USING INTERNET RESOURCES TO PROTECT WATER QUALITY IN MISSOURI

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ABSTRACT

Some land use practices lead to water pollution and/or land degradation. Learning more about watershed activities and possible best management practices can assist citizens in protecting land and water quality. Using a watershed approach to restore the environment fosters a coordinated and efficient implementation effort of programs that reduce polluted runoff, and protect natural resources and drinking water supply sources. A University of Missouri Outreach and Extension project, the Missouri Watershed Information Network (MoWIN) collaborates with state, federal, and non-governmental agencies in planning and implementing watershed information training workshops. Workshops focus on information sources for developing water protection plans, total maximum daily loads, and water quality management plans. Audiences include landowners, land managers, locally led watershed alliances, decision and policy makers, educators, researchers, or volunteers. Staff will work closely with state and federal agencies and natural resource interest groups. This project is an additional empowerment tool for citizens to make informed watershed management decisions. The project contributes to watershed restoration activities by promoting awareness of watershed-related information, educating citizens on how to access the various categories of information, and enhancing participants' technological expertise. For additional information please visit: http://outreach.missouri.edu/mowin.

Key words: water quality, source water protection, watershed restoration, stakeholders, watershed stewardship, nonpoint source pollution

INTRODUCTION

A result of the University of Missouri's Outreach and Extension (UOE) Plan of Work – Statewide Deliberative Process, local extension councils and invited community members across Missouri overwhelmingly identified the need to protect our water resources (water quality) as a major concern to assure sustainable community systems. The United States Environmental Protection Agency (EPA), Missouri Department of Natural Resources (DNR), and the Missouri Department of Conservation (MDC) have conducted assessments of Missouri's water resources and have documented a trend of ever-increasing point and nonpoint pollution problems resulting from past and present land use practices throughout Missouri. Findings from the Missouri Department of Natural Resource's assessment resulted in the publishing of the "Impaired Waters of Missouri 303(d) List." Presently, approximately 179 water bodies (streams, lakes, ponds, community drinking water reservoirs) comprise the list, with an expected increase in the number of affected water bodies at the end of the present assessment process (Clifford, 2000). The trend of more

water sources being added to the 303(d) list necessitates the need for communities to develop watershed management plans to improve and protect water resources. As the trend and pollution of Missouri's water resources continues, more communities will need access to reliable sources of safe water to insure continuation of socioeconomic sustainability and viability.

Most community drinking water reservoirs are located north of I-70 as a result of not having access to a reliable source of groundwater. Land use north of I-70 consists almost entirely of agriculture (row crops/ livestock), which directly or indirectly contributes significantly to the point and nonpoint pollution problems. Increased pollution resulting from uninformed land use decisions indicates a definite need for improving local access to information and resources, in order to empower local communities and groups to develop locally based watershed management plans that address water quality issues. Citizens must have access to information and resources to be equipped with necessary skills to evaluate, decide, plan, and implement watershed management plans specific for their local watershed. More communities are finding it necessary to develop and implement watershed management protection plans to assure water quality and public health.

University Outreach and Extension, United States Environmental Protection Agency, and the Missouri Department of Natural Resources have identified the importance for local people, local governments, and organizations to have access to reliable information and resources as they begin the process of evaluating, planning, implementing, and reevaluating strategies for improving/protecting their water resources. The University Outreach and Extension, U.S. Environmental Protection Agency, and the Missouri Department of Natural Resources have collaborated through an EPA 319 grant to develop a training series on "Internet-Based Assistance for Watershed Planning and Management." Training will allow agencies, local groups, and organizations access to information about environmental quality, development, and implementation of watershed management plans. The "Internet-Based Assistance for Watershed Planning and Management" program provides statewide access to watershed information and hands-on training for local watershed assessment projects in Missouri. Training sessions provide local groups with a framework to obtain watershed assessment information, development, and implementation strategies for watershed management plans.

The program allows for better coordination of programs and activities where water quality is impaired by point and nonpoint sources of pollution. Major challenges in planning and implementing Water Quality Management Plans (WQMPs), Source Water Protection Plans (SWPPs), and Watershed Restoration Action Strategies (WRASs) include accessing information about, understanding and accepting causes of water pollution. The Clean Water Action Plan (CWAP) identifies stewardship of natural resources as a fundamental step in pollution prevention, and states, "In rural watersheds, stewardship of privately owned crop lands, pastures, wetlands, and rangelands is the key to pollution prevention." Furthermore, the (CWAP) states, "Ensuring that farmers and ranchers have the technical, financial, and educational assistance they need to be good stewards of their land is a fundamental element of a comprehensive clean water program". However, less than 25% of those surveyed by the sixth annual NEETF/Roper National Report Card on Environmental Attitudes, Knowledge, and Behaviors in America knew the most common cause of water pollution (sedimentation).

OBJECTIVES

Specific objectives of this project include the following:

- Assess types of environmental management activities being undertaken and participants' perceptions regarding watershed stewardship.
- Inform citizens about the availability of information and data through MoWIN; also, determine their needs for other types of information and data.
- Develop a curriculum, and plan and implement statewide workshops to inform and educate individuals about accessing and utilizing available watershed-related information and data.
- Provide hands-on activities to access the information pertaining to agricultural and natural resources, natural resource conservation contacts, stormwater management, water quality, source water, and watershed restoration activities.
- Provide opportunities for education, training, and technology transfer pertinent to the development of related management plans using group dynamics.

EXPECTED OUTCOMES—IMMEDIATE

- Participants will be able to access, design, plan, and develop related watershed plans utilizing information compiled on MoWIN Web site.

- Participants will be able to use the Internet to retrieve watershed management-related information.
- Participants will become aware of various sources and use of information related to Water Quality Management Plans, Source Water Protection Plans, Total Maximum Daily Loads, Watershed Restoration Action Strategies, Missouri Conservation Resource Enhancement Program, Phase II Stormwater Regulations and Best Management Practices, in addition to relevant aspects related to nonpoint source pollution.

OUTCOMES—INTERMEDIATE

- By enhancing a person's ability to obtain watershed information, there will be an increase in voluntary protection of the environment.
- Use of Web-based information in watershed plans development and implementation.
- There will be a reduction in the amount of sediment and nutrient loading occurring in waters of the state.

OUTCOMES—LONG-TERM

- Removal of impaired waters from the 303(d) list to restore them to their designated uses (swimming, fishing, drinking).
- Implementation of Watershed Management Plans to improve water and environmental quality.

TARGET AUDIENCE/PARTICIPANTS/PARTNERSHIPS

The comprehensive nature of this project requires substantial coordination, cooperation, and collaboration among numerous agencies, organizations, interest groups, industry, and individuals. Restoration efforts should be grassroots in nature, with actual projects implemented by watershed communities. The training sessions have targeted agency personnel, city/county officials, and environmental grant recipients as the primary audience. Every agency, individual, community, and organization is a potential audience member and partner as they go about their daily lives relying on sources of safe water for their physical, economical, and environmental well-being. The Internet-Based Assistance for Watershed Planning and Management program has strengthened or expanded partnerships with other federal and state agencies that are developing and share pertinent information and resources important to empowering local individuals and communities as they evaluate their watersheds and design a process to protect their water resources. Specific audience will include the United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS), Missouri Department of Natural Resources (DNR), Missouri Department of Conservation (MDC), University of Missouri Outreach and Extension (MU-UOE), Soil and Water Conservation Districts (SWCDs)

personnel, stakeholders, citizen-based watershed groups, city water officials, engineers and developers, municipal personnel, and others interested in natural resources conservation.

PROJECT DESCRIPTION AND IMPLEMENTATION

Beginning December 1, 2001, MoWIN will provide information about nonpoint sources of water pollution, and technical and educational assistance as they relate to: a) Water Quality Management Plans (WQMPs), b) Source Water Protection Plans (SWPPs), c) Total Maximum Daily Loads (TMDLs), d) Watershed Restoration Action Strategies (WRASs), e) Missouri Conservation Resource Enhancement Program (MoCREP), and f) Phase II Stormwater Regulations and Best Management Practices. This information is intended to provide a basis for developing WQMPs, SWPPs, and WRASs in an effort to satisfy Total Maximum Daily Loads (TMDLs) for impaired waters in Missouri, to assist landowners with implementation of the Missouri Conservation Reserve Enhancement Program (an $85 million federal-state partnership to protect Missouri's drinking water and reduce pollution in streams and reservoirs that supply water to more than 375,000 Missouri residents), and to meet Phase II Stormwater Program requirements for watershed plans.

University Outreach and Extension (UOE) specialists, working with other agency staff, will provide pertinent information and resources important to a successful local watershed (rural and urban) evaluation, planning, and implementation effort. Pre-surveys will be conducted to determine current information availability and additional requirements. Based on pre-surveys, UOE specialists will compile relevant information onto the MoWIN Web site: http://outreach.missouri.edu/mowin/.

UOE specialists will develop and deliver hands-on watershed planning activities at eight locations in the state using demonstration as a means of instruction. The training will acquaint local groups with principles and practices of sound watershed planning, and use of Internet-based information for watershed management and planning, promote awareness of nonpoint source pollution-related information, educate citizens on how to access various categories of information, and enhance participants' technological expertise.

EVALUATION

1. Pre-project questionnaires administered prior to the beginning of the workshops will be used to determine the level of information requirements for participants and existing information resources. Results will be used to enhance Web site information where necessary. Post-training evaluations will

be used to determine the effectiveness of the training and knowledge of participants in locating specific information from Web-based resources.

2. An increase will be noted in the number of watershed management plans, Source Water Protection plans, Phase II Stormwater Runoff plans, and Environmental Quality Incentive Program applications that are submitted each year. Each of these plans requires an element of private citizen participa tion. A Watershed Planning Information Web site will be designed and evaluated on the basis of the number of "hits" by end users accessing the page, in addition to phone, mail, personal visits, related participant questions, and comments.
3. Participants will be requested to pre-register for the training sessions. This will be another indicator of the success of the program: the number of people willing to take the course.
4. Water testing by the Missouri Department of Natural Resources will show a reduction in nutrient-impaired waters in the state and an increase in natural habitat due to reduced sedimentation.
5. Water testing results through the Missouri Department of Natural Resources will show an improvement in water and environmental quality by a reduction of nutrients, and sediment, and improved habitat causing a removal of waters from the state 303 (d) list.
6. There will be improved watershed management by implementation of watershed management plans to improve water and environmental quality.

COLLABORATIVE MEASURES/AGENCIES AND CITIZEN-BASED WATERSHED GROUPS

United States Environmental Protection Agency provides funding for the project through a Department of Natural Resources 319 grant. EPA provides technical information support for the Watershed Management and Planning Web site.

Missouri Department of Natural Resources (DNR) provides grant review and administration for the project, as well as providing technical resources for the Web site. DNR and the Missouri Department of Conservation regional staff provide planning and implementing support within local regions.

United State Department of Agriculture—Natural Resources Conservation Service, local Soil and Water Conservation Districts, and other available state and federal agency personnel will provide technical resources for the Web site, as well as staff support and follow-up to the local community planning training experiences.

ORGANIZATIONS

Private and public water suppliers will provide access to communities as they recognize the need to protect water resources through wise watershed management, e.g. the Clarence Cannon Wholesale Water Commission.

Local governments and planning organizations will consider watershed stewardship (water resources protection) as they contemplate land use issues through community comprehensive planning.

Local economic development organizations become a proponent for protecting the watersheds through watershed management and planning, because of the important roles watersheds play in providing a sound economic base.

Watershed interest groups, such as the James River Basin and the Watershed Committee of the Ozarks, will assist with identifying critical local leaders for training, and providing local sponsorship of the program.

CONCLUSION

Using a watershed approach to provide information and develop environmental management plans fosters a coordinated, efficient implementation effort of programs that reduce polluted runoff, and protect natural resources plus drinking water sources and supplies. Providing information at a watershed level increases accountability and involvement by the public, private landowners, and businesses. Using a watershed focus promotes a holistic way of managing watersheds. This project is an additional resource to ensure that Missourians make informed best management practices and decisions.

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