

MODIFICATION NUMBER THREE

of the

AGREEMENT CONCERNING IN-LIEU MITIGATION FEES

between

U.S. ARMY CORPS OF ENGINEERS,
NORTHERN KENTUCKY UNIVERSITY CENTER FOR APPLIED ECOLOGY &
NORTHERN KENTUCKY UNIVERSITY RESEARCH FOUNDATION

February 2012

LRL-2010-326-pgj

I. INTRODUCTION

- A. This document shall constitute the instrument (Instrument) that governs the in-lieu fee mitigation program (Mitigation Program) jointly sponsored by the Northern Kentucky University Center for Applied Ecology (CAE) and Northern Kentucky University Research Foundation (NKURF) (jointly “Sponsor”). Specific background information for the Mitigation Program is provided in Appendix A.

The Instrument is a modification of a prior agreement (Agreement) entitled “Agreement Concerning In Lieu Mitigation Fees” originally finalized August 30, 1999. The Agreement and the Instrument establish the Mitigation Program for the Sponsor for purposes of meeting requirements of the Mitigation Rule (Mitigation Rule) set forth in 33 CFR Part 332. The Instrument is an agreement between the Sponsor and the U.S. Army Corps of Engineers Louisville District (Corps).

- B. Because the Instrument is a modification of an existing agreement, it is important to maintain continuity and assurances for existing projects funded under the Agreement while transitioning to the Instrument. The Instrument shall apply to all funds collected and all projects approved on or after the effective date of the Instrument. Projects previously approved for design under the Agreement that are approved for full project funding (construction and post construction) by the Interagency Review Team (IRT) prior to the effective date of the Instrument shall be completed under the terms of the Agreement. If any of the projects approved under the Agreement are terminated then the remaining funds shall become unobligated, and managed in accordance with the Instrument. Any project funds remaining upon completion and closure of projects approved under the Agreement shall be managed in accordance with the Instrument.

Transition from the Agreement to this Instrument will require conversion of unobligated funds collected under the Agreement. Refer to Appendix A for transition, accounting, fee schedule, and other program-specific information.

II. PURPOSE

- A. The fundamental objectives of the Instrument are to establish procedures for compensatory mitigation for losses to waters of the United States (WOUS) authorized by DA permits pursuant to Section 404 of the Clean Water Act (33 USC 1344) and Section 10 of the River and Harbors Act of 1899 (33 U.S.C. 401, 403). The Corps shall have the final authority for approval of mitigation activities performed under the Instrument. The definitions listed in 33 CFR §332.2 shall apply.
- B. The Sponsor desires to restore (rehabilitate, re-establish), enhance, establish, and preserve aquatic resources in Kentucky for the benefit of its citizens. The Sponsor is authorized to receive, hold, and account for assets for the purpose of compensatory mitigation. Further documentation regarding the Sponsor’s authorization is provided in the Appendix A.
- C. This Instrument provides the Sponsor with authorization to provide mitigation credits to Department of Army (DA) permittees to be used as compensatory mitigation for DA Permits, upon approval by the District Engineer (Corps), or the Corps’s official representative, at the Corps District with jurisdiction over the permitted activity.

Approval shall be in the form of a DA permit. The Sponsor does not have the written or implied authority to approve DA permits.

III. PROGRAM OPERATION

A. INTERAGENCY REVIEW TEAM

The IRT consists of representatives from the Corps, U.S. Fish and Wildlife Service (USFWS), U.S. Environmental Protection Agency (US EPA), Kentucky Department of Fish and Wildlife Resources (KDFWR) and Kentucky Division of Water (KDOW). The Corps is the chair of the IRT. USFWS, USEPA, KDFWR and KDOW are the IRT Members. The IRT shall replace the Mitigation Review Team (MRT) previously established in the Agreement.

1. Corps of Engineers:

The Corps, as the chair of the IRT, is responsible for consulting with the IRT in accordance with the requirements of 33 CFR §332.8, providing oversight of the Mitigation Program, and ensuring compliance with Section 404 of the Clean Water Act (CWA) and Section 10 of the River and Harbors act of 1899 (RHA).

The Louisville District is responsible under this Instrument for communicating with the Sponsor and coordinating with the IRT on issues related to the Instrument and on an individual compensatory mitigation project or DA permit.

2. IRT Members:

The IRT Members are responsible for advising the Corps in assessing monitoring reports, recommending remedial or adaptive management measures, and providing input on credit releases, credit release schedules, and instrument modifications. The procedures for IRT Member review and comment set forth in 33 CFR §332.8 shall apply.

B. CREDITS

1. Allocation of Advance Credits

The number of Advance Credits allocated under this Instrument and the basis for determining that number are provided in Appendix A. The number of Advance Credits available to the Sponsor at any given time to sell or transfer to permittees is equal to the number of Advance Credits allocated in Appendix A minus any Advance Credits that have been sold or provided to satisfy DA permittee compensatory mitigation requirements but not yet fulfilled.

2. Credit Sales

The Sponsor may, but is not obligated to sell mitigation credits. The Sponsor agrees that mitigation credits sold will be solely for the purposes of compensatory mitigation required for DA permits. Once purchased, mitigation credits may not be re-funded, re-sold or transferred to other entities except with

the approval of the Corps. Mitigation Credit ledgers shall be updated within 30 days of approved releases or sales and annually.

The Sponsor may sell or transfer mitigation credits to DA permittees to be used as compensatory mitigation for DA Permits, upon approval by the Corps. The approval will be in the form of a DA permit.

The Corps shall provide the Sponsor with sufficient information to account for impacts and the required mitigation for each DA permit in which a permittee is approved to purchase mitigation credits from the Sponsor. Documentation should include the following:

- i. Corps District and Project Manager
- ii. Corps I.D. and Date of Authorization
- iii. Water Quality Certification (WQC) number and Date of Issuance, if available
- iv. Project Name
- v. Permittee Information (name, address, phone number)
- vi. County
- vii. Project coordinates (Latitude and Longitude), in decimal degrees
- viii. Service Area
- ix. Linear feet or acres of impacted WOUS
- x. Functional or other mitigation units lost
- xi. Type of waters impacted (stream flow regime or wetland classification)
- xii. The number of functional or other mitigation units required of the Sponsor to compensate for the impacts, including temporal loss and/or cumulative impacts
- xiii. Other information as determined by the Corps

In cases where the Corps allows permittees to purchase mitigation credits over time for a single DA permit (phased payments), the Corps must provide, in addition to the above documentation, a schedule for each individual mitigation credit purchase and the amount of mitigation credits to be purchased in each phased payment.

3. Credit Cost

The Sponsor shall determine the cost of compensatory mitigation credits in accordance with 33 C.F.R. §332.8(o)(5)(ii).

The Sponsor will set fees to reflect the expected costs associated with the mitigation, based on "full cost accounting" and include, as appropriate: land acquisition, project planning and design, construction, plant materials, labor, legal fees, monitoring, remediation or adaptive management activities, administrative costs, contingencies (including construction and real estate expenses), long term management and protection, and financial assurances. The Sponsor may adjust fees as necessary and the fee adjustments will not constitute a modification of the Instrument.

The annual report provided by the Sponsor will include a breakdown of the fees and fee modifications and any anticipated changes in fee structure.

4. Fulfillment and Reallocation

Mitigation credits will be identified as Advance Credits or Released Credits. Advance Credits are made available before mitigation projects have been implemented. Released Credits are generated from mitigation projects when performance measures and milestones have been achieved.

As Released Credits are produced, they will be used to fulfill any Advance Credits that have already been provided within the service area before any remaining Released Credits can be sold or transferred to permittees. Once previously provided Advanced Credits have been fulfilled, an equal number of Advance Credits will be re-allocated to the Sponsor for sale or transfer to fulfill new mitigation requirements consistent with the Instrument. The number of Advance Credits available to the Sponsor at any given time to sell or transfer to permittees is equal to the number of Advance Credits specified in the Instrument minus any that have already been provided but not yet fulfilled.

C. COMPENSATORY MITIGATION PROJECT CREDITS

1. Determination of Credits

Mitigation credits for individual mitigation projects will be determined as part of the compensatory mitigation project approval and credit release process. Mitigation credits will be determined in accordance with 33 C.F.R. §332.8(o). In order to receive mitigation credits all projects must have a Corps approved Project Mitigation Plan.

2. Schedule for Credit Release

Released Credits shall be tied to milestones and performance measures. Mitigation sites, other than preservation projects (or preservation with buffer enhancement), shall be subject to the following mitigation credit release schedule:

- 15% mitigation credit release after receipt of the signed and recorded conservation easement or other approved long term site protection instrument and an approved 404 permit.
- 5% additional mitigation credit release (20% cumulative) upon written acceptance from the Corps of the “As Built” Report.
- 60% credit release divided equally (80% cumulative) over the monitoring period upon documentation that Performance Standards has been met.
- 20% additional mitigation credit release (100 % cumulative) upon proof that final Performance Standards are met. Final credit release is contingent upon final accounting of mitigation credits and written release from compliance monitoring from the Corps in consultation with the IRT.

Preservation projects shall be subject to the following mitigation credit release schedule:

In the case of preservation, 100% of the mitigation credits will be released upon the following: approval of the Project Mitigation Plan, purchase of the property, and filing of permanent protection instrument (i.e. conservation easement(s), deed restriction(s), or other legal protection). In situations where property is not purchased, 100% of mitigation credits will be released upon approval of the Project Mitigation Plan and filing the permanent protection instruments. For all preservation projects the permanent protection method must be approved by the Corps.

Deviations from these release schedules may be approved by the Corps on a case-by-case basis after consultation with the IRT and shall be included in the approved Project Mitigation Plan for the compensatory mitigation project. Approval of deviations from the above release schedule shall be based on past and current performance, specific site characteristics or factors that would affect risk, or other considerations as determined by the Corps.

3. Credit Release

The Sponsor shall submit documentation to the Corps demonstrating that the relevant milestones have been achieved and request release of the mitigation credits. The release of mitigation credits for a compensatory mitigation site must be approved by the Corps. The Corps will follow the procedures set forth in 33 CFR 332.8(o)(9) in making the determination on whether to approve a mitigation credit release.

D. CREDIT ACCOUNTING AND REPORTING

The Sponsor shall establish and maintain an annual report ledger in accordance with 33 CFR 332.8(i)(3) & (q)(1) and individual ledgers that track the production and debit of Advanced and Released Credits for each compensatory mitigation project. Credit ledgers and annual reports shall be provided to the Corps and IRT by February 28 of each year for the previous calendar year. The Corps may consider granting an extension of this deadline upon request by the Sponsor.

E. COMPENSATORY MITIGATION PROJECTS

1. Compensatory Project Mitigation Plans

The Sponsor must submit a Project Mitigation Plan for each compensatory mitigation project to the Corps. The Project Mitigation Plan must include the information required in 332.8(j) and shall reference the Compensation Planning Framework (CPF).

2. General Considerations

The general considerations for compensatory mitigation set forth in 33 CFR §332.3 shall be taken into consideration in evaluating compensatory mitigation projects submitted by the Sponsor to the Corps for approval.

Plans or projects with a primary purpose of improving or creating water supply, flood control or sanitary projects (sewer installation or improvements, straight pipe removal, septic system removal or installation, etc), or other water related improvements that do not involve aquatic habitat enhancement, rehabilitation, establishment, re-establishment, or preservation are not acceptable forms of out-of-kind mitigation and shall not be considered an acceptable type of compensatory mitigation under this Instrument.

3. Approval

The Corps must approve all compensatory mitigation projects as modifications to this Instrument. Individual compensatory mitigation projects will be reviewed and approved in accordance with 33 CFR 332.8. Projects requiring Section 404 and/or Section 10 authorization will be approved following the Letter of Permission “New Mitigation Projects Associated with Approved Compensatory Mitigation Banking and In-lieu Fee Instruments” (LRL-2010-323). Mitigation projects involving preservation and not requiring Section 404 and/or Section 10 authorization will be reviewed and approved following 33 C.F.R. §332.8 (g)(2). A list of approved projects will be provided in Appendix D. The list will be updated as each new project is approved.

4. Implementation

The Sponsor is responsible for the implementation, long-term management, and any required remediation of compensatory mitigation projects, even if those activities are conducted by other parties except in instances where the Sponsor is purchasing mitigation credits from a Corps approved mitigation bank in accordance with Section III(F)(3) of this Instrument. In those cases, these responsibilities will be transferred to the mitigation bank with appropriate documentation.

5. Monitoring

The Sponsor is responsible for monitoring compensatory mitigation projects. The Sponsor shall monitor the compensatory mitigation projects in accordance with the approved Project Mitigation Plan for each project. The Sponsor will provide annual monitoring reports on each compensatory mitigation project to the Corps and IRT unless otherwise specified in the project’s approved Project Mitigation Plan. The Sponsor remains responsible for monitoring each compensatory mitigation project until the Sponsor receives written notification of release from monitoring from the Corps.

F. ACCEPTANCE OF COMPENSATORY MITIGATION RESPONSIBILITIES

1. The Sponsor agrees to assume responsibility for the mitigation requirements of DA permittees for which mitigation credits are purchased from the Sponsor as compensatory mitigation under a DA permit. The DA permittee shall retain

responsibility for providing the compensatory mitigation until the Corps has received the appropriate documentation that confirms the Sponsor has accepted the mitigation responsibilities and received payment.

2. The Sponsor shall provide the Corps with documentation confirming the Sponsor has accepted responsibility for providing the required compensatory mitigation for a DA permit. This Documentation will consist of a letter to the DA permittee, signed by the Sponsor, identifying the permit number and stating the number and type of mitigation credits that have been secured from the Sponsor. The Sponsor shall also provide a copy of this letter to the Corps. The Sponsor shall not be obligated to accept mitigation payments without the documentation the Corps is required to provide under Section III.B.2 of this Instrument. The Sponsor shall retain the right to refuse any mitigation credit sales.
3. The Sponsor may purchase mitigation credits from a Corps' approved mitigation bank or in-lieu fee program if the purchase is approved by the Corps or is required by the Corps in accordance with Section III (H)(1). In these cases, the instrument(s) governing the mitigation bank/in-lieu fee program shall apply, including the transfer of mitigation liability from the permittee (i.e. Sponsor) to the bank/in-lieu fee program once the mitigation credits have been purchased.

G. COMPENSATION PLANNING FRAMEWORK

1. The Compensation Planning Framework (CPF) for the Mitigation Program is attached as Appendix C. The CPF will be used to select, secure, and implement specific compensatory mitigation projects. The CPF describes the geographic service area for the Mitigation Program and how it was selected.
2. Modification of the CPF is considered a significant modification to the Instrument and will be made following the procedures in 33 CFR 332.8(d).

H. TIMING OF COMPENSATORY MITIGATION PROJECTS

1. In general, implementation of compensatory mitigation projects will occur after sufficient funds are available to undertake a project. Permanent protection and initial physical or biological improvements shall begin by the end of the third full growing season after the mitigation credit(s) are sold unless the Corps determines that more or less time is needed to plan and implement a project. The Corps shall have the authority to direct funds to alternative compensatory mitigation projects, including the purchase of mitigation credits from a Corps approved mitigation bank, if the Sponsor does not provide mitigation within three growing seasons after the first Advance Credit is sold unless the Corps determines that more or less time is needed.
2. The Sponsor may identify, design, and/or implement mitigation in advance of impacts.
3. The timing of mitigation projects may be affected by IRT consultation, procurement procedures, permitting, compliance with other environmental regulations, and other factors.

IV. PERMANENT PROTECTION

- A. Compensatory mitigation sites will be protected by acquiring a permanent conservation easement from private landowners, purchasing property with appropriate deed restrictions, locating project sites on public land that are protected through memoranda of agreement, management plans or deed restrictions, or protection through ownership interest by qualified conservation organizations, institutions, or agencies, unless otherwise approved by the Corps in consultation with the IRT.
- B. The Corps is responsible for the review and approval of the site protection methods and the language in site protection instruments.
- C. In general, the Sponsor shall not implement mitigation on sites where oil, gas, mineral rights, timber rights, or other landuse rights are severed from fee ownership and where such rights could threaten the long term success of compensatory mitigation, unless approved by the Corps. Rights that are severed from fee ownership will generally be considered to threaten the long term success of a mitigation site unless such rights are subordinated, or made subject to the site protection instrument(s).
- D. Lands purchased with in-lieu fee monies, including uplands, shall be protected in their natural or restored state to ensure project sustainability. Passive recreation such as hunting, fishing, wildlife viewing, hiking, or other passive uses shall be allowed. The following restrictions shall apply to all new properties purchased in fee title:
 - 1. Non-passive uses, such as timber harvesting, motorized recreational or all-terrain vehicle (ATV) use, horses or horseback riding, shall be prohibited.
 - 2. Land disturbance activities, including utility lines, roadways, or mineral extraction shall not be allowed unless approved in writing by the Corps in consultation with the IRT.
 - 3. Any deviation in these restrictions including any capital improvement, wildlife management activities, or other actions must be approved by the Corps on a case-by-case basis or be part of a long-term management plan approved by the Corps in consultation with the IRT.

Projects implemented on lands or properties where non-passive uses exist will be reviewed and may be approved by the Corps on a case-by-case basis.

V. PERIODIC REVIEWS

There will be an annual review of project sites at dates agreeable to the Corps and the Sponsor. The Sponsor will coordinate annual review dates with the Corps, in consultation with the IRT. Program and account reviews and reporting are discussed in Appendix A to this Instrument.

VI. FINANCIAL ASSURANCES

- A. The Sponsor will provide financial assurances for compensatory mitigation projects. The amount of the financial assurances shall be determined in accordance with 33 CFR 332.2(n)(2). The specific financial assurances that will be used are described in Appendix A.
- B. The Mitigation Program is funded at a rate that is established and based on the actual and forecasted costs of conducting mitigation projects based on current requirements of the Corps. Funds collected from the sales of mitigation credits are deposited and maintained in restricted accounts. Approved mitigation projects are further protected by the contractual agreements for individual projects, and accrued interest, or other management accounts. The Mitigation Program shall reserve a minimum amount of funds within the account(s) and/or in a separate account as financial assurance for remedial actions, long term maintenance of projects, and/or other activities that enhance or further protect mitigation projects.

VII. MODIFICATION OF THE INSTRUMENT

- A. Modification of the Instrument shall follow the procedures set forth in 33 CFR §332.8(g).
- B. For purposes of this Instrument modifications in the allocation of Advance Credits and approval of preservation projects are generally considered not to be significant and may warrant application of the streamlined review process.
- C. Appendices will be reviewed annually. Changes to the Appendices are modifications subject to the procedures of 33 CFR §332.8(g), unless specifically identified otherwise. The CPF, attached as Appendix C, utilizes various sources of external information/data in its mitigation approach and prioritization. These sources of information/data are expected to be updated or modified over time by the external entities responsible for maintaining these sources of information. The Sponsor's use of updated or modified information from these external sources in the application of its CPF is not considered a modification of the CPF or this Instrument.

VIII. DEFAULT, SUSPENSION AND TERMINATION

- A. If the Corps determines that the Mitigation Program is not meeting performance standards or complying with the terms of the Instrument, appropriate action will be taken. Such actions may include, but are not limited to: suspending Sponsor mitigation credit sales, decreasing the allocation of Advance Credits, adaptive management actions, suspending approval of new mitigation projects, directing funds to alternative mitigation, terminating the Instrument, or other actions as approved by the Corps.
- B. Termination:
 - 1. Either the Corps or Sponsor may terminate this Instrument. Termination procedures shall be commenced upon written notice of either party's intent to terminate the Instrument.

2. Termination procedures are as follows:
 - i. The Sponsor shall provide an accounting of all monies; and
 - ii. The Sponsor shall complete all existing contracts for projects approved by the Corps under the Instrument and expenses incurred on behalf of these projects.
 - iii. Unencumbered funds shall be payable as directed by the Corps.
3. Upon termination, should Mitigation monies remain in the Mitigation Fund, the Corps shall direct the Sponsor to transfer the funds to another entity for implementation of stream and wetland mitigation projects and may include funds necessary for long-term management.

IX. CONFLICT OF INTEREST

An IRT agency shall be recused from participating in IRT activities associated with projects in which they have a direct or indirect role in funding, contracting, implementation, or other financial involvement.

X. FORCE MAJEURE

A. Responsibility for Repair and Remediation

Projects shall be designed to be self-sustaining to the maximum extent possible.

The Sponsor shall be responsible for repair and remediation of compensatory mitigation projects except under the following circumstances:

1. A project is released from monitoring by the Corps; and
2. Damages to the compensatory mitigation project are the result of an Act of God.

The Corps, in consultation with the IRT, will determine whether a force majeure event has occurred.

B. Definition of Act of God

For purposes of this Instrument, an "Act of God" shall mean a natural hazard that has a significant impact on the environment and that is beyond the Sponsor's control. Natural hazards shall include, but not be limited to, floods, tornados, hurricanes, earthquakes and fires.

C. Burden of Proof

The Sponsor shall bear the burden of demonstrating to the satisfaction of the Corps:

1. The natural hazard was caused by circumstances beyond the control of the Sponsor, and/or any entity controlled by the Sponsor, including its contractors and consultants;

2. That neither the Sponsor, nor any entity controlled by the Sponsor, including its contractors and consultants, could have reasonably foreseen and prevented such an event or damages from such event; and
3. The damage was caused by the natural hazard.

XI. POINTS OF CONTACT

The points of contact for written communication among the parties are as follows or as otherwise specified in the future by written notice to all parties:

Corps of Engineers

U. S. Army Corps of Engineers
Chief, Regulatory Branch (currently James M. Townsend)
Operations Division
Louisville District Corps of Engineers
P.O. Box 59
Louisville, Kentucky 40201
Phone (502) 315-6675
Fax (502) 315-6677
e-mail: james.m.townsend@usace.army.mil

Sponsor

Scott Fennell, PE, Program Director
Northern Kentucky Stream and Wetland Restoration Program
NKU Center for Applied Ecology
15 Clearview Drive
Highland Heights, Kentucky 41076
Phone (859) 448-8953
e-mail: fennells@nku.edu

William Thompson, Executive Director
Northern Kentucky University Research Foundation
Lucas Administrative Center 616B
Northern Kentucky University
Highland Heights, Kentucky 41099
Phone (859) 572-5768
e-mail: thompsonw4@nku.edu

IRT Members

Kentucky Division of Water
Ms. Barbara Scott
Water Quality Certification Supervisor
200 Fair Oaks Lane
Frankfort, KY 40601

US EPA
Wetlands, Coastal, & Oceans Branch
Chief of Mining Section
Mr. Duncan Powell
61 Forsyth Street, SW
Atlanta, GA 30303

U.S. Fish & Wildlife Service
Kentucky ES Field Office
Mr. Lee Andrews, Field Supervisor
J C Watts Federal Building - Room 265
330 West Broadway
Frankfort, KY 40601

Kentucky Department of Fish and Wildlife Resources
Mr. Benjy Kinman, Deputy Commissioner
1 Sportsman's Lane
Frankfort, Kentucky 40601
Phone (502) 564-7109 ext 4466
Fax (502) 564-3178
e-mail: benjy.kinman@ky.gov

XII. EFFECTIVE DATE:

This agreement shall become effective when signed by the Louisville District of the Corps and the Sponsor. IRT members are invited to sign this Instrument as an indication of their agreement to the terms of the Instrument. The decision of an IRT Member not to sign this Instrument does not negate the effectiveness of the Instrument.

CORPS OF ENGINEERS & SPONSOR SIGNATURES

James M. Townsend
Chief, Regulatory Branch
Louisville District

Date

James Votruba, Ph. D.
President
Northern Kentucky University

Date

William Thompson
Executive Director
Northern Kentucky University Research Foundation

Date

Appendices

Agreement Concerning In-Lieu Mitigation Fees

Northern Kentucky Stream and Wetland Restoration Program

February 2012

LRL-2010-326-pgj

Appendix A: NKSWRP-Specific Information

- I. Background
- II. Transitioning Existing Program
- III. Responsibilities
- IV. Financial Accounting
- V. Reporting
- VI. Financial Assurance
- VII. Initial Fee Schedule
- VIII. Advance Credits
- IX. Adaptive Management

Appendix B: List of Approved Compensatory Mitigation Projects

Appendix C: Compensation Planning Framework

Appendix A: NKSWRP-Specific Information

I. BACKGROUND

This In-Lieu Fee (ILF) Program Instrument (Instrument) for the Northern Kentucky Stream and Wetland Restoration Program constitutes a revised agreement (“Agreement”) among the Northern Kentucky University Center for Applied Ecology (CAE), the Northern Kentucky University Research Foundation, Inc. (NKURF), and the Louisville District of the US Army Corps of Engineers (Corps) to continue an In-Lieu Fee Program to mitigate impacts to waters of the United States authorized by Corps permits in northern Kentucky. The original Agreement was finalized August 30, 1999 and revised March 6, 2001 and October 2006.

The name of this ILF Program is the Northern Kentucky Stream and Wetland Restoration Program (NKSWRP), and it is jointly sponsored by the CAE and NKURF (“Sponsor”). Transition from the original Agreement as previously revised to the current program will be as described in Section II.

II. TRANSITIONING EXISTING PROGRAM

Because the Instrument is a modification of an existing agreement, it is important to maintain continuity and assurances for existing projects funded under the Agreement while transitioning to the Instrument.

The Agreement will remain in effect for all mitigation projects approved under the Agreement; project activities under the Agreement will be referred to as Phase 1. Any Phase 1 project funds remaining upon completion and closure of projects funded under the Agreement shall be subject to the terms of the Instrument.

The Instrument shall become effective on the date of signature by the U.S. Army Corps of Engineers-Louisville and by the Sponsor. The Instrument shall apply to all funds collected and all projects undertaken after the effective date of the Instrument; project activities under the Instrument will be referred to as Phase 2. The Instrument shall apply to all interest that has accrued to the fund since inception.

Transition from the Agreement to this Instrument will require conversion of unobligated funds collected under the Agreement. All unobligated in-lieu fee funds, except accrued interest, collected under the Agreement shall be converted to the appropriate mitigation unit by dividing the total unobligated funds by the estimated cost of a mitigation credit using full cost accounting. All transitioned funds will become governed by the Instrument for implementation of mitigation projects. The number of mitigation units resulting from this conversion will be debited from the total number of initial Advance Credits. This conversion, including the timing of conversion and cost of a mitigation credit for purposes of conversion, shall be subject to review and approval by Corps.

III. GENERAL RESPONSIBILITIES OF SPONSOR PARTNERS

A. NKU RESEARCH FOUNDATION, INC.

NKURF is a non-profit 501[C] 3 organization created to support the mission of Northern Kentucky University, including regional stewardship initiatives such as the NKSWRP. NKURF will administer the ILF Program Account (ILFPA), receive ILF payments from permittees, as directed by the Corps, and deposit the fees into the ILFPA. NKURF will make disbursements from the ILFPA to the CAE for mitigation project and program expenses, and take other necessary actions relative to the ILFPA in accordance with this Instrument.

NKURF may accept conservation easements and/or land title for mitigation projects.

Upon receipt of documentation from the Corps of impacts to be mitigated, and deposit of fees from the permittee to the ILFPA, NKURF shall provide a signed letter to the permittee and to the Corps confirming acceptance of responsibility for providing the required mitigation. NKURF shall also provide reporting and perform other duties described elsewhere in this document.

B. NKU CENTER FOR APPLIED ECOLOGY

The CAE operates the NKSWRP (excluding the ILFPA, which is managed by NKURF), implementing ILF mitigation projects and performing program administration duties. The CAE is a regional stewardship / outreach center of Northern Kentucky University established to provide practical solutions to environmental and ecological issues in the region. The CAE is self-funded, generating revenues from services provided to offset operations costs. Additionally, the CAE employs NKU students as part-time employees, providing practical experience in the environmental field. Between 1999 and 2011, the CAE employed over 60 students working on CAE projects, and implemented 26 stream and wetland mitigation projects through the original and revised Mitigation Agreement with the Corps. At any given time four to 10 student interns are employed on mitigation projects, logging over 5000 labor hours per year.

IV. FINANCIAL ACCOUNTING PROCEDURES

All ILF payments made by permittees and received by NKURF will be deposited in the ILF Program Account (ILFPA). The ILFPA is to be used solely for the NKSWRP, for the purposes and benefits of Kentucky stream and wetland mitigation projects, and must be deposited in a FDIC-member financial institution. The monies will be invested by NKURF in appropriate low-risk instruments with the primary objective of preserving capital, and a secondary objective of generating interest. Suitable investments include an interest bearing deposit account, and/or bank money market deposit account, that is FDIC insured and/or secured/collateralized by direct or indirect government securities guaranteed by the US Treasury with a value equal to the funds on deposit in the account; and/or certificates of deposit (CD)

secured by collateralized direct or indirect government securities guaranteed by the US Treasury with a value equal to the CD market value. NKURF shall maintain sufficient liquidity in the account to make required project and program disbursements, and exercise the level of care and diligence required of a fiduciary with regard to maintaining and investing state funds. All books, accounts, reports, files, and other records pertaining to the ILFPA shall be retained in accordance with Kentucky state records retention requirements and made available at reasonable times for inspection by the Corps. NKURF will provide an annual Fund Report of the ILFPA as described in Section V.C.

A. ILF PROGRAM ACCOUNT - SEPARATE OPERATING ACCOUNTS

NKURF will manage the ILFPA as six separate operating accounts. Deposits into and distributions from each operating account will be made as described below:

1. **Phase 1 Mitigation Project Account.** The Phase 1 Mitigation Project Account (MPA) will be comprised of all Phase 1 ILF deposits minus funds transferred to the remaining five operating accounts described below. This account will be used to complete mitigation projects approved under the existing Agreement. Budgets for all Phase 1 projects will be managed as a single account so that funds may be shifted among project budgets at the discretion of the CAE as necessary to complete the projects. Any interest earned on this account will be transferred to the Program Contingency Account at least annually.
2. **Phase 2 Mitigation Project Account.** This account will be used to fund Phase 2 mitigation projects using ILF payments received after the effective date of this Instrument, plus unobligated funds transferred from Phase 1 as described in Section II. Deposits to the Phase 2 MPA will initially be 80 percent of each Phase 2 ILF payment received. Deductions from Phase 2 ILF payments prior to deposit to the Phase 2 MPA will be as follows: five percent to Program Administration Account; five percent to Site Protection Account, five percent to Program Contingency Account; and five percent to NKURF as a management fee. (The NKURF management fee provides compensation for receipt, investment, disbursement, and reporting of ILFPA funds; conservation easement management responsibilities; and NKU contributions from Legal Affairs, Procurement Services, Comptroller, and other administrative services.) In future, the CAE may adjust the percentages and/or distribution of ILF deposit deductions as necessary to appropriately fund each function. These adjustments will not constitute a modification of this Instrument; however, the Corps must approve any adjustments. Interest earned on this account will be transferred to the Program Contingency Account at least annually.
3. **Program Administration Account.** This account will be used to fund program administration and pre-approval project tasks required for both Phase 1 and 2 projects for operating the NKSWRP, including, but not limited to: preparation of the CAE's annual reports; attending meetings, conferences and training; candidate site identification; initial landowner contacts; site visits; preparation of concept plans for Corps project approval; and updating the Compensation Planning Framework. It may also be used to purchase or lease program equipment, supplies, and facilities.

Deposits to the Program Administration Account will include:

1. All funds in the existing (Phase 1) Program Administration Account.
2. Five (5) percent of each Phase 2 ILF payment. (In future, the CAE may, with the approval of the Corps, adjust the percentage as described above.)

Interest earned on this account will remain in the account but will be accounted for separately in the annual fund report.

4. **Site Protection Account.** This account will be used to fund long term site protection tasks for both Phase 1 and 2 projects including, but not limited to, periodic site inspections, replacement of boundary posts, fencing, landowner or neighbor contacts, and legal assistance to ensure the provisions of the site protection instruments are enforced.

Deposits to the Site Protection Account will include:

1. All funds currently in the (Phase 1) Conservation Easement Account.
2. Five (5) percent of each Phase 2 ILF payment. (In future, the CAE may, with the approval of the Corps, adjust the percentage as described above.)

If the conservation easement holder is, and/or site protection responsibilities will fall to, another qualified conservation organization rather than NKURF, the CAE may direct the project site protection endowment to that entity from the Site Protection Account, not to exceed five percent of the mitigation project cost.

This is to be a non-wasting account (endowment); the CAE will bill against the interest, but not against the principal of this account unless authorized by the Corps, except as described above to another site protection entity.

5. **Program Contingency Account.** The primary purpose of the Program Contingency Account is to provide programmatic financial assurance. The account will be used to fund project and program expense overruns not covered by budgeted project contingencies (e.g., reconstruction after catastrophic failure) and/or in excess of funds available in the Program Administration or Site Protection Accounts, and/or to implement supplemental or advance mitigation projects. Additionally, the CAE may bill against this account for management and/or maintenance costs after release from monitoring, such as stream repairs or invasive plant control deemed necessary to ensure project success. The Program Contingency Account will be available for use for both Phase 1 and 2 project and program expenses.

Deposits to the Program Contingency Account will include:

1. Interest earned on the Phase 1 ILFPA prior to the effective date of this Instrument, excluding interest on the Conservation Easement Fund. (This interest income through FY 10/11 was approximately \$1,000,000.)
2. Interest earned on the Phase 1 MPA and Phase 2 MPA.

3. Interest earned on this account.
4. Five (5) percent of each Phase 2 ILF payment. (In future, the CAE may, with the approval of the Corps, adjust the percentage as described above.)

The CAE will attempt to maintain a Program Contingency Account minimum balance of ten percent of the cost of outstanding mitigation requirements calculated as follows: (Advance Credits sold) minus (Released Credits) multiplied by (current mitigation project cost per credit, excluding program costs). If the balance in the Program Contingency Account accumulates to an amount deemed excessive for the purposes described above, continued deposits into this account from new credit sales may be temporarily reduced or suspended, and/or advance mitigation projects may be undertaken, at the discretion of the CAE. The upper limit target will be determined considering the outstanding program mitigation obligation, mitigation success uncertainty, and other risk factors.

6. **Kentucky Utilities Account.** This account will be used to hold an anomalous Phase 1 ILF deposit of over \$13 million received from Kentucky Utilities (Corps ID LRL-2009-358). The Sponsors and the Corps recognize there is a high degree of uncertainty that this magnitude of mitigation—approximately equal to 12 years worth of normal ILF mitigation demand—can be achieved within the standard mitigation timeline and/or at the typical mitigation project cost. The KU ILF deposit—minus five percent to Program Administration Account, five percent to Site Protection Account, five percent to Program Contingency Account, and five percent to NKURF—will be held in this account until mitigation projects are identified in consultation with the Corps and IRT, and approved by the Corps. Interest earned in this account will be maintained in the account to compensate for the potential extended temporal loss timeframe.

As mitigation projects are approved, project funds will be transitioned from this account into the Phase 2 MPA based upon approved project budgets, and Advance Credits will be debited based upon the mitigation credit cost determined for each approved project.

Subject to approval by the Corps, mitigation may also include alternative means such as private mitigation bank credit purchase, large-tract land purchase and transfer of title to a governmental or conservation entity, and/or transfer of funds to such entities.

B. BILLING AGAINST ILF PROGRAM ACCOUNT

On a regular basis, not less frequently than quarterly, the CAE will prepare and submit to NKURF invoices for services billed against each of the five separate operating accounts described above. Cost details will be provided including labor hours, labor rates, expenses, subcontracts, and markups by mitigation project and program expense. CAE labor rates and markups will not exceed representative consulting firm rates for similar services provided in the region. Invoice backup data will be maintained by the CAE in accordance with Kentucky state records retention requirements. The CAE will be solely responsible to establishing, increasing or decreasing, and managing mitigation project and program administration budgets. NKURF will

only be responsible for the receipt, investment, and disbursement of ILF program funds; NKURF will not be responsible to oversee individual mitigation project or program budgets.

V. REPORTING

A. CAE REPORTING

The CAE will prepare and submit an Annual Program Report to the Corps, due by February 28 of each year, for the previous calendar year. Topics will include:

1. Summary information for approved mitigation projects in tabular format – project name, location (for example: lat/long, watershed), status, feet of stream, stream credits, acres of wetlands, wetland credits, acres of conservation area, budget, cost per stream foot, and cost per credit.
2. Credit ledger in tabular format, including annual beginning and ending balance on Advance Credits (initial, sold, and available) and Released Credits (projected, generated, and sold).
3. Updates or modifications (if any) of the Compensation Planning Framework (CPF).
4. List of potential project sites prioritized based upon the CPF, including status.
5. Adaptive management actions and/or anticipated future program activities.
6. Fund Report prepared by NKURF, including deposits, expenditures and descriptions for all five ILF Program separate operating accounts. The Fund Report will be based upon a fiscal year.
7. Update and provide basis for cost-per-credit for streams or wetlands (i.e., ILF).
8. Summary of project status.
9. Other elements as deemed necessary by the Corps, in consultation with the IRT

The Annual Program Report and CPF updates will be provided to the Corps in PDF format on a CD and one paper copy. At the request of IRT members, CAE will provide the report in digital (PDF) and/or hard copies to the members. Copies may also be posted on a website. Individual project reports (i.e., Project “As-Built” and “Project Compliance Monitoring Reports”) are addressed in the project’s Mitigation Project Plan and are not part of the Annual Program Report.

B. NKURF REPORTING

The NKURF will prepare an Annual ILFPA Report (Fund Report) at the end of each fiscal year, applying generally-accepted accounting principles which will detail program accounting. The Fund Report will be based upon a fiscal year, and will be included in the Annual Program Report. The Fund Report will include the results of the annual accounts report, including deposits, interest, NKURF fees, and disbursements for each of the five accounts. The Fund Report will also provide the summary record of ILF payments received, including permittee, permit number, service area (lat/long, county, and watershed), amount of impacts (feet, acres, AMUs), other

information provided by the Corps and/or Kentucky Division of Water, amount paid, and date received in table format. This ILF payments record will be kept up-to-date and will be provided to the CAE and the Corps via email each time a deposit is made, in addition to the annual report. The Fund Report will be provided to the CAE for inclusion in the Annual Program Report.

VI. FINANCIAL ASSURANCES

Financial assurances are intended to provide a high level of confidence that permitted impacts will be fully compensated by the ILF Program. Assurances built in to the NKSWRP include:

- The cost-per-credit will be developed based upon actual local project experience and full cost accounting, adjusted for inflation and other reasonable factors, covering all project, program, and contingency costs. All CAE mitigation projects completed to date have met budgets.
- Project budgets include a project contingency, typically 10-20% of construction costs, and maintenance & monitoring funds.
- The CAE maintains a one million dollar professional liability insurance policy, and is covered by the Kentucky Commonwealth Board of Claims for general liability. Subcontractors are required to maintain appropriate levels of insurance protection, and subcontracts in excess of \$40,000 require performance bonds.
- The Program Contingency Account is to be created and funded with a target minimum balance as described above. One of the purposes of this account is to maintain funds for emergency repairs or supplemental projects, if necessary to achieve required program mitigation.
- The Site Protection Account is a non-wasting account, ensuring that funds will be available in future to enforce long-term site protection.

In the event of a programmatic failure, sufficient monies will remain in the ILFPA to successfully complete compensatory mitigation requirements and existing projects. In-lieu funds shall be released to the Corps' designee in the event that the ILF program fails or is terminated.

VII. INITIAL FEE SCHEDULE

The initial fee schedule for stream mitigation credit sales is based upon representative Phase 1 project experience and anticipated adjustments in the Phase 2 program. Six completed Phase 1 projects selected as being most representative of likely future projects have an average project cost of \$167 per adjusted mitigation unit (AMU) for streams, excluding program costs. Adding ten percent each for inflation and land or easement purchase cost allowance ($\$167 \times 1.2 = \$200/\text{AMU}$), and back-calculating for 20% deductions for program costs (program administration, site protection, program contingency, NKURF management fee: $\$200/0.8 = \$250/\text{AMU}$), the projected cost for Phase 2 stream credits would be \$250 per stream AMU if projects were on average similar to Phase 1 projects plus an allowance for land or easement purchase. However, it is anticipated project cost savings will be realized by focusing project scope, performance standards, and monitoring to the current credit determination system, and by securing

larger consolidated mitigation projects. Project and program cost savings of 14 percent are anticipated; thus the initial fee schedule will be $\$250 \times 0.86 = \215 per stream AMU.

The fee schedule for wetlands AMUs will be determined at the time of sale, due to the high uncertainty associated with future sales including amount required and economy of scale (e.g., 0.2 acres versus 15 acres), the availability of suitable property (e.g., sufficient acreage of hydric soil lands), type of wetlands (e.g., emergent vs forested), performance standard requirements, etc. Less than one acre of wetlands was mitigated during the first 11 years of the Phase 1 program due in part to the paucity of natural wetlands in the service area (see Appendix C).

The fee schedule is subject to revision by the CAE at its sole discretion at any time. Changes to the fee schedule will not constitute a modification of the Instrument. These mitigation prices may or may not be used to convert Kentucky Utilities Account Funds to debits from Advance Credits based upon mitigation timeline requirements and other factors.

The Corps will determine the appropriate method for assessing stream and wetland units. In the absence of a functional method or other approach, linear feet or acres may be used to determine mitigation units. Because mitigation units and methodology may change over time, and because the changes will be determined by the Corps, implementation of these changes by the Sponsor will not constitute a modification of the Instrument.

VIII. ADVANCE CREDITS

The NKSWRP shall have an initial allotment of Advance Credits available for sale for both stream and wetland impacts. The Advance Credit request is based upon program history and projections as follows:

- From 2007 through 2011, 18 Phase 1 mitigation projects in various stages of completion will generate approximately 58,000 stream credits (11,600 per year average). Based upon requirements for landowner negotiations, project approvals, design, construction and monitoring, it may require three years for initial partial credit release for new projects, and seven years or more to achieve full credit release. Allowing for five years of average mitigation credits, the baseline advance credit request to accommodate historic demand is $11,600 \times 5 = 58,000$ stream credits.
- Phase 1 funds transfer will require a one-time debit from Advance Credits. Assuming \$215,000 will be transitioned, divided by the initial Fee Schedule of \$215/AMU, approximately 1,000 Advance Credits are required for transitioned funds.
- The Kentucky Utilities Account transition to Phase 2 will require multiple debits from Advance Credits. Using the initial Fee Schedule: $\$13,000,000 / \$215/\text{AMU} = 60,000$ Stream AMUs are required.

Based upon the above, the total Advance Credit request is $58,000 + 1,000 + 60,000 = 119,000$ Stream AMUs.

The Kentucky Utilities site requires approximately five wetland AMUs to be mitigated. Only approximately five additional wetlands AMUs required mitigation during the 12-year Phase 1 program. To accommodate the KU wetlands mitigation demand, and several similar wetland mitigation requirements, the Advance Credit request for wetlands is 20 Wetland AMUs.

In the event the availability of Advance Credits and Release Credits does not keep pace with demand, the NKSWRP may request an additional allotment of Advance Credits from the Corps, in consultation with the IRT, following a streamlined review process.

IX. ADAPTIVE MANAGEMENT

General adaptive management strategies are addressed in the main text of the Instrument. Additional adaptive management strategies implemented by the CAE include:

During construction, opportunities will be considered to improve project results and/or achieve cost savings. These may include construction adjustments to save desirable vegetation, utilizing alternative sources of stone (especially native flat rock), design changes to incorporate innovative techniques and materials or new knowledge, etc. Project adjustments may also be required to address unforeseen circumstances such as the discovery of refuse/waste or cultural resources, or additional restoration opportunities not identified during the formal design phase. These modifications may result in an adjustment of project mitigation credits.

If monitoring results indicate a failure to meet Performance Standards (e.g., beyond anticipated minor maintenance), the CAE will evaluate whether the best course of action is corrective action to achieve performance standards, extension of the period of maintenance & monitoring to achieve performance standards, a downward adjustment of project credits if more cost-effective than corrective actions, or other action. The CAE's determination will be subject to approval by the Corps.

Appendix B: List of Approved Compensatory Mitigation Projects

Table of Corps Approved Mitigation Projects: NKSWRP						
PROJECT	COUNTY	SERVICE AREA	404 PERMIT ID.NO.	404 PERMIT OR PROJECT MITIGATION PLAN APPROVAL DATE	401 WQC ID. NO.	401 WQC APPROVAL DATE

Appendix C: Compensation Planning Framework

(Separate Document)

Compensation Planning Framework

Northern Kentucky Stream and Wetland Restoration Program

February 2012

LRL-2010-326-pgj

This Compensation Planning Framework (CPF) addresses the requirements of 33 CFR 332.8[c], and describes how the Northern Kentucky Stream and Wetland Restoration Program (NKSWRP), using a watershed-based approach, will select in-lieu fee mitigation project sites to compensate for aquatic resource impacts. The NKSWRP is described at <http://nkswrp.nku.edu>.

Figures and Tables referenced in the text are provided at the end of this document.

I. SERVICE AREA

The NKSWRP serves a single Service Area encompassing the northern Kentucky region, a region which shares common characteristics including physiography, Ecoregions, topography, land use, historic and current stream impairments, wildlife preservation prioritization, and community and governmental natural resource management partnerships.

The core of the Service Area is comprised of the nine northern-most Kentucky counties: Boone, Kenton, Campbell, Carroll, Gallatin, Grant, Pendleton, Bracken, and Mason. These counties are readily accessible from NKU for project implementation (approximately one hour or less travel time, thus facilitating utilization of NKU student interns), and have the closest cultural ties to NKU and the northern Kentucky metropolitan area. At present the NKSWRP is the only in-lieu fee program serving the nine core Service Area counties. The remainder of the state is served by Kentucky Division of Fish and Wildlife.

Outlying counties of the northern Kentucky region and within the NKSWRP Service Area include particularly Oldham, Trimble, Henry, Owen, Harrison, Robertson and Nicholas. These counties are within the same major watersheds (Ohio River Tributaries, Licking, and/or Kentucky), and the same Level IV Ecoregions as the core Service Area counties (Outer Bluegrass and Hills of the Bluegrass). Fleming and Lewis Counties to the east are also within the same major watersheds as the core Service Area counties, but include significant portions of an additional Ecoregion (Knobs-Lower Scioto Dissected Plateau). Outlying counties are more rural and provide a greater opportunity to create larger, more

consolidated mitigation projects. The outlying counties are served by both the NKSWRP and the KDFWR in-lieu fee programs.

A. MAJOR WATERSHEDS

The NKSWRP Service Area includes portions of three major watersheds: Ohio River Tributaries (streams that drain directly to the Ohio River); the Licking River, and the Kentucky River. A map illustrating the major watersheds is attached. In order of predominance, the Licking River watershed constitutes about 51 percent of the Service Area core counties, versus 36 for Ohio River Tributaries, and 13 percent for the Kentucky River watershed. The Eagle Creek watershed constitutes nearly the entire Kentucky River watershed within the Service Area core counties.

B. ECOREGIONS

At the Level IV Ecoregion scale, the Service Area core counties include approximately equal proportions of two similar ecoregions:

- **Outer Bluegrass (71d):** most of Carroll, Gallatin, Boone, Kenton, Campbell, and Mason Counties
- **Hills of the Bluegrass (71k):** most of Grant, Pendleton, and Bracken Counties

The next tier northern Kentucky counties are also predominantly within these same Ecoregions, except the Knobs-Lower Scioto Dissected Plateau (70d) Ecoregion constitutes a significant proportion of Fleming County (approx. 30%) and Lewis County (approx. 70%).

A map illustrating the Level IV Ecoregions is attached. They are characterized as follows:

71d. Outer Bluegrass. The rolling to hilly Outer Bluegrass (71d) contains sinkholes, springs, entrenched rivers, and intermittent and perennial streams. Local relief is variable. Discontinuous glacial outwash and leached, pre-Wisconsinan till deposits occur in the north from Louisville to Covington. Glacial deposits do not occur elsewhere in Kentucky. Ecoregion 71d is mostly underlain by Upper Ordovician limestone and shale. Natural soil fertility is higher than in the shale-dominated Hills of the Bluegrass (71k). Today, pastureland and cropland are widespread and dissected areas are wooded. At the time of settlement, open savanna woodlands were found on most uplands. On less fertile, more acidic soils derived from Silurian dolomite, white oak stands occurred and had barren openings. Cane grew along streams and was especially common in the east. Distinct vegetation grew in areas underlain by glacial drift. Upland streams have moderate to high gradients and cobble, boulder, or bedrock substrates. Mean stream density is less than in Ecoregion 71k. Concentrations of suspended sediment and nutrients can be high.

71k. Hills of the Bluegrass. The mostly forested Hills of the Bluegrass (71k) are underlain by Upper Ordovician calcareous shale, siltstone, and limestone. It is lithologically unlike the Outer Bluegrass (71d). Upland soils are fairly high in phosphorus, potassium, and lime but are not as naturally fertile as Ecoregion 71d; they support young, mixed forests rich in white oak, hickory, and cedar. The Hills of the

Bluegrass (71k) has steeper terrain, droughtier soils, lower soil fertility, higher drainage density, and is more erosion-prone than Ecoregion 71d. As a result, less than ten percent of Ecoregion 71k is suited to row crop agriculture and the rest is wooded, pastureland, or hayland. Stream nutrient levels are generally lower than in Ecoregions 71d. Upland streams are often intermittent and have cobble, boulder, or bedrock substrates. Fish and macroinvertebrate assemblages are similar to Ecoregions 71d.

70d. Knobs–Lower Scioto Dissected Plateau contains rounded hills and ridges, narrow valleys with high gradient streams, and a few wide, locally swampy, bottoms underlain by weak shales. Cliffs occur especially in the south. High amounts of topographic and geologic variation are typical and create substantial ecological diversity. Ecoregion 70d is underlain by a mixture of Pennsylvanian-age through Silurian-age sedimentary rocks that is absent from the rest of Ecoregion 70. Ecoregion 70d is geographically adjacent and ecologically connected to the Western Allegheny Plateau (70) and, as such, is not a part of the Interior Plateau (71). Uplands knobs are forested and oak and oak–pine forests predominate. Broad valleys are mostly covered by bottomland forests but some are used for livestock or general farming. Elevation, local relief, and forest density are much greater than in Ecoregions 71d and 71k. Nutrient and ionic concentrations in streams are lower than in Ecoregions 71d. No coal mining or related stream acidity problems occur.

Descriptions are adapted from: ftp://ftp.epa.gov/wed/ecoregions/ky/ky_front.pdf

II. HISTORIC LOSSES AND THREATS TO AQUATIC RESOURCES

A. WETLANDS

Historically, the most significant cause of wetlands loss was draining for agriculture. Currently, filling for development is an increasing cause of wetlands loss (<http://www.epa.gov/owow/wetlands/pdf/threats.pdf>).

Within the NKSWRP core service area, only about two percent of the land area is comprised of NRCS-mapped hydric or partially hydric soils, which are the most likely locations for larger acreages of current or former wetlands. Small wetlands can also occur on soils that are not mapped as hydric, for example, within depressions in clayey bottomland soils, or below hillside seeps.



During the first 11 years of operation, less than one acre of wetlands loss was mitigated through the NKSWRP. Nevertheless, wetlands have been created or enhanced as a component of previous stream

restoration projects, since wetlands are an integral part of stream quality and function (floodwater detention, pollutant removal, groundwater recharge, amphibian habitat, etc.).

B. STREAMS

The most significant threats to northern Kentucky streams, both historic and current, include **Pollution, Hydromodification, and Lack of Riparian Vegetation**. Another common issue affecting streams is **improper refuse disposal** (dumping, old landfills).



1. **Pollution.** Pollution of streams can originate from point (end-of-pipe) sources such as outfalls from industry, stormwater pipes, and wastewater treatment plants, or from non-point sources such as runoff from agricultural or urban land. The implementation of the National Pollutant Discharge Elimination System (NPDES) beginning in 1972 has drastically reduced pollution from point sources, resulting in significant improvement in stream and river water quality and aquatic life. However, releases from combined or separate sanitary sewer systems and stormwater runoff continue to pose a challenge. In the northern most counties, fecal coliform bacteria and other pollutants released from antiquated or inadequate sanitary sewers are being addressed under consent order by Sanitation District No. 1 (SD1). Stormwater runoff pollution is now a major focus of the NPDES program.

In rural areas, straight pipes, failing leach fields, and agricultural runoff are significant sources of pollution. Pollutants include fecal coliform bacteria, pesticides, herbicides, nutrients and sediment. There are several programs that address these sources of pollution, including the implementation of agricultural best management practices (BMPs).



According to the USEPA, **urban and agricultural runoff** (i.e., non-point sources) are presently the leading causes of surface water quality impairments nationwide (<http://www.epa.gov/305b/2000report/execsum.pdf>). Sediment (soil) is the most prevalent agricultural and construction site runoff pollutant, although nutrients, bacteria, and oxygen-depleting substances are also common pollutants associated with urban and agricultural runoff.

2. **Hydromodification.** Hydromodification (aka hydrology modification) refers primarily to deliberate, physical alterations of a stream, and has been a common practice in both rural and urban landscapes.

Once completed, most stream channel alterations are poorly maintained or not maintained at all, which exacerbates the negative impacts. Specific examples of deliberate stream hydromodification include:

- Channelization: channel straightening, concrete lining, dredging and/or relocation
- Damming
- Hard bank armoring: sheetpile, concrete, demolition debris, refuse
- Culvertizing: piping, encasement
- Floodplain and/or channel encroachment: filling, levee construction
- Undersized and/or misaligned stream crossings (culverts, low water crossings, etc.)



Hydromodification can also refer to stream channel erosion due to modified landuse. Land clearing for agriculture results in reduced rainfall retention (loss of topsoil, un-vegetated soil, reduced evapotranspiration). Similarly, urban development results in impervious surfacing, stormwater concentration into pipes, and soil compaction. Both agricultural and urban development increase and concentrate stormwater runoff, resulting in channel erosion as receiving streams must adjust to create more channel capacity.

Hydromodification results in stream and riparian habitat loss, stream bank erosion, channel incision and/or scouring, slope failures, sedimentation/siltation of aquatic habitat, infrastructure damage, disconnection from the floodplain, downstream flooding, increased stream temperatures, increased light levels and other problems.

3. **Lack of Riparian Vegetation.** A buffer of native vegetation along stream corridors provides numerous benefits to streams such as organic material inputs (food web), aquatic and riparian habitat, temperature moderation, channel roughness (stream energy dissipation), nutrient and sediment removal, and bank protection (root reinforcement). The removal of native riparian vegetation, for example by forest clearing, livestock grazing, or mowing to the edge of banks, forfeits these benefits. The most obvious impairment associated with loss of riparian vegetation is bank erosion resulting in stream sedimentation/siltation. Where riparian vegetation is allowed to recover after removal, although bank stability generally improves, invasive/non-native plants and low biodiversity often reduces the quality of the riparian buffer compared to pre-disturbance conditions.



4. **Improper Refuse Disposal.** Another common impairment of streams in northern Kentucky is improper refuse disposal. Old landfills may generate contaminated leachate that migrates to groundwater then discharges to streams. Dumping of garbage, tires and other auto parts, demolition debris, and hazardous wastes such as drums of used oil or spent solvent, pose potential toxicity concerns and other hazards such as broken glass, rusted jagged metals, and mosquito habitat (especially tires). Disposal areas are often ravines, floodplains, and stream channels.



III. CURRENT CONDITIONS

A. CURRENT LAND COVER

The northern half of Boone, Kenton, and Campbell Counties are part of the greater Cincinnati metropolitan region, and constitute one of the more developed and actively developing regions of the Commonwealth. (As previously described, most permitted stream impacts to date have been in these counties.) Dense development begun in the 1800s in Covington and Newport has spread to include a much larger area of contiguous development encompassing the communities of Burlington to the west, Alexandria to the east, and Independence to the south. The Greater Cincinnati International Airport, located in north-east Boone County, is a significant factor in regional development, as is Interstate development and proximity to Cincinnati.



The lower tier of counties in the service area is generally rural, being mostly agricultural with scattered urban areas such as the county seat communities of Williamstown and Falmouth, and river cities such as Carrollton and Maysville.

Based upon 2005 data provided by Kentucky Division of Geographic Information, the land cover in the Service Area core counties is 11 percent developed, 32 percent agricultural, and 48 percent forested. (According to the 2010 KDF Statewide Forest Assessment, the state-wide landcover is 47 percent forest.) Forest acreage has increased throughout the region in recent decades due to the idling of marginal agricultural land. For example, a county-wide forest assessment utilizing aerial photography analysis demonstrated that forested land increased from 17% in 1954 to 38% in 1998 in Boone County. Where forests have recolonized idled agricultural land, they are often dominated by early successional species such as boxelder, black locust, and white ash. Furthermore, these forests often exhibit a high concentration of non-native / invasive plants, such as bush honeysuckle and multiflora rose, due in part to the loss of topsoil, as well as the competitive advantage of these wind-blown and/or bird-dispersed seed

species. These invasive plants are unsightly and choke out native forest vegetation, and often create impenetrable thickets (photo right). Research is showing negative effects to aquatic ecosystems as well.



Kentucky Division of Forestry has designated Forest Priority Areas throughout the state based upon large forest blocks, forest health, forest management, wildlife conservation, water quality, and other factors. Most of the NKSWRP service area lies within either the Bluegrass Rivers or Appalachian Forest Priority Areas.

Natural limitations to land development in the region include steep topography and landslide-prone soils on the hillsides, especially in areas underlain by Kope Formation limestone-shales. An illustration of some of northern Kentucky's steepest topography (Eden-Cynthiana Association Soils; 12-30 percent slopes), which constitute 42% of Boone, Kenton, and Campbell Counties, is provided below:

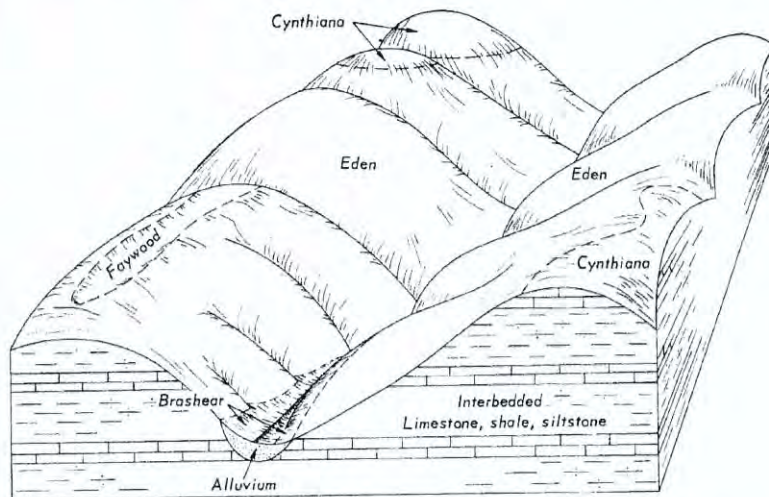


Figure 2.—Relationship of soils in the Eden-Cynthiana association to topography and underlying material.

Illustration source: Soil Survey of Boone, Kenton, and Campbell Counties, Kentucky (1989)

Due to development and agricultural limitations of steep slopes, forest lands are disproportionately located on steep slopes such as ravines containing first, second, and higher-order streams, providing benefits such as water quality protection and wildlife corridors.

B. SIGNIFICANT NATURAL / AQUATIC RESOURCES

The State Nature Preserves Commission records of 191 state and/or federal rare plant and animal species are illustrated on an attached map and include (not limited to):

- Fanshell, Pink Mucket, Sheepnose, and Salamander mussels
- Northern Leopard Frog
- Redback Salamander (photo right) and Eastern Hellbender (salamanders)
- Northern and Slender Madtom (fish)
- Running Buffalo Clover and Nodding Rattlesnake-root (riparian zone plants)
- Black bear and eagle
- Indiana bat



Priority Conservation Areas designated by the KDFWR for the “purpose of focusing conservation efforts that benefit the largest number of species with the greatest conservation need” (Kentucky's Comprehensive Wildlife Conservation Strategy, 2005) are illustrated on an attached map and include:

- Wetland Bird Priority Areas: Ohio River bottoms (west) and Licking River watershed
- Forest Bird Priority Area: Licking River watershed
- Amphibian Priority Area: portions of northern Boone and Kenton Counties

C. FEDERALLY DESIGNATED THREATENED AND ENDANGERED SPECIES

US Fish and Wildlife Service maintains a list of known and potentially-occurring federally-designated threatened and endangered species by county. A summary list of T&E species for the NKSWRP counties (bold type) and surrounding Kentucky counties is provided as an attachment.

Federal T&E species known to occur in the NKSWRP counties include 8 species of mussels and one plant (Running buffalo clover). Indiana bat is not known to occur in the service area, but is listed as potentially occurring in all NKSWRP counties. USFWS T&E information can be viewed directly at: <http://www.fws.gov/frankfort/EndangeredSpecies.html>.

D. EXCEPTIONAL USE WATERS AND AQUATIC LIFE USE SUPPORT

Exceptional Use Waters include streams designated by KDOW as reference reach waters and/or streams that exhibit “excellent” populations of fish or macroinvertebrates. Exceptional Use Waters (2009) and Aquatic Life Use Support designation (2003-2007 and 2010-2014), as determined by KDOW for northern Kentucky streams, are illustrated on an attached map. The streams deemed Exceptional Use Waters and the counties in which they are located are listed below:

- Licking River main stem (multiple counties)
- Boone: Double Lick, Little South Fork, Garrison Creek, Second Creek
- Carroll: Indian Creek
- Gallatin: UT to Big Sugar Creek

- Henry: Drennon Creek, Emily Run, Little Sixmile Creek, Sixmile Creek
- Kenton: Bowman Creek, Sawyer's Fork
- Lewis: Kinniconick Creek
- Mason: UT to Shannon Creek
- Owen: Mill Creek, Severn Creek, UT to Cedar Creek
- Pendleton: Blanket Creek, Flour Creek, Grover's Creek, South Fork Grassy Creek
- Robertson: West Creek
- Trimble: UT to Corn Creek

E. 2010 303(D) LIST OF IMPAIRED WATERS

Excluding rivers and those streams listed solely for pollution attributed to sewage, a total of 48 streams in the Service Area core counties are included in the 2010 303(d) List of Impaired Waters, compiled by KDOW. A summary table of impairments by stream is provided on an attached table. The summary calculations below exclude Lewis and Fleming counties. Among these 48 impaired streams, the most common pollutants identified by KDOW are, excluding sewage, in order of predominance:

- Sediment (28 streams; 58%)
- Nutrients (27 streams; 56%)
- Fecal coliform from farm operations (3 streams; 6%).

Consistent with nation-wide trends, the KDOW-identified sources of these pollutants are, in order of predominance:

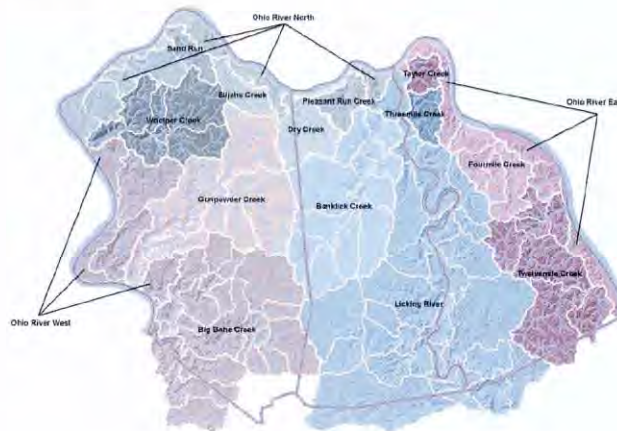
- Urbanization (42 streams; 88%)
 - Land development (16 streams; 33%)
 - Stormwater runoff (13 streams; 27%)
 - Hydromodification (13 streams; 27%)
- Agriculture (29 streams; 60%)
- Loss of riparian vegetation (4 streams; 8%)

The source of impairment for one stream was determined to be surface mining, four other streams were impaired by industrial/municipal discharges, and the source of impairment for eleven streams was determined to be "unknown".

Note that most stream miles have not yet been assessed, and assessments typically do not include the lowest order, upper headwater streams that are priorities for stream mitigation. The total number and length of impaired streams is no doubt much more than currently documented. Nevertheless, the identified pollutants and sources are believed to be representative of the impairments for all streams in the region.

F. SD1 WATERSHED CHARACTERIZATION REPORTS

In addressing its consent decree with USEPA and KDOW, SD1 assessed the conditions of 16 watersheds (not HUC 8 sub-basins) that comprise Boone, Kenton, and Campbell Counties, and prepared Watershed Characterization Reports for each watershed. These reports address current and future land cover, stream conditions such as bank and bed erosion, water quality sampling data, etc. They provided the basis for the development of 5-Year Watershed Plans submitted to the agencies in June 2009 and to be updated every five years until 2025. The Plans were based upon a watershed approach to water quality attainment, emphasizing green solutions rather than only conventional “gray” (concrete) technologies. The primary focus of the consent order is fecal coliform (determined to be an issue “almost everywhere” in the SD1 service area); however, the reports also address sediment and other pollutants, hydromodification, and other impairments to some extent. Information on obtaining the watershed reports can be found at: sd1.org.



Map source: http://sd1.org/documents/Summary-2009_Final.pdf

G. LAND USE TRENDS

Positive trends in land use and development in northern Kentucky include:

- Implementation of construction site BMPs (sediment and erosion control)
- Improving regulation of agricultural and urban stormwater runoff (quality and quantity)
- Emerging awareness of green engineering and infrastructure, riparian buffer and floodplain protections, low-impact / conservation development, and other practices benefiting aquatic resources among local government, developers, and citizens
- Idled land reforestation (albeit with high invasive/non-natives and low diversity)
- Voluntary land conservation among private, non-profit (e.g., local conservancies), government, and government-supported (EQIP, WHIP, CRP, HIP) landowners
- Correction of failing sewer systems such as combined sewer overflows (CSOs) and sanitary sewer overflows (SSOs) by SD1 (consent decree compliance deadline 2025) and reduction of straight pipe discharges in rural areas (e.g., 319 grants)

- Improved waste management and refuse cleanup (e.g., Clean County Certification)

Negative or flat trends in land use and development in northern Kentucky include:

- Increasing impervious surfaces and stormwater piping associated with continued development
- Resistance to zoning and subdivision regulation changes to facilitate conservation development practices (e.g., curb and gutter drainage, minimum pavement width requirements)
- Development on land-slide prone, currently-forested hillsides
- Lack of maintenance or repair of prior stream hydromodifications: impoundment failure, culvert plugging/outlet erosion, bank armor failure, bank erosion, channel incision, etc.
- Spread of invasive/non-native vegetation such as bush honeysuckle
- Slow implementation of agriculture water quality BMPs

H. CHRONIC ISSUES

All of the causes of stream impairment described above—urban and agricultural runoff pollution, hydromodification, lack of riparian vegetation, and improper refuse disposal—are chronic stream issues in northern Kentucky. Among historic impairments, perhaps only industrial point sources and landfill leachate are no longer uncontrolled, systemic issues.

IV. GOALS AND OBJECTIVES

The goal of the NKSWRP is to locally fulfill the purpose of Section 404 of the Clean Water Act and the Compensatory Mitigation Rule, namely:

- To **restore and maintain** the chemical, physical and biological integrity of the Nation’s waters, and
- To **compensate for the loss of aquatic resource functions and services** that result from permitted impacts to streams and wetlands.

Practically speaking, the most commonly permitted impact to streams is the culvertization (loss) of headwater streams for land development. Mitigation projects will offset the permitted stream losses by restoring streams at project sites—addressing urban and agricultural runoff pollution, hydromodification, lack of riparian vegetation, and improper refuse disposal.

V. PRIORITIZATION STRATEGY

To the extent practicable, NKSWRP mitigation projects will be selected considering the following priorities:

- **In-kind mitigation.** In general, stream impacts will be mitigated with stream projects, and wetland impacts will be mitigated with wetland projects. Furthermore, **perennial and intermittent headwater streams** will be prioritized, since these are the jurisdictional streams most commonly

impacted. Headwater streams are defined by KDOW as generally draining less than 5 square miles, and in northern Kentucky headwater streams are generally high gradient (rocky-bottom). In order to address a major regional stream impairment source—urban stormwater runoff—mitigation using “green” practices such as stormwater wetlands or bioretention may be appropriate, so long as it is not addressing regulatory requirements of other parties. Similarly, riparian wetlands are often integral to stream functions and services, such as groundwater/baseflow recharge, floodwater storage and energy dissipation, and habitat, and may be an appropriate component of a stream mitigation project. The Corps may approve mitigation using **out-of-kind and/or non-jurisdictional waters** on a case-by-case basis where it serves the aquatic resource needs of the watershed.

- **Addresses multiple functions and services:** aquatic and wildlife habitat, floodwater storage and downstream flood protection, water energy dissipation, temperature moderation, pollutant removal, natural aesthetics, environmental education, etc.
- **Protects buffers, aquatic or semi-aquatic T&E species, and/or critical habitat.**
- **Located adjacent to or near previously approved ILF project, public natural lands, environmental conservation lands, etc.**
- **Located within the same major river basin (i.e., Ohio, Licking, or Kentucky) where impacts were generated.** To the extent practicable, projects will be proportionately distributed to major river basins based upon impacts. Other considerations such as the size, quality, and timeliness of available project sites may override this criterion.
- **Addresses pollutants and/or sources** identified in watershed or stream assessments and/or the 303(d) list, such as sediment or nutrients attributable to hydromodification, bank erosion, lack of riparian buffer, etc. Water quality issues which are too severe may eliminate project sites from consideration. Projects should directly reduce pollutants of concern, or other actions within the watershed should address identified water quality issues so that restored habitat may be utilized by organisms. Sewage related impairments, such as rural straight pipes and failing septic systems, or antiquated urban sanitary sewers, will not be directly mitigated.
- **Practicability of implementation:** cost-effectiveness, constructability, self-sustainability, development trends, landscape position, habitat connectivity, etc. will be considered to maximize project benefits and the probability of long-term success. Candidate sites with multiple utility line or roadway easements will be scrutinized to ensure the existing or planned disturbance will not significantly compromise the mitigation site success.
- **Voluntary landowner participation.** Preference will be given to projects with voluntary participation from either public or private landowners; however, purchase of conservation easements or land title may be necessary or desirable under certain circumstances (e.g., habitat for threatened or endangered aquatic or semi-aquatic species, mature riparian forest, adjoining public natural area, etc.).
- **Existing watershed plans** (not necessarily USEPA Watershed Based Plan format or contents). The following watersheds have plans developed or under development:
 - Upper Allen Fork (Boone County Engineer)
 - Banklick Creek (Banklick Creek Watershed Council; KDOW First Priority Watershed)
 - Gunpowder Creek (Boone County Conservation District)
 - Woolper Creek (Boone County Conservation District)
 - Lower Eagle Creek (Kentucky Watershed Management Framework 2001 Priority Watershed)
 - Ten Mile Creek (N. Ky Independent Health District; mostly focused on fecal coliform)

- 16 watersheds of the SD1 service area (see above)

Other plans may exist or be under development.

- **Complements regional conservation initiatives** such as:
 - Local watershed planning initiatives (see above)
 - KDOW Licking River Basin Management Unit
 - USDA Mississippi River Basin Initiative Focus Area Watershed (Licking River)
 - SD1 Green Infrastructure Program and Watershed Community Council
 - Licking River Watershed Watch
 - Northern Kentucky Urban and Community Forestry Council
- **Risk to aviation.** From the Compensatory Mitigation Rule preamble: *“Locating compensatory mitigation projects near airports is likely to attract wildlife species and pose hazards to aviation. This does not mean that no compensatory mitigation projects can be located near any airport; it means that compatibility with existing facilities must be considered.”*

VI. PRESERVATION

From the Compensatory Mitigation Rule preamble: *Preservation is particularly valuable for protecting unique, rare, or difficult-to-replace aquatic resources, such as bogs, fens, and **streams**, and may be the most appropriate form of compensatory mitigation for those resources.*

According to USEPA, “existing, relatively intact ecosystems are the keystone for conserving biodiversity, and provide the biota and other natural materials needed for the recovery of impaired systems” (<http://www.epa.gov/owow/wetlands/restore/principles.html>).

In addition to protection of Exceptional Use Waters, aquatic or semi-aquatic T&E species, and other priority natural or aquatic resources, preservation may also be appropriate as a means to preserve and restore streams and riparian vegetation in other urban and rural landscapes. Restoration and preservation of riparian buffers is currently being promoted by numerous land management entities such as SD1, Conservation Districts, NRCS, Boone County Planning, Northern Kentucky Area Planning, etc. to address issues of urban stormwater runoff quantity and quality, flooding, agricultural water quality, bank erosion, wildlife corridors, greenspace and livable communities, air pollution, and (recently) carbon sequestration. ILF projects consisting of 100% preservation or where preservation is the major emphasis of a project may be implemented if it meets the needs of the watershed, the resource is rare or difficult to replace, or for other reasons as approved by the Corps.

VII. STAKEHOLDER INVOLVEMENT

An October 2010 draft of this CPF was submitted via email to over 100 individuals and organizations known to be involved in natural resources conservation and protection within the service area, many of

whom have worked directly with the NKSWRP on past projects. In addition to being invited to review and comment on the CPF, stakeholders were invited to forward the invitation to other potentially interested parties, and to suggest candidate mitigation project opportunities. Additionally, anyone visiting the NKSWRP website (<http://nkswrp.nku.edu>) will see a link to view the CPF. Email solicitation of stakeholder input will be repeated approximately biannually. Stakeholder input will be incorporated into future updates to this CPF.

VIII. LONG-TERM PROTECTION AND MANAGEMENT

Mitigation project sites are to be provided long-term site protection to protect the site against future incompatible uses to the extent practicable. (In cases of public or private lands that inherently have a natural areas preservation function, such as state wildlife management areas and natural areas owned by conservation organizations, a project-specific site protection instrument may not be necessary.) The options for long-term site protection include conservation easement or deed restriction, transfer of title to a conservation organization or agency, or in certain circumstances, a management agreement. Prior to executing a conservation easement or deed restriction, the NKSWRP will conduct a title search. If it is determined that there is a mortgage on the property, the NKSWRP will attempt to subordinate the mortgagee's interest to the conservation easement. The Corps will be apprised of the site protection mechanism in the Mitigation Project Plan.

Site protection instruments executed after the effective date of this Instrument will include a clause requiring the Corps to be notified 60 days prior to voiding or substantially modifying the instrument. The conservation easement holder (if applicable) and Corps shall also be notified 60 days prior to transfer of property ownership.

If efficacious to move the project forward in a timely manner, the landowner may sign a memorandum of agreement to execute the site protection instrument at a later date.

Each project budget will include a line item cost to be deposited into the Site Protection Account. This is to be a non-wasting account (endowment) used to perform long-term site protection tasks including, but not limited to, periodic site inspections, replacement of boundary posts, fencing, landowner or neighbor contacts, and legal assistance to ensure the provisions of conservation easements, deed restriction, and/or management agreements are enforced.

NKURF, as designated holder of all conservation easements obtained to date, has established a formal conservation easement monitoring and enforcement policy.

IX. EVALUATION AND REPORTING

Program Evaluation and Reporting is addressed in the NKSWRP Instrument, to which this CPF is an attachment.

FIGURES

Impact and Project Sites

Major Watersheds

Level IV Ecoregions

Hydric and Partially Hydric Soils

Land Cover

Wildlife Priority Areas and Occurrences for Threatened, Endangered, and Special Concern Species

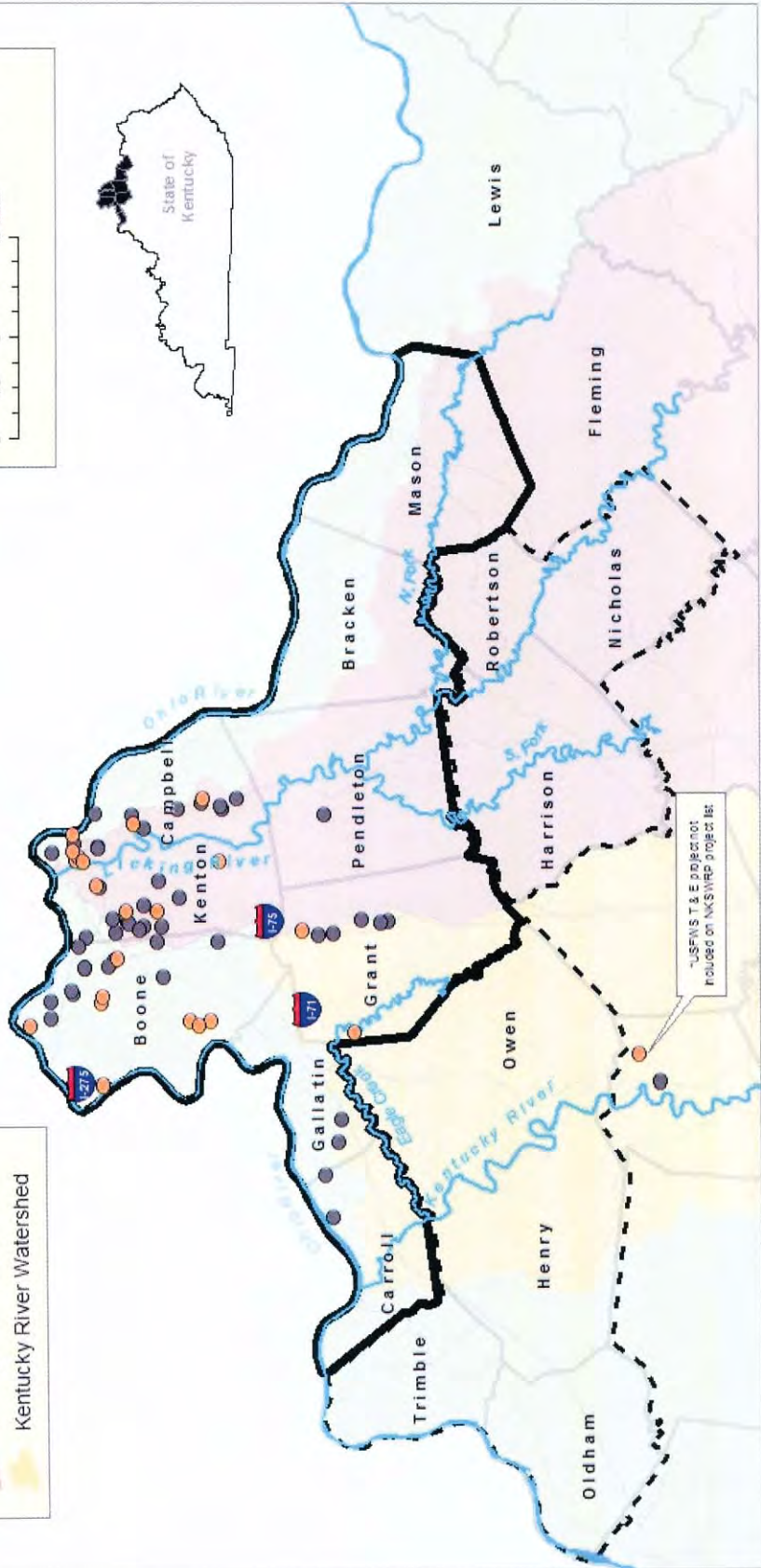
KDOW Stream Assessment Classifications

TABLES

Summary Information from 2010 303(d) Listed Streams in Northern Kentucky

T&E Species Potentially Occurring in Service Area

Impact and Mitigation Project Sites Phase 1 NKSWRP September 1999 - December 2011



NKSWRP Service Area Major Watersheds

Features

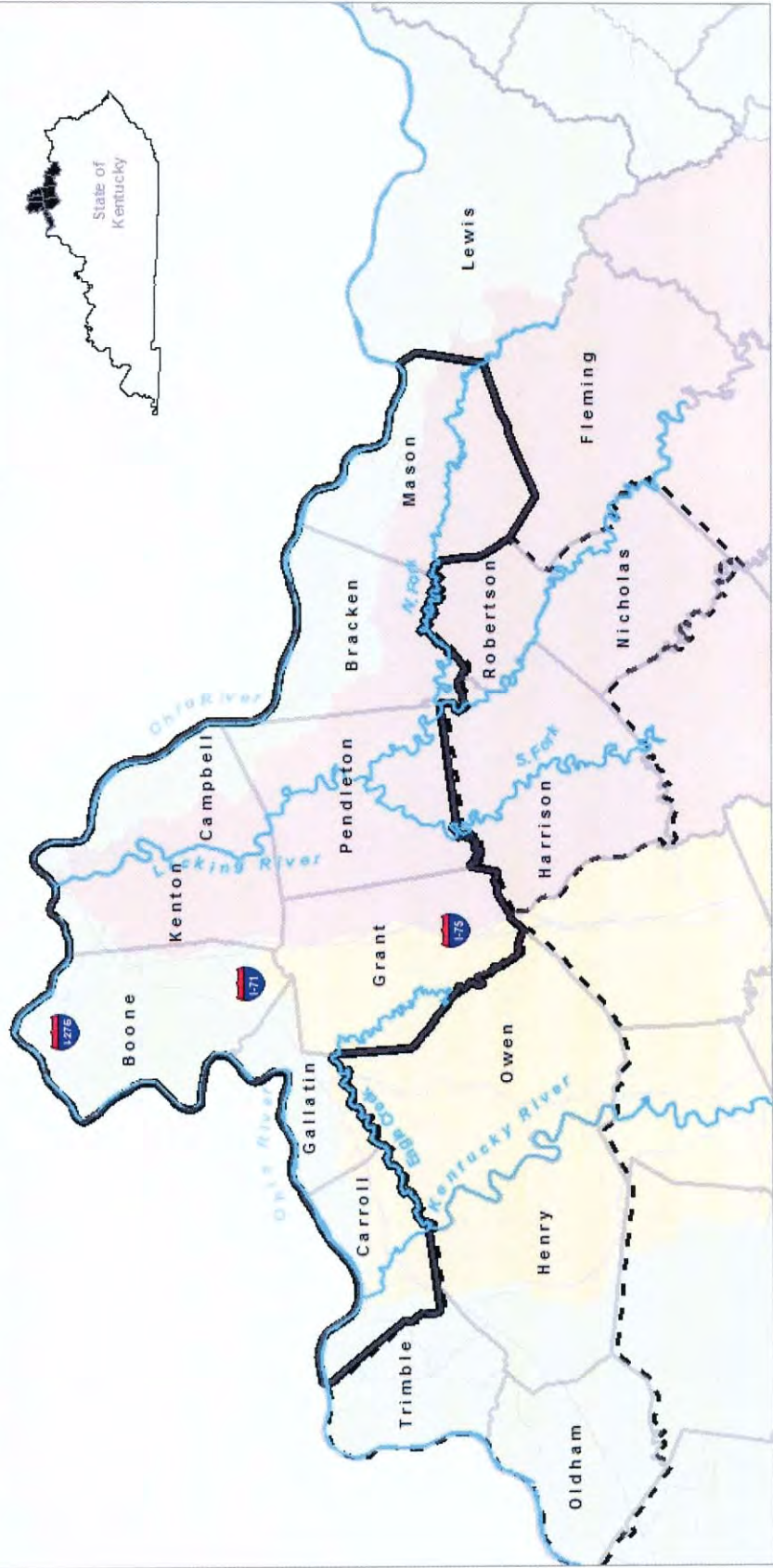
-  NKSWRP core service area
-  NKSWRP outlying service area
-  County Boundary
-  Ohio River Trib Watersheds
-  Licking River Watershed
-  Kentucky River Watershed

Notes

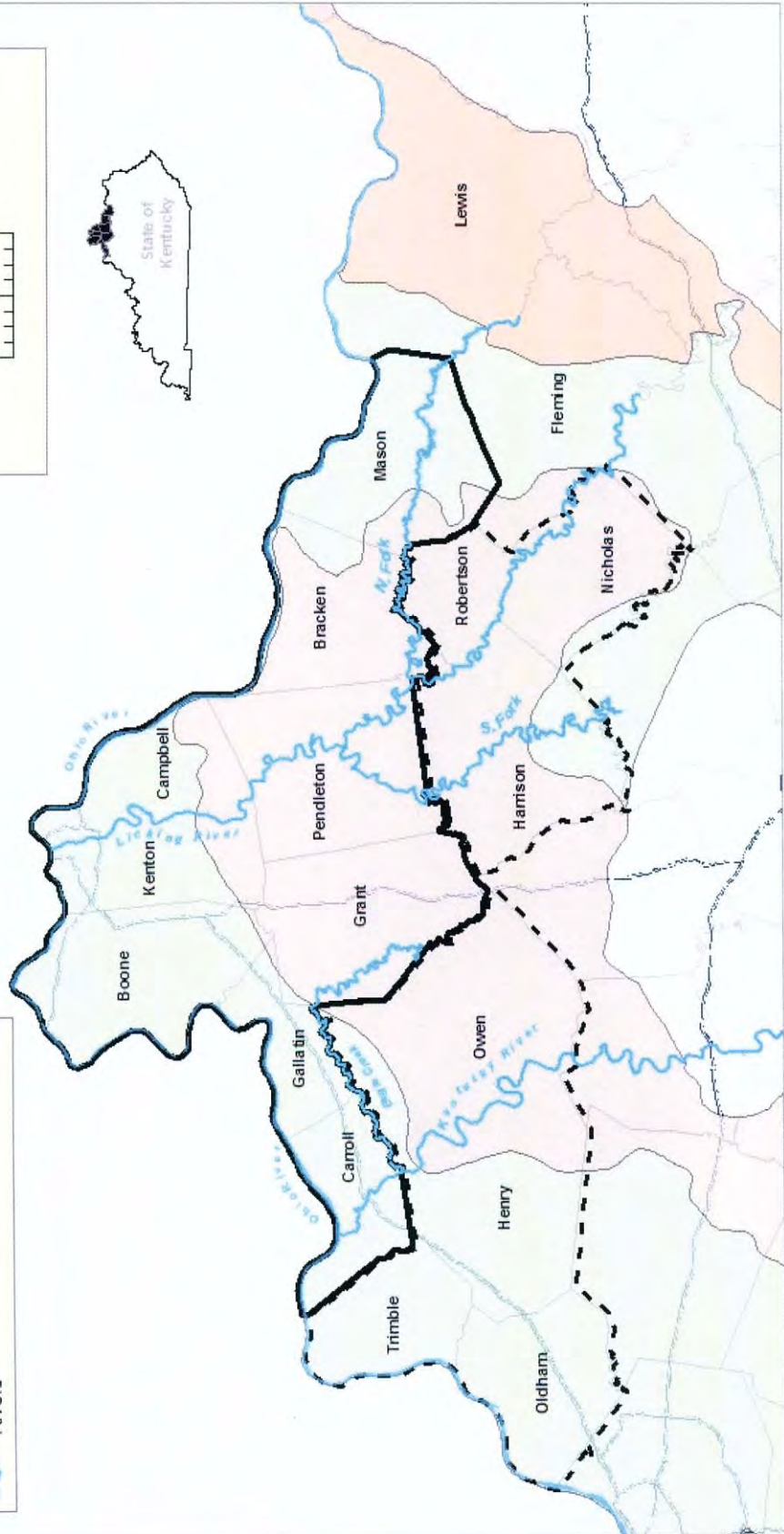
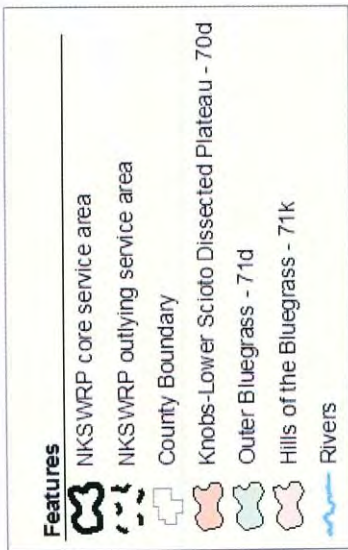
Data Sources: Kentucky Division of Geographic Information, Kentucky Division of Water, NKU Center for Applied Ecology,
 Map prepared by: Center for Applied Ecology, Northern Kentucky University,
 Updated - April 2012.
 Projection: Kentucky State Plane North
 Datum: North American Datum 1983

0 4 8 16 Miles

N 







Level IV Ecoregions in NKSWRP Service Area



Hydric and Partially Hydric Soil in NKSWRP Service Area

Features


-  NKSWRP core service area
-  NKSWRP outlying service area
-  County Boundary
-  Hydric/Partially hydric soils

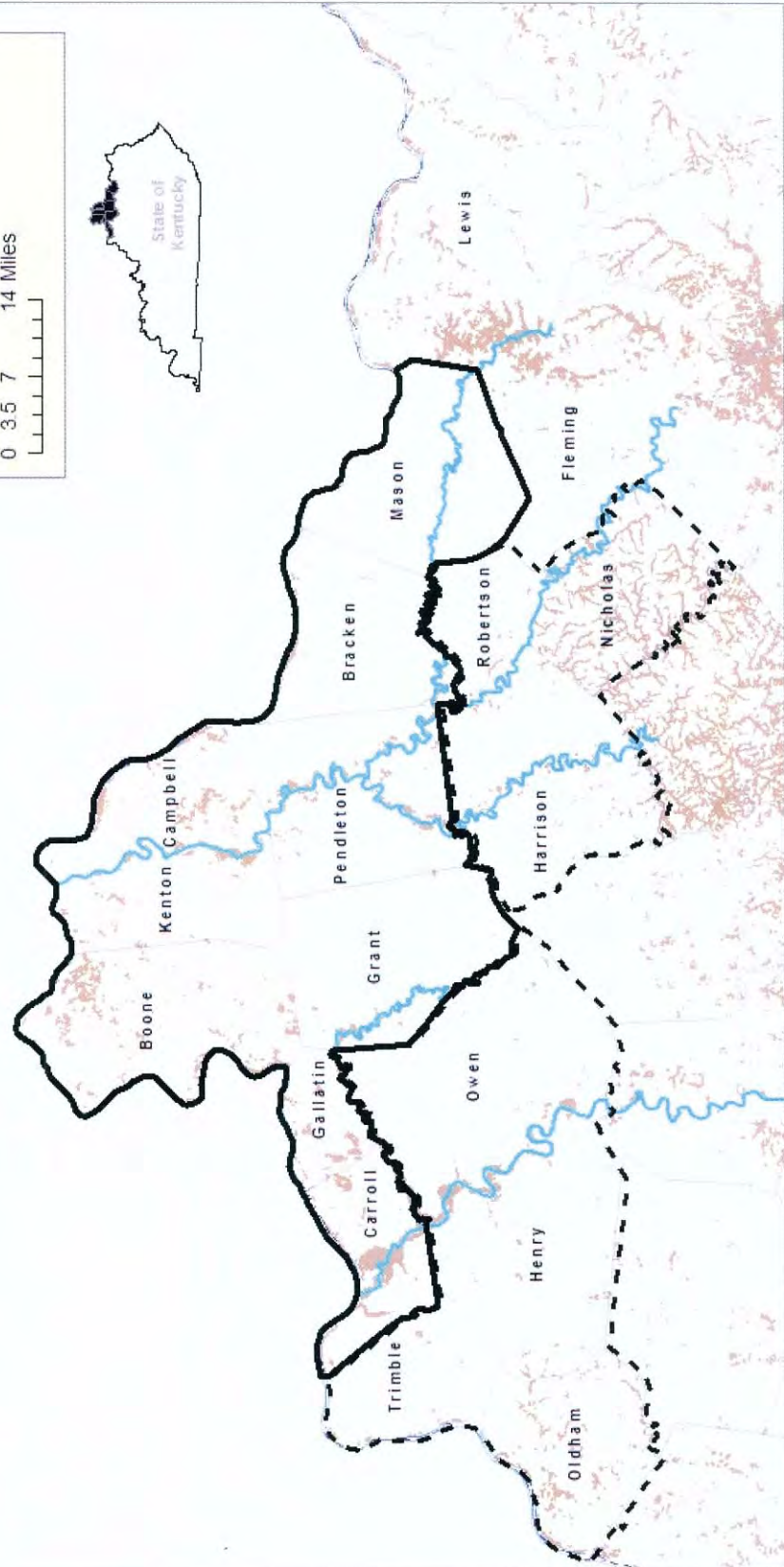
Data Sources

Base map data were provided by Kentucky Division of Geographic Information. Soils data were provided by the USDS-NRCS. Map prepared by: Center for Applied Ecology Northern Kentucky University, Updated - April 2012.

Projection: Kentucky State Plane
North Datum: North American Datum 1983

0 3.5 7 14 Miles

N 



Land Cover in NKSWRP Service Area

Features

- NKSWRP Core Service Area
- NKSWRP outlying service area
- County Boundary
- Major Roads & Interstate Hwys

Land Use

- Forest Land
- Agricultural Land
- Urban
- Water

Notes

Data Sources: Kentucky Division of Geographic Information - Kentucky Land Cover Database (KLCD) 2001 Level III Land Cover map.

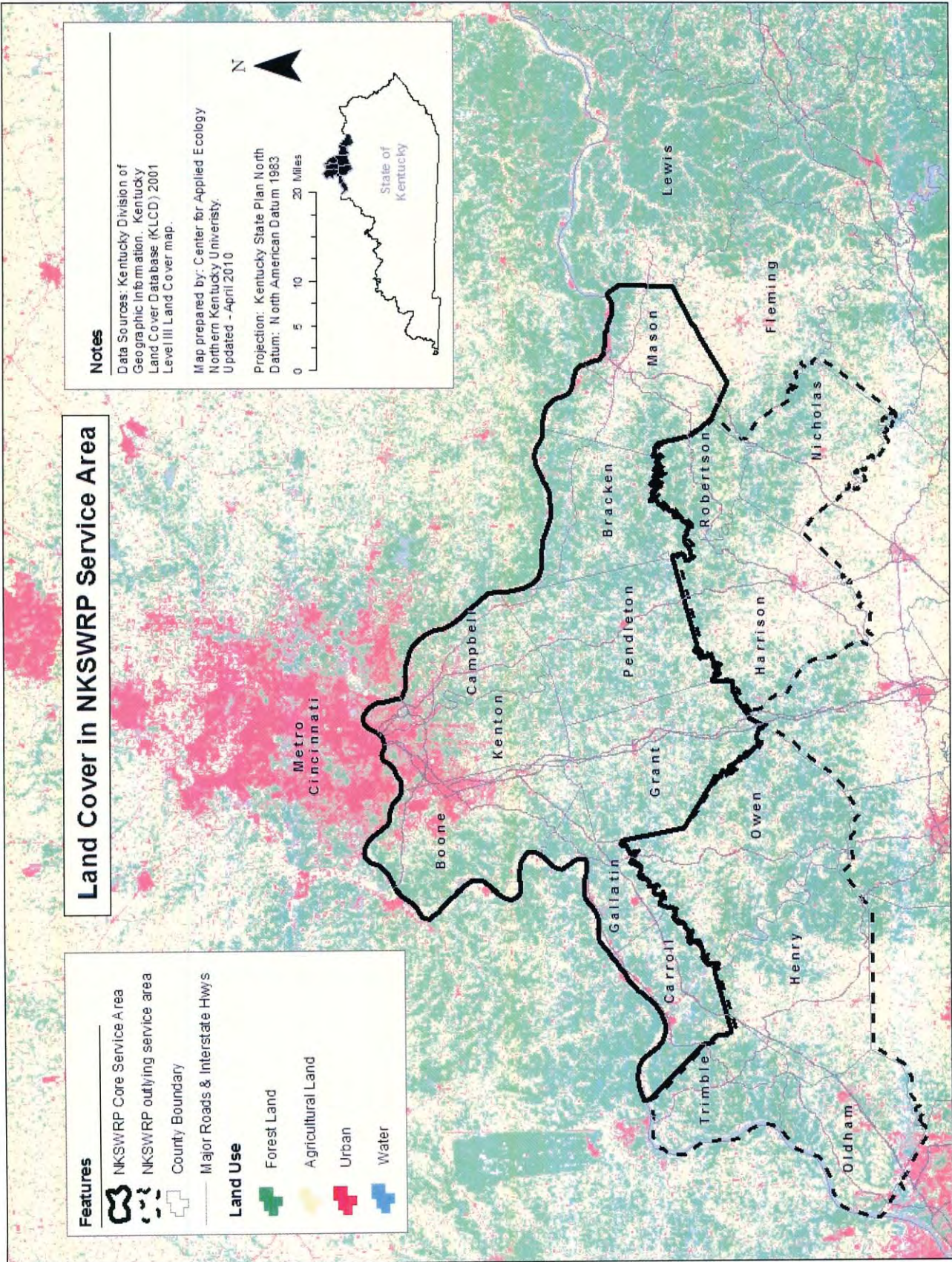
Map prepared by: Center for Applied Ecology Northern Kentucky University. Updated - April 2010

Projection: Kentucky State Plan North Datum: North American Datum 1983

0 5 10 20 Miles

N

State of Kentucky



Wildlife Priority Areas and Occurrences for Threatened, Endangered, and Special Concern Species in NKSWRP Service Area

Features

-  NKSWRP core service area
-  NKSWRP outlying service area
-  KDFWR Amphibian Priority Areas
-  KDFWR Forest Bird Priority Areas
-  KDFWR Wetland Bird Priority Areas
-  Rivers

Species Occurrence

-  Insect
-  Mammal
-  Amphibian
-  Bird
-  Fish
-  Mussel
-  Plant
-  Snail

Date Sources and Notes

Data sources: Kentucky State Nature Preserves Commission (provided species occurrence data within 200ft of streams, May 2010); Kentucky Division of Water, Kentucky Department of Fish and Wildlife Resources, Kentucky Division of Geographic Information.

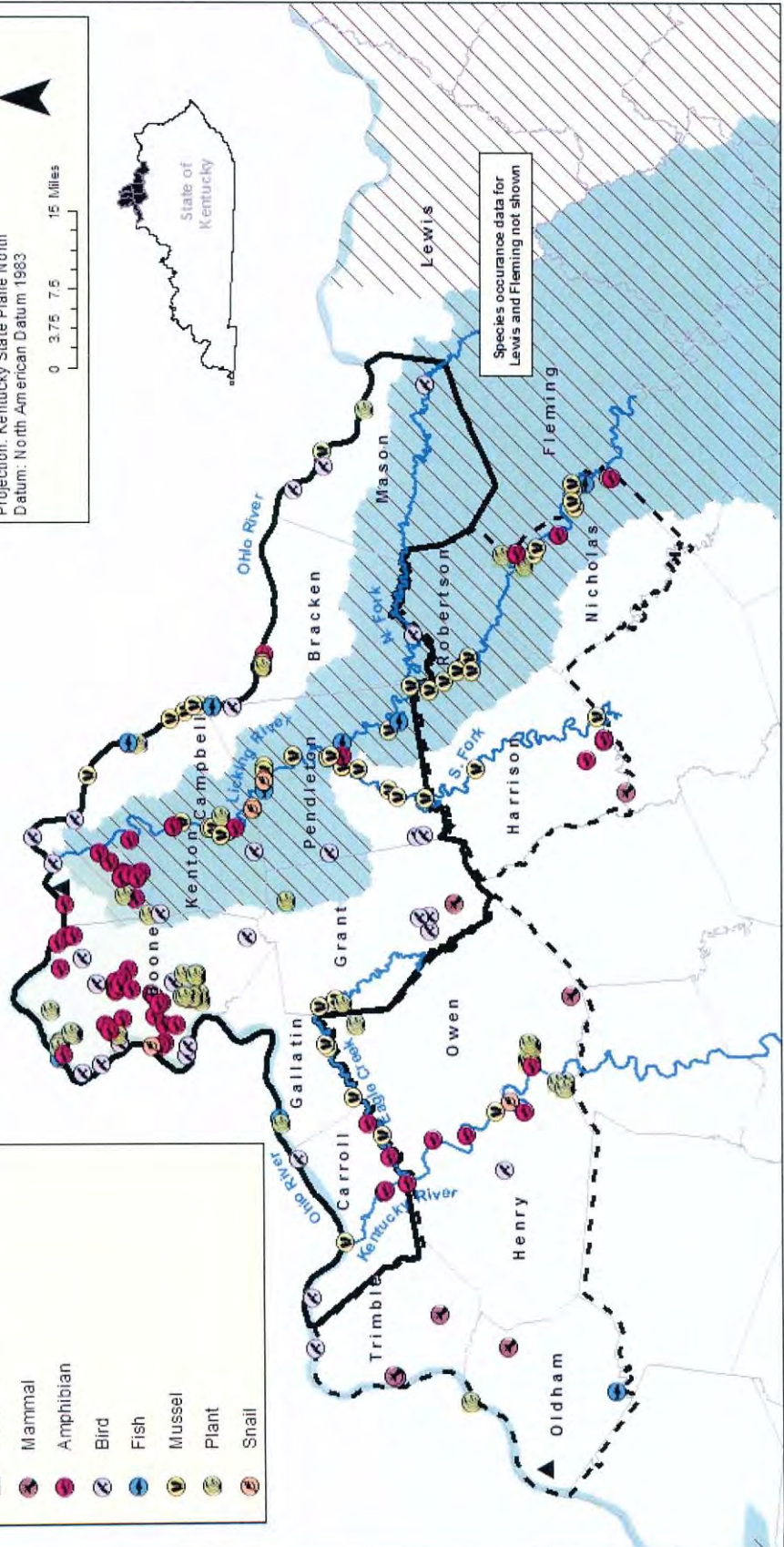
Map prepared by: Center for Applied Ecology, Northern Kentucky University, April 2012.

Notes: Priority Areas taken from Kentucky's Comprehensive Wildlife Conservation Strategy, 2005. Location precision of species occurrence data varies from very precise to within several miles.

Projection: Kentucky State Plane North
Datum: North American Datum 1983



0 3.75 7.5 15 Miles



KDOW Stream Assessment Classifications in NKSWRP Service Area

Features

-  NKSWRP core service area
-  NKSWRP outlying service area
-  County Boundary
-  KDOW Exceptional use waters
-  KDOW 305 (b) 2010-2014 Aquatic Life Fully supporting
-  Partially supporting
-  Not supporting
-  Rivers

Notes

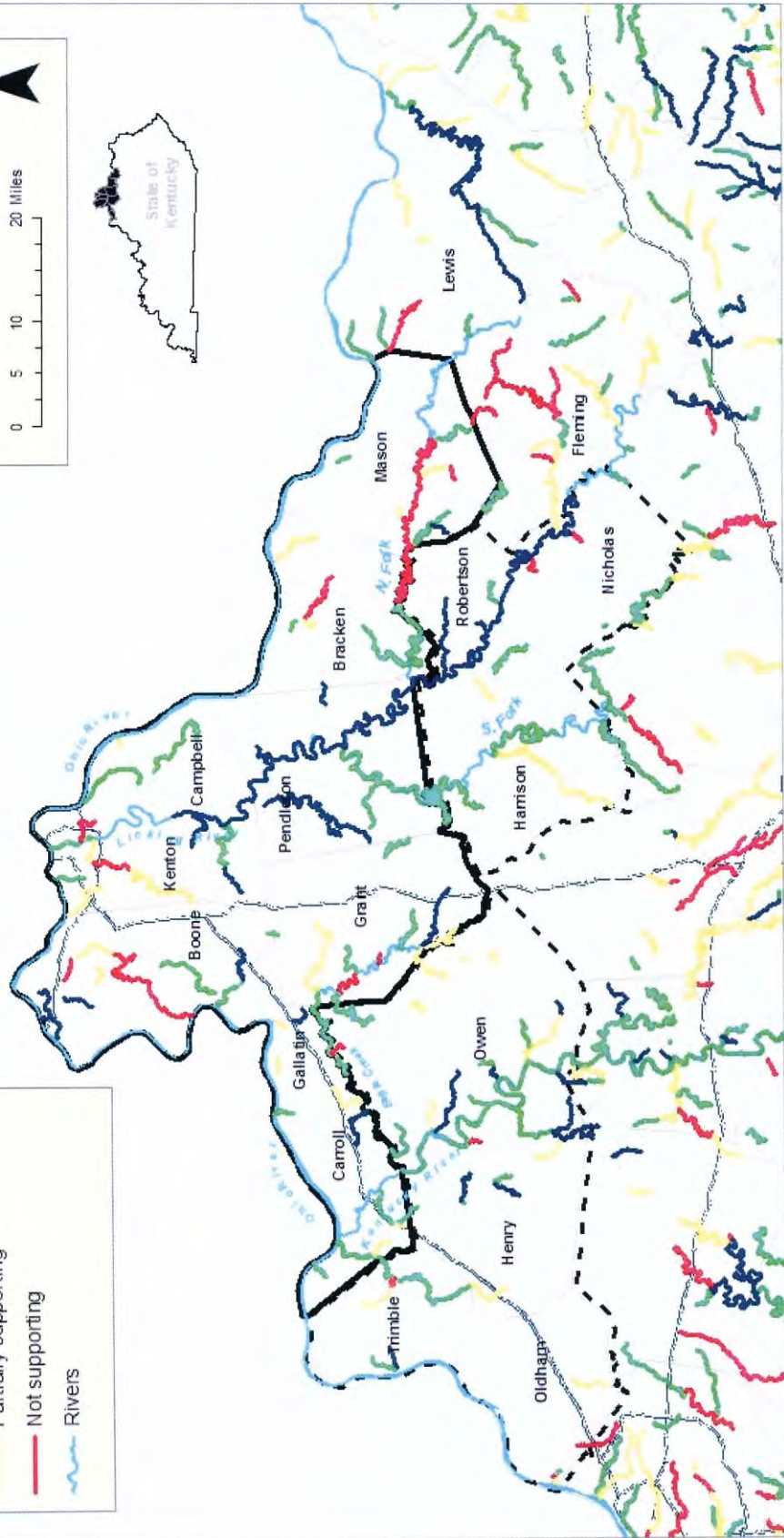
Data sources: Kentucky Division of Water's Water Quality Report to Congress (305 (b)), data from 2003-2007 and 2010-2014; Kentucky Division of Geographic Information.

Map prepared by: Center for Applied Ecology Northern Kentucky University, Updated - April 2012

Projection: Kentucky State Plane
North Datum: North American Datum 1983

0 5 10 20 Miles

N 



Summary Information from 2010 303(d) Listed Streams in Northern Kentucky (Excludes Rivers)

Stream	County	Pollutants	Suspected Sources
Gunpowder Creek	Boone	Sediment, Nutrients, Sewage	Land development, Urban stormwater, Agriculture, Streambank modification, Loss of riparian vegetation
S Fork of Gunpowder	Boone	Fecal coliform, Sediment, Nutrients, Sewage	Agriculture, Land development, Package plant, Unknown
Woolper Creek	Boone	Fecal coliform, Nutrients, Sewage, Sediment, Total suspended solids	Agriculture, Inappropriate waste disposal, Hydromodification, Urban runoff,
Allen Fork of Woolper	Boone	Nutrients, Sediment	Urban stormwater, Habitat modification
Middle Creek	Boone	Nutrients, Sediment	Agriculture, Land development
Dry Creek of Ohio	Boone	Nutrients, Sewage	Agriculture, Municipal point source, Urban stormwater
Banklick Creek	Kenton	Fecal coliform, Sediment, Nutrients, Sewage	Land development, Urban runoff, Sewage (municipal and on-site), Agriculture
Threemile Creek of Licking	Campbell	Fecal coliform, Sediment, Nutrients, Sewage	Sanitary sewer overflows, Unknown
Tenmile Creek	Campbell	Sediment, Nutrients	Crop production, Livestock, Land development
Lick Creek	Carroll	Total Dissolved Solids	Urban runoff
West Fork of Mill Creek	Carroll	Sediment	Road and urban runoff, Streambank modification, Loss of riparian vegetation
Mellins Branch	Carroll	Nutrients	Crop production, Livestock
Big Sugar Creek of Ohio	Gallatin	Nutrients, Sewage, Sediment	Crop production, Road runoff, Land development
Dry Creek	Gallatin	Nutrients, Sewage, Sediment	Crop production, Livestock, Urban runoff
Eagle Creek	Grant	Sediment, Nutrients	Crop production, Livestock
Arnolds Creek of Ten Mile	Grant	Sediment	Crop production, Streambank modification
Rattlesnake Creek of Eagle	Grant	Unknown	Unknown
Ten Mile Creek	Grant	Unknown	Unknown
Three Forks Creek of Eagle	Grant	Sediment	Unknown
Brushy Fork	Pendleton	Sediment	Crop production, Streambank modification
Bracken Creek of Ohio	Bracken	Nutrients	Crop production, Livestock
Goose Creek	Bracken	Unknown	Natural sources, Surface mining
Locust Creek	Bracken	Unknown	Unknown
Cabin Crk of Ohio	Mason	Sediment	Agriculture, Habitat modification
Lees Creek of N Fork Licking	Mason	Sediment, Nutrients	Crop production, Livestock
UT to UT of Lees	Mason	Sediment, Nutrients	Livestock, Loss of riparian vegetation

Stream	County	Pollutants	Suspected Sources
Allison Creek	Fleming	Nutrients, Sewage, Phosphorus	Livestock
Craintown Branch	Fleming	Phosphorus	Livestock
Crane Creek	Fleming	Sediment	Agriculture, Livestock, Loss of riparian vegetation, Mining/Quarries, Streambank modification
Doty Creek	Fleming	Nutrients	Agriculture, Animal feeding operations
Fleming Creek	Fleming	Nutrients, Phosphorus, Sewage	Agriculture, Livestock, Urban runoff
Fox Creek	Fleming	Fecal coliform, Sediment, Nutrients,	Unknown, Livestock, Dredging
Locust Creek	Fleming	Nutrients, Sediment	Crop production
Logan Run	Fleming	Nutrients	Agriculture
UT to Mill Creek	Fleming	Sediment, Nitrogen	Livestock, Loss of riparian habitat, Road runoff
Little Beaver Creek	Harrison	Nutrients, Sediment	Crop production , Livestock, Urban runoff
Mill Creek	Harrison	Nutrients, Sediment	Crop production , Livestock, Land development
Little Kentucky River	Henry	Nutrients, Sediment	Agriculture, Livestock
Salt River of Sixmile Creek	Henry	Sediment	Agriculture, Habitat modification
Sulphur Creek	Henry	Nutrients, Sediment	Agriculture, Habitat modification
Briery Branch	Lewis	Nutrients	Crop production , Livestock, Land development
Clary Branch	Lewis	Sediment	Dredging, Urban runoff
Laurel Fork	Lewis	Nutrients, Sediment	Crop production , Dredging, Livestock
Montgomery Creek	Lewis	Nutrients, Sewage, Sediment	Crop production, Dredging, Livestock, Land development
Salt Lick Creek	Lewis	Sediment	Urban runoff, Loss of riparian habitat
Trace Creek	Lewis	Nutrients, Sewage, Sediment	Crop production, Livestock, Land development
Crooked Creek	Nicholas	Fecal coliform	Unknown
Scrubgrass Creek	Nicholas	Unknown	Unknown
Stony Creek	Nicholas	Unknown	Unknown
Currys Fork	Oldham	Nutrients, Dissolved Oxygen, Sediment	Agriculture, Habitat modification, Land development
Harrods Creek	Oldham	Fecal coliform, Nutrients	Urban runoff
Pond Creek	Oldham	Nutrients, Sewage	Municipal point source discharges
UT to Pond Creek	Oldham	Chlorine, Nutrients, Sewage	Package plant discharge,
Big Twin Creek	Owen	Sediment	Agriculture, Habitat modification
Caney Creek	Owen	Nutrients, Sewage, Sediment	Channelization, Loss of riparian habitat, Livestock
Cedar Creek	Owen	Nutrients, Sediment	Livestock, Highway runoff
Elk Creek	Owen	Unknown	Unknown
Kentucky River	Owen	Methylmercury	Atmospheric deposition – toxics source unknown
Moseby Branch	Owen	Unknown	Unknown
Richland Creek	Owen	Sediment	Crop production
Stevens Creek	Owen	Nutrients, Sediment	Livestock
Johnson Creek	Robertson	Fecal coliform	Unknown
Hardy Creek	Trimble	Nutrients, Sewage	Crop production, Livestock, Runoff, Loss of riparian habitat, Hydromodification,

Data Source:

<http://www.water.ky.gov/NR/rdonlyres/58E97683-C9B7-4F9F-BA87-93671E6A02D9/0/2008volume2final.pdf>

Notes Regarding Summary Information:

Sediment = Sediment/Siltation or Turbidity

Nutrients = Nutrients/Eutrophication

Sewage = Sewage/Organic Enrichment

Livestock – Grazing, Feedlots, Dairies

Bold — TMDL to be released 2009

Italics — TMDL being developed

No TMDL targets have been developed for Nutrients and Sewage

~~Strikethrough~~ — Omits streams listed only for bacteria (fecal coliform).

MAMMALS			MUSSELS			PLANTS								
<i>Myotis sodalis</i>	<i>Myotis grisescens</i>		<i>Pleurobema clava</i>	<i>Cyprogenia stegaria</i>	<i>Plethobasus cooperianus</i>	<i>Lampsilis abrupta</i>	<i>Pleurobema plenn</i>	<i>Epioblasma torulosa rangiana</i>	<i>Obovata retusa</i>	<i>Epioblasma o. obliquata</i>	<i>Trifolium stoloniferum</i>	<i>Arabis perstellata</i>	<i>Solidago shortii</i>	<i>Arabis perstellata</i>
Indiana bat	gray bat		clubshell	fanshell	orangefoot pimpleback	pink mucket	rough pigtoe	northern ruffleshell	ring pink	purple catspaw	running buffalo clover	Braun's rockcross	Short's goldenrod	Braun's rockcross
Endangered	Endangered	Endangered	Endangered	Endangered	Endangered	Endangered	Endangered	Endangered	Endangered	Endangered	Endangered	Endangered	Endangered	Endangered
Potential	Potential	Potential	Potential	Potential	Potential	Known	Potential	Potential	Potential	Potential	Known	Potential	Potential	Potential
Potential	Potential	Potential	Known	Known	Known	Known	Known	Known	Known	Known	Potential	Potential	Potential	Potential
Potential	Potential	Potential	Potential	Potential	Potential	Known	Known	Known	Known	Known	Potential	Potential	Potential	Potential
Potential	Potential	Potential	Known	Known	Known	Known	Known	Known	Known	Known	Known	Known	Known	Known
Potential	Known	Potential	Known	Known	Known	Known	Known	Known	Known	Known	Known	Known	Known	Known
Potential	Potential	Potential	Known	Known	Known	Potential	Potential	Potential	Potential	Potential	Potential	Known	Known	Known
Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Known	Known	Known
Known	Known	Known	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential
Known	Known	Known	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential
Known	Known	Known	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential
Known	Known	Known	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential
Known	Known	Known	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential

source: <http://www.fws.gov/frankfort/EndangeredSpecies.html> Jan-12