

FINAL

**PROGRAMMATIC ENVIRONMENTAL
ASSESSMENT FOR THE
IMPLEMENTATION OF THE
CONSERVATION RESERVE
ENHANCEMENT PROGRAM FOR THE
WESTERN OHIO LAKE ERIE REGION**



**US Department of Agriculture
Farm Service Agency**

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ACRONYMS

Term/Acronym	Definition
AGWMP	Ambient Groundwater Monitoring Program
AQI	Air Quality Index
AREI	Agricultural Resources and Environmental Indicators
BEA	Bureau of Economic Analysis
BLS	Bureau of Labor Statistics
CAA	Clean Air Act
CAFO	Concentrated animal feeding operations
CCC	Commodity Credit Corporation
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
COE	(US Army) Corps of Engineers
CP	Conservation practice
CPA	Conservation priority area
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
CRP-SIP	CRP-signing incentive payment
CWA	Clean Water Act
DNR	Department of Natural Resources
EA	Environmental assessment
EBI	Environmental Benefits Index
EI	Erodibility Index
EO	Executive Orders
EPA	(U.S.) Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
ERS	Economic Research Service
ESA	Endangered Species Act
EWP	Emergency Watershed Protection Program
EWRP	Emergency Wetlands Reserve Program
FEMA	Federal Emergency Management Agency
FOTG	Field Office Technical Guide
FSA	Farm Service Agency
FWP	Farmable wetlands pilot program
FWS	(U.S.) Fish and Wildlife Service
GIS	Geographic information system
HEL	Highly erodible land.
HUC	Hydrologic unit code
LaMP	(Great Lakes) Lakewide Management Plan
LTA	Long-term agreement
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act

NO ₂	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O ₃	Ozone
ODW	Ohio Division of Wildlife
OH EPA	State of Ohio Environmental Protection Agency
Pb	the heavy metal element lead
PEA	Programmatic Environmental Assessment
PEIS	Programmatic Environmental Impact Statement
PIP	Practice Incentive Payment
PM ₁₀	Respirable particulate matter, 10 micron diameter
ROI	Region of influence
RUSLE	Revised universal soil loss equation
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan for CAA regulatory compliance
SO ₂	Sulfur dioxide
SRC	State resource conservationist
SRR	Soil rental rate
SSA	Sole Source Aquifer
SWAP	Source Water Assessment and Protection
TCP	Traditional cultural properties
THPO	Tribal Historic Preservation Officer
TMDL	Total Maximum Daily Load
TSP	Technical service provider
USACE	US Army Corps of Engineers
USCB	US Census Bureau
USDA	US Department of Agriculture
USFWS	US Fish and Wildlife Service
USGS	U.S. Geological Survey
USLE	Universal soil loss equation
WBP	Water Bank Program
WEQ	Wind erosion equation
WESL	Wind erosion soils list
WHIP	Wildlife Habitat Incentive Program

EXECUTIVE SUMMARY

This Programmatic Environmental Assessment (PEA) describes the potential environmental consequences resulting from the proposed implementation of Ohio's Lake Erie Conservation Reserve Enhancement Program (CREP) agreement (Lake Erie CREP). The environmental analysis process is designed: to ensure the public is involved in the process and informed about the potential environmental effects of the proposed action; and to help decision makers take environmental factors into consideration when making decisions related to the proposed action.

This PEA has been prepared by the United States Department of Agriculture (USDA), Farm Service Agency (FSA) in accordance with the requirements of the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality regulations at 40 CFR parts 1500-1508, and 7 CFR 799 *Environmental Quality and Related Environmental Concerns – Compliance with the National Environmental Policy Act*.

Purpose and Need for the Proposed Action

The purpose of the proposed action is to implement Ohio's Lake Erie CREP agreement. Under the agreement, eligible farmland in the northwest portion of the State that drains into Lake Erie would be removed from production and approved conservation practices, such as tree planting, installation of riparian buffers, and wetland restoration, would be implemented. Producers would receive annual rental payments and would be eligible for one-time payments to support the implementation of approved conservation practices.

The Lake Erie CREP agreement is needed to assist the State of Ohio in meeting the following CREP goals:

- Improve water quality,
- Protect drinking water,
- Control soil erosion,
- Protect threatened and endangered species, and
- Assist the State in complying with environmental regulations related to agriculture.

Proposed Action and Alternatives

The proposed action would implement Ohio's Lake Erie CREP agreement. Under this agreement, 67,000 acres of eligible farmland in the following counties would be enrolled in CREP: Allen, Ashland, Auglaize, Crawford, Cuyahoga, Defiance, Erie, Fulton, Hancock, Hardin, Henry, Huron, Lorain, Lucas, Marion, Medina, Mercer, Ottawa, Paulding, Putnam, Richland, Sandusky, Seneca, Shelby, Van Wert, Williams, Wood, and Wyandot.

Producers would enroll eligible farmland by entering into 15-year contracts with FSA. Conservation practices would be established and maintained on enrolled lands for the contract duration. Producers would receive annual rental payments for the duration of the contracts as well as financial and technical support for implementing and maintaining the practices. For lands enrolled in CREP, annual rental payments would be the sum of the base soil rental rate, an incentive payment, and an annual maintenance rate.

Under the No Action Alternative, no lands would be enrolled in CREP. None of the conservation practices or rental payments described above would be implemented. This PEA documents the analysis of the Proposed Action and the No Action Alternative.

Summary of Environmental Consequences

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

Table 1 Executive Summary

Resource	Proposed Action	No Action Alternative
Biological Resources	The proposed action is expected to contribute to vegetation and wildlife diversity. Positive impacts to threatened and endangered species, species of concern, and their habitats are expected.	Continued degradation of terrestrial and aquatic habitats; potential for invasion by exotic species.
Cultural Resources	There is high potential for encountering archaeological resources. Site specific archaeological and historic architectural surveys and coordination with SHPO are recommended prior to the installation of conservation practices. Consultation with several tribes that have traditional ties to the Lake Erie areas affected may be required once sites are selected.	No major impacts are expected, though negative impacts to cultural resources could result from changes in existing farming practices or the disturbance of previously undisturbed land.
Water Resources	Significant long-term positive impacts to surface and groundwater quality are expected. Wetlands acreages are expected to increase as a result of the proposed conservation practices. Temporary minor impacts to existing wetlands and localized surface water quality may result from runoff during activities associated with the installation of the proposed conservation practices. Modifications of channels would require coordination with USACE.	Continued degradation of surface and groundwater and wetlands is expected to result if the proposed action is not implemented.
Earth Resources	Positive impacts to localized topography and soils are expected to result from implementation of the proposed action.	Continued erosion is expected to result if the proposed action is not implemented.
Air Quality	No impacts to attainment status or violations of State Implementation Plan standards would result from the proposed action. However, localized temporary minor impacts to air quality may result from ground disturbing activities and the use of heavy equipment during the installation of conservation practices.	No change from current conditions is expected.

Table 1 Executive Summary (continued)

Resource	Proposed Action	No Action Alternative
Recreational Resources	Positive long-term effects on recreational resources are expected. The proposed conservation practices are expected to increase habitat for game and nongame species. Water quality improvements would result in better recreation fishing and other water-related recreation.	No change from current land-based recreational opportunities is expected; however, continued water quality degradation may affect game fish or other water-related recreation.
Socioeconomics and Environmental Justice	Increased land values are expected to result from the implementation of the proposed action. The project area is not considered an area of concentrated minority population, no significant impacts to Environmental Justice is expected.	No changes in current trends in socioeconomic conditions are expected.

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1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

The United States Department of Agriculture (USDA) Farm Service Agency (FSA) proposes to implement the Conservation Reserve Enhancement Program (CREP) agreement for the State of Ohio. This Programmatic Environmental Assessment (PEA) has been prepared to analyze the potential environmental consequences associated with the Proposed Action and No Action Alternative in accordance with the requirements of the National Environmental Policy Act (NEPA); the Council on Environmental Quality (CEQ) regulations; and FSA's environmental regulations located at CFR part 799, Environmental Quality and Related Environmental Concerns – Compliance with the National Environmental Policy Act.

1.2 BACKGROUND

1.2.1 The Farm Service Agency and Conservation Reserve Program

The mission of FSA is to “ensure the well being of American agriculture, the environment and the American public through efficient and equitable administration of farm commodity programs; farm ownership, operating and emergency loans; conservation and environmental programs; emergency and disaster assistance; domestic and international food assistance and international export credit programs.”

FSA's Conservation Reserve Program (CRP) is the Federal government's largest private land environmental improvement program. CRP is a voluntary program that supports the implementation of long-term conservation measures designed to improve the quality of ground and surface waters, control soil erosion, and enhance wildlife habitat on environmentally sensitive agricultural land. The CRP is a voluntary program for agricultural landowners. Through CRP producers receive annual rental payments and cost-share assistance to establish long-term, resource conserving covers on eligible farmland.

The Commodity Credit Corporation (CCC) makes annual rental payments based on the agriculture rental value of the land, and it provides cost-share assistance for up to 50 percent of the participant's costs in establishing approved conservation practices. Participants enroll in CRP contracts for 10 to 15 years. The CRP is administered by the CCC through the FSA and program support is provided by Natural Resources Conservation Service (NRCS), Cooperative State Research and Education Extension Service, state forestry agencies, and local Soil and Water Conservation Districts. (FSA 2003a)

1.2.2 Conservation Reserve Enhancement Program

CREP was established in 1997 under the authority of the CRP. CREP is a voluntary land conservation program that helps agricultural producers protect environmentally sensitive land, decrease erosion, restore wildlife habitat, and safeguard ground and surface water. The program is a partnership among producers; tribal, State, and federal governments; and, in some cases, private groups. CREP is an offshoot of the country's largest private-lands environmental improvement program – the Conservation Reserve Program (CRP).

CREP addresses high priority conservation issues of both local and national significance, such as impacts to water supplies, loss of critical habitat for threatened and endangered wildlife species, soil erosion, and reduced habitat for fish populations such as salmon. CREP is a community-based, results-oriented effort centered around local participation and leadership.

State, tribal, Federal and local government agency representatives, producers and other stakeholders, develop statewide and regional CREP agreement proposals, which then are submitted by that State's Governor to FSA for review by an interagency panel. A final CREP agreement is set into practice

through a Memorandum of Agreement between USDA and the Governor of the respective State. CREP programs are limited to 100,000 acres per State.

In 2003, a final Programmatic Environmental Impact Statement (PEIS) was prepared for the proposed nationwide CRP, authorized under the Farm Security and Rural Investment Act of 2002 (2002 Farm Bill) (FSA 2003). The PEIS contained the results of detailed analyses of the impacts of implementing CRP nationwide including the CREP component. The analyses of the impacts of implementing Ohio's Lake Erie CREP agreement presented in this PEA tier from the nationwide PEIS. (FSA 2003)

Ohio's Lake Erie CREP agreement would remove up to 67,000 acres of eligible farmland in the Lake Erie watersheds from production and establish approved CPs on the land (Ohio Lake Erie CREP 12/18/03). Specific lands that would be enrolled in the program have not yet been identified. Once eligible lands are identified, site-specific NEPA analysis would be completed with the assistance of a technical service provider (TSP) as provided for in Part 10 of the *Agricultural Resource Conservation Program Handbook 2-CRP*.

1.2.3 Ohio Lake Erie CREP Goals

CREP agreements are designed to meet specific statewide or regional conservation goals and objectives related to agriculture. For the Lake Erie watersheds of Ohio, the goals and objectives of the Lake Erie CREP agreement are to provide an opportunity for eligible producers in the targeted watersheds to establish up to 67,000 acres of filter strips, riparian buffers, hardwood tree plantings, wildlife habitat, wetlands, and field windbreaks through financial and technical assistance. Out of this 67,000-acre potential enrollment: approximately 57,620 acres would be set aside for riparian-forested buffers, grass filter strips, hardwood tree plantings, and wildlife habitat; approximately 6,030 acres of cropped wetlands would be used to reduce field runoff and sediment pollution to surface waters; and approximately 3,350 acres of field windbreaks would be established to address impacts associated with wind erosion. The specific objectives of the Lake Erie CREP agreement are further described in section 1.3 of this chapter. The Lake Erie CREP agreement is not intended to supersede any rules or regulations, which have been, or may be, promulgated by USDA, FSA, Commodity Credit Corporation (CCC), Ohio, or any other governmental entity participating in the Ohio Lake Erie CREP but is intended to aid in the administration of the Conservation Reserve Program (CRP).

1.2.4 Lake Erie Watersheds

The Lake Erie Watersheds are defined as the land draining into the U.S. portion of western Lake Erie. It encompasses the following major watersheds: Maumee River, Portage River, Sandusky River, Huron River, Vermilion River, Black River, and the Lake Erie Direct Drainage. The watersheds are comprised of approximately 7,040,832 acres. Figure 1.2-1 shows the boundary of the proposed CREP area and associated watersheds. Eligible lands in 28 counties Allen, Ashland, Auglaize, Crawford, Cuyahoga, Defiance, Erie, Fulton, Hancock, Hardin, Henry, Huron, Lorain, Lucas, Marion, Medina, Mercer, Ottawa, Paulding, Putnam, Richland, Sandusky, Seneca, Shelby, Van Wert, Williams, Wood, and Wyandot.

The Lake Erie watersheds addressed in this PEA occur within three physiographic provinces in Ohio: the Huron-Erie Lake Plains, the Central Lowland Till Plains, and the Glaciated Appalachian Plateau. The eastern portion of the Lake Plains consists of wide expanses of level or nearly level land traversed by sandy ridges that are the last visible remnants of glacial-lake beaches. Much of the area was swamp prior to development and marshes are still present along Lake Erie near Toledo. The Maumee River is the predominant waterway that drains this area into Lake Erie near the city of Toledo. The topography of the Till Plains section of the Central Lowlands physiographic province consists of gently rolling ground moraine, bands of terminal moraine, and outwash-filled valleys. Glaciations altered the courses of most of the streams in this area during the last Ice Age. The Sandusky River and

its tributaries traverse the central portion of the Western Lake Erie watersheds. The watersheds and the land surface they cover are listed in Table 1.2-1.

Table 1.2-1 Ohio Lake Erie CREP Watersheds

Watershed	Area, Square Miles	Area, Acres
Auglaize	1,568	1,003,648
Black-Rocky	898	574,720
Blanchard	771	493,440
Cedar-Portage	958.8	613,632
Huron-Vermilion	763.6	488,704
Lower Maumee	1,081.9	692,416
Ottawa-Stony	147	94,080
Raisin	26.5	16,960
Sandusky	1,824.6	1,167,744
St. Joseph	1,801.2	1,152,768
St. Marys	412.4	263,936
Tiffin	557.5	356,800
Upper Maumee	190.6	121,984

1.3 PURPOSE AND NEED FOR THE ACTION

The purpose of this proposed action is to implement the Ohio Lake Erie CREP Agreement and amendments. The geographic region of this CREP includes watersheds in the western Lake Erie drainage area. The CREP will allow, where deemed desirable by USDA, CCC, and Ohio, certain acreage to be enrolled in the CRP.

This action meets the following general goals:

- Reduce significantly the amount of sediment entering the targeted watersheds from agricultural sources through a voluntary, incentive-based program;
- Assist Ohio in achieving the sediment reduction goals for agriculture in the targeted area; and

The reduction of sediment through the establishment of permanent vegetative cover will also enhance the associated wildlife habitat. The implementation of this agreement would achieve, through financial and technical assistance, to the extent practicable, the following:

1. Provide an opportunity for eligible producers in the targeted watersheds to establish up to 67,000 acres of filter strips, riparian buffers, hardwood tree plantings, wildlife habitat, wetlands, and field windbreaks through financial and technical assistance within the targeted watersheds (Figure 1.2-1 Map of Ohio Lake Erie Watersheds).
2. This potential 67,000-acre enrollment will:
 - a. Provide an opportunity for eligible producers in Ohio to restore and enhance riparian habitat corridors next to wetlands, streams, drainage ditches, and other watercourses by enrolling approximately 57,620 acres of riparian-forested buffers, grass filter strips, hardwood tree plantings, and wildlife habitat.
 - b. Provide an opportunity for eligible producers in the targeted watersheds to restore approximately 6,030 acres of cropped wetlands to reduce field runoff and sediment pollution to surface waters.
 - c. Provide an opportunity for eligible producers in the targeted watersheds to establish approximately 3,350 acres of field windbreak to address impacts associated with wind erosion.

The specific objectives of the Ohio Lake Erie CREP are to achieve, to the extent practicable, the following:

- For the first 10 years of this Agreement, reduce sediment loading to Western Lake Erie by progressive 15,000 metric tons per year increments (15,000 tons the first year, 30,000 tons the second year, etc.) with a total reduction of 825,000 metric tons over 10 years.
- For the next 10 years reduce sediment loading to western Lake Erie by 150,000 metric tons per year (150,000 tons in year 11, 150,000 tons in year 12, etc.) so that after 20 years there will be a total cumulative reduction of 2,325,000 metric tons over 20 years.
- Protect 5,000 linear miles of streams from sedimentation.

1.4 REGULATORY COMPLIANCE

Federal laws, regulations, and Executive Orders (EO) require Federal agencies to consider the potential impacts of their proposed actions upon the human and natural environment. Therefore, CRP and implementation of the State and regional CREP agreements requires that FSA must ensure that all potential impacts to the human environment be considered. This PEA meets the requirements of NEPA, the CEQ regulations, and FSA's environmental regulations.

The intent of NEPA is to protect, restore, and enhance the human environment through informed Federal decisions. A variety of laws, regulations, and EOs apply to actions undertaken by Federal agencies and form the basis of the analysis presented in this PEA. These include but are not limited to:

- Endangered Species Act (ESA)
- National Historic Preservation Act (NHPA)
- Clean Air Act (CAA)
- Clean Water Act (CWA)
- Safe Drinking Water Act (SDWA)
- EO 11514, Protection and Enhancement of Environmental Quality
- EO 12898, Addresses Environmental Justice in Minority and Low Income Populations.

The FSA is provided the statutory authority to implement the actions proposed by the Ohio Lake Erie CREP by the provisions of the Food Security Act of 2002, as amended (2002 Act) (16 U.S.C. 3830 et seq.), and the CRP regulations at 7 CFR part 1410. The relevant legislation authorizes new enrollments under CRP through December 31, 2007. Various participating agencies of the State of Ohio have the statutory authority to implement the actions proposed by the CREP agreement through the provisions of the Ohio Revised Code Chapter 1515, and Sections 126.07 and 1501.02. Other authorities may also apply.

1.5 ORGANIZATION OF THE PEA

The PEA assesses the potential impacts of the proposed action, herein referred to as Alternative A (the preferred alternative) and Alternative B, the No Action Alternative on potentially affected environmental and economic resources. Chapter 1.0 provides background information relevant to the proposed action, and discusses its purpose and need. Chapter 2.0 describes the proposed action and alternative. Chapter 3.0 describes the baseline conditions (i.e., the conditions against which potential impacts of the proposed action and alternatives are measured) for each of the resource areas while Chapter 4.0 describes potential environmental impacts on these resources. Chapter 5.0 includes an analysis of cumulative impacts and irreversible and irretrievable resource commitments. Chapter 6.0 is a list of the preparers of this document and Chapter 7.0 contains a list of persons and agencies contacted during the preparation of this document. Chapter 8.0 contains references used in this PEA. Acronyms used in the PEA precede the Table of Contents and a Glossary of Terms is provided in a section following the Appendices at the end of this document.

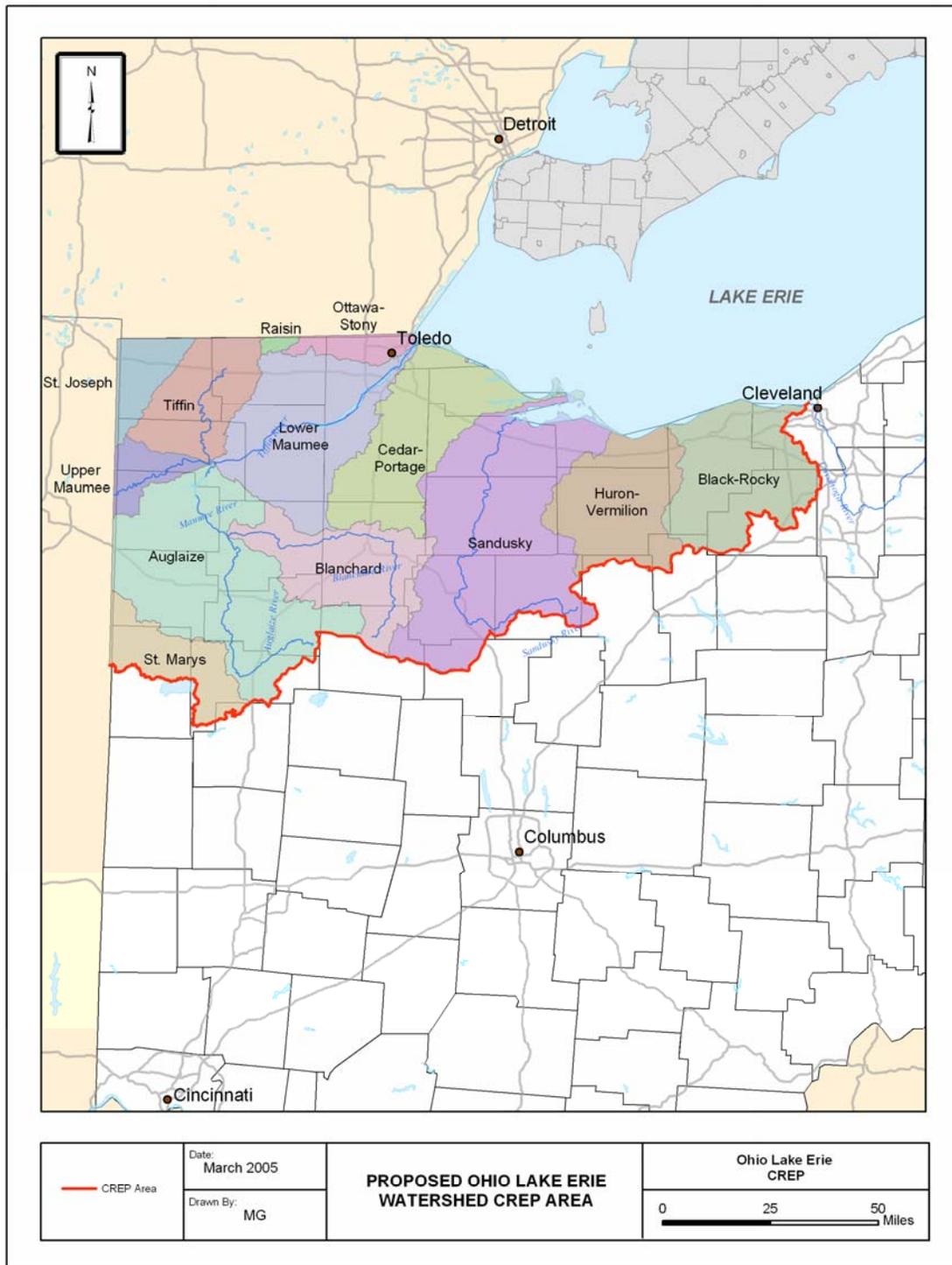


Figure 1.2-1 Ohio Lake Erie CREP Region and Watersheds

2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

FSA proposes to implement the Ohio Lake Erie CREP Agreement. This agreement would enroll lands under CREP by establishing contracts with participants in eligible targeted watersheds. Producers would receive support for the costs of installing and maintaining such practices in addition to annual rental payments for enrolled lands. The entire text of the Ohio Lake Erie CREP Agreement is attached to this PEA in Appendix A.

2.1.1 Eligible Lands

To be eligible for placement in CRP, land must be either cropland planted or considered planted to an agricultural commodity for four of the previous six crop years or is marginal pastureland that is enrolled in the Water Bank Program, suitable for use as a riparian buffer or for similar water quality purposes. Other criteria that will be used to determine eligibility for each candidate tract include its average erosion index, previous CRP participation, or status as a CRP conservation priority area. Other applicable CRP enrollment criteria shall apply as described in the CREP agreement.

Table 2.1-1 Acreage of Agricultural Land Eligible for Enrollment in the CREP

County	Acres in the Lake Erie Watersheds	Land in Farms (Acres)	Estimated Number of Farms in County
Allen	176,420	188,150	968
Ashland	27,379	161,100	1,089
Auglaize	154,647	217,916	1,020
Crawford	156,026	234,204	693
Cuyahoga	203	4086	159
Defiance*	189,866	208,994	982
Erie	84,361	94,681	392
Fulton*	192,582	197,410	783
Hancock*	201,155	262,095	976
Hardin	109,574	246,393	842
Henry*	219,235	236,273	844
Huron*	203,578	228,346	865
Lorain	119,055	161,918	975
Lucas	64,645	77,823	405
Marion	44,233	205,605	520
Medina	34,174	122,682	1,188
Mercer	147,309	268,569	1,268
Ottawa	116,243	114,430	517
Paulding*	212,379	238,497	651
Putnam*	255,368	331,517	1,348
Richland	29,383	158,653	1,086
Sandusky	186,863	196,152	802
Seneca*	260,814	280,449	1,185
Shelby	15,113	207,329	1,022
Van Wert*	221,582	250,224	681
Williams*	192,808	213,265	1,099
Wood*	289,552	305,834	1,066
Wyandot	198,660	201,146	607

Sources: Acres in Lake Erie Watershed provided by Jennifer Stirm GIS Coordinator; USDA – FSA Estimated Farmland & Estimated Number of Farms USDA; National Agricultural Statistics Service 2002

* Indicates entire county is within the watershed.

The proposed Lake Erie watersheds CREP agreement would enroll 67,000 acres of environmentally sensitive agricultural lands in a 28 county region of Ohio’s Lake Erie Watersheds. Once the CREP agreement is approved, producers would enroll eligible lands in the program on a voluntary basis. Table 2.1-1 shows the number of acres, the farmland acreages, and the number of farms in each county in the Lake Erie watersheds that will be eligible for the Ohio Lake Erie CREP.

2.1.2 Establish Conservation Practices (CPs)

CPs proposed for implementation under the Ohio Lake Erie CREP are listed in Table 2.1-2 along with the eligibility criteria for each practice and the contractual duration for each CP. Appendix B contains an expanded list of these conservation practices and the corresponding USDA Natural Resources Conservation Service (NRCS) conservation practice standards as they apply to CRP and the State CREP agreements.

Conservation plans for the land enrolled in CRP under the Ohio Lake Erie CREP shall meet criteria of CRP regulations, 2-CRP, and the Field Office Technical Guide (FOTG). For the purposes of these enrollments, the following standard CRP practices shall be used:

1. For land to be devoted to a wetland restoration practice:
 - CRP Practice CP23 (Wetland Restoration)

2. For land to be devoted to a riparian area practice that is located adjacent to watercourses and/or drainage ditches as defined by the FOTG (grass waterways as defined by the FOTG will not be considered riparian areas for the purpose of this CREP agreement and so are not considered to meet water quality objectives):
 - CRP Practice CP3A (Hardwood Tree Planting)
 - CRP Practice CP4D (Permanent Wildlife Habitat, non-easement)
 - CRP Practice CP21 (Filter Strip)
 - CRP Practice CP22 (Riparian Buffer)
 - CRP Practice CP23 (Wetland Restoration)

3. For land to be devoted to a field windbreak practice:
 - CRP Practice CP5A (Field Windbreak Establishment, non-easement)

Table 2.1-2 Ohio Lake Erie CREP Proposed Conservation Practices

Conservation Practice		Eligible Lands
CP3A	Hardwood Tree Planting	Riparian, > 50% alluvial soil
CP4D	Permanent Wildlife Habitat (non-easement)	Riparian, water-eroded areas, > 50% alluvial soil (no more than 5,000 total acres)
CP5A	Field Windbreak Establishment (non-easement)	(not specified)
CP21	Filter Strips	Riparian areas adjacent to watercourse, > 50% alluvial soil
CP22	Riparian Buffer	Riparian areas within 300 ft adjacent to watercourse, > 50% alluvial soil
CP 23	Wetland Restoration	Floodplains with greater than 50 percent hydric soils or hydric inclusions

Source: Ohio Lake Erie CREP Agreement

Special criteria that will apply to the Ohio Lake Erie CREP State Incentive Program and to the relationship between it and CRP include a minimum 14-year term (CRP contracts cannot exceed 15 years in length) and the eligible producer must enter the Ohio program in accordance with the specified State Commitments of the Agreement.

2.1.3 Provide Financial Support to Producers

Commitments by FSA, CCC, and Ohio are subject to the availability of funds. All CRP contracts under the Ohio Lake Erie CREP are subject to the limitations set forth in the regulations at 7 CFR Part 1410. Neither Ohio nor FSA may assign or transfer any rights or obligations under the Ohio Lake Erie CREP without the prior written approval of the other parties and amendments. Table 2.1-3 summarizes the Ohio Lake Erie CREP Agreement Payments and government commitments (Ohio Lake Erie CREP 2003).

Table 2.1-3: Lake Erie CREP Payments and Commitments

Eligible Acres & Practices/ 15 Year Minimum Enrollment in CRP	FSA Rental & Cost Share/ 15 Annual Rental Payments	ODNR One Time CREP Incentive Payment	Duration of Agreement (Total # Years Committed)
All filter strips within 120' of a watercourse	155% per acre + CIP-SIP and PIP* + 50% cost-share	\$200 per acre	20 years
All filter strips within 300' of a watercourse on alluvial floodplain soils	155% per acre + CIP-SIP and PIP* + 50% cost-share	\$200 per acre	20 years
Wildlife habitat within 150' of a watercourse	155% per acre + 50% cost-share	\$500 per acre	20 years
Wildlife habitat within 300' of a watercourse on alluvial floodplain soils	155% per acre + 50% cost-share	\$500 per acre	20 years
Wetland restoration	175% per acre + 50% cost-share	\$500 per acre Up to a maximum \$5,000	30 years
Field windbreaks	175% per acre + CIP-SIP and PIP* + 50% cost-share	\$500 per acre	30 years
Riparian buffers and tree planting within 180' of a watercourse	175% per acre + CIP-SIP and PIP* + 50% cost-share	\$500 per acre	30 years
Riparian buffers and tree planting within 300' of a watercourse on alluvial floodplain soils	175% per acre + CIP-SIP and PIP* + 50% cost-share	\$500 per acre	30 years
Bonus incentive for wetland restoration/warm season grasses		Bonus incentive up to \$40/ac. warm season grass; up to \$500/ac. wetland	

Source: Ohio Department of Natural Resources, Division of Soil and Water Conservation, 2004

2.2 ADDITIONAL ENVIRONMENTAL EVALUATION REQUIREMENTS

Site-specific NEPA analyses would be completed for each candidate tract with the assistance of a TSP as provided for in Part 10 of the *Agricultural Resource Conservation Program Handbook 2-CRP* and other applicable guidance. The USDA Ohio Field Office uses the NRCS Environmental Evaluation Worksheet form NRCS-CPA-52, attached to this PEA in Appendix G. The NRCS Ohio Field Office has also developed a process for cultural resource evaluations that is shown on a flowchart also attached in Appendix G of this PEA.

2.3 ALTERNATIVES

Alternative A - Preferred

Under Alternative A, Ohio's Lake Erie CREP agreement would be implemented as described in Section 2.0. Up to 67,000 acres of eligible farmland in 28 counties in the western Lake Erie watershed would be removed from agricultural production. CPs would be established on those lands, and producers would receive annual payments and incentive awards in accordance with the provisions of the Agreement.

Alternative B - No Action

Under the No Action Alternative, the State of Ohio's Lake Erie CREP agreement would not be implemented. No land in the targeted watershed would be enrolled under CREP and the CREP program's goals would not be achieved. Though eligible lands could be enrolled under CRP or other conservation programs, the benefits inherent to CREP would not be realized. This alternative will be carried forward in the analyses to serve as a baseline against which to assess the impacts of the Preferred Alternative.

3.0 AFFECTED ENVIRONMENT

This Chapter describes relevant existing conditions for the resources potentially affected by the proposed action. In compliance with guidelines contained in NEPA and CEQ regulations, the description of the affected environment focuses on those resources potentially subject to impacts.

3.1 BIOLOGICAL RESOURCES

3.1.1 Definition of Resource

Biological resources include living plant and animal species and the habitats within which they occur. These resources are divided into four categories: vegetation; wildlife; aquatic species; and threatened, endangered, and sensitive species and their defined critical habitat. Vegetation and wildlife refer to the plant and animal species, both native and introduced, which characterize a region. Threatened, endangered, and sensitive species refer to those species that are protected under the Endangered Species Act (ESA) and/or similar State laws. Critical habitat is designated by the U.S. Fish and Wildlife Service (FWS) as essential for the recovery of threatened and endangered species.

3.1.2 Region of Influence

The Region of Influence (ROI) for biological resources is the area encompassed by the proposed Lake Erie watershed CREP agreement including the Auglaize, Blanchard, Cuyahoga, Maumee, Sandusky, and Tiffin rivers, and their tributaries and the waters downstream from the proposed CREP area.

3.1.3 Affected Environment

Ohio is in the Eastern Broadleaf Forest (Continental) Province, an ecoregion. This region tends to be dominated by broadleaf deciduous forests that extend from New York to Georgia and Missouri to Indiana and Minnesota (Bailey 1995). Ohio's five physiographic regions, shown in Figure 3.1-1 are contained within the range of the Continental Province and consist of:

- Huron-Erie Lake Plains (Great Lakes Plains)
- Glaciated Appalachian (Allegheny) Plateau
- Central Lowland (Till Plains)
- Interior Low Plateau (Lexington Plain)
- Unglaciated Appalachian (Allegheny) Plateau (Ohio Hills)

The proposed CREP area is located within portions of three of the five physiographic regions in Ohio. The Lake Plains physiographic region included Lake Maumee and other lakes, which were ancient glacial-age lakes that occurred in the area where Lake Erie now lies. This region is an extremely flat plain that extends along the Lake Erie coast in northeastern Ohio and significantly broadens west of the city of Cleveland. As water levels rose and fell sandy beach ridges and dunes formed along the shore. The northwestern area of the Lake Plains was called the Great Black Swamp and was characterized by rich, black soils and poor drainage. The Glaciated Appalachian Plateau is a region carved by glaciers and ancient streams. This region is less hilly and lacks the rugged quality of the unglaciated landscape of the Appalachian Plateau to its south. (OHDNR, 2003a)

Following glaciations, many streams reversed their flow and began cutting new paths throughout the region. Evidence of the region's geologic past includes bogs, kettle lakes, and a landscape marked by small hills of sand or gravel called "kames". Today, the area is marked by smaller tracts of forest, ranging from a few acres to hundreds of acres. The Till Plains region contains deep and fertile soil and is characterized by gently rolling hills. In some areas, material dropped by glaciers can be as deep as 400 feet. Glaciers created terraces along valley sides and new drainage patterns, including today's Ohio River (Ohio Department of Natural Resources [DNR] 2004).

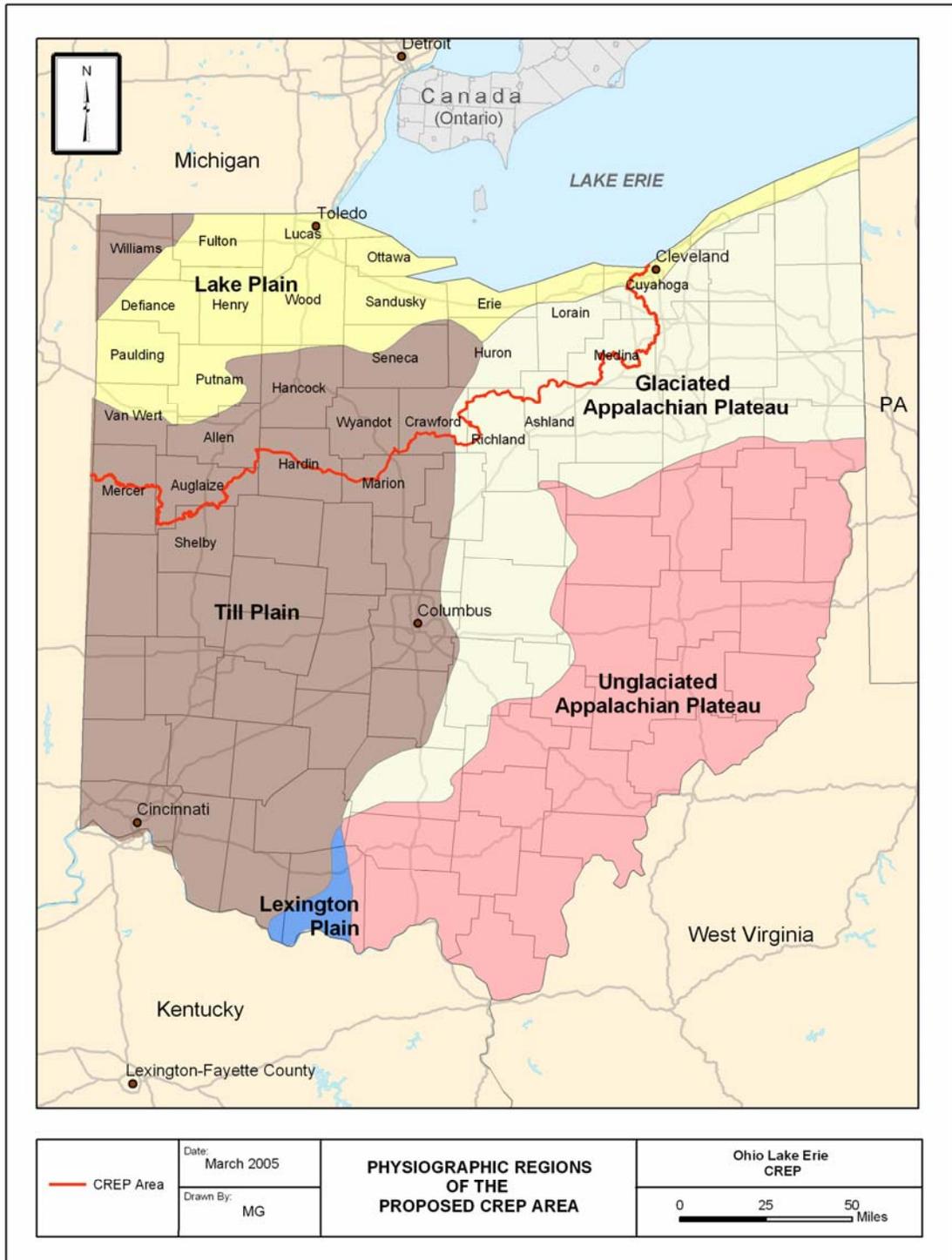


Figure 3.1-1 Physiographic Regions of the Proposed CREP Area

Vegetation

The proposed CREP area has very diverse geology and topography. As a result of this diversity, it contains many types of vegetation communities. Vegetation communities in the area include, but are not limited to bogs, marshes and fens, elm-ash swamp forests, flood plains, mixed mesophytic (wet) forests, oak-sugar maple, mixed oak forests, beech forests and prairie. Elm-ash swamp forests contain American elm (*Ulmus americana*), Silver maple (*Acer sacharinum*), Green Ash (*Fraxinus pennsylvanica*) and various oaks. Beech forests typical of the Till Plain physiographic region also contain red and sugar maples, hickories, oaks and a diverse understory. Wet Prairies and wet meadows in northern Ohio contain prairie cordgrass (*Spartina pectinata*) and several sedge species (*Carex spp.*) and other wetland plants. Variants and subsets of these types of communities also exist with some of the more common associations located in the proposed CREP are listed in Table 3.1-1.

Table 3.1-1 Ohio Plant Species

<i>Oak-Hickory Forest</i>	
Common Name	Scientific Name
Red oak	<i>Quercus rubra</i>
Black oak	<i>Q. velutina</i>
White oak	<i>Q. alba</i>
Chestnut oak	<i>Q. prinus</i>
Mockernut hickory	<i>Carya tomentosa</i>
Shagbark hickory	<i>C. ovata</i>
Pignut hickory	<i>C. cordiformis</i>
Bitternut hickory	<i>C. glabra</i>
Black walnut	<i>Juglans nigra</i>
White ash	<i>Fraxinus americana</i>
Basswood	<i>Tilia americana</i>
Black cherry	<i>Prunus serotina</i>
Wild plum	<i>P. americana</i>
Redbud	<i>Cercis canadensis</i>
Pawpaw	<i>Asimina triloba</i>
Sour gum	<i>Oxydendron arboreum</i>
Flowering dogwood	<i>Cornus florida</i>
Sassafras	<i>Sassafras albidum</i>
Spicebush	<i>Lindera benzoin</i>
<i>Beech-Maple Forest Community</i>	
American beech	<i>Fagus grandifolia</i>
Sugar maple	<i>A. saccharum</i>
Red oak	<i>Q. rubra</i>
White ash	<i>F. americana</i>
White oak	<i>Q. alba</i>
Black cherry	<i>P. serotina</i>
Basswood	<i>T. americana</i>
Shagbark hickory	<i>C. ovata</i>
Ironwood	<i>Carpinus caroliniana</i>
Eastern hophornbeam	<i>Ostrya virginiana</i>
Spicebush	<i>L. benzoin</i>
Hawthorn	<i>Crataegus spp.</i>
Pawpaw	<i>A. triloba</i>

Table 3.1-1 Ohio Plant Species (continued)

<i>Elm-Ash Forest Community</i>	
Common Name	Scientific Name
American elm	<i>Ulmus americana</i>
Red elm	<i>U. rubra</i>
White ash	<i>F. americana</i>
Green ash	<i>F. pennsylvanica</i>
Red maple	<i>A. rubrum.</i>
Silver maple	<i>A. saccharinum</i>
Blackhaw	<i>Virburnum prunifolium</i>
Prickly ash	<i>Zanthoxylum americanum</i>
Spicebush	<i>L. benzoin</i>
<i>Prairie Community</i>	
Common Name	Scientific Name
Big bluestem	<i>Andropogon gerardii</i>
Little bluestem	<i>Schizachirum scoparium</i>
Indiangrass	<i>Sorghastrum nutans</i>
Switchgrass	<i>Panicum virgatum</i>
Common milkweed	<i>Ascepias syriaca</i>
Prairie false indigo	<i>Baptisia alba</i>
Ox-eye daisy	<i>Chrysanthemum leucanthemum</i>
Large blazing-star	<i>Liatris scariosa</i>
Common goldenrod	<i>Solidago canadensis</i>
<i>Non-Native, Exotic Or Alien Species</i>	
Common Name	Scientific Name
Bush honeysuckle	<i>Lonicera spp.</i>
Japanese honeysuckle	<i>Lonicera japonica</i>
Buckthorn	<i>Rhamnus frangula</i>
Garlic mustard	<i>Alliaria petiolata</i>
Purple loosestrife	<i>Lythrum salicaria</i>
Reed canary grass	<i>Phalaris arundinacea</i>
Autumn olive	<i>Eleagnus umbellata</i>
Russian olive	<i>E. angustifolia</i>
Multiflora rose	<i>Rosa multiflora</i>
Canada thistle	<i>Cirsium arvense</i>
Tree-of-heaven	<i>Ailanthus altissima</i>

Wildlife

The Ohio Division of Wildlife (ODW) has legal authority over Ohio's fish and wildlife, which includes about 56 species of mammals, 200 species of breeding birds, 84 species and subspecies of amphibians and reptiles, 170 species of fish, 100 species of mollusks, and 20 species of crustaceans.

Wildlife biodiversity is generally low in the region because of the extensive cropland and lack of suitable cover for nesting and reproduction. The scientific name of animal species mentioned in the text is listed in Table 3.1-2.

Whitetail deer is the primary big game animal in Ohio. Approximately 400,000 hunters participate in the deer-gun hunt and 200,000 deer are harvested annually. None of the counties in the proposed

CREP area are in the top five total deer harvest counties statewide. Other game species include cottontail rabbit, gray squirrel, and fox squirrel. Game birds include mourning dove, ring-necked pheasant, northern bobwhite, mallard and wood duck, ruffed grouse, and eastern turkey. Trapping seasons are provided for furbearers, including beaver and raccoon. Recreation is discussed in Sections 3.6 and 4.6 of this PEA. Recreation related socioeconomics is discussed in Sections 3.7 and 4.7. (FSA 2004).

Table 3.1-2 Ohio Animal Species

Common Name	Scientific Name
Whitetail deer	<i>Odocoileus virginianus</i>
Cottontail rabbit	<i>Sylvilagus floridanus</i>
Fox Squirrel	<i>Sciurus nigra</i>
Mallard	<i>Anas platyrhynchos</i>
Wood Duck	<i>Aix sponsa</i>
Eastern Turkey	<i>Meleagris gallopavo sylvestris</i>
Gray Squirrel	<i>S. carolinensis</i>
Mourning Dove	<i>Zenaida macroura</i>
Northern Bobwhite	<i>Colinus virginianus</i>
Ring-necked Pheasant	<i>Phasianus colchius</i>
Ruffed Grouse	<i>Bonasa umbellus</i>
Beaver	<i>Castor canadensis</i>
Raccoon	<i>Procyon lotor</i>

Aquatic Species

The ODW has a Lake Erie Strategic Plan to enhance and restore Lake Erie for people, terrestrial, and aquatic wildlife. It is an ecosystem approach that recognizes that aquatic wildlife and their habitat are intricately linked to physical, chemical, and biological components of the lake and watersheds. Fish such as walleye (*Stizostedion vitreum vitreum*), yellow perch (*Perca flavescens*), smallmouth bass (*Micropterus dolomieu dolomieu*), white bass (*Morone chrysops*) and steelhead trout (*Oncorhynchus mykiss*) are key management species for the ODW and their numbers have been monitored since the 1990s. Many non-game fish such as Blacknose dace (*Rhinichthys atratulus*), bowfin (*Amia calva*), channel darter (*Percina copelandi*), and Northern hog sucker (*Hypentelium nigricans*) are also important components of a healthy ecosystem. The DNR actively promotes many restoration strategies including reducing and eliminating exotic species such as the zebra mussel (*Dreissena polymorpha*), managing for multi-species fisheries with limits to protect depleted species, evaluate and inventory important fish habitat, restore degraded habitat including tributary corridors. Measures such as these not only protect fish but also other important species in aquatic communities including mussels and insects. Three federally listed native mussels are found in Table 3.1-3.

The USEPA has declared parts of the Maumee River as an Area of Concern (AOC) because fish with tumors and other abnormalities have been reported that have been attributed to contaminated run-off from agricultural areas, nonpermitted waste dumps, industrial sites, sewer overflows, and disposed dredged materials. The drainage area for this AOC covers all of Lucas County and parts of Wood, Ottawa, and Sandusky counties. Fish populations are identified as degraded throughout the AOC. Documented cases involving deformities in bald eagles that feed on fish in the Maumee AOC have been linked to the bioaccumulation of polychlorinated biphenyls (PCBs). Degradation of the benthos or bottom communities, important components of the food chain, has also been documented. In addition to Lake Erie itself, the DNR is protecting habitat for six species of redbreast suckers in the Sandusky State Scenic River area within the CREP. The Chagrin State Scenic River supports one of the few populations of the American brook lamprey in Ohio.

Threatened and Endangered Animal and Plant Species Ohio Lake Erie Watershed Area

There are 354 specially State-listed species identified by the ODW in the Lake Erie CREP area. According to this list, 12 birds species are endangered, and five are threatened. For mammals, only the Indiana Bat is listed as endangered. Four reptiles are listed as endangered, and two are listed as threatened. For amphibians, one salamander is listed as endangered. Six fish are listed as endangered, and four are listed as threatened. For freshwater bivalves (mussels), six are listed as endangered, and six are listed as threatened. There are 259 listed plant species. There are 29 listed insects, mostly butterflies and dragonflies. For a complete list of all threatened, endangered and special interest and concern species, see Appendix C. The USFWS has also provided additional information regarding threatened and endangered species contained in their response letter in Appendix H of this PEA.

Federally listed endangered and threatened animal species are shown in Table 3.1-3.

Table 3.1-3 Federally Endangered and Threatened Animal Species

Common Name	Scientific Name	Federal Status	Occurs in CREP Area
Indiana bat	<i>Myotis sodalis</i>	Endangered	Yes
Bald eagle	<i>Haliaeetus leucocephalus</i>	Threatened	Yes
Piping plover	<i>Charadrius melodus</i>	Endangered	Yes
Lake Erie water snake	<i>Nerodia sipedon insularum</i>	Threatened	Western Lake Erie Basin
Copperbelly water snake	<i>N. erythrogaster neglecta</i>	Threatened	Williams County
Karner blue butterfly	<i>Lyceides melissa samuelis</i>	Endangered	Possibly Lucas County
White catspaw, mussel	<i>Epioblasma obliquata perobliqua</i>	Endangered	Yes, northwest corner and boundary with Indiana
Northern riffleshell, mussel	<i>E. torulosa rangiana</i>	Endangered	Yes, southwestern and south central portion
Clubshell, mussel	<i>Pleurobema clava</i>	Endangered	Yes, southern boundary CREP area

Indiana Bat

The Indiana bat (*Myotis sodalis*) is an endangered species that occurs throughout much of the eastern United States including the state of Ohio. Indiana bats use distinctly different habitats during summer and winter. During winter hibernation, bats congregate in a few large limestone caves and mines resulting in a very restricted winter distribution. Data regarding the bat’s summer activities is sparse but it appears that females and juveniles forage in forested riparian and floodplain areas during the warm months of the year. Streams and creeks that have few trees are less desirable to this species. Males forage over floodplain ridges and hillside forests and usually roost in caves. As a consequence of their limited distribution, specific summer and winter habitat requirements, and tendency to congregate in large numbers during winter, Indiana bats are particularly vulnerable to rapid population reductions resulting from habitat change, environmental contaminants, and other human disturbances. Indiana bats are found in western and northern Ohio. Population declines have been caused by loss of summer habitat and disturbance at hibernation sites. Wooded areas along waterways in western Ohio probably represent the best summer habitat. The most important actions

to protect the species in Ohio involve the protection of wooded habitats along waterways, although recent research has shown that maternity colonies can be established in upland, wooded sites one to two miles from permanent water. Several environmental groups and individuals (Southern Appalachian Biodiversity Project, Virginia Forest Watch, Shenandoah Ecosystem Defense Group, Heartwood, and the Indiana Forest Alliance) have petitioned the FWS to designate critical habitat for the Indiana bat in Ohio counties including Lucas, Paulding and Richland in the proposed Ohio Lake Erie CREP area.

Piping Plover and Critical Habitat

The FWS issued a final determination of critical breeding habitat for the piping plover (*Charadrius melodus*) that includes their historic breeding range along approximately 201 miles of shoreline in Minnesota, Wisconsin, Michigan, Illinois, Indiana, Ohio, Pennsylvania, and New York that includes portions of the Ohio Lake Erie CREP. In Ohio, this critical habitat consists of 1,640 feet inland from the shore of Lake Erie. At the present time, primary breeding sites for piping plovers in the Great Lakes area are restricted to several beaches along Lake Superior and Lake Michigan in northern Michigan. These birds winter primarily on the Gulf Coast, in Texas, Louisiana, Alabama and Florida. In Ohio, spring and autumn migrants are presently casual (irregularly appearing outside their present range) to rare along Lake Erie and casual inland. Summer visitors remain casual along Lake Erie but are increasingly less frequent. Great Lakes piping plovers utilize the open, sandy beaches, barrier islands, and sand spits formed by wave action along the Great Lakes' perimeter. They do not inhabit lakeshore areas where high bluffs formed by severe erosion have replaced beach habitat. They prefer sparsely vegetated open sand, gravel, or cobble for nesting sites. They forage along the rack line where invertebrates are most readily available. (FWS Environmental Online Conservation System)

Federally listed plants are the endangered lakeside daisy, *Hymenoxys herbacea*, and the threatened prairie fringed orchid *Plantanthera leucophaea*.

3.2 CULTURAL RESOURCES

3.2.1 Definition of Resource

Cultural resources consist of prehistoric and historic sites, structures, districts, artifacts, or any other physical evidence of human activities considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. Cultural resources can be divided into three major categories: archaeological resources (prehistoric and historic), architectural resources, and traditional cultural properties (TCP). Archaeological resources are locations and objects from past human activities. Architectural resources are those standing structures that are usually over 50 years of age and are of significant historic or aesthetic importance to be considered for inclusion in the National Register of Historic Places (NRHP). Traditional cultural resources hold importance or significance to Native Americans or other ethnic groups in the persistence of traditional culture.

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

3.2.2 Region of Influence (ROI)

The ROI for cultural resources is the area encompassed by the proposed Lake Erie watershed CREP agreement.

3.2.3 Affected Environment

3.2.3.1 Archaeological Resources

Ohio has an extensive cultural history and thousands of recorded archaeological sites, many of which are found in the principal drainage basins of the state. Approximately 38,000 prehistoric and historic sites are included in the Ohio Archaeological Inventory maintained by the Ohio Historical Society, which serves as the State Historic Preservation Office (SHPO). (Ohio HPP 2003)

Prehistoric Period

The prehistory of Ohio has been described in the context of the Paleo-Indian, Archaic, and Woodland time periods. The Paleo-Indians (ca. 12,000–8,000 B.C.) are thought to be the first people to occupy what is now Ohio, moving into central Ohio following the retreat of glaciers during the last ice age. These people were nomadic and subsisted on hunting game animals, some of which are now extinct, and gathering fruits and nuts from deciduous trees and shrubs. Paleo-Indian artifacts are often found on exposed soil surfaces in Ohio and consist of stone tools including knives, scrapers, graters, and spear points.

The Archaic period (ca. 8000–1000 B.C.) is divided into Early, Middle and Late sub-periods. Archaic groups were efficient at exploiting food resources, including deer, birds, squirrels, fish and mollusks, and a variety of plant foods found in the Ohio region. They moved their camps to follow these resources throughout the seasons. Early Archaic people made flint spear points and developed a spear throwing device called the atlatl. Evidence of long-term base camps and primitive food processing used during the Middle Archaic (ca. 6000–3000 B.C.) has been found in Ohio. Rapid population growth and an increase in campsites occurred during the Late Archaic (ca. 3000–1000 B.C.). Stone mortars, pestles, and grinders found in Ohio imply increased utilization of plant resources. Axes, adzes, and “celts” used for woodworking, awls and fishhooks made of bone and antlers, shell ornaments, and raw copper have been found in the region. Evidence of long distance trade, ritualism, small-scale cultivation of native plants, and a rudimentary social ranking system have been found at Late Archaic sites in Ohio.

The Woodland period (ca. 1000 B.C. – A.D. 1000) also consists of Early, Middle, and Late sub-periods. Archeological evidence found at Late Archaic sites indicates that adaptive cultural trends became more intensified, there was greater diversification of food sources, a continued increase in permanent settlements, long distance trade, and the emergence of social ranking. Pottery manufacturing, true cultivation of native plants such as sunflowers, sumpweed, goosefoot, may grass, gourds, and squashes, and funerary mound burials were introduced. Vast, geometric earthworks were constructed by Woodland cultures in Ohio. Burial mounds and related sites indicate that the Early Woodland sites in most of Ohio correspond to the Adena complex. Typically conical, burial mounds were sometimes built within an earthen walled enclosure, over a burned house, or over a log tomb. Artifacts such as carved stone pipes, decorative stone tablets, reel shaped gorgets, marine conch shell implements, and bone, antler, and copper ornaments are characteristic of the Adena. Earthen mounds, enclosures, habitation sites, large middens, and storage pits of the Middle Woodland sub-period have been found in most large drainage areas of the Great Miami River Valley south of the Lake Erie region. Late Prehistoric period (ca. A.D. 1000–1600) cultures developed specialized production of crops such as maize, beans, and squash that were supplemented by hunting, fishing, and wild plant food. Village sites were fortified in central and southern Ohio by sedentary agricultural societies and are referred to as the “Fort Ancient tradition”. Artifacts at these

sites typically include bone and antler tools, ornaments, shell tempered pottery, triangular points, slate celts, and carved tablets, and marine shell incised gorgets (Ohio HPP 2003).

Protohistoric and Historic Period

By the period between about 1600 and 1750, called the Protohistoric, there was active contact between European traders and American Indians in the Ohio region. The Iroquois people traded furs with French trappers and merchants for muskets, iron tools, blankets, and glass beads that have been found at many Ohio sites. Permanent Indian settlements declined in Ohio during the seventeenth century due to wars with European colonists and deaths from diseases among the people who had little resistance to them. During the Beaver Wars between 1630 and 1700, the dominant Iroquois drove out other native people who were the descendants of Ohio's prehistoric cultures. By the early to mid-eighteenth century, various other Indian groups migrated into Ohio from other areas including: the Wyandotte (originally the Huron) from Canada, the Leni Lenape from Delaware, the Shawnee from the southern colonies, the Mingo (originally Seneca Iroquois) from New York, and the Miami people from Indiana.

England acquired all French possessions in the Ohio Country in the early Historic period between 1750 and 1850 as a result of the French and Indian War that culminated with the Treaty of Paris in 1763. This treaty gave England control of former French possessions in Canada as well as territory east of the Mississippi River, including the Ohio Country. Numerous battles occurred between the English and the Indians over lands in the Ohio Country during the 1760s through 1780s. The British era in Ohio ended with England's defeat by colonials in the American Revolution and the creation of the Declaration of Independence in 1776. Colonists moved into the Ohio Country at will, although conflicts continued between American settlers and the original native inhabitants (Ohio History Central 2003).

The Battle of Fallen Timbers, the Treaty of Greenville, Ohio Statehood

In late 1791, Miami Indians defeated General Arthur St. Clair's forces at a site along the Wabash River that became known as Fort Recovery. Nearly three-quarters of St. Clair's men were killed or wounded in the Indian attack. In late 1793, General Anthony Wayne sent a force to build a four-blockhouse post at the site of St. Clair's defeat he named "Recovery". It was completed in March of 1794 and on June 30 of that year General Wayne's army defeated a huge Indian force. The battle of Fallen Timbers on 20 August 1794 was decisive in bringing the Indians of the Northwest Territory to sign the Treaty of Greenville. By this treaty the Indians ceded southern and eastern Ohio to settlers. Fallen Timbers is near the Maumee River about three miles southwest of the city of Maumee in Lucas County that is within the Ohio Lake Erie CREP area. The Treaty of Greenville contained specific land demarcations encompassing territory in northwest Ohio that comprises most of the Lake Erie CREP area. The Americans Indians scrupulously abided by the terms of this treaty. However, American settlers did not. New white settlements outside of the treaty area were established almost immediately. When Ohio became a state in 1803 Indian tribes still claimed parts of northern and northwestern Ohio. Resistance by the Natives led by Tecumseh and his brother, The Prophet, emerged in the early years of the 19th century in lands slightly farther west of the Greenville Treaty demarcation line. Tecumseh joined the British in the War of 1812 and followed them as they were pushed back into Canada. He was killed by American forces at the Battle of the Thames in 1813.

General William Henry Harrison, who defeated Tecumseh at the Battle of Fallen Timbers, built Fort Meigs on the Maumee River in 1813 to protect northwest Ohio and Indiana from a British invasion. Fort Meigs is on West River Road (State Route 65) in Perrysburg, in Wood County within the Ohio Lake Erie CREP area. By 1843, the United States deported the remaining portion of Ohio's Indian tribes to reservations in Kansas and Oklahoma.

The US Congress passed the Land Act of 1804 facilitating the purchase of Ohio lands by farmers. During the War of 1812 and afterwards, farmers bought many acres of land from the federal government. This land had been part of the Congress Lands, set aside by the national government as it organized the Northwest Territory (Ohio History Central 2003). During the War of 1812, many Ohio businesses began production to replace manufactured English goods no longer accessible to Americans. Indian Mill, built in 1861, is located along the Sandusky River and is the nation’s first educational museum of milling in its original structure. The restored three-story structure at Indian Mill replaced the original one-story building that the US government built in 1820 to reward the loyalty of local Wyandot Indians during the War of 1812. The Tariff of 1816 helped businesses in Ohio to compete with European factories. In Cincinnati, several businesses flourished by the late 1810s, including a textile mill, several distilleries and breweries, a cotton mill, and at least one glass manufacturer. Ohio’s abundance of raw materials including lumber, coal, iron, and waterpower aided industrialization in the state.

Table 3.2-1 summarizes the number of archeological sites listed in the NRHP within each county of the Lake Erie CREP region.

Table 3.2-1 NRHP Archaeological Sites Located in CREP Area

County	NRHP Listed Archaeological Sites	County	NRHP Listed Archaeological Sites
Allen	0	Marion	0
Ashland	1	Medina	1
Auglaize	0	Mercer	0
Crawford	0	Ottawa	0
Cuyahoga*	5	Paulding	0
Defiance	1	Putnam	0
Erie*	78	Richland	0
Fulton	1	Sandusky	0
Hancock	0	Seneca	0
Hardin	1	Shelby	0
Henry	0	Van Wert	0
Huron	0	Williams	0
Lorain*	6	Wood	4
Lucas	0	Wyandot	0
Total			98

**Contain Archaeological, Historic or Prehistoric District
Source: Ohio Historical Preservation Office, National Register Database*

3.2.3.2 Historic Architectural Resources

Ohio historic architectural resources include homes, banks, stores, churches, businesses, factories, and schools that reflect various aspects of the state’s cultural heritage. These historic resources are organized into themes that reflect life from approximately 1795 through 1950: Agriculture, Art and Education, Commerce and Finance, Domestic Architecture, Education, Government, Social Welfare and Health, Industry and Manufacturing, Military, Religion, Settlement, Ethnic Groups and Migration, and Transportation, Science, and Communication (Ohio HPP 2003). Approximately 95 Historic Districts and 1094 individual NRHP properties are located in the CREP area counties (Table 3.2-2). The earliest settlers built homes in the valleys of the Scioto, Muskingum, and Miami Rivers, and in the Western Reserve. Typically, early settlers built log homes and barns that required hand-hewn beams in structures containing more than one room.

**Table 3.2-2 NRHP Listed Historic Districts and Individual
Historic Properties in CREP Area**

County	NRHP Listed Historic Districts	NRHP Listed Properties
Allen	0	36
Ashland	2	15
Auglaize	1	21
Crawford	1	25
Cuyahoga	34	304
Defiance	1	10
Erie	5	175
Fulton	0	5
Hancock	1	9
Hardin	3	4
Henry	0	4
Huron	0	15
Lorain	7	113
Lucas	14	74
Marion	0	12
Medina	2	26
Mercer	1	28
Ottawa	3	25
Paulding	0	4
Putnam	1	8
Richland	2	64
Sandusky	0	13
Seneca	5	40
Shelby	2	17
Van Wert	0	8
Williams	2	5
Wood	7	25
Wyandot	1	9
Total	95	1094

Source: Ohio Historical Preservation Office 2004, <http://dbs.ohiohistory.org/hp/index.cfm>

The Settlement and Agriculture themes are the most relevant to the implementation of the CPs in the proposed action as these were the most prevalent in the CREP area during the historical period. During westward expansion of the nation in the mid-nineteenth century, Ohio's agricultural economy led the US. Ohio often led the nation in corn and wheat production and had the largest number of swine, horses, and sheep. The number and variety of farmsteads that are located across the state reflect this productivity. Ohio has more barn types than any other mid-western state and a diversity of farmhouses, outbuildings and rural landscapes. Agricultural specializations such as dairy and cheese farms, wineries, granaries, and livestock farms are also evident (Ohio HPP 2003). Historic agricultural properties represented in NRHP listings include barns, farmhouses, silos, chicken coops, and agricultural fields. Most NRHP-listed buildings date to 1850-1899, followed by the 1900-1924 period (Ohio HPP 2003). Given the state's rich farming heritage, most agricultural properties are located in the fertile river valleys as well as along transportation routes.

3.2.3.3 Traditional Cultural Properties

Traditional Cultural Property (TCP) is defined as a property that is eligible for inclusion in the NRHP because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community. In most cases, TCPs are associated with American Indians but may also be associated with other sociocultural or ethnic groups. Traditional cultural properties may be difficult to recognize and may include a location of a traditional ceremonial location, a mountaintop, a lake, or a stretch of river, or culturally important neighborhood (USDI 1998). There are currently no federally recognized American Indian TCPs in Ohio, although numerous tribes no longer present in the state have traditional ties to the region.

3.3 WATER RESOURCES

3.3.1 Definition of Resource

The CWA is the primary Federal law that protects the nation's waters including lakes, rivers, aquifers, wetlands, and coastal areas. For this PEA, water resources include surface water, impaired waters, groundwater, wetlands, and floodplains. Surface water includes streams and rivers. Impaired waters are defined by the EPA as those surface waters with levels of pollutants that exceed state water quality standards. Every two years, states must publish lists of impaired rivers: those streams and lakes that do not meet their designated uses because of excess pollutants (EPA 2004a).

Groundwater refers to subsurface hydrologic resources, such as aquifers that are used as water supplies for domestic agricultural and industrial purposes. Groundwater includes "sole source aquifers". Wetlands are defined by the U.S. Army Corps of Engineers (USACE) as areas that are characterized by specific hydrological conditions, hydric soil, and the presence of vegetation adapted to saturated soil conditions. These criteria are defined by USACE. Floodplains are defined in this PEA as 100-year floodplains designated by the Federal Emergency Management Agency (FEMA). Floodplains are areas that are subject to inundation by a "100-year" flood, a flood that has a 1 percent chance of being equaled or exceeded in any given year.

The Safe Drinking Water Act (SDWA) was established to protect the quality of drinking water in the U.S. This law focuses on all waters actually or potentially designed for drinking use, whether from above ground or underground sources. The Act authorizes EPA to establish safe standards of purity and requires all owners or operators of public water systems to comply with primary (health-related) standards. State governments, which assume this power from EPA, also encourage attainment of secondary standards (nuisance-related such as odor, taste, color). (USEPA, 2004a)

Wetlands are defined by the USACE as areas that are characterized by specific hydrological conditions, hydric soil, and the presence of vegetation adapted to saturated soil conditions. These criteria defined by USACE Section 404 of the Clean Water Act established a program to regulate the discharge of dredged and fill material into waters of the United States, including wetlands. Activities in waters of the United States that are regulated under this program include fills for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports), and conversion of wetlands to uplands for farming and forestry. Section 404 of the CWA requires that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. Permits describe that applicants have:

- taken steps to avoid wetland impacts where practicable
- minimized potential impacts to wetlands

- provided compensation for any remaining, unavoidable impacts through activities to restore or create wetlands.

Activities regulated under Section 404 of the CWA are controlled by a permit review process. An individual permit is usually required for potentially significant impacts. However, for most discharges that will have only minimal adverse effects, the USACE may grant general permits. These may be issued on a nationwide, regional, or state basis for particular categories of activities (for example, minor road crossings, utility line backfill, and bedding) as a means to expedite the permitting process. Section 404(f) exempts some activities from regulation under Section 404. These activities include many ongoing farming, ranching, and silviculture practices. (USEPA, 2004b)

Floodplains are defined in this PEA as 100-year floodplains designated by the Federal Emergency Management Agency (FEMA). Floodplains are areas that are subject to inundation by a “100-year” flood, a flood that has a 1 percent chance of being equaled or exceeded in any given year. FSA must address potential impacts to floodplains as required by EO 11988, Floodplain Management.

The current condition of specific tracts of agricultural land and their suitability for implementation of the CPs included in the Ohio Lake Erie CREP would be evaluated as provided for in Part 10 the USDA/FSA *Agriculture Resource Conservation Program (Handbook 2-CRP)*.

3.3.2 Region of Influence

The ROI for water resources includes the surface water, groundwater, wetlands, and floodplains in the area encompassed by the proposed Lake Erie watershed CREP agreement listed by individual counties in Table 3.3.2-1.

Table 3.3.2-1: Ohio Lake Erie CREP Counties and Watersheds

County	Watersheds
Allen	Auglaize, Blanchard
Ashland	Huron-Vermilion, Black-Rocky
Auglaize	Auglaize, St. Marys
Crawford	Sandusky, Huron-Vermilion
Cuyahoga	Black-Rocky
Defiance	St. Joseph, Tiffin, Lower and Upper Maumee, Auglaize
Erie	Sandusky, Huron-Vermilion
Fulton	Tiffin, Raisin, Ottawa-Stony, Lower Maumee
Hancock	Lower Maumee, Cedar-Portage, Blanchard
Hardin	Auglaize, Blanchard, Sandusky
Henry	Tiffin, Lower Maumee
Huron	Sandusky, Huron-Vermilion
Lorain	Huron-Vermilion, Black-Rocky
Lucas	Ottawa-Stony, Lower Maumee, Cedar-Portage
Marion	Sandusky
Medina	Black-Rocky
Mercer	Auglaize, St. Marys
Ottawa	Cedar-Portage, Sandusky
Paulding	Upper Maumee, Auglaize
Putnam	Auglaize, Blanchard, Lower Maumee
Richland	Sandusky, Huron-Vermilion
Sandusky	Cedar-Portage, Sandusky
Seneca	Blanchard, Sandusky, Huron-Vermilion
Shelby	St. Marys
Van Wert	Auglaize, St. Marys
Williams	St. Joseph, Tiffin
Wood	Lower Maumee, Cedar-Portage, Sandusky
Wyandot	Blanchard, Sandusky

3.3.3 Affected Environment

3.3.3.1 Surface Water

Impaired Waters

Table 3.3.3-1 lists the watersheds within the Lake Erie CREP ROI, their assigned hydrologic unit codes (HUC), and the numbers of impairments identified in each. Appendix D contains fact sheets with additional information regarding the impairments and maps of each watershed in the Lake Erie CREP. At the time of the development of this PEA, the Total Maximum Daily Loads (TMDL) of contaminants were in the process of being developed for portions of the Auglaize, Sandusky, Huron-Vermilion, and Black-Rocky watersheds. The Draft Reports for TMDLs in the Upper Sandusky River Watershed and Auglaize River Watershed were released for public review in February 2004 and June 2004, respectively. The TMDLs for other watersheds in the Ohio Lake Erie CREP ROI were in various stages of development as of September 2004.

3.3.3.2 Groundwater

The three major aquifer types and groundwater quality data for the Ohio Lake Erie CREP ROI, shown in Figure E-1 in Appendix E, are:

- Sand and gravel aquifers;
- Sandstone aquifers; and
- Carbonate aquifers.

Based on major ion composition, the three general water types encountered in Ohio's aquifers are a calcium-bicarbonate type in the sand and gravel aquifers, a calcium-sodium-bicarbonate type in the sandstone aquifers, and a calcium-bicarbonate-sulfate type in the carbonate aquifers. The sandstone aquifer waters are highest in sodium and chloride. The carbonate groundwaters have the highest bicarbonate, calcium, magnesium, and sulfate ion concentrations. Carbonate waters have the highest mean ionic strength of the three types that correlates with the longer residence time of groundwater within the carbonate system. Lower total dissolved solids (TDS) in water from the sandstone aquifers are attributed to the higher silica sand and lower carbonate rock content in the sandstones. These younger waters are generally shallower, and, if affected by surface contamination, are more likely to reflect this impact.

The overall groundwater quality within Ohio has been characterized in the Ambient Groundwater Monitoring Program (AGWMP) database that consists of over 3,250 water quality samples from 203 sampling locations. The majority of the wells used in this evaluation are production wells associated with public water supplies, usually developed within higher yielding zones of generally good water quality. This is consistent with the goals of the AGWMP to collect, analyze, and describe the background (ambient) groundwater quality of supplies used by Ohio's public water systems.

The thick glacial tills (clayey soils) found across much of north, central, and west Ohio affect the initial percolation water quality much differently than the thin loess (fine, wind-blown deposits) soils of southeastern Ohio. The permeability of these thick soils tends to increase the residency time. However, agriculture tile drains that have been installed within these thick soils short-circuit flow paths to surface water and influence the volume of recharge water reaching the aquifer.

One of the accomplishments of the Ohio EPA AGWMP in recent years has been the identification of wells with elevated nitrate contamination generated from surface and near surface sources. Wells categorized as nitrate-contaminated were listed if they exhibited levels of nitrate greater than 2.0 mg/L. This criterion is similar to the one used in the Source Water Assessment and Protection Program (SWAP) Susceptibility Analysis and is also based on USGS reports citing nitrate background levels as being less than 2.0 mg/L. (Ohio EPA 2004)

Table 3.3.3-1: Ohio Lake Erie CREP Agreement Watersheds and Listed Impairments

Watershed	HUC	Total Number of Impairments	General Impairment Name																									
			Other Habitat Alterations And Algal Blooms	Organic Enrichment/ Low DO	Sediment/ Siltation	Flow Alteration	Nutrients	Cause Unknown	Fish Consumption Advis. (Hg, PCB)	Pathogens	Metals	Unionized Ammonia	Unknown Toxicity	Priority Organics**	Suspended Solids	Oil And Grease	Salinity/TDS/ Chlorides	Thermal Modifications	Total Toxics	Chlorine	Turbidity/ TDS***	Other Inorganics	Taste And Odor	Noxious Aquatic Plants	Non-priority Organics & Raw Sewage	Impaired Biotic Communities	PAHs	Fish Kills
Auglaize	4100007	48	7	7	5	4	6	2	2	6	-	3	3	1	-	-	-	-	-	-	-	-	-	-	-	2	-	-
Black-Rocky	4110001	31	3	5	4	1	5	1	3	2	-	2	2	1	-	-	-	-	-	1	-	-	-	-	-	-	1	-
Blanchard	4100008	7	1	1	-	2	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cedar-Portage	4100010	19	3	4	5	2	1	-	1	-	-	-	1	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-
Huron-Vermilion	4100012	15	4	1	2	1	4	1	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Lake Erie	4120200	*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lower Maumee	4100009	18	5	1	5	3	-	-	-	2	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Ottawa-Stony	4100001	26	2	1	1	2	1	-	2	2	-	1	-	5	-	-	-	1	1	-	2	-	-	-	-	4	-	1
Raisin	4100002	*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sandusky	4100011	25	1	2	4	3	4	7	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. Joseph	4100003	58	3	-	1	-	1	-	19	22	1	-	-	-	-	-	-	-	-	2	-	-	-	-	9	-	-	
St. Marys	4100004	41	3	-	1	1	2	-	12	14	-	1	-	-	-	-	-	-	-	1	-	-	-	-	6	-	-	
Tiffin	4100006	24	5	3	6	1	2	1	1	2	-	-	1	-	-	-	-	-	-	-	-	-	-	2	-	-	-	
Upper Maumee	4100005	32	2	-	1	1	2	-	14	7	-	-	1	-	-	-	-	-	-	-	-	-	-	-	4	-	-	

*The numbers of impairments are not available for these Ohio watersheds

**Includes pesticides

***Turbidity and Total Dissolved Solids

N/A = information not available for Ohio watershed

Source: USEPA 2004, <http://cfpub.epa.gov/surf/locate/map2.cfm>

Sand and Gravel Aquifers

Ohio's most productive water bearing formations or aquifers are valley outwash deposits of sand and gravel that were deposited by glacial melt water. They are found beneath and adjacent to major rivers and other pre-glacial stream channels. The St. Joseph watershed in the northwestern portion of Ohio and the areas along the Huron River contain these types of aquifers. Water production from these sand and gravel units ranges from 500 to 1,000 gallons per minute in the coarser grained and thicker deposits. Lower yields from sand and gravel aquifers are more common. The production rate depends on the type, distribution, extent, and thickness of permeable glacial/alluvial deposits. The groundwater from sand and gravel aquifers is characterized by relatively low TDS, zinc, fluoride, and sulfate. The mean total iron and manganese concentrations for the sand and gravel aquifers are 1,598 µg/L, and 197 µg/L respectively. These values significantly exceed the associated SMCL (300 µg/L and 50 µg/L, respectively). Consequently, it is not uncommon for iron removal to be included as a treatment component at a public water supply (PWS) using a deep sand and gravel aquifer source.

Sandstone Aquifers

In the eastern portions of Ohio, east of the Sandusky River watershed in the Lake Erie ROI, buried valley aquifers are not present and the common aquifer type is composed of sandstone. These formations occur as numerous interbedded layers of variable thickness and surface extent separated by layers of shale and other rock formations. The sandstone units generally dip a few degrees to the southeast. Some of the thicker sandstones are capable of yielding 50 to 100 gallons per minute to individual wells. Sandstone bedrock aquifer waters are characterized by low (bicarbonate) alkalinity. A significant trend for some sandstone waters is toward increasing chloride and sodium composition. The elevated sodium in the sandstone aquifers is indicated by the mean concentrations of 63.1 mg/L for the sandstones compared with 35.3 mg/L for the carbonate aquifer sources. These higher mean concentrations are most evident in samples obtained at greater well depths that suggest the influence of deeper formation waters or longer residence time.

Carbonate Aquifers

The third major aquifer type in the Lake Erie ROI consists of carbonate bedrock aquifers that are predominant in the western part of Ohio. Limestone and dolomite formations reach thicknesses of up to 600 feet and are capable of yielding from 100 to over 500 gallons of water per minute. Higher production is associated with fracture or dissolution features that increase the permeability of the carbonate bedrock. Most groundwater in the carbonate bedrock is of the calcium-bicarbonate-sulfate type. This aquifer type exhibits the greatest mean concentrations for calcium, magnesium, sulfate, TDS, alkalinity, strontium, hardness, and conductivity of the three aquifer types in the Ohio Lake Erie CREP ROI. Mean hardness (554 mg/L) is at concentrations that typically require treatment to remove calcium and magnesium in potable water. The mean concentrations of TDS (769 mg/L), iron (1004 µg/L), and sulphate (280 mg/L) are all above their respective secondary maximum concentration levels (SMCLs) (500 mg/L, 0.3mg/L, and 250 mg/L). About 40 percent of the AGWMP samples from carbonate aquifers exceeded the SMCL for sulfate (250 mg/L). Mean fluoride concentrations are highest in the carbonate aquifer systems (1.4 mg/L) and are thought to be controlled by the dissolution of fluorine-bearing minerals within the formation. Carbonate bedrock aquifer water samples frequently have constituents that have average concentrations above secondary drinking water standards. These elevated concentrations in the carbonate system relative to the other aquifer settings may be related to longer residence times for water within the formation as well as the relatively high solubility factors for the minerals typically found in the host bedrock.

Sole Source Aquifers and Well Head Protection Areas

Portions of the Ohio Lake Erie CREP region contain sole source aquifers (SSA) and specially designated water supply well protection areas. The Allen County SSA is located in parts of Putnam,

Van Wert, Mercer, Auglaize, and Allen counties. Shelby County is traversed by the northern portion of the Great Miami SSA. The Ohio Administrative Code (OAC) Rule Number 3745-34-01 defines a "Sole or principal source aquifer" as any aquifer which has been so designated by the administrator of the United States Environmental Protection Agency pursuant to section 1424 (a) or (e) of the SDWA and as such are specially protected by federal and state regulations. Figure E-2 in Appendix E is a map of SSAs in the Ohio Lake Erie CREP region. The Wellhead Protection (WHP) Program and the Source Water Assessment and Protection (SWAP) Program are both federal programs designed to help protect US drinking water. The WHP Program was created through amendments of the 1986 SDWA. Ohio's WHP Program focuses on large community public water systems that use ground water and serve more than 500 people in a year. A WHP plan consists of determining the area in which groundwater will travel to the wells in five years (protection area), inventorying all of the potential sources of contamination located within the protection area, and developing a plan for protecting the drinking water supply. It has primarily been a voluntary program, initiated by the public water system and submitted to the Ohio EPA for endorsement consideration. In some situations, a wellhead protection plan may be required, such as to get approval from the Ohio EPA for a new well. Figure E-3 in Appendix E is a map of drinking water source protection areas in the Lake Erie CREP region. Included within these source protection areas is a karst region in Seneca, Sandusky, Huron, and Erie Counties. The karst region is characterized by high groundwater flow rates (>500ft/day) and also has a history of ground water contamination. Groundwater in this region moves via large fractures and flow can be turbulent. Groundwater flow models that assume laminar flow conditions within a porous media cannot be applied to this region. Therefore, Ohio EPA delineated the entire region that contributes water via the karst system as a drinking water source protection area. Figure E-4 in Appendix E is a map of this karst area.

The 1996 amendments of the SDWA created the SWAP Program. The SWAP Program expanded the WHP program to include all public water systems, such as small systems and public water systems using surface water. A SWAP plan (or, Drinking Water Source Assessment) consists of the same components of a WHP plan, with one exception: the susceptibility of the drinking water source has to be evaluated. In order to have the public water systems assessed consistently, and to meet the statutory deadlines, Ohio made the decision to have the Ohio EPA complete the delineation, inventory and susceptibility analysis for all systems that have not yet completed a plan under the WHP Program. Since a susceptibility analysis is not part of a WHP plan, Ohio EPA went back and determined the susceptibility for all the systems that had an endorsed WHP delineation and inventory. In a public water system's Drinking Water Source Assessment, Ohio EPA provides guidelines for protecting the drinking water source, but recommends that the individual public water systems complete their own protection plans.

3.3.3.3 Wetlands

The 1987 USACE Wetland Delineation Manual specifies three criteria for the identification of wetlands: hydrophytic vegetation, hydric soil, and positive indicators of wetland hydrology (USACE 1987). Wetlands are defined by the EPA (Federal Register 1980) and the USACE (Federal Register 1982) as

“Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas” (33 CFR 3283 (b) 1984).

According to the National Wetland Inventory, there are approximately 216,106 acres of wetlands in the counties in the proposed CREP area. Table 3.3.3-2 shows acreages of wetlands in each county based on the National Wetland Inventory.

Table 3.3.3-2 Acreages of Wetlands per County Based on NWI

County Name	Wetland Acreage
Allen	11,482.30
Ashland	8,956.29
Auglaize	3,653.80
Crawford	3,210.89
Cuyahoga	11,454.13
Defiance	17,816.20
Erie	13,502.33
Fulton	12,662.77
Hancock	11,400.75
Hardin	8,727.66
Henry	3,134.58
Huron	5,468.74
Lorain	28,005.64
Lucas	22,519.41
Marion	9,213.77
Medina	9,864.55
Mercer	12,121.11
Ottawa	21,004.65
Paulding	2,812.55
Putnam	755.45
Richland	16,817.10
Sandusky	16,404.93
Seneca	9,264.77
Shelby	2,729.72
Van Wert	7,511.41
Williams	17,368.64
Wood	15,067.60
Wyandot	13,064.76
Total	315,996.50

Source: Ohio Wetland Restoration and Mitigation Strategy Blueprint
 Ohio DNR & Ohio EPA 1999

3.3.3.4 Floodplains

Floodplains are areas of low-lying land that are subject to inundation by the lateral overflow of waters from rivers or lakes with which they are associated. EO 1988, Floodplain Management, requires that federal agencies:

“Take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains.”

Accordingly, agencies must review FEMA floodplain maps to determine whether a proposed action is located in or will impact 100-year floodplains.

3.4 EARTH RESOURCES

3.4.1 Definition of Resource

In this analysis, earth resources are defined as topography and soils. Topography describes the elevation and slope of the terrain, as well as other visible land features. Soils are assigned to taxonomic groups and can be further classified into associations.

3.4.2 Region of Influence

The ROI for earth resources includes the area proposed for enrollment in Lake Erie watershed CREP agreement.

3.4.3 Affected Environment

3.4.3.1 Topography

The Ohio Department of Natural Resources (Ohio DNR) divides the CREP area into three physiographic regions: the Glaciated Appalachian Plateau, the Lake Plains, and the Till Plains Region (Ohio DNR 2003).

The Glaciated Appalachian Plateau Region is carved by glaciers and ancient streams; this region is less hilly and lacks the rugged quality of the unglaciated landscape. Following glaciation, many streams reversed their flow, cutting new paths throughout the region. Evidence of the region's glacial past includes bogs, kettle lakes, and a landscape marked by small hills of sand and gravel.

The Lake Plains physiographic region was once the bottom of Lake Maumee, a large ancient lake. This region is an extremely flat plain that extends along the Lake Erie coast in northeastern Ohio and significantly broadens west of Cleveland. As water levels rose and fell sandy beach ridges and dunes formed along the shore. The northwestern area of the region was called the Great Black Swamp – marked by rich, black soils and poor drainage.

The Till Plain Region is characterized by gently rolling hills and fertile soils. Most hills are a series of moraines, glacier-created mounds of rock and soil up to 100 feet high and six miles wide. Glaciers created terraces along valley sides and new drainage patterns, including the Ohio River.

3.4.3.2 Soils

Soil regions of Ohio are illustrated on Figure F-1 in Appendix F. Soils are arranged in the following classification from most general to most specific: order-suborder-great group-subgroup-family-series. The Lake Erie CREP area is comprised of many different soil series, which have been grouped into larger soil regions based on similarities in soil composition, thickness, and arrangement. Soil series in Ohio have been grouped into regions by Ohio State University and are described below. Regions I, II, V, and VI occur in the CREP area (Ohio State University 1996).

Soil properties of Region I have been influenced by water impoundment during glaciations, which resulted in deposits of fine sediment in deeper areas of historic lakes and coarse sediments near lake margins. Textures of these soils range from fine (clay) to coarse (sand). The Ohio DNR lists the Hoytville, Nappanee, Paulding and Toledo soil series as common in this Region (Ohio DNR 2004b).

Soils of Region II were developed in glacial till containing considerable limestone material and clay. Textures of these soils range from medium (silt) to fine (clay). The Blount, Pewamo and Glynwood soil series are common in this Region.

Successive levels of impounded water have influenced soils in Region V. The lake-plain soils of northeastern and northwestern Ohio were deposited at about the same time. The lake-plain soils of northeastern Ohio range from fine to coarse texture, but are generally more acidic than northwestern Ohio soils.

The glacial till in Region VI is predominately medium textured, with some areas of fine texture. Calcium carbonate (lime) content of the glacial till increases from east to west with the eastern area containing mostly sandstone and shale fragments and the western area containing considerable limestone. Two soil properties peculiar to some of the soils in this area are the high content of extractable aluminum, which increases lime requirements, and dense, medium-textured subsoil "pans." The Bennington, Cardington and Centerburg soil series are common in this Region.

3.4.3.3 Current Conditions of Agricultural Land

Much of the property eligible for the CREP has been previously impacted by the producers who may have, or have not, utilized various NRCS conservation practice standards throughout the years. Among the key conservation practice standards are Nutrient Management and Drainage Water Management. In the Ohio Lake Erie CREP region, subsurface drainage improvements such as installations of plastic tubing, tiles, or pipes have been used in the past to control water flow and storage within the near-surface soils. In conjunction with these subsurface drainage improvements, the proper management of nutrients contained within the soil and shallow groundwater is important for several reasons. These reasons include: efficient beneficial use of nutrients on productive cropland; reduction of artificially applied nutrients and additives; and minimization of the discharge of high concentrations of nutrients in downstream areas and groundwater. The current condition of specific tracts of agriculture land and their suitability for implementation of the conservation practices included in the Ohio Lake Erie CREP would be evaluated as provided for in Part 10 the USDA/FSA *Agriculture Resource Conservation Program (Handbook 2-CRP)*.

3.5 AIR QUALITY

3.5.1 Definition of Resource

The Clean Air Act requires the maintenance of National Ambient Air Quality Standards (NAAQS). NAAQS, developed by EPA to protect public health, establish limits for six criteria pollutants: ozone (O₃), nitrogen dioxide (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), lead (Pb), and respirable particulates [particulate matter less than 10 microns in diameter] (PM₁₀). The Clean Air Act requires states to achieve and maintain the NAAQS within their borders. Each state may adopt requirements stricter than those of the national standard. Each state is required by EPA to develop a State Implementation Plan (SIP) that contains strategies to achieve and maintain the national standard of air quality within the state. Areas that violate air quality standards are designated as nonattainment areas for the relevant pollutants. Areas that comply with air quality standards are designated as attainment areas for relevant pollutants.

3.5.2 Region of Influence

The ROI for this air quality analysis includes the Air Quality Control Regions which encompass the following counties: Allen, Ashland, Auglaize, Crawford, Cuyahoga, Defiance, Erie, Fulton, Hancock, Hardin, Henry, Huron, Lorain, Lucas, Marion, Medina, Mercer, Ottawa, Paulding, Putnam, Richland, Sandusky, Seneca, Shelby, Van Wert, Williams, Wood, and Wyandot.

3.5.3 Affected Environment

The state of Ohio Environmental Protection Agency (EPA) Division of Air Pollution Control monitors the air quality in the state of Ohio. The division implements and regulates many air toxic reduction programs throughout the state. These programs focus on prevention measures for pollutants that pose the greatest risk to the public and environment.

Ohio EPA developed the Air Quality Index (AQI) as an approximate indicator of overall air quality that can be easily interpreted by the public. The AQI converts concentrations of all criteria air pollutants into one normalized number (0 – 500) that defines the air quality for the area. The AQI establishes air quality categories of good (0 – 50), moderate (51 – 100), unhealthy for sensitive groups (101 – 150), unhealthy (151 – 200), very unhealthy (201 – 300), and hazardous (301 – 500). Ohio EPA publishes AQI values for all monitoring sites as a means of informing the public of the current conditions. These values can fluctuate and are therefore updated hourly. The overall air quality in Ohio is good; however, in June of 2004, Ohio in conjunction with the rest of the country adopted the new 8-Hour Ozone National Air Quality Ambient Standard. This new standard has put the some counties into basic or moderate nonattainment status. Table 3.5.2-1 shows the 8-hour ozone attainment status of all the counties within the ROI.

Table 3.5.2-1 Eight-Hour Ozone National Air Quality Standard Attainment Status within the ROI

Counties	NAAQS Attainment Status		
	In Attainment	Moderate Nonattainment	Basic Nonattainment
Allen	X		
Ashland	X		
Auglaize	X		
Crawford	X		
Cuyahoga		X	
Defiance	X		
Erie	X		
Fulton	X		
Hancock	X		
Hardin	X		
Henry	X		
Huron	X		
Lorain		X	
Lucas			X
Marion	X		
Medina		X	
Mercer	X		
Ottawa	X		
Paulding	X		
Putnam	X		
Richland	X		
Sandusky	X		
Seneca	X		
Shelby	X		
Van Wert	X		
Williams	X		
Wood			X
Wyandot	X		

Source: Ohio EPA 2002

3.6 RECREATIONAL RESOURCES

3.6.1 Definition of Resource

Recreational resources are those activities or settings either natural or man-made that are designated or available for recreational use by the public. In this analysis, recreational resources include lands and waters utilized by the public for hunting, fishing, hiking, birding, canoeing and other water sports, and water-related activities. Figure 3.6-1 is a map showing locations of state and Federal recreational lands.

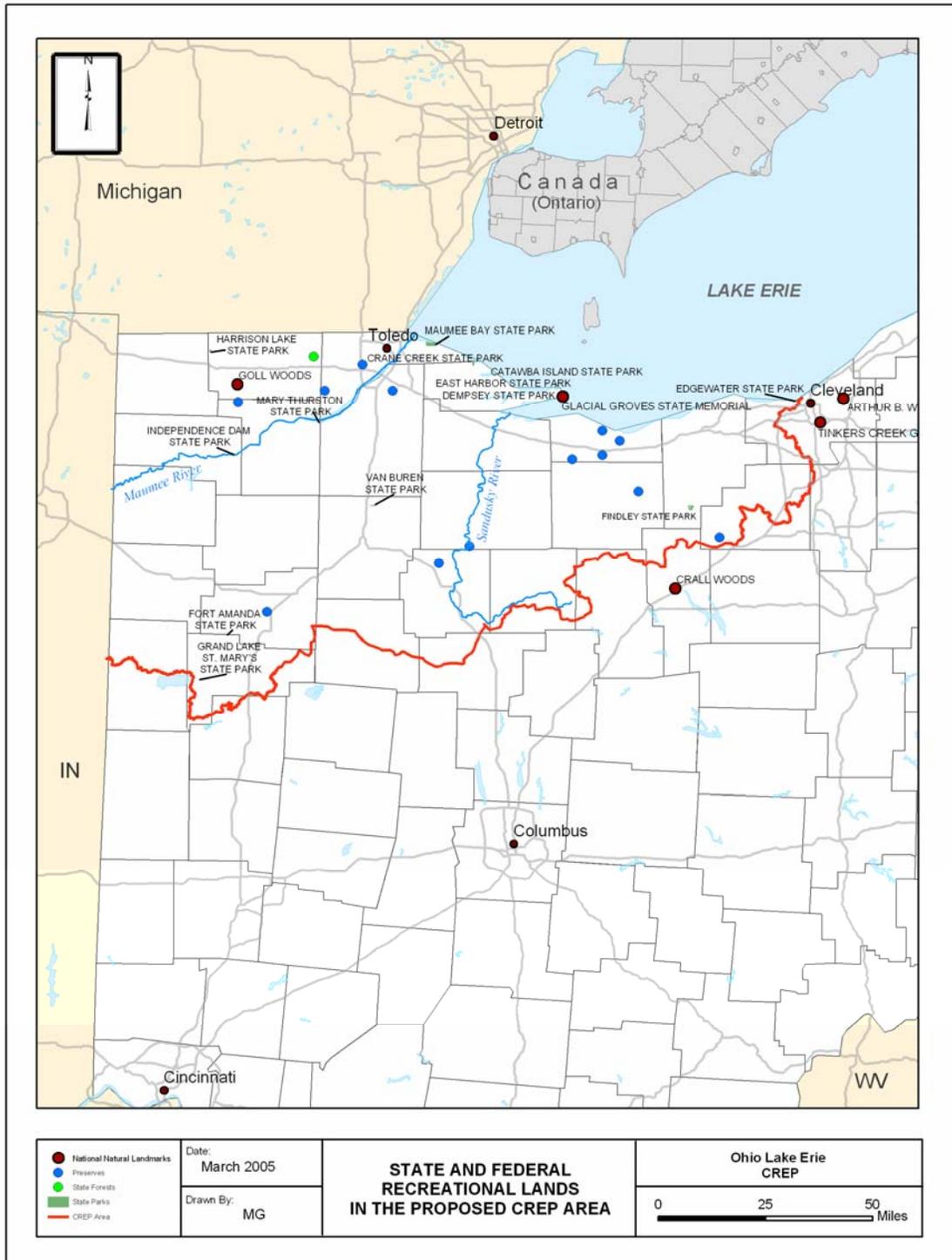


Figure 3.6-1 State and Federal Recreational Lands in the Proposed CREP Area

3.6.2 Region of Influence

The ROI for recreational resources includes those lands proposed for enrollment in the Lake Erie CREP agreement, adjacent lands, as well as the bodies of water that lie within the proposed CREP area and the waters downstream

3.6.3 Affected Environment

Because the lands eligible for enrollment in the CREP program are privately held, the landowners control access to these lands for recreational activities. However, in the proposed CREP area there are numerous public lands available for recreation (Figure 3.6.3-1).

There are 11 state parks 2 state forests, and 17 preserves in the proposed CREP area. Additionally, there are three scenic river systems included as components to the States Scenic Rivers Program. These are the Maumee, Sandusky and Chagrin Rivers. These public lands provide recreational activities such as hunting, hiking, camping, fishing, biking, and backpacking. Hunting and fishing require state issued licenses for both public and private lands. The economics of recreational activities can be found in Sections 3.7 and 4.7, Socioeconomics. Important fish and game species are discussed in Sections 3.1 and 4.1, Biological Resources. Water quality is discussed in Sections 3.3 and 4.3, Water Resources.

3.7 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

3.7.1 Definition of Resource

For this analysis, socioeconomics includes investigations of farm and nonfarm employment and income, farm production expenses and returns, agricultural land use, and recreation spending.

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

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

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

3.7.2 Region of Influence

The ROI for analysis of impacts to socioeconomics or environmental justice is those counties where lands eligible for enrollment in the proposed CREP are located: Allen, Ashland, Auglaize, Crawford,

Cuyahoga, Defiance, Erie, Fulton, Hancock, Hardin, Henry, Huron, Lorain, Lucas, Marion, Medina, Mercer, Ottawa, Paulding, Putnam, Richland, Sandusky, Seneca, Shelby, Van Wert, Williams, Wood, and Wyandot.

3.7.3 Affected Environment

The affected socioeconomic environment is summarized in this section and in Tables 3.7-1, 3.7-2, and 3.7-3.

3.7.3.1 Demographic Profile

The total population within the ROI exceeded 3.5 million people in 2000, which was an approximately .8 percent increase over the population of 1990 (USCB 1990, 2000). The majority of the population (81 percent) was located within urban areas or urban clusters (USCB 2000). Only 2.2 percent of the total ROI population was located on farms (USCB County and City Data Book).

Demographically the ROI population was 81 percent White, non-Hispanic, 15 percent Black or African American, non-Hispanic, 0.2 percent Native American or Alaska Native, non-Hispanic, 1.1 percent Asian, non-Hispanic, 0.02 percent Native Hawaiian or Pacific Islander, non-Hispanic, 1.5 percent all other races or combination of races, non-Hispanic, and 3.4 percent Hispanic (USCB 2000). The total minority population within the ROI was 755,003 or 21 percent of the total ROI population (USCB American Fact Finder 2000). The ROI is not a location of a concentrated minority population.

In 2002, Hispanics operated 269 farms within the ROI, Black or African Americans operated 36 farms, Native Americans operated 57 farms, Native Hawaiians or Other Pacific Islanders operated 4 farms, and Asians operated 21 farms (USDA NASS 2002). The ROI accounts for 32.2 percent of all minority farm operators within the state of Ohio, while these 387 farms account for 1.6 percent of the total number of farms within the ROI (USDA NASS 2002).

3.7.3.2 CREP Region Employment, Income, and Poverty Rates

Median household income in 2000 was \$41,455 within the ROI. The highest median household income occurred in Medina County (\$57,436) and the lowest median household income occurring in Hardin County (\$35,844) (USCB Small Area Income and Poverty Estimates 2000). The average poverty rate for the ROI in 1999 was 10.8 percent, a decrease of approximately 1.9 percent from the 1990 poverty rate (USCB 1990, 2000). The 2000 poverty rate varied from a high of 16.9 percent in Cuyahoga County to a low of 4.5 percent in Medina County (USCB 2000). None of the counties within the ROI would be considered as poverty areas as defined by the USCB.

3.7.3.3 Recreational Values

An analysis of the 1996 and 2001 National Surveys of Fishing, Hunting, and Wildlife Associated Recreation indicated that total participants in wildlife related recreation increased approximately 3.8 percent to 3.4 million persons between 1996 and 2001 in Ohio. Total expenditures for wildlife-related recreation activities were approximately \$2.3 billion in 2001, a 15.9 percent increase over 1996. Total expenditures for hunting related activities in Ohio increased 23.7 percent to \$636.5 million in 2001, while sport fishing expenditures declined 8.9 percent to \$761.6 million. Wildlife viewing expenditures increased 37.0 percent to \$623.1 million in 2001 (USFWS 1997, 2002).

Table 3.7-1 Farm Labor as a Percentage of Total Production Expenses

Area	2002				1997			
	Hired Farm Labor (\$000)	Contract Labor (\$000)	Total Production Expenses (\$000)	Labor as a Percent of Total Production Expenses	Hired Farm Labor (\$000)	Contract Labor (\$000)	Total Production Expenses (\$000)	Labor as a Percent of Total Production Expenses
State of	362,702	27,071	3,925,358	9.9	314,865	20,670	3,707,688	9.0
Allen	2,226	155	44,982	5.3	1,047	96	45,165	2.5
Ashland	4,487	433	52,067	9.4	2,602	213	41,156	6.8
Auglaize	3,465	292	70,379	5.3	2,675	442	66,695	4.7
Crawford	4,167	490	66,628	7.0	3,130	377	57,985	6.0
Cuyahoga	5,551	194	13,658	42.1	4,506	122	13,447	34.4
Defiance	1,606	59	38,884	4.3	583	83	31,744	2.1
Erie	3,563	124	32,441	11.4	3,393	92	26,492	13.2
Fulton	4,592	64	67,214	6.9	3,885	89	72,197	5.5
Hancock	1,690	164	51,447	3.6	1,892	197	55,668	3.8
Hardin	2,116	726	67,486	4.2	4,165	826	77,588	6.4
Henry	2,884	488	50,850	6.6	2,573	271	51,783	5.5
Huron	9,991	180	67,215	15.1	6,826	99	57,275	12.1
Lorain	21,714	440	86,223	25.7	15,814	702	67,919	24.3
Lucas	8,428	182	37,402	23.0	10,022	470	50,200	20.9
Marion	2,851	128	46,509	6.4%	2,152	42	50,259	4.4
Medina	8,776	622	40,491	23.2%	3,749	115	29,638	13.0
Mercer	7,537	912	228,717	3.7%	5,233	223	234,567	2.3
Ottawa	2,548	124	27,864	9.6%	2,454	215	23,719	11.3
Paulding	6,493	(D)	55,714	(D)	1,716	191	33,488	5.7
Putnam	5,937	293	87,684	7.1%	3,934	421	75,411	5.8
Richland	1,700	93	43,148	4.2%	2,231	196	36,703	6.6
Sandusky	4,940	(D)	52,014	(D)	4,831	726	51,465	10.8
Seneca	1,623	831	58,170	4.2	2,419	913	62,855	5.3
Shelby	2,565	232	64,963	4.3	1,876	157	54,446	3.7
Van Wert	2,435	273	49,268	5.5	1,370	419	49,967	3.6
Williams	2,481	52	47,353	5.3	1,173	94	41,305	3.1
Wood	7,453	632	80,932	10.0	6,001	270	66,893	9.4
Wyandot	2,044	891	53,167	5.5	2,166	518	48,579	5.5

Source: USDA National Agricultural Statistics Survey 2002

(D): Withheld to avoid disclosing of Data for Individual Farmers

Table 3.7-2 Average Farm Production Expense and Return Per Dollar of Expenditure 2002

Area	Average Size of Farm (acres)	Average Total Farm Production Expense	Average Cost Per Acre	Average Net Cash Return/Farm	Average Net Cash Return/Acre	Average Return/ \$ Expenditure
State of Ohio	187	50,462	270	8,929	47.75	0.18
Allen	194	46,374	239	916	4.72	0.02
Ashland	148	47,767	323	3,184	21.51	0.07
Auglaize	214	69,067	323	5,620	26.26	0.08
Crawford	338	95,729	283	11,475	33.95	0.12
Cuyahoga	26	85,898	3,304	37,690	1,449.62	0.44
Defiance	213	39,356	185	11,917	55.95	0.30
Erie	242	81,921	339	9,184	37.95	0.11
Fulton	252	85,623	340	12,590	49.96	0.15
Hancock	269	52,875	197	(548)	(2.04)	(0.01)
Hardin	293	80,054	273	44,971	153.48	0.56
Henry	280	60,035	214	16,836	60.13	0.28
Huron	264	77,795	295	4,222	15.99	0.05
Lorain	166	88,434	533	12,000	72.29	0.14
Lucas	192	92,578	482	22,861	119.07	0.25
Marion	395	89,098	226	12,077	30.57	0.14
Medina	103	34,084	331	2,904	28.19	0.09
Mercer	212	180,092	849	48,303	227.84	0.27
Ottawa	221	54,106	245	5,509	24.93	0.10
Paulding	366	85,714	234	23,397	63.93	0.27
Putnam	246	64,903	264	5,556	22.59	0.09
Richland	146	39,841	273	7,572	51.86	0.19
Sandusky	245	64,855	265	3,028	12.36	0.05
Seneca	237	49,089	207	2,847	12.01	0.06
Shelby	203	63,565	313	5,011	24.68	0.08
Van Wert	367	72,240	197	24,049	65.53	0.33
Williams	194	43,009	222	5,521	28.46	0.13
Wood	287	75,637	264	5,525	19.25	0.07
Wyandot	331	87,455	264	38,144	115.24	0.44

Source: USDA National Agricultural Statistical Survey 2002

In 2002, 5.10 million acres of land within the ROI were actively used for agricultural purposes including cropland, hay land, and pastureland, this was a decrease of approximately 1.2 percent from the 1997 figures (5.16 million acres) (USDA 1999). Table 3.7-4 lists the acreage for different agricultural land uses in 1997 and 2002 and the percent change during the period.

Table 3.7-3 Average Value per Farm of Land, Buildings, Machinery and Equipment 2002

Area	Average Size of Farm (acres)	Average Value of Land & Buildings	Average Value of Machinery & Equipment
State of Ohio	187	509,307	68,119
Allen	194	576,950	72,666
Ashland	148	464,749	67,764
Auglaize	214	608,027	139,817
Crawford	338	863,236	121,839
Cuyahoga	26	541,920	79,448
Defiance	213	456,584	54,088
Erie	242	819,142	82,603
Fulton	252	651,679	98,867
Hancock	269	680,969	75,371
Hardin	293	665,100	88,055
Henry	280	737,870	77,963
Huron	264	735,890	85,037
Lorain	166	548,493	79,050
Lucas	192	639,642	102,135
Marion	395	904,764	121,072
Medina	103	431,717	64,602
Mercer	212	692,702	103,725
Ottawa	221	479,253	73,202
Paulding	366	774,192	91,702
Putnam	246	560,242	75,759
Richland	146	403,516	50,742
Sandusky	245	593,891	98,998
Seneca	237	546,260	83,057
Shelby	203	517,487	77,582
Van Wert	367	917,663	126,817
Williams	194	455,783	60,737
Wood	287	783,863	106,348
Wyandot	331	911,051	88,814

Source: USDA 1999

Table 3.7-4 Agricultural Land Use Acreage within the ROI

Land Use	2002	1997	Percent Change
Cropland 1	4,746,293	4,800,755	(1.1)
Hayland 2	202,963	210,495	(3.6)
Pastureland 3	155,466	156,178	(0.5)
Woodland 4	303,384	283,791	6.9
House lots, ponds, roads, wasteland, etc.	206,380	204,800	0.8
CRP & WRP 5	170,754	165,966	2.9
Active Agriculture 6	5,104,722	5,167,428	(1.2)
Total Land in Farms 7	5,785,240	5,821,985	(.63)
1 Cropland excludes all harvested hayland and cropland used for pasture or grazing 2 Hay land includes all harvested cropland used for alfalfa, other tame, small grain, wild, grass silage, green chop, etc. 3 Pastureland includes all pasture, including cropland, grazed woodland, and rangeland not considered cropland or woodland 4 Woodland excludes all wooded pasture lands 5 CRP & WRP acreages are included as active agricultural lands 6 Active agricultural lands include the sum of cropland, hay land, and pastureland 7 Total land in farms include the sum of cropland, hay land, pastureland, woodland, and house lots, etc.			

Source: USDA 2002 National Agricultural Statistics Service

4.0 ENVIRONMENTAL CONSEQUENCES

Appendix G contains a table of the CPs associated with the Ohio Lake Erie CREP and a summary of corresponding physical effects from their implementation. This chapter provides anticipated environmental consequences from implementation of the proposed action and also the No Action alternative.

4.1 BIOLOGICAL RESOURCES

4.1.1 Alternative A – Preferred

Implementation of Alternative A would result in beneficial impacts to biological resources in the proposed CREP area and the waters downstream from the area. The agricultural land eligible for enrollment in the proposed CREP area consists of previously disturbed and extensively managed landscapes. Vegetation, wildlife, aquatic species, and threatened, endangered, and sensitive species have been displaced from years of crop production on these lands. Implementation of the Preferred Alternative would not have adverse impacts on biological resources with incorporation proper procedures and consultations with the USFWS are highly recommended. See USFWS response letter in Appendix H of this PEA regarding this guidance.

The project objectives to reduce sediment loading to western Lake Erie watersheds by a total of 825,000 metric tons over ten years and 2,325,000 metric tons over twenty years and protecting 5,000 linear miles of streams from sedimentation would improve habitat conditions for wildlife, especially aquatic species. Enrollment of riparian areas including alluvial floodplains would benefit all biological resources. Providing perpetual conservation easements for all riparian corridor and wetland and wildlife practices would result in long-term benefits for biological resources in the proposed CREP area.

Vegetation

Every CP that is proposed for implementation under the Lake Erie watersheds CREP would contribute to vegetation diversity in the proposed CREP area. In particular, establishment of permanent native grasses (CP2) and riparian buffers (CP22) would benefit vegetation resources in the CREP area. The native forest types are generally associated with riparian areas and the adjacent uplands. Establishment of tree planting (CP3) and hardwood tree planting (CP3A) areas would benefit forest resources in the proposed CREP area. In addition, establishment of native plant communities would help to reduce occurrences of exotic plant species. Vegetation restoration would increase biodiversity and improve water quality throughout the 67,000 acres proposed for enrollment.

Wildlife

Associated with improved habitat conditions, wildlife diversity in the proposed CREP area would increase from implementation of conservation practices. In comparison to the existing conditions on most of the eligible cropland, wildlife habitat and wildlife diversity would thrive after establishment of each CP. Nongame and game wildlife would benefit from establishment of permanent wildlife habitat (CP4D) and filter strips (CP21). Establishment of riparian buffers (CP22) would enhance stream corridor quality and important habitat for neotropical and other migratory and nesting birds.

In the short term, increases in wildlife populations would have negligible impacts on the habitat in the CREP area. However, white-tail deer populations could increase above carrying capacity in the long term without implementing proper wildlife management practices. In accordance with the Lake Erie watersheds CREP agreement, the Ohio DNR would provide technical assistance regarding wildlife resources. Because target levels for most of Ohio's rural counties are based on farmer tolerances for crop depredation, the likelihood of widespread agricultural problems is expected to be minimal when

deer populations are maintained at target levels. However, some localized damage could occur and in these instances, producers would be eligible for a Deer Damage Control permit from Ohio DNR. This technical support would recommend and help implement procedures to ensure that wildlife populations remain within the habitat carrying capacity in the area.

Increased wildlife populations, especially game birds and deer, could enhance the socioeconomic value of agricultural lands for hunting, wildlife watching, and other outdoor recreational activities. However, the expected returns would not be realized until several years after implementation of the proposed CREP because of the time required for development of vegetation and travel corridors.

Aquatic Species

Aquatic biodiversity in the proposed CREP area would benefit from reduced levels of nutrient and sediment loading to surface waters from agricultural activity. Lower nutrient concentrations in the streams would improve the health of fish and invertebrate communities, as well as stream corridor quality. In particular, establishment of filter strips (CP21), riparian buffers (CP22), and wetland restoration (CP23), would enhance aquatic biodiversity in the CREP area and downstream. Aquatic species would benefit from the targeting of conservation practices to alluvial floodplain soils, hydric, and hydric-included soils. These practices would provide filter strips, riparian buffers, and wetland restoration areas in the 100-year floodplain for protection and enhancement of water quality, which would increase aquatic biodiversity in the proposed CREP area.

Threatened, Endangered, and Sensitive Species

Implementation of the proposed CREP would have positive impacts on threatened, endangered, and sensitive species. Benefits to aquatic species in this category would be realized shortly after implementation of CPs and would increase in the long term. Benefits to threatened, endangered, and sensitive species in terrestrial environments would be minimal in the short term as vegetative communities developed. However, the greatest benefits to terrestrial species and habitats in this category would be expected in the long term following implementation of the proposed CREP. The USFWS has provided additional information in response to this PEA that is included in Appendix H.

4.1.2 Alternative B - No Action

Under the No Action Alternative the proposed CREP would not be implemented and there would be no change to existing biological resources in the Lake Erie watersheds CREP area.

4.2 CULTURAL RESOURCES

4.2.1 Alternative A - Preferred

Archaeological Resources

Due to the rich cultural and archaeological history of the CREP agreement area, the potential for encountering archaeological resources during implementation of CREP contracts is considered high. CPs that are ground disturbing beyond what is normally disturbed from agricultural plowing have the potential to impact known and yet unknown archaeological resources. Such practices include earthmoving for installation of filter strips, firebreaks, fencing, and roads, as well as construction of dams, levees, and dikes in wetland restoration areas and excavation of potholes or other structures to regulate water flow.

In order to determine whether proposed ground-disturbing practices would impact archaeological resources listed in or eligible for listing in the NRHP, appropriate archeological review will be completed prior to implementation of the contract as part of the environmental evaluation as provided for in Part 10 the USDA/FSA *Agriculture Resource Conservation Program (Handbook 2-CRP)*. Results and recommendations from the review should receive concurrence from the Ohio

State Historic Preservation Office (SHPO) prior to project implementation. Additional guidance with regard to preservation of cultural resources and appropriate coordination with the SHPO is provided in a response letter from the Ohio Historic Preservation Office included in Appendix H of this PEA.

Architectural Resources

The CREP agreement area contains a rich architectural history related to early settlement and agricultural themes of Ohio's history. Should proposed conservation practices include the removal or modification of historic architectural resources included in or eligible for the NRHP, an historic architectural resources survey (Ohio Historic Inventory) would be required in order to determine whether such resources are present.

Traditional Cultural Properties

Because the areas of potential effect of CREP actions are not yet defined, no Native American sacred sites or TCPs are identified. Once these areas are defined, consultation with Native American tribes that have traditional ties to the lands may be needed to determine whether such properties exist on affected lands. Federally recognized tribes to be contacted may include the Shawnee Tribe, Seneca Tribe, Wynadotte Nation, Leech Lake Band Ojibwe, Delaware Nation, Eastern Shawnee Tribe of Oklahoma (Federal Register 2002).

4.2.2. Alternative B - No Action

Under the No Action Alternative, farming practices in the CREP area would continue. Though the continuation of farming in previously disturbed areas is not expected to impact cultural resources, a change in farming practices that would disturb previously undisturbed areas or plowing in areas not previously plowed, could result in impacts to known or unknown archeological, architectural, or traditional cultural resources.

4.3 WATER RESOURCES

The proposed implementation of the CREP Agreement in the Ohio Lake Erie region is part of the ongoing USDA mission to provide technical support to agricultural producers for improving production, implementing conservation plans and practices, managing natural and ecological resources, improving economic efficiency, applying agricultural engineering technologies, and complying with regulations developed to sustain good agricultural practices. In consideration of existing subsurface drainage improvements, evaluations of the producers' management of nutrients contained within the soil and shallow groundwater would be necessary to assess the efficiency of beneficial uses of nutrients on productive cropland, the extent of artificially applied nutrients and additives, and the volume of discharge of high concentrations of nutrients to downstream areas and groundwater. The potential impacts to water associated with specific tracts of agriculture land and their suitability for implementation of the conservation practices included in the Ohio Lake Erie CREP would be evaluated as provided for in Part 10 the USDA/FSA *Agriculture Resource Conservation Program (Handbook 2-CRP)*.

4.3.1 Alternative A – Preferred

Implementation of the proposed conservation practices listed in Section 2.1 would improve surface water quality within the proposed CREP area by reducing agriculture sourced nutrient and sediment loading within the region's streams and rivers. Reductions in nutrient and sediment loading, would occur as a result of the proposed action. Activities such as vegetation clearing and soil disturbance may occur during the installation of the CPs. These activities could result in temporary and minor impacts to surface water quality resulting from runoff associated with these activities. Use of filter fencing or similar practices would reduce these impacts.

Implementing the proposed conservation practices is expected to have positive impacts on groundwater quality in the proposed CREP area. Agricultural acreages would be reduced which would decrease the amount of nutrients leaching into groundwater sources.

Implementation of the proposed conservation practices CP22 (Riparian Buffer) and CP23 (Wetland Restoration) is expected to increase the acreages of wetlands and riparian habitat in the proposed CREP area. As with surface water, temporary and minor increases in runoff could occur during the installation of the proposed conservation practices. In response to their review of this PEA, the USACE Buffalo District, that has jurisdiction in northwest Ohio, recommends that any planned modifications within riparian areas or other drainages, such as changing a channel's bottom elevation, would need to be evaluated and approved by their agency. This would be necessary to ensure that implementation of this alternative would not adversely impact stream hydraulic characteristics, i.e. cause increases in flooding, cause flow restrictions, decrease in-stream water storage capacities, or remove or change other existing beneficial features.

4.3.2 Alternative B - No Action

Under Alternative B, the No Action Alternative, the CPs described in Section 2.1 would not be implemented and no change to existing surface water, groundwater or wetland acreage would occur. Continued runoff of agricultural chemicals, erosion of soils, and the impacts of these to surface and groundwater quality would be expected if the preferred alternative were implemented.

4.4 EARTH RESOURCES

4.4.1 Alternative A - Preferred

Under Alternative A, potential long-term positive impacts to earth resources are expected to occur. Implementation of the proposed CPs would result in localized stabilization of soils and control of nutrients as a result of reduced erosion and runoff. In pasturelands, exclusion of cattle from streams and riparian areas bordering streams would increase stream bank stabilization, resulting in reduced rates of sedimentation and subsequent improvements to water quality (see Section 4.3 for a discussion of surface water quality). Establishing permanent native vegetation on former croplands would reduce erosion by wind and water. Short-term disturbance to soils could include tilling, or installation of various structures such as fences, breakwaters and roads that may be necessary in association with the implementation of CPs. These activities may result in temporary minor increases in soil erosion, particularly prior to the establishment of new vegetation and during heavy rainfall or flooding events. The potential impacts to soil associated with specific tracts of agriculture land and their suitability for implementation of the conservation practices included in the Ohio Lake Erie CREP would be evaluated as provided for in Part 10 the USDA/FSA *Agriculture Resource Conservation Program (Handbook 2-CRP)*.

4.4.2 Alternative B - No Action

Under Alternative B, the No Action Alternative, the CPs described in Section 2.1 would not be implemented and continued erosion would be expected to occur, causing further alteration of topography and loss of soils.

4.5 AIR QUALITY

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

4.5.1 Alternative A – Preferred

Implementation of Alternative A would result in establishment of CPs as described on up to 67,000 acres of farmland in 28 counties in the western Ohio Lake Erie watershed. Preparing the lands for CPs could include activities such as tilling, burning, and installation of various structures in water or on land. These activities would have a temporary minor impact to the local air quality. It is not expected that any of these practices would change the current attainment status or violate standards in the SIP.

Preparing lands for CPs could include activities such as tilling, burning, and installation of various structures in water or on land. These activities would have localized temporary minor impacts to air quality. Tilling would temporarily increase the PM₁₀ concentrations in the immediate area; however, this increase is not expected to be significant. Watering exposed soils during and after tilling would reduce the release of PM₁₀. The amount of open burning that would take place in conjunction with clearing and preparing lands for installation of CPs is not known. Burning could release PM₁₀, CO, hydrocarbons and nitrous oxide into the atmosphere (EPA 1992). The type and quantity of these pollutants would be determined by the type of vegetation being burned, the configuration of the burned material, and the weather conditions. It is not anticipated, however, that this burning would have a significant impact on the local air quality. Heavy equipment and construction vehicles used to install roads, firebreaks, dams, levees, and other structures would release CO and PM₁₀. Like tilling and burning, impacts from the use of heavy equipment is expected to be temporary and minor and limited to the immediate construction area.

4.5.2 Alternative B - No Action

Implementation of Alternative B, the No Action Alternative, would not change existing air quality conditions. The CPs described in Section 2.1 would not be implemented.

4.6 RECREATIONAL RESOURCES

4.6.1 Alternative A – Preferred

Implementation of Alternative A would have a positive long-term impact on recreational resources by increasing game species of birds, fish and mammals. Installation of the proposed CPs would increase habitat for game bird and mammal species. An increase in water quality would allow for the replenishment of game fish species. The CPs listed in Section 2.1 would increase the desirability of land to be used for hiking, boating or camping by improving aesthetics. A short-term negative impact to recreational activities may occur during the installation of the proposed conservation practices due to unsightly construction activities or displacement of game species.

4.6.2 Alternative B - No Action

Under Alternative B, the No Action Alternative, the conservation practices described in Section 2.1 would not be implemented and no change to existing recreational activities would occur. Continued degradation of water quality would be expected, affecting water-related recreational opportunities.

4.7 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

4.7.1 Alternative A – Preferred

Implementing the proposed action would result in positive net present values for land rentals into the CREP program within the ROI (Appendix C). Under the proposed action, a maximum of 67,000 acres would be conserved and restored for a 15-year period. This action would cause the loss of approximately 346 farm worker positions, at an estimated cost of \$1.8 million per year (Table 4.7.1-1). The loss of these positions would account for approximately 1.3% of the farm workers positions available in 2002. Additionally, the loss of production on 67,000 acres would reduce the amount of total farm expenditures for seed, agricultural chemicals, and petroleum products by \$4.1 million per year or less than 1 percent of the total 2002 farm expenditures. The initial agriculture income lost from

the inclusion of land in the Lake Erie CREP program would be approximately 4 million dollars after estimated production costs are deducted, which is approximately 1.4 percent of the net cash farm income. However, the inclusion of 67,000 acres in the CREP would result in the FSA paying an annual land rental of approximately \$8.3 million; \$120 per acre for producers utilizing CPs 4D and 21, and approximately \$137 for producers utilizing CPs 3A, 5A, 22 and 23. These values are based on the USDA's January 1, 2003 estimate for average cash rent per acre in Ohio of \$78 per acre (Table 4.7.1-2). Producers would also be eligible for a cost-sharing rate of 50 percent of the cost for initiating an eligible conservation practice. Additionally one time incentive payments are potentially available from the FSA and the ODNR for stewardship, initiation of a specific practice and contract extensions.

Implementing the proposed action would be anticipated to result in positive net present values for land rentals into the Ohio Lake Erie CREP program within the ROI. Enrollment in the CREP would improve wildlife habitat for game species and nongame species. This improved and expanded wildlife habitat would be likely to increase wildlife-related recreation opportunities within the ROI. This increased/improved habitat would be likely to improve wildlife-recreation generated economic activity within the ROI.

Since the ROI would not be considered an area of concentrated minority population or a poverty area and there would be no adverse impacts from selecting the proposed action there would be no ROI-wide impacts due to environmental justice.

4.7.2 Alternative B - No Action

Under the no action alternative, the Ohio Lake Erie CREP would not be implemented. Socioeconomic conditions would be expected to continue to follow the trends associated with the ROI and larger Ohio and northeastern US region. The continued loss of wildlife habitat could result in wildlife enthusiasts to spend more of their activity dollars in adjacent states with similar opportunities and forego the remaining available wildlife-related recreation opportunities. There would be no impacts from selecting the no action alternative as there would be no ROI-wide impacts due to environmental justice.

Table 4.7.1-1 Estimated Loss of Employment and Income Associated with the Lake Erie CREP

Counties	Cropland Acres	Acres Eligible for CREP	Hired Farm Labor	Approximate number of Jobs Lost	Hired farm labor (\$1000)	Dollar Value of Lost Jobs
Allen	168,444	2,250	495	7	2,226	29731
Ashland	118,576	1,584	833	11	4,487	59930
Auglaize	198,756	2,655	812	11	3,465	46280
Crawford	213,617	2,853	156	2	4,167	55656
Cuyahoga	1,637	22	685	9	5,551	74141
Defiance	182,593	2,439	632	8	1,606	21450
Erie	82,521	1,102	701	9	3,563	47588
Fulton	180,285	2,408	1,017	14	4,592	61332
Hancock	240,153	3,208	521	7	1,690	22572
Hardin	223,644	2,987	296	4	2,116	28262
Henry	221,865	2,963	785	10	2,884	38520
Huron	199,433	2,664	2,543	34	9,991	133443
Lorain	137,482	1,836	2,044	27	21,714	290018
Lucas	73,885	987	1,162	16	8,428	112567
Marion	190,068	2,539	616	8	2,851	38079
Medina	92,522	1,236	1,262	17	8,776	117215
Mercer	243,186	3,248	1,523	20	7,537	100666
Ottawa	104,894	1,401	779	10	2,548	34032
Paulding	222,136	2,967	691	9	6,493	86722
Putnam	304,386	4,065	1,146	15	5,937	79296
Richland	119,637	1,598	885	12	1,700	22706
Sandusky	180,313	2,408	2,220	30	4,940	65980
Seneca	249,312	3,330	643	9	1,623	21677
Shelby	185,253	2,474	704	9	2,565	34259
Van Wert	237,322	3,170	534	7	2,435	32523
Williams	177,964	2,377	1,024	14	2,481	33137
Wood	284,552	3,801	862	12	7,453	99544
Wyandot	181,927	2,430	341	5	2,044	27300
Total	5,016,363	67,000	25,912	346	135,863	1,814,626

Table 4.7.1-2 Estimated Annual Disbursement of FSA Funds

Conservation Practices	CREP Eligible Acres	FSA Rental Rate*	Average Cash Rental Value for Cropland per Acre**	Approximate Annual FSA Rental Payment per Acre	Annual FSA Disbursement of Rental Funds
Hardwood Tree Planting (CP3A)	1,050	175%	78	137	143,325
Permanent Wildlife Habitat (CP4D)	2,450	155%	78	121	296,205
Field Windbreak Establishment (CP5A)	3,350	175%	78	137	457,275
Grassed filter strips (CP21)	52,020	155%	78	121	6,289,218
Riparian forest buffers (CP22)	2,100	175%	78	137	286,650
Wetland restoration (CP23)	6,030	175%	78	137	823,095
Total	67,000	-	-	-	8,295,768

*Percent of Average Soil Rental Rate

**USDA's January 1, 2003 estimate for average cash rent per acre in Ohio

Source Information from NASS

5.0 CUMULATIVE IMPACTS AND IRRETRIEVABLE COMMITMENT OF RESOURCES

5.1 CUMULATIVE EFFECTS

5.1.1 Definition of Cumulative Effects

CEQ regulations stipulate that the cumulative effects analysis within an EA should consider the potential environmental impacts resulting from “the incremental impacts of the action when added to other past, present and reasonably foreseeable actions regardless of what agency or person undertakes such other actions.” CEQ guidance in *Considering Cumulative Effects* affirms this requirement, stating that the first steps in assessing cumulative effects involve defining the scope of the other actions and their interrelationship with the proposed action. The scope must consider geographic and temporal overlaps among the proposed action and other actions. It must also evaluate the nature of interactions among these actions.

Cumulative effects most likely arise when a relationship exists between a proposed action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in proximity to the proposed action would be expected to have more potential for a relationship than those more geographically separated. Similarly, actions that coincide, even partially, in time tend to have potential for cumulative effects.

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

5.1.2 Past, Present, and Reasonably Foreseeable Actions

In addition to CRP and the regional CREP, the NRCS maintains and implements numerous programs in the state of Ohio to conserve and enhance natural resources. These programs include, but are not limited to, the Wildlife Habitat Incentives Program, Grassland Reserve Program, Environmental Quality Incentives Program, Farm and Ranchlands Protection Program, Grazing Lands Conservation Initiative, and the Wetlands Reserve Program.

The Wildlife Habitat Incentives Program offers opportunities to private and Tribal landowners to improve and protect wildlife habitat. Through the program, the NRCS provides technical and financial assistance to landowners to develop upland, wetland, riparian, and aquatic habitat areas on their property. Cost sharing reimburses up to 75 percent of costs, not to exceed \$15,000 per contract. The program in Ohio places an emphasis on reestablishment of habitat for declining species such as wetland and grassland dependent birds, amphibians, reptiles, insects and small mammals. Seventeen counties in the CREP area have been designated as priority areas for enrollment.

The Grassland Reserve Program helps landowners and operators restore and protect grassland, including rangeland and pastureland, while maintaining the areas as grazing lands. The program offers several enrollment options with varying financial assistance for implementing conservation practices that emphasize support for grazing operations, plant and animal biodiversity, and pasture and hay land under the greatest threat of conversion. Offers for enrollment must contain at least 40 contiguous acres. Ohio’s allocation for implementing the program was \$831,201 for fiscal year 2003.

The Environmental Quality Incentives Program provides technical, financial, and educational assistance for farmers and ranchers that promote agricultural production and environmental quality as compatible national goals while optimizing environmental benefits. Program activities are carried out

according to an environmental quality incentives program plan of operations. The plan of operations is developed in conjunction with the producer that identifies the appropriate conservation practice to address the resource concerns. The NRCS may cost-share up to 75 percent of the costs of conservation practices.

The Farm and Ranch Lands Protection Program protects working agricultural land from conversion to nonagricultural uses. The program provides matching funds to State, Tribal, and local governments and nongovernmental organizations with farm and ranch land protection programs to purchase permanent conservation easements. The NRCS provides 50 percent of the purchase cost for the easements. In 2003, 1,775 acres of Ohio's productive agricultural soils on eleven farms were permanently protected. In 2004, NRCS allocated \$2,601,300 in financial assistance to protect Ohio farmland.

The Grazing Lands Conservation Initiative is a nationwide collaborative process of individuals and organizations working to maintain and improve the management, productivity, and health of the Nation's privately owned grazing lands. The coalitions actively seek sources to increase technical assistance and public awareness activities that maintain or enhance grazing land resources.

The Wetlands Reserve Program is a voluntary program that provides technical and financial assistance to eligible landowners to address wetland, wildlife habitat, soil, water, and related natural resource concerns on private land in an environmentally beneficial and cost-effective manner. The program provides an opportunity for landowners to receive financial incentives to enhance wetlands in exchange for retiring marginal land from agriculture. In 2002, \$4,000,000 was provided to Ohio by the NRCS to protect wetlands.

5.1.3 Analysis of Cumulative Impacts

The incremental contribution of impacts of the proposed action, when considered in combination with other past, present, and reasonably foreseeable actions, is expected to result in positive impacts to water, earth, biological, and recreational resources both in the proposed CREP area and in waters downstream.

5.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

NEPA requires that environmental analysis include identification of any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the use of these resources has on future generations. Irreversible effects primarily result from the use or destruction of a specific resource that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action.

Participation in the Ohio Lake Erie CREP may result in some permanent changes in land uses, particularly with regard to the restoration, enhancement, or establishment of wetlands. Under current federal policies, particularly the National Wetlands Mitigation Plan, no net loss of wetlands is a primary goal. Wetlands that become established as a result of implementation of CREP conservation practices would be subject to these policies. Additionally, land that has been restored to provide habitat for wildlife, particularly endangered and threatened species, would be subject to provisions of the ESA. Although regarded as beneficial consequences, it should be recognized that such permanent changes in land uses would be regarded as irretrievable commitments of agricultural production resources.

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Appendix A

Ohio Lake Erie CREP Agreement

**Agreement Between the State of Ohio
and
The U.S. Department of Agriculture Commodity Credit Corporation
Concerning the Implementation of the Ohio Lake Erie
Conservation Reserve Enhancement Program**

This Agreement is entered into between the United States Department of Agriculture (USDA), Commodity Credit Corporation (CCC), and the State of Ohio (Ohio) to implement a Conservation Reserve Enhancement Program (CREP) for the enhancement of water quality by reduction of sediment. The CREP is part of the national Conservation Reserve Program (CRP), operated by USDA for CCC.

I. PURPOSE

The purpose of this Agreement is to allow, where deemed desirable by USDA, CCC, and Ohio, certain acreage in the targeted watersheds to be enrolled in the CRP under the Ohio Lake Erie CREP.

The general goals for the Ohio Lake Erie CREP are: to significantly reduce the amount of sediment entering the targeted watersheds from agricultural sources through a voluntary, incentive-based program; to assist Ohio in achieving the sediment reduction goals for agriculture in the targeted area; and to significantly reduce the amount of sediment entering those watersheds. The reduction of sediment through the establishment of permanent vegetative cover will also enhance the associated wildlife habitat.

The primary goals of this Agreement are to achieve through financial and technical assistance, to the extent practicable, the following:

1. Provide an opportunity for eligible producers in the targeted watersheds to voluntarily establish up to 67,000 acres of filter strips, riparian buffers, hardwood tree plantings, wildlife habitat, and field windbreaks through financial and technical assistance within the targeted watersheds (exhibit #A map of watershed).
2. Out of this 67,000 acre potential enrollment:
 - a. Provide an opportunity for eligible producers in Ohio to voluntarily restore and enhance riparian habitat corridors next to wetlands, streams, drainage ditches, and other watercourses by enrolling approximately 57,620 acres of riparian-forested buffers, grass filter strips, hardwood tree plantings, and wildlife habitat.
 - b. Provide an opportunity for eligible producers in the targeted watersheds to voluntarily restore approximately 6,030 acres of cropped wetlands to reduce field runoff and sediment pollution to surface waters.
 - c. Provide an opportunity for eligible producers in the targeted watersheds to voluntarily establish approximately 3,350 acres of field windbreak to address impacts associated with wind erosion.

The specific objectives of this Agreement are to achieve, to the extent practicable, the following:

For the first ten years of this Agreement, reduce sediment loading to Western Lake Erie by progressive 15,000 metric tons per year increments (15,000 tons the first year, 30,000 tons the second year, etc.) with a total reduction of 825,000 metric tons over ten years.

For the next ten years reduce sediment loading to Western Lake Erie by 150,000 metric tons per year (150,000 tons in year eleven, 150,000 tons in year twelve, etc.) so that after twenty years there will be a total cumulative reduction of 2,325,000 metric tons over twenty years.

Protect 5,000 linear miles of streams from sedimentation.

This Agreement is not intended to supersede any rules or regulations, which have been, or may be, promulgated by USDA, CCC, Ohio, or any other governmental entity participating in this Ohio Lake Erie CREP. This Agreement is intended to aid in the administration of the Conservation Reserve Program (CRP).

II. AUTHORITY

A. Federal

The USDA is provided the statutory authority to perform the activities contemplated by this Agreement by the provisions of the Food Security Act of 2002, as amended (2002 Act) (16 U.S.C. 3830 et seq.), and the regulations at 7 CFR part 1410. The relevant legislation authorizes new enrollments through December 31, 2007. Other authorities may also apply.

B. State

Various participating agencies of the State of Ohio are provided the statutory authority to perform all activity contemplated by this Agreement by the provisions of the Ohio Revised Code Chapter 1515, and Sections 126.07 and 1501.02 of the Ohio Revised Code. Other authorities may also apply.

III. PROGRAM ELEMENTS

USDA, CCC, and Ohio agree that:

A. The Ohio Lake Erie CREP will consist of a continuous sign-up CRP component and a State of Ohio Incentive Program. The Ohio Lake Erie CREP will enroll no more than 67,000 acres in the CRP State Incentive Program (SIP).

B. The Ohio Lake Erie CREP will target enrollment of 57,620 acres in riparian area practices, 6,030 acres of cropped wetland restoration, and 3,350 acres of field windbreak within the Western Lake Erie Watershed. The Ohio Lake Erie CREP encompasses the Western Lake Erie drainage areas of 27 Northwestern Ohio counties as delineated in exhibit #A: Western Lake Erie Watershed Project Area. All eligible acres are within portions of the CRP Great Lakes National Conservation Priority Area.

C. Land may, on a continuous basis, be enrolled in the Ohio Lake Erie CREP if it meets CRP cropping and land ownership requirements, land eligibility criteria, conservation practice criteria, and any other Lake Erie CREP and CRP criteria set forth in the CRP regulations, this Agreement, Handbook 2-CRP, and the Natural Resources Conservation Service (NRCS) Field Office Technical Guide (FOTG). Acreage enrollment limitations for eligible practices shall not exceed those specified in paragraph E of this section. USDA and Ohio may, if they agree jointly in writing, provide further restrictions on enrollment

eligibility in particular cases.

D. Conservation plans for the land enrolled in the CRP under the Ohio Lake Erie CREP shall meet criteria of the CRP regulations, 2-CRP, and FOTG. The eligibility criteria described in paragraph E of this section shall be used to determine which lands may be enrolled in the CRP under the Ohio Lake Erie CREP. For the purposes of these enrollments, the following standard CRP practices shall be used:

1. For land to be devoted to a wetland restoration practice:

CRP Practice CP23 (Wetland Restoration)

2. For land to be devoted to a riparian area practice that is located adjacent to watercourses and/or drainage ditches as defined by the FOTG (grass waterways as defined by the FOTG will not be considered riparian area for the purpose of this Agreement and so are not considered to meet water quality objectives):

CRP Practice CP3A (Hardwood Tree Planting)

CRP Practice CP4D (Permanent Wildlife Habitat-noneasement)

CRP Practice CP21 (Filter Strip)

CRP Practice CP22 (Riparian Buffer)

CRP Practice CP23 (Wetland Restoration)

3. For land to be devoted to a field windbreak practice:

CRP Practice CP5A (Field Windbreak Establishment-noneasement)

E. The following enrollment criteria, in addition to other applicable CRP criteria, shall apply:

1. Land to be devoted to CP23 wetland restoration may be enrolled only if comprised of predominately (greater than 50 percent) hydric soils or non-hydric soils comprised of predominately (greater than 50 percent) hydric inclusions. Enrollment of the lands must help address soil erosion and/or filtering of water associated with field runoff.

2. Lands to be devoted to cropped wetland restoration shall not be enrolled unless it can be restored to wetland status such that under the FOTG it will be considered an acceptable CP23 wetland restoration.

3. For all practices, the practice will be implemented in accordance with the 2-CRP and the FOTG and applicable regulations. In no case may an installed riparian area practice exceed an average of 300 feet in width. Riparian area practices devoted to CP3A hardwood tree planting, CP4D wildlife habitat, and CP22 riparian buffer between 120 feet and 300 feet maximum average width, must be located on predominately (greater than 50 percent) alluvial floodplain soils as determined by the County Soil Survey. Riparian area practices devoted to CP21 filter strip between 120 feet and 300 feet maximum average width must be located on predominately (greater than 50 percent) alluvial floodplain soils as determined by the County Soil Survey.

4. No acreage may be enrolled under or per contract unless it equals or exceeds 0.1 acre.

5. Enrollments, otherwise restricted by this Agreement, may also be extended a modest additional width, as permitted by CCC. The modest additional width shall not exceed ten (10) percent of the area needed to attain water quality objectives. In no case shall the width of the practice exceed an average 300 feet in width.

6. For lands devoted to CP3A hardwood tree planting, the type spacing and planting requirements must be consistent with CP22 riparian buffer standards and must ensure that water quality standards are met.

7. For lands to be devoted to CP4D wildlife habitat, no more than 5,000 acres in total may be enrolled. The practice must meet or exceed the water quality objectives that would be derived from land planted to a CP21 filter strip.

8. For the grass filter strip practice (CP21) and wildlife habitat practice (CP4D) incidental grazing is permitted as allowed in the site conservation plan and Handbook 2-CRP.

9. Infeasible to farm areas are likewise eligible for CREP enrollment as long as they qualify for enrollment as allowed in the site conservation plan and Handbook 2-CRP.

F. The following special criteria shall apply to the Ohio Lake Erie CREP State Incentive Program and to the relationship between it and CRP; CRP lands to be enrolled shall only be accepted under this Ohio Lake Erie CREP if:

1. The CRP contract has a minimum of 14-year term (CRP contracts cannot exceed 15 years in length).

2. The eligible producer enters the State program in accordance with section V. of this Agreement.

G. Eligible producers will not be denied the opportunity to offer eligible acreage for enrollment during other CRP enrollment periods.

H. CRP contracts executed under this Agreement will be administered in accordance with the CRP regulations at 7 CFR part 1410, and the provisions of this Agreement and any conditions required by the CCC.

IV. FEDERAL COMMITMENTS

Subject to the availability of funds and statutory limitations USDA and CCC agree to:

A. Determine producer eligibility for participation in the CRP under the Ohio Lake Erie CREP consistent with the regulations at 7 CFR Part 1410, and administer those CRP contracts that are executed.

B. Consistent with the CRP regulations, pay up to 50 percent of the eligible reimbursable costs of CRP conservation practices. Cost share reimbursements to participants from all sources may not, by law, exceed 100 percent of the participants out of pocket expenses.

C. For acreage enrolled devoted to CP23 wetland restoration, make as an additional rental payment, a one-time incentive payment equal to 25 percent of the eligible reimbursable cost of restoring the hydrology of the site. This is the only one-time payment to be made to eligible participants who install CP23 wetland restoration, and supersedes any other one-time incentive payment offered for this practice other than those provided for in F and G.

D. On a continuous basis through December 31, 2007, enroll land that meets the eligibility criteria set forth in the CRP regulations at 7 CFR Part 1410 and this Agreement.

E. Make annual rental payments otherwise applicable to the land under the CRP contract based on the County posted CRP dryland soil rental rates established according to the CRP regulations at 7 CFR Part 1410, plus incentive payments and maintenance payments as provided in paragraphs F and G, respectively, of this section. No other incentive payments shall be included in the calculation of the annual rental payment.

F. As part of the annual rental payment, make incentive payments as a percentage of the weighted average soil rental rate based on the three predominate soils offered, in an amount equal to:

1. For land devoted to wildlife habitat (CP4D) and filter strips (CP21), including associated infeasible to farm acres, 55 percent.

2. For land devoted to wetland restoration (CP23), riparian buffer (CP22), field windbreak (CP5A), or hardwood tree planting (CP3A), including associated infeasible to farm acres, 75 percent.

G. As part of the annual rental payment, make a maintenance payment which would otherwise apply under the CRP. This payment is not in addition to any other offered maintenance payment, but is instead the only maintenance payment to be made to eligible participants under the contract.

H. Work cooperatively with the State and producers in the development and review of conservation plans for land accepted for enrollment in the CRP under the Ohio Lake Erie CREP.

I. Conduct required status reviews to ensure compliance with the CRP contract.

J. In cooperation with Ohio, provide information to producers concerning the Ohio Lake Erie CREP and technical assistance for implementing the Ohio Lake Erie CREP.

K. Permit successors-in-interest to contracts enrolled under the Ohio Lake Erie CREP in the same manner as allowed for other CRP contracts.

L. Make a one-time CRP-Signing Incentive Payment (SIP) for the following practices: CP5A Field Windbreak, CP21 Grass Filter Strip, and CP22 Riparian Forest Buffer. CRP-SIP one-time payments shall be for \$10 per acre enrolled for each full year of CRP-1 as stated in the Handbook 2-CRP. Any acres enrolled under the infeasible to farm provision are not eligible for CRP-SIP.

M. Make a one-time CRP-Practice Incentive Payment (PIP) for the following practices: CP5A Field Windbreak, CP21 Grass Filter Strip, and CP22 Riparian Forest Buffer. CRP-PIP one-time payments shall be equal to 40 percent of the total eligible cost of practice installation according to Handbook 2-CRP. Any acres enrolled under the infeasible to farm provision are not eligible for CRP-PIP.

N. Make management payment(s) for conservation practices as approved by the Ohio USDA State Technical Committee and deemed needed and necessary by the approved Conservation Plan of Operation.

V. STATE COMMITMENTS

Ohio agrees or states:

A. The State of Ohio's obligations under this Agreement are limited to the contract period defined as the remainder of the current operating biennium; work shall commence immediately upon entering into this Agreement and shall terminate at midnight on June 30, 2005, unless the contract is terminated sooner or renewed as herein provided. The terms and conditions of this Agreement may be renewed by the State of Ohio, to the extent possible, to match federal allocations to the Lake Erie CREP through December 31, 2005.

B. At the option of the State of Ohio and with written concurrence of CCC the Agreement may be renewed under the same terms and conditions for the biennium beginning July 1, 2005, and ending December 31, 2007. Any purchase orders issued against the Agreement, or any renewal thereto, shall not be valid unless the Director of the State's OBM shall first certify, under Section 126.07 of the Revised Code, that there is a sufficient balance in the user agencies appropriations not already obligated to pay existing obligations.

C. The State of Ohio shall use its best efforts to secure funding for its obligations under this Agreement to match federal allocations to the Lake Erie CREP through December 31, 2007. In the event funds are not appropriated in the current capital biennium, or any succeeding biennium, for the State of Ohio's obligations hereunder, this Agreement shall automatically terminate.

D. The State of Ohio's cash obligation is limited to \$2,436,000 for the 2004 and 2005 fiscal years of the State's biennium operating budget. A total of \$1,218,000 is available during each of the two fiscal years for a total contribution of up to \$2,436,000 in cash and associated in-kind contributions for the state fiscal years 2004-2005. The State of Ohio will use its best efforts to secure cash and in-kind contributions to meet USDA match obligations.

E. The State will seek eligible producers willing to offer eligible and appropriate land for enrollment in the Ohio Lake Erie CREP.

F. As a condition for participation in the Ohio Lake Erie CREP, the State will enroll producers in the State Incentive Program. Producers must enter into a separate agreement with the State of Ohio to enroll in the State Incentive Program as a contingent for enrollment in the CRP under the Ohio Lake Erie CREP. The State Incentive Program will extend the period of conservation and benefits obtained from enrollment in the CRP for an additional period to run at the end of the CRP period and consecutively with the end of that period as follows:

1. An additional 5 years for land enrolled using the Wildlife Habitat (CP4D) practice and Filter Strip (CP21) practice.
2. An additional 15 years for Hardwood Tree Planting (CP3A), Field Windbreak (CP5A), and Riparian Buffer (CP22) practices.
3. A 15-year contract extension for Wetland Restoration (CP23).

G. The State of Ohio will enter into agreements with each Soil and Water Conservation District (SWCD) within the Ohio Lake Erie CREP to make the one-time bonus incentive payments for enrollment into the CREP set out in paragraph H. The Ohio Division of Wildlife (ODW) will enter into separate contractual agreements with producers for additional bonus incentive payments if required or warranted.

H. The State of Ohio and its affiliates shall make one-time incentive payments to producers participating in the State Incentive Program and the Ohio Lake Erie CREP in the amounts specified by this

paragraph. The one-time payment shall be made after Ohio has been notified by the applicable USDA service center that the CRP contract has been approved. The one-time payment may be divided among all participants in the same manner as the annual rental payment as determined by the State of Ohio. The amount shall be as follows:

1. A one-time payment of \$200 per acre (from the SWCD) for land devoted to a Filter Strip (CP21).
2. A one-time payment of \$500 per acre (from the SWCD) for land devoted to hardwood tree planting (CP3A), wildlife habitat (CP4D), field windbreaks (CP5A), and riparian buffer (CP22) practices.
3. A one-time payment of \$500 per acre (from the SWCD) up to a maximum of \$5,000 per FSA tract for land devoted to Wetland Restoration (CP23) and enrolled in the State Incentive Program for a 15-year contract extension.
4. A one-time payment up to \$40 per acre (from ODW), for planting warm season grasses where 100% of the seeding is warm season grasses as approved ODW. Additional incentives from other than CCC sources may also be provided directly to producers for installation of warm season grass by the State or other contributors.
5. An additional one-time payment, not to exceed \$500 per acre (from the ODW), for land devoted to Wetland Restoration (CP23) and enrolled in the State Incentive Program for either a 5 or 15-year contract extension. The one-time payment shall be made after Ohio has been notified by the applicable USDA service center that the CRP contract has been approved. The one-time payment may be divided among all participants in the same manner as the annual rental payment.
6. Acres enrolled into the CREP that qualify as infeasible to farm and may be enrolled under the conditions set forth in the Handbook 2-CRP are eligible for State of Ohio Incentive Payments as follows:

A one-time payment of \$200 per acre (from the SWCD) for land devoted to a Filter Strip (CP21).

A one-time payment of \$500 per acre (from the SWCD) for land devoted to hardwood tree planting (CP3A), wildlife habitat (CP4D), field windbreaks (CP5A), and riparian buffer (CP22) practices.

A one-time payment of \$500 per acre (from the SWCD) up to a maximum of \$5,000 per FSA tract for land devoted to Wetland Restoration (CP23) and enrolled in the State Incentive Program for a 15-year contract extension.

- I. The State will pay all costs for the required annual monitoring of the Ohio Lake Erie CREP.
- J. The State will develop, implement, and pay for an outreach program as provided in the Ohio Lake Erie CREP proposal.
- K. The State will provide technical assistance, such as but not limited to assistance in developing conservation plans; assisting producers in locating approved vendors, seed, and seedlings to install approved practices; coordinating efforts of State and local agencies to provided needed services for practice completion; and compliance monitoring of installed practices.
- L. The state will provide such additional contribution if any, as may be needed so that its contribution shall amount to a total of 20 percent of the overall costs of implementing the Ohio Lake Erie CREP

through a combination of State budgetary allocations, in-kind services, and eligible match funding. Costs may include funds expended for program administration, producer payments, bonus incentive payments, technical assistance in the field, local program assistance, and state and local expenditures for agricultural nonpoint source pollution related to goals in the project area. The State of Ohio shall use its best efforts to secure funding for its obligations under this Agreement and to contribute at least 20 percent of the overall costs of the Lake Erie CREP.

M. The State will coordinate the Ohio Lake Erie CREP with other local natural resource conservation programs.

N. The State will temporarily release the participant from any contractual or easement restrictions on crop production during the CRP contract period if such release is determined necessary by the U.S. Secretary of Agriculture in order to address a national emergency.

O. The State will within ninety (90) calendar days of the end of each Federal fiscal year, provide a report to USDA summarizing the status of enrollments under this Agreement and progress in fulfilling the other commitments of this Agreement. The annual report to USDA will include, but not be limited to, the level of program participation; the results of the annual monitoring of the Ohio Lake Erie CREP; a detailed summary of the Ohio expenditures; and recommendations to improve the Ohio Lake Erie CREP.

VI. MISCELLANEOUS PROVISIONS

A. Funding commitments by USDA and Ohio are subject to the availability of funds. In the event either party is subject to funding limitation, that party will notify the other party expeditiously and appropriate modifications may be made to this Agreement or either party may exercise its right to terminate. If either party cannot fulfill its financial obligations under the Agreement, the other party may immediately cease accepting new contracts.

B. All CRP contracts under the Ohio Lake Erie CREP shall be subject to the limitations set forth in the regulations at 7 CFR Part 1410 including, but not limited to, those regarding such matters as economic use, transferability, violations, and contract modifications.

C. Neither Ohio nor USDA shall assign or transfer any rights or obligations under this Agreement without the prior written approval of the other party.

D. Contracts entered into under the Ohio Lake Erie CREP may not be assigned or transferred without approval of the landowners and CCC.

E. Any amendments to this Agreement shall be in writing and shall be executed by the same parties who executed the original Agreement, or their successors in office.

F. Ohio and USDA agree that each party will be responsible for its own acts and/or omissions and results thereof to the extent authorized by law and shall not be responsible for the acts or omissions of any others and the results thereof.

G. This Agreement may be terminated by either party at any time after written notice. Such termination will not alter existing contractual obligations under this Agreement, between participants, Ohio, and CCC.

Appendix B

Conservation Practices Summary Table

Conservation Practices Summary Table

FSA CRP Conservation Practices		NRCS National Conservation Practice Standards			
CP	Practice	Practice Code	Practice	Purpose	Maintenance
5A	Field Windbreak Establishment	380	Windbreak /Shelterbelt Establishment	<ul style="list-style-type: none"> To reduce soil erosion from wind To protect plants from wind related damage, To alter the microenvironment for enhancing plant growth, To manage snow deposition, To enhance wildlife habitat by providing travel corridors, To provide living barriers against airborne chemical drift, To improve irrigation efficiency, To increase carbon storage 	<ul style="list-style-type: none"> Replacement of dead trees or shrubs until the barrier is functional. Provide supplemental water as needed. Thin or prune the barrier to maintain its function. Inspect trees and shrubs from the adverse affects of insects, diseases or competing vegetation. Protect trees from fire and damage from livestock and wildlife. Periodic applications of nutrients may be needed to maintain plant vigor.
22	Riparian Buffer	340	Cover and Green Manure Crop	<ul style="list-style-type: none"> To reduce erosion from wind and water To increase soil organic matter To manage excess nutrients in the soil profile To promote biological nitrogen fixation To increase biodiversity Weed suppression To provide supplemental forage To manage soil moisture 	<ul style="list-style-type: none"> Control growth of the cover crop to reduce competition from volunteer plants and shading. Control weeds in the cover crop by mowing or herbicide application Avoid cover crop species that attract potentially damaging insects.

Conservation Practices Summary Table (continued)

FSA CRP Conservation Practices		NRCS National Conservation Practice Standards			
CP	Practice	Practice Code	Practice	Purpose	Maintenance
22 and 23	Riparian Buffer and Wetland Restoration	643	Restoration and Management of Declining Habitat	<ul style="list-style-type: none"> To restore land or aquatic habitats degraded by human activity To provide habitat for rare and declining wildlife species by restoring and conserving native plant communities To increase native plant community diversity To manage unique or declining native habitats 	<ul style="list-style-type: none"> Where feasible, prescribed burning should be utilized instead of mowing. Management measures must be provided to control invasive species and noxious weeds. Species used in restoration should be suitable for the planned purpose. Only certified, high quality, and ecologically adapted native seed and plant material should be used. Proper planting dates, and care in handling and planting of the seed or plant material will ensure that established vegetation will have an acceptable rate of survival. Site preparation should be sufficient for establishment and growth of selected species. Timing and use of equipment should be appropriate for the site and soil conditions.
4D and 3A	Permanent Wildlife Habitat- Non-easement, and Hardwood Tree Planting	645	Upland Wildlife Habitat Management	<ul style="list-style-type: none"> To provide a variety of food for the desired kinds of wildlife species To provide a variety of cover types for the desired kinds of wildlife species, examples include nesting, fawning, loafing, resting, escape, travel lanes, and thermal To provide drinking water for the desired kinds of wildlife species To arrange habitat elements in proper amounts and locations to benefit desired species To manage the wildlife habitat to achieve a viable wildlife population within the specie's home range 	<ul style="list-style-type: none"> The use of native plant materials should be encouraged. Biological control of undesirable plant species and pests (e.g., using predator or parasitic species) should be implemented where available and feasible. Proper timing of haying and livestock grazing should avoid periods when upland wildlife are nesting, fawning, etc. and should allow for the establishment, development, and management of upland vegetation for the intended purpose. Spraying or other control of noxious weeds should be done on a "spot" basis. Grazing and haying should be conducted to maintain or improve vegetation structure and composition so as to improve the desired wildlife habitat

Conservation Practices Summary Table (continued)

FSA CRP Conservation Practices		NRCS National Conservation Practice Standards			
CP	Practice	Practice Code	Practice	Purpose	Maintenance
23	Wetland Restoration	657	Wetland Restoration	<ul style="list-style-type: none"> To restore hydric soil conditions, hydrologic conditions, hydrophytic plant communities, and wetland functions that occurred on the disturbed wetland site prior to modification to the extent practicable 	<ul style="list-style-type: none"> A permanent water supply should be available approximating the needs of the wetlands. A functional assessment (Hydrogeomorphic Approach or similar method) should be performed on the site prior to restoration. The vegetation should be restored, as close to the original natural plant community as the restored site conditions will allow. Adjust timing and level setting of water control structures required for the establishment of desired hydrologic conditions or for management of vegetation. Develop inspection schedule for embankments and structures for damage assessment. Monitor depth of sediment accumulation to be allowed before removal is required.
4D, 21, and 22	Permanent Wildlife Habitat- Non-easement, Filter Strips and Riparian Buffer	658	Wetland Creation	<ul style="list-style-type: none"> To create wetlands that have wetland hydrology, hydrophytic plant communities, hydric soil conditions, and wetland functions and/or values 	<ul style="list-style-type: none"> Created wetlands should only be located where the soils, hydrology, and vegetation can be modified to meet the current NRCS criteria for a wetland. Establish vegetative buffers on surrounding uplands to reduce sediment and soluble and sediment-attached substances carried by runoff and/or wind. Timing and level setting of water control structures should be established to reach the desired hydrologic conditions or for management of vegetation. Inspection of embankments should be done at regular intervals. The depth of sediment accumulation to be allowed before removal should be determined prior to wetland creation. Haying and grazing should be managed to protect and enhance established and emerging vegetation.

Conservation Practices Summary Table (continued)

FSA CRP Conservation Practices		NRCS National Conservation Practice Standards			
CP	Practice	Practice Code	Practice	Purpose	Maintenance
22, 3A, 4D, 23, and 21	Riparian Buffer, Hardwood Tree Planting, Permanent Wildlife Habitat- Non-easement, Wetland Restoration, and Filter Strips	395	Stream Habitat Improvement and management	<ul style="list-style-type: none"> To provide suitable habitat for desired aquatic species and diverse aquatic communities To provide channel morphology and associated riparian characteristics important to desired aquatic species 	<ul style="list-style-type: none"> Establish soil conservation, nutrient management, pesticide management practices, and other management techniques for non point sources of pollution. Restore or protect riparian and floodplain vegetation and associated riverine wetlands. Maintain suitable flows for aquatic species and channel maintenance If needed, improve floodplain-to-channel connectivity including off-channel habitats.
5A and 21	Field Windbreak Establishment- Non-easement and Filter Strips	386	Field Border	<ul style="list-style-type: none"> To reduce erosion from wind and water To protect soil and water quality To manage harmful insect populations To provide wildlife food and cover 	<ul style="list-style-type: none"> Field borders should be established around the field edges and should be seeded with adapted species of permanent grass, legumes, and/or shrubs. Repair storm damage. Remove sediment when 6 inches of sediment have accumulated at the field border/cropland interface. Shut off sprayers and raise tillage equipment to avoid damage to field borders. Shape and reseed border areas damaged by chemicals, tillage or equipment traffic Fertilize, mow, harvest, and control noxious weeds to maintain plant vigor. Ephemeral gullies and rills that develop in the border should be filled and reseeded.

Conservation Practices Summary Table (continued)

FSA CRP Conservation Practices		NRCS National Conservation Practice Standards			
CP	Practice	Practice Code	Practice	Purpose	Maintenance
21 and 4D	Filter Strips, and Permanent Wildlife Habitat- Non-easement	393A	Filter Strip	<ul style="list-style-type: none"> To reduce sediment, particulate organics, and sediment adsorbed contaminant loadings in runoff To reduce dissolved contaminant loadings in runoff To reduce sediment, particulate organics, and sediment adsorbed contaminant loadings in surface irrigation tailwater To restore, create or enhance herbaceous habitat for wildlife and beneficial insects To maintain or enhance watershed functions and values 	<ul style="list-style-type: none"> Permanent filter strip vegetative plantings should be harvested as appropriate to encourage dense growth, maintain an upright growth habit, and remove nutrients and other contaminants that are contained in the plant tissue. Undesired weed species, especially state-listed noxious weeds, should be controlled with spot spraying of herbicide. Prescribed burning may be used to manage and maintain the filter strip when an approved burn plan has been developed. Prescribed burning may be used to manage and maintain the filter strip when an approved burn plan has been developed.
22, 3A, 4D, and 21	Riparian Buffer, Hardwood Tree Planting, Permanent Wildlife Habitat- Non-easement, and Filter Strips	391	Riparian Forest Buffer	<ul style="list-style-type: none"> To create shade to lower water temperatures to improve habitat for aquatic organisms To provide a source of detritus and large woody debris for aquatic and terrestrial organisms. Create wildlife habitat and establish wildlife corridors To reduce excess amounts of sediment, organic material, nutrients and pesticides in surface runoff and reduce excess nutrients and other chemicals in shallow ground water flow To provide protection against scour erosion within the floodplain. To restore natural riparian plant communities 	<ul style="list-style-type: none"> The riparian forest buffer should be inspected periodically and protected from adverse impacts Replacement of dead trees or shrubs and control of undesirable vegetative competition should continue until the buffer is, or will progress to, a fully functional condition. An adjacent filter strip should be used to control excessive erosion and sediment deposition within the stream.

Conservation Practices Summary Table (continued)

FSA CRP Conservation Practices		NRCS National Conservation Practice Standards			
CP	Practice	Practice Code	Practice	Purpose	Maintenance
22, 4D, and 21	Riparian Buffer, Permanent Wildlife Habitat- Non-easement, and Filter Strips	390	Riparian Herbaceous Cover	<ul style="list-style-type: none"> To intercept direct solar radiation to help maintain or restore suitable water temperatures for fish and other aquatic organisms To improve and protect water quality by reducing the amount of sediment and other pollutants, such as pesticides, organic, and nutrients in surface runoff as well as nutrients and chemicals in shallow ground water flow To provide food for aquatic insects that are important food items for fish. To help stabilize the channel bed and stream bank. To serve as corridors between existing habitats 	<ul style="list-style-type: none"> Plant species selected must be adapted to the duration of saturation and inundation of the site. Upland erosion control measures should be put into place in order to slow the movement of soil and other debris in order to maintain riparian function. The use of any fertilizers, pesticides or other chemicals in the riparian area should be used only when necessary.
21	Filter Strips	601	Vegetative Barrier	<ul style="list-style-type: none"> To reduce sheet and rill erosion To reduce ephemeral gully erosion To manage water flow To stabilize steep slopes To trap sediment 	<ul style="list-style-type: none"> All tillage and equipment operations in the interval between barriers should be parallel to the vegetative barrier. Obstructions, such as trees and debris that interfere with vegetative growth and maintenance, should be removed to improve vegetation establishment and alignment. Mowing may be used as a management practice to encourage the development of a dense stand and prevent shading of crops in adjacent fields. Weed control should be accomplished by mowing or by spraying or wick application of labeled herbicides. Crop tillage and planting operations should be parallel with the vegetative barrier. Washouts or rills that develop should be filled and replanted immediately.

Conservation Practices Summary Table (continued)

FSA CRP Conservation Practices		NRCS National Conservation Practice Standards			
CP	Practice	Practice Code	Practice	Purpose	Maintenance
4D	Permanent Wildlife Habitat-Non-easement	659	Wetland Enhancement	<ul style="list-style-type: none"> To modify the hydrologic condition, hydrophytic plant communities, and/or other biological habitat components of a wetland for the purpose of favoring specific wetland functions or values. For example; managing site hydrology for waterfowl or amphibian use, or managing plant community composition for native wetland hay production 	<ul style="list-style-type: none"> Where possible, native plant materials should be used; however, introduced or cultivated plant species can be used to meet specific project objectives. Biological control of undesirable plant species and pests (e.g., using predator or parasitic species) should be implemented where available and feasible. An inspection schedule for embankments and structures for damage assessment is required. Haying and livestock grazing should be managed to protect and enhance established and emerging vegetation.
4D and 23	Permanent Wildlife Habitat-Non-easement, and Wetland Restoration	644	Wetland Wildlife Habitat Management	<ul style="list-style-type: none"> To maintain, develop, or improve habitat for waterfowl, fur-bearers, or other wetland associated flora and fauna 	<ul style="list-style-type: none"> Native plants should be used wherever possible. Haying and livestock grazing plans should be developed so as to allow the establishment, development, and management of wetland and associated upland vegetation for the intended purpose. Biological control of undesirable plant species and pests (e.g., using predator or parasitic species) shall be implemented where available and feasible.
5A	Field Windbreak Establishment, Non-easement	650	Windbreak – Shelterbelt Renovation	<ul style="list-style-type: none"> To restore or enhance the original planned function of existing windbreaks or shelterbelts 	<ul style="list-style-type: none"> Replacement of dead trees or shrubs until the barrier is functional Provide supplemental water as needed. Thin or prune the barrier to maintain its function Inspect trees and shrubs from the adverse affects of insects, diseases or competing vegetation. Trees or shrubs should be protected from fire and damage from livestock and wildlife. Periodic applications of nutrients may be needed to maintain plant vigor.

Conservation Practices Summary Table (continued)

FSA CRP Conservation Practices		NRCS National Conservation Practice Standards			
CP	Practice	Practice Code	Practice	Purpose	Maintenance
5A	Field Windbreak Establishment, Non-easement	603	Herbaceous Wind Barriers	<ul style="list-style-type: none"> To reduce soil erosion from wind To Protect growing crops from damage by wind-borne soil particles To manage snow to increase plant available moisture for plants To provide food and cover for wildlife 	<ul style="list-style-type: none"> Annual barriers will be managed so barriers are of sufficient height and condition to meet their intended purpose. Gaps in perennial barriers should be replanted as soon as practical to maintain barrier effectiveness. Perennial barriers should be fertilized as needed, and weeds controlled by cultivation or chemical spot treatments. Barriers composed of perennial vegetation that are designed to enhance wildlife habitat should not be mowed unless their height or width exceeds that required to achieve the barrier purpose, or they become competitive with the adjoining land use. Mowing, if necessary, should be done during the non-nesting season. The use of prescribed burning to enhance plant vigor may be completed after nesting/resting periods.
3A, 4D, and 22	Hardwood Tree Planting, Permanent Wildlife Habitat- Non-easement, and Riparian Buffer	612	Tree/Shrub Establishment	<ul style="list-style-type: none"> To establish woody plants for forest products, wildlife habitat, long-term erosion control and improvement of water quality, treat waste, reduction of air pollution, sequestration of carbon, energy conservation, and enhance aesthetics 	<ul style="list-style-type: none"> Competing vegetation should be controlled until the woody plants are established. Noxious weeds should be controlled. Replant when survival is inadequate Supplemental water should be provided as needed. Trees and shrubs should be inspected periodically and protected from adverse impacts including insects, diseases, competing vegetation, fire, and damage from livestock or wildlife. Periodic applications of nutrients may be needed to maintain plant vigor

Appendix C

Threatened, Endangered and Specially Listed Species

Ohio's Special Concern (SC) and Special Interest (SI) Species

Birds

Name	Latin Name	Occurrence in the CREP Area		Reference
Sharp-shinned Hawk (SC)	<i>Accipiter striatus</i>	confirmed		Ohio DNR, Division of Wildlife
Northern Pintail (SC)	<i>Anas acuta</i>	confirmed		Ohio DNR, Division of Wildlife
Northern Shoveler (SI)	<i>Anas clypeata</i>	possible		Ohio DNR, Division of Wildlife
Green-winged Teal (SI)	<i>Anas crecca</i>	confirmed		Ohio DNR, Division of Wildlife
Gadwall (SI)	<i>Anas strepera</i>	Adjacent watershed-Cuyahoga		Ohio DNR, Division of Wildlife
Redhead (SI)	<i>Aythya americana</i>	Confirmed		Ohio DNR, Division of Wildlife
Sedge Wren (SC)	<i>Cistothorus platensis</i>	Confirmed		Ohio DNR, Division of Wildlife
Magnolia Warbler (SI)	<i>Dendroica magnolia</i>	Confirmed		Ohio DNR, Division of Wildlife
Common Snipe (SI)	<i>Gallinago gallinago</i>	Possible		Ohio DNR, Division of Wildlife
Mourning Warbler (SI)	<i>Oporornis philadelphia</i>	Possible		Ohio DNR, Division of Wildlife
Ruddy Duck (SI)	<i>Oxyura jamaicensis</i>	Possible		Ohio DNR, Division of Wildlife
Sora Rail (SC)	<i>Porzana carolina</i>	Possible		Ohio DNR, Division of Wildlife
Virginia Rail (SC)	<i>Rallus limicola</i>	Possible		Ohio DNR, Division of Wildlife
Western Meadowlark (SI)	<i>Sturnella neglecta</i>	Possible		Ohio DNR, Division of Wildlife
Canada Warbler (SI)	<i>Wilsonia canadensis</i>	Possible		Ohio DNR, Division of Wildlife

Mammals

Name	Latin Name	Occurrence in the CREP Area		Reference
Badger (SC)	<i>Taxidea Taxa</i>	Confirmed		Ohio DNR, Division of Wildlife

Reptiles

Name	Latin Name	Occurrence in the CREP Area		Reference
Eastern Fox Snake (SC)	<i>Elaphe vulpina gloydi</i>	Confirmed		Ohio DNR, Division of Wildlife
Blanding's Turtle (SC)	<i>Emydoidea blandingii</i>	Confirmed		Ohio DNR, Division of Wildlife
Melanistic Garter Snake (SC)	<i>Thamnophis sirtalis</i>	Confirmed		Ohio DNR, Division of Wildlife

Amphibians

Name	Latin Name	Occurrence in the CREP Area		Reference
Four-toed Salamander (SC)	<i>Hemidactylium scutatum</i>	Possible		Ohio DNR, Division of Wildlife

Ohio's Special Concern (SC) and Special Interest (SI) Species

Fish				
Name	Latin Name	Occurrence in the CREP Area		Reference
Eastern Sand Darter (SC)	<i>Ammocrypta pellucida</i>	Possible	Ohio DNR, Division of Wildlife	
Muskellunge (SC)	<i>Esox masquinongy</i>	Possible	Ohio DNR, Division of Wildlife	
Iowa Darter (SC)	<i>Etheostoma exile</i>	Possible	Ohio DNR, Division of Wildlife	
River Redhorse (SC)	<i>Moxostoma carinatum</i>	Possible	Ohio DNR, Division of Wildlife	
Lake Whitefish (SC)	<i>Coregonus clupeaformis</i>	Possible	Ohio DNR, Division of Wildlife	
Mollusks				
Name	Latin Name	Occurrence in the CREP Area		Reference
Wavy-rayed Lampmussel (SC)	<i>Lampsilis fasciola</i>	Possible	Ohio DNR, Division of Wildlife	
Deertoe (SC)	<i>Truncilla truncata</i>	Possible	Ohio DNR, Division of Wildlife	
Purple Wartyback (SC)	<i>Cyclonaias tuberculata</i>	Possible	http://www.inhs.uiuc.edu/cbd/musselmanual/page48_9.html	
Round Pigtoe (SC)	<i>Pleurobema sintoxia</i>	Possible	Ohio DNR, Division of Wildlife	

Ohio's Threatened Species

Birds

Name	Latin Name	Occurrence in the CREP Area	Reference
Upland sandpiper	<i>Bartramia longicauda</i>	confirmed	Ohio DNR, Division of Wildlife
Black-crowned night-heron	<i>Nycticorax nycticorax</i>	confirmed	Ohio DNR, Division of Wildlife
Yellow-crowned night-heron	<i>Nyctanassa violacea</i>	possible	Ohio DNR, Division of Wildlife
Barn owl	<i>Tyto alba</i>	confirmed	Ohio DNR, Division of Wildlife
Dark-eyed junco	<i>Junco hyemalis</i>	Adjacent watershed-Cuyahoga	Ohio DNR, Division of Wildlife
Hermit thrush	<i>Catharus guttatus</i>	Confirmed	Ohio DNR, Division of Wildlife
Least bittern	<i>Ixobrychus exilis</i>	Confirmed	Ohio DNR, Division of Wildlife
Least flycatcher	<i>Empidonax minimus</i>	Confirmed	Ohio DNR, Division of Wildlife

Reptiles

Name	Latin Name	Occurrence in the CREP Area	Reference
Kirtland's snake	<i>Clonophis kirtlandii</i>	Possible	Ohio DNR, Division of Wildlife
Spotted turtle	<i>Clemmys guttata</i>	Possible	Ohio DNR, Division of Wildlife

Amphibians

Name	Latin Name	Occurrence in the CREP Area	Reference
Mud salamander	<i>Pseudotriton montanus</i>	No	Ohio DNR, Division of Wildlife

Fishes

Name	Latin Name	Occurrence in the CREP Area	Reference
Brook trout	<i>Salvelinus fontinalis</i>	Adjacent- Ashtabula County	Ohio DNR, Division of Wildlife
Bigeye shiner	<i>Notropis boops</i>	Confirmed	http://nas.er.usgs.gov/queries/SpFactSheet.asp?SpeciesID=587
Tonguetied minnow	<i>Exoglossum laurae</i>	No	http://nas.er.usgs.gov/queries/SpFactSheet.asp
Greater redhorse	<i>Moxostoma valenciennesi</i>	Possible	Ohio DNR, Division of Wildlife
Channel darter	<i>Percina copelandi</i>	Probable	http://www.speciesatrisk.gc.ca/search/speciesDetails_e.cfm?SpeciesID=74
American eel	<i>Anguilla rostrata</i>	Confirmed	Ohio Department of Game and Fish website
Paddlefish	<i>Polyodon spathula</i>	Possible	Ohio DNR, Division of Wildlife
Rosyside dace	<i>Clinostomus funduloides</i>	No	http://www.dnr.state.oh.us/dnap/rivfish/rosyside.html
Bigmouth shiner	<i>Notropis dorsalis</i>	Confirmed	http://nas.er.usgs.gov/queries/SpFactSheet.asp?SpeciesID=593
Lake chubsucker	<i>Erimyzon sucetta</i>	Possible in Cuyahoga, rare	http://linuxgurrl.agr.gc.ca/mapdata/itis/itisrosa.php
River darter	<i>Percina shumardi</i>	Probable, rare, wide range	http://linuxgurrl.agr.gc.ca/mapdata/itis/itisrosa.php
Bluebreast darter	<i>Etheostoma camurum</i>	Probable	http://linuxgurrl.agr.gc.ca/mapdata/itis/itisrosa.php
Tippecanoe darter	<i>Etheostoma tippecanoe</i>	Unknown Muskingum River	Ohio DNR, Division of Wildlife

Ohio's Threatened Species (continued)

Mollusks

Name	Latin Name	Occurrence in the CREP Area	Reference
Black sandshell	Ligumia recta	No	http://www.inhs.uiuc.edu/cbd/musselmanual/page136_7.html
Threehorn wartyback	Obliquaria reflexa	No	http://www.inhs.uiuc.edu/cbd/musselmanual/page100_1.html
Fawnsfoot	Truncilla donaciformis	No	http://www.inhs.uiuc.edu/cbd/musselmanual/page116_7.html
Pondhorn	Unimerus tetralasmus	Possible	No information

Insects

Name	Latin Name	Occurrence in the CREP Area	Reference
DRAGONFLIES			
Rifle snaketail	Ophiogomphus carolus	Possible	Ohio DNR, Division of Wildlife
DAMSELFLIES			
River jewelwing	Calopteryx aequabilis	Possible	Ohio DNR, Division of Wildlife
CADDISFLIES			
	Psilotreta indecisa	Possible	Ohio DNR, Division of Wildlife
	Hydroptila albicornis	Possible	Ohio DNR, Division of Wildlife
	Hydroptila artesa	Possible	Ohio DNR, Division of Wildlife
	Hydroptila koryaki	Possible	Ohio DNR, Division of Wildlife
	Hydroptila talledaga	Possible	Ohio DNR, Division of Wildlife
	Hydroptila valhalla	Possible	Ohio DNR, Division of Wildlife
MIDGES			
	Bethbilbeckia floridensis	Possible	Ohio DNR, Division of Wildlife
	Apsectrotanypus johnsoni	Possible	Ohio DNR, Division of Wildlife
	Radotanypus florens	Possible	Ohio DNR, Division of Wildlife
BUTTERFLIES			
Silver-bordered fritillary	Boloria selene	Possible	Ohio DNR, Division of Wildlife
MOTHS			
Wayward nymph	Catocala antinympha	Possible	Ohio DNR, Division of Wildlife
	Spartiniphaga panatela	Possible	Ohio DNR, Division of Wildlife
	Fagitana littera	Possible	Ohio DNR, Division of Wildlife
The pink-streak	Faronta rubripennis	Possible	Ohio DNR, Division of Wildlife
BETLES			
	Cicindela hirticollis	Possible	Ohio DNR, Division of Wildlife
Cobblestone tiger beetle	Cicindela marginipennis	Possible	Ohio DNR, Division of Wildlife

Ohio's Endangered Species

Mammals

Name	Latin Name	Occurrence in the CREP Area		Reference
Indiana Bat	Myotis sodalis	Probable		http://www.batcon.org/discover/species/mysodal.html
Allegheny woodrat	Neotoma magister	Possible		http://www.natureserve.org/explorer/servlet/NatureServe?searchName=NEOTOMA+MAGISTER+
Bobcat	Felis rufus	Possible		eastern, southeastern, and south-central regions of Ohio
Black Bear	Ursus americanus	Possible		south-central and southeastern Ohio
Snowshoe hare	Lepus americanus	Probable		http://www.museum.state.il.us/exhibits/larson/LSamrange.html

Birds

Name	Latin Name	Occurrence in the CREP Area		Reference
American bittern	Botaurus lentiginosus	Confirmed		Ohio DNR, Division of Wildlife
Bald eagle *T	Haliaeetus leucocephalus	Confirmed		Ohio DNR, Division of Wildlife
Northern harrier	Circus cyaneus	Possible		Ohio DNR, Division of Wildlife
Peregrine falcon	Falco peregrinus	Confirmed		Ohio DNR, Division of Wildlife
King rail	Rallus elegans	Confirmed		Ohio DNR, Division of Wildlife
Sandhill crane	Grus canadensis	Confirmed		Wayne and Ashland Counties
Piping plover *E	Charadrius melodus	Confirmed		http://linuxgurr1.agr.gc.ca/mapdata/itis/itisrosa.php
Common tern	Sterna hirundo	Confirmed		Ohio DNR, Division of Wildlife
Black tern	Chlidonias niger	Confirmed		Ohio DNR, Division of Wildlife
Yellow-bellied sapsucker	Sphyrapicus varius	Possible		Ohio DNR, Division of Wildlife
Bewick's wren	Thryomanes bewickii	Possible		Ohio DNR, Division of Wildlife
Loggerhead shrike	Lanius ludovicianus	Confirmed		Ohio DNR, Division of Wildlife
Golden-winged warbler	Vermivora chrysoptera	Confirmed		Ohio DNR, Division of Wildlife
Kirtland's warbler *E	Dendroica kirtlandii	Possible (transient)	extremely rare	Ohio DNR, Division of Wildlife
Lark sparrow	Chondestes grammacus	Confirmed		Ohio DNR, Division of Wildlife
Osprey	Pandion haliaetus	Confirmed		Ohio DNR, Division of Wildlife
Trumpeter swan	Cygnus buccinator	Confirmed		Ohio DNR, Division of Wildlife
Snowy egret	Egretta thula	Confirmed		rookery in western Lake Erie
Cattle egret	Bubulcus ibis	Confirmed		Ohio DNR, Division of Wildlife

Reptiles

Name	Latin Name	Occurrence in the CREP Area		Reference
Copperbelly water snake	Nerodia erythrogaster neglecta	Confirmed		Ohio DNR, Division of Wildlife
Plains Garter Snake	Thamnophis radix radix	Confirmed		Ohio DNR, Division of Wildlife
Timber rattlesnake	Crotalus horridus horridus	Possible		Ohio DNR, Division of Wildlife
Eastern massasauga	Sistrurus catenatus	Confirmed		Ohio DNR, Division of Wildlife
Lake Erie water snake	Nerodia sipedon insularum	Confirmed,	Islands of Lake Erie	Ohio DNR, Division of Wildlife

Ohio's Endangered Species (continued)

Amphibians

Name	Latin Name	Occurrence in the CREP Area		Reference
Eastern hellbender	Cryptobranchus alleganiensis alleganiensis	Possible		Ohio DNR, Division of Wildlife

Blue spotted salamander	Ambystoma laterale	Confirmed	Ohio Fish and Game
Green salamander	Aneides aeneus	Possible	extreme southern Ohio
Cave salamander	Eurycea lucifuga	Possible	southwest Ohio
Eastern spadefoot	Scaphiopus holbrookii	Possible	central-southeastern Ohio

Fishes

Name	Latin Name	Occurrence in the CREP Area	Reference
Ohio lamprey	Ichthyomyzon bdellium	Possible, Ohio River drainage	Ohio DNR, Division of Wildlife
Northern brook lamprey	Ichthyomyzon fossor	Confirmed	http://linuxgurrl.agr.gc.ca/mapdata/itis/itisrosa.php
Mountain brook lamprey	Ichthyomyzon greeleyi	Possible	http://www.dlia.org/atbi/species/animals/vertebrates/fish/Petromyzontidae/I_greeleyi.html
Lake sturgeon	Acipenser fulvescens	Confirmed	Ohio DNR, Division of Wildlife
Shovelnose sturgeon	Scaphirhynchus platyrhynchus	Possible	Ohio DNR, Division of Wildlife
Spotted gar	Lepisosteus oculatus	Confirmed	http://nas.er.usgs.gov/queries/SpFactSheet.asp
Shortnose gar	Lepisosteus platostomus	Possible	http://nas.er.usgs.gov/queries/SpFactSheet.asp
Cisco (or Lake herring)	Coregonus artedii	Confirmed	http://www.seagrant.wisc.edu/greatlakesfish/flakeherring1.html
Goldeye	Hiodon alosoides	Confirmed	http://www.enature.com/fieldguide/showSpeciesSH.asp
Speckled chub	Macrhybopsis aestivalis	Possible	http://linuxgurrl.agr.gc.ca/mapdata/itis/itisrosa.php
Pugnose minnow	Opsopoeodus emiliae	Confirmed	http://linuxgurrl.agr.gc.ca/mapdata/itis/itisrosa.php
Popeye shiner	Notropis ariomus	Possible	Ohio DNR, Division of Wildlife
Blackchin shiner	Notropis heterodon	Possible	http://fish.dnr.cornell.edu/nyfish/Cyprinidae/blackchinshiner.html
Blacknose shiner	Notropis heterolepis	Confirmed	http://linuxgurrl.agr.gc.ca/mapdata/itis/itisrosa.php
Mississippi silvery minnow	Hybognathus nuchalis	Possible	http://linuxgurrl.agr.gc.ca/mapdata/itis/itisrosa.php
Blue sucker	Cycleptus elongatus	Possible	http://linuxgurrl.agr.gc.ca/mapdata/itis/itisrosa.php
Longnose sucker	Catostomus catostomus	Confirmed	http://linuxgurrl.agr.gc.ca/mapdata/itis/itisrosa.php
Blue catfish	Ictalurus furcatus	Possible	http://linuxgurrl.agr.gc.ca/mapdata/itis/itisrosa.php
Mountain madtom	Noturus eleutherus	Possible	http://linuxgurrl.agr.gc.ca/mapdata/itis/itisrosa.php
Northern madtom	Noturus stigmosus	Confirmed	http://linuxgurrl.agr.gc.ca/mapdata/itis/itisrosa.php
Scioto madtom *E	Noturus trautmani	Possible	http://linuxgurrl.agr.gc.ca/mapdata/itis/itisrosa.php ; possibly occurs in Scioto County
Pirate perch	Aphredoderus sayanus	Possible	http://linuxgurrl.agr.gc.ca/mapdata/itis/itisrosa.php
Western banded killifish	Fundulus diaphanus menona	Confirmed	http://drysedale.kgs.ku.edu/website/Specimen_Mapper/mxmapit.cfm http://64.95.130.5/map/kgs/temp/11162920040916.xml
Spotted darter	Etheostoma maculatum	Possible	http://www.dec.state.ny.us/website/dfwmr/wildlife/endspec/spotdarter.html

Ohio's Endangered Species (continued)

Mollusk

Name	Latin Name	Occurrence in the CREP Area	Reference
Snuffbox	Epioblasma triquetra	Confirmed	http://www.inhs.uiuc.edu/cbd/musselmanual/page162_3.html
Ebonyshele	Fusconaia ebena	Possible	http://www.inhs.uiuc.edu/cbd/musselmanual/page42_3.html
Fanshell	Cyprogenia stegaria	Possible	http://www.inhs.uiuc.edu/cbd/musselmanual/page102_3.html
Butterfly	Ellipsaria lineolata	Possible	http://www.inhs.uiuc.edu/cbd/musselmanual/page106_7.html

Elephant-ear	<i>Elliptio crassidens crassidens</i>	Possible	http://www.inhs.uiuc.edu/cbd/musselmanual/page66_7.html
Purple catspaw *E	<i>Epioblasma o. obliquata</i>	Confirmed	http://www.inhs.uiuc.edu/cbd/musselmanual/page164_5.html
White catspaw *E	<i>Epioblasma obliquata perobliqua</i>	Possible	Ohio DNR, Division of Wildlife
Northern riffleshell *E	<i>Epioblasma torulosa rangiana</i>	Confirmed, extremely rare	http://www.inhs.uiuc.edu/cbd/musselmanual/page166_7.html
Long-solid	<i>Fusconaia maculata maculata</i>	Possible	http://www.inhs.uiuc.edu/cbd/musselmanual/page44_5.html
Pink mucket *E	<i>Lampsilis orbiculata</i>	Possible	Recently rediscovered in the Ohio river
Sharp-ridged pocketbook	<i>Lampsilis ovata</i>	Possible	http://www.inhs.uiuc.edu/cbd/musselmanual/page158_9.html
Yellow sandshell	<i>Lampsilis teres</i>	Possible	http://www.inhs.uiuc.edu/cbd/musselmanual/page148_9.html
Eastern pondmussel	<i>Ligumia nasuta</i>	Confirmed	http://www.eman-rese.ca/eman/reports/publications/nm97_mussels/map24.htm
Washboard	<i>Megaloniais nervosa</i>	Possible	http://www.inhs.uiuc.edu/cbd/musselmanual/page24_5.html
Sheepnose	<i>Plethobasus cyphus</i>	Confirmed	http://www.inhs.uiuc.edu/cbd/musselmanual/page50_1.html
Clubshell *E	<i>Pleurobema clava</i>	Confirmed	http://www.inhs.uiuc.edu/cbd/musselmanual/page56_7.html
Ohio pigtoe	<i>Pleurobema cordatum</i>	Possible	http://www.inhs.uiuc.edu/cbd/musselmanual/page62_3.html
Pyramid pigtoe	<i>Pleurobema rubrum</i>	Possible	http://www.inhs.uiuc.edu/cbd/musselmanual/page64_5.html
Rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>	Confirmed	http://www.inhs.uiuc.edu/cbd/musselmanual/page64_5.html
Monkeyface	<i>Quadrula metanevra</i>	Possible	http://www.inhs.uiuc.edu/cbd/musselmanual/page34_5.html
Wartyback	<i>Quadrula nodulata</i>	Possible	http://www.inhs.uiuc.edu/cbd/musselmanual/page36_7.html
Purple lilliput	<i>Toxolasma lividus</i>	Possible	http://www.inhs.uiuc.edu/cbd/musselmanual/page132_3.html
Rayed bean	<i>Villosa fabalis</i>	Confirmed	http://www.inhs.uiuc.edu/cbd/musselmanual/page142_3.html
Little spectaclecase	<i>Villosa lienosa</i>	Possible	http://www.inhs.uiuc.edu/cbd/musselmanual/page146_7.html

Ohio's Endangered Species (continued)

Dragonflies

Name	Latin Name	Occurrence in the CREP Area	Reference
Hine's emerald *E	<i>Somatochlora hineana</i>	Extirpated	http://www.michigandnr.com/publications/pdfs/huntingwildlifehabitat/abstracts/zoology/somatochlora_hineana.pdf ; extirpated in Ohio
Mottled darner	<i>Aeshna clepsydra</i>	Confirmed (1999)	http://www.marietta.edu/~odonata/species/103.html
Plains clubtail	<i>Gomphus externus</i>	Confirmed	http://www.marietta.edu/~odonata/species/34.html
American emeral	<i>Cordulia shurtleffi</i>	Possible	http://www.marietta.edu/~odonata/species/166.htm ; Geauga and Portage Counties
Uhler's sundragon	<i>Helocordulia uhleri</i>	Possible	http://www.marietta.edu/~odonata/species/odolist.html
Frosted whiteface	<i>Leucorrhinia frigida</i>	Possible	http://www.marietta.edu/~odonata/species/odolist.html
Elfin skimmer	<i>Nannothemis bella</i>	Confirmed	http://www.marietta.edu/~odonata/species/171.html
Canada darner	<i>Aeshna canadensis</i>	Confirmed	http://www.marietta.edu/~odonata/species/108.html
Racket-tailed emerald	<i>Dorocordulia libera</i>	Possible	http://www.marietta.edu/~odonata/species/167.html
Brush-tipped emerald	<i>Somatochlora walshii</i>	Possible	http://static.highbeam.com/t/theohiojournalofscience/june012002/somatochlorawalshiiodonatacorduliidaeaneuwaterreco/ ; Astabula and portage Counties
Blue corporal	<i>Ladona deplanata</i>	Possible	Ohio DNR, Division of Wildlife
Chalk-fronted corpora	<i>Ladona julia</i>	Possible	Ohio DNR, Division of Wildlife
Yellow-sided skimmer	<i>Libellula flavida</i>	Possible	Ohio DNR, Division of Wildlife

Damselflies

Name	Latin Name	Occurrence in the CREP Area	Reference
Lilypad forktail	<i>Ischnura kellicotti</i>	Possible	Ohio DNR, Division of Wildlife
Seepage dancer	<i>Argia bipunctulata</i>	Possible	Ohio DNR, Division of Wildlife

Caddisflies

Name	Latin Name	Occurrence in the CREP Area	Reference
	<i>Chimarra socia</i>	Possible	Ohio DNR, Division of Wildlife
	<i>Oecetis eddlestoni</i>	Possible	Ohio DNR, Division of Wildlife
	<i>Brachycentrus numerosus</i>	Possible	Ohio DNR, Division of Wildlife

Mayflies

Name	Latin Name	Occurrence in the CREP Area	Reference
	<i>Rhithrogena pellucida</i>	Possible	Ohio DNR, Division of Wildlife
	<i>Litobrancha recurvata</i>	Possible	Ohio DNR, Division of Wildlife

Midges

Name	Latin Name	Occurrence in the CREP Area	Reference
	<i>Rheopelopia acra</i>	Possible	Ohio DNR, Division of Wildlife

Ohio's Endangered Species (continued)

Butterflies

Name	Latin Name	Occurrence in the CREP Area	Reference
Persius dusky wing	<i>Erynnis persius</i>	Possible	Ohio DNR, Division of Wildlife
Frosted elfin	<i>Incisalia irus</i>	Possible	Ohio DNR, Division of Wildlife
Karner blue*E	<i>Lycaeides melissa samuelis</i>	Possible	Ohio DNR, Division of Wildlife
Purplish copper	<i>Lycaena helloides</i>	Possible	Ohio DNR, Division of Wildlife
Swamp metalmark	<i>Calephelis muticum</i>	Possible	Ohio DNR, Division of Wildlife
Regal fritillary	<i>Speyeria idalia</i>	Possible	Ohio DNR, Division of Wildlife
Grizzled skipper	<i>Pyrgus cantataureae wyandot</i>	Possible	Ohio DNR, Division of Wildlife
Mitchell's satyr *E	<i>Neonympha mitchellii</i>	Possible	Ohio DNR, Division of Wildlife

Moths

Name	Latin Name	Occurrence in the CREP Area	Reference
Unexpected cynthia	<i>Cynthia inopinatus</i>	Possible	Ohio DNR, Division of Wildlife
Graceful underwing	<i>Catocala gracilis</i>	Possible	Ohio DNR, Division of Wildlife
	<i>Spartiniphaga inops</i>	Possible	Ohio DNR, Division of Wildlife
	<i>Hypocoena enervata</i>	Possible	Ohio DNR, Division of Wildlife
	<i>Papaipema silphii</i>	Possible	Ohio DNR, Division of Wildlife
	<i>Papaipema beeriana</i>	Possible	Ohio DNR, Division of Wildlife
	<i>Lithophane semiusta</i>	Possible	Ohio DNR, Division of Wildlife
	<i>Trichoclea artesta</i>	Possible	Ohio DNR, Division of Wildlife
	<i>Tricholita notata</i>	Possible	Ohio DNR, Division of Wildlife
	<i>Melanchra assimilis</i>	Possible	Ohio DNR, Division of Wildlife
Pointed sallow	<i>Epiglaea apiata</i>	Possible	Ohio DNR, Division of Wildlife
	<i>Ufeus plicatus</i>	Possible	Ohio DNR, Division of Wildlife
	<i>Ufeus satyricus</i>	Possible	Ohio DNR, Division of Wildlife
Hebard's noctuid moth	<i>Erythroecia hebardii</i>	Possible	Ohio DNR, Division of Wildlife

Beetles

Name	Latin Name	Occurrence in the CREP Area	Reference
Kramer's cave beetle	<i>Pseudanophthalmus krameri</i>	Possible	Ohio DNR, Division of Wildlife
Ohio cave beetle	<i>Pseudanophthalmus ohioensis</i>	Possible	Ohio DNR, Division of Wildlife
American burying beetle *E	<i>Nicrophorus americanus</i>	Possible	Ohio DNR, Division of Wildlife

OHIO STATE-LISTED ENDANGERED, THREATENED, AND POTENTIALLY LISTED PLANTS

Source: Ohio DNR, Division of Wildlife

Latin Name	Name
<i>Actaea rubra</i>	Red Baneberry (T)
<i>Agalinis gattingeri</i>	Gattinger's-foxglove (T)
<i>Agalinis purpurea</i> var. <i>parviflora</i>	Small Purple-foxglove (E)
<i>Agalinis skinneriana</i>	Skinner's-foxglove (E)
<i>Amelanchier sanguinea</i>	Rock Serviceberry(E)
<i>Ammophila breviligulata</i>	American Beach Grass (T)
<i>Androsace occidentalis</i>	Western Rock-jasmine (T)
<i>Anemone cylindrica</i>	Prairie Thimbleweed (T)
<i>Apocynum sibiricum</i>	Clasping-leaved Dogbane (T)
<i>Arabis divaricarpa</i>	Limestone Rock Cress (E)
<i>Arabis hirsuta</i> var. <i>adpressipilis</i>	Southern Hairy Rock Cress (P)
<i>Arabis hirsuta</i> var. <i>pyncocarpa</i>	Western Hairy Rock Cress (E)
<i>Arabis lyrata</i>	Lyre-leaved Rock Cress (T)
<i>Arabis missouriensis</i>	Missouri Rock Cress (E)
<i>Arenaria lateriflora</i>	Grove Sandwort (P)
<i>Arenaria stricta</i>	Rock Sandwort (P)
<i>Aristida necopina</i>	False Arrow-feather (E)
<i>Aristida purpurascens</i>	Purple Triple-awned Grass (P)
<i>Armoracia lacustris</i>	Lake Cress (T)
<i>Artemisia campestris</i>	Beach Wormwood E
<i>Asclepias amplexicaulis</i>	Blunt-leaved Milkweed P
<i>Asclepias viridiflora</i>	Green Milkweed P
<i>Asclepias viridis</i>	Spider Milkweed P
<i>Aster dumosus</i>	Bushy Aster T
<i>Aster ontarionis</i>	Bottomland Aster T
<i>Astragalus canadensis</i>	Canada Milk-vetch T
<i>Aureolaria pedicularia</i> var. <i>ambigens</i>	Prairie Fern-leaved False Foxglove (E)
<i>Baptisia lactea</i>	Prairie False Indigo P
<i>Barbula indica</i> var. <i>indica</i>	Twisted Teeth Moss E
<i>Betula populifolia</i>	Gray Birch P
<i>Betula pumila</i>	Swamp Birch T
<i>Botrychium multifidum</i>	Leathery Grape Fern T
<i>Botrychium simplex</i>	Least Grape Fern E
<i>Bromus nottowayanus</i>	Satin Brome T
<i>Cakile edentula</i>	Inland Sea Rocket P
<i>Calamintha arkansana</i>	Limestone Savory T
<i>Calopogon tuberosus</i>	Grass-pink T
<i>Campanula rotundifolia</i>	Harebell E
<i>Carex alata</i>	Broad-winged Sedge P
<i>Carex albolutescens</i>	Pale Straw Sedge T
<i>Carex alopecoidea</i>	Northern Fox Sedge E
<i>Carex appalachica</i>	Appalachian Sedge T
<i>Carex aquatilis</i>	Leafy Tussock Sedge P
<i>Carex atherodes</i>	Wheat Sedge P
<i>Carex atlantica</i> ssp. <i>capillacea</i>	Howe's Sedge P
<i>Carex aurea</i>	Golden-fruited Sedge P
<i>Carex bebbii</i>	Bebb's Sedge P
<i>Carex bicknellii</i>	Bicknell's Sedge T
<i>Carex brevior</i>	Tufted Fescue Sedge T
<i>Carex cephaloidea</i>	Thin-leaved Sedge E
<i>Carex conoidea</i>	Field Sedge T
<i>Carex crus-corvi</i>	Raven-foot Sedge T
<i>Carex cryptolepis</i>	Little Yellow Sedge P
<i>Carex diandra</i>	Lesser Panicked Sedge P
<i>Carex garberi</i>	Garber's Sedge E
<i>Carex lasiocarpa</i>	Slender Sedge P
<i>Carex longii</i>	Long's Sedge E
<i>Carex louisianica</i>	Louisiana Sedge E
<i>Carex lucorum</i>	Fire Sedge E
<i>Carex lupuliformis</i>	False Hop Sedge T
<i>Carex merritt-feraldii</i>	Fernald's Sedge E
<i>Carex oligosperma</i>	Few-seeded Sedge T
<i>Carex pallescens</i>	Pale Sedge T
<i>Carex projecta</i>	Necklace Sedge T
<i>Carex pseudocyperus</i>	Northern Bearded Sedge E

OHIO STATE-LISTED ENDANGERED, THREATENED, AND POTENTIALLY LISTED PLANTS (Continued)

<i>Carex retroflexa</i>	Reflexed Sedge P
<i>Carex retrorsa</i>	Reflexed Bladder Sedge E
<i>Carex siccata</i>	Hay Sedge E
<i>Carex sprengelii</i>	Sprengel's Sedge T
<i>Carex straminea</i>	Straw Sedge P
<i>Carex viridula</i>	Little Green Sedge P
<i>Castanea dentata</i>	American Chestnut P
<i>Celtis tenuifolia</i>	Dwarf Hackberry T
<i>Chimaphila umbellata</i>	Pipsissewa T
<i>Clintonia umbellulata</i>	Speckled Wood-lily T
<i>Coeloglossum viride</i>	Long-bracted Orchid E
<i>Comptonia peregrina</i>	Sweet-fern T
<i>Conyza ramosissima</i>	Bushy Horseweed T
<i>Corallorhiza maculata</i>	Spotted Coral-root P
<i>Cornus canadensis</i>	Bunchberry T
<i>Cornus rugosa</i>	Round-leaved Dogwood P
<i>Corydalis sempervirens</i>	Rock-harlequin P
<i>Croton glandulosus</i>	Northern Croton T
<i>Cuscuta coryli</i>	Hazel Dodder E
<i>Cuscuta cuspidata</i> Cuspidate	Dodder E
<i>Cuscuta glomerata</i> Glomerate	Dodder T
<i>Cuscuta pentagona</i>	Five-angled Dodder T
<i>Cycnia inopinatus</i>	Unexpected Cycnia E
<i>Cyperus acuminatus</i>	Pale Umbrella-sedge T
<i>Cyperus diandrus</i>	Low Umbrella-sedge P
<i>Cyperus schweinitzii</i>	Schweinitz' Umbrella-sedge T
<i>Cypripedium candidum</i>	White Lady's-slipper E
<i>Descurainia pinnata</i>	Tansy Mustard T
<i>Desmodium sessilifolium</i>	Sessile Tick-trefoil E
<i>Draba reptans</i>	Carolina Whitlow-grass T
<i>Drosera intermedia</i>	Spathulate-leaved Sundew E
<i>Eleocharis compressa</i>	Flat-stemmed Spike-rush T
<i>Eleocharis engelmannii</i>	Engelmann's Spike-rush E
<i>Eleocharis flavescens</i>	Green Spike-rush T
<i>Eleocharis geniculata</i>	Caribbean Spike-rush E
<i>Eleocharis ovata</i>	Ovate Spike-rush E
<i>Eleocharis quinqueflora</i>	Few-flowered Spike-rush E
<i>Elymus trachycaulus</i>	Bearded Wheat Grass T
<i>Epilobium angustifolium</i>	Fireweed E
<i>Equisetum sylvaticum</i>	Woodland Horsetail P
<i>Equisetum variegatum</i>	Variiegated Scouring-rush E
<i>Eryngium yuccifolium</i>	Rattlesnake-master T
<i>Euphorbia polygonifolia</i>	Seaside Spurge P
<i>Euphorbia serpens</i>	Round-leaved Spurge E
<i>Euthamia remota</i>	Great Lakes Goldenrod T
<i>Gentiana puberulenta</i>	Prairie Gentian E
<i>Gentiana saponaria</i>	Soapwort Gentian E
<i>Gentianopsis crinita</i>	Fringed Gentian P
<i>Gentianopsis procera</i>	Small Fringed Gentian P
<i>Geranium bicknellii</i>	Bicknell's Crane's-bill E
<i>Gratiola virginiana</i>	Round-fruited Hedge-hyssop T
<i>Gymnocarpium dryopteris</i>	Common Oak Fern T
<i>Hedeoma hispida</i>	Rough Pennyroyal P
<i>Hedyotis nigricans</i>	Narrow-leaved Summer Bluets P
<i>Helianthemum bicknellii</i>	Plains Frostweed T
<i>Helianthemum canadense</i>	Canada Frostweed T
<i>Helianthus mollis</i>	Ashy Sunflower T
<i>Helianthus occidentalis</i>	Western Sunflower P
<i>Hieracium canadense</i>	Canada Hawkweed T
<i>Hieracium longipilum</i>	Long-bearded Hawkweed E
<i>Hymenoxys herbacea</i>	Lakeside Daisy E FT
<i>Hypericum canadense</i>	Canada St. John's-wort E
<i>Hypericum gymnanthum</i>	Least St. John's-wort E
<i>Hypericum kalmianum</i> Kalm's	St. John's-wort T
<i>Hypericum majus</i>	Tall St. John's-wort P
<i>Iris brevicaulis</i>	Leafy Blue Flag E
<i>Juglans cinerea</i>	Butternut P

OHIO STATE-LISTED ENDANGERED, THREATENED, AND POTENTIALLY LISTED PLANTS (Continued)

<i>Juncus alpinus</i>	Alpine Rush P
<i>Juncus balticus</i>	Baltic Rush P
<i>Juncus diffusissimus</i>	Diffuse Rush E
<i>Juncus greenei</i>	Greene's Rush E
<i>Juncus interior</i>	Inland Rush E
<i>Juncus platyphyllus</i>	Flat-leaved Rush E
<i>Juniperus communis</i>	Ground Juniper E
<i>Koeleria macrantha</i>	June Grass E
<i>Krigia virginica</i>	Virginia Dwarf-dandelion T
<i>Larix laricina</i>	Tamarack P
<i>Lathyrus ochroleucus</i>	Yellow Vetchling T
<i>Lechea intermedia</i>	Round-fruited Pinweed P
<i>Lechea minor</i>	Thyme-leaved Pinweed T
<i>Lechea pulchella</i>	Leggett's Pinweed T
<i>Lechea villosa</i>	Hairy Pinweed P
<i>Leersia lenticularis</i>	Catchfly Grass E
<i>Liatris squarrosa</i>	Scaly Blazing-star P
<i>Lilium philadelphicum</i>	Wood Lily T
<i>Lilium superbum</i>	Turk's-cap Lily P
<i>Linaria canadensis</i>	Old-field Toadflax E
<i>Lipocarpa drummondii</i>	Drummond's Dwarf Bulrush E
<i>Lipocarpa micrantha</i>	Dwarf Bulrush T
<i>Lithospermum carolinense</i>	Plains Puccoon T
<i>Lupinus perennis</i>	Wild Lupine P
<i>Lycopodiella subappressa</i>	Northern Appressed Club-moss E
<i>Melampyrum lineare</i>	Cow-wheat T
<i>Monarda punctata</i>	Dotted Horsemint E
<i>Moneses uniflora</i>	One-flowered Wintergreen E
<i>Muhlenbergia cuspidata</i>	Plains Muhlenbergia E
<i>Myriophyllum sibiricum</i>	American Water-milfoil T
<i>Nuphar variegata</i>	Bullhead-lily E
<i>Oenothera clelandii</i>	Cleland's Evening-primrose E
<i>Oenothera oakesiana</i>	Oakes' Evening-primrose T
<i>Oenothera parviflora</i>	Small-flowered Evening-primrose T
<i>Opuntia humifusa</i>	Common Prickly Pear P
<i>Oryzopsis racemosa</i>	Mountain-rice T
<i>Panicum bicknellii</i>	Bicknell's Panic Grass T
<i>Panicum boreale</i>	Northern Panic Grass T
<i>Panicum commonsianum</i>	Commons' Panic Grass E
<i>Panicum leibergii</i>	Leiberg's Panic Grass T
<i>Panicum lindheimeri</i>	Lindheimer's Panic Grass E
<i>Panicum meridionale</i>	Southern Hairy Panic Grass T
<i>Panicum perlongum</i>	Long-panicled Panic Grass E
<i>Panicum philadelphicum</i>	Philadelphia Panic Grass E
<i>Panicum praecocius</i>	Early Panic Grass E
<i>Panicum spretum</i>	Narrow-headed Panic Grass E
<i>Panicum tuckermanii</i>	Tuckerman's Panic Grass E
<i>Penstemon pallidus</i>	Downy White Beard-tongue T
<i>Phegopteris connectilis</i>	Long Beech Fern P
<i>Phlox latifolia</i>	Mountain Phlox E
<i>Plagiothecium latebricola</i>	Lurking Leskea T
<i>Plantago patagonica</i>	Woolly Plantain E
<i>Platanthera ciliaris</i>	Yellow Fringed Orchid T
<i>Platanthera flava</i>	Tuberclad Rein Orchid P
<i>Platanthera leucophaea</i>	Prairie Fringed Orchid T FT
<i>Platanthera psycodes</i>	Small Purple Fringed Orchid E
<i>Poa languida</i>	Weak Spear Grass P
<i>Pogonia ophioglossoides</i>	Rose Pogonia T
<i>Polygala cruciata</i>	Cross-leaved Milkwort E
<i>Polygala polygama</i>	Racemed Milkwort T
<i>Populus balsamifera</i>	Balsam Poplar E
<i>Potamogeton gramineus</i>	Grass-like Pondweed E
<i>Potamogeton natans</i>	Floating Pondweed P
<i>Potamogeton praelongus</i>	White-stemmed Pondweed E
<i>Potamogeton richardsonii</i>	Richardson's Pondweed P
<i>Potamogeton zosteriformis</i>	Flat-stemmed Pondweed P
<i>Potentilla arguta</i>	Tall Cinquefoil E
<i>Potentilla palustris</i>	Marsh Five-finger P

OHIO STATE-LISTED ENDANGERED, THREATENED, AND POTENTIALLY LISTED PLANTS (Continued)

<i>Potentilla paradoxa</i>	Bushy Cinquefoil E
<i>Prenanthes aspera</i>	Rough Rattlesnake-root E
<i>Prenanthes crepidinea</i>	Nodding Rattlesnake-root P
<i>Prenanthes racemosa</i>	Prairie Rattlesnake-root P
<i>Prunus pumila</i> var. <i>cuneata</i>	Sand Cherry T
<i>Pycnanthemum verticillatum</i>	var. <i>pilosum</i> Hairy Mountain-mint E
<i>Pyrola chlorantha</i>	Green-flowered Wintergreen E
<i>Quadrula cylindrica cylindrica</i>	Rabbitsfoot E
<i>Ranunculus fascicularis</i>	Early Buttercup P
<i>Rhexia virginica</i>	Virginia Meadow-beauty P
<i>Rhynchospora alba</i>	White Beak-rush P
<i>Rhynchospora recognita</i>	Tall Grass-like Beak-rush E
<i>Rosa blanda</i>	Smooth Rose E
<i>Sagittaria cuneata</i>	Wapato T
<i>Sagittaria graminea</i>	Grass-leaved Arrowhead E
<i>Sagittaria montevidensis</i>	Southern Wapato P
<i>Sagittaria rigida</i>	Deer's-tongue Arrowhead T
<i>Salix candida</i>	Hoary Willow T
<i>Salix myricoides</i>	Blue-leaved Willow P
<i>Salix petiolaris</i>	Slender Willow E
<i>Salix serissima</i>	Autumn Willow P
<i>Schoenoplectus purshianus</i>	Pursh's Bulrush P
<i>Schoenoplectus smithii</i>	Smith's Bulrush E
<i>Schoenoplectus subterminalis</i>	Swaying-rush E
<i>Scleria pauciflora</i>	Few-flowered Nut-rush T
<i>Scleria triglomerata</i>	Tall Nut-rush P
<i>Senecio pauperculus</i>	Balsam Squaw-weed T
<i>Shepherdia canadensis</i>	Canada Buffalo-berry P
<i>Sida hermaphrodita</i>	Virginia-mallow P
<i>Sisyrinchium atlanticum</i>	Atlantic Blue-eyed-grass E
<i>Sisyrinchium montanum</i>	Northern Blue-eyed-grass T
<i>Sisyrinchium mucronatum</i>	Narrow-leaved Blue-eyed-grass E
<i>Smilax lasioneura</i>	Pale Carrion-flower P
<i>Smilax pulverulenta</i>	Downy Carrion-flower E
<i>Sparganium androcladum</i>	Keeled Bur-reed T
<i>Sphenopholis obtusata</i> var. <i>obtusata</i>	Prairie Wedge Grass T
<i>Spiranthes lucida</i>	Shining Ladies'-tresses P
<i>Spiranthes magnicamporum</i>	Great Plains Ladies'-tresses P
<i>Spiranthes ovalis</i>	Lesser Ladies'-tresses P
<i>Stipa spartea</i>	Porcupine Grass T
<i>Thuja occidentalis</i>	Arbor Vitae P
<i>Tortella inclinata</i>	Curved Tortella E
<i>Toxolasma lividus</i>	Purple Lilliput E
<i>Triglochin palustre</i>	Marsh Arrow-grass P
<i>Trillium recurvatum</i>	Prairie Wake-robin P
<i>Triphora trianthophora</i>	Three-birds Orchid T
<i>Triplasis purpurea</i>	Purple Sand Grass P
<i>Ulmus thomasi</i>	Rock Elm T
<i>Utricularia intermedia</i>	Flat-leaved Bladderwort T
<i>Utricularia minor</i>	Lesser Bladderwort P
<i>Vernonia fasciculata</i>	Prairie Ironweed P
<i>Vernonia missurica</i>	Missouri Ironweed E
<i>Viburnum opulus</i> var. <i>americanum</i>	Highbush-cranberry E
<i>Viola lanceolata</i>	Lance-leaved Violet P
<i>Viola nephrophylla</i>	Northern Bog Violet E
<i>Viola pedata</i> Birdfoot	Violet T
<i>Vitis cinerea</i>	Pigeon Grape P
<i>Woodwardia areolata</i>	Netted Chain Fern P
<i>Xyris torta</i>	Twisted Yellow-eyed-grass T
<i>Zizania aquatica</i>	Wild Rice T

Appendix D

Ohio Lake Erie CREP Watershed Fact Sheets and Impairment Summaries

Auglaize Watershed Section 303(d) List Fact Sheet

USGS Cataloging Unit: **04100007**

Places Involving this Watershed

Ohio Counties:

- Adams
- Allen
- Allen
- Henry
- Paulding
- Putnam
- Defiance
- Hancock
- Hardin
- Mercer
- Van Wert
- Shelby

Auglaize American Heritage Rivers:

None

National Estuary Programs:

None

Other Watersheds Upstream:

Blanchard

Other Watersheds Downstream:

Lower Maumee



Impairments

Impairment Name	Impairments Reported	Percent of Reported
ORGANIC ENRICHMENT/LOW DO	2	14.58
OTHER HABITAT ALTERATIONS	2	14.58
NUTRIENTS	6	12.50
PATHOGENS	6	12.50
SILTATION	5	10.42
FLOW ALTERATION	4	8.33
UNIONIZED AMMONIA	3	6.25
UNKNOWN TOXICITY	3	6.25
CAUSE UNKNOWN	2	4.17
IMPAIRED BIOTIC COMMUNITIES	2	4.17
FCA	2	4.17
PRIORITY ORGANICS	1	2.08

Total Number of Impairments Reported: 48

Black-Rocky Watershed Section 303(d) List Fact Sheet

USGS Cataloging Unit: **04110001**

Places Involving this Watershed

Ohio Counties:

- Fulton
- Monroe
- Erie
- Lenawee
- Medina
- Ashland
- Cuyahoga
- Lorain
- Summit
- Huron
- Lucas

American Heritage Rivers:

None

National Estuary Programs:

None

Other Watersheds Upstream:

Huron-Vermilion

Other Watersheds Downstream:

Ashtabula-Chagrin



Impairments

Impairment Name	Impairments Reported	Percent of Reported
NUTRIENTS	5	16.13
ORGANIC ENRICHMENT/LOW DO	5	16.13
SILTATION	4	12.90
FCA	3	9.68
OTHER HABITAT ALTERATIONS	3	9.68
PATHOGENS	2	6.45
UNIONIZED AMMONIA	2	6.45
UNKNOWN TOXICITY	2	6.45
CAUSE UNKNOWN	1	3.23
FLOW ALTERATION	1	3.23
PAHS	1	3.23
PRIORITY ORGANICS	1	3.23
CHLORINE	1	3.23

Total Number of Impairments Reported: 31

Blanchard Watershed Section 303(d) List Fact Sheet

USGS Cataloging Unit: **04100008**

Places Involving this Watershed

Ohio Counties:

- Allen
- Putnam
- Seneca
- Hancock
- Hardin
- Wyandot

American Heritage Rivers:

None

National Estuary Programs:

None

Other Watersheds Upstream:

None

Other Watersheds Downstream:

Auglaize



Impairments

Impairment Name	Impairments Reported	Percent of Reported
CAUSE UNKNOWN	2	28.57
FLOW ALTERATION	2	28.57
NUTRIENTS	1	14.29
ORGANIC ENRICHMENT/LOW DO	1	14.29
OTHER HABITAT ALTERATIONS	1	14.29

Total Number of Impairments Reported: 7

Cedar-Portage Watershed Section 303(d) List Fact Sheet

USGS Cataloging Unit: **04100010**

Places Involving this Watershed

Ohio Counties:

Seneca
Hancock
Ottawa
Wood
Sandusky
Lucas

American Heritage Rivers:

None

National Estuary Programs:

None

Other Watersheds Upstream:

Ottawa-Stony
Lower Maumee

Other Watersheds Downstream:

Sandusky



Impairments

Impairment Name	Impairments Reported	Percent of Reported
SILTATION	5	26.32
ORGANIC ENRICHMENT/LOW DO	4	21.05
OTHER HABITAT ALTERATIONS	3	15.79
FLOW ALTERATION	2	10.53
FCA	1	5.26
UNKNOWN TOXICITY	1	5.26
NUTRIENTS	1	5.26
TURBIDITY	1	5.26
OIL AND GREASE	1	5.26

Total Number of Impairments Reported: 19

Huron-Vermilion Watershed Section 303(d) List Fact Sheet

USGS Cataloging Unit: **04100012**

Places Involving this Watershed

Counties:

Richland

Seneca

Erie

Ashland

Crawford

Lorain

Huron

American Heritage Rivers:

None

National Estuary Programs:

None

Other Watersheds Upstream:

Sandusky

Other Watersheds Downstream:

Black-Rocky



Impairments

Impairment Name	Impairments Reported	Percent of Reported
NUTRIENTS	4	26.67
OTHER HABITAT ALTERATIONS	4	26.67
SILTATION	2	13.33
CAUSE UNKNOWN	1	6.67
FCA	1	6.67
ORGANIC ENRICHMENT/LOW DO	1	6.67
OIL AND GREASE	1	6.67
FLOW ALTERATION	1	6.67

Total Number of Impairments Reported: 15

Lower Maumee Watershed Section 303(d) List Fact Sheet

USGS Cataloging Unit: **04100009**

Places Involving this Watershed

Counties:

Fulton
Henry
Putnam
Defiance
Hancock
Wood
Lucas

American Heritage Rivers:

None

National Estuary Programs:

None

Other Watersheds Upstream:

Upper Maumee

Tiffin

Auglaize

Other Watersheds Downstream:

Cedar-Portage



Impairments

Impairment Name	Impairments Reported	Percent of Reported
OTHER HABITAT ALTERATIONS	5	27.78
SILTATION	5	27.78
FLOW ALTERATION	3	16.67
PATHOGENS	2	11.11
ORGANIC ENRICHMENT/LOW DO	1	5.56
TOTAL TOXICS	1	5.56
UNIONIZED AMMONIA	1	5.56

Total Number of Impairments Reported: 18

Ottawa-Stony Watershed Section 303(d) List Fact Sheet

USGS Cataloging Unit: **04100001**

Places Involving this Watershed

Counties:

- Fulton
- Monroe
- Washtenaw
- Wayne

American Heritage Rivers:

None

National Estuary Programs:

None

Other Watersheds Upstream:

Raisin

Huron

Other Watersheds Downstream:

Cedar-Portage



Impairments

Impairment Name	Impairments Reported	Percent of Reported
FCA (PCBS)	2	7.69
FISH AND MACROINVERTEBRATE COMMUNITIES RATED POOR	2	7.69
FLOW ALTERATION	2	7.69
PATHOGENS	2	7.69
OTHER HABITAT ALTERATIONS	2	7.69
MACROINVERTEBRATE COMMUNITY RATED POOR	2	7.69
ALDRIN	1	3.85
PRIORITY ORGANICS	1	3.85
TDS	1	3.85
UNIONIZED AMMONIA	1	3.85
TURBIDITY	1	3.85
TOTAL TOXICS	1	3.85
THERMAL MODIFICATIONS	1	3.85
SILTATION	1	3.85
PESTICIDES	1	3.85
NUTRIENTS	1	3.85
LINDANE	1	3.85
HYDROGEN SULFIDE	1	3.85
FISH KILLS	1	3.85
DISSOLVED OXYGEN	1	3.85

Total Number of Impairments Reported: 26

Raisin River Watershed Section 303(d) List Fact Sheet

USGS Cataloging Unit: **04100002**

Places Involving this Watershed

Counties:

Fulton

American Heritage Rivers:

None

National Estuary Programs:

None

States:

Michigan

Ohio

Other Watersheds Upstream:

None

Other Watersheds Downstream:

Ottawa-Stony



Only a small tributary of the Raisin River watershed occurs in northern Fulton County in Ohio. No impairments to water quality could be attributed to this section of the watershed.

Sandusky Watershed Section 303(d) List Fact Sheet

USGS Cataloging Unit: **04100011**

Places Involving this Watershed

Counties:

- Marion
- Richland
- Seneca
- Erie
- Hancock
- Hardin
- Ottawa
- Wood
- Wyandot
- Crawford
- Sandusky
- Huron

American Heritage Rivers:

None

National Estuary Programs:

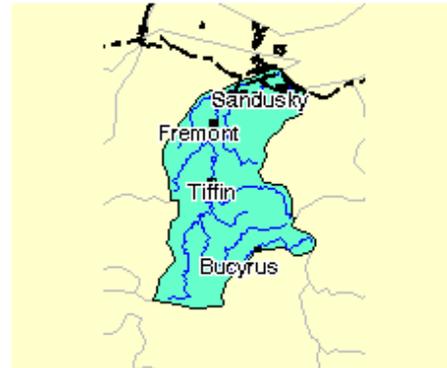
None

Other Watersheds Upstream:

Cedar-Portage

Other Watersheds Downstream:

Huron-Vermilion



Impairments

Impairment Name	Impairments Reported	Percent of Reported
CAUSE UNKNOWN	7	28.00
NUTRIENTS	4	16.00
SILTATION	4	16.00
FCA	3	12.00
FLOW ALTERATION	3	12.00
ORGANIC ENRICHMENT/LOW DO	2	8.00
OTHER HABITAT ALTERATIONS	1	4.00
PATHOGENS	1	4.00

Total Number of Impairments Reported: 25

St. Joseph Watershed Section 303(d) List Fact Sheet

USGS Cataloging Unit: **04100003**

Places Involving this Watershed

Counties:

Allen
Branch
Hillsdale
Steuben
Whitley
Defiance
Noble
De Kalb
Williams

American Heritage Rivers:

None

National Estuary Programs:

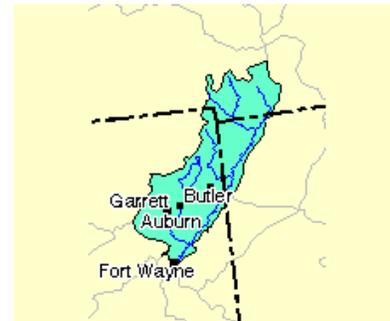
None

Other Watersheds Upstream:

None

Other Watersheds Downstream:

Upper Maumee



Impairments

Impairment Name	Impairments Reported	Percent of Reported
PATHOGENS	22	37.93
FCA (MERCURY)	9	15.52
IMPAIRED BIOTIC COMMUNITIES	9	15.52
FCA (PCBS)	8	13.79
FCA	2	3.45
OTHER HABITAT ALTERATIONS	2	3.45
ALGAL GROWTH	1	1.72
MERCURY	1	1.72
SALINITY/TOTAL DISSOLVED SOLIDS	1	1.72
TDS	1	1.72
SILTATION	1	1.72
NUTRIENTS	1	1.72

Total Number of Impairments Reported: 58

St. Marys Watershed Section 303(d) List Fact Sheet

USGS Cataloging Unit: **04100004**

Places Involving this Watershed

Counties:

- Adams
- Allen
- Allen
- Mercer
- Van Wert
- Shelby
- Wells
- Auglaize

American Heritage Rivers:

None

National Estuary Programs:

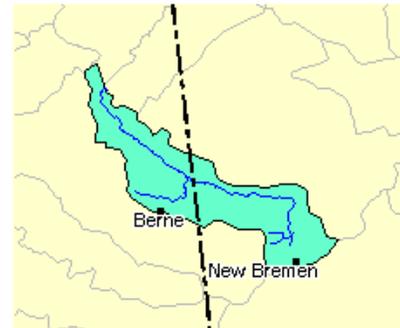
None

Other Watersheds Upstream:

None

Other Watersheds Downstream:

Upper Maumee



Impairments

Impairment Name	Impairments Reported	Percent of Reported
PATHOGENS	14	34.15
IMPAIRED BIOTIC COMMUNITIES	6	14.63
FCA (MERCURY)	5	12.20
FCA (PCBS)	5	12.20
FCA	2	4.88
NUTRIENTS	2	4.88
OTHER HABITAT ALTERATIONS	2	4.88
ALGAL GROWTH	1	2.44
AMMONIA	1	2.44
TDS	1	2.44
SILTATION	1	2.44
FLOW ALTERATION	1	2.44

Total Number of Impairments Reported: 41

Tiffin Watershed Section 303(d) List Fact Sheet

USGS Cataloging Unit: **04100006**

Counties:

- Fulton
- Henry
- Hillsdale
- Defiance
- Lenawee
- Williams

American Heritage Rivers:

None

National Estuary Programs:

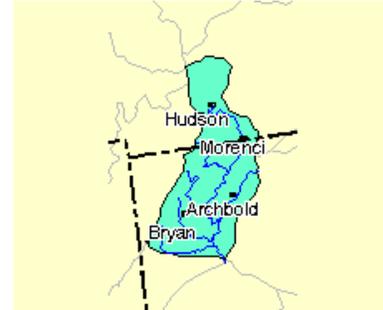
None

Other Watersheds Upstream:

None

Other Watersheds Downstream:

Lower Maumee



Impairments

Impairment Name	Impairments Reported	Percent of Reported
SILTATION	6	25.00
OTHER HABITAT ALTERATIONS	5	20.83
ORGANIC ENRICHMENT/LOW DO	3	12.50
NUTRIENTS	2	8.33
PATHOGENS	2	8.33
UNTREATED SEWAGE DISCHARGES, PATHOGENS	2	8.33
CAUSE UNKNOWN	1	4.17
FCA	1	4.17
UNKNOWN TOXICITY	1	4.17
FLOW ALTERATION	1	4.17

Total Number of Impairments Reported: 24

Upper Maumee Watershed Section 303(d) List Fact Sheet

USGS Cataloging Unit: **04100005**

Places Involving this Watershed

Counties:

- Allen
- Paulding
- Defiance
- De Kalb

American Heritage Rivers:

None

National Estuary Programs:

None

Other Watersheds Upstream:

- St. Joseph
- St. Marys

Other Watersheds Downstream:

Lower Maumee



Impairments

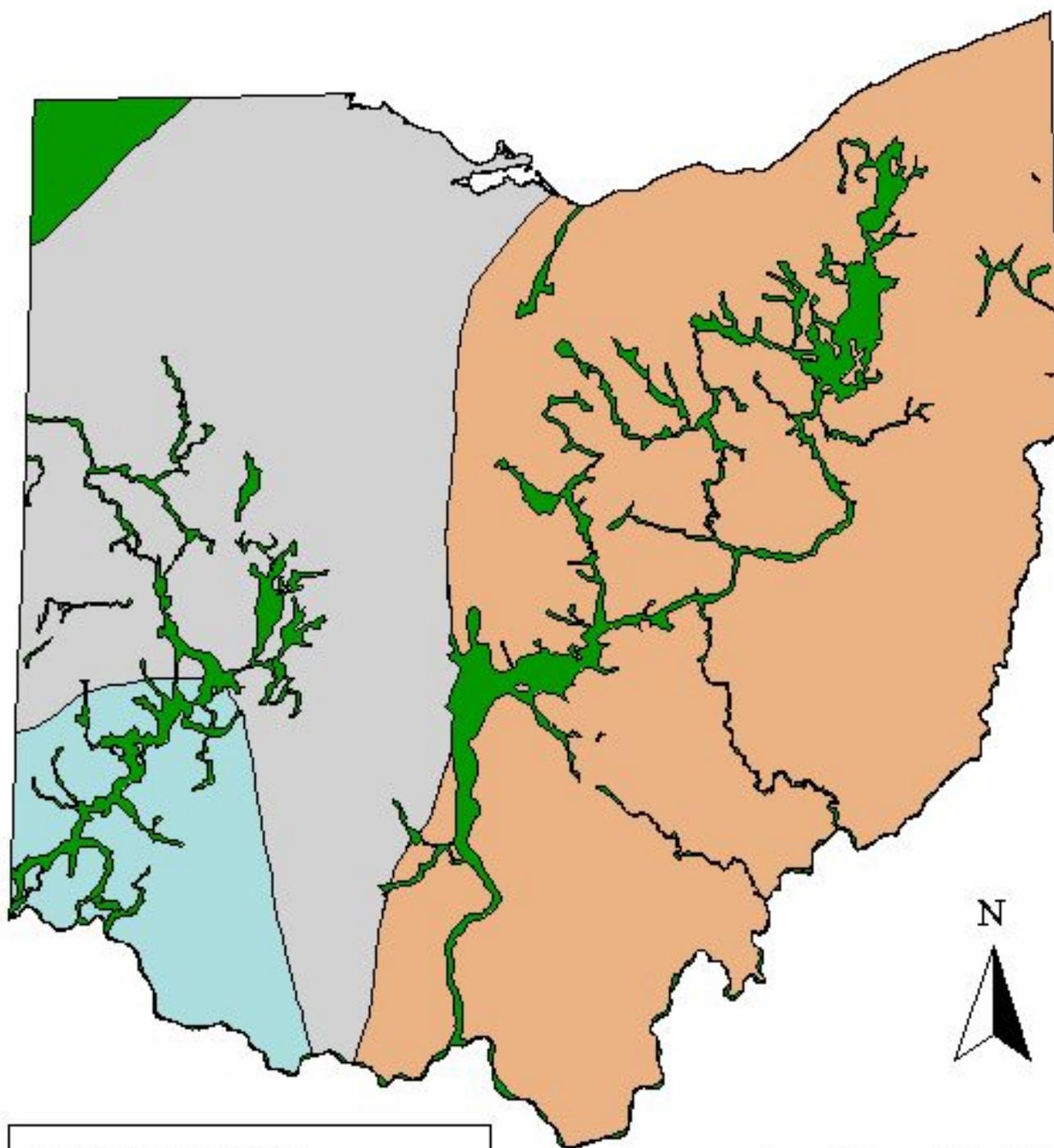
Impairment Name	Impairments Reported	Percent of Reported
FCA (MERCURY)	2	21.88
FCA (PCBS)	2	21.88
PATHOGENS	2	21.88
IMPAIRED BIOTIC COMMUNITIES	4	12.50
NUTRIENTS	2	6.25
ALGAL GROWTH	1	3.13
FLOW ALTERATION	1	3.13
SILTATION	1	3.13
UNIONIZED AMMONIA	1	3.13
OTHER HABITAT ALTERATIONS	1	3.13

Total Number of Impairments Reported: **32**

Appendix E

Groundwater Maps and Exhibits

Major Aquifer Types



Aquifer Type/Lithology

-  Sand and Gravel Aquifers
-  Sandstone Aquifers
-  Carbonate Aquifers
-  Interbedded Shale and Carbonates



0 20 40 Miles



Ambient Network Data Summary by Major Aquifer as of July 2002.

Parameter and Units	Major Aquifer	Mean Value	Median Value	Min. Value	Max. Value	Number of Samples	Number Below Rep. Limit	Percent Censored
FIELD PARAMETERS				‡			§	§
pH, Field S.U.	Sand and Gravel	7.32	7.3	5.8	8.9	1135	na	na
	Sandstone	7.27	7.3	5.9	8.7	257	na	na
	Carbonate	7.25	7.2	5.6	8.7	578	na	na
Specific Conductivity μ mhos/cm	Sand and Gravel	598	590	1	1503	1207	na	na
	Sandstone	571	480	20	3700	269	na	na
	Carbonate	850	760	275	2790	600	na	na
Water Temperature Degrees C	Sand and Gravel	13.4	13.1	5.8	25.0	1220	na	na
	Sandstone	12.8	12.5	7.0	28.7	268	na	na
	Carbonate	13.4	13.1	8.0	25.0	603	na	na
MAJOR CONSTITUENTS								
Alkalinity, Total as CaCO ₃ mg/L	Sand and Gravel	265	274	< 5.0	1500	1509	0	0
	Sandstone	215	196	< 5.0	1500	369	0	0
	Carbonate	292	301	102	648	645	0	0
Calcium, Total mg/L	Sand and Gravel	93.3	93	< 2	300	1566	2	0
	Sandstone	57.3	50	< 2	74	384	1	0
	Carbonate	136.4	116	60	613	666	1	0
Chloride mg/L	Sand and Gravel	34.5	28.0	< 2.0	247	1548	51	3
	Sandstone	40.5	21.0	< 2.0	286	377	47	12
	Carbonate	27.9	14.0	< 2.0	420	636	66	10
Hardness, Total as CaCO ₃ mg/L	Sand and Gravel	358	362	< 10	953	1168	2	0
	Sandstone	227	201	< 10	630	282	1	1
	Carbonate	554	471	209	2010	489	0	0
Magnesium, Total mg/L	Sand and Gravel	29.8	30	< 1	74	1569	3	0
	Sandstone	18.0	16	< 1	66	384	1	0
	Carbonate	50.6	44	26	134	668	1	0
Potassium, Total mg/L	Sand and Gravel	2.3	2.0	< 1	56.0	1496	221	15
	Sandstone	2.6	2.0	< 0.5	8.0	373	69	18
	Carbonate	3.0	3.0	1.3	8.4	615	3	0
Sodium, Total mg/L	Sand and Gravel	25.5	21	< 4	427	1569	36	2
	Sandstone	63.1	28	< 5	774	384	18	5
	Carbonate	35.3	27	< 5	202	667	7	1
Sulfate mg/L	Sand and Gravel	81.5	70.0	< 5	640	1548	6	1
	Sandstone	77.1	43.5	< 5	1320	382	37	10
	Carbonate	280.7	201.0	< 5	1410	662	1	1
Total Dissolved Solids mg/L	Sand and Gravel	461	452	12	1650	1472	0	0
	Sandstone	415	350	< 10	2390	371	1	0
	Carbonate	769	670	330	2360	625	0	0
TRACE CONSTITUENTS								
Aluminum ug/L	Sand and Gravel	200.6	200.0	84.0	1510	1093	1090	100
	Sandstone	200.2	200.0	< 200.0	234	315	313	99
	Carbonate	207.9	200.0	< 200.0	1810	424	417	98
Arsenic, Total ug/L	Sand and Gravel	7.00	4.0	< 2.0	95	1472	535	36
	Sandstone	2.99	2.0	< 2.0	30	363	274	75
	Carbonate	3.89	2.0	< 2.0	21	630	367	58
Barium ug/L	Sand and Gravel	192.0	139.0	15.0	2160	1444	19	1
	Sandstone	173.3	69.0	15.0	2080	353	6	2
	Carbonate	65.8	40.0	7.0	301	629	68	11
Cadmium, Total ug/L	Sand and Gravel	0.22	0.2	< 0.2	5.0	1313	1297	99
	Sandstone	0.22	0.2	< 0.2	6.0	364	356	98
	Carbonate	0.25	0.2	< 0.2	10.2	609	599	98

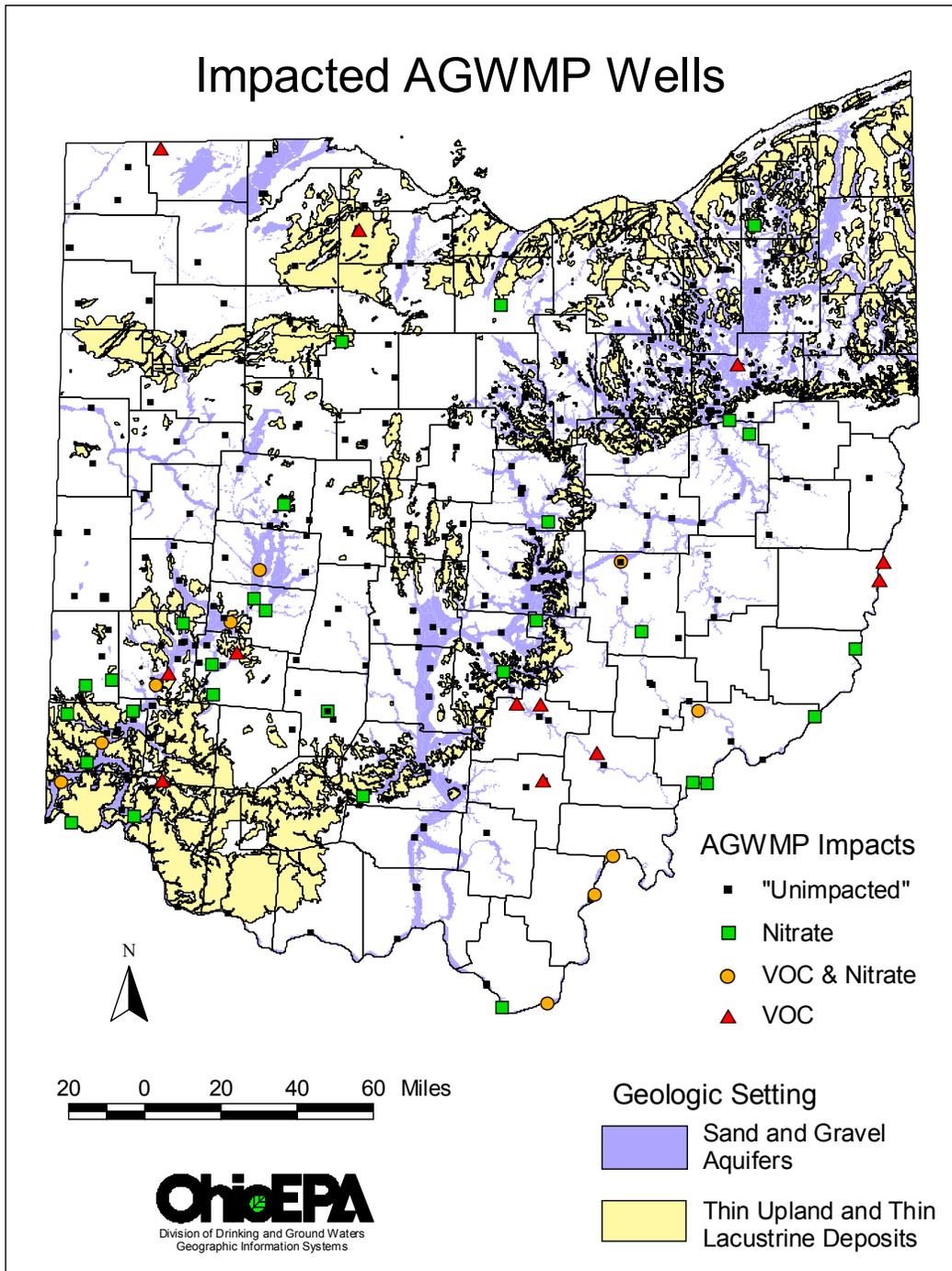
Ohio's Ground Water Quality 2002 305(b) Report

Parameter and Units	Major Aquifer	Mean Value	Median Value	Min. Value ‡	Max. Value	Number of Samples	Number below Rep. Limit	Percent Censored
Chromium, Total ug/L	Sand and Gravel	27.0	30.0	< 0.2	50	1338	1325	99
	Sandstone	27.4	30.0	< 10.0	30	370	367	99
	Carbonate	28.2	30.0	< 0.2	50	619	607	98
Copper, Total ug/L	Sand and Gravel	10.80	10.0	< 2.0	233	1188	1035	87
	Sandstone	10.65	10.0	< 2.0	93	349	274	79
	Carbonate	13.58	10.0	< 2.0	367	489	344	70
Fluoride mg/L	Sand and Gravel	0.49	0.3	< 0.1	2.3	958	111	9
	Sandstone	0.36	0.3	< 0.1	2.1	287	39	10
	Carbonate	1.40	1.4	< 0.1	3.2	423	5	1
Iron, Total ug/L	Sand and Gravel	1598.0	1400.0	21.0	14000	1571	104	7
	Sandstone	1784.3	516.0	< 50.0	21500	382	53	14
	Carbonate	1004.1	690.0	< 50.0	10200	669	68	10
Lead, Total ug/L	Sand and Gravel	2.52	2.0	1.0	101	1462	1343	92
	Sandstone	2.52	2.0	< 2.0	40	369	335	91
	Carbonate	3.14	2.0	< 2.0	167	583	493	85
Manganese, Total ug/L	Sand and Gravel	197.1	125.0	5.3	5130	1533	108	7
	Sandstone	232.8	94.5	9.0	1810	377	42	11
	Carbonate	29.3	17.0	10.0	300	620	454	73
Nickel, Total ug/L	Sand and Gravel	36.5	40.0	1.0	74	1147	1139	99
	Sandstone	38.3	40.0	< 20.0	144	332	320	96
	Carbonate	38.1	40.0	< 20.0	100	457	454	99
Selenium, Total ug/L	Sand and Gravel	2.07	2.0	< 2.0	10	1211	1167	96
	Sandstone	2.05	2.0	< 2.0	10	355	293	85
	Carbonate	2.15	2.0	< 2.0	10	454	428	94
Strontium, Total ug/L	Sand and Gravel	2248.0	537.5	< 30.0	30800	1138	2	0
	Sandstone	489.8	375.0	10.0	4800	324	2	1
	Carbonate	18404.0	16200.0	< 30.0	66200	462	3	1
Tritium T.U.	Sand and Gravel	9.0	10.0	< 0.8	23	108	7	6
	Sandstone	8.3	9.1	< 0.8	19	26	5	19
	Carbonate	4.3	1.8	< 0.8	13	44	14	32
Zinc, Total ug/L	Sand and Gravel	23.6	10.0	< 10.0	3620	1198	814	68
	Sandstone	32.6	14.0	< 10.0	426	348	134	39
	Carbonate	58.9	12.0	< 10.0	1210	459	202	44
NUTRIENTS								
Ammonia-N mg/L	Sand and Gravel	0.27	0.14	0.01	3.4	1525	391	26
	Sandstone	0.38	0.22	< 0.05	2.2	375	78	21
	Carbonate	0.39	0.32	< 0.05	5.1	651	57	9
Chemical Oxygen Demand mg/L	Sand and Gravel	11.4	10.0	< 10.0	200	1110	1025	92
	Sandstone	10.6	10.0	< 10.0	55	314	293	93
	Carbonate	12.5	10.0	< 10.0	371	481	397	83
NO2+NO3 as N mg/L	Sand and Gravel	0.22	0.10	< 0.01	4.9	1465	1125	77
	Sandstone	0.12	0.10	0.10	1.9	366	316	86
	Carbonate	0.12	0.10	< 0.05	1.5	618	571	92
Phosphorus, Total mg/L	Sand and Gravel	0.10	0.05	0.02	10.5	1297	990	76
	Sandstone	0.12	0.05	< 0.05	4.4	318	195	61
	Carbonate	0.07	0.05	< 0.05	1.4	531	411	77
Total Kjeldahl N mg/L	Sand and Gravel	0.42	0.3	< 0.2	3.3	514	181	35
	Sandstone	0.59	0.4	< 0.2	2.8	170	47	28
	Carbonate	0.57	0.5	0.1	5.3	238	36	15
Total Organic Carbon mg/L	Sand and Gravel	3.2	2.0	< 1.0	75	1172	1085	93
	Sandstone	2.7	2.0	< 1.0	16	321	299	93
	Carbonate	3.1	2.0	< 1.0	73	481	403	84

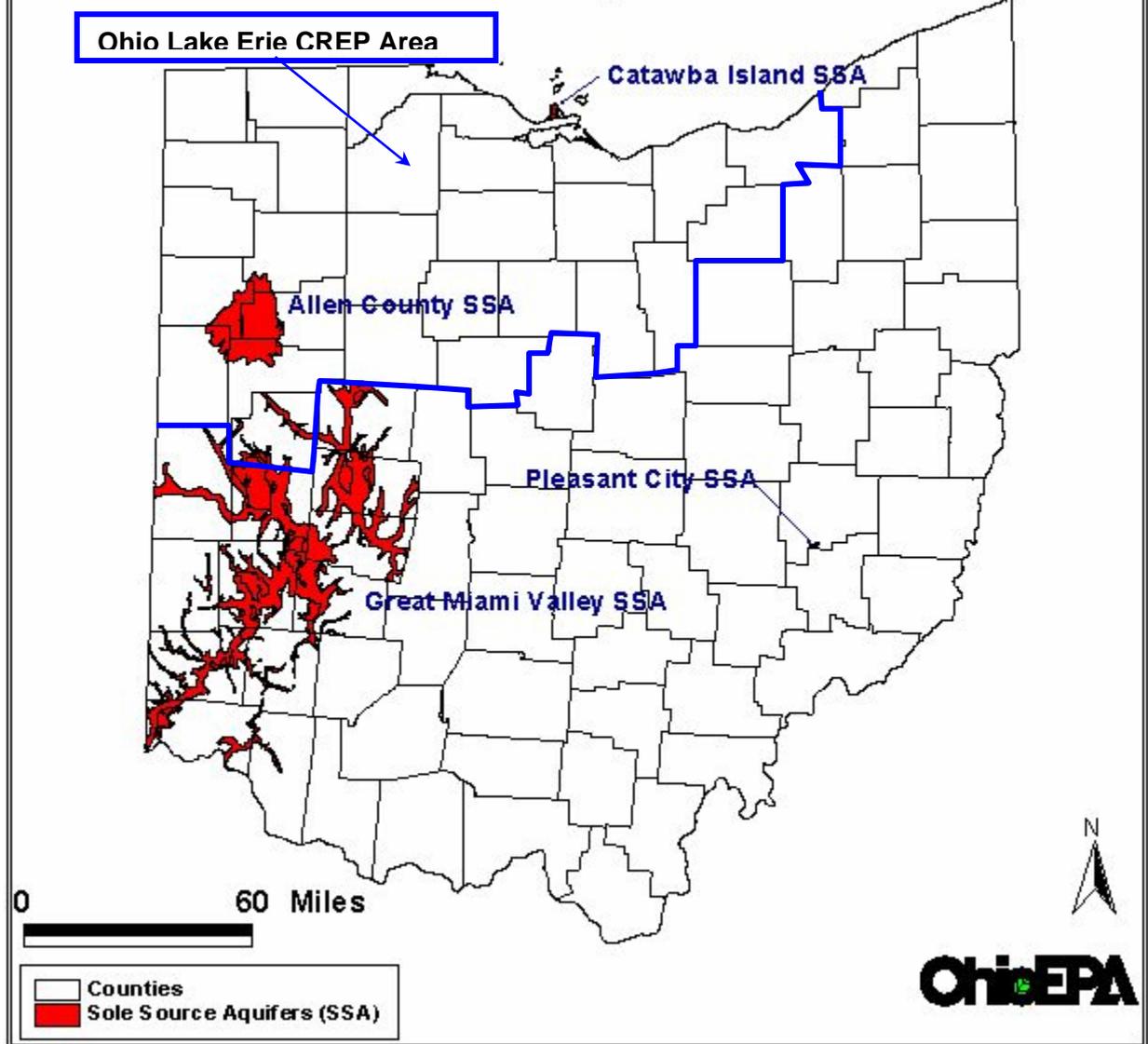
‡ records with '<' represent reporting limit

§ na denotes not applicable

AGWMP Inorganic Chemical Parameters	
PARAMETERS	CURRENT REPORTING LIMITS
<u>Major Constituents</u>	<u>mg/L</u>
Alkalinity, Total as CaCO ₃	5
Calcium (Ca)	2
Chloride (Cl)	5
Hardness as CaCO ₃	10
Magnesium (Mg)	1
Potassium (K)	2
Sodium (Na)	5
Sulfate (SO ₄)	5
Total Dissolved Solids (TDS)	10
<u>Trace Constituents</u>	<u>µg/L</u>
Aluminum (Al)	200
Arsenic (As)	2
Barium (Ba)	15
Cadmium (Cd)	0.2
Chromium (Cr)	30
Copper (Cu)	10
Fluoride (F)	0.10 mg/L
Iron (Fe)	50
Lead (Pb)	2
Manganese (Mn)	10
Nickel (Ni)	40
Selenium (Se)	2
Strontium (Sr)	30
Tritium (³ H)	0.8 T.U.
Zinc (Zn)	10
<u>Nutrients</u>	<u>mg/L</u>
Ammonia (NH ₃)	0.05
Chemical Oxygen Demand (COD)	10
Nitrate/Nitrite (as N)	0.10
Phosphorus (P)	0.05
Total Kjeldahl Nitrogen (as N)	0.2
Total Organic Carbon (TOC)	2
<u>Field Analysis</u>	<u>Relative Accuracy</u>
pH	± 0.02 S.U.
Specific Conductance (µmhos/cm)	± 0.5 %
Temperature	± 0.1 °C

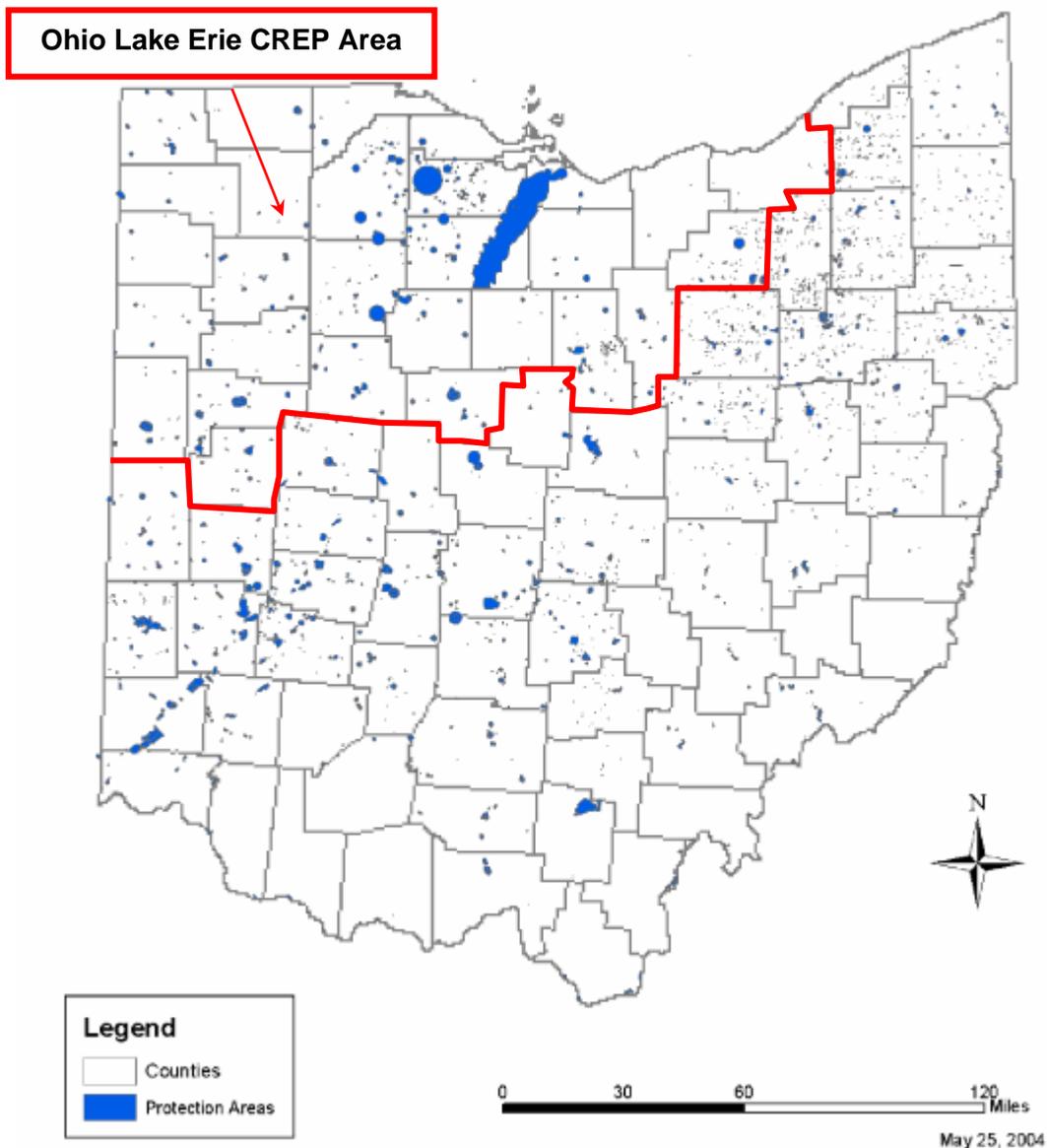


Sole Source Aquifers in Ohio



Source: Ohio EPA Division of Drinking and Ground Waters
http://www.epa.state.oh.us/ddagw/pdu/swap_ssa.html

Drinking Water Source Protection Areas in Ohio for Public Water Systems that use Ground Water



Source: Ohio Division of Drinking and Ground Waters
http://www.epa.state.oh.us/ddagw/pdu/swap_gwareas.html

**Lake Erie CREP Public Water Systems Assessed
Under Ohio's Wellhead Protection Program**
(http://www.epa.state.oh.us/ddagw/pdu/swap_whpreports.html)

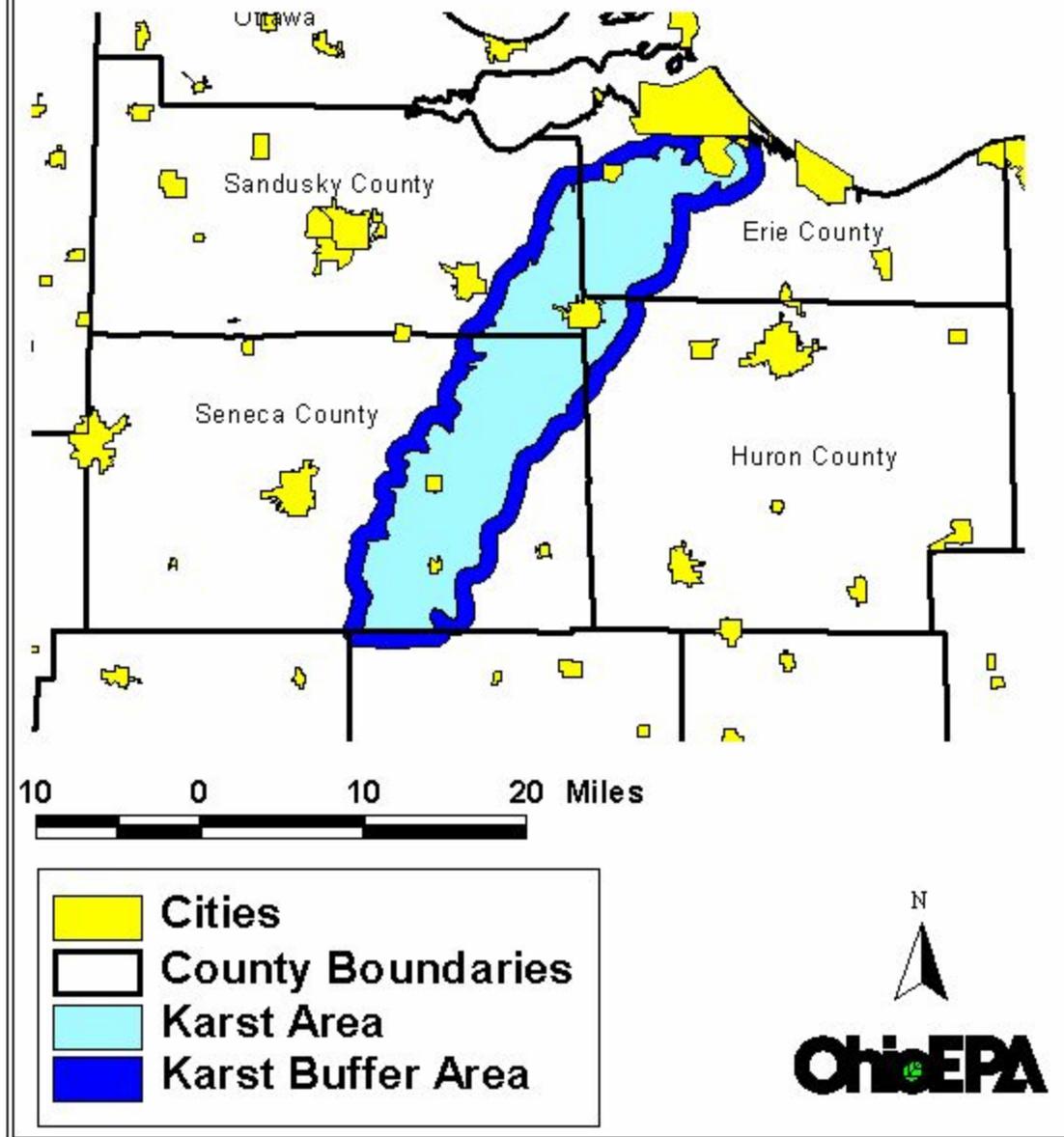
The following table lists those public water systems within the Ohio Lake Erie CREP area that voluntarily assessed their drinking water source under Ohio's Wellhead Protection Program. All of these systems have completed at least a delineation component (determined a protection area), and an inventory component (inventoried all of the potential contaminant sources within their protection area). The reports documenting these efforts were completed by the system and submitted to Ohio EPA in hardcopy. They are not available electronically from Ohio EPA. However, Ohio EPA completed the Susceptibility Analysis (http://www.epa.state.oh.us/ddagw/pdu/swap_faqs.html) for most of these systems. **If the name of the public water system is in blue**, and a link from this website is available to view a file of its Susceptibility Analysis, completed by the Ohio EPA. **If the name of the public water system is in red**, the system has both ground water wells and surface water intakes. The system's susceptibility analysis is based on the surface water source, and is documented in the surface water SWAP report, which currently is not available here because of security concerns. Systems with a ★ next to their names have also submitted a plan for protecting their drinking water resources and have a completely endorsed Drinking Water Source Protection Plan.

County	Public Water System	System Type	Ohio EPA ID
Ashland	Loudonville, Village Of	COMM	301012
Auglaize	Minster, Village Of ★	COMM	600412
Auglaize	St. Marys, City Of	COMM	600612
Hancock	Arlington, Village Of ★	COMM	3200012
Hardin	Ada, Village Of ★	COMM	3300012
Hardin	Dunkirk, Village Of ★	COMM	3300212
Hardin	East Muskingum Water Authority	COMM	3300212
Marion	OH Amercian Water Co - Marion ★	COMM	5100414
Medina	Wadsworth, City Of	COMM	5201712
Putnam	Columbus Grove ★	COMM	6900112
Richland	Mansfield, City Of	COMM	7002914
Richland	Ontario, City Of	COMM	7003512
Sandusky	Woodville, Village Of	COMM	7200912
Seneca	OH Amercian Water Co - Tiffin ★	COMM	7400614
Shelby	Anna, Village Of ★	COMM	7500012
Shelby	Honda - Anna Engine Plant	NTNC	7537812
Shelby	Shelby Co - Arrowhead Hills	COMM	7500112
Shelby	Shelby Co - Fairhaven Home	COMM	7501112
Shelby	Sidney, City Of	COMM	7501214
Van Wert	Willshire, Village Of	COMM	8100911
Williams	Bryan, City Of	COMM	8600012
Williams	Montpelier, Village Of	COMM	8600912
Williams	West Unity, City Of	COMM	8601812

COMM=Community Water System; NTNC=Non-Transient, Non-Community System

Karst Area in Northwest Ohio

February 1, 2001



Source: Ohio EPA Division of Drinking and Ground Waters
http://www.epa.state.oh.us/ddagw/pdu/swap_karst.html

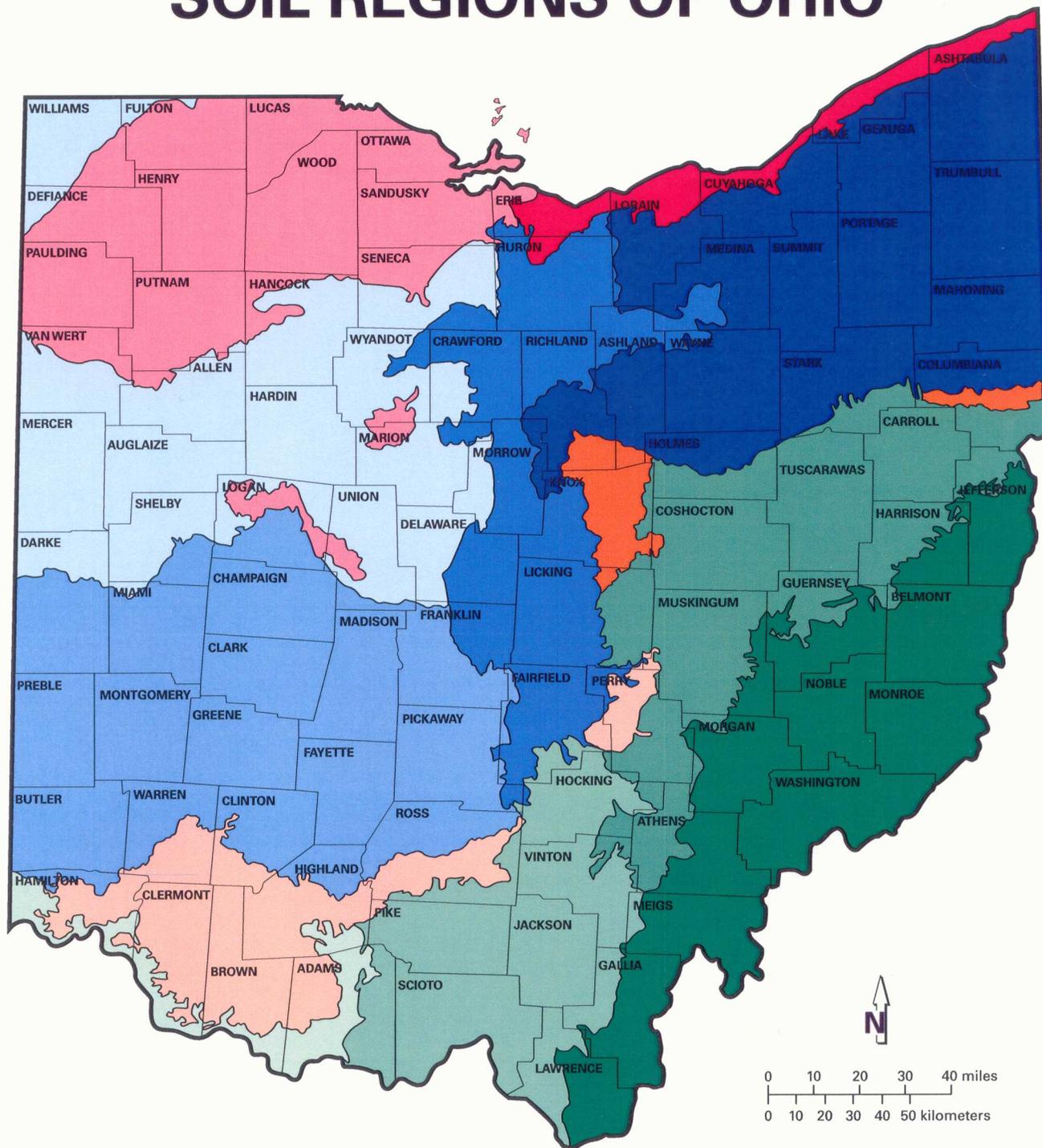
In 1998, Ohio EPA partnered with the Great Lakes Rural Community Assistance Program (RCAP) to complete a regional source water assessment and protection plan for the karst region in Seneca, Sandusky, Huron, and Erie Counties. The karst region is characterized by high ground water flow rates (>500ft/day) and a history of ground water contamination. Ground water in this region moves via large fractures and flow can be turbulent. Ground water flow models that assume laminar flow conditions within a porous media cannot be applied to this region. Therefore, Ohio EPA delineated the entire region that contributes water via the karst system as a drinking water source protection area. The area was delineated based on the distribution of surficial karst features, changes in lithology, the presence of discharge areas (springs), and existing potentiometric surface maps. The protection area encompasses 15 public water systems that utilize ground water and the watershed protection area for the City of Bellevue. The karst region also covers portions of the watershed protection areas for Clyde, Tiffin, and Fremont.

Due to the large size of the protection area, the potential contaminant source inventory was completed using several techniques. First, a regional database search of over 30 databases was conducted. This initial inventory yielded over 1,300 potential sources of contamination. Next, each public water system (PWS) in the area completed a detailed inventory of sources within their municipal boundaries (for community PWSs) or an inventory of sources within their property boundaries (for non-community PWSs). In an attempt to inventory the remaining portion of the protection area a variety of stakeholders, including county commissioners, township trustees, local soil and water conservation districts, and the Ohio Farm Bureau were asked to provide information on potential contaminant sources within the protection area. This detailed inventory located over 700 additional potential contaminant sources. Figure E-4 is a map of the karst protection area

Great Lakes RCAP worked with the public water systems and stakeholders to develop a comprehensive protection plan for the area. The karst stakeholder group has recently become a subcommittee of the Sandusky River Watershed Coalition and is working on a regional educational effort that addresses both ground water and surface water concerns. For more information about the karst region, please contact Heather Raymond of Ohio EPA's Central Office at (614) 644-2752 or Kristen Woodall of Great Lakes RCAP at (419) 332-2029.

Appendix F
Soil Types Map

SOIL REGIONS OF OHIO



LEGEND*

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> 1 Hoytville-Nappanee-Paulding-Toledo 2 Conotton-Conneaut-Allis 3 Blount-Pewamo-Glynwood 4 Miamian-Kokomo-Eldean | <ul style="list-style-type: none"> 5 Bennington-Cardington-Centerburg 6 Mahoning-Canfield-Rittman-Chili 7 Clermont-Rossmoyne-Avonburg-Cincinnati 8 Westmoreland-Homewood-Loudonville | <ul style="list-style-type: none"> 9 Eden-Bratton-Brushcreek 10 Shelocta-Brownsville-Latham-Steinsburg 11 Coshocton-Westmoreland-Berks 12 Gilpin-Upshur-Lowell-Guernsey |
|--|--|---|

*Soil regions are identified by the names of the soil series that are common in that region

Appendix G

Environmental Evaluation Worksheet (NRCS-CPA-52)

U.S. Department of Agriculture Natural Resources Conservation Service Environmental Evaluation Worksheet	NRCS-CPA-52 10-03		A. Client:	
			B. Plan ID No:	
			C. CMU/Fields:	
			D. Client's objective	E. Purpose and need for action

F. Resource Considerations	H. Alternatives and Effects (Attach additional pages as necessary)			
	Proposed Action	No Action	Alt 1	Alt 2
SOIL				
Erosion				
Condition				
Deposition				
WATER				
Quantity				
Quality				
AIR				
Quality				
Condition				
PLANT				
Suitability				
Condition				
Management				
ANIMAL				
Habitat				
Management				

G. Economic and Social Considerations	I. Effects			
	Proposed Action	No Action	Alt 1	Alt 2
Land use				
Capital				
Labor				
Management level				
Profitability				
Risk				

J. Special Environmental Concerns (See "Evaluation Procedure Guide Sheets")	K. Effects			
	Proposed Action	No Action	Alt 1	Alt 2
Clean Water Act/Waters of the U.S				
*Coastal Zone Management Areas				
Coral Reefs				
*Cultural Resources				
*Endangered and Threatened Species				
Environmental Justice				
*Essential Fish Habitat				
*Fish and Wildlife Coordination				
Floodplain Management				
Invasive Species				
Migratory Birds				
Natural Areas				
Prime and Unique Farmlands				
Riparian Area				
Scenic Beauty				
Wetlands				
*Wild and Scenic Rivers				

* These items may require consultation or coordination between the lead agency/RFO and another governmental unit.

L. Easements, permissions, or permits. _____

M. Mitigation _____

N. The information recorded above is based on the best available information:

Signature _____ Title _____ Date _____

O. Agencies, persons, and references consulted _____

P. Findings. Indicate which of the alternatives from Section H is the preferred alternative. _____

I have considered the effects of this action and the alternatives on the Resource, Economic, and Social Considerations; the Special Environmental Concerns; and the extraordinary circumstances criteria in the instructions for form NRCS-CPA-52. I find, for the reasons stated in (Q) below, that the selected alternative:

_____ is **not a federal action**. No additional analysis is required.

_____ is **categorically excluded** from further environmental analysis and there are no extraordinary circumstances. No additional analysis is required.

_____ has been **sufficiently analyzed** in an existing NRCS environmental document. No additional analysis is required.

_____ may require preparation of an EA or EIS. The action will be referred to the State Office.

Q. Rationale supporting the finding _____

R. _____
Signature _____ Title _____ Date _____

Instructions for Completing Form NRCS-CPA-52, "Environmental Evaluation Worksheet"

COMPLETING THE FORM

The form NRCS-CPA-52 is the instrument used to summarize the effects of conservation practices and systems. It also provides summary documentation of the environmental evaluation (EE) of the planned actions. The EE is “a concurrent part of the planning process in which the potential long-term and short-term impacts of an action on people, their physical surroundings, and nature are evaluated and alternative actions explored” (NPPH-Amendment 3 January 2000). The EE applies to all assistance provided by NRCS (GM190 Part 410.5).

The following are instructions for completing form NRCS-CPA-52:

- A Record the client's name.
- B Enter the conservation plan identification number.
- C Enter the conservation management unit to which this evaluation applies. This may be done by field, pasture, tract, landuse (i.e. cropland, rangeland, woodland, etc.), by resource area (i.e. riparian corridor or wetland area) or any other suitable geographic division.
- D Briefly summarize the client's objective(s).
- E Briefly identify the purpose and need for action. Reference the resource concern(s) to be addressed.
- F, G Use the provided resource, economic, and social considerations or list considerations identified during scoping or by any existing areawide, watershed or other resource document appropriate for the planning area. The list of considerations may be expanded by listing subcategories, such as wind erosion, sheet erosion, gully erosion etc. Refer to the applicable quality criteria.
- H, I Briefly summarize the practice/system of practices being proposed, as well as any alternatives being considered. Document the effects of the proposed action for the considerations listed in E and F. Reference applicable quality criteria, information in the CPPE, and quantify effects whenever possible. Consider both long-term and short-term effects. Consider any effects which may be individually minor but cumulatively significant at a larger scale or over an extended time period. At the request of the client, additional alternatives may be developed and their effects evaluated. This may be done in order to more fully inform the client about the decision to be made. In these cases, briefly describe alternatives to the proposed action, including the “no action” alternative. The no action alternative is the predicted future condition if no action is taken. Clearly define the differences between proposed action, no action, and the other alternatives if applicable.

- J, K See the Special Environmental Concerns Evaluation Procedure Guide Sheets in Appendix 610.70 of the National Environmental Compliance Handbook. Completion of Help Sheets is not required, but may provide additional documentation that the appropriate processes have been followed. Complete section J by documenting the effects of each alternative on the special environmental concerns listed in I. Quantify effects whenever possible. Consider both long-term and short-term effects. Consider any effects, which may be individually minor but cumulatively significant at a larger scale or over an extended time period.
- L List any necessary easements, permissions, or permits (i.e. 404, ESA section 10, State or county permits or requirements).
- M Describe mitigation to be applied that will offset any adverse impacts. Attach documentation from other agencies.
- N The individual responsible for completing the CPA-52 must sign and date the Form indicating they have used the best available information. This signature is particularly important when a TSP is completing the CPA-52 or when NRCS is providing technical assistance on behalf of another agency.
- O Document contact and communications with USFWS, NOAA Fisheries, COE, EPA, NRCS State Biologist, State Environmental Agencies, or any others consulted. Include public participation activities, if applicable.
- P Check the applicable finding being made.
- Q Explain the reasons for making the finding identified in P. Cite any references, analysis, data, or documents which support the finding. Add additional pages as necessary. To find that an action has been sufficiently analyzed in an existing NRCS environmental document, the document must cover the area in which the action is being implemented.
- R NRCS responsible official must sign and date for NRCS actions. The FSA or other federal agency responsible official must sign and date for FSA or other agency funded activities.

CRITERIA FOR IDENTIFYING EXTRAORDINARY CIRCUMSTANCES

Extraordinary circumstances usually involve impacts on environmental concerns such as wetlands, floodplains, or cultural resources. The circumstances that may lead to a determination of extraordinary circumstances are the same factors used to make determinations of significance and include

1. Impacts that may be both beneficial and adverse and that significantly affect the quality of the human environment.
2. The degree to which the proposed action affects public health or safety.

3. Unique characteristics of the area, such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.
4. The degree to which the effects on the quality of the human environment are likely to be controversial.
5. The degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risks.
6. The degree to which the action may establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration.
7. Individually insignificant but cumulatively significant activities that have not been analyzed on a broader level, such as on a program-wide or priority area basis.
8. Adverse effects on areas listed in or eligible for listing in the National Register of Historic Places, or that may result in loss or destruction of significant scientific, cultural, or historical resources.
9. Adverse effects on an endangered or threatened species or its designated critical habitat.
10. Circumstances threatening the violation of Federal, State or local law or requirements imposed for the protection of the environment.

If one or more extraordinary circumstances are found to apply to the proposed action, determine whether the proposal can be modified to mitigate the adverse effects and prevent the extraordinary circumstances. If this can be done and the client agrees to the change, then the proposed action may be modified and categorically excluded. If the proposed action cannot be modified or the client refuses to accept a proposed change, prepare an EA or EIS as indicated above.

If none of the extraordinary circumstances are determined to apply to the proposed action (or modified action), then it may be categorically excluded. Document the rationale for the determination in Q.

Natural Resources Conservation Service
Cultural Resources Field Form – Instructions

Natural Resources Conservation Service
Cultural Resources Field Form - Instructions

Permanent Site Number: the Ohio State Historic Preservation Officer assigns this number. Please leave this blank.

Site Name or Identification: If the site has a local name or has been given a temporary designation, please enter it here.

Cultural Resource: Please identify the type of resource being recorded. Prehistoric archeological sites are associated with Native Americans and are lithic scatters, villages, mounds, etc. Historic archeological sites show evidence of Euro-American (post – 1690) goods or remains such as homestead foundations, dug outs, trash scatters, etc. Structures are facilities such as bridges, windmills, dams, stone fences, etc. Buildings may be houses, barns, outhouses, silos, etc. Traditional Cultural Properties are generally associated with Native Americans. Human burials include all marked and unmarked graves. Other types of resources may be trails, railroad rights-of-way, historic roads, historic canals and ditches, battlefields, or other evidence of human use.

Location: Please record either the UTM or legal description of the resource location. Please include a copy of the U.S.G.S. quadrangle showing the site location. Site locational information will be kept confidential to prevent looting.

Land Owner/Manager: Please identify the name and address of the landowner or land management agency on whose land the resource is located.

Resource Description: Please estimate the size of the site (either the area or the maximum dimensions) of the scatter of cultural material or the dimensions of the structure or building foundation. The name of the closest body of permanent water and site elevation are helpful in relocating the resource. Please describe the types of soils, vegetation cover, and current land use for the site area. Site condition is important in assessing National Register status. Please identify if the site appears to be undisturbed, previously cultivated (plowed and/or disked), or eroded. If eroded, please describe the type (i.e., water, wind) and extent (low, moderate, heavy). Include additional observations such as the types of artifacts you saw on the ground surface, types of features (such as mounds, hearths, and foundations), whether or not you observed evidence for buried cultural materials, and any information you think is important to describing the site. Soil color changes or vegetation changes may be a clue to the presence of buried archaeological materials. A sketch map of the site location showing the important cultural features and any on-site or nearby landmarks (such as fence and utility lines, roads, and ponds) is very helpful in relocating the site.

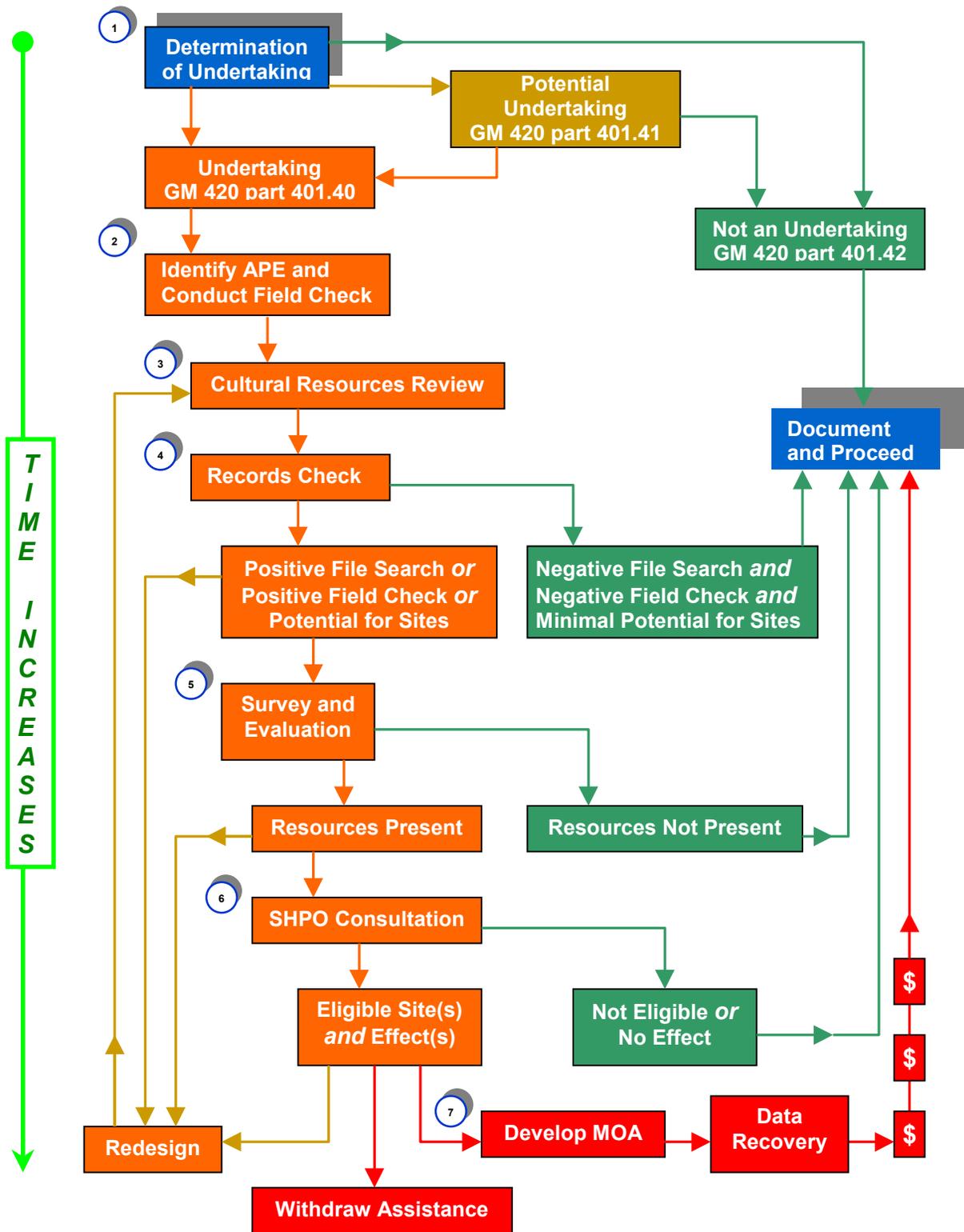
Please return the form to the Ohio NRCS Cultural Resources Coordinator,

Natural Resources Conservation Service State Office
200 North High Street, Room 522
Columbus, OH 43215

For additional information call (614) 255-2500



OHIO NRCS CULTURAL RESOURCES COMPLIANCE PROCESS



Appendix H

Interagency Correspondence and Public Comments



**The
Blade**

AFFIDAVIT OF PUBLICATION
STATE OF OHIO, LUCAS COUNTY}ss.

541 North Superior St.
Toledo, Ohio 43660
Classified: 419-724-6500
FAX: 419-724-6438
General: 419-724-6000

Advertiser Name: J.M. WALLER ASSOCIATES
Account # 2108228006J.M.
Ad Size 1 x 55,000
Ad #: 5007604
Notices

Start Date: 01-15-05

Stop Date: 01-15-05

Price: \$ 298.65

Classification: 0010 - Legal

I, *Sammy M. Waller* being first duly sworn, make oath and say that I am an Advertising Clerk in the employ of THE TOLEDO BLADE CO., the publishers of THE BLADE, that I personally know the facts herein stated, that said BLADE is a daily newspaper printed, and of general circulation in excess of 15,000, in said County, and in said State, and that the notice of which the below is a true copy of the text, was published in said Daily BLADE according to the above run schedule.

Subscribed in my presence and sworn to before me this 18 day of Jan, A.D. 2005

Wanda L. Lamb

Notary Public, State of Ohio

Legal Proof:

1—LEGAL NOTICE 330

Notice of Availability of a
Draft Programmatic
Environmental Assessment
(PEA) for Proposed
Implementation of the Ohio
Lake Erie Conservation
Reserve Enhancement
Program (CREP) Agreement

The US Department of Agriculture Farm Services Agency and the State of Ohio propose to implement an Agreement to provide a Conservation Reserve Enhancement Program in the Western Lake Erie Region of Ohio including the following counties:

Allen, Ashland, Auglaize, Crawford, Cuyahoga, Defiance, Erie, Fulton, Hancock, Hardin, Henry, Huron, Lorain, Lucas, Marion, Medina, Mercer, Ottawa, Paulding, Putnam, Richland, Sandusky, Seneca, Shelby, Van Wert, Williams, Wood, and Wyandot.

The Draft PEA will be available commencing on 1/17/05 at http://www.fsa.usda.gov/dafp/cepd/epb/pdf/OH_CREP2_Draft_EA_1_05.pdf and printed copies will be provided to the following libraries:

Norwalk Public Library, 46 West Main St., Norwalk, OH 44857, PH. 419-668-6063

Findly Public Library, 206 Broadway, Findly, OH 45840, PH. 419-422-1712

Defiance Public Library, 320 Fort Street, Defiance, OH 43512, PH. 419-782-1456, and

Toledo/Lucas County Library, 325 N. Michigan Ave., Toledo, OH 43624, PH. 419-259-5207

Comments regarding this PEA should be addressed to:

Mr. Jerry Hines, USDA/FSA
200 N. High Street, Rm. 540
Columbus, Ohio, 43215
Jerry.Hines@oh.usda.gov



WANDA L. LAMB
Notary Public
In and for the State of Ohio
My Commission Expires
May 30, 2006

The Courier

State of Ohio Hancock County, ss

I, Lilly Powell, for the publishers of *The Courier*, a daily newspaper published in Hancock County, and of general circulation therein, do solemnly swear that a notice, a copy of which is hereto annexed, was published in said newspaper on January 15, 2005, according to the best of my knowledge and belief.

Purchase Order Number:
Account name:
Account Number:20969
Public Notice Fee: \$63.50
Payable to: The Courier
P O Box 609
Findlay OH 45839-0609

**Notice of Availability of a
Draft Programmatic Environmen-
tal Assessment (PEA) for
Proposed Implementation of the
Ohio Lake Erie Conservation Re-
serve Enhancement Program
(CREP) Agreement**

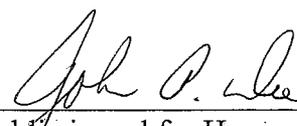
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in the Western Lake Erie Region of
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Hancock, Hardin, Henry, Huron,
Lorain, Lucas, Marion, Medina, Mer-
cer, Ottawa, Paulding, Putnam, Rich-
land, Sandusky, Seneca, Shelby,
Van Wert, Williams, Wood, and
Wyandot.

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commencing on 1/17/05 at
[http://www.fsa.usda.gov/dafp/
cepd/epb/pdf/OH_CREP2_
Draft_EA_1_05.pdf](http://www.fsa.usda.gov/dafp/cepd/epb/pdf/OH_CREP2_Draft_EA_1_05.pdf)
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to the following libraries:

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Main St., Norwalk, OH 44857, PH.
419-668-6063
Findlay Public Library, 206 Broad-
way, Findlay, OH 45840, PH.
419-422-1712
Defiance Public Library, 320 Fort
Street, Defiance, OH 43512, PH.
419-782-1456, and
Toledo/Lucas County Library, 325
N. Michigan Ave., Toledo, OH
43624, PH. 419-259-5207
Comments regarding this PEA
should be addressed to:
Mr. Jerry Hines, USDA/FSA
200 N. High Street, Rm. 540
Columbus, Ohio, 43215
Jerry.Hines@oh.usda.gov
PUBLISH: January 15, 2005


Signature

Sworn to and subscribed before me this 25th. day of
January 2005.

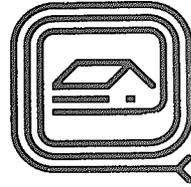

A Notary Public in and for Hancock County, Ohio

John A. Dee
Notary Public, State of Ohio
My Commission Expires:
September 9, 2009

Ohio Historic Preservation Office

567 East Hudson Street
Columbus, Ohio 43211-1030
614/ 298-2000 Fax: 614/ 298-2037

Visit us at www.ohiohistory.org



OHIO
HISTORICAL
SOCIETY
SINCE 1885

February 2, 2005

Robert Moyer
J.M. Waller Associates, Inc.
8610 N. New Braunfels Avenue, Suite 606
San Antonio, Texas 78217-6359

Dear Mr. Moyer:

This is in response to a letter from Jerry Hines of the Farm Service Agency regarding a programmatic environmental assessment for the Ohio Lake Erie Conservation Reserve Enhancement Agreement. Our comments are submitted in accordance with the provisions of Section 106 of the National Historic Preservation Act of 1966 (36CFR 800).

It is the federal agency's responsibility if determine if an action is an undertaking for the purposes of Section 106. If this project requires Section 106 review you may wish to check the information on our website <http://www.ohiohistory.org/resource/histpres/services/106rev.html> for submission requirements. Please note that we consider indirect effects as well and will need information on historic properties in the area of potential effects as well identification of properties within the project boundaries.

If you need to access our information you are welcome to use our files at the Ohio Historic Preservation Office. Our office maintains the Ohio Historic Inventory, the Ohio Archaeological Inventory, and the National Register of Historic Places for properties in Ohio. You may make an appointment with Carrie Simmons at (614) 298-2000 to use these resources. Our office is open from 9 AM to 5 PM, Monday through Friday. We also have a records search service available. Please see <http://www.ohiohistory.org/resource/histpres/toolbox/recordsSearch.html> for more information

If you have any questions please contact me at (614) 298-2043 or jquinlan@ohiohistory.org.

Sincerely,

Julie A. Quinlan, Program Review Manager
Resource Protection and Review



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
6950 Americana Parkway, Suite H
Reynoldsburg, Ohio 43068-4127

(614) 469-6923
Fax: (614) 469-6919

January 27, 2005

Mr. Robert Moyer
J.M. Waller Associates, Inc.
8610 N. New Braunfels Ave., Suite 606
San Antonio, TX 78217-6359

Dear Mr. Moyer:

This is in response to your January 13, 2005 letter requesting the U.S. Fish and Wildlife Service's review of the Draft Programmatic Environmental Assessment (PEA) for the proposed implementation of the Ohio Lake Erie Conservation Reserve Enhancement Program (CREP) Agreement. The agreement would enroll 67,000 acres of land in the following counties: Allen, Ashland, Auglaize, Crawford, Cuyahoga, Defiance, Erie, Fulton, Hancock, Hardin, Henry, Huron, Lorain, Lucas, Marion, Medina, Mercer, Ottawa, Paulding, Putnam, Richland, Sandusky, Seneca, Shelby, Van Wert, Williams, Wood, and Wyandot. Approved conservation practices would be established on these lands and landowners would receive support for the costs of installing and maintaining such practices as well as annual rental payments for lands enrolled in the program.

The Service has reviewed the Draft PEA and submits the following comments for your consideration:

In general, we agree that implementation of the Ohio Lake Erie CREP program will enhance habitat for fish and wildlife species throughout the region. In addition, we believe that substantial water quality benefits will also result. We do have concerns regarding the potential for temporary adverse impacts of construction or installation of certain practices on Federally listed endangered, threatened, and candidate species. The northwestern portion of Ohio supports numerous Federally listed species. The Draft PEA identifies these species by name, but does not thoroughly discuss the habitat of these species, or how the implementation of individual actions within the CREP program could impact listed species. We have provided below a habitat description, general location information, and specific avoidance and minimization measures to protect such species during construction. We strongly recommend that, if Federally listed species are known to occur within the vicinity of a proposed project, this office be contacted to help assess impacts and identify protective measures.

Indiana bat (*Myotis sodalis*), Endangered. All Counties within the CREP are within the range of the Indiana bat.

Since first listed as endangered in 1967, their population has declined by nearly 60%. Several factors have contributed to the decline of the Indiana bat including the loss and degradation of suitable hibernacula, human disturbance during hibernation, pesticides, and the loss and degradation of forested habitat, particularly stands of large, mature trees. Fragmentation of forest habitat may also contribute to declines. Summer habitat requirements for the species are not well defined but the following are considered important:

1. Dead or live trees and snags with peeling or exfoliating bark, split tree trunk and/or branches, or cavities, which may be used as maternity roost areas.
2. Live trees (such as shagbark hickory and oaks) which have exfoliating bark.
3. Stream corridors, riparian areas, and upland woodlots which provide forage sites.

Should the proposed site contain trees or associated habitats exhibiting any of the characteristics listed above, we recommend that the habitat and surrounding trees be saved wherever possible. If the trees must be cut, further coordination with this office is recommended. Additionally, suitable bat roost trees should

not be cut between April 15 and September 15. If desirable trees are present and must be cut, mist net or other surveys may be warranted to determine if bats are present. Any survey should be designed and conducted in coordination with the Endangered Species Coordinator for this office. The survey should be conducted in June or July, since the bats would only be expected in the project area from approximately April 15 to September 15.

Bald eagle (*Haliaeetus leucocephalus*), Threatened. Counties include Crawford, Defiance, Erie, Hancock, Hardin, Henry, Huron, Lorain, Lucas, Marion, Mercer, Ottawa, Putnam, Richland, Sandusky, Seneca, Wood, and Wyandot.

Bald eagles typically nest in supercanopy trees near large bodies of water. Bald eagle nests are concentrated within the vicinity of the large Lake Erie and Sandusky Bay marshes in Erie, Ottawa, Sandusky, and Lucas Counties, and along the major river corridors throughout the CREP area. If any nests are located within ½ mile of the project site, further coordination with this office will be necessary. If the nest is active, we recommend that work at the site be restricted from mid-January through July to allow pre-nesting activities, incubation, and raising of the young.

Copperbelly Watersnake (*Nerodia erythrogaster neglecta*), Threatened. Counties include Williams, Defiance, and Hardin.

Habitat requirements for this species include lowland swamps or other warm, quiet waters (both seasonal and permanent), adjacent wooded migration corridors, adjacent upland slopes with underground hibernation sites below the frost line, and streams or rivers. Known populations exist in Northwest and Bridgewater Townships, Williams County. If suitable habitat for this species is located on the site, please contact this office prior to site construction. Timeframes may be put on excavation activities to protect the snake during hibernation.

Lakeside daisy (*Hymenoxys herbacea*), Threatened. Counties include Erie and Ottawa.

This plant occurs on the Marblehead Peninsula and Kelleys Island and is found in dry, rocky prairie underlain by limestone or in cliff and alvar crevices of exposed limestone rock outcrops. Lakeside daisy requires an open habitat with full sun exposure. If suitable habitat is present, we recommend that surveys for this species be conducted in May when the plant is in flower.

Lake Erie Watersnake (*Nerodia sipedon insularum*), Threatened. Counties: Lake Erie Islands within Erie and Ottawa Counties.

The Lake Erie Watersnake is found on the offshore islands and in adjacent waters of Lake Erie. Watersnake summer habitat consists mainly of rocky shorelines with adjacent vegetation and shoreline structures such as crib docks. Winter hibernation habitat for the watersnake includes the island interior and the shoreline/vegetation interface. We recommend that all projects on the Lake Erie Islands be reviewed by this office, as the snake is present in many locations on the islands. Timeframes may be put on excavation activities to protect the snake during hibernation.

Eastern prairie fringed orchid (*Platanthera leucophaea*), Threatened. Counties include Lucas, Ottawa, and Sandusky.

This tall showy orchid is found in wet prairies, sedge meadows, and moist road-side ditches. We recommend that the project location be examined to determine if suitable habitat for the orchid is present. If suitable habitat is present and proposed to be impacted, we recommend that surveys for this species be conducted in early July when the orchids are in bloom.

Karner blue butterfly (*Lycaeides melissa samuelis*), Endangered. Counties include Lucas.

This butterfly is found in the Oak Openings region of northwest Ohio, due to the presence of *Lupinus perennia*, an important plant in the life cycle of the butterfly. We encourage the conservation of native lupine plants wherever possible. We also encourage that native lupine plants be incorporated into site restoration efforts, green areas, and other project designs to benefit the Karner blue butterfly.

Piping plover (*Charadrius melodus*), Endangered. Counties include Cuyahoga, Erie, Lorain, Lucas, Ottawa, and Sandusky.

Plover habitat includes sand or pebble beaches with sparse vegetation along the shore of Lake Erie. Although plovers are not currently nesting in Ohio, they may be found along the shore of Lake Erie during migration seasons. In addition, as plover populations increase due to recovery actions, they may seek nesting habitat in Ohio. In Ohio, restoration of sand beaches, which provide nesting habitat, and coastal wetlands, which provide foraging habitat, could benefit plover recovery. Two Critical Habitat areas have been designated for plovers in Ohio: Sheldon Marsh State Nature Preserve, Erie County, and Headland Dunes State Nature Preserve, Lake County.

Clubshell mussel (*Pleurobema clava*), Endangered. Counties include Defiance, Hancock, and Williams.

This species is known from the Blanchard River watershed within Hancock County, and the St. Joseph River watershed in Defiance and Williams County. The clubshell inhabits areas with sand or gravel substrate and also prefers areas with riffles and runs. For any projects involving instream work within these specified watersheds, we recommend that you contact this office to determine if there is a potential for impacts to this species.

Northern riffleshell mussel (*Epioblasma torulosa rangiana*), Endangered.

White cat's paw pearly mussel (*Epioblasma obliquata perobliqua*), Endangered.
Counties include Williams.

These species are known from the St. Joseph River watershed in Williams County. They inhabit areas with sand or gravel substrate and also prefer areas with riffles and runs. For any projects involving instream work within this watershed, we recommend that you contact this office to determine if there is a potential for impacts to these species.

Rayed bean mussel (*Villosa fabalis*), Candidate. Counties include Defiance, Hancock, Hardin, Marion, Williams, and Wyandot.

This species is known from the Blanchard River watershed in Hancock County, the St. Joseph River watershed in Williams and Defiance Counties, and the Tymochtee Creek watershed in Marion and Wyandot Counties. They are usually found in or near shoal or riffle areas, and in the shallow, wave-washed areas of lakes. Substrates typically include gravel and sand, and they are often associated with, and buried under the roots of vegetation, including water willow (*Justicia americana*) and water milfoil (*Myriophyllum* sp.). For any projects involving instream work within these specified watersheds, we recommend that you contact this office to determine if there is a potential for impacts to this species.

Eastern massasauga (*Sistrurus catenatus catenatus*), Candidate. Counties include Crawford, Cuyahoga, Defiance, Erie, Fulton, Hardin, Huron, Lorain, Lucas, Marion, Medina, Ottawa, Paulding, Sandusky, Seneca, and Wyandot.

The massasauga is often found in or near wet areas, including wetlands, wet prairie, or nearby woodland or shrub edge habitat. This often includes dry goldenrod meadows with a mosaic of early successional woody species such as dogwood or multiflora rose. Wet habitat and nearby dry edges are utilized by the snakes, especially during the spring and fall. Dry upland areas up to 1.5 miles away are utilized during the summer, if available. If suitable habitat exists within the project area, we recommend that you contact this office to determine if there is a potential for impacts to this species.

This technical assistance letter is submitted in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C.661 et seq.), the Endangered Species Act of 1973, as

amended, and is consistent with the intent of the National Environmental Policy Act of 1969, and the U.S. Fish and Wildlife Service's Mitigation Policy.

If project plans change or if portions of the proposed project were not evaluated, it is our recommendation that you contact our office for further review. If you have questions, or if we may be of further assistance in this matter, please contact Megan Seymour at extension 16 in this office.

Sincerely,

A handwritten signature in black ink that reads "Mary Knapp". The signature is written in a cursive, flowing style.

Mary Knapp, Ph.D.
Supervisor

cc: ODNR, DOW, SCEA Unit, Columbus, OH

Record of Communication/Interview Summary

<u>Person Interviewed/Organization:</u>	Scott Schlueter, USACE Buffalo District
<u>Phone No./Address:</u>	716-879-4325; Alan Sisselman (Chief), 1776 Niagra St Buffalo, NY 14207
<u>Date and Location of Interview:</u>	10 February 2005, telephone discussion JMWA, San Antonio
<u>Subject of Interview:</u>	Response to request for comments on Ohio Lake Erie CREP Draft PEA
<u>Interviewer and Project Name:</u>	Robert Moyer, Ohio Lake Erie CREP PEA, USDA/FSA Order No. 43-3151-4-7236 (JMWA #039-01-001-01-001)

Details of Interview: Mr. Scott Schlueter at the US Army Corp of Engineers Buffalo District called JMWA in response to his review of the Draft Ohio Lake Erie CREP PEA. He stated that, overall, his organization was in favor of the goals and purpose of the CREP. He emphasized, however, that any planned modifications within riparian areas or other drainages, such as changing a channel's bottom elevation, would need to be evaluated and approved. This would be necessary to ensure that they would not adversely impact their hydraulic characteristics, i.e. cause increases in flooding, cause flow restrictions, decrease in-stream water storage capacities, or remove or change other existing beneficial features. JMWA will make revisions to the section(s) of the Draft PEA relating to these comments as appropriate.

GLOSSARY

GLOSSARY

Term/Acronym	Definition
2002 Farm Bill	Farm Security and Rural Investment Act of 2002
2-CRP	United States Department of Agriculture, Farm Service Agency (FSA) Handbook, <i>Agricultural Resource Conservation (Revision 4)</i>
Agricultural Pollution	Wastes, emissions, and discharges arising from farming activities. Causes include runoff and leaching of pesticides and fertilizers; pesticide drift and volatilization; erosion and dust from cultivation; and improper disposal of animal manure and carcasses. Some agricultural pollution is point source (e.g., large feedlots), but much is nonpoint source, meaning that it derives from dispersed origins.
Agricultural Services	Includes establishments primarily engaged in supplying soil preparation services, crop services, landscape and horticultural services, veterinary and other animal services, and farm labor and management services.
Algal Bloom	Rapid and flourishing growth of algae in and on a body of water.
Alkaline	Having a ph of 7.0 or above.
Alluvium	Material transported and deposited on land by flowing water, such as clay, silt, and sand.
Anaerobic	Devoid of gaseous or dissolved molecular oxygen; organisms that are able to live without oxygen.
Approved Conservation Plan	A plan that covers approved cover, other required practices necessary for establishing and maintaining cover, and a schedule for installing conservation practices to provide adequate environmental benefits on eligible cropland.
Aquifer	An underground formation or layer of earth, gravel, or porous stone capable of storing and yielding significant quantities of water;
Beneficial Use	The role that the government decides a water body will fulfill. Examples of these uses include healthy fish and wildlife populations, fish consumption, aesthetic value, safe drinking water sources, and healthy phytoplankton and zooplankton communities.
Benthic Organisms	Bottom-dwelling aquatic organisms.
Bioaccumulation	The uptake and retention of nonfood substances by a living organism from its environment, resulting in a build-up of the substances in the organism.
Biomass	Any biological material. In reference to alternative energy sources, mainly plants or parts of plants, such as harvested trees, leaves, limbs, etc. In ecological studies, the dry mass of living organisms in a specified area.
Coliform	Bacteria common to the intestinal tract of warm-blooded animals, including humans.
Conservation	The management of human and natural resources to provide maximum benefits over a sustained period of time. In farming, conservation entails matching cropping patterns and the productive potential and physical limitations of agricultural lands to ensure long-term sustainability of profitable production. Conservation practices focus on conserving soil, water, energy, and biological resources.
Conservation Easement	Acquisition of rights and interest to a property to protect identified conservation or resource values, using a reserved interest deed.
Conservation Plan	A combination of land uses and farming practices to protect and improve soil productivity and water quality, and to prevent deterioration of natural resources on all or part of a farm. Plans must meet technical standards.
Conservation Practice	A technique or measure used to protect soil and water resources, air, plants, and animals for which standards and specifications for installation, operation, or maintenance have been developed.
Cost-Sharing	Payments to producers to cover a specified portion of the cost of installing, implementing, or maintaining a conservation practices.
Critical Habitat	The specific areas within the geographical area occupied by the species on which are found those physical or biological features that are both essential to the conservation of the species and may require special management considerations or protection.
Crop failure	Consists mainly of the acreage on which crops failed because of weather, insects, and diseases, but includes some land not harvested due to lack of labor, low market prices, or other factors.

Cropland harvested	Includes row crops and closely sown crops; tree fruits, small fruits, and tree nuts; vegetables; other minor crops and hay.
Cropland used only for pasture	Generally is considered in the long-term crop rotation, as being tilled, planted in field crops, and then re-seeded to pasture at varying intervals. However, some cropland pasture is marginal for crop uses and may remain in pasture indefinitely. This category also includes land that was used for pasture before crops reach maturity and some land used for pasture that could have been cropped without additional improvement.
CRP-1	This form is the contract between the Commodity Credit Corporation and producers for the Conservation Reserve Program
CRP-2	Producers use this form to offer land for CRP when the program is offered.
CRP-SIP	CRP-signing incentive payment
Cultivated summer fallow	Refers to cropland in sub-humid regions of the Western United States cultivated for a season or more to control weeds and accumulate moisture before small grains are planted.
Deposition	The washout or settling of material from the atmosphere to the ground or to surface waters.
Dissolved Oxygen (DO)	Amount of free oxygen found in water; most commonly used measurement of water quality.
Drainage basin	The geographical area draining into a river or reservoir.
Easement	A landowner sells or surrenders the right to develop a portion of the property, usually in return for a payment or some other benefit.
Ecosystem	A level of organization within the living world that includes both the total array of biological organisms present in a defined area and the chemical-physical factors that influence the plants and animals in it; all biological and non-biological variables within a defined area.
Ecotone	A zone of transition between two well-defined vegetated areas.
Erodibility Index	A numerical value that expresses the potential erodibility of soil in relation to its soil loss tolerance value without consideration of applied conservation practices or management. (Defined at 7 CFR 12.2). Derived by dividing potential erosion (from all sources except gully erosion) by the T value, which is the rate of soil erosion above which long term productivity may be adversely affected. The erodibility index is used in conservation compliance and CRP. One of the eligibility requirements for the CRP is that land have an EI greater than 8
Emergent Plant	A plant that grows in shallow water with the root system submerged under the water and the upper vegetation rising about the water.
Endangered Species	A species that is threatened with extinction throughout all or a significant portion of its range.
Erosion	The removal and loss of soil by the action of water, ice, gravity, or wind.
Eutrophication	A process where more organic matter is produced than existing biological oxidization processes can consume.
Farm Income	The earnings of a farming operation over a given period of time, measured by several factors
Farmed Wetland	Wetlands that have been partially drained or are naturally dry enough to allow crop production in some years, but otherwise meet the soil, hydrological, and vegetative criteria defining a wetland.
Fauna	All animals associated with a given habitat, area, or period.
Filter Strip	An area of vegetation, generally narrow and long, that slows the rate of runoff, allowing sediments, organic matter, and other pollutants that are being conveyed by the water to be removed. Filter strips reduce erosion and the accompanying stream pollution, and can be a best management practice.
Floodplain	The lowland that borders a stream or river and is found outside of the floodway. It is usually dry, but subject to flooding.
Flora	All plant life associated with a given habitat, country, or period, including bacteria.
Flyways	A general term used to describe common migrating patterns among different bird species, based on definite geographic regions.
Forestland	A land cover/land use category that is at least 10 percent stocked by single-stemmed woody species of any size that will be at least 13 feet tall at maturity. Also included, for the NRI, is land bearing evidence of natural regeneration of tree cover and not currently developed for nonforest use.

Forest-use land	Forest-use land excludes special-use areas in forest cover, such as parks, wilderness, and wildlife areas, to avoid double counting. To eliminate overlap with other uses that exist is not feasible, but this reduced area is a more realistic approximation of the land that they may be expected to serve normal forest uses.
Gross cash income	Is the sum of all receipts from the sale of crops, livestock, and farm related goods and services as well as all forms of direct payments from the government.
Gross farm income	Is the same as gross cash income with the addition of nonmoney income, such as the value of home consumption of self-produced food and the imputed gross rental value of farm dwellings.
Groundwater	Water in the porous rocks and soils of the earth's crust; a large proportion of the total supply of fresh water.
Harvested Acres	The cropland actually harvested for a particular crop, usually somewhat smaller at the national level than planted acres due to weather damage or abandonment because of low market prices.
Harvested cropland	This category includes land from which crops were harvested, hay was cut, and land was used to grow short-rotation woody crops, land in orchards, citrus groves, Christmas trees, vineyards, nurseries, and greenhouses. Land from which two or more crops were harvested was counted only once. Land in tapped maple trees is included in woodland not pastured.
Hay	All hay including alfalfa,
Hydric	Containing an abundance of water.
Hydrology	The study of the distribution, movement, and chemical makeup of surface and ground waters.
Hydrophyte	Plants that live in water or that have adapted to hydric conditions.
Hypoxia	A low oxygen condition in the water that may occur where a nutrient-laden free-flowing body of water (like a river) enters a lake or ocean. The high nutrient content promotes rapid growth of plankton/phytoplankton that subsequently die and, in the process, consume large amounts of oxygen.
Infiltration	The flow of a liquid into a substance through small openings.
Introduced Species	Species that have evolved elsewhere and have been transported and purposely or accidentally disseminated by humans. Many terms describe these species including: alien, exotic, non-native, and nonindigenous
Invasive Species	A species that is 1) non-native (or alien) to the ecosystem under consideration, and 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health
Lacustrine	Pertaining to lakes.
Land Capability (Classification)	The quality of soil resources for agricultural use is commonly expressed as land capability classes and subclasses, which show, in a general way, the suitability of soils for most kinds of field crops. Soils are grouped according to their limitations when they are used to grow field crops, the risk of damage when they are used, and the way they respond to treatment. Capability classes, the broadest groups, are designated by Roman numerals I through VIII, with I being the best soils and VIII being the poorest.
Market Price	The price per bushel (or pound or hundredweight) of an agricultural commodity paid in the private sector. It can sometimes refer to the price paid at domestic seaports or large inland terminal markets (such as daily cash prices listed in newspapers).
Marsh	A coastal region where the soil has high moisture content because of periodic flooding caused by the tides. The vegetation is normally dominated by grasses.
Median Household Income	The income level which divides the income distribution of all of the households in a given area into two equal groups, half of the households having incomes above the median, half having incomes below the median.
Migrational Homing	Term used to describe the behavior of birds that return to the same nesting grounds year after year.
Mitigation	A method or action to reduce or eliminate adverse program impacts.
Native Grasses	Various regional and national grasses that were original to particular areas of the United States; they are regional with regards to soils, acidity or alkalinity, climate, diseases, and symbiotic coexistence with other plants in the surrounding area.
Neotropical Migrants	Bird species that annually migrate to the tropics during the northern winter months.

Net cash income	Is gross cash income less all cash expenses such as for feed, seed, fertilizer, property taxes, interest on debt, wages to hired labor, contract labor and rent to nonoperator landlords.
Net farm income	Is gross farm income less cash expenses and noncash expenses, such as capital consumption, perquisites to hired labor, and farm household expenses. Net farm income is a longer-term measure of the ability of the farm to survive as a viable income-earning business, while net cash income is a shorter-term measure of cash flow.
Nitrate	The nitrogen ion, NO ₃ ⁻ , is derived from nitric acid and is an important source of nitrogen in fertilizers. Nitrate pollution of drinking water, shallow wells being particularly vulnerable, is of concern because infants are especially sensitive.
Nitrogen	An element found in the air and in all plant and animal tissues. For many crops, nitrogen fertilizer is essential for economic yields. However, nitrogen can also be a pollutant when nitrogen compounds are mobilized in the environment (e.g., leach from fertilized or manured fields), are discharged from septic tanks or feedlots, volatilize to the air, or are emitted from combustion engines. As pollutants, nitrogen compounds can have adverse health effects (see nitrate) and contribute to degradation of waters.
No Net Loss	A federal and state policy to achieve no overall net loss of the nation's remaining wetlands base as defined by acreage and function and to restore and create wetlands where feasible, to increase the quality and quantity of the nation's wetland resource base. Related program: Wetland Conservation Act, Section 404.
Non-Indigenous Species	Those species found beyond their natural ranges or natural zone of potential dispersal. Also referred to as exotic species.
Non-Indigenous Aquatic Nuisance Prevention and Control Act of 1990	A federal law to prevent the unintentional introduction and dispersal of non-indigenous species into the waters of the U.S. The act mandates the establishment of: a national ballast water control program; the Aquatic Nuisance Species Task Force; initial research funding; technical assistance and education for federal and state agencies; state management plans; and grant programs to prevent, monitor, and control the spread of zebra mussels and other exotic species. It also provides for the establishment of regulations that control the introduction of and dispersal of these organisms. See also aquatic nuisance species.
Nonpoint Source	A pollution source, which comes from diffuse sources (the origin of the pollutant cannot be easily defined), such as land runoff, precipitation, atmospheric deposition, or percolation. Nonpoint source pollution occurs when moving water, either from precipitation or irrigation, runs over the land or through the ground, picks up pollutants, and deposits them into a body of water or into the groundwater.
Natural Resources Conservation Service	A federal agency within the United States Department of Agriculture that provides technical assistance to land users in cooperation with other federal, state, and local agencies in carrying out a variety of natural resources-related programs designed to promote protection and wise use of these resources on private lands. Formerly the Soil Conservation Service (SCS).
Nutrients	Elements or compounds essential as raw materials for organism growth and development, such as carbon, nitrogen, and phosphorus.
Nutrient Pollution	Contamination by excessive inputs of nutrient a primary cause of eutrophication of surface waters, in which excess nutrients, usually nitrogen or phosphorus, stimulate algal growth. Sources of nutrient pollution include runoff from fields and pastures, discharges from septic tanks and feedlots, and emissions from combustion.
Ozone	A highly reactive molecule composed of three oxygen atoms. Environmentally, ozone is important in two completely separate contexts—one, as a naturally occurring screen of harmful radiation in the outer atmosphere (i.e., stratospheric ozone), and two, as a component of polluting smog formed from emissions resulting from human activities (i.e., urban smog). In the stratosphere 7 to 10 miles above the Earth, naturally occurring ozone acts to shield the Earth from harmful radiation.
Ohio Lake Erie CREP	Ohio Lake Erie Watersheds CREP Agreement

Organic	Chemically, a compound or molecule containing carbon bound to hydrogen. Organic compounds make up all living matter. The term organic frequently is used to distinguish "natural" products or processes from man-made "synthetic" ones. Thus, natural fertilizers include manures or rock phosphate, as opposed to fertilizers synthesized from chemical feedstocks.
Other Rural Land	A land cover/land use category that includes farmsteads and other farm structures, field windbreaks, barren land, and marshland.
Outfall	The location or structure where wastewater or drainage empties into the surface water from a sewer, drain, or other conduit.
Palustrine	Describing marsh or wetlands.
Particulate Matter (see also PM ₁₀)	Air pollutants, including dust, soot, dirt, smoke, and liquid droplets directly emitted into the air by sources such as factories, power plants, cars, construction activity, fires, and natural windblown dust.
Pastureland	A land use/land cover category of land managed primarily for the production of introduced forage plants for livestock grazing. For the NRI, includes land that has a vegetative cover of grasses, legumes, and/or forbs, regardless of whether or not it is being grazed by livestock.
Pastureland and rangeland, other than cropland and woodland pastured	This land use category is very inclusive and encompasses all grazable land that does not qualify as cropland pasture. It may be irrigated or dry land. In some areas, it can be a high quality pasture but could not be cropped without improvements. In other areas, it is barely able to be grazed and is only marginally better than waste land.
Peat	The residue of partly decomposed plant material in which various plant parts, such as stems, can easily be discerned.
Per Capita Income	The average income computed for every person in a given area, excluding patients or inmates in institutional quarters. Per capita income is derived by dividing the total income of every person in a given area by the total population within that area.
Permanent Vegetative Cover	Trees, or perennial grasses, legumes, or shrubs with an expected life span of at least 5 years. Permanent cover is required on cropland entered into the CRP.
pH	A numerical indicator of the acidity or alkalinity of a substance; ranges from 0.0 (acidic) to 14.0 (basic or alkaline); pure water is neutral, with a pH of 7.0.
Practice Incentive Payment PIP	Practice incentive payment is a one-time payment equal to 40% of the eligible cost-share.
Point Source Pollution	Pollutants that are discharged or emitted from discrete "point" sources, such as pipes and smokestacks. While much agricultural pollution is nonpoint source, some agricultural activities are affected (e.g., feedlots of over 1,000 animal units).
Porosity	A description of the total volume of soil, rock, or other material that is occupied by pore spaces. A high porosity does not equate to a high permeability, in that the pore spaces may be poorly interconnected.
Poverty Thresholds	For statistical purposes (e.g., counting the poor population), the U.S. Census Bureau uses a set of annual income levels (poverty thresholds) that represent a Federal Government estimate of the point below which a household of a given size has cash income insufficient to meet minimal food and other basic needs. They were developed in the 1960s, based largely on estimates of the minimal cost of food needs, to measure changes in the poor population. The thresholds differ by household size and are adjusted annually for overall inflation.
Priority Pollutants	Pollutants identified in certain federal and state regulations. Priority pollutants have different definitions in air, water, and waste programs.
Rangeland	A land cover/land use category on which the climax or potential plant cover is composed principally of native grasses, grass-like plants, forbs, or shrubs suitable for grazing and browsing, and introduced forage species that are managed like rangeland. For the NRI, grasslands, savannas, many wetlands, some deserts, and tundra were considered to be rangeland.
Regional Permit	A type of general permit that may be issued by a division or district engineer (USACE), after compliance with other procedures, for activities in navigable waters of the U.S. or wetlands. Related program: Section 404, 33 CFR.
Riparian	Of, on, or relating to the banks of a natural course of water.

Riparian Areas	Lands adjacent to rivers and streams that are influenced by flooding. They are considered transition zones between the aquatic and terrestrial ecosystem that are connected by direct land-water interaction.
Runoff	Non-infiltrating water entering a stream or other conveyance channel shortly after a rainfall.
Scioto River CREP	Scioto River Watershed CREP
Section 404	A term used to refer to Section 404 of the federal Clean Water Act that outlines permit requirements for dredging and other filling activities in waters of the U.S.. This is the primary federal law that regulates activities affecting wetlands. The Section 404 program is administered by the USACE in accordance with the EPA. Related program: Clean Water Act.
Sediment	Any finely divided organic and/or mineral matter derived from rock or biological sources that have been transported and deposited by water or air.
Sedimentation	The process of depositing sediment from suspension in water.
Signing Incentive Payment (S-I-P)	(Signing Incentive Payment) is a one-time payment up to \$150
Sign-Up Period	A USDA-prescribed time period, usually lasting several months, when farmers can enroll in a crop price support or other farm program.
Slippage	Occurs when the amount of land an owner enrolls in the CRP is partially or wholly offset by additional land that is brought into production.
Sodbuster	A program created by Title 12 of the Food Security Act of 1985 designed to discourage the plowing up of erosion-prone grasslands for use as cropland. Sodbuster provisions remain in effect under the FAIR Act of 1996.
Soil Quality	The capacity of a specific kind of soil to function, within natural or managed ecosystem boundaries, to sustain plant and animal productivity, maintain or enhance water and air quality, and support human health and habitation.
Soil and Water Conservation District (SWCD)	Local county units of government within states that assist landowners with implementation of soil and water conservation measures and practices. Related program: Board of Water and Soil Resources.
Surface Water	All water above the surface of the ground including, but not limited to lakes, ponds, reservoirs, artificial impoundments, streams, rivers, springs, seeps, and wetlands.
Swampbuster	A provision of the Food Security Act of 1985 that discourages the conversion of wetlands to cropland use. Swampbuster provisions were amended in the FAIR Act of 1996 to provide greater flexibility for producers and landowners.
Threatened Species	A species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
Topsoil	The topmost layer of soil, usually containing organic matter.
Total Cropland	Includes five components: cropland harvested, crop failure, cultivated summer fallow, cropland used only for pasture, and idle cropland.
Total Maximum Daily Load (TMDL)	A TMDL identifies the amount of a specific pollutant or property of a pollutant, from a point source ("end of the pipe"), a nonpoint source (from runoff), and natural background sources, including a margin of safety, that may be discharged to a water body and still ensure that the water body attains water quality standards.
Toxic Pollutant	A substance or combination of substances, including disease-causing agents, which may cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including reproductive malfunctions), or physical deformation in organisms or their offspring.
Toxicity	The inherent potential of a substance to cause adverse effects in a living organism.
Vegetative Cover	Is planted vegetation that has an expected lifespan to sufficiently protect the land for the life of CRP-1 and includes trees, perennial grasses, legumes, and forbs or shrubs.
Water Table	The uppermost level of the belowground, geological formation that is saturated with water.

Waters of the United States	A term used in federal regulations that defines all water bodies regulated as waters of the U.S. It includes: (1) all waters which may be susceptible to use in interstate or foreign commerce; (2) all interstate waters, including interstate wetlands; (3) all other waters, such as intrastate lakes, rivers, streams (including intermittent streams), mud flats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters; (4) all impoundments of waters otherwise defined as waters of the United States; (5) tributaries of waters identified in this section; (6) the territorial seas; (7) wetlands adjacent to waters (other than waters that are themselves wetlands). Related programs: Clean Water Act, 33 CFRs.
Watershed	The land across and under which water flows on its way to a stream, river, lake, or other water body; the surface drainage area above a specified point on a stream.
Wellhead Protection Area	A surface and subsurface land area regulated to prevent contamination of a well or well-field supplying a public water system. This program, established under the Safe Drinking Water Act, is implemented through state governments.
Wetland	Areas that are saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. (Defined at 33 CFR 320-328.3)
Wildlife Corridor	Is a strip of land, 1 to 3 chains in width, which includes woody vegetation as determined by STC, in consultation with the State Technical Committee, that connects existing wildlife cover and provides travel lanes for wildlife through a nonprotective cover area.
Woodland pastured	This category includes all woodland used for pasture or grazing during the census year. Woodland or forest land pastured under a per-head grazing permit was not counted as land in farms and, therefore, was not included in woodland pastured.
Zebra Mussel	An exotic species originally introduced into the Great Lakes and its tributaries via the ballast water of transoceanic ships. This small bivalve mussel poses a multibillion dollar threat to industrial, agricultural, and municipal water supplies by clogging water intake pipes. It can also have impacts on fisheries, native freshwater mussels, and natural ecosystems. Free-swimming larvae spread by river currents.