

**Planning and Implementing
Agricultural Water Quality Projects
Through the National Water Quality Initiative:
A Practitioners Guide**



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I Overview of the National Water Quality Initiative

The National Water Quality Initiative (NWQI) was developed to apply watershed protection and restoration “lessons learned” over the past 40 years to improve the quality of America’s rural lakes, rivers, streams, wetlands, and coastal waters. Agricultural producers, public agencies, and private sector organizations have sponsored and led water quality improvement projects on agricultural landscapes for many decades. Their collective efforts show that engaging the agricultural community in focused projects targeting real, data-verified problems can produce significant results—especially when supported by the technical and financial resources of public agencies.

Purpose of this Document

This document is intended to familiarize staff from the U.S. Environmental Protection Agency (EPA), the U.S. Department of Agriculture’s Natural Resources Conservation Service (NRCS), state water quality agencies (SWQAs), and [partners](#) with the NWQI program so they can: (1) coordinate to develop and implement NWQI projects; (2) plan and complete necessary NWQI project administration and management preparatory tasks; and (3) provide outreach and education to partners involved in farm-level NWQI project promotion and conservation practice implementation. The partnerships established and nurtured by the collaborative nature of NWQI are intended to help address water quality protection and improvement on agricultural lands.

Primary funding support for the NWQI is provided under the [NRCS Environmental Quality Incentives Program \(EQIP\)](#). Nationally, NRCS applies conservation practices that address water quality or other resource concerns on over 10 million acres annually through EQIP. Since 2012, NRCS has invested over \$190 million and worked with more than 4,000 farmers/ranchers to implement conservation practices to improve or protect water quality specifically through NWQI. Support for state nonpoint source (NPS) pollution control programs and projects is provided by the [EPA Clean Water Act \(CWA\) Section 319 Program](#) (the National NPS Management Program). CWA Section 319 funds support a wide range of functions and activities, including state NPS staff salaries, program planning and management, technical training and assistance, watershed-based plan development, watershed coordinators for plan implementation, urban green infrastructure projects, riparian restoration, agricultural conservation measures, outreach and education, and NPS monitoring.

Watershed assessments, planning, and implementation of [conservation practices](#) are at the heart of the NWQI, with particular focus on increasing voluntary adoption of the **right conservation practices and systems, in the right position on the landscape, in the right amount, with the right timing and sequence** of implementation. This document discusses how this approach is incorporated into the NWQI and summarizes key details of:

- NWQI program background and history
- The role of federal, state, and other partners
- How projects are conceived, planned, and implemented
- Eligibility, documentation, and reporting requirements

NWQI History

The [NWQI](#) was launched in 2012 by NRCS to reduce [nonpoint sources \(runoff\)](#) of agriculture-related nutrients, sediment, and pathogens in small, high-priority watersheds in each state. These priority watersheds are selected by NRCS state conservationists in consultation with SWQAs and/or state source water protection programs, focusing where targeted on-farm conservation investments can deliver the greatest water quality benefits. NWQI provides a means to accelerate voluntary, private landowner cost-share investments in conservation, with dedicated financial assistance through NRCS's [EQIP](#) program. The effort is also supported by EPA's [CWA Section 319 Program](#) and other state and local funds that support watershed assessment, planning, implementation, and outreach. In a subset of NWQI watersheds, SWQAs use CWA Section 319 or other funds for monitoring efforts that help track water quality improvements over time.

NWQI projects focus on reducing nutrient, sediment, and bacteria runoff to surface waters through a variety of practices that **avoid**, **control**, or **trap** these pollutants to reduce their contribution to water quality impairment. This may involve (Figure 1):

- *Avoiding runoff of pollutants*
 - Nutrient management plans and activities.
 - Addressing the rate, timing, form, and method of nutrient application.
- *Controlling runoff of pollutants*
 - Residue and tillage management.
 - Drainage water management.
- *Trapping pollutants*
 - Vegetated waterbody buffers.
 - Wetlands designed for nutrient removal.

Since 2012, NRCS has invested nearly \$200 million working with more than 4,000 producers to implement conservation practices on more than 875,000 acres in priority watersheds through NWQI. As partners, EPA invested nearly \$11 million in CWA Section 319 funds in Fiscal Year (FY) 2016 alone.



Figure 1. Avoiding, Controlling, and Trapping Pollutants Through Conservation Practices is the Focus of the NWQI

NWQI 2017–2021

In 2017, NRCS launched an NWQI *Readiness Phase* (now referred to as the *Planning Phase*) to assist NRCS state offices and partners with watershed-level assessments, [on-farm planning](#), and outreach prior to receiving financial assistance for implementation. NRCS provides technical assistance and resources in selected planning/readiness watersheds for approximately 1 year to:

- Identify problems and opportunities.
- Document desired future conditions.
- Inventory and analyze existing conditions.
- Determine the appropriate conservation practices for documented resource concerns.
- Leverage and enhance existing watershed and conservation plans.
- Fill gaps needed to complete watershed assessments.
- Develop outreach plans to educate producers about upcoming projects and promote participation and conservation practice implementation.

NRCS invested approximately \$30 million in targeted assistance to help farmers and ranchers improve water quality in high-priority streams and rivers across the country in 2020. In FY 2021, NRCS will provide financial assistance to 173 watersheds, with another 221 planning watersheds receiving support for watershed assessments and outreach strategies.

NRCS launched a pilot program in 2019 to include drinking water source protection. During that pilot, NRCS invested approximately \$2 million for projects assisting partners in adapting and expanding 16 source water protection plans. These plans identify critical areas that need further treatment related to agricultural land uses to protect sources of drinking water. Building on the success of that pilot, NRCS permanently expanded the scope of NWQI to include source water protection, including both surface and ground water public water systems.

Healthy Soils: The Foundation of Agriculture

[Soil health, also referred to as soil quality](#), is defined as the continued capacity of soil to function as a vital living ecosystem that sustains plants, animals, and humans.

Soil is not an inert growing medium, but rather is teeming with billions of bacteria, fungi, and other microbes that are the foundation of a symbiotic ecosystem.

Soil is an ecosystem that can be managed to provide nutrients for plant growth, absorb and hold rainwater for use during dryer periods, filter and buffer potential pollutants from leaving farm fields, serve as a firm foundation for agricultural activities, and provide habitat for soil microbes to flourish and diversify to recycle nutrients and decompose organic matter.

NWQI has been extended through FY 2023, with some updates to strengthen program delivery. Updates include a focus on **watershed assessment and planning** and **use of multi-year budgets** to demonstrate long-term commitment in assisting water quality efforts.

Although the primary goal of the NWQI is to improve water quality through accelerated implementation of conservation practices, a secondary goal is to enhance and improve working relationships among NRCS state offices and SWQAs. In FY 2016, 61% of states (28 out of 46 responses) reported that SWQAs and NRCS have established newly productive working relationships and coordination of programs and resources as a result of the NWQI, and 43% (19 out of 44 responses) indicated that the NWQI has inspired new collaborations that have—or will be—expanded beyond NWQI watersheds. These results are similar to previous years of reporting and indicate a positive trend towards improved coordination and collaboration between the agencies over a 3-year period. To date, states have reported that at least 11 impaired waters in NWQI watersheds are no longer impaired or threatened.

II How the NWQI Program Operates

NWQI projects target small watersheds (12-digit hydrologic unit code [HUC] areas, averaging 10,000–40,000 acres) in all 50 states and Puerto Rico where waterbody uses are listed as impaired or threatened, or where drinking water sources would benefit from increased protections or remediation. The impaired or threatened waters—which states list biennially in their CWA [Integrated Reports on Water Quality](#)—are often affected by elevated levels of nitrogen, phosphorus, sediment, or bacteria. These pollutants can affect aquatic life and recreational uses of the water. A primary goal of NWQI is to reduce pollutant or impairment levels sufficiently to allow a water (e.g., stream/river segments, lakes) to meet state water quality standards and be removed from states' lists of impaired and threatened waters or critical watersheds. NWQI is also used to reduce pollutant loads in source water or wellhead protection areas to protect drinking water sources.

How's the NWQI Program Working?

[Water quality is improving in some NWQI watersheds](#). SWQA partners report that 27% of NWQI monitoring watersheds (16/59) show an improvement in water quality in at least one of the NWQI-monitored pollutants (FY 2016 data).

Further, 81% of these improvements can be attributed to or associated with agricultural conservation practices implemented by farmers and ranchers.

General Program Approach

NRCS and SWQA and/or source water protection personnel review relevant assessment and other data and discuss whether or not: (1) sufficient information exists to warrant a targeted NWQI project and (2) the type of conservation practices supported under NWQI would address the problems identified. These conversations may happen at NRCS state technical committee meetings or via ad hoc state meetings.

After NRCS and SWQA/source water protection agency staff identify possible candidate watersheds for a potential NWQI project, NRCS may engage other partners, including producer groups, local conservation officials, extension service personnel, drinking water utilities, and other key stakeholders. The exact mix of partners and stakeholders will be unique to each project location.

Overview of Project Phases and Annual Cycle

As noted above, NWQI projects usually begin with a discussion among NRCS and SWQA and/or source water protection program staff on how to improve or protect water quality in the candidate watersheds. The steps can vary somewhat; however, NWQI watersheds are considered and selected through the general steps described below (and summarized in Figure 2).

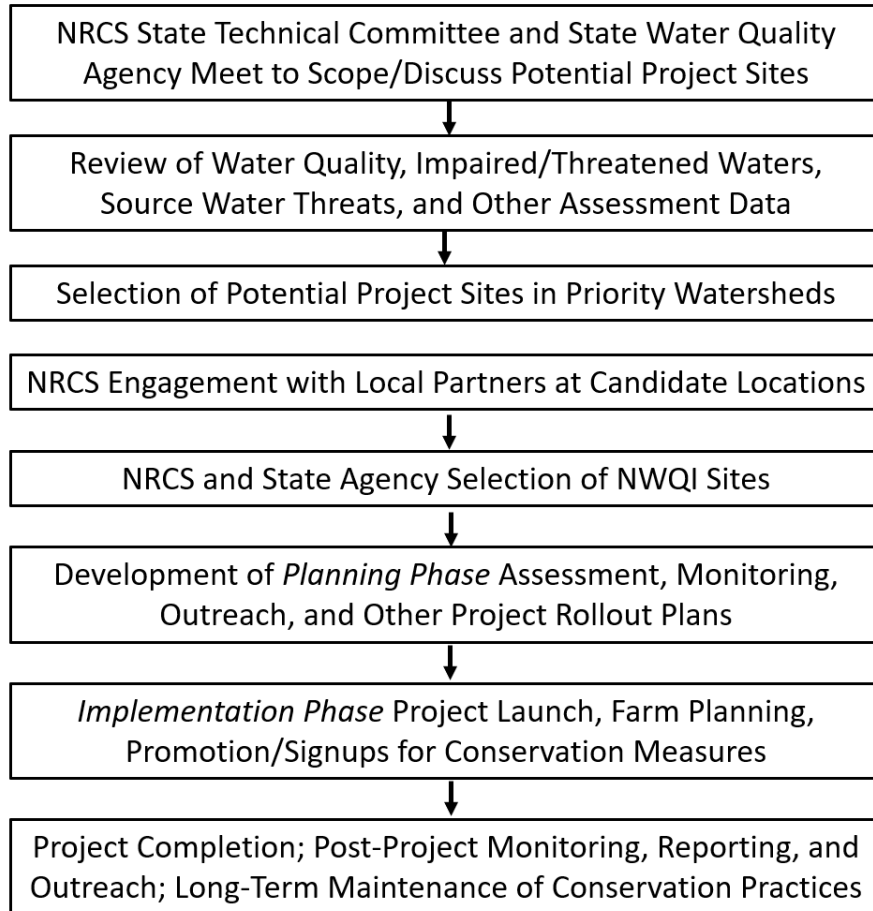


Figure 2. Generalized Approach for NWQI Scoping, Location Selection, Implementation, and Closeout

Annual Watershed Selection Bulletin/Guidance

Although NWQI discussions and watershed selection can happen throughout the year, the process is officially launched each year when NRC publishes a bulletin to provide state conservationists, state technical committees (STCs), and directors of the Caribbean and Pacific Island Areas with requirements for NWQI participation, information about NWQI funding opportunities, guidance and criteria for selecting new NWQI watersheds and source water protection areas, and the date by which watershed selection must be finalized.

Initial Watershed Project Scoping

- State NRCS staff, state technical committee members and SWQA and/or source water protection program staff discuss potential locations for an NWQI partnership.
- This can involve conducting a review of data related to water quality, agricultural activities, existing assessment documents (e.g., total maximum daily load [TMDL] or watershed-based plan), stakeholder engagement, and other factors to gauge the potential for an NWQI project. (See box for the [type of data that might be reviewed](#) during these discussions.)
- Candidate watersheds are reviewed with other potential partners and stakeholders, as appropriate.

Project Watershed Selection and Initiation

- [State NRCS states technical committees](#) identify and document candidate watersheds that have water quality issues, a watershed or source water assessment, technical capacity, partner network, and producer interest.
- The NRCS NWQI *Planning Phase* provides an opportunity for watersheds to develop or enhance a watershed assessment (or source water protection plan), conduct on-farm planning and outreach, and increase support for local staff in priority watersheds that lack assessments which meet NRCS guidance.
- Watershed(s) selection is confirmed with the SWQA or source water protection agency, and state NRCS staff submit candidate watersheds to NRCS Headquarters for approval and identification of available technical assistance resources.
- NRCS Headquarters issues the final suite of NWQI watersheds for that year.
- SWQAs and [project partners](#) may identify and leverage other funding, such as CWA Section 319 (i.e., NPS) funding.
- SWQAs identify one or more NWQI monitoring watersheds and develop an approach for [assessing project impacts on water quality in these](#) watershed(s); they coordinate with NRCS on data to assist in this assessment.
- NRCS staff begin working with local conservation officials, producer groups, and other regional/local partners to conduct targeted [engagement and outreach](#).

NWQI Scoping Data Examples

- State integrated reports on water quality impairments/threats.
- Reports and assessments (drinking water source assessments, watershed plans, TMDLs, etc.).
- Monitoring data from health departments, water utilities, volunteer groups, etc.
- Land use and land cover maps.
- Other remote sensing data (bare areas, eroded channels, stream buffers, etc.).
- Detailed data on the type of agricultural activities in the area.
- Physical and human infrastructure (topography, soils, geology, hydrology, homes, barns, waste facilities, drainage tiles, ditches, etc.).
- Existing conservation practices (stream buffers, cover crops, etc.).
- Type of farm-based conservation practices and systems that may be appropriate.

Implementation and Operation

- Technical staff from NRCS, often in collaboration with state agencies or other local partners, use assessment and other data to identify critical areas where conservation practices would yield the greatest benefits. This data is often developed during the *Planning Phase*, or it may have already been available via state, local, and/or watershed partners.

- NRCS staff and other partners, as appropriate, [actively promote involvement](#) by encouraging producers and land managers to engage with technical staff to determine farm conservation practice needs.
- SWQAs may use CWA Section 319 funding to support a variety of activities in NWQI watersheds, including monitoring, conservation practice implementation, outreach, implementation tracking, technical assistance, local project coordination, and watershed planning.
- During the [Implementation Phase](#), NRCS provides technical and financial assistance for producers to implement conservation practices that address resource concerns identified in the watershed assessment.
- Conservation practices are implemented in critical areas throughout the project watershed.
- In a subset of watersheds, SWQAs or other project partners implement [monitoring strategies](#) to gauge project results.

III Role of Federal, State, and Local Partners

NWQI projects typically involve a [consortium of partners](#) that leverage a wide range of federal, state, and local resources. Key financial resources are provided through NRCS (EQIP) and EPA (CWA Section 319); these funds are matched with state, local, and other resources. This section discusses the typical roles of NWQI partners, which will vary somewhat based on the project type, location, resources available, and other factors. The roles of NRCS, EPA, and SWQAs/source water protection agencies are summarized in Table 1.

Table 1. Federal and State Partner Roles in NWQI Projects

NRCS	EPA	SWQA/Source Water Protection Agency
<ul style="list-style-type: none"> • Offer targeted water quality conservation practice implementation and technical assistance through EQIP. • Select NWQI watersheds. • Assess and plan through NWQI planning phase. • Report on NRCS metrics annually. 	<ul style="list-style-type: none"> • Promote coordination between NRCS and SWQAs. • Provide guidance on NWQI in-stream monitoring efforts. • Support state use of CWA Section 319 funds. • Offer technical support on monitoring and watershed planning. • Report on state metrics annually. 	<ul style="list-style-type: none"> • Conduct focused water quality monitoring in at least one NWQI watershed in the state (~60 watersheds nationwide). • Coordinate with NRCS on watershed selection process. • Direct use of CWA Section 319 or other funds to support variety of activities. • Report monitoring progress to EPA annually. • Source water protection agency: consult on watersheds, engage partners.

Federal Partner Roles

NRCS staff at the state level [lead NWQI project planning and implementation](#). NRCS state-level staff work with SWQA/source water protection agency personnel to review water quality data, identify candidate priority watersheds, gauge interest in NWQI project participation, select project sites, coordinate financial and technical resources, and actively promote conservation practice

implementation. During the *Planning Phase*, NRCS may provide dedicated funding to support staff time or partner agreements to develop a watershed assessment at the subwatershed level. This assessment describes resource concerns, identifies treatment goals and critical areas for practices, and establishes metrics to track progress.

During the *Implementation Phase*, NRCS provides one-on-one technical assistance to help landowners develop a conservation plan—including specific, targeted conservation practices—to address resource concerns on their property. NRCS then provides financial assistance to producers to accelerate voluntary adoption of conservation practices that target the water quality-related resource concerns identified in the watershed assessment and that address on-farm resource concerns. NRCS uses a ranking process to identify the land parcels and expected conservation practice implementation that will have the greatest benefit to water quality.

EPA Headquarters and regional offices support the partnerships between NRCS and SWQAs through use of CWA Section 319 funds for watershed assessment, planning, and monitoring. EPA helps to facilitate communications with state agencies as the NWQI project evolves, provides overall guidance on NWQI monitoring, and compiles state-reported NWQI water quality monitoring results. EPA staff can also help to facilitate partnerships between NRCS, state source water and/or drinking water programs, and drinking water utilities to identify priority source water protection areas.

Both NRCS and EPA—in accordance with their funding levels and requirements—coordinate with other stakeholders to help build project awareness; educate others about potential benefits; and directly support project documentation, tracking, and reporting (Figure 3).



Figure 3. Outreach and Education are Key Components of the NWQI

State Water Quality and Source Water Protection Agency Roles

SWQAs provide direct project support and coordinate planning, implementation, and other activities among the federal and local partners. [SWQAs coordinate with NRCS](#) on watershed selection and conduct in-stream water quality monitoring in at least one NWQI watershed in the state. They use CWA Section 319 or other funds to support activities in targeted watersheds, such as supporting a watershed coordinator or implementing additional conservation practices. [State and local source water protection](#) program officials can also be key NWQI project partners. They can share data and information on delineated source water protection areas, priority contaminants, sources of contamination, and water quality monitoring results where available. These agencies also help to evaluate water quality data (see Table 1), assist local partners with project promotion, and aid with conservation practice implementation as appropriate. State agencies can also help to engage and involve key local partners, such as county conservation districts, extension service personnel, and drinking water utilities.

Local Partner Roles

Local conservation districts, extension service offices, drinking water utilities, local governments, and other partners [can assist an NWQI project](#) in many ways. They can play key roles in conceiving, planning, and implementing projects—helping with activities ranging from initial scoping to post-project water quality monitoring. Building awareness and educating local partners about the project and enlisting their support in promoting conservation practice implementation is essential to success.

Partner Focus: Drinking Water Protection Programs

[State and local source water protection](#) program officials can be key NWQI project partners. They can share data and information on delineated source water protection areas, priority contaminants, sources of contamination, and water quality monitoring results. In some cases, they can help to provide assessment information and leverage potential internal/external funding sources. The [2018 Farm Bill](#) emphasizes protection of drinking water sources through special provisions that encourage practices that relate to water quality and water quantity that: (1) protect source water for drinking water and (2) benefit agricultural producers. [Drinking water professionals](#) can assist other NWQI partners with project implementation and help to identify and target priority areas for conservation practices. They can also help to support outreach and education efforts.

Private Sector Partners

Private sector partners may also assist with and/or contribute resources to NWQI projects that are consistent with their mission. Partners can range from local conservation and watershed organizations to volunteer monitoring programs, community/civic groups, and other entities who can:

- Assist with project awareness, outreach, education, and promotion
- Supplement public agency water quality or other monitoring
- Conduct visual surveys or screening of potential project focus sites
- Promote the adoption of conservation practices in targeted locations
- Provide in-kind labor or other support for conservation practice implementation
- Aid the project with other technical, in-kind, or financial support

Monitoring in NWQI Watersheds

As noted previously, [water quality is improving in some NWQI watersheds](#). SWQA partners report that 27% of NWQI monitoring watersheds (16/59) show an improvement in water quality in at least one of the NWQI-monitored pollutants (FY 2016 data). Further, 81% of these improvements can be attributed to or associated with agricultural conservation practices implemented by farmers and ranchers.

SWQAs play a critical role in the delivery of NWQI: collaborating with NRCS on watershed selection, supporting critical project activities in NWQI watersheds, and tracking water quality trends in NWQI watersheds through [in-stream monitoring activities](#) (Figure 4). State agencies assess in-stream water quality progress by monitoring at least one NWQI watershed per state, using EPA CWA Section 319 or other funds. The [objective of NWQI monitoring](#) is to assess whether water quality and/or biological condition related to nutrients, sediments, or livestock-related pathogens have changed since the start of the NWQI in the watershed, and, if so, whether this change can be associated with voluntary conservation implemented on agricultural lands.

Monitoring approach – States have discretion in the overall monitoring design, including deciding how, when, where, how frequently, and for which parameters (related to the NWQI pollutants) the monitoring will be conducted. These decisions will vary based on monitoring schedules, existing baseline data, state water quality standards, conservation practice types, and other factors. Monitoring timelines can vary greatly, depending on the time needed to establish baseline conditions and assess changes after implementation of conservation practices (e.g., 5–7 years or more). NWQI monitoring should be linked to an existing watershed-based plan or TMDL where possible because they form a good technical basis for assessing NWQI implementation progress.



Figure 4. Water Quality Monitoring is Essential for Documenting NWQI Project Effectiveness

Monitoring scale – NWQI typically addresses water quality impacts at the HUC-12 level. However, depending on the type and density of conservation practices and other watershed factors, states may monitor portions of HUC-12 watersheds as appropriate to assess measurable changes in water quality at a smaller scale. Focusing the monitoring and bracketing areas with higher proportions of conservation treatment will be more likely to detect results in a shorter timeframe than watershed-scale monitoring.

Monitoring partnerships and data sharing – To have a reasonable chance of assessing water quality changes in a watershed associated with conservation practices, state agencies will need an understanding of the extent, type, timing, and general location of practices put in place. NRCS can provide partners and stakeholders with practice implementation data aggregated to the HUC-12 or county level.

More refined locational as well as other conservation contract data is protected through policy and law. SWQAs agencies and NRCS counterparts are strongly encouraged to collaborate on how/if subwatershed level data on conservation practices can be shared in monitoring watersheds, including through the development of formal or informal data-sharing agreements that address producer and other concerns. EPA's NPS Management Branch will request that SWQAs submit annual updates of summary-level information on monitoring assessment results (see Section V).

IV Planning and Implementing an NWQI Project

Clean water projects across the nation have shown repeatedly that local water quality can be improved through focused efforts that target appropriate conservation practices to high-priority sources of polluted runoff. Locally driven partnerships composed of watershed stakeholders, producers, and landowners are the key to success.

What Kind of Projects Are Successful?

The most promising candidate project sites have several characteristics that improve the chances for success, for example, locations where there is a [watershed coordinator or network](#), a watershed or source water assessment and/or protection plan, high producer interest in improving water quality, and potential partners for outreach, implementation, and monitoring. Successful projects are designed to address water quality impairments or threats through a high concentration of appropriate practices. NWQI projects target critical areas—specific locations within the watershed that generate relatively high pollutant loads due to soil erosion, manure or fertilizer runoff, drainage tile outlets, or other factors (Figure 5). NWQI projects target critical areas because:

- Major sources of pollution are often disproportionately distributed across watersheds. Actively eroding gullies, poorly sited or designed animal waste management areas, and other locations where the likelihood of sediment, nutrient, and bacteria runoff is high can contribute significantly more to water quality degradation than do areas with low pollutant runoff potential.
- Identifying and addressing pollutant sources in these critical areas is essential to success. A relatively small number of critical areas in a watershed or subwatershed may be responsible for the vast majority of pollutant runoff. Targeting conservation practices in critical areas improves efficiency in achieving water quality goals as compared to more generalized approaches to implementing conservation practices.

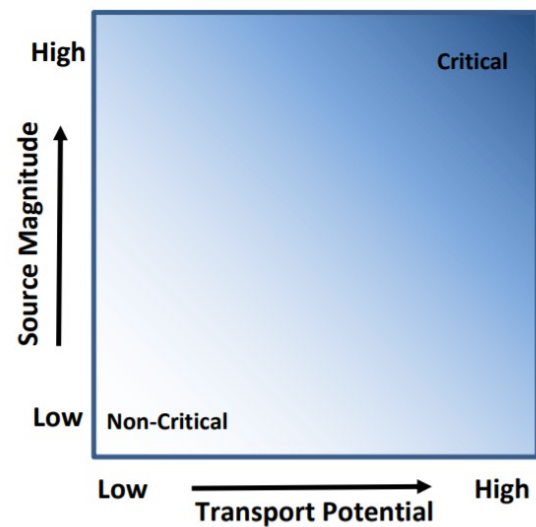


Figure 5. Conceptual Relationship between Pollutant Source Magnitude and Transport Potential (Source: EPA 2018)

[Recommendations for identifying and addressing critical areas](#) will vary, depending on watershed characteristics, water quality goals, and project budgets. Regardless of the scale and complexity of the project, in all cases critical areas should be identified through a systematic process. Reviewing available, relevant data as discussed previously usually provides a good starting point for screening potential critical areas. Evaluation parameters for critical areas may include:

- Type of pollutant(s) addressed (e.g., nitrogen, phosphorus, sediment, bacteria).
- The relative magnitude of the pollutant source: high, medium, or low.
- Pathways for pollutants, from their source to an impacted waterbody.
- Distance to the waterbody targeted for protection/restoration.
- Location, type, and severity of the water quality impairment or threat.
- Present conservation status (i.e., existing management/conservation practices).
- On-site evaluation for verification of inferences from data reviews.
- Landscape and physical characteristics.

Implementation levels for conservation practices should be relatively high to achieve water quality goals. In addition, conservation practices are best applied in a systems approach that includes multiple practices and an adaptive management function for periodically evaluating and adjusting the approach. NRCS uses a nine-step conservation planning process with landowners to determine specific water quality resource concerns and present alternatives (i.e., suites of conservation practices) that can meet the landowner’s objectives. NRCS considers a combination of practices to avoid, control, and trap (ACT) excess nutrients and sediments as the best approach to fully treat the water quality concern.

A [systems approach to conservation management](#) can be thought of as a group of conservation practices that support one another. When implemented, such an approach has a synergistic effect: the benefits are greater than if the practices were implemented alone. Many individual conservation practices need the support of other practices to be successful. For example, a grass filter strip will soon be rendered ineffective if sheet and rill erosion is not controlled above the filter area (i.e., the filter strip will fill with sediment and lose its ability to absorb nutrients). Table 2 lists some typical combinations of conservation practices for two different types of nutrient management systems—one for situations without manure in the mix and one where animal waste is present.

Table 2. Combinations of Practices for Situations With/Without Manure (Source: USDA NRCS 2017)

Nutrient Management Conservation System	Waste Utilization Conservation System
Conservation Cropping System (328)	Conservation Cropping System (328)
Residue and Tillage Management (329, 345, 346)	Residue and Tillage Management (329, 345, 346)
Cover Crops (340)	Cover Crops (340)
Buffer Strips (327, 386, 390, 393)	Buffer Strips (327, 386, 390, 393)
Nutrient Management (590)	Structure for Water Control (587)
	Drainage Water Management (554)
	Nutrient Management (590)
	Waste Utilization (633)
	Waste Transfer (634)

Note: Numbers in parentheses are USDA-NRCS conservation practice standard numbers.

Working with Partners to Develop a Project

The impetus for identifying, organizing, and implementing a project may originate at the state or local level. NRCS conducts resource assessments and identifies treatment needs within the state. NRCS staff are responsible for coordinating and promoting NWQI activities to help address identified water quality concerns with the involvement and support of state agency personnel and EPA. Partners in each state have the flexibility to conceive and pursue projects in a manner that best fits their abilities and needs, subject to the project selection criteria below and the administrative, financial, and other requirements of relevant funding programs.

As noted previously, [NWQI implementation projects must include water quality resource concerns, a watershed or source water assessment and/or protection plan, technical capacity and producer interest, and methods for measuring progress](#). Potential locations within [areawide conservation plans](#), [source water protection plans](#), or comprehensive [water quality assessments](#) and/or plans are good candidate project sites. NRCS state offices must document SWQA or state drinking water partner support for proposed projects, as well as the following:

Water quality resource concerns – Include documentation that a stream or waterbody is impaired and listed on the state’s CWA Section 303(d) list, is subject to an established TMDL, is threatened, or is determined to be a significant contributing source of downstream impairment. If the project relates to protecting a drinking water source, state technical committees should propose projects that address agriculture-related impacts to water used as a public drinking water supply (surface or ground water); these must be delineated by state drinking water programs or water utilities (Figure 6).



Figure 6. Plans for Protecting Sources of Drinking Water can be Integrated into NWQI Projects

Watershed or source water plans and goals – There must be an actionable watershed or source water protection plan or assessment that is sufficient to guide the siting and implementation of conservation practices at the HUC-12 level—or within the source water protection area—to achieve the greatest water quality benefits. Requirements include identifying and mapping critical source areas for designated pollutants of concern and establishing goals for water quality improvement, specific metrics to gauge progress towards the goals, and outreach strategies for [implementation on vulnerable acres](#). In general, the NRCS watershed assessment guidance is compatible with the CWA Section 319 nine-element planning process; however, it is focused on predominantly agricultural HUC-12 watersheds and targeted critical source areas for conservation practice implementation. There are opportunities—and often efficiencies—for coordination at the state and local level on these watershed plans, which will help to meet the needs of all NWQI partners.

Technical capacity and producer interest – State NRCS offices and SWQAs should consider and demonstrate that: (1) there is adequate technical capacity, from NRCS or partners, to conduct sufficient outreach and technical assistance to meet project goals; (2) there is sufficient density of producers and producer interest to meet project goals; and (3) there is an opportunity for partners to provide in-stream water quality monitoring or measurements that can help track project-related progress (Figure 7).



Figure 7. Producer Interest, Technical Capacity, and Opportunities for Partnerships are Vital to Project Success

Measuring progress – State NRCS offices and SWQAs should prepare for assessing progress toward meeting their goals by selecting watersheds or source water protection areas where baseline water quality data exists, where possible, and by tracking implementation on identified critical areas. Projects should report on the specific metrics developed with partner input to demonstrate progress in meeting water quality goals. At least one of the interim metrics must be directly related to the water quality concern, such as pollutant load reduction percentages, pounds of phosphorus prevented from leaving a field, changes in biotic index scores, quantification of nitrogen, and changes in phosphorus index results weighted across the watershed. In addition, as described above, SWQAs will conduct in-stream monitoring in one or more NWQI watersheds.

What Kinds of Conservation Practices are Included?

NWQI projects seek to reduce [nonpoint sources \(runoff\)](#) of agriculture-related nutrients, sediment, and pathogens. [Typical conservation practices](#) supported by NWQI may include reduced tillage, manure/nutrient management, filter strips, and conservation buffers. Other conservation practices and information on how they can be linked to address specific planning objectives can be found on the [NRCS website](#). When applied as a system, these suites of practices significantly reduce NPS pollution from agricultural lands and private forestland and provide opportunities for many other conservation benefits. Implementing NWQI practices does not, however, exclude consideration for other practices or systems designed to protect natural resources related to agriculture activities.

Promoting Project Engagement and Participation

[Past assessments](#) have shown that even where funding and technical know-how is available, [coordinated stakeholder-driven action](#) focused on high-risk critical areas is necessary for success. Overarching principles associated with the NWQI approach that increase the likelihood of success include:

- An increased commitment to a systems approach of agricultural conservation practices.
- Improved and expanded technical assistance to foster a systems approach.
- Greater understanding of the economics and sustainability of conservation systems.
- Commitment to adaptive management and the tools needed to support it.
- Technically sound approach employing features demonstrated to drive water quality results in agricultural watersheds, such as:
 - Focused efforts in small watersheds (HUC-12, ~ 40 square miles).
 - Critical areas defined and treated with suites of practices.
 - Close coordination between SWQAs and NRCS.
 - NRCS sharing of appropriate practice data so the SWQA can assess progress via [in-stream monitoring](#).
 - Watershed plan development and implementation through local stakeholders, with adequate data and problem description and characterization.
 - Quantitative water quality and monitoring goals.
 - High level of implementation and landowner participation; good outreach capacity.
 - Stable funding, effective information, and technical transfer capability.

Implementing and Adjusting the Approach

Selecting, planning, and implementing a project involves a step-by-step process driven by stakeholder involvement and partner support. Examples of NWQI [watershed assessments](#) and [implementation plans](#) are available for review and help to illuminate the kinds of activities undertaken by projects in different parts of the nation. Staff from NRCS and SWQAs can provide key support and guidance for conducting the assessment, planning, project development, and implementation work needed to launch and complete a successful effort. It should be noted that NWQI projects usually take several years for planning and implementation, and the approach often needs to be adapted as stakeholders and partners engage producers and new information arises (Figure 8).

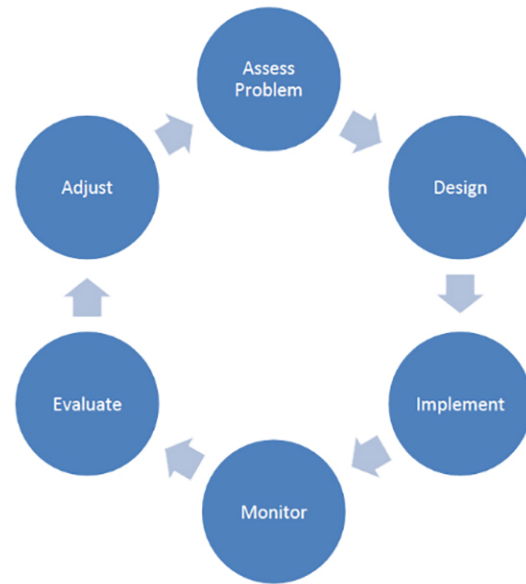


Figure 8. Adaptive Management Process

V Reporting and Project Documentation

In April 2015, NRCS and EPA jointly established a set of long-term outcome-based performance measures, short-term interim measures, and metrics with which to gauge success of the NWQI. Since the establishment of these metrics and measures, NRCS and EPA jointly report the outcomes of NWQI, including information on practices put in place, financial data, water quality outcomes and improvements, and monitoring efforts. The NRCS and EPA performance measures include:

- Total annual CWA Section 319 funds and matching support in NWQI watersheds, including a summary of supported activities (EPA).
- Watershed monitoring results including any positive water quality changes associated with agricultural conservation practices (EPA, long and short-term).
- Number of impaired segments/waters in NWQI watersheds that are proposed for delisting for one or more priority pollutants (EPA).
- Acceleration of conservation practice system implementation in NWQI watersheds compared to general programs (NRCS).
- Increase in producer participation in NWQI watersheds (NRCS).
- Modeled edge-of-field nutrient and sediment load reduction estimates (NRCS).
- Number of edge-of-field monitoring sites (NRCS).

Historically, to obtain the information for this report, EPA developed a set of reporting questions that SWQAs answered as part of their CWA Section 319 grant reporting requirements. The report summarized progress on EPA and NRCS metrics and measures. In an effort to reduce the reporting burden on the states, EPA implemented a streamlined method in FY 2020 that compiles already-reported state data in EPA data systems to populate most of the NWQI report.

The new reporting method requires that states respond to a short questionnaire concerning only NWQI monitoring activity and water quality results. EPA will gather the following information from EPA databases: (1) CWA Section 319 financial contributions to NWQI watersheds, pulled from the Section 319 Grants Reporting and Tracking System (GRTS), and (2) watersheds with improvements that qualify for removal from impaired watershed reports, tracked through EPA's Assessment and TMDL Tracking and Implementation System (ATTAINS) database. The monitoring questionnaire will also give states the opportunity to share feedback and provide comments about the program with EPA and NRCS. In addition, after the first year of responses are recorded, states will only need to respond to the annual questionnaire if there have been changes to their responses.

VI Technical and Other Resources

Resources from the U.S. Department of Agriculture

USDA Natural Resources Conservation Service. Ongoing. National Water Quality Initiative. <https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/water/?cid=stelprdb1047761>.

Primary website hosting information regarding the NWQI, with links to other relevant NRCS programs, policies, priority watersheds, pilot projects, success stories, etc.

USDA Natural Resources Conservation Service. 2019. National Water Quality Initiative. Our Focus is Clear: A Guide to Effective Partnerships. https://www.purdue.edu/fnr/prokopy/wp-content/uploads/2020/01/NWQI_PG_Partnership_FINAL.pdf.

Guide for building and leveraging partnerships for NWQI project implementation. Focuses on the NWQI as a partnership between NRCS and other federal, state, and local partners as a means to improve water quality in targeted agricultural watersheds. Describes how targeted on-farm investments and watershed assessment resources can deliver the greatest benefits for local, regional, and national water quality.

USDA, Purdue University, and Conservation Technology Innovation Center (CTIC) Practitioner's Guide to Successful Watershed Management. https://www.nrcs.usda.gov/wps/PA_NRCSCconsumption/download?cid=nrcseprd1606615&ext=pdf.

This practitioner's guide was developed for groups and individuals working to improve the health of their watershed. These groups and individuals include private citizens; nonprofit groups; private industry; federal, state, or local agency staff; and many more. The key components laid out in this guide include partnership development, relationship building, constructive leadership, community engagement, and effective communication. These building blocks for successful watershed management provide additional guidance on incorporating local solutions, building community support, and establishing effective partnerships for successful watershed improvement projects.

USDA Natural Resources Conservation Service. Ongoing. Environmental Quality Incentives Program. <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip/>.

NRCS information on the EQIP program, including benefits, Farm Bill updates, incentive contracts, popular practices, other initiatives, summary data on the program, etc.

USDA Natural Resources Conservation Service. Undated. Conservation Practices. https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/technical/cp/ncps/?cid=nrcs143_026849.

Access page for the NRCS Technical Guides on conservation practices, which are the primary scientific references for NRCS, containing technical information about the conservation of soil, water, air, and related plant and animal resources. Also referred to as Field Office Technical Guides (FOTGs).

USDA Natural Resources Conservation Service. Ongoing. Conservation Planning. https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/entsc/?cid=nrcs144p2_027212.

Information and links to information on conservation planning to support sound natural resource management decisions on private, tribal, and other nonfederal lands. Topics include better land management technologies, water quality/quantity protection and improvement, maintaining habitat for wildlife and fish, enhancing recreational opportunities, agricultural diversification, and sustainable practices. Assistance may be in the form of resource assessments, conservation practice design, resource monitoring, or follow-up on installed practices.

USDA Natural Resources Conservation Service. 2018. National Water Quality Initiative 2018 Progress Report. https://www.nrcs.usda.gov/Internet/FSE_MEDIA/nrcseprd1441452.pdf.

Summary report on USDA's premiere water quality initiative—the NWQI—which provides a way to accelerate voluntary, on-farm conservation investments and focused water quality monitoring and assessment resources where they can deliver the greatest benefits for clean water.

USDA Natural Resources Conservation Service. Undated. National Water Quality Initiative Successes. <https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/initiatives/?cid=nrcseprd723006>.

Information on how the NWQI is focusing conservation efforts to improve water quality in watersheds across the country, including details on projects in Iowa (Walk Lake Inlet, part of Black Hawk Lake), Louisiana (Big Creek and East Fork Big Creek), Ohio (East Branch South Fork Sugar Creek), and Vermont (Rock River).

USDA NRCS and EPA. 2013. NRCS–EPA National Water Quality Initiative: Water Quality Monitoring and Data Sharing Agreements. <http://www.conservationwebinars.net/webinars/nrcs-epa-water-quality-initiative/>.

Link to an on-demand webinar providing an overview of the NWQI. Includes discussion of roles of agencies, including those of NRCS Headquarters, NRCS state offices, EPA, state agencies (i.e., leading CWA Section 319, water quality, or monitoring programs), and other partners. Two monitoring components are introduced: NWQI in-stream monitoring and NRCS edge-of-field monitoring. Data sharing and confidentiality requirements are explained, including Farm Bill Section 1619 and confidentiality considerations.

USDA Natural Resources Conservation Service. Ongoing. State Technical Committees. <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/technical/stc/>.

Information on NRCS State Technical Committees, which serve in an advisory capacity to NRCS and other agencies of USDA on the implementation of the natural resources conservation provisions of Farm Bill legislation. Committees, which include members from a wide variety of natural resource and agricultural interests, are chaired by the NRCS State Conservationist in each

state. The committees meet regularly to provide information, analysis, and recommendations to appropriate USDA officials, who strongly consider their advice.

USDA. 2014. Areawide Conservation Planning. Title 180 – National Planning Procedures Handbook; Part 600, Subpart F <https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=36487.wba>.

[NOTE: This is under review and will be updated in 2021.] Areawide Conservation Plans are voluntary, comprehensive plans for watersheds or other broad-based geographical areas. Plan development considers all natural resources in the planning area as well as relevant social and economic considerations. Plan development follows an established nine-step planning process to assist local people, through a voluntary locally led effort, in assessing their natural resource conditions and needs, setting goals, identifying programs and other resources to achieve those goals, developing proposals and recommendations, implementing solutions, and measuring their success.

USDA Natural Resources Conservation Service. 2012. Effective Education to Promote Conservation Practice Adoption. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1047817.pdf.

This summary of “lessons learned” in 13 agricultural watershed projects evaluates the effects of cropland and pastureland conservation practices on spatial and temporal trends in water quality at the watershed scale—particularly how social and economic factors influence implementation and maintenance of conservation practices. Information is provided about outreach techniques that were most effective for communicating information to different audiences, achieving adoption of practices, and improving management and/or maintenance of practices in different geographic settings.

USDA Natural Resources Conservation Service. Ongoing. Conservation Effects Assessment Project (CEAP). <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/nra/ceap/>.

Primary website hosting information on USDA’s CEAP program, which is a multi-agency effort to quantify the environmental effects of conservation practices and programs at the national, regional, and watershed scales. These assessments, which are carried out on cropland, grazing lands, wetlands, and wildlife, help develop the science base for managing the agricultural landscape for environmental quality.

Resources from the U.S. Environmental Protection Agency

EPA. Ongoing. Polluted Runoff: Nonpoint Source Pollution. <https://www.epa.gov/nps>.

Primary EPA Office of Water website containing information about NPS pollution and the pollution-control practices used to target agricultural lands, forestry areas, and other land use categories. Includes links to grant information for funding under CWA Section 319.

EPA. Ongoing. Nonpoint Source Outreach Toolbox: Getting In Step Outreach Series. <https://cfpub.epa.gov/npstbx/getinstep.html>.

Information and links to a variety of resources on the steps needed to develop and implement an effective watershed outreach and education campaign. Includes a set of practical worksheets, a companion video that reinforces the steps outlined in the guide, a webinar, and examples of four very different watershed outreach campaigns from different parts of the country. It also includes a link to a comprehensive stakeholder engagement/involvement guide.

EPA. Ongoing. Source Water Protection. <https://www.epa.gov/sourcewaterprotection>.

Primary EPA Office of Water website containing information about source water protection under the Safe Drinking Water Act (SDWA). Links are provided for detailed information on assessing drinking water sources, protective measures, case studies, funding opportunities, and more.

EPA. 2018. Critical Source Area Identification and BMP Selection: Supplement to Watershed Planning Handbook. EPA 841-K-18-001. https://www.epa.gov/sites/production/files/2018-08/documents/critical_source_area_identification_and_bmp_selection_final_5-11-18cover.pdf.

This document was developed to help watershed project teams define critical pollutant source areas (i.e., those locations where appropriate conservation practices will have the most impact on improving water quality). Effective identification of critical areas helps to define smaller areas within a watershed that contribute a disproportionate amount of pollutants of concern. The approach presented relies on a data-driven assessment of the factors that are needed to identify critical locations where there is a high probability of pollutant delivery to receiving waters. The assessment also informs the selection of the necessary management tools that support or promote implementing conservation practices in those critical locations.

EPA. Ongoing. Drinking Water Mapping Application to Protect Source Waters (DWMAPS). <https://www.epa.gov/sourcewaterprotection/drinking-water-mapping-application-protect-source-waters-dwmaps>.

DWMAPS is an online mapping tool that helps watershed protection projects and source water collaboratives locate drinking water providers, potential sources of contamination, polluted waterways, and information on protection projects and Source Water Collaborative initiatives in their area. State and utility drinking water professionals use DWMAPS in concert with other state and local mapping tools to update their source water assessments and protection plans.

EPA. 2013. Guidance on Monitoring in NWQI Watersheds: EPA Expectations and Program Support in FY14. Memo from the chief of the NPS Control Branch, US EPA Office of Water, to regional NPS coordinators and state NPS coordinators. <https://www.epa.gov/sites/production/files/2015-09/documents/epa-fy14-guidance-memo-nwqi-monitoring.pdf>.

This guidance memorandum summarizes information and expectations for monitoring activity conducted by states in support of NWQI. The objective of NWQI in-stream monitoring is to assess whether water quality and/or biological condition related to nutrients, sediments, or livestock-related pathogens has changed in the watershed, and, if so, whether this can be associated with agricultural conservation practices. Monitoring approaches, quality assurance/quality control, data sharing, and reporting are discussed in detail.

EPA. 2013. EPA-State Approach to Instream Monitoring for NWQI – Webinar 1. <https://www.epa.gov/sites/production/files/2015-09/documents/nwqi-monitoring-approach-2013-state-april30.pdf>.

Link to an April 30, 2013, webinar that discusses primary goals and objectives for NWQI monitoring, a summary of the challenges, monitoring effects for agricultural practices, a proposed approach, CWA Section 319 grant guidelines, monitoring schedules, and adaptive management considerations. A transcript of the webinar is posted at <https://www.epa.gov/sites/production/files/2015-09/documents/nwqi-043013-transcript.pdf>.

EPA. Ongoing. National Nonpoint Source Monitoring Program. <https://www.epa.gov/nps/national-nonpoint-source-monitoring-program>.

Information and resources related to the National NPS Monitoring Program. The purposes of EPA's Section 319 National NPS Monitoring Program are to provide credible documentation of the feasibility of controlling nonpoint sources and to improve the technical understanding of NPS pollution and the effectiveness of NPS control technology and approaches.

EPA. 2013. Water Quality Monitoring for National Water Quality Initiative Watershed Projects: Technical Background Information to Support Project Design Efforts. Webinar slides, posted at <https://www.epa.gov/sites/production/files/2015-09/documents/nwqi-monitoring-webinar-7-18-2013.pdf>.

Link to a webinar on water quality monitoring for NWQI projects that summarizes the data needed to understand the watershed/system under study, discusses designing the monitoring program to meet project objectives, highlights information on monitoring pollutant sources and activities, and discusses details on data management, quality assurance/quality control, logistics, and recordkeeping. The webinar transcript is posted at <https://www.epa.gov/sites/production/files/2015-09/documents/nwqi-071813-transcript.pdf>.

Resources from the Other Organizations

Association of State Drinking Water Administrators. 2019. Source Water Contacts. <https://www.asdwa.org/sourcewatercontacts/>.

Link to a website for the Association of State Drinking Water Administrators (ASDWA), which offers links to state drinking water program contacts and includes other resources related to protecting drinking water sources and providing safe water supplies. ASDWA is the professional association serving state drinking water programs. Since 1984, ASDWA has provided national representation for state drinking water professionals before elected and agency officials, and it has supported states in their efforts to protect public health through the provision of safe drinking water and meeting regulatory requirements.

Source Water Collaborative. 2020. Collaboration Toolkit: Protecting Drinking Water Sources Through Agricultural Conservation Practices. <https://sourcewatercollaborative.org/swp-usda/>.

This toolkit, developed as a result of extensive collaboration between members of the Source Water Collaborative and the NRCS, offers a step-by-step approach for protecting drinking water sources from nonpoint sources of pollution. The resources are useful for anyone working in source water protection—from those who already know their state conservationist, but may be looking for new ideas, to those aiming to build a successful relationship. Each insightful tip is based on advice received from NRCS and from state and regional source water coordinators who recently fostered effective partnerships.

Waupaca County Land and Water Conservation Department, USDA NRCS, Golden Sands RC&D. 2017. Bear Lake - Little Wolf River Watershed Management Plan. https://dnr.wi.gov/topic/nonpoint/documents/9kep/Bear_Lake-Plan.pdf.

This watershed management plan provides examples of a watershed characterization, assessment, resource analysis, pollutant source assessment, watershed goals, conservation practice selection process, information/education program development, and funding analysis.

Whatcom Conservation District. 2017. USDA National NRCS National Water Quality Initiative (NWQI) Pilot Watershed Assessment: Tenmile Watershed. September 2017, Volume 3. Whatcom Conservation District, Lynden, WA. <https://www.whatcomcd.org/tenmile>.

Comprehensive assessment for the Tenmile watershed in Washington, characterizing and identifying the critical areas that have the greatest potential for nutrient (nitrogen and phosphorous), sediment, and/or pathogen impacts to water quality, while also identifying the outreach strategy and conservation management practices that can be implemented to reduce those impacts. Follow-up activities include implementing the outreach strategy, including conducting a comprehensive survey of land users in the watershed; modeling of the impact of specific management practices by land use identified in the survey; and connecting those land users to NRCS practices, programs, and planning as appropriate to achieve water quality goals.