



**AN ACTION PLAN TO PROTECT NORTH CAROLINA'S
DRINKING WATER SOURCES**
Aligning Land Use and Source Water Protection

Final Report
Enabling Source Water Protection Project
Prepared in Cooperation with the NC Source Water Protection Program
October 2010

The Project Team

The *Enabling Drinking Water Source Protection* initiative, funded by the U.S. Environmental Protection Agency (EPA), is a partnership among The Trust for Public Land (TPL), The Smart Growth Leadership Institute (SGLI), River Network and the Association of State Drinking Water Administrators (ASDWA). Mission statements from the organizations are included below. The project assesses state programs to recommend the best opportunities for program alignment that will support local communities in their drinking water source protection efforts. The project team members wish to thank Amy Axon and Jay Frick of the NC Source Water Protection Program and their many partners for the dedication and assistance that made this project possible.

Mission Statements

TPL conserves land for people to enjoy as parks, gardens and other natural places, ensuring livable communities for generations to come.

SGLI, a project of Smart Growth America, is dedicated to helping state and local elected, civic and business leaders design and implement effective smart growth strategies. SGLI's coalition includes many of the best-known national organizations advocating on behalf of historic preservation, the environment, farmland and open space preservation, and neighborhood revitalization.

River Network is leading a nationwide movement to preserve and restore clean and healthy waters. While rivers are the focal point, River Network works to protect the quality of all fresh waters and the health of all people and ecosystems dependent upon them.

ASDWA is the professional association serving state drinking water programs. Formed in 1984 to address a growing need for state administrators to have national representation, ASDWA has become a respected voice for states with Congress, EPA, and other professional organizations.

EPA leads the nation's environmental science, research, education and assessment efforts. The mission of the Environmental Protection Agency is to protect human health and the environment. Since 1970, EPA has been working for a cleaner, healthier environment for the American people.

The NC Source Water Protection (SWP) Program serves to protect the state's public drinking water sources. The NC SWP Program evaluates susceptibility to contamination and initiates strategies to protect these sources, including delineation and assessment activities, wellhead and surface water protection activities, proactive local planning efforts and coordination with a variety of state and federal programs.

Cover Photos

From left to right: Mark's Creek, Raleigh, Mountain Island Lake, Carolina Thread Trail
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Table of Contents

The Project Team.....	1
Executive Summary.....	3
Background	5
Recommendations.....	6
Recommendation 1: Enhance the NC SWP Program website.	6
Recommendation 2: Create incentives to encourage source water protection.....	6
Recommendation 2A: Develop a Public Water System awards program.....	6
Recommendation 2B: Promote recognition programs for exemplary land practices.	8
Recommendation 2C: Make the economic case for source water protection.....	10
Recommendation 3: Improve access to relevant state and federal funding programs.....	12
Recommendation 3a: Provide information on funding for source water protection.	12
Recommendation 3b: Include source water protection criteria for 604(b)/205(j) projects...	12
Recommendation 4: Offer DWSRF interest rate reductions for source water protection	13
Recommendation 5: Enhance CWSRF support of drinking water protection.	14
Recommendation 6: Establish new outreach and coordination mechanisms.....	15
Recommendation 6A: Create a “Source Water Collaborative.”.....	15
Recommendation 6B: Improve Coordination among NCDENR Divisions.....	16
Recommendation 7: Promote the development of local funding for source water protection..	17
Recommendation 8: Enhance regulatory programs to support source water protection.	18
Recommendation 8A: Review permitting procedures.	18
Recommendation 8B: Improve antidegradation implementation.....	19
Recommendation 8C: Examine stormwater controls.....	20
Recommendation 8D: Offer technical assistance regarding stormwater pollution.	20
Recommendation 8E: Suggest improvements to construction stormwater controls	21
Addendum: Workshop Summary	23
Appendix 1: Information and links to enhance source water protection website.....	31
Appendix 2Ai: Public Water System Award Example.....	35
Appendix 2Aii: Sample Press Release and Governor Proclamation	35
Appendix 2C: Examples of Research on Economic Benefits.....	37
Appendix 3: Fact Sheets on Relevant Funding Programs for Source Water Protection	38
Appendix 4: Ohio WRRSP Fact Sheet	40
Appendix 5A: Potential CWSRF priority ranking system enhancements	41
Appendix 5Ai: Examples from CWSRF PICES Awards	43
Appendix 5B: CWSRF Demonstration Project Recommendations	45
Appendix 6Ai: Steps in Implementing Source Water Collaborative.....	46
Appendix 6Aii: Source Water Collaborative Examples	47

Executive Summary

Achieving better coordination among state land and water programs to support local communities in their source water protection activities is a primary goal of a multi-year, national project sponsored by the United States Environmental Protection Agency (EPA). The project draws upon the expertise of a “national team” with members from The Trust for Public Land, the Smart Growth Leadership Institute, River Network and the Association of State Drinking Water Administrators. In 2009, North Carolina was selected as one of eight demonstration states, due to its commitment to further improve an already high-quality effort to protect public drinking water. In their application for the project, staff of the NC SWP Program outlined an ambitious project to promote local drinking water protection throughout the state. Their main objective was to foster working relationships among North Carolina’s land conservancies, local planners and watershed organizations aimed at source water protection.

The *Enabling Source Water Protection Project* for North Carolina was initiated with a workshop in August 2009 (see Addendum at the end of this document). Robin Smith, Assistant Secretary, NC Department of Environment and Natural Resources, addressed more than 40 national and state leaders in water protection, land conservation and local planning. She pointed out that “North Carolina is expected to grow in population by as much as 30 percent by the year 2030.” She then presented a challenge to the group by stating that both water quantity and quality are “vitally important to the future of the state,” and that the *Enabling Source Water Protection* effort should focus on ensuring that the state’s drinking water sources “can support growth and economic development as well as a healthy environment.”

The intent of the *Enabling Source Water Protection Project* was to build upon NC’s existing momentum and identify potential opportunities consistent with the vision described above. As such, the national team functioned to provide a unique perspective based on its experience and knowledge of efforts undertaken in other states. The national team identified several key strategic areas. These areas include developing incentives to undertake source water protection; improving access to critical information and technical assistance for local governments and nonprofit organizations; pointing out how a variety of funding programs and mechanisms can be used for source water protection; and clarifying how regulatory programs can support source water protection.

The resulting *Action Plan to Protect North Carolina’s Drinking Water Sources*, contains recommendations to help the NC SWP Program assist local leaders and officials as they justify, initiate, and implement source water protection activities. More specifically, the recommended actions include the following:

1. Enhance the NC SWP Program website to promote the involvement of local government, watershed groups and land conservation organizations in source water protection.
2. Create incentives to encourage source water protection actions on the part of water suppliers, land developers and local governments.
3. Improve access to relevant state and federal funding programs.
4. Offer Drinking Water State Revolving Loan Fund interest rate reductions for sponsoring source water protection projects.

AN ACTION PLAN TO PROTECT NORTH CAROLINA'S DRINKING WATER SOURCES

5. Work with partners to enhance Clean Water State Revolving Loan Fund support of drinking water protection, green infrastructure, water and other environmentally innovative activities.
6. Establish new outreach/coordination mechanisms such as a state “Source Water Collaborative.”
7. Promote the development of local funding for source water protection.
8. Enhance existing regulatory programs to support source water protection.

AN ACTION PLAN TO PROTECT NORTH CAROLINA'S DRINKING WATER SOURCES *Aligning Land Use and Source Water Protection*

Background

The NC Source Water Protection (SWP) Program carries out a number of activities designed to assist local leaders and officials to protect drinking water supplies. For example, NC SWP Program staff:

- Work closely with colleagues to integrate drinking water protection into the priority structures of other agencies and programs.
- Create detailed assessments, including susceptibility analysis for contamination, of the state's 9000+ public drinking water sources to support local source water protection efforts.
- Maintain web-based GIS tools to distribute assessment data and to assist decision-making regarding drinking water protection activities.
- Provide technical guidance to enable local stakeholder teams to achieve voluntary and proactive drinking water protection.

The combination of these efforts has positioned North Carolina favorably as a leading state in drinking water protection. The US Environmental Protection Agency (EPA) recently concluded the NC SWP Program "is considered to be a model for other states" (US EPA Quadrennial Report, 2010).

Striving to constantly improve, the NC SWP Program competed with several other states to benefit from the *Enabling Source Water Protection* initiative, which is funded by EPA and is comprised of a partnership among The Trust for Public Land, The Smart Growth Leadership Institute, River Network and the Association of State Drinking Water Administrators. Through the initiative, experts from each of the organizations assess state programs and policies in order to recommend the best opportunities for program alignment that will support local communities in their drinking water source protection efforts.

In support of consideration for the *Enabling Source Water Protection Project*, the NC SWP Program assembled a team of dedicated partners, with a common interest of protecting and preserving the state's water resources. By design, the state partner team represented a diverse set of expertise and included participation from federal and state programs, academic institutions, non-profit organizations, and associations with direct connections to local government officials

The NC SWP Program outlined an ambitious project to promote local drinking water protection throughout the state. The main objective of the proposal was to foster working relationships among NC's land conservancies, local planners, and watershed organizations. Specifically, the NC SWP Program outlined the following strategies:

- Align program policies such that source water protection objectives are readily identifiable and considered as a priority by the groups outlined above.
- Create outreach strategies to nurture and maintain local relationships and to stimulate smart growth decisions at the local level that are consistent with source water protection.
- Outline a set of relevant tools to assist local officials and make it easier for them to initiate and justify source water protection activities.

- Create economic incentives and other mechanisms to support source water protection activities as implemented by local leaders and stakeholders.

The Secretary of the NC Department of Environment and Natural Resources endorsed the strategy outlined above in a written letter of support. In addition, the Departmental Assistant Secretary addressed participants in a kickoff workshop to encourage sustained action consistent with drinking water protection. More than 40 national and state leaders in water protection, land conservation and local planning participated in the workshop, held in Raleigh on August 31, 2009. A detailed summary of the workshop findings and attendees can be found in the Addendum at the end of this document.

Over the ensuing year, the national project team assessed these opportunity areas, conducted research and analysis, and evaluated potential impacts and resource investments for implementation. The resulting recommendations are captured in this action plan. Each recommendation contains a brief rationale, suggestions for implementation and, where appropriate, examples from within North Carolina or from other states and supporting appendices. This action plan is now being submitted to the NC SWP Program for review and implementation.

Recommendations

Recommendation 1: Enhance the NC SWP Program website.

The current website provides relevant but limited information. Enhancing the information on the website may further support and foster involvement of important partners such as local government, watershed groups and land conservation organizations. Through the *Enabling Source Water Protection* project, a number of websites and information sources have been identified which might be used to improve the website. Targeted outreach to selected audiences could promote use of these materials.

Implementation

- Incorporate information and links found in Appendix 1, which provides short descriptions and URLs for documents and programs of particular relevance.
- Determine specific audiences to be reached and consider creating separate starting pages (e.g. "For Local Officials", "For Land Owners"...) for each.

Recommendation 2: Create incentives to encourage source water protection actions on the part of water suppliers, land developers, and local governments.

Recommendation 2A: Develop a Public Water System awards program, ask the Governor to sign a National Drinking Water Week (NDWW) Proclamation and host associated media events.

Although safe drinking water is highly valued by the public, it is rarely front and center in the public mind. An awards program for public water system utilities (PWSs), combined with a Governor's proclamation and media events would help promote the value of drinking water

throughout the state and provide PWSs extra attention for their source water protection efforts.

The awards program would provide a competitive incentive for PWSs to implement projects that put their approved source water protection plans into action. The award winning PWSs could be recognized among the water systems in the state as well as in their communities for their efforts to reduce and mitigate the impacts of potential contamination sources and to implement land use strategies and conservation. As an extra incentive, the state could nominate its award winning PWSs for the national American Water Works Association Yearly Exemplary Source Water Protection Award. Combining the delivery of the source water protection awards program with NDWW activities—the Governor's proclamation and media coverage—would provide water systems and operators with highest-level recognition from the Governor, the state government and citizens across the state.

Implementation—Awards Program

- The NC SWP Program should work with its state affiliates of the NC Rural Water Association and the NC AWWA–WEA (Water Environment Association) to develop and facilitate a state source water protection awards program for water systems in three size categories (based on the population served). Partnering with the state water associations provides greater opportunities for publicizing the awards program and conducting outreach. These state associations regularly communicate with many of the water systems in the state and would also therefore be able to nominate and suggest PWSs for the awards.
- In addition, the state should nominate the award recipients for the national AWWA source water protection Award Program, which can also be used as an example of how to develop the program and criteria for the awards in North Carolina.
- The PWS source water protection awards (provided in the form of a plaque or certificate similar to the NC Area-Wide Optimization Turbidity Removal certificate) should be delivered at a state water conference, where the recipient's peers are in attendance, and/or during a celebration of National Drinking Water Week (NDWW).

Implementation—Governor Proclamation and Media Event

- Develop proclamation for the Governor to sign to promote the value of drinking water during NDWW each year.
- Work with Governor's office to arrange media events.
- Consider additional measures carried out by other Governors, including those from the states of Missouri, New Hampshire, and Washington:
 - Send press releases to the media to recognize water systems and operators for different types of awards.
 - Send letters of recognition to the water system staff for the award.
 - Post the awards information on the state web site.
 - Recognize the PWS award recipients in relevant newsletters.

Examples

AWWA's Yearly Exemplary Source Water Protection Award (Appendix 2Ai)

ASDWA's Sample Governor Proclamation and Press Release (Appendix 2Aii)

Recommendation 2B: Promote recognition programs for exemplary private and public sector land development and land stewardship practices.

Even the best regulations eventually become outdated. North Carolina's rule-making process increases the challenge for state agencies to keep environmental regulations up to date and, unfortunately, outdated policies discourage innovation. This inflexibility can cause land developers to perceive environmental regulators as anti-development.

Recognition programs are increasingly used as an incentive for individuals and organizations that expend additional time, creativity and money to incorporate newer, more effective environmental protection and mitigation strategies as part of their development program. The U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) certification is a well-known national example of this type of program, but there are dozens of similar programs operating at the state and local level.

Two such programs already exist in North Carolina: the Lower Cape Fear Stewardship Development Awards (<http://www.stewardshipdev.com>) and the new Greater Triangle Stewardship Development Awards (<http://trianglestewardship.org>). Both of these programs are supported by a team of public and private-sector sponsors, including local, regional and state governments, homebuilders, realtors, etc. Both programs use detailed criteria to evaluate applicants on a wide range of design, construction and management practices, including water quality protection.

Benefits to the NC SWP Program of associating itself with this type of program include an opportunity to demonstrate support for developers and development, a way to promote a definition of "stewardship" that includes source water protection, and an opportunity to reward innovation in source water protection practices, all in a high-profile, non-regulatory way. The recognition program can also serve as a forum to build relationships among public and private environmental and development-oriented groups and to publicize emerging best practices. Embedding source water protection in the framework of sustainable development will make it more recognizable and relevant to a much larger group of professionals.

Implementation

The NC SWP Program and its partners could play a variety of roles in promoting awards programs like these.

- Ensure source water protection concerns are adequately represented in existing program criteria.
 - A state Soil and Water Conservation division employee currently represents the state on the Lower Cape Fear review panel, and the NC SWP Program could review this program's criteria and communicate through this employee to assure that source water protection efforts are highlighted in the selection process.
 - Of the two programs that currently exist, one used the other's criteria as a template. Because new programs will typically borrow criteria from existing programs, ensuring inclusion of source water protection considerations in existing programs is the easiest way to promote them in future programs.

- Promote Stewardship Development programs as a source water protection technique.
 - Advertise the existence and function of Stewardship Development programs in the Lower Cape Fear and Greater Triangle regions through source water protection communications channels such as the website.
 - Identify past award recipients that achieved source water protection benefits, and feature a profile of their efforts in source water protection communications.
- Work with watershed protection organizations to support initiation of development/stewardship recognition programs in key regions of the state.
 - For upstream rural areas, develop a recognition program for landowners who invest in livestock, agricultural and land management practices that protect water quality. Work with the NC Rural Water Association to identify program partners and sponsors that could contribute to the prestige of such an award and have the capacity to publicize it.
 - In areas of the state where land conversion and development pose the greatest threat to drinking water sources, convene potential program sponsors, such as real estate professionals, local governments and environmental organizations, to discuss the potential for a recognition program to encourage innovation. Bring representatives from existing programs to discuss program impacts and needs.

Examples

In addition to the two North Carolina examples noted above, there are many notable local and regional examples of recognition programs designed to achieve related goals.

- The Holman Water Quality Stewardship Award, named after North Carolina's own Bill Holman, is awarded by the Hiwassee River Watershed Coalition (in North Carolina and Georgia) to an individual or group who has done the most to facilitate water quality improvements in the watershed. (<http://www.hrwc.net/award.htm>)
- Texas Parks and Wildlife administers the Lone Star Land Steward Awards Program to honor private landowners for habitat management and wildlife conservation practices. Criteria for the awards include whether the landowner is following recommendations of state habitat and conservation plans, as well as additional activities that demonstrate public spiritedness. (http://www.tpwd.state.tx.us/landwater/land/private/lone_star_land_steward)
- The Urban Land Institute has initiated multi-sectoral regional smart growth coalitions around the country to encourage communication and collaboration among environmental and development interests. Several of these coalitions deliver annual awards, but the program is most notable for its work on cross-sector partnerships. (http://www.uli.org/sitecore/content/ULI2Home/CommunityBuilding/~/_media/CommunityBuilding/SGAIN%20Rpt%20%2006%202010%20finalweb.ashx)

Recommendation 2C: Make the economic case for source water protection.

“Too often conservationists and developers view one another as adversaries, focusing on competing interests rather than on common ground...Only through collaboration and partnerships based on a shared vision and mutual goals—not confrontation—will we establish a framework that will guide both conservation and development to benefit the community, environment, and economy.”¹

Some may say that because drinking water can be treated to meet regulatory standards, voluntary actions to further protect drinking water sources are unnecessary and potentially costly in economic terms. Actually, the potential environmental and economic benefits of source water protection are numerous. They vary according to the actions taken, site-specific parameters, jurisdictions involved, etc. For example, protecting forestland and riparian buffers along source water areas may reduce drinking water treatment costs, provide recreational opportunities, preserve important wildlife habitat, reduce flooding, improve water quality, and preserve scenic amenities—all of which can increase surrounding real estate values.

Fortunately, in North Carolina, there are a number of communities that have recognized the multiple benefits of protecting source water, such as Charlotte-Mecklenburg working to protect Mountain Island Lake, as well as local government and non-profit partners working to protect critical lands for nine reservoirs through the Upper Neuse Clean Water Initiative. The Conservation Trust for North Carolina has coordinated conservation efforts of various land trusts and watershed associations. As of March 2010, these partners had together protected more than 46 miles of stream buffer and almost 4,400 acres in the Upper Neuse Basin.

Making a strong case for the financial benefits of source water protection can help even more communities in North Carolina to reframe this debate, and help individuals, landowners and local officials perceive their own interests in modifying activities, policies and practices to protect water quality. Additionally, by supporting research into local costs and savings, the state has an opportunity to help local source water advocates and government officials more fully consider and understand the specific economic benefits of protecting drinking water sources in North Carolina.

The benefits to the state of embracing this economic development viewpoint depend in part on whether other state programs, agencies and regulatory commissions can unite around it. For instance, this argument applies to all water protection efforts, and it will be more persuasive if all programs with a mandate for water protection incorporate the message in their materials. Additionally, making the case that protecting source water can also enhance economic development aligns well with the state's various sustainability initiatives.

¹ Larry Seltzer, President, The Conservation Fund, in the foreword to *Ten Principles for Smart Growth on the Suburban Fringe*, published by ULI—the Urban Land Institute, 2004.

Implementation

- Articulate the economic benefits of source water protection in terms that are relevant to elected and appointed officials responsible for land use and economic development decisions. These include local planners, planning commissions, as well as regional and state economic development planners, among others.
- Incorporate the benefits wherever possible in NC SWP Program materials and outreach efforts, including the website.
 - Use existing research (see Appendix 2C) to show how source water protection adds value.
 - Work with state planners and economic development officials to develop these messages. Encourage them to use these messages and incorporate source water protection as a priority for local land use and economic development planning.
- Guide local and state officials in using the Source Water Protection Cost/Benefit Tool, available at <http://www.swptool.org/index.cfm>, to estimate the triple bottom line (i.e., economic, social, and environmental) costs and benefits of specific source water protection practices.
- Work with academic economists to develop estimates of the economic benefits of source water protection for specific North Carolina watersheds, perhaps in some of the areas mentioned above. There is an existing body of research that summarizes direct and indirect economic benefits of source water protection, but current local information will be more relevant and more persuasive to state and local decision-makers.
- Convene NC SWP Program partners with university and think tank researchers to brainstorm research projects that would be persuasive to state and local elected officials concerned with economic development. Consider the importance of questions such as:
 - **What are the total net costs of treatment vs. net costs of source protection?** Consider the impacts of different methods of source protection, for instance the value of protected open space, the costs to businesses of restricted activities in source water protection areas, etc.
 - **Who pays?** Who pays for source water protection? Who benefits? To the extent that there are regional disparities for the different drinking water techniques (i.e., treatment vs. protecting the source), such a study can serve as the basis for efforts to equalize these costs and support upstream efforts. For instance, a jurisdiction whose water supply is protected might benefit from lower treatment costs, whereas the community where the land conservation takes place might benefit from increased recreational opportunities.
 - **What are the inter-jurisdictional economics of source water protection?** Due to the multi-jurisdictional character of many watersheds, it is not unusual for a drinking water utility to look beyond the jurisdictional boundaries of the community it serves to implement source water protection activities.
- Develop case studies of source water protection success stories and their economic and quality of life benefits.

Recommendation 3: Improve access to relevant state and federal funding programs.

Recommendation 3a: Provide information on and promote use of available funding for source water protection.

Drinking water protection can be an important driver for water quality protection and land conservation. As a result of dozens of polls across the nation, The Trust for Public Land has found that the number one reason that voters support open space measures across the country is to protect water resources, and typically they are most interested in protecting their drinking water supply. Through the DWSRF program, North Carolina is among the leaders in the nation in providing resources for land conservation activities that will help protect source water. However, several other existing state and federal funding programs, which focus on other issues than source water protection, could be utilized to achieve multiple benefits, including source water protection.

As part of the *Enabling Source Water Protection* project, fact sheets on relevant state and federal funding programs have been developed. A listing of the programs covered in the fact sheets is included in Appendix 3. Although source water protection is not always the primary purpose of these funding programs, projects that meet the program requirements may also benefit source water protection. The fact sheets should be incorporated into the NC SWP Program website and highlighted in outreach activities.

Implementation

- Include information on these programs on source water protection website.
- Highlight information on funding programs to local government officials, watershed organizations, land conservation organizations when possible, e.g., through regular outreach vehicles and at special events.
- Meet with funding program managers to prepare overlay GIS maps of their priorities with source water protection area priorities, and jointly develop incentives to achieve multiple benefits (e.g. priority ranking factors for projects that include source water protection).

Recommendation 3b: Include source water protection criteria into the review criteria for 604(b)/205(j) projects

The American Recovery and Reinvestment Act of 2009 (stimulus package) resulted in significantly increased funds to the states for capitalization of the State Revolving Funds. Section 604(b) of the Clean Water Act requires that 1% of each state's Clean Water State Revolving Fund allotment be reserved "to carry out planning" under Sections 205(j) and 303(e) of the Clean Water Act. The increase in funds for the CWSRF last year translated to a dramatic increase in the funds for Section 205(j) projects as well. North Carolina received \$714,400 for water quality management planning.

Section 205(j) requires that at least 40% of these water quality management planning funds be granted to regional public comprehensive planning organizations and appropriate

interstate organizations. NC Department of Environment and Natural Resources Division of Water Quality has awarded those funds to Councils of Government through a competitive process. The request for proposals is usually released around May. No match is required, but it is preferred to have one.

Section 205(j) of the Clean Water Act states that the grants are to be used for:

Water quality management and planning, including, but not limited to:

- (A) Identifying the most cost effective and locally acceptable facility and non-point source measures to meet and maintain water quality standards;*
- (B) Developing an implementation plan to obtain state and local financial and regulatory commitments to implement measures developed under subparagraph A;*
- (C) Determining the nature, extent, and cause of water quality problems in various areas of the state.*

In North Carolina, priorities for each round of the 205(j) funds are identified before the release of the request for proposals through internal DWQ discussions. The review criteria include relevance to basin plans. The importance of protecting water supply uses should be part of basin-wide water quality management and planning. North Carolina could ensure this by developing 205(j) funding review criteria that require projects to identify whether water supply uses are protected.

Implementation

- Discuss with the Division of Water Quality (DWQ) how source water protection review criteria could be incorporated into the next request for proposal.
- Identify whether any basin plans mention protection of water supply uses.
- Pitch the value of requiring the COGs to consider source water protection in their project proposals.
- Ask one or more source water savvy COG to include source water protection elements as part of the broader water quality management and planning project.

Note: The next two recommendations relate to two additional water-related funding sources that may contribute to source water protections efforts—the Drinking Water State Revolving Loan Fund and the Clean Water State Revolving Loan Fund. These funds are maintained by North Carolina and are supported by federal and state contributions.

Recommendation 4: Offer Drinking Water State Revolving Loan Fund (DWSRF) interest rate reductions for sponsoring source water protection projects.

North Carolina can encourage and support source water protection implementation by offering interest rate reductions on DWSRF loans to PWSs that sponsor source water protection implementation projects. Through such sponsorship programs, the DWSRF could partner with non-traditional organizations, such as land trusts and watershed groups, to foster the use of land conservation and nonpoint source pollution control activities to protect source water. Similar programs in other states have provided millions of dollars to support projects that acquired wetlands, riparian lands, and conservation easements, restored habitat, and modified dams.

Public water suppliers would likely have an interest in the program because protecting source water through forest preservation may reduce treatment costs. In a recent study of the impacts of declining forest cover on drinking water treatment costs, it was determined that there is a significant relationship among source water quality, percent land cover and drinking water treatment costs. An increase in agriculture and urban land use related to increased turbidity at the drinking water intake, and resulted in higher costs. On the contrary, increased forest land cover was significantly related to decreased turbidity.²

Implementation

To institute this recommendation, North Carolina could use a similar process to that which it used for developing the priority point system and/or the low-interest (DWSRF set-aside) loan program for land conservation. Again, the state would have to consult with EPA Region 4 staff to include this in its DWSRF Intended Use Plan, capitalization grant, and operating agreement, as appropriate.

Example

Ohio's Environmental Protection Agency and Water Development Authority established the Water Resource Restoration Sponsor Program (WRRSP) to "counter the loss of ecological function and biological diversity that jeopardizes the health of Ohio's water resources." They recognized that significant advances had been made in wastewater treatment, but that nonpoint source pollution, habitat degradation and manmade alterations were preventing their attainment of water quality goals. Ohio WRRSP offers communities an interest rate reduction on their CWSRF loan if they agree to sponsor projects that protect or restore habitat. As of 2005, WRRSP loans have promoted over \$67 million worth of projects that acquired wetlands, riparian lands and conservation easements, restored habitat, and modified dams. Considerable information on how the WRRSP works is available on the website <http://www.epa.ohio.gov/defa/09wrrsp.aspx>. A fact sheet on the WSSRB is attached in Appendix 4.

Recommendation 5: Work with partners to enhance CWSRF support of drinking water protection, green infrastructure, water and other environmentally innovative activities.

Recently, the CWSRF program has taken steps to implement an integrated priority rating system in an effort to improve the effectiveness and efficiency of the program in administering funds and to support green infrastructure, water or energy efficiency improvements, or other environmentally innovative activities. In addition to other priorities, the 2010 CWSRF priority ranking sheet provides support for projects that benefit waters designated for public drinking water use. Five points are assigned for projects that directly benefit waters classified as HQW, ORW, Tr, WS-I, WS-II, or SA and two points for projects directly benefiting waters classified as WS-III or WS-IV that are covered by an approved source water protection plan (See <http://portal.ncdenr.org/web/wq/cgls/fap/cwsrf/iup> and select Integrated Priority Rating Sheet).

² *Statistical Analysis of Drinking Water Treatment Plant Costs, Source Water Quality, and Land Cover Characteristics*, White Paper, The Trust for Public Land, 2008

This is a positive development that should be built upon to further enhance support of drinking water protection as part of the overall CWSRF goal to protect water quality.

Implementation

The NC SWP Program staff should further relationships with the CWSRF in several ways:

- Work with the CWSRF staff to provide outreach to municipalities on how to undertake source water plans and how to apply for support from the CWSRF.
- Work with other interested parties to develop appropriate recommendations for further enhancing the CWSRF priority rating system. Appendix 5A provides suggestions on how the CWSRF priority rating system could be enhanced.
- Work with other interested parties to develop a demonstration project on utilizing the CWSRF to support source water protection. Appendix 5B provides more detailed recommendations on forming a workgroup for this purpose.

Recommendation 6: Establish new outreach and coordination mechanisms

Recommendation 6A: Create a “Source Water Collaborative.”

While the NC SWP Program personnel participate in a number of interagency partnerships and committees (e.g., for the Clean Water Management Trust Fund and the Community Conservation Assistance Program), these programs serve as examples, but are not specifically focused on source water protection. A formal source water collaborative, comprised of the agencies, organizations and representatives that were brought together for this project, would help to further ongoing state source water protection efforts and to implement the recommendations in this report.

Implementation

- Design a Framework. Potential options:
 - Vision statement
 - Memorandum of Understanding (MOU)
 - Charter
 - Informal pledge signing
- Identify Purpose/Mission.
- Define Goals and Objectives.
- Determine Membership.
- Hold Meetings.
- Undertake Activities/Actions.

Examples

Appendix 6Ai describes the implementation steps in greater detail.

Appendix 6Aii contains information on three state and three national collaboratives.

These collaborative examples show a range of options from informal to formally convened multi-agency/stakeholder groups.

Recommendation 6B: Improve Coordination among NC Divisions of Environmental Health, Water Quality and Water Resources

The establishment of a formal coordination mechanism among the NC Divisions of Environmental Health (DEH); Water Quality (DWQ), and Water Resources (DWR) could enhance the consideration of source water protection concerns in the development of state river basin plans, the river basin water supply plans, and nutrient strategies.

Locally-based source water protection plans are promoted and supported by DEH. Responsibilities for river basin planning are shared by DWQ, which focuses on water quality, and DWR, which focuses on water supply.

DWR works with local governments and other water users to develop 50-year river basin water supply plans to assure water supply needs are met. Because both these river basin water supply plans and source water protection plans are intended for use by local governments, it is important that they be developed in a complementary or combined manner to protect both source water quality and quantity and ultimately ensure the sustainability of drinking water supplies.

Similarly, the DWQ basinwide plans and nutrient strategies should be well coordinated with source water protection efforts in order to promote use of best management practices that provide multiple benefits for water quality and public health. For example, nutrient strategies could give extra credit for forest conservation in drinking water watersheds.

Implementation

- Consider the optimum level and make up for a formal coordination mechanism
 - Is it at the division level? Higher?
 - Should it include water-related divisions only or should it be broader in order to address interdisciplinary issues associated with water quality and quantity, such as agricultural and transportation planning and practices.
- Define Goals and Objectives.
 - Brief each other on activities?
 - Assign staff to interdisciplinary teams?
 - Review each others' products?
- Make commitment.
 - Sign agreement
 - Hold regular meetings
- Undertake Activities/Actions.
- Report to Secretary of the Department of the Environment and Natural Resources, or Governor, based on committee composition.

Example

Ohio Water Resources Council (OWRC)

- The OWRC was originally formed on a temporary basis as an outgrowth of the Governor's Blue Ribbon Task Force on Water Resources. In July 2001, a

new state law permanently established the OWRC and redefined the Council's roles and responsibilities in order to strengthen its leadership and provide for greater representation by stakeholder groups.

- The new OWRC membership is comprised of an Executive Assistant to the governor and the heads of nine state agencies: the Ohio departments of Agriculture, Development, Health, Natural Resources and Transportation; the Ohio Environmental Protection Agency; Ohio Public Works Commission; Ohio Water Development Authority; and Public Utilities Commission of Ohio.
- Two groups assist the OWRC in pursuing its goals. The State Agency Coordinating Group, consisting of staff from the member agencies and the Executive Director of the Ohio Lake Erie Commission, serves Council members in support and research roles. The Advisory Group, including 20 members appointed by the OWRC and 8 technical members representing a variety of stakeholder groups, advise the Council and participate in work groups to develop recommendations on water resource issues.
- For more information, see <http://ohiodnr.com/tabid/15378/default.aspx>.

Recommendation 7: Promote the development of local funding for source water protection.

Local governments around the country protect their drinking water sources through a variety of mechanisms including forest and riparian land conservation, streambank stabilization, wetland restoration and nonpoint source pollution control.

Often, these measures bring multiple benefits—besides protecting water, they help preserve wildlife habitat and environmentally sensitive lands, as well as improve the quality of life for their citizens through increased parkland and recreational opportunities. In some cases, they can even help meet regulatory requirements.

In order to pay for source water protection, local governments may adopt special funding measures, such as bonds, dedicated taxes and special fees, which, surprisingly, are often quite popular with voters. For example, since 2000, 74% of the more than 1500 ballot measures for land conservation across the country have passed, raising more than \$36 billion.

Some local governments in North Carolina have been very successful in developing funds for drinking water protection as a primary goal of land conservation efforts. Through education and training, more local government bodies might succeed in developing local funds for source water protection. A primer entitled “Developing Local Funding to Protect Drinking Water Sources in North Carolina: A Guide for Local Government Officials” was developed under this project. The primer could be featured in outreach activities and distributed to selected audiences in order to promote the development of local funds.

Implementation

- Publicize availability of the primer on the NC SWP Program website and in materials provided at meetings, conferences, etc.

- Include information from the primer in presentations.
- Collaborate with the Environmental Finance Center based at the University of North Carolina, the Conservation Trust for North Carolina and others as appropriate to provide training for local officials.

Examples

Selected Successful Bond Referenda with Watershed Protection Goals 1996-2007

Jurisdiction	Date	Funds Approved	Purpose	% Yes
Cary	5/3/2005	\$10,000,000	Open space, wildlife habitat, and watershed protection	75%
Guilford County	5/2/2000	\$20,000,000	Open space, recreation, watershed protection, parks and greenways	55%
Orange County	11/6/2001	\$20,000,000	Watershed protection	67%
Wake County	11/2/2004	\$26,000,000	Open space, recreation, watershed protection, wildlife habitat	75%

Note: Many other bond referenda have passed in North Carolina that did not specify watershed protection as a goal. Since 2000, 85% land conservation measures were approved. Voters in 22 North Carolina counties and municipalities have voiced their support for land conservation by approving more than \$478.5 million through local bond referenda. All of these referenda passed with wide margins, with an average approval rate of 65 percent. Only five measures failed during this time period.

Recommendation 8: Enhance existing regulatory programs to support source water protection.

Recommendation 8A: Review permitting procedures in WS, HQW and ORW classified waters to ascertain whether protection of surface source waters is sufficient.

A review of the permitting procedures might identify opportunities to improve protection of source waters. This review can examine whether the NPDES permits being granted have sufficient controls to prevent adverse affects on the classified water supply uses and whether the permits have sufficient controls to protect the HQW and ORW characteristics of the WS waters that are dually classified.

North Carolina's water quality standards specify restrictions on discharges into surface waters classified as WS, HQW and ORW. For example, stormwater pollution is not allowed if it would adversely impact the waters for use as a water supply. (15A NCAC 02B.214(3)(b), .215(3)(b), .216(3)(b)) This protection in particular is to be implemented through development restrictions.

When a wastewater or stormwater NPDES permit is proposed in a water supply (WS) watershed, the permit is sent for review to the Public Water Supply Section's Regional Engineer in the Division of Environmental Health.

It would also be valuable to examine whether the permits granted upstream from WS classification (in WS-IV and WS-V watersheds where only ten miles is protected), likely a Class C segment, are causing any troubles for downstream water supply uses.

Implementation

- Work with the NC DWQ to evaluate the procedures for permitting in WS, HW and ORW watersheds.
- Provide water supply watershed maps to entities submitting NPDES applications (e.g., wastewater and stormwater utilities).
- Offer technical assistance from the Public Water Supply Section (or documentation of source water assessment areas) to permittees.
- Continue to provide technical assistance, source water protection plans or source water susceptibility ratings to the regional engineers.

Recommendation 8B: Improve antidegradation implementation in source water supply watersheds.

The federal antidegradation policy is designed to protect against loss of high water quality due to a discharge or activity. The policy requires analysis of alternatives and a socio-economic evaluation of the need for any discharge or activity.

All WS-I and WS-II are automatically also "high quality waters" (HW) and many others classified as WS-III and WS-IV have been additionally classified as HW. However, North Carolina's antidegradation procedures do not guard against the degradation of water quality that is higher than the standards.

North Carolina should prioritize an examination of antidegradation procedures in water supply watersheds that are also classified as HW.

Implementation

- Discuss the procedures in 15A NCAC 02B .0200 with DWQ permitting leadership and staff.
- Review a dozen or more permits that have been granted in WS-I and WS-II waters for controls that address the additional protections for HW in 02B .224 and for the procedures in 02B .0200 (including alternative analyses and examination of the available load capacity of the receiving waters).
- Review requirements for stormwater controls listed in 15A NCAC 02H .1006 for HW.

Recommendation 8C: Examine stormwater controls associated with municipalities, construction sites and industrial sites (if any) in a sample of watersheds classified as WS.

According to DWQ stormwater staff, only wastewater permits, not stormwater permits, are sent to the regional DEH engineer for review of possible impact to the water supply.

If a WS watershed is also a HQW or ORW, development and redevelopment activities are required to meet more stringent controls (2H1005 for specifics). However, if a WS watershed is not designated as either HQW or ORW, it is possible that the stormwater permits issued, and the stormwater management plans developed, may not adequately protect the water supply watershed from sediment and the pollutants that may be associated with eroding sediment.

The Phase II and the construction stormwater requirements are developed and implemented at the local government level. Therefore, it is valuable to examine practices in various parts of the state to see where additional information and technical assistance may be needed.

Implementation

- Identify three priority (possibly rapidly developing) water supply watersheds not also protected as HQW or ORW.
- Review a sample of stormwater management plans to identify references to WS uses and controls identified to meet WS criteria in the following categories:
 - One Phase I MS4 stormwater management plan (if there is one) – specifically the construction and post-construction elements
 - Two MS4 Phase II stormwater management plans (different parts of the watershed to represent different local government program quality) – specifically the construction and post-construction elements
 - Four construction stormwater management plans (different parts of the watershed to represent different local government program quality)
 - Two industrial stormwater construction management plans
- Based on findings, provide technical assistance.

Recommendation 8D: Offer technical assistance to local governments regarding the impact of stormwater pollution from road construction in water supply watersheds; where interest exists, support their development of additional controls in those watersheds.

In the Jordan Water Supply Nutrient Strategy, proposed new road construction projects are exempt from the stormwater management requirements (15A NCAC 02B .0265) if they are in compliance with the buffer protection requirements (15A NCAC 02B .267 and .0268). Some lengths of road crossings are also exempt from the buffer requirements altogether or allowed in the buffers with mitigation.

There may be local governments within and dependent upon water supply watersheds that are interested in developing more protective controls on these road development projects if they knew of the potential impact and the limited requirements.

Since the Jordan rules are serving as the model for the development of the rules for the other nutrient sensitive waters, it may be useful to do a study of some road projects and their impact in that basin to determine whether this is a problem or not.

Implementation

- Identify three ongoing road construction projects of various sizes in different parts of the Jordan basin. Talk with the local governments who have jurisdiction over those projects.
- Research most recent baseline monitoring data for likely construction-related pollutants.
- Identify someone who could design the study and perform the monitoring.
- Perform the monitoring and compile and analyze the data in a report.
- Based on findings and local willingness, target assistance, funding or help target other funding to develop or implement more protective road construction pollution control measures.

Recommendation 8E: Provide suggestions on improvements to construction stormwater controls in water supply watersheds to the Technical Advisory Committee for the upcoming revisions to the construction general permit.

A Construction General Permit Technical Advisory Committee was formed recently, meeting for the first time in August 2010. There is one committee member representing the NC Division of Land Resources (DLR). It would be possible to provide information and offer ideas for improvements to this member who is the co-chair.

In particular, the DWQ and DLR have developed a Memorandum of Understanding (MOU) for the implementation of the federally required construction stormwater NPDES permit program. This MOU does not make any specific reference to protection of Clean Water Act designated uses in general, nor of water supply watersheds in particular. Through this MOU, North Carolina authorizes an approved sedimentation and erosion control plan to automatically receive construction stormwater NPDES permit as well.

Although the water supply watershed protection program requires that development in the water supply watersheds be low density or have particular controls, more explicit MOU language prohibiting the violation of water quality standards could assure that all development occurs in a protective fashion. Improvements in the permit itself or perhaps in the rules governing the Sedimentation and Erosion Control plans could be possible solutions as well.

Implementation

- Contact the Technical Advisory Committee

AN ACTION PLAN TO PROTECT NORTH CAROLINA'S DRINKING WATER SOURCES

- Provide information on ways that the renewal of the construction general permit can be more protective of water supply watersheds – informally and in formal comments to the committee if he recommends such action.
- Use research generated under Recommendation 8D, provide input to committee on the extent of any problem.
- Provide comments next year when the draft Construction General Permit is released.

ADDENDUM

NC Enabling Source Water Protection Project Workshop Summary

More than 40 national and state leaders in water protection, land conservation and local planning met on August 31st, 2009 at the Division of Environmental Health's conference room in Raleigh, NC, to discuss strategies for protecting approximately 9,300 sources of public drinking water in the state.

Opening Remarks

Opening remarks were given by Bob Midgette, NC Public Water Supply Section, Enforcement and Protection Branch Head; Terry Pierce, NC Division of Environmental Health Director; and Robin Smith, Assistant Secretary of the Environment, NC DENR. General conclusions drawn from these remarks are that due to growing stressors (growth, drought, climate change) affecting water resources in the state, source water protection is timely and hugely important.

In particular, Robin Smith pointed out that "North Carolina is expected to grow in population by as much as 30 percent by the year 2030." Referencing recent high profile public debates concerning water supply from Jordan Lake and other key watersheds, she went on to say that both water quantity and quality are "vitally important to the future of the state" and that the *Enabling Source Water Protection* effort to bring together local, state and federal partners to protect and restore North Carolina's water sources is focused on ensuring that the states drinking water sources "can support growth and economic development as well as a healthy environment."

Jay Frick, NC Public Water Supply Section, Source Water Protection Program Coordinator, gave an overview of the state's Source Water Protection Program and formally introduced the *NC Enabling Source Water Protection Project* to the audience. He explained that NC's Source Water Protection Program was selected in April 2009 as one of three states to participate in a national drinking water protection project, titled "*Enabling Source Water Protection: Aligning State Land Use and Water Protection Programs*." As part of the project, a team of State Partners will receive technical assistance from national experts to identify incentives and develop strategies to support and enable drinking water protection at the local level.

The presentation focused on 3 topic areas: (i) challenges facing NC drinking water resources that instill a sense of urgency, (ii) successful strategies that have been implemented at the state level, including partnerships and incentives, and (iii) the goal of taking effective source water protection to the local or community level. A case was made to demonstrate that the expertise of the State Partners was sufficient to accomplish this goal.

The project is funded by the Environmental Protection Agency and administered by The Trust for Public Land (TPL) and the Smart Growth Leadership Institute (SGLI), in partnership with the Association of State Drinking Water Administrators (ASDWA) and the RiverNetwork (RN).

Caryn Ernst, TPL, and Elizabeth Schilling, Water Program Manager, SGLI, led an introduction of the National Team. Deirdre Mason, ASDWA; Kelley Hart, TPL; and Gayle Killam, RN, could not be present for the workshop but were available via conference call. Each team member provided a description of how they will contribute to the project.

After a morning break, Amy Axon, NC Public Water Supply Section, Source Water Protection Program, facilitated a round robin introduction of all of the participants. A list of everyone that attended the workshop follows.

Changes Needed to Enhance Source Water Protection

Workshop sessions for the rest of the day were designed to identify the most effective opportunities to enhance drinking water source protection. First, Caryn Ernst and Elizabeth Schilling facilitated a group discussion regarding the question: *If you could make one change that would enhance source water protection (locally or across the state), what would that be?*

Actions that emerged were:

- Public education and focused communications are needed to support local officials and private individuals to take appropriate actions. For example, training on new incentives (see below) could be provided to local officials. Also, heightened awareness of water supply protection needs could build the public will necessary for public officials to take actions that otherwise might be considered too risky. Public awareness could be increased through specific education campaigns, such as pamphlets on why and how to protect drinking water sources provided during real estate transactions, and signage that identifies the borders of water supply watersheds. Examples of successful communications efforts from other places would be helpful.
- Incentives are needed to encourage local government officials to adopt policies that might be politically sensitive or costly to implement.
 - Improved Zoning - Commissioners are interested in using zoning to protect water supplies, a model zoning ordinance could be helpful. Incentives could be targeted based on which counties have such an ordinance; whether the laws are outdated, and where water sources are most threatened.
 - Land Use Planning - Statewide enabling legislation could stimulate or require land use planning. To be most effective minimum performance standards concerning as water quality protection are needed. The legislation could provide incentives such as infrastructure or discretionary funds linked to adoption of comprehensive plans that guide future development and redevelopment away from environmentally sensitive areas, e.g., wetlands.
 - Transfer of Development Rights - Statewide enabling legislation is needed.
- Another set of incentives are needed to encourage voluntary, or if necessary, mandate actions on the part of individuals. In particular, incentives or requirements are needed to protect and maintain naturally vegetated buffers between streams and developed areas.

- Statewide regulatory actions to raise the priority of water quality protection and pollution prevention are also important. Examples include:
 - Enact water allocation policy recommendations -The timing for such action is appropriate because constrained water supply is changing the way people are thinking about this issue and its long-term importance to the state's economy and health.
 - Shift resources to focus more on protecting drinking water sources and pristine waters than remediating polluted waters.
 - Improve consistency of standards and regulations, e.g., mitigation requirements for impacts in water supply watersheds, turbidity limit for construction sites, and nutrient removal requirement for wastewater treatment. Such improvements would be more effective at protecting water resources and facilitate regional cooperation, which is especially important given that many water sources cross-jurisdictional boundaries.
 - Regulate fate and transport of contaminants before introduction into the market and environment. This may require improved understanding of specific issues, (e.g., the impacts of sludge application) or the development of standards and model programs (e.g., for pharmaceutical disposal or other emerging contaminants).
- Charge for the true cost of water and fuel, i.e., that the price reflects the full cost of abating environmental impacts. Suggestions included:
 - Apply a source water protection fee to water bills to fund best management practices, including pollution prevention through land conservation.
 - Charge fees to provide funding for adequate oversight of compliance with water quality protection regulations, for example, construction run-off requirements.
- Identify, mobilize and support leaders for watershed protection efforts. This could range from recognition programs and training to the hiring of watershed coordinators.
- Demonstration project – Select an area as a demonstration project for better integration and coordination among local governments whose activities impact the same drinking water source. One region to consider might be the Durham metropolitan area, where challenges include high rate of growth and new water quality protection rules.

Highlights of Success in Other States

During lunch, Caryn and Elizabeth provided an overview of some source water protection successes being implemented in other states. Caryn highlighted suggestions made in New Hampshire and Maine, including innovative financing strategies for land acquisition and the development of better land management programs to balance recreation and source water protection. Elizabeth described Ohio's Balanced Growth program and noted the voluntary, watershed-scale process that assumes that addressing land use is essential to protecting water quality in Lake Erie.

Pre-Meeting Survey Results

In advance of the workshop, the NC Public Water Supply Section undertook a short survey. They asked invitees to the meeting questions about their role in source water protection, the skills and expertise they can bring to it, and what they see as potential benefits of the *Enabling Source Water Protection* project. Amy Axon presented a summary of the pre-meeting survey. Some general conclusions drawn from the survey results are:

- There is widespread recognition amongst the respondents of the connection between the their program responsibilities and drinking water protection. Also, most felt that they were well positioned to support activities geared toward source water protection.
- The respondents have the capability to provide a diverse set of expertise and resources to this project and source water protection in NC. Funding is the category that is most lacking.
- When asked what benefits could be gained by alignment with source water protection, respondents submitted: increase of program credibility, increase in efficiency by resource sharing and networking, and receiving technical assistance in understanding source water protection specifics so they can share message with others.
- When asked what benefits they hoped to gain by participation in this project, respondents stated: access to accurate and effective tools to help with education and outreach efforts, identification of overlapping goals amongst participants, opportunities to enable collaborative decision making and networking, and increased expertise in source water protection to help with program responsibilities.
- Respondents have high expectations on what they hope this project accomplishes. These ideas include: development of a well-grounded basis for funding, managing and improving water supply protection in the state; development of a water quality protection toolbox for local planners and elected officials; technical information packaged for local government use to help them make informed land use regulations and infrastructure planning; coordination of like-minded efforts across the state to make implementation more effective and efficient; and streamlining of water protection planning processes.

Motivational Factors, Barriers and Obstacles and Incentives

During the afternoon session, facilitators lead participants through brainstorming sessions to gather their views on three topics:

- Motivational factors to stimulate local source water protection activities.
- Barriers and obstacles that prevent action on source water protection.
- Incentives and/or tools that would best assist source water protection.

Actions with Potentially High Impact for Protecting Source Water

When the separate groups reconvened in the main conference room, Caryn led a discussion to consolidate ideas on the third topic covered during the afternoon brainstorming session: *incentives and tools that have the most potential for positively affecting source water protection efforts*. The group did a quick assessment of the highest impact ideas, which are summarized below.

- Identify and Communicate Actions Needed by Selected Audiences - Due to the many ways that drinking water sources can be negatively impacted, there are many kinds of people who could take actions to protect drinking water sources. For example, local

planning officials and decision makers might have a role, as well as drinking water purveyors, landowners, farmers, local industries and even school children. A strategy to communicate with key audiences about the actions they could take and the benefits of those actions is critically important. More specific ideas on why and how to communicate with local officials were also identified, such as:

- Direct communication to elected officials and provide tools and training to make implementing source water protection as easy as possible. During the pre-meeting survey, when asked what groups have the highest potential to initiate source water protection efforts, 90% of the respondents identified local land planners and officials. But local officials are very busy and are not likely to take on voluntary source water protection efforts if they seem too difficult. They will not act if they think there is political risk or lack of support. So, a key audience for communication efforts and tool development should be planners and local government officials. Outreach efforts should include information on what resources (including risk assessment tools, economic benefits information, updated model codes and ordinances, conservation planning tools, and funding sources) are available to them.
 - Develop and use visual models that tell a story, showing things like: impact of development on source water; impact of action vs. inaction; surface and/or ground water impacts on drinking water source; relationship between ground and surface water; and change in hydrology from pre and post development. The models need to be visual and interactive, capable of showing what if scenarios. Needs to be packaged and used in a way that delivers a clear message to key audiences, especially local officials. Duke University's initiative regarding climate change may serve as a model.
- New structures for watershed coordination and planning. Comprehensive planning and forums for communication among various jurisdictions (i.e. upstream/downstream) would enhance source water protection. When land use decisions are made piecemeal and source water protection focuses on mitigation rather than pollution prevention, there are impacts that could have been avoided.
 - Assign responsibility and ownership of local source water protection efforts. To be successful, leadership is needed. Can this be accomplished through recognition and support of voluntary "champions" or is it necessary to assign responsibility of a particular component or individual within local government? A successful template on which a local government could put its own stamp or "brand" might help them to take ownership and develop a "custom" source water protection program.
 - Build relationships. The importance of building relationships during the implementation of source water protection efforts emerged repeatedly. Influential groups and individuals, including experts and those whose activities might be impacted, need to be identified and be included very early in the process to ensure that they fully understand the benefits and appreciate their responsibilities.

- Evaluate existing funding and potential for new funding streams. An analysis of existing funding streams and whether those need to be allocated more efficiently is needed. Water and wastewater utility revenues should be explored for payback of loans and grants. Redirection of fuel surcharge to land conservation should also be explored.
- Incentives. Provide credits for early adoption of nutrient reduction.

Next Steps

To adjourn the workshop, Caryn Ernst and Elizabeth Shilling provided an overview of the next steps to be taken. The basic plan of action is to digest results of the input received during this workshop, conduct individual interviews with participants, and further investigate potential tools and incentives. Smaller groups may be reconvened to build strategies or comments may be solicited via email. Upon final compilation of incentives, tools and strategies, we may schedule another meeting with the state partners to finalize the project. We also hope to identify one or more demonstration projects that can be used to test the strategies and serve as models for local communities. If all goes well, we would like to have the demonstration projects implemented by end of project.

Workshop Attendance List

Name	Organization
Alan Clark	Division of Water Quality-Planning Section
Alan Oldham	NC Rural Water Association
Amy Axon	Public Water Supply Section
Bill Eaker	Land-of-Sky Council of Governments
Bill Holman	Nicholas Institute for Environmental Policy
Bob Midgette	DENR-Public Water Supply Section
Caryn Ernst	Trust for Public Land
Christy Perrin	NCSU - Watershed Education for Communities and Officials
Debbie Maner	NC Rural Water Association
Debra Gutenson	US EPA, Office of Ground Water and Drinking Water
Deirdre Mason	Association of State Drinking Water Administrators
Dwane Jones	NCSU Biological & Ag Engineering Department
Elaine Chiosso	Haw River Assembly
Elizabeth Schilling	Smart Growth Leadership Institute
Erin Wynia	NC League of Municipalities
Evan Kane	Division of Water Quality - Aquifer Protection Section
Gale Johnson	DENR-Public Water Supply Section
Gayle Killam	RiverNetwork
Jay Frick	Public Water Supply Section
Jeff Hughes	UNC-CH, School of Government, Environmental Finance Center
Jeff Marcus	Wildlife Resource Commission

AN ACTION PLAN TO PROTECT NORTH CAROLINA'S DRINKING WATER SOURCES

Jessica Miles	Public Water Supply Section
Kelley Hart	Trust for Public Land
Laura Leonard	Division of Environmental Health
Linnette Weaver	DENR-Public Water Supply Section
Lisa Creaseman	Conservation Trust for NC
Mike Herrmann	Ecosystems Enhancement Program (EEP)
Mike Schlegel	Triangle J Council of Governments
Patrice Roesler	Association of County Commissioners
Paul Clark	Division of Water Quality-Planning Section
Pete Campbell	U.S. Fish and Wildlife Service
Phil Trew	High Country Council of Governments
Rich Holder	NC Rural Community Assistance Project
Rick Gaskins	Catawba Riverkeeper Foundation
Robert Olive	U.S. Environmental Protection Agency Region IV
Robin Smith	NC Department of Environment and Natural Resources
Rodger Lentz	N.C. Chapter of the American Planning Association
Sarah Bruce	Upper Neuse River Basin Association
Shaun Moore	Henderson County Soil and Water Conservation District
Terry Pierce	Division of Environmental Health
Tony Gallegos	Western Piedmont COG
Will Summer	Clean Water Management Trust Fund

Appendix 1—Information and links to enhance source water protection website

Source Water Protection Cost/Benefit Tool is a user-friendly, web-enabled tool for water resource managers and other watershed stakeholders to estimate the triple bottom line (i.e., economic, social, and environmental) costs and benefits of specific source water protection practices. Link:

<http://www.swptool.org/index.cfm>

Your Water Your Decision Customizable Guide is a tool to help states, public water systems, and organizations reach out to local officials and land use decision makers. The tool helps users create a professional-looking guide that highlights their community or state's specific source water protection needs by customizing subject matter, content, cover photos, contacts and resources. In addition, users can brand their guide by adding their own logo and contact information – making the guide unique for every organization. Link: www.yourwateryourdecision.org.

Water Words That Work is a web site that provides a four step method to developing social marketing messages that turn passive environmental awareness into community action.

Link: <http://waterwordsthatwork.com/the-method/>

Bottled water video on youtube: This 8 minute youtube video advocates drinking tap water rather than bottled water. The video is based on the book and animated film series "The Story of Stuff" by Annie Leonard. She is a proponent of sustainability and anti-consumerism. Link:

<http://www.youtube.com/watch?v=Se12y9hSOM0&feature=topvideos>

Water on Tap: What You Need To Know: EPA has recently updated this 36-page booklet to help citizens understand where their drinking water comes from, how to know it is safe or if there is a problem, and how to protect it. The book explains drinking water sources and treatment, as well as drinking water standards. It also covers issues like water conservation, source water protection, security, POU/POE treatment, and private wells. Link: <http://www.epa.gov/ogwdw/wot/index.html>. (also available in Spanish and Chinese)

Only Tap Water Delivers: This AWWA web site provides information and promotional materials for water utilities and others to promote the value of drinking water during National Drinking Water Week. The resources could be modified for use during other events or for public outreach efforts in general. Link:

<http://www.awwa.org/Government/content.cfm?ItemNumber=44766&navItemNumber=3863&showLogin=N>

The Water Sourcebooks: Provides materials for teachers for grades K-12, covering topics such as: Introduction to Water, Drinking Water and Wastewater Treatment, Surface Water Resources, Ground Water Resources, and Wetlands and Coastal Waters. Activities are organized by objectives, materials needed, background information, advance preparation, procedures, and resources. The materials were developed through a partnership of the EPA, the Alabama Department of Environmental Regulation, and LEGACY. All materials may be printed and copied. Link:

<http://www.epa.gov/safewater/kids/wsb/index.html>

MAKING THE CASE FOR SOURCE WATER PROTECTION

The Cost of Not Protecting Source Waters: The Trust for Public Land (TPL) promotes the conservation of watershed lands as an effective way to protect irreplaceable sources of clean water and to manage

stormwater. With examples concerning increased treatment costs, increased capital investments, and loss of public confidence, this site provides rationale for land conservation as a means of source water protection. Link:

http://www.tpl.org/tier3_cd.cfm?content_item_id=21899&folder_id=1885

Statistical Analysis of Drinking Water Treatment Plant Costs, Source Water Quality, and Land Cover Characteristics, White Paper, The Trust for Public Land, 2008 In a recent study of the impacts of declining forest cover on drinking water treatment costs, it was determined that there is a significant relationship among source water quality, percent land cover and drinking water treatment costs. An increase in agriculture and urban land use related to increased turbidity at the treatment plant, and resulted in higher costs. On the contrary, increased forest land cover was significantly related to decreased turbidity. Available under “White Paper: Land Use and Drinking Water Treatment Costs” at http://www.tpl.org/tier2_pa.cfm?folder_id=1885.

The Economic Benefits of Land Conservation: . Traditionally, ballot measures for land conservation have been very popular with voters. From 2000-09, 74% of the more than 1500 measures across the country passed, raising more than \$36 million for land conservation. More importantly, based on hundreds of surveys, The Trust for Public Land finds that drinking water protection is a leading reason for the public to support land conservation. This document further illustrates how land conservation provides economic benefits. Link: http://www.tpl.org/tier3_cd.cfm?content_item_id=21251&folder_id=18

Center for Conservation Finance: The Trust for Public Land specializes in assisting communities in developing funds for land conservation, which often focuses on water quality protection as a goal. This website provides references to several tools to track and improve land conservation efforts. Link: http://www.tpl.org/tier2_pa.cfm?folder_id=3148

Building Sustainable Communities: Quality Growth Strategies in the Southeast In the preface to this document, Christine Olsenius, Executive Director of the Southeast Watershed Forum, states, “Building sustainable communities for the 21st century will require new ideas and perspectives in balancing our built environment with our exceptional natural resources. This will require politically difficult actions like regional planning; wiser land use practices, especially around drinking water supplies; water and energy conservation, and land conservation to conserve special resources and help mitigate the impacts of climate change.” Download the document at: <http://www.southeastwaterforum.org/news/newsletters.asp>

SUCCESS STORIES

Community Watershed Plans: These examples from The Trust for Public Land illustrate how communities integrate water protection with land conservation and other community goals. Link: http://www.tpl.org/tier3_cd.cfm?content_item_id=21919&folder_id=18

Conservation Vision Case Studies: Communities across the country create conservation vision plans to protect water quality and meet other community goals, such as improving recreation, preventing flooding, maintaining rural character, and protecting wildlife. The PDF documents on this site provide more information about how several communities are making informed decisions about land conservation. Link: http://www.tpl.org/tier3_cd.cfm?content_item_id=20161&folder_id=31

Growth Readiness Reports: This site refers to several case studies from communities that underwent a series of growth readiness workshops and extensively discussed ways to help make quality land use decisions and protect land and water resources. Link: <http://www.southeastwaterforum.org/news/newsletters.asp>

TECHNICAL ASSISTANCE

Southeast Watershed Assistance Network: This clearinghouse provides information of particular relevance in the southeast United States. Topics include land and water resource conservation strategies; watershed & stormwater management; and “Quality Growth” case studies. Link: <http://www.watershed-assistance.net/resources/categories.asp?catid=215>

Project NEMO: NEMO (Nonpoint Education for Municipal Officials) provides information, education and assistance to local land use boards and commissions on how they can accommodate growth while protecting their natural resources and community character. This site provides information on training, tools and case studies. Link: <http://nemo.uconn.edu/>

STORMWATER PROGRAM TOOLS

Stormwater program information can be helpful with regard to source water protection because the requirements of the various stormwater programs can greatly benefit/protect source waters. If local governments understand that there are mutual public health, water quality and water quantity benefits associated with compliance with stormwater requirements, securing necessary investment and adoption of required local ordinances may be more publicly supported and thereby politically palatable.

Stormwater Maps and GIS Resources

DENR, DWQ and NC Center For Geographic Information and Analysis have worked to establish an interactive web-based mapping system to help those undertaking development activities determine whether they are covered by the post-construction permitting program or other stormwater permitting requirements. This website can be very useful for local governments as well. http://portal.ncdenr.org/web/wq/ws/su/maps#GIS_Data_Maps

Stormwater Programs Map

This map displays the overlapping stormwater requirements. It can be valuable to local governments trying to understand which stormwater regulations apply to the activities and existing stormwater conveyance systems throughout the state.

http://portal.ncdenr.org/c/document_library/get_file?uuid=cff3333c-b897-4c1a-8590-031a1b55d1d6&groupId=38364

FUNDING

Developing Local Funds for Source Water Protection

The primer entitled “Developing Local Funding to Protect Drinking Water Sources in North Carolina: A Guide for Local Government Officials” prepared under this project can be uploaded to the web.

State and Federal Funding Programs that may support source water protection

Fact sheets prepared under this project can be uploaded to the web.

Watershed Protection Revenue Dashboard

The Environmental Finance Center at the University of North Carolina created an interactive tool that water utility managers and other water resource managers can use when considering options for generating local funds for source water protection. The tool includes a "slider" that can be manipulated to show how much revenue can be generated by raising water rates. It also includes other options such as creating a "watershed fee" through property tax bills instead of the utility bill. Funds generated by these options can be used as a match for grants that require a cost-share. Alternatively, the funds can be used to

amortize a loan, since the tool demonstrates to lenders how the funds will be generated for loan repayment. See: http://www.efc.unc.edu/tools.htm#watershed_protection_dashboard.

Appendix 2Ai – Public Water System Award Example

AWWA's Yearly Exemplary Source Water Protection Award

The AWWA Exemplary Source Water Protection Award is given to North American water systems and authorities that have developed and implemented outstanding source water protection programs. The deadline for submitting nominations every year is October 1, and the awards are given at the AWWA Annual Conference and Exposition in June.

Three awards are made each year, one each for small, medium-size, and large systems, on the basis of a number of criteria. Eligible systems must:

- Be regulated by a state or a province;
- Have a completed source water assessment that satisfies applicable state or provincial requirements, including the location of all current or planned sources, delineation of the protection area and identification of the types, locations and distance of existing and potential sources of contamination;
- Have a management program that effectively controls potential sources of contamination in the protection area;
- Have a management program that controls introduction of new potential sources of contamination into the protection area;
- Have an emergency plan, infrastructure, and equipment available to deal with accidents;
- Have an ongoing stakeholder education and involvement program;
- Have been coordinated with local, state or provincial, and, where applicable, regional and national authorities;
- Have a monitoring program; and
- Have a watershed monitoring program that measures up-gradient water quality for surface water supplies.
- The source water protection plan/program must also have a person(s) responsible for the effort, such as a source water protection program manager.

Qualified water systems and authorities can self-nominate or be nominated by others. Materials submitted by the nominees will be evaluated by AWWA's Source Water Protection Committee on effectiveness of the program, innovation in the program approach, and difficulties overcome. Consideration will be given to the resources available to organizations in light of their size.

Past winners of the award include:

2007

Small System—Ira Township, Fair Haven, Mich.

Medium System—Charter Township of Waterford, Mich.

Large System—Contra Costa Water District, Concord, Calif.

2008

Medium System—City of Davison, Mich.

Large System—Indiana American Water, Richmond District, Richmond, Ind.

Appendix 2Aii – Sample National Drinking Water Week Press Release and Governor Proclamation

PROPOSED PRESS RELEASE FOR NATIONAL DRINKING WATER WEEK 2010

**WATER IS PRECIOUS
MAKE EVERY DROP COUNT**

This year marks the 35th Anniversary of the Safe Drinking Water Act that forms the core of our national efforts to provide quality drinking water and protect the health of our citizens. From May 2-8, we also celebrate National Drinking Water Week – a national observance that highlights the value of water to each of us in our everyday lives.

In ***STATE***, ***XXX*** people are served daily by more than ***XXX*** public drinking water systems, ranging in size from a drinking fountain at a roadside rest area to a large metropolitan drinking water system. Each ***STATE-ian*** relies on their water system (whether large or small) to provide a safe and dependable supply of water, both now and in the future.

National Drinking Water Week recognizes the importance of water source protection and conservation, as well as the value, importance, and fragility of our state's water resources. The ***STATE Department of Health/Environment/Natural Resources*** works with drinking water utilities to make sure that the water delivered to consumers meets all federal and state standards and is clean and abundant. These efforts are vital to ***STATE's*** economy and to the public health of our citizens.

The tasks facing state drinking water programs and public water systems continue to be extremely challenging – especially in an era of scarce resources. The drinking water infrastructure in many cities is aging and presents daunting resource demands. As a nation, we continue to be challenged by new and emerging drinking water contaminants associated with our industrial society.

Today, ***STATE*** renews its commitment to build on the successes of the past 35 years and to continue to work with all of our partners in the water community to fully realize the public health goals of the Safe Drinking Water Act through celebrating National Drinking Water Week.

STATE can add information about celebration specific information on water festivals, awards programs, stream walks, or water workshops that may be taking place.

Appendix 2C—Examples of Research on Economic Benefits

The Cost of Not Protecting Source Waters: The Trust for Public Land (TPL) promotes the conservation of watershed lands as an effective way to protect irreplaceable sources of clean water and to manage stormwater. With examples concerning increased treatment costs, increased capital investments, and loss of public confidence, this site provides rationale for land conservation as a means of source water protection. Link:

http://www.tpl.org/tier3_cd.cfm?content_item_id=21899&folder_id=1885

Statistical Analysis of Drinking Water Treatment Plant Costs, Source Water Quality, and Land Cover Characteristics, White Paper, The Trust for Public Land, 2008 In a recent study of the impacts of declining forest cover on drinking water treatment costs, it was determined that there is a significant relationship among source water quality, percent land cover and drinking water treatment costs. An increase in agriculture and urban land use related to increased turbidity at the treatment plant, and resulted in higher costs. On the contrary, increased forest land cover was significantly related to decreased turbidity. Available under “White Paper: Land Use and Drinking Water Treatment Costs” at http://www.tpl.org/tier2_pa.cfm?folder_id=1885.

The Economic Benefits of Land Conservation: . Traditionally, ballot measures for land conservation have been very popular with voters. From 2000-09, 74% of the more than 1500 measures across the country passed, raising more than \$36 million for land conservation. More importantly, based on hundreds of surveys, The Trust for Public Land finds that drinking water protection is a leading reason for the public to support land conservation. This document further illustrates how land conservation provides economic benefits. Link:

http://www.tpl.org/tier3_cd.cfm?content_item_id=21251&folder_id=18

Center for Conservation Finance: The Trust for Public Land specializes in assisting communities in developing funds for land conservation, which often focuses on water quality protection as a goal. This website provides references to several tools to track and improve land conservation efforts. Link:

http://www.tpl.org/tier2_pa.cfm?folder_id=3148

Appendix 3—Fact Sheets on Relevant Funding Programs for Source Water Protection

NOTE: As part of the *Enabling Source Water Protection* project, fact sheets on relevant state and federal funding programs were developed for inclusion on the NC SWP Program website. The following list provides only the name and contact websites of the programs. The fact sheets include additional information, such as program contacts, eligibilities and requirements. Although source water protection is not always the primary purpose of these funding programs, projects that meet the program requirements may also benefit source water protection.

The following funding programs are covered in the fact sheets:

State Programs

- NC Clean Water Management Trust Fund
www.cwmtf.net/
- NC Natural Heritage Trust Fund
www.ncnhhf.org/
- NC Parks and Recreation Management Trust Fund
www.ncparks.gov/About/grants/partf_main.php
- NC Ecosystem Enhancement Program
www.nceep.net/pages/abouteeep.html
- NC Community Conservation Assistance Program
www.enr.state.nc.us/DSWC/pages/ccap_program.html

State/USDA Agriculture-related Programs

- Environmental Quality Incentives Program
www.nc.nrcs.usda.gov/programs/eqip/index.html
- Wildlife Habitat Incentives Program
www.nc.nrcs.usda.gov/programs/whip/index.html
- Conservation Stewardship Program
www.nrcs.usda.gov/programs/CSP/
- Conservation Reserve Enhancement Program
www.enr.state.nc.us/dswc/pages/crep.html
- Wetland Reserve Program
www.nrcs.usda.gov/programs/wrp/states/nc.html

EPA-related Programs

- NPS Section 319
<http://portal.ncdenr.org/web/wq/ps/nps/319program>

US Department of the Interior Programs

- Land and Water Conservation Fund—stateside
www.ncparks.gov/About/grants/lwcf_main.php
- Land and Water Conservation Fund—federal
www.nps.gov/nrcr/programs/lwcf/

AN ACTION PLAN TO PROTECT NORTH CAROLINA'S DRINKING WATER SOURCES

- State Wildlife Grants
<http://wsfrprograms.fws.gov/Subpages/GrantPrograms/SWG/SWG.htm>
- Cooperative Endangered Species Conservation Fund--Recovery Land Acquisition Grants
www.fws.gov/endangered/grants/index.html
- Federal Aid in Wildlife Restoration
<http://federalasst.fws.gov/wr/fawr.html>
- Migratory Bird Conservation Fund
www.fws.gov/refuges/realty/mbcc.html
- The North American Wetlands Conservation Act
- www.fws.gov/birdhabitat/Grants/NAWCA/index.shtm

US Forest Service Program

- Forest Legacy
www.dfr.state.nc.us/fsandfl/what_is_forest_legacy.htm

US Department of Transportation Programs

- Transportation Enhancements
www.enhancements.org/Factsheets/TE_11.htm
- Transportation and Community and System Preservation Program
www.fhwa.dot.gov/tcsp/pi_tcsp.htm

Department of Defense Programs

- DOD Buffer Program—Compatible Land Use Partnerships
www.sustainability.army.mil/tools/programtools_acub.cfm

Appendix 4—Ohio WRRSP Fact Sheet



State of Ohio Environmental Protection Agency

Fact Sheet

January 2008

Ohio Water Pollution Control Loan Fund Water Resource Restoration Sponsor Program

Introduction

Advances in wastewater treatment practices have improved Ohio's surface water quality in the past 30 years. However, current data indicate that nonpoint source runoff, habitat degradation and man-made alterations also significantly impair water resources, thereby preventing attainment of Ohio's water quality goals.

The Water Resource Restoration Sponsor Program (WRRSP) addresses the loss of ecological function and biological diversity that is threatening the health of Ohio's water resources. The Water Pollution Control Loan Fund (WPCLF) provides funds through the WRRSP to implement projects that will protect or restore aquatic habitat.

Eligible Applicants

An applicant to the WPCLF for a direct loan can also apply to carry out its own WRRSP project, or to sponsor a WRRSP project that will be implemented by another organization. WRRSP implementers may include political subdivisions, park districts, and not-for-profit organizations.

The Process

The sponsor and implementer of the WRRSP project sign an agreement describing the project and identifying their respective roles and responsibilities to carry it out.

The implementer must

demonstrate that it has the technical and institutional capacity to implement and permanently manage the project in a manner consistent with its water quality purposes.

Funding

Ohio EPA will advance a portion of the interest payments that will be received from the sponsor's direct loan to pay for the implementation of the WRRSP project. The amount awarded for a WRRSP project must be less than the amount of interest that the WPCLF will receive from the sponsor's direct loan.

No other repayment of the interest advanced for the WRRSP project is required. In addition, the interest rate on the sponsor's loan is reduced by up to 0.1 percent.

Project Selection

For the current year, Ohio EPA will make \$15 million available for WRRSP projects. Projects are classified as either restoration or protection projects, and are ranked within those categories. A WRRSP project is then designated for available funding based on its position on the priority list, and the sponsor's readiness to proceed with the direct loan project.

Other Considerations

- The costs required by consent decrees for Supplemental Environmental Projects are not eligible for WRRSP funding

Eligible Activities

An eligible WRRSP project must, by itself or in combination with other activities, provide protection or restoration of aquatic habitat sufficient to fully meet or protect the designated uses of the benefitted water resource, as defined under Ohio's water quality standards. It must also help implement Ohio's Nonpoint Source Management Plan.

Eligible projects include restoration activities such as stream bank stabilization and riparian re-vegetation, and protection activities such as the purchase of land or use limitations for permanent conservation.

- Preliminary WRRSP project plans must be completed prior to the award of funds
- Limitations will be established to assure the compatibility of future uses of the project site with the water quality purposes of the project.

Additional Information

For more information, contact us at (614) 644-2798. Application materials and frequently asked questions are available through the WPCLF Program page on our Web site.

Appendix 5A—Potential CWSRF priority ranking system enhancements

Points for projects that benefit highly susceptible source waters.

The CWSRF could increase its effectiveness by directing its resources towards projects that would benefit source waters that are highly susceptible. The Public Water Supply Section of NCDENR has undertaken an extensive evaluation of source water protection areas across the state. The resulting information enhances the understanding of the susceptibility of drinking water resources to potential contamination. More specifically, the CWSRF should provide additional priority ranking points for projects that directly benefit waters classified as WSI, WSII, WSIII or WSIV **and** that are ranked as highly susceptible source water assessment areas.

This recommendation is consistent with actions taken by other NC agencies, which have already adopted similar priority ranking factors for their programs, including the NRCS EQIP Program, the NC Clean Water Management Trust Fund, and NC Division of Soil and Water Conservation.

Allowance to combine points.

The 2010 ranking sheet does not allow points to be combined. For example, a HQW that is also classified as WSIII for which there is an approved source water protection plan would only receive 5 points, not 7points (5 for HQW and 2 for WSIII w/ SWP). Projects benefiting HQW, ORW, TR, WSI, WSII and SA that are highly susceptible and have approved source water plan should get extra points (e.g., for WSI 5pts, SWP 2pts and whatever is additional for highly susceptible areas for a total of greater than 7points).

Support for land conservation projects that preserve water-related ecosystem functions.

In addition to prioritizing projects with respect to susceptibility, the CWSRF should also consider supporting land conservation projects to cost-effectively achieve multiple benefits for water quality and other community objectives. For example, land conservation might be used to preserve wetlands that trap polluted runoff, reduce flooding, provide wildlife habitat and offer recreational opportunities. So, funding of such nontraditional projects may help communities meet many locally important objectives.

There are many environmentally sound reasons for increasing support of land conservation under the CWSRF:

- Maintaining land in natural cover reduces runoff thus preventing water quality degradation associated with land disturbance, especially siltation.
- Riparian buffers capture sediment-borne nutrients.
- Riparian buffers absorb and slow down floodwater, reducing streambank erosion
- Riparian woodlands provide food and cover for wildlife and aquatic organisms, and, by shading the waterbody, lower water temperatures.

Consistent with an emphasis on watershed approaches and green infrastructure, over the past decade, the US Environmental Protection Agency (EPA) has encouraged the use of CWSRF to support a broad array of projects that improve water quality. Several states received EPA awards for modifying their CWSRF programs to pursue integrated water quality programs that address high priority water quality problems. These more holistic programs support both wastewater system improvements as well as less traditional water quality improvement projects, such as land conservation. More information is contained in Appendix 5Ai, which provides examples of award-winning uses of the CWSRF for source water protection and land conservation. Also, see www.epa.gov/npdes/greeninfrastructure, which provides more information on EPA's support of green infrastructure.

While the priority ranking system assigns points for stream restoration projects that protect riparian buffers, it needs to be expanded to explicitly support land conservation for pollution prevention, in addition to restoration. Utilities that wish to partner with land conservation organizations in order to reduce pollution within the same watershed should be allowed to count land preservation through purchase or easement as part of their overall, integrated water quality management regime.

Appendix 5Ai—Examples from CWSRF PICES Awards

USEPA established the Performance & Innovation in the SRF Creating Environmental Success Awards, or PISCES Awards to recognize innovations in the implementation of the CWSRF.

A few paraphrased excerpts from EPA PISCES award documents show the diversity of uses of the SRF to protect human health, groundwater and instream water quality:

Middletown, RI, used a \$1 million CWSRF loan to purchase 45 acres of an agricultural land adjacent to the primary feeder stream to a drinking water reservoir. Once in danger of being developed, the parcel has now been turned into a park.³

Morgantown Utility Board (MUB), WV,

To form a stormwater utility, MUB developed a unique funding strategy that included user fees, reinvestment of Business & Occupation taxes, state grants, and a CWSRF loan. They have used the utility to reconstruct wetlands and stabilize stream banks.⁴

Lexington County, SC, used a CWSRF loan to address potential health and groundwater contamination hazards by replacing 26 inadequate septic tanks with public sewer connections.⁵

Sioux Falls, SD. CWSRF loans totaling approximately \$57 million funded storm sewer improvements and the construction of a new sanitary sewer, while simultaneously contributing over \$4 million to cost share nonpoint source best management practices.⁶

High Island Independent School District, Galveston County, TX

The District replaced inadequate septic systems with a low pressure septic tank pump system and a constructed wetlands treatment system, reducing point and nonpoint source pollution. The project utilized a \$250,000 CWSRF loan and Federal and State grants. In addition, the land was donated by the Audubon Society and has been restored as a wildlife/bird watching area.⁷

Little Rock, AR. The Nature Conservancy purchased 4,361 acres of bottomland hardwood wetlands to preserve and restore prime wildlife habitat along the Cache and Bayou DeView Rivers. The CWSRF loan was repaid within three years.⁸

States have also received PISCES Awards for restructuring their CWSRF programs to support integrated water resource management.

Ohio's Environmental Protection Agency and Water Development Authority established a Water Resource Restoration Sponsor Program (WRRSP). WRRSP offers communities an interest rate reduction on their CWSRF loan if they agree to sponsor a nonpoint source project. As of 2005,

³ 2008 USEPA CWSRF PISCES AWARDS, 832-F-08-062 October 2008

⁴ 2008 USEPA CWSRF PISCES AWARDS, 832-F-08-062 October 2008

⁵ Ibid.

⁶ Ibid.

⁷ 2006 USEPA CWSRF PISCES AWARDS, 832-F-06-040 November 2006

⁸ Ibid.

WRRSP had made over \$67 million worth of loans for projects that acquired wetlands, riparian lands, and conservation easements, restored habitat, and modified dams.⁹

The Montana CWSRF program used \$23 million, almost 25 percent of its funding from 2000-2005, for implementation of the state's Section 319 nonpoint source management plan.¹⁰

The Oklahoma Water Resources Board (OWRB) adopted an Integrated Priority Ranking System, which ranks projects for funding based on the goals of the Clean Water Act and the State's Unified Watershed Assessment to eliminate human health threats, restore impaired surface waters, and protect high quality waters and their uses. It has adopted a targeted effort to identify high priority projects and contacts communities within targeted watersheds or that are in violation of NPDES discharge permits.¹¹

⁹ 2005 USEPA CWSRF PISCES AWARDS

¹⁰ Ibid.

¹¹ Ibid.

Appendix 5B—CCWSRF Demonstration Project Recommendations

Workgroup Membership

- Consider inviting membership on the workgroup from DWQ Planning Section, NCSU Watershed Education Program, CTNC, The Trust for Public Land, and appropriate governmental entities.
- Decide upon the charge for the workgroup. For example, the charge might be to incorporate source water protection into a nutrient strategy or basinwide plan and to develop an application to the CWSRF to support the strategy or plan.
- If the application to CWSRF entails land conservation, it will be important to clarify that a municipality or utility will be the borrower, not a non-governmental organization. Also, it will be important to stress the multiple benefits of land conservation for water quality protection, source water protection, wildlife, recreation, etc. If the 2009/2010 CWSRF Priority Ranking System is still in effect, land conservation work would need to be associated with restoration of streams, wetlands, and estuaries wetlands. Finally, the cost of the project should fall under the current CWSRF cap reserve for “green projects” (in 2009-10 IUP reserve is not less than \$7,354.6 M).

At an appropriate time, meet with CWSRF managers to review the project application materials to maximize potential for the project to receive appropriate points under the priority ranking system and address any other concerns.

Appendix 6Ai—Steps in Implementing Source Water Collaborative

Design a Framework: A framework to establish the collaborative should be based on shared vision and goals. Following are some framework options to consider:

- Vision statement
- Memorandum of Understanding (MOU)
- Charter
- Informal pledge signing

Identify Purpose/Mission: The purpose/mission will be stated in the framework document. Each member or member agency must agree to “uphold the intentions” or “participate in and support the efforts” (of the group). When writing the framework document, each of the members should consider what they can commit to do, both individually and as part of the group. Government agencies must also consider the need for clauses and disclaimers in the framework document, as well as copyrights and patents if the collaborative develops a policy statement or product of any type that might not represent an opinion or policy of the government agency

Define Goals and Objectives: When determining goals and objectives, the collaborative members will want to expand on the purpose of the group by documenting more specific actions that they would like to happen (in the short-term and long-term future) as a result of their efforts, both individually and as a group. In addition to source water protection, do you want to include things like sustainability planning and developing innovative policies?

Determine Membership: North Carolina has already convened agencies, organizations, and representatives (for the purposes of this project) that could participate in the collaborative. The current group should also think about inviting other members and consider whether to limit the number and type of members who join the collaborative, depending on the decided objectives and activities of the group. It is also very helpful to form a smaller steering committee with key members of the group to perform the administrative tasks of the collaborative, schedule meetings and calls, develop agendas, and generally ensure that the group is working toward its goals. It is also helpful to form smaller subgroups or workgroups to work on particular topics or activities, where a larger group would easily become unmanageable. In addition, you want to invite others to participate in the full collaborative meetings or workgroups for particular topics or activities. For example, do you coordinate efforts with bordering states (i.e., Virginia, South Carolina, and Tennessee) on particular issues or for particular water bodies?

Hold Meetings: Meetings and/or conference calls with the whole group should be held on a regular basis (once per quarter at a minimum). If there is a smaller steering committee, this group will meet more frequently (e.g., once per month to touch base). Additional workgroups that are formed to work on specific projects should also plan to communicate on a regular schedule outside of the normal Collaborative meetings and calls.

Undertake Activities/Action Items: To ensure that the collaborative is fulfilling its purpose and working toward its goals and objectives, it is essential that the group identify a suite of activities to work on, that includes a set period of time, or timeframes for completion. The action items do not have to be made into a formal document, but may line up very well with the recommendations in this project report.

Appendix 6Aii—Source Water Collaborative Examples

- Groton area, Southeast Connecticut Source Water Stakeholders Group
 - *Purpose/Mission:* The Groups focus is on community involvement and empowerment, water supply and public health protection, proactive land use planning and strategies balanced with need for economic growth.
 - *Goals:* Develop local drinking water quality management plans to ensure preservation of purity and availability of the state's public drinking water sources.
 - *Members:* Five Groton area Municipalities, Connecticut Drinking Water Program (Dept. of Health), Dept. of Environmental Protection, Dept. of Public Utilities Commission, Office of Policy and Management, EPA , USGS, The Trust for Public Land, The Nature Conservancy, Atlantic States Rural Water Association, Rivers Alliance of CT, Connecticut Forest & Park Association, and more.
 - *Meetings:* Workshops and meetings are held bi-annually.
 - *Effective Characteristics:* This is a grass roots community-based, stakeholder driven group that is focused on source water protection implementation that plans to recommend legislation to the state. The state has a GIS application that the group uses to prioritize source protection activities.
- Virginia's Ground Water Protection Steering Committee
 - *Purpose:* An inter-agency advisory committee formed to stimulate, strengthen, and coordinate ground water protection activities in Virginia.
 - *Goals:* Seeks ways of improving existing programs, and ways to tie planning for ground water protection to planning for economic development.
 - *Members:* Department of Environmental Quality (Lead Agency), Department of Health – Drinking Water Program, Virginia Cooperative Extension, Department of Agriculture & Consumer Services, Department of Business Assistance, Department of Conservation & Recreation, Department of General Services (Consolidated Laboratory), Department of Housing & Community Development, Department of Mines, Minerals and Energy, and USGS.
 - *Meetings:* Meetings are held bi-monthly.
 - *Activities:* Publishes Annual Reports to inform Virginia citizens, officials, and businesses about ground water and State programs; Promotes voluntary wellhead protection efforts, and testing of private water wells; Reasserts areas of concern such as underground storage tanks, landfills, waste lagoons, septic tanks, and pesticides and fertilizers; Explores opportunities for improving research and information

collection and dissemination; and Seeks ways to maximize use of limited resources through coordination of activities among and between state agencies and localities, and public and private entities.

- *Effective Characteristics:* Bi-monthly meetings are open to the public. The Committee helps provide grant programs for local municipalities and water suppliers and maintains a website at <http://www.deq.virginia.gov/gwpssc>.
- Kansas Watershed Restoration and Protection Strategy Workgroup
 - *Framework:* Kansas has established the Watershed Restoration and Protection Strategy (WRAPS) through a memorandum of agreement among the sub-cabinet agencies to provide a framework that engages citizens and other stakeholders in a teamwork environment aimed at protecting and restoring Kansas watersheds.
 - *Purpose/Mission:* WRAPS efforts address a variety of water resource concerns statewide. These concerns include water quality, public water supply reservoir protection, flooding issues, and wetland and riparian habitat protection or restoration.
 - *Goals/Objectives:* There are four basic stages in the WRAPS process: 1) Identify watershed restoration and protection needs; 2) Establish management goals; 3) Create a cost effective action plan to achieve goals; and 4) Implement the action plan. In addition to the WRAPS framework, a report is generated that records the stakeholders' decisions concerning goals, the plan to achieve the goals, and the resources required to execute the plan.
 - *Members:* Kansas Department of Wildlife & Parks, Kansas Department of Health & Environment, Kansas Department of Agriculture, Kansas Water Office, State Conservation Commission, Kansas Corporation Commission, and Kansas Animal Health Department.
 - *Effective Characteristics:* A special state fund was developed to finance projects that meet WRAPS goals. WRAPS is implemented at the local level through Kansas Watershed Partnership Agreements to assure that all Kansas water resource stakeholders are implementing the WRAPS by providing advice to the WRAPS workgroup and promoting stakeholder participation in WRAPS projects. Partners are composed of any public or private organization that applies for membership and accepts the Statement of Principles and the duties and obligations within the Partnership Agreement. The partner projects are focused on source water protection and could include meeting Total Maximum Daily Loads, protecting a public water supply, and enhancing recreation.
- The National Source Water Collaborative (SWC)
 - *Vision Statement:* Each national organization in the Collaborative understands and appreciates the importance of source water protection. Individually, each promotes

implementation of source water protection in their overall mission. Each organization recognizes the synergy of coordinated actions and the need for leveraging each other's resources in order to increase the chances for success over each entity going it alone.

- *Goals/Objectives:* To encourage actions that: Contain or prevent contaminants, including pesticides, fertilizer, industrial waste, petroleum by-products and other runoff, from reaching the sources of our drinking water; Promote development patterns that limit threats to the integrity of lakes, rivers, ground water, water recharge areas or other sources of drinking water; and Encourage matching uses of land with locations least likely to affect current or future sources of drinking water; and Preserve the land needed to protect the quality of current and future sources of drinking water.
 - *Members:* The members of this group are primarily federal agencies and national non-governmental organizations that represent members whose job includes some type of responsibility for or interest in source water protection. The Source Water Collaborative has recently created a special new category of membership for organizations that want to participate and share information, but cannot necessarily advocate the goals of the whole group.
- The Association of State Drinking Water Administrators (ASDWA) Source Water Protection Committee
 - *Purpose/Mission:* The primary mission of this committee is to support state source water assessment and protection activities, involvement in national initiatives, and opportunities to further local source water protection implementation efforts.
 - *Goals/Objectives:* Promote public health protection by supporting the active involvement of state drinking water programs in the implementation of Federal, state, and local source water protection efforts to assure that the concerns of state drinking water programs are included. Provide input to U.S. EPA during the development of rules and guidance, as well as reporting related to source water protection, such as the Ground Water Rule and the Class V Rule, to assure that the concerns of state drinking water programs are adequately reflected.
 - *Members:* Any state drinking water program representative who is interested in helping support the national source water protection efforts of the group.
 - National Onsite Wastewater Management MOU Workgroup
 - *Purpose:* The purpose of this MOU is to continue the efforts begun under the 2005 MOU and to include additional organizations and expand upon the goals of the cooperative relationship between the Signatory Organizations by including a focus on state decentralized (septic) management programs and research components.

- *Objectives:* Strengthen external partnerships; Improve decentralized wastewater treatment system performance through improved practitioner competency, management practices, *research* and technology transfer; Improve accountability, control, and oversight through enhanced state, tribal and local program implementation; Improve local decision making through improved public awareness, education programs, and information materials; and Support the principles outlined in the *Voluntary Management Guidelines* and *Management Handbook for Decentralized Systems* developed by EPA's Office of Wastewater Management.
- *Members:* The members of this group include EPA water programs and national non-governmental organizations that represent members whose job includes some type of responsibility for on-site septic systems, as well as an interest in source water protection.