



Water Protection in Rural Communities: Examples of Funding and Technical Assistance

Lesson: 15

**National Science
Education
Standards for
Grades 9-12**

Content Standard E: Science and Technology: Abilities of Technological Design

- *Identify appropriate problems for technological design.*
- *Design a solution or product.*
- *Implement a proposed design.*

Content Standard F: Science in Personal and Social Perspectives: Science and Technology in Local, National and Global Challenges

- *Progress in science and technology can be affected by social issues and challenges. Funding priorities for specific health problems serve as examples of ways that social issues influence science and technology.*
- *Humans have a major effect on other species. For example, the influence of humans on other organisms occurs through land use—which decreases space available to other species—and pollution—which changes the chemical composition of air, soil and water.*

**Student Learning
Objectives**

- 15.1 Describe sources of funding for projects to protect drinking water sources in their communities.
- 15.2 Identify sources of funding and assistance for completing Best Conservation Practices (BCPs) for source water protection.

**Teacher Info
Table Time**

Instruction time for this lesson: 50 minutes, with research for 15.2 completed as homework.

Resources,
Tools, Equipment
and Supplies

15.1 Describe sources of funding for projects to protect drinking water sources in their communities.

Resources

- *Water Quality*– slide SW.15.1.TM
- *Water Infrastructure*, U.S. EPA, <http://water.epa.gov/infrastructure/>
- *Clean Water Act State Revolving Fund*, http://water.epa.gov/grants_funding/cwsrf/cwsrf_index.cfm
- *Safe Drinking Water Act State Revolving Fund*, <http://www.epa.gov/ogwdw/dwsrf/pdfs/dwfact.pdf>

15.2 Identify sources of funding and assistance for completing BCPs for source water protection.

Resources

- SW.15.2.AS.A – Worksheet: *Technical Assistance and Funding for Drinking Water Protection*
- SW.15.ASSESS - Handout

Internet access to the following sites:

- USDA/NRCS Environmental Quality Incentives Program (EQIP) website: <http://www.nrcs.usda.gov/programs/eqip/>
- USDA/NRCS Agricultural Water Enhancement Program (AWEP) website: <http://www.nrcs.usda.gov/programs/awep/>
- EQIP Application Information by State website: http://www.nrcs.usda.gov/programs/eqip/EQIP_signup/index.html
- EPA Clean Water State Revolving Fund website: <http://www.epa.gov/owm/cwfinance/cwsrf/>
- *Conservation Reserve Program*, USDA Farm Service Agency: <http://www.fsa.usda.gov/FSA/webapp?area=home&subject=copr&topic=crp>
- *Conservation Reserve Enhancement Program*, USDA Farm Service Agency: <http://www.fsa.usda.gov/FSA/webapp?area=home&subject=copr&topic=cep>

Resources, Tools, Equipment and Supplies

15.2 Resources (*continued*)

For more on conservation planning:

- *Conservation Planning*, USDA Natural Resources Conservation Service, New Hampshire: <http://www.nh.nrcs.usda.gov/technical/ConservationPlanning/ConservationPlanning.html>
- USDA/NRCS State Technical Committees advise State Conservationists on conservation funding decisions: <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/technical/stc>

Key Terms

Agricultural Water Enhancement Program (AWEP)

Clean Water Act (CWA)

Clean Water State Revolving Fund (CWSRF)

Conservation Reserve Enhancement Program (CREP)

Conservation Reserve Program (CRP)

Environmental Quality Incentive Program (EQIP)

Productivity

Responsibility

Technical Service Provider (TSP)

Water infrastructure

SUMMARY OF CONTENT AND TEACHING STRATEGIES: (BACKGROUND FOR TEACHERS)”

Water Quality Project Funding Opportunities

- A. Clean Water Act (CWA)
 - 1. Federal Water Pollution Control Act
 - 2. Act of Congress designed to help restore and maintain our nation’s water
- B. Clean Water Act purpose
 - 1. Restore and maintain chemical, physical and biological integrity of the nation’s water by preventing and reducing pollution
 - 2. Provide assistance to publicly owned treatment works for the improvement of waste water treatment
 - 3. Maintain the integrity of wetlands
- C. Clean Water State Revolving Fund (CWSRF)
 - 1. Federal funds given to states to fund water quality projects, including land conservation and agricultural practices to protect water quality from non-point sources
 - 2. CWSRFs have funded more than \$74 billion
 - 3. Low interest rates, flexible terms
 - 4. Significant funding for nonpoint source pollution control and estuary protection
 - 5. Assistance to a variety of borrowers
 - 6. Partnerships with other funding sources
- D. USDA Conservation Programs (selected)
 - 1. Environmental Quality Incentives Program (EQIP)
 - 2. Agricultural Water Enhancement Program (AWEP)
 - 3. Conservation Reserve Program

Federal Funds for Implementing WaterRelated BCPs

A. Clean Water Act State Revolving Fund (CWSRD)

Many states have used their CWSRF programs to fund agricultural best management practices. States have provided funding for a wide variety of projects, including waste management systems, manure spreaders, conservation tillage equipment, irrigation equipment, filter strips and streambank stabilization. Minnesota, Ohio, Iowa and New York, as well as Delaware, Minnesota, and West Virginia, provide excellent examples of how states have used their CWSRF programs to address agricultural nonpoint source pollution. For example, Minnesota has provided funding for agricultural best management practices to reduce pollution. New York has invested in purchasing land and easements to protect New York City's source of drinking water in the Catskill watershed. The interest rates on loans under these programs are typically well below market rates and have flexible repayment terms that can be extended up to 20 years. Land trusts have also taken advantage of both the DWSRF and CWSRF for land acquisition.

B. USDA/NRCS Environmental Quality Incentives Program (EQIP)¹

The Environmental Quality Incentives Program (EQIP) is a voluntary program that provides financial and technical assistance to agricultural producers through contracts up to a maximum term of ten years in length. These contracts provide financial assistance to help plan and implement conservation practices that address natural resource concerns and for opportunities to improve soil, water, plant, animal, air and related resources on agricultural land and non-industrial private forestland. In addition, a purpose of EQIP is to help producers meet Federal, State, Tribal and local environmental regulations.

Who Can Apply

Owners of land in agricultural or forest production or persons who are engaged in livestock, agricultural or forest production on eligible land and that have a natural resource concern on the land may participate in EQIP.

How EQIP Works

EQIP provides financial assistance payments to eligible producers based on a portion of the average cost associated with implementation of conservation practices. Additional payments may be available to help producers develop conservation plans which are required to obtain financial assistance.

Historically underserved producers (limited resource farmers/ranchers, beginning farmers/ranchers, socially disadvantaged producers, Tribes) may be eligible for a higher practice payment rate for the implementation for conservation practices and conservation plans.

¹ USDA/NRCS EQIP website: <http://www.nrcs.usda.gov/programs/eqip/>

Producers may use a certified Technical Service Provider (TSP) for technical assistance needed for certain eligible activities, services and the development of conservation plans. Historically underserved producers may also be eligible for advance payments up to 30 percent of the cost needed to purchase materials or contracting services to begin installation of approved conservation practices.

NRCS works with the producer to develop a plan of operations that:

- Identifies the appropriate conservation practice or measures needed to address identified natural resource concerns
- Implements conservation practices and activities according to an EQIP plan of operations developed in conjunction with the producer that identifies the appropriate conservation practice or measures needed to address identified natural resource concerns. The practices are subject to NRCS technical standards adapted for local conditions.

Participants may not receive, directly or indirectly, payments that, in the aggregate, exceed \$300,000 for all EQIP contracts entered into during any six-year period. Participants whose projects NRCS determines to have special environmental significance may petition the NRCS Chief for the payment limitation to be waived to a maximum of \$450,000. Additional payment limitations apply to producers enrolled in the EQIP Organic Initiative. The EQIP OI offers financial and technical assistance to implement new conservation practices, including cover cropping, pest management, crop rotation, stream buffers, and hedgerow planting. It is available to certified organic growers, farmers transitioning to organic, and small farmers exempt from formal certification.

C. USDA/NRCS Agricultural Water Enhancement Program (AWEP)²

The Agricultural Water Enhancement Program (AWEP) is a voluntary conservation initiative that provides financial and technical assistance to agricultural producers to implement agricultural water enhancement activities on agricultural land for the purposes of conserving surface and groundwater and improving water quality. As part of the Environmental Quality Incentives Program (EQIP), AWEP operates through program contracts with producers to plan and implement conservation practices in project areas established through partnership agreements.

Under AWEP, the Natural Resources Conservation Service (NRCS) enters into partnership agreements with eligible entities and organizations that want to promote ground and surface water conservation or improve water quality on agricultural lands, such as universities, Cooperative Extension, or state agencies. After NRCS has announced approved AWEP project areas, eligible agricultural producers may submit a program application.

² From USDA/NRCS AWEP website <http://www.nrcs.usda.gov/programs/awep/>

How AWEF Works

Each fiscal year, NRCS may make AWEF financial and technical assistance available to eligible owners and operators of agricultural lands who participate in approved AWEF project areas.

The intent of AWEF is for the Federal government to leverage investment in natural resources conservation along with services and non-Federal resources of other eligible partners. Individual producers are not eligible to submit a partnership proposal.

Eligible Partners

Eligible partners include:

- Federally recognized Indian Tribes
- States
- Units of local government, such as municipal water departments
- Agricultural or silvicultural associations or other groups of such producers such as
 - an irrigation association
 - an agricultural land trust
- Or other nongovernmental organization with experience working with agricultural producers.

Producers

Owners and operators engaged in livestock or agricultural production may be eligible for the program. Eligible land includes cropland, rangeland, pasture, private non-industrial forestland and other farm or ranch lands.

Funding

The 2008 Farm Bill provides \$73 million for fiscal year 2009, \$73 million for fiscal year 2010, \$74 million for fiscal year 2011, and \$60 million for fiscal year 2012 and each year thereafter for AWEF.

Technical Service Providers (TSPs)³

Technical Service Providers (TSPs) are individuals, private businesses, nonprofit organizations, or public agencies outside of the U.S. Department of Agriculture (USDA) that help agricultural producers identify and apply conservation practices on the land. These NRCS certified professionals provide for convenient access to technical services, quality work, and professional one-on-one technical assistance to landowners or producers who participate in USDA conservation programs.

3 From USDA/NRCS Colorado site: <http://www.co.nrcs.usda.gov/technical/ecs/ecs-links/tsp.htm>

D. Conservation Reserve Program (CRP)⁴

The Conservation Reserve Program (CRP) provides technical and financial assistance to eligible farmers and ranchers to address soil, water, and related natural resource concerns on their lands in an environmentally beneficial and cost-effective manner. The program provides assistance to farmers and ranchers in complying with Federal, State, and tribal environmental laws, and encourages environmental enhancement. CRP is administered by the Farm Service Agency, with NRCS providing technical land eligibility determinations, conservation planning and practice implementation.

The Conservation Reserve Program reduces soil erosion, protects the Nation's ability to produce food and fiber, reduces sedimentation in streams and lakes, improves water quality, establishes wildlife habitat, and enhances forest and wetland resources. It encourages farmers to convert highly erodible cropland or other environmentally sensitive acreage to vegetative cover, such as tame or native grasses, wildlife plantings, trees, filterstrips, or riparian buffers. Farmers receive an annual rental payment for the term of the multi-year contract. Cost sharing is provided to establish the vegetative cover practices.

⁴ From USDA/NRCS website: <http://www.nrcs.usda.gov/wps/portal/nrcs/home>

INTEREST APPROACH:

In Lessons 11-13 students identify and investigate conservation practices as they're applied by farmers or ranchers in their communities. In this lesson they will explore the resources available for the implementation of BCPs; resources that are designed to help farmers cover initial costs so the farmer and the community can reap the benefits of the improved practice on source water resources.

Suggestion for beginning Lesson 15:

- What keeps you from wearing the best possible clothes and driving the best possible car?
- What do you think keeps farmers and ranchers from implementing all the practices that protect our drinking water sources?

OBJECTIVE BY OBJECTIVE:

Activity Outline and Teacher Support Information:

Students should recognize that drinking water protection in rural communities happens at a variety of levels. The federal government provides funding opportunities that can help protect water quality and drinking water sources. Some of those resources go to state and municipal governments to help fund publicly owned wastewater treatment works and sewer lines, drinking water treatment plants, drinking water distribution lines, and storage facilities to ensure protection of public health and the environment. These elements of water systems are referred to as water infrastructure. Leaky water lines can waste treated drinking water and create pathways for contamination. Deteriorating sewer lines can contaminate drinking water sources. Another important part of water infrastructure is source water protection. Communities in your state and county may receive funds from sources, which students will investigate below, to fund agricultural best management practices or conserve land to protect water quality.

Farmers or ranchers in your community may be eligible to apply for federal funds from other sources to help them implement BCPs for source water protection. In this lesson, students will briefly examine the funds available for drinking water protection through the Clean Water Act. Students will then look closely at two programs available to farmers or ranchers to implement BCPs to protect drinking water sources. They will examine the USDA/NRCS Environmental Quality Incentives Program (EQIP) and the Agricultural Water Enhancement Program (AWEP), and will learn about the roles of Technical Service Providers (TSPs) in assisting farmers interested in implementing BCPs. Finally, in the evaluation component of this lesson students will read a success story to identify how these programs enhance farming production while serving to protect water resources.

- 15.1. Describe sources of funding for projects to protect drinking water sources in their communities.

Show slide SW.15.1.TM. Initiate a brief classroom discussion about the Clean Water Act and the funds supplied through the Act that can also assist communities with drinking water protection.

- 15.2. Identify sources of funding and assistance for completing BCPs for source water protection.

In this activity students will use the Internet to explore funding and assistance programs for implementing BCPs. Each student will need a copy of worksheet SW.15.2.AS and access to the Internet. Students can work on this activity independently during class or as a homework assignment.

REVIEW / SUMMARY:

In your journal, make a list of a few pros and cons that a farmer might consider when deciding to implement two BCPs. You could create a table in your journal like the one below to record your responses.

Conservation Best Practice	Pros	Cons
Ex. – planting a riparian buffer	Improved water quality Stream is more attractive to fish, wildlife and people	Takes time for planning and implementation Native riparian plant costs
1.		
2.		

APPLICATION:

Homework assignment:

Ask students to explore on the Internet, the conservation practices Mr. Seider initiated on his ranch:

- Irrigation water management
- Nutrient management
- Prescribed burning
- Upland wildlife habitat enhancement

Ask them to record the definition of each practice and how the practice might impact drinking water quality or quantity in their journals.

EVALUATION AND ANSWERS:

SW.15.ASSESS

Read through the handout, NRCS Helps Comanche County Rancher with AWEF Funding for New Irrigation System, then complete the following questions:

1. What Best Conservation Practices does Mr. Seider practice on his ranch?

2. What positive outcomes resulted from the implementation of these BCPs?

3. Name the program that helped Mr. Seider fund his BCP project:

4. What potential unforeseen negative consequences for water quality could come from prescribed burning and from Mr. Seider's putting fertilizer through his filters using the underground wells from the Leon River to pump into his new irrigation system?"

Answers to SW.15.ASSESS

1. What Best Conservation Practices does Mr. Seider practice on his ranch?

- Irrigation water management
- Nutrient management
- Prescribed burning
- Upland wildlife habitat enhancement

2. What positive outcomes resulted from the implementation of these BCPs?

- More grass production (higher yields) with less erosion
- Improved water quality

3. Name the program that helped Mr. Seider fund his BCP project:

Agricultural Water Enhancement Program (AWEP)

4. What potential unforeseen negative consequences could come from Mr. Seider's pumping fertilizer into underground irrigation wells?

- Elevated nitrate levels in groundwater
- Increased nitrate levels in surface water that is connected to that groundwater

ACTIVITY WORKSHEET(S) – AS NEEDED:

SW.15.2.AS.A – Worksheet

Technical Assistance and Funding for Drinking Water Protection

Name _____

The federal government provides funding opportunities dedicated to the conservation and protection of source water. Some of those resources go to state and municipal governments to help fund drinking water treatment plants, sewer lines, drinking water distribution lines and storage facilities to ensure protection of public health and the environment. These elements of water systems are referred to as water infrastructure. Communities in your state and county may receive funds from sources you'll investigate below to build, maintain or improve their water infrastructure.

Farmers or ranchers in your community may be eligible to apply for federal funds from other sources to help them implement BCPs for source water protection. You'll look closely at two of these programs, the USDA/NRCS Environmental Quality Incentives Program (EQIP) and the Agricultural Water Enhancement Program (AWEP), learn about the roles of Technical Service Providers (TSPs) in assisting farmers interested in implementing BCPs, and read a success story to identify how these program enhance farming production while serving to protect water resources.

Funding Opportunities for Implementing BCPs

In this section you'll explore the information on two federal programs designed specifically to help farmers implement BCPs:

1. USDA/NRCS Environmental Quality Incentives Program (EQIP) website, <http://www.nrcs.usda.gov/programs/eqip/> Read the "Introduction", "Who Can Apply", and "How EQIP Works" sections of this page before answering the questions below.
 - a. Farmers/ranchers are required to participate in the EQIP program. True or False? (*circle one*)
 - b. NRCS works with farmers to create a plan for implementing BCPs. True or False? (*circle one*)

SW.15.2.AS.A – Worksheet *(continued)*

2. USDA/NRCS Agricultural Water Enhancement Program (AWEP), <http://www.nrcs.usda.gov/programs/awep/> Read the “introduction” and Program Description” sections of this Web page before answering the questions below.

c. Farmers/ranchers are required to participate in the AWEP program. True or False? *(circle one)*

d. Name two types of lands in your agricultural community that might be eligible for these funds:

3. Technical Assistance for Implementing BCPs: Go to the EQIP Application Information by State site, http://www.nrcs.usda.gov/programs/eqip/EQIP_signup/index.html. Choose your state from the map.

4. Does your state offer information on technical assistance or Technical Service Providers (TSPs)? Check the following sites:

- NRCS’s Locate Technical Service Providers: <https://techreg.sc.egov.usda.gov/CustLocateTSP.aspx>
- National Association of Conservation Districts, Districts on the Web: <http://nacdn.org/about/districts/websites/index.phtml>
- National Rural Water Association, State Associations: <http://www.nrwa.org/state%20associations/directory.aspx>

Briefly describe the services available to farmers. _____

SW.15.2.AS.A – Worksheet *(continued)*

Funding Opportunities for Water Quality Projects

Find answers to the questions below at the EPA Clean Water State Revolving Fund (CWSRF) page, <http://www.epa.gov/owm/cwfinance/cwsrf/> .

What is the Clean Water State Revolving Fund (CWSRF)?

What does the CWSRF offer?

- a. _____
- b. _____
- c. _____
- d. _____

SW.15.ASSESS – HANDOUT

NRCS Helps Comanche County Rancher with AWEF Funding for New Irrigation System⁵

Story by Randy Henry

In Comanche County, Texas, the Leon River floods many properties annually with severe erosion on farms and ranches, so one producer teamed up with the USDA Natural Resources Conservation Service (NRCS) to fight back to keep his land productive.

With \$19,615 in funding from the Agricultural Water Enhancement Program (AWEF), rancher Martin Seider and NRCS were able to put together a water conservation and quality project that rendered a new 1,033-foot long, center-pivot irrigation system for his 270-acre ranch located in Comanche.

In addition, the Leon River flooded his pastures 13 years in a row, so the new center-pivot irrigation system can get production started much faster than the old irrigation system he used for 33 years.

“It has improved the water retention on my fields, and I can put fertilizer through my filters using the underground wells from the Leon River that I pump into the new irrigation system,” Seider said. “It’s just more efficient than the older system, and that helps my production on the land to gain more grass with less erosion.”

AWEF promotes ground and surface water conservation and improves water quality by helping farmers and ranchers implement agricultural water enhancement activities, including water quality or water conservation plan development; conversion to the production of less water-intensive agricultural commodities or dry land farming; water quality or quantity restoration or enhancement projects; irrigation system improvement or irrigation efficiency enhancement; and activities designed to mitigate the effects of drought.

AWEF was established by the Food, Conservation, and Energy Act of 2008 (2008 Farm Bill) and funding comes from the Environmental Quality Incentives Program (EQIP). NRCS implements AWEF by entering into EQIP contracts directly with agricultural producers that qualify for the program.

“I have been with EQIP for three years and discussed conservation planning for many years with NRCS, so I intend to use other NRCS programs to install stock tanks in all my pastures this year,” Seider said.

⁵ NRCS News: <http://www.tx.nrcs.usda.gov/news/lonestalink/comanche.html>

SW.15.ASSESS – HANDOUT *(continued)*

“This producer is located directly on the Leon River and has a long history with the Upper Leon Soil and Water Conservation District, so we have been successful with implementing the goals in the conservation plan for this property,” said Cody Bauman, NRCS district conservationist in Comanche County. “The best management practices he utilizes are irrigation water management, nutrient management, prescribed burning, and upland wildlife habitat [enhancement].”

Plus, Seider has converted an existing cropland field that was located under the old irrigation system with a native grass species to help prevent erosion, which happens every year on this property from the Leon River.

“Seider is an excellent steward of the land, who is constantly thinking proactively when it comes to conserving our natural resources,” Bauman said.

“With the help of NRCS and AWEF, I have put down better grass on my pastures, including Tifton 85, Alamo Switchgrass and Johnsongrass. We changed out the Coastal to Tifton 85, and I have improved the grass quality and yields per acre,” Seider said.



While looking over a pasture of Tifton 85 grass with a new 1,033-foot long, center-pivot irrigation system funded by the Agricultural Water Enhancement Program, Martin Seider (right), a rancher with 270 acres in Comanche, Texas, discusses the water quality and higher yield results with Cody Bauman (left), NRCS district conservationist in Comanche County.



Showing severe erosion from the Leon River, just left of a pasture with Alamo Switchgrass planted on his 270-acre ranch in Comanche County, rancher Martin Seider utilized funding from the Environmental Quality Incentives Program and Agricultural Water Enhancement Program to put down better grasses on his pastures producing higher yields and less erosion with a new center-pivot irrigation system.

SW.15.ASSESS – HANDOUT *(continued)*



This new center-pivot irrigation system spanning 1,033-feet long sets over a pasture of Tifton 85 grass on Martin Seider's 270-acre ranch in Comanche County, Texas. The Agricultural Water Enhancement Program funded \$19,615 to replace an older 33-year-old irrigation system helping the producer render better water quality and higher yields per acre and to irrigate more effectively.

POWERPOINT SLIDES – AS NEEDED:

SW.15.1.TM

Water Quality

- A. Clean Water Act (CWA)
 - 1. Federal Water Pollution Control Act
 - 2. Act of Congress designed to help restore and maintain our nation's waters
- B. Clean Water Act purpose
 - 1. Restore and maintain chemical, physical, and biological integrity of the nation's water supply by preventing pollution
 - 2. Provide assistance to publicly owned treatment works for the improvement of waste water treatment
 - 3. Maintain the integrity of wetlands
- C. Clean Water State Revolving Fund (CWSRF)
 - 1. Federal funds given to states to fund water quality projects, including land conservation and agricultural practices to protect water quality from non-point sources.
 - 2. CWSRFs have funded over \$74 billion
 - 3. Low interest rates, flexible terms
 - 4. Significant funding for nonpoint source pollution control and estuary protection
 - 5. Assistance to a variety of borrowers
 - 6. Partnerships with other funding sources

SW.15.1.TM *(continued)*

- D. American Recovery and Reinvestment Act of 2009
 - 1. A congressional economic stimulus package designed to help the economy
 - 2. Gave more than \$4 billion dollars to the CWSRF