Dix River Septic System Education and Improvement Program

Grant # C9994861-12
Application/Project # 12-04
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Submitted by:
Bridget Abernathy, Outreach Specialist

BLUEGRASS GREENSOURCE

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Acknowledgements

Over the past three years, Bluegrass Greensource has formed invaluable relationships with those who live and work in the Dix River Watershed. Partnerships with water quality experts, local professionals, community groups, schools, homeowners and contractors have allowed us to build and strengthen the program throughout the grant cycle. We have worked with many of these groups preceding this grant, and have developed other professional relationships during the course of this project. We would like to acknowledge these entities in helping us promote and implement the program within the Dix River watershed:

- Kentucky Water Resources Research Institute (KWRRI)
- Natural Resources Conservation Service (NRCS)
- University of Kentucky Cooperative Extension Service
- Garrard County Cooperative Extension Service
- Lincoln County Cooperative Extension Service
- Boyle County Cooperative Extension Service
- Kentucky River Basin Coordinator
- Kentucky Division of Conservation
- Dix River Watershed Council
- Kentucky Waterways Alliance
- Kentucky Onsite Wastewater Association
- Bluegrass Area Development District
- Garrard County Health Department
- Lincoln County Health Department
- Boyle County Health Department
- Lincoln County Sanitation District
- Third Rock Consultants
- Garrard County Public Schools
- Lincoln County Public Schools
- Boyle County Public Schools
- Boyle County Community Education
- Danville Department of Public Works
- Clarks Run Environmental Education Corporation (CREEC)
- Centre College
- Lincoln County Public Library
- Boyle County Public Library
- Garrard County Fiscal Court

- Lincoln County Fiscal Court
- Boyle County Fiscal Court
- Kentucky Community and Technical College System
- Stanford Interior-Journal
- Garrard Central Record
- Danville Advocate Messenger
- WPBK FM Lincoln County Local Radio

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Executive Summary

For nearly fifteen years, Bluegrass Greensource has educated youth and the general public about water quality in Central Kentucky. Our approach has included not only the critically important issues in our area, but has also ways to implement improvements. Research has proven that septic system repair and maintenance can decrease *E.coli* and other bacterial contributions to waterways over time, and can help improve nonpoint source pollution contributions to streams and rivers. Our project focused on increasing awareness of water quality problems, educating the public on ways to mitigate the problem, and improving water quality by providing assistance to those who have septic system problems. We have educated homeowners on both water quality and septic system function and care, which allow citizens to better understand how their behaviors affect their local and regional environment, and have educated youth about water quality in their communities.

Throughout the Kentucky Division of Water three-year grant cycle, we have succeeded in facilitating the repair of 33 septic systems, and the pumpout of 23 septic systems. This project was focused in the Dix River Watershed, and included portions of Garrard, Lincoln, and Boyle Counties. During this period, we provided educational opportunities to over 18,880 individuals through septic system and watershed homeowner workshops, K-12 educational programming, stakeholder meetings, presentations to local organizations and governments, six community watershed festivals, and other community events. Over the three year grant cycle, our work has reached 27 percent of the population in the three-county project area. Through this broad outreach effort, we have created diverse opportunities for community members to learn about the importance of clean water and how to implement measures to improve water quality in the Dix River Watershed. Our partnerships with local organizations, professionals and individuals have assisted us in achieving the successes of the program.

Introduction and Background

During the development of the 2009 Watershed Based Plans for Hanging Fork and Clarks Run in the Dix River Watershed, research indicated that almost half of the stream miles in the Hanging Fork watershed were unsafe for human use (Third Rock Consultants, September 2009; Third Rock Consultants, November 2009). Water sampling results displayed concentrations of *E. Coli* ranged from ten to 1,000 times greater than the statewide limit for safe swimming and wading. At their highest levels, some sampling locations in the Hanging Fork watershed displayed *E. Coli* levels similar to those found in the inflow of a sewage treatment plant. The Clarks Run Watershed Based Plan and a 2010 Pathogen TMDL developed for the Dix River indicated similar *E. Coli* contamination. (Third Rock Consultants, November 2009; Kentucky Division of Water, June 2010).

In rural areas of Kentucky, septic systems are the most common way to treat and dispose of household sewage. Aging, improperly installed, or failing septic systems, as well as straight pipes, are the main cause of human-related bacterial contributions to waterways. Human fecal pollution of waterways is the most significant human health impact in the Dix River Watershed. The 2009 Watershed Based Plan's recommendations for reducing pathogen levels in the Hanging Fork Watershed include rehabilitating or replacing failing septic systems (Third Rock Consultants, September 2009). The Dix River Septic System Education and Improvement grant project was initiated to address the numerous failing septic systems contributing to high pathogen levels in Hanging Fork and other tributaries to the Dix River, and educate citizens about the vital need for water quality improvement.

This project has also implemented the Hanging Fork Plan's Objective #5 and Clarks Run Plan's Objective #7 to "increase knowledge of water quality issues such that citizens and local officials can address impairments." (Third Rock Consultants, September 2009; Third Rock Consultants, November 2009). The associated BMPs for the objectives have included measures to increase public education by increasing accessibility to water quality-related information, encouraging community interest in stream improvement, and presenting concerns and education to both county and city officials. Throughout the grant cycle, Bluegrass

Greensource has actively engaged youth and adults in educational programming, water quality curriculum and stream-related activities, and has collaborated with local professionals and governments about nonpoint source pollution and water quality in the Dix River Watershed.

The 2009 Watershed Based Plans provide pertinent information that identifies problems in the watershed, and recommendations for prioritizing work. These plans have been essential for project development, strategic planning, and focusing implementation efforts throughout the Dix River Watershed (Third Rock Consultants, September 2009; Third Rock Consultants, November 2009).

Materials and Methods

Project Area

The Dix River Watershed is located in the Kentucky River Basin, and includes portions of Garrard, Lincoln, and Boyle Counties (Figure 1). This area encompasses 418 square miles of land upstream from the Herrington Lake Dam. The watershed is part of the Outer Bluegrass physiographic region of Central Kentucky, which is characterized by rolling hills, moderate to rapid surface runoff, and moderate rates of subsurface drainage (Third Rock Consultants, September 2009). Sinkholes, springs, and intermittent and perennial streams are found throughout the watershed. The Outer Bluegrass region is made up of Upper Ordivician limestone, clay, shale, and siltstone. This bedrock makes the area especially prone to karst features, which affect water drainage and water quality.

This watershed is dominated by agricultural land, and includes fragmented forest along stream and river corridors. The history of land use is complex and diverse. At the time of settlement, open savanna woodland made up most upland areas. Steep slopes were made up of hardwood forest, and cane and forestland grew along streams and rivers. Settlers cleared much of the forest, and heavily utilized the land for agriculture. Soil depth and quality vary throughout this watershed, and land use has greatly affected soil properties (Third Rock Consultants, September 2009).

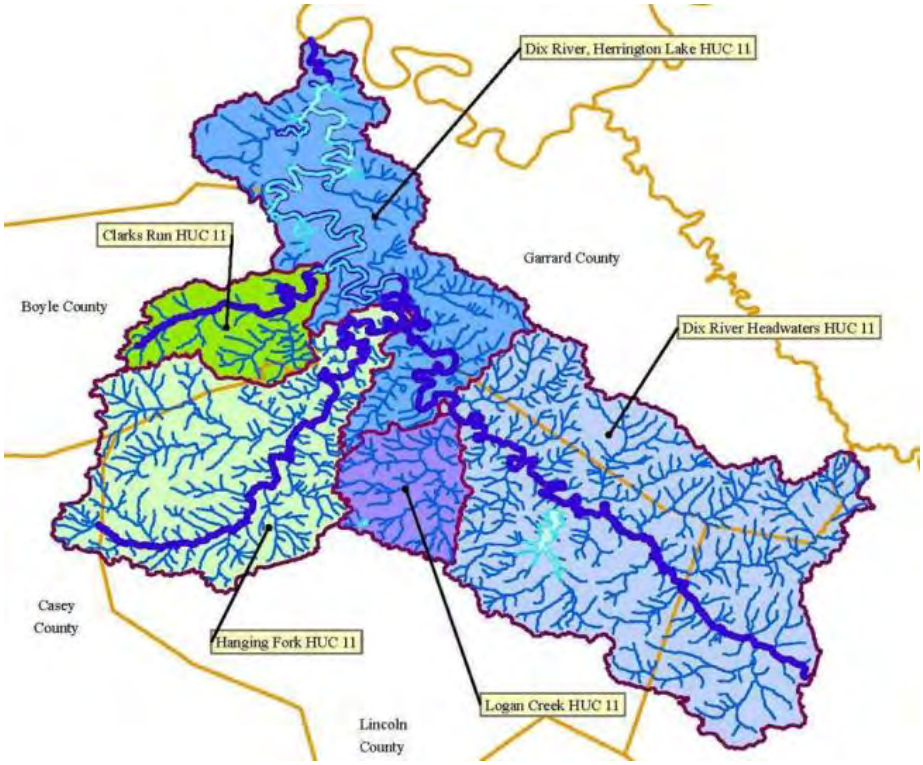
The USDA Natural Resources Conservation Service (NRCS) has published soil surveys throughout the project area, and rates the performance of septic tank absorption fields, defined as the area in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Soil ratings are based on soil properties, site features, and the observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of septic tank effluents. Soils in this area include the Eden, Maury, McAfee, Garmon, Faywood-Cynthiana and Lowell series. NRCS rates these soil series as somewhat to very limited for installation of septic tank absorption fields due to slope, depth to bedrock, stone content and restricted permeability (USDA Web Soil Survey, 2009). Based on the soil ratings and the

intermittent karst formations, many of the septic systems in the watershed are not functioning properly.

At present, the watershed is largely rural. Several small towns are located throughout the landscape; however, the majority of homeowners live in these rural areas, and many own acres of property. Agriculture continues to dominate the area, but some tracts have been left fallow as the presence of farming diminishes. Crops such as corn, soybeans, tobacco and alfalfa are grown in the area, and cattle are the predominant form of livestock present on farms. Farming practices have affected water quality for decades, where chemical application, soil erosion, and livestock waste enter waterways. Although agriculture is the dominant land use in the Dix River Watershed, data indicates that human waste was the source of human bacterial inputs at many testing sites (Third Rock Consultants, September 2009).

As the landscape has become more fragmented in past decades and population density increases, the number of residents on small tracts of land has increased. Many large-acreage farms have been divided into smaller units for small-scale farming or rural residential development. In this rural watershed, access to municipal sewer lines is limited to areas adjacent to towns. Homeowners have been reliant on septic systems to dispose of waste, and some homes still use "straight pipes", which are a direct conduit to streams and do not treat waste before it enters waterways. Many septic systems in the watershed are failing due to age and improper installation. In the Hanging Fork watershed, for example, nearly 37% of the approximately 2,700 septic systems are failing (Third Rock Consultants, September 2009).

Dix River Project Area Map-
Figure 1



Methods

Goals and Objectives

The project included two main goals: reducing human pathogen inputs to the Dix River Watershed, and providing watershed education to local communities. The objectives created to implement these goals included: building watershed stakeholder capacity for the greater appreciation and improvement of the Dix River Watershed and other area waterways, educating local homeowners, youth and other citizens about local water quality and septic system function, and enabling better septic system function throughout the watershed. Diverse activities were then developed to implement the goals and objectives of the project.

Partnerships and Stakeholders

At beginning of the project, Bluegrass Greensource focused on identifying stakeholder groups and building partnerships to create public awareness about water quality issues in the Dix River Watershed. After stakeholders and partners were identified, we coordinated informational meetings and trainings to educate local officials, community members, and professionals about the project area, the challenges within it, and the focus of the project. We solicited the professional expertise of the following stakeholders and partners:

- Kentucky Water Resources Research Institute (KWRRI)
- University of Kentucky Cooperative Extension Agents
- Kentucky River Basin Coordinator
- Kentucky Division of Conservation
- Natural Resource Conservation Service
- County Health Departments
- Dix River Watershed Council
- Kentucky Onsite Wastewater Association
- Clarks Run Environmental Education Corporation (CREEC)
- Centre College
- Public School Districts
- County Fiscal Courts

Homeowner Workshops and Trainings

After stakeholder and partner meetings took place in communities throughout the Dix River Watershed, we began planning homeowner and contractor workshops and trainings. We developed focused homeowner workshops to include educating residents about the Dix River Watershed, its many benefits to the communities within it, and the water quality issues that exist as a result of human activity. Additionally, homeowners learned about septic system function, failure, repair, and maintenance, so they could gain a better understanding of how and why septic systems affect water quality, and what they could do to make improvements. Local certified septic pumpout and repair contractors learned about the project and the homeowner assistance program, and their requirements if they were selected as a contractor to implement program activities. Local Health Department Environmentalists were essential in helping with outreach efforts for homeowners and contractors, provided venues for workshops, and expertise in septic workshop presentations. All workshop

and training materials, including advertising and marketing, flyers, brochures, applications, and presentations, were submitted and approved by Kentucky Division of Water prior to events taking place. Homeowner workshops were carried out at different Health Departments County Extension offices, and community centers in the project area three to four times per year.

Homeowner Septic Repair and Maintenance Assistance

After attending the workshops, homeowners could submit applications for septic system pumpout and/or repair if their property was located within the project area. Homeowners could submit applications at the end of the workshop, or could mail the completed applications to Bluegrass Greensource before an established deadline. Property locations were cross-referenced via online mapping and maps created by the Bluegrass Area Development District.

Applications for septic system pumpout included allowances for pumpout, excavation, and riser installation for future access. After approval, homeowners contacted a local septic system pumpout professional to carry out the work, and the contractor would submit an invoice to Bluegrass Greensource for reimbursement, up to an allowable amount.

Applications for septic system repair included an 80/20 percent cost-share allowance for repairs, where Bluegrass Greensource would pay 80 percent of the repair, and the homeowner was responsible for a 20 percent contribution in advance of work being carried out. Homeowners signed a repair and maintenance agreement, indicating their obligation and commitment to contribute 20 percent of the cost of repair.
In addition to this agreement, homeowners were given the *Homeowners Guide to Septic Systems*, outlining septic system function and maintenance. Bluegrass Greensource later approved applications, and local Health Departments carried out site evaluations to determine the extent of the septic system repair. If a repair was needed, the Health Department Environmentalist submitted site evaluations to Bluegrass Greensource, which were used in the Request for Bids sent out to local certified contractors. After bids were received from local certified contractors, Bluegrass Greensource usually accepted the lowest bid, and

a contract was developed with the certified septic contractor. The homeowner was then notified to submit a 20 percent payment in advance of work being initiated. Once payment was received, the contractor was notified to begin work. The contractor was allowed up to 15 months to complete the project, depending on the extent of the repair. Local health departments assisted in verification and final approval of work, and contractors submitted invoices for reimbursement.

K-12 Education and Community Watershed Festivals

Throughout this project, Bluegrass Greensource worked with local school districts to implement water quality education in the K-12 schools in Garrard, Lincoln and Boyle Counties. Our Environmental Educator scheduled regular lessons with local schools and provided hands-on activities at community events in the project area. Students who completed a series of lessons participated in culminating projects showcased at local Watershed Festivals. Water quality-focused environmental education programming was also offered at summer camps within the project area.

Bluegrass Greensource worked with local partners to assist in the planning and promotion of annual community Watershed Festivals in the Dix River Watershed area. Watershed festival partners and Bluegrass Greensource staff assisted in developing environmental education information and hands-on water quality activities for youth and adults, assisted in planning a workshop series for adults that incorporated septic system and water quality information, developed media and marketing material for the events, and worked with local vendors to attract a large audience. During the festivals, student community-based water projects were showcased, including an annual water-themed art contest. Festival participant names and contact information were collected for notification about future watershed initiatives and to add to a Dix River Watershed contact list.

Throughout the project, we continually contacted and recruited community groups to offer educational programming about nonpoint source pollution, what activities affect water quality, and how behavior changes can make an impact in their local environment.

Promotion of the Project

Bluegrass Greensource has worked cooperatively with various organizations, community groups, local officials, schools, colleges and businesses to promote the workshops, septic system assistance program, educational programming, and watershed festivals. Promotion and marketing of events and materials included:

- Radio interviews and promotion highlighting septic homeowner workshops
- Local newspaper articles and website postings about the septic system assistance program and the Dix River watershed
- Print and electronic distribution of flyers advertising homeowner workshops
- Social Media postings about Watershed Festivals
- Watershed Festival poster and flyer distribution among partners and within communities

Additionally, Bluegrass Greensource made presentations about the project to local elected officials in the three-county project area, displaying water quality concerns, highlighting successes of the program, and opportunities to partner and participate in the program.

Bluegrass Greensource tabled and set up septic system and educational displays for youth and adults at annual festivals and events, including:

- Great American Brass Band Festival- Boyle County
- Fall Tobacco Cutting Contest- Garrard County
- Field to Fork- Garrard County
- Master Gardeners- Garrard County
- Party on the Square- Garrard County
- Rural Heritage Festival- Garrard County
- Women in Ag- Garrard County
- Tobacco Festival- Garrard County
- Arts and Music Festival- Lincoln County
- Cow Bell Days Festival- Lincoln County
- Lincoln County Clean Sweep- Lincoln County

Results and Discussion

This project reached over 18,880 adult and youth members of the community in the Dix River Watershed, which equates to 27% of the population in the three-county project area. Our broad outreach with workshops, stakeholder meetings, presentations to local community groups and officials, educational programming, and watershed festivals allowed us to extend outreach to diverse groups in the area. Citizens have been provided educational opportunities to better understand nonpoint source pollution and water quality, how septic system repair and maintenance contribute to making improvements in water quality, and assistance opportunities for making these repairs and maintaining septic system function.

Additionally, 73% of septic system repairs were over $5,000. Throughout the grant period, we received feedback from numerous homeowners that they would not be able to repair their septic system if cost-share funding had not been available. Health department personnel also recognized the necessity of the program, and directed homeowners to attend workshops and apply for assistance. Homeowner and local professional receptivity and feedback remained high throughout the grant cycle.

Septic System Program and Water Quality Advertising Campaign Results

- 270 radio advertisements, reaching over 10,000 listeners per advertisement
- Four radio interviews, reaching over 10,000 listeners per interview
- Six local newspaper advertisements, reaching approximately 10,200 individuals per advertisement
- 18 newspaper and newletter articles, reaching approximately 5,600 individuals per article
- 10 online articles, reaching approximately 2,000 individuals per article
- 1,200 online and print workshop flyers
- 900 watershed festival posters
- 2,000 watershed festival flyers for K-12 students
- 500 direct mail postcards

(Appendix C displays samples of advertising campaign materials.)

Homeowner Workshops and Presentations Results

- Over 155 individuals attended workshops about septic system repair and water quality in the Dix River Watershed
- Over 1,000 copies of Kentucky Homeowner's Guide to Septic System manuals distributed

- 48 workshops and presentations conducted
- 35 certified septic contractors trained
- 150 local and elected officials informed during presentations

Best Management Practice Implementation Results

- 23 septic system pumpouts during the project
- 6 pumpouts in Boyle County
- 9 pumpouts in Garrard County
- 8 pumpouts in Lincoln County
- 33 septic system repairs during the project
- 5 repairs in Boyle County
- 22 repairs in Garrard County
- 6 repairs in Lincoln County

(Table 1 displays repair and pumpout implementation.)

Educational Programming and Watershed Festival Results

- 16,772 K-12 school reaches during the project. (Bluegrass Greensource used existing educational material approved by Kentucky Division of Water.)
- 1,500 community members informed during watershed festivals

Conclusions

The Dix River Septic System Education and Improvement Program has significantly increased awareness of nonpoint source pollution, water quality, and septic system function, repair, and maintenance in the three-county project area. We have distributed information, conducted presentations and provided in-depth information about the development, challenges, and successes of the project to county health departments in other areas of Kentucky, conservation districts, Kentucky River and Licking River Basin Teams, and the U.S. Forest Service. We have utilized print media, local newspapers, radio programming, and workshops to provide in-depth education to local residents, and can act as a resource for other projects in the future.

Our staff has learned many lessons during the development and implementation of this project. The first year of the grant included building a framework for the project with stakeholder and partner outreach, developing materials for educational programming and homeowner workshops, and watershed festival planning. Though several septic homeowner workshops were conducted during the first year, only a few septic repair contracts resulted. During the second year of the project, we chose to increase the number of workshops conducted to allow a higher number of homeowners to participate in the program. The third year of the project included managing and finalizing many long-term repairs and corresponding with contractors who implementing multiple projects.

Literature Cited

Evans, Steve. *Watershed Based Plan: Hanging Fork Watershed*. Third Rock Consultants, September, 2009.

Evan, Steve. *Watershed Based Plan: Clarks Run Watershed*. Third Rock Consultants, November, 2009.

Final Total Maximum Daily Load for Pathogens 25 Stream Segments Within the Dix River Watershed, Boyle, Casey, Garrard, Lincoln and Rockcastle Counties, Kentucky, Kentucky Division of Water, June 2010.

Natural Resources Conservation Service Web Soil Survey, http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx, 2009.

A Kentucky Homeowners Guide to Septic Systems, Kentucky Onsite Wastewater Association, Inc., Kentucky Division of Water, and the Kentucky Cabinet for Health Services, 2006.

Appendices

A. Financial and Administrative Closeout

Application Outputs

Milestones Completed

1. Through letters, phone calls, emails, meetings and site visits, introduce Bluegrass Greensource to residents, professionals and officials in the three county project area who may be of help or interested in the project.
2. Develop framework for project, and workshop and educational materials.
3. Submit all draft materials to the Kentucky Division of Water for review and approval.
4. Submit advanced written notice of all workshops, demonstrations, and/or field days to the Kentucky Division of Water.
5. Submit draft project materials to KDOW for review and approval: K-12 Education Material.
6. Submit draft project materials to KDOW for review and approval: Flyers, Articles, Advertisements, Materials for Septic Maintenance Workshops.
7. Submit draft project materials to KDOW for review and approval: Flyers, Articles, Advertisements, Materials for Watershed Festivals.
8. Submit draft project materials to KDOW for review and approval: Maintenance Checklists, Criteria and Prioritization Method for Septic Repairs, Contracts, Repair Agreements, and other materials for pumpout/repair program.
9. Develop a BMP Implementation Plan for the project and submit to KDOW for review and approval.
10. Continually collect contact information for people who express interest in the septic program and provide them with information on proper septic maintenance and project-related events.
11. Revise materials and submit to KDOW for review and approval as necessary.
12. Submit advance written notice to KDOW for all workshops and festivals.
13. Make contacts with local media to describe project and discuss how to best use their services to reach intended audience.
14. Market the project using conventional media, newsletters, websites, social media, and word of mouth.

15. Advertise workshops through various media outlets.
16. Attend local events to provide NPS pollution and project information.
17. Conduct K-12 educational programs for schools and summer camps within the Dix River Watershed.
18. Plan watershed festivals, secure partners and locations.
19. Advertise watershed festivals through various media outlets.
20. Make presentations to community groups, elected officials and watershed meetings to promote project.
21. Schedule and conduct homeowner workshops and presentations in each county. Notify Division of Water prior to events.
22. Solicit applications for pumpout program.
23. Solicit applications for septic system repair program.
24. Conduct annual watershed festivals.
25. Maintain a database of workshop attendees, partners, and other individuals interested in the program.
26. Keep records of all activities including media, presentations, workshops, outreach efforts, and septic system pumpout and repair assistance.
27. Review and prioritize applications for pumpouts and repairs, conduct inspections, and select sites for repairs.
28. Send repair approval letters to homeowners with matching fund agreement.
29. Conduct approved septic repairs.
30. Follow up and provide education and information to all those interested in the project.
31. Prepare and Submit Annual Reports to Kentucky Division of Water.
32. Prepare and Submit Final Report to Kentucky Division of Water.

Budget Summary

Original Detailed Budget

Budget Categories (Itemize all Categories)	§319(h) (60% of funds)	Non-Federal Match (40% of funds)	TOTAL
Personnel	101,880	178,871	280,751
Supplies	10,000	13,425	13,425
Equipment	0	0	0
Travel	8,625	1,050	9,675
Contractual	190,650	46,750	237,400
Operating Cost	60,480	20,420	80,900
Other	0	0	0
TOTAL	371,635	250,516	622,151

Revised Budget- Approved by Kentucky Division of Water, May 2013

Budget Categories (Itemize all Categories)	§319(h) (60% of funds)	Non-Federal Match (40% of funds)	TOTAL
Personnel	101,880	174,662	276,542
Supplies	10,000	425	10,425
Equipment	0	3,000	3,000
Travel	8,625	2,500	11,125
Contractual	190,650	46,750	237,400
Operating Cost	60,480	20,420	80,900
Other	0	0	0
TOTAL	371,635	247,757	619,392

Final Expenditures

Budget Categories (Itemize all Categories)	§319(h) (60% of funds)	Non-Federal Match (40% of funds)	TOTAL	Final Expenditures
Personnel	101,880	174,662	276,542	255,271.30
Supplies	10,000	425	10,425	8668.38
Equipment	0	3,000	3,000	5403.75
Travel	8,625	2,500	11,125	9485.94
Contractual	190,650	46,750	237,400	261,206.61
Operating Cost	60,480	20,420	80,900	79,356.02
Other	0	0	0	0
TOTAL	371,635	247,757	619,392	619,392

Bluegrass Greensource was reimbursed $317,635.00. All dollars were spent; there were no excess project funds to reallocate. This project did generate overmatch provided by Bluegrass Greensource. This overmatch was not posted to the grant.

Equipment Summary

No equipment was purchased using federal grants funds for this project.

Special Grant Conditions

No conditions were placed on this project by USEPA.

B. BMP Implementation Plan

Dix River Septic System Education and Improvement Program, Project 12-04
Best Management Practices (BMP) Implementation Plan

I. Introduction

In 2009, Watershed Based Plans were completed for Hanging Fork and Clarks Run, tributaries of the Dix River. Both plans identified high levels of E. coli in the watersheds, and microbial source testing revealed that human waste input was the primary source of this contamination. At some sampling sites in Hanging Fork, E. coli levels reached ten to one thousand times the statewide acute warmwater limit; and some sites had E. coli levels comparable to those found in the inflow to a wastewater treatment plant (Hanging Fork Watershed Based Plan, Third Rock Consultants, 2009). Because of the largely rural nature of the watershed, identification and repair of failing septic systems was identified in both plans as the primary objective for reducing pathogen levels in the watershed.

The Dix River Septic System Education and Improvement Program is intended to reduce inputs of E. coli from human waste sources into the watershed by educating local residents on proper septic system function, care, and maintenance, and offering significant financial assistance to homeowners for septic system pumpouts, repairs, and installations. Additional education on septic systems, nonpoint source pollution, and water quality will be offered to the community through watershed festivals, presentations and event tabling, and K-12 educational activities.

II. List of BMP Technologies to be Installed

Funding for the Dix River Septic System Education and Improvement Program will be used to repair and install onsite wastewater treatment systems for residences in the Dix River watershed in Boyle, Garrard, and Lincoln Counties. All facilities will be approved by the Boyle, Garrard, or Lincoln Health Departments. Where a failing septic system exists, repairs will be made as necessary to restore it to full functionality. Where no system exists and when feasible, a traditional septic system will be installed.

- **Traditional Septic Systems** typically consist of the following components:
    - Sewage pipe (also: sewer line) – Pipe through which sewage exits the home and enters the septic system.
    - Septic tank – A buried, watertight container made of concrete, fiberglass, or polyethylene. Retains wastewater while solids settle to the bottom and oil and grease floats to the top as scum.
    - Baffles, screens, and/or filters – Physical barriers that prevent solids from leaving the septic tank and entering the drainfield.
    - Drainfield (also: leach field) – Clarified wastewater exits the septic tank and enters the drainfield through perforated pipes.
    - Soil – Partially treated wastewater discharged into the drainfield percolates into the soil, where removal of harmful bacteria, viruses, and nutrients occurs.

Some sites may not be suitable for conventional septic systems due to lot size, slope, soil type, and/or geology. If a property is selected for assistance and it is not feasible to repair or install a conventional system, alternative systems may be considered.

- **Alternative Treatment Systems and System Components**, such as:
    - Wetland systems
    - Peat systems
    - Lagoon systems
    - Aerobic units
    - Other alternative treatment methods as approved by KDOW

Some participants in the program may find repairs unnecessary, but may benefit from a septic tank pumpout.

- **Septic Tank Pumpouts** are required to remove accumulated solids from the tank and should occur every 3 – 5 years.

Additional funding for the Dix River Septic System Education and Improvement Program will be used to promote the following **BMPs for proper septic system care and maintenance**.

- Inspect septic system regularly and pumpout as needed
- Keep records of septic system pumping and maintenance, including a map of septic system and drainfield locations
- Conserve water in order to avoid overloading the system
- Minimize introduction of chemicals and non-biodegradable materials into the system
- Eliminate use of garbage disposals
- Choose low-phosphate or phosphate-free detergents
- Keep heavy equipment, including vehicles, away from the system and drainfield
- Don't plant trees or shrubs within 100 feet of the drainfield

III. The Selection Process for Technologies and Implementation Sites

All BMPs used in the Dix River Septic System Education and Improvement Program will be selected by the applicable county health department environmentalist, or a contracted employee thereof, based on results of the site evaluation, experience with similar treatment systems, and other factors. In general, the selection process will focus on the most effective and efficient treatment system for the property in question.

Bluegrass Greensource has worked with the local health departments to identify specific target areas for septic repairs within the watershed based on maximizing potential water quality impact. Potential target areas that have been identified to date include the following, but target areas may be reevaluated and adjusted as necessary to maximize program success and impact:

- Within Dix River Headwaters, HUC # 05100205150: Fall Lick Creek subwatershed

- Within Hanging Fork Creek, HUC # 05100205180: Blue Lick subwatershed; central portion of the McCormick Church/Chicken Bristle subwatershed; Junction City/Oak Creek subwatershed

Homeowner workshops will be held at locations convenient to targeted neighborhoods, however any resident of the Dix River watershed will be able to attend to workshop and apply for financial assistance.

After the educational portion of the workshop, participants will be able to select the next step they would like to take. Participants who have a septic system and believe it is functioning properly will be eligible to receive a free pumpout. Pumpouts will be performed by a certified septic pumping company contracted by Bluegrass Greensource and selected through an RFP process. The pumper will also perform a basic surface inspection of each system that is pumped. Workshop participants who believe there may be an issue with their septic system and would like to apply for the repair program will submit an application to Bluegrass Greensource including information on home location, distance to stream, current wastewater situation, and household income (optional). Applications will be prioritized for assistance based on these factors (homes within target neighborhoods will receive higher priority but any household experiencing wastewater issues within the watershed may apply for consideration).

If an application is selected for assistance, the homeowner will be required to sign a commitment to provide a portion of the cost of any repair/installation, as well as to maintain the system with proper care and regular pumpouts. A site evaluation will be performed by the local health department and Bluegrass Greensource will solicit price bids for the repair or installation work. In most cases, the low bid will be selected. The homeowner will be required to provide Bluegrass Greensource with the specified portion of the repair cost before work begins, and Bluegrass Greensource will pay installer in full after the work is completed and has passed health department inspection.

If a sufficient number of homeowners are not identified within the target areas, Bluegrass Greensource will contact DOW to select additional subwatershed areas.

IV. KDOW Notification Procedure for BMP Implementation

KDOW will be kept informed of all program activities through quarterly progress reports and regular communication with Bluegrass Greensource. While we do not plan to notify KDOW about each individual BMP implementation, the NPS Section Technical Advisor (TA) assigned to the project will be notified via email of plans to install any alternative onsite wastewater treatment technology such as those listed in Section II above. Information pertaining to each BMP implementation, including a description of the chosen BMP, the location where the BMP will be installed, the expected date of installation, and a copy of the site evaluation, design specifications, and permit for each site, will be kept on file by Bluegrass Greensource and will be available for review by KDOW at any time.

V. Education and Outreach

In addition to providing education and financial assistance for homeowners, the Dix River Septic System Education and Improvement Program will include education and outreach components for both K-12 and general community populations. These activities will be conducted in the form of:

- A series of water quality education activities at several K-12 schools in the three county region. Some schools will participate in a culminating event that allows them to apply what they have learned in the classroom activities, such as a stream cleanup or water testing.
- Outreach tabling at various community events, such as Garrard and Boyle County's Earth Day Festivals and Garrard County's Party on the Square.
- Presentations about the project and its water quality implications for community groups, such as Herrington Lake Conservation League and local Rotary Clubs.
- Annual watershed festivals planned and executed by Bluegrass Greensource and partners.

VI. Financial Plan of Action

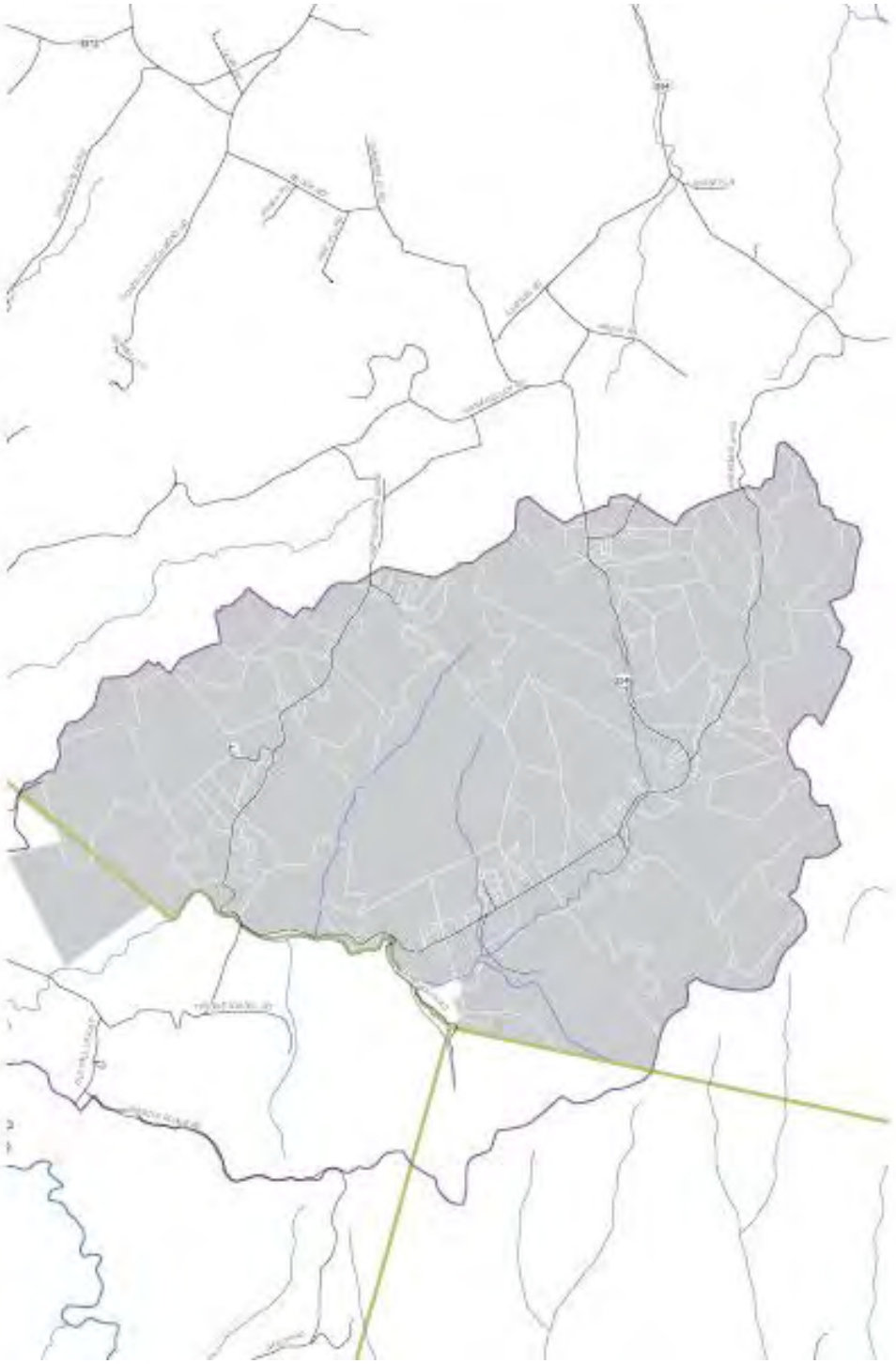
Funding for the Dix River Septic System Education and Improvement Program will come from 319 grant funds and matching funds. The total funding allotted for the program is $619,392, of which 60% is federal and 40% is non-federal match. Non-federal match will consist of homeowner contributions to repair and installation projects, contractor discounts, donated personnel time for Bluegrass Greensource staff and program partners, and volunteer time from area residents.

When a property is approved for septic repair or installation, the homeowner will be required to sign an agreement stating that they will pay a percentage of the cost to be determined based on household income. Bluegrass Greensource will get bids from local installers for the work. Once an installer is selected (usually the lowest bid), the homeowner will be required to submit their portion of the estimated cost to Bluegrass Greensource before work begins. After the repair/installation work is complete, Bluegrass Greensource will pay the installer in full. If the actual repair/installation cost differs from the estimate, the homeowner may be expected to provide additional funds to meet the predetermined match percentage.

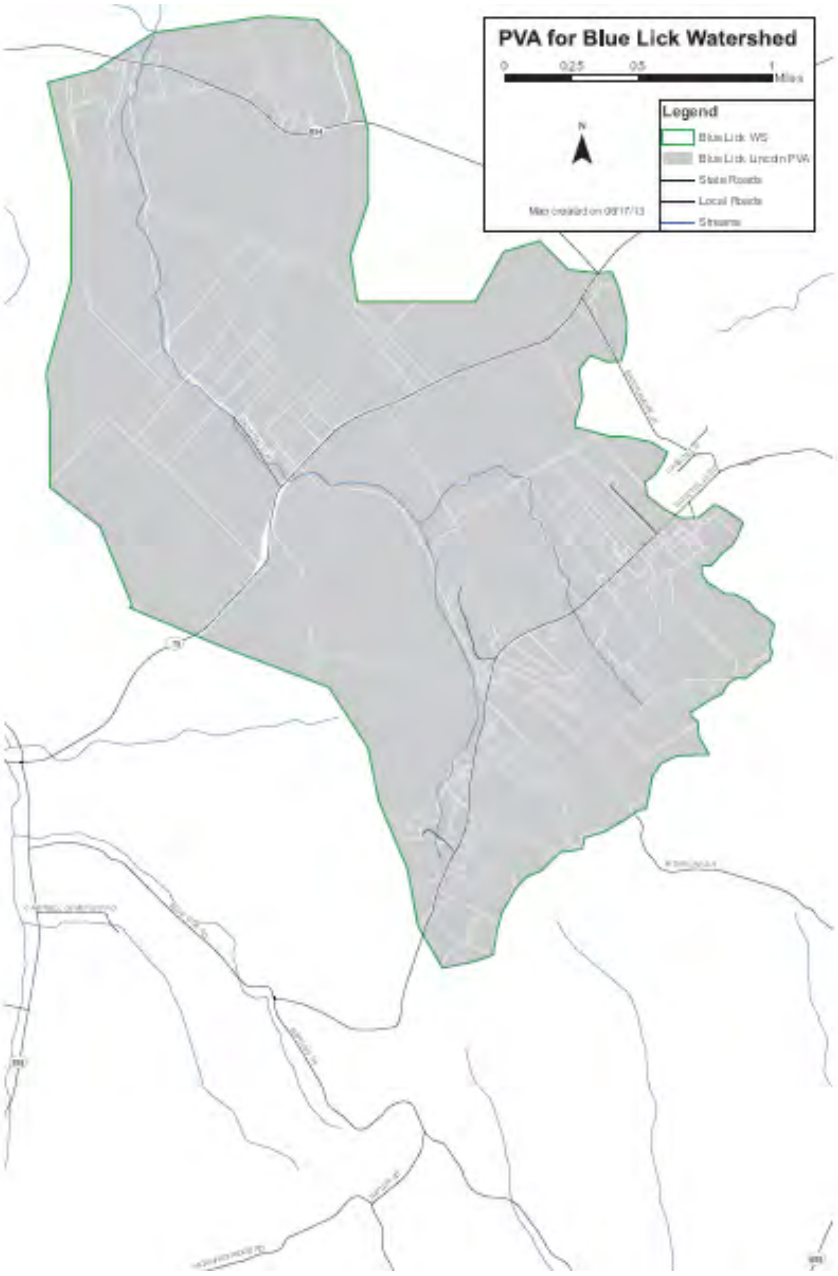
VII. Landowner Maintenance Agreement

Homeowners receiving financial assistance from the program will be required to sign a maintenance agreement stating that they will properly care for their septic system and get regular inspections and pumpouts. Participating household will receive printed materials detailing tips for septic care, such as those outlined in Section II of this document.

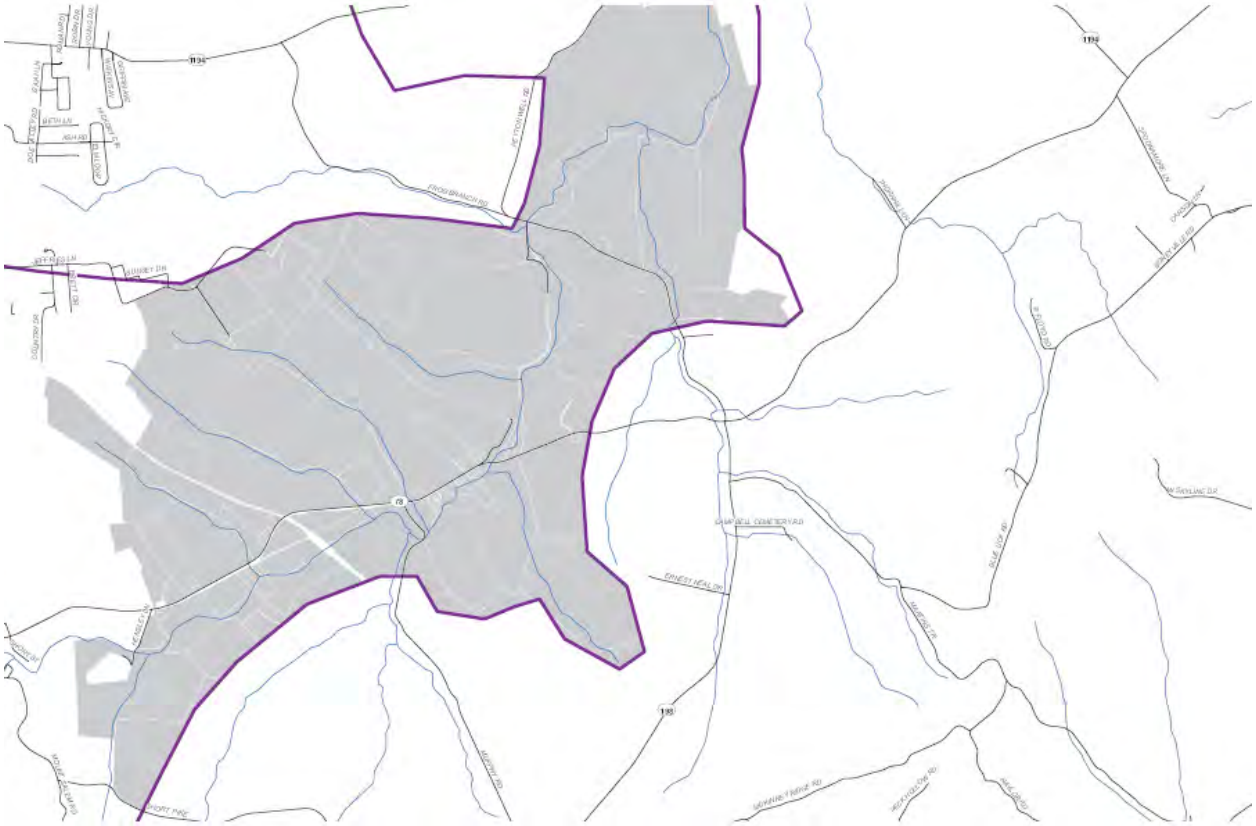
FALL LICK WATERSHED TARGET AREA



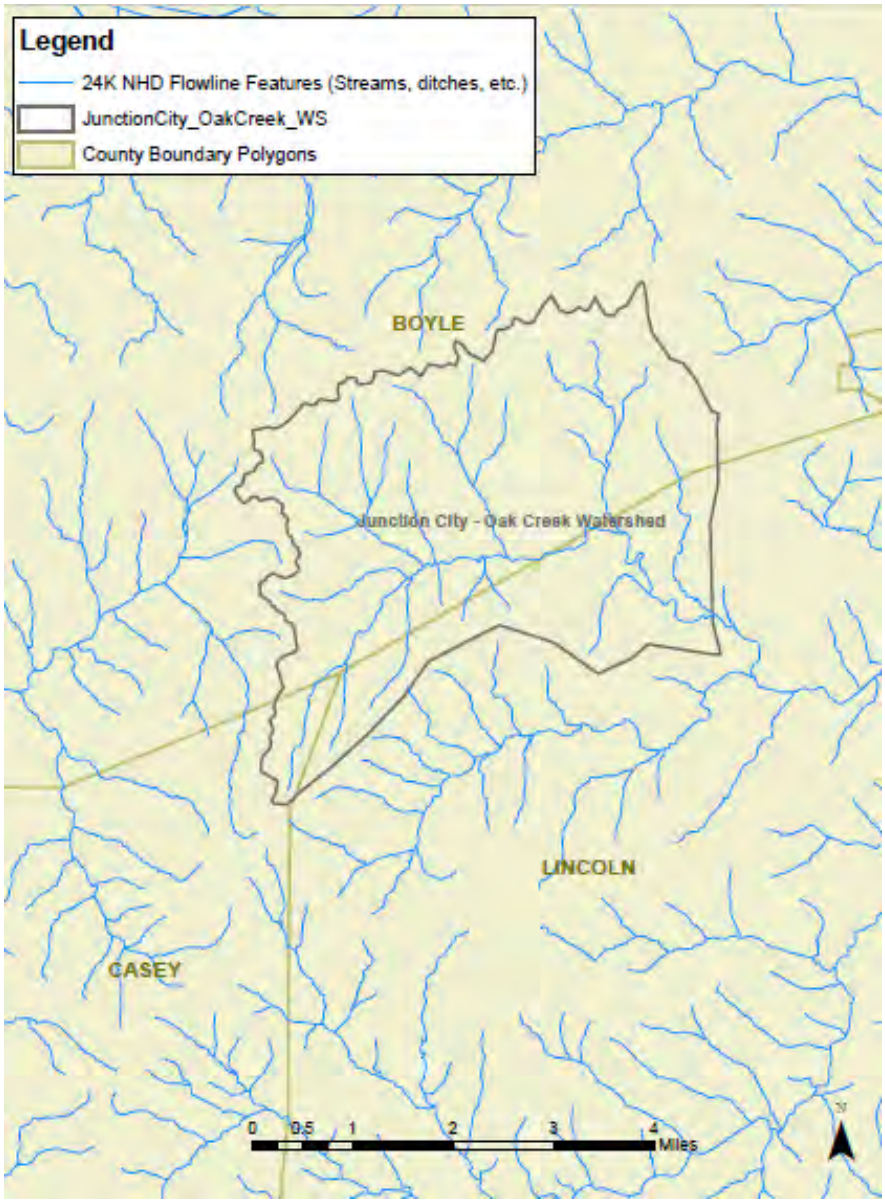
BLUE LICK WATERSHED TARGET AREA



CHICKEN BRISTLE WATERSHED TARGET AREA



JUNCTION CITY/OAK CREEK WATERSHED TARGET AREA



BLUEGRASS
GREENSOURCE

Application for Septic System Repair/Installation Assistance

Owner's Name _____

Occupant's Name (if different) _____

Property Address _____

City _____ State _____ Zip Code _____ Phone No. _____

Approximate distance to nearest creek _____

Annual household income (optional): ___ $35,000 or less ___ $50,001 - $75,000

___ $35,001 - $50,000 ___ $75,001 or more

Please describe your current septic system situation (including type of tank and leach field, any known problems, and location of discharge).

_____

_____

_____

_____

_____

Approximate date of last pumpout: _____ Number of people in household: _____

I certify that all information included in this application is true to the best of my knowledge. I have reviewed the maintenance agreement for this program and understand that I will be expected to sign and abide by the agreement should I be selected for funding.

I understand that Bluegrass Greensource is not an enforcement agency and the information provided above will be used only to determine my eligibility for financial assistance.

_____ _____

Signature of Applicant Date

Please return completed application to:

Bluegrass Greensource, P.O. Box 910384, Lexington, KY 40591

BMP Implementation Protocol

I. Work with county health departments and Kentucky River Basin Coordinator to identify target areas for septic repairs within the watershed with the goal of maximizing water quality impact

II. Schedule workshops at locations convenient to the identified target areas.

III. Send direct mailer to residents of the target areas advertising the program and upcoming workshop in their area using available PVA data; advertise workshop to other residents of the watershed through general media, event outreach, etc.

IV. Hold workshops

V. Workshop participants choose next step:

A. No further action

B. Pumpout only

- Pumper contracted by Bluegrass Greensource will perform pumpout and conduct basic visual/surface inspection of system
- If a larger problem is suspected, pumpout will be postponed and homeowner will be encouraged to apply for installation/repair assistance program
- If no problems are suspected and pumpout is performed, Bluegrass Greensource will pay pumper in full after work is complete

C. Submit application for repair/install assistance

- Applications will be prioritized by location relative to target areas, proximity to stream, and current sewage situation (straight pipe vs. failing tank) - household income level may act as a “tie-breaking” factor
- If application is accepted, homeowner will sign maintenance agreement
- Homeowner will schedule a site evaluation with the local health department
- Inspector from health department will visit property and do a thorough site evaluation; inspector will provide homeowner with recommendations for repairing system

- Bluegrass Greensource will provide installers with repair specifications from health department and solicit a minimum of two price bids for the work
- In most cases, the installer providing the lower bid will be selected
- Bluegrass Greensource collects and deposits homeowner portion of installation/repair cost before work begins
- Selected installer completes installation/repair
- Health department conducts final inspection of installation/repair work
- Bluegrass Greensource pays installer in full
- If repair/installation cost differs significantly from estimate, homeowner may be expected to provide additional funds as necessary to meet the predetermined cost share percentage

V. Reassess process and target areas as necessary for continuous improvement of program

Septic System Repair/ Installation Assistance Contract and Maintenance Agreement

I. Background and Purpose

Extensive water testing in the last decade has revealed high levels of E. coli in portions of the Dix River watershed, making many streams unsafe for wading, swimming, and fishing. Further source testing identified human waste as a significant contributor to this problem. Because the watershed is largely rural in nature, watershed plans recommended addressing the problem through the repair of failing septic systems and the replacement of straight pipes.

The Dix River Septic System Education and Improvement Program is intended to improve water quality in the watershed by educating local residents on proper septic system function, care, and maintenance, and offering financial assistance to homeowners for septic system pumpouts, repairs, and installations.

II. Bids, Installation, and Installer Payment

Upon being approved for a financial assistance award, homeowners will be required to schedule a site evaluation with the county health department. A health department inspector will visit property and do a thorough site evaluation; inspector will provide homeowner with recommendations for repairing system.

Bluegrass Greensource will provide certified septic installers with repair specifications from health department and solicit a minimum of two price bids for the work. Once an installer is selected, homeowner will provide Bluegrass Greensource with 20% of the installation/repair cost before the work begins. Bluegrass Greensource will pay the selected installer in full after the work is complete and has passed health department inspection.

If the actual cost of repair/installation differs from the estimate, homeowner may be required to provide additional funds in order to meet the predetermined cost share percentage.

III. Septic System Care and Maintenance

Homeowners receiving financial assistance from the program agree to follow Best Management Practices for maintaining and caring for their septic system where possible, including:

- Inspect septic system regularly and pumpout as needed
- Keep records of septic system pumping and maintenance, including a map of septic system and drainfield locations
- Conserve water in order to avoid overloading the system
- Minimize introduction of chemicals and non-biodegradable materials into the system
- Eliminate use of garbage disposals
- Choose low-phosphate or phosphate-free detergents
- Keep heavy equipment, including vehicles, away from the system and drainfield
- Don't plant trees or shrubs within 100 feet of the drainfield

IV. Recordkeeping and Use of Information

Bluegrass Greensource recommends that you keep all documentation pertaining to this program for at least three years after the work is completed on your property.

Bluegrass Greensource is not an enforcement agency and will only utilize your personal information for the purposes of this financial assistance and education program.

V. Site Access

By accepting financial assistance under this program, homeowner agrees to allow representatives of Bluegrass Greensource and its partners on the property for the purposes of septic repair/installation and follow up site visits.

I/We agree to the above terms of this maintenance contract.

_____ _____

Signature of Applicant Date

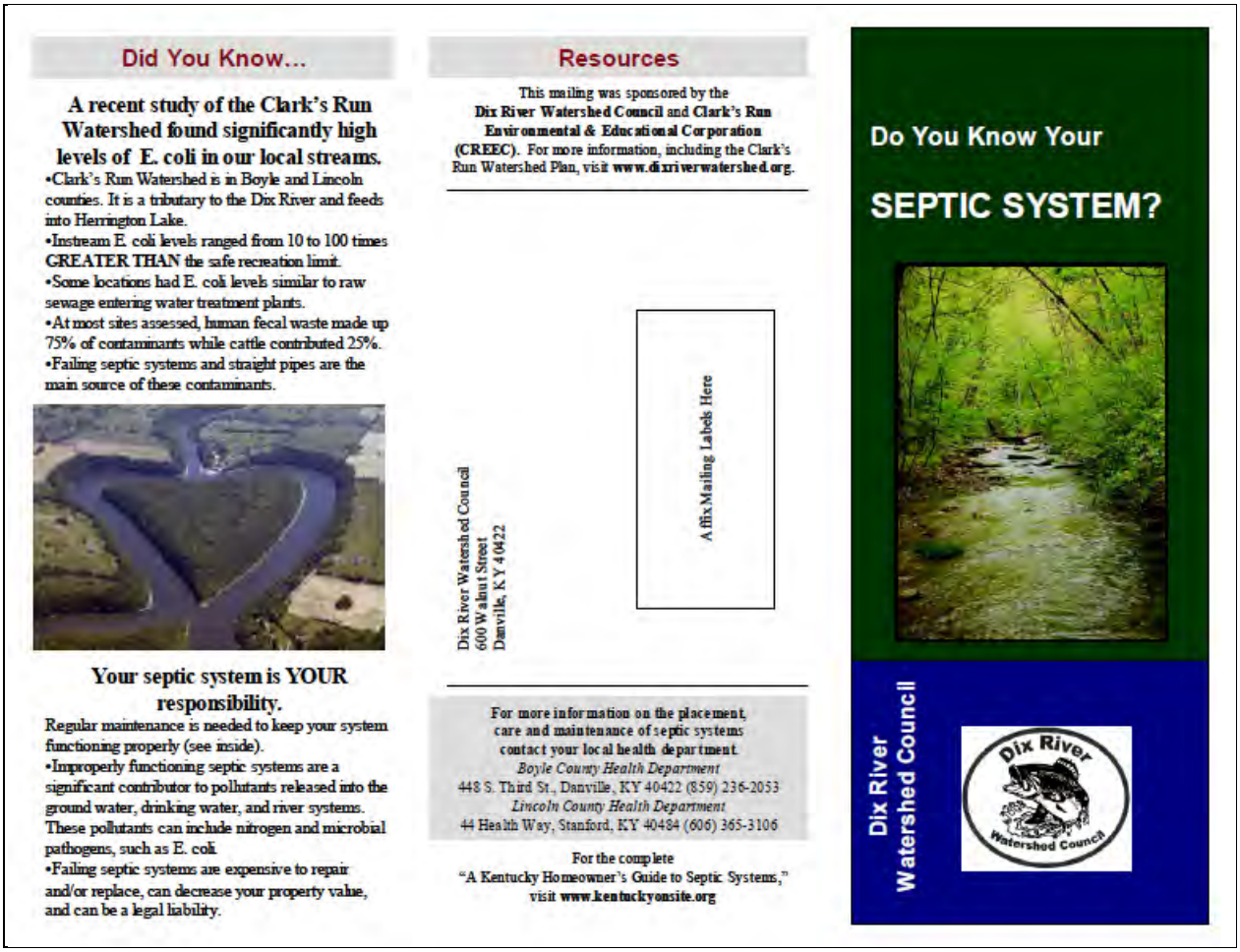
_____

Print Name

This work was funded in part by a grant from the U.S. Environmental Protection Agency under §319(h) of the Clean Water Act through the Kentucky Division of Water to Bluegrass Greensource (Grant #12-04).

C. Advertising Campaign Products

Septic System Pamphlet Example 1



Did You Know...

A recent study of the Clark's Run Watershed found significantly high levels of E. coli in our local streams.

- Clark's Run Watershed is in Boyle and Lincoln counties. It is a tributary to the Dix River and feeds into Herrington Lake.
- Instream E. coli levels ranged from 10 to 100 times GREATER THAN the safe recreation limit.
- Some locations had E. coli levels similar to raw sewage entering water treatment plants.
- At most sites assessed, human fecal waste made up 75% of contaminants while cattle contributed 25%.
- Failing septic systems and straight pipes are the main source of these contaminants.

Your septic system is YOUR responsibility.

Regular maintenance is needed to keep your system functioning properly (see inside).

- Improperly functioning septic systems are a significant contributor to pollutants released into the ground water, drinking water, and river systems. These pollutants can include nitrogen and microbial pathogens, such as E. coli.
- Failing septic systems are expensive to repair and/or replace, can decrease your property value, and can be a legal liability.

Resources

This mailing was sponsored by the **Dix River Watershed Council** and **Clark's Run Environmental & Educational Corporation (CREEC)**. For more information, including the Clark's Run Watershed Plan, visit **www.dixriverwatershed.org**.

Affix Mailing Labels Here

Dix River Watershed Council
600 Walnut Street
Danville, KY 40422

For more information on the placement, care and maintenance of septic systems contact your local health department.

Boyle County Health Department
448 S. Third St., Danville, KY 40422 (859) 236-2053
Lincoln County Health Department
44 Health Way, Stanford, KY 40484 (606) 365-3106

For the complete "A Kentucky Homeowner's Guide to Septic Systems," visit **www.kentuckyonsite.org**

Do You Know Your

SEPTIC SYSTEM?

Dix River Watershed Council

Septic System Pamphlet Example 2

A Kentucky Homeowner's Guide to Septic Systems

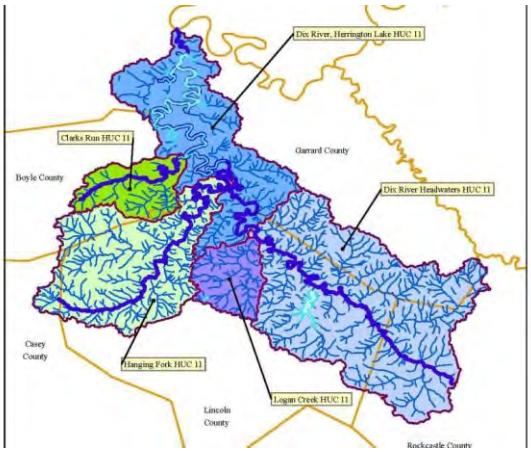
KENTUCKY ONSITE WASTEWATER ASSOCIATION, INC.
ACADEMICS
REGULATORS
INSTALLERS
PUMPERS
MANUFACTURERS
K.O.W.A.

Program Flyer Example 1

Stay Tuned for Septic System Care Programs in Your Area!

Why?

- Water quality testing in the Dix River Watershed has revealed very high pathogen levels
- In some streams, E. coli concentration exceeds safe level for swimming, wading, and fishing
- Significant source of E. coli in the watershed is human waste input from failing septic systems, straight pipes, and problems with urban sewer systems



New programs will be available to Dix River Watershed residents in Boyle, Garrard, and Lincoln Counties.

What?

- Workshops on septic system care for homeowners
- Financial assistance for septic system pumpouts, repairs, and installations
- Watershed festivals and other events

Please contact Sandy Bottoms at Bluegrass Greensource for more information:
sandy@bgGreensource.org
(859) 266-1572

BLUEGRASS GREENSOURCE

This work was funded in part by a grant from the U.S. Environmental Protection Agency under §319(h) of the Clean Water Act through the Kentucky Division of Water to Bluegrass Greensource.

Program Flyer Example 2

Dix River Septic System Education and Improvement Program

Bluegrass Greensource (formerly Bluegrass PRIDE), a nonprofit environmental education organization based in Lexington and working in 18 central Kentucky counties, has received a grant from the KY Division of Water to address failing septic systems in the Dix River watershed, including parts of Boyle, Garrard, and Lincoln Counties. This program is currently funded through September 2016.

WHAT IS A WATERSHED?

What is a watershed? A watershed is the area of land that drains to a particular body of water. The Dix River watershed includes land in six counties – Boyle, Casey, Garrard, Lincoln, Mercer, and Rockcastle. See page 2 for a map of the watershed.

WHY FOCUS ON SEPTIC SYSTEMS?

- Water quality testing in the Dix River watershed has revealed high pathogen levels
- In some streams, E. coli concentration exceeds safe level for swimming, wading, and fishing
- A significant source of E. coli in the watershed is human waste input from failing septic systems, straight pipes, and problems with urban sewer systems

WHAT PROGRAMS CAN I EXPECT IN MY AREA?

- Free workshops on septic system care for homeowners
- Financial assistance for septic system pumpouts, repairs, and installations
- Community watershed festivals
- Water education activities for K-12 students

WHO SHOULD I CONTACT FOR MORE INFORMATION?

For more information, please contact Sandy Bottoms:

- E-mail: sandy@bggreensource.org
- Phone: (859) 266-1572 or toll-free (866) 222-1648

This work was funded in part by a grant from the U.S. Environmental Protection Agency under §319(h) of the Clean Water Act through the Kentucky Division of Water to Bluegrass Greensource (Grant # 12-04).

Website Grant Advertisement Example

SEPTIC SYSTEM GRANTS

02-12-2014 BGGS No comments

Septic System Woes?

Did you know that a failing septic system can require expensive repairs, pose a serious health risk to your family and neighbors, and have negative impacts on water quality? Bluegrass Greensource awarded five Garrard County homeowners cost-share grants to repair or install septic systems at their homes. Each grant will pay 80% of the repair or installation cost, while the homeowner is responsible for the remaining 20%.

To be eligible for the grants, homeowners must reside within the Dix River watershed in Boyle, Garrard, or Lincoln Counties and must attend a one-hour workshop about septic system care and maintenance. Following the workshop, participants can apply for a cost-share grant for system repairs or installation, or for a free septic tank pump out (a regular maintenance task that is recommended every 3 to 5 years).

The next free septic system workshop will be held on Tuesday, March 4th from 6:00 to 7:00 PM at the Junction City Community Center (724 W. Shelby Street). Please contact Sandy Bottoms at sandy@bggreensource.org or (859) 266-1572 to register!

Bluegrass Greensource will offer a series of free septic workshops over the next two years, as well as a series of watershed awareness festivals in local communities and water-related activities in area K-12 classrooms. These activities are part of a grant program funded by the U.S. Environmental Protection Agency under section 319(h) of the Clean Water Act through the Kentucky Division of Water.

Contractor Training Newspaper Advertisement Example

AM news The Advocate Messenger

Bluegrass Greensource seeks certified septic installers

Story Comments Print Font Size:

Tweet G+1 1 Pin it 0 Share 1

Posted: Wednesday, May 28, 2014 8:34 am

0 comments

Bluegrass Greensource invites certified septic installers and licensed pumpers to attend a pre-bid meeting for multiple projects in Boyle, Garrard, and Lincoln Counties on Thursday, May 29th at 9:00 AM at the Garrard County Health Department. Call Sandy Bottoms at 859-266-1572 for more information.

BLUEGRASS GREENSOURCE

BluegrassGreensource logo

Homeowner Workshop Flyer Example 1

SEPTIC SYSTEM CARE IS UP TO YOU !

A failing septic system can cost thousands of dollars to repair, pose a serious health risk to your family, and have negative impacts on water quality in your community. You can prevent these problems by properly caring for your septic system.

Attend a FREE workshop to learn:

- How does my system work?
- How can I prevent my system from needing expensive repairs?
- Am I eligible for financial assistance to pump or repair my system?

UPCOMING WORKSHOP in BOYLE COUNTY:

Saturday, October 17, 2015
10:00-11:00 AM
Boyle County Cooperative Extension Service Office
99 Corporate Drive
Danville, KY 40422

*Residents of Garrard, Lincoln and Boyle Counties who reside within the Dix River Watershed are welcome to attend, and may be eligible for assistance.

Registration encouraged but not required.
For more information, contact Bridget Abernathy at Bluegrass Greensource
(859) 266-1572 or toll-free (866) 222-1648,
or bridget@bgGreensource.org

Image courtesy of Snohomish Health District

BLUEGRASS GREENSOURCE

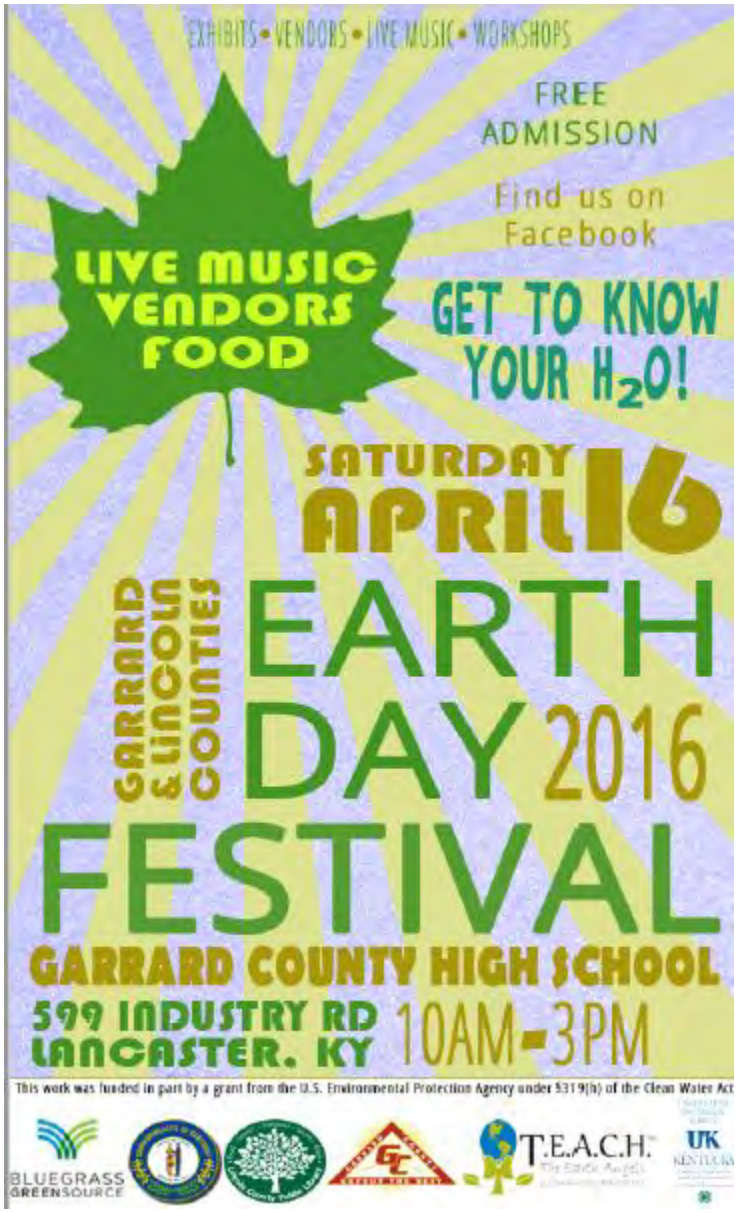
This work was funded in part by a grant from the U.S. Environmental Protection Agency under §319(h) of the Clean Water Act.

Homeowner Workshop Flyer Example 2

Trade Publication Article Example

Watershed Festival Poster Example 1

Watershed Festival Poster Example 2



Newspaper Article Example

Funds offered for septic tank repairs in Boyle area

By VICTORIA ALDRICH valdrich@amnews.com | Posted: Thursday, March 27, 2014 8:18 am

By VICTORIA ALDRICH

valdrich@amnews.com

JUNCTION CITY — The only thing that stinks more than a clogged toilet is a smelly yard that goes "squish," signs of septic system failure that do more than just stink to Boyle County Health Department Environmental Supervisor Dan Troutman.

Leaking systems pour raw sewage into the Dix River watershed, endangering humans and livestock alike, Troutman told guests during a septic tank workshop Tuesday at the Junction City Community Center.

"None of the systems we put in will last forever," Troutman said. "I've heard homeowners say, 'I've had my septic tank for 40 years and never pumped it out and it works good.' No, it doesn't."

Emptying systems every three to five years is a good rule of thumb, but maintenance doesn't have to be a nightmare, according to Bluegrass Greensource Outreach Coordinator Sandy Bottoms.

The Lexington-based agency is accepting applications through April 11 for two financial aid programs.

The first pays for pump-outs, and the second will pay 80 percent of the cost to repair or replace a damaged system, with an owner paying up front for their portion.

Recipients will be notified by May 12; those who apply for one program but actually need the other will be assisted past deadline, Bottoms explained. For full eligibility information, visit http://www.bggreensource.org/news/septic-system-grants.

A septic system consists of pipes that dump household waste into a concrete or synthetic tank where it is treated for up to 72 hours with bacteria to break down solids and oils.

Once treated, remaining waste settles to the bottom as sludge while the water drains back into the lawn through drain field pipes.

That's where most problems start, Troutman explained. Unaware of where they lie just below the surface, homeowners often find out too late when tree roots, cars and other hazards damage the pipes.

"Most calls we get are from people who say their tank has failed, but that is actually the least expensive part of your system and not usually the cause of the problem," Troutman said. "You can run over it with a car and damage it, but it can be replaced for about $1,000. It's when the drain field is damaged that you have a real problem."

Sometimes a pretty burst of green vegetation not matching the rest of the lawn is the first sign of a leak.

Online News Article Example 1

KENTUCKY WATERSHED WATCH

October 2014

Bluegrass Greensource is Helping Educate about Septic Systems

The results of a watershed study for the Dix River Watershed found E coli and other pathogens to be the most significant water quality problem in the area. Acting on the study's recommendations, the Bluegrass Greensource organization applied for and received funding to address one of the main culprits--failing septic systems.

Using funding from the USEPA and Kentucky Division of Water, Bluegrass Greensource is hosting another series of FREE septic system care workshops for homeowners in Boyle, Lincoln, and Garrard Counties in the Fall of 2014. Participants will learn about:
- local watersheds and water quality,
- how to properly care for septic systems, and
- how to identify problems with septic systems.

Additionally, Bluegrass Greensource currently has funding available for septic maintenance and repairs for residents of the Dix River watershed in these counties. Homeowners may be eligible for financial assistance, including free tank pumpouts and cost-share grants for repairs or straight-pipe replacements.

Find out more on the Grant Opportunities page of the Bluegrass Greensource website, or contact sandy@bgGreensource.org for more information.

LESSON LEARNED: This grant project is a great example of acting on sampling results that show water quality problems. After findings of high E coli levels, further sampling was conducted to identify the pathogen source as human, cattle or other. The results indicated that the source was largely human. Since most of the sampling sites were located in rural, non-sewered areas, it was concluded that the human sources of pathogens were from failing septic systems or straight pipes. This project helps educate local homeowners and offers funding assistance to make improvements. County health departments are partnering with Greensource to help make this project possible.

Septic System Tips:

- Arrange for a system pump-out every 3 to 5 years.
- Use water efficiently to reduce strain on the system.
- Don't pour chemicals and non-biodegradable materials down drains or into toilets.
- Eliminate use of garbage disposals.
- Choose low-phosphate or phosphate-free detergents.
- Avoid driving heavy heavy equipment, including vehicles, over the system and drainfield.
- Direct gutter spouts and other drains away from the drainfield.
- Keep records of septic system pumping and maintenance, including a map of septic system and drainfield locations.

Online News Article Example 2

KyForward
KENTUCKY'S ONLINE NEWSPAPER

Greensource: Working together to improve the water quality in our rivers and streams

Aug 6th, 2015

The Kentucky River (Photo by J. Ogden)

Kentucky's rivers and streams provide abundant habitat for aquatic life, numerous opportunities for recreation, scenic beauty and a source of drinking water for our communities. Across our state, small streams flow directly into larger bodies of water. These streams, rivers and lakes provide us with more than 100 different species of fish and other aquatic life.

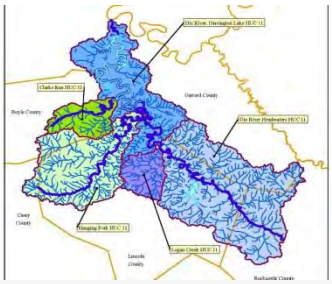
But many of Kentucky's streams and rivers are polluted, are not safe for swimming or fishing, and do not provide a suitable environment for sensitive aquatic species. Water pollution is primarily caused by human activity—wastewater, chemicals, trash and soil can run off the land and end up in our waterways.

A watershed is the area of land where all of the water that is under it or drains off of it goes into the same place. Watersheds cross local, county, state and national boundaries. In the United States, 2,267 watersheds spread across millions of square miles. On a large scale, a river basin is the land area that is drained by a river and its tributaries—there are many watersheds within river basins.

The state of Kentucky is comprised of 12 river basins within its approximate 24 million acres: Big Sandy, Green, Kentucky, Licking, Little Sandy, Lower Cumberland, Mississippi, Salt, Tennessee, Tradewater, Tygarts and Upper Cumberland. Within the 12 river basins in Kentucky, smaller subbasins exist. Central Kentucky includes the Lower Kentucky River subbasin, which spans portions of 25 counties.

The Dix River is part of the Lower Kentucky River subbasin and is highly polluted. This river and its tributaries have been found to have elevated levels of *E.coli*, a pathogen that can cause gastroenteritis and other health complications in humans. Some areas of the watershed have exceptionally high levels of *E.coli* that make streams unsafe for fishing, swimming, wading, and other

kinds of water recreation. Sites recently sampled averaged at least four times the limit for *E. coli*. While livestock farms contribute to *E.coli* contamination in rural streams, extensive water testing and analysis has shown that contamination in the Dix River watershed is primarily from human waste sources, likely from failing septic systems and straight pipes.



Dix River Watershed

To help improve water quality in the Dix River watershed, Bluegrass Greensource offers homeowner workshops in Boyle, Garrard and Lincoln counties. Participants will learn about local watersheds and water quality, how to properly care for septic systems, and how to identify problems with septic systems.

Following each workshop, participants can apply for a cost-share grant for septic system repairs or for a free septic tank pumpout. To be eligible for the grants, homeowners must reside within the Dix River watershed in Boyle, Garrard or Lincoln counties. The next free septic system workshops will be held in October in Garrard, Lincoln and Boyle counties.
Visit www.bgGreensource.org this fall for additional information.

This program is funded by the U.S. Environmental Protection Agency under section 319(h) of the Clean Water Act, through the Kentucky Division of Water.

Online News Article Example 3

The birds are chirping, the trees are in bloom, the weather is warming up – spring has sprung and it's the perfect time to celebrate the Earth! Bluegrass Greensource is working with a variety of local partners to host three watershed festivals this spring in Boyle, Garrard, and Lincoln Counties.

The Boyle County Earth Day Festival, held in conjunction with Clarks Run Environmental and Educational Corporation, Boyle County Cooperative Extension, and Bluegrass Community and Technical College, will be held **Saturday, April 26th from 11:00 to 3:00 at BCTC's Danville campus**. The event features a 2K "fun hike" and 26K bicycle ride, children's activities, a display of artwork by Junction City Elementary 5th graders, live music, concessions by Lucky Dog BBQ, and environmentally-themed displays from local vendors such as Boyle County Solid Waste, Boyle County Public Library, Community Arts Center, Smart Growth Boyle, and more. Informational sessions will be offered about local water quality, septic system care, and home composting. Additionally, Boyle County Cooperative Extension will offer a two-part rain garden workshop beginning on Friday, April 25, during which participants can learn to design and build a rain garden using native plants.
For detailed information about the Boyle County Earth Day Festival, click here.

The Garrard County Earth Day/Watershed Festival will be held on **Saturday, May 10th from 10:00 to 4:00 at the Garrard County Extension office**. The event is co-sponsored by Earth Angels, Garrard/Lincoln Solid Waste, and Garrard County Cooperative Extension and will feature children's activities, a display of watershed posters by Paint Lick Elementary students, a display of Garrard County nature photography, vendors selling recycled and handmade items, concessions, nature walks on the Pleasant Retreat trail, a recycled fashion show, and environmentally-themed displays from local organizations. Informational sessions will be offered about local water quality, septic system care, monarch waystations, and Garrard County flora.

The Lincoln County Earth and Arts Festival will be held on **Saturday, June 14th from 10:00 to 3:00 at the First Southern Community Arts Center in Stanford**. The event is co-sponsored by the Community Arts Center and Garrard/Lincoln Solid Waste, and will feature children's activities, live music, food vendors, rain barrel sales, environmentally-themed displays from local organizations, and more.

The spring festivals are funded in part by a grant from the U.S. Environmental Protection Agency under §319(h) of the Clean Water Act. Bluegrass Greensource will work with local partners to host a total of nine Earth Day or watershed festival events over the next three years in Boyle, Garrard, and Lincoln Counties.

Educational Programming Example 1

Educational Programming Example 2

BOYLE COUNTY
CAREER FAIR

Did you know that a failing septic system can cost thousands of dollars to repair, pose a serious health risk to your family, and have negative impacts on water quality?

Learn how to prevent these problems!
Attend a FREE Septic System Care Workshop:

McKinney Elementary (Lincoln County)
January 14, 2014
6:00 PM - 7:00 PM

Junction City Elementary (Boyle County)
TBA – February 2014
6:00 PM - 7:00 PM

BLUEGRASS
GREENSOURCE

Please contact Sandy Bottoms at Bluegrass Greensource for more information:
sandy@bggreensource.org
(859) 266-1572 // Toll-free (866) 222-1648

This work was funded in part by a grant from the U.S. Environmental Protection Agency under §319(h) of the Clean Water Act.

List of Tables and Figures

Table 1- Septic System Repair and Pumpout Implementation

12 Digit HUC Number	12 Digit HUC Name	Septic System Work Completed	Latitude/Longitude of BMP	Installation Date
051002050501	Upper Hanging Fork	Repair	37.500005, -84.756596	09/30/2014
051002050503	Lower Hanging Fork	Repair	37.495056, -84.706869	11/17/2014
051002050403	Fall Lick/ Dix River	Repair	37.529145, -84.447863	11/18/2014
051002050403	Fall Lick/Dix River	Repair	37.505993, -84.423331	01/09/2015
051002050702	Little Hickman Creek	Repair	37.731371, -84.660331	04/01/2015
051002050404	Drakes Creek/ Dix River	Repair	37.588153, -84.546994	05/04/2015
051002050504	Boone Creek/Dix River	Repair	37.6256446,-84.5744778	05/04/2015
051002050504	Boone Creek/Dix River	Repair	37.6295416, -84.5818621	05/11/2015
051002050404	Drakes Creek/ Dix River	Repair	37.5231349, -84.4982487	06/03/2015
051002050502	White Oak Creek/Hanging Fork Creek	Repair	37.5570447, -84.7971883	08/27/2015
051002050502	White Oak Creek/Hanging Fork Creek	Repair	37.5852635, -84.8063574	08/31/2015
051002050401	Negro Creek/Dix River	Repair	37.4067605, -84.4949889	09/17/2015
051002050504	Boone Creek/Dix River	Repair	37.6378921,-84.6597651	09/25/2015
051002050507	Cane Run - Dix River	Repair	37.716116, -84.650375	09/27/2016
051002050507	McKecknie Creek/Dix River	Repair	37.720471, -84.648846	10/07/2015
051002050507	Cane Run - Dix River	Repair	37.747475, -84.693060	11/02/2015
051002050403	Fall Lick/ Dix River	Repair	37.521302, -84.453718	01/09/2016
051002050406	Logan Creek	Repair	37.479514, -84.619808	01/21/2016
051002050504	Boone Creek/Dix River	Repair	37.640852, -84.652133	01/24/2016
051002050406	Logan Creek	Repair	37.524920, -84.618886	02/05/2016
051002050507	Cane Run - Dix River	Repair	37.706759, -84.642529	06/16/2016
051002050506	Mocks Branch/Dix River	Repair	37.674539, -84.681985	06/17/2016
051002050507	Cane Run - Dix River	Repair	37.706418, -84.642591	06/17/2016
051002050507	Cane Run - Dix River	Repair	37.750133, -84.701646	06/17/2016
051002050507	Cane Run - Dix River	Repair	37.779718, -84.706672	06/17/2016
051002050506	Mocks Branch/Dix River	Repair	37.683146, -84.687174	06/17/2016
051002050507	Cane Run - Dix River	Repair	37.700436, -84.643819	09/27/2016
051002050407	Gilberts Creek - Dix River	Repair	37.611212, -84.538948	09/13/2016
051002050403	Fall Lick/Dix River	Repair	37.512956, -84.429377	09/23/2016
051002050505	Clarks Run	Repair	37.772101, -84.710097	09/23/2016
051002050507	Cane Run - Dix River	Repair	37.717739, -84.650766	09/23/2016
051002050505	Clarks Run	Repair	37.770996, -84.711368	09/27/2016
051002050505	Clarks Run	Repair	37.640852, -84.652133	09/28/2016
051002050502	Flat Creek - Kentucky River	Pumpout	37.557866, -84.794481	10/24/2014
051002050507	Cane Run - Dix River	Pumpout	37.720122, -84.648549	10/31/2014
051002050406	Logan Creek/Dix River	Pumpout	37.4825582, -84.6536283	11/25/2014
051002050502	White Oak Creek/Hanging Fork Creek	Pumpout	37.5570447, -84.7971883	02/13/2015

051002050504	Dix River	Pumpout	37.5525184, -84.6593222	06/05/2015
051002050407	Stingy Creek/Dix River	Pumpout	37.5447721, -84.5504934	06/05/2015
051002050507	Dix River	Pumpout	37.7797228, -84.7241696	06/05/2015
051002050505	Balls Branch/Dix River	Pumpout	37.6117461, -84.8307253	06/05/2015
051002050506	Dix River	Pumpout	37.6907415, -84.7434123	06/05/2015
051002050505	Balls Branch/Dix River	Pumpout	37.5997602, -84.7780056	06/05/2015
051002050406	Logan Creek/Dix River	Pumpout	37.468548, -84.650808	06/09/2015
051002050406	Logan Creek/Dix River	Pumpout	37.536139, -84.657384	07/10/2015
051002050403	Fall Lick/Dix River	Pumpout	37.5063948, -84.4256362	09/07/2015
051002050403	Fall Lick/Dix River	Pumpout	37.5063065, -84.4256011	09/07/2015
051002050401	Negro Creek/Dix River	Pumpout	37.4067605, -84.4949889	09/17/2015
051002050507	McKecknie Creek/Dix River	Pumpout	37.7174296, -84.654181	09/18/2015
051002050504	Boone Creek/Dix River	Pumpout	37.637886, -84.642267	10/01/2015
051002050502	White Oak Creek/Hanging Fork Creek	Pumpout	37.5852635, -84.8063574	08/31/2015
051002050504	Boone Creek/Dix River	Pumpout	37.640852, -84.652133	01/24/2016
051002050507	Cane Run - Dix River	Pumpout	37.768428, -84.704764	01/24/2016
051002050702	Little Hickman Creek	Pumpout	37.731371, -84.660331	05/20/2016
051002050506	Mocks Branch/Dix River	Pumpout	37.674539, -84.681985	05/26/2016
051002050505	Clarks Run	Pumpout	37.643816, -84.726383	09/28/2016

Figure 1- Dix River Project Area Map