ADVANCING WATERSHED PROTECTION THROUGH LAND CONSERVATION

A Guide for Land Trusts

United States Environmental Protection Agency

June 2022

EPA 841-B-22-003

ACKNOWLEDGEMENTS

The U.S. Environmental Protection Agency wishes to acknowledge and thank the following individuals who contributed to the development of this guide:

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- Kimberly Brewster, Deputy Director, Chagrin River Watershed Partners, Inc.
- Shelton Douthit, Executive Director, Feather River Land Trust
- Chloé Fandel, Desert Rivers Program Associate, Arizona Land and Water Trust
- Dr. Ty Ferre, Professor, University of Arizona
- Erica Hernandez, Conservation Director, Alachua Conservation Trust
- Ruth Indrick, Project Director, Kennebec Estuary Land Trust
- Tom Kay, Executive Director, Alachua Conservation Trust
- Bailey Kennett, Desert Rivers Program Director, Arizona Land and Water Trust
- Jennifer Miller Herzog, Chief Program Officer, Land Trust Alliance
- Heather Obara, Associate Director, Alachua Conservation Trust
- Corey Pargee, Development Director, Feather River Land Trust
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This report was developed under USEPA contract EP-C-15-022 with The Cadmus Group.

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INTRODUCTION

Land trusts across the United States have accomplished outstanding achievements in support of environmental protection. Whether conserving tracts of land, serving as land stewards, or creating innovative education programs, land trusts are protecting millions of acres of land and water and engaging their communities in efforts to ensure that natural resources can be enjoyed today and by future generations.

Many land trusts have recognized the fundamental connection between land and water and are actively working to protect rivers, lakes, and other waters. Undertaking such water-related activities can offer several benefits to land trusts. Importantly, water issues and threats can be a strong motivator for the public to engage with land trusts. People depend on water every day for reliable and clean drinking water, recreational opportunities, flood protection, and other services. Further, waterbodies foster a sense of place and community that is often unmatched by other natural resource types. Land trusts and partner landowners can also access funding from federal, state, and local governments that is directed to water-focused actions and initiatives.

The U.S. Environmental Protection Agency (EPA) has a mission to protect our nation's waters and relies on a community of stakeholders to address water pollution through ***watershed protection***—efforts to protect and restore waterbodies by managing the areas of land draining to them. Land trusts can be important members of the watershed protection community and can play a critical role in watershed protection through land conservation, stewardship, and outreach activities.

This guide was inspired by land trusts that have engaged in watershed protection and was designed to serve as an introductory guide for other land trusts interested in the topic. The goal of this guide is to highlight opportunities for land trusts to integrate watershed protection in their organization's strategic plans, actions, and community engagement.

Getting Started Tips

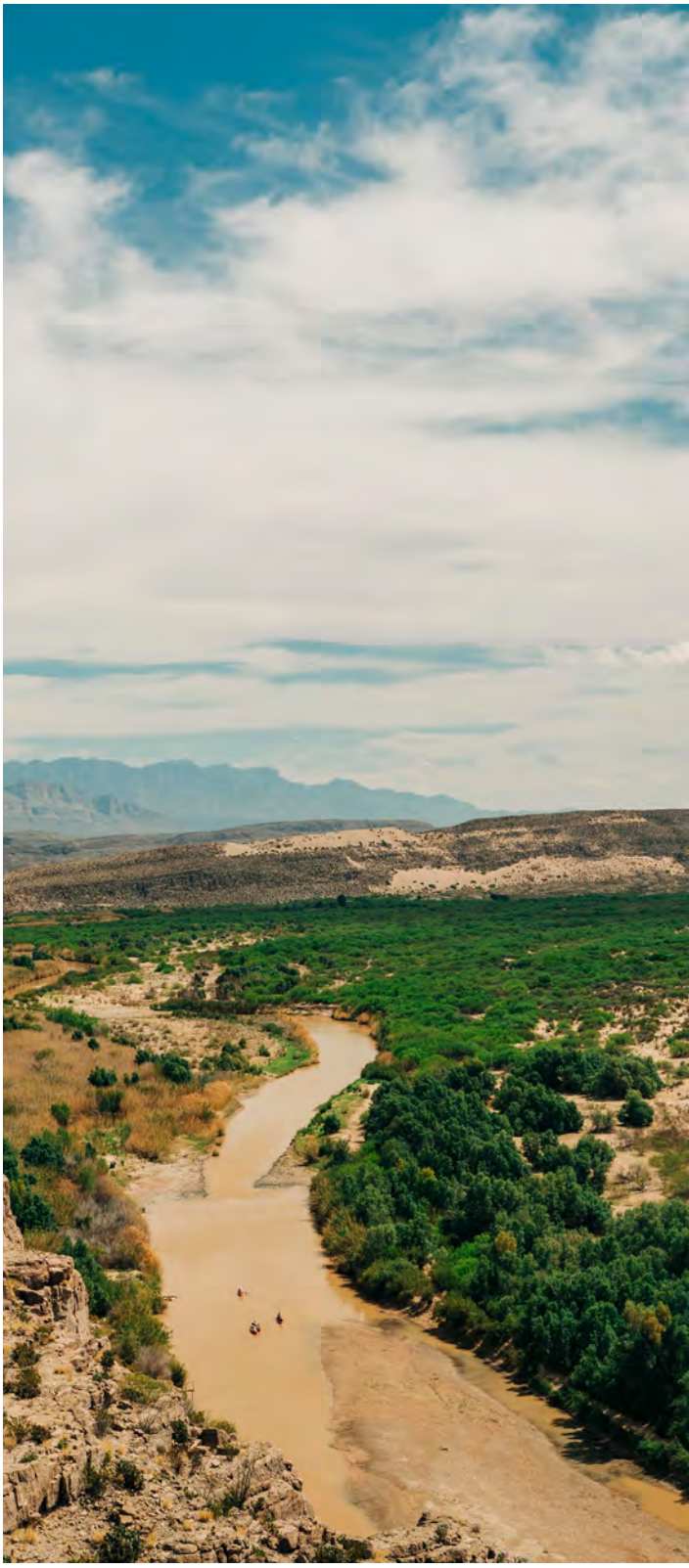
Keep an eye out for "Getting Started" tips throughout this guide, which suggest first steps for incorporating watershed protection in your work.

WATERSHED PROTECTION 101

Every community is part of a ***watershed***, broadly defined as an area of land that drains to a common body of water, such as a stream, river, lake, or bay. Watersheds vary widely in scale, from as small as the land area draining to a single pond, to the one million square mile Mississippi River Basin. At all scales, land use and activities throughout a watershed influence the health of downstream waters.

Healthy watersheds are characterized by natural and well-managed working lands that support resilient aquatic systems, intact and connected habitat that supports aquatic and riparian species, and good water quality conditions to support aquatic life. Healthy watersheds provide a wide range of benefits, including clean drinking water sources, public health benefits, recreational opportunities, and wildlife habitat.

The EPA promotes the ***watershed approach*** as a coordinating framework for engaging stakeholders and communities, including land trusts, to define and address watershed-scale challenges and solutions. Working with partners to develop a ***watershed management plan*** can help identify shared management goals and design strategies to achieve them. Watershed plans can also provide access to certain funding sources, like EPA Clean Water Act Section (§) 319 Nonpoint Source Management grant program. A more detailed outline of watershed components and the watershed approach can be found in the graphic on the following page.

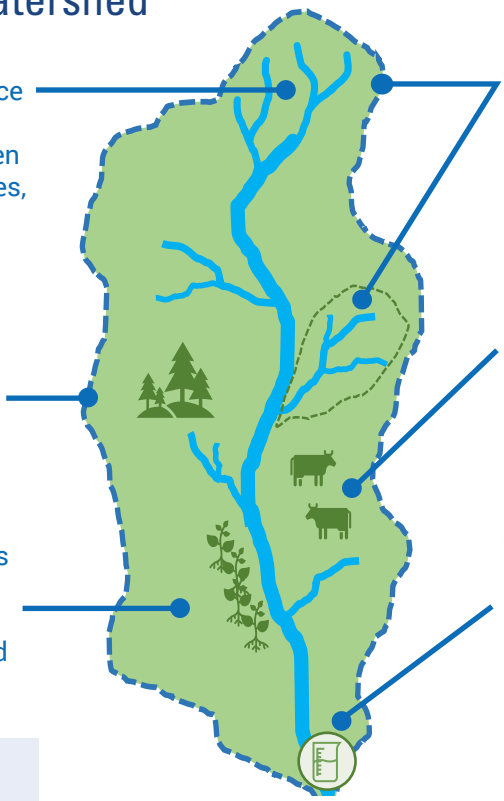


Key Components of a Watershed

Headwater streams strongly influence the health of downstream waters. Because many headwaters have been lost or altered due to human activities, they may be protection candidates.

Natural infrastructure, like forests and wetlands, support watershed health by reducing erosion and runoff, regulating pollutant export, preserving natural flow patterns, and minimizing flooding.

Riparian Zones. Healthy waterbodies have surrounding plants—grasses, shrubs, and trees—that help to absorb rainfall, slow stormwater, and filter runoff.



Watersheds can be defined at multiple scales. **Catchments** typically refer to small areas of land draining to a single waterbody or river/stream segment.

Stewardship activities on working lands and in developed areas are key to preventing and reducing polluted runoff from these areas.

Water quality monitoring helps quantify upstream pollution problems and assess progress towards watershed goals.

The Watershed Approach

The watershed approach is a coordinating framework for developing comprehensive, watershed-based strategies to protect water quality and quantity. In adopting the watershed approach, partners address water quality problems in a holistic manner and actively involve watershed stakeholders in selecting the management strategies to solve these problems. The watershed planning process works within this framework by using the cooperative, iterative steps outlined below.

1. Build Partnerships

In working at the watershed scale, you will be coordinating with various local stakeholders, including landowners, often across multiple jurisdictions. New ideas and input provided by partners not only provide a more solid commitment to solutions but also help to pool resources and skills.

2. Characterize the Watershed

Characterizing the watershed, its problems, and pollution sources provides the basis for developing effective management strategies (e.g., land conservation, stewardship practices) to meet water quality goals and helps to focus management efforts on the most pressing needs within the watershed.

3. Set Goals & Identify Solutions

Watershed goals are supported by specific objectives with measurable targets to assess progress towards each goal. This planning informs which management strategies are best suited to achieve your goals.

4. Design Implementation Program

Most watershed plans cover a 10 to 15-year implementation period. You can keep your team on track by including an implementation schedule with interim milestones, identifying specific technical assistance and funding needs, and incorporating a monitoring/evaluation process to assess progress as you go.

5. Implement Plan

Time to get to work! Your implementation team, likely comprised of multiple organizations, can coordinate in developing project work plans and schedules. Remember to keep your community engaged along the way—and don't forget to highlight your successes!

6. Measure Progress & Adjust

The watershed approach is not linear but circular, to allow you to integrate results back into your program. By tracking progress towards plan milestones and water quality goals, you can make adjustments along the way to make sure you're on track!

The above icons (e.g.,) will reappear in later sections of this guide to highlight actions that correspond with steps in the watershed approach.

CLEAN WATER ACT OVERVIEW

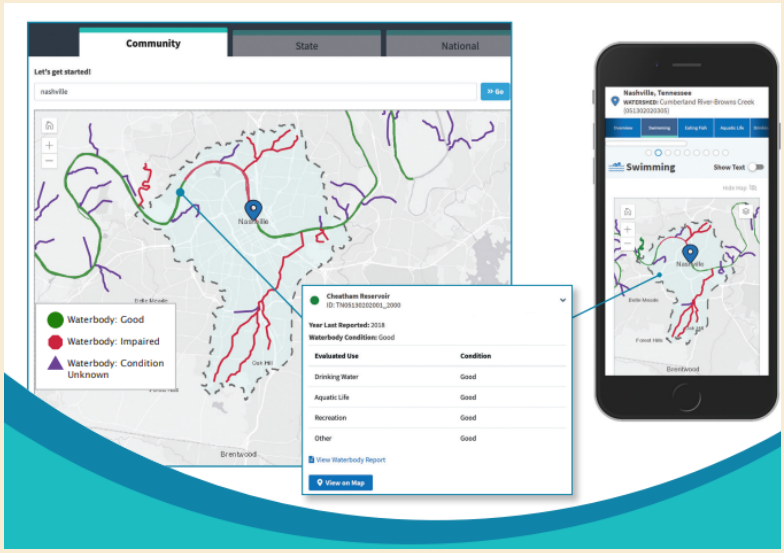
The Clean Water Act (CWA) was established "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (33 United State Code §1251(a)) and thus functions as the United States' principal law governing pollution control and water quality. The CWA establishes the basic structure for regulating discharges of pollutants into waters of the United States and regulating quality standards for surface waters.

As described in the Clean Water Act In Action graphic on the following page, state, territory, Tribal,[1] and local governments primarily work to implement the CWA with assistance from the EPA to reduce water pollution from point sources (e.g., municipal wastewater treatment plants or factories) and nonpoint sources (e.g., agricultural runoff). Land trusts can engage in the CWA process by educating landowners, participating in public comment opportunities, undertaking water quality monitoring and data submission, and securing or supporting grants and other funding sources for controlling and managing pollutant sources. Land trusts can reach out to their state's lead agency or department for water quality restoration and protection to better understand opportunities to collaborate on CWA initiatives.

Land trusts can find more information about watersheds, watershed protection, and the CWA at EPA's **Watershed Academy**. The Watershed Academy training modules are an excellent source of additional information on watershed management, water law, and related concepts.

EPA Resource Spotlight: How's My Waterway

EPA's **How's My Waterway** tool provides the public with an easily accessible and understandable picture of water quality at a community, state, or national scale. The tool is a good starting point for understanding the condition of your local waters and educating your community. Users can enter an address or place name and find information on water safety conditions, waterbody impairment status, and current actions to restore or protect waters.



[1]CWA § 518 authorizes the EPA to treat eligible Indian tribes with reservations in a similar manner to states for a variety of purposes, including administering each of the principal CWA regulatory programs and receiving grants under several CWA authorities. The term 'state' in this guide will refer to states, territories, and eligible tribes.

Clean Water Act in Action - Program Summary Table

Collaborate and Adapt

	Overview	Land Trust Connections
Establish Water Quality Standards	Under the CWA, states establish goals for the condition of surface waters, termed water quality standards (WQS), that can include goals such as protection of aquatic life, recreation, and drinking water sources. WQS establish the foundation for CWA implementation programs, including setting CWA permit requirements, evaluating waterbody condition, and setting water quality protection and restoration goals. WQS can also be used to establish special protections for certain high-quality waters.	• States review and can revise WQS every three years. Provide input to your state during these triennial reviews. • Nominate waters for high-quality designations. • Consider undertaking land conservation and stewardship around waters with high-quality designations, which may help spur public interest in conservation efforts.
Monitor and Assess Waters	Water quality monitoring strategies can be designed to meet different needs (e.g., observe long-term trends, provide a comparison of water quality before and after a restoration project). Monitoring data collected by state agencies and partners is used to assess the conditions of rivers, lakes, bays, wetlands, estuaries, and nearshore marine waters to determine if WQS are being attained.	• If you are collecting local water quality information, reach out to your state to see if data can be used for CWA purposes. • Assessment results can be an effective tool to communicate regional water quality conditions. Highlight high-quality or degraded waters to spark public interest. • Consider monitoring sites and data as you target land conservation and stewardship activities.
Water Quality Reporting	Every two years, states are required to report to the EPA and the public on the results of their monitoring efforts. The "305(b) Report" includes all that the state knows about its waters—healthy, threatened, and in poor condition. The "303(d) List" includes only those waters that are either threatened or already impaired (i.e., not meeting one or more WQS) and need a Total Maximum Daily Load (TMDL).	• Use the list of impaired waters to target problem areas. • Promote success stories, such as restoration and de-listing of an impairment, to the community and in watershed protection funding applications. • Use these reports to monitor significant changes to waterbodies in your watershed.
Identify Problems and Develop Restoration Plans	Based on their water quality reports, states develop TMDLs and other plans to guide restoration of impaired waters. Given the high number of impaired waters across the US, states develop prioritization approaches to target planning efforts, for example in waters with greater likelihood to be restored where local partners are available to support implementation work.	• Provide input on state impaired waters prioritization. • Support TMDL planning by sharing data and information on watershed conditions, submitting comments on methods and results, and participating in citizen advisory groups to monitor and track progress toward TMDL goals.
Control and Manage Sources	The CWA distinguishes two types of water pollution: point sources, including discharge from industrial and sewage treatment plants, are regulated the National Pollutant Discharge Elimination System (NPDES) permitting program, and nonpoint sources, originating from many diffuse sources and carried by rainfall or snowmelt, are not regulated under the CWA. These pollution sources are managed through a voluntary system that relies on grant funding and stakeholder partnerships.	• Form and strengthen partnerships to target nonpoint source pollution. • Land trust can be eligible to receive state and federal grants for watershed protection or can facilitate grant funding for landowners. For more information on funding sources, see the EPA Clearinghouse for Environmental Finance and Appendix B.

EPA Funding to Support Watershed Protection Work

The EPA oversees a number of funding programs that may be used to support watershed protection activities related to planning, community outreach, land acquisition, conservation (e.g., easements), and implementation of management practices. Some programs are administered directly by the EPA, but many are managed by state agencies that make their own rules and policies within the general parameters set by the EPA. The table below provides general summary information on potential EPA funding opportunities for land trusts. See **Appendix A** for more detailed descriptions of the funding programs and eligible activity categories listed in the table. Because state program specifics and land trust entity types vary, users should consult the respective program guidance to confirm program details. For additional funding search tools and funding tips see **Appendix B**.

Funding Program	Type	Land Trusts Directly Fundable?	ELIGIBLE ACTIVITIES: Land Conservation (Acquisition)	Land Conservation (Easement)	Restoration/BMPs/Stewardship	Sampling & Monitoring	Project Planning	Community Outreach	Watershed Partnerships & Plans	Administration	Capacity Development	Award Amount Range	Match Requirement	Funding Cycle (e.g. annual)
Brownfields Program - Assessment Grants	Cooperative Agreement	Yes				●	●	●		●		Community-wide up to $500,000; site-specific up to $200,000[1]	None	Annual
Brownfields Program - Cleanup Grants	Cooperative Agreement	Yes			●			●		●		Up to $500,000[1]	20%	Annual
Clean Water Act §319 Grant Program for States & Territories	Grant	Yes		●	●	●	●	●	●	●	●	Varies	Varies	Annual
Clean Water State Revolving Fund (CWSRF)	Loan	Yes[2]	●	●	●	● [3]	●	● [4]	●			-	None	Approx. annual, varies by state
Drinking Water State Revolving Fund (DWSRF) - Set- Asides[5]	Loan;[6] Grants; Technical Assistance	Yes	●	●	●	● [3]	●	●	●	●	● [7]	-	None; Varies[8]	Annual
Environmental Justice Collaborative Problem Solving Program	Cooperative Agreement	Yes			●	●	●	●	●	●	●	Up to $200,000	None	Approx. annual

1,2,3,4,5,6,7,8 - All descriptions of references and notes can be found on **page 28**.

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Environmental Justice Small Grants Program	Grant	Yes					●	●	●	●	●	Up to $75,000	None	Annual
Five Star and Urban Waters Restoration Grant Program	Grant	Yes			●	●		●	●	●	●	$20,000 - $50,000	50%	Annual
Great Lakes Restoration Initiative[9]	Grant; Cooperative Agreement	Yes	●	●	●			●		●		Up to $600,000	None	Varies
Indian Environmental Assistance Program (GAP Funds)	Grant; Cooperative Agreement; Performance Partnership Grant	No				●	●	●		●	●	Varies	None	Annual
National Estuary Program Coastal Watersheds Grants	Subaward Grants	Yes			●	●		●[9]	●	●	●	$75,000 - $250,000 (approximate)	25%[10]	Annual[11]
Water Infrastructure Finance and Innovation Act (WIFIA)	Loan	No	●	●	●	●	●	●	●	●		Min: $9.8M/ $2.5M (small communities); No upper limit	51%	Annual
Water Pollution Control Grants (Clean Water Act §106)	Grant	No				●		●	●	●	●	-	Maintain[12]	Annual
Wetland Program Development Grants	Grant; Cooperative Agreement	Yes			●[13]	●	●	●	●	●	●	$75,000 - $220,000	25%	Biannual

9,10,11,12,13,14 - All descriptions of references and notes can be found on page 28.

Kennebec Estuary Land Trust:
Engaging Communities Through Citizen Monitoring

The Kennebec Estuary Land Trust (KELT) Community Science Program demonstrates how volunteer-led water quality monitoring can connect a land trust with community members in support of Clean Water Act goals. KELT was established in 1989 with a focus on protecting 25,000 acres of land and wildlife habitat in the Kennebec Estuary in southern Maine. KELT launched its Community Science Water Quality Sampling Program in 2013 with financial support from grants, KELT general funds, and community fundraising efforts. Through the program, KELT trains citizen scientists, including local students and community members, on data collection, quality control, and sample analysis methods. Data collection protocols are guided by a state-approved Quality Assurance Project Plan (QAPP), which allows KELT to share data with the Maine Department of Environmental Protection for consideration in Clean Water Act programs (e.g., listing impaired waters).

KELT currently works with approximately 15 volunteers to conduct biweekly sampling at 21 coastal sites throughout the estuary. Volunteers collect a range of water quality data, including water clarity, temperature, pH, and dissolved oxygen. KELT uses sampling data to identify local areas with water quality concerns, tracking changes in water quality conditions over time, and to develop a better understanding and ability to serve the needs of the local community.

To learn more about KELT's work, visit **https://www.kennebecestuary.org/**.

"Community members participate in our water quality sampling program because they care about the local water resources, and also because sampling provides a reason to regularly visit unique and beautiful coastal sites, like Hall Bay." (pictured)

- **Ruth Indrick**, KELT's Project Director

Photo Credit: Kathy Gravino.

INCORPORATING WATERSHED PROTECTION IN LAND TRUST WORK

This section describes key concepts and approaches for land trusts to expand their impact and contribute to broader watershed protection efforts by incorporating elements of the Watershed Approach. Four types of activities that are commonly undertaken or supported by land trusts are discussed: building partnerships, conserving lands, land stewardship, and community engagement. Each subsection highlights connections to steps in the Watershed Approach, indicated by icons from the infographic on **page 3**.

Build Watershed Partnerships

Working with partners to develop a watershed plan can be an effective way to identify shared management goals and identify strategies to achieve them. Because watersheds can cross political boundaries (e.g., county lines), utility service areas, or other administrative margins, watershed planning can involve many stakeholders and functions best when rooted in partnerships. The organizations involved in watershed planning may include federal, state, county, or municipal government agencies, universities and research groups, citizen-based watershed or other conservation groups, or water suppliers and utilities. Land trusts can initiate or participate in—and strengthen—watershed partnerships and planning efforts by contributing their experience and expertise and serving as critical links to community engagement.

A shared vision of goals, problems, and solutions among watershed partners can prevent redundancies and enhance the benefits of actions undertaken by each individual organization. Partnerships allow for a "divide-and-conquer" approach to watershed planning, which reduces the burden on any one organization and allows participants to focus on their areas of expertise. For an example of a watershed partnership in action, see the Central Lake Erie Basin Collaborative case study below.

Getting Started: Tips for Building Watershed Partnerships

1. **Research existing or potential watershed-based partnerships in your area.** Contact your local citizen-based watershed group (e.g., see the River Network's "Who Protects Water?" Map), water utility (e.g., see EPA's Drinking Water Mapping Application to Protect Source Waters (DWMAPS)), or other conservation organizations to identify potential partners.

2. **Share your land conservation goals and experiences with watershed partners.** Has your organization already prioritized parcels for conservation in your service area? Share these with watershed partners

to help identify mutual priority areas. When working with partners to develop a watershed plan, help ensure the plan integrates land conservation as a strategy for protecting watershed health and establishes clear goals for land conservation (e.g., target number of acres to protect).

3. **Facilitate community participation.** To better understand the concerns and priorities at the forefront of your community's mind and inform the planning process, look for opportunities to lead community round tables to gather knowledge from residents regarding local historic water quality, water supply shortages, flooding, and other waterbody concerns.

4. **Incorporate watershed issues and goals into your organization's strategic plans.** Consider updating your strategic plans to target watershed issues and goals that have been identified through partnerships and planning. By taking this step, you can align your organization's approach to land conservation and stewardship with actions needed to restore and protect watershed health.

Central Lake Erie Basin Collaborative: *Partnering Across Boundaries to Protect Lake Erie*

Watersheds in the Central Lake Erie Basin contain several dense urban cores between large tracts of agricultural and forested lands; thus, water quality issues include high volumes of stormwater runoff containing fertilizers, pesticides, and other pollutants, habitat fragmentation, and erosion. The Central Lake Erie Basin Collaborative (the Collaborative) was formed in 2014 as a consortium of watershed groups, land trusts, and local government agencies to protect and restore natural areas and promote stormwater solutions across northern Ohio. The Collaborative has a strong relationship with the large water utility that provides drinking water to the Cleveland Metro area, the Northeast Ohio Sewer District, which provides funding to support some of their efforts.

Representatives of watershed organizations and initiatives participating in the Central Lake Erie Basin Collaborative regularly meet to share updates, ideas, and resources. Credit: Central Lake Erie Basin Collaborative.

The Collaborative thrives through an informal, non-binding arrangement that promotes opportunities for information exchange, alignment of shared goals, and coordination of funding opportunities and technical assistance.

Examples of partnership benefits for members include teaming to write compelling grant proposals for land conservation and water quality improvement projects, sharing technical expertise to implement projects, and tracking and communicating metrics of watershed protection actions and outcomes. Through a **Healthy Watersheds Consortium grant** awarded to the Collaborative from the U.S. Endowment for Forestry and Communities, members have enjoyed strengthened relationships with local land trusts, such as Western Reserve Land Conservancy, due to increased collaboration on joint projects and better alignment of priorities and planning.

The Collaborative recently worked together to develop a Strategic Plan which outlines conservation goals and objectives for Lake Erie and its watersheds and current and potential new sources of funding. The Collaborative has been able to identify specific goals for the entire watershed that includes over 300,000 acres of protection and thousands of stream miles. It has also built a revolving fund of over $30 million that can be accessed quickly to protect land that becomes available.

Through the Collaborative, Central Lake Erie Basin land trusts and watershed groups exemplify the efficiency and effectiveness of partnerships and experience greater success in funding watershed protection by sharing rather than competing for resources.

To learn more about the Collaborative, visit: **http://centrallakeerie.org/**.

Conserve Lands for Watershed Protection

The conservation of natural lands supports watershed protection by maintaining important elements of the water cycle, such as groundwater recharge, and by minimizing the accumulation and runoff of pollutants. Additionally, conserving well-managed working lands (e.g., agriculture and silviculture) can prevent conversion to alternative land uses that pose greater threats to water quality and quantity. Land conservation can be most effective when organizations:

Prioritize and target conservation in areas with the greatest impact on water quality. Not all parcels in a watershed have an equal impact on water resources. For example, riparian areas along riverbanks and lakeshores can be especially important to the health of a waterbody because of the ability of riparian vegetation to filter pollutants and sediment from adjacent uplands and to shade waterbodies, keeping water temperatures at a suitable level for aquatic wildlife. Table 1 describes other example landscape characteristics that are relevant to watershed health and could be factored into the identification of priority areas for land conservation.

Specific parcels or other units of land may already be identified as priorities for land conservation in existing watershed plans. If additional targeting of priority areas is needed,

potential approaches can range from a qualitative evaluation that relies on local knowledge and best professional judgment to advanced mapping analysis or watershed modeling. Land trusts can work with partners who bring technical expertise and capabilities to conduct advanced analysis or modeling (for example, see the **Arizona Land and Water Trust case study** on page 15).

Link land conservation to watershed goals. As priority areas for land conservation are identified and protected, it can be helpful to compare achievements against quantifiable goals to track progress and share updates with partners, funding agencies, and the community. Examples of these goals could include a target number of acres protected watershed-wide or within specific priority areas of the watershed. Such goals can be drawn from existing watershed plans for your area, if available, or can be established by your land trust. By linking land conservation progress to watershed goals, a land trust can demonstrate its important role in the watershed protection community and garner support for funding and future efforts.

Table 1. Important landscape characteristics to consider when targeting land conservation to protect water quality.[2] National datasets that are relevant to these characteristics are noted in the Example Data Sources column. However, you may find local, higher-resolution data by contacting your local conservation district, government planning office, university, or state geospatial service.

Landscape Characteristic	Why is it important?	Example Data Source
Natural land cover	Natural areas (e.g., forests, wetlands, natural grasslands) filter and process pollutants. They also support natural hydrology and flow patterns which help maintain healthy aquatic habitats and communities.	National Land Cover Database (NLCD)
Headwater streams	Headwater streams have important impacts on downstream water quality. The protection of headwater areas can support natural levels of water, sediment, and nutrient inflow to downstream waters.	National Hydrography Dataset (NHD)
Proximity to surface waters	Land near or within the riparian buffers that surround surface waters has a major influence on streamflow and water quality. Protecting natural lands in the broader floodplain also helps store and abate flood waters, thereby mitigating flooding impacts.	National Hydrography Dataset (NHD)
Critical groundwater areas	Lands near or above aquifer recharge areas, wellheads, and source water protection areas are critical to protecting groundwater and drinking water sources.	Contact local water utility or state drinking water agency

[2] Developed with information from the following sources: Upper Neuse Clean Water Initiative 2015; Ernst 2004; Gartner et al. 2013; Krueger and Jordan 2014; TPL and AWWA 2005

Table 1 Continued

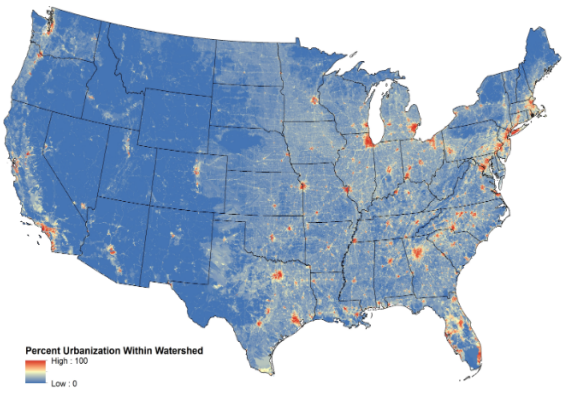
Landscape Characteristic	Why is it important?	Example Data Source
Slope	Steep slopes may be less stable and more prone to erosion.	3D Elevation Program
Soil permeability and erodibility	Maintaining natural vegetative cover on soils that are prone to runoff and erosion, or soils with high permeability, can be important for protecting water quality.	Soil Survey Geographic Database (SSURGO)
Development threat	Growth projections and related datasets can be used to help identify lands that are most susceptible to development or conversion to a land use with increased potential for water pollution.	Integrated Climate and Land Use Scenarios (ICLUS)
Proximity to protected lands	Large hubs of conserved lands, and connected corridors between hubs, can be more effective for supporting healthy aquatic communities compared to fragmented areas.	Protected Areas Database of the US (PAD-US)

Getting Started: Tips for Conserving Lands for Watershed Protection

Tools and Data for Priority Setting

The EPA and other organizations maintain several tools and datasets that land trusts can use to help identify priority locations for land conservation. Many of the links below include additional training materials and information on how to use the tools effectively.

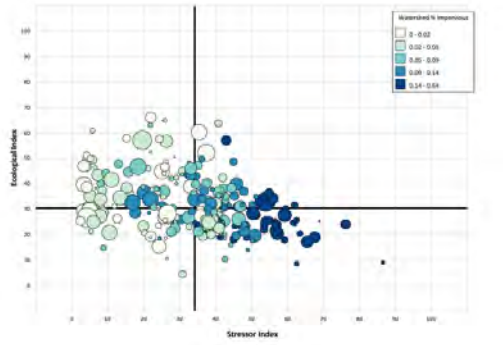
StreamCat Dataset: The EPA StreamCat dataset contains over 600 metrics that describe conditions in small subwatershed delineations called "catchments." A catchment represents the area that directly drains to a stream segment or lake segment. Catchments average approximately 1 square mile in size. The metrics in the StreamCat dataset describe many of the characteristics listed in Table 1 along with a variety of other landscape and waterbody characteristics. The metrics are available for download by state in a series of text files. The StreamCat dataset can be useful for identifying and evaluating catchments that meet user-defined criteria for prioritizing land conservation.



Example of a U.S. map created using StreamCat data on percent urbanization within a watershed. Accessed at: www.epa.gov

Watershed Resources Registry: The Watershed Resources Registry (WRR) consists of an online map viewer and custom map layers that depict suitability scores for restoration and preservation activities, such as riparian buffer restoration or preservation and wetland restoration or preservation. The suitability map layers are based on an analysis completed by the EPA and partners that assigns a score of one to five to areas that are relevant to each restoration or preservation topic. Land trusts can use the WRR to identify high scoring areas and evaluate those areas as potential priorities for land conservation. WRR map applications and suitability layers are available for seven states as of June 2022 (Alaska, Delaware, Maryland, New Jersey, Pennsylvania, South Carolina, Virginia, and West Virginia). Additional states may be added in the future.

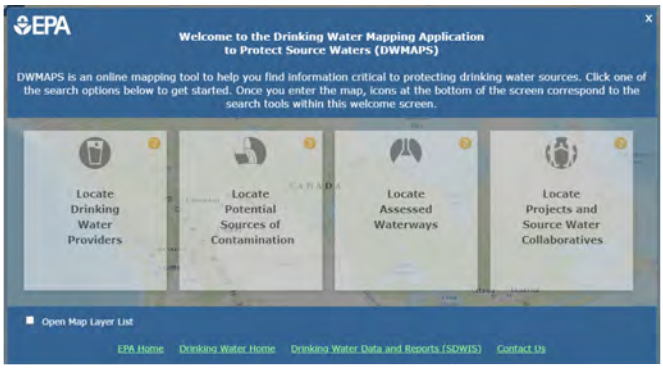
Recovery Potential Screening Tool: The EPA Recovery Potential Screening (RPS) Tool in an Excel-based tool designed to run screenings to identify priority subwatersheds for restoration or protection. RPS Tool files are available for all U.S. states and territories and come pre-loaded with metrics that describe many of the characteristics listed in Table 1 and additional ecological, stressor, and social characteristics in subwatershed delineations called "HUC12s". HUC12 subwatersheds are part of the national Watershed Boundary Dataset and average approximately 35 square miles in size. The RPS Tool is well-suited for land trusts that work across large areas to identify priority HUC12s for land conservation. Other finer-scale tools and datasets can then be applied to identify specific priority areas within the HUC12s of interest.



Sample of a Bubble Plot Chart created with the RPS Tool shown in the User Guide. Accessed at: www.epa.gov

Forests to Faucets: The U.S. Department of Agriculture (USDA) Forest Service Forests to Faucets tool includes an online map viewer and custom map layers that identify important HUC12 subwatersheds for protecting surface sources of drinking water. The identification of important HUC12s for source water protection is based on an analysis of landscape characteristics that align with those listed in Table 1. Similar to the RPS Tool described above, Forests to Faucets can be useful for identifying priority HUC12s for land conservation. Priority areas within those HUC12s can be further explored with other finer-scale tools and datasets.

DWMAPS: The EPA Drinking Water Mapping Application to Protect Source Waters (DWMAPS) is an online mapping tool designed to support source water assessments and source water protection planning. DWMAPS allows users to zoom to an area of interest and display a variety of map layers related to the location of waterbodies, drainage boundaries, land cover, protected lands, and pollutant sources. Drinking water metrics that are summarized by HUC12 can also be displayed, such as the percentage of a HUC12 in a source water protection area or the number of drinking water wells per HUC12. DWMAPS can also produce a summary report of catchment characteristics from the StreamCat dataset for a catchment of interest. DWMAPS can be used to investigate conditions in one or more potential priority areas for land conservation using the available map layers and the catchment report.



Welcome page of DWMAPS displays search tools for users to find information about drinking water sources. Accessed at: www.epa.gov

Arizona Land and Water Trust:
Prioritizing Land Conservation to Protect Rivers and Aquifers

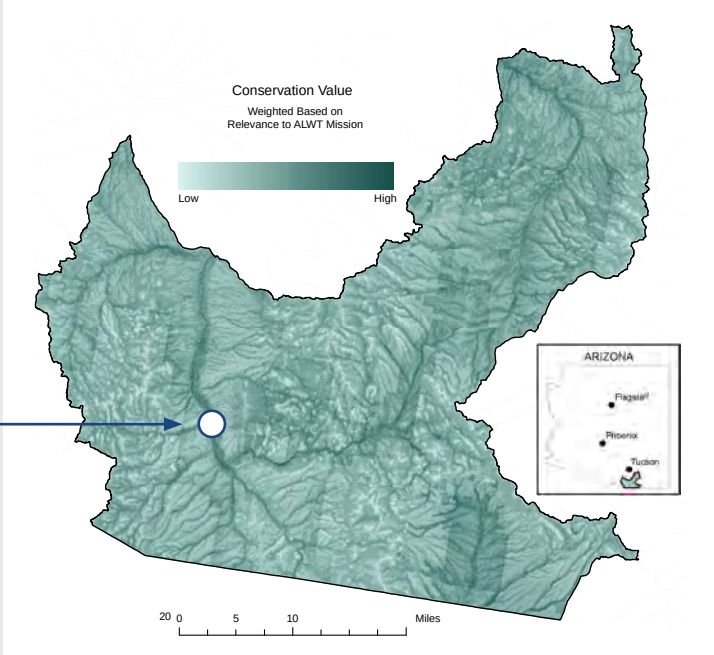
The Arizona Land and Water Trust's (ALWT's) mission is to protect Southern Arizona's vanishing western landscapes, its farms and ranches, wildlife habitat, and the waters that sustain them. To help allocate resources to the most critical areas of the Upper Santa Cruz Watershed, ALWT conducted two assessments to identify land protection opportunities most beneficial to the health of the river system. For one assessment, ALWT staff weighted 40 characteristics of watershed health (e.g., intact riparian areas), based on the relevance of each characteristic to its values and mission. The weights were applied to corresponding data layers in the GIS-based NatureServe Vista tool to generate a heat map, indicating priority areas for land conservation in the watershed.

ALWT also partnered with University of Arizona Department of Hydrology and Atmospheric Sciences (UA) researchers to explore the relationship between land conservation and river flows. The UA partners modified an existing state groundwater model to simulate the effects of different land and water use scenarios on groundwater levels and streamflow, and to identify sensitive river reaches and locations of particularly impactful pumping. This partnership with UA provided ALWT with valuable expertise that is out of scope for most land trust staff.

ALWT recently protected over 6,000 acres of high conservation value ranchlands, a critical step in maintaining and benefitting the health of the Upper Santa Cruz Watershed.

To learn more about ALWT's work, visit **www.alwt.org**.

Upper Santa Cruz River and Cottonwood-Willow riparian gallery at Tumacacori National Historic Park. Image Credit: ALWT



Steward Lands for Watershed Protection

Land stewardship is another important watershed protection strategy that focuses on the continued responsible management of land to minimize the impacts of human activity on the environment. Even protected lands benefit from stewardship (for an example, see the Feather River Land Trust case study below). Land trusts are well positioned to identify stewardship needs because they engage with landowners and often monitor the condition of conserved lands to understand local issues and threats. In some cases, land trusts may also manage their own lands and offer real-world stewardship demonstration projects for the local community.

The terms **Best Management Practice (BMP)** or **conservation practice** are commonly used to describe management strategies to address water quality or quantity issues. BMPs can be structural, such as to prevent livestock from entering a stream, or nonstructural, such as an ordinance that specifies vegetated buffer zones between certain activities and the water's edge. Management strategies must be tailored to site-specific land uses and conditions. A **state's nonpoint source management program** identifies management strategies that will be used to control nonpoint source pollution and achieve program goals. Additionally, the U.S. Department of Agriculture's Natural Resource Conservation Service (USDA-NRCS) provides state-specific **Field Office Technical Guides** with a range of technical information, including conservation practice design standards.

The questions below can serve as a guide for land trusts or landowners to conduct a basic site-specific assessment of potential BMPs to pursue for watershed protection. Many government programs, as well as nongovernmental conservation groups, offer technical and financial resources to support BMP planning and implementation including some cost-share funding opportunities. More detailed resources for BMP planning are listed in **Appendix C**.

What is the current land use of the parcel? Example land uses may include crop production, livestock grazing, barnyards, feedlots, forestry, mining, or other resource extraction. In addition to defining land use, make note of features on the landscape that may contribute to watershed health issues, such as impervious surfaces, exposed or disturbed soils, steep slopes, animal waste storage areas, fertilized fields, or eroding streambanks and shorelines. Such features can be sketched on a site map as areas where BMPs may be needed. Existing plans and resources may already include land use and landscape feature information as well.

What are the drainage characteristics of the property? An understanding of the direction of water flow on the property is important for BMP selection and planning. Low-lying areas like shallow depressions, swales, and gullies collect runoff and may be well-suited for BMPs that filter water and allow it to soak into the ground. Riparian areas that are adjacent to stream channels provide opportunities to maintain vegetated buffer strips or install livestock exclusion systems. Other notable drainage characteristics could include steep slopes, which present challenges for locating BMPs, or downspouts and other points where water flows out of manmade drainage features.

What water quality and/or water quantity concerns are associated with that land use and the watershed? The type of land use affects water cycle processes and determines potential pollutants of concern. If several water quality and water quantity issues are applicable to the parcel, use existing watershed plans for your area to guide higher priority issues to address with BMPs.

How have the water quality and/or water quantity concerns been addressed on similar properties in the area? BMPs that have successfully been implemented in similar areas can be a helpful starting point when considering which strategies will be well-suited for a particular parcel of land.

What are the advantages and disadvantages of potential BMPs? Potential BMPs may vary widely in costs and effectiveness at treating the water quality and quantity issues of concern.

Getting Started: Tips for Stewarding Lands for Watershed Protection

1. **Review existing watershed plans for your area to understand the recommended management practices.** Watershed plans often identify BMPs that are needed to address water quality and other watershed health concerns. In some cases, a watershed plan will also identify specific areas in the watershed, termed critical areas, where issues are prevalent and where BMPs are needed the most. The BMPs and critical areas that are identified in a watershed plan can help guide your organization in undertaking stewardship on your own land holdings and support stewardship by partner landowners.

2. **Reach out to local technical assistance providers in your area.** Local conservation districts, NRCS field offices, state forestry agencies, or university extension programs can provide technical assistance in conducting site assessments and BMP design. They can also offer suggestions on potential funding sources to support implementation. Land trusts can also refer to technical information published by other state or local government agencies such as forestry agencies for practices to manage polluted runoff from timber production areas.

3. **Identify and support external funding opportunities.** You can apply for funding to expand your organization's land stewardship programs and conduct BMP work on its own properties. You can also help other landowners by researching resources available through federal and state grant and loan programs, as well as non-profit conservation grant programs; offering expertise in proposal writing; and managing multiple funding sources that may support long-term BMP implementation on a property.

EPA Resource Spotlight:
Supporting Stewardship Through Wetland and Stream Mitigation

The federal wetland regulatory program (under §404 of the Clean Water Act) and its state counterparts require compensation for certain impacts to wetlands, streams, and other aquatic systems. As part of the §404 program, the U.S. Army Corps of Engineers requires thousands of acres of compensatory mitigation each year to offset permitted impacts. As a result, the

nation's stock of mitigation lands continues to grow. The 2012 Wetland and Stream Mitigation: A Handbook for Land Trusts developed by the Environmental Law Institute for the EPA and Land Trust Alliance describes how your land trust could get involved in the restoration and protection of these sites. Over the decades, land trusts have played a variety of roles in compensatory mitigation - assisting in site selection, project design and implementation, long-term stewardship of sites, holding conservation easements on sites, and more!

Feather River Land Trust: *Stewardship Through Adaptive Land Management*

The Feather River Land Trust (FRLT) works to protect ecologically important lands and waters across the 3,200 square mile Feather River Watershed in northern California, which provides drinking water for 27 million people downstream and supports a large community of ranching and farming families. Land stewardship is a central component of FRLT's approach to land protection. When developing conservation easements for private lands, FRLT identifies opportunities to work with landowners and the NRCS to develop conservation plans for the property. As part of the conservation planning process, FLRT and NRCS staff help landowners define their conservation objectives, identify natural resource concerns, and identify possible USDA assistance programs to help achieve conservation goals.

In addition to protecting private lands with conservation easements, FRLT owns and manages five preserves, totaling nearly 4,000 acres that are accessible to the public. FRLT adopts an adaptive land management approach toward stewarding its preserves. This approach involves flexibility in stewardship activities to respond to changing conditions and periodic evaluation of management strategies. Surrounding communities are able to visit FRLT's preserves and learn about BMPs such as sustainable grazing, underburning, invasive weed control, and wildlife-friendly fencing.

FRLT and its local grazing lessee observe conditions along Indian Creek at FRLT's Heart K Ranch in Genesee Valley, California. Image Credit: FRLT

In summer 2021, the Dixie and Beckwourth Complex fires devastated much of the Feather River Watershed and demonstrated the importance of FRLT's adaptive land management approach. FRLT directed resources to provide firefighting staff with information on water sources, access routes, and key ecological and cultural resources to protect from the fires. FRLT formed an interdisciplinary task group to guide fire recovery efforts and has been working on assessing fire impacted areas, identifying best remediation practices, and developing recovery plans for impacted properties.

To learn more about FRLT's work, visit **frlt.org**.

Engage Your Community in Watershed Protection

Community outreach is an important part of the watershed approach because it can help build a shared understanding of watershed protection challenges and solutions. Successful outreach campaigns can also encourage people to become engaged and change their behaviors in ways that will help improve and protect water quality. Land trusts are well positioned to lead community outreach due to their knowledge of local stakeholders, existing relationships with landowners from other stewardship or conservation efforts, and their legacy of environmental protection. Outreach efforts do not have to be major undertakings—every connection counts. Simple actions such as website postings or newsletter articles that highlight water-related activities can help to draw the attention of new audiences.

Effective community outreach strategies begin with finding the right messages and communication tools to reach your target audience. As you conduct outreach, tailor your messaging to your audience's level of knowledge about watershed protection. For example, some community members may benefit from seeing maps depicting local water resources and the watershed boundary relative to where they live. In your outreach, be specific in the 'what' and 'why' of actions you are asking your audience to take. Consider opportunities to highlight the many co-benefits of watershed protection work, such as clean drinking water sources and water-based recreation opportunities. See the Alachua Conservation Trust case study below for more information!

Getting Started: Tips for Engaging Your Community

1. **Define your audience.** Think about the various stakeholders in your community and their relationship to your watershed protection goals. Choose 2-3 priority stakeholder groups and consider the action you want them to take, then define the primary motivators and/or barriers to taking that action. Use this information to inform your message and your outreach plan.

2. **Make a plan to engage the community in water-focused outreach and education.** Select a variety of activities that can speak to the interest levels of your different audiences. You can help fill knowledge gaps in the community by raising awareness about water quality or water quantity problems, build appreciation for the watershed, and improve understanding of actions individuals can take. Additional educational resources for watershed protection are provided in **Appendix C**. Some ideas include:
   a) Hiking, paddling, or bird-watching tours through local lakes, streams, marshes, or other waterbodies.
   b) Water quality monitoring in partnership with a local academic or scientific program.
   c) Letter to the editor of a local newspaper from land trust leadership to encourage support from elected officials while also educating the general audience about the critical importance of watershed protection in their community.

3. **Prepare messages for landowners of priority parcels for watershed protection.** Many landowners may have limited knowledge about waterbody concerns and watershed protection. You can prepare for initial conversations by developing a set of core messages that define the problem, communicate the property's importance, suggest achievable actions, and identify benefits of participation. Common benefits that often resonate with landowners include:
    a) Financial interest: Easement contracts can provide tax benefits; a healthy watershed promotes economic growth in the region.
    b) Community leadership: Helping improve local waters demonstrates goodwill and leadership to both upstream and downstream neighbors.
    c) Recreation: Support clean waterways for swimming, watersports, and hunting and fishing.
    d) Family legacy: Ensure that lands passed down through generations remain preserved with healthy waters.

EPA Resource Spotlight:
Resources for Outreach & Engagement

The value of watershed protection can be a powerful message to motivate community members to engage in better protection of their local lakes, rivers, and streams. The following resources provide detailed guidance and tools to help you plan and implement a successful outreach campaign.

- EPA's Outreach Toolbox: **https://cfpub.epa.gov/npstbx/index.html**
- EPA's Getting in Step Guide: **https://cfpub.epa.gov/npstbx/files/getnstepguide.pdf**

Alachua Conservation Trust:
Communicating Watershed Protection Messages

The Alachua Conservation Trust (ACT) has facilitated the conservation of over 54,000 acres of land across 16 counties in North Central Florida, including the direct acquisition of nearly 20,000 acres through land purchase and donation. ACT's focus area includes the Santa Fe River Basin, which contains diverse forests, wetlands, and wildlife that support local tourism but are under threat from groundwater pumping and commercial water bottling.

ACT works to protect the Santa Fe River Basin and its aquifers through outreach and communication strategies that educate the public on watershed concepts and motivate local action. ACT has introduced the concept of "springsheds" in creative ways to help communities understand that protecting the area's valuable springs must involve protecting the land area that contributes water to springs. For example, ACT designed the *Simple Things for Our Springs* outreach campaign to raise awareness of the land-water connection among private landowners

using **videos** that convey the importance of protecting pristine lands and conserving working farms through real-life stories from involved citizens. The campaign included supporting printed materials and promotion through social media. ACT also organizes water-based outdoor activities, such as canoeing, kayaking, and wetland tours, to foster deeper community engagement. To inspire future generations, ACT hosts educational programs that teach children the basics of aquatic ecology.

Paddlers exploring the upper Santa Fe River during a guided trip to view ACT conservation lands. Credit: Alison Blakeslee

Partnerships are another factor in ACT's outreach and communication efforts. When preparing outreach materials, such as newsletters and webinars, ACT tailors the materials to attract new partners and align with existing partners (e.g., water management districts, citizen watershed groups, and wildlife agencies), so resources among groups can be better coordinated and leveraged. ACT often uses factsheets with photos and maps, sometimes also paired with site visits, to give context for a new project, make a clear ask of its partners, and identify productive paths for collaboration. Through tailored messaging, ACT has found common ground among diverse groups to better help protect North Central Florida's lands and waters.

To learn more about ACT's work, visit **https://www.alachuaconservationtrust.org/**

CONCLUSION

Land trusts can play a critical role in protecting a watershed to ensure that rivers, lakes, bays, wetlands, and other waterbodies promote a community's public health, recreational opportunities, and economic growth. The land conservation and stewardship principles that land trusts are built upon are well-aligned with approaches for restoring impaired waters and preserving healthy waters. By integrating watershed protection into their organizational goals and strategies, land trusts can leverage information on watershed conditions to guide strategic planning, sources of financial support for protecting water quality and quantity, and public interest in preserving waters that are valued by communities to augment outreach and engagement efforts.

REFERENCES

Ernst, C. 2004. Protecting the Source: Land Conservation and the Future of America's Drinking Water. The Trust for Public Land and American Water Works Association, San Francisco, CA. **https://www.tpl.org/sites/default/files/cloud.tpl.org/pubs/water-protecting_the_source_final.pdf**

Gartner, T., Mulligan, J., Rowan, S., and Gunn, J. 2013. Natural Infrastructure – Investing in Forested Landscapes for Source Water Protection in the United States. ISBN #: 978-1-56973-813-9. World Resources Institute, Washington, DC. **https://www.wri.org/publication/natural-infrastructure**

Krueger, E. and Jordan, N. 2014. Preserving Water Quality in the Savannah River: Protecting the Future of Drinking Water Supply. The Nature Conservancy, South Carolina Field Office, Charleston, SC. **https://s3.amazonaws.com/tnc-craft/library/Savannah-Potable-White-Paper-Final-091614.pdf?mtime=20180822151837**

Trust for Public Land (TPL) and American Water Works Association (AWWA). 2005. Source Protection Handbook: Using Land Conservation to Protect Drinking Water Supplies. The Trust for Public Land and American Water Works Association, San Francisco, CA. **https://www.tpl.org/sites/default/files/cloud.tpl.org/pubs/water_source_protect_hbook.pdf**

Upper Neuse Clean Water Initiative. 2015. Upper Neuse Clean Water Initiative: 2015-2045 Conservation Strategy. Upper Neuse Clean Water Initiative, Raleigh, NC. **http://ncswc.org/files/Awards/2015-2045%20Conservation%20Strategy.pdf**

APPENDIX A

EPA Program Descriptions, Eligible Activity Descriptions, and **Funding Program Table** footnotes

Brownfields Program Grants – *Brownfields* are properties for which the expansion, redevelopment, or reuse may be complicated due to the presence or potential presence of hazardous substances, pollutants, petroleum, or other contaminants, or is mine-scarred land. EPA's Brownfields Program provides direct funding for brownfields assessment, cleanup, revolving loans, and environmental job training through separate grants. Applicants must be able to demonstrate that they are not liable for the contamination. These funds are provided through Cooperative Agreements (see note below). Each program has slightly different eligibilities and requirements.

Most relevant to Land Trusts: **Community-wide and Site-Specific Assessment Grants**, which fund inventories, planning, assessment, and community outreach. A portion of funds may be used for environmental insurance. **Cleanup Grants**, which fund cleanup activities at sites owned by the applicant and for which a Phase II environmental assessment has been completed or is underway. A portion of funds may be used for environmental insurance.

Clean Water Act § 319 Grant Program – The Clean Water Act §319 Nonpoint Source Management Program Supports a wide variety of activities including technical assistance, financial assistance, education, training, technology transfer, demonstration projects and monitoring to assess the success of specific nonpoint source implementation projects. §319 programs are administered by States, Territories, and Tribes, which may in turn pass funds on to communities, local conservation groups, and other organizations through subgrants or contracts for implementation of nonpoint source projects, plans, and management efforts included in Watershed-based Plans. Programs vary widely; **contact your state Nonpoint Source Coordinator** for details.

Clean Water State Revolving Fund (CWSRF) – Clean Water State Revolving Fund (CWSRF) programs can fund a wide variety of water quality protection efforts under multiple CWA authorities, including watershed pilot projects (as described in CWA §122), or projects to implement a state nonpoint source (NPS) management program (as described in CWA §319) or National Estuary Program (NEP) Comprehensive Conservation & Management Plan (CCMP) (as described in CWA §320). Eligible projects range from planning, site cleanup, wetland restoration and land conservation, to BMP implementation, purchase of efficient agricultural equipment, installation of bioretention, and dam removal. Planning projects must have a reasonable expectation of resulting in a CWSRF-eligible capital project to receive funding.

Loans are offered at below-market rates and may qualify for principal forgiveness or grants. CWSRFs are administered at the State level. Watershed, NPS, and CCMP projects can be funded through a variety of mechanisms, the use of which and terms vary widely. Some states allow non-point projects to be "sponsored" by a traditional gray infrastructure project, at low- or no-net cost for the nonpoint source project. Other states use pass-through loans (through an intermediary lender) to fund nonpoint source projects. **Contact your state CWSRF program** for details.

Tip: Local water utilities can be critical partners in watershed protection. Through ratepayers, they have a viable source of loan repayment.

Drinking Water State Revolving Fund (DWSRF) – Drinking Water State Revolving Fund (DWSRF) programs can fund source water protection activities in delineated source water protection areas through the optional Set-Asides, which are separate from the infrastructure loan fund. States may support source water protection through various mechanisms, such as loans to public water systems, grants to local communities, funding of technical assistance providers, or grants to nonprofits. Water systems may receive below-market rate loans and may qualify for principal forgiveness or negative interest to acquire land/easements or implement voluntary, incentive-based measures. States may offer land trusts and other entities grants for land conservation or other source water protection activities. DWSRF programs are administered at the State level (50 states and Puerto Rico). Note that capacity development activities funded under the Local Assistance Set-Aside must be part of the state's **Capacity Development Strategy** to be eligible.

Nonprofits can be cosignatories to a loan agreement with the water system for land acquisition, easements, or other source water protection measures. In this arrangement, the organization could help implement the land use control measures around the water sources and take over the responsibility for loan repayment. Eligibility and terms vary, and not all States use Set-Aside funds for source water protection. **Contact your state DWSRF program** for details.

Tip: Local water utilities can be critical partners in watershed protection. Through ratepayers, they have a viable source of loan repayment.

Environmental Justice Collaborative Problem Solving Program (EJCPS) – The EJCPS helps build collaborative partnerships in underserved and disadvantaged communities to develop and implement solutions to address local environmental or public health issues, with an emphasis on climate and disaster resiliency. It is targeted towards larger, more established organizations than the EJ Small Grants program (below). EJCPS projects emphasize information, communication, awareness, and learning, rather than just fixing problems. Eligible project activities include research, public education, demonstration projects, training, monitoring, development, surveys/studies, investigations, and experiments. Large-scale clean-ups, routine operations, treatments, disposal, or a similar implementation focus are not appropriate. Projects must be associated with at least one federal environmental statute, such as the Clean Water Act and Safe Drinking Water Act. Recipients must use EPA's **EJ Collaborative Problem-Solving Model.**

Environmental Justice Small Grants Program (EJSG) – The EJSG helps underserved and vulnerable communities to build collaborative partnerships, educate the community, and develop strategies to address local environmental and public health issues. Climate and disaster resiliency is a focus area. EJSG projects emphasize gathering and transferring information gathering and advancing awareness, rather than just fixing problems. Projects must be associated with at least one federal environmental statute, such as the Clean Water Act and Safe Drinking Water Act. Half of 2021 funds were reserved for non-profits with fewer than 10 employees.

Five Star and Urban Waters Restoration Program – Offered by the National Fish and Wildlife Foundation (NFWF) in partnership with the EPA, USDA, USFWS, and private partners, the Five Star and Urban Waters Program seeks to develop community capacity to sustain local natural resources for future generations by providing modest financial assistance to diverse local partnerships for wetland, forest, riparian and coastal habitat restoration, stormwater management, outreach and stewardship with a particular focus on water quality, watersheds and the habitats they support. Each project must include four main elements: on-the-ground activities; community partners; integrated education, outreach, and training; and measurable ecological, educational, and community benefits. Funds are available nationwide, in any size of community, but some funds offered through the program have specific priorities.

Great Lakes Restoration Initiative (GLRI) – Through the GLRI, the EPA provides funding for a variety of projects targeting toxic substances, invasive species, nonpoint source pollution, habitats and species, designated geographic Areas of Concern, and Foundations for Future Restoration Actions (covering education, monitoring, communication, partnerships), in support of the **GLRI Action Plan**. The information displayed in the eligibility chart is for EPA's Nonpoint Source Runoff & Nutrient Reduction RFA Projects, which fund activities such as riparian restoration, interception and filtration of legacy agricultural phosphorus, and green infrastructure. There are multiple funding opportunities offered through GLRI, by the EPA as well as **NOAA, USFWS,** and other **partners.** Visit the **GLRI funding page** for the most up to date information.

Indian Environmental General Assistance Program (GAP) – The GAP provides grants to Indian Tribal governments and intertribal consortia to build capacity to administer environmental programs and develop multimedia programs addressing environmental issues on Indian lands. In addition, implementation of solid and hazardous waste programs is allowed. Activity eligibility is often determined on a case-by-case basis, depending upon specific circumstances. Contact your EPA Region for details.

National Estuary Program (NEP) Coastal Watersheds Grants – The NEP is a non-regulatory, place-based program established under Clean Water Act §320 to protect and restore water quality and ecological integrity of estuaries of national significance. There are currently 28 NEPs that receive grants directly from the EPA to develop and implement Comprehensive Conservation & Management Plans (CCMPs). For more information on the NEP, go to **www.epa.gov/nep.**

The NEP Coastal Watersheds Grant is a national competitive program administered on behalf of the EPA through a cooperative agreement with Restore America's Estuaries (RAE). RAE issues subawards to eligible entities to address urgent, emerging, and challenging issues facing estuaries and identified in CCMPs such as habitat loss, flooding, coastal erosion, and nutrients. Eligible entities include states, interstate, and regional water pollution control entities, state coastal zone management agencies, and other public and private nonprofits. The details on subaward project eligibilities and timing were not available at the time of this publication; interested parties can visit the NEP Coastal Watershed Grant website for the most up to date information.

Water Infrastructure Finance and Innovation Act (WIFIA) – WIFIA is an EPA-administered federal credit program that provides long-term, low-cost financing for a variety of water infrastructure projects, including those meeting DWSRF or CWSRF eligibilities or providing drought prevention/reduction/mitigation projects. WIFIA has minimum project cost thresholds; projects tend to be large or complex and must be of national or regional significance. Typical borrowers are water utilities and state infrastructure financing authorities; while land trusts are not ineligible to receive funds directly, it is more likely that they could access funds in partnership with utilities or government entities. Projects carried out by private entities must be publicly sponsored.

Water Pollution Control (Clean Water Act §106) Grants – The EPA provides CWA §106 grants to States, interstate agencies, Territories, and Tribes, which use the funds to administer their §106 programs for the prevention, reduction, and elimination of pollution, including regulatory enforcement. States use §106 grants to fund a variety of regulatory, prevention, and control programs and activities, including those targeting nonpoint sources of pollution such as monitoring and assessment, watershed plans, and outreach and education programs. Some §106 programs may offer subgrants to carry out program priorities. Use of funds vary; contact your State, Tribe, Territory, or **interstate agency** for more information.

Wetland Program Development Grants (WPDG) – Established under CWA §104(b)(3), WPDGs fund programs and projects to protect, manage, and restore wetlands, with an emphasis on building the capacity of State, Tribal, and local government wetland programs. Non-profit organizations are eligible for National WPDGs, which must address a National Priority Area and be national in scope or benefit at least one state/tribe in at least two EPA Regions. States and other governmental entities may apply for Regional WPDGs. Eligible activities include research, surveys, training, outreach and education, planning, and demonstrations relating to causes, effects, extent, prevention, reduction, or elimination of water pollution. Implementation projects are not eligible, however, projects to develop and demonstrate new or experimental technologies, methods, or approaches may be funded.

Descriptions of Eligible Activity Categories from Funding Program Table

Eligible Activity	Description
Land Conservation	Acquisition: acquisition of real property, typically fee simple. Easement: acquisition by agreement of interests in real property less than fee simple, typically by restricting the use of the land for the purposes of protecting natural resources.
Restoration/Best Management Practice (BMP) Implementation/ Stewardship	Ecological restoration of degraded sites to improve functioning of natural systems or on-the-ground land management activities that protect or restore ecological function. Examples of restoration: invasive species removal, demolition and removal of structures and impervious surfaces, removal and remediation of contaminants, replanting, reconstructing wetlands, floodplain reconnection. Stewardship and BMPs include land management practices where the method, tools, location, or timing of activities are adjusted to reduce negative environmental impacts or yield positive environmental benefits. BMPs can also include stormwater management practices that manage, reduce, treat, recapture, and/or reuse stormwater.
Testing and Monitoring	Any type of survey, sampling, testing, monitoring, or analysis, except as prohibited by rule or statute—for example, SRFs prohibit routine testing and monitoring that are part of standard utility operations and regulatory compliance, but they can fund testing associated with new source development or a site assessment for an NPS project.
Project Planning	Feasibility studies, alternatives analyses, engineering reports, designs, or other work preparatory to implementation of a project that typically involves some sort of construction. Typically, this is related to a specific project.
Community Outreach	Activities involving the development and dissemination of informational materials to the public, obtaining public input, or other engagement with community groups. Examples: preparation of education materials; hosting or participating in a community forum; development of a toolkit of actions for community members to use.
Watershed Partnerships and Plans	Activities to support the creation and activities of watershed partnerships between entities working to manage water resources. Examples: organizing stakeholders to develop a watershed partnership; developing watershed plans; hosting workgroups, networks, and collaboratives to manage NPS pollution to reduce adverse impacts on water quality.
Administration	Direct and/or indirect costs associated with the administration and programmatic management of the funding and funded activities. Not general organizational administrative work. Examples: project oversight; reporting of outputs/outcomes metrics required under funding agreement.
Organizational Capacity Development	Activities that improve the technical, financial, or managerial ability of an entity to carry out activities that ensure clean water or manage programs. Examples: training, development of strategies or procedures, software, or tools.

References and Notes from Funding Program Table

1. Applicants may request a waiver to exceed the maximum grant amounts as follows: *Site-Specific Assessment Grants:* up to $350,00 may be requested for a site contaminated by hazardous substances, pollutants, contaminants, and/or petroleum. Waiver requests must be based on the anticipated level of contamination, size, or status of ownership of the site. *Cleanup Grants:* up to $650,000 may be requested for projects that plan to address only one brownfield site in their application. Waiver requests must be based on the anticipated level of contamination, size, and other considerations as outlined in the Cleanup Grant guidelines.

2. Eligible entities and activities are dependent on the specific statutory (CWA) eligibility. Several CWSRF eligibilities may fall under watershed partnerships and plans.

3. DWSRF and CWSRF funds may not be used for routine monitoring or testing required under SDWA or CWA as part of typical water or wastewater system operations. Special, non-routine testing such as to get a baseline for a contaminant of concern or to test a new potential water source can be funded.

4. Initial development of outreach materials for a community is CWSRF eligible.

5. The eligibilities displayed here refer to use of DWSRF Set-Asides, not the infrastructure loan fund. States' use of DWSRF Set-Asides vary. The most common set-aside used for source water protection is the Local Assistance and Other State Programs set-aside.

6. Only public water systems may receive loans from the DWSRF Set-Asides for land acquisition, conservation easements, or other source water protection measures. Land trusts may receive grant funding.

7. Capacity Development activities done under the DWSRF Local Assistance Set-Aside must be part of the state's Capacity Development Strategy.

8. DWSRF source water protection loans under the Local Assistance set-aside do not require a match. Grants or other forms of assistance provided by states may have match requirements as determined by the state.

9. GLRI information displayed here is for the EPA's Nonpoint Source Runoff & Nutrient Reduction Projects 2021 RFA. The GLRI is a larger umbrella under which EPA and other federal agencies offer a variety of funds, which may have slightly different eligibilities. Visit the **GLRI funding page** for the most up to date information.

10. Cost-share requirement for NEP refers to the overarching cooperative agreement with the entity that administers sub-awards; the requirements for any given subaward project may vary.

11. The timing of requests for new subaward project proposals is determined by the cooperative agreement holder administering the subawards, which has usually occurred annually.

12. To receive a federal §106 grant, states and interstate agencies must at minimum expend non-Federal funds for carrying out their pollution control program in the same amount spent during FY 1971.

13. Implementation projects or project-specific planning are not eligible for Wetland Program Development Grant funding, except insofar as they are a development or demonstrations of new techniques, technologies, or approaches.

APPENDIX B

EPA Funding Search Tools and Platforms

- EPA – **All Program Grants**
- EPA – **Regional Grants**
- EPA – **Source Water Collaborative Collaboration Toolkit**
- EPA – **Funding Integration Tool for Source Water Protection (FITS Tool)**
- **National government grants**
- River Network – 2021 article on **Unpacking Federal Water Policy Progress, Gaps & What Lies Ahead**
- **EPA Clearinghouse for Environmental Finance**
- Your state may have a search portal for funding opportunities, such as Kentucky's Division of Water, which has a list of BMP Funding Opportunities: **List of Funding Opportunities**

Getting Started: Tips for Applying for Federal Grants

1. **Review and complete eligibility requirements before application periods open:** For example, eligible entities must complete several steps before they can apply for a federal grant, including registering your organization with the **Federal System for Award Management** and designating an Authorized Organization Representative in **www.grants.gov.** The registration process can take a few weeks, so get started in advance!
2. **Identify potential projects and partners:** For government grant opportunities, the application period can be as short as 30 to 60 days. Identify projects that are in need of funding and potential partners before application periods open so that your organization is prepared to meet application deadlines. Projects may need to be included in local watershed plans to be eligible for some federal funding sources.
3. **Use effective search criteria to find relevant grant sources:** Grant clearinghouse websites have filtering options available for narrowing down relevant grants. Knowing which selections to make will save time. Review the suggested key terms and search criteria below:

    a) Suggested key terms: watershed planning, best management practices (or BMPs), community outreach, land acquisition, land conservation, conservation easements, and land management, nature-based solutions, source water protection, non-point source, restoration

    b) Suggested search criteria: grant dollar amount, match requirement, non-profit eligible

4. **Government funding sources typically have procurement requirements:** EPA grant recipients must comply with requirements for procurement contracts when using EPA funds to hire planners, architects, landscape architects, engineers, and other vendors of commercial services, as well as for the purchase of materials. These requirements are generally focused on ensuring transparency, fair pay, opportunities for women- and minority-owned businesses, and use of domestically-produced goods. Historically, some NPS projects have not been subject to some federal procurement requirements, but this is evolving. Detailed guidance is available in EPA's **Best Practice Guide for Procuring Services, Supplies, and Equipment Under EPA Assistance Agreements.** Subawards to nonprofit or governmental partners must comply with requirements in EPA's **Subaward Policy.**

5. **Cooperative Agreements bring partnerships with federal staff:** Some EPA funding is awarded in the form of a Cooperative Agreement, which allows the EPA Project Officer to be substantially involved in overseeing the funded work. Recipients of Cooperative Agreement funding can expect: technical assistance and consultation from the EPA staff; EPA staff participation in project scoping, procurement, and implementation; and close monitoring of performance.

6. **Be prepared to estimate impacts of proposed projects in terms relevant to regulatory requirements:** Funding applications to implement projects may require you to quantify estimated impacts of your project using metrics of regulatory concern, such as nutrient or sediment load reductions or volume of stormwater intercepted or treated. Familiarize yourself with the tools available and the input metrics necessary to generate estimates. A selection of tools is listed above. These tools may also position land trusts to participate in water quality trading markets.

APPENDIX C

'Getting Started' Technical Resources to Address Land Conservation and Watershed Protection

Background Information on Watershed Protection and the Watershed Approach

- **EPA Watershed Academy**
- **EPA Benefits of Healthy Watersheds website**
- **EPA Economic Benefits of Protecting Healthy Watersheds Fact Sheet**
- **EPA Watershed Approach website** (resources for understanding and applying the watershed approach)
- **EPA National Estuary Program (NEP) Community-Based Watershed Management Handbook** (describes successful watershed management approaches drawn from NEP experiences, and while NEPs focus on estuaries and coastal watersheds, information can be adapted to non-coastal watershed initiatives)
- **EPA Nonpoint Source Pollution website**
- **EPA National Nonpoint Source Program—A Catalyst for Water Quality Improvements**
- **EPA Source Water Protection website**

Land Conservation and Stewardship Resources:

- **NRCS Field Office Technical Guide for Conservation**
- **Land Trusts and Water: Strategies and Resources for Addressing Water in Western Land Conservation**
- **Land Trust Standards and Practices—Stewardship Compiled Guidance**
- **Protecting the Source—Land Conservation and the Future of America's Drinking Water**

Tools for Estimating Land Conservation and Stewardship Impacts on Water:

- **Spreadsheet Tool for Estimating Pollutant Load (STEPL)** – estimates nutrient and sediment loads from different land uses under different practices (EPA)
- **Nutrient Tracking Tool (NTT)** – estimates nutrient and sediment loss from agricultural lands under different management scenarios (USDA)
- **National Stormwater Calculator** – estimates annual amount of rainwater and runoff frequency from specific site using green infrastructure (EPA)
- **iTree** – selection of tools for quantifying impacts of trees. Use a 10-year tree age for measuring stormwater benefits.
- **Phosphorus Transport Reduction App (P-TRAP)** – estimates phosphorus removal of different removal structures under different site conditions (USDA)

Outreach and Communications Resources:

- **NPS Outreach Toolbox (EPA)**
- **Getting In Step: A Guide for Conducting Watershed Outreach Campaigns (3rd edition)**
- **Engaging Landowners in Conservation: A Complete Guide to Designing Programs and Communications (TELE)**
- **Urban Waters Ambassador Toolkit**