwork to expand its energy services into the emerging biomass renewable energy market. That initiative came to fruition in 2010 as MFA Oil teamed up with Aloterra Energy LLC to form MFA Oil Biomass LLC to lead the cooperative into the biomass energy field. MFA is leveraging its knowledge in farming and in the energy markets to form a vertically integrated renewable energy supply chain. MFA's proposed project area will provide farmers an energy crop source, harvesting and planting equipment for the crop's rhizomes, specialty harvesting for the mature cane, processing technology, and marketing services for the cooperative's biomass fuel.

1.2 USDA NEPA GUIDANCE / AUTHORITY

This EA is being prepared in accordance with the NEPA (PL 91-190, 42 USC 4321 *et seq*.); implementing regulations adopted by the Council on Environmental Quality (CEQ) (40 CFR 1500-1508); and FSA implementing regulations, Environmental Quality and Related Environmental Concerns – Compliance with NEPA (7 CFR 799). According to CEQ guidance, an EA is a "concise document for which a Federal agency is responsible that serves to (1) briefly provide sufficient evidence and analysis for determining whether to prepare an EIS or a finding of no significant impact (FONSI) (40 CFR 1508.9)." Additionally, since this document falls under the guidance of the BCAP Final PEIS, which was a broad national-level program document, CEQ guidance allows for "tiering." CEQ guidance defines tiering as, “the coverage of general matters in broader EIS with subsequent narrower statements or environmental analyses incorporating by reference the general discussions and concentrating solely on the issues specific to the statement subsequently prepared (40 CFR 1508.28).

1.3 PURPOSE AND NEED FOR THE PROPOSED ACTION

The primary purpose of BCAP is to promote the cultivation of perennial bioenergy crops and annual bioenergy crops that show exceptional promise for producing bioenergy or biofuels that preserve natural resources and that are not primarily grown for food or animal feed. The purpose of the Proposed Action is to support the establishment and production of giant miscanthus as a crop for energy production to be grown by BCAP participants in the project areas proposed in Arkansas, Missouri, Ohio, and Pennsylvania. The need for the Proposed Action is to provide renewable biomass feedstock to a Biomass Conversion Facility (BCF) for use in energy production with and potentially outside the immediate region(s).

1.4 ORGANIZATION OF THE DOCUMENT

This EA assesses the potential impacts of the Proposed Action and No Action Alternatives on the potentially affected environmental and socioeconomic resources.

- **Section 1** provides background information relevant to the Proposed Action, and discusses its purpose and need.
- **Section 2** describes the alternatives, including the Proposed Action, and compares the alternatives.
- **Section 3** describes the baseline conditions (i.e., the conditions against which potential impacts of the Proposed Action and alternatives are measured) for each of the potentially affected resources.
- **Section 4** describes potential environmental consequences on these resources.
- **Section 5** includes analysis of cumulative impacts and irreversible and irretrievable resource commitments.
- **Section 6** discusses mitigation measures.
- **Section 7** is a list of references cited in the EA.
- **Section 8** lists the preparers of this document.
- **Section 9** contains a list of persons and agencies receiving this document and contacted during the preparation of this document.

This Page Intentionally Left Blank

2 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 ALTERNATIVES DEVELOPMENT

As part of the BCAP Project Area Selection Process, the Project Sponsors developed a proposal application for submittal to the FSA. Prior to this submittal, the Project Sponsors have determined the economic feasibility of their proposal, including developing alternatives for location and crop species. The Project Sponsors developed selection criteria to meet the overall purpose and need for the Proposed Action, the establishment and production of giant miscanthus as a dedicated energy crop for energy production under the incentives of the BCAP. As part of the alternatives development process the Project Sponsors analyzed both alternative crops and alternative locations for the proposed project areas. The following sections describe each of these processes that were under taken by the Project Sponsors during their planning phases and why certain aspects were eliminated as unfeasible alternatives.

2.1.1 Proposed Crop Alternatives – Alternatives Analyzed and Eliminated

The Project Sponsors utilized two primary criteria to determine the proposed crop alternatives within the proposed project areas. These selection criteria included:

(1) **Potential Biomass Yield in Tonnage Produced per Acre** – This selection criterion was closely tied to economic feasibility because obtaining a sufficient annual harvest is necessary to make the proposed project economically viable for the Project Sponsors. Prior to the passage of the 2008 Farm Bill, the Project Sponsors were considering the results of a three-year study conducted by the Ohio Seed Improvement Association (OSIA). When the 2008 Farm Bill was authorized, the Project Sponsors felt the economic feasibility for United States markets had reached the threshold necessary to make the proposed project viable. The Project Sponsors were also concurrently reviewing data from the OSIA study that evaluated the annual tonnage yield for the perennial grass giant reed (*Arundo donax*) that is a native of Europe, several varieties of the perennial native switchgrass (*Panicum virgatum* varieties), and the perennial hybrid grass native to Asia, giant miscanthus. The results of the three-year study with harvesting conducted between 2007 and 2010 indicated that giant miscanthus was the superior biomass producer of the eight crops or varieties tested and provided approximately 1.5 to two times more annual tonnage of biomass than switchgrass;

(2) Potential for Invasiveness – The Project Sponsors subsequently became a member of the OSIA and worked with them as an independent, third party, to develop a voluntary Quality Assurance Program (QAP) that included site visits at their propagation locations, genetic tracing of their stock, and a records audit. In their letter to the Project Sponsors dated March 4, 2010 that was submitted as part of their BCAP application, OSIA concluded that the Project Sponsors proposed giant miscanthus was a sterile triploid hybrid producing no viable seed at the Conneaut, Ohio and Kansas propagation locations inspected. Furthermore, the Project Sponsors' QAP was submitted to the Association of Official Seed Certifying Agencies (AOSCA), which is the national authority for seed certification for additional verification.

Other crop types were eliminated from detailed study within this EA due to the increased potential for environmental impacts associated with additional land use or conversion for less efficient species or hybrids, potential additional water supply or demand requirements for propagation and planting purposes, potential impacts on water quantity due to continual irrigation needs, potential water quality impacts due to higher nutrient requirements, potentially higher air emissions of criteria pollutants and greenhouse gases (GHG) due to additional transportation, harvesting (e.g., ethanol production typically uses multiple harvest passes per field), and feedstock drying (e.g., associated with crop choices with more moisture content when harvested) sources.

The Project Sponsors also considered the use of corn stover or residuals, which are heavily used in the production of corn ethanol-based biofuels (e.g. included in the BCAP, but not as an advanced biofuel). However, this option was not considered economically viable because of the infrastructure required and time to acquire and construct this infrastructure, which the Project Sponsors are not well positioned to obtain on an economically viable basis. The presence of other established market competitors already producing corn ethanol-based biofuels in the Midwest with multiple harvest passes per planted field that have this infrastructure in place, is another reason that the corn option was considered but not pursued.

2.1.2 Proposed Project Area Locations – Alternatives Analyzed and Eliminated

The Project Sponsors utilized several criteria to determine the proposed project locations. These selection criteria included:

(1) Regional Location - The Midwest was selected because the growing requirements of giant miscanthus include rainfall of generally more than 30 inches per year and winter conditions that would trigger plant dormancy, generally less than 32°F, usually associated with adequate snow cover to protect the rhizomes. Additionally, the Project Sponsors also have a history within this region, which provided familiarity with the region and the conditions, including climatic, agricultural economy, use of renewable energy or the desire for the use of renewable energy, and willingness to participate in the BCAP. Therefore, the Project Sponsors considered Midwestern locations because this region provided the only suitable match for the growing requirements of the proposed advanced biofuels feedstock in the United States;

(2) Availability of Adequate Rainfall to Support Planting Propagation Acres – More specific locations within the Midwest were selected through the second selection criterion, adequate rainfall to primarily support planting of propagation acres and longer term growth of planted giant miscanthus after propagation. As indicated above, a minimum of 30 inches per year of rainfall is considered the minimum along with adequate snow cover to support this species. Adequate normal rainfall is important to avoid the need for supplementary irrigation. Within the Midwest, the Project Sponsors selected the proposed project areas because they all receive the minimum amount of rainfall, which avoids the need to irrigate the plantings;

(3) Proximity of Infrastructure for Market Transportation - The proposed project areas adopted the model that the outside borders of the proposed project area should be located no further than 50 miles from the BCF to reduce emissions and transportation costs to make the effort economically feasible for the producers. Therefore, the BCF locations were carefully chosen to be the center point of the 50-mile radius within each proposed project area and the BCF location must include access to rail, highway, and be within reasonable distance of ports for water connection. The proposed Ashtabula project area was selected due to the established Aloterra Energy farm in Conneaut, Ashtabula County, Ohio which was in proximity of the Port of Ashtabula and rail connections to local pellet markets. The other proposed project areas were selected for their proximity to current highway and rail transportation to support existing agricultural transport mechanisms from cotton, corn, beans, and poultry farming;

(4) **Economic Feasibility** - The Project Sponsors used economic feasibility based on the current dominant agricultural land use in the region and the value of that land use in relation to potential yields for giant miscanthus payments under the BCAP. For example, throughout large parts of all four states corn, beans, beef, and poultry are the dominant agricultural products based on the return price for individual producers. As a result, the Project Sponsors selected individual proposed project areas in those states where there was a large amount of marginal land not currently under production in any of the dominant agricultural products to avoid competition between a potentially more economically feasible option (e.g. the current agricultural use) and what the Project Sponsors are proposing. Due to the higher return on more arable land in conventional crops or livestock, the Project Sponsors recognized the importance of targeting marginal croplands and current pastureland where returns for participating producers would be higher than the existing land use, which could encourage greater participation. Additionally, based on existing research and internal economic analyses the Project Sponsors determined that giant miscanthus could economically produce on smaller acreages, potentially benefitting a larger group of producers.

In Arkansas, however; in response to specific requests from local participating farmers, the Project Sponsors are proposing to use some lands that are currently used for corn or beef but are more marginally productive. The request to plant giant miscanthus is associated with the desire to reduce runoff from high input food crops and to mitigate the unsustainable depletion of groundwater from current farming practices, which could be creating additional costs to these producers;

(5) **Access to Local Markets** – The Project Sponsors decided that access to local markets was key for developing relationships that would meet the need for future renewable energy feedstocks. For example, the proposed Ashtabula project area is within close proximity to the Port of Ashtabula and rail where the Project Sponsors anticipate meeting the significant needs of the energy industry in Ohio triggered by Renewable Energy Standard (RES) mandates. However, the transporting of pellets to both the Canadian and European markets is a viable economic option should biomass supplies exceed regional needs. In central Missouri, the Project Sponsors anticipate providing their anticipated supply to the City of Columbia, which passed a local RES for city-owned utilities, and the University of Missouri, which is in the process of converting their coal-fired power plant to either a partial co-firing or complete co-firing based on advanced biofuels feedstocks. In southwestern Missouri, the Project Sponsors anticipate selling the bulk of their pellet supply to regional poultry producers who primarily rely on propane gas to heat their poultry producing facilities, but often alter their operations if the price of propane gas rises beyond economic feasibility thresholds.

Other alternative locations were eliminated from detailed study within this EA due to the increased potential for environmental impacts associated with increased transportation and infrastructure impacts, increased air emissions including GHG and other criteria pollutants regulated under the Clean Air Act (CAA), additional water demand requirements if a suboptimal climate were chosen with insufficient water supply, additional water quality impacts if a suboptimal site was chosen with additional nutrient demand that may affect impaired waters under the Clean Water Act (CWA) in the region, and potential socioeconomic impacts if a region with an economically superior crop alternative was selected.

2.2 ALTERNATIVES TO BE ANALYZED

Alternatives considered to be reasonably expected to meet the purpose and need for action include the Proposed Action. Even though the No Action Alternative would not meet the purpose and need for the proposed action, it is included as the baseline for which the Proposed Action is compared to determine the potential effects to the human and natural environment and the potential significance of those effects, both positive and negative.

2.2.1 No Action Alternative

Under the No Action Alternative, the FSA would not establish the proposed project areas supporting the establishment and production of giant miscanthus. This alternative would leave existing agricultural production practices in place in the proposed project areas. Producers would have the ability, if market conditions exist, to convert acreage into traditional crops, leave as is, or provide their acreage for non-agricultural development. This alternative would not meet the goals and objectives of the BCAP, as these Project Sponsors would not enter the voluntary program for the incentive to produce dedicated bioenergy crops. Also, the No Action Alternative would not meet the purpose and need for the Action as described in Section 1.3.

2.2.2 Proposed Action

Aloterra Energy LLC and MFA Oil Biomass LLC (Project Sponsors) are proposing that FSA establish four separate BCAP project areas to establish and produce giant miscanthus on 50,000 acres per proposed project area (200,000 total acres) over the life of the project (20 years or longer). The acreage targeted for enrollment into the proposed project areas are marginal croplands and current pastureland. As per the BCAP statute and regulatory guidance, native sod would be excluded from any project area. The Project Sponsor defines marginal and idle lands as the following:

- Marginal – This refers to the productivity status of the land due to economics, geographic locations, topography, or other site conditions that render production of high value food crops such as corn and soybeans not viable.
- Idle – Land not currently being cropped.

All Federal and State-owned land are considered to be ***ineligible*** for participation in the BCAP program. Other lands considered ***ineligible*** to be enrolled under a BCAP contract include native sod; and land that is already enrolled in CCC's CRP, Wetlands Reserve Program, or Grassland Reserve Program. Native sod within the proposed BCAP rules is land on which the plant cover is composed principally of native grasses, grass like plants, forbs, or shrubs suitable for grazing and browsing; and that has never been tilled for the production of an annual crops as of the date of the publication of the Final Rule in the Federal Register.

The proposed project areas are located in four states in four distinct proposed project areas (**Figure 2-1**). Missouri contains two proposed project areas; Columbia and Aurora. Arkansas contains one proposed project area, Paragould. Ohio and Pennsylvania contain the final proposed project area, Ashtabula. The Project Sponsors have been in discussions with producers to ensure the economic feasibility of the project proposal to FSA; however, no producers have been asked to provide commitments to the Project Sponsors or have entered into a discussion with the FSA to become BCAP participating producers. As such, the proposed project areas have some approximate locations of acreage to be included

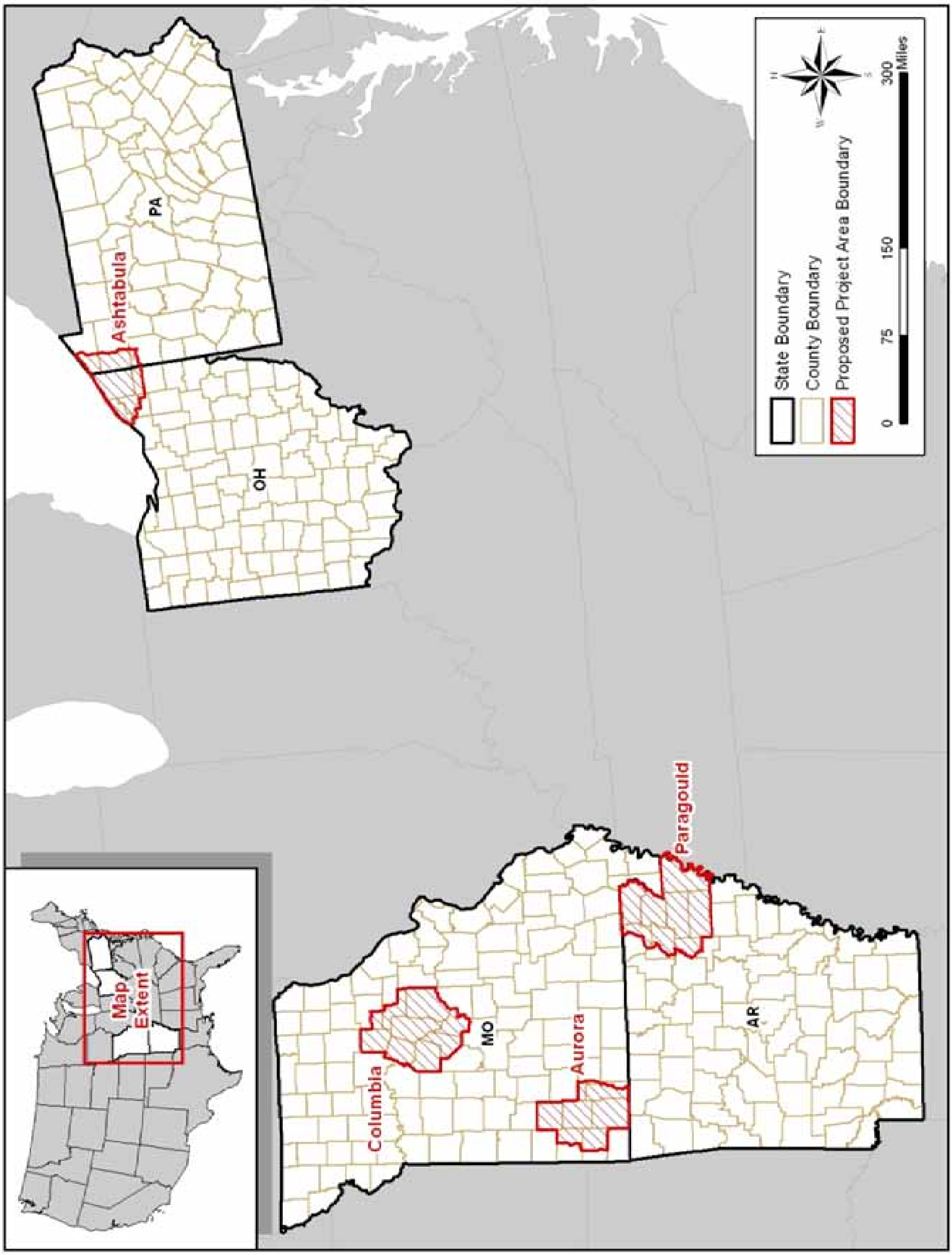

Figure 2-1. Proposed Project Area Locations.

within the first growing season, but those acres are not committed; therefore, the level of analysis for this EA is based at the combined county proposed project area level. Each proposed project area is named for the approximate location of the BCF that will be utilized to process the giant miscanthus biomass into pellets to be shipped to other facilities or users for use in bioenergy products. Each proposed project area was developed as an approximate 50-mile radius from the approximate location of each BCF. This 50-mile radius was developed based on the generalized research findings (as detailed in the BCAP Final PEIS) that 50-miles was generally considered to be the maximum distance biomass feedstocks could be transported to a BCF and make the BCF economically viable. Project acres have been determined to be potentially located anywhere within the 50-mile radius developed from the proposed BCF located city.

The Project Sponsors reserve the right to decline any acres within the eligible project area that the Project Sponsors, the FSA, or the FSA technical partners' determine cannot produce giant miscanthus effectively without substantial environmental effects. This would be determined through one of the following: the Project Sponsors' initial site evaluations, the environmental screening process for each participating contract, or through the conservation or forest stewardship planning processes. The environmental screening process for each project proposal begins with the completion of Form BCAP-22 Environmental Screening for the Project Proposal. The conservation planning process for each participating producer includes the completion of the Natural Resources Conservation Service (NRCS) Form CPA-052 with the assistance of either NRCS field personnel or a certified technical service provider (TSP).

Additionally, per the BCAP Final PEIS and BCAP Final Rule, the collection, harvest, storage, and transportation of biomass from the proposed project areas to the BCF are included within the provisions of the BCAP Matching Payments Program; therefore, those activities are not being analyzed as part of the Proposed Action (BCAP Final PEIS Chapter 1.3.2, page 1-6). The Matching Payment Program was determined not to be a major Federal action per the NEPA definition since (1) there was no discretionary authority to implement the program terms; it was implemented per the direct language of the 2008 Farm Bill and (2) that the materials collected during the Matching Payment Program were currently being utilized in the marketplace for a similar, if not the same, purpose.

2.2.2.1 Methods for Establishment and Production of Giant Miscanthus

The establishment and production of giant miscanthus (**Figure 2-2**) would begin with centralized propagation acres on each farm. Rhizomes from the propagation acres would be distributed to plantation acres during the next growing season. During this planting season (2011) only, this initial establishment would require a centralized location within each proposed project area with center-pivot irrigation due to the late timing of planting in the growing season. This centralized propagation area for the entire proposed project area would only occur this planting season; all other planting seasons would follow the on-farm model with the initial establishment of propagation acres, followed by plantation acres the following growing season, both without subsequent irrigation beyond 2011. No irrigation will be required following the 2011 season.

Figure 2-2. Giant Miscanthus.

Giant miscanthus is a triploid hybrid perennial warm-season grass developed through the crossing of *Miscanthus sinensis* (diploid species) with *M. sacchariflorus* (tetraploid species), both of which are native to Southeast Asia. One species, *Miscanthus sinensis* was introduced to the United States, as an ornamental; other species are not frequently being used, including varieties of giant miscanthus, which is currently being developed as a biofuel feedstock. Yields in North American research trials have reached 17 dry tons per acre per year with minimal inputs. The species is a sterile hybrid which does not produce viable seed and is therefore propagated vegetatively by rhizome division (Jørgensen 2011, Gordon et al 2011). Planting equipment for Bermudagrass (*Cynodon* spp) or specialty vegetable crops has been used to successfully establish giant miscanthus in Midwestern United States. Harvesting is done in a manner similar to traditional hay crops, but the equipment must be able to handle high-yield crops. **Table 2-1** summarizes best practices for the establishment and management of giant miscanthus.

Table 2-1. Proposed Establishment and Production Methods for Giant Miscanthus

Former Land Use: Traditional Crops	Former Land Use: Currently Idle or Pasture
Crop Establishment Year One	
Deep tillage in Fall or early Spring with chisel plow.	Perform burn-down using one application of non-selective herbicide.
Tillage immediately prior to planting with disk or soil finisher to ensure fine seedbed.	Deep tillage in Fall or early Spring with chisel plow. Tillage with disk to break soil clods.
Plant rhizomes at depth of 4 inches and density of 6,000 per acre. A post-planting roller may be required to ensure solid contact between soil and rhizome.	Tillage immediately prior to planting with disk or soil finisher to ensure fine seedbed.
Apply Harness© or Harness XTRA© herbicide at label rate, prior to emergence of weeds. A second application may be made if weeds emerge.	Plant rhizomes at depth of 4 inches and density of 6,000 per acre. A post-planting roller may be required to ensure solid contact between soil and rhizome.
Mow biomass in late winter/early spring.	Apply Harness© or Harness XTRA© herbicide at label rate, prior to emergence of weeds. A second application may be made if weeds emerge.
	Mow biomass in late winter/early spring.
Crop Establishment Year Two	
Apply Harness© or Harness XTRA© herbicide at label rate, prior to emergence of weeds. A second application may be made if weeds emerge.	
Mow, rake, and bale biomass in late Fall/early Spring, prior to emergence of new shoots.	
Crop Maintenance (Years 3-15)	
Fertilize with Nitrogen (8 lbs. per dry ton of biomass), Phosphorus (1.5 lbs. per dry ton of biomass), and Potassium (8 lbs. per dry ton of biomass)	
Harvest annually, from December to March, using equipment such as a mower/conditioner and large square baler.	
Crop Removal	
Following final biomass harvest, deep tillage with plow to break apart rhizome mass. Tillage, as necessary, to break rhizomes and soil clods.	
Plant glyphosate tolerant crop and apply glyphosate during growing season when giant miscanthus shoots appear.	

At the time of planting, rhizomes should be dormant. Viable rhizomes are firm, tan in color, weigh 1.0 to 1.5 ounces, and have at least one visible bud. Soil moisture is a key to establishment and supplemental irrigation in the first growing season is encouraged, but not required. Fertilizer should not be applied in the first two growing seasons, unless planted on in very poor soil, lacking sufficient soil nutrients for crop growth or readily leaches nutrients (e.g., high sand content). In research trials, giant miscanthus has shown tolerance to common maize (corn) herbicides, Harness (Acetochlor) and Harness XTRA (Acetochlor + Atrazine) are currently the only herbicides labeled for use in giant miscanthus. A complete kill of any existing vegetation must be completed before the establishment of the crop. Stems of giant miscanthus can be ½-inch in diameter, 12 feet tall and as dense as 10 stems per square foot.

Harvesting equipment must be able to handle this high yield crop. Biomass harvest should not occur until after first frost when nutrients have been translocated from the stem to rhizome. For the 2012 growing season, live rhizomes would be transported from the centralized propagation acres to the plantation acres within each proposed project area in bags on pallets contained within enclosed, refrigerated trucks similar to the standard process used to transport live plant materials long distances. For the 2013 growing, live rhizomes would be transported from on-farm propagation acres to on-farm plantation acres, there would not be any long distance transport of live plant materials off farms.

Glyphosate and traditional tillage have been found to be effective eradication methods for giant miscanthus though it may require more than one growing season for complete eradication (Caslin et al. 2010, Anderson et al. 2009, Anderson et al. 2011). Caslin et al. (2010) recommend an application of glyphosate after emergence followed by tillage. Anderson et al. (2009) recommend a tillage depth of at least 10 centimeters to remove any living rhizomes after herbicide treatment.

2.2.2.2 Ashtabula Proposed Project Area

For the spring of 2011, the Project Sponsors have obtained initial commitments from farmers to plant between 50 to 300 propagation acres of giant miscanthus, which will be replanted into plantation acres in 2012. A *propagation* acre is planted densely in order to quickly generate rhizomes the following year which are then spread to cover additional acres. A *plantation* acre is planted less densely and is intended to be used to harvest giant miscanthus for biomass. The Project Sponsors will scale up to 50,000 acres of giant miscanthus by 2014, which will enable the Project Sponsors' conversion facility to process 600,000 tons of biomass each year (**Tables 2-2 and 2-3**). The Project Sponsors have a small scale pellet mill in operation. This conversion facility has existing pelletizing technology that is energy efficient, mobile, easy to maintain, and able to be scaled up by combining smaller units using one conveyor and control system. As the economic feasibility establishes, scalability greatly increases the probability of success as expenditures will meet developing tonnage needs. Pellet markets are diverse and are strong both inside and outside of the United States. To that point; the Project Sponsors have giant miscanthus contracts with a large biomass aggregator and a local residential pellet distributor.

Table 2-2. Proposed Giant Miscanthus Acres Added by Growing Season 2011-2014

Project Area	2011 Propagation Acres Range	2012	2013	2014	Total Acres 2011-2014
		Total Giant Miscanthus Acres Added			
Ashtabula	50-300	2,275	13,500	35,000	50,000
Aurora	100-400	7,950	13,500	31,000	50,000
Columbia	100-300	6,450	13,500	33,000	50,000
Paragould	100-600	10,850	13,500	28,400	50,000

NOTE: 2011 is the only year that will have only propagation acres planted, total additional acreage per year includes both propagation acres and plantation acres (2012-2014).

Source: Confidential Application for Proposed BCAP Project Areas, 2011

Table 2-3. Estimated Biomass Tonnage by Production Year 2013-2017

Project Area	2013-2014	2014-2015	2015-2016	2016-2017
	Total Biomass Tonnage Processed			
Ashtabula	12,000	102,000	309,000	600,000
Aurora	42,000	156,000	414,000	600,000
Columbia	32,000	132,000	402,000	600,000
Paragould	57,600	187,200	429,600	600,000

Source: Confidential Application for Proposed BCAP Project Areas, 2011

2.2.2.3 Aurora Proposed Project Area

In the spring of 2011, the Project Sponsors have obtained initial commitments from farmers to plant between 100 to 400 propagation acres of giant miscanthus, which will be replanted into plantation acres in 2012. MFA Oil Biomass will utilize its 40,000 cooperative members to scale up to 50,000 acres of giant miscanthus by 2014, which will enable the Project Sponsors' conversion facility to process 600,000 tons of biomass each year. The Project Sponsors' conversion facility is utilizing existing pelletizing technology that is energy efficient, mobile, flexible in maintenance and product, and able to be scaled by combining smaller units using one conveyor and control system. As the economic feasibility establishes, scalability greatly increases the probability of success as expenditures will meet developing tonnage needs and pellet markets already exist, are diverse, and are inside and outside of the United States. To that point, the Project Sponsors have giant miscanthus tonnage contracts with farmers with commercial heating needs, and large scale aggregators of biomass.

2.2.2.4 Columbia Proposed Project Area

For the spring of 2011, the Project Sponsors have obtained initial commitments from farmers to plant between 100 to 300 propagation acres of giant miscanthus, which will be replanted into plantation acres in 2012. MFA Oil Biomass will utilize its 40,000 cooperative members to scale up to 50,000 acres of giant miscanthus by 2014, which will enable the Project Sponsors' conversion facility to process 600,000 tons of biomass each year. The Project

Sponsors' conversion facility is utilizing existing pelletizing technology that is energy efficient, mobile, flexible in maintenance and product, and able to be scaled by combining smaller units using one conveyor and control system. As the economic feasibility establishes, scalability greatly increases the probability of success as expenditures will meet developing tonnage needs and pellet markets already exist, are diverse, and are inside and outside of the United States. To that point, the Project Sponsors have giant miscanthus tonnage contracts with farmers with commercial heating needs, and large scale aggregators of biomass.

2.2.2.5 Paragould Proposed Project Area

In the spring of 2011, the Project Sponsors have obtained initial commitments from farmers to plant between 100 to 600 propagation acres of giant miscanthus, which will be replanted into plantation acres in 2012. MFA Oil Biomass will utilize its 40,000 cooperative members to scale up to 50,000 acres of miscanthus by 2014, which will enable the Project Sponsors' conversion facility to process 600,000 tons of biomass each year. The Project Sponsors' conversion facility is utilizing existing pelletizing technology that is energy efficient, mobile, flexible in maintenance and product, and able to be scaled by combining smaller units using one conveyor and control system. As the economic feasibility establishes, scalability greatly increases the probability of success as expenditures will meet developing tonnage needs and pellet markets already exist, are diverse, and are inside and outside of the United States. To that point, the Project Sponsors have giant miscanthus tonnage contracts with farmers with commercial heating needs, and large scale aggregators of biomass.

2.3 RESOURCES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

As mentioned previously, this EA is being tiered from the BCAP Final PEIS, as such certain resource areas are being excluded from this analysis consistent with the BCAP Final PEIS, due to little or no affects to these resource areas due to their absence within the proposed project areas or limitations on effects by program guidelines. Those resources areas being excluded from this analysis include:

- **Wetlands** – were eliminated from detailed analysis in this EA since the conversion of wetland is prohibited under BCAP;
- **Floodplains** – were eliminated from detailed analysis in this EA, since there is little potential for effect from traditional agricultural production practices in floodplains. The Project Sponsors would also exclude or buffer certain areas, depending upon

the site-specific conditions associated with each individual producer contract. Giant miscanthus, once established, provides a tight below ground root mass with a low likelihood of floodwater movements. Additionally, practices, included as part of the Mitigation and Monitoring Plan, and the individual Conservation Plan would minimize the potential for vegetative transport of giant miscanthus through flooding;

- **Regulated Coastal Zones** – were eliminated from detailed analysis in this EA; the Project Sponsors have agreed not to plant within regulated coasted zones.
- **Prime and Unique Farmland** – were eliminated from detailed analysis in this EA, since they are exempt from coordination with the NRCS due to the continued agricultural production of these areas rather than conversion into other land uses;

Environmental Justice – was eliminated from detailed analysis in this EA, since a determination at the programmatic level was undertaken in the BCAP Final PEIS and it was found to not result in any disproportionate effects to minority or low-income populations. **Figures 2-3** and **2-4** provide visual reference to the minority and low-income populations at the county level within each proposed project area. Two counties in Arkansas (e.g., Mississippi and Poinsett) would be considered to be a concentrated poverty area based on the 2000 census information;

- **Cultural Resources** – was eliminated from detailed analysis in this EA, since this is a site specific issue and will be addressed during the completion of the environmental evaluation as part of the conservation or forest stewardship planning requirement for each individual producer BCAP contract;
- **Noise** – was eliminated from detailed analysis in this EA, since the effects would be minor, only temporarily occurring during activities, and would be similar to agricultural activities currently taking place within the proposed project areas.

Additionally, other resources that were analyzed within the BCAP Final PEIS and are being eliminated in this EA due to the minor and insubstantial effects that could occur from the implementation of the Proposed Action or No Action Alternative include:

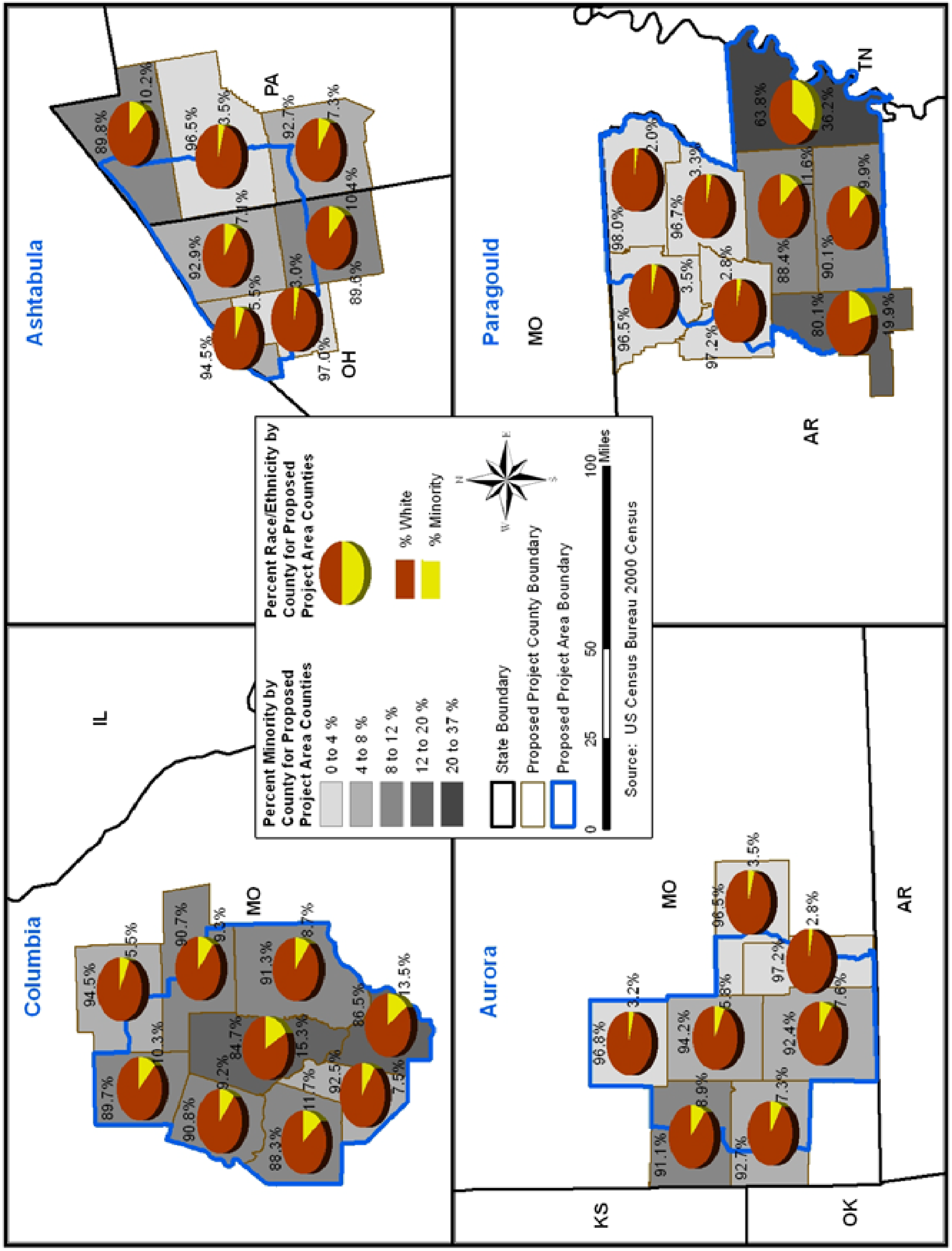

Figure 2-3. Percent Minority by County for Each Proposed Project Area.

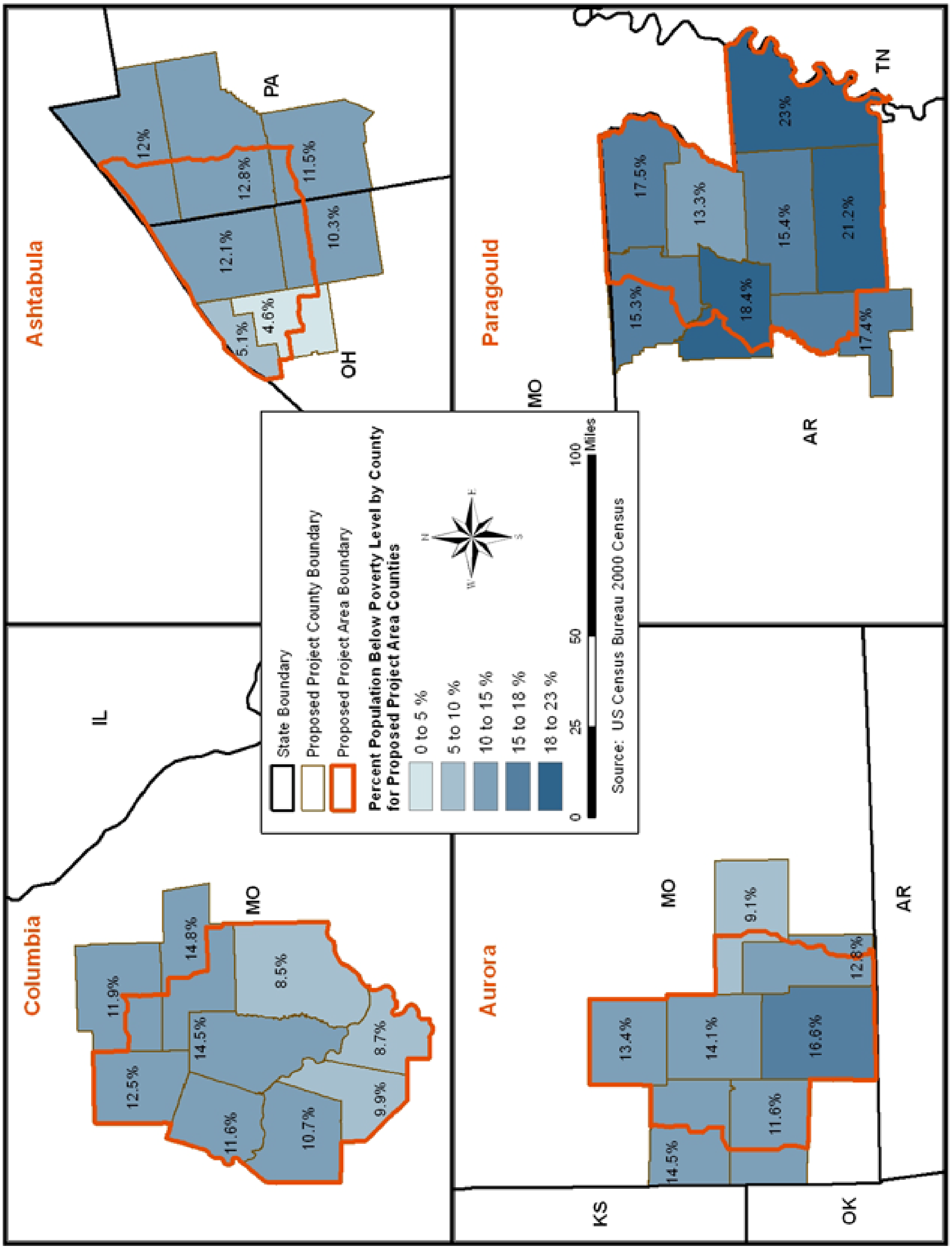

Figure 2-4. Percent of the Population Below the Poverty Threshold by County for Each Proposed Project Area.

- **Air Quality** – was eliminated from detailed analysis in this EA due to the similarity between the proposed activities within each of the proposed project areas and existing agricultural activities within those areas. All counties located within the proposed project areas are rural or semi-rural and the majority of the land use in these counties in agriculture. The additional agricultural use anticipated to be produced should not introduce any additional significant emissions. The project is not expected to significantly impact the air quality in the proposed project areas.

A quick analysis of the attainment status based on the National Ambient Air Quality Standards (NAAQS) was conducted for each county within the proposed project areas. Pennsylvania has designations for the following criteria pollutants: carbon monoxide (CO), particulate matter (PM_{10}, $PM_{2.5}$,) 1-hour ozone, 8-hour ozone, and sulfur dioxide (SO_2). All counties in the proposed project area are designated as in attainment for all criteria pollutants.

Missouri has designations for the following criteria pollutants: lead (Pb), 8-hour ozone, SO_2, and $PM_{2.5.}$ All counties in the proposed project areas are designated as in attainment for all criteria pollutants.

Arkansas has designations for the following criteria pollutants: Pb, SO_2, nitrogen dioxide (NO_2), CO, PM_{10}, and $PM_{2.5.}$ All counties in the proposed project area are designated as in attainment for all criteria pollutants.

Ohio has designations for the following criteria pollutants: CO, Pb, NO_2, PM_{10} and $PM_{2.5}$, 1-hour ozone, and 8-hour ozone. All Ohio counties in the proposed project area were designated as in attainment for 1-hour and 8-hour ozone, PM_{10}, Pb, NO_2, and CO. Geauga and Trumbull counties are designated as in attainment for $PM_{2.5}$. Lake County is designated as in full non-attainment for $PM_{2.5}$ and Ashtabula County as partial non-attainment for $PM_{2.5}$.

Lake County and Ashtabula County are part of the Cleveland-Akron-Lorain Air Quality Control Region (AQCR) 174. $PM_{2.5}$ pollutants are considered fine particles being less than 2.5 micrometers in diameter. Sources of fine particles include all types of combustion, including motor vehicles, power plants, residential wood burning, forest fires, agricultural burning, and some industrial processes (U.S. Environmental Protection Agency [EPA] 2011). The 2005 Emissions Inventory for Ohio (EPA 2006) indicates that Lake County had 3,310 tons per year (tpy) of $PM_{2.5}$

emissions with electric generating units accounting for greater than 80 percent of the pollutant load, non-road emissions (e.g., diesel engines from construction and agricultural equipment) accounted for approximately 6.6 percent of pollutant load. In Ashtabula County 1,407 tpy were monitored in 2005, with 27.1 percent generated from non-road emissions, other stationary sources accounted for 62 percent of the pollutant load.

The Ohio Environmental Protection Agency (OEPA) has requested a Clean Data assessment from the EPA to remove the 1997 $PM_{2.5}$ nonattainment status for counties in Ohio (OEPA 2010). The OEPA provided monitoring data from the Lake County air quality monitoring station that indicated that the three-year average was 11.9 micrograms per cubic meter of air ($\mu g/m^3$), which is below the 15 $\mu g/m^3$ primary NAAQS standard. There are no monitoring stations located in Ashtabula County.

Overall, it would be anticipated that agricultural equipment necessary for the establishment, harvesting, and transportation of giant miscanthus would provide a minimum amount of the $PM_{2.5}$ particulate load within these two counties based on the high level of electric generating units in Lake County and the proximity to the Cleveland, Ohio metropolitan area.

A calculation of $PM_{2.5}$ emissions for traditional agricultural tillage was developed following the EPA's Development of Agricultural Dust Emission Inventories for the Central State Regional Air Planning Association; it indicated a range of 0.0565 pounds per acre to 0.1790 pounds per acre (Penfold et al nd., EPA 1998). Agricultural tillage would occur for two years on each contract parcel within the proposed project area. The first year would be small acreage to accommodate the on-site propagation and then the second year would be the rhizome harvest and planting on the plantation acres. Based on the acres for the Ashtabula proposed project area in **Table 2-2**, tpy of fine dust particulates generated from agricultural tillage within the entire Ashtabula proposed project would range from 0.001 tpy to 0.027 tpy in 2011, 0.066 tpy to 0.230 tpy in 2012, 0.381 tpy to 1.208 tpy in 2013, and 0.989 tpy to 3.133 tpy in 2014. Even at the highest amount and assuming that all particulates would occur within the Cleveland-Akron-Lorain AQCR, the contribution of agricultural tillage from this project would account for approximately 0.2 percent of the 2005 emissions in Ashtabula County or 0.09 percent of the 2005 emissions in Lake County. The 2008 State Implementation Plan (SIP) for this AQCR indicated that the 2009 estimated mobile source emissions were 779.15 tpy. When compared, the agricultural emissions would contribute 0.4 percent to this total. In the long term, $PM_{2.5}$ emissions should be reduced by the program since lands currently tilled annual will no longer be tilled once the rhizomes are planted.

- **Recreation** – was eliminated from detailed analysis in this EA, since the effect to outdoor recreation was determined to be minor, on the whole, from the BCAP Final PEIS and would be site-specific based on the practices of the individual BCAP contract producers. A brief summary of the value of hunting as determined through the 2006 National Survey of Fishing, Hunting, and Wildlife Watching (U.S. Department of the Interior Fish and Wildlife Service and the U.S. Department of Commerce U.S. Census Bureau 2007) in each state is included in the paragraphs below.

In Arkansas, approximating 354,000 people 16 years old and older spent 7.9 million days hunting. The largest percentage of hunting in Arkansas was for big game (80 percent), then small game (32 percent), then migratory birds (32 percent). The total amount spent on these activities, including trip-related activities, equipment and miscellaneous expenditures was over $789 million. The average total expenditures in 2006 were $2,108 per hunter with an average trip expenditure of $514. Of the types of land, 12 percent of hunters used public land only, 59 percent used private land only, and 27 percent used both public and private land.

In Missouri, approximating 608,000 people 16 years old and older spent 9.7 million days hunting. The largest percentage of hunting in Missouri was for big game (83 percent), then small game (39 percent), then migratory birds (14 percent) and other animals (6 percent). The total amount spent on these activities, including trip-related activities, equipment and miscellaneous expenditures was over $1.1 billion. The average total expenditures in 2006 were $1,748 per hunter with an average trip expenditure of $483. Of the types of land, nine percent of hunters used public land only, 67 percent used private land only, and 22 percent used both public and private land.

In Ohio, approximating 500,000 people 16 years old and older spent 10.6 million days hunting. The largest percentage of hunting in Ohio was for big game (86 percent), then small game (43 percent), and other animals (15 percent). The total amount spent on these activities, including trip-related activities, equipment and miscellaneous expenditures was over $842 million. The average total expenditures in 2006 were $1,846 per hunter with an average trip expenditure of $297. Of the types of land, 72 percent used private land only, and 19 percent used both public and private land.

In Pennsylvania, approximating 1.0 million people 16 years old and older spent 16.9 million days hunting. The largest percentage of hunting in Pennsylvania was for big game (96 percent), then small game (36 percent), and other animals (15 percent). The total amount spent on these activities, including trip-related activities, equipment and miscellaneous expenditures was over $1.6 billion. The average total expenditures in 2006 were $1,530 per hunter with an average trip expenditure of $263. Of the types of land, 21 percent of hunters used public land only, 51 percent used private land only, and 26 percent used both public and private land.

2.4 COMPARISONS OF THE ALTERNATIVES

Table 2-4 provides a tabular summary of the potential effects from both the Proposed Action and No Action Alternative. As described previously, the No Action Alternative would not meet the purpose and need as described, but is the baseline to which the Proposed Action is compared to determine effects to the analyzed environmental resource areas.

Table 2-4. Comparison of the Alternatives

Resource Area	Proposed Action	No Action Alternative
Socioeconomics	+ minor	0
Land Use	- minor	0
Biological Resources		
Vegetation	- minor	0
Wildlife	- minor	0
Protected Species	0	0
Soil Resources	+/- minor	0/- minor
Water Quality/Quantity		
Water Quality	+/- minor	0
Water Quantity	+/- minor	0

Note:
+ =positive - =negative 0 =neutral

3 AFFECTED ENVIRONMENT (BY RESOURCE AREA)

3.1 SOCIOECONOMICS

3.1.1 Definition of the Resource

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

Socioeconomic resources within this document include general agricultural characteristics associated with number of farms, acres of primary field crops, and revenues generated from primary field crops. Additionally, a brief analysis of rural population trends is discussed.

3.1.2 Existing Conditions

3.1.2.1 Number of Farms and Land in Farms

From 1997 to 2007, the number of farms in the United States declined 0.5 percent (USDA National Agricultural Statistics Service [NASS] 2009). Most farm categories declined from 1997 to 2007, with the number of acres in farms declining 3.4 percent, the average size of farms declining by 3.0 percent, the amount of cropland declining by 8.7 percent, and the amount of harvested cropland acreage declining by 2.9 percent (*Ibid*). The average market value of land and buildings increased approximately 90.2 percent for the average farm and approximately 95.7 for the average acre (*Ibid*). Farm production expenses also showed an increase of approximately 52.8 percent over the decade. When compared by type of farm, the largest number of farms in the United States falls within the small family farm – residential or lifestyle farm. For the majority, the largest number of farms in the proposed project areas fall within the small family farm – residential or lifestyle farm (**Table 3-1**).

Table 3-1. Number of Farms by Farm Typology, 2007

Location	Item	Total	Small Family Farms					Large family	Very large family	Non-family
			Limited resource	Retirement	Residential/ lifestyle	Farming occupation/ lower sales	Farming occupation/ higher sales			
Arkansas										
Arkansas	Number	49,346	7,581	9,932	18,434	4,797	953	1,727	4,135	1,787
	%	100	15	20	37	10	2	3	8	4
Clay	Number	731	104	127	208	78	54	37	88	35
	%	100	14	17	28	11	7	5	12	5
Craighead	Number	1,191	56	253	111	34	38	545	110	44
	%	100	5	21	9	3	3	46	9	4
Greene	Number	770	93	164	290	79	26	34	63	21
	%	100	12	21	38	10	3	4	8	3
Jackson	Number	445	34	59	134	43	39	50	49	37
	%	100	8	13	30	10	9	11	11	8
Lawrence	Number	592	67	102	195	74	29	39	58	28
	%	100	11	17	33	13	5	7	10	5
Mississippi	Number	369	25	31	78	36	15	43	121	20
	%	100	7	8	21	10	4	12	33	5
Poinsett	Number	418	27	40	88	43	11	62	102	45
	%	100	6	10	21	10	3	15	24	11
Randolph	Number	766	149	135	340	69	8	12	42	11
	%	100	19	18	44	9	1	2	5	1
Missouri										
Missouri	Number	108,098	15,785	23,491	42,987	12,525	3,931	2,810	2,861	3,708
	%	100	15	22	40	12	4	3	3	3
Boone	Number	1,322	180	264	648	112	20	23	12	63
	%	100	14	20	49	8	2	2	1	5
Callaway	Number	1,503	198	374	642	158	29	22	25	55
	%		13	25	43	11	2	1	2	4
Cole	Number	1,103	163	287	503	95	20	11	7	17
	%	100	15	26	46	9	2	1	1	2
Cooper	Number	942	110	175	363	114	40	53	34	53
	%	100	12	19	39	12	4	6	4	6
Howard	Number	867	101	175	373	100	46	26	13	33
	%	100	12	20	43	12	5	3	1	4
Moniteau	Number	1,138	136	242	477	130	44	25	47	37
	%	100	12	21	42	11	4	2	4	3
Randolph	Number	1,000	161	232	448	82	23	7	14	33
	%	100	16	23	45	8	2	1	1	3
Audrain	Number	1,102	96	198	386	157	89	80	57	39
	%	100	9	18	35	14	8	7	5	4
Monroe	Number	1,036	126	236	402	117	43	28	34	50
	%	100	12	23	39	11	4	3	3	5
Barry	Number	1,606	239	303	620	174	32	22	165	51
	%	100	15	19	39	11	2	1	10	3
Christian	Number	1,265	236	311	541	106	22	10	7	32
	%	100	19	25	43	8	2	1	1	3
Dade	Number	883	124	195	343	129	31	17	21	23
	%	100	14	22	39	15	4	2	2	3
Jasper	Number	1,369	207	302	546	177	48	14	35	40
	%	100	15	22	40	13	4	1	3	3
Lawrence	Number	1,873	275	343	802	261	60	24	48	60
	%	100	15	18	43	14	3	1	3	3
Newton	Number	1,590	244	378	643	168	26	12	84	35
	%	100	15	24	40	11	2	1	5	2
Stone	Number	753	125	147	349	90	10	8	8	16

Location	Item	Total	Small Family Farms: Limited resource	Retirement	Residential/ lifestyle	Farming occupation/ lower sales	Farming occupation/ higher sales	Large family	Very large family	Non-family
	%	100	17	20	46	12	1	1	1	2
Ohio										
Ohio	Number	75,861	9,670	15,071	30,434	8,989	3,556	3,087	2,781	2,273
	%	100	13	20	40	12	5	4	4	3
Ashtabula	Number	1,127	193	258	381	182	43	27	19	24
	%	100	17	23	34	16	4	2	2	2
Geauga	Number	888	152	142	326	202	16	14	7	29
	%	100	17	16	37	23	2	2	1	3
Lake	Number	259	47	47	78	33	11	7	12	24
	%	100	18	18	30	13	4	3	5	9
Trumbull	Number	970	170	232	348	127	33	22	9	29
	%	100	18	24	36	13	3	2	1	3
Pennsylvania										
Pennsylvania	Number	63,163	10,230	11,755	22,563	7,533	4,644	2,589	2,003	1,846
	%	100	16	19	36	12	7	4	3	3
Crawford	Number	1,468	274	249	514	231	90	65	17	28
	%	100	19	17	35	16	6	4	1	2
Erie	Number	1,609	278	386	604	158	84	38	18	43
	%	100	17	24	38	10	5	2	1	3
Mercer	Number	1,210	216	253	421	166	76	33	20	25
	%	100	18	21	35	14	6	3	2	2

Source: USDA NASS, 2009

3.1.2.2 Primary Field Crops

The 2003 National Resources Inventory indicates that approximately 368 million acres within the United States is cultivated cropland and 58 million acres is uncultivated cropland. In 1992, those figures were 334 million acres of cultivated cropland and 47 million acres of uncultivated cropland. **Table 3-2** illustrates the amount of acreage planted of select primary field crops in 2010, along with harvested acres of those crops, and total production of the crops (USDA NASS 2009). As shown in the table, a majority of the counties had corn (grain) and soybean planted, harvested and production in 2010.

Table 3-2. Planted Acres, Harvested Acres, and Production of Select Field Crops in the Project Counties (2010).

Area	Crop Type	Planted Acres	Harvested Acres	Production
Arkansas				
Arkansas State Totals	Corn (Grain)	390,000	380,000	57,000,000
	Cotton, Upland (2008)	620,000	615,000	1,296,000
	Sorghum (Grain)	40,000	35,000	2,695,000
	Rice All (2008)	1,401,000	1,395,000	92,938,000
	Soybeans	3,190,000	3,150,000	110,250,000
	Wheat All (2008)	1,070,000	980,000	55,860,000
Clay	Corn (Grain)	23,600	23,500	3,666,000
	Cotton Upland, All (2008)	28,500	28,400	60,500
	Rice All (2008)	76,200	75,300	5,208,100
	Soybeans	103,500	103,000	3,900,000
	Wheat, All (2008)	20,000	17,000	765,000
Craighead	Corn (Grain)	20,200	20,200	3,426,000
	Cotton, Upland (2008)	73,200	72,900	154,000
	Rice All (2008)	79,000	78,500	5,385,100
	Soybeans	105,500	102,700	3,976,000
	Wheat All (2008)	25,000	23,000	1,220,000
Greene	Corn (Grain)	11,100	11,000	1,749,000
	Cotton, Upland (2008)	8,500	8,400	17,500
	Rice All (2008)	80,500	79,900	5,446,300
	Soybeans	76,400	75,400	2,405,000
	Wheat All (2008)	19,000	18,000	850,000
Jackson	Corn (Grain)	7,900	7,800	1,170,000
	Rice All (2008)	95,000	93,600	6,229,800
	Soybeans	129,000	124,500	3,104,000
	Wheat All (2008)	57,000	52,000	2,330,000
Lawrence	Corn (Grain)	1,800	1,800	288,000
	Sorghum (Grain)	1,200	1,000	30,000
	Rice All (2008)	99,000	98,500	6,08,7,300
	Soybeans	65,100	63,900	1,815,000
Mississippi	Corn (Grain)	19,300	18,900	3,137,000
	Cotton, Upland (2008)	179,500	177,800	371,200
	Sorghum (Grain)	1,200	1,100	62,000
	Rice All (2008)	44,300	44,000	3,115,200
	Soybeans	255,500	254,700	8,820,000
	Wheat All (2008)	44,000	36,000	2,160,000
Poinsett	Corn (Grain)	10,100	9,800	1,499,000
	Cotton, Upland (2008)	39,800	39,600	88,000
	Rice All (2008)	120,000	119,000	8,278,400
	Soybeans	170,800	166,900	5,875,000
	Wheat All (2008)	38,000	35,000	1,860,000
Randolph	Corn (Grain)	4,900	4,900	637,000
	Rice All (2008)	33,500	33,400	2,237,800
	Soybeans	31,600	31,200	1,063,000
Missouri				
Missouri State Totals	Corn (Grain)	3,150,000	3,000,000	369,000,000
	Hay All (Dry) (2008)		4,200,000	8,820,000
	Sorghum (Grain)	40,000	33,000	2,574,000
	Soybeans	5,150,000	5,070,000	210,405,000
	Wheat All (2008)	1,250,000	1,160,000	55,680,000
Boone	Corn (Grain)	25,700	24,400	2,806,000
	Hay All (Dry) (2008)		44,000	86,000
	Sorghum (Grain)	1,000	900	64,800
	Soybeans	40,500	39,900	1,643,000
	Wheat All (2008)	12,400	12,200	569,600

Area	Crop Type	Planted Acres	Harvested Acres	Production
Callaway	Corn (Grain)	30,600	29,800	4,052,000
	Hay All (Dry) (2008)		49,000	99,000
	Sorghum (Grain)	1,700	1,500	133,000
	Soybeans	58,400	57,600	2,588,000
	Wheat All (2008)	14,300	13,300	568,100
Cole	Corn (Grain)	5,100	4,600	608,000
	Hay All (Dry) (2008)		41,000	95,000
	Soybeans	10,000	9,800	440,000
Cooper	Corn (Grain)	48,600	47,800	6,231,000
	Hay All (Dry) (2008)		34,000	70,000
	Soybeans	70,800	70,400	3,177,000
	Wheat All (2008)	20,900	20,400	1,120,000
Howard	Corn (Grain)	34,700	33,700	4,157,000
	Hay All (Dry) (2008)		28,000	59,000
	Soybeans	41,900	41,600	1,839,000
	Wheat All (2008)	10,500	10,300	453,800
Moniteau	Corn (Grain)	11,300	10,800	1,198,000
	Hay All (Dry) (2008)		52,000	112,000
	Soybeans	21,200	21,100	981,000
	Wheat All (2008)	7,400	7,000	298,500
Randolph	Corn (Grain)	16,800	14,500	1,403,000
	Hay All (Dry) (2008)		36,000	76,000
	Soybeans	45,600	45,200	1,735,000
	Wheat All (2008)	10,300	9,500	453,100
Audrain	Corn (Grain)	94,800	91,500	11,186,000
	Hay All (Dry) (2008)		25,000	57,000
	Sorghum (Grain)	4,200	3,900	302,000
	Soybeans	167,000	164,900	7,451,000
	Wheat All (2008)	37,400	36,300	1,785,000
Monroe	Corn (Grain)	56,100	53,500	5,485,000
	Hay All (Dry) (2008)		33,000	72,000
	Sorghum (Grain)	1,600	1,400	142,000
	Soybeans	86,800	86,000	3,745,000
	Wheat All (2008)	15,500	15,200	649,100
Barry	Corn (Grain)	3,600	3,000	333,000
	Hay All (Dry) (2008)		72,000	176,000
	Soybeans	2,000	1,900	58,000
	Wheat All (2008)	1,300	1,000	38,700
Christian	Corn (Grain)	700	600	59,900
	Hay All (Dry) (2008)		46,000	111,000
Dade	Corn (Grain)	15,300	14,400	1,552,000
	Hay All (Dry) (2008)		64,000	114,000
	Sorghum (Grain)	1,000	900	80,400
	Soybeans	26,800	26,600	918,000
	Wheat All (2008)	26,500	24,800	1,049,000
Jasper	Corn (Grain)	29,000	28,100	3,615,000
	Hay All (Dry) (2008)		58,000	109,000
	Sorghum (Grain)	700	500	38,900
	Soybeans	45,900	45,400	1,532,000
	Wheat All (2008)	28,500	27,500	1,154,000
Lawrence	Corn (Grain)	9,400	8,400	778,000
	Hay All (Dry) (2008)		88,000	202,000
	Soybeans	9,400	9,300	278,000
	Wheat All (2008)	6,600	5,100	219,500
Newton	Hay All (Dry) (2008)		87,000	204,000
	Soybeans	5,100	5,000	137,000
	Wheat All (2008)	4,200	3,100	129,600

Area	Crop Type	Planted Acres	Harvested Acres	Production
Stone	Corn (Grain)	500	300	26,800
	Hay All (Dry) (2008)		19,000	34,000
Ohio				
Ohio State Totals	Corn (Grain)	3,450,000	3,270,000	533,010,000
	Hay All (Dry) (2008)		1,140,000	2,802,000
	Oats	65,000	50,000	3,500,000
	Soybeans	4,600,000	4,590,000	220,320,000
	Wheat All (2008)	1,120,000	1,090,000	74,120,000
Ashtabula	Corn (Grain)	20,200	19,200	2,965,000
	Hay All (Dry) (2008)		27,000	71,700
	Soybeans	32,000	31,800	1,588,000
Geauga	Corn (Grain)	3,100	2,800	396,000
	Hay All (Dry) (2008)		12,600	31,700
	Oats	900	850	68,700
Lake	Hay All (Dry) (2008)		3,200	5,800
Trumbull	Corn (Grain)	19,900	18,600	2,974,000
	Hay All (Dry) (2008)		15,200	36,300
	Oats	2,100	2,020	165,000
	Soybeans	26,300	26,200	1,220,000
	Wheat All (2008)	6,000	5,800	400,200
Pennsylvania				
Pennsylvania State Totals	Corn (Grain)	1,350,000	910,000	116,480,000
	Corn (Silage)		400,000	7,200,000
	Hay, All (Dry) (2008)		1,750,000	3,810,000
	Oats	110,000	80,000	4,720,000
	Soybeans	500,000	495,000	20,790,000
	Wheat All (2008)	195,000	185,000	11,840,000
Crawford	Corn (Grain)	35,000	25,600	3,529,000
	Corn (Silage)		8,800	174,000
	Hay All (Dry) (2008)		48,300	116,400
	Oats	5,600	4,300	264,000
	Soybeans	20,000	19,900	896,000
Erie	Corn (Grain)	22,000	18,500	2,536,000
	Corn (Silage)		2,800	47,400
	Oats	3,000	2,500	158,000
	Soybeans	10,500	10,400	441,000
	Wheat All (2008)	3,600	3,400	168,000
Mercer	Corn (Grain)	38,000	32,000	4,677,000
	Hay All (Dry) (2008)		35,700	88,400
	Oats	4,300	3,500	208,000
	Soybeans	17,700	17,600	825,000
	Wheat All (2008)	4,200	4,100	214,000

Source: USDA NASS 2011

3.1.2.3 Primary Livestock Industries

The primary livestock industries across the proposed project areas are cattle for all states in addition to sheep in Ohio and Pennsylvania. **Table 3-3** lists the most recent data on livestock numbers by type and by county.

Table 3-3. Primary Livestock Activities by County within the Proposed Project Areas

Area	Livestock	Number of Head
Arkansas		
Arkansas State Totals	Cattle All (2010)	1,890,000
Clay	Cattle All (2010)	8,200
Craighead	Cattle All (2010)	12,300
Greene	Cattle All (2010)	7,400
Jackson	Cattle All (2010)	10,500
Lawrence	Cattle All (2010)	18,200
Mississippi	Cattle All (2010)	1,700
Poinsett	Cattle All (2010)	2,000
Randolph	Cattle All (2010)	35,500
Missouri		
Missouri State Totals	Cattle All (2010)	4,150,000
Boone	Cattle All (2010)	30,500
Callaway	Cattle All (2010)	39,000
Cole	Cattle All (2010)	42,500
Cooper	Cattle All (2010)	55,000
Howard	Cattle All (2010)	25,500
Moniteau	Cattle All (2010)	75,000
Randolph	Cattle All (2010)	30,500
Audrain	Cattle All (2010)	39,000
Monroe	Cattle All (2010)	28,500
Barry	Cattle All (2010)	83,000
Christian	Cattle All (2010)	49,500
Dade	Cattle All (2010)	60,000
Jasper	Cattle All (2010)	51,000
Lawrence	Cattle All (2010)	100,000
Newton	Cattle All (2010)	74,000
Stone	Cattle All (2010)	26,500
Ohio		
Ohio State Totals	Cattle All (2010)	1,280,000
	Sheep and Lambs (2008)	125,000
Ashtabula	Cattle All (2010)	18,700
	Sheep and Lambs (2008)	600
Geauga	Cattle All (2010)	7,800
	Sheep and Lambs (2008)	1,300
Lake	Sheep and Lambs (2008)	200
Trumbull	Cattle All (2010)	11,800
	Sheep and Lambs (2008)	200
Pennsylvania		
Pennsylvania State Totals	Cattle All (2010)	1,620,000
	Sheep and Lambs (2008)	98,000
Crawford	Cattle All (2010)	42,500
	Sheep and Lambs (2008)	2,000
Erie	Cattle All (2010)	14,200
	Sheep and Lambs (2008)	600
Mercer	Cattle All (2010)	28,500
	Sheep and Lambs (2008)	2,500

Source: USDA NASS 2011.

Only Lake County, Ohio did not contain any reportable or discloseable level of cattle. The Aurora and Columbia proposed project areas contributed approximately 19.5 percent of all cattle in Missouri. Both the Paragould and Ashtabula proposed project areas accounted for five percent or less for their state totals. The Ashtabula proposed project area accounted for approximately three percent of the sheep in Ohio and Pennsylvania.

3.1.2.4 Rural Population Trends

The USDA Economic Research Service (ERS) found that by 2006 non-metro counties in the United States accounted for a population of approximately 50.2 million persons, which is approximately 16.8 percent of the total United States population (ERS 2008; U.S. Census Bureau [USCB] 2008). The general trend in these counties was a decline in the population with over 51 percent of the non-metro counties experiencing population declines of approximately 0.5 percent per year from 2000 to 2006.

3.1.2.5 Farm Income and Cost

The ERS (USDA ERS 2011a) indicated that net farm income in 2011 is projected to be above the 2010 forecast by 19.8 percent. Net farm income was estimated to be approximately $94.1 billion in 2011 with net cash income of $98.6 billion (*Ibid)*. Total expenses in the agricultural sector are anticipated to increase by $20.2 billion, exceeding $300 billion for the first time. Crop receipts were estimated to increase to $24.1 billion (*Ibid*).

At the household level, the average family farm household income for 2010 was estimated to be $83,021, an increase of 7.6 percent from 2009 (USDA ERS 2011b). The ERS anticipates that in 2011 approximately 12.9 percent of average family farm household income was generated from on-farm sources with an average of approximately $75,178 of household income generated from off-farm sources (*Ibid*).

3.2 LAND USE

3.2.1 Definition of the Resource

Land use analysis primarily details the interactions of humans and their environment, both natural and human-induced. Such analyses address how different land uses currently interact and if there would be conflict between new and existing land uses. In urban areas, land uses are primarily controlled for public health and safety concerns through land use zoning mechanisms. In rural areas, land use restrictions may be developed at a county or regional scale, or land use restrictions may not exist or be limited to special public health and safety concerns. Land use within this document is being described as the acreage within cropland and permanent pasture since these lands uses are being proposed for conversion into a dedicated energy crop land use.

3.2.2 Existing Conditions

The 2007 Agricultural Census estimates the amount of land in agricultural land uses in the United States. **Tables 3-4** through **3-7** illustrate the agricultural lands defined by land use categories and sub-categories in the proposed project area counties. From land use categories, harvested cropland as a percentage of total land in farms can be derived; indicating harvested cropland is a dominant land use in the Ashtabula (52.5 percent) and Paragould (81.7 percent) proposed project areas. In the Aurora (32.9 percent) and Columbia (44.9 percent) proposed project areas, harvested cropland is a prominent land use category; however, pastureland, of all types (cropland, pastureland; woodland, pastured; and permanent pasture and rangeland) account for 55.4 percent and 29.3 percent of the proposed project areas, respectively.

Figure 3-1 provides an illustration of percentage of total farmland in each of the proposed project areas, while **Figure 3-2** illustrates the percentage of cropland and pastureland within each proposed project area.

When land use data from the 2002 Agricultural Census and the 2007 Agricultural Census are compared by geographic area, some changes in land use become apparent across all areas. The number of farms increased in all states, except Ohio, which had a decline of 2.5 percent. However, acres in farms declined in all states, except Pennsylvania, which had a less than one percent increase in land in farms. The average size of farm declined in all states, mirroring observations across the United States that the overall decline in farm is leveling off and new entrants are younger than the average producer with smaller farms. Average farm size within these states ranged from 124 acres in Pennsylvania to 281 acres in Arkansas. All states had a decline in cropland and an increase in permanent pasture and rangeland.

At the county level, the Ohio counties within the Ashtabula proposed project area had an average decline in the number of farms by 12 percent, which was greater than the state level decline of 2.5 percent. Erie County, Pennsylvania had the greatest increase in farm numbers (25.4 percent) amongst of the proposed project area counties. All three counties in Pennsylvania had a greater than four percent increase in land in farms.

Table 3-4. Farmland Land Use Categories and Sub-Categories for the Ashtabula Proposed Project Area

Land Use Type	Ohio	Ashtabula	Geauga	Lake	Trumbull	Pennsylvania	Crawford	Erie	Mercer
	(Acres 2007)								
Approximate land area	26,149,825	449,244	256,106	146,267	395,084	28,631,687	648,136	509,921	429,980
Land in farms	13,956,563	161,698	56,558	16,065	125,136	7,809,244	232,093	173,125	171,860
Total cropland	10,832,772	106,255	29,541	10,126	87,440	4,870,287	139,526	101,698	111,556
Total woodland	1,473,638	34,898	14,389	2,931	21,631	1,717,791	55,047	41,485	32,028
Permanent pasture and rangeland, other than cropland and woodland pastured	1,046,728	10,461	7,768	1,012	8,962	732,275	21,614	15,495	17,130
Land in farmsteads, buildings, livestock facilities, ponds, roads, wasteland, etc.	603,425	10,084	4,860	1,996	7,103	488,891	15,906	14,447	11,146
Total Cropland									
Harvested cropland	9,991,007	93,639	23,413	7,316	80,484	3,942,079	114,671	77,909	94,618
Cropland used only for pasture or grazing	348,923	4,173	2,913	364	2,416	397,131	10,575	7,769	7,174
Other cropland	492,842	8,443	3,215	2,446	4,540	531,077	14,280	16,020	9,764
Cropland on which all crops failed	42,855	1,252	705	179	576	51,177	1,441	1,691	1,259
Cropland idle or used for cover crops or soil improvement, but not harvested and not pastured or grazed	449,987	7,191	2,510	2,267	3,964	443,785	9,550	13,449	7,404
Cropland in cultivated summer fallow	-	-	-	-	-	36,115	3,289	880	1,101
Total Woodland									
Woodland not pastured	1,194,513	32,299	12,072	2,772	18,603	1,567,607	49,293	37,227	28,084
Woodland pastured	279,125	2,599	2,317	159	3,028	150,184	5,754	4,258	3,944
Pastureland, All Types	1,674,776	17,233	12,998	1,535	14,406	1,279,590	37,943	27,522	28,248
Permanent pasture and rangeland, other than cropland and woodland pastured	1,046,728	10,461	7,768	1,012	8,962	732,275	21,614	15,495	17,130
Cropland used only for pasture or grazing	348,923	4,173	2,913	364	2,416	397,131	10,575	7,769	7,174
Woodland pastured	279,125	2,599	2,317	159	3,028	150,184	5,754	4,258	3,944
Conservation Acres - CRP, WRP, Farmable Wetlands, and CREP	385,442	2,181	196	-	1,113	232,543	4,792	3,478	2,036

Source: Adapted from USDA NASS 2000

Table 3-5. Farmland Land Use Categories and Sub-Categories for the Aurora Proposed Project Area (2007)

Land Use Type	Missouri	Barry	Christian	Dade	Jasper	Lawrence	Newton	Stone
	Acres (2007)							
Approximate land area	43,974,665	498,075	360,110	313,616	408,645	391,510	399,846	296,980
Land in farms	29,026,573	289,626	189,177	276,229	258,815	322,822	245,892	121,792
Total cropland	16,405,595	114,244	76,040	127,080	135,730	150,703	107,943	36,790
Total woodland	4,414,396	51,481	33,465	28,031	21,199	33,879	33,989	28,625
Permanent pasture and rangeland, other than cropland and woodland pastured	6,864,391	113,402	71,100	114,815	88,631	126,177	93,902	53,240
Land in farmsteads, buildings, livestock facilities, ponds, roads, wasteland, etc.	1,342,191	10,499	8,572	6,303	13,255	12,063	10,058	3,137
Total Cropland								
Harvested cropland	12,980,113	77,319	52,185	105,106	110,017	112,839	81,364	22,203
Cropland used only for pasture or grazing	1,858,684	31,869	21,001	15,136	14,855	30,001	19,908	12,860
Other cropland	1,566,798	5,056	2,854	6,838	10,858	7,863	6,671	1,727
Cropland on which all crops failed	118,387	526	(D)	721	2,039	364	961	224
Cropland idle or used for cover crops or soil improvement, but not harvested and not pastured or grazed	1,374,183	4,212	2,213	5,571	8,421	6,779	5,540	1,503
Cropland in cultivated summer fallow	74,228	318	-	546	398	720	170	-
Total Woodland								
Woodland not pastured	2,548,059	20,690	14,363	7,466	9,159	15,156	14,288	12,122
Woodland pastured	1,866,337	30,791	19,102	20,565	12,040	18,723	19,701	16,503
Pastureland, All Types	10,589,412	176,062	111,203	150,516	115,526	174,901	133,511	82,603
Permanent pasture and rangeland, other than cropland and woodland pastured	6,864,391	113,402	71,100	114,815	88,631	126,177	93,902	53,240
Cropland used only for pasture or grazing	1,858,684	31,869	21,001	15,136	14,855	30,001	19,908	12,860
Woodland pastured	1,866,337	30,791	19,102	20,565	12,040	18,723	19,701	16,503
Conservation Acres - CRP, WRP, Farmable Wetlands, and CREP	1,691,694	978	855	5,902	12,551	7,968	3,955	-

Source: Adapted from USDA NASS 2009

Table 3-6. Farmland Land Use Categories and Sub-Categories for the Columbia Proposed Project Area (2007)

Land Use Type	Missouri	Audrain	Boone	Callaway	Cole	Cooper	Howard	Moniteau	Monroe	Randolph
	(Acres 2007)									
Approximate land area	43,974,665	443,029	438,428	534,121	250,525	360,999	296,862	265,616	414,507	308,737
Land in farms	29,026,573	424,880	258,734	322,929	180,840	302,429	276,590	242,946	288,293	221,647
Total cropland	16,405,595	337,854	152,527	166,339	79,523	189,065	172,316	122,630	183,346	119,856
Total woodland	4,414,396	26,308	38,532	63,853	42,655	39,984	38,944	37,496	44,391	37,022
Permanent pasture and rangeland, other than cropland and woodland pastured	6,864,391	42,271	54,510	77,798	50,769	62,895	49,924	69,372	44,555	51,331
Land in farmsteads, buildings, livestock facilities, ponds, roads, wasteland, etc.	1,342,191	18,447	13,165	14,939	7,893	10,485	15,406	13,448	16,001	13,438
Total Cropland										
Harvested cropland	12,980,113	308,285	121,717	135,285	59,816	151,755	131,709	89,403	142,075	86,479
Cropland used only for pasture or grazing	1,858,684	11,727	17,088	16,106	15,319	19,234	17,289	22,918	15,445	11,727
Other cropland	1,566,798	17,842	13,722	14,948	4,388	18,076	23,318	10,309	25,826	21,650
Cropland on which all crops failed	118,387	498	3,150	711	276	580	290	1,308	723	495
Cropland idle or used for cover crops or soil improvement, but not harvested and not pastured or grazed	1,374,183	16,053	9,865	13,287	3,346	15,641	22,468	8,634	24,016	20,626
Cropland in cultivated summer fallow	74,228	1,291	707	950	766	1,855	560	367	1,087	529
Total Woodland										
Woodland not pastured	2,548,059	18,201	25,395	42,574	16,492	21,187	26,166	14,153	30,449	25,164
Woodland pastured	1,866,337	8,107	13,137	21,279	26,163	18,797	12,778	23,343	13,942	11,858
Pastureland, All Types	10,589,412	62,105	84,735	115,183	92,251	100,926	79,991	115,633	73,942	74,916
Permanent pasture and rangeland, other than cropland and woodland pastured	6,864,391	42,271	54,510	77,798	50,769	62,895	49,924	69,372	44,555	51,331
Cropland used only for pasture or grazing	1,858,684	11,727	17,088	16,106	15,319	19,234	17,289	22,918	15,445	11,727
Woodland pastured	1,866,337	8,107	13,137	21,279	26,163	18,797	12,778	23,343	13,942	11,858
Conservation Acres - CRP, WRP, Farmable Wetlands, and CREP	1,691,694	18,310	9,958	15,199	3,367	19,998	25,125	11,486	34,628	30,192

Source: Adapted from USDA NASS 2009

Table 3-7. Farmland Land Use Categories and Sub-Categories for the Paragould Proposed Project Area (2007)

Land Use Type	Arkansas	Clay	Craighead	Greene	Jackson	Lawrence	Mississippi	Poinsett	Randolph
	(acres, 2007)								
Approximate land area	33,287,812	409,126	452,604	369,640	405,455	375,429	575,122	484,998	417,184
Land in farms	13,872,862	330,464	336,919	267,263	302,125	263,615	461,328	340,704	252,325
Total cropland	8,432,221	293,353	301,734	229,272	266,354	200,765	451,917	322,991	135,019
Total woodland	2,239,119	17,234	15,163	13,945	18,399	27,534	3,742	6,470	52,971
Permanent pasture and rangeland, other than cropland and woodland pastured	2,637,556	13,236	12,381	14,053	12,563	30,408	3,332	4,537	59,884
Land in farmsteads, buildings, livestock facilities, ponds, roads, wasteland, etc.	563,966	6,641	7,641	9,993	4,809	4,908	2,337	6,706	4,451
Total Cropland									
Harvested cropland	7,367,068	279,480	290,968	215,891	250,327	184,410	440,967	316,213	109,715
Cropland used only for pasture or grazing	724,044	4,331	4,046	4,649	5,964	10,727	5,288	4,005	21,438
Other cropland	341,109	9,542	6,720	8,732	10,063	5,628	5,662	2,773	3,866
Cropland on which all crops failed	47,770	935	1,296	849	1,699	785	1,812	568	217
Cropland idle or used for cover crops or soil improvement, but not harvested and not pastured or grazed	259,318	8,478	4,135	6,058	6,769	3,963	1,843	1,484	3,431
Cropland in cultivated summer fallow	34,021	129	1,289	1,825	1,595	880	2,007	721	218
Total Woodland									
Woodland not pastured	1,496,471	13,107	12,879	9,153	15,092	16,614	3,657	5,068	29,190
Woodland pastured	742,648	4,127	2,284	4,792	3,307	10,920	85	1,402	23,781
Pastureland, All Types	4,104,248	21,694	18,711	23,494	21,834	52,055	8,705	9,944	105,103
Permanent pasture and rangeland, other than cropland and woodland pastured	2,637,556	13,236	12,381	14,053	12,563	30,408	3,332	4,537	59,884
Cropland used only for pasture or grazing	724,044	4,331	4,046	4,649	5,964	10,727	5,288	4,005	21,438
Woodland pastured	742,648	4,127	2,284	4,792	3,307	10,920	85	1,402	23,781
Conservation Acres - CRP, WRP, Farmable Wetlands, and CREP	441,655	11,054	2,647	3,366	6,575	4,389	14,477	1,810	10,273

Source: Adapted from USDA NASS 2009

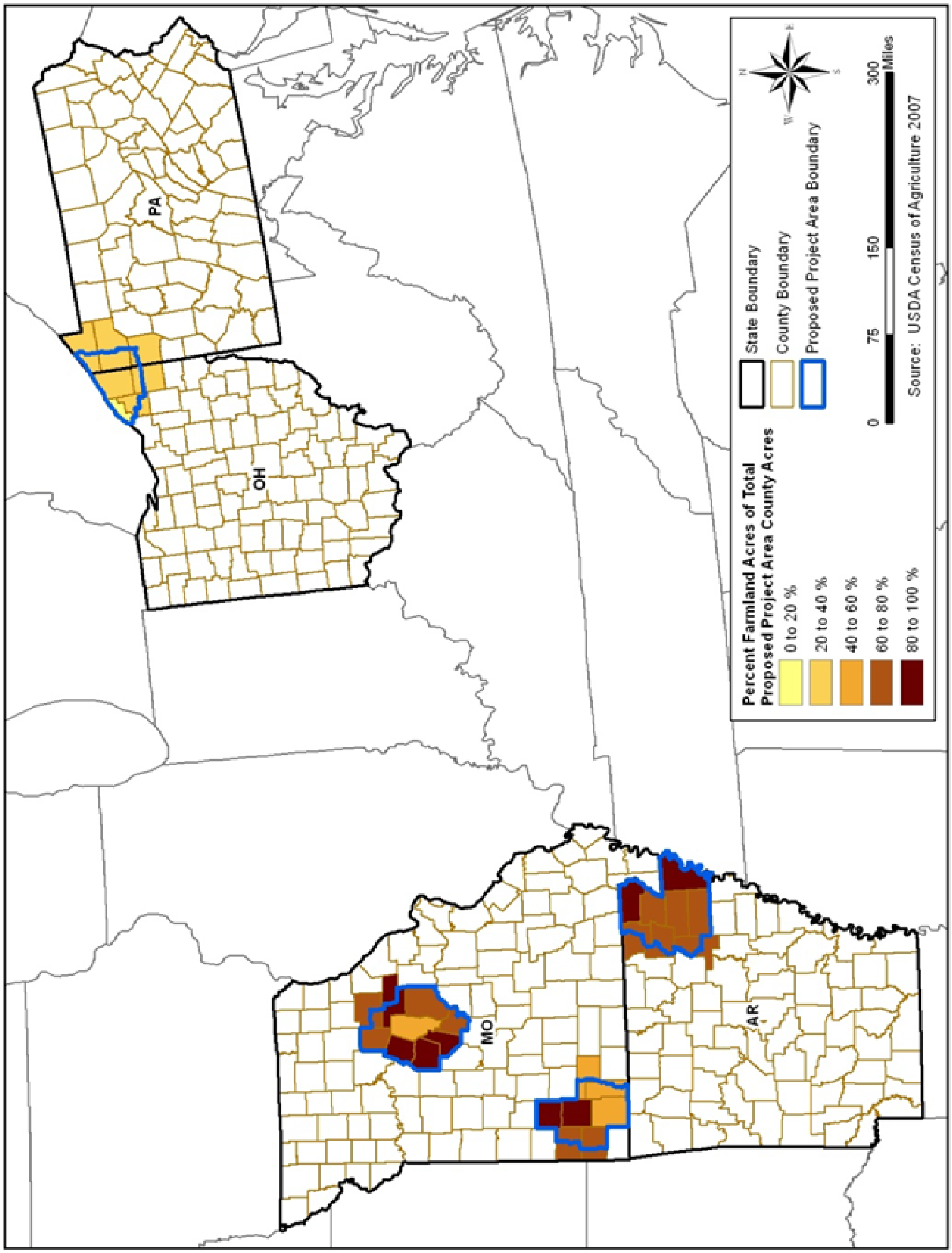

Figure 3-1. Percent of Farmland Acres by County in the Proposed Project Areas.

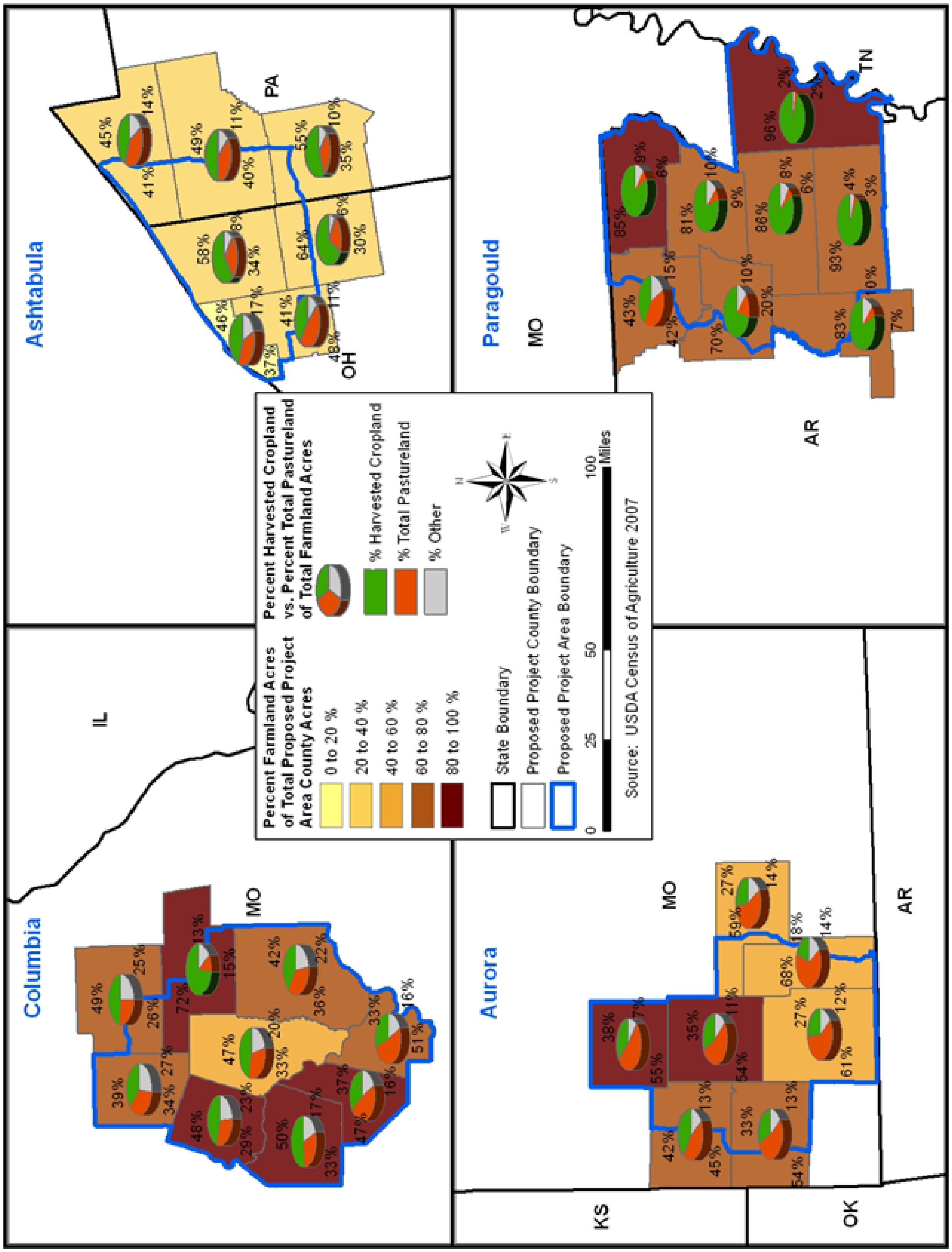

Figure 3-2. Comparison of the Percentage of Harvested Cropland and Total Pastureland in the Proposed Project Areas.

Table 3-8 and **Figure 3-3** illustrates the farmland Enrolled in Conservation Reserve Program (CRP), Wetland Reserve Program (WRP), Farmable Wetlands, or Conservation Reserve Enhancement Programs (CREP) in the proposed project areas. There was approximately 54,591 acres enrolled into conservation programs within the Paragould proposed project area, 168,263 acres within the Columbia proposed project area, 32,209 acres within the Aurora proposed project area, and 13,796 acres within the Ashtabula proposed project area.

Table 3-8. Farmland Enrolled in CRP, WRP, Farmable Wetlands, or CREP in the proposed project areas.

County	Acres enrolled in Conservation Practices	Percent of total acres
Arkansas		
Clay	11,054	2.7
Craighead	2,647	0.6
Greene	3,366	0.9
Jackson	6,575	1.6
Lawrence	4,389	1.2
Mississippi	14,477	2.5
Poinsett	1,810	0.4
Randolph	10,273	2.5
Missouri		
Audrain	18,310	4.1
Boone	9,958	2.3
Callaway	15,199	2.8
Cole	3,367	1.3
Cooper	19,998	5.5
Howard	25,125	8.4
Moniteau	11,486	4.3
Monroe	34,628	8.4
Randolph	30,192	9.8
Barry	978	0.2
Christian	855	0.2
Dade	5,902	1.9
Jasper	12,551	3.1
Lawrence	7,968	2.0
Newton	3,955	1.0
Stone	0	0.0
Ohio		
Ashtabula	2,181	0.5
Geauga	196	0.1
Lake	0	0.0
Trumbull	1,113	0.3
Pennsylvania		
Crawford	4,792	0.7
Erie	3,478	0.7
Mercer	2,036	0.5

Source: Confidential Application for Proposed BCAP Project Areas, 2011

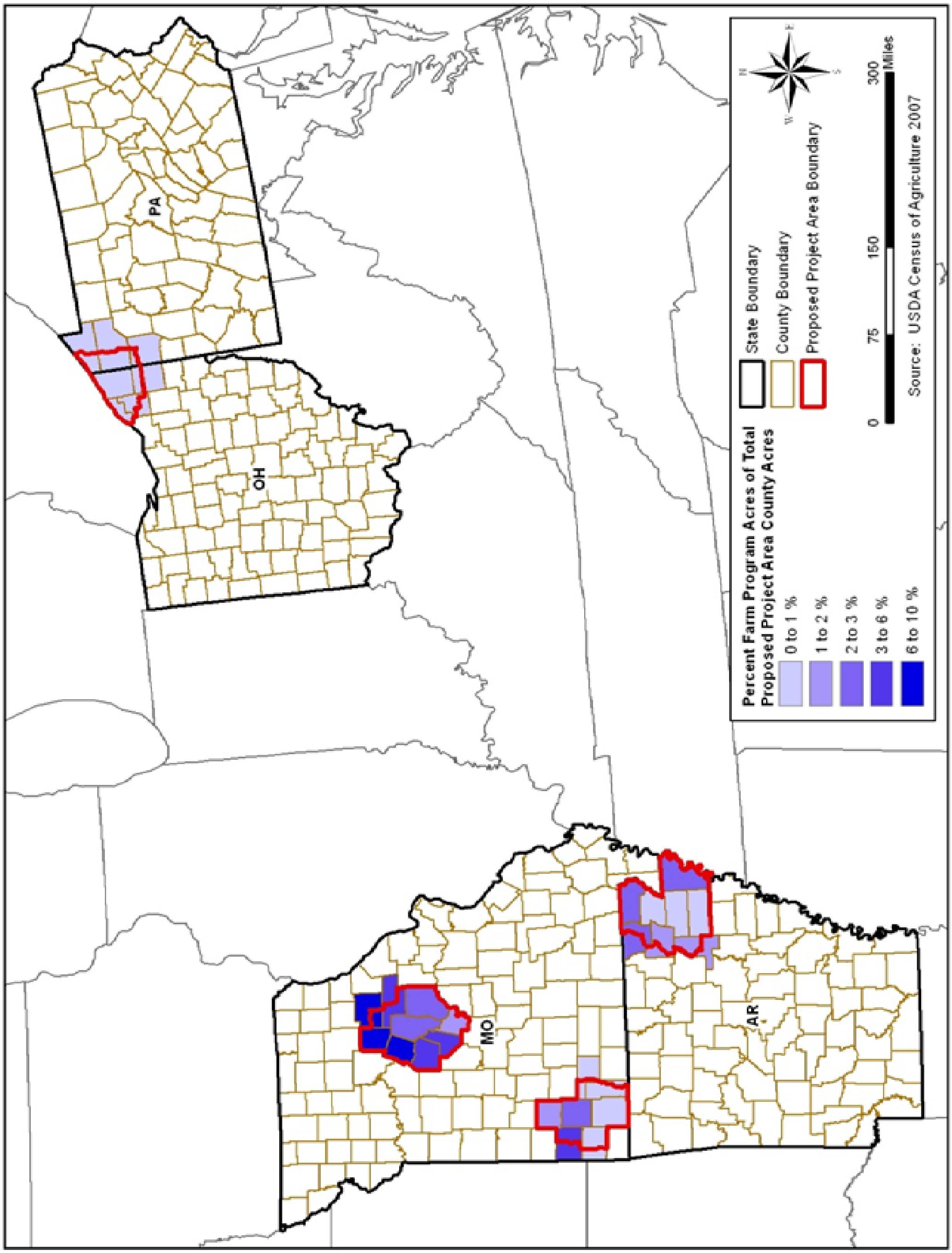

Figure 3-3. Percent of Total Acres Enrolled in Conservation Programs, 2007.

3.3 BIOLOGICAL RESOURCES

3.3.1 Vegetation

3.3.1.1 Definition of the Resource

Vegetation refers to the plants, both native and introduced, of a specific region.

3.3.1.2 Existing Conditions

3.3.1.2.1 <u>Ecoregions</u>

For this project, the Level III Ecoregions will be used to illustrate the natural vegetation of each proposed project area. **Figure 3-4** illustrates the ecoregions within and adjacent to the proposed project areas.

3.3.1.2.1.1 Ashtabula Proposed Project Area

This proposed project area is dominated by the Erie Drift Ecoregion, characterized by low rounded hills, scattered end moraines and areas of wetlands. The area was historically covered by maple-beech-birch forests but much of the area has been converted to farms. A small portion of this proposed project area is also covered by the Eastern Great Lakes and Hudson Lowlands Ecoregion. This region is a coastal strip of beach ridges and swales. This area has also been converted to farming, with a large percentage of agriculture associated with dairy operations (EPA 2011).

3.3.1.2.1.2 Aurora Proposed Project Area

This proposed project area is located within the Ozark Highlands Ecoregion. Topography varies from steep slopes near the large streams to moderate relief hills on the broad plateaus or inter-stream areas. The majority of the region is open forest or woodlands, dominated by oak or mixed stands of oak and pine. Cleared upland areas are used for pasture and livestock (EPA 2011).

3.3.1.2.1.3 Columbia Proposed Project Area

This proposed project area is covered by three Ecoregions, Central Irregular Plains, Interior River Valleys and Hills, and Ozark Highlands. The Central Irregular Plains have a mix of land uses. The potential natural vegetation is a grassland/woodland mosaic with wider wooded strips along the streams. The grasslands are dominated mostly by tallgrass prairies. This area has now been converted to extensive cropland and pastureland. The

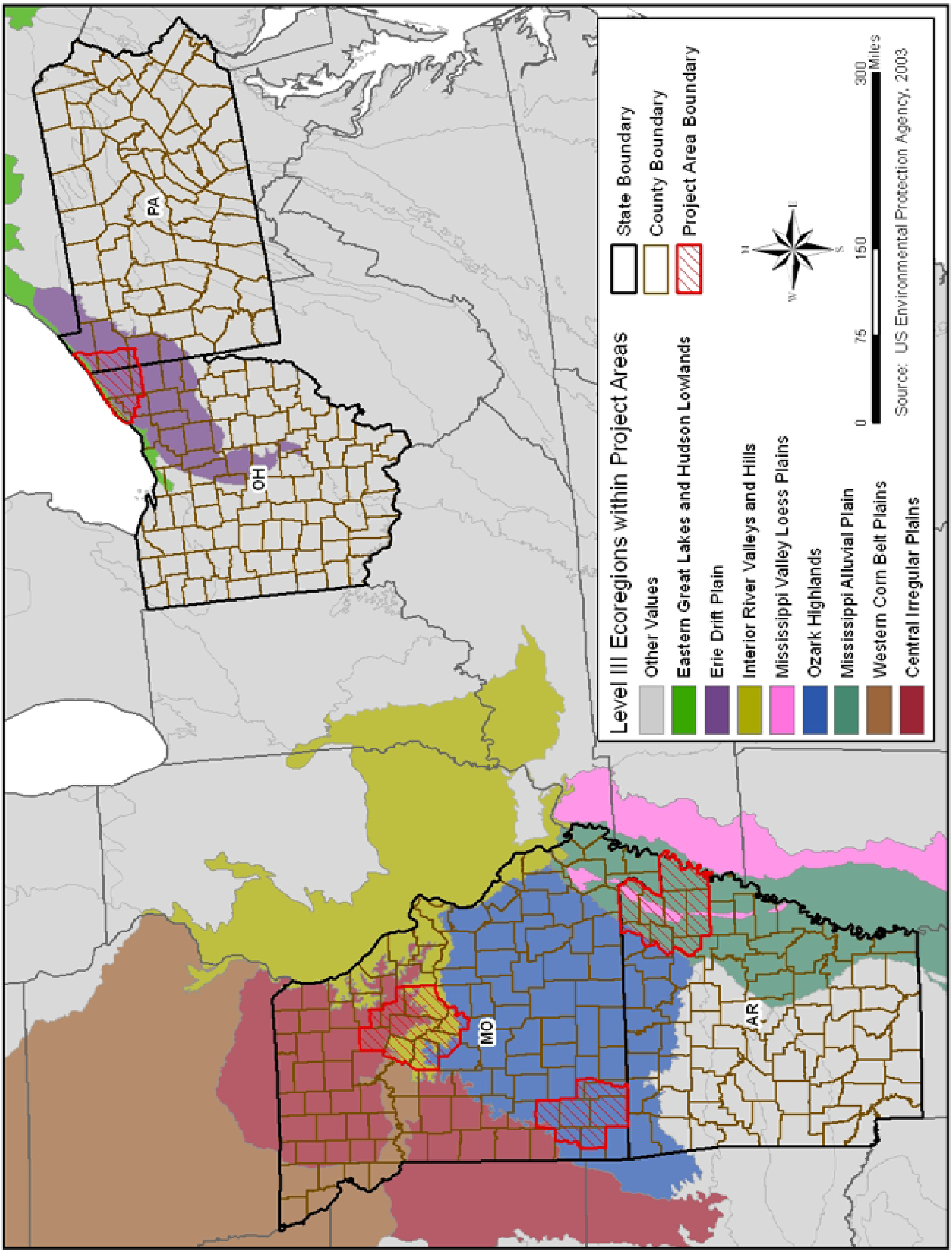

Figure 3-4. Level III Ecoregions within and adjacent to the Proposed Project Areas.

Interior River Valleys and Hills Ecoregion is made up of many wide, flat-bottomed, terraced valleys, forested valley slopes, and dissected glacial-till plains. This region is generally a transitional area between the more forested areas in the Ozarks, and the flatter plains and more extensive cropland of regions to the north. The Ozarks Highlands are covered by forest or woodlands, dominated by oak or mixed stands of oak and pine (EPA 2011).

3.3.1.2.1.4 Paragould Proposed Project Area

The proposed project area is dominated by the Mississippi Alluvial Plain Ecoregion, and to a lesser extent the Mississippi Valley Loess Plain. The Mississippi Alluvial Plain is located along the Mississippi River from the confluence of the Ohio and Mississippi rivers southward to the Gulf of Mexico. This area is a broad, nearly level, agriculturally-dominated plain that provides important habitat for fish and wildlife, and includes the largest continuous system of wetlands in North America. The Mississippi Alluvial Plains is also a major bird migration corridor used in fall and spring migrations. Historically, the vegetation in this area is bottomland hardwood forest and woodlands. Today many parts of the Mississippi Alluvial Plains have been cleared for cropland.

The Mississippi Valley Loess Plain is a small area in eastern Arkansas is composed of a small series of loess-capped hills surrounded by the Mississippi Plain. The area is made up of woodland and pastureland dominated by post oak–blackjack oak forest, southern red oak–white oak forest and beech–maple forest (EPA 2011).

3.3.1.2.1 Invasive and Noxious Plant Species

Current agricultural and conservation practices include the planting of native and introduced species and control or eradication of invasive or noxious species. The Executive Order (EO) 13112, Invasive Species, directs Federal agencies to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause unless the benefits of the introduction or spread of the invasive species clearly outweigh potential harms. In addition, the Plant Protection Act (PPA), which became law in June 2000 as part of the Agricultural Risk Protection Act, consolidated all or part of 10 existing laws, applicable to USDA activities, into one comprehensive law, including the authority to regulate plants, plant products, certain biological control organisms, noxious weeds, and plant pests (USDA Animal and Plant Health Inspection Service [APHIS] 2002). EO 13112 defines native species as a species that, with respect to a particular ecosystem, other than as a result of an introduction, historically occurred or currently occurs in that ecosystem. An alien or non-native species is any species, with respect to a particular ecosystem, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem; an invasive species is a nonnative "species whose introduction does or is likely to cause economic or environmental harm or harm to human health" (EO 13112). The PPA defines a noxious weed as any plant or plant product that can directly or indirectly bring harm to agriculture, the public health, navigation, irrigation, natural resources, or the environment; this Act expands the definition of noxious weed from the definition in the 1974 Federal Noxious Weed Act, which included only weeds that were of foreign origin, new to, or not widely prevalent in the United States (APHIS 2002). Noxious weeds are identified and listed on State and Federal lists.

Invasive plant species can have significant negative impacts on biological resources including decreases in native wildlife and plant species populations, alterations to rare plant communities, or changing ecological processes that native plant species and other desirable plants and wildlife depend on for survival (including impacts upon native pollinators) (National Invasive Species Council [NISC] 2008). Invasive plant species could potentially cause or vector decimating plant diseases, prevent native and agricultural species from reproducing, suppress the growth of neighboring plants, out-compete desirable species for nutrients, light, moisture or other vital resources; and adversely impact erosion rates, hydrologic regimes and soil chemistry such as pH and nutrient availability. Natural wildfire cycles could also be altered; invasions by fire-promoting grasses could alter entire plant communities, eliminating or sharply reducing populations of many native plant species (*Ibid*).

Eradication or control of invasive and noxious species can be an arduous task often including multiple methods of treatment to be effective. The application of herbicide, grazing, burning, mechanical or manual control (cutting, excavating), and mowing are all methods that can be used to control and eradicate invasive species. While it may not be possible to fully eradicate an invasive plant species, management activities can control further spread or takeover. Some species of invasive plants require timed treatment for eradication or control such as when the plant is dormant, young, or prior to flowering/seeding. Additionally, vegetation may become accustomed to certain methods of control and other methods may be required to aid in management (NRCS Conservation Practice Standard [CPS] 595, Pest Management).

Giant miscanthus is not listed on any of the proposed project areas State (Arkansas, Missouri, Ohio, or Pennsylvania) list of noxious weeds as of March 2011 located through the

USDA PLANTS database, this may be partially due to the fact that this species has not had widespread distribution in a localized or regional level; however, this is the most recent listing for these states. This species is also not listed on the Federal Noxious Weed List as of the 2006 list.

Two species of *Miscanthus (M. floridulus* and *M. sinensis*), one of which is a parent species of the hybrid being proposed by the Project Sponsors, are listed on the U.S. Weeds species list per the USDA PLANTS database. Additionally, the other parent species (*M. sacchariflorus*) is listed as a noxious weed in Massachusetts. The Early Detection and Distribution Mapping System (EDDMapS) developed by the University of Georgia Center for Invasive Species and Ecosystem Health has compiled distribution records for invasive and exotic species down to the county level for the United States. These distribution records do not indicate an infestation, rather just a record of occurrence on an exotic species known to have infestations in the United States. The distribution maps indicate records for *Miscanthus sinensis* in 12 counties in Pennsylvania (none within the proposed project areas), 23 counties in Ohio (including Lake, Ashtabula, and Geauga), and six counties in Missouri (including Boone). There were no distribution records for *Miscanthus sacchariflorus* in any of the states within the proposed project areas.

3.3.2 Wildlife

3.3.2.1 Definition of the Resource

Wildlife refers to the animal species (mammals, birds, amphibians, reptiles, invertebrates, and fish/shellfish), both native and introduced, which characterize a region.

3.3.2.2 Existing Conditions

3.3.2.2.1 Ashtabula Proposed Project Area

Major wildlife species in this area include muskrat (*Ondatra zibethicus*), beaver (*Castor canadensis*), least shrew (*Cryptotis parva*), least weasel (*Mustela nivalis*), mink (*Mustela vison*), southern bog lemming (*Synaptomys cooperi*), Virginia opossum (*Didelphis virginiana*), white tailed deer (*Odocoileus virginianus*), striped skunk (*Mephitis mephitis*), American bittern (*Botaurus lentiginosus*), alder flycatcher (*Empidonax alnorum*), American black duck (*Anas rubripes*), Canada goose (*Branta canadensis*), great egret (*Ardea alba*), least bittern (*Ixobrychus exilis*), and least sandpiper (*Calidris minutilla*). Fish of importance, including common game fish, across the area include smallmouth bass (*Micropterus* *dolomieu*), common carp (*Cyprinus carpio*), white sucker (*Catostomus commersonii*), and stonecat madtom (*Noturus flavus*) (Ohio Department of Natural Resources [ODNR] 2011a).

3.3.2.2.2 Aurora Proposed Project Area

Major wildlife species in the area include white-tailed deer, eastern cottontail (*Sylvilagus floridanus*), raccoon (*Procyon lotor*), wood duck (*Aix sponsa*), wild turkey (*Meleagris gallopavo*), smallmouth bass, and largemouth bass (*Micropterus salmoides salmoides*). Several prairie species, such as black-tailed jackrabbits (*Lepus californicus*) and prairie chickens (*Tympanuchus cupido*), inhabit small areas of the original tall grass prairie Confidential Application for Proposed BCAP Project Areas, 2011).

3.3.2.2.3 Columbia Proposed Project Area

Major wildlife species in this Area include white-tailed deer, coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), red fox (*Vulpes vulpes*), beaver, raccoon, skunk, muskrat, opossum, mink, rabbit, fox squirrel (*Sciurus niger*), gray squirrel (*Sciurus carolinensis*), Canada goose, bald eagle (*Haliaeetus leucocephalus*), turkey vulture (*Cathartes aura*), turkey, woodcock (*Scolopax minor*), great horned owl (*Bubo virginianus*), wood duck, pileated woodpecker (*Dryocopus pileatus*), red-bellied woodpecker (*Melanerpes carolinus*), ring-necked pheasant (*Phasianus colchicus*), and bobwhite quail (*Colinus virginianus*). Fish of importance, including common game fish, across the area include carp (*Cyprinus carpio*), catfish, largemouth bass, smallmouth bass, bluegill (*Lepomis macrochirus*), crappie (*Pomoxis* sp.), and sunfish (Confidential Application for Proposed BCAP Project Areas, 2011).

3.3.2.2.4 Paragould Proposed Project Area

Across this are, major wildlife species in this Area include white-tailed deer, coyote, gray fox, red fox, raccoon, skunk, muskrat, cottontail rabbit, fox squirrel, bobwhite quail and mourning dove. Fish of importance, including common game fish, across the Area include carp, bullhead, largemouth bass, smallmouth bass, bluegill, and crappie (Confidential Application for Proposed BCAP Project Areas, 2011).

3.3.3 Protected Species

3.3.3.1 Definition of the Resource

Protected species are those Federally designated as threatened or endangered under the ESA or species that are considered candidates for being listed as threatened or endangered. Critical habitat is defined as: (1) specific areas within the geographical area occupied by the species at the time of listing, if they contain physical or biological features essential to conservation, and those features may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species if the agency determines that the area itself is essential for conservation (USFWS 2008a).

3.3.3.2 Existing Conditions

Table 3-9 lists the Federally-listed threatened and/or endangered species that could be present in the proposed project area counties. **Figures 3-5** through **3-7** illustrate the potential ranges of Federally-listed species within the proposed project areas. A table of the State-listed species that could potentially occur within the proposed project areas is included in **Appendix A**.

3.3.3.2.1 Ashtabula Proposed Project Area

A review of Federally-listed protected (threatened and/or endangered) species based on the U.S. Fish and Wildlife Service (USFWS) data indicate that four Federally-listed endangered species have the potential to occur in Ohio counties within the proposed project area. The Clubshell mussel (*Pleurobema clava*) has the potential to occur in Ashtabula and Trumbull Counties; the Kirtland's warbler (*Dendroica kirtlandii*) and Piping plover (*Charadrius melodus*) have the potential to occur in Ashtabula and Lake Counties; and the Indiana bat (*Myotis sodalis*) has the potential to occur in Ashtabula, Geauga, Lake, and Trumbull counties.

The Clubshell mussel is known from Pymatunig Creek in Ashtabula County, Ohio, but no other counties within the proposed project area in Ohio. Kirtland's warblers are not currently known from any of the counties within the proposed project area in Ohio. The Great Lakes population of Piping plovers is only known from the Headland Dunes area of coastal Lake County, but no other counties within the proposed project area in Ohio. According to the Draft Recovery Plan (USFWS 2007) for Indiana bats, there are known summer roosts in

Table 3-9. Federally-Listed Threatened and/or Endangered Species that Could Potentially occur within the Proposed Project Areas

Category	Species – Common Name (Scientific Name)	T/E	Counties
Aurora			
Fishes / Clams	Ozark cavefish (*Amblyopsis rosae*)	T	Barry, Jasper, Lawrence, Newton, Stone
	Neosho madtom (*Noturus placidus*)	T	Jasper
Plants	Missouri bladderpod (*Physaria filiformis*)	T	Christian, Dade, Lawrence
	Mead's milkweed (*Asclepias meadii*)	T	Dade
	No common name (*Geocarpon minimum*)	T	Dade, Jasper, Lawrence
	Virginia sneezeweed (*Helenium virginicum*)	T	Christian
	Running buffalo clover (*Trifolium stoloniferum*)	E	Barry, Christian, Dade, Jasper
Mammals	Indiana bat (*Myotis sodalis*)	E	Barry, Christian, Stone
	Gray bat (*Myotis grisescens*)	E	Barry, Christian, Dade, Jasper, Lawrence, Newton, Stone
Columbia			
Fishes / Clams	Pallid sturgeon (*Scaphirhynchus albus*)	E	Boone, Cole, Cooper, Moniteau
	Topeka shiner (*Notropis topeka* (=*tristis*))	E	Cooper, Moniteau
	Pink mucket (pearly mussel) (*Lampsilis abrupta*)	E	Cole
Plants	Running buffalo clover (*Trifolium stoloniferum*)	E	Boone, Cole, Cooper, Moniteau
Mammals	Indiana bat (*Myotis sodalis*)	E	Audrain, Boone, Cooper, Monroe, Randolph
	Gray bat (*Myotis grisescens*)	E	Boone, Cole
Paragould			
Birds	Interior Least Tern (*Sterna antillarum athalassos*)	E	Mississippi
Fishes / Clams	Pink mucket (pearly mussel) (*Lampsilis abrupta*)	E	Clay, Randolph, Lawrence, Jackson
	Fat pocketbook (*Potamilus capax*)	E	Craighead, Mississippi, Poinsett
	Curtis pearlymussel (*Epioblasma florentina curtisii*)	E	Lawrence
	Scaleshell mussel (*Leptodea leptodon*)	E	Lawrence
	Pallid sturgeon (*Scaphirhynchus albus*)	E	Mississippi
Plants	Pondberry (*Lindera melissifolia*)	E	Lawrence
Mammals	Gray bat (Myotis *grisescens*)	E	Lawrence
Ashtabula			
Birds	Kirtland's Warbler (*Dendroica kirtlandii*)	E	Ashtabula, Lake, Crawford, Erie
	Piping Plover (*Charadrius melodus*)	E	Ashtabula, Lake, Erie
Fishes / Clams	Clubshell mussel (*Pleurobema clava*)	E	Ashtabula, Trumbull, Crawford, Erie, Mercer
	Northern riffeshell mussel (*Epioblasma torulosa rangiana*)	E	Crawford, Erie, Mercer
Mammals	Indiana bat (*Myotis sodalis*)	E	Ashtabula, Geauga, Lake, Trumbull, Crawford, Erie, Mercer

Source: Confidential Application for Proposed BCAP Project Areas, 2011

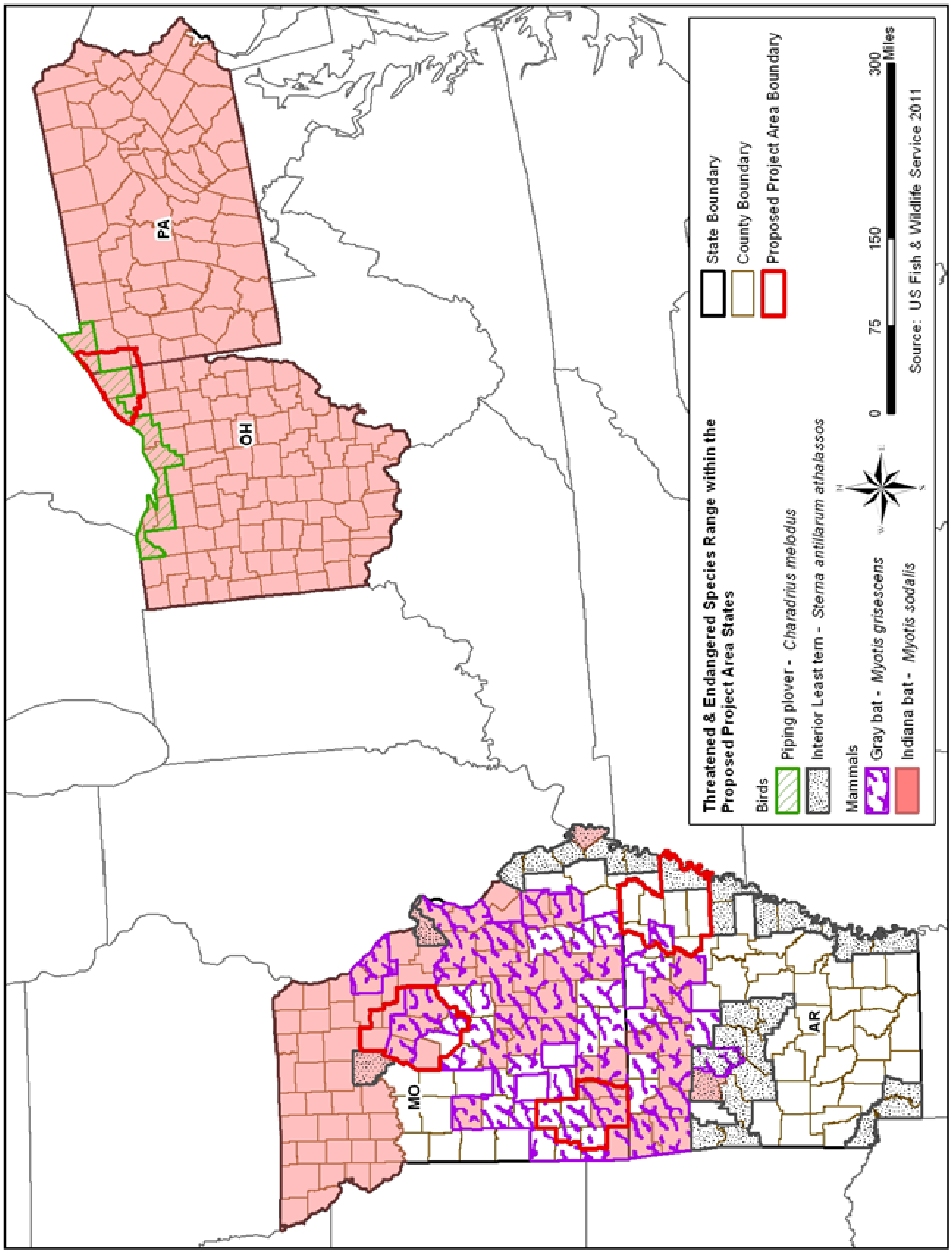

Figure 3-5. Potential Ranges of Federally-listed Threatened and/or Endangered Birds, Insects and Mammals within and adjacent to the Proposed Project Areas.

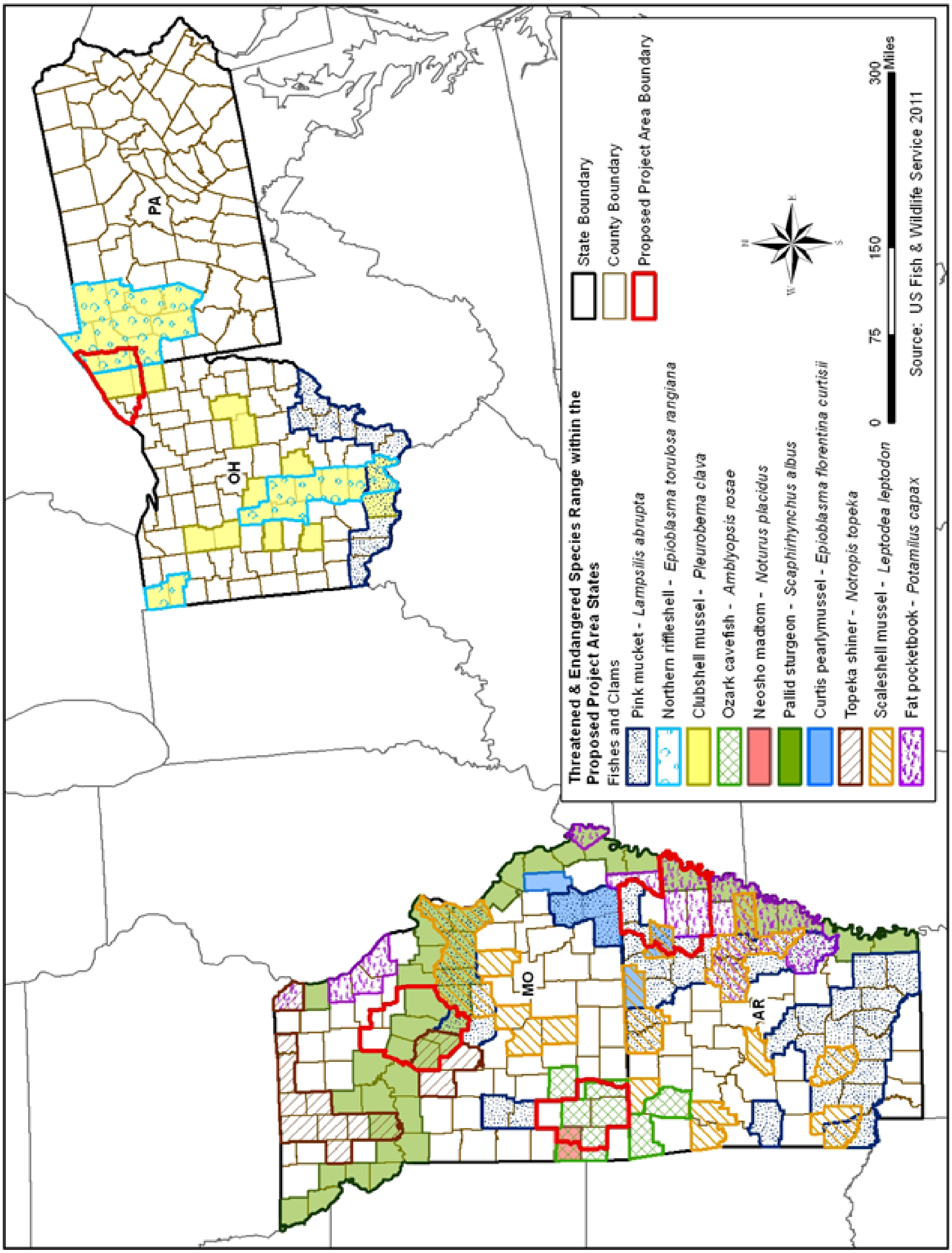

Figure 3-6. Potential Ranges of Federally-listed Threatened and/or Endangered Fishes and Clams within and adjacent to the Proposed Project Areas.

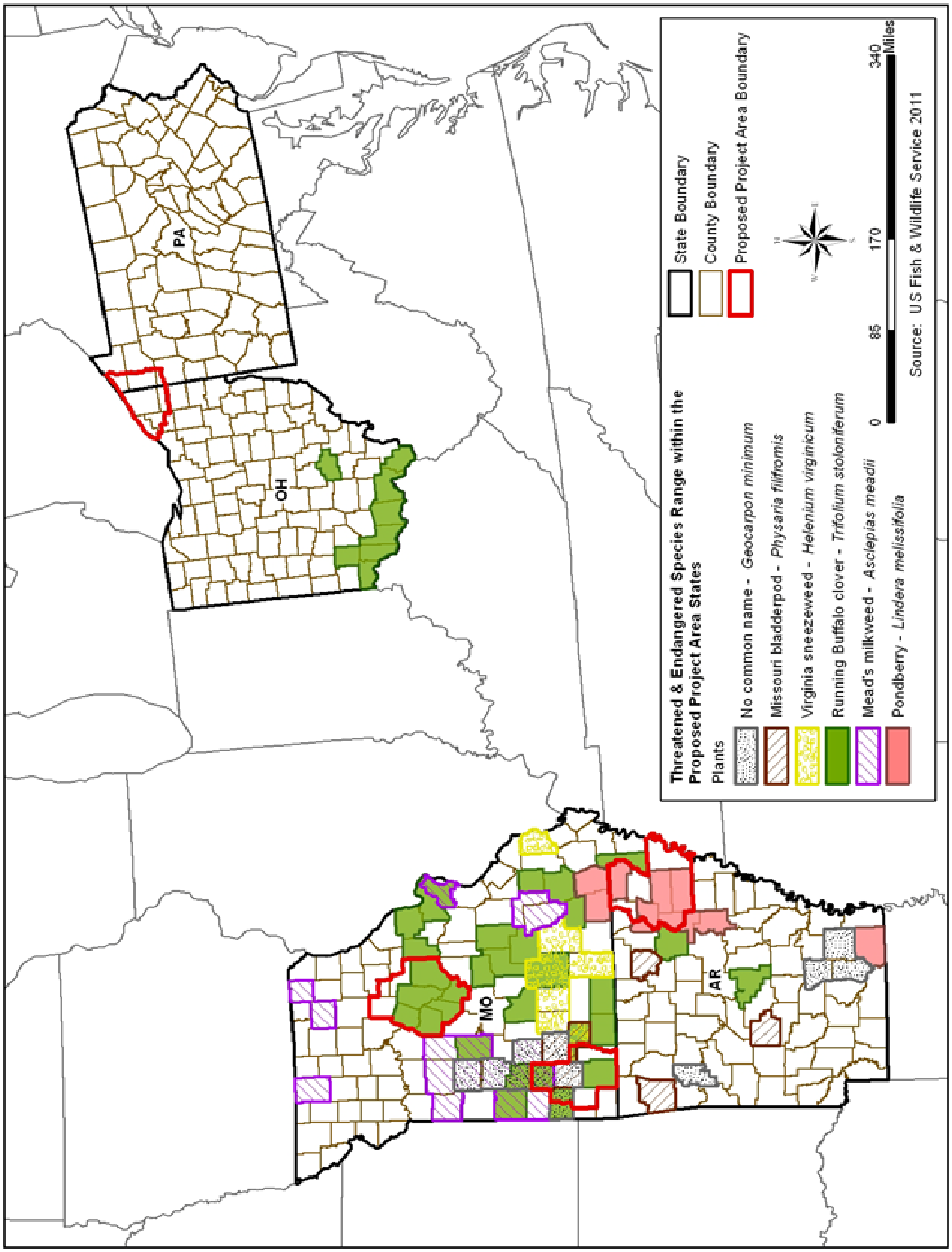

Figure 3-7. Potential Ranges of Federally-listed Threatened and/or Endangered Plants within and adjacent to the Proposed Project Areas.

Ashtabula County in Ohio. Of those Federally-listed species with the potential to occur within the proposed project area, only the Federally endangered Piping plover has designated Critical Habitat in Ohio in Lake County. However, this Critical Habitat is designated within the Headland Dunes Nature Preserve and not in any areas that will be used for agricultural purposes. No other Federally-listed endangered species with the potential to occur in the Ohio portion of the proposed project areas have designated Critical Habitat in these counties (Confidential Application for Proposed BCAP Project Areas, 2011).

A review of the Pennsylvania Natural Heritage Program Species of Concern List, indicates that there 46 State-listed threatened species and 89 State-listed endangered species. Of those species, 8 are State-listed endangered birds, 2 are State-listed threatened birds, 7 are State-listed threatened fish, 8 are State-listed endangered fish, 36 are State-listed threatened plants, 71 are State-listed endangered plants, 1 is a State-listed threatened reptile, and 2 are State-listed endangered reptiles within the Pennsylvania counties in the Ashtabula proposed project area. The search also indicates that there are 16 species listed as rare (plant species which are uncommon within the Commonwealth), 10 species listed as extirpated (plant species believed to be extinct within the Commonwealth), and 7 species listed as PC (animals that could become endangered or threatened in the future. All of these are uncommon, have restricted distribution or are at risk because of certain aspects of their biology) within the Pennsylvania counties in the Ashtabula proposed project area.

A review of Ohio Biodiversity Database State-listed Species indicates that there 60 State-listed threatened species and 71 State-listed endangered species. Of those species, 2 are State-listed threatened birds, 3 are State-listed threatened fish, 2 are State-listed endangered fish, 8 are State-listed threatened insects, 8 are State-listed endangered insects, 2 are State-listed endangered mammals, 2 are State-listed threatened mussels, 2 are State-listed endangered mussels, 44 are State-listed threatened plants, 56 are State-listed endangered plants, 1 is a State-listed threatened reptile, and 1 is a State-listed endangered reptile within the Ohio counties within the Ashtabula proposed project area. The search also indicated that 56 species are potentially threatened, 23 are species of concern, and six are species of special interest within the Ohio counties within the Ashtabula proposed project area.

3.3.3.2.2 Aurora Proposed Project Area

Three plants on the Federal list of threatened and endangered species are identified within grasslands in the proposed project areas. The Missouri bladder pod (*Physaria filiformis*) has been found in glades and pastureland, and the Mead's milkweed (*Asclepias meadii*) is found in association with tallgrass prairie lands. Geocarpon (*Geocarpon minimum*) is also associated with glades. Many listed plants thrive on periodic disturbance, including mowing and burning.

Mammals associated with this proposed project area include three bat species. Both Indiana and gray bats forage over bodies of water and use wooded corridors adjacent to water as roosting sites. However, the other bat species have been known to overwinter in limestone caves (Confidential Application for Proposed BCAP Project Areas, 2011).

A review of the Missouri Heritage Program indicates that there are 4 bird species, 3 mammal species, 3 fish species, 1 reptile species, and 5 plant species listed as a State endangered species within the counties in the Aurora proposed project area.

3.3.3.2.3 Columbia Proposed Project Area

Fishes and clams are associated with water and require high water quality. The plant listed in association with the Columbia proposed project area is primarily associated with mesic areas. Mammals associated with this proposed project area include two bat species, the Indiana bat and the gray bat. Both species forage over bodies of water and use wooded corridors adjacent to water as roosting sites. Indiana bat may also overwinter in limestone caves (Confidential Application for Proposed BCAP Project Areas, 2011).

A review of the Missouri Heritage Program indicates that there are 1 bird species, 3 mammal species, 2 mussel species, 5 fish species, and 1 plant species listed as a State endangered species within the counties in the Columbia proposed project area.

3.3.3.2.4 Paragould Proposed Project Area

The listed bird species prefers habitat adjacent to bodies of water that have sandbars or sand/gravel pit areas. Listed fishes/clams are associated with water and water quality. The Gray bat will forage over bodies of water and use wooded corridors adjacent to water as roosting sites (Confidential Application for Proposed BCAP Project Areas, 2011).

A review of the Arkansas Natural Heritage Commission Rare Species Search indicates there are four State-listed endangered plants and five State-listed threatened plants within the counties within the Paragould proposed project area. The search also indicates that 129 species are Inventory Elements (The Arkansas Natural Heritage Commission is currently conducting active inventory work on these elements. Available data suggests these elements are of conservation concern) within the counties within the Paragould proposed project area.

3.4 SOIL RESOURCES

3.4.1 Definition of the Resource

Soils are a natural body made up of weathered minerals, organic matter, air and water. Soils are formed mainly by the weathering of rocks, the decaying of plant matter, and the deposition of materials such as chemical and biological fertilizers that are derived from other origins. Soils are differentiated based on characteristics such as particle size, texture and color, and classified taxonomically into soil orders based on observable properties such as organic matter content and degree of soil profile development (Brady and Weil 1996). Soil taxonomy was established to classify soils according to the relationship between soils and the factors responsible for their character (USDA NRCS 1999). For the purpose of this project, the soil resources will be discussed based on the soil classification in the particular proposed project area.

Soil erosion is a naturally occurring event and the erosion rates are relatively slow; however, human activity can greatly accelerate the rate of erosion. Poor farming practices, loss of vegetation through deforestation, overgrazing and the maintenance of agricultural land are some of the factors that make soils more susceptible to erosion. For the purpose of this document, highly erodible lands (HEL) were used to evaluate the potential for erosion within the proposed project areas (**Figure 3-8**). For more information about HEL, refer to the BCAP Final PEIS (Chapter 3.4).

3.4.2 Existing Conditions

3.4.2.1 Ashtabula Proposed Project Area

In general, soils across this region favor agriculture. The soils in this region are often very deep, gently sloping and poorly drained, depending on specific soil type. The soils in this area were formed in different textures of glacial till (USDA Ohio NRCS 2007).

There was approximately 193,410 acres of HEL within the counties of the Ashtabula proposed project area (Taylor 2011). Within this proposed project area, Mercer County had the highest amount of HEL, covering 11 percent of the county.

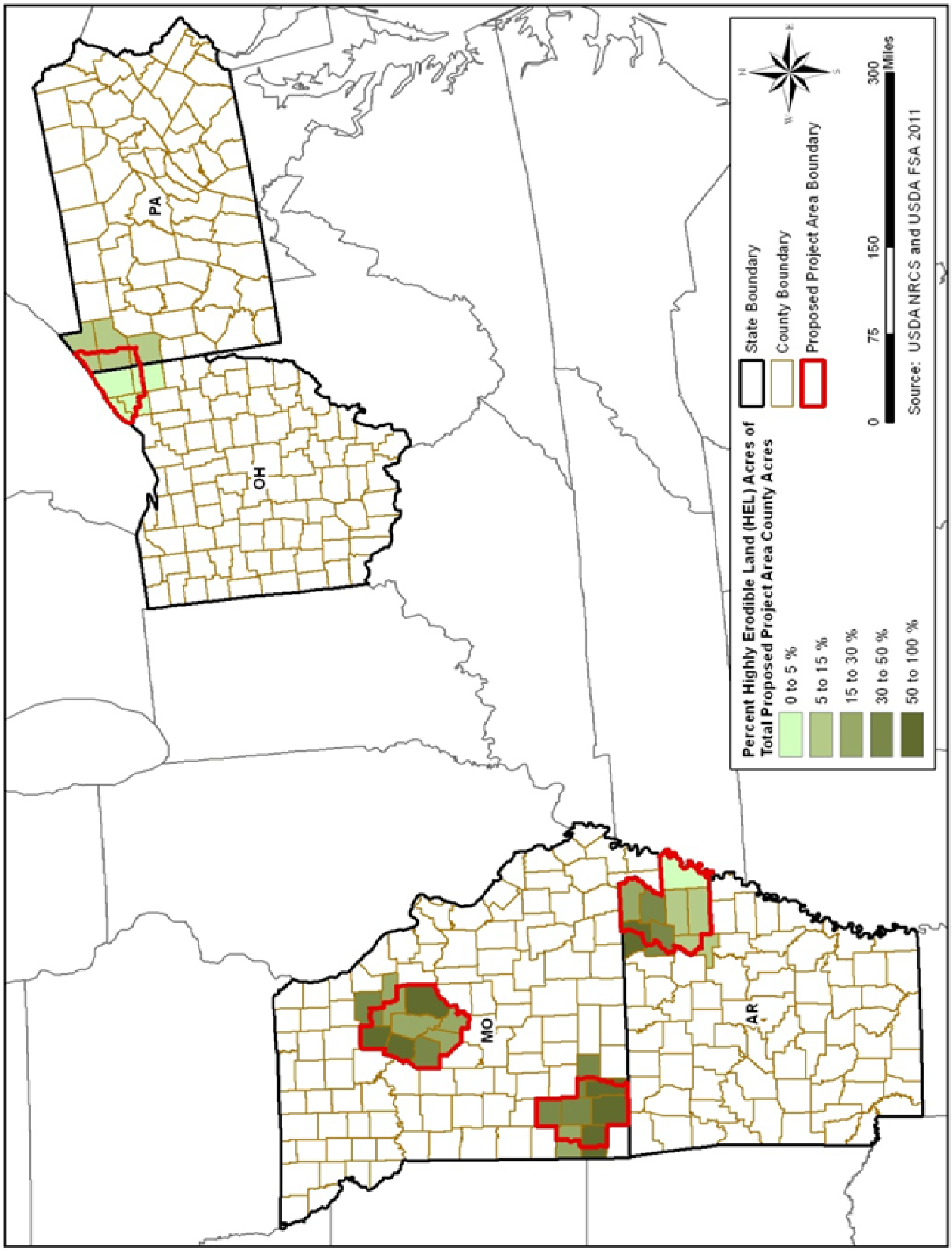

Figure 3-8. Percent of Total Land Classified as Highly Erodible by County within the Proposed Project Areas.

3.4.2.2 Aurora Proposed Project Area

Soils across this region favor agriculture, including corn, soybean and grains. Soils range from well-drained to poorly-drained, depending on specific soil type, land features, and slope position. Upland sites are typically better drained than lowlands. At times, clay and silt content can create drainage problems (Confidential Application for Proposed BCAP Project Areas, 2011).

There was approximately 1,338,641 acres of HEL within the counties of the Aurora proposed project area, with an average of 51 percent of the land being HEL (Confidential Application for Proposed BCAP Project Areas, 2011). Within this proposed project area, Stone County had the highest amount of HEL, covering 93 percent of the county.

3.4.2.3 Columbia Proposed Project Area

In general, soils across this region favor agriculture, including corn, soybean and grains. Soils range from well-drained to poorly-drained, depending on specific soil type, land features, and slope position. At times, clay content can create drainage problems (Confidential Application for Proposed BCAP Project Areas, 2011).

There was approximately 1,266,771 acres of HEL within the counties of the Columbia proposed project area, with an average of 37 percent of the land being HEL (Confidential Application for Proposed BCAP Project Areas, 2011). Within this proposed project area, Callaway County had the highest amount of HEL, covering 61 percent of the county.

3.4.2.4 Paragould Proposed Project Area

Soils range from well-drained to poorly-drained, depending on specific soil type, land features, and slope position. Upland sites are typically better drained than lowlands. At times, clay and silt content can create drainage problems (Confidential Application for Proposed BCAP Project Areas, 2011).

There was approximately 710,118 acres of HEL within the counties of the Paragould proposed project area, with an average of 25 percent of the land being HEL (Confidential Application for Proposed BCAP Project Areas, 2011). Within this proposed project area, Randolph County had the highest amount of HEL, covering 61 percent of the county. Mississippi County contains no soil classified as HEL.

3.5 WATER QUALITY AND QUANTITY

3.5.1 Water Quality

3.5.1.1 Definition of the Resource

Freshwater is necessary for the survival of most terrestrial organisms, and is required by humans for drinking and agriculture, among other uses; however, less than one percent of Earth's water is in the form of freshwater that is not bound in ice caps or glaciers. The Water Pollution Control Act of 1972, or CWA, Safe Drinking Water Act, and the Water Quality Act are the primary Federal laws that protect the nation's waters. The principal law governing pollution of the nation's surface water resources is the CWA. The Act utilizes water quality standards, permitting requirements, and monitoring to protect water quality. The EPA sets the standards for water pollution abatement for all waters of the United States under the programs contained in the CWA but, in most cases, delegates the authority to issue and enforce permits to qualified States. For this analysis, water resources include surface water quality (including lakes, rivers and associated tributaries, and estuaries), groundwater quality, and water use/quantity of both surface and groundwater.

Surface water, as defined by the EPA, are waters of the United States, such as rivers, streams, creeks, lakes, and reservoirs, supporting everyday life through uses such as drinking water and other public uses, irrigation, and industrial uses. Surface runoff from rain, snow melt, or irrigation water, can affect surface water quality by depositing sediment, minerals, or contaminants into surface water bodies. Surface runoff is influenced by meteorological factors such as rainfall intensity and duration, and physical factors such as vegetation, soil type, and topography.

The 303(d) List of Waters reports on streams and lakes identified as impaired for one or more pollutants and do not meet one or more water quality standards. The term, "303(d) list," is short for the list of impaired waters (stream segments, lakes) that the Clean Water Act requires all states to submit for EPA approval every two years. The states identify all waters where required pollution controls are not sufficient to attain or maintain applicable water quality standards and rank the waters taking into account the uses of the water and severity of the pollution problem (EPA 2008). **Figure 3-9** illustrates the impaired streams and water bodies within each state containing the proposed project areas.

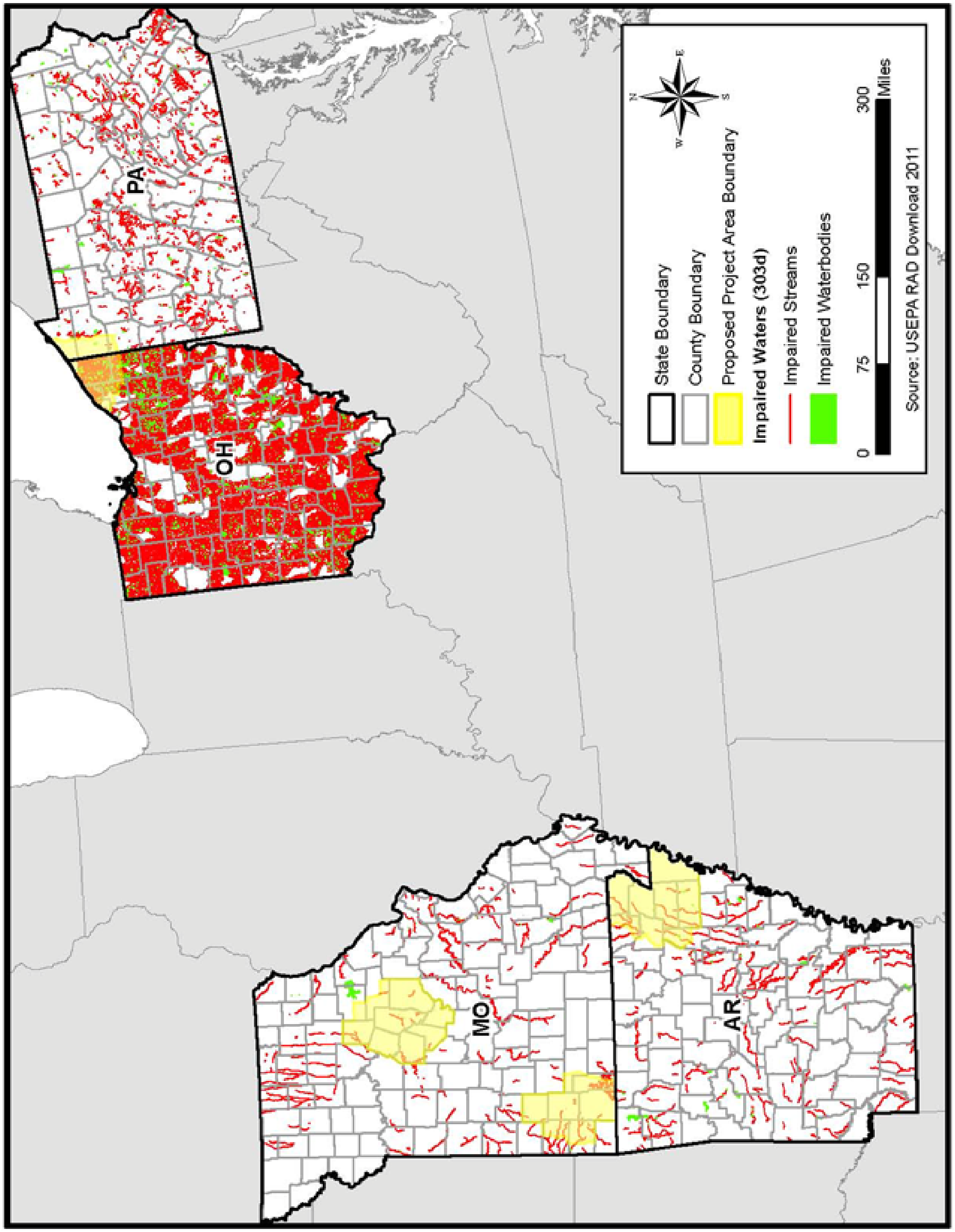

Figure 3-9. Waters Listed on the State 303(d) Lists for Impaired Waters

Groundwater is the water that flows underground and is stored in natural geologic formations called aquifers. It is ecologically important because it sustains ecosystems by releasing a constant supply of water into wetlands and contributes a sizeable amount of flow to permanent streams and rivers (USDA FSA 2003).

3.5.1.2 Existing Conditions

3.5.1.2.1 <u>Ashtabula Proposed Project Area</u>

According to the 303(d) list, there are 1,868 impaired stream segments within the Ashtabula proposed project area for a total of 3,711.34 miles of impaired streams. There is also a total of 56.87 square miles of impaired lakes and reservoirs (EPA 2010).

3.5.1.2.2 <u>Aurora Proposed Project Area</u>

According to the 303(d) list, there are 328 impaired stream segments within the Aurora proposed project area for a total of 557.40 miles of impaired streams (EPA 2010).

3.5.1.2.3 <u>Columbia Proposed Project Area</u>

According to the 303(d) list, there are 314 impaired stream segments within the Columbus Project Area for a total of 388.63 miles of impaired streams. There is also a total of 0.30 square miles of impaired lakes and reservoirs (EPA 2010).

3.5.1.2.4 <u>Paragould Proposed Project Area</u>

According to the 303(d) list, there are 335 impaired stream segments within the Paragould Project Area for a total of 581.71 miles of impaired streams. There is also a total of 5.2 square miles of impaired lakes and reservoirs (EPA 2010). A majority of the water use relies on surface water sources. However, counties closer to the Mississippi River are more likely to use groundwater sources. Uses of groundwater include domestic, industry, and irrigation.

3.5.2 Water Quantity

3.5.2.1 Definition of the Resource

Water use/quantity is the specific amount of water used for a given task, such as the production of dedicated bioenergy crops. Three types are distinguished: *withdrawal*, where water is taken from a river, or surface or underground reservoir, and after use returned to a natural water body; *consumptive*, which starts with withdrawal but without any return (e.g. irrigation) and is no longer available directly for subsequent uses; *non-withdrawal*, the *in situ* use of a water body for, e.g. navigation, fishing, recreation, effluent disposal and power generation (Food and Agricultural Organization [FAO] 2005).

3.5.2.2 Existing Conditions

Table 3-10 summarizes acres of the irrigated cropland by state and county. The table also contains a summary of the water withdrawals by source for each county within the proposed project area. The EPA defines a watershed as the area of land where all of the water that is under it or drains off of it goes into the same place (EPA 2009). Further, the U.S. Geological Survey (USGS) defines a watershed as the divide separating one drainage basin from another. The USGS has divided and sub-divided the United States using hydrologic units (HUC). The hydrologic unit system has four levels of classification (USGS 2011). For this project the fourth level of classification, the 8-digit HUC codes, were used to classify the watersheds within the proposed project area.

3.5.2.2.1 Ashtabula Proposed Project Area

Within the counties in Ashtabula proposed project area, three of the four Ohio counties had less than 400 acres of irrigated cropland with the exception of Lake County, Ohio, which had a total of 2,180 acres of irrigated land (**Table 3-10**). There was a total of 7.28 million gallons of water withdrawn per day in the proposed project area, with an average of 66 percent from surface water and 34 percent from groundwater sources (USGS 2010b).

Eight different watersheds are located within the counties in the Ashtabula proposed project area, with the dominate watersheds being Ashtabula-Chagrin and Grand. These eight watersheds cover 5,218,511 acres of land in Ohio and Pennsylvania with 26 percent within the proposed project area (Seaber 2007). There were approximately 3,600 miles of streams and rivers within the Ohio proposed project area and 1,700 miles of streams and rivers within the Pennsylvania proposed project area. There were approximately 13,800 acres of lakes, ponds and reservoirs within the Ohio proposed project area and 16,200 acres within the Pennsylvania proposed project area (USGS 2010a).

3.5.2.2.2 Aurora Proposed Project Area

Within the Aurora proposed project area, there was an average of 2,572 acres of irrigated land within the proposed project area. Overall, Missouri had a total of 1.19 million acres of irrigated land. There was a total of 10.68 million gallons of water withdrawn per day in the proposed project area, with an average of 29 percent from surface water and 71 percent from groundwater sources (USGS 2010b).

Table 3-10. Acres of Irrigated Land and Water Withdrawals by County within Each Proposed Project Area

County	Total Cropland (acres)	Irrigated Land (acres)	Percent Irrigated Acres	Withdrawals (in million gallons per day) By source: Ground-water	Withdrawals By source: Surface water	Withdrawals Total
Arkansas						
Arkansas	8,432,221	4,460,682	52.9	7,020	1,510	8,530
Clay	293,353	227,000	77.4	466.08	9.36	475.44
Craighead	301,734	244,365	81.0	350.76	44.61	395.37
Greene	229,272	164,615	71.8	206.17	3.81	209.98
Jackson	266,354	178,101	66.9	378.04	22.54	400.58
Lawrence	200,765	130,983	65.2	220.99	24.21	245.20
Mississippi	451,917	269,564	59.6	270.57	2.12	272.69
Poinsett	322,991	262,180	81.2	672.02	90.36	762.38
Randolph	135,019	67,301	49.8	101.46	37.38	138.84
Missouri						
Missouri	16,405,595	1,199,981	7.3	1,340	38.9	1,370
Audrain	337,854	15,462	4.6	2.27	7.86	10.13
Boone	152,527	3,596	2.4	0.99	0.61	1.60
Callaway	166,339	4,025	2.4	2.67	2.26	4.93
Cole	79,523	448	0.6	0.00	0.06	0.06
Cooper	189,065	393	0.2	0.15	0.00	0.15
Howard	172,316	12,049	7.0	1.90	0.00	1.90
Moniteau	122,630	160	0.1	0.28	0.00	0.28
Monroe	183,346	1,473	0.8	0.00	0.81	0.81
Randolph	119,856	738	0.6	0.29	0.00	0.29
Barry	114,244	416	0.4	0.06	0.00	0.06
Christian	76,040	158	0.2	0.04	0.00	0.04
Dade	127,080	8,621	6.8	3.03	0.73	3.76
Jasper	135,730	5,169	3.8	2.33	1.65	3.98
Lawrence	150,703	2,416	1.6	0.19	0.70	0.89
Newton	107,943	1,150	1.1	1.93	0.00	1.93
Stone	36,790	74	0.2	0.02	0.00	0.02
Ohio						
Ohio	10,832,772	37,959	0.4	17.7	24.9	42.6
Ashtabula	106,255	352	0.3	0.01	0.10	0.11
Geauga	29,541	355	1.2	0.04	0.29	0.33
Lake	10,126	2,180	21.5	0.38	4.43	4.81
Trumbull	87,440	152	0.2	0.16	0.54	0.70
Pennsylvania						
Pennsylvania	4,870,287	37,786	0.8	8.29	16	24.3
Crawford	139,526	564	0.4	0.07	0.09	0.16
Erie	101,698	1,397	1.4	0.30	0.69	0.99
Mercer	111,556	195	0.2	0.08	0.10	0.18

Source: USDA 2009; USGS 2010b.

Seven different watersheds impact counties within the Aurora proposed project area; however, the Sac, Spring, and James watersheds cover most of the area. These three watersheds cover 2,567,536 acres of land in Missouri (Confidential Application for Proposed BCAP Project Areas, 2011). There were approximately 7,500 miles of streams and rivers within this proposed project area. There were approximately 37,600 acres of ponds, lakes and reservoirs within this proposed project area (USGS 2010a). Springs are numerous and often contribute to the base flow of many area streams.

3.5.2.2.3 Columbia Proposed Project Area

Within the Columbia proposed project area, there was an average of 4,260 acres of irrigated land within the proposed project area. Overall, Missouri had a total of 1.19 million acres of irrigated land. There was a total of 20.15 million gallons of water withdrawn per day in the proposed project area, with an average of 58 percent from surface water and 42 percent from groundwater sources (USGS 2010b).

While Columbia proposed project area includes land area in 13 different watersheds, the broadest is the Lower Missouri – Moreau (LMM). The Lower Missouri Moreau contacts every county in the Project Area, except for Monroe County. It represents land area encompassing 2,175,934 acres (Confidential Application for Proposed BCAP Project Areas 2011). There were approximately 11,900 miles of streams and rivers within this proposed project area. There were approximately 11,900 acres of ponds, lakes and reservoirs within this proposed project area (USGS 2010a).

3.5.2.2.4 Paragould Proposed Project Area

Within the Paragould proposed project area, there was an average of 193,014 acres of irrigated land (69 percent of the total acres) which is slightly above the state total of 52.9 percent of the acres being irrigated. There was an average of 362.56 million gallons of water withdrawn per day in the proposed project area, with an average of eight percent from surface water and 92 percent from groundwater sources (USGS 2010b).

While Paragould proposed project area includes land area in 11 different watersheds, the greatest land area is represented by three of those 11. The Lower St. Francis, Little River Ditches, and Cache watersheds encompass a total of 3,471,360 acres and impact all counties represented in this proposed project area. The western-most counties, Randolph, Jackson, and Lawrence, are impacted by an additional seven watersheds, inclusive. However, these watersheds represent a much smaller portion of the proposed project area

(Confidential Application for Proposed BCAP Project Areas 2011). There were approximately 14,000 miles of streams and rivers within this proposed project area. There were approximately 20,600 acres of ponds, lakes and reservoirs within this proposed project area (USGS 2010a).

4 ENVIRONMENTAL CONSEQUENCES

4.1 DATA GAPS

Giant miscanthus is a new agronomic crop species in the United States, and also still relatively new in Europe, where the oldest cultivation areas are approximately 30 years old or less. The *Miscanthus* genus was introduced to the United States over 100 years ago in ornamental plantings and was first described by Beal in 1896 in the *Grasses of North America*. Several universities (i.e., University of Illinois, Mississippi State University, University of Wisconsin, Michigan State University, and the University of Georgia) in the United States are currently cultivating giant miscanthus on a trial basis or conducting research on giant miscanthus or the *Miscanthus* genus. Additionally, large-scale acreages of giant miscanthus have not been cultivated in the United States; although commercial production of giant miscanthus for bioenergy production in co-fired systems have been established within the last few years in the United Kingdom. Given, that giant miscanthus has only been grown in large-scale trials in Europe, the data on giant miscanthus planting in the United States is limited.

In light of the lack of data applicable to the proposed project areas, an adaptive Mitigation and Monitoring Plan has been developed, which includes best management practices (BMPs) for the establishment and production of giant miscanthus. These BMPs are designed to ensure avoidance and/or minimization of potential effects to the immediate environment and the larger landscape. The Mitigation and Monitoring Plan is a living document that is highly dependent on routine monitoring of the fields to determine the success of giant miscanthus plantings, its overall effects to the immediate environment, and any potential effects to the larger landscape based on observation and measurement. This document contains information on appropriate and effective eradication methods that would be updated over time as new data become available. Likewise, other metrics or observable measurements will be adapted over time based on past observations, new research findings, and new regulations.

The following information related to the growth and production of giant miscanthus in the United States has been found to be lacking complete detail. .

- Potential effects to socioeconomics are focused on the information provided in the pro forma analyses of the Project Sponsors. Data from Europe indicates a high cost of establishment due to the vegetative propagation of the species; however, the

BCAP combined with the model undertaken by the Project Sponsors and technical assistance to be provided to producers addresses most of these concerns.

- Landscape scale analyses of giant miscanthus are generally lacking since there have not been any commercial-scale field trials in the United States.
- Literature documenting the potential for invasiveness of the fertile species of the *Miscanthus* genus has been discussed along with documentation supporting that giant miscanthus should not be considered invasive due to its sterility and slow rhizome spread within the United States. The growth and management of giant miscanthus has been studied extensively by the University of Illinois and commercial-scale production has been implemented and monitored in the United Kingdom, but commercial-scale production of the plant has not yet been implemented in the United States. Although the preponderance of evidence indicates that the plant is sterile and slow spreading, documentation of sterility and spread is needed for commercial-scale operations in United States' environments.
- Literature discussing potential plant pests has been recently published relating to the western corn root worm, several species, of aphids, and rust; those studies along with recommendations have been included.
- There is little peer-reviewed literature concerning the effects of giant miscanthus plantings on biological diversity in the United States; however, some specific studies have been published in Europe. These studies are primarily focused on bird species with some small mammal observations. These studies also looked at young-aged giant miscanthus stands, so there was little information available on biodiversity found in mature stands.
- Information concerning the nutrient uptake, nutrient addition trials, and root structure has been included to discuss the potential for soil erosion, soil organic matter, and soil carbon sequestration based on the available literature.
- Literature concerning nutrient uptake, water use efficiency, and irrigation needs (one time application in 2011 due to late planting) during establishment has been discussed based on the available literature.

4.2 SOCIOECONOMICS

4.2.1 Significance Threshold

The significance thresholds for socioeconomics include a substantial change in farm income, which could lead to wider community effects such as employment loss and population declines.

4.2.2 Proposed Action

Implementing the Proposed Action would not result in significant adverse effects to the socioeconomic conditions of any of the proposed project areas. The Proposed Action would provide a positive cash-flow stream to producers and an economically viable product through the BCF to local, regional, and potentially out of region sales according to the BCAP project area application documents. Giant miscanthus would require some level of inputs (e.g., herbicides) during the establishment phases, with minimal fertilizer inputs annually beginning in year three of the maintenance period to replace nutrients lost through biomass production; thereby, maintaining the existing agricultural products stream, with the potential for creating new markets for more species-specific agricultural chemicals. Agricultural services would be maintained in the short-term, with the potential creation of new services streams for heavier-duty equipment manufacture and contract farming for harvesting, baling, and transportation of baled products to the BCF. Overall, the maintenance of existing higher value cropland acres with the inclusion of smaller dedicated energy crop production should maintain or enhance farm household and agricultural services-related household incomes.

BCAP was developed to provide assistance to participating producer to offset a portion of the costs associated with establishing and producing dedicated energy crops. **Table 4-1** lists the estimated establishment and production costs for giant miscanthus with a comparison of the BCAP payments to participating producers. The value of BCAP to participating producers was estimated using a crop budget analysis based on information from the Michigan State University (MSU) Extension.” The MSU miscanthus budgets provide an analysis of both ‘cheap’ and market rate rhizomes. Under MSU’s analysis with “market rhizomes” after 10 years the producer is still cash flow negative over $6,000 on each acre planted. If the rhizome costs were reduced to only 25 percent of MSU’s estimate, the producer would still need 10 years to break even. Under MSU’s analysis, producers

Table 4-1. Cost Comparison for Participating Versus Non-Participating Producers for the Establishment and Production of Giant Miscanthus

Item	Giant Miscanthus Establishment without BCAP	Giant Miscanthus Establishment with BCAP
	Per Acre (all values rounded to the next whole $)	
Crop Establishment		
Rhizomes ($1.80 ea)	$7,290	$7,290
Soil Amendments	$0	$0
Pest Control	$18	$18
Machinery Cost	$67	$67
Labor	$3	$3
Total Establishment Cost	$7,378	$7,378
BCAP Establishment Payment	$0	$5,534
BCAP Annual Payment	$0	$89
Revised Establishment Cost	*$7,378*	*$1,755*
Year 2 Production		
Annual Costs – Year 2	$1,133	$1,133
Estimated Revenue – Year 2 (5 tons @ $60/ton)	$300	$300
BCAP Annual Payment	$0	$67
BCAP Matching Payment – Year 1	$0	$225
Profit/Loss Continual	*-$8,211*	*-$2,296*
Year 3 Production		
Annual Costs – Year 3	$343	$343
Estimated Revenue – Year 3	$600	$600
BCAP Annual Payment	$0	$67
BCAP Matching Payment – Year 2	$0	$450
Profit/Loss Continual	*-$7,954*	*-$1,522*
Year 4 Production		
Annual Costs – Year 4	$343	$343
Estimated Revenue – Year 4	$600	$600
BCAP Annual Payment	$0	$67
Profit/Loss Continual	*-$7,697*	*-$1,198*
Year 5 Production		
Annual Costs – Year 4	$343	$343
Estimated Revenue – Year 4	$600	$600
BCAP Annual Payment	$0	$67
Profit/Loss Continual	*-$7,440*	*-$874*

Notes:

- All cost estimates derived from MSU miscanthus budget (James et al. 2009)
- The average rental rate for CRP as of February 2011 in each state containing proposed project areas are: Arkansas = $59.53/acre; Missouri = $74.16/acre; Ohio = $118.87/acre; Pennsylvania = $102.85/acre. The average rental rate for these four states = $88.85 (USDA FSA 2011a)
- A reduction in the annual BCAP payment was estimated at 25 percent for biomass sold for heat, power, or biobased products (USDA FSA 2011b).

would have little incentive to establish energy crops. However, with “cheap rhizomes,” the producer is cash flow positive after the third year. BCAP provides enough incentive, per the MSU cost and revenue values, that a producer would begin realizing a profit in year nine or in year eight, if the matching payment were delayed until a full harvest was collected.

The Project Sponsors have been very successful in finding producers willing to plant energy crops on less productive land when shown BCAP incentives that create positive cash flows in comparison to establishment without BCAP. Importantly, producer commitments are contingent upon BCAP funding, which indicates that the short term incentives provided by BCAP create a viable energy crop market. MSU’s research supports the Project Sponsors’ experience with actual producers in proposed project areas that without BCAP incentives in an approved project area, producer interest under current market conditions declines dramatically.

Under the Proposed Action, the Project Sponsors propose to establish and produce giant miscanthus in the proposed project areas with a maximum acreage of 50,000 acres per project area by 2014. The Project Sponsors estimate that approximately 20 percent of the total acreage in the proposed project areas for Aurora, Columbia, and Paragould would be marginal cropland with the remainder being non-cropland, such as pastureland. In the Ashtabula proposed project area, 10 percent of the total acreage would be marginal cropland. The Project Sponsors have a goal of minimizing the amount of arable cropland to be included in the contract acreage, thereby maximizing producer incomes through diversification of a small amount of marginal croplands or idle lands, such as pastureland.

On average, contract acreage would be estimated to be in a range between 38 to 100 acres per contract. The BCAP Final PEIS (Table 3.1-5) lists the national average farm size for different farm types; overall the majority of farms within the United States are considered small family farms with average farm size between 137 acres (Limited Resource) to 1,040 acres (Farming Occupation/Higher Sales). In each of the states included within the proposed project areas, greater than 84 percent of the farms would be considered small family farms. The Project Sponsors, through small acreage enrollments, would provide an incentive for small farms to enter a BCAP contract, especially with the producer assistance to be provided as part of the proposed project area models.

To determine the economic viability of the Proposed Action, the Project Sponsors developed an Economic Impact Analysis (EIA) for each proposed project area. For each proposed project area region, the 20 year project time-frame from the giant miscanthus acres produced under BCAP, the anticipated economic impact to the region would total more than $750 million (US$2011). The EIA estimated the annual value to the producers in each proposed project area to be approximately $33 million for the approximately 600,000 tons anticipated to be produced annually at full production (2017). The Project Sponsors' BCF would be estimated to directly create six positions in 2014, 78 positions in 2016, and 114 positions in 2017.

4.2.2.1 Ashtabula Proposed Project Area

In Ashtabula, at full scale production in 2017 the local BCF developed by the Project Sponsors would create 1,210 new positions (i.e., direct, indirect, and induced across all related economic sectors) and bring approximately $49.9 million into the region annually. Economic modeling was performed to analysis the contribution of the Proposed Action for each proposed project area as part of the Project Sponsors' confidential project area application.

4.2.2.2 Aurora Proposed Project Area

In Aurora, at full scale production in 2017 the local BCF developed by the Project Sponsors would create 960 new positions (i.e., direct, indirect, and induced across all related economic sectors) and bring approximately $49.2 million into the region annually. Economic modeling was performed to analysis the contribution of the Proposed Action for each proposed project area as part of the Project Sponsors' confidential project area application.

4.2.2.3 Columbia Proposed Project Area

In Columbia, at full scale production in 2017 the local BCF developed by the Project Sponsors would create 980 new positions (i.e., direct, indirect, and induced across all related economic sectors) and bring approximately $50.9 million into the region annually. Economic modeling was performed to analysis the contribution of the Proposed Action for each proposed project area as part of the Project Sponsors' confidential project area application.

4.2.2.4 Paragould Proposed Project Area

In Paragould, at full scale production in 2017 the local BCF developed by the Project Sponsors would create 750 new positions (i.e., direct, indirect, and induced across all related economic sectors) and bring approximately $50.0 million into the region annually. Economic modeling was performed to analysis the contribution of the Proposed Action for each proposed project area as part of the Project Sponsors' confidential project area application.

4.2.3 No Action Alternative

The selection of the No Action Alternative would not result in significant adverse effects to the socioeconomic conditions of the proposed project areas. Under this alternative, the Project Sponsors would not undertake the establishment and production of giant miscanthus in the proposed project areas. The agricultural conditions would remain as described in Section 3.1 and would follow projected demand and production aspects. This alternative would not create a small acreage diversification into dedicated energy crops, nor would a new services market be developed for heavy-duty machinery associated with high-yielding biomass crops, such as giant miscanthus.

4.3 LAND USE

4.3.1 Significance Threshold

For land use the significance thresholds include a substantial change in land use type that could trigger the development of agricultural lands into other non-agricultural land use types within the region or adjacent to the region.

4.3.2 Proposed Action

Implementing the Proposed Action would not result in significant changes in land use types that could trigger development of agricultural lands into other non-agricultural land use types nor would it create a substantial loss of arable cropland within the proposed project areas. Under the Proposed Action, the Project Sponsors propose to establish and produce giant miscanthus in the proposed project areas with a maximum total acreage of 50,000 acres per project area by 2014. The Project Sponsors estimate that approximately 20 percent of the total acreage in the proposed project areas for Aurora, Columbia, and Paragould would be marginal cropland or cropland with the remainder being non-cropland, such as pastureland (Confidential Application for Proposed BCAP Project Areas, 2011). In the Ashtabula proposed project area, 10 percent of the total acreage would be marginal cropland (Confidential Application for Proposed BCAP Project Areas, 2011). On average, contract acreage would be estimated to be in a range between 38 to 100 acres. However, all estimates are preliminary and percentages could change over time depending upon the individual parcels that become enrolled.

The conversion of pastureland could negatively affect livestock production within the proposed project areas, if sufficient grazing acreage was converted. The Ashtabula proposed project area accounts for approximately 3.0 percent of all cattle and 1.8 percent of sheep and lambs in Ohio and just over five percent of cattle and sheep and lambs in Pennsylvania. The Aurora and Columbia proposed project areas account for approximately 18.7 percent of all cattle in Missouri; while the counties within the Paragould proposed project area accounts for 5.1 percent of all cattle in Arkansas. The most productive (i.e., highest stocking rate forage availability) pastureland would not be converted into giant miscanthus, unless the individual producer determined that the net return would be higher from giant miscanthus per acre than from cattle or sheep production.

Table 4-2 lists the estimated total acres that could be planted by each land use type, cropland (harvested cropland and other cropland) or pastureland (pastureland, all types) by proposed project area and that estimated percentage by either cropland or pastureland.

Table 4-2. Estimated Acres to be Planted by 2014 to Giant Miscanthus by Proposed Project Area and Percent of Land Use Type.

Proposed Project Area	Harvested Cropland	Other Cropland	Cropland – Giant Miscanthus	Percent of Other Cropland	Pastureland All Types	Pastureland – Giant Miscanthus	Percent of Pastureland All Types
Ashtabula	492,050	58,708	5,000	8.5	139,885	45,000	32.2
Aurora	561,033	41,867	10,000	23.9	944,322	40,000	4.2
Columbia	1,226,524	150,079	10,000	6.7	799,682	40,000	5.0
Paragould	2,087,971	52,986	10,000	18.9	261,540	40,000	15.3

Source: Adapted from USDA NASS 2009, Confidential Application for Proposed BCAP Project Areas, 2011

The Project Sponsors have a priority of using marginal or idle croplands in place of higher-value harvested croplands and pasturelands. The Ashtabula proposed project area would include the greatest percentage of giant miscanthus plantings in the combined acreage of the pastureland and other cropland land use types (25.2 percent) due to the smaller area in other cropland and pastureland land use types, when compared to the other proposed project areas. The Paragould proposed project area would be anticipated to have approximately 15.9 percent of combined pastureland and other cropland planted in giant miscanthus; however, due to issues related to nutrient use and leaching, water use, and soil erosion, more acres of productive cropland could be utilized for giant miscanthus production; thereby lowering the percentage of marginal lands used. In the Aurora and Columbia proposed project areas, the percentage of marginal land (other cropland and pastureland) anticipated to be planted into giant miscanthus is slightly over five percent for both areas.

4.3.3 No Action Alternative

The selection of the No Action Alternative would not result in significant adverse effects to the land use within the proposed project areas. Under this alternative, the Project Sponsors would not undertake the establishment and production of giant miscanthus in the proposed project areas. The agricultural conditions would remain as described in Section 3.1 and would follow projected demand and production aspects. This alternative would not create a small acreage diversification into dedicated energy crops.

4.4 BIOLOGICAL RESOURCES

4.4.1 Vegetation

4.4.1.1 Significance Threshold

For vegetation, a significant effect would be a finding of invasiveness for the species, that it had a high likelihood of being a vector for a plant pathogen or insect harmful to native species, or that it was extremely difficult to eradicate once established.

4.4.1.2 Proposed Action

Implementing the Proposed Action, in association with the Mitigation and Monitoring Plan, (**Section 6**) would be anticipated to result in minor effects to local and regional vegetation due to the change in vegetation from the existing cover to giant miscanthus. The Mitigation and Monitoring Plan addresses measures to avoid and minimize effects to vegetation. Some of these measures include exclusions from planting within sensitive segments of 100-year floodplains and floodways, to minimize the potential for vegetative spread through rhizome or active stalks transported via stormwater flows or wind and active management to provide eradication in adjacent areas, if necessary.

As mentioned previously, the Project Sponsors anticipate that most of the acreage for giant miscanthus would be idle lands, which are being considered as pastureland for this analysis. Pasturelands throughout the proposed project areas could be in fallow agricultural fields with annual vegetation or a mix of annual and perennial vegetation, in permanent improved pasture, or rangeland. Twenty percent or less of the giant miscanthus acreage is anticipated to be marginal cropland, which could be currently fallow or in traditional row crops. Vegetation species diversity is highly site specific and part of the larger local landscape.

Figure 4-1 provides the approximate locations of the anticipated current producers, which are spread throughout the proposed project areas. The Project Sponsors have estimated that individual contracts for giant miscanthus production would range between 38 to 100 acres; the minimum acreage is considered by the Project Sponsors to be the lower end of acreage size that would be economically viable for the producer. These small patches of fields should assist in the minimization of the loss of landscape level vegetation biodiversity and richness along with anticipated buffers to riparian areas and wildlife corridors through the Mitigation and Monitoring Plan.

Jørgensen (2011) indicates a potential fire risk associated with senesced stands of giant miscanthus. To reduce potential fire risk, the Mitigation and Monitoring Plan includes a minimum buffer width and a more site-specific buffer width to be included in the individual contract producer's Conservation Plan, which would take into account landscape features (e.g., habitable structures, farmsteads, communities within close proximity), normal fire frequency within the areas, normal conditions during the fall/winter standing dead plant material), and adjacent land uses, which could contribute to increased fire risk. Additionally, early harvest could be conducted, if unforeseen circumstances increased the risk to human health and.

Two components of concern associated with giant miscanthus include its potential for invasiveness and as a vector for disease or plant pests. The following sections detail each of these areas.

4.4.1.2.1 Invasiveness

Overall, the existing literature indicates that giant miscanthus is not likely to become invasive; however, this has not been tested through scale field–sized trials in the United States. The very components that make a species ideal for a biomass feedstock are often the same characteristics that are described of weedy invasive species (**Table 4-3**). Giant miscanthus is a naturally occurring hybrid species that is vegetatively propagated and does not produce viable seeds. One of its parent species is *Miscanthus sinensis*, which is considered an invasive species in the United States, and the other parent species (*M. sacchariflorus*) is not included on any Federal or State lists of noxious or invasive species.

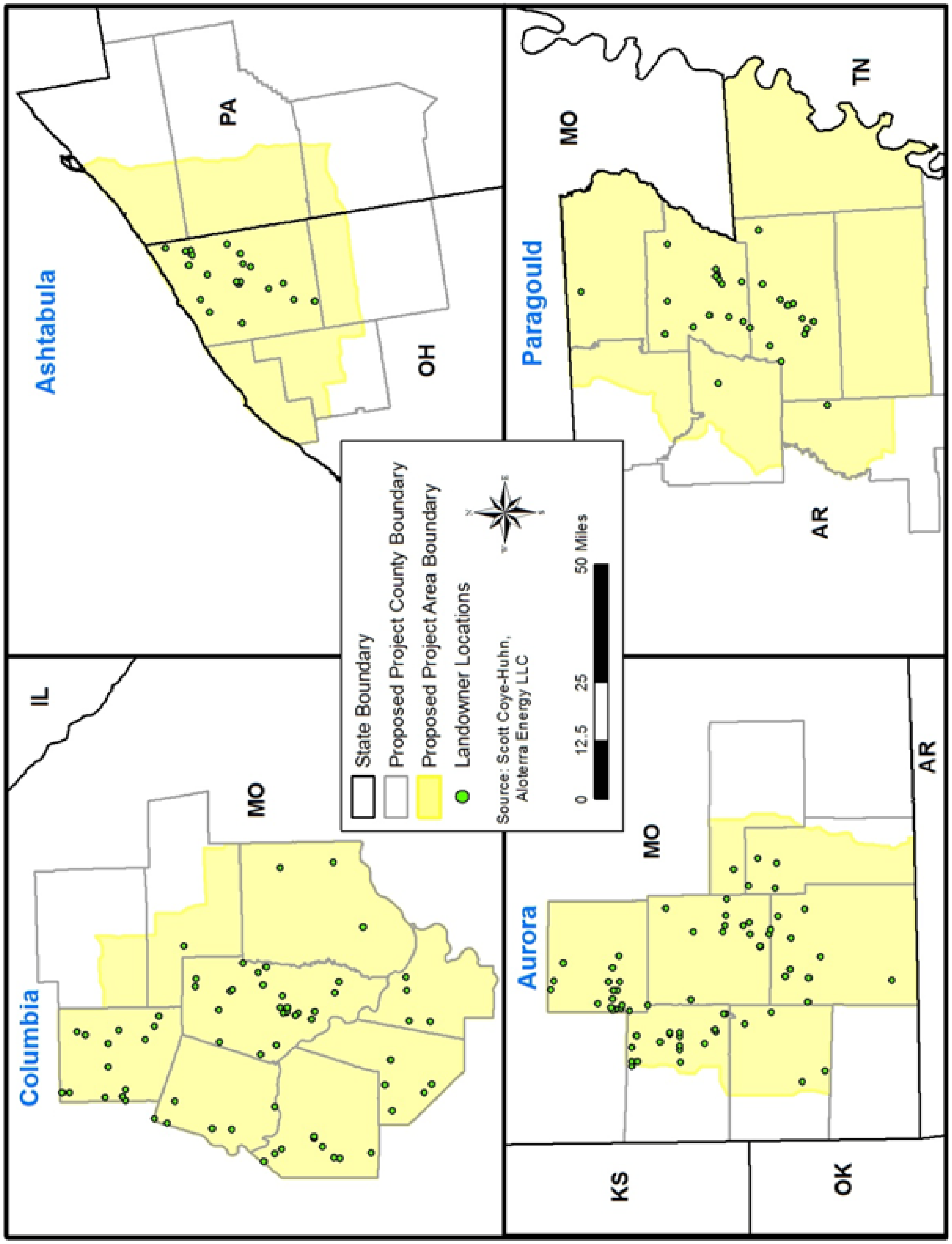

Figure 4-1. Approximate Locations of Anticipated Producers within the Proposed Project Areas

Table 4-3. Characteristics of Ideal Biomass Crop/Weeds

Type of Characteristic	Ideal Biomass Crop	Ideal Weedy Characteristics
Life History	Perennial	Perennial
	High Aboveground Biomass Production	High Aboveground Biomass Production
	Flowers Late Or Little Allocation to Seed Production	
Physiology	Drought Tolerant	Drought Tolerant
	Tolerates Low Fertility Soils	Tolerates Low Fertility Soils
	Tolerates Saline Soils	Tolerates Saline Soils
	C4 Photosynthetic Pathway	C4 Photosynthetic Pathway
	High Water/Nutrient Efficiency	High Water/Nutrient Efficiency
Other	Highly Competitive – Reduces Herbicide Use	Highly Competitive – Reduces Herbicide Use
	Few Resident Pests – Reduces Pesticide Use	Few Resident Pests – Reduces Pesticide Use
	Allelopathic	Allelopathic
	Re-allocates Nutrients to Roots in Fall	

Source: Raghu et al. 2006

Raghu et al. (2006) indicated that aspects of the genetics (i.e., the parent species) associated with giant miscanthus could indicate the potential for this species to be invasive it has the ability to resprout from belowground, rapid growth, and efficient photosynthetic pathways. Jørgensen (2011) indicates that rhizome spread of giant miscanthus occurs only at about 10 centimeters (cm) per year from observation of intentionally planted areas, which is relatively slow. There have been no documented unintentionally spreading of giant miscanthus in Europe, where the species has been studied for over 30 years. In the event that giant miscanthus rhizomes in intentionally planted areas spread beyond the planted fields, Jørgensen (2011) indicates that rhizomes transported accidentally by man, soil erosion, or flooding could be easily eradicated using commercially available herbicides (see Section 2.2.2.1). In contrast, Jørgensen (2011) indicates that *Miscanthus sacchariflorus* (i.e., a parent species of giant miscanthus) has creeping rhizomes that spread several meters (m) in a few years with high adaptability to riparian areas, which has a higher potential for translocation via erosion and water transport.

Gordon et al (2011) assessed the potential invasiveness of several potential dedicated energy crop species using the Australian Weed Risk Assessment (WRA). The WRA is a tool that has been used in Australia and New Zealand for over a decade to determine if plant species should be considered for use in those countries. The WRA has been shown to be 90 percent accurate in indentifying invasive species, 70 percent accurate in non-invaders, with approximately 10 percent of non-invaders incorrectly predicted to be invasive (Gordon et al. 2011). Gordon et al (2011) performed the WRA on 12 potential dedicated energy crops, not native to Florida, for Florida and the United States. Based on the WRA results they found that only four species (giant miscanthus, plume grass, sugarcane, and sweet sorghum) should be accepted as potential dedicated energy crops, one species (cabbage gum) should be further evaluated, and the remainder rejected (giant reed, Red River gum, rose gum, jatropha, leadtree, elephantgrass, and castor bean). Gordon et al. (2011) did indicate that since both giant miscanthus and sweet sorghum had parent genetics from documented invasive species, production should be carefully monitored for changes in fertility or other traits. Barney and DiTomaso (2008) also performed a WRA on giant miscanthus and found it to be acceptable for a dedicated energy crop.

Davis et al. (2010) suggests that using the WRA may not be sufficient as a stand-alone tool provided that the chance of an inadvertent approval of an invasive species could be 1:10 or 1:20. Davis et al. (2010) suggest a nested approach where an initial screen, such as WRA, is used to determine if a pre-entry evaluation of a species is warranted. The Davis et al (2010) evaluation would analyze data from the species home range for its potential for invasiveness; if approved after this step, and then a post-entry evaluation would be conducted. The post-entry evaluation would include quarantined field trials to determine if release of a species is appropriate.

4.4.1.2.2 Disease Vector, Host for Plant Pathogens, Host for Plant Pests

Another potential for vegetative effects is the movement of diseases and plant pests from one species to another, such as from giant miscanthus to corn. Recently published literature in the United States does indicate that giant miscanthus could provide a refuge or reservoir for plant pests, especially for corn and sorghum, depending upon location. Jørgensen (2011) indicates that the western corn rootworm has been found in giant miscanthus, while Stewart and Cromey (2011) indicated that reports of diseases such as barley yellow dwarf virus, rust (*Puccinia emaculata*) and smut (*Tilletia maclaganii*) in miscanthus and switchgrass. Additionally, Spenser and Raghu (2009) found that in greenhouse and field studies there was significant emergence of western corn rootworm from giant miscanthus placed near corn fields. Bradshaw et al. (2010) found two species of aphids (yellow sugarcane aphid and corn leaf aphid) in samples taken from giant miscanthus fields in four states with stands ranging from one year to 21-years old. The yellow sugarcane aphid was located in seven samples across the four states and the corn leaf aphid was located in four samples in four states. According to Bradshaw et al. (2010) the presence of aphids in giant miscanthus is of concern since aphids can transmit plant viruses. The research in this area is somewhat lacking as these are new reports and steps should be taken to monitor for any plant diseases or pests within established stands of giant miscanthus. The Mitigation and Monitoring Plan includes integrated pest management (IPM) programs associated with dedicated energy crops that will provide protection equal or greater than IPM programs for crops within the project areas. .

4.4.1.3 No Action Alternative

Selecting the No Action Alternative would not result in significant effects to the local or regional vegetation within the proposed project areas, as the Project Sponsors would not establish and produce giant miscanthus in those areas. Current agricultural activities would remain similar or along the current projected trends for those regions.

4.4.2 Wildlife

4.4.2.1 Significance Threshold

For wildlife, a significant effect would be a finding of substantial decline in biodiversity or species richness for the local area or the region.

4.4.2.2 Proposed Action

Implementing the Proposed Action, in association with the Mitigation and Monitoring Plan, would be anticipated to result in minor negative effects to wildlife diversity. Wildlife diversity effects would be contingent upon the type of previous land use the acreage was in prior to conversion into giant miscanthus stands. There could be adverse effects to larger wildlife as giant miscanthus stands mature when compared to pasturelands; however, data related to larger species is lacking; therefore, the implementation of appropriate BMPs, as developed in the Mitigation and Monitoring Plan, would be essential to gauge short and longer-term effects on local larger wildlife. Field margins and wildlife buffers would provide continued access in areas where larger wildlife species are known to occur. Fernando et al (2010) indicates that monocultures are not generally as diverse as polycultures, but that biodiversity levels depend on the crop and the environmental setting (i.e., the overall landscape diversity and the lands being converted). They also indicate that perennial rhizomatous grasses require less tillage, lower agrochemicals and high above- and below-ground biomass, which are beneficial for soil microfauna and provide cover to invertebrates and birds. Fernando et al (2010) indicate that according to their weighted-model, no significant differences related to a suite of environmental impacts was observed for the perennial species supported for dedicated energy crops. They suggested that compared to cultivated fields (e.g., potato and wheat), all perennial dedicated energy crops had fewer environmental impacts; however, they had greater impacts than fallow fields when considered on the whole.

4.4.2.2.1 Birds

Studies from Europe indicate a neutral to positive effect for young-aged stands of giant miscanthus on bird species richness, depending upon the previous vegetation cover. Bellamy et al (2009) provide some preliminary information on the abundance and diversity of birds in giant miscanthus and winter wheat in the United Kingdom. They found a greater abundance and diversity of birds in fields (study field size of three hectare = 7.41 acres) with giant miscanthus aged between one to three years than in the control wheat fields. Bellamy et al. (2009) hypothesized that the reasons for greater diversity in giant miscanthus could have been the contribution to shelter provided by giant miscanthus during the winter and the abundance of non-crop plants (e.g., weeds) in these early stage giant miscanthus fields. Bellamy et al. (2009) surmised that on-going management for wildlife would be necessary to ensure continued biodiversity as the giant miscanthus plants matured and the crop structure developed.

Similarly, Semere and Slater (2007a) found that young giant miscanthus fields in Herefordshire, England have a greater variety and abundance of open-ground bird than reed canary grass fields; however, the abundance and diversity of birds and small mammals was higher at the edges of both type of perennial biomass fields than in the fields themselves. Semere and Slater (2007a) indicate that perennial biomass grasses could provide improved wildlife habitat due to the lower input of agricultural chemicals relative to traditionally managed row crops. Sage et al. (2010) found that the number of birds in miscanthus grown in southwestern England was approximately equivalent to the number of birds found in grasslands. They found bird use to be variable and dependent on many factors such as region, weediness, crop structure, and patchiness.

Fargione (2010) in a review of literature indicated that researchers found potential for a loss of bird biodiversity in high-input low diversity (HILD) bioenergy crops, such as corn and soybeans, while in low-input high diversity (LIHD) bioenergy crops, such as native prairie, bird species richness increased. They also found that the magnitude of changes was more than double for species of concern than for generalist species. Fargione (2010) indicates a lack of specific data availability for crops such as giant miscanthus, which has a different structure than native prairie grass species in the United States, indicating a need for more research on these species. Jørgensen (2011) indicates that very few species directly feed on miscanthus so diversity indicators are due in part to the lack of continual tilling, reduced pesticide levels, and provision of cover. At maturity, these stands could have a decline in biodiversity if the fields become so successful that weeds are fully suppressed or large field are planted which would reduce the quantity of field margin habitat (*Ibid*.).

In the United States, plantings of the Illinois clone have been observed for wildlife interactions. Several reed nesting bird species, established nests in the two-year old fields; while indications of ringneck pheasant utilization during the winter was observed (Caveny 2011).

4.4.2.2.2 Insects

In a study of invertebrates, Semere and Slater (2007b) found that more invertebrates utilized miscanthus fields than areas dominated by reed canary-grass but less than field margins, in large part due to the increased presence of weeds within the establishing fields. They surmise that the more mature fields of reed canary-grass observed in these studies could be an approximation in terms of the generalized potential for biodiversity effects from mature stands of giant miscanthus since data for biodiversity is lacking for the mature age class of giant miscanthus (*Ibid*.). As such, field buffers would provide necessary wildlife habitat and edge to ameliorate the loss of biodiversity from maturing stands of giant miscanthus. Landis and Werling (2010) provided a review of relevant literature related to arthropods and biofuel production, indicating a general lack of data associated with mature giant miscanthus stands and arthropod interactions. Gardiner et al. (2010) analyzed arthropods in three different types of potential biofuel crops, corn (planted for grain), switchgrass (planted for CRP), and mixed prairie (planted for CRP). They found that insects responded more positively to greater landscape diversity, provided by switchgrass and mixed prairie; however, if switchgrass was planted and managed for biomass feedstock, the overall insect diversity could increase with a decline in plant diversity.

4.4.2.3 No Action Alternative

Selecting the No Action Alternative would not result in significant effects to the local or regional wildlife within the proposed project areas, as the Project Sponsors would not establish and produce giant miscanthus in those areas. Current wildlife communities would remain similar for those regions.

4.4.3 Protected Species

4.4.3.1 Significance Threshold

For protected species, both for vegetation and wildlife, a significant effect would be a finding of substantial decline in the number or range of species for the local area or the region directly attributable to the Proposed Action.

4.4.3.2 Proposed Action

Implementing the Proposed Action would not result in significant effects to any protected species, Federally-listed as threatened and/or endangered, primarily due to the lack of those species within the proposed project areas. Some species, such as the Indiana bat, may occur while commuting or migrating along waterways that serve as corridors between roost areas and other habitats, but existing crop and idle lands do not provide suitable habitat within the proposed project areas. Other concerns would be for fish, clams, and invertebrates located in streams near giant miscanthus plantings. The Mitigation and Monitoring Plan specifies buffers between plantings and streams and riparian areas. These buffers will ensure that effects to any aquatic and riparian species will be minimized or avoided.

4.4.3.3 No Action Alternative

Selecting the No Action Alternative would not result in significant effects to the local or regional protected species within the proposed project areas, as the Project Sponsors would not establish and produce giant miscanthus in those areas. Current agricultural activities would remain similar or along the current projected trends for those regions.

4.5 SOIL RESOURCES

4.5.1 Significance Threshold

Impacts to soil resources would be considered significant if implementation of an action resulted in permanently increasing erosion, altered soil characteristics that threaten the viability of the cover, or affected unique soil conditions.

4.5.2 Proposed Action

Implementing the Proposed Action would result in a positive reduction in the soil erosion through abundant below ground biomass with soil retaining abilities. Giant miscanthus produces abundant above and below ground biomass. The top soil layer (0 to 30 centimeters [cm]) contains around 28 percent of the root biomass, while nearly half of the total roots were present in the deeper soils layers (below 90 cm) (Neukirchen et al 1999). The extensive deep root system can improve soil qualities by improving water storage, microbial process, and soil organic carbon storage (Blanco-Canqui 2010). In a 10-year study of giant miscanthus in Illinois, Davis et al. (2010) found that giant miscanthus produced greater above ground carbon (C) (1,606 to 2,426 grams [g] C/ square meter [m^2]) when compared to switchgrass, native prairie, (344 to 705 g C/m^2) and corn (405 to 717 g C/m^2). Davis et al. (2010) also indicated that giant miscanthus could produce soil C at a faster rate due in part to greater litter fall and below ground plant production (root system). Hansen et al. (2004) indicated that between 26 to 29 percent of accumulated C input was retained in the soil in soil samples taken from 9-year old and 16-year old giant miscanthus plants in Denmark.

Initial preparation of land for giant miscanthus establishment could result in the soil disturbance similar to traditional tillage of commodity crops. The preparation process could cause erosion following rainfall events until the giant miscanthus becomes established (Donnelly et al 2010). Soil tillage for giant miscanthus establishment can redistribute the organic matter and nutrients that accumulate at the surface of soils and create beneficial effects for the soil quality by mixing the soils and organic matter (Donnelly et al 2010). First-year harvesting of rhizomes would have similar soil disturbances as the initial planting; however, later year's harvesting would be similar to activities for hay production that only minimally effect soil layers. Likewise, the eradication of the crop would result in additional tillage, similar to the establishment phase and traditional row crop tillage, which would redistribute soil organic matter, but would leave the soil bare until a new cover crop was established. The crop is expected to have a 10 to 15 year lifetime. Once the plant is established, the dense root and rhizome system is expected to minimize the potential for soil erosion. In the long term, the potential for soil erosion will be significantly reduced relative to other regional crops and will likely be reduced relative to pasture land, which is disturbed by grazing stock.

Pimental and Kounang (1998) reviewed the literature to determine average soil erosion rates for different land types. They found that the average soil erosion rate on U.S. croplands was 13 tons per hectare per year or approximately 5.3 tons per acre per year (*Ibid*.). Pastureland was found to be have a soil erosion rate approximately half that of cropland (six tons per hectare per year or 2.4 tons per acre per year) (*Ibid*.). They also cited that the natural soil formation rate is approximately 0.5 to 1.0 tons per hectare per year (0.2

to 0.4 tons per acre per year) (*Ibid*.). Triplett and Dick (2008) found that traditional tillage, when compared to a no tillage system for corn production in Ohio over 42 years, resulted in a difference of over 13.4 tons of soil lost per acre per year from traditional tillage acres. Overall, soil loss due to erosion greatly exceeds natural soil formation in most areas.

Once established, giant miscanthus fields would generate soil conservation benefits associated with a large perennial root system and no tillage production. The combined root system and high litter accumulation on the soil surface would reduce the wind and water soil erosion. During the establishment period, traditional tillage practices would be undertaken for a maximum of two years on select acres (i.e., propagation acres) within the project areas and for one year on the majority of acres (i.e., plantation acres) within the project areas. Pyter et al. (nd.) indicated that under ideal conditions one-year rhizomes clumps can yield seven to 10 harvestable rhizomes and two-year rhizomes clumps could yield 25 or more harvestable rhizomes. Thus, it would be reasonable to determine that approximately five percent of acreage within each proposed project area would be used for propagation acreage, thus only a relatively small portion of the total acreage would be traditionally tilled more than once.

Overall, there could be a positive result of soil quality and reduction of soil erosion for the Proposed Action. Giant miscanthus can produce an ample amount of above and below ground biomass allowing for reduction in soil loss which would reduce the potential for sediment to move from fields carrying pesticides and nutrients to the surface water bodies. This also is expected to reduce the sediment runoff which could be deposited off-site or runoff directly into water bodies.

4.5.3 No Action Alternative

Selecting the No Action Alternative would be unlikely to change current practices. Under this alternative, the Project Sponsors would not undertake the establishment and production of giant miscanthus in the proposed project areas. The proposed project areas would not receive the potential soil benefits that could be provided by giant miscanthus and could potentially receive negative effects to soil quality through continued traditional crop management.

4.6 WATER QUALITY AND QUANTITY

4.6.1 Water Quality

4.6.1.1 Significance Threshold

An accounting of increases or reductions in input use such as fertilizer, herbicides, and pesticides is performed to evaluate potential changes in water quality.

4.6.1.2 Proposed Action

Implementing the Proposed Action would not result in a significant decline in surface water quality or groundwater quality within the proposed project areas. Over the productive life of the plantation acres, inputs of fertilizer, herbicides, and pesticides would be anticipated to be lower when compared to inputs for traditional row crops and higher for unimproved pasture.

Since giant miscanthus is expected to be an excellent nutrient scavenger and recycles nutrients back to the root system, and provides excellent soil surface cover to prevent erosion losses, off-site movement of nitrogen and phosphorus would be expected to be low. As indicated earlier, fertilization of giant miscanthus would not begin until year three when significant biomass is produced. Cadoux et al. (2011) indicate that biomass harvest of miscanthus removes approximately 4.9 grams per kilogram (g/kg) of dry matter, 0.45 g/kg, and 7.0 g/kg of nitrogen, phosphorus, and potassium, respectively, which should indicate a maximum replenishment rate for fertilizer applications. Average recommended rates would be eight pounds of nitrogen and potassium fertilizer and 1.5 pounds of phosphorus fertilizer per ton of biomass produced. For an acre of giant miscanthus producing 12 tons of biomass, this would indicate an application of 96 pounds of nitrogen and potassium fertilizers and 18 pounds of phosphorus fertilizer. When compared to corn, in 2005 the average acre of corn was treated with 138 pounds of nitrogen, 58 pounds of phosphorus, and 84 pounds of potassium fertilizers. Additionally, recommended fertilization in Pennsylvania included 180 pounds of nitrogen, 115 pounds of phosphorus, and 260 pounds of potassium for corn grown for forage (Roth and Heinrichs 2001). No fertilizer treatments are recommended during the establishment or propagation phase for giant miscanthus, thereby reducing the potential for nutrient losses through stormwater flows on exposed or on partially covered acreage.

Research also suggests that, once established, giant miscanthus can lead to low levels of nitrate leaching and as a result improve groundwater quality relative to other crops (Christian and Riche 1998). Further, Love and Nejadhashemi (2011), through modeling with the Soil and Water Assessment Tool (SWAT) for scenarios of crop conversions in Michigan, found that perennial grasses (e.g., miscanthus, native grasses, and switchgrass) would improve water quality over traditional crops for sediment and phosphorus loading, but could slightly increase nitrogen. On lands with existing high nitrogen levels within the study area, that are currently cultivated with other crops (e.g., sugarbeets, potatoes, dry beans, and fruit crops) or lands considered marginal for crop production, the authors determined these areas would not be suitable for bioenergy production, as all herbaceous species modeled increased nitrogen loading. The authors did find that on these land types with less nitrogen concerns, miscanthus and native grasses would be suitable crops for bioenergy production (*Ibid*). Ng et al. (2010) found using SWAT that a 10 percent land use change to miscanthus from a corn and soybean rotation in Illinois reduced nitrate export by 6.4 percent; while at a 50 percent conversion, up to a 30 percent decrease in nitrate export could be obtained.

The conversion of formerly cropped acres to giant miscanthus production would reduce runoff, sediment loss, and nutrient loss due to the high ground cover provided by the plant after it has established and the reduced need for nutrient application. This reduction in sediment and nutrient loss in runoff could enhance water bodies and water quality, especially in sensitive watersheds. In marginal areas, sediment runoff could be affected during the establishment of giant miscanthus; however, that would be contingent upon the quality of vegetation cover on the marginal lands. Fertilization of giant miscanthus during establishment is neither recommended or needed. For lower quality vegetation, such as a previously disturbed site dominated by annual or early successional species, these areas would be anticipated to receive water quality benefits as giant miscanthus establishes perennial groundcover on the previous short-term or spare vegetative cover. For areas with improved perennial pasture, there could be short-term increases in off-site runoff, until giant miscanthus becomes established. Site-specific BMPs would be incorporated into the producer Conservation Plan to minimize these effects.

4.6.1.3 No Action Alternative

Selecting the No Action Alternative, would not produce a significant change in water quality, unless there was a substantial increase in land use toward traditional commodity crops. Based on agricultural crop production projections, planted corn acreage is anticipated to increase by approximately 5.4 percent between 2008 and 2017; however, all other primary field crop planted acreage is anticipated to decline. Overall, the change in land use through the selection of the No Action Alternative would not indicate increased acreage with a need for increased agricultural chemicals.

4.6.2 Water Quantity

4.6.2.1 Significance Threshold

Water quantity changes could result in positive or negative effects on total water use in the short-term and over the life of the crop compared to other cropping systems depending on the regional climate. Land use and water use changes would affect hydrology relative to runoff and stream flow.

4.6.2.2 Proposed Action

Miscanthus has a higher efficiency of water use per biomass yield than corn or sorghum crops. Typically, giant miscanthus requires between 100 to 300 liters of water (approximately 26 to 79 gallons) to produce one kilogram (kg) (approximately 2.2 pounds) of biomass depending upon location of production with average anticipated to be approximately 200 liters per kg (approximately 500 millimeters [mm] equivalent precipitation per year) (Heaton et al 2010).

Although miscanthus uses less water per unit of biomass than traditional crops in the project area, the net water use per acre may be higher. This is due to the higher biomass per acre, than corn, soybeans, and switchgrass, and a longer growing season than corn and soybeans

Annual water use and water losses associated with evapotranspiration (ET) for giant miscanthus differs from those documented for annual row crops and pasturelands. Hall (2003) estimated that perennial energy grasses would use between 500 to 600 mm (20 to 24 inches) of water annually. Hall determined that giant miscanthus had approximately a 20 percent interception loss, indicating that a giant miscanthus crop, to be productive would need approximately 28 inches per year in precipitation. Grass hay, alfalfa, or pasture which typically require between 30 and 39 inches of water annually and corn typically requires 21 to 29 inches of water annually (Schneekloth and Andales 2009). **Table 4-4** summarizes literature associated with seasonal water use by crop type.

Table 4-4. Summary of Reported Water Use Values (mm) for Miscanthus and Other Crops

Crop	Estimated Water Use (mm)	Location	Source(s)
Miscanthus	200	England	Heaton et al. (2010)
	500	United Kingdom	Long and Beale (2001) as cited in Teoh et al. (2011)
	954.6	Illinois	Hickman et al. (2010)
	347.9 to 391.7	Italy	Consentino et al. (2006)
Alfalfa	763.0 to 999.2	Colorado	Schneekloth and Andales 2009
Barley	288 to 297 – monoculture and rotation	Spain	Álvaro-Fuentes et al. (2009)
Coastal Bermudagrass	680	Texas	Marsalis et al. (2007)
Corn	146 to 316	Colorado	Nielsen et al. (2006)
	551 to 584	Kansas	Hattendorf et al. (1988)
	255 to 422 – dry matter 293 to 448 - grain	South Dakota	Olson (1971)
	520.4 to 681.0	Colorado	Schneekloth and Andales 2009
	444 to 480	Kansas	Norwood (2001)
	611.9	Illinois	Hickman et al. (2010)
Giant Amaranth	261 to 282	North Dakota	Johnson and Henderson (2002)
Grain Sorghum	339 to 374	Nebraska	Maman et al. (2003)
	451 to 523	Kansas	Hattendorf et al. (1988)
	453 to 477	Kansas	Stone et al. (2001)
	202 to 424 – dry matter 296 to 443 - grain	South Dakota	Olson (1971)
	406.1 to 640.1	Colorado	Schneekloth and Andales 2009
Grass hay/pasture	661.4 to 880.4	Colorado	Schneekloth and Andales 2009
Pearl Millet	336 to 370	Nebraska	Maman et al. (2003)
	70 to 266	Colorado	Nielsen et al. (2006)
	441 to 529	Kansas	Hattendorf et al. (1988)
Soybean	441 to 596	Kansas	Hattendorf et al. (1988)
Sunflower	476 to 584	Kansas	Hattendorf et al. (1988)
	565 to 580	Kansas	Stone et al. (2001)
Sweet Sorghum	152 to 268	Arizona	Miller and Ottman (2010)
	272 to 390	South Dakota	Olson (1971)
Switchgrass	764.3	Illinois	Hickman et al. (2010)
Triticale	86 to 330	Colorado	Nielsen et al. (2006)
Wheat	317 to 342	Australia	Angus and Herwaarden (2001)
	318.3 to 499.1	Colorado	Schneekloth and Andales 2009
	300 to 345 – monoculture and rotation	Spain	Álvaro-Fuentes et al. (2009)

Beale et al. (1999) indicated that water use efficiency for giant miscanthus, when normalized by the daily maximum vapor pressure deficit, were within the range of C_4 crops over several environments (7.3 grams per kiloPascal per kilogram [g kPA/kg] – 9.4 g kPA/kg) and based on literature would be similar to corn (8.2 to 12.0 g kPA/kg) and pearl millet (8.4 to 10.6 g kPA/kg). Although the proportion of corn and pasture/idle land that will be enrolled in the program is unknown, the project sponsors expect that 80 percent or more of the enrolled lands will be lands currently in pasture or idle land. Since some pastureland species use more water annually than miscanthus; depending upon land use cover of pastureland, total water use could be reduced somewhat through implementation of the project areas.

The majority of the data on ET comes from England where the plant has been grown in production for over a decade. Estimated ET for miscanthus is highly variable between studies (**Table 4-5**). In general, ET in miscanthus fields is two to three times lower than the values measured in corn, similar to switchgrass, and somewhat higher than winter wheat and grasslands.

Table 4-5. Summary of Reported ET Values (mm/day) for Miscanthus and Other Crops

Crop	Estimated ET (mm/day)	Location	Source(s)
Miscanthus	2.3	England	Beale et al. (1999)
	1.2 to 1.6	England	Cranfield University (2001) as cited in Finch et al. (2009)
	1.9 to 3.1	Italy	Cosentino et al. (2007)
	3.2	England	Finch and Riche (2008) as cited in Finch et al. (2009)
	3.7 to 3.9	Illinois	McIsaac et al. (2010)[1]
Corn	6.8 to 7.4 (43 year average)	Kansas	Lamm et al. (2007)
	6 to 10	Texas	Howell et al. (1996)
	1.8-3.0 – no till 1.7-3.1 – chisel plow	Wisconsin	Brye et al. (2000)
Corn – Soybean	1.4 to 2.3	Illinois	McIsaac et al. (2010)[1]
Soybeans	4.1 to 5.1 – irrigated 3.4 to 4.6 – non-irrigated	Siberia	Maksimovic et al. (2005)
	3.4 – irrigated 3.2 - rainfed	Nebraska	Suyker and Verma (2009)
Switchgrass	2.5 to 2.6	Illinois	McIsaac et al. (2010) [1]
Winter Wheat	1.3 – drought crop 2.0 – rain fed crop	England	Weir and Barraclough (1986) as cited in Finch et al. (2009)
	1.5 to 1.7	England	Scott et al. (1994) as cited in Finch et al. (2009)
Alfalfa	7.9 to 8.1	Texas	Tolk et al. (2006)
Grasslands	1.4	England	Calder et al. (2003) as cited in Finch et al. (2009)[3]
	1.1	England, riparian areas	Finch and Harding (1988) as cited in Finch et al. (2009)
Native Prairie	2.6-2.7	North Dakota	Frank (2003)
	2.4-2.5	Wisconsin	Brye et al.(2000)
	3.2-3.4	Kansas	Bremer et al. (2001)
Western Wheatgrass	2.8	North Dakota	Frank (2003)

1/ Publication reported total annual ET; values converted to daily ET
2/ Publication indicated corn/soybeans were 104 mm less per growing season which is equivalent to 0.9 mm/day less. Number in table is value for miscanthus reported by the author minus 0.9 mm/day
3/ Grasslands in England have a longer growing season than Miscanthus

VanLoocke et al. (2010) indicated that through their modeling giant miscanthus at 100 percent cover that ET increased by over 200 mm per year and drainage declined between 50 to 250 mm per year. The model included the entire Midwest (11 states) with over 324 million acres of agricultural land and average precipitation ranging from 15 to 40 inches per year (west to east). At 10 percent cover (estimated more than 32 million acres) changes to ET and drainage were minimal compared to existing cover (*Ibid.*). The project is expected to enroll considerably less than 10 percent of the total agricultural lands in each of the production areas, so no significant regional change in ET is expected. VanLoocke et al. (2010) also indicate that past studies have shown that conversion from native grasslands to annual crop dominated cover could have reduced ET in Corn Belt of the United States by approximately 75 mm per year, indicating that giant miscanthus could have ET rates more in line with past vegetative cover in prime farming areas than current crop cover.

Giant miscanthus, as a result of the deep root system and large leaf area, likely has higher infiltration rates during rain events allowing for a reduced run-off and the reduced peak flows, which could reduce the effects of flooding in certain areas (Smeets 2008).

The proposed project would only require irrigation in this first year (2011) due to late planting of the crop and would not require irrigation after the first propagation year. Therefore, the Proposed Action would transfer some irrigated cropland to irrigated giant miscanthus propagation acres during 2011, resulting in irrigation use approximately equal to previous years within the proposed project areas. Therefore, impacts to water quantity used in one year or irrigation would be negligible. All of the proposed project areas have, on average, greater than 30 inches per year of precipitation, which is sufficient to support the growth of miscanthus; therefore, irrigation after 2011 would not be required.

Under the Proposed Action the implementation schedule, plant propagation acres would be planted in 2011 that would produce 9,600 propagation acres in 2012, with an overall the goal of planting 50,000 acres total per proposed project area. By 2014, the portion of these acres that are currently irrigated will not be known until producers sign up for the program. The Ashtabula, Aurora and Columbia proposed project areas have less than 10 percent irrigated lands (USDA 2009). The project is targeting use of pasture land, and marginal and idle croplands. Therefore, the number of acres converted from irrigated crops to miscanthus in these three project areas will likely be negligible. The Paragould proposed project area irrigates a much larger percentage of the cropland; an average of 70.1 percent of the cropland is irrigated. In this area, water use exceeds water recharge and aquifers are being depleted. Some of the more marginal acres that are currently irrigated may be converted to miscanthus. The targeted 50,000 acres represents 2.0 percent of the total acres of farmland in the Paragould proposed project area. Some unknown proportion of these areas will be irrigated lands. The conversion of irrigated lands to miscanthus will reduce water use in the area.

4.6.2.3 No Action Alternative

The selection of the No Action Alternative would not result in significant adverse effects to the water quantity within the proposed project areas. Under this alternative, the Project Sponsors would not undertake the establishment and production of giant miscanthus in the proposed project areas. The change in land use through the selection of the No Action Alternative would not indicate increased acreage with a need for increased agricultural irrigation.

4.7 ALTERNATIVES COMPARISON

This section of the EA provides a brief comparison for the potential effects associated with both the Proposed Action and the No Action Alternative. **Table 4-6** lists the qualitative comparison of the alternatives.

Table 4-6. Comparison of the Alternatives

Resource Area	Proposed Action	No Action Alternative
Socioeconomics	+ minor	0
Land Use	- minor	0
Biological Resources		
Vegetation	- minor	0
Wildlife	- minor	0
Protected Species	0	0
Soil Resources	+/- minor	0/- minor
Water Quality/Quantity		
Water Quality	+/- minor	0
Water Quantity	+/- minor	0

Note:
+ =positive - =negative 0 =neutral

4.7.1 Proposed Action

Implementing the Proposed Action would result in minor positive and negative effects to the local and regional area; however, many of these effects would be minimized through the use of the Mitigation and Monitoring Plan. The Proposed Action could result in additional diversified income for the contract producer, as well as technical assistance from the Project Sponsors in the production and harvesting of giant miscanthus. The Project Sponsors have a proposed BCF in each of the proposed project areas ensuring that producers will have a demand for their products. Also, ancillary agricultural services should expect an increase due to the Project Sponsors goal of primarily contracting idle acres and not active cropland. The Proposed Action would result in a changed local landscape with the addition of the giant miscanthus fields; however, most contract acreage would be small between 38 to 100 acres. The Mitigation and Monitoring Plan will be used to ensure that adverse effects from this new crop are minimized or avoided.

Minor negative effects would be anticipated for biological diversity as pastureland is converted in giant miscanthus croplands. The Mitigation and Monitoring Plan will be essential to provide mechanisms such as buffers and field edges to support continued wildlife and vegetative diversity in these areas and control of rhizome and vegetative spread.

Recent research has indicated that giant miscanthus can function as a source of plant pests to conventional crops; the Mitigation and Monitoring Plan monitoring and buffer will be essential to ensure that any pests/diseases are identified and treated early to avoid transmission to local croplands, such as corn.

Giant miscanthus, which has an extensive perennial root system, would be anticipated to have positive effects on soil retention, soil organic matter, and conversion to soil carbon, as well as increased water quality due to reduced nutrient leaching and transported sediments. Giant miscanthus would be anticipated to require more water than annual crops, such as corn; however, giant miscanthus has much higher water use efficiency, generating high amounts of biomass per volume of water consumed.

4.7.2 No Action

The No Action Alternative would result in no adverse effects to the local and regional area since there would be no giant miscanthus planted in any of the proposed project areas as described in this BCAP Project Proposal. However, the No Action Alternative would not assist in meeting the overall goal of BCAP, which is to develop dedicated energy crops for use into the conversion of bioenergy.

This Page Intentionally Left Blank

5 CUMULATIVE IMPACTS ASSESSMENT

5.1 DEFINITION

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

The Proposed Action is to establish BCAP project areas supporting the establishment and production of giant miscanthus as a dedicated energy crops for bioenergy production. The scale of this action is regional and includes counties within Arkansas, Missouri, Ohio, and Pennsylvania. Given the action is to produce an alternative crop on existing agricultural lands, identifying past, present, and reasonably foreseeable future actions is based on existing cropland production, projected future cropland production, existing CRP acres within each county, future expirations of CRP acres within each county, and the potential for additional BCAP project acres within these proposed project areas.

5.2 CUMULATIVE IMPACTS ANALYSIS BY RESOURCE AREA

5.2.1 Socioeconomics

In the United States, average farm operator household income from 2007 to 2009 has been consistently higher than the average United States household income; however, the percentage difference has been declining from a high of 31.1 percent higher to 13.5 percent higher (USDA ERS 2011b). Farming activities have contributed approximately 11.3 percent to household income, with the projected average being 12.5 percent in 2010 (*Ibid*). After two declining years of total household income of farm operators, the forecast for 2010 and 2011 indicate an increase, which will be record levels (*Ibid*). Traditional commodity crops continue to be high-value for associated land production capabilities providing a substantial proportion of farm operator household income for many areas. Combined with the foreseeable high commodity prices associated with recent natural occurrences that have impacted food crops globally and the driver for alternative fuels and energy sources from renewable resources, traditional crops such as corn and soybean would be anticipated to continue as the dominant agricultural land uses within these proposed project areas.

Under the Proposed Action, contract producers would be creating a diversified crop profile with the inclusion of giant miscanthus on their marginal or idle lands. Given the infancy of industry for biomass feedstock production, large acreages are not anticipated to be converted into dedicated biomass crops with the short-time frame associated with BCAP. The Project Sponsors are anticipating a total combined acreage across all proposed project areas to be 200,000 acres by 2014. The potential for dedicated energy crops exists through many regions of the United States; however, one of the primary limiting factors is accessibility to a BCF that (1) provides a market to producers for their biomass feedstock and (2) has a market for sale of the bioenergy product produced at that facility. Overall, the cumulative effects to socioeconomics associated with the Proposed Action and No Action Alternative would be minor, given the high commodity prices associated with traditional crops and the lack of adequate BCF with enough demand in the region to convert more than a modest amount of agricultural lands to dedicated energy crop production away from traditional crops.

5.2.2 Land Use

The combined proposed project areas include approximately 6.5 million acres of cropland and pastureland with varying degrees of activity (**Table 5-1**). Overall, soybeans are the most cultivated crop accounting for less than 1.7 million acres within the combined proposed project areas. Corn followed with 0.6 million planted acres in the combined proposed project areas. Projections from the *USDA Agricultural Projections to 2020* indicate that increased United States planted acres of soybeans and corn would, on average, remain relatively flat, with some short-term increase in corn (USDA 2011).

Of the land in farms, approximately 191,000 acres are in CRP as of 2010 (13.7 percent of permanent pasture or rangeland), with approximately 66,500 acres expiring from CRP between 2012 to 2014. Currently, there are approximately 31.2 million acres enrolled in CRP practices in the United States, with 4.4 million expiring at the end of Fiscal Year 2011 (14 percent). Overall, the cumulative effects to land use associated with the Proposed

Table 5-1. Land Use by Proposed Project Area with Planted Acres in Crops

Proposed Project Area	Harvested Cropland (2007)	Total CRP Acres (2010)	Total Pasture (2007)	Planted Acres (2010)				Percent of Planted Acres within the State(s)			
				Corn	Sorghum	Oats	Soy-beans	Corn	Sorghum	Oats	Soy-beans
Ashtabula	492,050	8,732	139,885	138,200	0	15,900	106,500	2.9%	0.0%	9.1%	2.1%
Aurora	561,033	20,241	944,322	58,500	1,700	0	89,200	1.9%	4.3%	0.0%	1.7%
Columbia	1,226,524	131,336	799,682	323,700	8,500	0	542,200	10.3%	21.3%	0.0%	10.5%
Paragould	2,087,971	31,505	261,540	98,900	2,400	0	937,400	25.4%	6.0%	0.0%	29.4%

Source: USDA NASS 2009, 2011

Action and No Action Alternative would be minor, given the high commodity prices associated with traditional crops and the lack of adequate BCF with enough demand in the region to convert more than a modest amount of agricultural lands to dedicated energy crop production away from traditional crops.

5.2.3 Biological Resources

Cumulative effects from the Proposed Action would be minimized through the use of the Mitigation and Monitoring Plan to ensure that overall biodiversity would be maintained and the potential for plant pests would be minimized. The potential cumulative effects of establishment of a biomass crop would impact wildlife as habitats are fragmented, degraded, or destroyed from dedicated energy crop establishment; however, the amount of acreage within any of the proposed project areas would be minor and would be mitigated through the Mitigation and Monitoring Plan. The establishment of new dedicated energy crops in areas previously fallow or cropped for a different style of agriculture may itself cause some direct mortality and range shifting at the local scale of wildlife. Direct effects are likely to occur during the establishment phase, but would be similar to traditional agricultural cropping of fallowed or idle lands. During the short term, species using pastureland could relocate to marginal areas or wildlife corridors. Overall, the cumulative effects to biological resources associated with the Proposed Action and No Action Alternative would be minor, given the high commodity prices associated with traditional crops and the lack of adequate BCF with enough demand in the region to convert more than a modest amount of agricultural lands to dedicated energy crop production away from traditional crops. The use of the Mitigation and Monitoring Plan for the Proposed Action would also minimize effects to biological resources and provide mechanisms for adaptive management should the need arise based on crop monitoring.

5.2.4 Soil Resources

The Proposed Action would be anticipated to have positive effects on soils at multiple levels, including a reduction of soil erosion, and increase in soil organic matter, and soil carbon deposition, relative to traditional crops or fallowed land under annual species. Overall, the cumulative effects to soils resources associated with the Proposed Action and No Action Alternative would be minor, given the high commodity prices associated with traditional crops and the lack of adequate BCF with enough demand in the region to convert more than a modest amount of agricultural lands to dedicated energy crop production away from traditional crops.

5.2.5 Water Quality and Quantity

The conversion to a perennial dedicated energy crop provides greater water use efficiency than traditional row crops such as corn, thereby indicating a more productive choice for biomass production. Giant miscanthus would be anticipated to use more water than fallowed or idle lands with permanent pasture, rangeland, or annual species. Taken in combination with traditional crops in the proposed project areas, there could be greater use of groundwater supplies or effects on groundwater recharge. However, these effects would be mitigated through monitoring and BMPs associated with the Mitigation and Monitoring Plan. The conversion from traditional crops to dedicated energy crops would be anticipated to limit runoff from agricultural fields and potential need for irrigation past the initial establishment period. Potential plant pests newly associated with giant miscanthus could require more pesticide use or greater IPM than potentially anticipated based on existing literature from Europe, but should be less than traditional row crops. Overall, the cumulative effects to water quality and quantity associated with the Proposed Action and No Action Alternative would be minor, given the high commodity prices associated with traditional crops and the lack of adequate BCF with enough demand in the region to convert more than a modest amount of agricultural lands to dedicated energy crop production away from traditional crops.

6 MITIGATION AND MONITORING

6.1 INTRODUCTION

The CEQ issued revised guidance for mitigation and monitoring to be included in NEPA decision documents that include three general types of scenarios including: (1) mitigation incorporated into project design; (2) mitigation alternatives for NEPA decision documents (i.e., EA and EIS); and (3) mitigation commitments analyzed in EAs to support a Mitigated FONSI (CEQ 2011). The purpose of mitigation in this EA is the first type, which is incorporation into project design following the original intent of the definition of mitigation provided by CEQ that includes:

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

The recently revised CEQ guidance also explicitly specifies that adaptive management, or the potential for the lead agency under NEPA to take corrective actions if the originally committed mitigation measures fail to address the target potential impacts, is allowable and desirable to both protect the environment and help a Federal agency meet their stated goals.

6.2 ROLES AND RESPONSIBILITIES

The revised CEQ guidance on mitigation and monitoring explicitly requires each federal lead agency under NEPA, or FSA in this case, to identify mitigation tracking mechanisms, commitments for any mitigation proposed; responsibility for implementation particularly if shared, reasonably foreseeable circumstances regarding anticipated or projected funding availability to implement mitigation commitments; and the identification of any outside entities that may be responsible for assisting the lead agency through financial or other means to implement the committed mitigations. In BCAP, the lead agency under NEPA is FSA with technical support provided by the USDA Rural Development, APHIS, the Forest Service (FS), and the NRCS, as described in the Final PEIS (USDA FSA 2010). FSA will to have primary responsibility for implementation and tracking of the mitigation and monitoring program. FSA has signed a Memorandum of Understanding (MOU) with NRCS to provide BCAP technical assistance for producers on an individual contract basis. FSA will ensure each producer complies with existing requirements of BCAP including completion of the Environmental Screening worksheet, completion of a Conservation Plan with appropriate BMPs and/or NRCS CPS, as adopted by FSA for the BCAP. Based on comments received on the Draft EA and to ensure the best possible results for this mitigation and monitoring plan, FSA has signed a MOU with the Project Sponsors defining their roles and responsibilities in implementing this Mitigation and Monitoring Plan. The Project Sponsors will provide the appropriate financial assistance associated with implementation of the monitoring program to assess the effectiveness of mitigation and provide financial assistance for any eradication efforts outside of the intentionally planted areas. The Project Sponsors will continue the Mitigation and Monitoring Plan through the life of the contract between the producer and the Project Sponsor, which can be renewed in perpetuity.

Based on the comments submitted on the Draft EA, in consultation with NRCS and ARS, FSA has developed a mitigation and monitoring plan that will be applied to this BCAP project. Additionally, FSA is aware of on-going research for giant miscanthus; however, publication of some of those results has not yet been provided. FSA will continually review and monitor newly developed and available data for inclusion into the mitigation and monitoring plan within this BCAP project area annually. **Table 6-1** summarizes the responsible party for different mitigation and monitoring activities per this plan.

Table 6-1. Roles and Responsibilities for the Mitigation and Monitoring Plan

Activity	Responsible Party	Comment
Biannual Producer meetings to discuss new developments in production, management, pest/disease treatment, and eradication.	Project Sponsor	Project Sponsor will coordinate with FSA, NRCS, ARS, and local extension as presenters as those parties are available.
New Producer orientation to discuss production methods, management activities, potential for spread of giant miscanthus, treatment methods, and responsibilities, pest/disease identification, treatment methods, and responsibilities, eradication methods, if necessary, and reporting requirements.	Project Sponsor	Project Sponsor will coordinate with FSA, NRCS, ARS, and local extension as presenters as those parties are available.
Producer Conservation Plans to include site specific best management practices (BMPs), which could included, but not be limited to, Natural Resources Conservation Services (NRCS) Conservation Practice Standards (CPS) and mitigation measures identified on the Environmental Evaluation CPA-52for soil erosion, pesticide use and application, fertilizer use and application, and other areas for each specific site.	NRCS	
Monitoring program developed to identify spread of giant miscanthus outside of planted fields with notification provided to the FSA County Office, local Weed Control Board, and Project Sponsors as soon as possible after identification of the issue. Producer will eradicate the portion of the miscanthus that has moved outside of the edge of the field.	Producer	Project Sponsor will provide confirmation to FSA, ARS, and NRCS of eradication.
Once notified of spread of miscanthus referenced above, Project Sponsor will confirm with Producer that elimination has been completed. If Producer refuses or cannot treat the miscanthus growth, Project Sponsors will eliminate the portion that has spread beyond the field boundary. FSA and/or NRCS will make a site visit to ensure compliance.	Project Sponsor	Project Sponsor will provide confirmation to FSA, ARS, and NRCS of eradication.
Monitoring program developed to identify diseases and pests with notification provided to the Project Sponsors as soon as possible after identification of the issue. Producer will treat the disease or pest in the BCAP contract acres.	Producer	Project Sponsor will consult with FSA, NRCS, and ARS to ensure monitoring program is capturing the appropriate structured data that will facilitate accurate annual reporting.
Once notified of disease or pests referenced above, if Producer refuses or cannot treat for the disease or pest, Project Sponsor will treat the producer's BCAP contracted acres in the field and notify FSA and/or NRCS who shall make a site visit to ensure compliance.	Project Sponsor	

Activity	Responsible Party	Comment
Monitoring program developed to monitor wildlife use or changes in use. Environmental Evaluation CPA-52 may need to be revised to capture changes and any new mitigation to be implemented.	Project Sponsor	This will require coordination. Project Sponsor will handle report and consult with FSA, NRCS, and ARS to ensure appropriate structured data is being collected that will facilitate accurate annual reporting.
Project Sponsors will verify that Producers will only establish giant miscanthus that (1) is an Illinois Clone variety and (2) has been incorporated into Aloterra's Quality Assurance Program administered by the third party Ohio Seed Improvement Association (OSIA).	Project Sponsor	
Data gathering to include (1) land use tracking (2) average and total size of enrolled fields (3) prior land use (4) rationale for land use change (4) spread of giant miscanthus outside of planted fields (5) any pests/diseases identification (6) the use of pesticides/herbicides to control unwanted spread of giant miscanthus or pests/diseases (6) BMP and CPS incorporated into field management, such as erosion control structures or materials, vegetative barriers, (7) fertilizer usage and application methods, and (8) cost data.	Project Sponsor	This will require coordination. Project Sponsor will handle report, and work with NRCS, ARS, FSA and local extension to improve data collection.
Annual Report. Draft report summarizing information gathered immediately above and submit to the FSA and other agencies that would like the information such as the NRCS and ARS.	Project Sponsor	
Initiation of a seed sampling program to determine the on-going sterility of seeds produced from the BCAP acres within the project areas. The seed sampling program includes recommended actions, including halting harvesting of material from the field, additional testing to verify findings, additional testing to fields in the region, and an eradication plan for that field.	Project Sponsor	Project Sponsor intends to coordinate these activities with the OSIA and ARS
Exclusion of planting giant miscanthus on certain acreage within 400 m (approximately 1,300 feet) from any know *Miscanthus sinensis* or *Miscanthus sacchariflorus* to limit the potential for cross-pollination resulting in viable seed.	Project Sponsor	Will coordinate with NRCS Conservation Plan efforts.
Exclusion of planting giant miscanthus on certain acreage within the project areas, depending upon certain site-specific conditions. This is beyond the Conservation Plan and will also consider economics and other considerations.	Project Sponsor	Will coordinate with NRCS Conservation Plan efforts

6.3 MITIGATION AND MONITORING RECOMMENDATIONS

General mitigation and monitoring recommendations for BCAP, as a national program with numerous feedstock options, were detailed in the Final PEIS including common BMPs to address potential adverse impacts of energy crop establishment. Examples of the common BMPs include conservation buffers strips, no-till or reduced till planting methods, avoiding the primary nesting season to protect grassland bird populations, and work window avoidance for energy crop establishment to avoid establishment during high precipitation or rainfall events.

6.3.1 Purpose and Overview

The purpose of this mitigation and monitoring plan is to provide project-specific mitigation measures that FSA is proposing to implement as part of the approval of the proposed BCAP project area. An inherent part of that process includes a site-specific environmental review by FSA through the use of an Environmental Screening worksheet to determine whether environmentally sensitive resources such as Federally threatened or endangered species or wetlands are present and could be potentially affected. Where possible, implementation of appropriate BMPs and/or CPS identified during the conservation planning process would mitigate or reduce any potential environmental impacts on key resources addressed within the scope of this EA. In the event sensitive resources have the potential to be present, FSA will be the lead agency in conducting any and all appropriate consultations with the resource regulatory agencies such as the USFWS, U.S. Army Corps of Engineers (USACE), and State Historic Preservation Offices (SHPO).

In general, potential environmental impacts associated with establishment and cultivation of giant miscanthus as proposed by the Project Sponsors are likely to be temporary in nature and variable in scale from local to regional depending on existing characteristics of the individual producer's total land acreage being enrolled, their current land use, the surrounding mix of agricultural uses in each of the four proposed project areas, and the year in the growth cycle (i.e., establishment in year one or two or maintenance in years three to 15). Potential localized impacts are more likely to be in areas where the average farm size or the portion of total land holdings an individual producer is enrolling in the project area is small. In areas with large farm sizes and/or large portions of total land holdings are enrolled, impacts could be more regional in nature, potential impacts are also likely to vary by current land use. Impacts will be less where cropped lands are currently in traditional row crops and potentially greater where lands are currently idle or in pastureland then converted into giant miscanthus. Potential impacts are also likely to vary depending on the surrounding character of farmland; areas dominated by a single agricultural use (e.g., corn or beans) that have a large proportion of land converted to BCAP may have greater impacts than regions dominated by a variety of agricultural uses where land conversions to BCAP cover a smaller area. Finally, impacts are likely to vary by phases of the growth cycle. Establishment in year one (propagation) and year two (plantation planting) may have greater impacts than maintenance (years three to 15) related to soil erosion and loss, water quality and quantity impacts, and herbicide application for weed control.

All proposed site-specific mitigation measures will rely on adaptive management and monitoring to ensure that proposed mitigation commitments are met, and, in the event they do not prevent the intended potential impacts, that additional corrective measures are implemented to rectify the situation as required by the recent CEQ guidance (CEQ 2011). Adaptive management and monitoring is also useful for assessing the effectiveness of particular mitigation actions and addressing any uncertainty regarding whether a proposed method of mitigation is likely to address the intended potential environmental impact.

6.3.2 Meetings with Contract Producers

The Project Sponsors shall hold regional meetings with the BCAP contract producers within the proposed project areas at least twice per year. These meetings will be used to disseminate information of interest to the producers and will also be used to provide information and resources regarding the latest recommendations and developments in the use of appropriate approved fertilizer, the control of pests and disease, erosion control, control options in the event of a potential spread of giant miscanthus, and other related topics. Additionally, new enrollees will be required to attend an orientation meeting, which will include training similar to the information presented at the biannual meetings with greater focus on the overall basics of establishment, maintenance, and production. The implementation of the actions contained in this section would be required of the producers.

6.3.3 Socioeconomics

The proposed project has the potential to impact socioeconomics by converting land currently enrolled in food crops to energy crops. However, this potential impact is primarily expected to be localized to the Paragould proposed project area associated with sustainability issues regarding current agricultural row crop use raised by producers who have expressed interest in enrolling in BCAP so they can convert the more marginally productive areas (low economic viability with existing crops), currently in corn or beans, into a more sustainable crop. Potential impacts are expected to be mitigated by minimizing the conversion of food to energy crops and when that conversion does occur, focusing on the marginally productive lands currently in food crop production. The Project Sponsors have worked with FSA, the USDA Agricultural Research Service (ARS), and NRCS to develop appropriate metrics for tracking conversion of lands currently enrolled in food production and tracking documentation of their productive status.

- **Contract Producer Application Forms** - The Project Sponsors will develop an application form that documents the prior use of enrolled land (e.g., cropland, idle cropland, pasture, or hayland) and the reason the applicant wishes to convert to giant miscanthus production. If the applicant identifies current land use as cropland for food production, additional questions will provide insight into the economic rationale for the desired conversion (e.g., marginally productive cropland).
- **Contract Producer Annual Report and Project Area Annual Reporting** – Annual reporting to FSA will include the number of producers that enrolled, average and total enrolled field size, their prior land use, rationale for applying, and a summary of economic rationales where appropriate. After review of the annual reporting effort, FSA will determine whether an unexpectedly high proportion of food crop acres may be converted, the rationale, and whether restrictions on land conversion may be necessary as part of adaptive management and monitoring to mitigate potential environmental impacts.

6.3.4 Land Use

Potential impacts on land use may include conversion of land use types such as the conversion from traditional row crops to giant miscanthus as discussed above or the conversion of idle land, pastureland, or hayland into giant miscanthus. The BCAP program does not allow conversion of native sod into BCAP; therefore, areas meeting this definition were excluded from this analysis because they will not be eligible for enrollment. Potential mitigation measures as discussed above for tracking the conversion of land types and their productive status are also expected to mitigate potential adverse impacts on land change. If adaptive monitoring indicates large-scale or regional land use conversions are both occurring, and are having a negative effect, then additional restrictions on land use conversion will be considered and implemented. Annual reporting to FSA following the methods described above in Section 6.3.1 will also be used to monitor any potentially unexpected changes in land use. In the event any unexpected changes in land use are detected, FSA will determine whether additional requirements are necessary to mitigate potential environmental impacts on land use.

6.3.5 Biological Resources

6.3.5.1 Vegetation

A potential impact of giant miscanthus establishment relates to the potential for fertile seed production and the potential to spread beyond the intended plantation and propagation acres. All published research, including detailed genetic studies of giant miscanthus, indicate it is a sterile triploid (i.e., meaning three sets of genetic material) hybrid that reproduces vegetatively through rhizomes and does not produce sterile seed (Linde-Laursen 1993, Lewandowski et al. 2000). The New Zealand Environmental Risk Management Authority (NZERMA) approved giant miscanthus for use as a biomass feedstock in 2007 after an extensive process of literature review, risk assessment methodology, and contact with researchers (NZERMA 2007). The NZERMA concluded, through literature and contact with researchers, that giant miscanthus is a triploid hybrid that does not produce seed or viable pollen; however, it will produce inflorescences in warmer climates (NZERMA 2007).

Based on third-party independent verification by the OSIA (OSIA 2010), the likelihood of giant miscanthus producing fertile seed and spreading beyond the enrolled fields is expected to be low. The OSIA has been monitoring the flower unit of OSIA's giant miscanthus selection for pollen and seed production by observation and microscopic examination (Armstrong 2011 – Appendix A). Accordingly, neither pollen nor seed has been produced (*Ibid*). The extruded anthers of the flower unit have been shriveled in appearance and similar to what we see with male sterile seed corn inbred lines (*Ibid*). In addition, there have been no observed volunteer seedlings emerging in observation plot areas adjacent to the giant miscanthus selection (*Ibid*).

- **Exclusion of Acreage Near Other *Miscanthus* Species** - As to seed dispersal, the Project Sponsors would take steps necessary to minimize the unintentional development of viable seed from giant miscanthus. The Project Sponsors would be willing to exclude acreage within 400 m (approximately 1,300 feet) from any known *Miscanthus sinensis* or *Miscanthus sacchariflorus* to limit the potential for cross-pollination resulting in viable seed. This distance is the maximum distance observed in Quinn et al. 2011.

- **Seed Sampling Program** – Based on comments received on the Draft EA and recommendations of ARS, a seed sampling program will be undertaken by the Project Sponsors to determine if the Illinois clone being used within the proposed project areas could produce viable seed. Seed samples at a rate of 50 to 100 inflorescences from four samples in each proposed project area would be provided to either a third party verification or ARS to determine the viability of the seeds. Samples would be taken to represent a range of environmental variability, such as land positions, slope, soil moisture, soil types, etc. If viable seed are found through the seed sampling program these additional steps could be undertaken, which include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range.

- **Quality Assurance Program overseen by OSIA -** Participation in the Ohio Seed Improvement Association's Quality Assurance Program is voluntary and illustrates a company's efforts to use effective quality control in rhizome production and marketing. The services and records generated under this system provide quality assurance for every customer. This program provides an unbiased quality control system of the items described below and rhizomes carrying the green "QA" tag have met the minimum standards set out below and in **Appendix D**. Aloterra Energy's "limited membership" designation and participation in OSIA's Quality Assurance program is based only on the genetic purity of the miscanthus giganteus and includes Aloterra's commitment to follow specific quality control measures in the harvest, transport, and planting of its rhizomes. Specifically, Aloterra has agreed to the items set out in **Appendix D**, which include field inspections, botanical description and origin confirmation, field history, agreed distance from other miscanthus varieties, the proper cleaning and storage of equipment, head sample collection to test for viability, and proper record keeping of all of the above with an agreement to inspections without notice.

Another potential impact of giant miscanthus plantings is the potential for spread or invasion in areas that are not intentionally planted or propagated. Based on numerous published studies, the likelihood of rapid growth in intentionally planted areas or invasion to areas where giant miscanthus has not been deliberately planted appears low. For example, weed risk assessments conducted on giant miscanthus compared to other potential bioenergy crops such as giant reed, switchgrass, *Eucalyptus* species, and *Jatropha* (i.e., a deciduous succulent plant) have concluded the risk of invasiveness in the United States is low (Barney and DiTomaso 2008, Gordon et al. 2011).

Published research studies have shown a slow growth rate of intentionally planted giant miscanthus rhizomes of approximately five cm per year (approximately two inches) in Europe (Jørgensen 2011), but those studies focused on rhizome growth from deliberately planted giant miscanthus, which is an expected characteristic in deliberately planted areas and not consistent with an invasion. Unpublished data provided by ARS indicates giant miscanthus tillers and rhizomes have a potential maximum rate of growth in Illinois from established plants of 1.2 meters (m) per year (approximately four feet) (Davis, unpublished data, 2011). In the event, giant miscanthus does escape, eradication studies indicate spring tillage followed by glyphosate application was successful in eliminating 95 percent of aboveground biomass after the first application (Anderson et al. 2011).

Another potential, but secondary impact, is the potential for giant miscanthus plantings to provide an additional host plant for crop pests such as the western corn rootworm. Results of a recent greenhouse and field study showed that planted giant miscanthus may support emergence of western corn rootworm eggs, although emergence on giant miscanthus was reduced compared to corn in field studies (Spencer and Raghu 2009).

The Project Sponsors will rely on a tiered approach coupled with adaptive management to monitor and manage any potential spread of giant miscanthus.

- **Contract Producer Trainings** - The Project Sponsors will coordinate biannual producer community trainings and resource sessions with local extension and TSPs to provide specific training on identification of western corn rootworm incidents.

- **Equipment Sanitizing** – As part of the agreement with the OSIA for quality assurance the Project Sponsors have agreed that all equipment will be cleaned to ensure that no unintentional release of rhizomes would occur during or after transport of live rhizomes. All rhizomes would be contained within bags on pallets for shipments that leave a producer's property destined for any other location.
- **Monitoring of Buffer Areas by Contract Producers-** The first tier will rely on individual producers to monitor and report any detections of giant miscanthus spread beyond a specified monitoring buffer outside the planted areas. The Project Sponsors have indicated that typical fields have an existing buffer of woody vegetation or other areas that are not actively planted up to the fence or property line, so a monitoring buffer of a minimum width beyond the planted areas with maximum buffer width determined by site-specific conditions as determined within the Conservation Plan, these buffers will be monitored every other year, at a minimum.
- **Minimum Setback/Buffer Distance** - Although published data on the maximum rate of giant miscanthus rhizome spread indicates five cm per year (two inches) may be expected, the FSA, in consultation with both NRCS and ARS, have elected to implement the following setbacks for giant miscanthus with the purpose of the setback/buffer being to manage the giant miscanthus stand to prevent unintentional spread. The contract producer would follow all local, State, and/or Federal regulations for containment of biomass plantings in existence at the time of the development of the producer's Conservation Plan or through an amendment of the Conservation Plan initiated by the producer and approved by FSA and NRCS, if determined appropriate for the site-specific conditions. If no such guidance exists, minimum procedures to prevent unintentional spread of giant miscanthus shall include:
    - Establish or maintain a minimum 25 feet of setback/buffer around a giant miscanthus stand, unless the field is adjacent to existing cropland or actively managed pasture with the same producer.
    - Setback/buffer areas may be planted to an annual row crop such as corn or soybeans; may be planted to a site-adapted, perennial cool-season or warm season forage or turf grass; may be kept in existing vegetation, or kept clear by disking, rotovating, or treating with a non-selective burn down herbicide at

least once a year. The method used may be dependent on slope and the potential for erosion.

- **Action if Unintentionally Spread is Identified** - In the event that giant miscanthus is detected within the field monitoring buffer, each enrolled producer will be contractually obligated to report this to the Project Sponsors, along with their plans for control and eradication. In the event the producer is unable or unwilling to implement control efforts, a second tier will be followed, whereby the Project Sponsors assume responsibility for applying chemical control on the producer's acres enrolled under BCAP and will subsequently deduct the associated cost from the producer's yield payment as described in the producer's enrollment contract. All chemical treatment applications would be applied during proper environmental conditions under the supervision of a licensed or trained pesticide applicator consistent with Federal and State guidelines.
- **Contract Producer Annual Report and Project Area Annual Reporting** – Beginning in year two after the first monitoring cycle is complete, annual monitoring reports will include the number of producers where potential giant miscanthus spreads were documented, the distance detected from areas planted, years since planting, and any additional structured data determined appropriate by ARS as continual monitoring occurs. FSA, NRCS, ARS, and the Project Sponsors will evaluate data on the potential spread of giant miscanthus and determine whether additional adaptive monitoring and management is required to mitigate potential environmental impacts.
- **Long-Term Eradication Strategy** - At the end of the project contract or at the termination of the contract between the producer and the Project Sponsors, the producer contracts would allow for either party, the producer or Project Sponsors, to eradicate giant miscanthus within the contracted acres at the termination of the contract.

To address potential crop pest and disease outbreaks such as the western corn rootworm, an IPM Plan will be developed as part of each producer's Conservation Plan. The biannual producer community meetings will include updates on any new or emerging pests or diseases to assist in early detection and reporting for effective treatment. The IPM Plan will also follow a tiered approach, similar to that described above for detection of potential vegetative spread.

- **Monitoring of Buffer Areas by Contract Producers** - In the first tier, producers will be required to annually survey their fields for potential pest and disease outbreaks.
- **Contract Producer Treatment of Pest and Diseases** - In the event that pests or diseases are detected, the producer will be contractually obligated to notify the Project Sponsors and to treat or control the pest or disease on the producer's acres enrolled under BCAP.
- **Project Sponsors Treatment of Pest and Diseases** - In the event that the producer is unable or unwilling to control and treat the pest or disease, the second tier approach will be for the Project Sponsors to assume responsibility to treat the affected producer's acres enrolled under the BCAP program and to deduct any costs from the producer's yield payment that will be described in the producer's contract. Courtesy notification of immediately adjacent land owners would also be required. All chemical treatment applications would be applied during proper environmental conditions under the supervision of a licensed or trained pesticide applicator consistent with Federal and State guidelines.

6.3.5.2 Wildlife

Potential impacts on wildlife and biodiversity may include habitat loss associated with conversion of lands currently idle, in pasture, or in hay, to giant miscanthus; reduced winter cover and food supplies on lands currently enrolled in row crops; impacts on nesting grassland bird populations; and additional habitat fragmentation in areas where field sizes are larger and more contiguous. Potential impacts due to habitat loss are expected to be mitigated using similar measures as described above to assess land use change to track and document the current status of any land converted to giant miscanthus under BCAP. The relatively low residual height left after harvesting giant miscanthus may reduce winter cover and affect nesting conditions for grassland birds such as northern bobwhites (*Colinus virginianus*), eastern meadowlarks (*Sturnella magna*), and grasshopper sparrows (*Ammodramus savannarum*). Finally, conversion of larger areas dominated by a single land use type (i.e., idle land, pastureland, or hayland) may have proportionally larger impacts on habitat fragmentation in project areas.

- **Monitoring of Buffer Areas and Fields by Contract Producers** - Mitigation measures will primarily focus on monitoring the conversion of winter cover and food sources for wildlife as a result of reduced residual or crop stubble height after harvest.
- **Contract Producer Annual Report and Project Area Annual Reporting** – As part of the enrollment process, individual producers will be asked to report any incidental data (e.g., casual observation, hunting data, or supplemental feeding data) or existing systematic data (i.e., agency counts or surveys) on wildlife winter cover and food use. Annual reporting will include the incidental or existing systematic data on wildlife use of winter cover or food use from any of the same data sources along with reported residual and stubble height on each field after harvest. In the event that unexpected significant changes in wildlife winter cover or winter food sources are detected, FSA will work with NRCS and the Project Sponsors and appropriate State fish and wildlife agencies to determine additional agreed upon mitigation measures to offset potentially significant impacts and how to monitor those agreed upon measures.

6.3.5.3 Protected Species

Potential impacts on protected species, such as Federally threatened or endangered species are possible in those areas where Critical Habitat has been designated, suitable habitat exists within the documented range of the species, or known records have been documented. Additionally, state-listed, protected, or tribal-listed species will be analyzed for potential impacts, as well. Compliance with existing regulations, including the Endangered Species Act, will be accomplished with the assistance of NRCS through the Environmental Screening worksheet and subsequent resource agency consultation, if deemed necessary, with FSA being the lead agency.

- **Contract Producer Conservation Plans** - Mitigation measures will follow a tiered structure whereby individual producers who enroll land in close proximity to sensitive habitat such as streams, wetlands, or riparian zones are required to implement additional BMPs and/or NRCS CPS as part of their Conservation Plan and potentially work with FSA to complete appropriate resource agency consultations, if necessary. Such a tiered approach is expected to be used throughout the monitoring program to ensure additional measures are taken when sensitive resources are present or in close proximity. Potential examples of BMPs for these areas would include buffers to maintain specific planting distances, conservation buffer strips or plantings, silt fencing or other erosion control measures, potential application of no-till establishment methods to address sedimentation impacts, and use of appropriately labeled herbicides and/or pesticides to protect aquatic or other sensitive species.

6.3.6 Soil Resources

Potential impacts on soil resources may include soil erosion and loss as a result of field preparation and planting in giant miscanthus. Compared to land currently in traditional row crops, potential soil erosion and loss is expected to be temporary and short-term, primarily associated with the establishment phase compared to more intensive annually tilled crops. Compared to land currently idle or in pasture or hay, potential soil erosion and loss may be slightly higher but still temporary and short-term associated with establishment. Regardless of current land use, long-term benefits of soil retention with established rhizomes and carbon soil sequestration towards the middle of the 15-year maintenance period on enrolled fields are expected to off-set temporary and short-term increases in soil erosion and loss that may also be associated with reduced carbon sequestration.

Mitigation will include a tiered structure that uses BMPs associated with no-till planting methods for proposed project areas in close proximity to sensitive habitats such as streams, wetlands, or other water bodies.

- **Contract Producer Conservation Plans** - Specific mitigation requirements will be developed for each producer and included in the producer’s Conservation Plan in conjunction with BMPs and/or existing NRCS CPS, applicable to the individual site. It is expected that mitigation will be consistent with the BMPS and/or NRCS CPS on management of soil erosion, including the guidelines on management within high concentration flow areas and HEL.
- **Contract Producer Annual Report and Project Area Annual Reporting** – The Project Sponsors will collect information regarding the BMPs and/or NRCS CPS that are being applied by each producer and will include that information in annual reports.

Adaptive monitoring and management is expected to be used to track the effectiveness of carbon sequestration over the life of a given giant miscanthus planting (i.e., up to 15 years). In addition, the Project Sponsors anticipate selling carbon credits, or similar type credits, from the sequestration benefits in markets such as the European Exchange, which will require independent, third-party verification and data collection for verification. The Project Sponsors have designed the project for the purpose of abating emissions of GHG to the greatest extent possible. As such, the Project Sponsors have commissioned a GHG emission reduction feasibility study to establish technical viability, environmental integrity, and optimal registration path for offset development. This process is meant to ensure adherence to internationally accepted norms for project based GHG accounting, including comprehensive Project Design Documentation (PDD) and third party validation/verification procedures, as set out by the World Resources Institute (WRI) GHG Accounting Protocol, International Standards Organization (ISO) 14064, Intergovernmental Panel on Climate Change (IPCC) Guidelines for GHG Inventories, IPCC Good Practice Guidance for Land Use, Land-Use Change and Forestry, and precedents under approved United National Framework Convention on Climate Change (UNFCCC) Clean Development Mechanism (CDM) modalities and methodologies. As a result, the GHG reduction associated with the proposed project will inherently take into account vital programmatic considerations such as baseline emissions, implementation management, and planned monitoring of the program over their entire crediting periods. Data collected for verification will be provided to FSA, and other appropriate USDA agencies, such as ARS and NRCS, as needed, as part of annual reporting as soon as it begins and is available.

6.3.7 Water Quality and Quantity

6.3.7.1 Water Quality

Potential impacts on water quality include short-term and temporary increases in nutrient and fertilizer runoff during establishment and monitoring. Compared to land currently in traditional row crops, conversion to giant miscanthus is expected to result in less nutrient and fertilizer runoff. Compared to land currently idle or in pasture or hay, conversion to giant miscanthus may result in slight but short-term and temporary increases in nutrient and fertilizer runoff. In general, fertilizer application is only recommended starting in year three and only on an as-needed basis until the maintenance period begins, so the potential temporary increase is further expected to be reduced compared to annual inputs to traditional crops. However, long-term declines in nutrient loss (i.e., phosphorus and nitrogen) during the maintenance period (years three to 15) are likely to off-set temporary and short-term increases in nutrient leaching or runoff. The anticipated fertilizer application rate is also expected to be substantially lower compared to traditional row crops, but may be higher than idle or pasture or hay land.

- **Contract Producer Conservation Plans** - Potential impacts to water quality will be mitigated through the development of the Conservation Plans for each producer based on existing BMPs and/or NRCS CPS or newer variants that may be developed specifically for BCAP, as adopted by FSA. The less frequent application of fertilizer compared to traditional crops will further reduce potential impacts on water quality due to runoff.
- **Contract Producer Trainings** - The Project Sponsors will include training and resources on soil testing and fertilizer amendments to minimize unnecessary additions during their biannual producer community meetings.
- **Contract Producer Annual Report and Project Area Annual Reporting** – Annual reporting will include the rate, type, frequency, and cost of fertilizer application on a per acre basis for each field enrolled. In the event that FSA determines potential water quality impacts are not being appropriately mitigated, FSA and the Project Sponsors will work with the producer cooperatives to provide further training to implement BMPs to minimize unnecessary inputs.

6.3.7.2 Water Quantity

Potential impacts on water quantity may arise from surface or groundwater supply depletion if giant miscanthus increases the amount of water withdrawal relative to current land uses (traditional row crops or idle, pasture, or hayland). Giant miscanthus is expected to be able to attain all the required water for the growing season from within the rooting zone of the plant and will not require irrigation at any time except this first program year. This first program year requires irrigation due to the late planting of the rhizomes. In this first program year, all planted fields would be fields normally irrigated to grow other crops according to the Project Sponsors and is part of their criteria for acceptance in this initial year. No increase in the volume of water used to irrigate fields is anticipated. In the following years, no irrigation will occur. After the first year, giant miscanthus plantings should have either no change to the amount irrigated acres in the project areas or result in a net reduction in irrigated acres within the project areas; thereby, reducing irrigation water demand, since the plantation acres would not be irrigated for giant miscanthus. In the Paragould proposed project area, a net reduction in water withdrawal will be particularly important to mitigate existing aquifer depletion associated with unsustainable farming practices by traditional row crops (e.g., rice, corn, and beans) by providing an economically viable alternative.

- **Contract Producer Conservation Plans** - Mitigation will include BMPs and/or existing NRCS CPS that minimize water use and will be incorporated into each producer's Conservation Plan.
- **Contract Producer Annual Report and Project Area Annual Reporting** – Annual reporting will include the total number of producers enrolled in each project area, the BMPs or existing NRCS CPS utilized, and their average and total yield per field enrolled.

7 REFERENCES

Acroglu, M., and A.S. Aksoy, 2005. The Cultivation and Energy Balance of *Miscanthus x giganteus* Production in Turkey. Biomass and Bioenergy Vol. 29, pp. 42-48.

Aloterra Energy LLC. 2011 Confidential Project Area Proposal, Ashtabula, Ohio and Pennsylvania.

Álvaro-Fuentes, J., J. Lampurlanés, and C. Cantero-Martínez. 2009. Alternative Crop Rotations under Mediterranean No-Tillage Conditions: Biomass, Grain Yield, and Water-Use Efficiency. Agronomy Journal. Vol. 101, No. 5, pp. 1227-1233.

Anderson, E.K., T.B. Voigt, G.A. Bollero, and A.G. Hager. 2011. Controlling *Miscanthus x giganteus*. *Miscanthus x giganteus* response to tillage and glyphosate. In Preparation for Weed Technology.

Anderson, E.K., A.G. Hager, T.B. Voigt, and G.A. Bollero, 2009. Herbicide Phytotoxicity and Eradication Studies in Miscanthus x giganteus. University of Illinois at Urbana-Champaign, Illinois Council on Food, and Agricultural Research Special Research Initiative. January.

Angelini, L.G., L. Ceccarini, N.N. Di Nasso, and E. Bonari, 2009. Comparison of *Arundo donax* L. and *Miscanthus x giganteus* in a Long-Term Field Experiment in Central Italy: Analysis of Productive Characteristics and Energy Balance. Biomass and Bioenergy Vol. 33, pp. 635-643.

Angus, J.F., and A.F. van Herwaarden. 2001. Increasing Water Use and Water Use Efficiency in Dryland Wheat. Agronomy Journal. Vol. 93. Mar-Apr. pp. 290-298.

Arkansas Department of Environmental Quality (ADEQ). 2011. Air Division. http://www.adeq.state.ar.us/air/default.htm. Accessed March 2011.

Arkansas Historic Preservation Program. 2011. Federally Recognized Tribes Associated with Arkansas. http://www.arkansaspreservation.com/archaeology-section106/tribes/. Accessed April 2011.

Armstrong, J. 2011. Personal Communication with Scott Coye-Huhn, Aloterra Energy LLC. Ohio Seed Improvement Association. 04 April.

Barney, J.N., and J.M. DiTomaso, 2008. Nonnative Species and Bioenergy: Are We Cultivating the Next Invader? BioScience Vol. 58, No. 1, pp. 64-70. January.

Barney, Jacob. nd. Identifying the invasive potential of biofuel crops. University of California – Davis. http://www.berkeleybioeconomy.com/wp-content/uploads//2010/07/Barney_Berkeley_2010_shorter.pdf. Accessed April 2011.

Beale, C.V., and S.P. Long, 1997. Seasonal Dynamics of Nutrient Accumulation and Partitioning in the Perennial C_4-Grasses *Miscanthus x giganteus* and *Spartina cynosuroides*. Biomass and Bioenergy Vol. 12, No. 6, pp. 419-428.

Beale, C.V., J.I.L. Morison, and S.P. Long, 1999. Water Use Efficiency of C_4 Perennial Grasses in a Temperate Climate. Agricultural and Forest Meteorology Vol. 96, pp. 103-115.

Bellamy, P.E., P.J. Croxton, M.S. Heard, S.A. Hinsley, L. Hulmes, S. Hulmes, P. Nuttall, R.F. Pywell, and P. Rothery, 2009. The Impact of Growing *Miscanthus* for Biomass on Farmland Bird Populations. Biomass and Bioenergy Vol. 33, pp. 191-199.

Bennett, D. 2007. It takes a lot of water to grow a corn crop. Southeast Farm Press. http://southeastfarmpress.com/print/it-takes-lot-water-grow-corn-crop. Accessed May 2011.

Beuch, S., B. Boelcke, and L. Belau, 2000. Effect of the Organic Residues of *Miscanthus x giganteus* on the Soil Organic Matter Level of Arable Soils. J. Agronomy & Crop Science Vol. 183, pp. 111-119.

Blanco-Canqui, H., 2010. Energy Crops and Their Implications on Soil and Environment. Agronomy Journal Vol. 102, pp.403-419. January.

Bradshaw, J.D., J.R. Prasifka, K.L. Steffey, and M.E. Gray, 2010. First report of field populations of two potential aphid pests of the bioenergy crop miscanthus x giganteus. Florida Entomologist Vol. 93(1), pp. 135-137.

Brady, N. and R. Weil. 1996. The Nature and Properties of Soils, 11th ed. Prentice-Hall, Inc., Upper Saddle River, NJ.

Bremer, D.J., L.M. Auen, J.M. Ham, and C.E. Owensby. 2001. Evapotranspiration in a Prairie Ecosystem: Effects of Grazing by Cattle. Agronomy Journal. Vol.93. Mar-Apr. pp. 338-348.

Brye., K.R., J.M. Norman, L.G. Bundy, and S.T. Gower. 2000. Water-Budget Evaluation of Prairie and Maize Ecosystems. Agronomy Journal. Vol. 64. Mar-Apr. pp. 715-724.

Bureau of Indian Affairs. 2010. Indian Entities Recognized and Eligible to Receive Services from the United States Bureau of Indian Affairs. http://www.bia.gov/idc/groups/xraca/documents/text/idc011463.pdf. Accessed April 2011.

Burner, D.M., T.L. Tew, J.J. Harvey, and D.P. Belesky, 2009. Dry Matter Partitioning and Quality of *Miscanthus*, *Panicum*, and *Saccarum* genotypes in Arkansas, USA. Biomass and Bioenergy Vol. 33, pp. 610-619.

Byrd, G.T., and P.A. May II. 2000. Physiological Comparisons of Switchgrass Cultivars Differing in Transpiration Efficiency. Crop Science. Vol. 40 Sep-Oct. pp. 1271-1277.

Cadoux, S., A.B. Riche, N.E. Yates, and J.M. Machet, 2011. Nutrient Requirements of *Miscanthus x giganteus*: Conclusions from a Review of Published Studies. Biomass and Bioenergy pp.1-9.

Calder, I. R., Reid, I, Nisbet, T. R. and Green, J.C. (2003) Impact of lowland forests *in* England on water resources: Application of the Hydrological Land Use Change (HYLUC) model *Wat. Resour. Res*., **39**, doi:10.1029/2003WR002042.

Caslin, B., J. Finnan, and L. Easson, 2010. Miscanthus Best Practice Guidelines. Agriculture and Food Development Authority, Teagasc, and Agri-Food and Bioscience Institute.

Caveny, J.D. 2011. Enhancing Wildlife Habitat by Growing the Illinois Clone of Miscanthus x giganteus for Baseload Renewable Energy.

Christian, D.G., A.B. Riche, and N.E. Yates, 2008. Growth, Yield and Mineral Content of *Miscanthus x giganteus* Grown as a Biofuel for 14 Successive Harvests. Industrial Crops and Products Vol. 28, pp. 320-327.

Christian, D.G., M.J. Bullard, and C. Wilkins, 1997. The Agronomy of Some Herbaceous Crops Grown for Energy in Southern England. Aspects of Applied Biology Vol. 49, pp.41-51.

Christian, D.G., and A.B. Riche, 1998. Nitrate Leaching Losses Under *Miscanthus* Grass Planted on a Silty Clay Loam Soil. Soil Use and Management Vol. 14, pp. 131-135.

Clifton-Brown, J.C., and I. Lewandowski, 2000. Overwintering Problems of Newly Established Miscanthus Plantations can be Overcome by Identifying Genotypes with

Improved Rhizome Cold Tolerance. New Phytologist Vol. 148, No. 2, pp. 287-294. November.

Clifton-Brown, J.C., and I. Lewandowski, 2002. Screening *Miscanthus* Genotypes in Field Trials to Optimise Biomass Yield and Quality in Southern Germany. European Journal of Agronomy Vol. 16, pp. 97-110.

Clifton-Brown, J.C., P.F. Stampfl, and M.B. Jones, 2004. *Miscanthus* Biomass Production for Energy in Europe and its Potential Contribution to Decreasing Fossil Fuel Carbon Emissions. Global Change Biology Vol. 10, pp. 509-518.

Clifton-Brown, J.C., J. Breuer, and M.B. Jones, 2007. Carbon Mitigation by the Energy Crop, *Miscanthus*. Global Change Biology Vol. 13, pp. 2296-2307.

Clifton-Brown, J.C., and I. Lewandowski, 2002. Screening Miscanthus Genotypes in Field Trials to Optimize Biomass Yield and Quality in Southern Germany. European Journal of Agronomy Vol. 16, pp. 97-110.

Cosentino, S.L., C. Patanè, E. Sanzone, V. Copani, and S. Foti, 2007. Effects of Soil Water Content and Nitrogen Supply on the Productivity of *Miscanthus x giganteus* Greef ef Deu. In a Mediterranean Environment. Industrial Crops and Products Vol. 25, pp. 75-88.

Council on Environmental Quality (CEQ). 2011. Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impacts. Memorandum for Heads of Federal Departments and Agencies. Executive Office of the President. January 14. http://ceq.hss.doe.gov/current_developments/docs/Mitigation_and_Monitoring_Guidance_14Jan2011.pdf. Accessed March 2011.

Cranfield University (2001a) *Review of the effects of energy crops on hydrology,* Ministry of Agriculture, Fisheries and Food, Final report NF0416 pp. 29.

Danalatos, N.G., S.V. Archontoulis, and I. Mitsios, 2007. Potential Growth and Biomass Productivity of *Miscanthus x giganteus* as Affected by Plant Density and N-Fertilization in Central Greece. Biomass and Bioenergy Vol. 31, pp. 145-152.

Dauber, J., M.B. Jones, and J.C. Scott. 2010. The impact of biomass crop cultivation on temperate biodiversity. Bioenergy 2:289-309.

Davis, A.S, R.D. Cousens, J. Hill, R.N. Mack, D. Simberloff, and S. Raghu. 2010. Screening bioenergy feedstock crops to mitigate invasion risk. Frontiers in Ecology and the Environment; 8(10): 533-539.

Davis, S.C., W. J. Parton, F.G. Dohleman, C.M. Smith, S. Del Grosso, A.D. Kent, and E.H. DeLucia, 2010. Comparative Biogeochemical Cycles of Bioenergy Crops Reveal Nitrogen-Fixation and Low Greenhouse Gas Emissions in a *Miscanthus x giganteus* Agro-Ecosystem. Ecosystems Vol. 13, pp. 144-156.

Davis, T. 2011. Personal Communication. Arkansas Department of Environmental Quality. Air Division. Air Quality Planning. Telephone Interview. March 31.

DiTomaso, J.M., J.N. Barney, and A.M. Fox, 2007. Biofuel Feedstocks: The risk of future invasions. CAST Commentary, QTA2007-1, November 2007.

Dohleman, F.G., and S.P. Long, 2009. More Productive Than Maize in the Midwest: How Does Miscanthus Do It? Plant Physiology Vol. 150, pp. 2104-2115. August.

Donnelly, A., D. Styles, J. Fitzgerald, and J. Finnan, 2010. A Proposed Framework for Determining the Environmental Impact of Replacing Agricultural Grassland with *Miscanthus* in Ireland. Global Change Biology Bioenergy pp. 1-17.

Downs, J. 2011. Personal Communication. Missouri Department of Natural Resources. Air Pollution Control Program. Monitoring. Telephone Interview. March 31.

Environmental Protection Agency (EPA). 2011. Level III Ecoregions of the Continental United Sates. National Health and Environmental Effects Research Laboratory. January.

Environmental Protection Agency (EPA). 2011. The Green Book Nonattainment Areas of Criteria Pollutants. Pennsylvania. http://www.epa.gov/oar/oaqps/greenbk/ancl.html#PENNSYLVANIA. Accessed April 2011.

Environmental Protection Agency (EPA). 2010. EPA Office of Water: 303(d) Listed Impaired Waters NHD Dataset. http://www.epa.gov/waters/data/downloads.html#303(d) Listed Impaired Waters. Accessed March 2011.

Environmental Protection Agency (EPA). 2009. What is a Watershed? Watersheds. http://water.epa.gov/type/watersheds/whatis.cfm. Accessed March 2011.

Environmental Protection Agency (EPA). 2008. 303(d) List. http://www.epa.gov/reg3wapd/tmdl/303d.htm. Accessed March 2011.

Environmental Protection Agency (EPA). 2006. 2005 Emission Inventory for Ohio. http://www.epa.gov/ttnnaaqs/pm/docs/2005_ei_ohio.xls. Accessed April 2011.

Environmental Protection Agency (EPA). 1998. National Air Pollutant Emission Trends Procedures Document, Sections 1, 4, and 6 1985-1996 Projections 1999-2010. EPA-454/R-98-008. June. Office of Air Quality Planning and Standards. http://nepis.epa.gov/Exe/ZyNET.exe/00003677.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1995+Thru+1999&Docs=&Query=454R98008&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=pubnumber%5E%22454R98008%22&QFieldYear=&QFieldMonth=&QFieldDay=&UseQField=pubnumber&IntQFieldOp=1&ExtQFieldOp=1&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C95thru99%5CTxt%5C00000010%5C00003677.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=10&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=p%7Cf&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL#. Accessed May 2011.

Ercoli, L., M. Mariotti, A. Masoni, and E. Bonari, 1999. Effect of Irrigation and Nitrogen Fertilization on Biomass Yield and Efficiency of Energy Use in Crop Production of *Miscanthus*. Field Crops Research Vol. 63, pp.3-11.

Fargione, Joe, 2010. Is bioenergy for the birds? An evaluation of alternative future bioenergy landscapes. PNAS Vol. 107 (44), pp. 18745-18746.

Fernado, A.L, Duarte, M.P, Boleo, S. and Mendes, B., 2010. Environmental impact assessment of energy crops cultivation in Europe. Biofuels, Bioprod. Bioref. Vol. 4, pp. 594-604.

Fernando, A.L., V. Godovikova, and J.F.S. Oliveira, 2004. *Miscanthus x giganteus*: Contribution to a Sustainable Agriculture of a Future/Present. Oriented Biomaterial Materials Science Forum Vol. 455-456, pp. 437-441.

Finch, J.W. and Harding, R.J. (1998) A comparison between reference transpiration and measurements of evaporation for a riparian grassland site *Hydrol. Earth Syst. Sci.,* 2,101-108.

Finch, J.W, A Karp, D P M McCabe, S Nixon,A B Riche and A P Whitmore. 2009. Miscanthus, short-rotation coppice and the historic environment. Prepared by the Centre for Ecology & Hydrology and Rothamsted Research. Prepared for English Heritage

Finch, J. W. and Riche, A. B. (2008) Soil water deficits and evaporation rates associated with *Miscanthus* in England. *Aspects of Applied Biology* **90**, Biomass and Energy Crops III, 295-302.

Food and Agriculture Organization of the United Nations. 2005. Water for Food and Ecosystems Glossary. http://www.fao.org/ag/wfe2005/glossary_en.htm. Accessed April 2011.

Frank, A.B. 2003. Evapotranspiration from Northern Semiarid Grasslands. Agronomy Journal. Vol. 95. Nov-Dec. pp. 1504-1509.

Gardiner, M.A., J.K. Tuell, R. Isaacs, J. Gibbs, J.A. Ascher, and D.A. Landis. 2010. Implications of Three Biofuel Crops for Beneficial Arthropods in Agricultural Landscapes. Bioenery. Res. 3:6-19.

Gordon, D.R., K.J. Tancig, D.A. Onderdonk, and C.A. Gantz, 2011. Assessing the Invasive Potential of biofuel Species Proposed for Florida and the United States Using the Australian Weed Risk Assessment. Biomass and Bioenergy Vol. 35, pp. 74-79.

Hall, R. 2003. Grasses for Energy Production Hydrological Guidelines. DTI New and Renewable Energy Programme. http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk/files/file14946.pdf . Accessed May 2011.

Hansen, E.M., B.T. Christensen, L.S. Jensen, and K. Kristensen, 2004. Carbon Sequestration in Soil Beneath Long-Term *Miscanthus* Plantations as Determined by ^{13}C Abundance. Biomass and Bioenergy Vol. 26, pp. 97-105.

Hattendorf, M.J., M.S. Redelfs, B. Amos, L.R. Stone, and R.E. Gwin, Jr. 1988. Comparative Water Use Characteristics of Six Row Crops. Agronomy Journal. Vol. 80. Jan-Feb. pp80-85.

Heaton, E.A., F.G. Dohleman, A.F. Miguez, J.A. Juvik, V. Lozovaya, J. Widholm, O.A. Zabotina, G.F. Mcisac, M.B. David, T.B. Voigt, N.N. Boersma, and S.P. Long, 2010.

Miscanthus: A Promising Biomass Crop. Advances in Botanical Research Vol. 56, pp. 75-137.

Heaton, E.A., J. Clifton-Brown, B. Voigt, B. Jones, and S.P. Long, 2004. *Miscanthus* for Renewable Energy Generation: European Union Experience and Projections for Illinois. Mitigation and Adaptation Strategies for Global Change Vol. 9, pp. 433-451.

Hickman, G.C., A. VanLoocke, F.G. Dohleman, and C.J. Bernacchi. 2010. A comparison of canopy evapotranspiration for maize and two perennial grasses identified as potential bioenergy crops. GCB Bioenergy, 2: 157-168.

Hodkinson, T.R., and S. Renvoize, 2001. Nomenclature of *Miscanthus x giganteus* (*Poaceae*). Kew Bulletin Vol. 56, No. 3, pp. 759-760.

Howell, T.A., J.A. Tolk, A.D. Schneider, and S.R. Evett. 1998. Evapotranspiration, Yield, and Water Use Efficiency of Corn Hybrids Differing in Maturity. Agronomy Journal Vol. 90 No. 1: pp 3-9, January-February.

Howell, T.A., S.R. Evett, J.A. Tolk, A.D. Schneider, and J.L. Steiner. 1996. Evapotranspiration of Corn -- Southern High Plains. pp. 158-166, *In* C.R. Camp, E.J. Sadler, and R.E. Yoder (eds.) *Evapotranspiration and Irrigation Scheduling*, Proceedings of the International Conference, Nov. 3-6, 1996, San Antonio, TX, American Society of Agricultural Engineers, St. Joseph, MI.

James, L.K., S.M. Swinton, and D. Pennington. 2009. Profitability of Converting to Biofuel Crops. Michigan State University Extension. Extension Bulletin E-3084. December. http://bioenergy.msu.edu/economics/E3084.pdf, and http://bioenergy.msu.edu/economics/miscanthus.xls. Accessed March 2011.

Jezkowski, S., K. Glowacka, Z. Kaczmarek, 2011. Variation on Biomass Yield and Morphological Traits of Energy Grasses from the Genus *Miscanthus* During the First Years of Crop Establishment. Biomass and Bioenergy Vol. 35, pp. 814-821.

Jodl, S., A. Eppel-Htz, and K. Marzini, 1998. Examination of the Ecological Value of *Miscanthus* Expanses-Faunistic studies. Biomass for Energy and Industry; Proc 10th EU Bioenergy Conference, Wuzbury, Germany Carmen Publishers, Rimpar, Germany pp. 48-53.

Johnson, B.L. and T.L. Henderson. 2002. Water Use Patterns of Grain Amaranth in the Northern Great Plains. Agronomy Journal. Col. 94. Nov-Dec. pp. 1437-1443.

Jørgensen, U., 2011. Benefits Versus Risks of Growing Biofuel Crops: the Case of *Miscanthus*. Current Opinion in Environmental Sustainability pp. 324-330.

Jørgensen, U., and H.-J. Muhs. *Miscanthus* Breeding and Improvement. pp. 68-85.

Jørgensen, U., and K. Schelde. 2001. Energy Crop Water and Nutrient Use Efficiency. Danish Institute of Agricultural Sciences (DIAS) Department of Crop Physiology and Soil Science. The International Energy Agency. IES Bioenergy Task 17, Short Rotation Crops. http://www.p2pays.org/ref/17/16275.pdf. Accessed May 2011.

Kahle, P., S. Beuch, B. Boelcke, P. Leinweber, and H.R. Schulten, 2001. Cropping of Miscanthus in Central Europe: Biomass Production and Influence on Nutrient and Soil Organic Matter. European Journal of Agronomy Vol. 15, pp. 171-184.

Lamm,F.R., L. R. Stone, and D. M. O'Brien. 2007. Crop production and economics in northwest Kansas as related to irrigation capacity. Applied Engineering in Agriculture. Vol. 23(6): 737-745 .

Landis, D.A. and B.P. Werling. 2010. Arthropods and biofuel production systems in North America. Insect Science. 17:220-236.

Lewandowski, I., J.C. Clifton-Brown, J.M.O. Scurlock, and W. Huisman, 2000. Miscanthus: European Experience with a Novel Energy Crop. Biomass and Bioenergy Vol. 19, pp. 209-227.

Lewandowski, I., and A. Heinz, 2003. Delayed Harvest of *Miscanthus*-Influences on Biomass Quantity and Quality and Environmental Impacts of Energy Production. European Journal of Agronomy Vol. 19, pp. 45-63.

Lewandowski, I., J.M.O. Scurlock, E. Lindvall, and M. Christou, 2003. The Development and Current Status of Perennial Rhizomatous Grasses as Energy Crops in the US and Europe. Biomass and Bioenergy Vol. 25, pp. 335-361.

Linde-Laursen, I.B., 1993. Cytogenetic Analysis of *Miscanthus* 'Giganteus', an Interspecific Hybrid. Hereditas Vol. 119, pp. 297-300. June.

Love, B.J., and A.P. Nejadhashemi, 2011. Water Quality Impact Assessment of Large-Scale Biofuel Crops Expansion in Agricultural Regions of Michigan. Biomass and Bioenergy pp. 1-17.

Low, T., and C. Booth, 2007. The Weedy Truth About Biofuels. Invasive Species Council. October.

McElroy, M. 2005. Hybrid Grass May Prove to be Valuable Fuel Source. University of Illinois News Bureau. 27 September. http://news.illinios.edu/news/05/0927miscanthus.html. Accessed May 2011.

McIsaac, G.F., M.B. David, and C.A. Mitchell, 2010. Miscanthus and Switchgrass Production in Central Illinois: Impacts on Hydrology and Inorganic Nitrogen Leaching. Journal of Environmental Quality Vol. 39, pp. 1790-1799.

McKervey, Z., V.B. Woods, and D.L. Easson. 2008. *Miscanthus* as an energy crop and its potential for Northern Ireland. Agri-Food and Biosciences Institute Global Research Unit. May. http://www.afbini.gov.uk/afbi_miscanthus.pdf. Accessed May 2011.

Maman, N., D.J. Lyon, S.C. Mason, T.D. Galusha, and R. Higgins. 2003. Pearl Millet and Grain Sorghum Yield Response to Water Supply in Nebraska. Agronomy Journal. Vol. 95. Nov-Dec. pp. 1618-1624.

Marsalis, M.A., V.G. Allen, C.P. Brown, C.J. Green. 2007. Yield and Nutritive Value of Forage Bermudagrass Grown Using Subsurface Drip Irrigation in the Southern High Plains. Crop Science. Vol. 47. May-June. pp. 1246-1254.

MFA Oil Biomass LLC. 2011. Confidential Project Area Proposal Aurora, Missouri.

MFA Oil Biomass LLC. 2011. Confidential Project Area Proposal Columbia, Missouri.

MFA Oil Biomass LLC. 2011. Confidential Project Area Proposal Paragould, Arkansas.

Miller, A.N., and M.J. Ottman. 2010. Irrigation Frequency Effects on Growth and Ethanol Yield in Sweet Sorghum. Agronomy Journal. Vol. 102, No. 1, pp. 60-70.

Missouri Department of Natural Resources. 2011a. Air Pollution Control Program. National Ambient Air Quality Standard Area Boundary Designations. http://www.dnr.mo.gov/env/apcp/naaqsboundarydesignations.htm. Accessed March 31.

Missouri Department of Natural Resources. 2011b. State Historic Preservation Office. http://www.dnr.mo.gov/shpo/sectionrev.htm. Accessed April 2011.

National Atlas. 2011. Federal and Indian Lands. http://www.nationalatlas.com/printable/fedlands.html#bia. Accessed April 2011.

New Zealand Environmental Risk Management Authority (NZERMA). 2007. Taharoa C Block Incorporation Application Decision Document. 17 September. http://www.ermanz.govt.nz/Documents/NOR06003-decision.pdf. Accessed May 2011.

Neukirchen, D., M. Himken, J. Lammel, U. Czypionka-Krause, and H.W. Olfs, 1999. Spatial and Temporal Distribution of the Root System and Root Nutrient Content of an Established *Miscanthus* Crop. European Journal of Agronomy Vol. 11, pp. 301-309.

Ng, T.L., J.W. Eheart, X. Cai, and F. Miguez, 2010. Modeling Miscanthus in the Soil and Water Assessment Tool 9 SWAT) to Stimulate Its Water Quality Effects As a Bioenergy Crop. Environmental Science Technology Vol. 44, pp. 7138-7144.

Nielsen, D.C., M.F. Vigil, and J.G. Benjamin. 2006. Forage Yield Response to Water Use for Dryland Corn, Millet, and Triticale in the Central Great Plains. Agronomy Journal. Vol. 98. Jul-Aug. pp. 992-998.

Norwood, C. 2001. Planting Date, Hybrid Maturity, and Plant Population Effects on Soil Water Depletion, Water Use, and Yield of Dryland Corn. Agronomy Journal. Vol. 93. Sep-Oct. pp. 1034-1042.

Ohio Department of Natural Resources (ODNR). 2011a Species A to Z Guide. Ohio Department of Natural Resources Division of Wildlife. http://www.dnr.state.oh.us/Home/species_a_to_z/SpeciesGuideIndex/tabid/6491/Default.aspx. Accessed March 2011.

Ohio Department of Natural Resources (ODNR). 2011b. Wetland History. Department of Natural Resources. http://www.ohiodnr.com/dnap/wetlands/history/tabid/1001/Default.aspx.

Ohio Environmental Protection Agency (OEPA). 2011. Division of Air Pollution Control. NAAQS Attainment Status. http://www.epa.state.oh.us/dapc/general/naaqs.aspx on. Accessed April 2011.

Ohio Environmental Protection Agency (OEPA). 2010. Clean Data Request. 01 April. http://www.epa.state.oh.us/dapc/SIP/annual.aspx. Accessed April 2011.

Ohio Historic Preservation Office. 2011. Section 106 Reviews. http://www.ohiohistory.org/resource/histpres/services/106LandingPage.html. Accessed April 2011.

Olson, T. 1971. Yield and Water Use by Different Populations of Dryland Corn, Grain Sorghum, and Forage Sorghum in the Western Corn Belt. Agronomy Journal. Vol. 63. Jan-Feb. pp. 104-106.

Pennsylvania Historical and Museum Commission. 2011. Project Review under Section 106 and Pa History Code. http://www.portal.state.pa.us/portal/server.pt/community/project_review_under_section_106_and_pa_history_code/3787. Accessed April 2011.

Penfold, B.M., D.C. Sullivan, S.B. Reid, and L.R. Chinkin. Nd. Development of Agricultural Dust Emissions Inventories for the Central States Regional Air Planning Association. http://www.epa.gov/ttn/chief/conference/ei14/session7/reid.pdf. Accessed May 2011.

Pimental, D. and N. Kounang. 1998. Ecology of Soil Erosion in Ecosystems. Ecosystems 1:416-426.

Pimentel, D., and J. Krummel, 1987. Biomass Energy and Soil Erosion: Assessment of Resource Costs. Biomass Vol. 14, pp. 15-38.

Pyter, R., T. Voigt, E. Heaton, F. Dohleman, and S. Long. nd. Growing Giant Miscanthus in Illinois. http://miscanthus.illinois.edu/wp-content/uploads/growersguide.pdf. Accessed May 2011.

Raghu, S., R.C. Anderson, C.C. Daehler, A.S. Davis, R.N. Wiedenmann, D. Simberloff, and R.N. Mack, 2006. Adding Biofuels to the Invasive Species Fire? Science Vol. 313, pp. 1742. September.

Quinn, L.D., D.P. Matlaga, J.R. Stewart, and A.S. Davis. 2011. Empirical Evidence of Long Distance Dispersal in *Miscanthus sinensis* and *Miscanthus X giganteus*. Invasive Plant and Science Management 4:142-150.

Ramsey, J., and D.W. Schemske, 1998. Pathways, Mechanisms, and Rates of Polyploid Formation in Flowering Plants. Annu. Rev. Ecol. Syst. Vol. 29, pp.467-501.

Richter, G.M., A.B. Riche, A.G. Dailey, S.A. Gezan, and D.S. Powlson, 2008. Is UK Biofuel Supply from *Miscanthus* Water-Limited? Soil Use Management Vol. 24, pp. 235-245.

Roth, G.W. and A.J. Heinrichs. 2001. Corn Silage Production and Management. Agronomy Facts 18. Penn State. College of Agricultural Sciences. Agricultural

Research and Cooperative Extension. http://cropsoil.psu.edu/extension/facts/agfact18.pdf. Accessed May 2011.

Sage, R., M. Cunningham, A.J. Haughton, M.D. Mallott, D. Bohan, A. Riche, and A. Karp, 2010. The environmental impacts of biomass crops: use by birds of miscanthus in summer and winter in southwestern England. The International Journal of Avian Science. Vol. 152, pp. 487-499.

Schneekloth, J and A. Andale. 2009 Seasonal Water Needs and Opportunities for Limited Irrigation for Colorado Crops. Crop Series Fact Sheet, Irrigation, no. 4.718. University of Colorado Extension Service.

Schwarz, H., P. Liebhard, K. Ehrendorfer, and P. Ruckenbauer, 1994. The Effect of Fertilization on Yield and Quality of *Miscanthus sinensis* 'Giganteus'. Industrial Crops and Products Vol. 2, pp. 153-159.

Scott, R.K., Jaggard, K.W. and Sylvester-Bradley, R. 1994. Resource capture by arable crops, In *Resource capture by crops*, (Eds, Monteith, J.L., Scott, R.K. and Unsworth, M.) Nottingham University Press, Nottingham, pp. 279-302.

Seaber, P. R., F.P. Kapinos, and G.L. Knapp, 2007. Hydrologic Unit Maps. U.S. Geological Survey, Water Supply Paper 2294. March. http://pubs.usgs.gov/wsp/wsp2294/. Accessed March 2011.

Semere, T. and F.M. Slater. 2007a. Ground flora, small mammal and bird species diversity in miscanthus (*Miscanthus x giganteus*) and reed canary-grass (*Phalaris arundinacea*) fields. Biomass & Bioenergy 31:20-29.

Semere, T. and F.M. Slater. 2007b. Invertebrate populations in miscanthus (*Miscanthus x giganteus*) and reed canary-grass (*Phalaris arundinacea*) fields. Biomass & Bioenergy 31:30-39.

Smeets, E.M.W., I.M. Lewandowski, and A.P.C. Faaij, 2009. The Economical and Environmental Performance of Miscanthus and Switchgrass Production and Supply Chains in a European Setting. Renewable and Sustainable Energy Reviews Vol. 13, pp. 1230-1245.

Somerville, C., H. Youngs, C. Taylor, S.C. Davis, and S.P. Long, 2010. Feedstocks for Lignocellulosic Biofuels. Science Vol. 329, pp. 790-792. August.

Spencer, J.L., and S. Raghu, 2009. Refuge or Reservoir? The Potential Impacts of the Biofuel Crop *Miscanthus x giganteus* on a Major Pest of Maize. PLoS One Vol. 4, No. 12, pp. 8336.

Stewart, A. and M. Cromey. 2011. Identifying disease threats and management practices for bio-energy crops. Current Opinion in Environmental Sustainability, 3:75-80

Stone, L.R., D.E. Goodrum, M.N. Jaafar, and A.H. Khan. 2001. Rooting Front and Water Depletion Depths in Grain Sorghum and Sunflower. Agronomy Journal. Vol. 93. Sep-Oct. pp. 1105-1110.

Stullu, L., S. Cadoux, M. Preughomme, M-H. Jeuffroy, and N. Beaudoin, 2011. Biomass Production and Nitrogen Accumulation and Remobilisation by *Miscanthus x giganteus* as Influenced by Nitrogen Stocks in Belowground Organs. Field Crops Research Vol. 121, pp. 381-391.

Styles, D., and M.B. Jones, 2007. Energy Crops in Ireland: Quantifying the Potential Life-Cycle greenhouse Gas Reductions of Energy-Crop Electricity. Biomass and Bioenergy Vol. 31, pp. 759-772.

Taylor, D. 2011. "Re: Need HEL data for OH and PA." 29 March. Personal communication via e-mail correspondence with Integrated Environmental Solutions, LLC and USDA-FSA.

Teoh, K., S.P. Devaiah, D. Vicuna Requesens, and E.E. Hood. 2011. Dedicated Herbaceous Energy Crops (Chapter 4 pp 85-108). in. Plant Biomass Conversion. eds. E.E. Hood, P. Nelson, and R. Powell. John Wiley & Sons, Inc.

Thompson, L.J. and A.A. Hoffmann. 2011. Pest management challenges for biofuel crop production. Current Opinion in Environmental Sustainability 3:95-99.

Tolk, J., T.A. Howell, and S.R. Evett. 2006. Nighttime Evapotranspiration from Alfalfa and Cotton in a Semiarid Climate. Agronomy Journal. Vol. 98. May-Jun. pp. 730-736.

Triplett, G.B., and W. Dick. 2008. No-Tillage Crop Production: A Revolution in Agriculture!. Celebrate the Centennial (A Supplement to the Agronomy Journal). S-153-S-165.

U.S. Census Bureau. 2008. National Population Estimates. http://www.census.gov/popest/national/national.html. Accessed May 2009

U.S. Department of Agriculture (USDA). 2010. Action Plan for Tribal Consultation and Collaboration. February 3. http://www.usda.gov/documents/ConsultationPlan.pdf. Accessed April 2011.

U. S. of Agriculture (USDA), 2011. USDA Agricultural Projections to 2010. Office of the Chief Economist, Long term-Projections Report OCE-2011-1. February 2011.

U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS). 2002. Factsheet: The Plant Protection Act. U.S. Department of Agriculture/Animal Plant Health Inspection Service. http://www.aphis.usda.gov/publications/plant_health/content/printable_version/fs_phproact.pdf. Accessed July 2009.

U. S. Department of Agriculture (USDA). Economic Research Service (ERS). 2011a. Farm Income and Costs: 2011 Farm Sector Income Forecast. February. http://www.ers.usda.gov/Briefing/FarmIncome/nationalestimates.htm. Accessed March 2011.

U. S. Department of Agriculture (USDA), Economic Research Service (ERS), 2011b. Farm Household Economics and Well-Being: Farm Household Income. February. http://www.ers.usda.gov/briefing/wellbeing/farmhouseincome.htm. Accessed March 2011.

U. S. Department of Agriculture (USDA) Economic Research Service (ERS). 2008. Rural America at a Glance, 2008 edition, Economic Information Bulletin 40. http://www.ers.usda.gov/Publications/EIB40/EIB40.pdf. Accessed July 2009.

U. S. Department of Agriculture (USDA). Farm Service Agency (FSA). 2011. Conservation Program. http://www.fsa.usda.gov/FSA/webapp?area=home&subject=copr&topic=rns-css. Accessed March 2011.

U.S. Department of Agriculture (USDA). Farm Services Agency (FSA). 2011a. Conservation Reserve Program Monthly Summary, February. Washington, D.C. http://www.fsa.usda.gov/Internet/FSA_File/feb2011crpstat.pdf. Accessed March 2011.

U.S. Department of Agriculture (USDA). Farm Services Agency (FSA). 2011b. Biomass Crop Assistance Program (BCAP) Final Rule Provisions. Washington, D.C. http://www.fsa.usda.gov/Internet/FSA_File/bcapoctrules.pdf. Accessed March 2011.

U.S. Department of Agriculture (USDA). Farm Services Agency (FSA). 2010. Final Programmatic Environmental Impact Statement for the Biomass Crop Assistance Program (BCAP). Washington, D.C.

U. S. Department of Agriculture (USDA). Farm Service Agency (FSA). 2003. Final Programmatic Environmental Impact Statement for the Conservation Reserve Program (CRP). Washington, D.C.

U.S. Department of Agriculture (USDA), National Agricultural Statistics Service (NASS). 2011. Quick Stats – Crops and Livestock data by State and County. http://www.nass.usda.gov/QuickStats/Create_County_All.jsp. Accessed March 2011.

U. S. Department of Agriculture (USDA), National Agricultural Statistics Service (NASS). 2009. 2007 Census of Agriculture. United States Summary and State Data Vol. 1, Geographic Area Series, Part 51, pp. 1-739.

U. S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). 2011b. Ohio 11-Digit Watershed Boundaries.

U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). 2009. Tribal Consultation. A Guide for Natural Resource Conservation Service (NRCS) Employees. USDA. May 5. http://www.nrcs.usda.gov/programs/tribalgov/tribal-consultation.pdf. Accessed April 2011.

U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). 1999. Grassland Birds NRCS Fish and Wildlife Habitat Management Leaflet No. 8. ftp://ftp-fc.egov.usda.gov/WHMI/WEB/pdf/GRASS1.pdf. Accessed October 2008.

U. S. Department of Agriculture (USDA), Ohio Natural Resources Conservation Service. 2007. Soil Survey of Ashtabula County, http://soildatamart.nrcs.usda.gov/Manuscripts/OH007/0/Ashtabula.pdf. Accessed March 2011.

U. S. Department of the Interior (DOI). 2011. Water Resources of the United States, Hydrologic Unit Maps. United States Geological Survey. http://water.usgs.gov/GIS/huc.html. Accessed March 2011.

U.S. Department of the Interior (DOI) Fish and Wildlife Service and U.S. Department of Commerce U.S. Census Bureau. 2007. 2006 National Survey of Fishing, Hunting, and Wildlife Watching. State Reports for Arkansas, Missouri, Ohio, and Pennsylvania. http://www.census.gov/prod/www/abs/fishing.html. Accessed May 2011.

U. S. Geological Survey (USGS), 2011. Hydrologic Unit Maps. Water Resources of the United States. http://water.usgs.gov/GIS/huc.html Accessed March 2011.

U. S. Geological Survey (USGS), 2010a. National Hydrography Dataset. ftp://nhdftp.usgs.gov/DataSets/Staged/States/. Accessed March 2011.

U. S. Geological Survey (USGS), 2010b. Estimated Use of Water in the United States, 2005. http://water.usgs.gov/watuse/data/2005/index.html. Accessed March 2011.

VanLoocke, A., C.J. Bernacchi, and T.E. Twines, 2010. The Impacts of *Miscanthus x giganteus* Production on the Midwest US Hydrologic Cycle. Global Change Biology Bioenergy Vol. 2, pp. 180-191.

Weir, A.H. and Barraclough, P.B. 1986. The effect of drought on the root growth of winter wheat and its water uptake from a deep loam soil. *Soil Use Mgmt,* **2,** 91-96.Whitmore, A.P., Bradbury, N.J. and Johnson, P.A. (1992) The potential contribution of ploughed grassland to nitrate leaching. *Agriculture, Ecosystems and Environment*, **39**, 221-233

Zub, H.W., S. Arnoult, M. Brancourt-Hulmel, 2011. Key Traits for Biomass Production Identified in Different *Miscanthus* Species at Two Harvest Dates. Biomass and Bioenergy Vol. 35, pp. 637-651.

This Page Intentionally Left Blank

8 PREPARERS

Name	Organization	Experience	Project Role
Rae Lynn Schneider M.P.P, Public Policy, Harvard University, 2001 B.S., Rangeland Ecology & Management, Texas A&M University, 1997	Integrated Environmental Solutions, LLC	10 years	Project Management, Project Review
Katelyn Kowalczyk B.S., Environmental Science, Stephen F. Austin State University, 2008	Integrated Environmental Solutions, LLC	2.5 years	Affected Environment, Environmental Consequences
Ransley Welch M.S., Geoarchaeology and GIS, University of North Texas, 2008 B.A., Anthropology, University of North Texas, 2002	Integrated Environmental Solutions, LLC	6 years	GIS Analysis and Map Generation
Kimberly Suedkamp Wells Ph.D., Fisheries and Wildlife Sciences, University of Missouri, 2005 M.S., Fisheries and Wildlife Ecology, Oklahoma State University, 2000 B.S., Renewable Natural Resources, University of Arizona, 1998	ENVIRON	10 years	Mitigation and Monitoring Plan

Name	Organization	Experience	Project Role
Heather Smith B.S. Natural Resource Management, Grand Valley State University, 2007	ENVIRON	4 years	GIS support
Domoni Glass Graduate Studies, Natural Resources Management, University of Washington B.S. Fisheries, University of Washington, 1982	ENVIRON	30 years	Mitigation and Monitoring Plan, Project Review
Laura Moran BSLA/MUP, City University of New York, 1987-1988 B.S. Biology, St. Lawrence University, 1985	ENVIRON	24 years	Mitigation and Monitoring Plan
Scott Coye-Huhn J.D. Environmental Law, University of Cincinnati Law School, 2004 M.S. W. Social Work, St. Louis University, 1998 S.W. Social Work, Xavier University, 1992	Aloterra Energy LLC	16 years	Project Sponsor, Mitigation and Monitoring Plan, Environmental Consequences

Name	Organization	Experience	Project Role
Gene Garrett Ph.D., Forest Ecology, University of Missouri, 1970 M.S., Forest Silviculture, Southern Illinois University, 1966 B.S., Forestry, Southern Illinois University, 1965	University of Missouri	30 years	Environmental Consequences
Rich Pyter M.S., University of Illinois at Champaign-Urbana, Natural Resources and Environmental Sciences, 2007 B.S., University of Illinois at Champaign-Urbana, Environmental Geology, 2003	Consultant for Aloterra Energy LLC	8 years	Environmental Consequences

This Page Intentionally Left Blank

9 PERSONS AND AGENCIES CONTACTED

9.1 TRIBAL CONSULTATION

This section has been added to the Final EA after reviewing comments received on the Draft EA concerning Tribal Consultation. FSA is committed to government-to-government consultation. FSA conducts these consultations in a regular and meaningful way that takes into account the comments and concerns of American Indian Tribal governments.

As part of this FSA's commitment and as required by EO 13175 "Consultation and Coordination with Indian Tribal Governments," FSA conducted two formal consultations with Tribal governments on BCAP prior to the publication of the final rule. Both of the Tribal consultations were conducted through teleconferences. All Federally recognized Tribes were invited to the first consultation, which was held on July 21, 2010. The Forest County Potawatomi Community requested a separate government-to-government consultation on BCAP, which was held on July 22, 2010. All comments from the government-to-government Tribal consultations were addressed in the final rule.

This proposed BCAP project is an action that does not have a "substantial direct effect on one or more Indian tribe" (Sec.1 (a) EO 13175). As such, no separate government-to-government consultations were deemed necessary for this project. The proposed locations that were analyzed in this Final EA do not encompass any Tribal lands as defined under 36 CFR 800.16(x).

Tribal members may own private lands which would be within the project area of this BCAP project and thus may be eligible to apply. These applicants would have the same rights and eligibility requirements as any private lands applicant.

Tribal consultation is required for any proposed federal action that may significantly affect the human environment according to NEPA Implementing Regulations (40 CFR Part 1500). EO 13175, *Consultation and Coordination with Indian Tribal Governments,* further described the obligation of federal agencies to coordinate and consult with federally recognized tribes for any proposed federal action that may affect significant cultural or historic resources to that tribe. The USDA released a department-wide Action Plan for Tribal Coordination and Consultation on February 3, 2010 in response to a memorandum from President Obama on November 5, 2009 that required effective tribal consultation in carrying out federal actions (USDA 2010). Agency-specific guidance has also been developed by the NRCS within USDA that provides the FSA with technical assistance in relation to environmental compliance at the field or contract level on a state basis including tribal consultation (NRCS 2009).

Tribal consultation was initiated by FSA as part of the Final BCAP PEIS using a variety of teleconferences or follow up individual teleconferences if requested by individual tribes. FSA also initiated tribal consultation with three tribes based on the Final BCAP PEIS process, which included the Sac and Fox Nation of Oklahoma, Osage Nation of Oklahoma, and the Seneca Nation of New York. Each of these three tribes was provided with a copy of this Draft EA and invited to comment during the public comment period that opened on April 8, 2011 with the publication of the Draft EA in the Federal Register.

The Project Sponsors also completed additional desktop reviews to support the Draft EA including a review of publicly available information on Indian lands, the Bureau of Indian Affairs (BIA) list of federally recognized tribes and their affiliations, and State Historic Preservation Office (SHPO) web sites for the four states within the proposed project areas. Based on a review of National Atlas data, there are no Indian reservations or Indian lands in any of the four states that include the proposed project areas (National Atlas 2011). Based on a review of the BIA list of federally recognized tribes by state that was last updated on October 1, 2010, there are no federally recognized tribes currently living in any of the four states that include the proposed project areas (BIA 2010). A review of the SHPO web sites for additional tribal information provided no additional data for Missouri, Ohio, and Pennsylvania, but the Arkansas Historic Preservation Program (AHPP) provided a list of 20 tribes that were historically associated with land in that state (AHPP 2011). The Osage Nation of Oklahoma, which is one of the three tribes that FSA provided a Draft EA to as part of further consultation, is also on the list of tribes with historical connections to Arkansas. Any specific tribal concerns raised during the public comment period on the Draft EA will be further incorporated into the development of conservation plans to avoid and minimize such impacts as part of the overall environmental compliance program that NRCS will assist FSA with implementing for BCAP enrollees.

9.2 AGENCIES AND PERSONS CONTACTED

Name	Organization/Agency
Responsible Agency Officials	
Juan M. Garcia	Acting Deputy Administrator for Farm Programs, U.S. Department of Agriculture, Farm Service Agency, Washington D.C.
Martin Lowenfish	Associate Director, U.S. Department of Agriculture, Farm Service Agency, Conservation and Environmental Programs Division, Washington D.C.
Matthew T. Ponish	National Environmental Compliance Manager , U.S. Department of Agriculture, Farm Service Agency, Washington D.C.
Todd Atkinson	Senior Policy Advisor, U.S. Department of Agriculture, Farm Service Agency, Washington D.C.
Federal Agencies Contacted	
USDA, Agricultural Research Service	· Adam Davis, Ecologist, Global Change and Photosynthesis Research Unit, IL · Seth Dabney · Richard Lowrance, Research Ecologist, GA · John Sadler, Research Leader,, Cropping Systems and Water Quality Research Unit, MO
USDA, Animal Plant Health Inspection Service	· Neil Hoffman, Special Assistant to the Deputy Administrator
USDA, Forest Service	· Joseph Carbone, Assistant Director, Ecosystem Management Coordination - NEPA
USDA, Natural Resources Conservation Service	· Diane E. Gelbund, PhD, Special Assistant to the Chief for Strategic Natural Resource Issues · Philip Barbour, PhD, Wildlife Biologist · Steve Brady, PhD, Team Leader, National Wildlife Technology Development Team · John Englert, National Plants Materials Specialist · Matt Harrington, National Environmental Coordinator · C. Wayne Honeycutt, PhD, Deputy Chief for Science and Technology · Norm Widman, National Agronomist
USDA, Rural Development	· Linda Rogers, Deputy Director, Program Support Staff

Name	Organization/Agency
U.S. Environmental Protection Agency *Region 1* *Region 2* *Region 3* *Region 4* *Region 5* *Region 6* *Region 7* *Region 8* *Region 9* *Region 10*	 Washington, D.C. Boston, MA New York, NY Philadelphia, PA Atlanta, GA Chicago, IL Dallas, TX Kansas City, KS Denver, CO San Francisco, CA Seattle, WA
U.S. Fish and Wildlife Service *Region 1* *Region 2* *Region 3* *Region 4* *Region 5* *Region 6* *Region 7* *Region 9*	 Portland, OR Albuquerque, NM Fort Snelling, MN Atlanta, GA Hadley, MA Denver, CO Anchorage, AK Washington, D.C.
State Agencies Contacted	
State of Arkansas	· Terry Griffin, Assistant Professor, University of Arkansas · Randy Young, Director, Arkansas Natural Resources Commission
State of Missouri	· Dennis Baird, Deputy Director of Agriculture · Don Day, University of Missouri Extension · Cerry Klein, Sustainable Advantage Director, University of Missouri · Sara Parker Pauley, Director, Department of Natural Resources · Steve Wyatt, Vice Provost for Economic Development, University of Missouri
State of Ohio	· David Marrison, County Extension Director, Ohio State University Extension – Ashtabula County
Local Officials and Interested Parties	
	· Brian Anderson, Executive Director, Growth Partnership of Ashtabula County, OH · John Armstrong, Manager, Ohio Seed Improvement Association, OH · Dale Arnold, Director, Energy Policy of Ohio Farm Bureau Federation, OH · J. Mike Brooks, President, Regional Economic Development, Inc. MO · Paula Hertwig Hopkins, Assistant City Manager, City of Columbia, MO · Blake Hurst, President, Missouri Farm Bureau Federation, MO · Tad Johnson, Director, Columbia Water and Light, Columbia, MO

Name	Organization/Agency
	· Bob McDavid, Mayor, City of Columbia, MO · Sue McGowan, Director, Paragould Regional Chamber of Commerce, Paragould, AR · John Palo, Director, Conneaut Port Authority, OH · Sean Ratican, Executive Director, Ashtabula County Port Authority, OH · Jeff Roskam, Kansas Alliance for Biorefining and Bioenergy, KS · Tony Stonecypher, City Manager, City of Aurora, MO · Shannon Walker, Director Aurora Chamber of Commerce, Aurora, MO · Randy Zook, CEO, Arkansas State Chamber of Commerce, AR
Political Officials	
	· Senator Roy Blunt · Senator John Boozman · Senator Sherrod Brown · Representative Rick Crawford · Representative Steven C. LaTourette · Senator Claire McCaskill · Senator Mark Pryor

This Page Intentionally Left Blank

APPENDICES

This Page Intentionally Left Blank

APPENDIX A – State-listed Species that Could Potentially Occur within the Proposed Project Areas

This Page Intentionally Left Blank

Category	Species- Common Name (Scientific name)	T/E	Counties
	Columbia		
Bird	Greater Prairie-chicken (Tympanuchus cupido)	SE	Cooper, Moniteau, Audrain, Monroe
Mammal	Black-tailed Jackrabbit (Lepus californicus)	SE	Moniteau
	Gray Bat (Myotis grisescens)	SE	Cole, Boone, Calloway, Howard
	Indiana Bat (Myotis sodalis)	SE	Boone, Randolph, Audrain, Monroe
Mussel	Ebonyshell (Fusconaia ebena)	SE	Cole
	Elephantear (Elliptio crassidens)	SE	Cole, Cooper
Fish	Flathead Chub (Platygobio gracilis)	SE	Cole, Boone, Calloway, Cooper, Howard, Moniteau
	Lake Sturgeon (Acipenser fulvescens)	SE	Cole, Boone, Calloway, Cooper, Howard, Moniteau
	Pallid Sturgeon (Scaphirhynchus albus)	SE	Cole, Boone, Calloway, Cooper, Howard, Moniteau
	Pink Mucket (Lampsilis abrupta)	SE	Cole
	Topeka Shiner (Notropis topeka)	SE	Boone, Calloway, Moniteau
Plant	Running Buffalo Clover (Trifolium stoloniferum)	SE	Boone, Calloway
	Aurora		
Bird	American Bittern (Botaurus lentiginosus)	SE	Jasper
	Bachman's Sparrow (Aimophila aestivalis)	SE	Barry
	Greater Prairie-chicken (Tympanuchus cupido)	SE	Lawrence, Dade, Jasper, Newton
	Northern Harrier (Circus cyaneus)	SE	Dade, Jasper, Newton
Fish	Ozark Cavefish (Amblyopsis rosae)	SE	Barry, Lawrence, Stone< Newton
	Redfin Darter (Etheostoma whipplei)	SE	Lawrence, Jasper
	Neosho Madtom (Noturus placidus)	SE	Jasper
Mammal	Black-tailed Jackrabbit (Lepus californicus)	SE	Barry, Lawrence, Dade, Christian, Stone, Jasper, Newton
	Gray Bat (Myotis grisescens)	SE	Barry, Lawrence, Dade, Christian, Stone, Jasper, Newton
	Plains Spotted Skunk (Spilogale putorius interrupta)	SE	Christian
Plant	Geocarpon (Geocarpon minimum)	SE	Lawrence, Dade
	Running Buffalo Clover (Trifolium stoloniferum)	SE	Barry
	Missouri Bladder-pod (Physaria filiformis)	SE	Lawrence, Dade, Christian
	Mead's Milkweed (Asclepias meadii)	SE	Dade
	Elephant ear (Elliptio crassidens)	SE	Stone
Reptile	Yellow Mud Turtle (Kinosternon flavescens)	SE	Barry
	Paragould		
Plant	Caric sedge (Carex opaca)	SE	Poinsett
	Rose turtlehead (Chelone obliqua var. Speciosa)	SE	Greene
	Pondberry (Lindera melissifolia)	SE	Craighead, Jackson, Lawrence, Poinsett
	Bigleaf magnolia (Magnolia macrophylla)	SE	Clay, Mississippi
	Prairie evening primrose (Oenothera pilosella ssp. Sessilis)	ST	Clay
	Heartleaf plantain (Plantago cordata)	ST	Randolph

Category	Species- Common Name (Scientific name)	T/E	Counties
	Northern tubercled-orchid (Platanthera flava var. Herbiola)	ST	Clay
	Purple fringeless-orchid (Platanthera peramoena)	ST	Clay
	Purple fringeless-orchid (Platanthera peramoena)	ST	Craighead, Lawrence
Ashtabula			
Bird	American Bittern (Botaurus lentiginosus)	SE	Erie, Crawford, Mercer
	Bald Eagle (Haliaeetus leucocephalus)	ST	Ashtabula, Lake, Geauga, Trumbull, Erie, Crawford, Mercer
	Barn Owl (Tyto alba)	ST	Ashtabula, Geauga
	Black Tern (Chlidonias niger)	SE	Erie, Crawford
	Common Tern (Sterna hirundo)	SE	Erie
	Dickcissel (Spiza americana)	SE	Erie, Mercer
	King Rail (Rallus elegans)	SE	Crawford, Mercer
	Least Bittern (Ixobrychus exilis)	ST	Lake, Trumbull, Erie, Crawford, Mercer
	Least Shrew (Cryptotis parva)	SE	Crawford, Mercer
	Migrant Loggerhead Shrike (Lanius ludovicianus migrans)	SE	Erie, Crawford, Mercer
	Northern Harrier (Circus cyaneus)	SE	Ashtabula, Trumbull
	Osprey (Pandion haliaetus)	ST	Crawford, Mercer
	Peregrine Falcon (Falco peregrinus)	ST	Lake
	Sedge Wren (Cistothorus platensis)	SE	Erie, Crawford, Mercer
	Short-eared Owl (Asio flammeus)	SE	Crawford
	Upland Sandpiper (Bartramia longicauda)	ST	Ashtabula, Lake, Geauga, Trumbull, Erie, Crawford, Mercer
	Yellow-bellied Sapsucker (Sphyrapicus varius)	SE	Ashtabula, Geauga
Fish	Bigmouth Shiner (Notropis dorsalis)	ST	Crawford
	Black Bullhead (Ameiurus melas)	SE	Mercer
	Blackchin Shiner (Notropis heterodon)	SE	Erie, Crawford
	Bluebreast Darter (Etheostoma camurum)	ST	Erie, Crawford, Mercer
	Brindled Madtom (Noturus miurus)	ST	Erie, Crawford, Mercer
	Brook Trout (Salvelinus fontinalis)	ST	Geauga
	Burbot (Lota lota)	SE	Erie
	Cisco (Coregonus artedi)	SE	Erie
	Eastern Sand Darter (Etheostoma pellucida)	SE	Erie, Crawford
	Gilt Darter (Percina evides)	ST	Erie, Crawford
	Iowa Darter (Etheostoma exile)	SE	Erie
	Lake Chubsucker (Erimyzon sucetta)	ST	Geauga
	Lake Sturgeon (Acipenser fulvescens)	SE	Erie
	Longear Sunfish (Lepomis megalotis)	SE	Mercer
	Mountain Brook Lamprey (Ichthyomyzon greeleyi)	ST	Erie, Crawford, Trumbull
	Narrow-leaved Pondweed (Potamogeton strictifolius)	SE	Erie

Category	Species- Common Name (Scientific name)	T/E	Counties
	Northern Brook Lamprey (Ichthyomyzon fossor)	SE	Ashtabula, Lake, Trumbull, Erie, Crawford
	Northern Madtom (Noturus stigmosus)	SE	Erie, Crawford, Mercer
	Northern Redbelly Dace (Phoxinus eos)	SE	Erie
	Pugnose Minnow (Opsopoeodus emiliae)	SE	Lake
	Redfin Shiner (Lythrurus umbratilis)	SE	Erie, Crawford, Mercer
	Southern Redbelly Dace (Phoxinus erythrogaster)	ST	Crawford, Mercer
	Spotted Darter (Etheostoma maculatum)	ST	Erie, Crawford, Mercer
	Spotted Gar (Lepisosteus oculatus)	SE	Erie
	Spotted Sucker (Minytrema melanops)	ST	Crawford
	Tadpole Madtom (Noturus gyrinus)	SE	Erie, Crawford
	Tippecanoe Darter (Etheostoma tippecanoe)	ST	Erie, Crawford, Mercer
	Mountain Madtom (Noturus eleutherus)	SE	Erie, Crawford, Mercer
	Warmouth (Chaenobryttus gulosus)	SE	Erie, Crawford, Mercer
Insect	A Burrowing Mayfly (Litobrancha recurvata)	SE	Geauga
	A Caddisfly (Chimarra socia)	SE	Ashtabula, Lake
	A Caddisfly (Psilotreta indecisa)	ST	Lake, Geauga, Trumbull
	A Midge (Rheopelopia acra)	SE	Ashtabula, Lake
	Boreal Bluet (Enallagma boreale)	ST	Lake, Geauga
	Brush-tipped emerald (Somatochlora walshii)	SE	Ashtabula
	Bug-on-a-stick (Buxbaumia aphylla)	ST	Ashtabula, Trumbull
	Chalk-fronted Corporal (Ladona julia)	SE	Ashtabula
	Graceful Underwing (Catocala gracilis)	SE	Ashtabula, Trumbull
	Green-faced Clubtail (Gomphus viridifrons)	ST	Ashtabula, Lake
	Harlequin Darner (Gomphaeschna furcillata)	ST	Geauga
	Marsh Bluet (Enallagma ebrium)	ST	Ashtabula, Lake, Geauga
	Northern Bluet (Enallagma cyathigerum)	ST	Lake, Geauga
	River Jewelwing (Calopteryx aequabilis)	SE	Geauga
	Tiger Beetle (Cicindela hirticollis)	ST	Ashtabula
	Uhler's Sundragon (Helocordulia uhleri)	SE	Lake
Mammal	Black Bear (Ursus americanus)	SE	Ashtabula
	Bobcat (Felis rufus)	SE	Ashtabula, Lake
Mussel	Black Sandshell (Ligumia recta)	ST	Ashtabula, Lake, Trumbull
	Clubshell (Pleurobema clava)	SE	Erie, Crawford, Mercer
	Eastern Pondmussel (Ligumia nasuta)	SE	Ashtabula, Geauga
	Fawnsfoot (Truncilla donaciformis)	ST	Lake
	Northern Riffleshell (Epioblasma torulosa rangiana)	SE	Erie, Crawford, Mercer
	Rabbitsfoot (Quadrula cylindrica)	SE	Erie, Crawford, Mercer
	Salamander Mussel (Simpsonaias ambigua)	SE	Crawford
	Snuffbox (Epioblasma triquetra)	SE	Ashtabula, Lake, Erie, Crawford, Mercer
Plant	American Reed Grass (Phragmites australis)	ST	Lake

Category	Species- Common Name (Scientific name)	T/E	Counties
	Pasture Blue Grass (Poa saltuensis)	SE	Geauga
	Yellow Lady's-slipper (Cypripedium parviflorum)	SE	Geauga
	A Sedge (Carex tetanica)	ST	Crawford, Mercer
	American Beach Grass (Ammophila breviligulata)	ST	Ashtabula, Lake
	American Beachgrass (Ammophila breviligulata)	ST	Erie
	American Columbo (Swertia caroliniensis)	SE	Mercer
	American Emerald (Cordulia shurtleffii)	SE	Geauga
	American Water-milfoil (Myriophyllum sibiricum)	ST	Ashtabula, Geauga
	Appalachian Blue Violet (Viola appalachiensis)	ST	Erie, Crawford, Mercer
	Appalachian Quillwort (Isoetes engelmannii)	SE	Trumbull
	Aster-like Boltonia (Boltonia asteroides)	SE	Erie
	Autumn Willow (Salix serissima)	ST	Erie, Crawford, Mercer
	Awned Sedge (Carex atherodes)	SE	Erie
	Backward Sedge (Carex retrorsa)	SE	Erie
	Balsam Poplar (Populus balsamifera)	SE	Ashtabula, Geauga, Erie
	Baltic Rush (Juncus arcticus var. littoralis)	ST	Erie
	Beach Peavine (Lathyrus japonicus)	ST	Erie, Crawford
	Beach Wormwood (Artemisia campestris ssp. caudata)	SE	Erie
	Bearded Wheat Grass (Elymus trachycaulus)	ST	Ashtabula, Geauga
	Bebb's Sedge (Carex bebbii)	SE	Erie, Crawford
	Beck's Water-marigold (Megalodonta beckii)	SE	Erie, Crawford
	Bicknell's Crane's-bill (Geranium bicknellii)	SE	Ashtabula
	Bluebead-lily (Clintonia borealis)	SE	Ashtabula
	Bog Bedstraw (Galium labradoricum)	ST	Geauga
	Bog Bluegrass (Poa paludigena)	ST	Crawford, Mercer
	Bog Willow (Salix pedicellaris)	SE	Geauga
	Branching Bur-reed (Sparganium androcladum)	SE	Erie, Mercer
	Bristly Sarsaparilla (Aralia hispida)	SE	Lake, Geauga
	Bristly Smartweed (Persicaria setacea)	SE	Ashtabula, Geauga
	Broad-leaved Water-milfoil (Myriophyllum heterophyllum)	SE	Erie
	Broad-winged Sedge (Carex alata)	ST	Erie, Crawford
	Brook Lobelia (Lobelia kalmii)	SE	Erie
	Brownish Sedge (Carex brunnescens)	SE	Ashtabula, Geauga
	Bunchberry (Cornus canadensis)	SE	Ashtabula, Geauga
	Bushy Aster (Symphyotrichum dumosum)	ST	Ashtabula
	Bushy Cinquefoil (Potentilla paradoxa)	ST	Ashtabula, Lake, Erie
	Bushy Naiad (Najas gracillima)	ST	Erie, Mercer
	Canada Buffalo-berry (Shepherdia canadensis)	SE	Erie
	Canada Hawkweed (Hieracium umbellatum)	ST	Ashtabula, Lake

Category	Species- Common Name (Scientific name)	T/E	Counties
	Canada St. John's-wort (Hypericum canadense)	SE	Ashtabula, Lake
	Capillary Beaked-rush (Rhynchospora capillacea)	SE	Erie
	Capitate Spike-rush (Eleocharis caribaea)	SE	Erie
	Carey's Smartweed (Polygonum careyi)	SE	Erie
	Carolina Grass-of-parnassus (Parnassia glauca)	SE	Erie
	Cattail Sedge (Carex typhina)	SE	Crawford, Mercer
	Clinton's Wood Fern (Dryopteris clintoniana)	SE	Ashtabula
	Cluster Fescue (Festuca paradoxa)	SE	Erie
	Coarse Smartweed (Persicaria robustior)	ST	Ashtabula, Lake, Geauga, Trumbull
	Coastal Little Bluestem (Schizachyrium littorale)	SE	Ashtabula, Lake
	Common Hemicarpa (Lipocarpha micrantha)	SE	Erie
	Common Hop-tree (Ptelea trifoliata)	ST	Erie
	Commons' Panic Grass (Panicum commonsianum)	SE	Ashtabula
	Cooper's Milk-vetch (Astragalus neglectus)	SE	Lake, Geauga
	Cow-wheat (Melampyrum lineare)	ST	Ashtabula, Lake, Geauga
	Cranesbill (Geranium bicknellii)	SE	Erie
	Crepis Rattlesnake-root (Prenanthes crepidinea)	SE	Mercer
	Cuckooflower (Cardamine pratensis var. palustris)	SE	Erie, Crawford
	Cyperus-like Sedge (Carex pseudocyperus)	SE	Erie, Crawford
	Dark-eyed Junco (Junco hyemalis)	ST	Lake, Geauga
	Downy Willow-herb (Epilobium strictum)	SE	Erie, Crawford, Mercer
	Drooping Wood Sedge (Carex arctata)	SE	Geauga
	Dwarf Bulrush (Lipocarpha micrantha)	ST	Lake
	Early Buttercup (Ranunculus fascicularis)	ST	Lake
	Early Coral-root (Corallorhiza trifida)	SE	Ashtabula, Geauga
	Ebony Sedge (Carex eburnea)	SE	Erie
	Elephant-ear (Elliptio crassidens)	SE	Ashtabula
	Elk Sedge (Carex garberi)	SE	Erie
	Few-flowered Spike-rush (Eleocharis pauciflora var. fernaldii)	SE	Erie
	Few-flowered St. John's-wort (Hypericum ellipticum)	ST	Ashtabula, Lake
	Few-seeded Sedge (Carex oligosperma)	ST	Mercer
	Fireweed (Epilobium angustifolium)	SE	Ashtabula, Geauga
	Flat-leaved Bladderwort (Utricularia intermedia)	ST	Erie, Crawford
	Flat-stemmed Pondweed (Potamogeton zosteriformis)	ST	Lake, Geauga
	Flat-stemmed Spike-rush (Eleocharis compressa)	SE	Crawford
	Four-angled Spike-rush (Eleocharis quadrangulata)	SE	Erie, Mercer
	Fries' Pondweed (Potamogeton friesii)	SE	Erie, Crawford
	Fuzzy Hypnum Moss (Tomentypnum nitens)	SE	Geauga
	Golden-fruited Sedge (Carex aurea)	SE	Erie

Category	Species- Common Name (Scientific name)	T/E	Counties
	Grass-pink (Calopogon tuberosus)	ST	Geauga
	Grassy Pondweed (Potamogeton gramineus)	SE	Erie, Crawford, Mercer
	Green Sedge (Carex viridula)	SE	Erie
	Green Spike-rush (Eleocharis flavescens)	ST	Geauga
	Ground Juniper (Juniperus communis)	SE	Geauga
	Harbinger-of-spring (Erigenia bulbosa)	ST	Erie, Crawford
	Hard-stemmed Bulrush (Schoenoplectus acutus)	SE	Erie, Crawford
	Hemlock-parsley (Conioselinum chinense)	SE	Crawford
	Hermit Thrush (Catharus guttatus)	ST	Lake
	Hill's Pondweed (Potamogeton hillii)	SE	Ashtabula, Geauga, Erie, Crawford
	Hispid Gromwell (Lithospermum caroliniense)	SE	Erie, Mercer
	Hoary Willow (Salix candida)	ST	Erie
	Hobblebush (Viburnum alnifolium)	ST	Ashtabula, Lake, Geauga, Trumbull
	Hooded Ladies'-tresses (Spiranthes romanzoffiana)	SE	Ashtabula, Geauga, Erie, Crawford
	Houghton's Flatsedge (Cyperus houghtonii)	SE	Crawford
	Inland Beach Pea (Lathyrus japonicus)	ST	Ashtabula, Lake
	Keeled Bur-reed (Sparganium androcladum)	ST	Ashtabula, Lake
	Labrador Marsh Bedstraw (Galium labradoricum)	SE	Erie, Crawford
	Large-leaved Mountain-rice (Oryzopsis asperifolia)	ST	Ashtabula, Lake
	Larger Canadian St. John's-wort (Hypericum majus)	ST	Erie
	Leafy Goldenrod (Solidago squarrosa)	ST	Ashtabula, Lake, Geauga
	Leafy White Orchid (Platanthera dilatata)	SE	Erie, Crawford
	Least Spike-rush (Eleocharis parvula)	SE	Lake
	Leathery Grape Fern (Botrychium multifidum)	SE	Ashtabula
	Lesser Bladderwort (Utricularia minor)	ST	Geauga
	Lesser Panicled Sedge (Carex diandra)	ST	Ashtabula, Geauga, Erie, Crawford, Mercer
	Little-spike Spike-rush (Eleocharis parvula)	SE	Erie
	Log Fern (Dryopteris celsa)	SE	Lake
	Long-fruited Anemone (Anemone cylindrica)	SE	Erie
	Long-lobed Arrow-head (Sagittaria calycina var. spongiosa)	SE	Erie
	Louisiana Sedge (Carex louisianica)	SE	Ashtabula
	Lyre-leaved Rock Cress (Arabis lyrata)	SE	Lake
	Marsh Bedstraw (Galium palustre)	SE	Ashtabula
	Matted Spike-rush (Eleocharis intermedia)	ST	Erie, Crawford, Mercer
	Mitchell's Sedge (Carex mitchelliana)	SE	Ashtabula, Crawford
	Mountain Bindweed (Fallopia cilinodis)	SE	Lake, Geauga
	Mountain Fly Honeysuckle (Lonicera villosa)	SE	Crawford
	Mud Sedge (Carex limosa)	SE	Geauga
	Navelwort (Hydrocotyle umbellata)	SE	Geauga

Category	Species- Common Name (Scientific name)	T/E	Counties
	Necklace Sedge (Carex projecta)	ST	Ashtabula, Lake, Geauga, Trumbull
	Nodding Sedge (Carex gynandra)	SE	Geauga
	Northeastern Sedge (Carex cryptolepis)	ST	Crawford
	Northern Blue-eyed-grass (Sisyrinchium montanum)	ST	Ashtabula
	Northern Poison-ivy (Toxicodendron rydbergii)	SE	Ashtabula, Lake
	Northern Water-milfoil (Myriophyllum sibiricum)	SE	Erie, Crawford
	Northern Water-plantain (Alisma triviale)	SE	Erie, Crawford, Mercer
	One-coned Club-moss (Lycopodium lagopus)	SE	Geauga
	Painted Trillium (Trillium undulatum)	SE	Ashtabula
	Pinxter-flower (Rhododendron periclymenoides)	ST	Ashtabula
	Pipsissewa (Chimaphila umbellata)	ST	Ashtabula
	Pod-grass (Scheuchzeria palustris)	SE	Erie
	Prairie Sedge (Carex prairea)	ST	Erie, Crawford, Mercer
	Primrose-leaved Violet (Viola primulifolia)	SE	Ashtabula
	Purple Sandgrass (Triplasis purpurea)	SE	Erie
	Racemed Milkwort (Polygala polygama)	ST	Ashtabula
	Red Baneberry (Actaea rubra)	ST	Ashtabula
	Red Currant (Ribes triste)	ST	Erie, Crawford
	Red-head Pondweed (Potamogeton richardsonii)	ST	Erie, Crawford, Mercer
	Richardson's Rush (Juncus alpinoarticulatus ssp. nodulosus)	ST	Erie
	Riffle snaketail (Ophiogomphus carolus)	ST	Lake, Geauga
	Riverweed (Podostemum ceratophyllum)	SE	Ashtabula
	Robbins' Pondweed (Potamogeton robbinsii)	SE	Geauga
	Robin-run-away (Dalibarda repens)	SE	Ashtabula, Geauga
	Rose Pogonia (Pogonia ophioglossoides)	ST	Geauga
	Rose Twisted-stalk (Streptopus lanceolatus)	SE	Ashtabula
	Round-fruited Hedge-hyssop (Gratiola virginiana)	ST	Ashtabula
	Rush Aster (Symphyotrichum boreale)	SE	Erie, Crawford
	Schweinitz' Umbrella-sedge (Cyperus schweinitzii)	ST	Ashtabula
	Showy Lady's-slipper (Cypripedium reginae)	ST	Erie, Crawford, Mercer, Geauga
	Showy Mountain-ash (Sorbus decora)	SE	Erie, Crawford
	Shumard's Oak (Quercus shumardii)	SE	Erie, Crawford
	Silverweed (Potentilla anserina)	ST	Erie
	Silvery Sedge (Carex argyrantha)	ST	Lake, Geauga
	Simple Willow-herb (Epilobium strictum)	ST	Geauga, Trumbull
	Slender Cotton-grass (Eriophorum gracile)	SE	Erie
	Slender Spike-rush (Eleocharis elliptica)	SE	Erie, Crawford, Geauga
	Slender Willow (Salix petiolaris)	ST	Ashtabula
	Small Bur-reed (Sparganium emersum)	SE	Geauga

Category	Species- Common Name (Scientific name)	T/E	Counties
	Small Cranberry (Vaccinium oxycoccos)	ST	Geauga
	Small Purple Fringed Orchid (Platanthera psycodes)	ST	Ashtabula, Geauga
	Small Sea-side Spurge (Chamaesyce polygonifolia)	ST	Erie
	Small Yellow Lady's-slipper (Cypripedium calceolus var. parviflorum)	SE	Erie, Crawford, Mercer
	Small-flowered False-foxglove (Agalinis paupercula)	SE	Erie, Mercer
	Small-headed Rush (Juncus brachycephalus)	ST	Erie
	Smith's Bulrush (Schoenoplectus smithii)	SE	Erie
	Southern Hairy Panic Grass (Panicum meridionale)	ST	Ashtabula
	Spathulate-leaved Sundew (Drosera intermedia)	SE	Geauga
	Speckled Wood-lily (Clintonia umbellulata)	ST	Trumbull
	Spotted Pondweed (Potamogeton pulcher)	SE	Crawford
	Spreading Globeflower (Trollius laxus)	SE	Ashtabula, Erie
	Stalked Bulrush (Scirpus pedicellatus)	ST	Erie
	Sterile Sedge (Carex sterilis)	ST	Erie, Mercer
	Striped Maple (Acer pensylvanicum)	SE	Ashtabula
	Swamp Fly Honeysuckle (Lonicera oblongifolia)	SE	Erie, Crawford
	Swamp Red Currant (Ribes triste)	SE	Ashtabula, Geauga
	Swamp-pink (Arethusa bulbosa)	SE	Erie, Crawford
	Sweet Bay Magnolia (Magnolia virginiana)	ST	Mercer
	Sweet Flag (Acorus americanus)	SE	Erie, Crawford
	Sweet-fern (Comptonia peregrina)	SE	Lake
	Thin-leaved Cotton-grass (Eriophorum viridicarinatum)	ST	Erie, Crawford, Mercer
	Thread-like Naiad (Najas gracillima)	SE	Lake
	Torrey's Bulrush (Schoenoplectus torreyi)	SE	Erie
	Torrey's Rush (Juncus torreyi)	ST	Erie, Mercer
	Triangle Grape Fern (Botrychium lanceolatum)	ST	Ashtabula, Geauga
	Tuckerman's Panic-grass (Panicum tuckermanii)	ST	Erie
	Tufted Fescue Sedge (Carex brevior)	ST	Ashtabula
	Twig Rush (Cladium mariscoides)	SE	Erie, Crawford
	Twinflower (Linnaea borealis)	ST	Erie
	Two-leaved Water-milfoil (Myriophyllum heterophyllum)	SE	Ashtabula
	Two-seeded Sedge (Carex disperma)	SE	Ashtabula
	Umbrella Flatsedge (Cyperus diandrus)	SE	Erie
	Highbush-cranberry (Viburnum opulus)	SE	Ashtabula, Trumbull, Geauga
	Variegated Horsetail (Equisetum variegatum)	SE	Erie
	Variegated Scouring-rush (Equisetum variegatum)	SE	Geauga
	Vasey's Pondweed (Potamogeton vaseyi)	SE	Erie, Crawford
	Velvet-leaved Blueberry (Vaccinium myrtilloides)	SE	Ashtabula, Geauga, Trumbull

Category	Species- Common Name (Scientific name)	T/E	Counties
	Vernal Water-starwort (Callitriche verna)	ST	Ashtabula, Lake Geauga, Trumbull
	Walter's Barnyard-grass (Echinochloa walteri)	SE	Erie
	Walter's St. John's-wort (Triadenum walteri)	ST	Ashtabula, Trumbull
	Water Sedge (Carex aquatilis)	ST	Erie
	Western Mountain-ash (Sorbus decora)	SE	Ashtabula, Geauga
	White Wood-sorrel (Oxalis montana)	SE	Ashtabula, Lake
	White-stemmed Pondweed (Potamogeton praelongus)	SE	Geauga
	Whorled Nutrush (Scleria verticillata)	SE	Erie
	Whorled Water-milfoil (Myriophyllum verticillatum)	SE	Erie, Crawford
	Wild Rice (Zizania aquatica)	ST	Geauga
	Wild-pea (Lathyrus ochroleucus)	ST	Crawford
	Winged Cudweed (Pseudognaphalium macounii)	SE	Ashtabula, Geauga
	Yellow Sedge (Carex flava)	ST	Erie, Crawford
	Yellow Vetchling (Lathyrus ochroleucus)	SE	Ashtabula, Lake, Trumbull
Reptile	Bog Turtle (Glyptemys muhlenbergii)	SE	Crawford, Mercer
	Eastern Massasauga (Sistrurus catenatus)	SE	Ashtabula, Trumbull, Crawford, Mercer
	Spotted Turtle (Clemmys guttata)	ST	Ashtabula, Lake, Geauga, Trumbull

This Page Intentionally Left Blank

APPENDIX B – Ohio Seed Improvement Association Data Summary for Giant Miscanthus

This Page Intentionally Left Blank

OHIO SEED *Improvement* ASSOCIATION

6150 Avery Road, Box 477 Dublin, Ohio 43017-0477
OFFICE HOURS: MON-FRI 7:30 AM - 4:00 PM

E-Mail osia@ohseed.org
Web Site http://www.ohseed.org/

Telephone 614-889-1136 *Fax 614-889-8979*

March 4, 2011

Mr. Scott Coye-Huhn
Director of Business Development
Aloterra Energy, LLC
8000 Research Forest Drive Suite 115-176
The Woodlands
Texas 77382

Dear Mr. Coye-Huhn:

By way of this communiqué, I wanted to summarize the current status of Aloterra Energy's, LLC comprehensive and innovative biomass program for generating renewable fuels by way of their Miscanthus giganteus production program. Your firm has provided important leadership in moving forward with a project to create a production system for energy independence in the United States.

In 2010, the Ohio Seed Improvement Association (OSIA), admitted Aloterra Energy, LLC as a Limited member and developed a custom Quality Assurance (QA) third party program specifically for Miscanthus giganteus. The QA program involves plant material field and site inspections, genetic traceability of plant materials, record audits and use of a trademarked product logo. Furthermore, this new QA program has been submitted to the national seed certification designated authority, AOSCA (Association of Official Seed Certifying Agencies) for approval as an interim QA program. Miscanthus giganteus plant propagule production acreage in Ohio and Kansas passed QA standards in 2010 and forms the basis of a significant planting stock inventory for launching biomass production in the Midwest region.

Furthermore, from a technical standpoint it is important for all involved in biomass production to recognize that Miscanthus giganteus is a sterile triploid species that produces no viable seed. The plant is commercially grown in Europe for combustion and has been grown several years in the U.S. as an ornamental. University of Illinois, United States Department of Agriculture and independent research firms has categorized Miscanthus giganteus as having no weed or invasive risks. The species is controlled with Glyphosate herbicide.

Lastly, farmers and the energy consuming public will benefit from the efforts of Aloterra Energy, LLC to launch innovative renewable biomass projects. Support from the BCAP government program is essential to realize the important goal of providing renewable fuel and energy independence in the U.S. Best regards.

Sincerely,

John Armstrong, Sec./Mgr.

John Armstrong
Secretary/Manager

File:AloterraMar.3.11

From: John Armstrong [mailto:armstrong@ohseed.org]
Sent: Monday, April 04, 2011 8:17 AM
To: Scott Coye-Huhn
Subject: RE: IMPORTANT -please read and respond/call

Dear Scott:

Your statement below is correct. More specifically, what I have done is to monitor the flower unit of OSIA's M. x giganteus selection for pollen and seed production by observation and microscopic examination. To date neither pollen or seed has been produced. The extruded anthers of the flower unit have been shriveled in appearance and similar to what we see with male sterile seed corn inbred lines. In addition, I have observed no volunteer seedlings emerging in observation plot areas adjacent to the M. x giganteus selection.

Furthermore, the following technical references provide additional comment regarding the invasive issue:

1. CAST Commentary, QTA2007-1, November 2007, "Biofuel Feedstocks: The Risk of Future Invasions", p. 5.

2. Lewandowski, I., J. C. Clifton-Brown, J.M.O. Scurlock, and W. Huisman. 2000. Miscanthus: European experience with a novel energy crop. *Biomass Bioenergy* 19:209-227.

Best regards.

John Armstrong, Sec./Mgr.
Ohio Seed Improvement Association
61650 Avery Road P.O. 477
Dublin, Ohio 43017
Ph. 614-889-1136
Fax: 614-889-8979
Email: armstrong@ohseed.org

****

From: Scott Coye-Huhn [mailto:scoyehuhn@aloterraenergy.com]
Sent: Saturday, April 02, 2011 11:25 AM
To: John Armstrong
Subject: IMPORTANT -please read and respond/call
Importance: High

Are you comfortable with the statement below? They are basing that on your observations in your 3 year study.

The primary potential impacts of giant miscanthus establishment are expected to be the potential for the hybrid to produce fertile seed and thus spread beyond the extent of the propagation or planting acres. Based on third-party independent verification by the OSIA (OSIA

2010), the likelihood of giant miscanthus producing fertile seed and spreading beyond the enrolled fields is expected to be low. Additional weed risk assessments conducted on giant miscanthus compared to other potential bioenergy crops such as giant reed, switchgrass (*Panicum virgatum*), *Eucalyptus* species, and *Jatropha* (i.e., a deciduous succulent plant) have concluded the risk of invasiveness in the United State is low (Barney and DiTomaso 2008, Gordon et al. 2011). In the event, giant miscanthus does escape, eradication studies indicate spring tillage followed by glyphosate application was successful in eliminating 95 percent of aboveground biomass after the first application (Anderson et al. 2011).

Scott Coye-Huhn
Director of Business Development
Aloterra Energy LLC
8000 Research Forest Drive, Suite 115-176
The Woodlands, Texas 77382
713-412-5311

APPENDIX C – Comments on the Draft Environmental Assessment

This Page Intentionally Left Blank

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
1	1	these agencies preparing a cheap sloppy ea, which nepa requires an eis. also this prepartion takes more energy to prepare it than you get from using miscanthus for energy. this whole ccrappy process is political shenanigans and a complete boondoggle. stop any tax dollars of american citizens from this usda boondoglle.	General	Against	NJ	08822	Individual	None	Comment noted, the NEPA process requires an appropriate level of environmental review based on the Agency's assessment of the potential for significant effects. In this instance, the EA was an appropriate NEPA-level evaluation to determine if effects would be significant and require the preparation of an EIS
2	1	I live in Missouri and a native of South Carolina, where I have seen this giant miscanthus overtake large areas around the Pee Dee, Waccamaw , Black Rivers, in the Georgetown Estuary . A Non-native, it grows like wildfire, and contributes nothing to maintain the flora and fauna of the area. It sustains only itself, and now you want to make it a crop?? That would be truly opening a Pandora's box, once you let it loose..... Missouri will have giant carp in it rivers, and giant reeds growing on its prairie. PLEASE reconsider the proposal.	Invasive, Non-Native	Against	MO	63124	Individual	None	Comment noted, this EA was site specific to proposed project areas within four states. The information provided would be utilized if a BCAP project area with miscanthus was proposed in South Carolina. More than likely the species of concern within South Carolina is another cultivar or species of *Miscanthus*
3	1	I am email to support the BCAP Project Area application for Columbia, MO. As a farmer, the BCAP program creates enough temporary economic incentives to move myself and other farmers in my region to commit land to dedicated energy crops. Our nation has spent decades talking about energy independence and setting high goals for transitioning our energy supply from foreign sources to domestic sources. No group or organization in America is more capable of providing this necessary energy supply than America's farmers. Critically, Miscanthus is the only energy crop that is perennial, non-invasive, and provides enough tons per acre to make economic sense. Dedicated energy crops are the most practical solution to a number of issues facing our nation. It provides my family with a new cash crop, will ensure economic development in rural communities, and will provide a home grown, reliable, base load energy supply that America desperately needs.	General	Support			Individual	None	Comment noted on the support of the proposed action.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
4	1	I am email to support the BCAP Project Area application for Columbia, MO. As a farmer, the BCAP program creates enough temporary economic incentives to move myself and other farmers in my region to commit land to dedicated energy crops. Our nation has spent decades talking about energy independence and setting high goals for transitioning our energy supply from foreign sources to domestic sources. No group or organization in America is more capable of providing this necessary energy supply than America's farmers. Critically, Miscanthus is the only energy crop that is perennial, non-invasive, and provides enough tons per acre to make economic sense. Dedicated energy crops are the most practical solution to a number of issues facing our nation. It provides my family with a new cash crop, will ensure economic development in rural communities, and will provide a home grown, reliable, base load energy supply that America desperately needs.	General	Support	MO	64850	Individual	None	Comment noted on the support of the proposed action.
5	1	I am email to support the BCAP Project Area application for Columbia, MO. As a farmer, the BCAP program creates enough temporary economic incentives to move myself and other farmers in my region to commit land to dedicated energy crops. Our nation has spent decades talking about energy independence and setting high goals for transitioning our energy supply from foreign sources to domestic sources. No group or organization in America is more capable of providing this necessary energy supply than America's farmers. Critically, Miscanthus is the only energy crop that is perennial, non-invasive, and provides enough tons per acre to make economic sense. Dedicated energy crops are the most practical solution to a number of issues facing our nation. It provides my family with a new cash crop, will ensure economic development in rural communities, and will provide a home grown, reliable, base load energy supply that America desperately needs.	General	Support	MO	65201	Individual	None	Comment noted on the support of the proposed action.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
6	1	I am email to support the BCAP Project Area application for Columbia, MO. As a farmer, the BCAP program creates enough temporary economic incentives to move myself and other farmers in my region to commit land to dedicated energy crops. Our nation has spent decades talking about energy independence and setting high goals for transitioning our energy supply from foreign sources to domestic sources. No group or organization in America is more capable of providing this necessary energy supply than America's farmers. Critically, Miscanthus is the only energy crop that is perennial, non-invasive, and provides enough tons per acre to make economic sense. Dedicated energy crops are the most practical solution to a number of issues facing our nation. It provides my family with a new cash crop, will ensure economic development in rural communities, and will provide a home grown, reliable, base load energy supply that America desperately needs.	General	Support			Individual	None	Comment noted on the support of the proposed action.
7	1	Regional Economic Development, Inc (RDI) is the economic development organization for Columbia-Boone County Missouri and in that capacity is submitting this letter in support for the BCAP grant application from MFA Oil Biomass LLC and Aloterra Energy LLC. we have had numerous briefings on the plans for this exciting opportunity and we have reviewed the Environmental Assessment provided by the USDA. We believe this application clearly meets the stated primary purpose of BCAP, which is to promote the cultivation of perennial bioenergy crops and annual bioenergy crops that show exceptional promise for producing bioenergy or biofuels, preserving natural resources without compromising crops grown for food or animal feed. Not only will this project crate an important source of bioenergy, it will also create a positive economic impact on Columbia and mid-Missouri.	General	Support	MO	65201	Regional-NGO	Regional Economic Develop-ment, Inc.	Comment noted on the support of the proposed action.
8	1	One correction regarding invasiveness of giant miscanthus parents: *Miscanthus sacchariflorus* (Maxim.) Franch. is on the Massachusetts state-listed noxious weeds list, contrary to P4-11 L9	Text Correction	NA	IL		Individual	University of Illinois at Urbana-Champaign	Text correction has been included in the Final EA

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
9	1	Stewart, A. and M. Cromey. 2011. Identifying disease threats and management practices for bio-energy crops. Current Opinion in Environmental Sustainability, 3:75-80.	Text Correction	NA	FL	32399	Regional-NGO	Florida Fish & Wildlife Conserva-tion Commission	Text correction has been included in the Final EA
10	1	I am writing to support the BCAP Project Area application for Ashtabula, Ohio. As an economic development agency acting in the best interest of Ashtabula County, Growth Partnership hopes the BCAP program creates enough temporary economic incentives to move the farmers in our region to commit land to dedicated energy crops. We are dedicated to assisting in this process any way that we can. Our nation has spent decades talking about energy independence and setting high goals for transitioning our energy supply from foreign sources to domestic sources. No group or organization in America is more capable of providing this necessary energy supply than America's farmers. Critically, Miscanthus is the only energy crop that is perennial, non-invasive, and provides enough tons per acre to make economic sense. Dedicated energy crops are the most practical solution to a number of issues facing our nation. It provides Ashtabula County's farmers with a new cash crop that will ensure economic development in rural communities, and will provide a homegrown, reliable, base load energy supply that America desperately needs.	General	Support	OH	44047	Local-NGO	Growth Partnership for Ashtabula County	Comment noted on the support of the proposed action.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
11	1	We have reviewed the Environmental Assessment for the proposed BCAP Giant Miscanthus grass that is to be used by Aloterra Energy and MFA Oil Biomass Company LLC in the biomass project areas in Missouri, Arkansas, Ohio and Pennsylvania. We are very supportive of the projects. Based on the environmental consequences outlined in the EA document, we believe the use of Miscanthus as a dedicated energy crop used for the production of energy will have little or no environmental impact to any area that is to be used in these project areas. The establishment of the biomass project areas will also provide renewable energy inputs and will result in a new complimentary industry for agriculture with an enormous economic impact to the economy as well as providing a program dedicated to reducing our reliance on foreign oil. As a former Secretary of Agriculture for Kansas, I look forward to this developing industry in our neighboring state and hope that biomass projects areas will be established in Kansas.	General	Support	KS	67543	Individual	Priddle & Associates	Comment noted on the support of the proposed action.
12	1	I have reviewed the Environmental Assessment for the proposed BCAP Giant Miscanthus grass that is to be used by Aloterra Energy and MFA Oil Biomass Company LLC in the biomass project areas in Missouri , Arkansas , Ohio and Pennsylvania . I, as a member of Corner Poster Energy LLC, have participated in the planting, harvesting, and baling and digging of rhizomes of the giant miscanthus grass. Being a first hand observer of the operation, I did not witness any environmental issues in growing or harvesting of the giant Miscanthus grass. Based on this and the negligible environmental consequences outlined in the EA document, I believe the use of Miscanthus as a dedicated energy crop used for the production of energy will have little or no environmental impact to any area that is to be used in these project areas.	General	Support			Individual	Corner Post Energy LLC	Comment noted on the support of the proposed action.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
13	1	I believe this country must, as it has in the past, stand up for its own best interest. This country needs to produce energy not import it. Energy independence means we as a people determine our own destiny. We must start somewhere and I want that line in the sand to be drawn right here in Ashtabula county Ohio! I am writing to support the BCAP Project Area application for Ashtabula, Ohio. As a farmer, the BCAP program creates enough temporary economic incentives to move myself and other farmers in my region to commit land to dedicated energy crops. Our nation has spent decades talking about energy independence and setting high goals for transitioning our energy supply from foreign sources to domestic sources. No group or organization in America is more capable of providing this necessary energy supply than America's farmers. Critically, Miscanthus is the only energy crop that is perennial, non-invasive, and provides enough tons per acre to make economic sense. Dedicated energy crops are the most practical solution to a number of issues facing our nation. It provides my family with a new cash crop, will ensure economic development in rural communities, and will provide a home grown, reliable, base load energy supply that America desperately needs.	General	Support	OH	44030	Individual	None	Comment noted on the support of the proposed action.
14	1	USDA is proposing to support the establishment and production of giant miscanthus as a dedicated energy crop in Arkansas, Missouri, Ohio and Pennsylvania as part of the Biomass Crop Assistance Program (BCAP). The Missouri Department of Conservation (MDC) is the state agency responsible for fish, forest and wildlife resources in Missouri. MDC participates in project review when projects might affect those resources. MDC comments and recommendations are for USDA consideration and are offered to reduce impacts to natural resources in the project area.	General	NA	MO	65102	State Agency	Missouri Department of Conserva-tion	General statement, no response required.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
14	2	The proposed establishment of 100,000 acres of giant miscanthus (Miscanthus x giganteus) and another 50,000 acres just across the state line in Arkansas represents a significant land conversion proposal that will significantly alter ecological conditions in the immediate project areas.	Land Use	NA	MO	65102	State Agency	Missouri Department of Conserva-tion	The Project Sponsors are targeting existing agricultural lands that are considered marginal, indicating that traditional crops have failed on those acres, or pasturelands, with a potential for a minor component of active cropland. In the Missouri proposed project areas, the maximum giant miscanthus acres (50,000 per proposed project area), as part of this project, would account for just over five percent of the land area within each proposed project area in other cropland and pastureland, as described in the 2007 Agricultural Census. Within the Arkansas proposed project area, a portion of the giant miscanthus acreage would be planted on harvestable cropland due to past agricultural activities creating generalized environmental concerns. Additionally, land conversion would be gradual beginning this planting season with maximum acres enrolled by 2014.
14	3	Impacts to wildlife, potential invasiveness of the cultivar in large-scale plantings in the central United States are largely unknown and the dismissal of such concerns as minor for the proposed action in the environmental assessment reflects largely anecdotal statements with little scientific research to back them up.	Biodiversity	NA	MO	65102	State Agency	Missouri Department of Conserva-tion	A substantial amount of research has been conducted on giant miscanthus in Europe with no evidence, even from stands greater than 20 years, showing invasiveness from this sterile hybrid. The Project Sponsors are committed to producing a safe, environmentally sustainable crop with active monitoring measures to ensure that there is no spread beyond the intentionally planted acres. Field buffers will be included as a standard practices for all contract acreage enrolled within these proposed project areas. As a mitigation measure, any vegetative spread beyond the intentionally planted acres, will be control with an appropriate herbicide, using a spot treatment or treatments.
14	4	Table ES-2, titled Comparison of Alternatives, states there will be only 4 positive benefits of this program. Each of these benefits, including the socioeconomic category is classified in the table as a “minor positive” benefit. Land use and biological resources are classified as “minor negative” impact. These are questionable assessments considering the potential for land conversion and the unknown invasiveness nature of mass plantings of miscanthus.	Impact Analysis	NA	MO	65102	State Agency	Missouri Department of Conserva-tion	The Project Sponsors and FSA have developed a Mitigation and Monitoring Plan that addresses concerns of invasiveness, pest and disease potential, soil erosion during establishment, and biodiversity. The active measures would reduce the potential for environmental impacts to minor levels.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
14	5	MDC recommends more substantive research is needed to determine potential impacts to wildlife and invasiveness of giant miscanthus before the federal government funds an extensive, long-term BCAP initiative.	Additional Research	NA	MO	65102	State Agency	Missouri Department of Conserva-tion	The BCAP statute does not allow for field trials, test plots, or other small-scale demonstration projects. The BCAP does allow for reporting of activities associated with the establishment and production of vegetation on BCAP contracted acreage. The Project Sponsors are providing annual reporting to the FSA and other USDA agencies are multiple aspects associated with establishment and production, spread of giant miscanthus outside of intentionally planted areas, chemical usage, harvest metrics, and other items.
14	6	USDA must include stipulations that require offsite control of escaped plants, sanitary control of equipment and trucks hauling miscanthus to avoid the spread of plant propagules including rhizomes and seeds. As USDA sponsored program, BCAP must require that each producer have an approved farm conservation or stewardship plan which includes requirements for producers and suppliers to implement best management practices to harvest and manage bioenergy fields. In addition, periodic USDA inspections or third party audits should be completed for continued compliance of producers and suppliers under BCAP. These best management practices should include practices for soil and water conservation, ensuring some measure of wildlife habitat protection and to limit the spread of giant miscanthus.	Mitigation Measures	NA	MO	65102	State Agency	Missouri Department of Conserva-tion	The Mitigation and Monitoring Plan take many of these considerations into account and have included similar activities as necessary for the contract acreage. Active monitoring along field buffers and within fields will ensure early detection of a vegetative spread or pests/diseases. All equipment will be sanitized to ensure that no unintentional release of rhizomes or propagules would occur during or after transport of live rhizomes. All rhizomes would be contained within bags and contained to wrapped pallets during initial shipments. After this growing season, all rhizomes would come from on-farm sources, which would not require transportation of live rhizomes.
14	7	USDA should discourage the conversion of native prairies, wetlands, woodlands, riparian forests and other native ecological communities to miscanthus energy fields. Loss of these rare and declining biological habitats will decrease populations of many species of plants and animal. This in turn, creates the possibility that more species could be raised to endangered status, which will affect agriculture and economic opportunity more broadly in agricultural regions.	Native & Natural Habitats	NA	MO	65102	State Agency	Missouri Department of Conserva-tion	As part of BCAP, native sods and wetlands cannot be converted into biomass crop acreage. The Project Sponsors are targeting acreage that is either failed cropland, marginal cropland with traditional crops, or pastureland. It would not be economically feasible for producers to converted wooded areas to giant miscanthus croplands. Along sensitive areas, such as wooded riparian buffers, the Conservation Plan would be used on a site-specific basis to increase field buffers widths to ensure the avoidance and minimization of impacts to these sensitive land areas.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
14	8	The use of the terms “idle acres” (page ES-3) and “marginal croplands” (page E-2) suggests land with less row crop potential has reduced natural resource significance. Land categories targeted for miscanthus establishment should be clearly defined and published in the final environmental impact statement, with disclosure of potential impacts to prairies, woodlands, wetlands, riparian forests and other native ecological communities. If lands with significant wildlife habitat are converted to miscanthus, then the stated conclusion in this draft environmental impact statement that the "impacts to wildlife from this project are minimal" are unfounded and that this determination should to be revised in the final version.	Land Use Conversion	NA	MO	65102	State Agency	Missouri Department of Conserva-tion	Since contract acreage has not been established within each proposed project area, site-specific analysis cannot be performed through the environmental assessment. The Conservation Plan for contract acreage will provide a site specific analysis of the potential effects at that localized level. The Project Sponsors are currently targeting lands that have failed as croplands, only produce marginal returns with traditional crops, or are currently abandoned or managed pastureland. Lands with significant or sensitive features would be avoided or not accepted into the project area as the discretion of the Project Sponsors of FSA before or during the site specific environmental review.
14	9	USDA must clearly state in the final environmental assessment and in the Mitigation and Monitoring Plan that USDA is required to control escaped miscanthus in surrounding fields and transportation routes, and eradicate miscanthus populations and specimens that leave the dedicated plots. Best management practices as required in the Mitigation and Monitoring Plan for miscanthus management and wildlife habitat must be developed in consultation with federal and state fish and wildlife agencies.	Mitigation Measures	NA	MO	65102	State Agency	Missouri Department of Conserva-tion	The Mitigation and Monitoring Plan takes into account many accepted best management practices, as well as NRCS Conservation Practices Standards to reduce the potential environmental effects.
14	10	Literature reviews suggest that public research institutions have begun development research to produce a viable seed version of giant miscanthus for energy production. A viable seed cultivar of giant miscanthus greatly changes the potential for the species to become invasive. USDA sponsorship of BCAP which results in the planting a viable seed cultivar of miscanthus should trigger an immediate, new environmental assessment process and public comment period.	Viable Seed	NA	MO	65102	State Agency	Missouri Department of Conserva-tion	The Project Sponsors are proposing to only use the Illinois clone of giant miscanthus, which is only propagated through rhizomes, within the proposed project areas. Currently, there are no giant miscanthus clones that produce viable seed. FSA would undergo additional environmental analyses should a viable seed cultivar be proposed for the BCAP.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
14	11	The history of introducing exotic species frequently has required expensive control measures that often have become pointless, because control came too late. The research on invasiveness tendencies was not done, or frequently was ineffective. USDA promotion of miscanthus as an energy crop suggests federal responsibility to control potential escapes of miscanthus.	Invasive, Non-Native	NA	MO	65102	State Agency	Missouri Department of Conserva-tion	A review of literature from Europe and the United States has not indicated that this clone of giant miscanthus would result in an invasive spread. The Mitigation and Monitoring Plan activities would be used to ensure that acres intentionally planted as part of the proposed project areas would not create an unintentional spread of giant miscanthus. The field buffers, as well as, an eradication strategy would be implemented as part of the Conservation Plan.
14	12	The Missouri Department of Conservation is prepared to engage USDA and partners in developing policy and best management practices to limit impacts to fish, forest and wildlife and their habitat in the pursuit of renewable and efficient alternative energy sources.	General	NA	MO	65102	State Agency	Missouri Department of Conserva-tion	General statement, no response required.
15	1	I am writing to support the BCAP Project Area application for Ashtabula, Ohio. As a farmer, the BCAP program creates enough temporary economic incentives to move myself and other farmers in my region to commit land to dedicated energy crops. Our nation has spent decades talking about energy independence and setting high goals for transitioning our energy supply from foreign sources to domestic sources. No group or organization in America is more capable of providing this necessary energy supply than America's farmers. Critically, Miscanthus is the only energy crop that is perennial, non-invasive, and provides enough tons per acre to make economic sense. Dedicated energy crops are the most practical solution to a number of issues facing our nation. It provides my family with a new cash crop, will ensure economic development in rural communities, and will provide a home grown, reliable, base load energy supply that America desperately needs. Ashtabula needs this project desperately, as it seems the area has been forgotten causing businesses to close, and people to become unemployed. Just recently we have lost another 130 jobs from a plant moving to North Carolina.	General	Support			Individual	None	Comment noted on the support of the proposed action.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
16	1	We support the approval of Aloterra Energy's BCAP applications. Miscanthus is the most viable energy crop solution available today and we need to support it for both energy and national security reasons. I STRONGLY SUPPORT IT.	General	Support	CO	80203	Individual	Plexus Capital, LLC	Comment noted on the support of the proposed action.
17	1	I support the approval of Aloterra Energy's BCAP applications and I support the use of Miscanthus as an energy crop to meet America's renewable energy needs.	General	Support	MO		Individual	None	Comment noted on the support of the proposed action.
18	1	Please give every consideration ,to this very important step in the right direction. Thanks. I support the approval of Aloterra Energy's BCAP applications and I support the use of Miscanthus as an energy crop to meet America's renewable energy needs."	General	Support			Individual	Clearwater Seafood	Comment noted on the support of the proposed action.
19	1	I support the approval of Aloterra Energy's BCAP applications and I support the use of Miscanthus as an energy crop to meet America's renewable energy needs. Thank you very much.	General	Support			Individual	None	Comment noted on the support of the proposed action.
20	1	I support the approval of Aloterra Energy's BCAP applications and I support the use of Miscanthus as an energy crop to meet America's renewable energy needs. This should be looked at as not only an alternative, but the main energy source for our future. Put energy revenues with our U.S. farmers, not the Oil Industry and Middle East/Venezuela!!!	General	Support			Individual	None	Comment noted on the support of the proposed action.
21	1	I support the approval of Aloterra Energy's BCAP applications. And, I support the use of Miscanthus as an energy crop to meet our country's, U.S.A., renewable energy needs.	General	Support	CO		Individual	None	Comment noted on the support of the proposed action.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
22	1	Agrosil Energy LLC, while a small company, has one of the largest inventories of Miscanthus grass (Mxg) rootstock in the United States. We are a provider of Mxg rootstock to Aloterra Energy, LLC and strongly support the approval of Aloterra's BCAP applications and as well support the use of Miscanthus as an energy crop to meet America's renewable energy needs. Miscanthus is a perennial grass which satisfies multiple criteria for the ideal energy crop – namely, high dry matter yield; low mineral and moisture content; perennial growth; relative low fertilizer demand; efficient use of water and other resources; and pest and disease resistance. It can be grown on lower classes of farm land. The result is a crop that is both profitable to farmers and environmentally friendly. Importantly, Miscanthus x giganteus a sterile and non-invasive form. It has a 20 year history of use as a bio-fuel in the United Kingdom and other European countries. It is an effective feedstock for co-firing with coal for electric power generation as well as for firing in 100% biomass boilers. Higher farm yields per acre in the US can make it more cost effective in North American markets. The growing of Mxg fuel crops under the BCAP program will result in 2 to 3 times less farm land being utilized for fuel than the growing of switchgrass. We urge your approval of Aloterra's BCAP applications.	General	Support	CA	93442	Private Company	Agrosil Energy, LLC	Comment noted on the support of the proposed action.
23	1	I support the approval of Aloterra Energy's BCAP applications and I support the use of Miscanthus to meet America's renewable energy needs. It will help the company to make biomass energy crops part of this country's energy portfolio; it can also create new jobs and support the US farmers.	General	Support			Individual	None	Comment noted on the support of the proposed action.
24	1	I would like to express my support for of approval Aloterra Energy's BCAP applications and I support the use of Miscanthus as an energy crop to meet America's renewable energy needs.	General	Support	WA	98195	Individual	University of Washington Department of Micro-biology	Comment noted on the support of the proposed action.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
25	1	The Missouri Department of Agriculture has made renewable energy a strong focus in terms of priorities for the future. As such, we support Missouri's biomass producers in their efforts to move Missouri agricultural forward. In 2008, Missouri voters approved Proposition C, requiring that investor-owned utilities include no less than 15 percent assets in renewable energy. Projects involving biomass will help the state of Missouri to meet those requirements. The Renewable Fuel Standard 2 (RFS2) and EPA transportation rules are likely to contribute to an increase in the need for biomass feedstock in the future, expanding markets for co-products and by-products from the renewable fuels industry. The Biomass Crop Assistance Program (BCAP) enables Missouri farmers to expand energy services into emerging biomass renewable energy markets and is an opportunity of great interest to the Department. Your proposed project provides farmers with an energy crop source, unique harvesting and planting equipment, specialty harvesting services, crop processing technology and marketing services. From the information provided, the project creates opportunities for new crops for our state's farmers, jobs with the biomass conversion facility, and advances in economic development throughout Missouri. We certainly support your efforts and hope your project, MFA Oil Biomass LLC, is favorably received by USDA, Biomass Crop Assistance program. As always, if we can ever be of assistance, please do not hesitate to contact us.	General	Support	MO	65102	State Agency	Missouri Department of Agriculture	Comment noted on the support of the proposed action.
26	1	The Pennsylvania Game Commission has reviewed the Draft Environmental Assessment on *Miscanthus x giganteus* in the Federal Register notice Vol. 76, No. 68, pg. 19741, April 8, 2011 and provides the following comments.	General	NA	PA	17110	State Agency	Pennsyl-vania Game Commission Bureau of Wildlife Habitat Manage-ment	No response required.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
26	2	The record of containment of "sterile" hybrid plant materials has been poor in the past, and we do not advocate repeating those mistakes again. Specifically, vegetative hybrids have the chance of creating viable seed over time if crossed with other species of the genus, and the resulting escapes of other *Miscanthus* species in Pennsylvania that have infested several hundred acres of private lands and public rights-of-way.	Seed Sterility	Against	PA	17110	State Agency	Pennsyl-vania Game Commission Bureau of Wildlife Habitat Manage-ment	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determined within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced.
26	3	A classic example of failed hybrid sterility that has severely impacted wildlife habitat is purple loosestrife (*Lythrum salicaria*). Purple loosestrife has spread prolifically and outcompeted native wetland vegetation resulting in the loss of wetland habitat and millions of dollars spent on invasive species control.	Seed Sterility	NA	PA	17110	State Agency	Pennsyl-vania Game Commission Bureau of Wildlife Habitat Manage-ment	Many of the species cited were introduced to the U.S. in the 19th century or through inadequately assessed horticultural varieties prior to many of the safeguards that were put in place within the last few decades. This clone of giant miscanthus has been grown in field trials since 2002 without escape from these areas. There is also little evidence from European experience of invasive potential for this hybrid.
26	4	We believe that the overall risk to wildlife habitat and wildlife in Pennsylvania is not worth the federal government funded private industry reward in this case, nor the investment of American tax dollars in that private industry. In 1994, invasive plant control costs and related losses totaled over $19 billion on agricultural and non-agricultural lands nationwide. The private industry is shifting the burden of the invasive species escape risk to the American tax payer. We do not believe the proposed activity should be funded, but if it is, the industry should contribute more to reducing that risk, as described below.	Invasive, Non-Native	NA	PA	17110	State Agency	Pennsyl-vania Game Commission Bureau of Wildlife Habitat Manage-ment	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. The Project Sponsors have committed to long-term management and responsibility for the contracted fields within these proposed project areas. The overall purpose of BCAP is to provide incentive payments for producers to establish and producer novel energy crops as biomass feedstock for bioenergy and bioproducts.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
26	5	Specific weaknesses within the DEA include portions of section 2-3. Section 2-3 identifies resources that were considered but eliminated from further analysis. Section 2-3, line 18 with reference to Floodplains not needing to be evaluated. We feel that despite the unbalanced risk of introducing a new invasive species to the Pennsylvania environment via seed dispersal, the immediate risk of spread of this detrimental hybrid is through vegetative dispersal along watersheds from the movement of the rhizomes via watercourses during normal rain, high flow and flood events. We already experience the movement of invasive Japanese knotweed via rhizomes being dislodged and deposited downslope and downstream via waterways. This is a real hazard, and if approved should at the very least be mitigated by: 1) planting may only be done outside of the 100 year floodplain; 2) planting shall not be done on sites where any portion of the field equals or exceeds an Erodibility Index of 8 (i.e. EI<8); and 3) a minimum of at least 100 foot field border of unmowed native herbaceous vegetation surrounding the hybrid planting must be installed serving as a rhizome impediment, as well as a sheet flow screen for any eroding hybrid rhizomes.	Eliminated Resource Areas	NA	PA	17110	State Agency	Pennsyl-vania Game Commission Bureau of Wildlife Habitat Manage-ment	The amount of floodplains within the proposed project areas will be detailed within the Final EA. Within the Ashtabula area, approximately five to seven percent would be within the 100-year floodplain. Site-specific Conservation Plans would be used to increase buffer widths adjacent to sensitive areas, such as wetlands and aquatic areas, if the conditions of the contract acreage warrant. Floodplains are often used to grow agricultural crops and certain portions of the proposed project areas have wide 100-year floodplains or higher percentages of land within floodplains. Additionally, giant miscanthus once established, would provide excellent soil holding abilities on HEL due to the high biomass yield and large below ground root structure this species provides. The Conservation Plan for each producer will incorporate the Mitigation and Monitoring as the starting conditions for development, with greater use of BMPs, depending upon the local site conditions. As to seed dispersal, the Project Sponsors would take steps necessary to minimize the unintentional development of viable seed from giant miscanthus. The Project Sponsors would be willing to exclude acreage within 400 m (approximately 1,300 feet) from any known Miscanthus sinensis or Miscanthus sacchariflorus invasion to limit the potential for cross-pollination resulting in viable seed. This distance is the maximum distance observed in Quinn et al. 2011. Additionally, the Project Sponsors have committed to a seed sampling program to track the potential viability of the giant miscanthus acres included within their project areas.
26	6	Section 2-3, Line 20 indicates that regulated coastal zones were eliminated from consideration because the proposed project areas are not located within such as zone. Lake Erie, which borders several counties in the Ashtabula site, and under the authority of the Army Corps of Engineers, should be considered a regulated coastal zone and as such we suggest that detailed analysis be conducted pertaining to regulated coastal zones.	Eliminated Resource Areas	NA	PA	17110	State Agency	Pennsyl-vania Game Commission Bureau of Wildlife Habitat Manage-ment	The Project Sponsors will exclude any acreage included within the managed coastal zones of Lake Erie to ensure compliance with the USACE regulations or Coastal Zone Management regulations.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
26	7	Additionally, in section 2-15, line 26, the evaluation that Recreation will not be significantly impacted is not sufficiently addressed. Fifty thousand acres of wildlife habitat and huntable areas will be converted to unhuntable *M. x giganteus*, representing a significant percentage of huntable upland small game areas in the defined areas of Ohio and Pennsylvania. Hunting is a significant economic influence in rural areas, and the loss of 50,000 acres of habitat will result in losses in revenue to hotels, motels, gas stations, convenience stores and sporting goods stores in and around the proposed area.	Eliminated Resource Areas	NA	PA	17110	State Agency	Pennsyl-vania Game Commission Bureau of Wildlife Habitat Manage-ment	Public hunting access on private lands will be discussed in greater detail in the Final EA; however, lands included under state access programs, such as the Cooperative Farm-Game Program in Pennsylvania are under contract with the state. This contract is for five years or longer and stipulates that wildlife management activities must occur on those acres in combination with a Conservation Plan. As such, it would be unlikely that the state would approve the planting of giant miscanthus on those acres, and the Project Sponsors would exclude those acres for the remaining length of the contract period, if the contract is broken.
26	8	The evaluation that soil will be protected is making the assumption that the cover will be retained in perpetuity. As we have seen multiple times, new industries often fail, and landowners change their mind about leasing land to producers. As stated in the DEIS, that cover will need to be plowed to a depth of 10 inches, and repeatedly treated with herbicide to control the established hybrid. This will create more erosion than most of these lands would normally encounter over several years. The combination of predominantly glacial till soils that are highly erodible in the target area, and the targeted "marginal" lands that will be planted, greatly increase the risk of severe erosion. We believe, this section of the DEIS should be revisited and revised to address this concern. This concern also further supports the three numbered mitigating recommendations listed above, especially number 2.	Land Use	NA	PA	17110	State Agency	Pennsyl-vania Game Commission Bureau of Wildlife Habitat Manage-ment	During establishment of giant miscanthus the soil will be tilled twice on the propagation acres and once on the plantation acres. The initial planting of the rhizomes would require disturbing the soil to a depth of approximately four inches, similar to traditional tillage for annual crops. On the propagation acres, a second tillage would occur at a depth from six to 10 inches to harvest the rhizome for planting on plantation acres. After the plantation establishment, tillage would not occur again over the productive life of the plant. Harvesting of biomass would be similar to activities used for the production of hay. The fields would only need treatment with herbicides during the initial growth period in years one and two, rather than yearly compared to traditional crops that must be treated with herbicide during the initial growth period.
26	9	The assessment that nutrient losses will be reduced is also under the assumption that no or minimal nutrient amendments will be used for this biomass crop. This is highly unlikely, and we recommend that nutrient use be limited to at most 50% of tested recommendations, and that the application be split into at least two applications separated by at least 30 days during the growing season, and at least 30 days prior to the first fall frost for the area.	Nutrient Application	NA	PA	17110	State Agency	Pennsyl-vania Game Commission Bureau of Wildlife Habitat Manage-ment	As stated in Section 2.2.2.1, fertilization would be required at a recommended rate of approximately, eight pounds of nitrogen, 1.5 pounds of phosphorus, and eight pounds of potassium per dry ton of biomass produced. However, soil testings at the local level could reduced or increase these amounts, due to the variability of soil types, moisture content, and conditions across the project areas. These rates are the average recommended for this crop based on field trials and European experience.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
26	10	Because of the implementation costs of contracting and establishing the Conservation Reserve and Enhancement Program (CREP) and the local, state and federal investment in the program, and the targeted goals of water quality improvement and grassland nesting bird habitat of the Pennsylvania CREP, we request that no CREP contract acres be permitted to be enrolled in BCAP either by breaking the contract or within one full year following a contract expiration.	CREP acres	NA	PA	17110	State Agency	Pennsyl-vania Game Commission Bureau of Wildlife Habitat Manage-ment	This is a CREP contract issue and not a BCAP contract issue. FSA has no control over producers that have had acreage expire from a conservation program once the contract is complete, unless it has been written into the specific producer contract for those conservation acres.
26	11	Further, because of the unknown outcome of seed viability over time, we recommend establishing a restoration and eradication fund, funded by the participating private entities, that equals at a minimum, the established custom rates for three herbicide sprays and one deep plowing treatment for each acre of hybrid planted. This fund would be maintained in perpetuity and used to treat escapes and restore sites, even if the company ceases Miscanthus operations. If funding is used from the fund for an escape or restoration, the fund will be re-funded from the existing entities that are participating in BCAP funded Miscanthus biomass on a pro-rated acre basis. The fund should be administered by the Pennsylvania Department of Agriculture with the evaluation and response coordinated by the Pennsylvania Invasive Species Council. If the industry or project area fails, those funds should be retained by the Pennsylvania Department of Agriculture for other invasive species management.	Additional Funding	NA	PA	17110	State Agency	Pennsyl-vania Game Commission Bureau of Wildlife Habitat Manage-ment	The BCAP statute does not allow for perpetual funding or bonding for Project Sponsors.
26	12	Although the use of this hybrid is not advocated, and we believe it would have dramatic negative effect on wildlife if allowed, we believe that the above mitigation measures will at least allow for a pro-active approach to permitting an industry to operate in a responsible, professional manner.	General	Against	PA	17110	State Agency	Pennsyl-vania Game Commission Bureau of Wildlife Habitat Manage-ment	The Project Sponsors have committed to a Mitigation and Monitoring Plan that sets broad activities within each project area. More specific or stringent activities would be included in each producer's Conservation Plan based on the site-specific conditions and State and local regulations.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
27	1	On behalf of the National Wildlife Federation (NWF) and its four million members and supporters, I submit these comments on the Environmental Assessment (EA) for the proposed establishment and production of giant miscanthus (*Miscanthus X giganteus*) in Arkansas, Missouri, Ohio, and Pennsylvania as a project under the Biomass Crop Assistance Program (BCAP). We thank the agency for considering these comments.	General	NA	D.C.	20004	NGO	National Wildlife Federation	No response required.
27	2	The National Wildlife Federation is concerned about the potential for giant miscanthus to become invasive. As you know, the 2008 Farm Bill specifically excludes "any plant that is invasive or noxious or has the potential to become invasive or noxious" as an eligible crop for purposes of BCAP. The EA appears to conclude that there is a "low likelihood" for giant miscanthus to become invasive. Yet, the EA acknowledges that there are data gaps in the literature on the invasive potential on giant miscanthus. It also acknowledges that two species of Miscanthus, including *Miscanthus sinensis*, the parent species of the hybrid cultivar *Miscanthus X giganteus*, are listed on the Federal Invasive Species List.	Invasive	NA	D.C.	20004	NGO	National Wildlife Federation	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determine within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
27	3	While giant miscanthus is a sterile hybrid cultivar, there is still concern that it could reproduce, and as the EA demonstrates, there are a number of features of giant miscanthus that make it an ideal invasive weed. If giant miscanthus were indeed able to reproduce, the potential for invasion would be significant. While the EA dismisses the potential for giant miscanthus to reproduce, studies have found that triploid sterility can break down and result in fertile gametes (Ramsey and Schemske 1998). Moreover, the literature has reports of the production of fertile seed by the so-called sterile giant miscanthus (Quinn et al. 2011). Other species that were thought to be sterile, such as the Bradford pear (*Pyrus calleryana*), have in fact ended up reproducing and becoming invasive through cross-pollination with other cultivars (Cully and Hardiman 2007). Thus, the proximity of the fields that are to be planted with giant miscanthus to ornamental plantings of *M. sinensis* and *M. sacchariflous* should be taken into account within the EA.	Invasive, Non-Native; Seed Sterility	NA	D.C.	20004	NGO	National Wildlife Federation	The giant miscanthus hybrid has not shown such traits based on the on-going field trials are recent larger scale plantings in Europe. The Project Sponsors are aware of the concern of cross-pollination with one of the parent species. As such, an exclusion would be included within the producer contracts that would not allow giant miscanthus to be planted within 400 meters (approximately 1,300 feet) from an existing infestation of Miscanthus sinensis or Miscanthus sacchariflorus or ornamental planting of these or other Miscanthus species to greatly reduce the probability of cross-pollination and production of viable seed.
27	4	Few details are given in the EA regarding the specifics of the mitigation and monitoring plan. New research demonstrates that giant miscanthus, in rare circumstances, has the ability to travel long distances, in some cases as much as 300 or 400 meters (Quinn et al. 2011). Thus, the monitoring plan would have to take into account the possibility for long distance dispersal, as well as monitoring of the roadways that lead from the fields to the processing facility and to the location in which harvesting equipment is kept. Monitoring for invasiveness also must occur over a longer period of time than the length of project; many invasive plants do not show up for several years or several decades.	Mitigation Measures	NA	D.C.	20004	NGO	National Wildlife Federation	As to seed dispersal, the Project Sponsors would take steps necessary to minimize the unintentional development of viable seed from giant miscanthus. The Project Sponsors would be willing to exclude acreage within 400 m (approximately 1,300 feet) from any known Miscanthus sinensis or Miscanthus sacchariflorus invasion to limit the potential for cross-pollination resulting in viable seed. This distance is the maximum distance observed in Quinn et al. 2011. Additionally, the Project Sponsors have committed to a seed sampling program to track the potential viability of the giant miscanthus acres included within their project areas. The Project Sponsors, as part of the MMP, will outline a long-term monitoring plan for potential escape and control of giant miscanthus. As part of the Quality Assurance Program with the OSIA, the Project Sponsors have agreed to thoroughly clean equipment used for planting, harvesting, and transporting giant miscanthus rhizome materials. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
27	5	The National Wildlife Federation is also concerned about reports of research currently being conducted to make the sterile hybrid *Miscanthus x giganteus* produce viable seeds. This would obviously alter the potential for giant miscanthus to become invasive, and it is of the upmost importance that a separate environmental assessment be done should Aloterra Energy and MFA Oil Biomass Company wish to receive BCAP funding to cultivate a seeded variety of miscanthus. Overall, we believe that the agency must more fully address the potential for giant miscanthus to become invasive before a BCAP project area is authorized for giant miscanthus.	Seed Sterility	NA	D.C.	20004	NGO	National Wildlife Federation	The Project Sponsors are proposing to only use the Illinois clone of giant miscanthus, which is only propagated through rhizomes, within the proposed project areas. Currently, there are no giant miscanthus clones that produce viable seed. FSA would undergo additional environmental analyses should a viable seed cultivar be proposed for the BCAP.
27	6	As FSA begins to move forward with the BCAP program, great care must be taken to avoid funding potentially invasive species. Many native, non-invasive species are good candidates for bioenergy production and should be prioritized within the program. For those species for which there is little information or there is a potential for invasive risk, we support the approach by Davis et al. (2010) described in the EA in which a weed risk assessment (WRA) tool, such as the Australian Weed Risk Assessment is used as an initial screen. Those species that pass the WRA would then be evaluated based on data from the species home range. The final step would include quarantined field trials to determine if the species should be released.	Mitigation Measures	NA	D.C.	20004	NGO	National Wildlife Federation	A WRA has been performed on giant miscanthus twice in the United States, both times indicated that this species would have a low probability of invasiveness. The Project Sponsors have committed to a Mitigation and Monitoring Plan that sets broad activities within each project area. More specific or stringent activities would be included in each producer's Conservation Plan based on the site-specific conditions and State and local regulations. The BCAP statute does not allow for field trials, test plots, or other small-scale demonstration projects. The BCAP does allow for reporting of activities associated with the establishment and production of vegetation on BCAP contracted acreage. The Project Sponsors are providing annual reporting to the FSA and other USDA agencies are multiple aspects associated with establishment and production, spread of giant miscanthus outside of intentionally planted areas, chemical usage, harvest metrics, and other items.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
27	7	We thank you for the opportunity to provide these comments on the draft EA. We urge the agency to more fully address the potential for giant miscanthus to become invasive before a BCAP project area is authorized for giant miscanthus. More generally, we strongly believe that the precautionary principle should be used when considering whether proposed BCAP crops have the potential to become invasive. Once it is clear that a species has become invasive, the problem has often already gotten out of hand, and the costs to the environment and to the public are great. Efforts to control purple loosestrife, for instance, cost $45 million per year (Pimentel et al. 2000).	Invasive	NA	D.C.	20004	NGO	National Wildlife Federation	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determine within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
28	1	I am writing to request a three-week extension to provide comment on the Draft Environmental Assessment (EA) per FR Doc. 2011-8421 proposing the establishment and production of Giant Miscanthus (*Miscanthus X giganteus*) as a dedicated energy crop as part of the Biomass Crop Assistance Program (BCAP).	Request for Extension	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	Request noted; however, FSA has determined that sufficient time was available for all interested parties to review and return comments on the document. An electronic version of the document was available 24-hours prior to the publication of the notice of availability in the Federal Register. The document could be requested in a hard copy format or electronically. All hard copy documents were received by the requestors within a short period from their request, usually provided the next business day. All requests for hard copies via e-mail were provided a response of receipt of the request and an electronic version of the document for immediate review.
28	2	On behalf of the Association of Fish and Wildlife Agencies (Association), of which all 50 states, the District of Columbia, and US Territories are members, we solicited comments in coordination with our Agricultural Conservation and Invasive Species Committees. In doing so, we have identified a multitude of critically important issues with the EA that are inadequately addressed. We would greatly appreciate the additional time to provide you with more detailed, useful comments and guidance for addressing these issues prior to a final determination on the environmental impacts of the proposed projects without additional analyses.	General	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	Request noted; however, FSA has determined that sufficient time was available for all interested parties to review and return comments on the document. An electronic version of the document was available 24-hours prior to the publication of the notice of availability in the Federal Register. The document could be requested in a hard copy format or electronically. All hard copy documents were received by the requestors within a short period from their request, usually provided the next business day. All requests for hard copies via e-mail were provided a response of receipt of the request and an electronic version of the document for immediate review.
28	3	We present the attached as an overview of our compiled comments, though with additional time, we can provide much greater detail on specific recommendations and guidance to enhance the thoroughness of the EA. We hope that the Farm Service Agency strongly considers the request before making its final determination. Our members would be greatly impacted if these concerns are not addressed.	General	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	No response required.
28	4	The EA is, as it currently stands, inadequately addresses several critical issues. In great part due to the inadequate treatment of issues below, the EA is not a thorough and objective assessment. These issues include:	General	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	No response required.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
28	5	Lack of mention of fire or fire management/mitigation in and around project areas. Miscanthus is highly flammable, and fire breaks would be just one, minimal, mitigation option	Fire Managemen t	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	This topic will be included in Section 4.4.1.2, Biological Resources, Vegetation. There is at least one published article describing the potential for fire/flammability of this species due to it drying in field before harvest. The minimum buffer width could be utilized as a standard fire break, with additional width added through the site-specific Conservation Plan for each producer. This fire break/buffer width would take into account landscape features to be protected from wildlife (e.g., habitable structures, farmsteads, communities within close proximity); normal fire frequency within the areas; normal conditions during the fall/winter, which could lead to increased fire danger associated with standing dead plant material; and adjacent land uses, which could contribute to increased fire risk. Additionally, early harvest could be conducted, if unforeseen circumstances increased the risk to human health and safety from wildlife potential.
28	6	Insufficient assessment of water use impacts. The EA states that miscanthus would require more water than annual crops such as corn; corn already requires heavy irrigation, thus additional water use for miscanthus could have significant impact on surrounding environmental resources.	Water Use	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	Further clarification will be provided within the Final EA. This will include potential irrigation demands of this crop as compared to traditional crops (e.g., corn) and compared to perennial grass species, which were the native communities within the proposed project areas. For the vast majority of acres included within these proposed project areas, irrigation would not occur within the giant miscanthus fields. When compared to irrigated corn, giant miscanthus would be anticipated to use less water.
28	7	Lack of detail on alternative crops evaluated and not considered in the EA including additional and specific detail regarding these other areas and what led to the justification of the target geographies in Arkansas, Missouri, Ohio, and Pennsylvania.	Alternatives Analyzed	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	The Project Sponsors are proposing a specific project for inclusion within the BCAP. The reasonable alternatives under consideration are (1) the Proposed Action, which implements the Project Sponsors plan or (2) the No Action Alternative, which would not implement the Project Sponsors plan. The Project Sponsors are not required to propose alternative species or project locations under NEPA.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
28	8	Insufficient assessment of impacts to state-listed or state special-concern wildlife, particularly due to conversion of pasture to miscanthus given that miscanthus is not a food source for wildlife, and will affect several species of conservation need, including migratory birds, as well as state-managed game species (e.g., turkey and deer)	State-listed Species	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	Further clarification would be provided to ensure that site-specific conditions do not create adverse effects to State-listed species. Species of concern, but not protected under State law/regulation, Federal laws/regulations, or tribal regulation would be considered to the extent of management by the appropriate entity. Site specific Conservation Planning would address wildlife best management practices that meet the needs of locally occurring protected species. No taking of a protected species would be allowed without appropriate consultation with the U.S. Fish and Wildlife Service and the appropriate State agency.
28	9	Conversion of pasture to miscanthus will affect some state listed plants, such as *Carex pallescens* (pale sedge), and wildlife such as grassland nesting birds of the Ashtabula area such as bobolink, grasshopper sparrow, and Henslow's sparrow, by removing habitat and food sources for those species.	State-listed Species	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	Further clarification would be provided to ensure that site-specific conditions do not create adverse effects to State-listed species. Species of concern, but not protected under State law/regulation, Federal laws/regulations, or tribal regulation would be considered to the extent of management by the appropriate entity. Site specific Conservation Planning would address wildlife best management practices that meet the needs of locally occurring protected species. No taking of a protected species would be allowed without appropriate consultation with the U.S. Fish and Wildlife Service and the appropriate State agency.
28	10	Lack of detail regarding plans for long-term monitoring for and eradication of escaped plants, including specific roles and responsibilities of contracted producers, Project Sponsors, or FSA if such an escape is detected).	Long-term Monitoring	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	See below.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
28	11	Any monitoring to determine if giant miscanthus has escaped or become invasive must occur not only in those non-project fields in close proximity to those planted with miscanthus, but also on the roadways that lead to the processing facility, the area around the processing facility and the area where harvesting equipment is stored. Harvesting will occur after seed set and as with other invasives, such as spotted knapweed, the seed can blow from trucks and harvesting equipment while traveling roadways.	Long-term Monitoring	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	The Project Sponsors, as part of the MMP, will outline a long-term monitoring plan for potential escape and control of giant miscanthus. As part of the Quality Assurance Program with the OSIA, the Project Sponsors have agreed to thoroughly clean equipment used for planting, harvesting, and transporting giant miscanthus rhizome materials. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range.
28	12	Monitoring for invasiveness should occur over the course of 20-40 years, as many invasives manifest themselves after several decades have passed. There does not appear to be any provisions or discussion of long-term monitoring.	Long-term Monitoring	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	The Project Sponsors will continue the MMP through the life of the contract between the producer and the Project Sponsor, which can be renewed in perpetuity.
28	13	The EA mentions several times that giant miscanthus can be eliminated through a combination of tillage and herbicides and that herbicides alone may not be effective. This presumes that the plants are in an area that can be tilled. If they escape onto roadsides, natural areas or other idle lands, then tillage is not an option and the process for eliminating those plants will be long and expensive. There is no discussion on who will be responsible for these costs of eradication of escaped plants.	Eradication	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	As detailed in the MMP, the responsibility for control lies with the producer and the Project Sponsor, should the producer fail to control any spread that is identified during monitoring of the fields. The MMP would minimize the potential for spread for this species through BMPs, which include ongoing seed sampling of inflorescences, and active management and monitoring, including the site-specific Conservation Plan measures.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
28	14	Insufficient assessment of potential for escape and invasion outside of project areas (including due to natural causes such as tornados, floods, high wind, etc.)	Vectors for Escape	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	Anecdotal evidence indicates a low potential of vegetative spread through live stems transported through natural mechanisms. Additionally, published literature indicates a low likelihood of rhizome spread outside of intentional plantings, since the rhizome is likely to desiccate if transported and not planted (i.e., provided adequate soil coverage). Site-specific conditions could be included in the Conservation Plan to increase buffer width or exclude certain land areas from giant miscanthus planting, if determined to increase the risk of spread outside an acceptable level that can be controlled by the producer.
28	15	Insufficient assessment of the host relationship of miscanthus with western corn rootworm, including the potential for rootworm spread and economic impact on non-project areas and food crops (e.g., neighboring cornfields).	Pests & Diseases	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	Published literature was cited in the Draft EA concerning the potential for western corn rootworm to occur in giant miscanthus. Further detail has been included in the MMP, which has been drafted and revised from consultation with NRCS and ARS. Monitoring for pests and diseases is included as part of the MMP and would be adjusted accordingly based on the site-specific Conservation Plan.
28	16	Inadequate discussion of historic record of containment of "sterile" hybrid plant material; attempts have been unsuccessful in the past, e.g., purple loosestrife, which outcompeted native wetland vegetation resulting in the loss of wetland habitat, and cost millions of dollars in invasive species control. Specifically, vegetative hybrids may produce viable seed over time if crossed with other species of the same genus; resulting escapes could be similar or worse than previously documented escapes of other miscanthus genera in Pennsylvania affecting several hundred acres of private lands and public rights of way.	Seed Sterility	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	Many of the species cited were introduced to the U.S. in the 19th century or through inadequately assessed horticultural varieties prior to many of the safeguards that were put in place within the last few decades. This clone of giant miscanthus has been grown in field trials since 2002 without escape from these areas. There is also little evidence from European experience of invasive potential for this hybrid.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
28	17	Insufficient discussion of ornamental plantings of *Miscanthus sinensis* and M. *sacchariflorus* or other members of the *Miscanthus* genus in Europe and their proximity to established stands of giant miscanthus. The literature suggests that not all triploid hybrids are sterile even those thought to be sterile produce some viable pollen, but not enough to pollinate in most cases. It is also possible for triploid hybrids to mutate and have plants that no longer exhibit the sterility trait.	Seed Sterility	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	The Project Sponsors would be willing to exclude acreage within 400 m (approximately 1,300 feet) from any known *Miscanthus sinensis* or *Miscanthus sacchariflorus* invasion to limit the potential for cross-pollination resulting in viable seed. This distance is the maximum distance observed in Quinn et al. 2011. Additionally, the Project Sponsors have committed to a seed sampling program to track the potential viability of the giant miscanthus acres included within their project areas.
28	18	Insufficient assessment of the effects of altering the vegetation in "idle or not active" lands on both the plant and wildlife communities (including specific consideration of state- or regionally-protected species, and lands currently enrolled Conservation Reserve or related Programs).	Land Use	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	The Project Sponsors would be willing to exclude any acreage currently located within a contracted conservation program, in which the producer breaks that contract, for the remaining length of that contract. Further clarification of the idle land use will be provided in the Final EA, to clearly define those lands to be included within the contract acreage.
28	19	There is no definition of "idle" and it is a major concern, and a potentially major negative impact on wildlife, if "idle" lands are those enrolled in Conservation Reserve or other conservation Program land contracts and serve as wildlife habitat. If such habitat will be converted to miscanthus, then the conclusion that the "impacts to wildlife from this project are minimal" are unfounded and that determination needs to be revised.	Land Use	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	The Project Sponsors would be willing to exclude any acreage currently located within a contracted conservation program, in which the producer breaks that contract, for the remaining length of that contract. Further clarification of the idle land use will be provided in the Final EA, to clearly define those lands to be included within the contract acreage.
28	20	Insufficient assessment of the indirect conversion of lands (i.e., pasture converted to *Miscanthus*, and thus forested lands converted to pasture in replacement.	Land Use	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	Further clarification will be provided in the Final EA, to provide an analysis of the livestock industry within the project areas that could cause indirect land use changes, from NIPF to pasturelands. It appears that livestock production in the Paragould and Ashtabula project areas accounts for less than five percent of the statewide totals for cattle.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
28	21	Economic considerations beyond agricultural entities (e.g., fish and wildlife recreation and tourism impacts).	Outdoor Recreation	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	Public hunting access on private lands will be discussed in greater detail in the Final EA; however, lands included under state access programs, such as the Cooperative Farm-Game Program in Pennsylvania are under contract with the state. This contract is for five years or longer and stipulates that wildlife management activities must occur on those acres in combination with a Conservation Plan. As such, it would be unlikely that the state would approve the planting of giant miscanthus on those acres, and the Project Sponsors would exclude those acres for the remaining length of the contract period, if the contract is broken.
28	22	Inadequate assessment of nutrient losses due to the assumption that no or minimal nutrient amendments will be used for this biomass crop.	Nutrient Application	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	Further clarification would be provided to ensure that the Final EA clearly indicates the increased potential to trap suspended sediment and nutrients in stormwater flows by the perennial vegetative structure of giant miscanthus. Additionally, more detail or clarification would be provided to indicate the nutrient requirements and applications for giant miscanthus plantings.
28	23	Lack of detail regarding development of BMPs for wildlife; these must be developed with and approved by state fish and wildlife agency.	Mitigation Measures	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	Detailed wildlife BMPs would be included in the site-specific Conservation Plan for each producer. Unless protected species are located on contract acreage, there is no precedent to include State wildlife agencies in the Conservation Planning process, unless the producer chooses that consultation as part of the development of the Conservation Plan.
28	24	Insufficient assessment of resources eliminated from detailed analysis, including:	General	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	No response required.
28	25	**wetlands** (these may be invaded by miscanthus via rhizomes, and if so, the expense of eliminating miscanthus from complex wetland communities would be extremely high, and the process would be difficult	Wetlands	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	Wetlands are excluded acreage per BCAP, as such no wetlands would be intentionally planted to giant miscanthus. Site-specific Conservation Plans would be used to increase buffer widths adjacent to sensitive areas, such as wetlands and aquatic areas, if the conditions of the contract acreage warrant.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
28	26	potential for rhizomes spread into **floodplains** by flooding is great due to vegetative dispersal along watersheds by the movement of rhizomes via watercourses during normal rain, high flow and flood events (Japanese knotweed has spread similarly via rhizomes)	Floodplains	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	The amount of floodplains within the proposed project areas will be detailed within the Final EA. Within the Ashtabula area, approximately five to seven percent would be within the 100-year floodplain. **Site**-specific Conservation Plans would be used to increase buffer widths adjacent to sensitive areas, such as wetlands and aquatic areas, if the conditions of the contract acreage warrant.
28	27	Lake Erie is considered a **regulated coastal zone** under the authority of the Army Corps of Engineers, thus it is unclear why these resources were eliminated when the proposed project areas in Ohio and Pennsylvania border this Lake.	Coastal Zones	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	The Project Sponsors will exclude any acreage included within the managed coastal zones of Lake Erie to ensure compliance with the USACE regulations or Coastal Zone Management regulations.
28	28	Fish and wildlife **recreation** and outdoor tourism are strong industries in some of the proposed project areas; conversion of large segments of the landscape to miscanthus will have a significant impact on land cover within the project areas. If wildlife habitat and hunting areas are converted to M.x giganteus, this would represent a significant loss of potential hunting areas for upland small games in defined areas of Ohio and Pennsylvania. Hunting is a significant economic influence in rural areas, and the loss of habitat will result in losses in revenue to hotels, motels, gas stations, convenience stores and sporting goods stores in and around the proposed area.	Outdoor Recreation	NA	D.C.	20001	NGO	Association of Fish & Wildlife Agencies	Public hunting access on private lands will be discussed in greater detail in the Final EA; however, lands included under state access programs, such as the Cooperative Farm-Game Program in Pennsylvania are under contract with the state. This contract is for five years or longer and stipulates that wildlife management activities must occur on those acres in combination with a Conservation Plan. As such, it would be unlikely that the state would approve the planting of giant miscanthus on those acres, and the Project Sponsors would exclude those acres for the remaining length of the contract period, if the contract is broken.
29	1	I have been following the use of Miscanthus x giganteus as a home grown replacement for fossil fuels since the initial publication of the Billion Ton Report.	General	NA	CA	93442	Individual	None	Comment noted on the support of the proposed action.
29	2	1) Miscanthus has a long history of replacing coal in the EU. Currently, over 1 million tons are being used annually by Drax power in the UK and there are several thousand mature hectares being used throughout the Continent to replace solid fossil fuels and create liquid fuel via gassification.	Biomass Feedstock	NA	CA	93442	Individual	None	Comment noted on the support of the proposed action.
29	3	2) Decades of study in the EU and at universities in the US have demonstrated that Miscanthus x giganteus is a sterile non-invasive plant that requires far less chemical inputs than a crop like corn. In fact, Miscanthus has a positive energy balance throughout its life cycle from growing to end use.	Sterility	NA	CA	93442	Individual	None	Comment noted on the support of the proposed action.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
29	4	3) Miscanthus is one of the best plants for sequestration of atmospheric carbon, removing more CO2 than it emits from growth establishment to use. It has a positive carbon balance which is not true of corn used for fuel.	Carbon Sequestratio n	NA	CA	93442	Individual	None	Comment noted on the support of the proposed action.
29	5	4) Miscanthus provides sufficient tonnage per acre to make it economically viable and sustainable for farmers at levels for their own use or commercially.	Economic Viability	NA	CA	93442	Individual	None	Comment noted on the support of the proposed action.
29	6	5) Miscanthus could replace a major percentage of fossil fuels that are dangerous because of unreliable sources and proven environmental damage.	Fossil-Fuels Replacement	NA	CA	93442	Individual	None	Comment noted on the support of the proposed action.
29	7	6) Miscanthus will provide clean sustainable rural economic growth.	Rural Economic Growth	NA	CA	93442	Individual	None	Comment noted on the support of the proposed action.
29	8	7) Miscanthus supplies yields (2-3 times the Btu per acre of corn) that will mean millions of corn acres used for ethanol can be returned to food and feed production, while still increasing overall ethanol production levels.	Higher Yields	NA	CA	93442	Individual	None	Comment noted on the support of the proposed action.
29	9	8) Because of its very low need, (if any) for applied nitrogen, miscanthus vastly mitigates run concerns off and improves soils.	Nutrient Application	NA	CA	93442	Individual	None	Comment noted on the support of the proposed action.
29	10	9) Studies have shown that natural habitat is enhanced by miscanthus. It requires only one annual disturbance in the field. It harbors birds, beneficial insects, small mammals and deer.	Wildlife	NA	CA	93442	Individual	None	Comment noted on the support of the proposed action.
29	11	In summary, Miscanthus x giganteus can significantly and beneficially effect US energy independence, energy price stability, rural economies, and the environment. BCAP project areas should be immediately approved.	General	Support	CA	93442	Individual	None	Comment noted on the support of the proposed action.
30	1	"I support the approval of Aloterra Energy's BCAP applications and I support the use of Miscanthus as an energy crop to meet America's renewable energy needs."	General	Support			Individual	None	Comment noted on the support of the proposed action.
31	1	I support the approval of Aloterra Energy's BCAP applications and I support the use of Miscanthus as an energy crop to meet America's renewable energy needs. This is the best green renewable energy source that I am aware of and is one of the few that is economically feasible on its own merits, which is demonstrated by its use in the UK in electric power generation.	General	Support	CO	80123	Individual	None	Comment noted on the support of the proposed action.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
32	1	I support the approval of Aloterra Energy's BCAP applications and I support the use of Miscanthus as an energy crop to meet America's renewable energy needs.	General	Support	TX	77380	Individual	None	Comment noted on the support of the proposed action.
33	1	I urge you to not approve the BCAP Environmental Assessment, Proposed BCAP Giant Miscanthus (Miscanthus x giganteus) Establishment and Production in Arkansas, Missouri, Ohio, and Pennsylvania, Sponsored by Aloterra Energy LLC and MFA Oil Biomass LLC, (the Draft), and to deny all BCAP subsidies to these proposed projects.	General	Against	IN	47432	Individual	None	No response required.
33	2	The use proposed for the miscanthus to be grown is making fuel pellets of it, pellets which will presumably be burned to produce heat. Fuel pellets made of cellulosic woody material have been used for many, many years in the United States as a fuel These pellets are generally made of woody material, and are sold virtually across the nation as pellet stove heating fuel; thus, the market for fuel pellets of woody material is a mature market. The biomass proposed to be used from Miscanthus is woody material. It is proposed to be made into fuel pellets. 7 CFR, Section 1450.2, as shown in Federal Register Vol. 75, No., 207, Wednesday, October 27, 2010, Definitions-Biobased Product states: "Products that have a mature market…will not be considered to be biobased products for the purposes of BCAP."	Biomass Products	NA	IN	47432	Individual	None	The BCAP establishment and annual payments are provided to the establishment and production of bioenergy crops. FSA has no control over the materials once it leaves the field for conversion into another product. As such the project definition is limited to establishment and production of giant miscanthus only, not any related downstream issues that FSA cannot control or regulate.
33	3	In the matter of Liberty Green Renewables Indiana, LLC, application for a Title V air operating permit, EPA agents made it clear that mere change of size of fuel particles did not make the LGRI facility a Fuel Conversion Facility; a Fuel Conversion Facility would change the nature or physical state of the fuel, as in a change from solid to gas or liquid.	General	NA	IN	47432	Individual	None	No response required.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
33	4	By the above two paragraphs, the proposed Biomass Conversion Facilities will not qualify as qualified biomass conversion facilities under BCAP. The BCAP BCF qualified list shows only three facilities, two in South Dakota and one in Iowa; these are not proposed as end consumers of the proposed miscanthus. There is no reason to further consider this Draft; it should be refused, denied, and terminated with prejudice.	Biomass Conversion Facility	NA	IN	47432	Individual	None	The BCAP establishment and annual payments are provided to the establishment and production of bioenergy crops. FSA has no control over the materials once it leaves the field for conversion into another product. As such the project definition is limited to establishment and production of giant miscanthus only, not any related downstream issues that FSA cannot control or regulate.
33	5	Further, and affirmatively: The sole specified possible consumers of the pelletized miscanthus are the University of Missouri's new CHP boiler to be operational in 2012, and the State of Missouri in some unspecified manner because of its renewable energy portfolio. The Univ. of MO's boiler is reported to be anticipated to use 100K tons per year of biomass from Missouri, not other states, and that biomass is stated to include wood chips and wood waste. Miscanthus pellets are not mentioned as fuel in reports on the boiler, not in an industry report nor in the Mizzou Weekly report of 5 May 2011. Mizzou Weekly uses a missouri.edu web address; it must be part of the university. Thus, the sole specifically cited possible combustor-for-domestic-energy consumer of these proposed miscanthus pellets has no current reported interest in them; the market is only a possibility at best. This Draft states farmers have signed up, but no BCFs independent of MFA Oil Biomass, Llc's proposed –only proposed– pelletization operations have signed up.	Biomass Products	NA	IN	47432	Individual	None	The BCAP establishment and annual payments are provided to the establishment and production of bioenergy crops. This environmental assessment is for one particular project area proposal being provided by the Project Sponsors. FSA for BCAP must either approve the project areas proposal after the appropriate processes are complete per statute and regulatory guidance or decline to accept the project area proposal. The process of approving the project area does not need to include specific producer acreage, at this point. FSA, after the project area has been approved, would solicit contract acreage from producers within the project areas. The BCAP is a voluntary program that producers enter based on their willingness and economic viability for production of the project areas species. Each producer entering acreage under these project areas would be required to follow all requirements of the Mitigation and Monitoring Plan, in addition to all other BCAP requirements within the site-specific Conservation Plan.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
33	6	Land impacts– Pastureland is still productive agricultural land, providing animals useful for food, wool and leather, and for human activity, from draft animals to pleasure horses. The Ashtabula project is to be 10% marginal crop land, but crop land, nonetheless. Fallow fields, which can be part of a crop rotation cycle are considered pasture in section 4.4.1.2. Inattention to detail on the part of the compiler of this Draft is shown in the inclusion of an average of land parcels anticipated to be used for miscanthus. The average is listed as 38-100 acres; an average would be a single number, not a range.	Land Use	NA	IN	47432	Individual	None	Pastureland, per the USDA NASS definition, includes all permanent or rangeland regardless of quality. This land type can provide high quality native grasslands or it can be previously disturbed early successional annual dominated areas. The average contract size is the average range across all proposed projects areas. At this time, there are no producers accepted into the project areas, so a determination of true average field size cannot be determined unless the project areas are approved by FSA. After approval, field size will be one metric reported during the Annual Report provided by the Project Sponsors to FSA, as part of the Final Mitigation and Monitoring Plan.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
33	7	Invasiveness– Even IDEM, the environmental management agency of Indiana, the state listed by Forbes as next to the worst in environmental matters, has published concern about the invasiveness of miscanthus giganteus (Assessment of Miscanthus sinensis and Miscanthus x giganteus in Indiana's Natural Areas Assessment conducted March 20, 2007 by Ellen Jacquart, Phil O'Connor, Ken Collins, Dave Gorden, Jeff Kiefer, Kate Howe)	Invasive	NA	IN	47432	Individual	None	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determine within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
33	8	Miscanthus giganteus, although presently not known to propagate except by rhizome extension, has the potential to spontaneously change to a fertile invasive species. Such has happened before, in a different hybrid. The history of the formerly sterile Spartina anglica, now an invasive plant, and the biological mechanism by which this sterile hybrid grass became fertile is available in: Nehring, S. and Adsersen, H. (2006): NOBANIS – Invasive Alien Species Fact Sheet – Spartina anglica. – From: Online Database of the North European and Baltic Network on Invasive Alien Species - NOBANIS www.nobanis.org, Date of access 05/07/2011.	Seed Sterility	NA	IN	47432	Individual	None	Complete history of this species indicates that a non-sterile species could have been planted instead of the sterile species due to the difficulty in separating the two species. Additionally, there had been indications that S. anglica reverted to a fertile state with relative ease. The giant miscanthus hybrid has not shown such traits based on the on-going field trials are recent larger scale plantings in Europe. The Project Sponsors are aware of the concern of cross-pollination with one of the parent species. As such, an exclusion would be included within the producer contracts that would not allow giant miscanthus to be planted within 400 meters (approximately 1,300 feet) from an existing infestation of Miscanthus sinensis or Miscanthus sacchariflorus or ornamental planting of these or other Miscanthus species to greatly reduce the probability of cross-pollination and production of viable seed.
33	9	Control of environmental risks/impacts is to be according to an MMP to be developed in the future. The MMP should be extant now, with revisions to be made as evidence of need arises. The Draft clearly shows environments will be affected by these miscanthus projects. A plan for mitigating these effects should exist before the projects begin and be available as part of this Draft, for public comment now.	Mitigation Measures	NA	IN	47432	Individual	None	The Mitigation and Monitoring Plan was provided in a draft form in the Draft EA to allow for public input and comment on the features to be included. Overall, comments from the public and agencies have provided a great deal of additional information to include in the Mitigation and Monitoring Plan as best management practices or exclusions of acreage.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
33	10	Page 4-15, lines 7, 8 state: "At maturity, these stands could have a decline in biodiversity if field margins shrink as the fields become fully mature." Maturity is at three years. This project could reduce biodiversity for a decade and a half or more. Could seems a carefully misleading choice of word. Since the Draft indicates Europe has grown miscanthus for 30 years, the Draft should clearly state and cite references for whether or not biodiversity has been and will be decreased by the crop.	Biodiversity	NA	IN	47432	Individual	None	There have been few published studies on the effects of biodiversity of this crop at maturity from Europe. Of the biodiversity studies, they have mostly focused on younger aged stands or anecdotal information, such as field observations.
33	11	Page 4-14, lines 11-13,states that the impact on the environment will be more with miscanthus crops than with fallow fields, which the Draft indicates comprise fallow land and pastures. Page 4-16, lines 29-31, shows there will be erosion during the first year or three (establishment) of the projects, when there is no miscanthus leaf mulch. This erosion will be a permanent loss of that soil eroded. The Draft does not but should state the amount of soil loss to be expected from initiation of the projects through the majority of the projects, including post-project restoration of the land. Further, the crop is bound to sequester minerals from the soil. These may be absorbed from the subsoil, or they may come from the topsoil, in which latter case re-mineralization of the project fields will be required for soil fertility when the project ends. The Draft should but does not address this.	Soil Resources	NA	IN	47432	Individual	None	Further clarification has been provided on the potential for soil erosion.
33	12	Page 4-16 raises several questions. Twenty-two percent of the root mass is not below ground, raising serious concerns about the viability of the crop due to frost damage to the root. Accumulated carbon input isn't defined. It is impossible to believe 26-29% of the carbon fixed by the plant thru photosynthesis is stored in the root system. Further, Hansen, et al (2004) only estimated, when he should have calculated from measurements, soil carbon sequestration. If accumulated carbon input does not consist of all carbon fixed by the plant, then the Draft should state what becomes of the other 71-74% of the accumulated carbon input.	Carbon Sequestration	NA	IN	47432	Individual	None	Twenty-two percent of the root mass is between 30-90cm. Hansen et al (2004) provides a description of how soil organic carbon contribution of miscanthus was calculated from stands of nine year old and 16-year old plantings. A large portion of accumulated carbon from miscanthus is captured in the harvestable biomass, the above-ground recycling, and the below-ground recycling of biomass.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
33	13	Pages 4-17&18, lines 30-3, state fertilizer and pesticide pollution of waters could increase from the proposed projects, compared to current use. This shows a clear need for an MMP to be extant now, not in the nebulous future, as the Draft acknowledges the risk. Twisted Oak Corporation, for its miscanthus biomass proposal submitted to the City of Jasper, Indiana, indicated no fertilizer would be necessary for the production of miscanthus giganteus. There appears to be misinformation disseminated by the industry.	Fertilizer Use, Mitigation Measures	NA	IN	47432	Individual	None	As stated in Section 2.2.2.1, fertilization would be required at a recommended rate of approximately, eight pounds of nitrogen, 1.5 pounds of phosphorus, and eight pounds of potassium per dry ton of biomass produced. However, soil testings at the local level could reduced or increase these amounts, due to the variability of soil types, moisture content, and conditions across the project areas. These rates are the average recommended for this crop based on field trials and European experience.
33	14	Table 4-4 shows a minor improvement in soil resources due to the proposed projects, this primarily during the establishment period. This directly contradicts the text of pages 4-16, 4-17, and 6-3, and calls into question the validity of information in this Draft.	Soil Resources	NA	IN	47432	Individual	None	Further clarification has been provided on the potential for soil erosion. The text error in the table has been corrected.
33	15	Page 5-3. Lines 17-18, state wildlife which use land affected by these projects can relocate temporarily to other lands. Since miscanthus will provide little if any winter cover and no wildlife food, as per Draft text, this temporary relocation is for the life of these projects: up to 21 years. The Draft should address this impact, unless this wildlife is considered expendable. The impacts upon wildlife expressed on page 6-5 sound much more severe than those discussed earlier in the Draft.	Biodiversity	NA	IN	47432	Individual	None	Miscanthus does provide winter cover as indicated through information provided by active fields observed for wildlife use in Illinois, outside of the University of Illinois field trials.
33	16	Water use, as stated in the Draft, seems inaccurate. Page 4-19, Lines 14-15, state irrigation would be necessary only in the first year. However, should rainfall be insufficient in late summer and fall, without irrigation, crop yield will plummet. Page 4-18 into 4-19 indicate irrigation of even the mature crop will be necessary in at least some of the projects' areas.	Water Use	NA	IN	47432	Individual	None	Further clarification to water use has been provided in reference to both comparisons of corn for grain and corn for silage. There would be no irrigation of giant miscanthus within these project areas after initial establishment this growing season. There was no indication based on available data that these project areas contain substantial amount of irrigated croplands. Average annual precipitation greater than 30 inches should be sufficient for the production of giant miscanthus.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
33	17	The water usage per kilogram of biomass of miscanthus is cited as 100-300 liters. This should be a single average number of liters for each project area, as 300 liters/kg is the cited average water usage of corn and soybeans. In light of other equivocal parts of the Draft, this section could and should be interpreted as showing miscanthus is capable of using just as much water per kilogram of biomass yield as corn and soybeans.	Water Use	NA	IN	47432	Individual	None	Water use has been furthered clarified and new literature is provided. This also includes a comparison with corn for silage, which is a crop that has enough data to be released in Pennsylvania. This provides a more description range of existing water uses within these areas.
33	18	Page 4-20, beginning paragraph, compares water consumption of the proposed project not to existing vegetation but to that preceding current land use. This appears to be a deceitful ruse that should not be allowed to stand.	Water Use	NA	IN	47432	Individual	None	Further clarification to water use has been provided in reference to both comparisons of corn for grain and corn for silage. There would be no irrigation of giant miscanthus within these project areas after initial establishment this growing season. There was no indication based on available data that these project areas contain substantial amount of irrigated croplands. Average annual precipitation greater than 30 inches should be sufficient for the production of giant miscanthus.
33	19	For at least the above reasons, I ask and urge you to reject both this Draft and these proposed projects for BCAP subsidies. Our nation will not benefit from deficit spending subsidization of combustion of biomass for electricity. That industry is neither clean nor, in the absence of government subsidies, economically viable on an industrial scale. The health care costs and human suffering potentially caused by that industry's pollution will further burden our nation. Please deny these projects all BCAP approval and subsidies.	General	Against	IN	47432	Individual	None	No response required.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
34	1	I am writing to support the BCAP Project Area application for Ashtabula, Ohio. As a farmowner with my brothers in Ashtabula County, I feel the BCAP program creates enough temporary economic incentives to move my brothers and other farmers in my region to commit land to dedicated energy crops. Due to the economics causing the decline of the small family farm, our land has lain fallow for the past 30 years and is ready to again produce a cash crop that will capture the sun's energy and water and contribute to the area's rebirth and energy supply. Our nation has spent decades talking about energy independence and setting high goals for transitioning our energy supply from foreign sources to domestic sources. No group or organization in America is more capable of providing this necessary energy supply than America's farmers. Critically, Miscanthus is the only energy crop that is perennial, non-invasive, and provides enough tons per acre to make economic sense. Dedicated energy crops are the most practical solution to a number of issues facing our nation. It provides my family with a new cash crop, will ensure economic development in rural communities, and will provide a home grown, reliable, base load energy supply that America desperately needs.	General	Support	NV	89410	Individual	Shellhamm-er Farm	Comment noted on the support of the proposed action.
35	1	I support the approval of Aloterra Energy's BCAP applications and I support the use of Miscanthus as an energy crop to meet America's renewable energy needs.	General	Support	TX	77002	Individual	Seyfarth Shaw LLP	Comment noted on the support of the proposed action.
36	1	I support the approval of Aloterra Energy's BCAP applications and I support the use of Miscanthus as an energy crop to meet America's renewable energy needs.	General	Support	OH	43604	Local-NGO	Toledo-Lucas County Port Authority	Comment noted on the support of the proposed action.
37	1	I support the approval of Aloterra Energy's BCAP applications and I support the use of Miscanthus as an energy crop to meet America's renewable energy needs.	General	Support	CO	80203	Individual	Plexus Capital, LLC	Comment noted on the support of the proposed action.
38	1	I support the approval of Aloterra Energy's BCAP applications and I support the use of Miscanthus as an energy crop to meet America's renewable energy needs.	General	Support	WA		Individual	None	Comment noted on the support of the proposed action.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
39	1	The EA evaluated Environmental Consequences of the Proposed Action in six general areas: 1) Data Gaps; 2) Land Use; 3) Socioeconomics; 4) Biological Resources; 5) Soil Resources; and 6) Water Quality and Quantity. My comments will address certain 'conservation aspects' of each of these areas (except Socioeconomics), as well as the Mitigation and Monitoring section.	General	NA	GA	30605	Individual	None	No response required.
39	2	Overview: Miscanthus x giganteus is a large, clump forming, C4, perennial grass from s.e. Asia. It is an almost completely sterile triploid hybrid (2n=3x=57) of M. sinensis (diploid; 2n=38) and M. sacchariflorus (tetraploid; 2n=76). The hybrid and its numerous cultivars have been developed artificially, but recent evidence suggests it may be a naturally occurring hybrid (Nishiwaki et al. 2001). Both parents of the hybrid are considered invasive in many parts of the world, especially M. sinensis which produces viable seed as both a species and as numerous cultivars. Although the pure species has been largely removed from the horticultural trade in the U.S., it was planted as an ornamental for nearly 100 years and those plants have spread invasively in the eastern U.S. Its supposedly 'sterile' cultivars can also produce viable seed when they cross with each other or back cross with the species.	Species Information	NA	GA	30605	Individual	None	No response required.
39	3	It has been grown in Europe for about 25-30 years where there is considerable interest in it as a biofuel/biofeedstock. In the U.S. it has been primarily cultivated on a trial basis and tested in the upper Midwest (e.g., Illinois). The Univ. of Georgia is also part of the research effort.	General	NA	GA	30605	Individual	None	No response required.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
39	4	I think it's safe to say that the 'genie is out of the bottle' as far as the development of biofuels is concerned. And there's no putting it back given America's demand for energy, dwindling domestic oil reserves, dependence on foreign suppliers (with accompanying political, foreign policy, and national security implications), concern for addressing climate change and reducing carbon footprints, and ramped up capital investment and speculation – all greatly enabled by the federal renewable fuel standard outlined in the Energy Security and Independence Act of 2007. There are certainly positive aspects to biofuel development and use, but the biofuel craze has the potential to become a 'run-away train'. Some advocates of biofuels have labeled any objections, cautionary statements, or regulations as obstructionist and even "un-American.." Some have gone so far as to label invasion biologists as "eco-Nazis" (Simberloff 2003).	Biofuel Concerns	NA	GA	30605	Individual	None	The BCAP establishment and annual payments are provided to the establishment and production of bioenergy crops. The Project Sponsors are proposing a specific project for inclusion within the BCAP. The reasonable alternatives under consideration are (1) the Proposed Action, which implements the Project Sponsors plan or (2) the No Action Alternative, which would not implement the Project Sponsors plan. The Project Sponsors are not required to propose alternative species, methods, or project locations under NEPA.
39	5	There are essentially two broad issues here: 1) the effect on the environment (incl. native plants and animals) from the cultivation of biofuels, in general, and 2) the specific deleterious effects of using non-native species (even mostly sterile ones) for this purpose. The first issue is focused primarily on land use changes as more acres are put into cultivation of biofuel crops. The second issue focuses primarily on the potential invasiveness of the specific crop species. Both issues impact native vegetation, wildlife, and soil/water resources.	General	NA	GA	30605	Individual	None	No response required.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
39	6	I. Environmental Consequences. A. Data Gaps: The EA acknowledges that "certain information has been found to lack complete detail in relation to growth and production of giant miscanthus in the United States." Almost no peer-reviewed literature exists for landscape scale analyses of any kind or the specific effects on biological diversity in the U.S. Some literature exists for potential plant pests, soil related issues (nutrient cycling, organic matter, erosion, carbon sequestration, etc.), and water related issues (water use efficiency and irrigation needs). The EA does reference available literature. Although the EA states that it has "documentation supporting that giant miscanthus should not be considered invasive due to its sterility and slow rhizome spread", it nevertheless identifies 'invasiveness' as a category for which the literature is incomplete. The last point will be discussed in greater detail later.	Data Gaps	NA	GA	30605	Individual	None	No response required.
39	7	B. Land Use (Change): This is a critical issue for all biofuel-related matters. The EA for this proposal states that mostly pasturelands and marginal or idle croplands will constitute the 200,000 acres planted in giant miscanthus for this project by 2014. It states that "implementing the Proposed Action would not result in significant changes in land use types that could trigger development of agricultural lands into other non-agricultural land use types nor would it create a substantial loss of arable cropland within the proposed project areas." The entire focus seems to be on not altering the agrarian nature of the project areas or in 'cannibalizing' high quality cropland currently devoted to other crops. However, converting idle croplands back to agriculture does represent a net-loss for wildlife habitat. The EA actually goes so far as to include in its 'land-use algorithm' the number of Conservation Reserve Program (CRP) acres that will be expiring from enrollment in 2010-2014. Instead of viewing this as an opportunity to facilitate more biofuel crop production, the expiration should be seen as an opportunity to re-enroll these acres in Farm Bill conservation programs.	Land Use	NA	GA	30605	Individual	None	FSA has no control over parceling of expiring CRP contracts once they leave CRP. Individual producers can choose to re-offer those acres to CRP; however, that choice is up to the individual producer. The Project Sponsors are targeting marginal croplands and idle lands to avoid compromising harvestable acreage in traditional crops.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
39	8	The EA further states that "given the high commodity prices associated with traditional crops and the lack of adequate bioconversion facilities (BCF) there would not be enough demand in the region to convert more than a modest amount of agricultural lands to dedicated energy crop production and away from traditional crops". This is disingenuous because one goal of the Proposed Action is to 'grow the market', as evidenced by the mentioning of the "potential for additional BCAP project acres within the proposed project areas." Depending on the landscape and availability of arable acres, the new additional acres may come at the expense of wildlife habitat (i.e., woodland, forest, early-successional habitats, etc.).	Land Use	NA	GA	30605	Individual	None	Based on the amount of available "other cropland" and pastureland within the project areas, there is sufficient acreage to avoid the conversion of higher quality habitats (e.g., forestlands or woodlands) or lands currently included within a Federal or State conservation program. BCAP, by statute, provides a mechanism to help producers establish and produce bioenergy crops. With this program, the Project Sponsors are estimating a positive balance for producers by Year 6 of production, rather than at Year 10 or later without BCAP.
39	9	A Mitigation and Monitoring Plan (MMP) was developed for this proposal in accordance with Council on Environment Quality (CEQ) guidance for National Environmental Policy Act (NEPA) decisions. It will attempt to track conversion of land use (and their productive status) and mitigate potential adverse impacts. It suggests additional restrictions on land use conversion may be necessary. This is much easier said than done. Land use restrictions are difficult to achieve and are subject to constitutional challenge. In addition, it would not be the responsibility of either of the project sponsors, Aloterra Energy LLC and MFA Oil Biomass Company LLC, to pursue these restrictions that would actually run counter to their own long-term investment interests. They may, however, be financially obligated to contribute to mitigation efforts under terms of the MMP.	Land Use	NA	GA	30605	Individual	None	The Project Sponsors are not directing land use restrictions, except for producers that entire into contracts to establish and produce giant miscanthus as part of the project area. The Project Sponsors have committed to the Mitigation and Monitoring Plan to ensure that this species does not become an invasive problem from the project areas.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
39	10	C. Biological Resources: Potential invasiveness and adverse effects on wildlife and natural habitats are two primary concerns. With regards to invasiveness, it should first be noted that many of the very traits that are desirable for biofuel species also are associated with invasiveness. These include: 1) perennial life history; 2) high above-ground biomass production; 3) drought tolerance; 4) high soil infertility tolerance ; 5) high soil salinity tolerance; 6) high water efficiency; 7) high nitrogen efficiency; 8) a C_4 photosynthetic pathway; 9) highly competitive; 10) relatively free of pests and pathogens; and 11) allelopathic. Giant miscanthus possesses most of these traits. Secondly, both parents of the *M.* x *giganteus* (*M. sacchariflorus* and *M. sinensis*) are invasive, especially the latter. At the very least, this suggests that there is adequate potential for this species to become invasive.	Invasive	NA	GA	30605	Individual	None	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determine within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
39	11	Giant miscanthus is purported to be a sterile triploid hybrid which does not produce seed or viable pollen and is, therefore, sterile. The three sets of chromosomes cannot pair and divide evenly during meiosis, resulting in unequal segregation of the chromosomes and consequently sterility. However, if the chromosomes fail to segregate, resulting in an unreduced gamete with 57 chromosomes, this unreduced gamete may be able to fuse with either a haploid (1n) gamete from a species such as *M. sinensis*, to produce a tetraploid offspring (4n=76), or with another unreduced gamete to form a hexaploid offspring (6n=114). The tetraploid and the hexaploid progeny could be fertile amongst themselves but not amongst the triploid parents. It is also possible to produce viable propagules through apomixis. Apomixis uses asexual reproduction (i.e., no fertilization) to produce a seed that is essentially a clone of the sporophyte parent. Giant miscanthus is also a rhizomatous, clump-forming perennial and is capable of vegetative reproduction and, therefore, vegetative invasive spreading (at a rate of about 10 cm/yr). It is possible that a significant disturbance event (i.e., flooding, tornado, etc.) could translocate rhizomes to non-project areas and thus initiate an infestation (New Zealand Environmental Risk Management Authority 2007).	Seed Sterility	NA	GA	30605	Individual	None	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determine within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
39	12	Past performance of an introduced/potentially invasive species reflects past environmental conditions and genotypes, and may not be an adequate predictor of future performance (Simberloff 2008). Although the evidence from 30 years of trials and study in Europe is the lack of any observation of the production of viable seeds or pollen, apomixis, or unintentional vegetative outbreaks, any of these are theoretically and mathematically possible. High densities and improved environmental conditions associated with cultivation (from the crop's perspective) provide evolutionary pressures for the development of novel genotypes, restoration of fertility, and creation of self-sustaining populations (both sexually and asexually).	Seed Sterility	NA	GA	30605	Individual	None	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determine within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
39	13	It is also critical to mention that research is currently underway at the University of Illinois to improve the biofuel potential of giant miscanthus by genetically engineering a fertile hexaploid (6n) variety (Chang et al. 2009). In plants, doubling of the chromosome number is often associated with larger more robust individuals. Restoring fertility would also enable future cultivation to employ seed, as opposed to the more expensive and labor-intensive use of rhizomes. While this might improve biofuel economy and yield, it will also produce a variety of giant miscanthus that is much more likely to become invasive. This relates to earlier comments regarding the biofuel craze as a 'runaway train'.	Seed Sterility	NA	GA	30605	Individual	None	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determine within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
39	14	The most widely used predictive tool for invasiveness, the Australian Weed Risk Assessment WRA), was utilized to evaluate the potential invasiveness of giant miscanthus, but this may prove inadequate. Several researchers (Barney and DiTomaso 2008; Gordon et al. 2011) screened giant miscanthus using the WRA and pronounced it 'safe' for consideration as a biofuel. One problem with the WRA is that its validation depends on 'after-the-fact' analysis. Many species remain non-invasive and geographically/ecologically constrained for decades (or even a century or more) until suddenly experiencing exponential growth rates and becoming invasive. Even a more precautionary approach as developed by Davis, T. et al. (2010) that employs the WRA as an initial screen to be followed up by more testing and evaluation may not be able to predict or prevent invasiveness.	Invasive	NA	GA	30605	Individual	None	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determine within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
39	15	The EA takes refuge from the issue of potential invasiveness in the development and application of the MMP and promises successful eradication measures. Ostensibly, a properly developed and executed MMP would provide for early detection and rapid response to an invasive outbreak, which could then be "easily eradicated using commercially available herbicides." If the outbreak occurred across limited time and spatial scales, then eradication may indeed be swift and sure. However, if multiple continual outbreaks occurred from an adapted invasive genotype then eradication might quickly become impossible or prohibitively expensive. Eradication measures also can have unintended consequences for non-target species.	Invasive, Mitigation Measures	NA	GA	30605	Individual	None	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determine within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
39	16	The impact of the cultivation of biofuels on wildlife and wildlife habitat depends upon the use and status of the proposed cultivation area prior to biofuel conversion. The EA claims that only idle/marginal croplands and expiring CRP lands will be utilized for this purpose. While this will have a lower impact on wildlife than converting healthy forest and prairie, it still represents a net loss of early successional habitat. Field margins, hedgerows, shrubby/herbaceous idle lands, and lands in conservation programs are all superior for wildlife as compared to a high-density cultivated field. The EA states that a cultivated biofuel crop will have greater diversity and fewer environmental impacts than a traditional cultivated field crop, such as corn, wheat, potato, soybean, etc. The EA also attempts to argue in favor of rhizomatous grasses, even if non-native and cultivated in monocultures since they "require less tillage, lower agrochemicals, and high above and below-ground biomass, which are beneficial for soil microfauna and provide cover to invertebrates and birds." This is hardly the issue. Early seral habitats and species are under assault from succession and conversion. Any genuine concern for these would manifest itself in a call for increased conservation lands and incentives to landowners to manage for early-successional habitat.	Biodiversity	NA	GA	30605	Individual	None	Biodiversity information reviewed from European literature does suggest that miscanthus can provide wildlife and insect habitats when compared to traditional crops and some pasture lands. The Mitigation and Monitoring developed in consultation with NRCS and ARS, provides appropriate minimum buffer width for each project area, combined with site-specific increases in buffer width for adjacency to sensitive areas, to be included in the individual Conservation Plan. Additional safeguards have been established for active producer monitoring and reporting to the Project Sponsor for the initiation of appropriate control technologies.
39	17	The EA invokes the MMP as a means to identify and offset potential negative impacts on wildlife and wildlife habitat. It discusses the use of BMPs, adaptive monitoring and management, and corrective measures, if necessary, to mitigate for unintended negative impacts. While planning for these actions is a positive step, it represents the minimum of what should be expected from a project such as this. Furthermore, **planning** for successful mitigation and **delivering** successful mitigation are two entirely different matters.	Mitigation Measures	NA	GA	30605	Individual	None	The Mitigation and Monitoring Plan was provided in a draft form in the Draft EA to allow for public input and comment on the features to be included. Overall, comments from the public and agencies have provided a great deal of additional information to include in the Mitigation and Monitoring Plan as best management practices or exclusions of acreage.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
39	18	Most rare and protected species, and other species of conservation-concern would not likely be directly affected by the footprint of this proposed action due to their absence from the project areas. Some migrating protected species may be impacted, but this impact would be expected to be low given the relatively few acres (200,000) involved in this project, at least initially. Rare aquatic organisms are probably at greatest risk depending upon the impacts of giant miscanthus cultivation on soil and water resources. Some soil erosion and changes to the hydrologic regime should be expected during the 'crop establishment' phase. Longer lasting impacts are unknown.	Biodiversity	NA	GA	30605	Individual	None	Further clarification would be provided to ensure that site-specific conditions do not create adverse effects to State-listed species. Species of concern, but not protected under State law/regulation, Federal laws/regulations, or tribal regulation would be considered to the extent of management by the appropriate entity. Site specific Conservation Planning would address wildlife best management practices that meet the needs of locally occurring protected species. No taking of a protected species would be allowed without appropriate consultation with the U.S. Fish and Wildlife Service and the appropriate State agency.
39	19	D. Soil Resources: While there would be both positive and negative impacts on soil resources associated with land conversion to giant miscanthus cultivation, the overall effect would likely be neutral to slightly positive. Giant miscanthus has abundant above and below ground biomass, and a deep root system (50% of which is below 90 cm). It produces more above ground biomass (and carbon) than other biofuels (e.g., switchgrass) and even native prairie (Davis, S.C. et al. 2010). Heavier litter fall and more extensive root production leads to higher soil carbon accumulation levels, and helps reduce soil erosion due to wind and water. The greater root system also improves water storage and microbial processes. There would be potential for soil erosion during the establishment phase, which BMPs could at least partially address.	Soil Resources	NA	GA	30605	Individual	None	No response required.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
39	20	E. Water Resources: Relative impacts to water quality are dependent upon whether the comparison is to traditional row crop cultivation or to idle, marginal or conservation lands. Water quality, both above and below ground, is best protected by intact habitats of native vegetation. That said, however, giant miscanthus cultivation should have fewer negative impacts to water quality than a row crop. Giant miscanthus is very effective at scavenging and recycling nutrients, and its thick vegetative mat and substantial litter layer control sheet flow of water and erosion following rainfall events. These combine to reduce off-site movement of nutrients and sediments, and to limit nutrient leaching through soil, thus potentially improving stream and groundwater quality, respectively. However, cultivation activities require inputs of fertilizers, pesticides, and herbicides, and also generate mechanical and internal combustion engine residues and leakages (e.g., fuel, oil, lubricants, etc.). These additional chemical inputs may potentially offset any gains in water quality provided by the physiology and growth habits of giant miscanthus.	Water Quality	NA	GA	30605	Individual	None	The Mitigation and Monitoring Plan and each producers' Conservation Plan will address agricultural chemical usage BMPs and guidance. The combination ensures that even with the conversion of pasture, that stormwater runoff even during the establishment period, would result in only minor effects to water quality.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
39	21	Evaluation of impacts to water quantity also depend upon the nature of the comparison. Since supplemental watering (i.e., irrigation) would only be needed in the first year on each farm to establish the giant miscanthus centralized propagation areas (i.e., rhizome bank for future outplantings), water budget considerations are only concerned with water use efficiency (WUE) and evapotranspiration (ET). Giant miscanthus has a relatively high WUE (9.0-10.7 grams dry weight/1 kg of water lost (normalized for maximum vapor pressure deficit) and is comparable to other C_4 row crops, such as corn (8.2-12.0g/kg) and pearl millet (8.4-10.6g/kg) (Beale et al. 1999). Native prairie in north-central Oklahoma with a mix of C_3 and C_4 graminoids and herbaceous species has a WUE of 0.2 to 2.2 g/kg (not normalized). Comparisons between normalized values for miscanthus and un-normalized values for native prairies (Burba 2005) are problematic.	Water Use	NA	GA	30605	Individual	None	Further clarification will be provided through normalized values where available in the literature.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
39	22	However, the issue here is that the EA is attempting to justify the cultivation of a non-native, potentially invasive species by arguing that it is at least as efficient at using water to produce above ground biomass, if not more so, than are other crops that might be cultivated. From a conservation perspective the issue is not how efficiently giant miscanthus uses water, but how much water it uses. McIssac et al. (2010) prepared an experimentally derived estimated water budget comparing giant miscanthus with native switchgrass, and the annual crops corn and soybean. They found growing season ET for corn and soybean to be approximately 18 mm greater than for switchgrass. Estimated ET from giant miscanthus was on average 140 mm greater than switchgrass and 104 mm greater than corn and soybean. They predicted that if giant miscanthus was planted extensively in central Illinois that a 104-mm increase in ET could cause an annual reduction in surface water flows of approximately 32%. This is consistent with the longer growing season, faster growth rate, larger leaf area and deeper root system of giant miscanthus as compared to other annual crops. This not only makes a case for the use of native switchgrass, but also against the use of non-native giant miscanthus.	Water Use	NA	GA	30605	Individual	None	Further clarification to water use has been provided in reference to both comparisons of corn for grain and corn for silage. There would be no irrigation of giant miscanthus within these project areas after initial establishment this growing season. There was no indication based on available data that these project areas contain substantial amount of irrigated croplands. Average annual precipitation greater than 30 inches should be sufficient for the production of giant miscanthus.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
39	23	II. Mitigation and Monitoring Plan The MMP (referenced in earlier sections), is the plan that addresses the possible identification of deleterious impacts resulting from this project, and addresses who is responsible for the detection, who is responsible for developing the plan and procedures for mitigation, who is responsible for funding the mitigation, who is responsible for performing the mitigation, and who will ultimately be held accountable for successful mitigation. The EA provides an impressive list of agencies involved in this effort: the USDA Farm Service Agency (FSA), the USDA Rural Development, USDA Animal and Plant health Inspection Service (APHIS), USDA Agricultural Research Service (ARS), USDA Natural Resource Conservation Service (NRCS), USDA Forest Service (USFS), US Fish and Wildlife Service (USFWS), US Army Corps of Engineers (USACE), Ohio Seed Improvement association (OSIA), and State Historic Preservation Offices (SHPO). Somewhere, lost in all the acronyms, bureaucracies, and the promises, good intentions and redundancies built into the MMP, is the fact that the history of non-native invasions is associated with unexpected developments across time and spatial gradients, and in indirect ways often completely unpredictable (Simberloff 2008). While the development of a MMP is required by law and is meant to demonstrate responsibility and preparedness, it is not a panacea. It can not guarantee that negative impacts will not occur or that they will be successfully remedied or mitigated. Although the MMP is a necessary document, it provides both an insufficient 'fail-safe' and insufficient justification for this project.	Mitigation Measures	NA	GA	30605	Individual	None	The Mitigation and Monitoring Plan was provided in a draft form in the Draft EA to allow for public input and comment on the features to be included. Overall, comments from the public and agencies have provided a great deal of additional information to include in the Mitigation and Monitoring Plan as best management practices or exclusions of acreage.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
39	24	III. Finding. The potential for biofuels to become an integral part of the nation's energy supply and a focal point of energy policy is undeniable. Issues of domestic energy supply vs. demand, national security, and global climate change ensure the U.S. government's involvement in encouraging biofuel development. Opportunities for entrepreneurs, corporations, and capital investors to recognize substantial profits explains their motivation. The issue is not whether to oppose or support biofuel development, but rather how to constructively engage the biofuel promoters in a manner that protects natural vegetation, wildlife, wildlife habitat, and soil and water resources.	General	NA	GA	30605	Individual	None	No response required.
39	25	As mentioned earlier, the proposed action can be evaluated at the levels of biofuels in general, and giant miscanthus use, specifically. Biofuels derived from existing crop and forestry residues would not be expected to impart many negative impacts to vegetation, wildlife, water resources, etc. However, cultivated biofuels must do so at the expense of lands supporting other crops, pastures, forests, conservation interests, etc. It is the cultivated biofuels that have the potential to adversely impact the environment and natural history elements. Land that was otherwise available to wildlife and native vegetation may be converted to biologically sterile (or nearly sterile) monocultures that could reduce soil and water quality/quantity. The Proposed Action is being conducted on a relatively small scale (200,000 acres), but is utilizing idle lands and expiring conservation lands that would better serve native vegetation and wildlife if left uncultivated. Biofuel projects should be considered acceptable **only** when they **replace** one monoculture with another monoculture.	Biofuel Concerns	NA	GA	30605	Individual	None	The Project Sponsors are proposing a specific project for inclusion within the BCAP. The reasonable alternatives under consideration are (1) the Proposed Action, which implements the Project Sponsors plan or (2) the No Action Alternative, which would not implement the Project Sponsors plan. The Project Sponsors are not required to propose alternative species, methods, or project locations under NEPA.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
39	26	With regards to the specific use of giant miscanthus as a biofuel crop, there seem to be ample reasons for rejecting it. First, both its parents, especially *M. sinensis* are invasive in many parts of the world. Second, many desirable qualities possessed by biofuel species (incl. those of giant miscanthus) are identical to traits associated with invasiveness, such as perennial life history, high biomass production, drought tolerance, a C_4 photosynthetic pathway, high water use efficiency, etc. Third, despite the fact that it is considered a sterile hybrid triploid, there are numerous 'natural' genetic mechanisms capable of restoring fertility. Given the sheer number of meiotic divisions associated with the millions and billions of plants/inflorescences/pollen grains, the evolutionary pressures provided by intense cultivation, and the numerous opportunities for crossing/backcrossing with various *Miscanthus* cultivars growing across the landscape, the restoration of fertility and/or the creation of a novel invasive are more probable than the EA allows. Fourth, past 'good behavior' of a potentially invasive species can not ensure a similar performance in the future. The history of invasion is fraught with examples of this phenomenon, such as Chinese privet (*Ligustrum sinense*) in these U.S. Fifth, while soil resources are not likely to experience adverse impacts from the cultivation of giant miscanthus, water resources, especially water quantity of soils and water available to recharge aquifers and streams, will decrease. This decrease may be substantial in intensely cultivated systems.	General	Against	GA	30605	Individual	None	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determine within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced.
39	27	In short, the No Action Alternative of the EA should be implemented. The FSA should not establish the proposed project areas supporting the establishment and production of giant miscanthus.	General	Against	GA	30605	Individual	None	No response required.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
40	1	We have been through the detailed Environmental Impact assessment of Miscanthus for this project. We fully support this application on the basis that the overall environmental balance of growing Miscanthus is positive. My background is that I have been involved in Miscanthus for 15 years and its commercialisation in the EU since 2001, planting the first large scale commercial crops under the UK Government equivalent scheme for supporting new biomass crops. As part of this expansion we routinely undertook environmental impact assessments of for all crops on a field by field basis covering all aspects. We were also involved in the fundamental studies that underpinned these assessments working as the industrial partners on University projects investigating different areas such as biodiversity, water use and public perception. On this basis having been involved in Miscanthus and seeing things 10 years forward we support fully its introduction on this basis as an energy crop. Going forward we now produce information on crops that are grown to meet current sustainability reporting guidelines. With a demand for increasing renewables, biomass provides things wind and solar cannot, in terms of fuels and heat. For this to become a reality far larger resources of biomass are needed, that demand requires energy crops, Miscanthus has been proved as a vital contributor to that.	General	Support			Individual	New Energy Farms Ltd.	Comment noted on the support of the proposed action.
41	1	I support the approval of Aloterra Energy's BCAP applications and I support the use of Miscanthus as an energy crop to meet America's renewable energy needs.	General	Support			Individual	None	Comment noted on the support of the proposed action.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
42	1	Missouri Farm Bureau (MFB), the state's largest farm organization, submits the following comments regarding the Draft Environmental Assessment for the Proposed Giant Miscanthus Establishment and Production in Arkansas, Missouri, Ohio, and Pennsylvania sponsored by Aloterra Energy LLC and MFA Oil Biomass LLC. We appreciate the work of the USDA Farm Service Agency (FSA) in evaluating the potential environmental resource and economic impacts of the proposal and offer support for the Proposed Action alternative. Our members support renewable energy as part of a comprehensive energy policy for our nation. The production and utilization of biomass harvested from farm, ranch and forestlands should be part of the strategy. In this particular proposal the project sponsors would like to establish two cultivation of giant miscanthus. Such action will be positive for positive for participating farmers as a source of income and rural communities as a result of added economic activity - all while accomplishing the goals of BCAP. We encourage FSA to designate the proposed counties in Missouri and other states as BCAP project areas given no significant negative impacts were identified. Furthermore, we would encourage FSA to work closely with the project sponsors and farmers as the Mitigation and Monitoring Plan is developed and implemented.	General	Support	MO	65102	State NGO	Missouri Farm Bureau Federation	Comment noted on the support of the proposed action.
43	1	Overall, the Environmental Assessment, as written, has flaws in logic, uses inappropriate comparisons to experience in Europe because of the lack of data in the US, dismisses the potential for pest problems, invasiveness or impacts on wildlife. The lack of input from appropriate specialists (agronomists, entomologists, wildlife specialists) renders the conclusions suspect.	General	Against	AR	72703	Individual	None	No response required.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
43	2	As stated on page 4-1, the oldest cultivation (in Europe) has been only 30 years, and large-scale cultivation in the United States has not yet occurred. Therefore, the data are lacking on environmental consequences. The Mitigation and Monitoring Plan is an excellent start, but is insufficient in its scope and its assumptions. Specific points include:	Data Gaps	NA	AR	72703	Individual	None	The Project Sponsors have made efforts to identified available literature associated with the production of giant miscanthus, both positively and negatively. To ensure avoidance and minimization of potential effects the Project Sponsors in consultation with USDA have developed a stringent Mitigation and Monitoring Plan for broad scale efforts across all project areas. Additionally, more stringent or broad BMPs could be used at the contract acreage level based on State and local regulations and site-specific conditions within each tract. Those BMPs would be part of each producer's Conservation Plan, which would be developed with the assistance of Technical Service Providers. The Project Sponsors are obligated to provide FSA with Annual Report detailing many aspects of establishment, production, and control of unwanted spread or pests and diseases. Each producer within the project area would be contractually obligated to the Project Sponsors to provide the necessary information from each contract to include within the project area Annual Report. If a producer fails to monitor or contain an identified issue, the Project Sponsor would assume that responsibility for that contract, with the producer being billed for those activities, if necessary.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
43	3	· On Pages 4-1 and 4-2, the listing of factors lacking detail in relation to growth and production in the US is extensive enough to warrant further documentation of economic benefits and no environmental impacts.	Data Gaps	NA	AR	72703	Individual	None	The Project Sponsors have made efforts to identified available literature associated with the production of giant miscanthus, both positively and negatively. To ensure avoidance and minimization of potential effects the Project Sponsors in consultation with USDA have developed a stringent Mitigation and Monitoring Plan for broad scale efforts across all project areas. Additionally, more stringent or broad BMPs could be used at the contract acreage level based on State and local regulations and site-specific conditions within each tract. Those BMPs would be part of each producer's Conservation Plan, which would be developed with the assistance of Technical Service Providers. The Project Sponsors are obligated to provide FSA with Annual Report detailing many aspects of establishment, production, and control of unwanted spread or pests and diseases. Each producer within the project area would be contractually obligated to the Project Sponsors to provide the necessary information from each contract to include within the project area Annual Report. If a producer fails to monitor or contain an identified issue, the Project Sponsor would assume that responsibility for that contract, with the producer being billed for those activities, if necessary.
43	4	· The socioeconomic information was provided by the project sponsors, not from an independent source. Given the proposed project would introduce a perennial crop plant with a 20-30 year lifespan, independent analysis is highly desirable.	Socioecono mics	NA	AR	72703	Individual	None	BCAP is a voluntary program that producers join if there is enough economic incentive for the individual producer to justify the production of a bioenergy crop. As such, producers bear the burden of determining individual economic viability on their contract acres. The Project Sponsors are providing technical assistance to the contract producers for establishment, production, and harvesting. The economic analysis provided in the Draft EA, was determined from publicly available data most similar to the confidential economic information developed by the Project Sponsors as part of the application.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
43	5	· There is no landscape-level analysis of *Miscanthus* because there is no large-scale planting in the US. However, the scale of planting is great enough that environmental changes are likely to occur.	Land Use	NA	AR	72703	Individual	None	The Project Sponsors in consultation with NRCS and ARS have developed the Final Mitigation and Monitoring Plan to provide project area level guidance and best management practices, as well as acreage exclusions, control methods, and training activities. Site-specific analysis will be undertaken for each contract producer to determine the potential for effects at that level. Each producer will be required to have a Conservation Plan, which could be more restrictive than the Mitigation and Monitoring Plan guidance.
43	6	· Irrigation is proposed to be used solely for establishment; however, *Miscanthus* yields can be doubled with adequate water. Comparisons are made to irrigation needs of crop lands, yet the proposed project states that pasture and marginal land would be used for the project – therefore, irrigation needs would not replace current usage, but add to it.	Water Use	NA	AR	72703	Individual	None	Further clarification to water use has been provided in reference to both comparisons of corn for grain and corn for silage. There would be no irrigation of giant miscanthus within these project areas after initial establishment this growing season. There was no indication based on available data that these project areas contain substantial amount of irrigated croplands. Average annual precipitation greater than 30 inches should be sufficient for the production of giant miscanthus.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
43	7	· The statement made (p. 4-2) that literature on invasiveness was discussed is lacking detail, and the "documentation supporting that giant miscanthus should not be considered invasive…" is a letter from the Ohio Seed Improvement Association – not based on consultation with invasion biologists. The reasoning behind the conclusion about *Miscanthus* not being invasive is based on the lack of viable seed production. However, there are other plants that produce no seed (e.g.,, giant reed, *Arundo donax*), yet are highly invasive. Further, the recent research conducted at the University of Illinois that has developed *Miscanthus* with double the number of chromosomes would produce seed (and would likely produce higher yields and be more productive). There are no safeguards to prevent the future use of those fertile varieties.	Seed Sterility	NA	AR	72703	Individual	None	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determine within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range.
43	8	· Another statement (p. 4-2) was made that literature discussing potential plant pests has been included; however, what was not included was the potential impacts of those pests and diseases on <u>other</u> crops. For example, crop rotation has been used for years to manage corn rootworm. Planting a perennial grass crop increases the potential for corn rootworm to produce pests that will affect corn plantations throughout the proposed area. Further, *Miscanthus* is already known to harbor an aphid that is a known risk to sorghum.	Pests & Diseases	NA	AR	72703	Individual	None	As part of each contract level Conservation Plan, pests and diseases for that specific area would be included as part of an Integrated Pest Management Plan (IPM). Treatment of any identified pests would be similar to treating pests in traditional crops or through the use of an IPM activities, if feasible for giant miscanthus. Each IPM, would be similar to the overall Conservation Plan, in that it would be site-specific.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
43	9	· The statement was made that, because there is little peer-reviewed literature on effects of giant miscanthus on biological diversity in the US, the writers of the proposal used literature published in Europe on birds and small mammals in young-aged plants. This is inappropriate in at least three ways: 1) there will be a great difference between young plants and mature stands, and plants will be mature for nearly all the 20-30 year lifespan of the project; 2) the studies were on plots that were too small (7.4 acres, page 4-14; Arkansas fields will be 38-100 acres in size) to determine any true effects; and 3) species differ between Europe and the US, and extrapolation of the sort proposed is inappropriate. Further, the comparison was made that there was greater abundance and diversity of birds in miscanthus fields than in wheat fields. This is a totally inappropriate comparison, as the proposed sites to be used will not be replacing wheat production. And the reference stating that young miscanthus fields had greater abundance and diversity of birds than in reed canary grass is again a false comparison (let alone that reed canary grass is highly invasive in the US, yet is not in England). In addition, the reference cited (Semere and Slater 2007) was not in the references provided in the document. One reference that was provided (Fargione 2010) does not support the deployment of low-diversity biomass crops.	Biodiversity	NA	AR	72703	Individual	None	The NEPA process requires a review of the best available data on both positive and negative aspects. Given the lack of substantial data on this species in the United States, European literature was referenced as appropriate. Additionally, since no large scale plantings of the Illinois clone of giant miscanthus have been undertaken, the Project Sponsors, in consultation with NRCS and ARS, developed a Mitigation and Monitoring Plan to minimize the potential for negative effects. Also, at the site-specific level, each producer's acreage would undergo environmental screening to identify sensitive resources or areas. If affects could not be mitigated, those acres would not be accepted for BCAP. Each individual producer must have a Conservation Plan to match the site-specific conditions of the acreage. Biodiversity information reviewed from European literature does suggest that miscanthus can provide wildlife and insect habitats when compared to traditional crops and some pasture lands. The Mitigation and Monitoring developed in consultation with NRCS and ARS, provides appropriate minimum buffer width for each project area, combined with site-specific increases in buffer width for adjacency to sensitive areas, to be included in the individual Conservation Plan. Additional safeguards have been established for active producer monitoring and reporting to the Project Sponsor for the initiation of appropriate control technologies.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
43	10	The references provided are inadequate and could be considered biased toward the positive potential of the project, with cursory reference to any studies that are not directly supportive of the project. A recent issue of Current Opinion in Environmental Sustainability (March 2011, Volume 3, Issues 1-2; Elsevier Publisher) is devoted to risks and benefits of growing biofuel crops. That literature needs to be considered to have a more-complete picture of the current state of knowledge.	Biomass Feedstock	NA	AR	72703	Individual	None	The BCAP establishment and annual payments are provided to the establishment and production of bioenergy crops. This environmental assessment is for one particular project area proposal being provided by the Project Sponsors. FSA for BCAP must either approve the project areas proposal after the appropriate processes are complete per statute and regulatory guidance or decline to accept the project area proposal. The process of approving the project area does not need to include specific producer acreage, at this point. FSA, after the project area has been approved, would solicit contract acreage from producers within the project areas. The BCAP is a voluntary program that producers enter based on their willingness and economic viability for production of the project areas species. Each producer entering acreage under these project areas would be required to follow all requirements of the Mitigation and Monitoring Plan, in addition to all other BCAP requirements within the site-specific Conservation Plan.
43	11	In conclusion, I believe the information provided in the EA is inadequate, treats several key issues superficially and treats the lack of any data as a clear sign to move forward, rather than seek information to address the issues.	General	Against	AR	72703	Individual	None	No response required.
44	1	Numerous oversimplifications, generalizations and mischaracterizations call to question the overall capacity of the sponsors to complete the project, and more importantly, to conduct it in a manner that ensures environmental safety.	General	Against	AR	72701	Individual	None	The Project Sponsors have committed to mitigation and monitoring of contract acres over the effective life of all intentionally contracted plantings of giant miscanthus. The final mitigation and monitoring plan will be included with the Final EA. Additionally, site-specific Conservation Plans for each producer would identify any additional BMPs required to minimize any potential effects below significance thresholds.
44	2	The potential of giant miscanthus to harbor pests (insects and diseases) is largely ignored. Indeed, throughout the document the word "insect" only appears 3 times (twice in tables), "disease" is mentioned twice, "pest" twice and "arthropod" is mentioned. This indicates an inadequate Environmental Assessment.	Pests & Diseases	NA	AR	72701	Individual	None	A review of the literature associated with plant pest and diseases was performed and provided in the EA. There was little indication from European literature of susceptibility to major pests and diseases. The Mitigation and Monitoring Plan directly addresses the potential for the occurrence of pests and diseases and the roles of the producer and Project Sponsor for treatment, if necessary.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
44	3	The suggestion that because recent research suggests that giant miscanthus is susceptible to some plant pests, "MMP monitoring and buffer efforts would be essential to ensure that any occurrence is identified and treated early to avoid transmission to local croplands" is naive and ignores well-established pest dynamics and pest management principles. The MMP (section 6) makes no mention of these treatments or buffers, or any efforts to mitigate plant pest effects on surrounding agricultural systems.	Pests & Diseases, Mitigation Measures	NA	AR	72701	Individual	None	The Project Sponsors or the producer would notify adjoining properties if any pests or diseases are located and need to be treated.
44	4	The lack of large-scale production in the US and the resulting data limitations of only large-scale trials in Europe are clearly noted in some areas of the EA (pg. ES-5, line 8ff). However, the experience of Europe is later cited as justification for low expectations on pest dynamics in surrounding agricultural systems.	Pests & Diseases	NA	AR	72701	Individual	None	A review of the literature associated with plant pest and diseases was performed and provided in the EA. There was little indication from European literature of susceptibility to major pests and diseases. The Mitigation and Monitoring Plan directly addresses the potential for the occurrence of pests and diseases and the roles of the producer and Project Sponsor for treatment, if necessary.
44	5	Plant pest studies are rare and have focused more on the pests of giant miscanthus, not the potential of the crop to harbor pests of other crops. The mention of the crop's ability to harbor western corn root worm, several aphid species and rust pathogens is cause for concern and point to the need for data to be obtained before launching an experiment of this scale using an exotic species.	Pests & Diseases	NA	AR	72701	Individual	None	Published literature was cited in the Draft EA concerning the potential for western corn rootworm to occur in giant miscanthus. Further detail has been included in the MMP, which has been drafted and revised from consultation with NRCS and ARS. Monitoring for pests and diseases is included as part of the MMP and would be adjusted accordingly based on the site-specific Conservation Plan.
44	6	The research documenting that miscanthus harbors large populations of the yellow sugar cane aphids (a species with no known parasitoids) (4-13) is most alarming for the Arkansas production area. The aphid is extremely damaging pest to grain sorghum (*Sorghum bicolor*) when it occurs, as evidenced by the threshold of a single aphid being found per plant. Inclusion of IPM programs or buffers away from existing corn crops (4-13) in the MMP would do nothing to mitigate real environmental impact of pests and diseases on all the crops and environments in target areas.	Pests & Diseases	NA	AR	72701	Individual	None	These plant pests can be treated with conventional agricultural chemicals, if necessary. The Project Sponsors or the producer would notify adjoining properties if any pests or diseases are located and need to be treated. The agricultural chemicals to be used would be the same as for the treatment of the same plant pests, diseases, and weeds (only during establishment) that would be used on adjacent crops. Chemical use would be project area and site-specific. All applicable guidance and regulations would be followed with documentation to be provided with each annual report. All chemical use would be described as part of the Conservation Plan for each producer's acreage.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
44	7	The suggestion that the recommendations of planting giant miscanthus "away from corn" and treating the crop to "avoid transmission" somehow addresses the data gap of potential plant pests (4-2) trivializes the importance of the impact of the crop on extant pest and beneficial organisms (including pollinators).	Pests & Diseases	NA	AR	72701	Individual	None	Comment noted. The Draft EA provided an overview of the best available information at the time of publication, including any shortcomings in the literature. The Project Sponsors, in consultation with the NRCS and ARS, developed the Mitigation and Monitoring Plan to address the issues of concern developed through this NEPA process. Since this NEPA process is only for the acceptance of BCAP project areas, more site-specific information is not available at this time. Individual producers would not contract acreage until the BCAP project area has been approved by FSA. Each individual producer would be required to develop a Conservation Plan, which addresses all resource areas specific to the local area and the region.
44	8	The statement that "Potential plant pests newly associated with giant miscanthus could require more pesticide use or greater IPM than potentially anticipated based on existing literature from Europe, but should be less than traditional row crops." is entirely without foundation. Pest dynamics in of an exotic plant in a novel habitat are essentially impossible to predict. Further, several existing "traditional row crops" have no or very little pest management or pesticide use, and any management in giant miscanthus would exceed that of several traditional row crops.	Pests & Diseases	NA	AR	72701	Individual	None	A review of the literature associated with plant pest and diseases was performed and provided in the EA. There was little indication from European literature of susceptibility to major pests and diseases. The Mitigation and Monitoring Plan directly addresses the potential for the occurrence of pests and diseases and the roles of the producer and Project Sponsor for treatment, if necessary.
44	9	Biodiversity studies have only been conducted on young-aged giant miscanthus stands (ES-6), and have not focused on organisms smaller than mammals. The lack of arthropod studies in this crop indicates the complete lack of any environmental assessment of arthropods in this document.	Biodiversity	NA	AR	72701	Individual	None	Further literature review was conducted on invertebrates.
44	10	The suggestion that "During the short-term, species using pastureland could relocate to marginal areas or wildlife corridors" (5-3) has no meaning for arthropod pest and beneficial (including pollinators) organisms. Additionally, the "marginal or idle" lands to be used in all states by for giant miscanthus typically are already the existing "marginal or wildlife corridors"!	Biodiversity	NA	AR	72701	Individual	None	Comment noted. Field buffers will be created or will be left at field edges to provide multiple environmental benefits. The size of the buffer will depend on the site-specific conditions prescribed through the Conservation Plan.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
44	11	The authors note that invasive plant species can have significant negative impacts on the environment by changing ecological processes and impacts on native species (including pollinators) (3-21). The authors state then state that giant miscanthus is not listed as a weed at any location and this species is not invasive. The authors finally conclude that because it is not invasive, it will not likely have adverse environmental impacts. This is faulty logic. An exotic species planted in great acreages in monocultures would be expected to impact ecological processes. Whether the species is invasive to an environment through its own biological means or through purposeful planting as huge monocultures is irrelevant for the potential of the exotic species to alter ecological processes. This area is completely ignored in this Environmental Assessment.	Biodiversity	NA	AR	72701	Individual	None	Biodiversity information reviewed from European literature does suggest that miscanthus can provide wildlife and insect habitats when compared to traditional crops and some pasture lands. The Mitigation and Monitoring developed in consultation with NRCS and ARS, provides appropriate minimum buffer width for each project area, combined with site-specific increases in buffer width for adjacency to sensitive areas, to be included in the individual Conservation Plan. Additional safeguards have been established for active producer monitoring and reporting to the Project Sponsor for the initiation of appropriate control technologies.
44	12	It seems unlikely that the local "nurseries" to be established at each location will be unable to meet the demand to result in the target acreage within the projected time-frame. Thus the temptation may be to pursue chromosome doubling as demonstrated by Yu et al . (2009) as a means to more efficiently reach target planting areas through seed production. This technique must be specifically banned for this project.	Seed Sterility	NA	AR	72701	Individual	None	The Project Sponsors would only be using the Illinois clone vegetatively propagated through rhizomes to establish all acres within the project areas. No other clone or species of Miscanthus would be used as part of this project area.
44	13	Water usage for production of this crop (i.e., consideration of MPG of water need) is excessive. The authors discount this fact with a misleading and inaccurate statement (ES-4, line 17ff) that "giant miscanthus would be anticipated to require more water than annual crops, such as corn, however giant miscanthus has much higher water use efficiency, generating higher amount of biomass per volume of water consumed." Corn is one of the least-efficient crops in terms of water usage, and to select that species for comparison is misleading. Specifically, their source (Jorgensen 2011) state giant miscanthus water use is high due to its high biomass productivity but is actually "exceeded by whole crop maize in some cases".	Water Use	NA	AR	72701	Individual	None	Water use has been furthered clarified and new literature is provided. This also includes a comparison with corn for silage, which is a crop that has enough data to be released in Pennsylvania.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
44	14	The shortcomings of this assessment regarding the potential impact on pest and beneficial organisms (including pollinators) arise from the preparers' lack of background in agricultural pests and diseases necessary to address these key issues. Failure to include such expertise is a significant shortcoming to this Environmental Assessment and could result in a highly significant, detrimental environmental impact of this large scale experiment across several states.	Pests & Diseases	Against	AR	72701	Individual	None	Comment noted. The Draft EA provided an overview of the best available information at the time of publication, including any shortcomings in the literature. The Project Sponsors, in consultation with the NRCS and ARS, developed the Mitigation and Monitoring Plan to address the issues of concern developed through this NEPA process. Since this NEPA process is only for the acceptance of BCAP project areas, more site-specific information is not available at this time. Individual producers would not contract acreage until the BCAP project area has been approved by FSA. Each individual producer would be required to develop a Conservation Plan, which addresses all resource areas specific to the local area and the region.
45	1	This note is on response to a request to review and comment on the BCAP Environmental Assessment of the proposed BCAP Giant Miscanthus (Miscanthus X giganteus) Establishment and Production in Arkansas, Missouri, Ohio, and Pennsylvania – Sponsored by Aloterra Energy LLC and MFA Oil Biomass LLC. Please note that I had been approached by MFA Oil Biomass and had discussed this project with them before their submission.	General	NA	MO	65211	University	University of Missouri	No response required.
45	2	I have reviewed the proposal and believe this is an important approach to helping deal with our renewable energy portfolio in the U.S. Biomass is one of the few approaches that could be implementable within a short period of time compared to solar and wind, and that also has the opportunity for rural economic development. I also believe that the no action alternative would actually do more harm than the proposal indicates. The no action alternative assumes that current economic conditions stay constant, yet that is not the case. If anything, the economic conditions and development would more than likely continue to deteriorate over the proposed time period. Hence anything that can possibly increase rural economic development is a plus. Therefore, I strongly support this program and BCAP as a whole. My concerns with what is proposed are outlined below.	General	Support	MO	65211	University	University of Missouri	Comment noted on the support of the proposed action.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
45	3	1. I am not convinced that Giant Miscanthus is noninvasive. It appears to be from the studies, but this is critical in getting farmers to truly buy in. It would be nice to have more data, but it does not exist. This would be a way to help determine the invasiveness of the species.	Invasive	NA	MO	65211	University	University of Missouri	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determine within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range.
45	4	2. I would like to have seen a range on the potential production numbers. It is not clear if the estimated biomass produced is an optimistic prediction or a pessimistic prediction. It would be better if a worst-case scenario, average-case scenario and a best-case scenario was given. This would obviously also impact the economic assessment and payback period.	Socioeconomics	NA	MO	65211	University	University of Missouri	BCAP is a voluntary program that producers join if there is enough economic incentive for the individual producer to justify the production of a bioenergy crop. As such, producers bear the burden of determining individual economic viability on their contract acres. The Project Sponsors are providing technical assistance to the contract producers for establishment, production, and harvesting. The economic analysis provided in the Draft EA, was determined from publicly available data most similar to the confidential economic information developed by the Project Sponsors as part of the application.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
45	5	3. The areas chosen for production were based on rainfall and little consideration appears to have been given to the soil conditions. The soil assessment was cursory and it is not clear to me that Giant Miscanthus would grow well in all the soil types in the different regions. This of course would also impact productivity of the stands.	Soil Resources	NA	MO	65211	University	University of Missouri	Site-specific analysis will be conducted on each proposed contract. This process will include an initial environmental screening to identify any potential environmental issue with the acreage. If necessary, consultation with the appropriate resources agency would be undertaken to develop mitigation measures, to reduce effects below the significance thresholds. If the effects cannot be reduced, that acreage would not be accepted into the BCAP. After the environmental screening, each producer would have to develop a Conservation Plan with the assistance of a TSP to identify appropriate buffer areas and BMPs in addition to the guidance provided in the Mitigation and Monitoring Plan.
45	6	Overall I believe that the proposal addresses the major environmental concerns and that there would be little to no negative impact for the proposed lands on which this would be planted. This appears to be well worth consideration.	General	Support	MO	65211	University	University of Missouri	No response required.
46	1	The Division of Agriculture, University of Arkansas, would like to offer comment regarding the Environmental Assessment for the "Proposed BCAP *Miscanthus x giganteus* Establishment and Production in Arkansas, Missouri, Ohio, and Pennsylvania" project. The Division of Agriculture provides research and extension to the State of Arkansas, and we received comments from several of our scientists. Our comments are specific to Arkansas, and are not intended to apply to the other states, although the issues we raise are common to all states in the proposed project.	General	NA	AR	72207	University	University of Arkansas, Division of Agriculture	No response required.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
46	2	We believe that there is insufficient information in the Environmental Assessment to be able to make the claims made by the sponsors. The large-scale deployment of this crop (50,000 acres in Arkansas by the year 2014) is of sufficient magnitude that we believe that greater detail and consultation with agricultural scientists is needed. The majority of contacts made have been with political or economic development (e.g., Chamber of Commerce) officials. The document stated that, in Arkansas, contacts with state agencies were made by Dr. Terry Griffin, an Extension Agricultural Economist, and Mr. Randy Young, Director of the Arkansas Natural Resources Commission. Dr. Griffin indicated the extent of his contact was from a grower that may plant *Miscanthus,* which was not what was conveyed in the document. Given the claims regarding the agronomic yields and inputs required, the potential invasiveness of *Miscanthus,* as well as the proposed soil and water benefits, we believe that contact should have been made with UA Division of Agriculture scientists that could have provided appropriate scrutiny of the data and proposal - economists, agronomists, entomologists, soil scientists and invasion biologists. The lack of appropriate input from specialists in those fields renders the conclusions questionable at best. As written, we do not believe there is adequate information provided or assessment made of the factors that will determine the economic viability of the *Miscanthus* production. Therefore we do not support the Environmental Assessment, as written, but believe a more-detailed study of potential impacts needs to be made to ensure environmental safety and economic viability of the project.	General	Against	AR	72207	University	University of Arkansas, Division of Agriculture	The Project Sponsors worked with many specialists and consultants as they developed their project area proposal for FSA. They have developed further literature of this species, as well as committed to an overall Mitigation and Monitoring Plan for the project areas to minimize risks associated with the establishment and production of this species. Also, as part of BCAP, producer are required to develop Conservation Plans to address site-specific resource needs, best management practices, and exclusion areas based on the parcel, State and local regulations, and the contractual obligations included within the overall Mitigation and Monitoring Plan.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
47	1	**<u>Concern Nos. 1, 2, and 3: Giant Miscanthus (*Miscanthus x giganteus*) and Biodiversity</u>**: The DEA (page ES-6) discloses that there is little experience in planting and growing giant miscanthus in the U.S. No commercial-scale trials have been conducted in the U.S. and there is little peer-reviewed literature concerning the effects of giant miscanthus plantings on biological diversity. The DEA (pages 2-9) identifies giant miscanthus as a sterile hybrid which does not produce viable seed and is therefore propagated vegetatively by rhizome division. It appears that giant miscanthus is a hardy plant that can reach heights over 10 feet and once established can produce a thick monoculture in a few years. The DEA states that the rhizome spread is slow, 10 centimeters (cm) per year (page 4-12). The DEA identifies that Glyphosate and traditional tillage have been found to be effect eradication methods for giant miscanthus, though it may require more than one growing season for complete eradication (page 2-10). If giant miscanthus rhizomes spread undiscovered offsite and are uncontrolled, there seems to be the potential for giant miscanthus to replace native plants with a plant that has limited ecological benefit for wildlife, insects or birds.	Biodiversity	NA	IL	60604	Federal Agency	EPA-Region 5	Literature indicates a low probability of invasiveness of giant miscanthus; however, the Project Sponsors and FSA understand that no commercial sized production has occurred in the United States. As such, a Draft Mitigation and Monitoring Plan was provided as part of the Draft Environmental Assessment. This was done to determine through further consultation with USDA staff concerns and mechanisms to avoid or minimize those concerns. The Project Sponsors and FSA also wanted to include concerns and suggestions for mitigation from public comments. A broad Mitigation and Monitoring Plan will be included with the Final EA, indicating the responsibilities of FSA, the Project Sponsors, and producers for ensuring that only minimal effects occur from the establishment and production of this species. The Mitigation and Monitoring Plan outline the minimum conservation efforts or exclusion areas for all project areas. More stringent site-specific measures could be incorporated into each producer Conservation Plan based on site-specific conditions, including adjacent properties, and State and local regulations.
47	2	**Recommendation**: Please discuss the potential for the species to spread and establish offsite by animal digging up rhizomes and/or rhizomes inadvertently being brought to the surface during harvest that are carried and dropped off-site by mammals (e.g., dogs, squirrels, raccoons, rats) and/or birds to locations well away from a miscanthus production field/site.	Biodiversity	NA	IL	60604	Federal Agency	EPA-Region 5	Literature suggests that giant miscanthus rhizomes desiccate rapidly, thereby decreasing viability within a matter of hours from any predation. Literature also points out that rhizomes that remain on the soil surface, but are not covered, remain unsprouted and desiccate rapidly.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
47	3	In all four project areas, habitats for endangered plant, mammal, bird, and aquatic species have been identified. The DEA lacks specificity on how site-specific reviews would be conducted, what criteria would be utilized to determine whether and what best management practices (BMPs) would be adequate or whether certain acres should be screened out, especially for dealing with endangered species impacts.	Biodiversity	NA	IL	60604	Federal Agency	EPA-Region 5	Overall, this environmental assessment analyzed a project area proposal for BCAP project areas. Only when FSA approves a BCAP project area can producers begin to enroll acres with FSA and the Project Sponsors for inclusion in the project area. At this stage, the individual parcels to be included within the project areas are not known. However, the environmental assessment process provide full detail on the general lack of data for certain resource areas, such as biodiversity. To ameliorate the potential for effects, the Project Sponsors in consultation with USDA staff developed an overarching Mitigation and Monitoring Plan to provide broad categories and actions to be conducted by each producer or by the Project Sponsors. At the local level, BCAP requires the development of a Conservation Plan as part of the environmental screening process. The Environmental Screening process, will be similar to other USDA programs to ensure minimal effects. The Environmental Screening process would allow FSA to decline acreage that would result in more than minimal effects to resources analyzed in this environmental assessment even with mitigation efforts. This screening process in combination with a site-specific Conservation Plan would provide reasonable activities that would be conducted based on the resources within and adjacent to the contract acres. Each Conservation Plan would be subject to all State and local regulations, which may be more stringent than Federal regulations concerning those resources areas.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
47	4	Given the lack of experience, data and specificity, the report's conclusions of minor adverse impacts on vegetation and wildlife and zero impacts on protected species are not supported and therefore are not very convincing.	Biodiversity	NA	IL	60604	Federal Agency	EPA-Region 5	Since contract acreage has not been established within each proposed project area, site-specific analysis cannot be performed through the environmental assessment. The Conservation Plan for contract acreage will provide a site specific analysis of the potential effects at that localized level. The Project Sponsors are currently targeting lands that have failed as croplands, only produce marginal returns with traditional crops, or are currently abandoned or managed pastureland. Lands with significant or sensitive features would be avoided or not accepted into the project area as the discretion of the Project Sponsors of FSA before or during the site specific environmental review.
47	5	**Recommendation:** A case study, where a site-specific review is conducted on a 30-100 acre plot in one of four areas, would be extremely helpful to demonstrate how the environmental worksheet and screening process and proposed BMPs would actually address the sensitive resources and/or protected species identified in that plot.	Biodiversity	NA	IL	60604	Federal Agency	EPA-Region 5	The BCAP statute does not allow for field trials, test plots, or other small-scale demonstration projects. The BCAP does allow for reporting of activities associated with the establishment and production of vegetation on BCAP contracted acreage. The Project Sponsors are providing annual reporting to the FSA and other USDA agencies are multiple aspects associated with establishment and production, spread of giant miscanthus outside of intentionally planted areas, chemical usage, harvest metrics, and other items.
47	6	**Recommendation**: We recommend the Final EA (FEA) disclose whether or not the Project Sponsors considered the feasibility of using a mixture of low input/high diversity native grasses and forbs for the biomass crop. If so, the FEA should please explain the reason for choosing giant miscanthus over the native species mixture.	Biodiversity	NA	IL	60604	Federal Agency	EPA-Region 5	The Project Sponsors are proposing a specific project for inclusion within the BCAP. The reasonable alternatives under consideration are (1) the Proposed Action, which implements the Project Sponsors plan or (2) the No Action Alternative, which would not implement the Project Sponsors plan. The Project Sponsors are not required to propose alternative species or project locations under NEPA.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
47	7	**Concern No. 4: Mitigation**: The DEA for these four project areas appears to be compromised by a lack of data and specificity. While the four project areas are identified, 30-100 acres commitments with individual growers within these project areas do not appear to have been realized, so specific environmental impacts have not been identified. Specific examples of how mitigation would adequately address these impacts are not provided. Rather, the DEA provides a generic process whereby site-specific reviews would be conducted by Technical Service Providers (TSPs) using an environmental worksheet to determine whether environmentally sensitive resources or protected species are present and could be potentially affected. If so, FSA proposes an adaptive mitigation and monitoring plan (MMP) which would include best management practices (BMPs) to be used in the establishment and production of giant miscanthus to ensure minimization of potentially adverse effects. FSA (page 6-2) is expected to have primary responsibility for implementation and tracking of the mitigation and monitoring program. The DEA identifies that FSA is currently developing a Memorandum of Understanding (MOU) with the Natural Resources Conservation Service (NRCS) to have NRCS provide technical support as TSPs on an individual contract basis to ensure each producer complies with existing requirements of BCAP including completion of the Environmental Screening worksheet, completion of a Conservation Plan, and compliance with all existing rules and regulations following BMPs outlined in NRCS Conservation Practice Standards. However, the DEA does not include a draft of the proposed Mitigation and Monitoring Plan or a draft of the FSA/NRCS MOU. Consequently, based on information in the DEA, we cannot determine if adequate mitigation and monitoring will likely be identified and successfully implemented in order to adequately protect the environment.	Mitigation Measures	NA	IL	60604	Federal Agency	EPA-Region 5	The Mitigation and Monitoring Plan was provided in a draft form in the Draft EA to allow for public input and comment on the features to be included. Overall, comments from the public and agencies have provided a great deal of additional information to include in the Mitigation and Monitoring Plan as best management practices or exclusions of acreage.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
47	8	**Recommendation:** We recommend the FEA include a draft MMP specific for each project area, if feasible, and include the signed MOU between the USDA-FSA and NRCS regarding NRCS TSPs for this proposal. The project-area-specific MMPs should be in place prior to any plantings of giant miscanthus rhizomes and the plan/s should be reviewed by independent crop and invasive species experts to assure that there are adequate measures to prevent the release of giant miscanthus into the natural environment. As part of the MMPs, there should be a buffer around each of these sites where the spread of giant miscanthus can be identified before it spreads offsite. Existing vegetation should be identified and quantified for areas where paste/rangeland, will be converted. Rangeland vegetation, which may contain a diversity of native and/or non-native perennial grasses, provides greater biodiversity, decreases the potential for erosion, does not require pesticides, herbicides, or fertilizers (PH&F) input, and increases water filtration. The consequences, positive and negative, of converting paste/rangeland should be described in the FEA.	Mitigation Measures	NA	IL	60604	Federal Agency	EPA-Region 5	A final Mitigation and Monitoring Plan will be included with the Final EA, detailing the aspects considered within this comment.
47	9	**Recommendation:** EPA recommends areas currently in pasture/rangeland that have good biodiversity be avoided as potential sites for biomass production. We further recommend that brownfields, reclaimed mines, former landfills and other such unused land be aggressively pursued by FSA and the Project Sponsors for evaluation for possible biomass cultivation.	Mitigation Measures	NA	IL	60604	Federal Agency	EPA-Region 5	Comment noted, suggestion will be taken into consideration by the Project Sponsors and the FSA on a site-specific basis as part of the environmental screening process and producer Conservation Plan.
47	10	**Concern No. 5: Water Quality**: Although inputs of PH&F for giant miscanthus may be lower in areas where traditional row crops dominate, inputs will be higher where fallow, idle, or pasture/rangelands dominate. Stormwater runoff containing PH&F could lead to increased non-point source pollution in area waterways.	Water Quality	NA	IL	60604	Federal Agency	EPA-Region 5	The Mitigation and Monitoring Plan and each producers' Conservation Plan will address agricultural chemical usage BMPs and guidance. The combination ensures that even with the conversion of pasture, that stormwater runoff even during the establishment period, would result in only minor effects to water quality.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
47	11	**Recommendation:** The EA would benefit by including a list of potential pesticides, herbicides, and fertilizers that could be used in giant miscanthus production along with a discussion of their possible effects on water quality, including effects to Clean Water Act Section 303 (d) impaired waters. Please include amount of PH&F per acre typically used for biomass production of giant miscanthus or a similar biomass crop.	Water Quality	NA	IL	60604	Federal Agency	EPA-Region 5	Average amount of fertilizer per acre were developed and included within the Final EA. All pesticides and herbicides would be applied at the appropriate label rate following all Federal, State, and local regulations. All agricultural chemical applications would be applied, handled, and stored, per best management practices and any applicable regulations. Special care would be taken with the use of agricultural chemical near sensitive areas and would be included as part of the individual producer's site-specific Conservation Plan.
47	12	**Recommendation:** For clarity, please include large scale maps in the EA that depict potential landowner locations overlaid on impaired waters and threatened and endangered species.	Water Quality	NA	IL	60604	Federal Agency	EPA-Region 5	Overall, this environmental assessment analyzed a project area proposal for BCAP project areas. Only when FSA approves a BCAP project area can producers begin to enroll acres with FSA and the Project Sponsors for inclusion in the project area. At this stage, the individual parcels to be included within the project areas are not known. However, the environmental assessment process provide full detail on the general lack of data for certain resource areas, such as biodiversity. To ameliorate the potential for effects, the Project Sponsors in consultation with USDA staff developed an overarching Mitigation and Monitoring Plan to provide broad categories and actions to be conducted by each producer or by the Project Sponsors. At the local level, BCAP requires the development of a Conservation Plan as part of the environmental screening process. The Environmental Screening process, will be similar to other USDA programs to ensure minimal effects. The Environmental Screening process would allow FSA to decline acreage that would result in more than minimal effects to resources analyzed in this environmental assessment even with mitigation efforts. This screening process in combination with a site-specific Conservation Plan would provide reasonable activities that would be conducted based on the resources within and adjacent to the contract acres. Each Conservation Plan would be subject to all State and local regulations, which may be more stringent than Federal regulations concerning those resources areas.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
47	13	**Recommendation:** EPA recommends the FEA correct the following: In the document (page 2-9), there are several references to Harness herbicide containing "Acteochlor" as an active ingredient. However, the active ingredient in Harness is "Acetochlor."	Water Quality	NA	IL	60604	Federal Agency	EPA-Region 5	Text correction has been included in the Final EA
47	14	**Concern No. 6: Connected Actions/Biomass Conversion Facilities (BCFs)**: Each of the four project areas require that the miscanthus crop be taken to a Biomass Conversion Facility (BCF) for processing. However, the DEA provides minimal information regarding the BCFs for this proposal. The DEA is unclear whether some or all of the BCFs currently exist or will need to be constructed. The DEA does not identify the size of the area needed nor the components that make up a typical miscanthus BCF nor does the DEA explain how a miscanthus BCF operates. Consequently, potential direct, indirect and cumulative impacts associated with the siting, construction, and/or operations of the BCFs are not identified nor potential mitigation measures proposed.	Biomass Conversion Facility	NA	IL	60604	Federal Agency	EPA-Region 5	The BCAP establishment and annual payments are provided to the establishment and production of bioenergy crops. FSA has no control over the materials once it leaves the field for conversion into another product. As such the project definition is limited to establishment and production of giant miscanthus only, not any related downstream issues that FSA cannot control or regulate.
47	15	**Recommendation:** Since the BCFs for the proposed project areas are integral to the successful implementation of the Biomass Crop Assistance Program and this particular proposal, we recommend the BCFs be considered connected actions under NEPA and their impacts and proposed mitigation for those impacts be disclosed in the FEA. Any permits that may be needed to construct and/or operate should also be disclosed.	Biomass Conversion Facility	NA	IL	60604	Federal Agency	EPA-Region 5	The BCAP establishment and annual payments are provided to the establishment and production of bioenergy crops. FSA has no control over the materials once it leaves the field for conversion into another product. As such the project definition is limited to establishment and production of giant miscanthus only, not any related downstream issues that FSA cannot control or regulate.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
47	16	**Concern No. 7: Renewable Fuel Standard/Greenhouse Gas Emission (GHGs)/Criteria Pollutants**: There is no evaluation of greenhouse gas (GHG) emission impacts associated with establishment of giant miscanthus under BCAP. EPA has determined under the Renewable Fuel Standard (RFS) that several biofuel pathways that use miscanthus as a feedstock qualify as a "Cellulosic Biofuel" under RFS definitions, indicating that EPA has assessed that these pathways meet the 60% lifecycle greenhouse gas reduction threshold as compared to a 2005 fossil fuel baseline required for Cellulosic Biofuels under RFS (see 40 CFR Part 80 for further details).	GHG Emissions	NA	IL	60604	Federal Agency	EPA-Region 5	The BCAP establishment and annual payments are provided to the establishment and production of bioenergy crops. FSA has no control over the materials once it leaves the field for conversion into another product. As such the project definition is limited to establishment and production of giant miscanthus only, not any related downstream issues that FSA cannot control or regulate.
47	17	**EPA's July 26, 2010 Comments on BCAP Programmatic EIS with regards to impacts on GHG emissions.** Since EPA's July 26, 2010 comments on the BCAP Programmatic EIS regarding concerns with the overall assessment of the program's impact on GHG emissions were not adequately addressed, we take this opportunity to reiterate our PEIS comments and recommend the FEA incorporates these changes, as follows:	GHG Emissions	NA	IL	60604	Federal Agency	EPA-Region 5	These comments are specific to the BCAP PEIS and not to this environmental assessment. FSA has provided responses to these comments during the BCAP PEIS process.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
47	18	Section 4.4.3 - 4.4.4 Direct & Indirect impacts definitions and reference: U.S. legislation (Energy Independence and Security Act of 2007, or "EISA") and regulation (Renewable Fuels Standard, or "RFS") have laid down precedent in use of the terms "direct effects" and "indirect effects" with regard to lifecycle analysis of greenhouse gas emissions for biofuels. EPA is concerning that the use of the two terms in the EIS is inconsistent with precedent in U.S. legislation and regulation with typical usage of the terms in the field of lifecycle analysis. Section 4.4.3 - 04.4.4 refers to the "the concept of indirect" as "offsite activities" that contribute to biofuel production or electricity generation for irrigation). In RFS and in the science of lifecycle analysis, such "offsite activities" are typically considered "direct impacts" (or "indirect effects") as they directly contribute to the production of the biofuel - i.e., in this analysis, the "system boundaries" includes its direct impacts such offsite activities. "Indirect Impacts" are typically considered those secondary impacts mediated by the impact of the biofuel production/use on existing markets (e.g., land use change impacts). Section 4.4.3.2 and 4.4.4.2 titled "Indirect Impacts" discusses impacts on quality (i.e., non-GHG pollutants). These should be refereed to as "direct impacts" on air quality. The section would more appropriately be titled "Non-GHG Air Quality Impacts." EPA expresses its concern that these terms should be used in the BCAP EIS in a manner consistent with other U.S. reports and studies in order to clearly communicate the types of effects the EIS has analyzed.	GHG Emissions	NA	IL	60604	Federal Agency	EPA-Region 5	These comments are specific to the BCAP PEIS and not to this environmental assessment. FSA has provided responses to these comments during the BCAP PEIS process.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
47	19	Section 4.4.3.2 and 4.4.42 - Non-GHG pollution : EPA expresses concern that the EIS does not fully analyze potential impacts of the BCAP program on air quality due to non-GHG emissions. The EIS reports that because the same machinery is used for feedstock production for biofuels as is used for other farming practices, implementation of BCAP program would result in no change to non-GHG related air quality. This assumption does not examine the possibility that increased crop production due to the BCAP program could lead to use of such machinery (and other related sources of air pollutant emissions) and increased total emissions compared to a No Action baseline.	GHG Emissions	NA	IL	60604	Federal Agency	EPA-Region 5	These comments are specific to the BCAP PEIS and not to this environmental assessment. FSA has provided responses to these comments during the BCAP PEIS process.
47	20	Section 4.4.2 - Methodology (for GHG Analysis): EPA expresses concern that the methodology description for the EIS analysis of potential GHG emissions impacts of BCAP does not provide sufficient information on analysis approach, modeling framework and tools, assumption, and emissions for readers to understand the reported results. In order for readers to adequately understand the EIS GHG analysis results, the methodology description should provide the following information: Modeling system and/or tools used to construct Net Ecosystem Carbon Budgets (NECB). Assumptions applied in constructing NECBs (for both the baseline and alternative use scenarios) and in comparing NECBs. (e.g., crop yields, fertilizer inputs) Description of the system boundaries for the analysis. The description should include clarification that downstream emissions (e.g., fuel processing and combustion) are not included. The time for the analysis (i.e., near term, longer term?) Indicate whether emission impacts reported are annual or cumulative over time.	GHG Emissions	NA	IL	60604	Federal Agency	EPA-Region 5	These comments are specific to the BCAP PEIS and not to this environmental assessment. FSA has provided responses to these comments during the BCAP PEIS process.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
47	21	**Criteria Pollutants:** The DEA identifies all project areas are in attainment for all criteria pollutants, except for the Ohio/Pennsylvania project area. The project area in Ohio contains Lake County designated as non-attainment for PM2.5 and Ashtabula County designated as partial non-attainment for PM2.5 Lake County and Ashtabula County are part of the Cleveland-Akron-Lorain Air Quality Control Region (AQCR) 174.	GHG Emissions	NA	IL	60604	Federal Agency	EPA-Region 5	These comments are specific to the BCAP PEIS and not to this environmental assessment. FSA has provided responses to these comments during the BCAP PEIS process.
47	22	**Recommendation:** The EA should disclose the sources and amounts of PM2.5 that may be emitted in Lake and Ashtabula Counties due to project implementation and operation, including the construction and/or operation of the Ashtabula BCF. The FEA should identify measures that will be undertaken to prevent any increases in PM2.5 in these areas due to the proposal. The FEA should also identify any air permits that may be needed for construction and/or operation of all BCFs.	GHG Emissions	NA	IL	60604	Federal Agency	EPA-Region 5	These comments are specific to the BCAP PEIS and not to this environmental assessment. FSA has provided responses to these comments during the BCAP PEIS process.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
47	23	**Concern No. 8: Environmental Justice:** It is not clear that a detailed environmental justice (EJ) analysis should be eliminated from this EA. EPA's comments on the draft Programmatic EIS, asked FSA to discuss how its Civil Rights Impact Analysis (CRIA) meets the letter and intent of Executive Order (E.O.) 129898. The July 2010 final Programmatic EIS, from which this EA was tiered, did not demonstrate this nor determine that disproportionate effects to minority, low-income and indigenous populations would not occur in the project areas. This precluded delineation of communities with possible EJ concerns.	Environmental Justice	NA	v	60604	Federal Agency	EPA-Region 5	A brief display of the minority and low-income communities within each county of each proposed project area will be included in the Final EA.
47	24	**Recommendations:** EPA recommends the FEA leverage publicly available demographic information resources by utilizing tools such as Landview or other GIS-type data visualization applications to support the identification, mapping, and analysis of potential populations with EJ concerns. At the core of any EJ analysis is the identification of populations that may be considered communities with EJ concerns. Once the population is identified, the affected area(s) can be delineated and the project's impacts and alternatives can be analyzed. EPA also recommends the FEA provide documentation that will substantiate a determination of non-applicability for an EJ analysis and support the argument that a reasonable threshold determination could be made regarding this. The DEA did not identify the human environment within the 50-mile radius of the project area, any sources of exposure that population(s) may experience or mitigation measures to address any adverse impacts. The DEA analyzed the establishment of four proposed BCAP project areas, two in Missouri, one in Arkansas, and one in Ohio and Pennsylvania. The EA states in part ..."Each proposed project area was developed as an approximate 50-mile radius from the approximate location of each BCF ... the BCF location must include access to rail, highway, and be within reasonable distance of ports for water connection. These factors suggest the probability of human habitation and activity.	Environmental Justice	NA	IL	60604	Federal Agency	EPA-Region 5	A brief display of the minority and low-income communities within each county of each proposed project area will be included in the Final EA.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
47	25	**Recommendation:** EPA recommends that the FEA identify the human environment within the 50-mile radius of the project area/s, sources of exposure that the population(s) may experience and the mitigation measures to address any adverse impacts. The Council on Environmental Quality (CEQ) EJ NEPA Guidance discusses general principles for considering EJ under NEPA. It states in part: "In preparing an EIS or an EA, agencies must consider both impacts on the natural and physical environment and related social, cultural and economic impacts. EJ concerns may arise from impacts on the natural and physical environment, such as human health or ecological impacts on minority populations, low-income populations and Indian tribes, or from social or economic impacts."	Environmental Justice	NA	IL	60604	Federal Agency	EPA-Region 5	A brief display of the minority and low-income communities within each county of each proposed project area will be included in the Final EA.
47	26	**Concern No. 9: Cumulative Effects:** A cumulative effects analysis should take into consideration the effects of other past, present, and reasonably foreseeable future actions in the project area/s. The cumulative impacts assessment section of the DEA does not identify or discuss any other actions that could have an impact to the resources listed in the DEA. Only the potential cumulative effects by the proposed action are identified and discussed. This is not the intent of 40 CFR Part 1508.7.	Cumulative Effects	NA	IL	60604	Federal Agency	EPA-Region 5	The cumulative effects analysis was based on the past and existing agricultural activities within these project areas and the potential for additional BCAP project areas within the reasonably foreseeable future.
47	27	**Recommendation:** EPA recommends the FEA provide a cumulative impacts analysis that identifies and takes into account the cumulative effects associated with other past, present and reasonably foreseeable actions in the project area/s.	Cumulative Effects	NA	IL	60604	Federal Agency	EPA-Region 5	The cumulative effects analysis was based on the past and existing agricultural activities within these project areas and the potential for additional BCAP project areas within the reasonably foreseeable future.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
48	1	On behalf of the Natural Resources Defense Council, I submitted these comments on the Environment Assessment (EA) for the proposed establishment and production of giant miscanthus (*Miscanthus X giganteus*) in Arkansas, Missouri, Ohio, and Pennsylvania as a project under the Biomass Crop Assistance Program (BCAP). We thank the Farm Services Agency (FSA) for considering these comments. We are pleased that FSA required Aloterra Energy and MFA Oil Biomass Company to prepare this environmental assessment, especially in light of the failure of the earlier BCAP programmatic environmental impact statement to consider specific potential impacts and mitigation of miscanthus or other biomass crops. We see the following concerns in the miscanthus Environmental Assessment:	General	NA	CA	94104	NGO	NRDC	No response required.
48	2	1) The EA relies on monitoring and adaptive response for invasiveness and other impacts, but there is not commitment to requiring or funding the work. Furthermore, potentially invasive species must be monitored during the full life of establishment and harvest of the crop, including transportation routes, because it can take many years for a species to demonstrate that it is indeed invasive.	Mitigation Measures	NA	CA	94104	NGO	NRDC	The Project Sponsors, as part of the MMP, will outline a long-term monitoring plan for potential escape and control of giant miscanthus. As part of the Quality Assurance Program with the OSIA, the Project Sponsors have agreed to thoroughly clean equipment used for planting, harvesting, and transporting giant miscanthus rhizome materials. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range. The Project Sponsors will continue the MMP through the life of the contract between the producer and the Project Sponsor, which can be renewed in perpetuity.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
48	3	2) Mitigation plans are touted but still under development, and not discussed in even general terms. Once miscanthus has escaped, what would be done to eliminate the escaped and the original perennial crops? Who would bear the expense and do the work, and how would private landowners be compensated? Which methods are effective? We all know many examples of the near impossibility of getting rid of invasive plants, so what evidence is there that a miscanthus mitigation plan work?	Mitigation Measures	NA	CA	94104	NGO	NRDC	The Mitigation and Monitoring Plan was provided in a draft form in the Draft EA to allow for public input and comment on the features to be included. Overall, comments from the public and agencies have provided a great deal of additional information to include in the Mitigation and Monitoring Plan as best management practices or exclusions of acreage.
48	4	3) The EA assumes no displacement of productive activity to other lands. However, since 80 percent of the projected contracts will be on pasturelands, those impacts would have a lot to do with the elasticity of demand for beef and dairy. Cattle on pasture can be a beneficial land use, but if those cattle are displaced into feedlots by biomass production, there could be an indirect effect on more cropland needed to grow feed, thereby leading to plowing up marginal lands for cropland. All proposed project areas have CRP acreage, but there is no assessment of the project's impact on conservation enrollment. Some areas include woodlands, which received no meaningful effects analysis at all.	Land Use	NA	CA	94104	NGO	NRDC	An analysis of the livestock activities currently on-going within these project areas was further identified in the Final EA. Producers are unlikely to convert high quality pastureland that provides livestock grazing, if that enterprise provides a higher return on investment that production of giant miscanthus. BCAP is a voluntary program that producer will only enter if they determine on any individual basis that the return would be superior to the existing operations on the contract acreage.
48	5	4) Species that are considered candidates for being listed as threatened or endangered are mentioned as sensitive, but no analysis whatever is offered of their occurrence or vulnerability in the project areas.	Species of Concern	NA	CA	94104	NGO	NRDC	The Final EA will include information on State-listed protected species and species of concern. However, all protected and species of concern would be considered on a site-specific basis through the environmental screening process and each producer's Conservation Plan. Any acreage that would have adverse effects to protected species would enter through the appropriate consultation process to determine mitigation measures that would reduce those effects, or if mitigation would not reduce the effects, the contract acreage would not be accepted into the project area.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
48	6	5) Added chemical input from conversion of pasture or fallow lands is glossed over, which is particularly troubling given the number of impaired waterbody segments in the project areas.	Chemical Inputs	NA	CA	94104	NGO	NRDC	Chemical inputs during establishment would be similar to other products used to control the growth of unwanted vegetation during the early stages of growth in giant miscanthus. All agricultural chemical applications would follow all Federal, State, and local regulations concerning use, handling, and disposal. The Conservation Plan for each producer contract acreage would include an overview of agricultural chemicals to be used and the appropriate rates. Fertilization of giant miscanthus would not occur until year three or later, after the giant miscanthus crop has established. Soil testing would occur prior to the first application and then at a frequency appropriate for the site-specific conditions at random locations throughout the fields. The soil testing will help to pinpoint the necessary amount of fertilization required for continued production of biomass. Pesticide use would follow the same protocols as herbicide use.
48	7	6) No transportation related impacts are analyzed, notwithstanding that the end product is a highly fungible pellet with far-flung markets, including foreign countries. We hope that the project is held to its plan that harvested biomass should not be shipped more than 50 miles to its biomass conversion facility. However, transportation costs after pelletizing should also be analyzed.	Transportati on Effects	NA	CA	94104	NGO	NRDC	Emissions outside of the establishment and production of giant miscanthus are not considered part of the project definition, as such they have not been analyzed. Mobile source emissions from agricultural equipment would be minor and occur infrequently throughout the year in the non-attainment areas.
48	8	7) There is zero analysis of impact on atmospheric CO2, either directly, from displacement, or through processing/transportation. While cellulosic biomass for energy can be much better at reducing greenhouse gas emissions than fossil fuels, there is absolutely no guarantee that this will be the case.	Atmospheric CO2	NA	CA	94104	NGO	NRDC	Emissions outside of the establishment and production of giant miscanthus are not considered part of the project definition, as such they have not been analyzed. Mobile source emissions from agricultural equipment would be minor and occur infrequently throughout the year in the non-attainment areas.
48	9	8) Despite the high price tag for miscanthus crop establishment (more than $5,000/acre for the proposed 200,000 acres = $100 million) from a now quite limited BCAP funding pool, there is no comparative analysis of how else BCAP money might be spent. Perhaps other perennial crops that can be safely established by seed might be a better investment of the taxpayer dollar.	Other Species	NA	CA	94104	NGO	NRDC	The Project Sponsors are proposing a specific project for inclusion within the BCAP. The reasonable alternatives under consideration are (1) the Proposed Action, which implements the Project Sponsors plan or (2) the No Action Alternative, which would not implement the Project Sponsors plan. The Project Sponsors are not required to propose alternative species or project locations under NEPA.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
48	10	9) The EA recognized the features of giant miscanthus that make it an extreme threat as an invasive species, but it failed to consider the potential for it to reproduce, as have so many other supposedly sterile species such as Bradford pear. Ornamental plantings of related miscanthus species should be studied for their potential cross with giant miscanthus. It is particularly alarming to hear about companies like Ceres, Inc. which are developing varieties of miscanthus that can be grown by seed.	Invasive	NA	CA	94104	NGO	NRDC	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determine within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
49	1	We submit these comments on behalf of a national network of grassroots groups working to ensure that our country's energy programs are implemented in a manner that is adequately protective of the environment and public health and that is consistent with the urgent need to address climate change. We are concerned about the actions described under the proposed Environmental Assessment (EA) because of their ecosystem, climate and health impacts. The EA fails to comply with NEPA because its consideration of alternatives is inadequate and it fails to adequately describe and mitigate ecosystem impacts. The EA is also inadequate for purposes of complying with the October 27, 2010 Record of Decision (ROD) for the BCAP Final Programmatic Environmental Impact Statement (PEIS). We submitted comments on the draft PEIS for the BCAP program on September 24, 2009 (Comments of EcoLaw) and on the FPEIS on August 16, 2010 with the Natural Resources Defense Council and the National Sustainable Agriculture Coalition.	General	Against	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	No response required.
49	2	1. The EA relies on monitoring and adaptive response, but there no commitment to requiring or funding the work needed to actually implement and monitor the mitigation activities throughout the life of the project. Without such a commitment, the monitoring and adaptive response are not credible control or mitigation measures.	Financial Responsibilit y	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	The Mitigation and Monitoring Plan clearly identifies the responsibilities of the FSA, the Project Sponsors, and the producers.
49	3	2) The EA refers to mitigation plans as the means to address various issues, but these plans are still development, and not discussed in even the most general terms. The EA should be revised to describe in detail the mitigation plans, and they must be site specific, based on current data about the condition of ecosystems that will be impacted.	Mitigation Measures	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	The Mitigation and Monitoring Plan was provided in a draft form in the Draft EA to allow for public input and comment on the features to be included. Overall, comments from the public and agencies have provided a great deal of additional information to include in the Mitigation and Monitoring Plan as best management practices or exclusions of acreage.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
49	4	3) The EA assumes the planting and production will not result in displacement of productive activity to other lands or locations. Since most of the projected BCAP contracts will be on pasturelands, those impacts would impact the elasticity of demand for beef and dairy. All proposed project areas have Conservation Reserve Program (CRP) acreage, but there is no assessment of the project on conservation enrollments. Some proposed project areas include woodlands which receive no meaningful effects analysis at all under the draft EA. 2. world food prices and prices for U.S. farmland are skyrocketing, EA fails to accurately account for these socioeconomic impacts.	Indirect Land Use Effects	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	Based on the amount of available "other cropland" and pastureland within the project areas, there is sufficient acreage to avoid the conversion of higher quality habitats (e.g., forestlands or woodlands) or lands currently included within a Federal or State conservation program. BCAP, by statute, provides a mechanism to help producers establish and produce bioenergy crops. With this program, the Project Sponsors are estimating a positive balance for producers by Year 6 of production, rather than at Year 10 or later without BCAP.
49	5	4) The EA mentions candidate species are mentioned "sensitive" but no analysis whatever is offered of their occurrence or vulnerability in the project areas.	Sensitive Species	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	Further clarification would be provided to ensure that site-specific conditions do not create adverse effects to State-listed species. Species of concern, but not protected under State law/regulation, Federal laws/regulations, or tribal regulation would be considered to the extent of management by the appropriate entity. Site specific Conservation Planning would address wildlife best management practices that meet the needs of locally occurring protected species. No taking of a protected species would be allowed without appropriate consultation with the U.S. Fish and Wildlife Service and the appropriate State agency.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
49	6	5) The EA provides inadequate data and analysis on the added chemical inputs from conversion of pasture or fallow lands, and wholly fails to address the impacts of these chemical inputs.	Chemical Inputs	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	Chemical inputs during establishment would be similar to other products used to control the growth of unwanted vegetation during the early stages of growth in giant miscanthus. All agricultural chemical applications would follow all Federal, State, and local regulations concerning use, handling, and disposal. The Conservation Plan for each producer contract acreage would include an overview of agricultural chemicals to be used and the appropriate rates. Fertilization of giant miscanthus would not occur until year three or later, after the giant miscanthus crop has established. Soil testing would occur prior to the first application and then at a frequency appropriate for the site-specific conditions at random locations throughout the fields. The soil testing will help to pinpoint the necessary amount of fertilization required for continued production of biomass. Pesticide use would follow the same protocols as herbicide use.
49	7	6) The EA fails completely to analyze transportation related impacts. This is particularly notable since the EA describes one of the possible end uses of the crops as an export product, including as a highly fungible pellet with far-flung markets, including foreign countries.	Transportati on Effects	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	Emissions outside of the establishment and production of giant miscanthus are not considered part of the project definition, as such they have not been analyzed. Mobile source emissions from agricultural equipment would be minor and occur infrequently throughout the year in the non-attainment areas.
49	8	7) The EA fails to analysis of impact on atmospheric carbon dioxide, CO2, either directly, from displacement, or through processing/transportation, or from combustion of the crops for energy production (electricity or thermal).	Atmospheric CO2	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	Emissions outside of the establishment and production of giant miscanthus are not considered part of the project definition, as such they have not been analyzed. Mobile source emissions from agricultural equipment would be minor and occur infrequently throughout the year in the non-attainment areas.
49	9	8) Despite the high price cost of implementing the project (>$5k/acre for 200,000 acres = $100 million) from a now quite limited funding pool on the federal level, the EA contains no comparative analysis of how else the money might be spent.	Other Species	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	The Project Sponsors are proposing a specific project for inclusion within the BCAP. The reasonable alternatives under consideration are (1) the Proposed Action, which implements the Project Sponsors plan or (2) the No Action Alternative, which would not implement the Project Sponsors plan. The Project Sponsors are not required to propose alternative species or project locations under NEPA.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
49	10	9) The alternatives analysis is faulty because it fails identify alternatives to bioenergy crops that will also meet the myriad goals of the Farm Bill of 2008. Alternatives that should be considered include use of farmland for alternative energy other than biomass combustion and conversion to liquid biofuels. This would include using the land for wind turbines or other energy facilities.	Alternatives Analyzed	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	The Project Sponsors are proposing a specific project for inclusion within the BCAP. The reasonable alternatives under consideration are (1) the Proposed Action, which implements the Project Sponsors plan or (2) the No Action Alternative, which would not implement the Project Sponsors plan. The Project Sponsors are not required to propose alternative species or project locations under NEPA.
49	11	The EA does not comply with CCEQ NEPA regulations for a EA or with USDA NEPA regulations at 7 CFR 799.	General	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	Comment noted, the NEPA process requires an appropriate level of environmental review based on the Agency's assessment of the potential for significant effects. In this instance, the EA was an appropriate NEPA-level evaluation to determine if effects would be significant and require the preparation of an EIS
49	12	Cumulative Effects: The NEPA regulations require a cumulative effects analysis that considers 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.” The EA fails to consider the potential environmental impacts of the actions proposed under the EA. The summary provided in Table ES-2 is not substantiated by the facts outlined in regards to water use, invasiveness/uncontrolled spread of the species. The economic data do not provide evidence that the project is financially feasible, so though rated as “minor” these factors are not.	Cumulative Effects	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	The cumulative effects analysis was based on the past and existing agricultural activities within these project areas and the potential for additional BCAP project areas within the reasonably foreseeable future.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
49	13	Land use selection The EA is in accurate because the land to be used is not accurately determined or described. Impacts of near-term water usage, the use of pesticides to clear land, the soil disturbance with planting, and the economic viability questions raised by using 38-100 acre farm plots is not adequately addressed. On Page ES-2 the report says 'Prior to this submittal, the Project Sponsors have likely determined the economic feasibility of their proposal, including developing alternatives for location and crop species." This is speculative. Without knowing what land will actually be involved, the determination of feasibility and alternatives cannot be done. This has the impact of invalidating the entire EA analysis. For example, the following portion of the EA does not explain why arundo donax was not further considered nor is the data revealed in sufficient detail: The report itself acknowledges that more accurate site selection could be part of the review process by allowing the Project Sponsors to decline a proposed planting site. That "map could be drawn for the EA. Page 2-8: "The Project Sponsors reserve the right to decline any acres within the eligible project area that the Project Sponsors, the FSA, or the FSA technical partners' determine cannot produce giant miscanthus effectively without substantial environmental effects." This shows that the actual land that will be planted is as yet actually unidentified. It is impossible to adequately describe the environmental impacts on a parcel if it is as yet unidentified.	Land Use	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	Overall, this environmental assessment analyzed a project area proposal for BCAP project areas. Only when FSA approves a BCAP project area can producers begin to enroll acres with FSA and the Project Sponsors for inclusion in the project area. At this stage, the individual parcels to be included within the project areas are not known. However, the environmental assessment process provide full detail on the general lack of data for certain resource areas, such as biodiversity. To ameliorate the potential for effects, the Project Sponsors in consultation with USDA staff developed an overarching Mitigation and Monitoring Plan to provide broad categories and actions to be conducted by each producer or by the Project Sponsors. At the local level, BCAP requires the development of a Conservation Plan as part of the environmental screening process. The Environmental Screening process, will be similar to other USDA programs to ensure minimal effects. The Environmental Screening process would allow FSA to decline acreage that would result in more than minimal effects to resources analyzed in this environmental assessment even with mitigation efforts. This screening process in combination with a site-specific Conservation Plan would provide reasonable activities that would be conducted based on the resources within and adjacent to the contract acres. Each Conservation Plan would be subject to all State and local regulations, which may be more stringent than Federal regulations concerning those resources areas.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
49	14	Evaluation of alternatives: Given the size of the project, the evaluation of alternatives must be done with clear reference to the particular sites being considered. Moreover, to merit the expenditure of this sum of federal funds, the effects should clearly be unequivocally positive. Controlling the impact from a 50,000-acre site is different than controlling the impact or assessing the alternatives for 500-700 38-100 acre sites, but the report does not account for this simply stating, without adequate data, "As part of the alternatives development process the Project Sponsors analyzed both alternative crops and alternative locations for the proposed project areas; however, each of these was determined not to be feasible."	Alternatives Analyzed	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	The Project Sponsors are proposing a specific project for inclusion within the BCAP. The reasonable alternatives under consideration are (1) the Proposed Action, which implements the Project Sponsors plan or (2) the No Action Alternative, which would not implement the Project Sponsors plan. The Project Sponsors are not required to propose alternative species or project locations under NEPA.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
49	15	Socioeconomic effects : The EA emphasizes the economic benefits developers that will benefit from use of the crops, but does not adequately explain the ongoing risk or non-viability for the individual farmer with a 38-100 acre plot given the expense of planting [covered for the developer by the BCAP grant] and the uncertainty as to availability and cost of the proper harvesting equipment for the individual farmer. If the individual economics of the "on-farm model" are not positive then the socioeconomic effects cannot be portrayed as positive as in Table ES-2. An example of the risk to individual farmers is illustrated by this statement "Equipment to be used to establish giant miscanthus would be modified equipment from existing perennial grass industries. Equipment used to harvest and bale giant miscanthus would be similar to existing types of agricultural machinery used for hay crops; however, they would need to be more heavy-duty due to the increased biomass amounts being harvested and baled" Page ES-3. A recent article based on a study at the University of Illinois looked at the necessary price level required to sustain agricultural supply to maintain large scale biomass combustion and came to the conclusion that the market price would need to be $140/metric ton in 2007 dollars. This is clearly not a sustainable price in the current energy market, even if further BCAP subsidies were available to the individual farmer. Other studies have also indicated that significant subsidies are necessary to make growing miscanthus a viable economic enterprise.	Socioeconomics	NA	MA	02238	NGO	Biomass Accountability Project - No Biomass Burning	BCAP is a voluntary program that producers join if there is enough economic incentive for the individual producer to justify the production of a bioenergy crop. As such, producers bear the burden of determining individual economic viability on their contract acres. The Project Sponsors are providing technical assistance to the contract producers for establishment, production, and harvesting. The economic analysis provided in the Draft EA, was determined from publicly available data most similar to the confidential economic information developed by the Project Sponsors as part of the application. As a point of clarification, the commenter cites a study that the market needs to support $140/ton biomass to be sustainable. The project sponsors confirmed with the author of that cited article that, more accurately, a price of $50-70 per metric ton of biomass is likely to be economically viable over the 2015-2035 period in 2007 prices. This is consistent with the findings of the project sponsor and an achievable price for the producer.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
49	16	Socioeconomic effects/economic viability: The degree of economic uncertainty for the farmer is very high, in terms of cost of planting, use and maintenance of machinery, invasiveness, and selling price. EA, Page 2-2: "Aloterra Energy's owners are now leveraging four decades of commodities and energy experience to form a vertically integrated energy supply chain, focused on giant miscanthus. Aloterra Energy's proposed project area will provide farmers an energy crop rhizome source, harvesting and planting equipment for the crop's rhizomes, specialty harvesting for the mature cane, processing technology, and marketing services for the cooperative's biomass fuel." "MFA's proposed project area will provide farmers an energy crop source, harvesting and planting equipment for the crop's rhizomes, specialty harvesting for the mature cane, processing technology, and marketing services for the cooperative's biomass fuel" The EA is faulty because it does not state what "provide" actually means. It could mean rent or lease, or that the terms are set by negotiating individually with a farmer. It does not set a price per facility. The EA should look at the question of whether, given the harvesting requirements and short window of time for harvest, how this will be accomplished economically for the farmer?	Socioeconomics	NA	MA	02238	NGO	Biomass Accountability Project - No Biomass Burning	BCAP is a voluntary program that producers join if there is enough economic incentive for the individual producer to justify the production of a bioenergy crop. As such, producers bear the burden of determining individual economic viability on their contract acres. The Project Sponsors are providing technical assistance to the contract producers for establishment, production, and harvesting. The economic analysis provided in the Draft EA, was determined from publicly available data most similar to the confidential economic information developed by the Project Sponsors as part of the application.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
49	17	The report continually emphasizes using the farm model, based on statements like the following for which no substantiating data is provided: EA, Page 2-4: “Additionally, based on existing research and internal economic analyses the Project Sponsors determined that giant miscanthus could economically produce on smaller acreages, potentially benefitting a larger group of producers. “ This seems to be in direct conflict with the study cited in the EA that shows net negative results, thereby necessitating the BCAP payments one assumes, but further underlining the lack of economic viability of the proposal: EA, Page 4-3: “Under MSU’s analysis with “market rhizomes” after 10 years the producer is still cash flow negative over $6,000 on each acre planted. If the rhizome costs were reduced to only 25 percent of MSU’s estimate, the producer would still need 10 years to break even.” EA, Page 4-5: “Importantly, producer commitments are contingent upon BCAP funding, which indicates that the short term incentives provided by BCAP create a viable energy crop market. MSU’s research supports the Project Sponsors’ experience with actual producers in proposed project areas that without BCAP incentives in an approved project area, producer interest under current market conditions declines dramatically.” Thus the later statement, requires what is currently an unsupportable statement about market price if the crop is to be used to provide affordable electricity: EA Page 4-5: The EIA estimated the annual value to the producers in each proposed project area to be approximately $33 million for the approximately 600,000 tons anticipated to be produced annually at full production (2017). In conclusion, given the data in the report, and considering the price point data from outside reference sources, and given the farm model requires >500 plots of farm land to reach target acreage, the scale and dollars proposed under the EA are not economical nor socially desirable.	Socioeconomics	NA	MA	02238	NGO	Biomass Accountability Project - No Biomass Burning	BCAP is a voluntary program that producers join if there is enough economic incentive for the individual producer to justify the production of a bioenergy crop. As such, producers bear the burden of determining individual economic viability on their contract acres. The Project Sponsors are providing technical assistance to the contract producers for establishment, production, and harvesting. The economic analysis provided in the Draft EA, was determined from publicly available data most similar to the confidential economic information developed by the Project Sponsors as part of the application.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
49	18	Effectiveness of Mitigation and Monitoring Plan [MMP] : The overall effect of the project is very dependent on the content of the "Mitigation and Monitoring Plan [MMP]" but the actual content is unknown. Page ES-2: "FSA has a framework for defining the components of the MMP that will be required for this project, but has not yet finalized the plan to consider all public input on the draft EA prior to making a final plan recommendation. " Assuming the EA is at least adequate, then the MMP should also be available for public comment, because changes to the MMP are in fact likely to require major changes or re-evaluation in the EA. As an example, there have been multiple studies showing that miscanthus is a vector for the spread of corn borer. Especially using an "on farm model" of plots to 38-100 acres, this will mean juxtaposition to corn fields given the planting acreage for corn on EA Page 3-4 to 3-6. The farmer would want assurance of protection of their major crop, yet the document provides assurances without adequate detail making this very risky for the farmer and raising the issue of the adequacy of the evaluation of minimal impact in the EA.	Mitigation Measures	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	The Mitigation and Monitoring Plan was provided in a draft form in the Draft EA to allow for public input and comment on the features to be included. Overall, comments from the public and agencies have provided a great deal of additional information to include in the Mitigation and Monitoring Plan as best management practices or exclusions of acreage.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
49	19	Page ES-4: "The MMP would be used to ensure that adverse effects from this new crop are minimized or avoided. Similarly, minor negative effects would be anticipated for biological diversity as pastureland is converted into giant miscanthus croplands. The MMP would be essential to provide mechanisms such as reasonable and economically feasible buffers and field edges to provide for continued wildlife and vegetative diversity in these areas. Recent research has indicated that giant miscanthus is susceptible to some plant pests; the MMP monitoring and buffer efforts would be essential to ensure that any occurrence is identified and treated early to avoid transmission to local croplands, such as corn." How this treatment would be done, at what dollar cost and what environmental cost is unclear, but exactly the type of information the EA should provide. As noted above the complexity, cost, and effectiveness of such efforts would be complicated and increased if it was necessary to deal with hundreds of plots as is assumed in this EA.	Mitigation Measures	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	The Mitigation and Monitoring Plan was provided in a draft form in the Draft EA to allow for public input and comment on the features to be included. Overall, comments from the public and agencies have provided a great deal of additional information to include in the Mitigation and Monitoring Plan as best management practices or exclusions of acreage.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
49	20	This is compounded in other areas of the report where research is dismissed and the lack of research is used as a reason to leave the MMP indefinite. For example, page 4-12: "Additionally, Spenser and Raghu (2009) found that in greenhouse and field studies there was significant emergence of western corn rootworm from giant miscanthus placed near corn fields. Bradshaw et al. (2010) found two species of aphids (yellow sugarcane aphid and corn leaf aphid) in samples taken from giant miscanthus fields in four states with stands ranging from one year to 21-years old. The yellow sugarcane aphid was located in seven samples across the four states and the corn lead aphid was located in four samples in four states. According to Bradshaw et al. (2010) the presence of aphids in giant miscanthus is of concern since aphids can transmit plant viruses. The research in this area is somewhat lacking as these are new reports and steps should be taken to monitor for any plant diseases or pests within established stands of giant miscanthus. Future directions to be included in the MMP may include integrated pest management (IPM) programs associated with dedicated energy crops or buffers away from existing corn crops."	Mitigation Measures	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	The Mitigation and Monitoring Plan was provided in a draft form in the Draft EA to allow for public input and comment on the features to be included. Overall, comments from the public and agencies have provided a great deal of additional information to include in the Mitigation and Monitoring Plan as best management practices or exclusions of acreage.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
49	21	Water Usage: The EA repeatedly obfuscates the true water impacts by repeatedly citing the assertion that miscanthus has a purported higher efficiency of using water, without clarifying that total water usage, at least in the first 3-5 years if establishing the crop, will increase. For example, Page 4-19: "Giant miscanthus does have higher ET losses when compared to corn or corn mixes and switchgrass (McIsaac et al. 2010; VanLoocke et al. 2010; Heaton et al. 2010)" Page 4-20: "The annual water use of giant miscanthus may be higher than corn or sorghum due to the rainfall interception and transpiration rates." Page 4-21: "Also, due to its growth patterns, giant miscanthus would be anticipated to require more water than annual crops, such as corn" Page 5-4: "Giant miscanthus would be anticipated to use more water than fallowed or idle lands with permanent pasture, rangeland, or annual species. Taken in combination with traditional crops in the proposed project areas, there could be greater use of groundwater supplies or effects on groundwater recharge." Page 6-8: Adaptive monitoring is expected to be used to determine whether any surface or groundwater supplies are being affected and if so, implement corrective measures. If the crops are used to fuel a biomass combustion power plant, which is typically "baseload," how will mitigation occur for water supplies if the biomass plant is dependent on the supply of fuel, which is dependent on the water? Does irrigation of water from another area constitute mitigation for depletion of water supplies?	Water Use	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	Water use is furthered clarified through literature citing European experience with overall water use. It has been indicated that energy grasses require between 500 to 600 mm annually for production (20 to 24 inches) with an interception loss of approximately 20 percent indicating a need for approximately 28 inches of precipitation per year. Corn requires between 22 to 23 inches annually with an average water use of 3,000 gallons per acre. The estimated production for giant miscanthus has been anticipated to require between 288,000 to 864,000 gallons per acre, while an acre of corn with an average yield would require approximately 444,000 gallons. If corn is grown for silage or biomass production, at an average production rate of 20 tons per acre, corn would require more than 1.4 million gallons. When compared to native perennial grasses (natural communities) giant miscanthus would be estimated to require a greater amount of water; however, it has been indicated that the historic water balance has been greatly altered by annual cropping systems. If annual cropping system were converted to perennial grasses, it was estimated in the literature that stream flow would decline between 24 to 28 percent. The percentage for giant miscanthus would be approximately 32 percent reduction in stream flow when compared to annual cropping systems.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
49	22	Water Quality: During the establishment of the crop there will be a decrement in water quality that is acknowledged in the EA, but then minimized without substantiating data. The effect will likely be increased as the number of smaller plots increases in number. EA Page 6-7: "Potential impacts on water quality include short-term and temporary increases in nutrient and fertilizer runoff during establishment and monitoring. Compared to land currently in traditional row crops, conversion to giant miscanthus is expected to result in less nutrient and fertilizer runoff. Compared to land currently idle or in pasture or hay, conversion to giant miscanthus may result in slight but short-term and temporary increases in nutrient and fertilizer runoff. However, long-term declines in nutrient loss (i.e., phosphorus and nitrogen) during the maintenance period (years 3 to 15) are likely to off-set temporary and short-term increases in nutrient leaching or runoff. The anticipated fertilizer application rate is also expected to be substantially lower compared to traditional row crops, but may be higher than idle or pasture or hay land.	Water Quality	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	Soil erosion is anticipated to be slightly higher in converted pasturelands than the existing vegetation; however, that is highly dependent on the site-specific groundcover being converted into giant miscanthus. The Mitigation and Monitoring Plan and each producers' Conservation Plan will address agricultural chemical usage BMPs and guidance. The combination ensures that even with the conversion of pasture, that stormwater runoff even during the establishment period, would result in only minor effects to water quality.
49	23	Land Use-- Repeatedly throughout the EA there is an emphasis on the use of marginal and non-productive land. That is contradicted by this statement indicating only a small quantity of such land is available: EA Page 4-5: "The Project Sponsors estimate that *approximately 20* percent of the total acreage in the proposed project areas for Aurora, Columbia, and Paragould would be marginal cropland with the remainder being non-cropland, such as pastureland." (emphasis supplied)	Land Use	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	Based on the amount of available "other cropland" and pastureland within the project areas, there is sufficient acreage to avoid the conversion of higher quality habitats (e.g., forestlands or woodlands) or lands currently included within a Federal or State conservation program. BCAP, by statute, provides a mechanism to help producers establish and produce bioenergy crops. With this program, the Project Sponsors are estimating a positive balance for producers by Year 6 of production, rather than at Year 10 or later without BCAP.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
49	24	Invaseness -- The report emphasizes that the plant is not invasive since there is high likelihood that the seed will be sterile. Even if that assertion is true 99% of the time, given the planting of 200,000 acres that is still significant risk since eradication can be achieved only with herbicides. What is more significant is the report repeatedly cites that all propagation is done by rhizomes, not by seed. Since much of the proposed land to be planted is "highly erodible", in the three to five years it takes to get the crop established, and likely thereafter at the margins of plantings, rhizomes will break off and move with the water, leading to widely disseminated spread. Then after saying the direct rhizome spread is not significant, one of the parents of the currently untested hybrid has a spread velocity of up to ten feet per year.	Invasive	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determine within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
49	25	Similarly, it is unrealistic and dangerous to assume that a rhizome will not be transported off the land. This could easily occur on the wheels of a vehicle used to transport the crop. A rhizome could blow off the vehicle during transport to the processing facility or could be deposited at the facility itself. Page 4-11: "Giant miscanthus is a naturally occurring hybrid species that is vegetatively propagated and does not produce viable seeds with one of the parent species being *Miscanthus sinensis*, which is considered an invasive species in the United States; the other parent species (*M. sacchariflorus*) is not included on any Federal or State lists of noxious or invasive species. "Jrgensen (2011) indicates that rhizome spread of giant miscanthus occurs only at about 10 centimeters (cm) per year. "Jrgensen (2011) indicates that *M. sacchariflorus* (i.e., a parent species of giant miscanthus) has creeping rhizomes that spread several meters (m) in a few years with high adaptability to riparian areas, which has a higher potential for translocation via erosion and water transport." EA Page 6-6: Regardless of current land use, long-term benefits of soil retention with established rhizomes and carbon soil sequestration towards the middle of the 15-year maintenance period on enrolled fields are expected to off-set temporary and short-term increases in soil erosion and loss that may also be associated with reduced carbon sequestration. EA Page 6-7: "Potential impacts on water quality include short-term and temporary increases in nutrient and fertilizer runoff during establishment and monitoring. The fact that such erosion and the potential spread of rhizomes will occur is recognized in the report.	Invasive	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determine within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
49	26	In addition the EA at one time says that plants that are not normally planted are not included on the "invasive species list" of a state or the federal list, and then later uses the non-inclusion of the grass on the list as a justification for considering the risk of invasion to be nonexistent. There is no resolution of the risk in the statement that one of the parent species of the hybrid is on the invasive list. That is seemingly ignored. At best smaller and more extensive field trials to prove the lack of invasiveness are called for. The EA uses circular logic in saying that the miscanthus is not listed as invasive – that is because it is not established yet in the proposed growing area. EA Page 3-21: Giant miscanthus is not listed on any of the proposed project areas State (Arkansas, Missouri, Ohio, or Pennsylvania) list of noxious weeds as of March 2011, this may be partially due to the fact that this species has not had widespread distribution in a localized or regional level; however, this is the most recent listing for these states. This species is also not listed on the Federal Noxious Weed List as of March 2011. Two species of Miscanthus (M. floridulus and M. sinensis), one of which is a parent species of the hybrid being proposed by the Project Sponsors, are listed on the Federal Invasive species list as of March 2011.	Invasive	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determine within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range.
49	27	Air quality The trucking and other emissions have an impact regardless of whether these are rural communities, certainly in counties such as Lake which are not in attainment. Moreover since the actual agricultural methods are currently undefined in the EA and there is no MMP, the additional emissions comment is hard to validate. EA Page 2-14: "All counties located within the proposed project areas are rural or semi-rural and the majority of the land use in these counties in agriculture. As such, the additional agricultural use anticipated to be produced should not introduce any additional significant emissions."	Air Quality	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	Emissions outside of the establishment and production of giant miscanthus are not considered part of the project definition, as such they have not been analyzed. Mobile source emissions from agricultural equipment would be minor and occur infrequently throughout the year in the non-attainment areas.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
49	28	In regards to PM 2.5, assessment is avoided, perhaps because there is no enough definition of the actual planting procedure and distribution as well as the necessary agricultural techniques and transportation even though the following is included: Page 2-14: "Lake County is designated as in full non-attainment for PM2.5 and Ashtabula County as partial non-attainment for PM2.5.	Air Quality	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	An analysis of PM2.5 associated with traditional tillage activities has been included within the Final EA.
49	29	Moreover the EA dismisses PM 2.5 almost as if it doesn't matter. EA Page 2-14: ""These particles are so small they can be detected only with an electron microscope." The comment in context makes it seems like the particles are too small to matter. They are very small, but the numbers amount to trillions, especially when looking at the smokestack emissions of the combustion of the miscanthus. Moreover, because they are so small that is why they are medically dangerous and why organizations like the American Heart Association and the American Lung Association have determined that there is no safe threshold for exposure to nano/UFP particulate matter and that medical risk is a linear dose response curve, representing significant risk to the population with every increment of PM nano/UFP exposure, regardless of the absolute level of particle count. [Please note that the footnote is only a very limited reference set. There are literally thousands of articles in the last few years detailing the heightened medical risk from exposure to these chemicals which are not accounted for in this EA.]	Air Quality	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	An analysis of PM2.5 associated with traditional tillage activities has been included within the Final EA.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
49	30	Air Quality and monitoring so as to adequately inform the MMP: There is almost no monitoring capability in close proximity to many of the proposed project areas. This makes it difficult to verify assertions/anticipations and to adequately prepare an MMP. EA Page 2-14: "There are no monitoring stations located in Ashtabula County. Overall, it would be anticipated that agricultural equipment necessary for the establishment, harvesting, and transportation of giant miscanthus would provide a minimum amount of the PM2.5 particulate load within these two counties based on the high level of electric generating units in Lake County and the proximity to the Cleveland, Ohio metropolitan area."	Air Quality	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	An analysis of PM2.5 associated with traditional tillage activities has been included within the Final EA.
49	31	Projected markets: The ultimate use of this material and the actual location of the use, given the current export market to Europe is not clear. EA Page 2-11: "Pellet markets are diverse and are strong both inside and outside of the United States. To that point; the Project Sponsors have giant miscanthus contracts with a large biomass aggregator and a local residential pellet distributor."	Projected Markets	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	The Project Sponsors are proposing a specific project for inclusion within the BCAP. The reasonable alternatives under consideration are (1) the Proposed Action, which implements the Project Sponsors plan or (2) the No Action Alternative, which would not implement the Project Sponsors plan. The Project Sponsors are not required to propose alternative species or project locations under NEPA.
49	32	Biodiversity: There is no adequate data presented to account for the effects of planting the total acreage or the acreage planted through the "farm model". The claim is no impact but the data is not substantive, and the EA acknowledges that there is no long-term applicable data. Page ES-6: "These studies also looked at young-aged giant miscanthus stands, so there was little information available on biodiversity found in mature stands."	Biodiversity	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	Biodiversity information reviewed from European literature does suggest that miscanthus can provide wildlife and insect habitats when compared to traditional crops and some pasture lands. The Mitigation and Monitoring developed in consultation with NRCS and ARS, provides appropriate minimum buffer width for each project area, combined with site-specific increases in buffer width for adjacency to sensitive areas, to be included in the individual Conservation Plan. Additional safeguards have been established for active producer monitoring and reporting to the Project Sponsor for the initiation of appropriate control technologies.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
49	33	Conflict of interest: In assessing the invasiveness the Project Sponsors for a period became a member of the group assessing the invasive potential of the crop. If Project Sponsors are a member of the group assessing their own product and proposal, then they are not an independent third party, even though tier information was apparently accepted as such. This may have also influenced OSIA judgments on other issues and the assessment of other grass species. The group also never addresses in the EA the issue of propagation risk from rhizome spread as opposed to seed. EA Page 2-2: "The Project Sponsors subsequently became a member of the OSIA and worked with them as an independent, third party, to develop a voluntary Quality Assurance Program (QAP) that included site visits at their propagation locations, genetic tracing of their stock, and a records audit." EA Page 2-2: "In their letter to the Project Sponsors dated March 4, 2010 that was submitted as part of their BCAP application, OSIA concluded that the Project Sponsors proposed giant miscanthus was a sterile triploid hybrid producing no viable seed at the Conneaut, Ohio and Kansas propagation locations inspected."	Quality Assurance Program	NA	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	The OSIA has been designated by the Ohio Legislature as the Official Certifying Agency for the State of Ohio. The OSIA establishes and administers standards for certification and inspects the production of Certified seed under their standards. The OSIA provides cooperating producers an unbiased and rigid inspection service.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
49	34	Inclusion of excluded data requiring the matching payment to be treated as a major action under the NEPA definition EA Page 2-8: "the collection, harvest, storage, and transportation of biomass from the proposed project areas to the BCF are included within the provisions of the BCAP Matching Payments Program; therefore, those activities are not being analyzed as part of the Proposed Action (BCAP Final PEIS Chapter 1.3.2, page 1-6). The Matching Payment Program was determined not to be a major Federal action per the NEPA definition since (1) there was no discretionary authority to implement the program terms; it was implemented per the direct language of the 2008 Farm Bill and (2) that the materials collected during the Matching Payment Program were currently being utilized in the marketplace for a similar, if not the same, purpose." As has been established in defining invasiveness [see 12 above] this crop is not grown in the United States except at one or two test plots. Therefore item (2) is invalid: if the crop is not grown then there can be no existent market for a "similar, if not the same, purpose." Therefore such a project as proposed to plant 200,000 acres with an essentially unknown species of grass in four states does require a full NEPA environmental impact report to assess the true impacts not only on local ecosystems, but on air and water quality, to more accurately assess the true risk of invasiveness and the potential impact on human health from the cultivation and use of miscanthus as a biomass combustion fuel source.	Matching Payment	Against	MA	02238	NGO	Biomass Accounta-bility Project - No Biomass Burning	The BCAP establishment and annual payments are provided to the establishment and production of bioenergy crops. As was fully described in the Record of Decision for the Final BCAP PEIS and the implementing regulations for BCAP, the Matching Payments program was determined to not be a major Federal action. The Matching Payment Program was determined not to be a major Federal action per the NEPA definition since (1) there was no discretionary authority to implement the program terms; it was implemented per the direct language of the 2008 Farm Bill and (2) that the materials collected during the Matching Payment Program were currently being utilized in the marketplace for a similar, if not the same, purpose.
50*	1	I support the approval of Aloterra Energy's BCAP applications and I support the use of Miscanthus as an energy crop to meet America's renewable energy needs.	General	Support			Individual	None	Comment noted on the support of the proposed action.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
51*	1	The City of Aurora is very excited to support this project. It provides a very necessary influx of capital in several forms, financial, intellectual, and social. We all see the need for a diversified energy portfolio and this project promises to be one of the viable avenues for our future energy needs. This project is scalable and a logical stepping stone to future technology. This will bring a tremendous amount of financial capital to our small community. This area has already committed itself to the alternative energy sector with its alternative energy programs at Crowder College in Neosho and even our community high school has an award winning high mileage car program and an exciting alternative energy program for high school students. These will only get better with the development of this project. The social aspect of this project cannot be over estimated. This area needs a dose of hope and optimism. We need to feel a part of the future and contribute to the energy portfolio for our nation. This technology is appropriate for this area and plays to our strengths. We are a farming community and this will allow us to have pride in that and work together to make a better future. We feel the environmental impact will be very positive for all the reasons sighted in the analysis. This area needs to have the pulsing action of growing grass and root die back to build the carbon bank back into the soils that have been depleted over the last century. This project needs to happen and it needs to happen in Aurora.	General	Support	MO		Local Governmen t	City of Aurora, Missouri	Comment noted on the support of the proposed action.
52*	1	I support the approval of Aloterra Energy's BCAP applications and I support the use of Miscanthus as an energy crop to meet America's renewable energy needs. Please help reduce the corn-to-ethanol mistake that drives up costs in many other areas for all of us	General	Support	TX	77027	Individual	Jackson Gilmour & Dobbs, PC	Comment noted on the support of the proposed action.
53*	1	I wanted to drop you a quick note to let you know that I support the approval of Aloterra Energy's BCAP applications. Additionally I believe that Miscanthus is a great energy crop and will do well to suit the needs of America's renewable energy needs.	General	Support			Individual	First Bell Capital	Comment noted on the support of the proposed action.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
54*	1	The Fish and Wildlife Service (Service) has reviewed the Draft Environmental Assessment (DEA) for the Proposed Giant Miscanthus Establishment and Production in Arkansas, Missouri, Ohio, and Pennsylvania under the Biomass Crop Assistance Program (BCAP). The following general and page-specific comments are submitted in response to the Notice of Availability of the DEA, which was published in the Federal Register on April 8, 2011, (Vol. 76, No. 68) by the U.S. Department of Agriculture Farm Service Agency (FSA) on behalf of the Commodity Credit Corporation and Farm Service Agency.	General	NA	VA	22203	Federal Agency	U.S. Fish and Wildlife Service	No response required.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
54*	2	Due to the long history of negative impacts of invasive species on the biodiversity in North America (see excellent review in Duke and Mooney 2004, pgs. 411-437), we have major concerns over the proposed introduction of giant miscanthus into the United States as a possible biofuel species. There are numerous records of the spread of noxious, invasive plants, especially perennial Eurasian grasses such as giant reed (*Arundo donax*) into non-targeted areas. Such impacts are well summarized and three are important citations referenced in Ragh et al. (2006, pg. 1742). Conclusions in the DEA that implementing mitigation measures "under development" would result in minimal or temporary impacts to native species/natural communities is unsubstantiated and the Service has not had the opportunity to review and comment on such mitigation measures.	Invasive, Mitigation Measures	NA	VA	22203	Federal Agency	U.S. Fish and Wildlife Service	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determine within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range. The Mitigation and Monitoring Plan was provided in a draft form in the Draft EA to allow for public input and comment on the features to be included. Overall, comments from the public and agencies have provided a great deal of additional information to include in the Mitigation and Monitoring Plan as best management practices or exclusions of acreage

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
54*	3	The Service has serious concerns with the potential impact of this action on multiple trust resources based on our authorities and responsibilities under the Endangered Species Act (ESA), the Fish and Wildlife Coordination Act, and the Migratory Bird Treaty Act. Conclusions that giant miscanthus has a low potential for invasiveness is based mostly on the claim that this hybrid is a sterile triploid and therefore produces no viable seed. However, as clearly pointed out by Raglu et al. (2006, pg. 1742) allopolyploidy does not guarantee sterility. Giant miscanthus is a triploid perennial warm-season grass created by combining Miscanthus sinensis with Miscanthus sacchiflorus, both native to Southeast Asia. It is not listed on the Federal list of noxious weeds or on any state noxious weed lists of the project area states. However, one of the parent species, M. sinensis is considered an invasive species in the United States and is on the Federal Noxious Weed List. Additionally, comments that the species is not likely to spread because it will not produce viable seed is also contrary to the fact that invasive perennial grasses are often spread by rhizomes that get displaced from introduction sites and distributed by floods, machinery, and other means.	Seed Sterility, Invasive	NA	VA	22203	Federal Agency	U.S. Fish and Wildlife Service	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determine within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
54*	4	The EA estimates that other than initial site preparation for establishment, there would be positive effects on soil quality and a reduction of soil erosion. This is intuitive for croplands converted to giant miscanthus. However, it should be noted that in situations where pasture is converted to giant miscanthus (the DEA estimates that over 82% of the 200,000 acres proposed for planting to giant miscanthus by 2014 is pastureland), there is increased potential for soil erosion. Several species of federally listed mussels occur in the project area. Any increase in sediment into these streams could have an adverse effect and could constitute a "take" of threatened or endangered species. All appropriate steps should be taken to keep disturbed soil from moving off site during plant establishment and project sponsors or the responsible agency should consult the Service on project where there are potential effects on these species.	Soil Resources, Protected Species	NA	VA	22203	Federal Agency	U.S. Fish and Wildlife Service	Further clarification would be provided to ensure that site-specific conditions do not create adverse effects to State-listed species. Species of concern, but not protected under State law/regulation, Federal laws/regulations, or tribal regulation would be considered to the extent of management by the appropriate entity. Site specific Conservation Planning would address wildlife best management practices that meet the needs of locally occurring protected species. No taking of a protected species would be allowed without appropriate consultation with the U.S. Fish and Wildlife Service and the appropriate State agency.
54*	5	The section on water quantity (4.6.2) seems to provide conflicting information about water needs and irrigation. The EA states that establishing miscanthus would reduce irrigation demand, while also stating that giant miscanthus requires more water than corn and that giant miscanthus has higher evapotranspiration losses compared to annual row crops. The Service believes this section needs to be clarified and water use of giant miscanthus better quantified. For example, although total rainfall in Arkansas exceeds the minimum requirements of giant miscanthus and corn, rainfall during most of the growing seasons is below what is required for optimal production and much of the corn grown in Arkansas is irrigated. Therefore, it is questionable as to whether it is going to be necessary to irrigate giant miscanthus to achieve production targets. The results of this clarification/evaluation will also need to be applied to determining the potential impacts on stream flow and/or other water bodies in the project area.	Water Use	NA	VA	22203	Federal Agency	U.S. Fish and Wildlife Service	Further clarification to water use has been provided in reference to both comparisons of corn for grain and corn for silage. There would be no irrigation of giant miscanthus within these project areas after initial establishment this growing season. There was no indication based on available data that these project areas contain substantial amount of irrigated croplands. Average annual precipitation greater than 30 inches should be sufficient for the production of giant miscanthus.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
54*	6	The EA indicates that there is potential for giant miscanthus to provide refuge or reservoir for plant pests, especially corn rootworm and aphids. Since pesticide will most likely be used if this occurs, the EA needs to provide information and discussion on what pesticides will likely be used, their potential toxicity to fish and wildlife and the potential for these pesticides to get into surface or groundwater. This information would be used to determine is there may be negative effects on federally listed freshwater mussels that occur in project area streams.	Pests & Diseases	NA	VA	22203	Federal Agency	U.S. Fish and Wildlife Service	The agricultural chemicals to be used would be the same as for the treatment of the same plant pests, diseases, and weeds (only during establishment) that would be used on adjacent crops. Chemical use would be project area and site-specific. All applicable guidance and regulations would be followed with documentation to be provided with each annual report. All chemical use would be described as part of the Conservation Plan for each producer's acreage.
54*	7	The Service does not believe it is appropriate in the spirit of the National Environmental Policy Act (NEPA) for FSA to restrict this EA to the proposed action and the no action alternative based solely on the Project Sponsors determination that other alternatives are not feasible. The Service believes FSA should prepare a supplemental EA that adequately addresses a reasonable range of alternatives with respect to other feasible energy crops and their potential impacts on the human environment.	Alternatives Analyzed	NA	VA	22203	Federal Agency	U.S. Fish and Wildlife Service	The Project Sponsors are proposing a specific project for inclusion within the BCAP. The reasonable alternatives under consideration are (1) the Proposed Action, which implements the Project Sponsors plan or (2) the No Action Alternative, which would not implement the Project Sponsors plan. The Project Sponsors are not required to propose alternative species, methods, or project locations under NEPA.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
54*	8	Scattered throughout the document reference is made to FSA's Mitigation and Monitoring Plan (MMP) or FSA's framework for a MMP. On page 6-1, the EA states the proposed mitigation is equivalent to the type identified in the new CEQ guidelines and referred to as "mitigation incorporated into project design." If this is the case, the Service believes the EA needs to provide more specific information about what mitigation actions are being considered for various situations and this MMP should be available for public comment.	Mitigation Measures	NA	VA	22203	Federal Agency	U.S. Fish and Wildlife Service	The Mitigation and Monitoring Plan was provided in a draft form in the Draft EA to allow for public input and comment on the features to be included. Overall, comments from the public and agencies have provided a great deal of additional information to include in the Mitigation and Monitoring Plan as best management practices or exclusions of acreage. The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determine within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
54*	9	In accordance with the new CEQ guidelines on mitigation and monitoring, FSA should identify the legal authority it has to implement mitigation and monitoring and the funding source. As currently written, the EA (page 6-2) states, "The role of the Project Sponsors, are expected to include potential financial assistance with implementation of the monitoring program to assess the effectiveness of mitigation and financial assistance for any eradication efforts outside of the intentionally planted areas." The Service believes that a mechanism needs to be in place that clearly documents what will be done, who will do it and who is financially responsible with respect to controlling giant miscanthus if it becomes invasive. Merely stating that Project Sponsors may be a potential funding source for monitoring or eradication costs is not adequate.	Financial Responsibilit y	NA	VA	22203	Federal Agency	U.S. Fish and Wildlife Service	The Mitigation and Monitoring Plan clearly identifies the responsibilities of the FSA, the Project Sponsors, and the producers.
54*	10	Page 2-3. We disagree that floodplains need not be considered in the DEA. Although targeted areas for introductions are outside of floodplains, we are concerned that rhizomes displaced from introduction sites could be washed downstream and become established in riparian corridors. There are numerous records in the western United States where the invasive exotic grass giant reed has become established within floodplain habitats and has completely eliminated native vegetation.	Eliminated Resource Areas	NA	VA	22203	Federal Agency	U.S. Fish and Wildlife Service	Floodplains would be considered on the site=specific basis through the Conservation Plan of each individual producer. A minimum buffer distance is included within the Mitigation and Monitoring Plan; however, a wider buffer may be required for certain site-specific conditions. The amount of floodplain within each project area varies greatly depending upon the watersheds.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
54*	11	Page 3-20. We agree that Executive Order 13112 should be considered in the analysis but disagree with any assumption here and elsewhere in the document that the benefits gained by the experimental use of this grass for biofuel production clearly outweigh potential harm from the introduction or spread of a potentially invasive, non-native species. The Service believes that a specific clause in the legislation for the BCAP should form the principal criteria for evaluating this application. Section 9011(a)(4) of PL 110-246 defines eligible and non-eligible (excluded) crops for BCAP. The pertinent exclusion for this application is addressed in section 9001(a)(4)(B)(ii), which states: "any plant that is invasive or noxious or has the potential to become invasive or noxious, as determined by the Secretary, in consultation with other appropriate Federal and State departments and agencies." Based on current scientific information, the Service believes that giant miscanthus (*Miscanthus x giganteus*) has the "potential to become invasive or noxious".	Invasive, BCAP Statute	NA	VA	22203	Federal Agency	U.S. Fish and Wildlife Service	A review of literature from Europe and the United States has not indicated that this clone of giant miscanthus would result in an invasive spread. The Mitigation and Monitoring Plan activities would be used to ensure that acres intentionally planted as part of the proposed project areas would not create an unintentional spread of giant miscanthus. The field buffers, as well as, an eradication strategy would be implemented as part of the Conservation Plan.
54*	12	Pages 3-21 and 3-22. The fact that giant miscanthus is not listed as a noxious weed in any of the proposed project areas is a moot point as there has not been time for this species to be so identified. The fact that other members of the genus (Raghu et al. 2006,pg. 1742) are listed as invasive perennials should be an immediate concern, especially given that grasses have been demonstrated to be significantly over-represented as natural area invaders compared to other plant families (Daehler 1998, pg. 171). Information on the USDA website pertaining to the two species of *Miscanthus* that are on the federal invasive species list clearly indicate these grasses are invasive and noxious.	Invasive	NA	VA	22203	Federal Agency	U.S. Fish and Wildlife Service	As an initial screening metric, the Federal and State lists for invasive and noxious weeds were consulted for the occurrence of giant miscanthus or other miscanthus species.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
54*	13	Page 3-24. Table 3-9: Information on federally listed species for Missouri should be updated and corrected. Virginia sneezeweed should not be listed for the Columbia area. The basis for this record in Boone Co. was a planting at a site on private property (outside the historic and known range of the species) that has since been eliminated. The species has, however, been recently documented in the Aurora area (Christian County). Topeka shiners no longer occur in Boone, Cole, or Randolph counties; Western prairie fringed orchid is not considered extant in Jasper or Lawrence counties; Ozark big-eared bat is not longer considered extant in Barry or Stone counties; and American burying beetle is no longer considered present in Newton County. Although we have no recent documented records of running buffalo clover in Boone, Cole, Cooper, or Moniteau counties, we recommend retention of this legume in the table because the species has a persistent seed bank and recent discoveries in Missouri suggest that it could be found in most floodplains and riparian corridors, especially those that have been exposed to some level of disturbance. See additional endangered species comments below.	Protected Species	NA	VA	22203	Federal Agency	U.S. Fish and Wildlife Service	Text correction has been included in the Final EA

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
54*	14	Page 4-11. On page 4-11, Table 4-3 outlines several characteristics that make giant miscanthus "ideal" as a weed. Two are worth noting: the fact that such species are allelopathic (i.e., puts out harmful chemicals that impede or prevent the growth of other species) and that they are drought tolerant. Noxious and invasive allelopathics species such as garlic mustard (Alliatia petiolata), spotted knapweed (Centaurea maculosa), and sericea lespedeza (Lespedeza cuneata) produce various phytotoxins and/or harmful biochemicals that have enabled these species to replace or significantly impair multiple natural communities by eliminating native species. While drought tolerance may be a desirable characteristic for ideal biomass species. this trait may enable invasive species to become an even greater threat in the face of predicted impacts from climate change. Once again, the Service believes these characteristics are sufficient for invoking the exclusion in section 9011(a)(4)(B)(ii) of BCAP about using giant miscanthus (*Miscanthus X giganteus*) because of its potential to become invasive or noxious.	Invasive	NA	VA	22203	Federal Agency	U.S. Fish and Wildlife Service	Giant miscanthus (*Miscanthus X giganteus*) is not considered to be allelopathic. Qasem and Foy (2001) did find evidence in literature that *Miscanthus floridulus* produced phenolic acids (Chou and Chung 1974), while *Miscanthus sinensis* was a targeted species affected by allelopathic plants of *Erigeron* spp. and *Solidago altissima* (Kobayashi et al. 1980). The table referenced from the Draft EA is a generalized description of characteristics observed in energy crops and weeds, not specific to any one species.
54*	15	Pages 4-14 and 4-15. The EA states that minor negative effects on wildlife diversity are anticipated. Research cited from studies in the United Kingdom indicated a greater abundance and diversity of birds in miscanthus field (field size - three hectare) than in winter wheat fields, and the number of birds was neutral when compared to grasslands. However, research cited from the United States found potential for a loss of bird diversity in bioenergy crops vs. native prairie and that impacts to species of concern was more than double generalist species; however, specific data for miscanthus was lacking. If the Proposed Action is implemented, project sponsors should avoid planting in native warm-season grasslands and efforts should focus on using existing pastures consisting of introduced forages (e.g., tall fescue, dallisgrass, etc.)	Biodiversity	NA	VA	22203	Federal Agency	U.S. Fish and Wildlife Service	The report from the United States, is a review of literature and is not fully supported by field trials or observations. Biodiversity information reviewed from European literature does suggest that miscanthus can provide wildlife and insect habitats when compared to traditional crops and some pasture lands.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
54*	16	Page 5-3. Claims in the DEA that the cumulative effects to biological resources associated with the proposed action would be minor are unsubstantiated. Limiting acreage proposed for energy crop production does not negate our concerns that rhizomes from miscanthus could be displaced and eventually transported to areas that could impact non-targeted natural communities and sensitive species.	Biodiversity, Cumulative Effects	NA	VA	22203	Federal Agency	U.S. Fish and Wildlife Service	The Mitigation and Monitoring developed in consultation with NRCS and ARS, provides appropriate minimum buffer width for each project area, combined with site-specific increases in buffer width for adjacency to sensitive areas, to be included in the individual Conservation Plan. Additional safeguards have been established for active producer monitoring and reporting to the Project Sponsor for the initiation of appropriate control technologies.
54*	17	Page 6-1. The Service does not concur that environmental impacts will be minimal due to the implementation of various mitigation measures currently in development. Although we have not had the opportunity to review such measures, they apparently will include compensation for impacts if they happen. We disagree that corrective measures can be counted on to rectify the situation if mitigation measures fail to address such unforeseen impacts. Based on the history of impacts of invasive exotic species on North America's biodiversity, corrective measures are usually not possible once such species have been released or escaped from captivity.	Mitigation Measures, Cumulative Effects	NA	VA	22203	Federal Agency	U.S. Fish and Wildlife Service	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determine within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
54*	18	Page 6-2 and 6-3. The Service and key State natural resource agencies should be involved in the development of any mitigation measures, BMPs and accompanying monitoring plans as well as implementation and tracking of such actions. There is no evidence to support the claim in the DEA that any potential impacts on the environment are "likely to be temporary" or "localized."	Mitigation Measures	NA	VA	22203	Federal Agency	U.S. Fish and Wildlife Service	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determine within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range.
54*	19	Page 6-4. As noted in our general comments above, we are not in agreement that this grass is unlikely to spread due to its reported inability to produce viable seed as rhizomes can be distributed by multiple methods. An example of an aggressive, rhizomatous, perennial grass that has developed into an invasive exotic species, is Cogongrass (Imperata cylindrical (L.) Beauv.) (MacDonald, 2004).	Invasive	NA	VA	22203	Federal Agency	U.S. Fish and Wildlife Service	Literature suggests that giant miscanthus rhizomes desiccate rapidly, thereby decreasing viability within a matter of hours from any predation. Literature also points out that rhizomes that remain on the soil surface, but are not covered, remain unsprouted and desiccate rapidly.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
54*	20	Page 6-5. A study apparently underway and cited (Anderson 2011) is used to outline control measures in the event miscanthus escapes from target areas. Because this manuscript is "in preparation," it is inappropriate to cite it as a published document in a peer-reviewed journal. It would be prudent for the Service to assist in identifying methods to avoid impacts to nesting grassland birds in accordance with our authority under the Migratory Bird Treaty Act.	Mitigation Measures	NA	VA	22203	Federal Agency	U.S. Fish and Wildlife Service	The Project Sponsors have committed to a stringent Mitigation and Monitoring Plan with financial responsibility for control of any unwanted spread resting with both the producer and the Project Sponsors. As part of the Mitigation and Monitoring plan, a field buffer, of a minimum width, would be required for all giant miscanthus fields to minimize vegetative spread outside of intentionally planted areas. The maximum buffer width would be determine within each producer contract per local site conditions and regulations, as part of each producer held Conservation Plan. Each Conservation Plan would be developed with the assistance of a Technical Service Provider. In addition to the buffer and Conservation Plan, a seed sampling program has been developed to identify if viable seed is being produced. The MMP will detail, the steps to occur if viable seed are found through the seed sampling program. These steps could include (1) halting any harvest of the identified field with no off-site movement of any material harvested from that field, (2) immediate removal of existing inflorescences in the field that was found to contain viable seeds, (3) resampling of those inflorescences at a greater rate to determine an approximate percent of inflorescences that produced viable seeds, (4) sampling of fields in the immediate region to determine if additional viable seed is occurring, (5) a commitment by the project sponsor to recommend eradication of that field, if it is determined that the percentage of viability is outside a safe range.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
54*	21	Page 6-6, section 6.333 Protected Species. This section of the DEA briefly mentions compliance with the Endangered Species Act. Although the DEA provides general information on federally listed species within the proposed project areas, there is no mention of a completed analysis of impacts to federally listed species. Furthermore, we saw no reference in the DEA pertaining to consultation with the Service under section 7(a)(2) of the Endangered Species Act (Act) nor any mention of a Biological Assessment in accordance with the Interagency Consultation regulation s(50 CFR, section 402.12). To fully comply with section 7(a)(2) of the Act, the federal action agencies (CCC and FSA) should prepare a Biological Assessment to determine if the proposed action is likely to adversely affect federally listed species. Based on the best available scientific and commercial information, the Service believes that establishing giant miscanthus as a biomass crop in some of the identified geographic areas could adversely affect specific listed plants. The Service can provide assistance to CCC and FSA in preparing the required Biological Assessment.	Protected Species	NA	VA	22203	Federal Agency	U.S. Fish and Wildlife Service	Overall, this environmental assessment analyzed a project area proposal for BCAP project areas. Only when FSA approves a BCAP project area can producers begin to enroll acres with FSA and the Project Sponsors for inclusion in the project area. At this stage, the individual parcels to be included within the project areas are not known. However, the environmental assessment process provide full detail on the general lack of data for certain resource areas, such as biodiversity. To ameliorate the potential for effects, the Project Sponsors in consultation with USDA staff developed an overarching Mitigation and Monitoring Plan to provide broad categories and actions to be conducted by each producer or by the Project Sponsors. At the local level, BCAP requires the development of a Conservation Plan as part of the environmental screening process. The Environmental Screening process, will be similar to other USDA programs to ensure minimal effects. The Environmental Screening process would allow FSA to decline acreage that would result in more than minimal effects to resources analyzed in this environmental assessment even with mitigation efforts. This screening process in combination with a site-specific Conservation Plan would provide reasonable activities that would be conducted based on the resources within and adjacent to the contract acres. Each Conservation Plan would be subject to all State and local regulations, which may be more stringent than Federal regulations concerning those resources areas.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
54*	22	Contrary to the analysis provided in the DEA, the Service believes that the proposed establishment and production of giant miscanthus as a dedicated energy crop in Arkansas, Missouri, Ohio, and Pennsylvania could have potentially significant environmental impacts. Because the full extent of this propose introduction has not been adequately analyzed, and for reasons outlined above, we are opposed to the use of this exotic grass as a biomass energy crop as described under the proposed action in the DEA. Because this plant clearly has the potential to become invasive or noxious, we believe that the proposed introduction is in direct conflict with section 9011(a)((4)(B)(ii) of Public Law 110-246 and the Plant Protection Act of 2000. Furthermore, we see no statutory, regulatory, or scientific validity for reaching a conclusion that the benefits of the proposed introduction outweigh the potential harm to the environment.	General	Against	VA	22203	Federal Agency	U.S. Fish and Wildlife Service	Comment noted. The Draft EA provided an overview of the best available information at the time of publication, including any shortcomings in the literature. The Project Sponsors, in consultation with the NRCS and ARS, developed the Mitigation and Monitoring Plan to ensure minimization of effects from the production activities. There is currently no published data indicating that the Illinois clone of giant miscanthus is invasive. When compared to giant reed and cogongrass, giant miscanthus does not show either rapid vegetative establishment from rhizomes or green stems or through high seed germination. Mechanisms have been provided to control unwanted spread of giant miscanthus and more stringent measures could be put in place through each individual producer's Conservation Plan.
55*	1	I have some serious concerns about farm scale plantings of Miscanthus. I have been working with the plant for about 5 years and believe that it has a strong potential to become invasive. The rhizomes of some types of Miscanthus travel a distance of 5 ft each year. Escape plants that are left unchecked for a few years could soon occupy large areas. As more research is conducted on this species, I'm confident that we'll understand it better and develop good stewardship practices to keep Miscanthus from becoming an invasive problem. However, until then, it seems premature to allow it to be grown unmonitored.	General	Against	PA	16802	Individual	Penn State University	Comment noted. Comment received after end of comment period.

Commenter No.	Comment No.	Comment	Category	Position	State	Zip Code	Entity	Agency/ Group	Response
56*	1	I would like to comment on the proposed 50,000 acre planting of Giant Miscanthus (GM) in Ashtabula. I have taken some time to read about GM, and have concluded Ohio and PA are not ready for this vast of a planting. My main concern is the invasiveness. There seems very little research on exactly how invasive GM is, and I believe there is real potential for it to be invasive. I would much prefer OH and PA concentrating on native species like switch grass instead. I live in NW PA, and see first hand most every day the effects of other invasive species like multi-flora rose have on our environment. I believe OH and PA are unique in the amount of water ways and wet areas that will harbor/transplant GM. Please re-consider - to NOT plant GM around Ashtabula	General	Against			Individual	None	Comment noted. Comment received after end of comment period.
57*	1	for Aloterra Energy's BCAPP application and the use of Miscanthus as an energy crop	General	Support	WA	98406	Individual	None	Comment noted. Comment received after end of comment period.

Note: * Comment received after end of comment period.

This page intentionally left blank

APPENDIX D – Summary of Quality Assurance Plan

This Page Intentionally Left Blank

OSIA QUALITY ASSURANCE (QA) PLANTING MATERIALS PROGRAM
FOR ALOTERRA ENERGY MISCANTHUS GIGANTEUS RHIZOMES

CUSTOM TEN STEP PLANT PROPAGULE QA PROGRAM FOR MISCANTHUS GIGANTEUS RHIZOMES	ACTION ITEM	OSIA INSPECTOR CHECK LIST		QA STANDARDS AND REQUIREMENTS TO BE INSPECTED OR AUDITED	COMMENT
1. Miscanthus Rhizomes and biomass production.	Applicant to QA Planting Stock Rhizomes, in production fields, research plots and plantations.	Yes	No	Custom Program for Miscanthus Giganteus clones, a perennial grass energy crop.	Program to consist of field inspection, lab test, auditing, traceability and optional QA Labeling.
2. Planting Stock	Applicant to provide botanical description, origin, producers declaration, source tag or invoice to substantiate licensing agreement, ownership or non-GMO claims.			Auditing of source documents by designated QA agency to verify claims.	Applicant to provide documentation prior to or with field inspection application(s).
3. Production field or test plot land history	Applicant to provide a field cropping history for all production fields, plantations and research sites.			A rhizome crop will not be eligible for QA if planted on land that has grown a different Miscanthus Giganteus variety during the previous two years.	Applicant to provide prior crop field history with field application.
4. Field Isolation Assignment	Minimum distance from other Miscanthus fields of the same species.			Fields shall be clearly separated from other Miscanthus species, or same species that is not entered in the QA program, or from GMO clones, in such a manner as to prevent mechanical mixture.	Audit field maps and annually verify isolation at the time of September or October field inspection.
5. Field Inspections	Third party QA Agency inspection of production fields, research plots, plantations or greenhouses.			Assess general agronomic field conditions and breeders description for genetic purity at the flowering stage in September or October annually. Other varieties permitted, 1:1000. Ten head samples per 10 acres to be collected for seed set (non-invasive monitoring).	OSIA field inspects and gathers ten head samples per clone and submits same to OSIA seed laboratory for microscopic examination for seed set (non-invasive species tendency). Viability tests will be used if needed.
6. Equipment Inspection	View transplanting, lifting, handling equipment and storage site facilities.			Audit applicant's procedures for cleaning and inspection of field, harvesting, handling, and storage equipment. Inspection agency reserves right for unannounced spot check inspections.	Annual audits required. Applicant must submit a plan or checklist for cleaning harvesting, handling and storage areas. QA rhizomes to be identified and stored separately from non-field inspected rhizomes.
7. Non-Invasive Species Validation and seed lab examinations.	Head sample collection.			Field inspector to collect ten heads per clone for seed lab microscopic analysis for presence of any seed set.	Annual lab examination of head samples at post flowering stage.
8. Applicant's file records.	Applicants are required to maintain records of all planting, harvesting, labeling and sales for all QA rhizome production.	Notified		Inspection agency shall have the optional right to require applicant to provide such records for auditing purposes.	Applicant must show due diligence in maintaining traceability for all QA records.
9. Program Standard Compliance (check only one)	A. No process deficiencies.			Program standards met	Field(s)/site passed.
	B. Minor process inadequacies reported.			Re-inspection of sites following applicant's remedy of situation.	Pending re-inspection.
	C. Field Rejection.			QA standard(s) not met (specify). QA logo and labels prohibited from use on rejected production.	Reject production field or portion of field area. Report problem on field inspection report or affidavit.
10. QA label use approved for tags, certificates or literature.	OSIA Quality Assurance (QA) custom program compliance achieved.			Results: Quality Assurance standards for this Miscanthus Giganteus propagule production was produced in compliance with OSIA QA program minimum guidelines for genetic purity, field history, isolation, custom inspection criteria and product traceability.	Optional use or QA label for plant material lot and batches passing program standards. Third party inspection agency completes one program cycle by performing system validation, by providing QA services, by determining product conformity and by communicating product availability.

Signature:________________________________

Date: _____________