Kentucky Watershed Leadership Academy
Phase I: Program Development Project Final Report

June 2009

Stantec

KENTUCKY WATERSHED LEADERSHIP ACADEMY
PHASE I: PROGRAM DEVELOPMENT
PROJECT FINAL REPORT

Grant Number: C9-994861-02

Application Title: Kentucky Watershed Leadership Academy: Program Development

Application Number: 02-19

Grant Agreement Number: #PON2 129 0800010714

Project Period: November 1, 2008 – June 30, 2009

Submitted By: Karen L. Schaffer, Stantec Consulting Services, Inc., 1901 Nelson Miller Parkway, Louisville, KY 40223. 502-212-5000 karen.schaffer@stantec.com

KENTUCKY WATERSHED LEADERSHIP ACADEMY
PHASE I: PROGRAM DEVELOPMENT
PROJECT FINAL REPORT
EXECUTIVE SUMMARY
June 30, 2009

The Energy and Environmental Cabinet (EEC) and Stantec Consulting Services, Inc. (Stantec) do not discriminate on the basis of race, color, national origin, sex, age, religion, or disability. The EEC and Stantec will provide, on request, reasonable accommodations including auxiliary aids and services necessary to afford an individual with a disability an equal opportunity to participate in all services, programs and activities. To request materials in an alternative format, contact the Kentucky Division of Water, 200 Fair Oaks Lane, Frankfort, KY 40601 or call (502) 564-3410, or contact Stantec Consulting Services, Inc.

Funding for this project was provided in part by a grant from the U.S. Environmental Protection Agency (USEPA) through the Kentucky Division of Water, Nonpoint Source Section, to Stantec Consulting Services, Inc. as authorized by the Clean Water Act Amendments of 1987, §319(h) Nonpoint Source Implementation Grant # C9-994861-02. Mention of trade names or commercial products, if any, does not constitute endorsement. This document was printed on recycled paper.

Acknowledgements

The assistance of the following project participants from the Kentucky Division of Water and the Kentucky Watershed Leadership Academy Program Development Committee is gratefully acknowledged. Their numerous contributions and insights have helped to shape the development of the Kentucky Watershed Leadership Academy and set the course for successful program implementation and long term sustainability.

Kentucky Division of Water

Paulette Akers, Nonpoint Source Section Supervisor
Debra Day, Grant Administrator
Rosetta Fackler, NPS Section Education Coordinator
Peter Goodmann, Assistant Director, KDOW
Lajuanda Haight-Maybriar, Licking River Basin Coordinator
Malissa McCallister, Kentucky River Basin Coordinator
Rob Miller, Upper Cumberland River Basin Coordinator
Dale Reynolds, Green/Tradewater rivers Basin Coordinator
John Webb, NPS Section Technical Advisor
Ted Withrow, Big Sandy, Little Sandy, Tygarts rivers Basin Coordinator (retired)

Kentucky Watershed Leadership Academy Program Development Committee

Laura Alex, Cumberland River Compact
Mark Ayers, Salt River Watershed Watch
John Baker, City of Henderson
Pat Banks, Kentucky Riverkeeper
Joe Baust, Murray State University
Billy Bennett, Eastern Kentucky University
Tom Biebighauser, USDA Forest Service
Kevin Bruce, Stantec
Robert Bush, City of Elizabethtown
Pete Cinotto, US Geological Survey
Steve Coleman, Division of Conservation, Kentucky DNR
Michael Croasdaile, University of Louisville Stream Institute
Andrew Earnest, Western Kentucky University
Joe Ewalt, League of Cities
Jim Funk, Forestry Consultant

Jennifer Garland, US Fish and Wildlife Service
Todd Garland, Kentucky Department of Agriculture
Alan Grant, Energy and Environment Cabinet
Steve Gray, Kentucky Division of Forestry
Sue Green, Louisville and Jefferson County Metropolitan Sewer District
Tim Guilfoile, Sierra Club
Amanda Gumbert, University of Kentucky, CES
Lajuanda Haight-Maybriar, KDOW-Licking River Basin Coordinator
Steve Hall, Stantec
Larry Hamilton, City of Bardstown
Carol Hanley, University of Kentucky, Extension Service
Mike Hardin, KY Department of Fish and Wildlife
Steve Higgins, University of Kentucky
Jamie Holtzapfel, Sanitation District No. 1 of Northern Kentucky
Martha Horseman, Kentucky Transportation Center
Kazi Javed, Kentucky State University
Mike Kemp, Murray State University
Laura Knoth, Kentucky Farm Bureau
Valerie Lucas, Kentucky Tennessee Water Environment Association
Paul Maron, Strand Associates
Kurt Mason, Jefferson County NRCS
Malissa McAllister, UK Kentucky Water Resources Research Institute
Tony Miller, 3rd Rock Consulting
Bill Mitchell, City of Williamstown
Maggie Morgan, Four rivers Basin Coordinator
Roger Recktenwald, Kentucky Association of Counties
Dale Reynolds, Green Tradewater Basin Coordinator
Jeff Rice, KY Association of Conservation Districts
Bruce Scott, Kentucky Waterways Alliance
Amy Sohner, Bluegrass Pride
Jeff Sole, The Nature Conservancy
Barry Tonning, TetraTech
Liz Upchurch, Tennessee Valley Authority
Tony Velasco, US Fish and Wildlife Service
Brian Ward, Palmer Engineering Company
John Webb, Environmental Scientist, Kentucky Division of Water
Frank Whitehouse, Lexmark
Howard Whiteman, Murray State University
Pamla Wood, PW Consulting, Inc.
Andrea Zimmer, USEPA - Region IV

Executive Summary

The Kentucky Watershed Leadership Academy (KWLA): Program Development provides a framework for a capacity building program to train local leaders and provide them with tools and skills to successfully champion the development and implementation of watershed-based plans. The project consisted of five (5) tasks, described below.

Stantec recruited membership for the **KWLA Program Development Committee** from the Kentucky Nonpoint Source Section, Kentucky Statewide Watershed Steering Committee, Kentucky Environmental Education Council, colleges and universities, USEPA, Kentucky Association of Counties and other watershed professionals. Through meetings and other communication, the committee guided the development throughout this phase of the project.

Stantec developed and hosted a **project website** (www.kywla.org). The website includes a password protected page to share draft documents with project participants. Final materials were posted to a publicly accessible page. The website was updated regularly throughout the project. The website proved to be a valuable tool for sharing information among project participants and the general public, with 947 web hits between December 2008 and June 2009.

Stantec hosted five (5) **focus group sessions** with the following groups: KDOW's Basin Coordinators, Kentucky Watershed Steering Committee, participants in the Kentucky Waterways Alliance statewide meeting, participants in the Salt River Watershed Watch Conference and members of the KWLA Program Development Committee. Basin Coordinators held focus group sessions with committees and watershed groups in their basins. In addition to discussions, forty-three (43) survey responses were analyzed to identify and prioritize topics for the KWLA course. Results were used throughout the project.

Stantec **researched existing watershed training courses** to identify information most relevant to Kentucky. Research methods included on-line searches and discussions with watershed training course staff in Ohio and Indiana. The research results were used to develop the course requirements, outline and schedule and will be used to develop the course content during the program implementation phase. Stantec identified twenty-one (21) courses and documents that provided valuable research results. Numerous useful documents were also identified.

Stantec developed the **KWLA Course Requirements and Outline**, integrating results of the needs catalogue, research and input from KDOW and the KWLA Program Development Committee. As currently envisioned, KWLA will include twenty-four (24) hours of in-person sessions and sixteen (16) hours of distance learning modules, and require approximately forty (40) hours to complete. The KWLA course includes thirty-four (34) hours of required modules. Students choose their remaining six (6) hours of elective modules from ten (10) available modules. Most elective modules will be taught via distance learning.

Next Steps: During the implementation phase of the project, the course materials will be developed; the course will be held three (3) times, including one short course for agency personnel and two full length courses. A program implementation plan will be developed. The plan will include an approach to keep training materials current and train approximately 50 people per year. The Program Implementation Plan will address funding, staffing for training sessions, program advertising, student recruitment, program updates, tracking success indicators and evaluations.

Table of Contents

EXECUTIVE SUMMARY E.1

1.0 INTRODUCTION AND BACKGROUND 1
1.1 PURPOSE 1
1.2 OBJECTIVE 4
1.3 GOAL 4

2.0 MATERIALS AND METHODS 4
2.1 KWLA PROGRAM DEVELOPMENT COMMITTEE 4
2.2 PROJECT WEBSITE 5
2.3 NEEDS CATALOGUE 5
2.4 RESEARCH EXISTING PROGRAMS 6
2.5 COURSE REQUIREMENTS AND OUTLINE 6

3.0 RESULTS AND DISCUSSION 7
3.1 KWLA PROGRAM DEVELOPMENT COMMITTEE 7
3.2 PROJECT WEBSITE 7
3.3 NEEDS CATALOGUE 8
3.4 RESEARCH EXISTING PROGRAMS 9
3.5 COURSE REQUIREMENTS AND OUTLINE 11

4.0 CONCLUSIONS 13
4.1 CONCLUSIONS 13
4.2 LESSONS LEARNED 14
4.3 MEASURES OF SUCCESS 14
4.4 RECOMMENDATIONS 14

5.0 LITERATURE CITED 15

Table of Contents

Tables

Table 1. Required Modules....11
Table 2. Elective Modules....13

Figures

Figure 1. Webhit Summary for KWLA Project Website....7

Appendices

A. Financial and Administrative Closeout
B. KWLA Program Development Committee Documentation
C. KWLA Project Website Information
D. Needs Catalogue Report
E. Research Existing Programs
Summary of Research on Existing Watershed Training Courses Report
Research Data – CD Only
F. Course Requirements and Outline Report

1.0 Introduction and Background

1.1 PURPOSE

The purpose of the Kentucky Watershed Leadership Academy (KWLA): Program Development is to provide a framework for developing a capacity building program within the Commonwealth of Kentucky that would train local leaders and provide them with the tools and skill sets to successfully champion the development and implementation of watershed-based plans. The KWLA would be founded in Kentucky's Watershed Management Framework and developed collaboratively through the support of the Kentucky Division of Water (KDOW), the Kentucky Watershed Steering Committee, and other project partners, such as the Kentucky Environmental Education Council, Cumberland River Compact, Kentucky Waterways Alliance and Western Kentucky University's proposed Kentucky Institute for Watershed Management Support.

The Kentucky Division of Water (KDOW) and US Environmental Protection Agency (USEPA) are charged with approving watershed plans developed through projects they have funded. Typically in Kentucky, watershed planning projects have been funded with Nonpoint Source Management Grants under Section 319(h) of the Clean Water Act. Although the KDOW and KWLA Program Development Committee recognize that 319(h) grants should not be the only source of funding for watershed projects, these grants are anticipated to be an important funding source for the foreseeable future. Therefore, graduates of the KWLA course should understand the criteria by which KDOW and USEPA evaluate watershed plans. These criteria were published by USEPA in guidance for Section 319(h) grants and are commonly known as the "A through I criteria" (USEPA, 2003). These criteria are listed below and the complete text is available at this website: http://www.epa.gov/fedrgstr/EPA-WATER/2003/October/Day-23/w26755.htm

A. Identification of causes of impairment and pollutant sources.

B. Estimate the load reductions expected from management measures.

C. Describe NPS management measures & critical areas.

D. Estimate technical & financial assistance needed, costs, and/or the sources and authorities that will be relied upon to implement this plan.

E. Describe education used to enhance public understanding & encourage participation in selecting, designing, and implementing NPS measures.

F. Schedule for implementing NPS measures that is reasonably expeditious.

G. Interim measurable milestones for determining whether NPS measures or other control actions are being implemented.

H. Criteria to determine whether load reductions are being achieved and substantial progress is being made toward attaining water quality standards.

I. Monitoring component to evaluate the effectiveness of the implementation efforts, measured against the criteria established under requirement H.

Effective watershed planning requires many science, technical, leadership, educational and social disciplines. The goal of the course is not to raise all students to the level of "expert" in these diverse disciplines but rather to provide some basic information and skill-building exercises to help students with the right questions to ask and where to go for additional resources. The required modules of the KWLA course are designed to assist students with building skills in the following areas:

Leadership Skills

- Identifying stakeholders, building partnerships with them and organizing a stakeholders group
- Facilitating group discussions and meetings
- Defining the scope of the watershed planning effort

Education and Outreach

- Conducting and using the results of a social assessment for the watershed
- Selecting and tailoring watershed educational materials based on the social assessment
- Changing behaviors with social marketing
- Engaging local officials

Watershed Analysis

- Locating, organizing and interpreting data and information for a watershed inventory
- Designing a monitoring program and developing a Quality Assurance Project Plan (QAPP)
- Analyzing water quality, habitat and biological data

- Estimating pollutant loads and load reductions needed to meet water quality goals using STEPL

Management Strategies

- Establishing meaningful watershed goals
- Establishing numerical / quantifiable targets and using environmental indicators to measure progress
- Selecting structural and non-structural Best Management Practices (BMPs) to achieve the established goals
- Developing an implementation plan, working with watershed stakeholders to implement the plan and measuring progress.

Additional information and opportunities for skill building will be offered through elective modules, focusing on Leadership and Watershed Analysis.

The North American Association for Environmental Education's Environmental Education Materials: Guidelines for Excellence (NAAEE, 2004) were considered during this first phase of developing the KWLA. The guidelines were developed around six (6) characteristics:

1. Fairness and accuracy – materials should be fair and accurate in describing environmental problems, issues and conditions and in reflecting the diversity of perspectives on them.
2. Depth – materials should foster awareness of the natural and built environment, an understanding of environmental concepts, conditions, and issues, and an awareness of the feelings, values, attitudes, and perceptions at the heart of environmental issues, as appropriate for different development levels.
3. Emphasis on skill building – materials should build lifelong skills that enable learners to address environmental issues.
4. Action orientation – materials should promote civic responsibility, encouraging learners to use their knowledge, personal skills, and assessments of environmental problems and issues as a basis for environmental problem solving and action.
5. Instructional soundness – materials should rely on instructional techniques that create an effective learning environment.
6. Usability - materials should be well designed and easy to use.

1.2 OBJECTIVE

The objective of this project is to develop an in-depth training program to provide key leadership and technical skills for watershed plan development. This project includes the following tasks to achieve this objective:

1. Organize the KWLA Program Development Committee
2. Develop Project Website
3. Catalogue needs for watershed leadership & technical skills
4. Research existing watershed training courses
5. Develop KWLA course requirements and outline

1.3 GOAL

The goal of this project is to promote capacity building for watershed coordinators, local governments, citizen groups and other interested stakeholders. National trends in watershed management continue to demonstrate that citizen and community-based watershed groups are becoming increasingly involved and responsible for efforts to protect and restore water quality. USEPA and other state nonpoint source pollution management agencies have concluded that the involvement of local citizens and stakeholders is critical to the success and sustainability of any watershed management effort. As such, successful watershed protection and restoration efforts are dependant upon having local watershed coordinators and citizen champions with the capacity, tools and skills required to successfully lead watershed planning and management efforts.

2.0 Materials and Methods

2.1 KWLA PROGRAM DEVELOPMENT COMMITTEE

The KWLA Program Development Committee was formed to provide advice during the development of the Kentucky Watershed Leadership Academy. Stantec recruited membership from the Kentucky Nonpoint Source Section, Kentucky Statewide Watershed Steering Committee, Kentucky Environmental Education Council, colleges and universities, Center for Watershed Protection, USEPA Watershed Branch, Kentucky Association of Counties, Kentucky Area Development Districts and other watershed professionals. Each potential committee member was called to discuss the project, ask for their participation and request their recommendations for additional members and organizations.

Through meetings, emails and telephone calls, the committee guided the development and implementation of the program throughout this phase of the project. All agendas, meeting materials and meeting summaries were reviewed by KDOW prior to release to the committee. KDOW-approved draft materials were posted to the project website (www.kywla.org) on the password protected page. Final materials were posted to the publicly accessible page of the project website. **Appendix B. KWLA Program Development Committee Documentation** includes meeting agendas, sign-in sheets, presentations and summaries for the two committee meetings held during this phase of the project.

2.2 PROJECT WEBSITE

Stantec developed a project website and provided draft web pages to KDOW for review. Upon approval of KDOW, Stantec hosted the project website available at www.kywla.org. The website includes a password protected page to share draft documents, approved by KDOW, among members of the KWLA Program Development Committee. Final materials, reviewed by the Project Development Committee and approved by KDOW, were posted to a publicly accessible page. The website was updated regularly throughout the project. Additional information regarding the project website is provided in **Appendix C. Project Website Information**.

2.3 NEEDS CATALOGUE

The purpose of the Needs Catalogue was to gather information from a broad range of government agencies, non-governmental organizations, volunteer groups and citizens regarding their learning needs associated with watershed planning.

Stantec developed focus group questions designed to assess watershed planning learning needs and provided draft questions to KDOW for review. Focus group questions addressed the major aspects of developing a watershed plan, including advantages of watershed planning, building partnerships, watershed characterization, data collection, water resource programs, watershed goals, identifying management strategies, developing an implementation plan, and measuring progress. Respondents were also asked to provide additional suggestions and recommendations for course topics. Additional questions gauged interest in participating in the training and future contacts regarding the project. Contact information was also requested.

Stantec drafted a presentation describing the KWLA project, provided the draft presentation to KDOW for approval. The presentation was provided to the following groups KDOW's Basin Coordinators, Kentucky Watershed Steering Committee, participants in the Kentucky Waterways Alliance statewide meeting, participants in the Salt River Watershed Watch Conference and members of the KWLA Program Development Committee. Following the presentation, the focus group questions were distributed and discussed, and responses were compiled. The focus group questions were distributed by the Basin Coordinators to committees and watershed groups in their respective basins and the questionnaire was available to

download from the publicly accessible page of the project website. Additional information regarding the needs catalogue is provided in **Appendix D. Needs Catalogue Report.**

2.4 RESEARCH EXISTING PROGRAMS

The purpose of the research task was to identify existing and available materials that could be used or adapted for the KWLA, with a focus on courses and materials that address one or more of the needs identified in the Needs Catalogue developed in the task above. Research methods included web searches, contacting watershed training personnel in other states and reviewing numerous documents. The research results were used to develop the course requirements, outline and schedule for the program development phase and will be used to develop the course content during the program implementation phase. Stantec identified twenty-one (21) courses and documents that provided valuable research results. Numerous useful documents were also identified.

Available information concerning the watershed training courses, including available course materials, was compiled. Each existing course was examined for leadership, logistics of teaching, level of detail covered in the course, tools and methods used, data sources, and a general outline. The websites of departments, programs and organizations containing watershed-related materials were also evaluated and any materials that could be used to develop the course content were compiled. In addition, all materials were evaluated with respect to EPA's nine (9) required elements of watershed plans funded by 319(h) grants (USEPA, 2003).

The twenty-one courses and documents were grouped into three categories: existing watershed information sources that are most relevant to Kentucky, additional watershed training courses, and preliminary sources of Kentucky course content. Additional information about the research results is provided in **Appendix E. Research Results Report.**

2.5 COURSE REQUIREMENTS AND OUTLINE

The purpose of this task is to integrate results of the needs catalogue, research and input from KDOW and the KWLA Program Development Committee to outline the modules of the KWLA course, to identify required and elective modules, in-person and distance learning components and course completion requirements. Stantec drafted the course requirements and outline report, held a meeting of the Program Development Committee to discuss the draft report and distributed a prioritization tool to the committee. Stantec met with KDOW representatives on June 3, 2009 to discuss the draft report, responses from the prioritization tool and to gather additional input and recommendations from KDOW. Results were used to develop the Course Requirements and Outline Report, which was provided to KDOW for review. The Course Requirements and Outline Report is provided in **Appendix F. Course Requirements and Outline Report.**

3.0 Results and Discussion

3.1 KWLA PROGRAM DEVELOPMENT COMMITTEE

The membership of the KWLA Program Development Committee was recruited from local, state and federal agencies, non-governmental organizations, volunteer groups and others with responsibilities for watershed planning, environmental education and water resource management.

The KWLA Program Development Committee guided the development of the Kentucky Watershed Leadership Academy through numerous interactions. Members of the committee were asked to provide input on the development of the Kentucky Watershed Leadership Academy through individual discussions, participation in two meetings and responses to surveys.

Stantec held two (2) meetings of the Program Development Committee in Louisville, Kentucky. Because members were physically located in many areas of the Commonwealth and beyond, and travel time was a significant consideration for their participation, Stantec used a toll-free conference call service to promote participation from Committee members. Committee members provided significant input and lively interactive discussion of the Kentucky Watershed Leadership Academy. Enthusiasm for the project was readily expressed.

Appendix B. KWLA Program Development Committee Documentation includes meeting agendas, sign-in sheets, presentations and summaries for the two committee meetings held during this phase of the project.

3.2 PROJECT WEBSITE

The project website proved to be a valuable tool for sharing information among project participants and the general public. As shown on Figure 1 below, there were 947 web hits, with 2,338 page views between December 2008 and June 17, 2009.

Figure 1. Web hit Summary for KWLA Project Website.

KWLA Program Development Committee members and KDOW project participants were able to use the website to download draft project information from the password protected page and others interested in the project were able to find final project information and to download the focus group questions. Additional information about the website is provided in **Appendix C. Project Website Information**.

3.3 NEEDS CATALOGUE

A total of forty-three (43) responses were received from focus groups and email distribution of the questionnaire. Respondents placed high importance on developing watershed plans, building partnerships and conducting watershed characterization. Respondents placed moderately high importance on collecting new data and understanding water resource programs. Respondents placed high importance on setting watershed goals, identifying management strategies, developing the watershed implementation plan and measuring progress.

Respondents recommended the following additional topics be considered for inclusion in the KWLA training course:

- Land use and local codes, planning, how to evaluate and integrate them into planning.
- Teach effective public outreach.
- Local educational programs are your first line of action on any water quality issue. Educational outreach is ongoing.
- Emphasize training for leadership of the watershed management plan and recommend use of existing trained technical expertise for sampling and other technical aspects.
- Importance of working top down, implementing water quality improvement of watershed over band-aid approach.
- Possibly supply a list of people, consultants, non-profits that can help with watershed plans.
- Engage elected officials and local decision makers in the training.
- Inclusion of native plants, protection of wildlife and development reduction to green space.
- Broaden the course beyond United States Environmental Protection Agency USEPA and Kentucky Division of Water (KDOW) requirements to teach holistic watershed planning that considers future water needs for human, agricultural, industrial and ecological uses.

The following steps are recommended to maximize the utility of the focus groups and questionnaire responses:

- Stantec should use this report to further refine the research of existing training programs, and highlight existing training programs that emphasize the topics included in the focus group questionnaire as well as the comments received.

- The KWLA Program Development Committee should discuss the findings of this report to develop its recommendations on course requirements and outline.

- A recommendation was received to expand the scope of the KWLA training course to include water use, which is not explicitly required by USEPA and KDOW for acceptable watershed plans. KDOW and the KWLA Program Development Committee should develop a response to this recommendation.

- The focus group questionnaire respondents should be contacted via email to highlight the availability of the KWLA website and in the future, when the training becomes available.

- Relatively few responses from local elected officials, planners and engineers were received. Additional efforts to engage these groups should be identified and implemented throughout the project.

Additional information regarding the needs catalogue is provided in **Appendix D. Needs Catalogue Report.**

3.4 RESEARCH EXISTING PROGRAMS

The research task was used to identify existing watershed information sources most relevant to Kentucky, which included the Watershed Planning Guidebook from the Kentucky Division of Water and Kentucky Waterways Alliance, as well as the EPA's Watershed Academy, Handbook for Developing Watershed Plans, Watershed Plan Builder Tool, and Watershed Central website. Also included were the Indiana Watershed Leadership Academy, the Ohio Watershed Academy, Michigan State University's Virtual Watershed Program, the Wetland Restoration Institute, and the Kentucky Press' Wetland Drainage, Restoration and Repair. Additional watershed training courses included the Kansas Environmental Leadership Program and Iowa State University's Renewing Local Watersheds Program. Additional information is provided in **Appendix E. Research Existing Programs.** The CD that accompanies this report includes the results of the research, i.e., the documents that were compiled during the research task.

Preliminary sources for KWLA course content included the Kentucky Watershed Management Framework from the Kentucky Division of Water (KDOW), the Commonwealth Water Education Project through KDOW and the University of Louisville, resources and training from the Center

for Watershed Protection, the University of Connecticut's Nonpoint Source Education for Municipal Officials, the partnership between the Natural Resource Conservation Service and the US Army Corps of Engineers, the Columbia River Compact, the Southeast Watershed Forum, the British Columbia Ministry of Forests and Range Karst Management Handbook and Training, the National Conservation Training Center Growing Communities on Karst Workshop, and bylaws from various watershed associations.

Initial strengths of the watershed training courses and information sources included many examples of learning methods used to teach watershed training, as well as various discussions of watershed leadership. Many watershed training courses made their course materials, course schedules and syllabus' available. The watershed planning process, which relates to the nine (9) requirements of a 319 funded watershed plan, was outlined and discussed in by various sources. The education of local officials was also discussed by a variety of sources. Little or no information concerning karst areas and mining practices was found during the initial web search.

Initial Recommendations:

- Consider a course structure similar to the Indiana Watershed Leadership Academy (IWLA), which includes distance learning modules, two face-to-face meetings, and a small group project.
- Borrow from the content of the Ohio Watershed Academy (OWA) and the Kansas Environmental Leadership Program (KELP) for developing the course content related to watershed leadership.
- Reference the Watershed Planning Guidebook (KDOW and KWA), the Handbook for Developing Watershed Plans (EPA) and the modules of the IWLA for developing the course content related to the watershed planning process.
- Reference the materials from the Cumberland River Compact (CRC), Tennessee Valley Authority (TVA) and the University of Connecticut NEMO, as well as the Center for Watershed Protection (CWP), and the Commonwealth Water Education Project (CWEP; UL and KDOW). Use these materials to develop course content educating local officials on the benefits of low impact design and sustainable building practices that will lead to improved watershed health and water quality.
- Consider a watershed training course with "dual tracks":
    - Watershed Planning Track: Focus this track on providing technical watershed planning and leadership training to watershed coordinators and other water resource managers.
    - Local Officials Track: Provide a short course to educate local officials about the benefits of watershed based plans, low impact development, green infrastructure.

This track would include a subset of the information presented in the Watershed Planning Track.

3.5 COURSE REQUIREMENTS AND OUTLINE

KWLA will be taught using a combination of in-person sessions and distance learning modules, and require approximately forty (40) hours to complete. This time commitment was considered sufficient to provide students with basic skills and information in the many facets of watershed planning. As envisioned, twenty-four (24) hours will be devoted to in-person sessions and sixteen (16) hours will be taught through self-directed distance learning sessions. The intent of this distribution of hours was to provide students with sufficient time for interaction and group learning without undue travel burden. The self-directed modules are intended to provide students with a background in topics that could be learned with relatively less personal interaction. In order to complete the course, students will be required complete on-line quizzes and to participate in discussions and group activities during in-person sessions.

The KWLA course includes thirty-four (34) hours of required modules. Students choose their remaining six (6) hours of elective modules from ten (10) available modules. Most elective modules will be taught via distance learning. In-person attendance will be required for the field exercise. The required modules focus on material considered to be essential for watershed planners. The elective modules provide students with the opportunity to explore a topic in a more in-depth manner and to tailor their learning experience to issues most relevant to their watershed.

The tables below summarize the required and elective modules and an overview of the contents of each module is provided in **Appendix F. Course Requirements and Outline Report.**

Table 1. Required Modules

Required Module: Title and Topics	In-Person Hours	Distance Hours
Introduction		
▪ Introduction to KY Watershed Leadership Academy	1	
▪ Principles of watershed management	1	
▪ Estimating and Presenting Environmental and Economic Benefits of Watershed Plans	1	
▪ When and How to Hire Assistance	1	
Subtotal	**4**	**0**

Required Module: Title and Topics	In-Person Hours	Distance Hours
Leadership Skills		
▪ Building Partnerships and Organizing Stakeholders		2
▪ Getting Your Watershed Group On Track		2
▪ Define the Scope of the Watershed Planning Effort		2
▪ Running an Effective Meeting & Group Facilitation Skills	2	
Subtotal	**2**	**6**
Education & Outreach		
▪ Social Assessment - Getting to Know Your Watershed Communities	2	
▪ Awareness & Action: Watershed Outreach and Introduction to Social Marketing	2	
▪ Understanding the Planning Process and Engaging Local Officials	2	
Subtotal	**6**	**0**
Watershed Analysis		
▪ Conducting a Watershed Inventory		2
▪ Data Collection and Quality Assurance Project Plans	2	
▪ Data Analysis	2	
▪ Quantifying Pollutant Loads and Load Reduction	4	
Subtotal	**8**	**2**
Management Strategies		
▪ Methods used to set watershed goals		1
▪ Establishing numerical targets and indicators for pollutant reduction		1
Subtotal	**0**	**2**
Implementing your watershed plan		
▪ Developing an Implementation Plan		1
▪ Implementing the Watershed Plan and Measuring Progress		1
Subtotal	**0**	**2**
Wrap-Up and Graduation		
▪ Post-KWLA Assistance	1	
▪ Graduation	1	
Subtotal	**2**	**0**
Total Required Hours	**22**	**12**

Table 2. Elective Modules

Elective Module: Title and Topics	In-Person Hours	Distance Hours
Leadership Skills		
▪ Sustaining Your Watershed Group Financially		2
▪ Basic Negotiation Skills: Applications for Watershed Management		2
Subtotal		**4**
Watershed Analysis		
▪ Field Exercise – Water Quality, Habitat, Biological Sampling	4	
Subtotal	**4**	**0**
Management Strategies: Structural and Non-Structural BMPs - Choose 3		
▪ 8 Tools for Watershed Protection in Developing Areas		1
▪ Wetland BMPs		1
▪ Agricultural management practices for WQ protection		1
▪ Forestry best management practices (BMPs) in watersheds		1
▪ Stream stabilization/ restoration overview		1
▪ On-Site Wastewater (Septic Systems, Straight Pipes		1
▪ BMPs for Karst Areas & Groundwater		1
▪ Policies & Non-Structural BMPs for Resource Extraction		1
Subtotal		**3**
Total	**4**	**7**

4.0 Conclusions

4.1 CONCLUSIONS

The close working relationship with KDOW and significant involvement of the KWLA Program Development Committee proved extremely valuable during the KWLA program development phase. The discussions, advice and recommendations provided by the Committee and KDOW were used throughout the project and significantly influenced and improved the final products.

The project website provided an efficient mechanism to share draft information with KDOW project participants and the KWLA Program Development Committee. The publicly accessible pages provided the general public with information regarding the project, including final reports approved by KDOW.

The focus group sessions reported in the Needs Catalogue provided valuable insight into the topics that were most important to the forty-three (43) respondents, and their comments and suggestions were considered during the research task and development of the course requirements and outline. Many of the focus group respondents indicated that they were

interested in further contact about the project as well as participating in the training once the KWLA implementation is initiated.

The research task yielded many valuable resources for use and adaptation in the KWLA course. Particularly the Ohio, Indiana, Kansas and USEPA watershed academies anticipated to provide useful learning tools and lesson approaches. The draft Watershed Planning Guidebook for Kentucky Communities (KWA, 2009) includes many Kentucky-specific resources that are anticipated to be used in KWLA modules.

The course requirements and outline developed in this phase of the project includes approximately forty (40) hours of required and elective modules, with three (3) days taught through in-person sessions and two (2) days taught through distance learning. Other key elements include the use of on-line quizzes and class participation as measures of course completion. These approaches will be tested, and perhaps refined, during the implementation phase.

4.2 LESSONS LEARNED

Establishing the KWLA Program Development Committee required more time than initially scheduled and resulted in a 2 month delay in completing this project. However, the additional effort invested in this task resulted in the formation of a committee with members who possess a high level of skill and expertise in the fields of environmental education, watershed planning and water resource management. This initial investment is anticipated to continue to provide significant benefits during the KWLA Program Implementation and Sustainability phases of this project.

4.3 MEASURES OF SUCCESS

Number of hits on project website:

Goal: 250 web hits during the project period.

This goal was met and surpassed during the project period. As shown on Figure 1, there were 947 web hits, with 2,338 page views between December 2008 and June 17, 2009.

4.4 RECOMMENDATIONS

The following recommendations were developed to leverage the successes of the KWLA program development phase:

- Initiate implementation of the KWLA Program Implementation and Sustainability phase. The goals of this phase are to (1) produce training materials (2) host three (3) courses, including one (1) short course for Kentucky Department for Environmental Protection

and two (2) full length courses for students and (3) to develop a plan for long term sustainability of the Kentucky Watershed Leadership Academy. Key components of the long term program implementation plan include an approach to keep training materials current and train approximately 50 people per year. The Program Implementation Plan will address funding, staffing for training sessions, program advertising, student recruitment, program updates, tracking success indicators and evaluations.

- Continue the active participation of KDOW and the KWLA Program Development Committee in the next phase of the project to provide input on all aspects of program implementation and development of the sustainability plan.

- Use of the KWLA website should continue to provide an efficient way to share draft information among project participants and the KWLA Program Development Committee as well as to share final documents and other project information with the general public. Expand the website to include downloadable lesson materials and on-line quizzes.

- Consider the North American Association for Environmental Association's Environmental Education Materials: Guidelines for Excellence (NAAEE, 2004), including the indicators for guideline application during the development of the KWLA course materials.

5.0 Literature Cited

Biebighauser, Thomas R. Wetland Drainage, Restoration and Repair. 2007. The University Press of Kentucky. ISBN: 978-0-8131-2447-6. 230pp. http://www.kentuckypress.com/viewbook.cfm?Category_ID=1&Group=54&ID=1396

British Columbia Ministry of Forests and Range. Karst Management Handbook. http://www.for.gov.bc.ca/hfp/publications/00189/Karst-Mgmt-Handbook-web.pdf

British Columbia Ministry of Forests and Range. Karst Management Handbook Training. http://www.for.gov.bc.ca/hfp/training/00008/index.htm

Center for Watershed Protection. Better Site Design Handbook. http://www.cwp.org/Store/bsd.htm

Center for Watershed Protection. The Practice of Watershed Protection. http://www.cwp.org/Resource_Library/pwp.htm

Center for Watershed Protection. Training. http://www.cwp.org/Our_Work/Training/

Center for Watershed Protection. Urban Subwatershed Restoration Manual Series. http://www.cwp.org/Store/usrm.htm

Cumberland River Compact. Building Outside the Box. http://cumberlandrivercompact.org/programs_bob.shtml

Cumberland River Compact. Local Officials Community Water Curriculum. http://cumberlandrivercompact.org/programs_lowc.shtml

Cumberland River Compact. The Watersheds Program. http://www.cumberlandrivercompact.org/programs_watersheds.shtml

Indiana Watershed Leadership Academy. https://engineering.purdue.edu/~iwla/iwla/

Iowa State University. http://www.soc.iastate.edu/extension/watersheds_manual/index.htm

Kansas Environmental Leadership Program. http://www.oznet.ksu.edu/kelp/

Kentucky Division of Water. Kentucky Watershed Management Framework. http://www.watersheds.ky.gov/framework/

Kentucky Division of Water. 2000. Kentucky nonpoint source management program – 2.0 for Federal fiscal years 2000-2005. Kentucky Division of Water, Natural Resources and Environmental Protection Cabinet, Frankfort, KY

Kentucky Division of Water and Kentucky Waterways Alliance. Watershed Planning Guidebook. http://www.kwalliance.org/Publications/WatershedPlanningGuidebook/tabid/271/Default.aspx

Kentucky Division of Water and University of Louisville. Commonwealth Water Education Project. http://www.inyourwater.org/index.html

Kentucky Watershed Leadership Academy. Phase I: Program Development Needs Catalogue Interim Report—Final. http://kywla.org/documents/draft/

Miscellaneous Watershed Group Bylaws.
http://www.stoneswatershed.org/bylaws.pdf
http://www.westfieldriver.org/archive/bylaws.html
http://www.bearcreekwatershed.org/Program%20Elements/By%20laws%202003.pdf

Michigan State University. Virtual Watershed Program. http://35.9.116.206/IWR/vu/watershed.html

National Conservation Training Center. Growing Communities on Karst Workshop. http://growingcommunitiesonkarst.wik.is/2008_September_17-18

Natural Resource Conservation Service (NRCS) and US Army Corps of Engineers (USACE). http://wmc.ar.nrcs.usda.gov/partnerships/COE/actionplan.html

Natural Resource Conservation Service (NRCS) and US Army Corps of Engineers (USACE). Rapid Watershed Assessments. http://www.nrcs.usda.gov/programs/rwa/

NAAEE. North American Association for Environmental Education. 2004. Environmental Education Materials - Guidelines for Excellence. NAAEE Publications, Troy, Ohio.

NAAEE. 1999. Excellence in Environmental Education – Guidelines for Learning (K-12). NAAEE Publications, Troy, Ohio.

Ohio Watershed Academy. http://ohiowatersheds.osu.edu/owa/

Southeast Watershed Forum, the Tennessee Department of Agriculture, the University of Tennessee's Water Resources Research Center, and the Tennessee Valley Authority. http://www.tva.gov/river/watersupply/responsibilities.htm

Southeast Watershed Forum, the Tennessee Department of Agriculture, the University of Tennessee's Water Resources Research Center, and the Tennessee Valley Authority. Tennessee Growth Readiness Program. http://swan.southeastwaterforum.org/resources/files/tngrowthreadiness.pdf

United States Environmental Protection Agency. 2003. Nonpoint Source Program and Grants Guidelines for States and Territories. http://www.epa.gov/fedrgstr/EPA-WATER/2003/October/Day-23/w26755.htm

United States Environmental Protection Agency. Handbook for Developing Watershed Plans to Restore and Protect Our Waters. http://www.epa.gov/owow/nps/watershed_handbook/

United States Environmental Protection Agency. Watershed Academy. http://www.epa.gov/owow/watershed/wacademy/

United States Environmental Protection Agency. Watershed Central. http://www.epa.gov/watershedcentral/

United States Environmental Protection Agency. Watershed Plan Builder Tool. http://iaspub.epa.gov/watershedplan/watershedPlanning.do?pageId=48&navId=35

University of Connecticut. Nonpoint Source Education for Municipal Officials (NEMO). http://nemo.uconn.edu/

Wilbur, Jack. Getting Your Feet Wet with Social Marketing: A Social Marketing Guide for Watershed Programs. 2006. Utah Department of Agriculture and Food. Salt Lake City, Utah. 132 pp. http://ag.utah.gov/conservation/GettingYourFeetWet1.pdf

Appendix A

Financial and Administrative Closeout

Appendix A. Financial and Administrative Closeout

APPLICATION OUTPUTS

All products required for this grant were produced on the following timetable.

Milestone	Expected Begin Date	Expected End Date	Actual Begin Date	Actual End Date
1. Submit all draft materials to the Cabinet for review and approval.	11/1/08	4/30/09	11/1/08	6/30/09
2. Submit advanced written notice on all workshops, demonstrations, and/or field days to the Cabinet.	11/1/08	4/30/09	11/1/08	6/30/09
3. Submit educational materials for KDOW review and approval	11/1/08	4/30/09	11/1/08	6/30/09
4. Organize the KWLA Program Development Committee	11/1/08	11/30/08	11/15/08	1/15/09
5. Develop Project Website	11/1/08	11/30/08	11/15/08	1/15/09
6. Catalogue needs for watershed leadership & technical skills	11/15/08	11/30/08	12/1/08	5/20/09
7. Research existing watershed training courses	11/1/08	11/30/08	121/09	5/6/09
8. Develop KWLA course requirements & outline	12/1/08	1/30/09	1/1/09	6/16/09
9. Program Development materials	2/1/08	2/28/08	2/1/09	6/16/09
10. Prepare Final Report	2/28/09	3/31/09	6/1/09	6/30/09
11. Submit three copies of the Final Report and submit three copies of all products produced by this project.	3/31/09	4/30/09	6/30/09	6/30/09

BUDGET SUMMARY

Detailed Budget				
Budget Categories (Itemize all Categories)	**§319(h)**	**Non-Federal Match**	**TOTAL**	**Final Expenditures**
Personnel		$20,000.00	$20,000.00	$20,000.00
Supplies				
Equipment				
Travel				
Contractual	$30,000.00		$30,000.00	$30,000.00
Operating Cost				
Other				
TOTAL	**$30,000.00**	**$20,000.00**	**$50,000.00**	**$50,000.00**

Stantec was reimbursed $30,000.00. All dollars were spent; there were no excess project funds to reallocate.

EQUIPMENT PURCHASED FOR THIS PROJECT

No equipment was purchased for this project.

SPECIAL GRANT CONDITIONS

There were no special grant conditions for this project.

Appendix B

KWLA Program Development Committee Documentation

Kentucky Watershed Leadership Academy

www.kywla.com

KWLA Program Development Committee

Tuesday April 21, 2009
1:30 pm – 3:30 pm edst

Location: Stantec Consulting Services
1900 Nelson Miller Parkway
Louisville, KY 40223
Main Telephone: 502-212-5000
Office Location Map: http://www.stantec.com/locationMap.html#EastMiddle

Toll Free Teleconference: 877-783-2009
Passcode: 824894

Meeting Agenda

1.	Introductions	1:30 pm
2.	Project Overview	2:00 pm
3.	KWLA Website	2:15 pm
4.	Catalogue Needs	2:25 pm
5.	Research Existing Programs	3:00 pm
6.	Next Steps	3:20 pm
7.	Adjourn	3:30 pm

This project was funded in part by a grant from the US Environmental Protection Agency under Section 319(h) of the Clean Water Act through the Kentucky Division of Water to Stantec Consulting Services, Inc. (Grant # C9-994861-02)

Please contact Karen Schaffer for information about this project (karen.schaffer@stantec.com

KWLA Sign-in Sheet
April 21, 2009

In Attendance	First	Last	Telephone	Email
x	Laura	Alex	615.837.1151	lauraa@cumberlandrivercompact.org
x	Mark	Ayers		mayers1948@hughes.net
x	John	Baker	270.826.2824	bakerj@hkywater.org
x	Pat	Banks	859.622.3065	kyriverkeeper@eku.edu
	Joe	Baust	270.809.2537	joe.baust@coe.murraystate.edu
x	Billy	Bennett		william.bennett@eku.edu
	Tom	Biebighauser	606.784.6428x102	tombiebighauser@fs.fed.us
x	Kevin	Bruce	812.285.4069	kevin.bruce@stantec.com
x	Robert	Bush	270.765.6121	robert.bush@elizabethtownky.gov
	Pete	Cinotto	502.493.1930	pcinotto@usgs.gov
	Steve	Coleman	502.573.3080	steve.coleman@ky.gov
x	Lauren	Cosentino	859.257.7452	lcose0@engr.uky.edu
x	Michael	Croasdaile	502.852.3220	m.croasdaile@louisville.edu
x	Andrew	Earnest	270.745.8895	andrew.ernest@wku.edu
	Joe	Ewalt	800.876.4552	jewalt@klc.org
x	Rosetta	Fackler	502.564.3410	rosettar.fackler@ky.gov
	Jim	Funk		forestsynergy@gmail.com
	Jennifer	Garland	502.695.0468x115	jennifer_garland@fws.gov
	Todd	Garland	502.573.0282	todd.garland@ky.gov
	Alan	Grant	502.564.5937	alan.grant@ky.gov
x	Steve	Gray	502.564.4496	steve.gray@ky.gov
x	Sue	Green	502.540.6955	green@msdlouky.org
	Tim	Guilfoile	859.426.1978	tim.guilfoile@sierraclub.org
x	Amanda	Gumbert	859.257.6094	amanda.gumbert@uky.edu
x	Lajuanda	Haight-Maybriar	859.948.3263	Lajuanda.Haight-Maybriar@ky.gov
x	Steve	Hall	812.285.4060	stephen.hall@stantec.com
x	Larry	Hamilton	502.348.5947x2287	lahamilton@bardstowncable.net
	Carol	Hanley	859.257.3780	chanley@uky.edu
	Mike	Hardin	800.858.1549x4471	mike.hardin@ky.gov
	Steve	Higgins		shiggins@bae.uky.edu
x	Jamie	Holtzapfel	859.578.6744	jholtzapfel@sd1.org
	Martha	Horseman	859.257.4531	mhorseman@engr.uky.edu
x	Kazi	Javed	502.597.6722	kazi.javed@kysu.edu
x	Mike	Kemp	270.809.3657	mike.kemp@murraystate.edu
x	Laura	Knoth	502.495.5000	lknoth@kyfb.com
	Valerie	Lucas	502.468.4772	valerie.lucas@kytnwea.org
	Paul	Maron	502.583.7020	paul.maron@strand.com
x	Kurt	Mason	502.499.1900	kurt.mason@ky.usda.gov
x	Malissa	McAlister	859.324.0845	mmcalister@uky.edu
x	Tony	Miller	859.977.2000	tmiller@thirdrockconsultants.com
	Bill	Mitchell		bill.mitchell@nkadd.org
x	Maggie	Morgan	270.908.4545	maggie.morgan@jpf.org
x	Charles	Poskas		cposkas@pirnie.com
x	Roger	Recktenwald	502.223.7667	roger.recktenwald@kaco.org
	Dale	Reynolds	502.564.3410	dale.reynolds@ky.gov
	Jeff	Rice	270.314.4317	jefric@milesnmore.com
x	Karen	Schaffer	812.285.4078	karen.schaffer@stantec.com
x	Bruce	Scott	502.589.8008	bwscott@fewpb.net
x	Amy	Sohner	859.266.1572	amy@kentuckypride.com
	Jeff	Sole	270.526.0067	jsole@tnc.org
	Barry	Tonning	859.585.0370	barry.tonning@tetratech.com
	Liz	Upchurch	865.632.8305	efupchurch@tva.gov
	Tony	Velasco	502.695.0468x105	anthony_velasco@fws.gov
	Brian	Ward	859.744.1218	bward@palmernet.com
x	John	Webb	502.564.3410	john.webb@ky.gov
	Frank	Whitehouse		frankcw@lexmark.com
	Howard	Whiteman	270.809.6753	howard.whiteman@murraystate.edu
x	Pamla	Wood	859.734.4112	pamlaw@iglou.com
x	Andrea	Zimmer	404.562.9306	zimmer.andrea@epa.gov

Kentucky Watershed Leadership Academy

KWLA Program Development Committee Meeting

April 21, 2009

One Team. Infinite Solutions

Stantec

Kentucky Watershed Leadership Academy

1. Introductions
2. Project Overview
3. KWLA Website
4. Catalogue Needs
5. Research Existing Programs
6. Next Steps
7. Adjourn

This project was funded in part by a grant from the US Environmental Protection Agency under Section 319 of the Clean Water Act through the Kentucky Division of Water to Stantec Consulting Services Inc. (Grant # C9-994861-02)

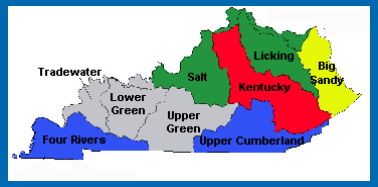
Kentucky Watershed Leadership Academy

Introductions

Kentucky Watershed Leadership Academy

Project Overview

1. Background
2. Program Development
3. Program Implementation
4. Program Sustainability
5. Budget & Schedule
6. Questions ?



This project was funded in part by a grant from the US Environmental Protection Agency under Section 319 of the Clean Water Act through the Kentucky Division of Water to Stantec Consulting Services, Inc. (Grant # C9-994861-02)

Kentucky Watershed Leadership Academy

Background – Project Overview

Project Goals

- Improve Kentucky's water quality through the development and implementation of watershed-based plans
- Build watershed knowledge among watershed coordinators, local governments, citizen groups and other interested stakeholders.

Project Phases

1. Program Development – initial planning
2. Program Implementation – produce materials, teach 3 classes
3. Program Sustainability –KWLA after the grant

Kentucky Watershed Leadership Academy

Program Development Phase

1. Program Development Committee
2. Project Website
3. Catalogue Needs
4. Research Existing Programs
5. Course Requirements and Outline

Kentucky Watershed Leadership Academy

Program Development Committee

Goal: Facilitate successful development, implementation and sustainability of KWLA

Membership

Government – Federal, State, Regional, Local

Academia, Industry, Consultants

Professional Associations

Watershed Groups

Expertise - Environmental Educators, Scientists, Engineers

Geographic – All 5 basin management units represented

Meetings – 12 during 2.5 year project, 2 meetings in Phase I

Kentucky Watershed Leadership Academy

Project Website: www.kywla.org

Program Development Phase

- Stantec hosting during project
- Project Information, Events, Useful Links
- Password-protected page for draft materials
- Final products posted to publicly accessible page

Implementation & Sustainability Phase

- Information above, plus:
  - Course materials available to view & download
  - Self-directed learning modules
  - Testing materials

Kentucky Watershed Leadership Academy

Catalogue Needs

Goal: Identify specific leadership & training needs

Approach:

Survey (on-going)

- River Basin Teams, Watershed Groups

Focus Groups

- 1 of 2 held at KY Watershed Roundtable (11/22/08)

Interviews

- KDOW NPS Program / Watershed Basin Coordinators
- KY Watershed Steering Committee
- KWLA Program Development Committee

Kentucky Watershed Leadership Academy

Research Existing Watershed Training

Review and Adapt Training Materials from:

- KY Watershed Framework
- KY Watershed Planning Guidebook
- KY Commonwealth Water Education Project
- USEPA Watershed Planning Handbook / Watershed Plan Tool
- USEPA Watershed Academy
- State Watershed Academies (Indiana, Ohio, Kansas)
- Academic (Univ. of Iowa, Coastal Carolina Univ., Univ. of Connecticut)
- Center for Watershed Protection's Watershed Institute
- Others

Kentucky Watershed Leadership Academy

Develop Course Requirements & Outline

Considerations:

- Required and elective learning modules
- Balance in-class, field and remote/distance learning
- Group learning & self-directed learning options
- Completion requirements & recognition
- Course outline
- Class schedule

Kentucky Watershed Leadership Academy

Program Development Products

Project Report including:

- Program Development Committee meeting materials
- Website content and web hit summary
- Summary of leadership and technical needs identified
- Summary of other training classes (content & implementation)
- Description of course requirements, outline, schedule
- Description of Implementation & Sustainability phase
- References

Kentucky Watershed Leadership Academy

Program Implementation & Sustainability Phase *

1. Implement KY Watershed Leadership training
2. Plan for long term sustainability of KWLA after the grant

** These phases conducted with significant input from the KWLA Program Development Committee

* Project selected for funding, contract yet not awarded

Kentucky Watershed Leadership Academy

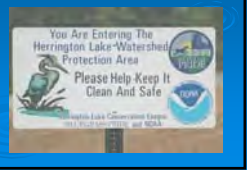
Program Implementation Phase

1. Develop KWLA course materials
2. Produce course materials
3. Select and train instructors
4. Plan three (3) classes
5. Implement three (3) classes

Kentucky Watershed Leadership Academy

Program Sustainability

1. Measure success of project
2. Develop long term implementation plan
   - Maintain training materials & instructor roster
   - Advertising, schedule, logistics
   - Post training support
   - Long term success measures for program
3. Develop long-term funding options
4. Final project report



Kentucky Watershed Leadership Academy

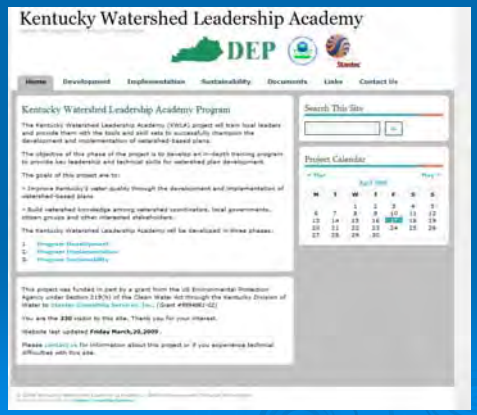
Budget & Schedule

	Budget	Schedule
Program Development	319(h) $30,000 Match $20,000 Total $50,000	Nov. 1, 2008 to June 30, 2009
Implementation & Sustainability*	319(h) $200,000 Match $133,333 Total $333,333	July 1, 2009 to June 30, 2011

* Project selected for funding, contract not awarded yet.

Kentucky Watershed Leadership Academy

Project Website: www.kywla.org



Click on DOCUMENTS

Click on DRAFT DOCUMENTS

Enter the password:

"kywla@work"

Kentucky Watershed Leadership Academy

Catalogue Needs – Survey Distribution

Focus Group Sessions

Kentucky Waterways Alliance's Alliance Roundtable

KDOW Basin Coordinators meeting

Kentucky Statewide Watershed Steering Committee

Salt River Watershed Watch Annual Conference

Survey Distributed by Email

Green/Tradewater rivers Basin Team

Licking River Basin Team

Survey available on website

Kentucky Watershed Leadership Academy

Catalogue Needs - Results

33 responses

High importance **on training related to:**

- developing watershed plans
- building partnerships
- conducting watershed characterization
- setting watershed goals,
- identifying management strategies,
- developing the watershed implementation plan
- measuring progress

Moderately High importance **on training related to:**

- collecting new data
- understanding water resource programs

Kentucky Watershed Leadership Academy

Catalogue Needs - Results

Additional topics recommended by respondents:

- ❑ How to evaluate land use planning and local codes
- ❑ Teach effective public outreach
- ❑ Emphasize training for leadership and recommend use of existing trained technical expertise for sampling and other technical aspects
- ❑ Possibly supply a list of people, consultants, non-profits that can help with watershed plans
- ❑ Engage elected officials and local decision makers in the training
- ❑ Native plants, wildlife protection, green space preservation
- ❑ Broaden beyond EPA & KDOW watershed plan requirements to teach holistic watershed planning that considers future water needs for human, agricultural, industrial and ecological uses.

Kentucky Watershed Leadership Academy

Research Existing Training Courses

Research Methods

- Internet and telephone Interview

Course Components Evaluated

- *Course Outline:* topics included, required, electives
- *Leadership:* engaging stakeholders, facilitation, effective meetings, conflict resolution, public education and outreach
- *Logistics:* classroom, field, distance learning, workshops, group projects
- *Level of Detail:* which topics get the most emphasis?
- *Tools & Methods:* use of reading materials, guidebooks, workshops, technical training
- *Data and Information Sources:* are materials useful for KY readily available?

Kentucky Watershed Leadership Academy

Research Existing Training Courses

How well were EPA/ KDOW Watershed Plan Requirements Covered?

(paraphrased from EPA Guidance for Watershed Plans funded with 319(h), also known as A – I criteria).

A. Identification of causes of impairment and pollutant sources.

B. Estimate the load reductions expected from management measures.

C. Describe NPS management measures & critical areas.

D. Estimate technical & financial assistance needed, costs, and/or the sources and authorities that will be relied upon to implement this plan.

E. Describe education used to enhance public understanding & encourage participation in selecting, designing, and implementing NPS measures.

Kentucky Watershed Leadership Academy

Research Existing Training Courses

A – I Criteria Continued

F. Schedule for implementing NPS measures that is reasonably expeditious.

G. Interim measurable milestones for determining whether NPS measures or other control actions are being implemented.

H. Criteria to determine whether load reductions are being achieved and substantial progress is being made toward attaining water quality standards.

I. Monitoring component to evaluate the effectiveness of the implementation efforts, measured against the criteria established under requirement H.

Kentucky Watershed Leadership Academy

Research Existing Training Courses

Most Relevant to KWLA

1. Kentucky Watershed Planning Guidebook
2. EPA Watershed Academy
3. EPA Handbook for Developing Watershed Plans
4. EPA Watershed Plan Builder Tool
5. Indiana Watershed Leadership Academy
6. Ohio Watershed Academy

Moderately Relevant to KWLA

1. Michigan State University Virtual Watershed Program
2. Kansas Environmental Leadership Program (KELP)
3. Iowa State University

Additional Sources of Information for KWLA

Kentucky Watershed Leadership Academy

Existing Training Courses Most Relevant to KWLA

Kentucky Watershed Planning Guidebook
http://www.kwalliance.org/Publications/WatershedPlanningGuidebook/

- Developed by KDOW & Kentucky Waterways Alliance
- Watershed plan development for EPA/KDOW A – I criteria
- Being tested by groups developing watershed plans
- Links to many KY-specific sources of information & data
- Includes worksheet tools

EPA Watershed Academy
http://www.epa.gov/owow/watershed/wacademy/

- 50 free on-line modules
- 15 required modules completed to obtain watershed certificate
- Supported by monthly webcast seminars
- Single or multi-day training courses (in-person)
- Watershed Academy Information Transfer Series (publications)

Kentucky Watershed Leadership Academy

Existing Training Courses Most Relevant to KWLA

EPA Handbook for Developing Watershed Plans
http://www.epa.gov/owow/nps/watershed_handbook/

- Similar approach to KY Watershed Plan Guidebook
- Very detailed, presents range of options
- Watershed plan development for EPA/KDOW A – I criteria
- National document does not link KY-specific sources of information & data

EPA Watershed Plan Builder Tool
http://iaspub.epa.gov/watershedplan/watershedPlanning.do?pageId=48&navId=35

- On-line watershed plan tool
- User enters information data and information they have compiled
- Able to save and edit
- Provides a structured outline with options to tailor
- Links to national databases, example plans, other information sources
- EPA Watershed Central – new "wiki" site for user supplied content

Kentucky Watershed Leadership Academy

Existing Training Courses Most Relevant to KWLA

Indiana Watershed Leadership Academy (IWLA)
http://www.epa.gov/owow/nps/watershed_handbook/

- 9 distance learning modules + 3 electives
- 2 one-day workshops
- 1 small group project
- Addresses EPA/KDOW A – I criteria
- Leadership skills taught mainly in elective modules

Ohio Watershed Leadership Academy (OWLA)
http://ohiowatersheds.osu.edu/owa/

- Distance learning modules with required reading & written assignment
- 2 workshops
- Addresses most EPA/KDOW A – I criteria
- Significant emphasis on leadership skills

Kentucky Watershed Leadership Academy

Existing Training Courses Moderately Relevant to KWLA

Michigan State University Virtual Watershed Program
http://35.9.116.206/IWR/vu/watershed.html

- Distance learning
- Undergraduate or graduate credit, or professional certificate
- Does not specifically cover EPA/KDOW A – I criteria
- Teaches leadership skills

Kansas Environmental Leadership Program (KELP)
http://www.oznet.ksu.edu/kelp/

- 5 in-person meetings
- Emphasis on leadership
- Addresses EPA/KDOW A – I criteria

Iowa State University
http://www.soc.iastate.edu/extension/watersheds_manual/index.htm

- Focuses on community and local leaders
- Does not specifically cover EPA/KDOW A – I criteria

Kentucky Watershed Leadership Academy

Research Existing Training Courses – Sources of Information for KWLA

Kentucky Specific

Kentucky Watershed Management Framework
Commonwealth Water Education Project
USFWS Wetlands Institute

Land Use / Smart Growth

Center for Watershed Protection
University of Connecticut NPS Education for Municipal Officials (NEMO)
Cumberland River Compact
- Local Officials Community Water Curriculum
- The Watersheds Program
- Building Outside the Box

Southeast Watershed Forum, the TN Dept of Agriculture, University of Tennessee's Water Resources Research Center, and TVA
- Community Growth Readiness Initiative

Kentucky Watershed Leadership Academy

Research Existing Training Courses – Sources of Information for KWLA

Karst

- British Columbia Ministry of Forests & Range Karst Management Handbook Training
- National Conservation Training Center Growing Communities on Karst Workshop

Leadership

Bylaws from various watershed groups

Other

NRCS and USACE Partnership Agreement
- Watershed planning & wetlands mitigation under NRCS & USACE
- Disaster recovery

Kentucky Watershed Leadership Academy

Research Existing Training Courses – Findings

Numerous examples of different learning methods
- Common themes – required & elective modules
  - distance learning emphasized
  - 2 one-day workshops

Emphasized on-line distribution of materials

Several training courses oriented toward EPA/KDOW A – I criteria

Leadership training emphasized engaging stakeholders, effective meetings, facilitation, conflict resolution

Emphasis on educating local officials

Several training courses oriented toward land use planning & smart growth
- Some used a series of in-person workshops in the community

Gaps – limited information on watershed planning in karst & mining areas
- New materials may need to be developed

Kentucky Watershed Leadership Academy

Research Existing Training Courses – Initial Considerations

Consider a watershed training course with "dual tracks":

- Watershed Planning Course
  - Focus on EPA/KDOW A – I criteria
  - Leadership & technical training
  - Emphasis on distance learning
  - 1 or 2 one-day workshops conducted in-person

- Local officials "short course"
  - Subset of material taught in full length course
  - ½ day seminar
  - Benefits of watershed plans
  - Codes & ordinances evaluation for water quality
  - Low impact design
  - Sustainable building practices

Kentucky Watershed Leadership Academy

KWLA Course Outline – Draft for Discussion

1. Background

- Introduction to KY Watershed Leadership Academy
- Principles of watershed management
- Estimating and Presenting Environmental and Economic Benefits of Watershed Plans

Kentucky Watershed Leadership Academy

KWLA Course Outline – Draft for Discussion

2. Leadership Skills

- Organizing and effectively running a watershed group
- Understanding the Planning Process and Engaging Planning Officials
- Basic Negotiation Skills: Applications for Watershed Management
- Facilitating Group Decision Making
- Social Assessment: Getting to Know Your Watershed Communities
- Building Partnerships

Kentucky Watershed Leadership Academy

KWLA Course Outline – Draft for Discussion

3. Education & Outreach

- Getting your Feet Wet with Social Marketing: A Social Marketing Guide for Watershed Programs
- Getting In Step: A Guide to Effective Outreach In Your Watershed
- Outreach: Moving From Awareness to Action
- Effective Outreach Using Social Marketing Strategies
- Implementing outreach activities

Kentucky Watershed Leadership Academy

KWLA Course Outline – Draft for Discussion

4. Data and Assessment

- Tools for Developing a Watershed Inventory
- Watershed Inventory and Analysis
- Center for Watershed Protection Codes & Ordinances Worksheet
- Analyze Data to Characterize the Watershed and Pollutant Sources
- Identify Data Gaps
- Data Collection with a Purpose
- Estimating Pollutant Loads

Kentucky Watershed Leadership Academy

KWLA Course Outline – Draft for Discussion

5. Strategies

- Methods used to set preliminary watershed goals
- Establish numerical targets for pollutant reduction
- Intro to CWA tools for watershed protection
- Identify BMPs and action items
- Wetlands Institute
- Agricultural management practices for WQ protection
- Forestry best management practices in watersheds
- Source water protection
- Stream corridor restoration tools
- Introduction to water infrastructure
- Low Impact Development, Green Infrastructure, Land Conservation

Kentucky Watershed Leadership Academy

KWLA Course Outline – Draft for Discussion

6. Implementation

- Sustaining Your Watershed Group Financially
- Developing a Sustainable Finance Plan
- Design Implementation Program and Assemble Watershed Plan
- Implement Watershed Plan and Measure Progress

Kentucky Watershed Leadership Academy

Next Steps

KWLA Program Development Committee

- Distribute surveys to colleagues (Due 5/1/09)
- Review & comment on reports (Needs Assessment & Research)
- Additional comments on course requirements & outline

Stantec

- Final reports (Needs Assessment & Research)
- Develop course requirements and outline

Next meeting: Tuesday May 12, 2009 1:30-3:30 PM EDST

Kentucky Watershed Leadership Academy

Project Contacts

Stantec Senior Project Advisor: Stephen Hall

stephen.hall@stantec.com, 812-285-4060

Stantec Project Manager: Karen Schaffer

karen.schaffer@stantec.com, 812-285-4078

KDOW Technical Advisor: Rosetta Fackler

rosettar.fackler@ky.gov , 502-564-3410

Kentucky Watershed Leadership Academy

Questions ?

Kentucky Watershed Leadership Academy

www.kywla.org

KWLA Program Development Committee

Tuesday April 21, 2009
1:30 pm – 3:30 PM EDST

Meeting Summary

Introductions

Meeting participants in the room and over the phone introduced themselves.

Project Overview

The program is currently in the Program Development phase, which will focus on initial planning and development of the course structure and logistics. The Program Implementation phase is in the process of being funded, and will focus on the development of the course content and teaching the class. The final phase of the project will focus on the sustainability of the KWLA program after the 319 grant.

KWLA Website

The website can be found at www.kywla.org. Draft versions of program materials are posted on a password protected page, and general project information and final versions of program materials are posted on a publicly accessible page.

Catalogue Needs

Focus group surveys were completed by individuals from different watershed organizations to help identify specific leadership and training needs. All topics listed on the surveys were identified as "important" by respondents. A draft report outlining the findings in greater detail is available on the program website. Additional survey responses are needed, committee members were encouraged to complete a survey and to distribute surveys at meetings of watershed organizations or other appropriate events. The survey can be found on the website.

The group suggested other needs for the program. Decoupling watershed planning projects from 319 funding was discussed, as 319 grants may not be a sufficient or sustainable funding source state-wide. Tying the funding of watershed projects to the local economies was suggested, though it was noted that expecting communities to provide funding for watershed projects may be unreasonable, and other federal funds may be available. Basic public education was seen as a need for the program as well; many citizens were just not aware of watershed and water quality issues.

Research Existing Programs

Existing training courses were evaluated for course structure and logistics, leadership content, level of detail, teaching methods, relevance to Kentucky, and relevance to EPA's "A-I" criteria for watershed plan requirements. This evaluation was used to group existing training courses by their relevance to the KWLA. A draft report outlining the findings in greater detail is available on the program website.

This project was funded in part by a grant from the US Environmental Protection Agency under Section 319(h) of the Clean Water Act through the Kentucky Division of Water to Stantec Consulting Services, Inc. (Grant # C9-994861-02)

Please contact Karen Schaffer for information about this project (karen.schaffer@stantec.com)

Limited information was found on watershed planning in karst and mining areas. The group suggested several organizations that may have information on these issues, including the American Cave Conservation Association (booklet "Living on Karst"), the State of Florida (information on springs), the Kentucky Geological Survey, the Red River WS Association (May 18 meeting on aquifers—L. Alex), SMCRA, the Eastern Coal Regional Roundtable (offers EPA Reg. 3 grant-funded watershed planning training), and Western Kentucky University (week-long course on karst taught by Art Palmer).

A suggestion was made to ask the leaders of the Indiana Watershed Leadership Academy and the Ohio Watershed Academy about the types of watershed plans they've seen from alumni, in an attempt to compare the two programs.

Initially, the course is considering two different "tracks", a more technical watershed planning track focusing on EPA's A-I criteria and technical training, and a half day "short course" with a subset of materials from the longer course, aimed at educating local officials on watershed planning benefits, low impact design, and code and ordinance evaluation. A suggestion was made to identify resource contacts to local officials and provide networking opportunities. A suggestion was made to adopt some practices of the Kentucky Rural Water Association, which provides a series of short courses dealing with utility management. The KRWA has done a good job of "branding" and marketing the program's alumni association, leading to high enrollment rates for the course and raising the overall education level of the field.

A suggestion was made to teach the course locally, allowing all the local officials from a community to attend in one group, and may increase the attendance of officials. Another suggestion was made to offer a short course at existing meetings of local officials, which could get people from agriculture involved. A suggestion was made to involve the 14 RC&D Councils in the state, which group several counties and local officials together. Kentucky has a good telelinking network available, though it was suggested distance learning methods may decrease elected official attendance.

It was suggested that the idea of economic development, not regulatory compliance, should be used to educate local officials on green infrastructure and watershed planning. Different incentives for participating in the training were considered, including coupling the training with continuing education hours, grant writing assistance, increasing eligibility for grant funding or KIA (infrastructure) funding. Other types of grant funding should be examined, though 319 remains the largest grant program available. It was also suggested that KPDES regulations may be necessary to provoke involvement.

A general outline of the course was presented for discussion (see the meeting slides for a more detailed outline). The components of the proposed outline and the associated discussions included:

Background: Students with a wide variety of backgrounds are expected to attend. Basic information will be included. The group recognized that effective watershed planning

This project was funded in part by a grant from the US Environmental Protection Agency under Section 319(h) of the Clean Water Act through the Kentucky Division of Water to Stantec Consulting Services, Inc. (Grant # C9-994861-02)

Please contact Karen Schaffer for information about this project (karen.schaffer@stantec.com)

requires many science, technical, leadership, educational and social disciplines. The goal of the course is not to raise all students to the level of "expert" in these disciplines but rather to provide some basic information about each and help students with the right questions to ask and where to go for additional resources.

Leadership: It was suggested that this section be equally important compared to technical topics; should be a course requirement.

Education and Outreach: No comments.

Technical Assessment: It was asked how the course would deal with accurately diagnosing problems in a watershed, as this is not easy. Examples were given of communities fixing assumed "problems" in the watershed that provide no water quality benefit. Diagnosis can be done in a simple or complex manner; it is suggested that both complex technical approaches and relatively simple approaches both be demonstrated.

It was suggested that local officials should be taught enough to be able to ask the right questions of the technical experts, to be aware of the available tools and be able to coordinate with their local partners to effectively assess and fix their problems. To get local officials to see the long-term value of watershed planning efforts, it was suggested that they complete a "tabletop exercise" to show the local economic stimulus achieved over a ~10 year timeframe due to initial research and watershed planning efforts. It was also pointed out that the lack of public knowledge and concern for watershed issues may cause low interest from public officials. Programs that allow officials from nearby communities to come together and address common issues have been successful (example: Cumberland River Compact).

Strategies and Implementation: It was suggested that all sources of pollution, including point sources, be included in watershed assessments.

It was noted that watershed plans have no legal authority on their own, the suggestion was made to consider regulation requiring watershed plans to designate an entity responsible for maintaining the plan after implementation. Another suggestion was made that watershed plans should demonstrate an eventual benefit to the community (tying back to the "tabletop exercise"); this benefit should show increased revenue or decreased expenditure for the community, increasing the likelihood of the plan's implementation. It was mentioned that some communities have tight budgets and that watershed plans, despite the benefits, may be seen as a luxury. It was suggested that watershed plans should be written to be implemented partially if needed.

Action Items

KWLA Program Development Committee

- Complete program surveys and distribute surveys to colleagues, email responses to Karen by **May 1**

This project was funded in part by a grant from the US Environmental Protection Agency under Section 319(h) of the Clean Water Act through the Kentucky Division of Water to Stantec Consulting Services, Inc. (Grant # C9-994861-02)

Please contact Karen Schaffer for information about this project (karen.schaffer@stantec.com)

- Review and comment on Needs Catalogue and Research Summary draft reports available on the website. Email comments to Karen by **May 6**

Stantec

- Finalize Needs Catalogue and Research Summary reports for next meeting
- Draft Course Requirements and Outline report for next meeting

Next meeting: Tuesday May 12, 2009, 1:30-3:30 PM EDST

This project was funded in part by a grant from the US Environmental Protection Agency under Section 319(h) of the Clean Water Act through the Kentucky Division of Water to Stantec Consulting Services, Inc. (Grant # C9-994861-02)

Please contact Karen Schaffer for information about this project (karen.schaffer@stantec.com)

Kentucky Watershed Leadership Academy
Background Information

The Kentucky Watershed Leadership Academy (KWLA) project will train local leaders and provide them with the tools and skill sets to successfully champion the development and implementation of watershed-based plans.

The goals of this project are to:

- Improve Kentucky's water quality through the development and implementation of watershed-based plans
- Build watershed knowledge among watershed coordinators, local governments, citizen groups and other interested stakeholders.

The Kentucky Watershed Leadership Academy will be developed in three phases:

1. Program Development
2. Program Implementation
3. Program Sustainability

Kentucky Watershed Leadership Academy Program Development
The objective of this phase of the project is to develop an in-depth training program to provide key leadership and technical skills for watershed plan development.

KWLA Program Development Tasks:

1. Organize the KWLA Program Development Committee – The committee will guide the development and implementation of the program.

2. Develop Project Website – www.kywla.org A password protected page is used to share draft documents among the KWLA Program Development Committee. Final products are posted to the publicly accessible page.

3. Catalogue needs for watershed leadership & technical skills – Input from regional and local governments, watershed groups and others will be used to identify the specific needs for watershed-based leadership and technical training.

4. Research existing watershed training courses – Research existing watershed training courses that could be adapted for Kentucky

5. Develop KWLA course requirements and outline – The course requirements outline and schedule will be developed in this project. The KWLA Program Development Committee will review the course requirements, outline and schedule.

KWLA Program Implementation: (pending funding)

Produce course materials
Hold three training sessions

Program Sustainability: (pending funding)

Long term implementation of the training

Your input is needed! Please complete Page 2 to provide your input on important topics and suggestions for the Kentucky Watershed Leadership Academy Training Class and email the survey to Karen.schaffer@stantec.com by April 24, 2009

This project was funded in part by a grant from the US Environmental Protection Agency under Section 319(h) of the Clean Water Act through the Kentucky Division of Water to Stantec Consulting Services, Inc. (Grant # C9-994861-02)

Please contact Karen Schaffer for information about this project (karen.schaffer@stantec.com)

Kentucky Watershed Leadership Academy
Survey Questions

The questions below are intended to identify topics of interest to potential future students of the Kentucky Watershed Leadership Academy. Your input will be used to help plan the training sessions.

	Importance (Low to High)				
Topic	**Least**		**Medium**		**Very**
Why develop a watershed plan?					
How to build partnerships ▪ Types of watershed committees ▪ Running an effective meeting ▪ Engaging citizens & elected officials					
How to conduct a watershed characterization ▪ Gathering & managing data ▪ Analyzing & interpreting data ▪ Estimating pollutant loads ▪ Using GIS ▪ On-line tools					
How to collect new data ▪ Designing a sampling plan ▪ Quality assurance ▪ Sampling					
Understanding water resource programs ▪ Water quality standards ▪ 305b, 303d, Integrated Report ▪ Permitting (wastewater, stormwater, confined animal feeding operations, etc.) ▪ Enforcement ▪ Floodplains, wetlands and 401/404					
Setting watershed goals					
Identifying management strategies ▪ Identifying & evaluating strategies ▪ Prioritizing & selecting strategies					
Developing the Implementation Plan ▪ Funding needs & sources ▪ Implementation schedule ▪ Measurable milestones					
Measuring progress using ▪ Water quality trends ▪ Progress on implementing the plan					

Please provide any additional suggestions for course topics:

Would you be interested in participating in watershed leadership training? ___ **Yes** ____**No**

Can we contact you again regarding this project? ___ **Yes** ____**No**. If yes, please provide:

Name:
Email:
Telephone:
Affiliation:

This project was funded in part by a grant from the US Environmental Protection Agency under Section 319(h) of the Clean Water Act through the Kentucky Division of Water to Stantec Consulting Services, Inc. (Grant # C9-994861-02)

Please contact Karen Schaffer for information about this project (karen.schaffer@stantec.com)

Kentucky Watershed Leadership Academy

www.kywla.org

KWLA Program Development Committee

Tuesday May 12, 2009
1:30 pm – 3:30 pm edst

New Location: **USGS – KY Water Science Center**
9818 Bluegrass Parkway, Louisville, KY
Maps and Directions: http://ky.water.usgs.gov/district_info/default.htm
Main Telephone: (502) 493-1900

Toll Free Teleconference: 877-783-2009
Passcode: 824894

Meeting Agenda

1.	Introduction	1:30 pm
2.	Catalogue Needs Final Report	1:40 pm
3.	Research Existing Programs Final Report	1:50 pm
4.	Course Requirements & Outline – Draft Report	2:00 pm
5.	Next Steps	3:20 pm
6.	Adjourn	3:30 pm

This project was funded in part by a grant from the US Environmental Protection Agency under Section 319(h) of the Clean Water Act through the Kentucky Division of Water to Stantec Consulting Services, Inc. (Grant # C9-994861-02)

Please contact Karen Schaffer for information about this project (karen.schaffer@stantec.com)

KWLA Sign-in Sheet
May 12, 2009

In Attendance	First	Last	Telephone	Email
	Laura	Alex	615.837.1151	lauraa@cumberlandrivercompact.org
x	Mark	Ayers		mayers1948@hughes.net
x	John	Baker	270.826.2824	bakerj@hkywater.org
	Pat	Banks	859.622.3065	kyriverkeeper@eku.edu
	Joe	Baust	270.809.2537	joe.baust@coe.murraystate.edu
	Billy	Bennett		william.bennett@eku.edu
	Tom	Biebighauser	606.784.6428x102	tombiebighauser@fs.fed.us
x	Kevin	Bruce	812.285.4069	kevin.bruce@stantec.com
	Robert	Bush	270.765.6121	robert.bush@elizabethtownky.gov
	Pete	Cinotto	502.493.1930	pcinotto@usgs.gov
	Steve	Coleman	502.573.3080	steve.coleman@ky.gov
	Michael	Croasdaile	502.852.3220	m.croasdaile@louisville.edu
	Mary Kathryn	Dickerson	859.586.7903	mary.dickerson@ky.nacdnet.net
	Andrew	Earnest	270.745.8895	andrew.ernest@wku.edu
	Joe	Ewalt	800.876.4552	jewalt@klc.org
	Rosetta	Fackler	502.564.3410	rosettar.fackler@ky.gov
x	Jana	Fattic	270.745.8706	jana.fattic@wku.edu
	Jim	Funk		forestsynergy@gmail.com
x	Jennifer	Garland	502.695.0468x115	jennifer_garland@fws.gov
	Todd	Garland	502.573.0282	todd.garland@ky.gov
	Alan	Grant	502.564.5937	alan.grant@ky.gov
x	Steve	Gray	502.564.4496	steve.gray@ky.gov
x	Sue	Green	502.540.6955	green@msdlouky.org
	Tim	Guilfoile	859.426.1978	tim.guilfoile@sierraclub.org
	Amanda	Gumbert	859.257.6094	amanda.gumbert@uky.edu
x	Lajuanda	Haight-Maybriar	859.948.3263	Lajuanda.Haight-Maybriar@ky.gov
	Steve	Hall	812.285.4060	stephen.hall@stantec.com
x	Larry	Hamilton	502.348.5947x2287	lahamilton@bardstowncable.net
x	Carol	Hanley	859.257.3780	chanley@uky.edu
	Mike	Hardin	800.858.1549x4471	mike.hardin@ky.gov
	Steve	Higgins		shiggins@bae.uky.edu
	Jamie	Holtzapfel	859.578.6744	jholtzapfel@sd1.org
	Martha	Horseman	859.257.4531	mhorseman@engr.uky.edu
	Kazi	Javed	502.597.6722	kazi.javed@kysu.edu
	Mike	Kemp	270.809.3657	mike.kemp@murraystate.edu
	Laura	Knoth	502.495.5000	lknoth@kyfb.com
	Valerie	Lucas	502.468.4772	valerie.lucas@kytnwea.org
x	Paul	Maron	502.583.7020	paul.maron@strand.com
	Kurt	Mason	502.499.1900	kurt.mason@ky.usda.gov
x	Malissa	McAlister	859.324.0845	mmcalister@uky.edu
	Tony	Miller	859.977.2000	tmiller@thirdrockconsultants.com
	Bill	Mitchell		bill.mitchell@nkadd.org
x	Maggie	Morgan	270.908.4545	maggie.morgan@jpf.org
	Roger	Recktenwald	502.223.7667	roger.recktenwald@kaco.org
	Dale	Reynolds	502.564.3410	dale.reynolds@ky.gov
	Jeff	Rice	270.314.4317	jefric@milesnmore.com
x	Karen	Schaffer	812.285.4078	karen.schaffer@stantec.com
x	Bruce	Scott	502.589.8008	bwscott@fewpb.net
	Amy	Sohner	859.266.1572	amy@kentuckypride.com
	Jeff	Sole	270.526.0067	jsole@tnc.org
x	Jack	Stickney	270.843.2291	j.stickney@krwa.org
x	Witni	Sztanyo	859.578.6745	wsztanyo@sd1.org
	Barry	Tonning	859.585.0370	barry.tonning@tetratech.com
	Liz	Upchurch	865.632.8305	efupchurch@tva.gov
	Tony	Velasco	502.695.0468x105	anthony_velasco@fws.gov
	Brian	Ward	859.744.1218	bward@palmernet.com
x	John	Webb	502.564.3410	john.webb@ky.gov
	Frank	Whitehouse		frankcw@lexmark.com
	Howard	Whiteman	270.809.6753	howard.whiteman@murraystate.edu
x	Pamla	Wood	859.734.4112	pamlaw@iglou.com
	Andrea	Zimmer	404.562.9306	zimmer.andrea@epa.gov

Kentucky Watershed Leadership Academy

www.kywla.org

KWLA Program Development Committee

Tuesday May 12, 2009
1:30 pm – 3:30 PM EDST

Meeting Summary

Previous Action Items Addressed

- Additional needs surveys and comments on the Needs Catalogue Report draft were incorporated into the final report
- Comments on the Research Summary Report draft were incorporated into the final report
- Final versions of the Needs Catalogue Report and the Research Summary Report have been delivered to KDOW and are available on the KWLA website

Program Course Requirements and Outline Draft Discussion

The group discussed the following which will be incorporated into the final Course Requirements and Outline report:

- Differences between online learning versus "hands on" learning methods (a "two-track" method was suggested)
- Effective watershed plans need to address more than just EPA's A through I criteria
- Importance of understanding the needs of the stakeholders to conduct effective education and outreach; "marketing" to change behavior
- Deciding when and how to deal with contractors and consultants
- Understanding data collection with a purpose; how much data is "enough"?
- Understanding strengths and weaknesses of different models estimating pollutant loads
- Discussion of different watershed management strategies
- Discussion of implementing watershed plans

Next Steps/Action Items

KWLA Program Development Committee

- Recommend modules by completing the Program Development Committee Tool (available on the website), **email responses to Karen by May 31**
- Review and comment on Course Requirement and Outline Report draft (available on the website), **email comments to Karen by May 31**

Stantec

- Incorporate comments and recommendations into the Course Requirements and Outline report, meet with KDOW (scheduled for June 3, 2009) and finalize Course Requirements and Outline.

Next meeting: To be scheduled to kick off Phase II: KWLA Program Implementation and Sustainability

This project was funded in part by a grant from the US Environmental Protection Agency under Section 319(h) of the Clean Water Act through the Kentucky Division of Water to Stantec Consulting Services, Inc. (Grant # C9-994861-02)

Please contact Karen Schaffer for information about this project (karen.schaffer@stantec.com)

Kentucky Watershed Leadership Academy: Program Development

Task 5: Course Requirements and Outline

To KWLA Program Development Committee: Please provide your recommendations for Required, Elective and Deferred modules, as well as your comments and suggestions on the outline. Responses can be emailed to Karen Schaffer (karen.schaffer@stantec.com) by **May 31, 2009**.

Title	**Required** (1-10), 1=high priority, 10=low priority	**Elective** (1-5), 1=high priority, 5=low priority	**Defer** (i.e., do not develop module in KWLA)	**Comments/ Suggestions** (i.e., modules that can be combined, suggestions on level of detail, etc.)
1.1 Introduction				
▪ Introduction to KY Watershed Leadership Academy				
▪ Principles of watershed management				
▪ Estimating and Presenting Environmental and Economic Benefits of Watershed Plans				
1.2 Leadership Skills				
▪ Building partnerships and organizing stakeholders				
o Social Assessment: Getting to Know Your Watershed Communities				
▪ Getting Your Watershed Group On Track				
▪ Sustaining Your Watershed Group Financially				
▪ Running an Effective Meeting & Group Facilitation Skills				
▪ Basic Negotiation Skills: Applications for Watershed Management				
1.3 Education & Outreach				
▪ Awareness – Getting In Step: A Guide for Conducting Watershed Outreach Campaigns				
▪ Action – Getting Your Feet Wet with Social Marketing				
1.4 Watershed Analysis				
▪ Define the Scope of the Watershed Planning Effort				
▪ Conducting a Watershed Inventory				
▪ Understanding the Planning Process and Engaging Planning Officials				
▪ Data Collection with a Purpose				

Title	**Required** (1-10), 1=high priority, 10=low priority	**Elective** (1-5), 1=high priority, 5=low priority	**Defer** (i.e., do not develop module in KWLA)	**Comments/ Suggestions** (i.e., modules that can be combined, suggestions on level of detail, etc.)
o Field Exercise – Water Quality, Habitat, Biological Sampling				
▪ Estimating Pollutant Loads				
1.5 Management Strategies				
▪ Methods used to set watershed goals				
▪ Establishing numerical targets and indicators for pollutant reduction				
▪ 8 Tools for Watershed Protection in Developing Areas				
▪ Wetland BMPs				
▪ Agricultural management practices for WQ protection				
▪ Forestry best management practices (BMPs) in watersheds				
▪ Stream stabilization/ restoration overview				
▪ Source water protection BMPs				
▪ BMPs for Karst Areas				
▪ Water quality management on mines				
1.6 Implementing your watershed plan				
▪ Developing an Implementation Plan				
▪ Implementing the Watershed Plan and Measuring Progress				
This project was funded in part by a grant from the US Environmental Protection Agency under Section 319 of the Clean Water Act through the Kentucky Division of Water to Stantec Consulting Services, Inc. (Grant # C9-994861-02)				
Project Contact Information:	**Project Website:** www.kywla.org			
Karen Schaffer, Stantec				
Environmental Management				
Ph: (812) 285-4078				
Fx: (812) 285-4061				
karen.schaffer@stantec.com				

Kentucky Watershed Leadership Academy: Program Development

Task 5: Course Requirements and Outline

To KWLA Program Development Committee: Please provide your recommendations for the top 2 pollutant load assessment tools. Responses can be emailed to Karen Schaffer (karen.schaffer@stantec.com) by **May 31, 2009**.

Tool	Website	Top 2	Comments
1.1 Currently Recommended by KDOW			
• Spreadsheet Tool for Estimating Pollutant	http://bering.tetratech-ffx.com/stepl/		
1.2 From Draft Kentucky Watershed Planning Guidebook			
• Simple Method	http://www.stormwatercenter.net/monitoring%20and%20assessment/simple%20meth/simple.htm		
• Watershed Treatment Model	http://www.stormwatercenter.net/monitoring%20and%20assessment/watershed_treatment_model.htm		
• Predict	http://www.predict.psu.edu/		
1.3 Other Tools			
• Bacterial Indicator Tool (BIT),	http://www.epa.gov/waterscience/ftp/basins/system/BASINS3/bit.htm		
• Long Term Hydrologic Impact Analysis (LTHIA),	http://www.ecn.purdue.edu/runoff/lthia/lthia_index.htm		
• EPA Region 5/IDEM Pollutant Load Reduction Workbook,	http://bering.tetratech-ffx.com/stepl/models$docs.htm		
• USGS SPARROW	http://water.usgs.gov/nawqa/sparrow/		
• Load Duration Curves (TMDL Method)	http://www.in.gov/idem/5963.htm		

This project was funded in part by a grant from the US Environmental Protection Agency under Section 319 of the Clean Water Act through the Kentucky Division of Water to Stantec Consulting Services, Inc. (Grant # C9-994861-02)

Project Contact Information:	**Project Website:** www.kywla.org		

Karen Schaffer, Stantec
Environmental Management
Ph: (812) 285-4078
Fx: (812) 285-4061
karen.schaffer@stantec.com

Appendix C

KWLA Project Website Information

Kentucky Watershed Leadership Academy

Better Management Through Knowledge

Kentucky Watershed Leadership Academy Program

The Kentucky Watershed Leadership Academy (KWLA) project will train local leaders and provide them with the tools and skill sets to successfully champion the development and implementation of watershed-based plans.

The objective of this phase of the project is to develop an in-depth training program to provide key leadership and technical skills for watershed plan development.

The goals of this project are to:

» Improve Kentucky's water quality through the development and implementation of watershed-based plans

» Build watershed knowledge among watershed coordinators, local governments, citizen groups and other interested stakeholders.

The Kentucky Watershed Leadership Academy will be developed in three phases:

1. **Program Development**
2. **Program Implementation**
3. **Program Sustainability**

This project was funded in part by a grant from the US Environmental Protection Agency under Section 319(h) of the Clean Water Act through the Kentucky Division of Water to **Stantec Consulting Services, Inc.** *(Grant #9994861-02)*

You are the **523** visitor to this site. Thank you for your interest.

Website last updated **Thursday May,21,2009** .

Please **contact us** for information about this project or if you experience technical difficulties with this site.

Search This Site

Go

Project Calendar

« May | Jul »

June 2009

M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

© 2009 Kentucky Watershed Leadership Academy - Better Management Through Knowledge
Developed and customized by **Stantec Consulting Services**.

Development

The objective of this phase of the project is to develop an in-depth training program to provide key leadership and technical skills for watershed plan development. This phase of the project consists of the following five tasks to be completed by April 30, 2009:

Project Tasks:

1. **Organize the KWLA Program Development Committee**
   The committee will guide the development and implementation of the program.
   1. Draft KWLA Program Development Committee Documents *(Password Protected)*
   2. 04-21-09 Meeting Summary
   3. 04-21-09 Meeting Slides
2. **Develop Project Website**
   A password protected page is used to share draft documents among the KWLA Program Development Committee. Final products are posted to the publicly accessible page.
2. **Develop Project Website**
   A password protected page is used to share draft documents among the KWLA Program Development Committee. Final products are posted to the publicly accessible page.
3. **Catalog needs for watershed leadership and technical skills**
   Input from regional and local governments, watershed groups and others will be used to identify the specific needs for watershed-based leadership and technical training.
   1. KWLA Survey (Download/View)
   2. Catalogue Needs Report - Final
4. **Research existing watershed training courses**
   Research existing watershed training courses that could be adapted for Kentucky
   1. Research Existing Watershed Training Courses Report - Final
5. **Develop KWLA course requirements and outline**
   The course requirements outline and schedule will be developed in this project. The KWLA Program Development Committee will review the course requirements, outline, and schedule
   1. Course Requirements and Outline - Annotated Draft

Search This Site

Go

Project Calendar

« May Jul »

June 2009

M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

© 2009 Kentucky Watershed Leadership Academy - Better Management Through Knowledge
Developed and customized by Stantec Consulting Services.

Kentucky Watershed Leadership Academy

Better Management Through Knowledge

DEP

Stantec

Home | Development | Implementation | Sustainability | Documents | Links | Contact Us

Implementation

Coming Soon..

Search This Site

Go

Project Calendar

« May Jul »

June 2009

M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

© 2009 Kentucky Watershed Leadership Academy - Better Management Through Knowledge
Developed and customized by Stantec Consulting Services.

Kentucky Watershed Leadership Academy

Better Management Through Knowledge

DEP

Stantec

Home | Development | Implementation | Sustainability | Documents | Links | Contact Us

Sustainability

Coming Soon..

Search This Site

Go

Project Calendar

« May Jul »

June 2009

M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Better Management Through Knowledge

DEP

Stantec

Home | Development | Implementation | Sustainability | Documents | Links | Contact Us

Links

- Kentucky Department For Environmental Protection
- Kentucky Division of Water
- Kentucky Waterways Alliance
- Kentucky Watershed Management
- Stantec Consulting Ltd.
- US Environmental Protection Agency Region IV (Kentucky)
- US Environmental Protection Agency Watershed Program

Search This Site

Go

Project Calendar

« May Jul »

June 2009

M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Kentucky Watershed Leadership Academy

Better Management Through Knowledge

DEP

Stantec

Home | Development | Implementation | Sustainability | Documents | Links | Contact Us

Contact Us

Project Contacts

Karen Schaffer, *Project Manager*
Stantec Consulting Services
Telephone: 812-285-4060

Contact Us

Your Name: Your Name (required)

Email: (valid email required)

Website: http://

Message:

Search This Site

Go

Project Calendar

« May Jul »

June 2009

M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Appendix D

Needs Catalogue Report

Kentucky Watershed Leadership Academy
Phase I: Program Development
Needs Catalogue Report

May 2009

Stantec

KENTUCKY WATERSHED LEADERSHIP ACADEMY
PHASE I: PROGRAM DEVELOPMENT
NEEDS CATALOGUE REPORT

This project was funded in part by a grant from the US Environmental Protection Agency under Section 319 of the Clean Water Act through the Kentucky Division of Water to Stantec Consulting Services, Inc. (Grant # C9-994861-02)

Executive Summary

Citizen and community-based watershed groups are becoming increasingly involved and responsible for efforts to protect and restore water quality. As such, successful watershed protection and restoration efforts are dependant upon having local watershed coordinators and citizen champions with the capacity, tools and skills required to successfully lead watershed planning and management efforts.

The Kentucky Watershed Leadership Academy (KWLA): Program Development will provide a framework for developing a capacity building program within the Commonwealth of Kentucky to train local leaders and provide them with the tools and skill sets to successfully champion the development and implementation of watershed-based plans. KWLA Program Development tasks include:

1. Organize the KWLA Program Development Committee
2. Develop Project Website
3. Catalogue Needs
4. Research Existing Watershed Training Courses
5. Develop KWLA Course Requirements and Outline

This report presents the results of Task 3, Catalogue Needs. This report describes the method used to compile input from a variety of groups and individuals in Kentucky regarding needs for watershed training, the results, findings and recommendations.

Focus group questions were developed to gather input on major aspects of developing a watershed plan, including advantages of watershed planning, building partnerships, watershed characterization, data collection, water resource programs, watershed goals, identifying management strategies, developing an implementation plan, and measuring progress. Respondents were also asked to provide additional suggestions and recommendations for course topics. Additional questions gauged interest in participating in the training and future contacts regarding the project. Contact information was also requested.

Focus group sessions were conducted at the Kentucky Waterways Alliance's Alliance Roundtable, the Basin Coordinators meeting, the Kentucky Statewide Watershed Steering Committee and the Salt River Watershed Watch Annual Conference. The focus group

questionnaire was also distributed via email to the KWLA Program Development Committee, watershed groups and basin teams.

A total of forty-three (43) responses were received from focus groups and email distribution of the questionnaire. Respondents placed high importance on developing watershed plans, building partnerships and conducting watershed characterization. Respondents placed moderately high importance on collecting new data and understanding water resource programs. Respondents placed high importance on setting watershed goals, identifying management strategies, developing the watershed implementation plan and measuring progress.

Respondents recommended the following additional topics be considered for inclusion in the KWLA training course:

- Land use and local codes, planning, how to evaluate and integrate them into planning.
- Teach effective public outreach.
- Local educational programs are your first line of action on any water quality issue. Educational outreach is ongoing.
- Emphasize training for leadership of the watershed management plan and recommend use of existing trained technical expertise for sampling and other technical aspects.
- Importance of working top down, implementing water quality improvement of watershed over band-aid approach.
- Possibly supply a list of people, consultants, non-profits that can help with watershed plans.
- Engage elected officials and local decision makers in the training.
- Inclusion of native plants, protection of wildlife and development reduction to green space.
- Broaden the course beyond United States Environmental Protection Agency USEPA and Kentucky Division of Water (KDOW) requirements to teach holistic watershed planning that considers future water needs for human, agricultural, industrial and ecological uses.

The following steps are recommended to maximize the utility of the focus groups and questionnaire responses:

- Stantec should use this report to further refine the research of existing training programs, and highlight existing training programs that emphasize the topics included in the focus group questionnaire as well as the comments received.

- The KWLA Program Development Committee should discuss the findings of this report to develop its recommendations on course requirements and outline.

- A recommendation was received to expand the scope of the KWLA training course to include water use, which is not explicitly required by USEPA and KDOW for acceptable watershed plans. KDOW and the KWLA Program Development Committee should develop a response to this recommendation.

- The focus group questionnaire respondents should be contacted via email to highlight the availability of the KWLA website and in the future, when the training becomes available.

- Relatively few responses from local elected officials, planners and engineers were received. Additional efforts to engage these groups should be identified and implemented throughout the project.

Table of Contents

EXECUTIVE SUMMARY E.1

1.0 INTRODUCTION 1

2.0 CATALOGUE WATERSHED LEADERSHIP TRAINING NEEDS 2
2.1 FOCUS GROUP QUESTIONNAIRE 2
2.2 ALLIANCE ROUNDTABLE FOCUS GROUP 3
2.3 SALT RIVER WATERSHED WATCH FOCUS GROUP 4
2.4 FOCUS GROUP QUESTIONNAIRE RESPONSES 6

3.0 FINDINGS 8

4.0 RECOMMENDED NEXT STEPS 9

List of Appendices

Appendix 1. KWLA Background and Focus Group Questions
Appendix 2. KWLA Focus Group Presentation
Appendix 3. Alliance Roundtable Focus Group Information
Appendix 4. Salt River Watershed Watch Focus Group Information
Appendix 5. Additional Information on Focus Group Questionnaire Responses

1.0 Introduction

National trends in watershed management continue to demonstrate that citizen and community-based watershed groups are becoming increasingly involved and responsible for efforts to protect and restore water quality. In fact, USEPA and other state nonpoint source pollution management agencies have concluded that the involvement of local citizens and stakeholders is critical to the success and sustainability of any watershed management effort (ODNR, 2005). As such, successful watershed protection and restoration efforts are dependant upon having local watershed coordinators and citizen champions with the capacity, tools and skills required to successfully lead watershed planning and management efforts.

The Kentucky Watershed Leadership Academy (KWLA): Program Development will provide a framework for developing a capacity building program within the Commonwealth of Kentucky to train local leaders and provide them with the tools and skill sets to successfully champion the development and implementation of watershed-based plans.

The goals of this project are to:

- Improve Kentucky's water quality through the development and implementation of watershed-based plans.
- Build watershed knowledge among watershed coordinators, local governments, citizen groups and other interested stakeholders.

The Kentucky Watershed Leadership Academy will be developed in three phases, which are described below:

1. Program Development
2. Program Implementation
3. Program Sustainability

Kentucky Watershed Leadership Academy Program Development

The objective of this phase of the project is to develop an in-depth training program to provide key leadership and technical skills for watershed plan development. KWLA Program Development tasks include:

1. Organize the KWLA Program Development Committee – The committee guides the development and implementation of the program.

2. Develop Project Website – A password protected page is accessible to the KWLA Program Development Committee. This page is used to share draft materials. Final products are posted to the publicly accessible page of the www.kywla.org website.

3. Catalogue Needs – Gather input from regional and local governments, watershed groups and others will be used to identify the specific needs for watershed-based leadership and technical training.

4. Research Existing Watershed Training Courses – Research existing watershed training courses that could be adapted for Kentucky

5. Develop KWLA Course Requirements and Outline – The course requirements outline and schedule will be developed in this project. The KWLA Program Development Committee will review the course requirements, outline and schedule.

This report presents the results of Task 3, Catalogue Needs. This report describes the method used to compile input from a variety of groups and individuals in Kentucky regarding needs for watershed training, the results, findings and recommendations.

2.0 Catalogue Watershed Leadership Training Needs

2.1 FOCUS GROUP QUESTIONNAIRE

Focus group questions were developed to gather input on major aspects of developing a watershed plan, including advantages of watershed planning, building partnerships, watershed characterization, data collection, water resource programs, watershed goals, identifying management strategies, developing an implementation plan, and measuring progress. Respondents were also asked to provide additional suggestions and recommendations for course topics. Additional questions gauged interest in participating in the training and future contacts regarding the project. Contact information was also requested. **Appendix 1. KWLA Background and Focus Group Questions**

This focus group questions were distributed in several ways. Focus group sessions were conducted at the Kentucky Waterways Alliance's Alliance Roundtable, the Basin Coordinators meeting, Kentucky Statewide Watershed Steering Committee and Salt River Watershed Watch Annual Conference. At the Basin Coordinators meeting, Kentucky Statewide Watershed Steering Committee and Salt River Watershed Watch Annual Conference, a presentation describing the KWLA project was provided, questions from the group were addressed, and the

focus group questions were distributed. The Kentucky Watershed Leadership Academy presentation to the focus groups is provided in **Appendix 2**. The focus group questionnaire was also distributed via email to the KWLA Program Development Committee, watershed groups and basin teams.

2.2 ALLIANCE ROUNDTABLE FOCUS GROUP

The Kentucky Waterways Alliance (KWA) hosted the Alliance Roundtable on Saturday November 22, 2008 in Louisville, Kentucky. This event was attended by individuals and representatives from watershed groups throughout the state. The Kentucky Watershed Leadership Academy project was discussed at the Water Quality Advocacy Track: Watershed Planning Panel moderated by Brooke Shireman and during the Closing Remarks. The KWLA Survey Questions were distributed during both sessions. Alliance Roundtable participants were provided another opportunity to respond to the questionnaire via an email distribution to all meeting participants from the KWA Outreach Director. Additional information regarding the Kentucky Waterway Alliance's Alliance Roundtable meeting is available at the "Past Events" page of the KWA website: http://www.kwalliance.org/default.aspx

Responses from eleven (11) of the Roundtable participants who returned the forms at the Alliance Roundtable meeting are summarized on the table below and additional information is provided in **Appendix 3. Alliance Roundtable Focus Group Information**.

Table 1. Alliance Roundtable Focus Group Results

	Importance (Low to High)				
Topic	**Least**		**Medium**		**Very**
Why develop a watershed plan?	1	0	0	0	2
How to build partnerships	0	0	2	0	9
How to conduct a watershed characterization	0	0	1	1	8
How to collect new data	0	0	1	0	8
Understanding water resource programs	0	0	2	3	5
Setting watershed goals	0	0	0	2	7
Identifying management strategies	0	0	1	2	7

	Importance (Low to High)				
Topic	**Least**		**Medium**		**Very**
Developing the Implementation Plan	0	0	1	2	7
Measuring progress	0	0	1	1	8

Based on the responses provided, most focus group participants believed that the topic list was appropriate and topics were identified as “very important” to the majority of respondents. Note that some focus group participants returned a partially completed questionnaire.

Focus group participants were asked for additional topics for consideration in the Kentucky Watershed Leadership Academy training course. Their suggestions are listed below:

- Land use and local codes, planning, how to evaluate and integrate them into planning.
- Local educational programs are your first line of action on any water quality issue. Educational outreach is ongoing.
- Inclusion of native plants, protection of wildlife and development reduction to green space.
- Possibly supply a list of people, consultants, non-profits that can help with watershed plans.
- Teach effective public outreach.
- Importance of working top down, implementing water quality improvement of watershed over band-aid approach.

Focus group participants were asked if they would be interested in participating in the Kentucky Watershed Leadership Academy training. Seven (7) responded “yes”, three (3) responded “maybe”.

Focus group participants were asked if they could be contacted again regarding this project. Nine (9) responded “yes” and the remaining responses were blank.

2.3 SALT RIVER WATERSHED WATCH FOCUS GROUP

A focus group session was conducted at the Annual Conference of the Salt River Watershed Watch was held March 5, 2009 at the University of Louisville’s Belknap Campus, Louisville,

Kentucky. The event was attended by about 45 members of Salt River Watershed Watch and other interested individuals. An overview of the Kentucky Watershed Leadership Academy project was presented, questions were addressed, and the focus group questionnaire was distributed. Six (6) of those in attendance responded to the focus group questionnaire. Results are summarized on the table below. Note that some focus group participants returned a partially completed survey.

Table 2. Salt River Watershed Watch Focus Group Results

	Importance (Low to High)				
Topic	**Least**		**Medium**		**Very**
Why develop a watershed plan?	0	0	0	1	2
How to build partnerships	0	0	1	3	2
How to conduct a watershed characterization	0	0	0	2	3
How to collect new data	0	0	1	3	1
Understanding water resource programs	0	0	1	4	0
Setting watershed goals	0	0	0	3	0
Identifying management strategies	0	0	1	2	2
Developing the Implementation Plan	0	0	2	1	2
Measuring progress	0	0	2	0	3

The Salt River Watershed Watch focus group was interested in the project, and requested to be considered as students for the KWLA training. There was interest in engaging the community, specifically elected officials and decision makers in the training. Three (3) focus group participants indicated that they were interested in participating in training, and one (1) was not interested in training. Four (4) respondents indicated that they were interested in being contacted again about the project. Additional information regarding this focus group is provided in **Appendix 4. Salt River Watershed Watch Focus Group Information**.

2.4 FOCUS GROUP QUESTIONNAIRE RESPONSES

The focus group questionnaire was distributed by email by the Kentucky Waterways Alliance to all participants in the Alliance Roundtable meeting. Basin Coordinators from the Licking River Watershed, Green / Tradewater rivers Watershed, Kentucky River Watershed and Big Sandy / Little Sandy / Tygarts rivers Watershed were provided the survey to distribute to their Basin Teams and other interested individuals. The Kentucky Division of Water's Watershed Technical Advisor was provided the survey to distribute within the Division of Water and other state offices. The survey was also distributed to the KWLA Program Development Committee at their meeting on April 21, 2009. In addition, the survey was available via the Kentucky Watershed Leadership Academy website (www.kywla.org). Several of the respondents were contacted via telephone to discuss the project and their focus group questionnaire response further.

There were twenty-six (26) responses to the focus group questionnaire received by email. Results are summarized on the table below. Note that some respondents returned a partially completed survey.

Table 3. Focus Group Questionnaire Response Summary

	Importance (Low to High)				
Topic	**Least**		**Medium**		**Very**
Why develop a watershed plan?	1	0	5	4	9
How to build partnerships	0	2	9	4	11
How to conduct a watershed characterization	1	0	3	9	13
How to collect new data	0	2	3	15	6
Understanding water resource programs	0	0	5	8	13
Setting watershed goals	0	0	4	5	14
Identifying management strategies	1	0	2	10	13
Developing the Implementation Plan	0	1	2	10	13
Measuring progress	0	2	5	8	11

One respondent suggested an emphasis on developing leadership of the management plan and less emphasis on sampling. The respondent clarified that knowledge of sampling and other technical aspects is essential, but that it may be more cost-effective to use resources already trained on these technical aspects.

One respondent suggested broadening the course beyond the requirements for USEPA and KDOW. The respondent suggested that significantly more emphasis should be placed on holistic watershed planning that considers future water needs for human, agricultural, industrial and ecological uses. Rather than teaching students how to react to pollution problems, the course should emphasize future water use and flow needs.

One respondent suggested that training local officials on the benefits of the watershed planning process, as well as low impact development practices would be very beneficial. These courses could be offered as a continuing education credit or other incentive. The respondent also suggested that the discussion of the program development was geared toward two different tracks, one for consultants and watershed organizations interested in completing a formal watershed plan, and the other for a more general audience interested in watershed and water quality planning and management.

One respondent suggested involving a diverse group of stakeholders with a variety of skills in the watershed planning process. Everyone involved in the watershed planning process should have an understanding of the steps involved in conducting the watershed characterization, an understanding of water quality standards, and an understanding of various management strategies that can be used. This respondent also suggested that setting and revising watershed goals throughout the process will help those goals be more refined. Don't forget that the ultimate goal of the process is not a grant, it is clean water. This respondent also stressed the importance of making water quality data relevant to the general public by showing the results and ramifications, not just explaining what has been done.

One respondent stressed selling the importance of watershed protection to local landowners, developing a group mission statement, involving and engaging volunteers, gaining access to private lands for project implementation, and communicating the group's mission, projects and successes back to the stakeholders.

Seventeen (17) respondents indicated that they were interested in participating in training, two (2) may be interested, and five (5) were not interested in training. Twenty-five (25) respondents indicated that they were interested in being contacted again about the project. Additional information regarding this focus group is provided in **Appendix 5. Additional Information on Focus Group Questionnaire Responses**.

3.0 Findings

A total of forty-three (43) responses were received from focus groups and email distribution of the questionnaire. Responses are summarized on the table below.

Table 4. Summary of Focus Group and Questionnaire Responses

	Importance (Low to High)				
Topic	**Least**		**Medium**		**Very**
Why develop a watershed plan?	2	0	5	5	13
How to build partnerships	0	2	12	7	22
How to conduct a watershed characterization	1	0	4	12	24
How to collect new data	0	2	5	18	15
Understanding water resource programs	0	0	8	15	18
Setting watershed goals	0	0	4	10	21
Identifying management strategies	1	0	4	14	22
Developing the Implementation Plan	0	1	5	13	22
Measuring progress	0	2	8	9	22

Respondents placed high importance on developing watershed plans, building partnerships and conducting watershed characterization. Respondents placed moderately high importance on collecting new data and understanding water resource programs. Respondents placed high importance on setting watershed goals, identifying management strategies, developing the watershed implementation plan and measuring progress.

Respondents recommended the following additional topics be considered for inclusion in the KWLA training course:

- Land use and local codes, planning, how to evaluate and integrate them into planning.

- Teach effective public outreach.
- Local educational programs are your first line of action on any water quality issue. Educational outreach is ongoing.
- Emphasize training for leadership of the watershed management plan and recommend use of existing trained technical expertise for sampling and other technical aspects.
- Importance of working top down, implementing water quality improvement of watershed over band-aid approach.
- Possibly supply a list of people, consultants, non-profits that can help with watershed plans.
- Engage elected officials and local decision makers in the training.
- Inclusion of native plants, protection of wildlife and development reduction to green space.
- Broaden the course beyond USEPA and KDOW requirements to teach holistic watershed planning that considers future water needs for human, agricultural, industrial and ecological uses.

4.0 Recommended Next Steps

The following steps are recommended to maximize the utility of the focus groups and questionnaire responses:

- Stantec should use this report to further refine the research of existing training programs, and highlight existing training programs that emphasize the topics included in the focus group questionnaire as well as the comments received.
- The KWLA Program Development Committee should discuss the findings of this report to develop its recommendations on course requirements and outline.
- A recommendation was received to expand the scope of the KWLA training course to include water use, which is not explicitly required by USEPA and KDOW for acceptable watershed plans. KDOW and the KWLA Program Development Committee should develop a response to this recommendation.

- The focus group questionnaire respondents should be contacted via email to highlight the availability of the KWLA website and in the future, when the training becomes available.

- Relatively few responses from local elected officials, planners and engineers were received. Additional efforts to engage these groups should be identified and implemented throughout the project.

Kentucky Watershed Leadership Academy
Background Information

The Kentucky Watershed Leadership Academy (KWLA) project will train local leaders and provide them with the tools and skill sets to successfully champion the development and implementation of watershed-based plans.

The goals of this project are to:

- Improve Kentucky's water quality through the development and implementation of watershed-based plans
- Build watershed knowledge among watershed coordinators, local governments, citizen groups and other interested stakeholders.

The Kentucky Watershed Leadership Academy will be developed in three phases:

1. Program Development
2. Program Implementation
3. Program Sustainability

Kentucky Watershed Leadership Academy Program Development
The objective of this phase of the project is to develop an in-depth training program to provide key leadership and technical skills for watershed plan development.

KWLA Program Development Tasks:

1. Organize the KWLA Program Development Committee – The committee will guide the development and implementation of the program.

2. Develop Project Website – www.kywla.org A password protected page is used to share draft documents among the KWLA Program Development Committee. Final products are posted to the publicly accessible page.

3. Catalogue needs for watershed leadership & technical skills – Input from regional and local governments, watershed groups and others will be used to identify the specific needs for watershed-based leadership and technical training.

4. Research existing watershed training courses – Research existing watershed training courses that could be adapted for Kentucky

5. Develop KWLA course requirements and outline – The course requirements outline and schedule will be developed in this project. The KWLA Program Development Committee will review the course requirements, outline and schedule.

KWLA Program Implementation: (pending funding)

Produce course materials
Hold three training sessions

Program Sustainability: (pending funding)

Long term implementation of the training

Your input is needed! Please complete Page 2 to provide your input on important topics and suggestions for the Kentucky Watershed Leadership Academy Training Class and email the survey to karen.schaffer@stantec.com by April 24, 2009

This project was funded in part by a grant from the US Environmental Protection Agency under Section 319(h) of the Clean Water Act through the Kentucky Division of Water to Stantec Consulting Services, Inc. (Grant # C9-994861-02)

Please contact Karen Schaffer for information about this project (karen.schaffer@stantec.com)

Kentucky Watershed Leadership Academy
Survey Questions

The questions below are intended to identify topics of interest to potential future students of the Kentucky Watershed Leadership Academy. Your input will be used to help plan the training sessions.

	Importance (Low to High)				
Topic	**Least**		**Medium**		**Very**
Why develop a watershed plan?					
How to build partnerships ▪ Types of watershed committees ▪ Running an effective meeting ▪ Engaging citizens & elected officials					
How to conduct a watershed characterization ▪ Gathering & managing data ▪ Analyzing & interpreting data ▪ Estimating pollutant loads ▪ Using GIS ▪ On-line tools					
How to collect new data ▪ Designing a sampling plan ▪ Quality assurance ▪ Sampling					
Understanding water resource programs ▪ Water quality standards ▪ 305b, 303d, Integrated Report ▪ Permitting (wastewater, stormwater, confined animal feeding operations, etc.) ▪ Enforcement ▪ Floodplains, wetlands and 401/404					
Setting watershed goals					
Identifying management strategies ▪ Identifying & evaluating strategies ▪ Prioritizing & selecting strategies					
Developing the Implementation Plan ▪ Funding needs & sources ▪ Implementation schedule ▪ Measurable milestones					
Measuring progress using ▪ Water quality trends ▪ Progress on implementing the plan					

Please provide any additional suggestions for course topics:

Would you be interested in participating in watershed leadership training? ___ **Yes** ____**No**

Can we contact you again regarding this project? ___ **Yes** ____**No**. If yes, please provide:

Name:
Email:
Telephone:
Affiliation:

This project was funded in part by a grant from the US Environmental Protection Agency under Section 319(h) of the Clean Water Act through the Kentucky Division of Water to Stantec Consulting Services, Inc. (Grant # C9-994861-02)

Please contact Karen Schaffer for information about this project (karen.schaffer@stantec.com)

Kentucky Watershed Leadership Academy

Presented to: Salt River Watershed Watch

Karen Schaffer, March 5, 2009

One Team. Infinite Solutions

Stantec

Kentucky Watershed Leadership Academy

Presentation Overview

1. Background
2. Program Development
3. Program Implementation
4. Program Sustainability
5. Budget & Schedule
6. Questions ?

This project was funded in part by a grant from the US Environmental Protection Agency under Section 319 of the Clean Water Act through the Kentucky Division of Water to Stantec Consulting Services, Inc. (Grant # C9-994861-02)

Kentucky Watershed Leadership Academy

Background – Project Overview

Project Goals

- Improve Kentucky's water quality through the development and implementation of watershed-based plans
- Build watershed knowledge among watershed coordinators, local governments, citizen groups and other interested stakeholders.

Project Phases

1. Program Development – initial planning
2. Program Implementation – produce materials, teach 3 classes
3. Program Sustainability –KWLA after the grant

Kentucky Watershed Leadership Academy

Program Development

1. Program Development Committee
2. Project Website
3. Catalogue Needs
4. Research Existing Programs
5. Course Requirements and Outline

Kentucky Watershed Leadership Academy

Program Development Committee

Goal: Facilitate successful development, implementation and sustainability of KWLA

Membership

Government – Federal, State, Regional, Local
Academia, Industry, Consultants
Professional Associations
Watershed Groups
Expertise - Environmental Educators, Scientists, Engineers
Geographic – All 5 basins represented

Meetings - Throughout project, with 2 meetings in Phase I

Kentucky Watershed Leadership Academy

Project Website: www.kywla.org

Program Development Phase

- Stantec hosting during project
- Project Information, Events, Useful Links
- Password-protected page for draft materials
- Final products posted to publicly accessible page

Implementation & Sustainability Phase

- Information above, plus:
  - Course materials available to view & download
  - Self-directed learning modules
  - Testing materials

Kentucky Watershed Leadership Academy

Catalogue Needs

Goal: **Identify specific leadership & training needs**

Approach:

Survey **(on-going)**

- River Basin Teams, Watershed Groups

Focus Groups

- 1 of 2 held at KY Watershed Roundtable (11/22/08)

Interviews

- KDOW NPS Program / Watershed Basin Coordinators
- KY Watershed Steering Committee
- KWLA Program Development Committee

Kentucky Watershed Leadership Academy

Research Existing Watershed Training

Review and Adapt Training Materials from:

- KY Watershed Framework
- KY Watershed Planning Guidebook
- KY Commonwealth Water Education Project
- USEPA Watershed Planning Handbook / Watershed Plan Tool
- USEPA Watershed Academy
- State Watershed Academies (Indiana, Ohio, Kansas)
- Academic (Univ. of Iowa, Coastal Carolina Univ., Univ. of Connecticut)
- Center for Watershed Protection's Watershed Institute
- Others

Kentucky Watershed Leadership Academy

Develop Course Requirements & Outline

Considerations:

- Required and elective learning modules
- Balance in-class, field and remote/distance learning
- Group learning & self-directed learning options
- Completion requirements & recognition
- Course outline
- Class schedule

Kentucky Watershed Leadership Academy

Program Development Products

Project Report including:

- Program Development Committee meeting materials
- Website content and web hit summary
- Summary of leadership and technical needs identified
- Summary of other training classes (content & implementation)
- Description of course requirements, outline, schedule
- Description of Implementation & Sustainability phase
- References

Kentucky Watershed Leadership Academy

Program Implementation & Sustainability Phase *

1. Implement KY Watershed Leadership training
2. Plan for long term sustainability of KWLA after the grant

** These phases conducted with significant input from the KWLA Program Development Committee

* Project selected for funding, contract yet not awarded

Kentucky Watershed Leadership Academy

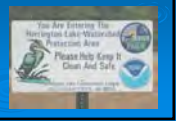
Program Implementation Phase

1. Develop KWLA course materials
2. Produce course materials
3. Select and train instructors
4. Plan three (3) classes
5. Implement three (3) classes

Kentucky Watershed Leadership Academy

Program Sustainability

1. Measure success of project
2. Develop long term implementation plan
   - Maintain training materials & instructor roster
   - Advertising, schedule, logistics
   - Post training support
   - Long term success measures for program
3. Develop long-term funding options
4. Final project report



Kentucky Watershed Leadership Academy

Budget & Schedule

	Budget	Schedule
Program Development	319(h) $30,000 Match $20,000 Total $50,000	Nov. 1, 2008 to April 30, 2009
Implementation & Sustainability*	319(h) $200,000 Match $133,333 Total $333,333	May 1, 2009 to Feb. 28, 2010

* Project selected for funding, contract not awarded yet.

Kentucky Watershed Leadership Academy

Project Contacts

Stantec Senior Project Advisor: Stephen Hall
stephen.hall@stantec.com, 812-285-4060

Stantec Project Manager: Karen Schaffer
karen.schaffer@stantec.com, 812-285-4078

KDOW Technical Advisor: Rosetta Fackler
rosettar.fackler@ky.gov , 502-564-3410

Kentucky Watershed Leadership Academy

Questions ?

Kentucky Watershed Leadership Academy
Focus Group Respondents
Kentucky Waterways Alliance's Alliance Roundtable

Appendix 3. Alliance Roundtable Focus Group Information		
First	**Last**	**Affiliation**
Craig	Bunting	Activist
Shanda	Cecil	Strodes Creek Conservancy
W. Ernest	Collins	Collins Capitol Consulting
Suzanne	Hoehne	Biohabitats, Landowner in Beargrass Creek Watershed
Yvonne	Meichtry	Licking River Watershed Watch & KY Transportation Cabinet
Tony	Miller	Third Rock Consultants
Lisa	Santos	Irish Hill Neighborhoon Association
Brooke	Shireman	Kentucky Division of Water
Pattie	Stivender	Bluegrass PRIDE
Pamla	Wood	KWA contractor & private citizen/consultant

Kentucky Watershed Leadership Academy
Focus Group Respondents
Salt River Watershed Watch

Appendix 4. Salt River Watershed Watch Focus Group Information		
First	**Last**	**Affiliation**
Russel	Barnett	University of Louisville, Salt River Watershed Watch
Dow	Buford	Jefferson County Public Schools - Farnsley Middle School Teacher
David	Kaelin	Floyds Fork Environmental Association
Greg	Kuhns	Salt River Watershed Watch, Kentucky Natural Lands Trust, KCC
Kevin	McDonald	University of Louisville Research Resources
Molly	Woofter	Jefferson County Public Schools - Fairdale High School Teacher

Kentucky Watershed Leadership Academy
Focus Group Respondents
Email

Appendix 5. Focus Group Questionnaire Responses		
First	**Last**	**Affiliation**
Laura	Alex	Cumberland River Compact
John	Burnett	Pulaski County Conservation District
David	Burton	Barren River District Health Department
Shanda	Cecil	Strodes Creek Conservancy
Kelly	Craig	Membership Assistant for KWA
Eric	Cummins	KY Fish & Wildlife Resources
Mary Kathryn	Dickerson	Boone, Campbell & Kenton County Conservation Districts/KWA
Jim	Dinger	KY Geological Survey, UK
Tom	Edwards	Friends of Muddy Creek, Inc. (Madison County, KY)
Joe	Ewalt	Kentucky League of Cities
Jason	Flickner	KWA
Amanda	Gumbert	UK Cooperative Extension Service/ KY Division of Conservation/ Cane Run Watershed Council
April	Haight	Morehead State University/ Triplett Creek Watershed
Marie	Halpin	Licking River Watershed Watch
Fred	Howes	KY Fish & Wildlife Resources
Morgan	Jones	Advocate, private citizen
Paul	Maron	Strand Associates
Malissa	McAlister	UK Kentucky Water Resources Research Institute
Stephanie	McSpirit	Professor, Eastern Kentucky University
Ashley	Osborne	University of KY Cooperative Extension Service
Sharmili	Sampath	Northern Kentucky Area Planning Commission
Jeffery	Sole	The Nature Conservancy
William (Gene)	Thomas	Environmental Director, Wedco District Health Department
Barry	Tonning	Licking River Watershed Watch
Angie	Wingfield	Kentucky Division of Conservation 319(h) Program Coordinator

Appendix E

Research Existing Programs

Kentucky Watershed Leadership Academy
Phase I: Program Development
Summary of Research on Existing Watershed Training Courses

May 2009

Stantec

KENTUCKY WATERSHED LEADERSHIP ACADEMY
PHASE I: PROGRAM DEVELOPMENT
SUMMARY OF RESEARCH ON EXISTING WATERSHED TRAINING COURSES

This project was funded in part by a grant from the US Environmental Protection Agency under Section 319 of the Clean Water Act through the Kentucky Division of Water to Stantec Consulting Services, Inc. (Grant # C9-994861-02)

Executive Summary

Citizen and community-based watershed groups are becoming increasingly involved and responsible for efforts to protect and restore water quality. As such, successful watershed protection and restoration efforts are dependant upon having local watershed coordinators and citizen champions with the capacity, tools and skills required to successfully lead watershed planning and management efforts.

The Kentucky Watershed Leadership Academy (KWLA): Program Development will provide a framework for developing a capacity building program within the Commonwealth of Kentucky to train local leaders and provide them with the tools and skill sets to successfully champion the development and implementation of watershed-based plans. KWLA Program Development tasks include:

1. Organize the KWLA Program Development Committee
2. Develop Project Website
3. Catalogue Needs
4. Research Existing Watershed Training Courses
5. Develop KWLA Course Requirements and Outline

This report presents the results of Task 4, Research Existing Watershed Training Courses. This report documents and summarizes the efforts to compile and evaluate information from existing watershed training courses. The research results will be used to develop the course requirements, outline and schedule for the KWLA in the next task and to develop the course content during the program implementation phase.

A web search of existing watershed training courses was performed, and available information concerning the course, including available course material, was compiled. Each existing course was examined for leadership, logistics of teaching, level of detail covered in the course, tools and methods used, data sources, and a general outline. The websites of departments, programs and organizations containing watershed-related materials were also evaluated and any materials that could be used to develop the course content were compiled. In addition, all materials were evaluated with respect to EPA's nine (9) required elements of watershed plans funded by 319(h) grants.

KENTUCKY WATERSHED LEADERSHIP ACADEMY
PHASE I: PROGRAM DEVELOPMENT
SUMMARY OF RESEARCH ON EXISTING WATERSHED TRAINING COURSES

EXECUTIVE SUMMARY
May 2009

Web search results were grouped into three categories: existing watershed information sources that are most relevant to Kentucky, additional watershed training courses, and preliminary sources of Kentucky course content.

Existing watershed information sources most relevant to Kentucky included the Watershed Planning Guidebook from the Kentucky Division of Water and Kentucky Waterways Alliance, as well as the EPA's Watershed Academy, Handbook for Developing Watershed Plans, Watershed Plan Builder Tool, and Watershed Central website. Also included were the Indiana Watershed Leadership Academy, the Ohio Watershed Academy, Michigan State University's Virtual Watershed Program, the Wetland Restoration Institute, and the Kentucky Press' Wetland Drainage, Restoration and Repair. Additional watershed training courses included the Kansas Environmental Leadership Program and Iowa State University's Renewing Local Watersheds Program.

Preliminary sources for KWLA course content included the Kentucky Watershed Management Framework from the Kentucky Division of Water (KDOW), the Commonwealth Water Education Project through KDOW and the University of Louisville, resources and training from the Center for Watershed Protection, the University of Connecticut's Nonpoint Source Education for Municipal Officials, the partnership between the Natural Resource Conservation Service and the US Army Corps of Engineers, the Columbia River Compact, the Southeast Watershed Forum, the British Columbia Ministry of Forests and Range Karst Management Handbook and Training, the National Conservation Training Center Growing Communities on Karst Workshop, and bylaws from various watershed associations.

Initial strengths of the watershed training courses and information sources included many examples of learning methods used to teach watershed training, as well as various discussions of watershed leadership. Many watershed training courses made their course materials, course schedules and syllabus' available. The watershed planning process, which relates to the nine (9) requirements of a 319 funded watershed plan, was outlined and discussed in by various sources. The education of local officials was also discussed by a variety of sources. Little or no information concerning karst areas and mining practices was found during the initial web search.

Initial Recommendations:

- Consider a course structure similar to the Indiana Watershed Leadership Academy (IWLA), which includes distance learning modules, two face-to-face meetings, and a small group project.
- Borrow from the content of the Ohio Watershed Academy (OWA) and the Kansas Environmental Leadership Program (KELP) for developing the course content related to watershed leadership.

- Reference the Watershed Planning Guidebook (KDOW and KWA), the Handbook for Developing Watershed Plans (EPA) and the modules of the IWLA for developing the course content related to the watershed planning process.
- Reference the materials from the Cumberland River Compact (CRC), Tennessee Valley Authority (TVA) and the University of Connecticut NEMO, as well as the Center for Watershed Protection (CWP), and the Commonwealth Water Education Project (CWEP; UL and KDOW). Use these materials to develop course content educating local officials on the benefits of low impact design and sustainable building practices that will lead to improved watershed health and water quality.
- Consider a watershed training course with "dual tracks":
    - Watershed Planning Track: Focus this track on providing technical watershed planning and leadership training to watershed coordinators and other water resource managers.
    - Local Officials Track: Provide a short course to educate local officials about the benefits of watershed based plans, low impact development, green infrastructure. This track would include a subset of the information presented in the Watershed Planning Track.

The next steps for the project are outlined below.

During the Program Development Phase:

- Discuss and receive input concerning course requirements and course structure from the Program Development Committee.
- Develop the course requirements and course structure.
- Receive feedback from the Program Development Committee and finalize the program's course requirements and course structure.

During the Program Implementation and Sustainability Phase:

- Develop and produce course materials
- Select and train course instructors
- Conduct three training sessions
- Evaluate measures of success

Table of Contents

EXECUTIVE SUMMARY E.1

1.0 INTRODUCTION 1

2.0 RESEARCH METHODS 2

3.0 RESEARCH RESULTS 4
3.1 INITIAL RESEARCH RESULTS 4
3.2 EXISTING WATERSHED INFORMATION SOURCES MOST RELEVANT TO KENTUCKY 5
3.3 ADDITIONAL COURSES TO CONSIDER 15
3.4 PRELIMINARY SOURCES FOR KWLA COURSE CONTENT 16

4.0 FINDINGS 24
4.1 INITIAL STRENGTHS 24
4.2 INITIAL LIMITATIONS 25

5.0 RECOMMENDATIONS 25

6.0 NEXT STEPS 26

7.0 REFERENCES 27

Appendices

Appendix 1. Summary Table of Research Results

1.0 Introduction

National trends in watershed management continue to demonstrate that citizen and community-based watershed groups are becoming increasingly involved and responsible for efforts to protect and restore water quality. In fact, USEPA and other state nonpoint source pollution management agencies have concluded that the involvement of local citizens and stakeholders is critical to the success and sustainability of any watershed management effort (ODNR, 2005). As such, successful watershed protection and restoration efforts are dependent upon having local watershed coordinators and citizen champions with the capacity, tools and skills required to successfully lead watershed planning and management efforts.

The Kentucky Watershed Leadership Academy (KWLA): Program Development will provide a framework for developing a capacity building program within the Commonwealth of Kentucky to train local leaders and provide them with the tools and skill sets to successfully champion the development and implementation of watershed-based plans.

The goals of this project are to:

- Improve Kentucky's water quality through the development and implementation of watershed-based plans
- Build watershed knowledge among watershed coordinators, local governments, citizen groups and other interested stakeholders.

The Kentucky Watershed Leadership Academy will be developed in three phases, which are described below:

1. Program Development
2. Program Implementation
3. Program Sustainability

Kentucky Watershed Leadership Academy Program Development

The objective of this phase of the project is to develop an in-depth training program to provide key leadership and technical skills for watershed plan development. KWLA Program Development tasks include:

1. Organize the KWLA Program Development Committee – The committee guides the development and implementation of the program.

2. Develop Project Website – A password protected page is accessible to the KWLA Program Development Committee. This page is used to share draft materials. Final products are posted to the publicly accessible page of the www.kywla.org website.

3. Catalogue Needs – Gather input from regional and local governments, watershed groups and others to identify the specific needs for watershed-based leadership and technical training. Focus groups were conducted to identify issues of importance for Kentucky, and the results of the focus groups were used to guide the research to factors identified as being important. The Needs Catalogue Interim Draft Report is available on the KWLA website.

4. Research Existing Watershed Training Courses – Research existing watershed training courses that could be adapted for Kentucky.

5. Develop KWLA Course Requirements and Outline – The course requirements outline and schedule will be developed in this project. The KWLA Program Development Committee will review the course requirements, outline and schedule.

This report presents the results of Task 4, Research Existing Watershed Training Courses. This report documents and summarizes the efforts to compile and evaluate information from existing watershed training courses. The research results will be used to develop the course requirements, outline and schedule for the KWLA in the next task and to develop the course content during the program implementation phase.

2.0 Research Methods

A web search of existing watershed training courses was performed, and available information concerning the course, including available course material, was compiled. If necessary, the course instructors or organizational leaders were contacted for additional information.

Each existing course was examined for the following types of information:

Leadership: Watershed leadership skills such as identifying and engaging stakeholders, facilitating participation in the watershed planning process, conflict resolution, running effective meetings, as well as public education and outreach.

Logistics of teaching: Is the course taught using online modules (distance learning), through face-to-face meetings, workshops and demonstrations, through small group projects, or a combination of methods?

Level of detail covered in the course: How detailed does the course get, and which topics are covered in the most detail? Are technical concepts such as water quality monitoring and watershed analysis covered in detail? Are management concepts such as organizing a watershed group and raising public awareness covered in detail?

Tools and methods used by each course: Does the course use reading materials, online modules, or guidebooks to teach the material? Does the course use live demonstrations, field training, workshops or technical training sessions to teach course material?

Data sources: Are data sources referenced throughout the course available? Data sources could include course material, material recommended for additional reference, or material used to develop the course.

General Outline: Is the general course outline and structure of the course available (online or otherwise)?

The websites of departments, programs and organizations containing watershed-related materials were also evaluated and any materials that could be used to develop the course content were compiled.

In addition, all materials were evaluated with respect to EPA's nine (9) required elements of watershed plans funded by 319(h) grants. These requirements are:

1. Identification of causes of impairment and pollutant sources or groups of similar sources that need to be controlled to achieve needed load reductions, and any other goals identified in the watershed plan.
2. An estimate of the load reductions expected from management measures.
3. A description of the nonpoint source management measures that will need to be implemented to achieve load reductions in requirement 2, and a description of the critical areas in which those measures will be needed to implement this plan.
4. Estimate of the amounts of technical and financial assistance needed, associated costs, and/or the sources and authorities that will be relied upon to implement this plan.
5. An information and education component used to enhance public understanding of the project and encourage their early and continued participation in selecting, designing, and implementing the nonpoint source management measures that will be implemented.
6. Schedule for implementing the nonpoint source management measures identified in this plan that is reasonably expeditious.

7. A description of interim measurable milestones for determining whether nonpoint source management measures or other control actions are being implemented.
8. A set of criteria that can be used to determine whether loading reductions are being achieved over time and substantial progress is being made toward attaining water quality standards.
9. A monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against the criteria established under Requirement 8.

3.0 Research Results

3.1 INITIAL RESEARCH RESULTS

The initial web search found numerous watershed training courses and sources of watershed-based information. A table providing summary information about each of the search results is included in **Appendix 1**. Information about the search results is included in the sections below.

Web search results were grouped into three categories: existing watershed information sources that are most relevant to Kentucky, additional watershed training courses, and preliminary sources of Kentucky course content. A description of the groups is provided below.

Existing Watershed Information Sources Most Relevant to Kentucky: These existing watershed information sources will include existing watershed training courses, as well as other sources of watershed information, and will provide the foundation that the KWLA training course will be based on. These sources will be used to help develop the structure, logistics, scheduling and organization of the KWLA training course.

Additional Watershed Training Courses: These existing watershed training courses contain watershed-related materials that will be used during the development of the KWLA training course. Watershed-related materials will be compiled from these courses and included on an accompanying CD.

Preliminary Sources of KY Course Content: These departments, programs or organizations contain watershed-related materials that will be during the development of the primary content of the KWLA training course. Watershed-related materials will be compiled from these sources and included on an accompanying CD.

3.2 EXISTING WATERSHED INFORMATION SOURCES MOST RELEVANT TO KENTUCKY

This section provides more detailed information on the information sources that are expected to help develop the structure, logistics, scheduling and organization of the KWLA training course. The details of each program will be discussed, which may include:

- How courses are taught
- Logistics of teaching
- Level of detail covered
- Tools and methods used
- Data sources
- General Outline

Kentucky Division of Water and Kentucky Waterways Alliance

Watershed Planning Guidebook
http://www.kwalliance.org/Publications/WatershedPlanningGuidebook/tabid/271/Default.aspx

The Kentucky Waterways Alliance, along with the Kentucky Division of Water, is currently developing a Watershed Planning Guidebook for the state of Kentucky to act as a resource for communities interested in preparing a watershed plan. This document is being "tested" by several watershed groups who are developing watershed plans using the guidebook. The draft guidebook is available as a resource. This Watershed Planning Guidebook addresses the EPA requirements for a watershed plan funded by a 319 grant.

The Watershed Planning Guidebook is intended to be used by the watershed coordinator of a local community to develop a watershed plan, though the level of detail can be adjusted to the needs of the user. The Guidebook is intended to be a resource for the watershed coordinator throughout the watershed planning process.

The Guidebook links to information from many sources, including websites and other online resources from the EPA and sources specific to Kentucky. While the EPA Handbook for Developing Watershed Plans is referenced frequently throughout the Guidebook, the Guidebook itself addresses issues specific to Kentucky. The nine elements of a watershed plan required to receive 319 funds, as specified by the EPA, are addressed throughout the guidebook.

The topics covered in the Watershed Planning Guidebook are as follows:

Chapter 1
- Background—How Kentucky protects its waterways
- Methods used to organize watershed planning groups
- Methods used to set preliminary watershed goals

- Steps to initiate the watershed planning process

Chapter 2
- Conduct a watershed inventory

Chapter 3
- Compare water quality data from the watershed with state standards
- Assess waterway problems using stream assessment protocols
- Predict point and non-point source pollutant loads in the watershed

Chapter 4
- Establish numerical targets for pollutant reduction from specific sources
- Identify best management practices (BMPs) and action items that will achieve the desired pollutant reductions
- Reach out to the community for resources and support

Chapter 5
- Implement the plan
- Monitor and evaluate progress

Appendices
A. Kentucky Watershed Plan Outline
B. Nine Minimum Elements to be Included in a Watershed Plan for Impaired Waters Funded Using Incremental Section 319 Funds
C. Resources for Group Development
D. Sample Stakeholder Invitation
E. Potential Pollutant Sources
F. Goals and Objectives Worksheet
G. Action Items Worksheet
H. Load Reduction Worksheet
I. Watershed Stakeholder Committee Evaluation
J. Glossary
K. References

US Environmental Protection Agency

Watershed Academy
http://www.epa.gov/owow/watershed/wacademy/

The Watershed Academy is a focal point in EPA's Office of Water for providing training and information on implementing watershed planning efforts. The Watershed Academy includes online training modules, webcast seminars, live watershed training courses, and online publications.

Online Training Modules
http://www.epa.gov/watertrain/

EPA's Watershed Academy contains fifty (50) free online training modules. Each self-taught module contains text and graphics related to a particular watershed topic. At the end of most modules, the user completes a test of the material presented. The modules range from basic to more advanced material, suitable for both citizens and local officials. The Watershed Management Training Certificate is awarded to those that complete fifteen (15) required modules and self-tests. The modules cover six themes:

- Introductory/Overview
- Watershed Ecology
- Watershed Change
- Analysis and Planning
- Management Practices
- Community/Social/Water Law

Webcast Seminars
http://www.epa.gov/owow/watershed/wacademy/webcasts/

Monthly webcast seminars are available on the EPA's Watershed Academy. Webcast seminars are suitable for citizens, watershed leaders, or local officials, and cover a wide range of watershed-related topics. Powerpoint slides and audio of past seminars are available for download from the site.

Watershed Training Courses
http://www.epa.gov/owow/watershed/wacademy/wsatrain.html

Live watershed-related training courses are available through the EPA's Watershed Academy. These are single- or multi-day workshops or training courses taught by trained professionals from the EPA or other sponsoring organizations. Training courses cover a wide variety of watershed-related topics suitable for citizens, watershed leaders or local officials. Course descriptions are available on the Watershed Academy site. The courses cover some of the following areas:

- Watershed Issues
- Watershed Analysis Tools and Models
- Community Growth Readiness
- Effective Outreach and Engaging Stakeholders
- Water Quality Monitoring

Watershed Academy Publications
http://www.epa.gov/owow/watershed/wacademy/its.html

The Watershed Academy Information Transfer Series documents are technical references that supplement the live and internet-based training courses. These documents are available for free download, and are appropriate for citizens, local watershed leaders, and elected officials.

Handbook for Developing Watershed Plans to Restore and Protect Our Waters
http://www.epa.gov/owow/nps/watershed_handbook/

EPA's Handbook for Developing Watershed Plans to Restore and Protect Our Waters is a resource available online to guide communities or groups in the development and implementation of watershed plans. An EPA webcast on using the handbook is available here: http://www.epa.gov/owow/watershed/wacademy/webcasts/archives.html#20060118

This handbook is intended to help communities, watershed organizations, and state, local, tribal and federal environmental agencies develop and implement watershed plans to meet water quality standards and protect water resources. The handbook goes into more detail than most watershed planning guides, however it is still suitable for use by local watershed groups and local officials.

The handbook describes processes and tools used to quantify pollutant loads, estimate load reductions, and identify management measures needed to achieve the estimated load reductions. The handbook addresses the nine elements of watershed plans required to receive 319 funds. Watershed leadership issues are also discussed, such as finding and engaging stakeholders, as well as providing a structure to maximize stakeholder participation.

The topics covered in the Handbook are as follows:

Chapter 1	Introduction
Chapter 2	Overview of Watershed Planning Process
Chapter 3	Build Partnerships
Chapter 4	Define Scope of Watershed Planning Effort
Chapter 5	Gather Existing Data and Create an Inventory
Chapter 6	Identify Data Gaps and Collect Additional Data If Needed
Chapter 7	Analyze Data to Characterize the Watershed and Pollutant Sources
Chapter 8	Estimate Pollutant Loads
Chapter 9	Set Goals and Identify Load Reductions
Chapter 10	Identify Possible Management Strategies
Chapter 11	Evaluate Options and Select Final Management Strategies
Chapter 12	Design Implementation Program and Assemble Watershed Plan
Chapter 13	Implement Watershed Plan and Measure Progress

Watershed Plan Builder Tool
http://iaspub.epa.gov/watershedplan/watershedPlanning.do?pageId=48&navId=35

This site provides information and tools developed by EPA to assist with the development and implementation of effective watershed management plans. The tool is intended to be used by anyone using the EPA's Handbook for Developing Watershed Plans, usually local watershed group leaders and officials. These activities include the development and implementation of watershed plans, the analysis of data, and the implementation of management practices.

The EPA Watershed Plan Builder Tool can be used in conjunction with the EPA's Handbook for Developing Watershed Plans. As you gather info about your watershed and proceed through the watershed planning process, the information entered into the Watershed Plan Builder Tool can be used as a framework for a comprehensive watershed plan. Within the plan outline there are also links to example plans, as well as useful information sources. A webcast seminar describing how the tool can be used is available here:
http://www.epa.gov/owow/watershed/wacademy/webcasts/archives.html#20070502

Watershed Central
http://www.epa.gov/watershedcentral/

EPA's Watershed Central is a "wiki" site where users supply content, designed to provide state, local and voluntary watershed management entities with a variety of tools and information that will aide in developing and implementing effective watershed management programs. The site includes guidance, tools, case studies, and data sets to help users share information, analyze data, and identify opportunities to initiate or strengthen their watershed efforts.

State Watershed Training Programs

Indiana Watershed Leadership Academy
https://engineering.purdue.edu/~iwla/iwla/

The Indiana Watershed Leadership Academy educates watershed coordinators, teachers, volunteers, engineers, district staff, non-profit organizations, and other interested citizens to lead watershed efforts that improve water quality in Indiana. The main topics covered by the Academy include:

- Organizing and effectively running a watershed group
- Completing a watershed inventory
- Understanding the Clean Water Act
- Understanding local policies and processes
- Estimating pollutant load reductions and associated benefits

The Academy requires the completion of nine (9) distance learning modules (six required modules and three elective modules), which consist of reading required materials and completing a short written assignment. Additional reading materials are included for further study. Participants are also required to attend two (2) watershed workshops, which include meetings, activities and live demonstrations of specific techniques. Academy participants are also required to complete an in-depth learning project within groups of two to four (2 to 4) students. Groups are allowed to choose the topic of the project, and it is recommended that each group member spend approximately ten (10) hours completing the project.

The full course syllabus is available online, as well as academy resources (resource topics include: communication, fundraising, planning and visioning, policy, program evaluation, regulatory and technical). Watershed web videos are also available (video topics include: organizing your watershed group, running effective meetings, group facilitation skills, defining issues and problems, and developing goals and objectives).

A basic outline of the course is as follows:

- Introduction to the Watershed Academy (required module)
- 1st Workshop—Focus on Effective Watershed Planning
- Stakeholder Involvement (required module)
- Tools for Developing a Watershed Inventory (required module)
- Watershed Inventory and Analysis (required module)
- Understanding the Planning Process and Engaging Planning Officials (required module)
- Setting Goals to Achieve Outcomes (required module)
- 2nd Workshop—Focus on Implementing Your Watershed Plan
- Students submit the three elective module choices as well as group members and topic for In-Depth Learning Projects
- Elective Module 1 (Choose 1 module from the following:)
  - Organizing Your Watershed Group
  - Understanding the Clean Water Act
  - Evaluating Your Efforts
  - Effective Outreach Using Social Marketing Strategies
- Elective Module 2 (Choose 1 module from the following:)
  - Running Effective Meetings
  - Understanding Drainage Policy and Practice
  - Sustaining Your Watershed Group Financially
  - Estimating Load Reductions for Best Management Practices
- Elective Module 3 (Choose 1 module from the following:)
  - Group Facilitation Skills
  - Understanding the Clean Water Act
  - Estimating and Presenting Environmental and Economic Benefits
  - Mapping Your Watershed Using GIS
- Graduation Session, including project presentations

Ohio Watershed Academy
http://ohiowatersheds.osu.edu/owa/

The Ohio Watershed Academy is a professional-development course designed to help watershed coordinators, local officials, or other interested participants develop and execute watershed action plans that involve, excite, and commit their communities. Main topics covered by the academy include:

- Organizing and effectively running a watershed group
- Implementing a watershed plan through identifying problems and outlining goals
- Implementing outreach activities
- Understanding the benefits of program evaluation
- Estimating environmental benefits

The Academy also addresses watershed leadership issues, specifically discussing watershed group organization, running effective meetings, group facilitation, negotiation and conflict resolution, and stakeholder involement.

The Academy requires the completion of distance learning modules, which consist of reading required materials and completing a short written assignment. Additional reading materials are included for further study. Participants are also required to attend two (2) watershed workshops, which give students the opportunity to learn from each other and develop new professional relationships. Full syllabus and course materials are available online.

An outline of the course is as follows:

Section 1 Human Dimensions: Collaborating
- Getting Your Watershed Group on Track
- Facilitating Group Decision Making
- Running Effective Meetings
- Stakeholder Involvement
- Basic Negotiation Skills: Applications for Watershed Management

Section 2 Human Dimensions: Understanding and Influencing the Social Environment
- Social Assessment: Getting to Know Your Watershed Communities
- Outreach: Moving From Awareness to Action
- Estimating Environmental Benefits

Section 3 Ecological Dimensions: Monitoring and Assessment
- How Healthy is Your Watershed?
- Data Collection with a Purpose
- Streams Dynamic Equilibrium
- Introduction to Geographic Information Systems

Section 4 Putting it All Together: Watershed Planning and Implementation

- Watershed Planning and Implementation: An Overview
- Defining Watershed Problems
- Developing Goals and Objectives
- Implementing a Watershed Plan
- Evaluation

University Courses

Michigan State University
Virtual Watershed Program
http://35.9.116.206/IWR/vu/watershed.html

The Institute of Water Research and the Department of Community, Agriculture, Recreation and Resource Studies at Michigan State University is currently offering a series of Internet-based courses leading to undergraduate credit, graduate credit or a professional certificate. Those individuals who complete all four courses (3-credits each) will receive a Professional Certificate in Watershed Management. Courses need not be taken in any particular order, however, concepts do build upon each other from one module to the next. These courses are designed for students, watershed leaders, or professionals to update their skills to meet the challenges of resource management under the watershed approach framework.

Each of the four (4) courses in the program are taught through internet-based distance learning, and require an enrollment fee ($450 each). Discussion showed 1/3 of enrolled students are consultants, 1/3 are graduate students, and 1/3 are undergrads/lifelong education particpants. Much of the information pertaining to legal, finanacial, and institutional frameworks for watershed management (fourth course) may be specific to Michigan and the Great Lakes region, and not necessarily applicable to Kentucky.

An outline of each of the four (4) courses is available at this website:
http://35.9.116.206/IWR/vu/module-info.html#Module%201

An overview of each course is as follows:

Course 1 Watershed Concepts
Introduces students to the foundations of watershed hydrology and management. Each unit presents a key concept, followed by descriptions of available data, monitoring and evaluation techniques, and assessment tools pertaining to that concept

Course 2 Building and Implementing Watershed Plans
Explores the process of developing and implementing a watershed management plan, from problem definition through data collection, public consultation, and program evaluation. Case

studies will showcase watershed management plans that have been implemented in other watersheds

Course 3 Watershed Assessments and Tools
Presents techniques for assessing and predicting physical, chemical, biological and socioeconomic conditions within a watershed, including indicators, water quality monitoring, bio-assessment protocols, and pollutant loading models

Course 4 Legal, Financial and Institutional Frameworks for Watershed Management
Introduces key legal, financial and institutional structures for watershed management, including an in-depth study of Clean Water Act programs.

An additional 1-credit course entitled "Watershed Concepts and Management for Local Officials, Public Administators and Practitioners" is intended to introduce Local Officials, Public Administrators and Practitioners to the foundations of watershed hydrology and management. This is a streamlined, shortened, and less technical version of the graduate-level course. The course topics include:

1. Introduction to Watershed Management
2. Hydrologic Cycle, Water Balance, Precipitation
3. Soils and Infiltration
4. Fluvial Processes: Hydraulics and Hydrology of Stream and River Systems
5. Water Quality and Aquatic Ecosystems
6. Point and Non-Point Source Pollution: Regulatory Framework and Related Best Management Practices

Other Courses

Wetland Restoration Institute

The Wetland Restoration Institute is designed to help individuals working for government agencies, nonprofit organizations, and consulting firms to initiate and to advance a wetland and stream restoration program. Following successful completion of the course, participants will be awarded a certificate for 55 hours of Continuing Education Credit from the University of Kentucky (16 hours lecture, 39 hours field). The certificate will be provided only to those who successfully attend the entire week of training.

This week-long training course is a hands-on wetland restoration workshop where participants learn how to identify drained wetlands and restore them by becoming involved in the actual construction of wetlands from start to finish. Techniques for establishing native plants, increasing amphibian populations, benefiting endangered and threatened species, and treating runoff are taught in a field setting where participants can be expected to use what they've learned to begin building wetlands.

Topics covered during the course include:

- Restoring Wetlands at Schools, in Fields, and Forests
- How They Pulled the Plug, a History of Wetland Drainage
- Examination of drained wetlands and altered creeks -Field Trip
- Examination of plants, reptiles, birds, and soils within constructed wetlands
- Stream Restoration Techniques
- Dix River Wetland and Stream Mitigation Project
- Permitting and the Path to Wetland Restoration
- The Wetland Reserve Program
- Construction of an ephemeral wetland using a dozer and an excavator
    - Finding a suitable location
    - Practical design and layout
    - Contracting heavy equipment and hiring an operator
    - Obtaining permits
    - Removing and hiding vegetation
    - Removing and storing topsoil
    - Replacing topsoil
    - Preparing the core
    - Shaping and packing the dam
    - Building the spillway
    - Landscaping techniques for reducing maintenance
    - Improving habitat for reptiles and amphibians (placing logs and branches)
    - Controlling erosion (seeding and mulching)
    - Establishing native plants
- Improving habitat around the wetland (bat roosting boxes, bird nest boxes, dragonfly perches)
- Field Activity: Sampling bat use of ridge-top wetlands using mist-netting and Anabat techniques
- Field Activity: Restoration of forested & ephemeral wetlands
    - Removing vegetation
    - Removing and storing topsoil
    - Preparing the core
    - Water Control Structure Installation
    - Shaping and packing the dam
    - Building the spillway
    - Replacing topsoil
    - Landscaping techniques for reducing maintenance
    - Improving habitat for reptiles and amphibians (placing logs and branches)
    - Controlling erosion (seeding and mulching)
- Planting native plants
- How to Reel-in Grants for Environmental Projects
- Waste-Water Wetlands, Household Systems-Field Trip
- Field Trip: Constructing Wetlands for storm water and for outdoor education

- Wetland Education Strategies and Wetland Curriculum Guides

Wetland Drainage, Restoration and Repair
http://www.kentuckypress.com/viewbook.cfm?Category_ID=1&Group=54&ID=1396

Designed to replace the highly successful publication *A Guide to Creating Vernal Ponds* (32,000 copies distributed), this book by Tom Biebighauser will show how to build a variety of wetlands in forested areas, open fields, timber sale units, at schools, backyards, and mined areas. The pages will focus on the latest technologies for successful wetland establishment and management including the use of synthetic liners, removal of subsurface permeable layers, crayfish burrows, remote controlled water control structures, groundwater dams, use of modern explosives, and rising of the water table. Readers will find easy to follow directions on how to restore wetlands on ridge-tops, slopes, and in riparian areas. Tips on working with the Endangered Species Act, Cultural Resources Protection Act, Clean Water Act, and advice on how to obtain permits from the Army Corp of Engineers and State Agencies will be included.

The text of choice for land managers interested in learning how to recognize drained wetlands and how to restore them, the information presented in this book is suitable for professionals, as well as private landowners planning their first wetland project. The directions included are simple to follow and will result in success. Helpful organizations and websites are also listed. An excerpt of the book can be found at: http://www.kentuckypress.com/0813124476excerpt.pdf.

3.3 ADDITIONAL COURSES TO CONSIDER

This section provides information on the courses that contain watershed-related materials that will be used during the development of the KWLA training course. Watershed-related materials will be compiled from these courses and included on an accompanying CD.

Kansas Environmental Leadership Program (KELP)
http://www.oznet.ksu.edu/kelp/

The Kansas Environmental Leadership Program (KELP) is a new approach to community leadership training. KELP offers a combination of activities for leadership studies and research on water quality. The result is an experience in leadership that will prepare graduates to be catalysts for water quality protection.

- Addresses EPA 319(h) requirements
- Five (5) face-to-face meetings
- Contains useful information concerning leadership in a general sense—leadership materials can be found here: http://www.oznet.ksu.edu/library/misc2/s137.pdf
- Introduction to water infrastructure

- Brief discussion of NPS management techniques
- Brief discussion of monitoring techniques and goals
- Brief discussion of groundwater management
- Some content specific to Kansas
- Main topics include: Organizing and effectively running a watershed group, implementing outreach activities, performing a watershed assessment
- Syllabus and materials available online here: http://www.oznet.ksu.edu/library/h20ql2/kelp_mod/kelp_modules.pdf
- Focuses more on leadership, public relations, conflict management, etc.

Iowa State University
http://www.soc.iastate.edu/extension/watersheds_manual/index.htm

Renewing Local Watersheds: Community Leaders' Guide to Building Watershed Communities

This community leaders' guide offers a process for local residents to come together as a group to learn about their watershed and become more actively involved in the management of their waters. It is designed for use by local leaders, community development specialists, extension educators, and technical experts who are seeking ways to increase citizen participation in land use and water decisions.

- Provides a document that will help communities be able to organize and effectively run a local watershed group
- Available online

3.4 PRELIMINARY SOURCES FOR KWLA COURSE CONTENT

This section provides information on the departments, programs or organizations with watershed-related materials that will be used during the development of the KWLA training course. Watershed-related materials will be compiled from these sources and included on an accompanying CD.

Kentucky Division of Water

Kentucky Watershed Management Framework
http://www.watersheds.ky.gov/framework/

The Kentucky Watershed Management Framework is a dynamic, flexible structure for coordinating watershed management across the commonwealth of Kentucky. The Watershed Management Framework is not a new program, but rather a way of coordinating existing programs and building new partnerships that will result in more effective and efficient

management of the state's land and water resources. Inherent in the design of the framework is the belief that many stakeholder groups and individuals must have ongoing opportunities to participate in the process of managing the abundant natural resources that characterize Kentucky's watersheds.

The main components of the Framework include the establishment of:

- Basin management units
- A basin management cycle
- A statewide basin management schedule
- Forums to support cooperative action
- Basin Management Plans and Watershed Action Plans

The Framework document details the organization of effectively organizing and running a watershed group at the state and local level and is available online.

Kentucky Division of Water and University of Louisville

Commonwealth Water Education Project

http://www.inyourwater.org/index.html

The Commonwealth Water Education Project is a partnership of people in Kentucky, working together to help keep Kentucky's streams and rivers healthy for drinking, swimming, fishing, and boating—for us and for future generations.

The Kentucky Wet Growth Tools for Sustainable Development handbook will present information, tools, and best practices for how Kentucky localities can adapt, manage, and control land development and growth to protect water quality and watershed health and integrity. The handbook will be written for and distributed to city and county officials in Kentucky, land development professionals, community and civic groups, and planning and environmental professionals. The handbook will enable local communities to select tools and best practices that are appropriate to their particular circumstances and needs. Examples include:

- Center for Watershed Protection Codes & Ordinances Worksheet
- Low-Impact Development
- Stormwater Runoff Control Best Management Practices
- Watershed Planning
- Land Conservation Policies and Tools
- Green Infrastructure
- Smart Growth Policies and Tools
- Wet Growth (integrated growth management) Policies & Tools

Center for Watershed Protection

Resources
The Center for Watershed Protection (CWP) has many resources related to a wide range of watershed related topics, including watershed protection, watershed restoration, and better site design (all available as free downloads).

The Practice of Watershed Protection:
http://www.cwp.org/Resource_Library/pwp.htm

This comprehensive reference contains 150 articles on all aspects of watershed protection and represents a broad interdisciplinary approach to restoring and maintaining watershed health. These resources deal with stormwater pollution, habitat and biodiversity, as well as eight watershed protection tools, including:

- watershed planning
- land conservation
- aquatic buffers
- better site design
- erosion and sediment control
- stormwater management practices
- control of non-stormwater discharges
- watershed stewardship

Urban subwatershed restoration manual series:
http://www.cwp.org/Store/usrm.htm

Under an EPA grant, the CWP developed from 2003 to 2008 an eleven-manual series on practical techniques to restore urban watersheds. The manuals cover the seven major practices used to restore urban watersheds: stormwater retrofits, stream repair, riparian management, discharge prevention, pollution source controls, watershed forestry and municipal operations. In addition, the series outlines new methods for desktop and field assessment and stakeholder management to develop effective small watershed restoration plans, and presents an integrated framework for urban watershed restoration.

Better Site Design Handbook:
http://www.cwp.org/Store/bsd.htm

Covering everything from basic engineering principles to actual vs. perceived barriers to implementing better site designs, the handbook outlines 22 guidelines for better developments and provides detailed rationale for each principle. Better Site Design also examines current practices in local communities, details the economic and environmental benefits of better site

designs, and presents case studies from across the country. Includes a sample Codes & Ordinances Worksheet.

Training
http://www.cwp.org/Our_Work/Training/

The CWP is dedicated to providing local staff, consultants, watershed groups, and other watershed managers with the skills and the tools they need to do more effective watershed work. To this end, they provide technical training on specific watershed management topics through Institutes, Workshops and Presentations, and Distance Learning.

Institutes: Center Institutes offer a limited number of participants a 3-5 day intense training program focused on watershed restoration and protection methods and stormwater management. These programs effectively empower local watershed practitioners with the skills, tools, and confidence to assess, design and implement effective programs in their home watersheds. Institutes combine classroom time, design exercises and field visits to provide a comprehensive learning experience. The participants also benefit from the Institute's caucuses, networking, extensive online supporting materials, and often several hours of consultations with Center staff.

Workshops and Presentations: The CWP is dedicated to training watershed managers around the country to protect, manage and restore our streams, lakes and rivers. Presentations at conferences or customized workshops provide communities with specific guidance on the types and combinations of watershed protection and restoration tools to apply, leading to more effective local watershed protection and restoration efforts. 60 training modules are available in eight topic areas. Training workshops range from half-day sessions up to 3 days.

Distance Learning: In 2006, the CWP partnered with University of Maryland University College to develop an online university course on urban watershed management. The *Introduction to Urban Watersheds* class covers: 1) the basics of watersheds, including hydrology, geomorphology, water quality, and biology; 2) the land development process and its impact on each of these systems; and 3) an introduction to watershed management methods. The class contains numerous interactive elements, including delineation of a subwatershed, intensive exchange with students for a semester, and lessons learned for future University-based teaching.

University Programs

University of Connecticut
Nonpoint Source Education for Municipal Officials (NEMO)
http://nemo.uconn.edu/

NEMO is a University of Connecticut program for local land use officials who are addressing the relationship of land use and natural resources.

- Offers workshops focused on land use planning as it relates to protecting water quality
- Workshop topics include: Stormwater planning, natural resource planning in watersheds, and open space planning
- Many publications and resources are available through the NEMO website providing information on low-impact design and planning to reduce impervious surfaces and improve water quality.

Other Watershed Training Programs

Natural Resource Conservation Service (NRCS) and US Army Corps of Engineers (USACE) Partnership
http://wmc.ar.nrcs.usda.gov/partnerships/COE/actionplan.html

The NRCS/USACE Partnership Agreement, signed July 7, 2005, promotes a long-term working relationship to improve the management of water and related natural resources under the missions and authorities of NRCS and USACE. The NRCS and USACE have pledged to work together in the following areas: 1) *watershed planning; 2) wetlands creation, restoration and enhancement; 3) natural disaster recovery; and 4) wetlands conservation and regulatory compliance.* This partnership includes several collaborative efforts including development of a multi-tiered watershed curriculum.

http://wmc.ar.nrcs.usda.gov/partnerships/COE/agreement.html

In terms of watershed planning, this agreement supports both agencies seeking ways to integrate water resources programs and initiatives in order to develop more complete and efficient water resources projects for project sponsors, and improved watershed resources management for the broader range of watershed stakeholders. Example topics that may be addressed include:

- Coordination and Collaboration in Water Resources Activities
- System Approaches to Managing Sediment and Potential Pilot Projects
- Models, Tools, and Technologies related to water and natural resource planning
- Pilot Water Resources Projects
- Innovations and Impediments to collaborative watershed approaches to resource development and management
- Watershed planning, training and technology exchange
- Integrated process to assist watershed project sponsors in obtaining 404 permits
- Increased technology, services, and data exchange to assure safety of new and existing dams.

NRCS and USACE are currently collecting existing watershed training course information, which will be made available on their website.

Rapid Watershed Assessment The Natural Resources Conservation Service (NRCS) is encouraging the development of rapid watershed assessments in order to increase the speed and efficiency generating information to guide conservation implementation, as well as the speed and efficiency of putting it into the hands of local decision makers. These assessments are conducted by watershed planning teams traveling through each watershed, meeting with landowners and conservation groups, inventorying agricultural areas, identifying conservation opportunities and current levels of resource management, and estimating impacts of these opportunities on the local priority resource concerns. While these rapid assessments provide less detail and analysis than full-blown studies and plans, they do provide the benefits of NRCS locally-led planning in less time and at a reduced cost. The benefits include:

- Quick and inexpensive plans for setting priorities and taking action
- Providing a level of detail that is sufficient for identifying actions that can be taken with no further watershed-level studies or analyses
- Actions to be taken may require further Federal or State permits or ESA or NEPA analysis but these activities are part of standard requirements for use of best management practices (BMPs) and conservation systems
- Identifying where further detailed analyses or watershed studies are needed
- Plans address multiple objectives and concerns of landowners and communities
- Plans are based on established partnerships at the local and state levels
- Plans enable landowners and communities to decide on the best mix of NRCS programs that will meet their goals
- Plans include the full array of conservation program tools (i.e. cost-share practices, easements, technical assistance)

Additional information concerning NRCS rapid watershed assessments is here: http://www.nrcs.usda.gov/programs/rwa/

Cumberland River Compact
The Cumberland River Compact provides a number of programs to the citizens and businesses of the Cumberland River Basin to encourage improved water quality. Some of these programs are discussed below.

Local Officials Community Water Curriculum
http://cumberlandrivercompact.org/programs_lowc.shtml

The Local Officials Community Water Curriculum (LOC) delivers high-quality water education directly to local officials in your community. This comprehensive curriculum provides community leaders with valuable information to make informed decisions about the water infrastructure issues facing their community. The Local Officials Curriculum Program offers over 35 different education courses taught by experts on water quality.

- The education courses are part of the Community Water Resources Program, which is tailored to fit the needs of individual communities. More program information is here: http://cumberlandrivercompact.org/programs_lowc_water_res.shtml

- Courses are delivered directly to local community officials and can range from summaries to all day technical trainings. Topics include: stormwater, land use, stream health, water quality in karst areas, and more
- Stantec is working with the Cumberland River Compact to facilitate watershed education by coordinating the efforts of the KWLA project

The Watersheds Program
http://www.cumberlandrivercompact.org/programs_watersheds.shtml

The Watersheds Program facilitates and encourages the formation and growth of autonomous watershed organizations within each of the 14 watersheds in the Cumberland River Basin. Follow-up and assistance is provided for each newly formed watershed association, as well as education and outreach programs for the general public.

- The process involves holding geographical focus groups to find out what the issues are in each particular watershed
- If stakeholders are interested, a series of 6-8 educational meetings are held to bring in experts to talk about the issues facing that particular watershed
- After the educational meetings have been completed, stakeholders often decide to form their own local watershed organizations

Building Outside the Box
http://cumberlandrivercompact.org/programs_bob.shtml

Building Outside the Box (BOB) is a project to demonstrate sustainable building practices and stream restoration techniques that improve water quality in three impaired streams in the Cumberland River Basin.

- Educational activities through the BOB program are part of partnerships with the Southeast Watershed Assistance Network (SWAN), the Southeast Watershed Forum, TVA and more
- A list of educational watershed resources, along with the SWAN events calendar, can be found here: http://swan.southeastwaterforum.org/resources/categories.asp

Southeast Watershed Forum, the Tennessee Department of Agriculture, the University of Tennessee's Water Resources Research Center, and TVA
http://www.tva.gov/river/watersupply/responsibilities.htm

The Southeast Watershed Forum, along with the Tennessee Department of Agriculture, the University of Tennessee's Water Resources Research Center, and the Tennessee Valley Authority (TVA), has developed and promotes the Tennessee Growth Readiness Program. The program provides information and tools that empower local officials to influence and manage urban growth in their communities. Tools are introduced through a series of workshops that

draw together a diverse group of stakeholders; including local government officials, developers, business owners, grass root organizations and citizens. More information about the Tennessee Growth Readiness Program can be found here:
http://swan.southeastwaterforum.org/resources/files/tngrowthreadiness.pdf

The Community Growth Readiness Initiative provides both an information/training approach as well as a facilitative approach to assist community leaders in reviewing current land use practices. The information and training includes presentations on the impact of imperviousness on watershed functions and the economics of good watershed management and site design. The timing of this program with new Stormwater Phase II requirements makes it particularly relevant as communities look for inexpensive, nonstructural approaches to managing polluted runoff.

Our One-Day and Half-Day Community Growth Readiness Workshops are tailored to each community's specific goals and objectives. They provide an overview of the economic drivers for quality growth planning, watershed protection and stormwater management. Using group instruction, hands-on activities, proven techniques, regional case studies, and small group discussions, your community will come away with specific steps to shape growth, maintain water quality and preserve local quality of life. More information and a sample agenda can be found here: http://www.southeastwaterforum.org/pdf/training/SmartGrowthFlyer-Revise1.pdf

Training Programs Dealing with Karst Areas

British Columbia Ministry of Forests and Range
Karst Management Handbook Training
http://www.for.gov.bc.ca/hfp/training/00008/index.htm

This web-based forest practices course will help you understand the contents of the *Karst Management Handbook for British Columbia*, published in 2003 by the Ministry of Forests (http://www.for.gov.bc.ca/hfp/publications/00189/Karst-Mgmt-Handbook-web.pdf).

The handbook is intended to assist in the development of appropriate management practices when conducting forest operations on karst terrain. The recommended best management practices contained in the handbook are designed to effectively manage both surface and subsurface karst resources, primarily through appropriate management activities on the surface.

National Conservation Training Center
Growing Communities on Karst Workshop
http://colab.cim3.net/file/work/SICoP/Karst2007/ConferenceBrochure.pdf
http://growingcommunitiesonkarst.wik.is/2008_September_17-18

Local governments that apply alternative planning, design and engineering techniques on karst and other sensitive lands can achieve watershed-friendly, economically sustainable growth. This workshop focuses on progressive strategies for site evaluation, wastewater and storm water

management, water supply protection, and construction. Demonstrations of geotechnical equipment, case histories of local efforts to control development on karst lands, and panel discussions of successful public policies will provide participants with vital tools for balancing development pressure with natural resource protection. This 2 day workshop is intended for many different types of professionals, including local elected officials, planners, stormwater coordinators and developers.

Local Resources
The Kentucky Geological Survey, US Geological Survey and Western Kentucky University have information regarding karst and cave systems that could form the basis for a KWLA module on karst systems.

Other Materials

Bylaws from Watershed Groups
Bylaws of various Watershed Associations can be found here:
http://www.stoneswatershed.org/bylaws.pdf
http://www.westfieldriver.org/archive/bylaws.html
http://www.bearcreekwatershed.org/Program%20Elements/By%20laws%202003.pdf

4.0 Findings

The initial web search found numerous watershed training courses and sources of watershed-based information. This section discusses the research findings in terms of strengths and limitations of the materials found as they relate to the development of the KWLA training course.

4.1 INITIAL STRENGTHS

The existing watershed training courses provided examples of many different learning methods, including distance learning through the use of computer modules, required readings, homework assignments and small group projects, as well as face-to-face meetings, demonstrations, training sessions and workshops. Many watershed training courses posted their course materials, including course schedules and syllabus', available online.

Watershed leadership, which involves engaging stakeholders, running effective watershed meetings, resolving conflicts and many other issues, was discussed in various watershed training course materials as well as other sources of watershed-based information.

The watershed planning process, which relates to EPA's nine (9) requirements of a 319(h) funded watershed plan, was outlined and discussed by various watershed training course materials as well as other sources of watershed-based information.

Various organizations focus on educating local officials on how land development and growth can be managed to protect and improve water quality and watershed health. Topics included the benefits of educated land use decisions (such as low impact design and sustainable building practices) as well as implementing low impact design principles into local ordinances.

4.2 INITIAL LIMITATIONS

The initial web search did not provide much information that addressed watershed health and water quality with respect to the following issues:

- Karst areas
- Mining practices

These topics, which are important to Kentucky, were not well addressed in the watershed training courses identified through this research. Unless additional information is identified, it may be necessary to develop new training materials for developing watershed plans to manage water resources in these areas. The Kentucky Geological Survey, US Geological Survey and Western Kentucky University have information regarding karst and cave systems that could form the basis for a KWLA module on karst systems.

5.0 Recommendations

This section provides recommendations for the course structure and content, as well as recommendations for filling any knowledge gaps mentioned in section 4.

- Consider a course structure similar to the Indiana Watershed Leadership Academy (IWLA), which includes distance learning modules, two face-to-face meetings, and a small group project.
- Borrow from the content of the Ohio Watershed Academy (OWA) and the Kansas Environmental Leadership Program (KELP) for developing the course content related to watershed leadership.
- Reference the Watershed Planning Guidebook (KDOW and KWA), the Handbook for Developing Watershed Plans (EPA) and the modules of the IWLA for developing the course content related to the watershed planning process.

- Reference the materials from the Cumberland River Compact (CRC), Tennessee Valley Authority (TVA) and the University of Connecticut NEMO, as well as the Center for Watershed Protection (CWP), and the Commonwealth Water Education Project (CWEP; UL and KDOW). Use these materials to develop course content educating local officials on the benefits of low impact design and sustainable building practices that will lead to improved watershed health and water quality.
- Consider a watershed training course with "dual tracks":
    - Watershed Planning Track: Focus this track on providing technical watershed planning and leadership training to watershed coordinators and other water resource managers.
    - Local Officials Track: Provide a short course to educate local officials about the benefits of watershed based plans, low impact development, green infrastructure. This track would include a subset of the information presented in the Watershed Planning Track.

6.0 Next Steps

During the Program Development Phase:

- Discuss and receive input concerning course requirements and course structure from the Program Development Committee.
- Develop the course requirements and course structure.
- Receive feedback from the Program Development Committee and finalize the program's course requirements and course structure.

During the Program Implementation and Sustainability Phase:

- Develop and produce course materials
- Select and train course instructors
- Conduct three training sessions
- Evaluate measures of success

7.0 References

Biebighauser, Thomas R. Wetland Drainage, Restoration and Repair. 2007. The University Press of Kentucky. ISBN: 978-0-8131-2447-6. 230pp. http://www.kentuckypress.com/viewbook.cfm?Category_ID=1&Group=54&ID=1396

British Columbia Ministry of Forests and Range. Karst Management Handbook. http://www.for.gov.bc.ca/hfp/publications/00189/Karst-Mgmt-Handbook-web.pdf

British Columbia Ministry of Forests and Range. Karst Management Handbook Training. http://www.for.gov.bc.ca/hfp/training/00008/index.htm

Center for Watershed Protection. Better Site Design Handbook. http://www.cwp.org/Store/bsd.htm

Center for Watershed Protection. The Practice of Watershed Protection. http://www.cwp.org/Resource_Library/pwp.htm

Center for Watershed Protection. Training. http://www.cwp.org/Our_Work/Training/

Center for Watershed Protection. Urban Subwatershed Restoration Manual Series. http://www.cwp.org/Store/usrm.htm

Cumberland River Compact. Building Outside the Box. http://cumberlandrivercompact.org/programs_bob.shtml

Cumberland River Compact. Local Officials Community Water Curriculum. http://cumberlandrivercompact.org/programs_lowc.shtml

Cumberland River Compact. The Watersheds Program. http://www.cumberlandrivercompact.org/programs_watersheds.shtml

Indiana Watershed Leadership Academy. https://engineering.purdue.edu/~iwla/iwla/

Iowa State University. http://www.soc.iastate.edu/extension/watersheds_manual/index.htm

Kansas Environmental Leadership Program. http://www.oznet.ksu.edu/kelp/

Kentucky Division of Water. Kentucky Watershed Management Framework. http://www.watersheds.ky.gov/framework/

Kentucky Division of Water and Kentucky Waterways Alliance. Watershed Planning Guidebook. http://www.kwalliance.org/Publications/WatershedPlanningGuidebook/tabid/271/Default.aspx

Kentucky Division of Water and University of Louisville. Commonwealth Water Education Project. http://www.inyourwater.org/index.html

Kentucky Watershed Leadership Academy. Phase I: Program Development Needs Catalogue Interim Report—Final. http://kywla.org/documents/draft/

Miscellaneous Watershed Group Bylaws.
http://www.stoneswatershed.org/bylaws.pdf
http://www.westfieldriver.org/archive/bylaws.html
http://www.bearcreekwatershed.org/Program%20Elements/By%20laws%202003.pdf

Michigan State University. Virtual Watershed Program.
http://35.9.116.206/IWR/vu/watershed.html

National Conservation Training Center. Growing Communities on Karst Workshop.
http://growingcommunitiesonkarst.wik.is/2008_September_17-18

Natural Resource Conservation Service (NRCS) and US Army Corps of Engineers (USACE).
http://wmc.ar.nrcs.usda.gov/partnerships/COE/actionplan.html

Natural Resource Conservation Service (NRCS) and US Army Corps of Engineers (USACE). Rapid Watershed Assessments. http://www.nrcs.usda.gov/programs/rwa/

Ohio Watershed Academy. http://ohiowatersheds.osu.edu/owa/

Southeast Watershed Forum, the Tennessee Department of Agriculture, the University of Tennessee's Water Resources Research Center, and the Tennessee Valley Authority.
http://www.tva.gov/river/watersupply/responsibilities.htm

Southeast Watershed Forum, the Tennessee Department of Agriculture, the University of Tennessee's Water Resources Research Center, and the Tennessee Valley Authority. Tennessee Growth Readiness Program.
http://swan.southeastwaterforum.org/resources/files/tngrowthreadiness.pdf

United States Environmental Protection Agency. Handbook for Developing Watershed Plans to Restore and Protect Our Waters. http://www.epa.gov/owow/nps/watershed_handbook/

United States Environmental Protection Agency. Watershed Academy.
http://www.epa.gov/owow/watershed/wacademy/

United States Environmental Protection Agency. Watershed Central.
http://www.epa.gov/watershedcentral/

United States Environmental Protection Agency. Watershed Plan Builder Tool.
http://iaspub.epa.gov/watershedplan/watershedPlanning.do?pageId=48&navId=35

University of Connecticut. Nonpoint Source Education for Municipal Officials (NEMO).
http://nemo.uconn.edu/

Wilbur, Jack. Getting Your Feet Wet with Social Marketing: A Social Marketing Guide for Watershed Programs. 2006. Utah Department of Agriculture and Food. Salt Lake City, Utah. 132 pp. http://ag.utah.gov/conservation/GettingYourFeetWet1.pdf

Appendix 1:

Summary Table of Research Results

	Watershed Planning Guidebook (KDOW; KWA)	Watershed Academy (EPA)	Handbook for Developing Watershed Plans (EPA)	Watershed Plan Builder Tool (EPA)	Watershed Central (EPA)	Indiana Watershed Leadership Academy	Ohio Watershed Academy	Michigan State University (Virtual Watershed Program)	Wetland Restoration Institute	Wetland Drainage, Restoration and Repair	Kansas Environmental Leadership Program
Main Topics/Comments	Guidebook provides a detailed overview of the watershed planning process in Kentucky; used in conjunction with the EPA Handbook; KWA also provides training to local watershed groups	50 free, self-paced training modules providing training and information on implementing watershed approaches; Main themes are Introductory and Overview, Watershed Ecology, Watershed Change, Analysis and Planning, Management Practices, Community/Social/Water Law	Intended to help communities, watershed organizations, and state, local, tribal and federal environmental agencies develop and implement watershed plans to meet water quality standards and protect water resources	Developed by EPA to assist with the development and implementation of effective watershed management plans. Designed for people who are involved in watershed management activities	Developed by EPA to provide state, local and voluntary watershed management entities with a variety of tools and information that will aide in developing and implementing effective watershed management programs	Main Topics: Watershed group management, Completing a watershed inventory, Understanding regulations and policies, estimating pollutant reductions and benefits	Does a good job of dealing with the logistics and organization of the watershed group with respect to the community and stakeholders (modules 1-7); the benefits and logistics of program evaluations are discussed (Module 16)	Course topics include watershed hydrology and management, developing and implementing a watershed management plan, assessing and predicting conditions within a watershed and legal, financial and institutional structures for watershed management	A week-long training course and hands-on wetland restoration workshop where participants learn how to identify drained wetlands and restore them by becoming involved in the actual construction of wetlands from start to finish	Shows how to build a variety of wetlands in forested areas, open fields, timber sale units, at schools, backyards, and mined areas, focusing on the latest technologies for successful wetland establishment and management	Discusses group leadership and organization in a general sense, provides background info on water infrastructure, dicusses groundwater management. Some content specific to Kansas
Learning methods		Distance learning modules	Materials available online	Materials available online	"Wiki" site includes user-generated content, materials available online	Distance learning and face-to-face workshops, as well as a group project	Distance learning and face-to-face workshops, group projects	Distance learning courses	Week-long course with presentations, field trips, and activities	Document for sale online	5 face-to-face meetings
Materials available?	Handbook available online	Materials available online	Materials available online	Materials available online	Materials available online	Yes- Online	Yes- Online	Yes- Online	Yes- Online	For sale online	Yes- Online
Watershed leadership addressed?	Leadship addressed through discussions of how to facilitate a collaborative watershed planning approach and facilitating stakeholder involvement	Leadership addressed through discussions of developing sustainable financial plans and conducting outreach campaigns	Yes; (Chapter 3) Stakeholders are identified and engaged, a structure to facilitate participation is encouraged; conflict resolution is not discussed	No	Leadership addressed through discussions of identifying key stakeholders and issues of concern, as well as conducting public outreach	Leadership addressed through discussions of identifying and engaging stakeholders, organizing the watershed group, running effective meetings, group facilitation and conflict resolution (Modules R2, E1, E2 and E3)	Leadership addressed through discussions of watershed group organization, running effective meetings, group facilitation, negotiation and conflict resolution, and stakeholder involement (Modules 2, 3, 4, 5, 6)	Leadership addressed through discussions of stakeholders, outreach and education, using adaptive management to guide the planning process, working with local agencies and citizens, as well as understanding, analyzing, and handling watershed conflicts	No	No	Leadership addressed through discussions of the components of leadership, the importance of public relations, as well as conflict management and negotiations
EPA 319 Requirements											
A. ID causes and sources	Chapter 2	Watershed Change Modules	Chapter 7			Module R4, “Watershed inventory and analysis”	Module 9, “How healthy is your watershed?”				
B. Estimate load reductions	Chapter 3; Many spreadsheet tools and other models mentioned for estimating load reduction	Analysis and Planning Modules; various models mentioned for estimating load reduction	Chapter 8; 7 models are discussed (page 8-19)			Module E6, “Estimating pollutant load reductions for BMPs”; discusses STEPL model	Module 11, “Developing goals and objectives”; reference materials discuss the Agricultural Nonpoint Source Pollution (AGNPS) model				
C. Describe NPS management measures	Chapter 4	Management Practices Modules	Chapter 10 and 11			Module R6, E4, E5 and E6 (planning process, Clean Water Act, drainage policy, BMP load reductions	Module 14, “Natural stream channel design”				Brief discussion
D. Estimate technical and financial assistance needed	Chapter 4	Community/Social/Water Law Modules	Chapter 12			Module R5 and E8 (setting goals, and financial sustainability)					
E. Describe information/education component for public understanding	Chapter 4	Community/Social/Water Law Modules	Chapter 12			Module E7 and E9 (evaluating efforts and presenting benefits)	Module 16 and 17 (evaluation and estimating benefits)				
F. NPS management implementation schedule	Chapter 5		Chapter 12			Module R5, “Setting goals to achieve impact”					Brief discussion
G. Describe interim milestones	Chapter 5		Chapter 13			Module E7, “Evaluating your efforts”					
H. Describe criteria used to determine whether load reductions are being met	Chapter 5		Chapter 13			Module E7, “Evaluating your efforts”					
I. Describe monitoring component	Chapter 5		Chapter 13			Demonstrations on collecting WQ data, stream monitoring and goals, macroinv., stream ecology and geomorph.					Brief discussion

	Iowa State University	Kentucky Watershed Management Framework (KDOW)	Commonwealth Water Education Project (KDOW; Uof L)	Center for Watershed Protection	University of Connecticut (NEMO)	NRCS and USACE	Cumberland River Compact	Southeast Watershed Forum, TDA, UT's Water Resources Research Center, TVA	British Columbia Ministry of Forests and Range, Karst Management Handbook Training	National Conservation Training Center Growing Communities on Karst Workshop
Main Topics/Comments	A document that provides a broad overview of the whole process of forming and running a watershed group. Similar to the Kentucky Watershed Management Framework	Provides a structure for coordinating and managing a statewide watershed program	Currently developing the Kentucky Wet Growth Tools for Sustainable Development handbook, which will present information, tools, and BMPs for how localities can adapt, manage, and control land development and growth to protect water quality and watershed health and integrity (will be available June 2009)	Provides resources related to a wide range of watershed related topics, including watershed protection, watershed restoration, and better site design. Also, the CWP provides technical training on specific watershed management topics through Institutes, Workshops and Presentations, and Distance Learning.	Similar to the Tennessee Growth Readiness Program in that it focuses on educating local officals making land use decisions (low impact development, etc); resources online	NRCS and USACE are currently collecting existing watershed training course information. Also, NRCS is focusing on rapid watershed assessments, which may aid local communities in their watershed assessments or inventories	(LOCWC) Delivers educational courses to local officials concerning water quality. Topics include: stormwater, land use, stream health, water quality in karst areas, and more; (TWP) encourages stakeholders in a watershed to form local groups addressing watershed issues; (BOB) educates and demonstrates sustainable building practices	Workshops educate local planners, officials and developers on the water quality benefits of low impact design. Getting low impact design principles into local ordinances is a focus	The handbook is intended to assist in the development of appropriate management practices when conducting forest operations on karst terrain. The recommended best management practices contained in the handbook are designed to effectively manage both surface and subsurface karst resources, primarily through appropriate management activities on the surface	This 2 day workshop is intended for many different types of professionals, including local elected officials, planners, stormwater coordinators and developers, and focuses on progressive strategies for site evaluation, wastewater and storm water management, water supply protection, and construction
Learning methods	Document available online	Document available online	Materials available online	Distance learning, face to face training sessions	Online resources, face-to-face workshops and training sessions		Face-to-face seminars, workshops and training sessions	Materials available online, face-to-face workshops and seminars	Document available online	Face-to-face seminars and workshops
Materials available?	Document available online	Document available online	Materials available online	Not online	Materials available online		Materials available online	Materials available online	Document available online	Presentations available online
Watershed leadership addressed?	Leadership addressed through discussions of group facilitation, forming local watershed groups, conducting group meetings, and sustaining local interest	Leadership addressed through discussions of organizing and implementing Basin Management Plans and Watershed Action Plans	No	Leadership addressed through discussions of involving a wide range of stakeholder groups	No		Leadership addressed through educational discussions encouraging the formation of local watershed groups	No	No	No
EPA 319 Requirements										
A. ID causes and sources				Urban Subwatershed Restoration Manual 8				Workshops discuss the impacts of urbanization on watersheds		
B. Estimate load reductions										
C. Describe NPS management measures				Urban Subwatershed Restoration Manuals 3, 4, 8 and 9				Workshops discuss the WQ benefits of low impact design principles	Karst Best Management Practices are described	
D. Estimate technical and financial assistance needed				Urban Subwatershed Restoration Manual 2						
E. Describe information/education component for public understanding				Urban Subwatershed Restoration Manuals 8 and 9						
F. NPS management implementation schedule										
G. Describe interim milestones										
H. Describe criteria used to determine whether load reductions are being met										
I. Describe monitoring component										

Appendix F

Course Requirements and Outline Report

Kentucky Watershed Leadership Academy
Phase I: Program Development
Course Requirements and Outline

June 2009

Stantec

KENTUCKY WATERSHED LEADERSHIP ACADEMY
PHASE I: PROGRAM DEVELOPMENT
COURSE REQUIREMENTS AND OUTLINE

This project was funded in part by a grant from the US Environmental Protection Agency under Section 319 of the Clean Water Act through the Kentucky Division of Water to Stantec Consulting Services, Inc. (Grant # C9-994861-02)

Executive Summary

Citizen and community-based watershed groups are becoming increasingly involved and responsible for efforts to protect and restore water quality. As such, successful watershed protection and restoration efforts are dependent upon having local watershed coordinators and citizen champions with the capacity, tools and skills required to successfully lead watershed planning and management efforts.

The Kentucky Watershed Leadership Academy (KWLA): Program Development provides a framework for developing a capacity building program within the Commonwealth of Kentucky to train local leaders and provide them with the tools and skill sets to successfully champion the development and implementation of watershed-based plans. KWLA Program Development tasks include:

1. Organize the KWLA Program Development Committee
2. Develop Project Website
3. Catalogue Needs
4. Research Existing Watershed Training Courses
5. Develop KWLA Course Requirements and Outline

This report presents the results of Task 5: KWLA Course Requirements and Outline. As a result of the previous tasks, input from the KWLA Program Development Committee and Kentucky Division of Water were used to develop the course requirements, outline, and schedule. The course includes approximately forty (40) hours of required and elective modules anticipated to be offered over several months. Completion requirements and graduate recognition (e.g., certificates) are described.

The goal of the KWLA course is to provide students with the tools needed to develop successful watershed plans. It is recognized that this course is not intended to provide students comprehensive skills in the wide variety of disciplines needed to develop watershed plans. Rather, this course is intended to provide an overview of important skills and topics, as well as tools and resources for additional learning and assistance

This report represents the completion of Phase I: Program Development and provides the foundation for Phase II: Implementation and Sustainability.

Table of Contents

EXECUTIVE SUMMARY E.1

1.0 INTRODUCTION 1

2.0 COURSE REQUIREMENTS 4
2.1 APPROACH 4
2.2 TIME COMMITMENT 5
2.3 REQUIRED AND ELECTIVE MODULES 5
2.4 COURSE COMPLETION REQUIREMENTS 5

3.0 COURSE OUTLINE: REQUIRED MODULES 7
3.1 INTRODUCTION 8
3.2 LEADERSHIP SKILLS 9
3.3 EDUCATION & OUTREACH 10
3.4 WATERSHED ANALYSIS 11
3.5 MANAGEMENT STRATEGIES 12
3.6 IMPLEMENTING YOUR WATERSHED PLAN 12

4.0 COURSE OUTLINE: ELECTIVE MODULES 13
4.1 LEADERSHIP SKILLS 13
4.2 WATERSHED ANALYSIS 13
4.3 MANAGEMENT STRATEGIES: STRUCTURAL AND NON-STRUCTURAL BMPS 14

5.0 COURSE SCHEDULE 16
5.1 SESSION 1: IN PERSON 16
5.2 SESSION 2: DISTANCE LEARNING 16
5.3 SESSION 3: IN PERSON 17
5.4 SESSION 4: DISTANCE LEARNING 17
5.5 SESSION 5: IN PERSON 17

6.0 NEXT STEPS 18

1.0 Introduction

The Kentucky Division of Water (KDOW) and US Environmental Protection Agency (USEPA) are charged with approving watershed plans developed through projects they have funded. Typically in Kentucky, watershed planning projects have been funded with Nonpoint Source Management Grants under Section 319(h) of the Clean Water Act. Although the KDOW and KWLA Program Development Committee recognize that 319(h) grants should not be the only source of funding for watershed projects, these grants are anticipated to be an important funding source for the foreseeable future. Therefore, graduates of the KWLA course should understand the criteria by which KDOW and USEPA evaluate watershed plans. These criteria were published by USEPA in guidance for Section 319(h) grants and are commonly known as the "A through I criteria". These criteria are listed below and the complete text is available at this website: http://www.epa.gov/fedrgstr/EPA-WATER/2003/October/Day-23/w26755.htm

A. Identification of causes of impairment and pollutant sources.

B. Estimate the load reductions expected from management measures.

C. Describe NPS management measures & critical areas.

D. Estimate technical & financial assistance needed, costs, and/or the sources and authorities that will be relied upon to implement this plan.

E. Describe education used to enhance public understanding & encourage participation in selecting, designing, and implementing NPS measures.

F. Schedule for implementing NPS measures that is reasonably expeditious.

G. Interim measurable milestones for determining whether NPS measures or other control actions are being implemented.

H. Criteria to determine whether load reductions are being achieved and substantial progress is being made toward attaining water quality standards.

I. Monitoring component to evaluate the effectiveness of the implementation efforts, measured against the criteria established under requirement H.

The following list of watershed and leadership training needs was identified through the needs catalogue:

High importance on training related to:

- developing watershed plans;
- building partnerships;
- conducting watershed characterization;
- setting watershed goals;
- identifying management strategies;
- developing the watershed implementation plan; and
- measuring progress.

Moderately high importance on training related to:

- collecting new data
- understanding water resource programs

Additional topics recommended by focus group participants and survey respondents are listed below. To the extent possible, these topics will be incorporated into the KWLA course.

- How to evaluate land use planning and local codes.
- Teach effective public outreach.
- Emphasize training for leadership and recommend use of existing trained technical expertise for sampling and other technical aspects.
- Possibly supply a list of people, consultants, non-profits that can help with watershed plans.
- Engage elected officials and local decision makers in the training.
- Native plants, wildlife protection, green space preservation.

- Broaden beyond EPA & KDOW watershed plan requirements to teach holistic watershed planning that considers future water needs for human, agricultural, industrial, and ecological uses.

Effective watershed planning requires many science, technical, leadership, educational, and social disciplines. The goal of the course is not to raise all students to the level of "expert" in these diverse disciplines but rather to provide some basic information and skill-building exercises to help students with the right questions to ask and where to go for additional resources. The required modules of the KWLA course are designed to assist students with building skills in the following areas:

Leadership Skills

- Identifying stakeholders, building partnerships with them and organizing a stakeholders group.
- Facilitating group discussions and meetings.
- Defining the scope of the watershed planning effort.

Education and Outreach

- Conducting and using the results of a social assessment for the watershed.
- Selecting and tailoring watershed educational materials based on the social assessment.
- Changing behaviors with social marketing.
- Engaging local officials.

Watershed Analysis

- Locating, organizing, and interpreting data and information for a watershed inventory.
- Designing a monitoring program and developing a Quality Assurance Project Plan (QAPP).
- Analyzing water quality, habitat and biological data.
- Estimating pollutant loads and load reductions needed to meet water quality goals using STEPL.

Management Strategies

- Establishing meaningful watershed goals.
- Establishing numerical / quantifiable targets and using environmental indicators to measure progress.
- Selecting structural and non-structural Best Management Practices (BMPs) to achieve the established goals.
- Developing an implementation plan, working with watershed stakeholders to implement the plan and measuring progress.

Additional information and opportunities for skill building will be offered through elective modules, focusing on Leadership and Watershed Analysis.

The course requirements and outline that follow were developed with significant input from the KWLA Program Development Committee and the Kentucky Division of Water (KDOW). A draft of this report was provided to KDOW and the KWLA Program Development Committee. The draft report was discussed at the Committee meeting on May 12, 2009. The Committee members were asked to complete a ranking form to convey their recommendations on ten required and five elective modules, and the top two pollutant load estimation tools. Responses are provided in **Appendix 1. KWLA Course Requirements and Outline Ranking Results.** Stantec compiled these recommendations and met with KDOW representatives on June 3, 2009. The Committee and agency recommendations were discussed at this meeting and the results are reflected in the chapters that follow.

2.0 Course Requirements

2.1 APPROACH

Both Indiana Watershed Leadership Academy (IWLA) and Ohio Watershed Academy (OWA) use a “hands on” approach. Students complete required and a subset of available elective modules. The modules consist of required readings and, if they choose, review of additional resources and completion of an assignment that applies the required readings to a watershed in which they are working. Assignments are marked as complete or incomplete by the academy personnel. Students are required to address deficiencies in incomplete assignments.

EPA’s Watershed Academy requires students to complete 15 required modules and utilizes a more traditional approach of reviewing web-based materials and completing an on-line quiz. The student is considered to have completed the module if they achieve a score of 70% or

higher on the quiz. A total of 50 modules are available and students may substitute up to three (3) required modules for electives.

The selected approach may influence the student's understanding and experience with applying the information. Students' learning experience is likely to be enhanced by the hands-on approach. The on-line quiz approach can be implemented readily through the KWLA website and does not require students to submit documents and instructors to evaluate them. This may be more cost effective during long term operation of the KWLA program.

The final approach selected with input from KDOW and KWLA Program Development Committee is a combination of the approaches outlined above. Students will be required complete on-line quizzes and to participate in discussions and group activities during in-person sessions.

2.2 TIME COMMITMENT

KDOW and KWLA Program Development Committee recommended a forty (40) hour course. This time commitment was considered sufficient to provide students with basic skills and information in the many facets of watershed planning, including leadership, education and outreach, watershed analysis, watershed management strategies and watershed plan implementation. As envisioned, twenty-four (24) hours will be devoted to in-person sessions and sixteen (16) hours will be taught through self-directed distance learning sessions. The intent of this distribution of hours was to provide students with sufficient time for interaction and group learning without undue travel burden. The self-directed modules are intended to provide students with a background in topics that could be learned with relatively less personal interaction.

2.3 REQUIRED AND ELECTIVE MODULES

The KWLA course includes thirty-four (34) hours of required modules. Students choose their remaining six (6) hours of elective modules from ten (10) available modules. Most elective modules will be taught via distance learning. In-person attendance will be required for the field exercise. The required modules focus on material considered to be essential for watershed planners. The elective modules provide students with the opportunity to explore a topic in a more in-depth manner and to tailor their learning experience to issues most relevant to their watershed.

2.4 COURSE COMPLETION REQUIREMENTS

Students must complete 40 hours of training that typically includes 34 hours of required modules and six (6) hours of elective modules, taught both in-person and through distance learning. The amount of time spent on in-person and distance learning will depend on the electives chosen and on the pace of the student.

Active participation in group discussions and a passing grade (70%) on quizzes is required. The option for a student with expertise in one or more areas to "opt out" of one or more modules may be considered on a case-by-case basis.

The tables below summarize the required and elective modules and an overview of the contents of each module is provided in Chapter 3.

Table 1. Required Modules

Required Module: Title and Topics	In-Person Hours	Distance Hours
Introduction		
▪ Introduction to KY Watershed Leadership Academy	1	
▪ Principles of watershed management	1	
▪ Estimating and Presenting Environmental and Economic Benefits of Watershed Plans	1	
▪ When and How to Hire Assistance	1	
Subtotal	**4**	**0**
Leadership Skills		
▪ Building Partnerships and Organizing Stakeholders		2
▪ Getting Your Watershed Group On Track		2
▪ Define the Scope of the Watershed Planning Effort		2
▪ Running an Effective Meeting & Group Facilitation Skills	2	
Subtotal	**2**	**6**
Education & Outreach		
▪ Social Assessment - Getting to Know Your Watershed Communities	2	
▪ Awareness & Action: Watershed Outreach and Introduction to Social Marketing	2	
▪ Understanding the Planning Process and Engaging Local Officials	2	
Subtotal	**6**	**0**
Watershed Analysis		
▪ Conducting a Watershed Inventory		2
▪ Data Collection and Quality Assurance Project Plans	2	
▪ Data Analysis	2	
▪ Quantifying Pollutant Loads and Load Reduction	4	
Subtotal	**8**	**2**
Management Strategies		
▪ Methods used to set watershed goals		1
▪ Establishing numerical targets and indicators for pollutant reduction		1
Subtotal	**0**	**2**

Required Module: Title and Topics	In-Person Hours	Distance Hours
Implementing your watershed plan		
▪ Developing an Implementation Plan		1
▪ Implementing the Watershed Plan and Measuring Progress		1
Subtotal	**0**	**2**
Wrap-Up and Graduation		
▪ Post-KWLA Assistance	1	
▪ Graduation	1	
Subtotal	**2**	**0**
Total Required Hours	**22**	**12**

Table 2. Elective Modules

Elective Module: Title and Topics	In-Person Hours	Distance Hours
Leadership Skills		
▪ Sustaining Your Watershed Group Financially		2
▪ Basic Negotiation Skills: Applications for Watershed Management		2
Subtotal		**4**
Watershed Analysis		
▪ Field Exercise – Water Quality, Habitat, Biological Sampling	4	
Subtotal	**4**	**0**
Management Strategies: Structural and Non-Structural BMPs - Choose 3		
▪ 8 Tools for Watershed Protection in Developing Areas		1
▪ Wetland BMPs		1
▪ Agricultural management practices for WQ protection		1
▪ Forestry best management practices (BMPs) in watersheds		1
▪ Stream stabilization/ restoration overview		1
▪ On-Site Wastewater (Septic Systems, Straight Pipes		1
▪ BMPs for Karst Areas & Groundwater		1
▪ Policies & Non-Structural BMPs for Resource Extraction		1
Subtotal		**3**
Total	**4**	**7**

3.0 Course Outline: Required Modules

The outline below groups the topics associated with watershed planning into broad headings and provides some key elements of the information to be included in each module. The modules will be developed during Phase II of the KWLA project.

3.1 INTRODUCTION

- Introduction to KY Watershed Leadership Academy
    - Instructors and students introduction
    - Course overview & materials distribution
- Principles of watershed management
    - Geographically focused, iterative, adaptive, flexible
    - Collaborative, Integrated with other planning processes
    - Holistic – all water resources, land interactions, environment & economy
    - A watershed management approach uses partnering, sound science, well-planned actions to achieve agreed upon results.
- Estimating and Presenting Environmental and Economic Benefits of Watershed Plans
    - Cost savings on wastewater and drinking water infrastructure & treatment
    - Increased recreational opportunities & property values, tourism
    - Reduced re-work (e.g., pave road, work on water lines, re-pave road)
    - Valuation methods used to quantify environmental & economic benefits
    - Regional examples of economic benefits (KY, IN, others?)
- When and How to Hire Assistance
    - Defining your knowledge and skill base
    - Methods to seek assistance
    - Getting the most from your contractor

3.2 LEADERSHIP SKILLS

- Building partnerships and organizing stakeholders
    - Compare and contrast partnerships with public education and involvement
    - Partners – identify and engage decision-makers, agencies & others with a long term commitment to developing and implementing the watershed plan
    - Stakeholders – identify and engage local entities who will be affected by the watershed plan or who can contribute to it's development and implementation
- Getting Your Watershed Group On Track
    - Clearly defining group purpose
    - Creating formal structures for distributing responsibilities and authority (by-laws)
    - Recruiting group leaders
    - Managing volunteers, hiring and training staff
    - Raising funds for salaries and programs
    - Prioritizing goals and activities to accomplish those goals
    - Managing finances, grants, and reporting
    - Managing conflict
- Define the Scope of the Watershed Planning Effort
    - Identify concerns of partners, stakeholders, citizens
    - Define the geographic extent of the watershed
- Running an Effective Meeting & Group Facilitation Skills
    - Meeting Preparation: Agendas, Meeting Materials, Communication
    - Conducting the Meeting: Basic Group Facilitation
    - After the Meeting: Evaluating the Effectiveness, Summaries, Communication

3.3 EDUCATION & OUTREACH

- Social Assessment: Getting to Know Your Watershed Communities
    - How to conduct a social profile that provides information about key social issues in the watershed (land use, land ownership, economy, income, uses of natural resources in the watershed);
    - How to conduct a survey of stakeholder opinions; and
    - How to use results to plan next steps and as content for some sections of a watershed management plan.
- Awareness and Action: Watershed Outreach and Introduction to Social Marketing
    - Define water resource goals and objectives
    - Identify and research the target audience(s)
    - Create and format educational message(s)
    - Distribute messages (e.g., mail, door-to-door, Internet).
    - Evaluate (what worked, what didn't?)
    - An Introduction to Social Marketing
        - Define the behavior you want to change and identify possible solutions
        - Analyze Strengths, Weaknesses, Opportunities, Threats (SWOT)
        - Understand your audience through marketing research
        - Select medium and messages, pretest your campaign ideas
        - Implement and evaluate your results, make adjustments as needed.
- Understanding the Planning Process and Engaging Planning Officials
    - Overview of the land planning process in Kentucky (comprehensive plans, zoning, development ordinances)
    - Tools to evaluate comprehensive plans, zoning, development ordinances

3.4 WATERSHED ANALYSIS

- Conducting a Watershed Inventory
    - Introduction – desktop tools and field assessments (windshield survey)
    - Characteristics of Water Resources (watershed boundary, hydrology, ground – surface water interactions, flooding, water supply)
    - Existing Planning Efforts (watershed plans, source water protection plans, wellhead protection program, groundwater protection plans, wastewater plans, agricultural plans, land use plans)
    - Regulatory Status of Waterways (designated uses, impaired streams, special use waters, Total Maximum Daily Loads (TMDLs),)
    - Water Quality Data (physical, chemical, biological, geomorphology, water quality data gaps)
    - Natural Features of the Watershed (geology, topography, soils, riparian ecosystems, flora and fauna - including threatened and endangered species, non-native and invasive species)
    - Human Activities Affecting Water Resource Quality – Point Sources (municipal and industrial wastewater, stormwater, combined sewer overflows, regulations and programs for wetland and in-stream construction or disturbance); Nonpoint Sources (land use, impervious surface, unsewered areas)
- Data Collection and Quality Assurance Project Plans
    - Design a monitoring program that addresses data gaps (water quality, biological and habitat)
    - Quality Assurance Project Plan
    - Estimating monitoring costs
    - Implementing the monitoring program
- Data Analysis
    - Managing Data
    - Quality Assurance / Quality Control Review

- Analyzing and using data (comparing water quality results to Surface Water Standards, biological and habitat data interpretation)

- Quantifying Pollutant Loads and Load Reduction
    - Using Spreadsheet Tool to Estimate Pollutant Loads (STEPL) to Quantify Pollutant Loads and Load Reductions
    - Overview of Additional Tools

3.5 MANAGEMENT STRATEGIES

- Methods used to set watershed goals
    - Water quality standards, literature values, reference watersheds
- Establishing numerical targets and indicators for pollutant reduction
    - Qualitative methods to establish numerical targets
    - Selecting appropriate indicators

3.6 IMPLEMENTING YOUR WATERSHED PLAN

- Developing an Implementation Plan
    - Information/education component
    - A schedule for implementing management measures
    - Interim milestones to determine whether management measures are being implemented
    - Criteria to measure progress toward reducing pollutant loads and meeting watershed goals
    - Monitoring component to evaluate the effectiveness of implementation efforts
    - An estimate of the technical and financial resources and authorities needed to implement the plan
    - An evaluation framework

- Implementing the Watershed Plan and Measuring Progress
    - Develop an organizational structure for implementation (workplans, implementing activities, sharing progress)
    - Evaluate progress (implementation of management strategies, monitoring data)
    - Amending the plan (updates to reflect new information, changes in the watershed, optimizing strategies)

4.0 Course Outline: Elective Modules

4.1 LEADERSHIP SKILLS

- Sustaining Your Watershed Group Financially
    - Step 1: Establish Priorities
    - Step 2: Assess Capacity
    - Step 3: Set Fundraising Goals
    - Step 4: Identify Funding Sources
    - Step 5: Evaluate & Select Funding Sources
- Basic Negotiation Skills: Applications for Watershed Management
    - What is negotiation?
    - Identifying positions and interests
    - Getting to Yes – Best Alternative to a Negotiated Agreement (BATNA)

4.2 WATERSHED ANALYSIS

- Field Exercise – Water Quality, Habitat, Biological Sampling
    - Watershed Watch Protocols for Water Quality, Habitat, Biological Sampling

4.3 MANAGEMENT STRATEGIES: STRUCTURAL AND NON-STRUCTURAL BMPS

Students will choose three (3) of the following topics to study in more detail, depending on previous knowledge and issues of concern in their watershed:

- 8 Tools for Watershed Protection in Developing Areas
    - Tool 1. Land Use Planning (low impact development, green infrastructure)
    - Tool 2. Land Conservation
    - Tool 3. Aquatic Buffers
    - Tool 4. Better Site Design
    - Tool 5. Erosion and Sediment Control
    - Tool 6. Stormwater Best Management Practices
    - Tool 7. Non-Stormwater Discharges
    - Tool 8. Watershed Stewardship Programs
- Wetlands
    - Build Your Own Wetland
    - Wetland Treatment Systems
- Agricultural management practices for WQ protection
    - Conservation Tillage
    - Crop Nutrient Management
    - Pest Management
    - Conservation Buffers
    - Irrigation Water Management
    - Grazing Management
    - Animal Feeding Operations (AFOs) Management

- Erosion and Sediment Control

- Forestry best management practices (BMPs) in watersheds
  - Planning
  - Streamside Management Zones
  - Forest Wetlands Protection
  - Road Construction BMPs
  - Timber Harvesting BMPs
  - Revegetation
  - Fire Management
  - Chemical Management
- Stream stabilization/ restoration overview
  - Common techniques for stream stabilization / restoration
  - Technical considerations for a stream restoration project
- On-Site Wastewater BMPs
  - Septic management policies and ordinances
  - Assistance to homeowners
- BMPs for Karst Areas and Groundwater
  - Karst policies
  - Urban, Agricultural and Transportation BMPs in Karst Systems
  - Groundwater Protection Plans and Wellhead Protection Areas
- Non-structural BMPs for Resource Extraction Areas
  - Policies, programs and agencies regulating resource extraction
  - Pre-law mines

5.0 Course Schedule

The KWLA course is designed to be taught in approximately forty (40) hours, with three (3) in-person days and an additional sixteen (16) hours of distance learning.

5.1 SESSION 1: IN PERSON

Introduction (4 hours)

- Introduction to KY Watershed Leadership Academy
- Principles of watershed management
- Estimating and Presenting Environmental and Economic Benefits of Watershed Plans
- When and How to Hire Assistance

Leadership Skills (2 hours)

- Running an Effective Meeting & Group Facilitation Skills

Education and Outreach (2 hours)

- Social Assessment - Getting to Know Your Watershed Communities

5.2 SESSION 2: DISTANCE LEARNING

Leadership Skills (6 hours)

- Building Partnerships and Organizing Stakeholders
- Getting Your Watershed Group On Track
- Define the Scope of the Watershed Planning Effort

Watershed Analysis (2 hours)

- Conducting a Watershed Inventory

5.3 SESSION 3: IN PERSON

Education and Outreach (4 hours)

- Awareness & Action: Watershed Outreach Campaigns and Introduction to Social Marketing
- Understanding the Planning Process and Engaging Local Officials

Watershed Analysis (4 hours)

- Data Collection and Quality Assurance Project Plans
- Data Analysis

5.4 SESSION 4: DISTANCE LEARNING

Management Strategies (2 hours)

- Methods used to set watershed goals
- Establishing numerical targets and indicators for pollutant reduction

Implementing your watershed plan (2 hours)

- Developing an Implementation Plan
- Implementing the Watershed Plan and Measuring Progress

Electives (4 hours)

5.5 SESSION 5: IN PERSON

Watershed Analysis (4 hours)

- Quantifying Pollutant Loads and Load Reduction

Electives (2 hours)

Wrap up and Graduation (2 hours)

6.0 Next Steps

The next phase of this project includes implementing the KWLA training course and developing a sustainability plan. The KWLA Program Development Committee will continue to provide advice and guidance during these important next steps. The Committee is anticipated to meet up to ten (10) times over the next two (2) years of the project to provide advice and recommendations on program implementation and sustainability. The next phases of the project are described below.

Program Implementation: Efforts will focus on producing Kentucky Watershed Leadership Academy training materials, recruiting and training instructors and conducting three (3) training course sessions of 25 to 30 students each. Course sessions include one (1) short course and two (2) full courses.

Course materials will be developed and produced and are anticipated to include both on-line and hard copy materials. All materials will be reviewed by Kentucky Nonpoint Source Section and the KWLA Program Development Committee.

With input from the Kentucky Nonpoint Source Section and the KWLA Program Development Committee, instructor qualifications will be defined and qualified instructors recruited from priority watersheds (i.e., Kentucky River Basin, focus watersheds, watersheds with TMDLs, impaired waterbodies and watershed based plans under development) and trained with course materials. Trained instructors will teach the short course and two full length courses described below.

The short course will be taught to selected employees of the Kentucky Department for Environmental Protection. The short course will use the same training materials, but the class will be taught on an accelerated schedule.

The Kentucky Division of Water and KWLA Program Development Committee will develop criteria and select students for the two (2) full-length classes. Student selection criteria could include current 319(h) grant recipients, local governments, existing watershed groups, etc. Prospective students include state, regional and local government program managers, and watershed stakeholders including local governments, environmental groups, regulated community, development community and others.

Program Sustainability: The development of a long term Program Implementation Plan will ensure that the KWLA is sustainable after the grant is completed. Key components of the long term program implementation plan include an approach to keep training materials current and train approximately 50 people per year. The Program Implementation Plan will address funding,

staffing for training sessions, program advertising, student recruitment, program updates, tracking success indicators and evaluations.

The project includes measures of project success, including improvement in watershed knowledge test scores, effective course outreach through advertising and achieving a high student satisfaction rating. Over the long term, success indicators include accelerating watershed plan development and cumulative estimated NPS reductions associated with plans developed by KWLA graduates.

Appendix 1

Course Requirements and Outline Ranking Results

Kentucky Watershed Leadership Academy: Program Development

Task 5: Course Requirements and Outline

Topic Area and Module Title	**Required** (1-10), 1=high priority, 10=low priority	**Elective** (1-5), 1=high priority, 5=low priority	**Defer** (i.e., do not develop module in KWLA)	**Comments/ Suggestions** (i.e., modules that can be combined, suggestions on level of detail, etc.)
1.1 Introduction				
▪ Introduction to KY Watershed Leadership Academy	1_0_7_1_1			Can all three Introdoction modules be combined?
▪ Principles of Watershed Management	1_10_7_1_1			Introductory modules should explain A-I Criteria
▪ Estimating and Presenting Environmental and Economic Benefits of Watershed Plans	1_9_7_1_1			Could teach these 3 sessions in a 2-hour module
1.2 Leadership Skills				
▪ Building Partnerships and Organizing Stakeholders	2_4_1_2_2			Could be combined with Getting Group on Track
o Social Assessment: Getting to Know Your Watershed Communities		1_4_0_0	x	1 recommendation to defer
▪ Getting Your Watershed Group On Track	2_4_1_2			
▪ Sustaining Your Watershed Group Financially	0_0_10_0_10	2_5_0_4		Required Leadership Skills could be completed in a 3-hr module
▪ Running an Effective Meeting & Group Facilitation Skills	0_8_4_5_5	3_0_4_0		Could develop a more in depth elective for those that wish more training in this area.
▪ Basic Negotiation Skills: Applications for Watershed Management		4_0_3_7_2		
1.3 Education & Outreach				
▪ Awareness – Getting In Step: A Guide for Conducting Watershed Outreach Campaigns	3_5_5_7_4			Add a small social marketing component to this module, but then could develop a more in depth social marketing module as an elective
▪ Action – Getting Your Feet Wet with Social Marketing	0_0_0_0_4	0_0_0_1		Could combine the Awareness and Action into a required 2-hr modules
1.4 Watershed Analysis				
▪ Define the Scope of the Watershed Planning Effort	2_3_1_2_3			Needs to be done in conjunction with Getting Your Group on Track as part of that module
▪ Conducting a Watershed Inventory	4_6_8_8_3			Could combine Defining the Scope with Conducting a Watershed Inventory
▪ Understanding the Planning Process and Engaging Planning Officials	0_0_0_10_6	5_2_1_0		Engaging Planning Officials could be developed as an Elective in Education/Outreach; Planning Process
▪ Data Collection with a Purpose	5_7_3_3,4_9			Could break down into data collection and analysis modules
o Field Exercise – Water Quality, Habitat, Biological Sampling	8_0_0_0	0_3_0_3_1		Combine these modules into one, and offer this as an elective--more in depth explanation of data analysis, etc.
▪ Estimating Pollutant Loads	8_0_9_0	0_3_0_5		

Topic Area and Module Title	**Required** (1-10), 1=high priority, 10=low priority	**Elective** (1-5), 1=high priority, 5=low priority	**Defer** (i.e., do not develop module in KWLA)	**Comments/ Suggestions** (i.e., modules that can be combined, suggestions on level of detail, etc.)
1.5 Management Strategies				
▪ Methods Used to Set Watershed Goals	6_2_6_6_7			Combine with Establishing numerical targets
▪ Establishing Numerical Targets and Indicators for Pollutant Reduction	6_2_6_6			
▪ 8 Tools for Watershed Protection in Developing Areas	9_0_0_0_8	0_1_5_2		Combine BMP modules
▪ Wetland BMPs		0_1_2_6		Combine BMP modules
▪ Agricultural Management Practices for WQ Protection	10_0_0_0	0_1_2_6		Combine BMP modules
▪ Forestry Best Management Practices (BMPs) in Watersheds		0_1_2_6		Combine BMP modules
▪ Stream Stabilization/Restoration Overview		0_1_2_6_3		Combine BMP modules
▪ Source Water Protection BMPs		0_1_2_6		Combine BMP modules
▪ BMPs for Karst Areas		0_1_2_6_4		Combine BMP modules
▪ Water Quality Management on Mines		0_1_2_6		Combine BMP modules
1.6 Implementing Your Watershed Plan				
▪ Developing an Implementation Plan	7_1_2_9	0_0_0_0_4		Combine with Implementing the WS Plan module
▪ Implementing the Watershed Plan and Measuring Progress	7_1_2_9	0_0_0_0_4		Could combine into one elective module.

This project was funded in part by a grant from the US Environmental Protection Agency under Section 319 of the Clean Water Act through the Kentucky Division of Water to Stantec Consulting Services, Inc. (Grant # C9-994861-02)

Project Contact Information:
Karen Schaffer, Stantec
Environmental Management
Ph: (812) 285-4078
Fx: (812) 285-4061
karen.schaffer@stantec.com
Project Website: www.kywla.org

Kentucky Watershed Leadership Academy: Program Development

Task 5: Course Requirements and Outline

To KWLA Program Development Committee: Please provide your recommendations for the top 2 pollutant load assessment tools. Responses can be emailed to Karen Schaffer (karen.schaffer@stantec.com) by **May 31, 2009**.

Dale Reynolds			
Tool	**Website**	**Top 2**	**Comments**
1.1 Currently Recommended by KDOW			
• Spreadsheet Tool for Estimating Pollutant	http://bering.tetratech-ffx.com/stepl/	0_1_0_0_0	
1.2 From Draft Kentucky Watershed Planning Guidebook			
• Simple Method	http://www.stormwatercenter.net/monitoring%20and%20assessment/simple%20meth/simple.htm		
• Watershed Treatment Model	http://www.stormwatercenter.net/monitoring%20and%20assessment/watershed_treatment_model.htm	0_2_0_0_0	
• Predict	http://www.predict.psu.edu/		
1.3 Other Tools			
• Bacterial Indicator Tool (BIT),	http://www.epa.gov/waterscience/ftp/basins/system/BASINS3/bit.htm		
• Long Term Hydrologic Impact Analysis (LTHIA),	http://www.ecn.purdue.edu/runoff/lthia/lthia_index.htm		
• EPA Region 5/IDEM Pollutant Load Reduction Workbook,	http://bering.tetratech-ffx.com/stepl/models$docs.htm		
• USGS SPARROW	http://water.usgs.gov/nawqa/sparrow/		
• Load Duration Curves (TMDL Method)	http://www.in.gov/idem/5963.htm		

This project was funded in part by a grant from the US Environmental Protection Agency under Section 319 of the Clean Water Act through the Kentucky Division of Water to Stantec Consulting Services, Inc. (Grant # C9-994861-02)

Project Contact Information:
Karen Schaffer, Stantec
Environmental Management
Ph: (812) 285-4078
Fx: (812) 285-4061
karen.schaffer@stantec.com

Project Website: www.kywla.org