Bacon Creek Watershed Plan Implementation

319(h) Nonpoint Source Implementation Grant #C-9994861-12

Project period: July 1, 2014

to September, 2016

Submitted by:

Kentucky Waterways Alliance

120 Webster Street
Suite 217
Louisville, KY 40206
www.kwalliance.org

The mission of the Kentucky Waterways Alliance is to protect and restore Kentucky's waterways.

The Energy and Environment Cabinet (EEC) and Kentucky Waterways Alliance Inc. do not discriminate on the basis of race, color, national origin, sex, age, religion, or disability. The EEC and Kentucky Waterways Alliance Inc. 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, 4th Floor, Frankfort, KY 40601 or call (502) 564-3410 or contact Kentucky Waterways Alliance Inc. Kentucky state agencies, please include the following: Hearing- and speech-impaired persons can contact the agency by using the Kentucky Relay Service, a toll-free telecommunications device for the deaf (TDD). For voice to TDD, call 800-648-6057. For TDD to voice, call 800-648-6056.

Funding for this project was provided in part by a grant from the U.S. Environmental Protection Agency through the Kentucky Division of Water, Nonpoint Source Section and the Kentucky Division of Conservation Kentucky Waterways Alliance as authorized by the Clean Water Act Amendments of 1987, Section 319(h) Nonpoint Source Grant #C-9994861-12. The contents of this document do not necessarily reflect the views and policies of the USEPA, KDOW or Kentucky Waterways Alliance Inc., nor does the mention of trade names or commercial products constitute endorsement. This document is printed on recycled paper.

Acknowledgments

Bacon Creek Watershed Council Core: Bonita Hendren, Linda Watts, Rose Bostic, Suellyn White, Eddie Bowen, John Perry, Wanda Gregory, Elaine Digges, Sherman Bowman, and the City of Bonnieville, Mayor and City Council. Additional members contributed to the overall success and function of the council.

KWA Staff
Tessa Edelen, Mark Howell, Jessica Kane, Judy Petersen, Tim Joice, and Will Willis.

Partners and advisors
Larue County Soil and Water Conservation District, NRCS Larue County, USDA-NRCS, NRCS Hart County, Hart County Health Department, LaRue County Health Department, Kentucky Onsite Wastewater Association, The Nature Conservancy, Roundstone Seed, DOC James Lambert, and KDOW Stefanie Osterman and Joanna Ashford.

Project participants
Implementing best management practices takes a lot of trust and cooperation. KWA thanks those individuals who made the decision to work with the project and the Bacon Creek Watershed Council.

Contents

Page

List of Figures

List of Tables

Executive Summary

The Bacon Creek Watershed is situated in the Upper Green River Basin and the Turnhole Bend Karst Basin. It lies predominantly in Hart County, but also extends into Hardin and Larue Counties (see Fig. 1). The entire 31.2 mile length of Bacon Creek has been on the 303(d) list of impaired streams, due to pathogens, since 1996. The watershed is comprised of seven sub-watersheds, this project focused on the six upper sub-watersheds, collectively known as the Upper Bacon Creek Watershed.

The main goal of this project was to reduce bacteria in Upper Bacon Creek originating from agricultural and residential sources. This goal was accomplished through implementing agricultural and residential best management practices (BMPs).

The residential BMP replacing failing septic systems and the agricultural BMPs programs were both successful. KWA Agricultural Coordinator Mark Howell was again employed to reach out to area farmers about water quality issues, the BMP program, and Kentucky Agricultural Water Quality plans.

There were no data collected for this project.

A secondary goal was to keep the Bacon Creek Watershed Council involved and engaged. The group met quarterly, and often hosted a guest speaker of a conservation-themed topic of interest to the group.

Nonpoint source pollution is a huge threat to water quality. In rural areas, especially, it truly takes community engagement to make a difference. There is a real need for updated septic systems and/or expanded sewer infrastructure and funding for agricultural BMPs in the area. Partnerships with local health departments, conservation districts, Natural Resource Conservation Service (NRCS) offices, local governments, and other community groups are a good way to reach a broader audience and build trust and support in the watershed.

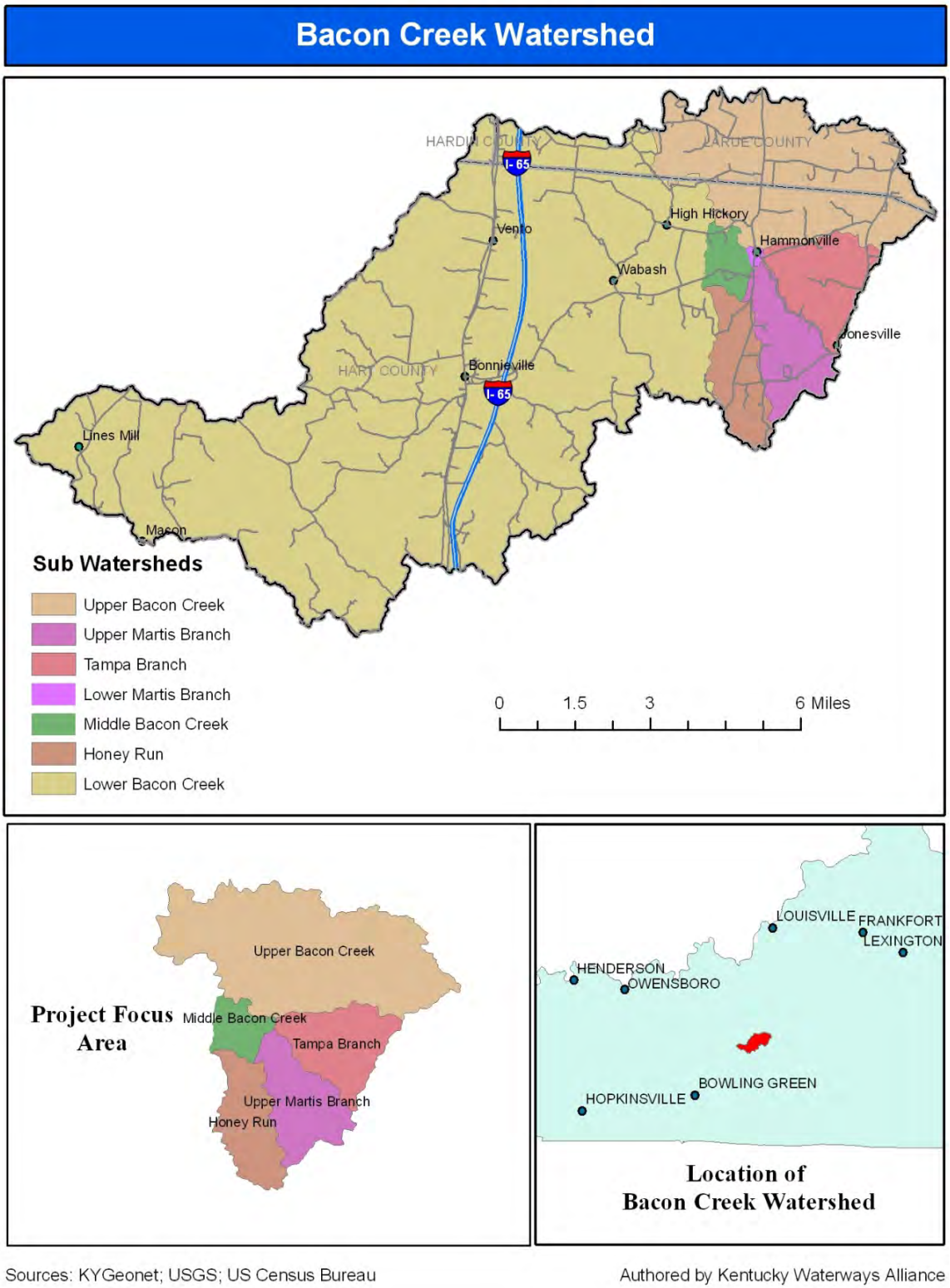

Figure 1: Upper Bacon Creek with delineated sub-watersheds (KWA 2013).

Introduction & Background

The entire 31.2 mile length of Bacon Creek has been on the 303(d) list of impaired streams, due to pathogens, since 1996. The watershed is comprised of seven sub-watersheds: the six upper (headwater) sub-watersheds and the Lower Bacon Creek Watershed, which includes the mouth of Bacon Creek. This project focused on the six upper sub-watersheds including Upper Bacon Creek, Honey Branch, Tampa Branch, Middle Bacon Creek, Lower Martis Branch, and Upper Martis Branch. The Bacon Creek Watershed Council has been active since 2000.

Project History

The Bacon Creek Watershed Council was organized with a group of active citizens in early 2000 with the help of a previous Kentucky Division of Water (KDOW) 319(h) grant to foster watershed groups in underserved areas. The first meeting was held on April 11, 2001. The group's initial goal, in cooperation with the Bonnieville City Council and other partners, was to plan, fund, and construct sewer lines to Bonnieville. The sewer system became a reality in late 2007. The simultaneous efforts to eliminate straight pipes and failing septic systems within the city limits of Bonnieville and efforts to establish a Watershed Council created synergy around the cleanup of Bacon Creek. A Watershed Action Plan was written by KDOW Green River Basin Coordinator Dale Reynolds in 2005, and it has served as a reference material and guide in writing the original watershed-based plan completed in 2010.

In the initial, FY05 319 (h) grant project, agricultural best management practice (BMP) implementation and post-implementation monitoring were planned. There was not enough local interest to go forward with BMP implementation at that time, however, and post-implementation monitoring became irrelevant. It was decided, instead, to conduct a round of bacterial source tracking monitoring to further delineate the sources of bacteria in the Upper Bacon Creek sub-watersheds. The experience of the KDOW Basin Coordinator and the Bacon Creek Watershed Council guided the selection of nine data collection sites. Figure 2 displays the monitoring sites and results for this bacterial source tracking data collection that occurred on four dates (two wet weather, two dry weather dates) in April and June of 2010.

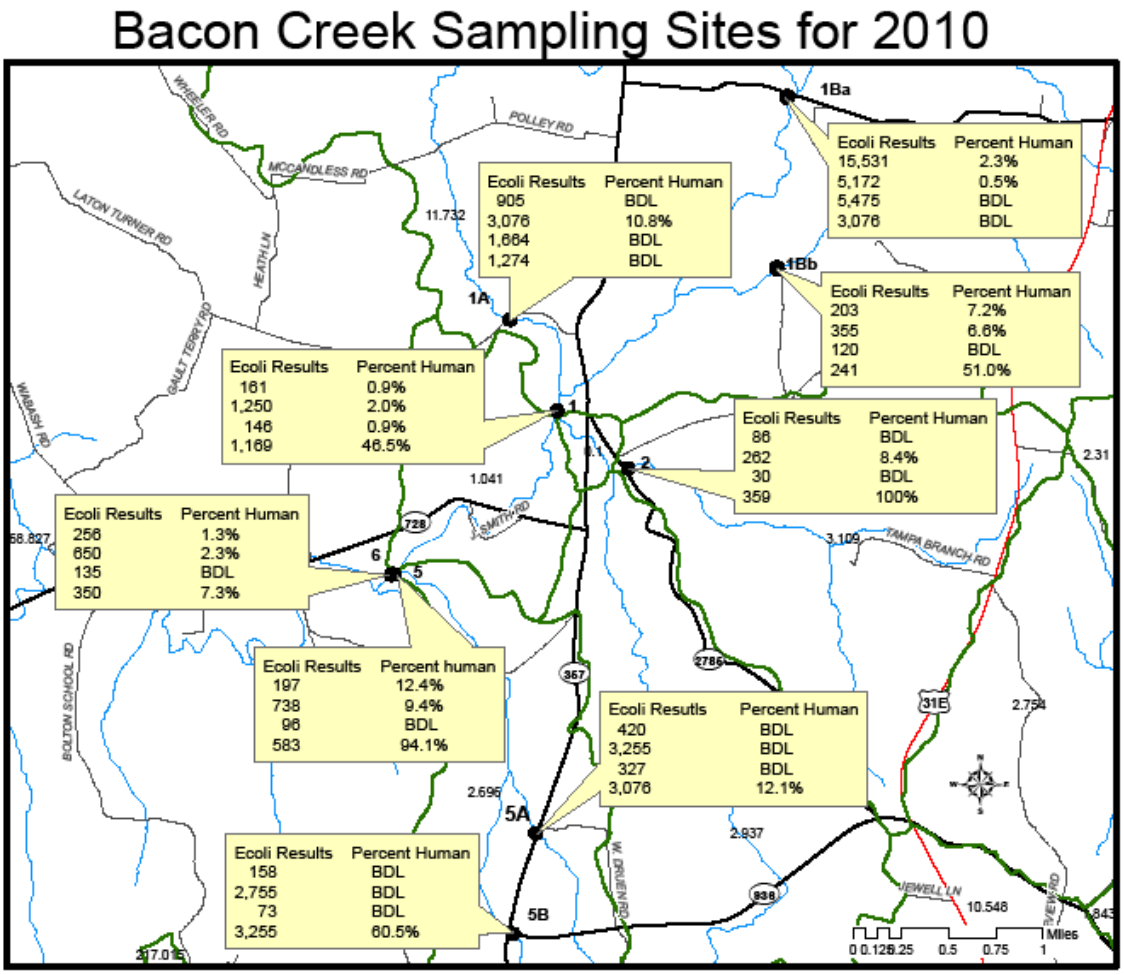

Figure 2: Bacterial Source Tracking sample sites and results (WKU Center for Water Resources 2010).

Results from this testing indicate that the Upper Bacon Creek sub-watershed has high levels of *E. coli* contamination and that a large percentage of those bacteria do not come from humans. Further, data indicate that the Honey Run sub-watershed has high levels of *E. coli* contamination and that a large percentage of those bacteria come from humans. This testing only differentiated between human bacteria and other animals. It did not further break down the "other" category into different animal species or wild versus domesticated animal.

With the advice and input from the Bacon Creek Watershed Council, the Basin Coordinator, and WKU Center for Water Resources, it was decided that the Upper Bacon Creek sub-watershed was a good candidate for farm management BMPs, and the Honey Run sub-watershed was a good candidate for improved septic system management BMPs. A FY10 grant application for BMP funding and watershed plan updates was submitted to the Division of Water nonpoint source section and awarded in 2010. This grant project included the hiring of a local Agricultural Coordinator to facilitate the planning and implementation of BMPs on farm lands.

This project installed nine agricultural BMPs on four farms in the Upper Bacon Creek sub-watershed, and replaced six complete septic systems and pumped out 13 septic tanks.

After the successful completion of the 2010 grant, KWA applied for the current FY13 grant for implementation to continue the work on area wastewater systems and agricultural runoff. It was awarded and work began in mid-2014.

Materials and Methods

Description of the project area

The Bacon Creek Watershed is in the Upper Green River Basin. It is connected to the Turnhole Bend Karst Basin; the entire area exhibits karst features. The watershed is mainly in Hart County, extending across the edges of Hardin and Larue Counties. The creek is just over 32 miles long and drains a 90.46 square mile area into the Nolin Reservoir. The creek is impaired for *E. coli* bacteria along its entire length and for sediment/siltation from river mile point 17.2 to 27.1 (2012 Integrated Report to Congress). The watershed is rural and mostly agricultural.

The Upper Bacon Creek Watershed, the headwaters of the creek, is the focus area of this project. It contains six smaller (HUC 14) sub-watersheds: Upper Bacon Creek, Tampa Branch, Upper Martis Branch, Lower Martis Branch, Honey Run, Middle Bacon Creek (see Figure 1). Delineating the watershed in this manner was based on the 2005 Watershed Action Plan (Reynolds 2005) that recommended focusing attention in the upper portion of the watershed due to consistent field measurements of elevated fecal coliform counts in that area. This upper watershed area encompasses 13,193 acres and covers over 20 of the total 90 square miles of the entire Bacon Creek Watershed (see Table 1). There are extensive areas of pasture and cultivated lands in the Upper Bacon Creek Watershed area. Agriculture represents over 60% of the acreage, with over four times as much pastureland as cropland.

The bulk of industry in the watershed is agricultural. There are no registered confined animal feeding operations. There is one US Geological Survey gaging station on Bacon Creek near Priceville, Kentucky. The Kentucky Pollution Discharge Elimination System has no active permitted dischargers in the drainage area. Spring Park Mobile Home Community was the only package treatment facility in this watershed, and its discharge permit was terminated in 2012. There are no sewer lines in the Upper watershed, and most households use septic systems.

For the purposes of this plan, Lower Martis and Middle Bacon Creek have been combined and are referred to as “Lower Martis” on maps. Thus, there are five sub-watersheds referenced on maps and in text throughout the watershed plan.

Table 1: Square mileage of Upper Bacon Creek sub-watersheds

Sub-watershed name	Square mileage	HUC-14 Number
Upper Bacon Creek	11.73	HUC 05110001150010
Middle Bacon Creek	1.04	HUC 05110001150050
Upper Martis	2.93	HUC 05110001150020
Lower Martis	0.1	HUC 05110001150040
Honey Run	2.69	HUC 05110001150060
Tampa Branch	3.10	HUC 05110001150030
Total	**21.59**	

Public water supply for the watershed is the Green River Valley Water District, which withdraws water from the Green River. Bacon Creek is a tributary to the Nolin River, which discharges into the Green River several miles below the intake for the water district. There are domestic groundwater wells in the watershed, but they're not generally used for human consumption.

Annual precipitation averages 46 inches. Soils tend to be thin (3-4 feet deep) and vary from prime farmland to marginal pastureland, having a tendency to be sandy and/or silty in nature. The predominant soil types have moderate to high tendency to erode. Riparian buffers tend to be thin to non-existent and slopes vary from 0-10 percent. The rolling topography of the watershed is underlain by the lower members of the Girkin Formation (Reynolds 2005). Karst features such as numerous large sinks and springs are present. While predominant flow patterns are determined by surface topography, karst features introduce variations that ignore topographic gradients. Bacon Creek is one of the few surface waterways in the area.

There is no evidence of stream channel alteration, man-made diversions, dams, or significant withdrawals from this water body. Despite near total removal of the riparian buffer, the stream has a fairly diverse aquatic assemblage.

A Total Maximum Daily Load was completed for Bacon Creek in 2011. TMDL sample sites were in the lower watershed, downstream of the current project area.

A description of all methods used to obtain the results for your project

<u>Community</u>

A crucial step in creating a successful watershed-based plan is to organize a group of local leaders and citizens who are dedicated to cleaning up their waterway. This happened when the Bacon Creek Watershed Council first met in April 2001.

With the current grant focus on implementation, Bacon Creek Watershed Council meetings were changed to a quarterly schedule. Meetings often involved a guest speaker to present on a conservation-themed topic of interest to the group.

Best Management Practices

Two types of BMPs were installed with this grant: agricultural to address animal sources of *E. coli* and residential to address human sources of *E. coli*. Implementation was done according to KDOW-approved plans written for this project (see Appendix D). All recipients of grant funding completed an application including a maintenance agreement and photo disclosure. All agricultural and septic systems BMPs were implemented according to recommended guidelines from NRCS or health department standards, respectively.

Agricultural BMPs

Program goals were to install agricultural BMPs and promote Kentucky's Agricultural Water Quality Plan. The Agricultural Coordinator spent time talking with farmers about prospective BMPs, state cost-share funding, and water quality plans. BMP implementation was offered at a 75-25% cost share. Participants could cover their 25% with in-kind labor and/or supplies or cash match.

Residential BMPs

A project packet was developed including an application, a photo disclosure, and a fact sheet on how septic systems work, maintenance requirements, and the impacts of bacteria on human health and the environment (see Appendix D). Methods for both BMPs were standard wastewater system methods and met local health department guidelines. Local county health departments and KOWA offered technical advice.

Data

No data were collected for this project.

Community

No specialized materials were used in working with the Bacon Creek Watershed Council or the community at large.

BMPs

No specialized materials were used in BMP implementation. Agricultural and septic system BMPs were implemented according to the KDOW-approved BMP Implementation plans written for this project. All of the agricultural and septic system BMPs were implemented according to recommended guidelines from the NRCS or health department standards, respectively.

Results and Discussion

Community

One result of the work of the Bacon Creek Watershed Council was an increase in awareness of watershed issues in the community. This is not a measureable outcome, but is marked as a success by the number of participants in the BMP programs and watershed council events. Another success is the relationships being developed through the work of the Agricultural Coordinator. We believe much of the success of the agricultural program is due to the Agricultural Coordinator's ties to the community and personal experience as a farmer.

BMPs

Project BMPs were successful. Collaboration with local health departments, conservation districts, and other community groups helped to support project goals and will facilitate future work in the watershed.

Residential BMPs

The septic system repair or replacement program replaced two failing septic systems, one in the Upper Bacon Creek sub-watershed and one in the Tampa Branch sub-watershed.

A conservative estimate of daily wastewater flow for a single home with 2.5 occupants is 150 gallons per day (Mayer et al. 1999). An estimate of fecal coliform in raw wastewater reaching the stream (US EPA "Onsite Wastewater Treatment Systems Manual" 2002) is 10,000,000 cfu per 100 ml. Removing a failing system that flows into a surface water by replacing it with a working system will remove 56,781,176,700 fecal coliform colonies per day per home. This equates to 13,056,831,582,165 *E. coli* cfu/year for each septic system remediated (McKee et al 2012). Replacing two septic systems combined potentially decreased the bacteria load in Bacon Creek by over 2 trillion *E. coli* cfu per year.

Agricultural BMPs

The agricultural BMPs implemented included two fencing sections totaling approximately 3,952 feet of fencing (NRCS code 382), one heavy use area protection (NRCS code 561), and one livestock watering facility (NRCS code 614). All four BMPs took place on the same farm. NRCS specifications were used to plan and install the BMPs, and the Agricultural Coordinator worked with the farmer to help ensure proper siting and installation. He called on local conservation district offices for technical advice when needed. Estimated load reductions for these BMPs can be seen in Table 2.

Table 2: Estimated load reductions and expected efficiencies from implemented BMPs.

BMP	Indicator	Estimated Load Reduction*	Expected Efficiency**
Ag. Water Quality Plan	Number of plans completed or updated	not measurable	not measurable
Fence (containment)	Bacteria count	50-90%	Moderate to Substantial Improvement
Watering Facility	Bacteria count	n/a	n/a
Heavy Use Area Protection	Bacteria count	85%	Moderate to substantial improvement

* Estimated Load Reduction: provides a gross estimate of practice effectiveness as reported in research literature. The actual effectiveness of a practice will depend on site-specific variables such as soil type, crop rotation, topography, tillage, and harvesting methods.
http://water.epa.gov/polwaste/nps/guidance.cfm

** Effectiveness: These values are based on NRCS conservation practice physical effects (CPPE) documents and EPA National Management Measures to control nonpoint source pollution. Due to the general nature of these sources and site variability, results may differ.
www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/econ/data
http://water.epa.gov/polwaste/nps/agriculture/agmm_index.cfm

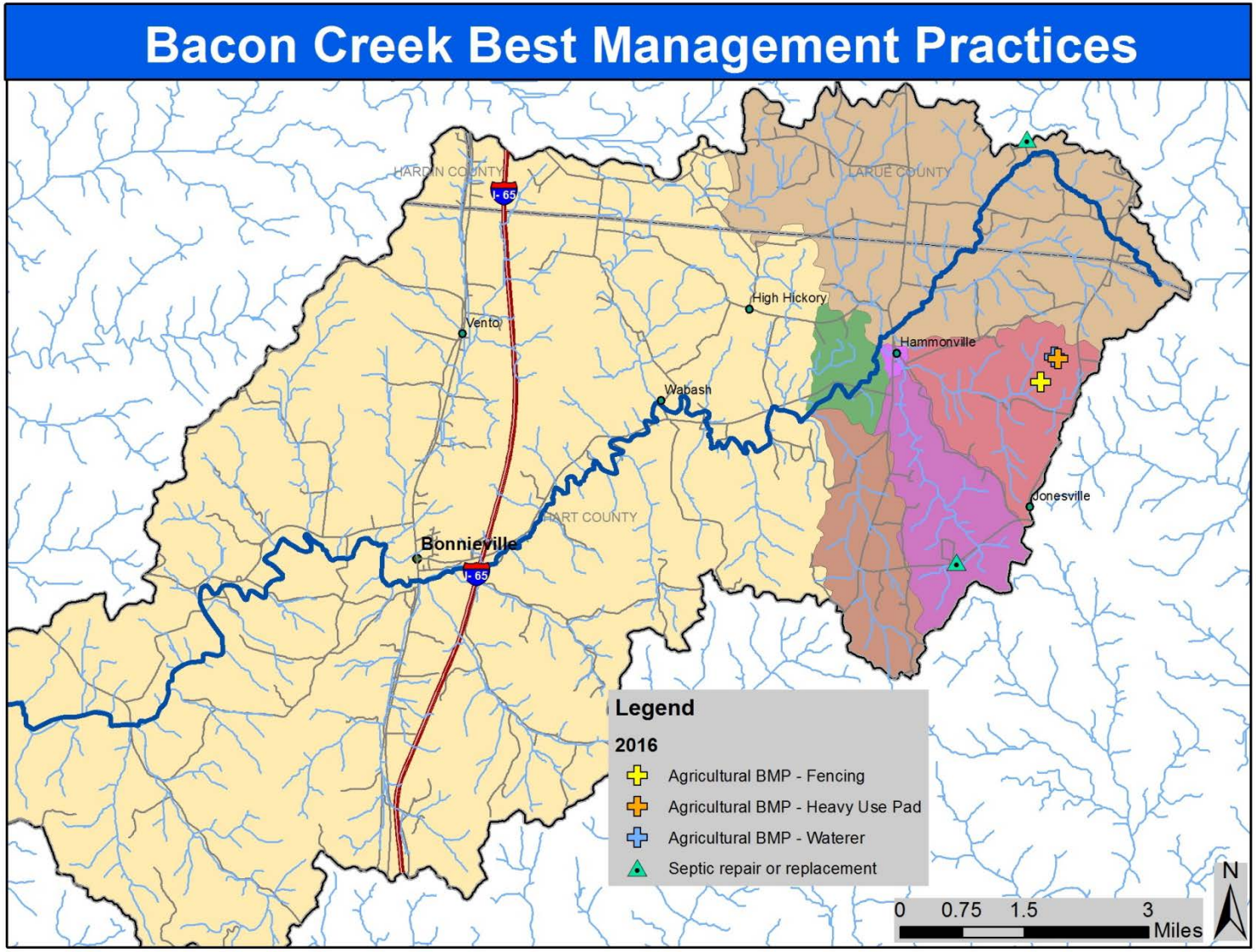

Figure 3: Locations of the Best Management Practices installed in the Bacon Creek Watershed Implementation project.

Conclusions

The following measures of success exhibit the scope of the grant project and the strides made toward involving local communities in watershed planning:

Measures of Success:

The overall project goals (as expressed in the grant application) were to reduce pathogens in the five upper HUC 14 sub-watersheds in Bacon Creek and increase capacity and effectiveness of the Bacon Creek Watershed Council. These goals were articulated in the following objectives:

1. Implement agricultural and septic BMPs to reduce pathogen levels in creek

-Septic and agricultural BMPs were installed to improve the water quality in Bacon Creek. A total of two failing septic systems were replaced, and four agricultural BMPs were implemented on one farm.

2. Increase membership in Council

-Partnership with the Watershed Council was maintained to continue community outreach and commitment to improve water quality in Bacon Creek.

- Assistance was provided for regular meetings, activities, and outreach.

Final Conclusion

Throughout the course of the grant project, local community residents have been interested and involved in cleaning up the Bacon Creek Watershed. Building relationships and developing trust with residents and farmers is a huge step in integrated watershed planning. Community participation, understanding, and support of watershed planning projects are integral to reaching long term water quality improvement goals.

Continued BMP implementation and community outreach and education will serve the populace of the watershed well. Traditional septic systems are not an ideal solution for the residential sources of *E. coli* as the watershed soils are mostly unsuitable for them. However, taking into account local economies and culture, septic systems may still be the most feasible treatment of wastewater in Bacon Creek. Careful siting and installation and additional measures such as double chamber tanks or double tank systems can help ensure proper function of systems. Agricultural BMPs will continue the work of this project in building

relationships and giving farmers the extra support needed to implement good, sustainable practices in all areas. The Agricultural Coordinator's work was instrumental in farmer involvement and BMP implementation. A move toward whole farm planning through the continuation of his work and the use of Agricultural Water Quality Plans will be critical for greater reductions in pollutant loads and long term sustainability.

There is great interest in the communities of the entire Bacon Creek Watershed to see the project move downstream to include the lower reaches. Many individuals in lower Bacon Creek have applied for septic system assistance and expressed interest in agricultural BMPs.

At a basic level, watershed planning is about education and community involvement – not some plan on a shelf somewhere. It is the collective, daily actions of individuals that impact water quality the most. Knowledge leads to awareness, and awareness leads to stewardship. The Bacon Creek Watershed Council and participants in project BMPs serve as examples of a small group of people making a big difference on a local level.

References

EPA. 2002. *Onsite wastewater treatment systems manual*. Office of water, Office of Research and Development, U. S. Environmental Protection Agency. 3-2 pp.

Kentucky Division of Water (KDOW). 2012. *Integrated Report to Congress on the Condition of Water Resources in Kentucky, 2012*. Commonwealth of Kentucky, Environmental and Public Protection Cabinet, Department for Environmental Protection, Division of Water. 314 pp.

Kentucky Waterways Alliance and Kentucky Division of Water. 2010. *Watershed Planning Guidebook for Kentucky Communities*. Kentucky Department for Environmental Protection, Division of Water, Frankfort, KY.

Mayer, Peter W. et. al. 1999. *Residential End Uses of Water*. American Water Works Association Research Foundation. 90-92 pp.

McKee, Kyna, et al. 2012. *Modeling support of Attoyac Bayou watershed initial SELECT model outputs*. Texas A&M Biological and Agricultural Engineering and Texas Water Resources Institute. 6-18 pp.

Natural Resources Conservation District (NRCS). 2011. Conservation Practices. http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/technical/?cid=nrcs143_026849 Accessed August 2013.

Natural Resources Conservation District (NRCS). 2009. *RMS planning tool, identify resource problems and recommend practices.* http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/econ/data/?cid=nrcs143_009740 Accessed in September 2013.

Reynolds, Dale. 2005 *Bacon Creek Watershed Action Plan*. Kentucky Division of Water.

Appendix A: Financial and Administrative Close-out

Appendix A: Financial and Administrative Close-out

1. Application Outputs

The following outputs were generated by the project during 2014-2016:

- Updated Bacon Creek Watershed webpages, July 1, 2014 - May 2016
- Renewed contract with Bacon Creek Agricultural Coordinator, July 2014
- BMP Implementation Plan for Septic System Replacement program, July 2014
- BMP Implementation Plan for Agricultural BMP program, July 2014
- Bacon Creek Farm Field Day flyer, August 2015
- Bacon Creek Celebration Meeting flyer, April 2016

Table 3: Final milestones for the Bacon Creek Watershed Plan Implementation project

Milestones	Date started	Date completed
1. Submit all draft materials to the Cabinet for review and approval.	7/1/14	5/20/16
2. Submit advanced written notice on all workshops, demonstrations, and/or field days to the Cabinet.	7/1/14	4/27/16
3. Update project partners	7/1/14	5/20/16
4. Submit draft news articles, brochures, newsletter articles, and other education and outreach materials to NPS Program staff for approval (ongoing)	7/1/14	5/20/16
5. Conduct quarterly Watershed Council meetings (ongoing)	9/17/14	4/27/16
6. Renew contract with Agricultural Coordinator	7/1/14	7/4/14
7. Maintain webpages for the project	7/1/14	5/20/16
8. Develop and submit a BMP Implementation Plan to NPS Program staff for approval	7/1/14	5/20/16
9. Install 4 agricultural BMPs	7/1/14	5/20/16
10. Install septic BMPs	7/1/14	5/20/16

11. Submit advance written notice to NPS Program staff for Watershed Roundtable and all educational public meetings (ongoing)	7/1/14	5/20/16
12. Plan and host Watershed Roundtable	7/1/14	4/27/16
13. Submit Annual Report to NPS Program staff by December of each year	7/1/14	4/18/16
14. Upon request of the Division of Water, submit Annual Report and/or participate in the Cabinet sponsored biennial NPS Conference.	7/1/14	4/18/16
15. Submit one hard copy and one electronic copy of Final Report and submit one hard copy and one electronic copy of all products produced by this project.	7/1/14	5/20/16

2. Budget Summary

Original Approved Budget			
Budget Categories (Itemize all Categories)	§319(h) (60% of funds)	Non-Federal Match (40% of funds)	TOTAL
Personnel	$33,080.00	$26,837.00	$59,917.00
Supplies	0	0	0
Equipment	0	0	0
Travel	1,187.00	791.00	1,978.00
Contractual	42,750.00	14,250.00	57,000.00
Operating Cost	5,546.00	9,334.00	14,880.00
Other	0	3,830.00	3,830.00
TOTAL	$82,563.00	$55,042.00	$137,605.00

Final grant expenditures

Final grant expenditures differed slightly from budgeted. We spent less on KWA personnel, travel and operating costs. We spent more than budgeted on agricultural BMPs and consequently more on the contractual agricultural coordinator. We spent less on septic BMPs. We had more match from the community participation due to hosting an agricultural field day.

Kentucky Waterways Alliance, Inc. was reimbursed $82,563.00. All dollars were spent; there were no excess project funds to reallocate.

Equipment Summary
No equipment was purchased for this project.

Special Grant Conditions
There were no special grant conditions for this project.

Appendix B: Community Outreach and Education Materials

1. Bacon Creek Farm Field Day flyer
2. Bacon Creek Celebration Meeting flyer

Appendix B: Bacon Creek Farm Field Day flyer

Appendix B: Bacon Creek Celebration Meeting flyer

Appendix C: Best Management Practices Implementation Plans

Bacon Creek Septic System Replacement Best Management Practices Implementation Plan

List of technologies to be installed

BMP: Repair or replacement of residential septic system

Selection process

• How the BMPs have been selected:

The septic repair or replacement BMP was selected based on its potential impact on water quality of Bacon Creek. The main goal of the septic replacement BMP is to reduce the bacteria load originating from residential sources in the upper watershed area. The strategy will be centered on identifying septic maintenance issues, offering a greatly reduced service of repairing or replacing a septic system up to $6000 total cost, and raising awareness about septic maintenance issues.

The Hart County Health Department is a participating agency on the project; new septic systems and repairs to existing systems require their approval. Their expertise and local knowledge is invaluable.

Applicant must complete a site evaluation application at the BRDHD/Hart County Health Department during normal Environmental office hours from 8:00 a.m. – 9:30 a.m. (CST), Monday through Friday. Applicant must provide a site drawing showing all current and proposed structures at the time of application submittal and pay the site evaluation fee of $155. The property owner will need to sign an Owner Affidavit indicating the number of bedrooms in the residence. A temporary electrical release sticker will be issued, if needed, for structures on a private onsite sewage disposal system except mobile homes.

The Certified Inspector will evaluate the site to determine if the parcel of land can be approved for an onsite sewage disposal system. A copy of the site evaluation will be made available to the applicant. Once the site is approved, the Certified Installer must obtain the installation permit for the onsite sewage disposal system.

A proposed onsite sewage disposal system drawing is required from the Certified Installer. The onsite sewage disposal system installation permit fee is $180 and is due before the permit is issued. This fee is to be paid by applicant. Once the permit is issued an electrical release sticker for permanent service will be provided, if needed. A copy of the permit will also be provided to the KY State Plumbing Inspector. The State Plumbing Inspector must have a copy of the septic

permit as part of the plumbing permit process. The State Plumbing Inspector issues permits for water service, inside plumbing and/or sewer line from the structure to the septic tank to a Licensed Plumber or a Homeowner.

A final inspection of the system will be done once the installation is complete and before it is covered.

A minimum of two bids must be submitted by the applicant to KWA Project Manager, and the potential award recipient will be encouraged to accept the best and lowest bid. In some instances, a repair permit may be obtained for replacement installations that meet repair guidelines. The repair permit is $110 and must be obtained by the Certified Installer from the BRDHD/Hart County Health Department. The applicant is responsible for this fee. The onsite sewage disposal system repair installation will be inspected by the Certified Inspector when weather and soil conditions are conducive. Only when all inspections are completed and approved will the funds be authorized to be disbursed, directly to the Certified Septic Installer. BMP technologies eligible for installation are as follows:

a. New septic tank and conventional leach lines to be installed in original or approved fill soil areas
b. New septic tank and leaching chambers to be installed in original or approved fill soil areas
c. Existing septic tank and new conventional leach lines to be installed in original or approved fill soil areas
d. Existing septic tank and new leaching chambers to be installed in original or approved fill soil areas
e. Addition of conventional leach lines or leaching chamber to existing systems which are surfacing sewage
f. Experimental systems as submitted and approved; mandatory operation and maintenance contracts
g. Any of the above systems with a pump tank and a pump to transfer the effluent from a lower tank to a higher lateral field if necessary

401 KAR 5:037 requires persons who own/operate septic systems to have a Groundwater Protection Plan (GPP). Applicants will be informed of requirement and given the "Homeowner's Septic System Guide and Record Keeping Folder" from the KDOW website. The Project Manager will request to see a completed GPP at the time of a site visit. If alternative onsite sewage system technology is used, the Health Department's Operation and Maintenance requirements must be met and a written contract received prior to issuance of permit.

The Septic Repair or Replace BMP Plan of Action is as follows:

1. Homeowner submits application to the Bacon Creek Septic Replacement Program to Project Manager (mail or email). Applicants are encouraged to contact Project Manager directly with questions about program or application and selection process.
2. The Project Manager reviews the application. She will contact applicant if approved or not approved to continue with inspection. Final approval for project will happen after inspection takes place.
3. Onsite sewage inspector schedules site evaluation, conducts evaluation, and takes picture of discharge.
4. Onsite inspector forwards the information and any photos to Project Manager with comments on potential impact on water quality (based on distance to creek, particular septic situation, and incidence of nearby karst features).
5. Applicant is asked to provide two installer bids from certified installers for onsite work to be completed and sends information to Project Manager.
6. Application packet and site are reviewed. Candidate is notified of project and certified installer approval.
7. Project Manager makes a site visit, meets land owner, and requests to see copy of GPP.
8. Permit is obtained.
9. Installation begins, and photos are taken. Homeowners pay required amount (20% of total cost) directly to Certified Installer after discussing cost with Project Manager.
10. Disbursement is authorized and sent directly to installer upon completion.

**Note that the onsite sewage disposal system installation permit fee ($180), the repair permit ($110), and/or the site evaluation fee ($155) will not be included in the total cost of the project. The applicant is responsible for these fees and is not eligible for reimbursement from KWA or project partners.*

How selected BMPs will be targeted to specific locations

• BMP selection criteria will include:

- potential load reduction based on distance to the creek, watershed location, and known karst features. Previously collect microbial source tracking and land use data will also be used in this analysis.
- landowner willingness to participate in watershed planning project
- landowner willingness to complete a Groundwater Protection Plan (GPP) and an Agricultural Water Quality Plan, when applicable (applicable when one owns 10 acres or more and performs commercial agricultural activities, excludes large garden for family consumption, even if a tractor is used and/or chemical pesticides/herbicides/ fertilizers are used).

All interested parties will be asked to complete an application including questions to address the above concerns. The applications will then be ranked based on the above criteria. The program is not being limited to a specific subwatershed. Applications will be carefully reviewed and site visits made to determine which locations would provide the biggest improvement to water quality in Bacon Creek. The final decision will be made by the KWA Executive Director and Watershed Program Director in collaboration with the DOC technical advisor and Health Department Inspector.

An initial application period of 90 days will be put into place. If there are funds remaining or too few applicants, an additional application period will ensue.

A secondary project goal is outreach and education in the watershed about water quality issues, particularly nonpoint source pollution. Applicants will be asked to serve on the Bacon Creek Watershed Council and/or participate in watershed planning and outreach activities.

Financial plan of action

The supplemental grant funding will be used to implement septic repair or replacement BMPs in the Bacon Creek Watershed to improve water quality. To facilitate participation, there will be an 80/20% cost-share, which may be waived at KWA's discretion. A total of $6000 may be spent per project. This means a total of $4800 of federal money and $1200 match for each project for a total of two projects.

Application for Septic Repair or Replacement Best Management Practices

(please complete both sides of application)

Owner's Name _____

Occupant's Name (if different):_____

Address of Property (include distance to creek):_____

_____

Phone and email:

_____

Briefly describe your septic system situation (including any known problems, number of people in the household, type of leach field, type of tank, and approximate date of last pump out).

_____

_____

_____

Are you interested in serving on the Bacon Creek Watershed Council? Do you have a particular area of interest?

_____

_____

Have you completed a Groundwater Projection Plan (GPP) or an Agricultural Water Quality Plan? 401 KAR 5:037 requires persons who own/operate septic systems to have a Groundwater Protection Plan. An Agricultural Water Quality Plan is applicable if you own 10 acres or more and you perform commercial agricultural activities (i.e. excludes large garden for family consumption, even if you use tractor and apply chemical pesticides/herbicides/ fertilizers).

Cost

The cost to the homeowner will be a percentage of the overall cost, depending on action need (repair or replacement, etc). This will most likely be an 80/20 cost share between KWA and the applicant. All final costs will be agreed upon by homeowner and KWA before any work is done. The homeowner will pay their portion of the project directly to the certified contractor.

Maintenance agreement with landowner

Throughout this application and implementation process, the landowner will be required to communicate directly with the Project Manager. Upon selection for participation in the KWA septic BMP program, the landowner will be required sign the following statement:
I certify that the above information is true and correct. I hereby request for payment to be made to installer for work on my property to the extent that KWA has determined that the practice has been performed. I have 60 days after project approval to obtain two bids and meet with Health Inspector. I agree to refund all or part of funds paid by KWA, if, before expiration of the practice's life span specified above, I (a) destroy the practice installed, or (b) cease to use practice for its intended purpose, or (c) voluntarily relinquish control or title to land on which the practice has been installed and the new owner and/or operator does not agree, in writing, to properly use and maintain practice for the remainder of its specified life span. I agree to follow recommended septic maintenance for the life of the septic tank, pumping out every three to five years.
I agree to allow photos or video of my property to be taken and used for KWA purposes. I understand that before I am eligible for work to begin, I must: (1) Complete a Groundwater Protection Plan and (2) Agree upon and sign contract.

_____ _____

Applicant Signature Date

Bacon Creek Agricultural Best Management Practices Implementation Plan

List of technologies to be installed

BMP:

- Fence (382) for water quality

- Filter Strip

- Grassed Waterway

- Heavy Use Area Protection (561)

-Access Control (472)

- Riparian Forest Buffer (391A)

- Sinkhole Protection (725)

- Stream Crossing (576)

More information about NRCS codes can be found here: www.ky.nrcs.usda.gov/technical/

Selection process

• How the BMPs have been selected:

Agricultural BMPs were selected based on their potential impact on water quality of Bacon Creek. The main goal of the agricultural BMPs is to reduce the bacteria load originating from agricultural sources in the Upper Bacon Creek Watershed. The strategy will be on centered on preventing or reducing polluted runoff from agricultural fields from entering the creek and its tributaries. Thus, efforts will be focused on BMPs that have been shown to be successful at this endeavor. All of the BMPs listed above would be appropriate and useful in the target area.

How selected BMPs will be targeted to specific locations

• BMP selection criteria will include:

- location

- proximity to the creek

- potential load reduction

- suitability of BMP for site proposed

- landowner willingness to participate in project and provide in-kind match

- cost of proposed BMP

All interested parties will be asked to complete an application including questions to address the above concerns. The applications will then be ranked based on the above criteria. All applicants will also be asked to apply for NRCS funding. BMPs will be selected that meet the needs of the operation while providing the best resource protection. If applicants qualify for current NRCS programs, they will be advised to use that funding instead of 319 project monies. Candidates that meet the criteria, and do not receive NRCS funding, will be in contention for project monies. The final decision will be made by the KWA Executive Director and Watershed Program Director in collaboration with the project Agricultural Coordinator.

A secondary project goal is outreach and education in the watershed about water quality issues, particularly nonpoint source pollution. Therefore, all applicants for 319 program monies will be asked to complete an Agricultural Water Quality Plan. Applicants will also be asked to serve on the Bacon Creek Watershed Council and/or participate in watershed planning and outreach activities. This could include BMP field days if appropriate.

The project will compliment state and federal funding programs in the watershed. Operation and maintenance agreements are required for both the EQIP and State Cost Share programs. These same agreements will be used for 319 project BMPs.

Financial plan of action

The grant funding will be used to promote appropriate agricultural BMPs in the targeted watershed, Upper Bacon Creek, to improve water quality. To facilitate participation, there will be no cash match requirement; in-kind match may be used. Specific to the BMP to be installed, land owner will be expected to assist in installation with time, equipment, and, if applicable, materials. However, cash match may be used if the applicant so chooses. Either type of match will be at a 25/75% ratio of cost.

Any BMP or system considered for funding through this program must be reviewed for the potential to improve water quality. BMPs or systems designed for production improvement or efficiency will not be considered. The application process should be used to help discern the most suitable and effective BMPs.

Maintenance agreement with landowner

Upon selection for participation in the KWA agricultural best management practices program, the landowner will be required to sign the following statement:

Please know that if selected, this application will represent a contract with Kentucky Waterways Alliance for the completion and maintenance of the selected BMP. KWA, via the 319 grant, will provide 75-25 cost-share for the installation of BMP. The landowner portion (25%) may be provided with cash or in-kind donation (labor, supplies, and equipment use) equaling 25%. You will be required to sign the following maintenance agreement:

I certify that the above information is true and correct. I hereby apply for payment to the extent that KWA has determined that the practice has been performed. I agree to maintain this practice for at least five (5) years following the year the practice is completed. I agree to refund all or part of the cost-share assistance paid to me as determined by KWA, if, before the expiration of the practice's life span specified above, I (a) destroy the practice installed, or (b) cease to use the practice for its intended purpose, or (c) voluntarily relinquish control or title to the land on which the installed practice has been established and the new owner and/or operator of the land does not agree, in writing, to properly use and maintain the practice for the remainder of its specified life span.

I agree to be willing for BMPs to be photographed (during installation or upon completion) and/or part of a field day or demonstration. I understand that before I am eligible for these funds I must complete the following: 1. Agree upon and sign contract; 2. Receive NRCS designs for approved practices; 3. *Complete initial or update current Agricultural Water Quality Plan; and 4. Install practices according to the designs and specifications.*

_____ _____

Applicant Signature Date

Notification process to DOW

All BMPs will be installed according to NRCS standards and specifications. All BMPs must comply with the KY Agriculture Water Quality Act and the Forest Conservation Act. BMPs must be maintained for the life of the practice.

Application for Agricultural Best Management Practices Assistance

The main goal of this project is to improve the water quality of Bacon Creek, and in particular, to reduce the amount of animal waste reaching the creek.

Name:_____

Address (please include subwatershed and distance to creek): _____

_____

Phone and email: _____

Briefly describe your agricultural operation and include total number of acres and livestock head count.

_____

_____

Have you completed an Agricultural Water Quality Plan? _____

If not, would you be willing to? _____

Did you apply for NRCS funding this year? If so, what program? _____

_____

What type of Best Management Practice would you like to implement (please be specific)?

_____

What kind of volunteer support, supplies, or equipment use can you provide for BMP implementation on your land (please be specific)?

_____

_____

_____

Are you interested in serving on the Bacon Creek Watershed Council? _____

Please know that if selected, this application will represent a contract with Kentucky Waterways Alliance for the completion and maintenance of the selected BMP. KWA, via the 319 grant, will provide 75-25 cost-share for the installation of BMP. The landowner portion (25%) may be provided with cash or in-kind donation (labor, supplies, and equipment use) equaling 25%. You will be required to sign the following maintenance agreement:

I certify that the above information is true and correct. I hereby apply for payment to the extent that KWA has determined that the practice has been performed. I agree to maintain this practice for at least five (5) years following the year the practice is completed. I agree to refund all or part of the cost-share assistance paid to me as determined by KWA, if, before the expiration of the practice's life span specified above, I (a) destroy the practice installed, or (b) cease to use the practice for its intended purpose, or (c) voluntarily relinquish control or title to the land on which the installed practice has been established and the new owner and/or operator of the land does not agree, in writing, to properly use and maintain the practice for the remainder of its specified life span.

I agree to be willing for BMPs to be photographed (during installation or upon completion) and/or part of a field day or demonstration. I understand that before I am eligible for these funds I must complete the following: 1. Agree upon and sign contract; 2. Receive NRCS designs for approved practices; 3. *Complete initial or update current Agricultural Water Quality Plan; and 4. Install practices according to the designs and specifications.*

_____ _____

Applicant Signature Date