

Section 319 Final Report
ARN 98-110
Farm*A*Syst and Home*A*Syst Coordinator
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Purdue University



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Objective

The objective of this project was to develop and coordinate the national Farm*A*Syst and Home*A*Syst programs for Indiana. Goals included hiring a coordinator and establishing a steering committee with other major conservation agencies, tailoring the programs to Indiana, performing outreach through workshops, media coverage and the world wide web, educating citizens by conducting on-site assessments, and carrying out a program evaluation.

Project Activities

Partnerships

Brent Ladd coordinated and carried out the project duties and Dr. Jane Frankenberger, Assistant Professor and Extension Agricultural Engineer, supervised the project. Partnerships were established with all Conservation Partnership agencies and other organizations in order to form a steering committee for the project. The steering committee met quarterly throughout the project and provided guidance, networking, and promotional opportunities for the project. Names and represented agencies are shown alphabetically below:



- Tony Bailey Natural Resources Conservation Service
- Dawn Boston Wildcat Creek Solid Waste Management District
- Cathy Burwell Purdue Extension, Consumer & Family Sciences
- Barbara Cooper Purdue Wellhead Protection, Agricultural & Biological Engineering
- Brian Daggy Indiana Farm Bureau
- Greg Hardin Indiana Association of Soil & Water Conservation Districts
- Jim Krejci Clean Water Indiana, Purdue Extension, Indiana Association of Soil & Water Conservation

- Heather Rippey, Indiana Department of Environmental Management, Watershed
• Amy Reeves Management Section, Project Monitors

- Kerry Smith Natural Resources Conservation Service
- Chad Watts Indiana Department of Natural Resources
- Fred Whitford Purdue Pesticide Programs, Botany and Plant Pathology
- Kristin Whittington Indiana Department of Environmental Management, Agricultural
Liaison

The Farm*A*Syst and Home*A*Syst program is a key component of the *Safe Water for the Future* Program at Purdue University. *Safe Water for the Future* focuses on protection and improvement of public and private drinking water sources and water resources in general. Working together with other Safe Water staff led to additional opportunities for program improvement and delivery to citizens throughout the state.

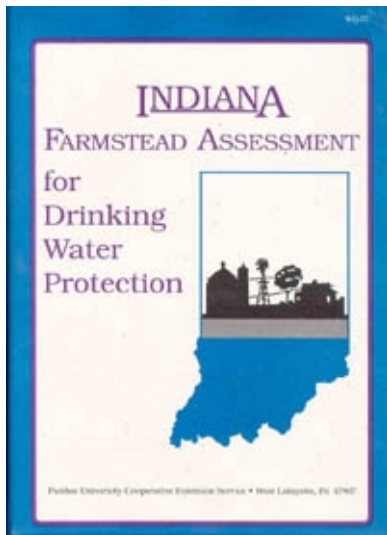
Environmental Site Assessments



In order to gain some experience using the Farm*A*Syst and Home*A*Syst materials and discover what would work best in working with residents, we initially decided to carry out ten on-site environmental assessments at rural homes and farm sites. From these initial site assessments we were able to better understand the strengths and weaknesses of the materials and plan a strategy for conducting and promoting environmental site assessments in Indiana.

The majority of the assessments we completed took place during the overall project evaluation in which ninety families participated. We developed a “quick check” worksheet (Appendix B) for use with the Indiana Farmstead Assessment packet that helped streamline the process of carrying out assessments. In fact, it reduced the average time of conducting an assessment from four hours to two hours. The Home*A*Syst guide already has an introductory risk assessment worksheet and we utilized this with non-farm home sites.

With our many program promotion opportunities, people throughout Indiana heard about the project and decided to order the materials directly from Purdue. Nearly 600 Indiana Farmstead Assessment Packets and Home*A*Syst guides were used during the project. We were able to make use of our Purdue Extension toll free phone number, 1-888-EXT-INFO, for people to call and order these materials. These residents were then able to conduct site assessments on their own.



Original Farm*A*Syst Packet



New “Basic Questions” Worksheet

Publications

We developed *Basic Questions* (WQ-32, Appendix B), a short two-page document, to help quickly discover risk areas on a farmstead and guide the farmer or person conducting the assessment to more in-depth information on reducing or eliminating the specific risks identified. *Basic Questions* also lent itself for use at meetings, promotional displays, and

direct mailings where an introduction to Indiana Farmstead Assessment Program and environmental assessments was more appropriate than handing out the entire Farm*A*Syst packet.

We also created a new program brochure (Appendix B) that highlights how residents can benefit from using our materials and services. The brochure has been very useful for public exhibits, conservation days, direct mailings, and other promotional opportunities.



After much discussion with our steering committee we made the decision to develop new publications for helping livestock farm operators in protecting water quality. Livestock are normally found in two types of settings; 1) confined or semi-confined buildings with concentrated manure storage and handling issues, and 2) pasture systems. Because these conditions differ in the types of risks associated with water quality, we developed two related publications to serve each farm type. The worksheets are titled *Pasture Assessment for Water Resource Protection*, and *Livestock Confinement Assessment for Water Resource*

Protection (Appendix B). We integrated the successful “quick check” format of our *Basic Questions* publication into these new livestock worksheets. Although the livestock publications were developed late in the project they have already received interest from farmers during two recent conferences where we displayed them.

We worked with many people and the entire Conservation Partnership in developing these new livestock publications. The following people helped with the *Livestock Confinement Assessment*: Don Jones and Alan Sutton, Purdue University; Tony Bailey, NRCS; Steve Nichols, Jim Luzar, and Jim Peter, Purdue University Cooperative Extension Service; Brett Canaday, Madison SWCD; Kristin Whittington, IDEM; Ken Eck, Purdue University/Celan Water Indiana. We worked with many people on the *Pasture Assessment* publication as well; Keith Johnson, Purdue University; Jim Krecji and Ken Eck, Purdue University/Clean Water Indiana; David Trotter, Jim Peter, and Kelly Easterday, Purdue University Cooperative Extension Service; Darrell Brown, Tony Bailey, and Victor Shelton, NRCS; Brett Canaday, Madison County SWCD. This collaboration helped ensure that a wide range of technical expertise and resources were represented in each publication. This was an example of how the Conservation Partnership can work together for a better end result. The new publications will be available from all county Extension offices, and Soil & Water Conservation Districts have also expressed an interest in using them. In addition, we plan to get commodity groups and livestock associations to adopt these publications in helping their members to protect water quality.

Program Promotion

Because Farm*A*Syst and Home*A*Syst were relatively new and had been little used in Indiana, we emphasized marketing of the program and materials by giving twenty-three presentations and workshops throughout Indiana. We also used our materials and displays to exhibit the program publicly at seventeen conferences, field days, and fairs. In addition to these activities, we also wrote eight different articles that were published in various newsletters, newspapers, and farm journals. We found additional opportunities to get the word out about our programs by working with other projects. One example resulted from helping with a Storm Water Awareness project with Clinton County Soil and Water Conservation District and Big Brothers-Big Sisters. We had 5,000 of our brochures distributed in Frankfort, IN door to door as part of

*“I like this service. I think probably everyone should do this.” —
Homeowner
Participant.*

the project effort. Another example has been getting other agency Web sites to link to our Web site. Indiana Natural Resources Conservation Service and Project Wet both linked to our Safe Water Web site.

Web Site Development

We developed an effective Web site for Farm*A*Syst and Home*A*Syst with downloadable worksheets, fact sheets, and helpful links. The web pages are an integral part of a larger Purdue University Web site called *Safe Water for the Future* (<<http://www.ecn.purdue.edu/SafeWater>>).

Wellhead Protection and Watershed Protection activities are also featured, along with drinking water education and kid's activities. The Web site has received an average of 7-10,000 visits per month and has helped reach additional Indiana residents, as well as being a technical water quality information source for agencies and educators locally, and nationally.



Program Evaluation

“Clean Water must be provided. We all must work to keep our water pure. We must do this at what ever the cost to family or government.” –Farmer Participant

We conducted an evaluation of the program by using before and after surveys, conducting on-site assessments, and coordinating self-assessments within two neighboring watersheds: Wildcat Creek and Sugar Creek located in central Indiana. We were interested in finding out what people knew about water quality and pollution prevention, as well as evaluating the effectiveness of our materials, comparing the impacts of doing on-site assessments and self-assessments, and the overall impact our project had on knowledge and

pollution prevention actions that people would gain.

Ninety families participated in the evaluation. Rossville High School Vocational Agriculture students were also involved in learning about water quality and helping to conduct site assessments. Final results showed that water quality and pollution prevention baseline knowledge was higher than we expected. However, we still saw water quality and pollution prevention knowledge increases across the board and one third of participating residents made practice changes to protect water quality, with another one third planning future changes. The program evaluation and results are presented in detail as Appendix A.

Future Program Funding

All of the activities and efforts of this project have allowed us to build a foundation for the program with good publications, promotional materials, Web site, partnerships, and the experience and lessons learned. We will have the opportunity to continue the success of the current project with funds from a new EPA-319 grant. Phase II of the project will help us continue to build partnerships for further program implementation in Indiana, expand Indiana Farmstead Assessment to a whole farm approach with the development of Field*A*Syst and Environmental Farm Plans for Indiana, as well as

conducting a statewide evaluation of previous participants of Farm*A*Syst to aid in continued program improvement.

Project Benefits

“Residents made activity changes to help protect water quality.”

- Pollution has been prevented in Indiana due to activity changes and raised awareness among project participants. Examples of specific changes people have made are noted in our program evaluation (Appendix A). Over one third of participants made changes within six weeks of completing their assessments and another one third of participants are planning future changes to protect water quality on their homes and farms.

- Residents sought technical assistance from us through on-site environmental assessments, materials for conducting self-assessments, and by calling or emailing us with water quality questions. In some cases we learned from resident comments that we were the only source of assistance on drinking water they could locate. For instance, a woman from New Harmony, IN remarked, “I have called probably twenty places with my question about my well water, and you are the first person that could answer it for me. I’m really glad I finally found the right place!” We also provided assistance to residents through county level Extension Educators, Soil and Water Conservation Districts, and other organizations. This was accomplished with workshops and presentations, promotional displays and materials, a Web site, and helping educators get answers to questions they received from citizens in their counties.



- An estimated 1300 residents completed the overview risk assessments for Indiana Farmstead Assessment. An additional 593 residents received on-site assessments or materials to conduct their own site assessments in the following areas: Drinking water wells, pesticide storage and handling, fertilizer storage and handling, fuel storage and handling, hazardous waste, household waste water (septics), livestock manure management, milk center waste water, site evaluation, lead in the home, storm water management, and household waste reduction. These publications were available directly from Purdue University through a toll free number (1-888-398-4636), from local Extension offices, and were available to download from our Web site, <<http://www.ecn.purdue.edu/SafeWater>>.

- The publications, promotional efforts, partnerships formed, and knowledge gained has allowed us to set the stage for the next three years in phase II of the project. We will be able to build upon what was accomplished in this project to help Indiana residents prevent pollution and protect water resources with Farm*A*Syst and Home*A*Syst.

“I called twenty places with my question about my well water, and you are the first person that could answer it for me. I’m really glad I finally found the right place!” — New Harmony, IN Resident

Lessons Learned

The primary audience for both Farm*A*Syst and Home*A*Syst is the rural family (although urban audiences can certainly benefit from particular chapters in Home*A*Syst). We started the project by taking a “let’s find out what works and what doesn’t work” approach. Our lessons learned reflect this approach.



- **People want “Easy to Read, Easy to Understand”.** Farm*A*Syst, a packet of 11 assessment topics and corresponding fact sheets, had been originally developed by the national Farm*A*Syst office in Wisconsin.

This packet was reproduced with some changes for Indiana regulations and contacts in 1995. Although the individual topic assessments are very useful tools, we discovered that the presentation of the packet in its entirety was perhaps overwhelming for potential participants. We were told that it looked like too much material to go through. We learned this from an initial “pilot test” with 10 farmers and homeowners. The pilot test involved us setting an appointment and using the materials to conduct site assessments and recommendations to the property owner. During the assessment we asked them their thoughts about the materials and how they would view them if they had to do it on their own.

Based on the responses from this pilot testing, we decided to streamline the packet by developing a “quick check” introductory worksheet, called *Basic Questions* (Appendix B). This two-page worksheet reduced the time of on-site assessments from 4 hours to 2 hours. *Basic Questions* takes approximately 15-20 minutes to complete and then guides the user to more in-depth information and recommended action where needed. The new worksheet also opened up more opportunities for people to quickly assess their farmsteads for water quality risks by getting the worksheet at meetings, displays, and through the mail. The worksheet has been used at meetings and workshops around the state as well as a number of on-site farm assessments.

- **Building Trust Should Come First.** In working with rural communities and rural residents we found that it takes a great deal of planning, forming partnerships, and using trust building activities before a successful project can be delivered. “Cold Calls”, although we made only a few of these initially, were not the best way of carrying out the program. In choosing watersheds in which to conduct our program evaluation, we decided to work closely with all Clinton County conservation partnership offices. We helped with the local Farm Conservation Days, Storm water awareness projects, speaking at the annual Farm Bureau meeting and helping at their 4-H fair booth, conducting a farm assessment and media interview with the county Farm Bureau President, and attending meetings with local Conservation Partnership. We also used the local papers and County Extension office newsletter to promote our project. These activities all led to establishing a degree of trust and familiarity with the project and with us. When going out to most farms and homes we were usually welcomed as people they could trust.

“I don’t trust the health department to come out here.”
—Farmer Participant



- **Walking the Site Works Best.** In using Farm*A*Syst and Home*A*Syst risk assessment materials in our pilot testing we soon discovered that sitting down in the farm office or at the kitchen table and running through questions with the person was not as effective as we wanted (as well as the problem of wading through all 11 topics to discover one or two risk areas). As we developed the *Basic Questions* worksheet Brent honed his delivery technique. Rather than going verbatim from question to question on the risk assessment sheet

he made sure that the assessment was a dialogue with the participant. In nearly all cases he had the participant walk with him throughout the farm or home site. First he chatted, and addressed any particular concerns of the participant, and then simply walked to each potential risk area on the site and discussed them with the owner. By speaking in simple conversational terms we were able to get the information needed without it being a dry and boring experience; as one farmer complimented, “This is more than just a bureaucratic exercise!”

- **Providing Many Formats for Assessments Allows More People To Participate.** As the program evaluation research documented, assessments where a specialist guided the participant through the process AND self-assessments, where the participant used the materials on their own, can both be effective. Although doing on-site assessments are better in terms of participants making changes, both delivery mechanisms should be in place. Also, alternative formats such as the introductory worksheet alone can be effective, as well as having internet-based assessment materials and information. One more way that some people preferred was to call us up with a specific question and get an answer to their question. All of these formats together have become the Indiana Farmstead Assessment and Home*A*Syst program and have made it a more effective program in preventing pollution.

- **Voluntary Accountability is Important to People.** We found that rural residents especially liked the fact that Farm*A*Syst and Home*A*Syst were voluntary and confidential programs. We were often asked if the assessment information was going to be given to a regulatory agency. When it was made clear that the information stayed with the participant, this set them at ease. Most participants were then quite open about risk areas on their property. With this project, it was ultimately up to participants to make the changes we recommended. Our program evaluation shows that about one third of the participants made at least one activity change within six weeks of their assessment. Another one third of participants were planning to make at least one change in the future. These results mirror those found in a previous Farm*A*Syst research study in Louisiana.

We were surprised to find that farm and non-farm residents had exactly the same concerns about environmental contamination.

- **Farmers and Rural Non-Farm Residents Are Very Similar.** Farmers and non-farmers responded very similarly and had identical concerns about their well water. The major difference was seen in the quantities of fuel, fertilizer, pesticide, and livestock on-site between farms and non-farms. This difference still necessitates the use of the different formats found in Farm*A*Syst and Home*A*Syst, especially in the case of self-assessments.

Nevertheless, pollution prevention strategies with rural residents do not need to differ sharply between farm and non-farm, as the attitudes, concerns, knowledge, and actions taken will be similar.

- **Well Tests were a Good Motivator, but Can Confuse the Message.** We believe that well testing was a big motivation for people to participate in the project, with nearly half of the participants never having had their well water tested. However, sometimes a clean well test seemed to backfire in terms of a participant's perspective on making changes. In a few cases there were many high-risk areas identified, but the well test was clean. One such participant noted in his final evaluation that his farm was A-OK because the well water tested clean. This was in spite of discussing with him during the assessment how long it can take pollutants to travel in ground water to his well. This indicates that we must put even more emphasis on talking prevention in these cases.



Summary of Contractor Duties

Summaries of how each contract duty was met are described below.

DUTY A – Form a steering committee and execute a MOU.



A steering committee was formed to guide the project. This committee included all conservation partnership agencies as well as representatives from Solid Waste Management Districts and Farm Bureau. The committee was helpful in pointing out opportunities for program promotion, developing publications, and agency contacts for more effective implementation of the program.

The committee met on a quarterly basis during the project. Meeting agendas and minutes are found in Appendix C.

A Memorandum of Understanding was drawn up and signed on November 19, 1999 by Purdue University, Indiana Department of Environmental Management, and Indiana Natural Resources Conservation Service (Appendix C).

DUTY B – Conduct environmental site assessments and develop livestock worksheets for Indiana.

A total of 100 site assessments were conducted on-site or coordinated by us during the project. Locations are listed here by county: Benton (1), Boone (1), Carroll (11), Clinton (76), Fountain (2), Madison (1), Montgomery (3), Tippecanoe (2), Tipton (1), Warren (2).

Another 493 self-assessments were estimated to have been conducted throughout Indiana based on assessment materials being directly mailed to residents for this purpose. During 10 workshops we conducted with



Extension Homemakers in all areas of Indiana, we had 1,100 women who attended these workshops complete the *Basic Questions* risk assessment overview.

The *Basic Questions* (Appendix B) two-page worksheet has helped streamline the program and made it more accessible and cost-effective. Previous to the completion of the *Basic Questions* worksheet, the entire Farm*A*Syst packet was handed out to everyone, even if they were only interested in a brief overview. Now this introductory worksheet allows people to quickly assess their farmstead for pollution risks and points them to more in-depth help where risks are identified.



Two new livestock assessment tools were developed (Appendix B). Livestock are normally found in two types of settings in Indiana: 1) in confined or semi-confined buildings with concentrated manure handling issues and 2) in pasture systems. We developed an assessment worksheet for each condition to accurately address the water quality risk issues involved with each condition.

DUTY C – Develop a plan of work and secure future funding.

An annual plan of work was developed, reviewed, and approved by the steering committee on December 14, 1999 (Appendix C). From this plan of work, priorities for the project were then arranged in terms of short term, long term, and on-going strategies, objectives, and duties (Appendix C).

*“Farm*A*Syst is a sound program, providing needed information and help to laymen. We appreciate your efforts.” — Farmer Participant*

With the guidance of the steering committee, we developed a proposal and submitted it for a new EPA-319 grant to continue the current project into phase II. This proposal was granted funding for the period of June 1, 2001 through May 31, 2004. This project that has been completed has allowed us to set the stage for the next three years as phase II of the project. We will be able to build upon the publications, promotional efforts, partnerships formed, and knowledge gained to help Indiana residents prevent pollution and protect water resources with Farm*A*Syst and Home*A*Syst. Phase II of the project will help us continue to build partnerships for further program implementation in Indiana, expand Indiana Farmstead Assessment to a whole farm approach with the development of Field*A*Syst and Environmental Farm Plans for Indiana, as well as conducting a statewide evaluation of previous participants of Farm*A*Syst to aid in continued program improvement.

DUTY E – Conduct at least three workshops to train volunteer and conservation partnership staff in conducting site assessments.

*After receiving training on the use of Farm*A*Syst 83% of Indiana Farm Bureau Health and Safety coordinators said they would promote the use of Farm*A*Syst in their counties.*

The following workshops and presentations on the Indiana Farmstead Assessment and Home*A*Syst programs and how to conduct site assessments were attended by 1,658 people:

Organization	Number attending workshop	Where & When
NRCS Technical Committee	30	Indianapolis, IN, July 19, 1999
Clinton County Farm Bureau	150	Frankfort, IN, August 26, 1999
Environmental Educators Association of Indiana	10	Madison, IN, November 13, 1999
Wellhead protection: Best Management Practices	33	Warsaw, IN, November 18, 1999
Wellhead protection Best Management Practices	20	Rensselaer, IN, November 23, 1999
Mutual Insurance Companies Association of Indiana	80	Indianapolis, IN, December 1, 1999
Science Teachers	20	Indianapolis, IN, December 3, 1999
South-Central & South-West SWCD Educators	10	Jasper, IN, December 16, 1999
Farm Bureau Health & Safety Conference	60	Indianapolis, IN, February 2, 2000
Hoosier Association of Science Teachers	35	Indianapolis, IN, February 10, 2000
Indiana Extension Homemakers Association	1,100	10 districts, March 20-April 5, 2000
Jennings County Water Test Public Meeting	50	Franklin, IN June 21, 2000
Warren County Fair	40	Williamsport, IN July 18, 2000
Great Lakes Pollution Prevention conference	20	Indianapolis, IN August 29, 2000

After receiving training on the use of Farm*A*Syst to reduce pollution risks on the farm 83% of the 60 Indiana Farm Bureau Health and Safety coordinators said they would promote the use of Farm*A*Syst in their counties. Forty-eight percent of participants (not all participants lived on a farm) said they planned to use it on their own farm.

We had many positive comments from Extension Homemakers on the presentations we gave at the ten annual district meetings around the state, and have since received requests from Extension Homemakers for more workshops on water quality protection in Warren and Tippecanoe counties. Here is a comment from one Extension Homemaker, "I really enjoyed learning what you had to say about water. I've always wondered about our water and now I know some things I can do to help protect it."

"I really enjoyed learning what you had to say about water. I've always wondered about our water and now I know some things I can do to help protect it."—
Extension Homemaker

DUTY E – Develop and maintain a Web page.



We developed an effective Web site for Farm*A*Syst and Home*A*Syst with downloadable worksheets, fact sheets, and helpful links. The web pages are an integral part of a larger Purdue University Web site called *Safe Water for the Future* (<<http://www.ecn.purdue.edu/SafeWater>>). You can view examples of the web pages in Appendix D. Wellhead Protection and Watershed Protection activities are also featured, along with drinking water education and kid's activities. The Web site has received an average of 7,000-10,000 visits per month and has helped reach additional Indiana residents, as well as being a technical water quality information source for agencies and educators locally, and nationally. Several residents have told us that they found the program through the Web site. The site is registered with the following search engines: Netscape, Excite, Alta Vista, Lycos, Google, Go To, LookSmart, and HotBot. A host report can be viewed in Appendix D.

DUTY F – Coordinate activities with state and national programs.

Early in the project we attended the National Farm*A*Syst and Home*A*Syst meeting in Washington D.C. During the course of the meeting we met individually with personnel from Illinois, Michigan, Wisconsin, Ohio, and Kentucky to review their successes and strategies. This was a great help in starting Indiana's program.

We co-presented with National Home*A*Syst Coordinator, Kadi Rowe, at the 2000 Great Lakes Pollution Prevention Conference that was held in Indianapolis. This presentation was able to reach agency and regulation personnel about the benefits of our voluntary and confidential program for residents in reducing pollution and protecting water quality.

When developing and conducting the program evaluation, we spoke with coordinators from Louisiana's Farm*A*Syst program and Michigan Ground Water Stewards Program and the very successful evaluations they performed in the past. This helped us to learn from their mistakes and successes in developing our evaluation.

We met with Mary Hoover during wellhead protection meetings and have worked closely with Barbara Cooper and Stacye Johnson, Purdue's Wellhead Protection Education program. We reviewed wellhead protection publications that have been distributed state-wide. These publications list Farm*A*Syst and Home*A*Syst as pollution prevention resources.

Web-based Farm*A*Syst assessments have been developed at Purdue as part of an EPA Region V and Purdue University project. We did extensive reviews of these web pages and gave comments on improving the site. The project is on-going with the construction site link being <<http://danpatch.ecn.purdue.edu/~epados/>>.



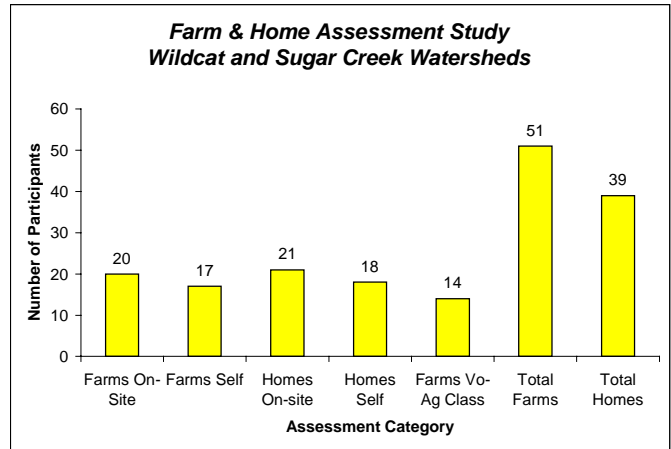
“All but one participant stated they would recommend Farm*A*Syst or Home*A*Syst to others.”

We are also active members of the Extension Water Quality Common Interest Group that meets regularly to coordinate water quality activities in Indiana.

DUTY G – Develop and conduct a program evaluation using before and after site assessments.

Environmental site assessments focusing on drinking water protection were conducted on 90 farm and home sites within the Wildcat Creek and Sugar Creek watersheds during the months of May through August of 2000. Materials used included Indiana Farmstead Assessment System (Farm*A*Syst) and Home Assessment System (Home*A*Syst). A free water test including bacteria, nitrate, and atrazine/simazine screenings was offered to all participants.

Participants were divided into two groups; the first group received assistance from us and the second group received identical materials and water test kits to perform their own self-assessment. Farm sites and non-farm sites were divided equally between these groups. Survey instruments were used in a pre- and post-assessment format to ascertain knowledge and activity changes. A pre-survey was completed by each participant prior to the assessment. Four to six weeks following the assessment, participants were asked to complete a post-survey evaluation. Interestingly, there was essentially no difference between rural farms and rural non-farm sites and owners with respect to attitudes, concerns, problems, and actions taken to prevent pollution.



“94 % of participants said the project increased their awareness of water quality issues when going about their daily activities.”

Results show that participants’ knowledge of ground water, septic and well maintenance, as well as pollution prevention understanding, all improved as a result of the project. These knowledge changes were not significantly different between groups. Paired T-tests were performed for knowledge questions and although in all cases an increase in knowledge was demonstrated these increases did not prove to be statistically significant.

A large majority of participants (94.3%) stated they were now more mindful of water quality issues when going about their daily activities due to the project.

Of all residents, 98.1% said the project was very helpful (50.9%) or moderately helpful (47.2%) in answering their questions and increasing their understanding of risk levels for various activities.

Those receiving help were more likely to indicate that their ability to protect drinking water had been greatly improved (39.4%) compared with those completing assessments on their own (16.7%).

All but one participant (98.6%) indicated they would recommend either Home*A*Syst or Farm*A*Syst to others.

Over one-third (35.9%) of all residents responding on the post-evaluation showed they had already made at least one activity change due to the project. We want to also point out that participants receiving help from us were more likely to make at least one activity change to improve drinking water protection compared with participants that did not receive help in completing their assessment (42.9% vs. 22.2%).

Participants in both groups were asked whether or not a specialist was necessary for them to complete the environmental assessment. Although participants were nearly equally divided in their response, the results indicate that having a specialist guide land owners through an environmental assessment is more effective than simply giving participant's the materials and asking them to do it on their own.

Well Testing Results



Forty-one farm and home locations had well test data and other information gathered such as septic system location. Our results are similar to those found in previous Indiana statewide water tests. The main concern was the presence of bacteria in wells. We ran logistic regression analysis to find out if any of the following factors influenced the presence of bacteria in wells; *well age, depth, type, sample source, presence or absence of septic absorption field, and whether the site was a farm or non-farm.* The analysis demonstrated that none of these variables played a significant role in affecting the presence of bacteria in those wells that tested positive. Thus, these results don't offer any easy direction for preventing the presence of bacteria in private wells. Other well test data research has suggested that older wells and wells with a depth less than 50 feet test positive for contaminants more so than newer and deeper wells. This seems intuitive, yet our data did not show such a clear difference for bacteria.

For more information and detail, the entire program evaluation is reported in Appendix A.

DUTY H – Promote the program and submit project information to the media.

The program was promoted using a wide variety of strategies including articles, brochures, displays, a Web site, and presentations throughout Indiana.

A new program brochure was created and printed (Appendix B). Nearly 5,000 copies are in the hands of individual citizens through our many promotional efforts. Another 5,000 copies has been recently printed for use in on-going promotional efforts.

A specific drinking water brochure was created and used in coordination with Hiedelburg College Water Testing Lab (Appendix B). Over the course of the project, 8,000 copies of this brochure were mailed to Indiana residents who received water test results. This brochure resulted in many calls to our office for more information or need for assistance.

Farm*A*Syst and Home*A*Syst were promoted using displays 17 events. Our exhibits included a table top display promoting Farmstead Assessment, brochures, Farmstead Assessment materials, Home*A*Syst guides, a lap-top computer with our Web site available



State Fair Exhibit 2000. Farm*A*Syst & Home*A*Syst portion is at the far right.

for browsing, a water quality “quiz board” titled “Are you a Water Wizard?”, and other water quality materials as appropriate. In many cases we staffed the display and could help answer people’s questions about water quality.

Conference	Estimated Viewers	Where & When
Clinton County Fair	5,000	Frankfort, IN, July, 1999
Boone County Fair	5,000	Lebanon, IN, July, 1999
Pathway To Water Quality at the Indiana State Fair (Clean Water Indiana)	5,000	Indianapolis, August 1999
Purdue Agronomy Day	100	Agronomy Farm, September 9, 1999
Flushing into the next century: septic systems and alternatives for rural areas.	220	Pokagon State Park, October 4, 1999
Purdue Extension Annual Conference	150	Purdue University, October 1999
Environmental Educators Association of Indiana	80	Clifty Falls State Park, November 12-13, 1999
Midwest Small Farm Conference	600	Noblesville, IN, November 19-20, 1999
Indiana Association of Soil & Water Conservation Districts Annual Meetings	1,000	Indianapolis, January 2000
Indiana State Fair	50,000	Indianapolis, August, 2000
Pathway To Water Quality at the Indiana State Fair (Clean Water Indiana)*This was a separate exhibit from the State Fair Exhibit.	5,000	Indianapolis, August 2000
Purdue Agronomy Day	500	Agronomy Farm, September 7, 2000
Purdue Extension Annual Conference	150	Purdue University, November 2000
Midwest Small Farm Conference	400	Noblesville, IN, November 17-18, 2000
Indiana Association of Soil & Water Conservation Districts Annual Meetings	1,000	Indianapolis, January 2001
Great Lakes Grazing Conference	400	Shipshewana, IN, February 12-13, 2001
Carroll County Swine Clinic	75	Flora, IN, February 23, 2001

The following articles about the program were published during the project.

- Ladd, B. and T. Bechman. April 2000. Clean water by the glass. *Indiana Prairie Farmer*.
- Ladd, B. April 2000. Farm*A*Syst : It's All in the Name. *The Label*.
- Ladd, B. October 1999. Helping Indiana Families Protect Their Water. *Purdue Extension – Consumer & Family Science Newsletter*.
- Ladd, B. and C. Parmenter. October 1999. Home*A*Syst Program now available in Vanderburgh County. *Vanderburgh SWCD Newsletter*.
- Ladd, B. September 1999. Purdue Program Provides Environmental Risk Assessments. *Nonpoint Notes*.
- Ladd, B. August 1999. Farm*A*Syst, Home*A*Syst Help Protect Hoosier Families. *Koskiusko Newspaper*. (Same article was also published in the Columbia City News. Similar articles published in other newspapers and Extension newsletters throughout the state).
- Ladd, B. July 1999. Pollution Prevention Programs for Farms and Homes. *Boone County SWMD Newsletter*.
- Ladd, B. and J. Krecji. May 1999. *A*Syst-ance: rural pollution-risk assessment program now available thru Purdue. *Topsoil Newsletter*.

Conclusion



This project demonstrated that both the Farm*A*Syst and Home*A*Syst materials were effective in increasing residents' water quality and pollution prevention knowledge. Over the course of two years, at least 1,600 people heard presentations, 1,300 completed assessments, 75,000 people saw our displays, and thousands more read articles about the program. More than one third made some change to help protect water quality and prevent pollution. Participants that received help in completing their assessments felt they had an increased ability to protect their water, and were more likely to make at least one activity change to protect water quality than participants not receiving assistance. Most of the residents seemed genuinely happy to be receiving help, with someone to provide answers to their questions during the assessment. However, when assistance cannot be provided, self-assessments can still be effective in raising awareness about water quality and pollution prevention.

We discovered that offering a free well water test for bacteria, nitrate, and pesticides was an effective motivator to get residents to participate. We feel this is a cost effective way to get rural, private well owners involved in water quality issues. Although confidentiality was emphasized throughout the project, some participants still asked where the data would be reported. Letting participants know that all the information found during the assessment would remain with them seemed to ease any concerns. The voluntary and confidential nature of both Farm*A*Syst and Home*A*Syst, along with an emphasis on drinking water issues, provides an excellent and effective format for involving rural citizens in pollution prevention in their own back yards.

“We really try our utmost to be sure we are doing all we can to safeguard against accident or groundwater contamination. Even then, it doesn’t mean it can’t happen. So we always feel there is room for improvement.” —Farmer Participant

