# Tennessee Forests & Water Forum 2021



## **Final Report**

The 2021 Tennessee Forests & Water Forum convened collaborators who are intimately connected with efforts to protect **healthy forests** and **clean water**. The "forest-water connection" highlights the overlap of environmental and human health benefits that come from managing healthy forests and protecting drinking water sources.

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### **OVERVIEW**

#### Southeastern Partnership & Tennessee

Increasing population growth and urbanization in the Southeast has resulted in forest fragmentation, forest losses (conversion to other land uses), and an overall decline in forest health. Since 2014, the USDA's Forest Service (USFS) and the US Endowment for Forestry & Communities have collaborated with southeastern states within the framework of the Southeastern Partnership for Forests and Water (SE Partnership).

The overall purpose of the SE Partnership initiative is to maintain healthy watersheds that provide safe, reliable drinking water, healthy forests, and strong local and regional economies. Specific goals include the following:

- Help maintain or expand healthy forests in drinking water source watersheds,
- Maintain and improve water quality and quantity through healthy forest retention and stewardship,
- Initiate and develop working relationships among water utilities, the forestry sector, state and local agencies, Rural Water Associations, and conservation groups,
- Identify watersheds and initiatives that have high potential for cooperative forest conservation and long-term stewardship, and
- Explore pilot projects to implement creative long-term stewardship strategies such as Payment for Watershed Services and forestry best management practices that demonstrate the interdependence of healthy forests and drinking water.

Over six years, SE Partnership supported 14 successful forest-water forums in eight southeastern states. Tennessee joined this group in 2021 by enlisting the support of SE Partnership to convene the **Tennessee Forests & Water Forum** (TN Forum). On September 15 and 16, 2021, nearly 100 stakeholders from the forestry, water, and conservation communities met virtually to explore the forest-water connection in Tennessee and to brainstorm specific ways to collaborate for the protection of these two important and interdependent resources.

Note: SE Partnership has a full research and partner library accessible from their website.

#### Planning the TN Forum

The TN Forests & Water Forum 2021 was the result of a multi-year planning effort guided by SE Partnership. Over 20 stakeholder representatives volunteered their time to recruit participants and plan for meaningful presentations that focus on the forest-water connection in Tennessee. Each planning team member is committed to future collaboration, and their contact information is listed for that purpose.

## TENNESSEE Forests & Water Forum – PLANNING TEAM



#### Forests & Water in Tennessee

The TN Forum focused on the connection between healthy forests and clean water in Tennessee, a state with a rich abundance of both.

Forests directly affect the quality and quantity of water. They serve as natural filters to pollutants, and they help manage the severity and impact of flooding events. According to the 2020 Tennessee Forest Action Plan, forests represent approximately 52% of the Tennessee landscape and help make Tennessee one of the top three lumber-producing states. Since income generated from forest-related industries is vital to the Tennessee economy, it is essential that forests are managed properly to keep the resource healthy and sustainable.

Water quality and quantity directly affect the lives of all Tennesseans by making agriculture and industry possible, providing recreational opportunities, and serving every household with drinking water. According to the Tennessee Department of Agriculture's Nonpoint Source Program's management plan, there are over 60,000 stream miles and over 570,000 lake and reservoir acres. Approximately half of the streams have been assessed to determine water quality, and 38% of those assessed streams do not meet water quality standards. Nearly all of the lake/reservoir acres have been assessed for water quality, and up to 32% of those acres may not meet water quality standards.

Drinking water in Tennessee households comes from private wells (groundwater) or utilities (surface and groundwater). Neither are safe from pollution, and the karst topography found in many Tennessee regions allows surface water pollutants to infiltrate groundwater supplies.

## 2021 Tennessee Forests & Water Forum

The opportunity provided by SE Partnership – to convene representatives of both the forest and water sectors to discuss new and better ways of managing both – was well-received. Approximately 100 registrants (see Appendix 2) represented state and local agencies, municipalities, utilities, conservation groups, and industries. The "lightning talk" format, which consisted of back-to-back 6-8 minute presentations, allowed a brief, but exciting, glimpse into a myriad of perspectives related to the forest-water connection. The complete Forum slide deck is available for download *here*; individual presentations are linked below.

#### Session 1: Introduction, Goals, and Objectives

- Southeastern Partnership for Forests & Water Overview Kathy Hawes, kathy@kathyhawes.com
- Water Management Overview Brian Ham, TN Dept of Environment & Conservation (TDEC), brian.ham@tn.gov
- Forest Management Overview Ali Williams, allison.l.reddington@usda.gov

#### Session 2: Watershed & Public Health Perspectives

- Strengthening Watershed Partnerships & Collaboration Jeff Schaeffer, TN Tech Water Center, *jschaeffer@tntech.edu*
- Link between Forests, Drinking Water, and Public Health Graeme Lockaby, Auburn University, lockabg@auburn.edu
- The Importance of Karst to Water in TN Cory Holliday, The Nature Conservancy, *cholliday@tnc.org*
- Fish, Wildlife, and Habitat Management in TN Emily Granstaff, US Fish & Wildlife Service, *emily\_granstaff@fws.gov*
- TN River Basin Network & TVA Programs Shannon O'Quinn, TVA, tsoquinn@tva.gov

#### Session 3: Forestry/Landowner/Land Use Perspectives

- TN Forestry Programs & Initiatives Jessica Yahnke, TN Dept of Agriculture, Jessica.yahnke@tn.gov; Brian Hughett, TN Dept of Agriculture, brian.hughett@tn.gov; & Caley Monigan, Evergreen Packaging, caley.monigan@everpack.com
- US Forest Service Initiatives in TN Ali Williams, US Forest Service, *allison.l.reddington@usda.gov*
- Connection between Recreation & Water in TN Jenni Veal, Jenni Veal Consulting, *jennifveal@yahoo.com*

#### Session 4: Drinking Water Source Protection Perspectives

- TN Source Water Protection Overview Brian Ham, TN Dept of Environment & Conservation, brian.ham@tn.gov & J.W. Griffin, TN Association of Utility Districts, justingriffin@taud.org
- TN Source Water Protection Case Studies David Stafford, Winchester Springs & Jonathan Pleasant, Elizabethton Water Utility, *jpleasant@cityofelizabethton.org*
- Memphis Aquifer CAESER Project Brian Waldron, CAESER, *bwaldron@memphis.edu* & Scott Schoefernacker, CAESER, *scott.s@memphis.edu*

#### Session 5: Land Conservation Perspectives

- Land Conservation & the Connection to Forests & Water Resources Rob Bullard, The Nature Conservancy, *ebullard@tnc.org*
- Land Stewardship Priorities for TN Christie Henderson, TennGreen, christie@tenngreen.org
- Harpeth Conservancy's Forests & Drinking Water Programs Ryan Jackwood, Harpeth Conservancy, ryanjackwood@harpethriver.org
- Tennessee's Natural Areas Roger McCoy, TN Department of Environment & Conservation, roger.mccoy@tn.gov

#### Session 6: Funding & Finance Perspectives

- Lessons Learned from the Healthy Watersheds Consortium Grant Program & Innovative Watershed Funding from the Southeast Jeff Lerner, US Endowment for Forestry & Communities, *jalanlerner@qmail.com*
- Funding & Financing for Watershed Stewardship Jenny Adkins, USDA Natural Resource Conservation Service (NRCS), *jenny.adkins@usda.gov* & Sam Marshall, TN Department of Agriculture, *sam.marshall@tn.gov*

#### Session 7: Policy & Planning Perspectives

- Tennessee Watershed Planning, Watershed Assessments, and Water Quality Standards Overview – Richard Cochran, TN Department of Environment & Conservation, richard.cochran@tn.gov
- Land & Water Policies that Affect Tennessee's Watersheds Sarah Houston, Protect our Aquifer, sarah@protectouraquifer.org
- Thrive Regional Partnership and Natural Treasures Partnership Rhett Bentley, Thrive Regional Partnership, *rbentley@thriveregionalpartnership.org* & Charlie Mix, University of Tennessee, *charles-mix@utc.edu*

#### **OTHER LINKS:**

- OSMRE's Appalachian Regional Reforestation Initiative
- Legacy Parks' Landowner Enhancement Guide
- University of Tennessee's Tennessee River Studio
- Thrive Regional Partnership's Cradle of Southern Appalachia Conservation Progress Dashboard
- TDEC's 2020 Tennessee Impaired Waters List (303d List)
- TDEC's Watershed Planning Resources
- USDA's Landscape Scale Restoration grant program
- TWRA's State Wildlife Action Plan
- Southeast Conservation Adaptation Strategy
- UTK's Tennessee Water Resources Research Center

## **Breakout Session 1:** "How to incorporate the Forest-Water Connection into Tennessee Watershed Efforts?"

In the first breakout session, attendees identified key players in Tennessee and answered questions about existing forest-water programs and how they can be optimized. A SWOT (strengths, weaknesses, opportunities, threats) analysis helped create a snapshot of current forest-water efforts.

**Key Organizations and Agencies:** State agencies (TN Dept of Environment & Conservation, TN Dept of Forestry/TN Dept of Agriculture, TN Wildlife Resources Agency), federal agencies (EPA, USDA-NRCS, USGS, USFWS, USFS, Army Corps of Engineers), TN Forestry Association, TN Association of Utility Districts, Soil & Water Conservation Districts, agricultural extensions and water centers at colleges and universities, NGOs (The Nature Conservancy, TN Wildlife Federation, TennGreen, watershed associations), utilities, and municipalities (MS4s and parks/recreation departments).

#### **Existing Forest-Water Programs:**

- USDA's Natural Resources Conservation Service (NRCS): National Water Quality Initiative (NWQI), Joint Chiefs' Landscape Restoration Partnership, Mississippi River Basin Healthy Watersheds Initiative, various Farm Bill programs
- Clean Water Act, Section 319's Nonpoint Source Program, managed in Tennessee by the Dept of Agriculture
- State Revolving Fund Loan Programs, managed in Tennessee by the Dept of Environment & Conservation
- Tennessee's State Land Acquisitions Fund (SLAF)
- Army Corps of Engineers (ACE) multiple programs Floodplain Management Services Program, Continuity Authority Program, Silver Jackets, Planning Assistance to States Program
- Educational programs: Stream critters, Engineering with Nature, Enviroscapes, Shade Your Stream, American Water Works Association (AWWA) Source Water Protection Week
- Office of Surface Mining, Reclamation, and Enforcement's (OSMRE) Appalachian Regional Reforestation Initiative (ARRI)
- Southeast Aquatic Resources Partnership (SARP)
- EPA's Healthy Watersheds Program
- Appalachian Regional Commission
- US Geological Survey's National Water Quality Assessment (NAWQA), Cooperative Matching Funds

#### STRENGTHS:

- Appalachian Regional Reforestation Initiative: 5-step approach for reforestation on coal mines
- Duck/Elk River Initiative incorporates partnerships, technical assistance & cost-share for private landowners
- Lots of available water in the state, many recreational opportunities
- Blueways projects show people first-hand the benefits of our waterways
- Existing source water risk assessments and wellhead protection reviews
- Money available through Farm Bill and other programs
- Strong partnerships leverage resources, such as between USFWS & NRCS
- Innovative ideas such as utilities switching water sources at certain levels to protect water quality and quantity as well as habitats

- Bike trails have worked to protect forests and increase consumer appreciation
- Partnership with Corps has kept algal blooms down in Percy Priest
- Some water departments have strong media presence and outreach programs
- Many strong conservation easement champions: TennGreen, Shelby County Conservation Board, Land Trust, Legacy Parks, Wolf River Conservancy, Loosahatchie, Nonconnah
- Strong individual champions, such as Mike Butler of TWF, Pandy Upchurch of TWRA
- New technology shares local utility data to non-operators

#### WEAKNESSES:

- Lots of individual projects across the state, but can be so focused on own goal/workload that collaboration opportunities that affect greater landscapes are missed or underutilized
- Karst features vulnerable to forest management; not enough regulation
- Unregulated activities (livestock, gravel in streams) have far-reaching effects on water systems
- Lack of understanding of how consumers' water bills are impacted by ever-increasing treatment costs (e.g., in Ohio, consumers may have increased water bills due to increased treatment costs for algal blooms during some months)
- Priority needs/watersheds are not fully known, so programs like the state revolving fund are not optimally used.
- Public does not fully understand the economic costs/benefits of water protection
- Abundance of water in the state creates less urgency for the need to protect it
- Lots of privately-owned land (most karst geography is privately owned) and many out-of-state owners of those private lands
- Not a culture of grassroots groups that focus on projects like conservation more outreach necessary to create LOCAL CHAMPIONS to sell conservation projects
- TWRA funded by license fees and understaffed; could be more active in forest-water protection
- TN geography essentially makes for 3 states in 1, with different needs/focus
- Poorly informed public regarding water cycle and drinking water; misinformation as well as information overload

#### **OPPORTUNITIES:**

- Use state tax dollars from State Lands Acquisition Fund (SLAF) to acquire land to protect drinking water sources.
- Develop database of groups/agencies with existing forest-water projects and shared goals to facilitate more collaboration
- Use urban, wetland, and stream restoration projects to assist with local flooding and related water quality issues.
- Increase wildfire suppression activities to minimize wildfires and their aftereffects.
- Improve ownership buy-in and volunteer implementation in some watersheds.
- Increase proactive BMP implementation *before* large timber harvests; include watershed-based discussions *before* timber harvests.
- Pursue dye trace studies of all inlets and outlets of Cumberland Plateau to help water resource people understand and protect the recharge area, then aggressively pursue ways to protect the identified lands and source waters.
- Increase programs to reconnect surface waters; explore subsurface connectivity.
- Increase public outreach with private landowners (acquisition, conservation easements, TWRA/TWF/FWS programs) using examples in presentations.

- Look at conservation ideas from multiple perspectives to find funding (i.e., a land conservation program may fit parameters for water quality funding.)
- TWRA could add aquatic biodiversity elements to their programs in addition to wildlife enhancement.
- TWF has a current surplus of funds within its in-lieu-fee wetlands mitigation program. More executable programs on private lands need to be sought.
- Partner with and support drinking water utilities to be champions for conservation programs.
- Develop more source water protection specialists.
- Create more and better champions of various conservation programs within universities, DU/TU, AmeriCorps, and other appropriate organizations.
- Engage more with soil and water conservation districts in every county.
- Develop more and better statewide networks and champions by emphasizing the similarities among the three regions and then tailoring programs to specific regional needs.
- Expand "shade your stream" program to "shade your spring" when TTU finishes state inventory of springs.
- Find more ways for recreational water users to extend their "stay" on the water. Access points are a good start, but there is a need for better partnerships with private landowners. UTK's TN RiverLine is strong on engagement opportunities.
- Host "blueway summits" to bring stakeholders to the table to discuss land use/development; include more contractors and Realtors at these discussions.
- Cultivate private sector funding for matching grants rather than compete for funds.
- Expand Corps programs to forests, e.g., Floodplain Management Systems Program.
- Expand FSA-funded source water protection specialists such as J.W. Griffin with TAUD.
- Use every opportunity to engage with the public as a chance to educate and be positive.
- Develop or expand educational opportunities to keep recruiting young champions (e.g., job shadowing opportunities for high school and college students; STEM clubs; stream critter programs; drinking water source programs).
- State programs or authorities to management lands for source water protection (like in the Northeast)
- Evaluate how well current programs are working

#### THREATS:

- Deforestation from lumber industry
- Loss of habitat for endangered species
- Increased pollution (esp. nonpoint) leading to more impaired/threatened waters
- Increased flooding, pollution, property damage due to climate change/change in weather patterns/increased precipitation
- Environmental destruction due to land/economic/recreation development projects related to increased population growth and urban sprawl
- Loss of source water protection due to industry development
- Aging infrastructure
- Losing forests, springs to development/sale from private and/or out-of-state property owners
- Pollution from failing septic tanks

## **Breakout Session 2:** "Developing an Action Plan: How to Utilize Funding/Finance, Research, Partnerships, & Policy to Strengthen Tennessee's Watershed Efforts?"

In the second breakout session, attendees were asked to contribute ideas toward the development of an action plan to continue the momentum gathered during the TN Forum. The following graphic from World Resources Institute identifies four stages of watershed protection. Tennessee's forest-water collaboration is in the "Momentum" stage.

#### WATERSHED PROTECTION SUCCESS FACTORS

(Credit: World Resources Institute)

THEME	SUCCESS FACTOR
BUILDING MOMENTUM	<ul> <li>Drivers/opportunities for green infrastructure investment</li> <li>Champions/Advocates</li> <li>Business/Economic Case</li> <li>Partnerships &amp; collaboration</li> <li>Effective messages/outreach</li> </ul>
DESIGNING	<ul> <li>Landscape assessments/plans</li> <li>Agreed upon outcomes/definition of success</li> <li>Sustainable funding mechanisms</li> </ul>
IMPLEMENTING	<ul> <li>Partners have defined responsibilities &amp; capacity</li> <li>Landowners are involved, invested</li> </ul>
MAINTAINING	<ul> <li>Outcomes monitored &amp; reported</li> <li>Sufficient long-term funding to achieve landscape-scale results</li> <li>Ability to learn from past &amp; plan for future</li> </ul>

#### OVERALL ACTION PLAN COMMENTS:

- Imperative to continue these meetings
- While the plan is important, we also need to establish and re-enforce the forum's mission, vision, purpose, etc.
- Important to have periodic reviews of action plans and accountability of those plans
  - Engaging in reviews at local level is important
- Recognize the 3 major basins in the statewide backbone- TN, Mississippi, and Cumberland

#### SHORT-TERM goals (3 mos to 1 year):

- Establish structure to continue collaboration
  - Establish statewide coordinator
  - Establish steering committee
  - $\circ$   $\;$  Establish the group's overall mission statement, goals, and objectives
- Establish a strategy to sustain this forum into the future

- Establish annual meeting and review goals to track accomplishments
- Inventory of grant funding available
  - For projects
  - For statewide coordinator position
    - Possibility to use River Studies and Leadership Certificate Program at UT Chattanooga
- Identify partners across the state
- Conduct partner capacity survey to see what we can do
  - Conduct literature/partner review of what groups do, projects in play, etc.
  - Create dashboard, platform, etc. for continual updates of projects
  - Create toolbox of resources available (i.e., grant funding, technical assistance)
- Develop an outline for the "Playbook"
- Gather intel on outreach/education activities, materials, locations, etc.
  - o Utilize Project Learning Tree and Project Wet
- Recognize and share success stories
- Conduct environmental scan of priority watersheds

#### LONG-TERM goals (1-5 years):

- Protect drinking water supply (address sensitive recharge areas)
- Obtain understanding of what needs to be preserved (wellheads, springs, etc.)
- Obtain understanding of how co-benefits of watershed protection can improve recreation access, carbon offsets, air, economics, etc.
- Gather info on utility initiatives to buy land for source water protection
- Continue to update master list of partners
- Encourage more cross-program coordination between state agencies, especially TDA and TDEC
- Get local groups more involved in projects, outreach, education, etc.
- Develop playbook idea through collaborative sessions
- Establish annual award for success stories
- Tools to develop:
  - Develop a framework to focus efforts
    - Develop a metric to forests on how they improve drinking water
    - "Wish list" of non-point source areas where TDA and TDEC would like to see new efforts established
  - Utilize a data integration platform
    - See Internet of Water and Source Water Collaborative concepts
    - TDEC and TDF are developing an ESRI hub for their data
    - Share TDEC and USGS's source water assessments with the larger community
- Consider local/state policy changes
  - $\circ$   $\:$  Identify policy leverage points or policy changes to help eliminate or limit source water threats
  - Statewide watershed management approach
  - Require green space with all new large land developments (engage planning departments in municipalities)
- Continue outreach/education projects
- Create Water Prioritization map

### APPENDIX 1: TN Forum Attendee Packet





	Tennessee Forests & Water Forum 2021 Sept. 15-16; Central Time Zone
)ay 2, T	hursday, September 16
10:00	Day 1 Breakout Sessions Report
10:20	<ul> <li>Land Conservation Perspectives</li> <li>Land Conservation and the Connection to Forests &amp; Water Resources - Rob Bullard, The Nature Conservancy</li> <li>Land Stewardship Priorities for TN - Christie Henderson, TennGreen</li> <li>Harpeth Conservancy's Forests &amp; Drinking Water Programs - Ryan Jackwood, Harpeth Conservancy</li> <li>TN Department of Environment &amp; Conservation Lessons Learned - Roger McCoy, TDEC</li> </ul>
10:50	<ul> <li>Funding and Financing Perspectives</li> <li>Lessons Learned from the Healthy Watersheds Consortium Grant Program &amp; Innovative Watershed Funding from the Southeast - Jeff Lerner, Healthy Watersheds Consortium Grant Program</li> <li>Funding &amp; Financing for Watershed Stewardship - Jenny Adkins, USDA- NRCS &amp; Sam Marshall, TN Dept. of Agriculture</li> </ul>
11:10	Q&A
11:20	Break
11:30	Policy and Planning Perspectives
	<ul> <li>Tennessee Watershed Planning, Watershed Assessments, and Water Quality Standards Overview - Richard Cochran, TDEC</li> <li>Land &amp; Water Policies that Affect Tennessee's Watersheds - Sarah Houston, Protect our Aquifer</li> <li>Thrive Regional Partnership and Natural Treasures Partnership - Rhett Bentley, Thrive Regional Partnership &amp; Charlie Mix, UT</li> </ul>
12:00	Q&A
12:15	Lunch Break
12:45	Breakout Group Discussions
1:45	Day 2 Breakout Session Report and Next Steps
2:15	Day 2 Adjourn

## SoutheasternPartnership.org

## Tennessee Forests & Water Forum 2021 Sept. 15-16; Central Time Zone

## FORUM GOALS & OBJECTIVES

- · Share information with each other about the forests-water connection; watershed planning, policy and issues; and relevant programs and projects.
- Learn ways to improve forested watershed stewardship.
- · Strengthen networking, partnerships and collaboration among watershed partners.
- · Create an action plan to collaboratively improve water resources in Tennessee through forest management and watershed stewardship.

### REGISTRANT SURVEY RESPONSES

An informal two-question survey was sent to registrants to assess the geographic scope of attendees and to find out what problem areas may be addressed during the Forum. The following responses were received.

#### Where is your work focused geographically?

"Statewide"

Chickamauga Dam\*

"Wilson County"

with special focus on Obed & Big South

"Knox County, with several streams in the county & the TN River\*

Fork watersheds\* "Statewide"

"Statewide" "Southern Appalachian Region"

\*Tennessee River below "TN River in Chattanooga" "TN River, Holston, and French Broad watersheds"

"Water quality of all the state's rivers,

"Statewide"

#### What are your primary challenges with this work?

"My biggest challenge is finding organizations willing to accept grant funds in exchange for doing great conservation work in the field."

"Source water protection"

"1) Establish modeling, monitoring, and reporting beyond the TDEC baseline status of wadable streams 2) Support development of comprehensive watershed restoration and management plans."

"Staying current with communication techniques, relationships with relatively new groups such as Mountain Bikers and ATV'ers."

"As a nonprofit, a major challenge is funding for land conservation and our work. However, other challenges for my job are reaching a statewide audience about land conservation and identifying/reaching individuals who are interested and capable of working with us on conservation easements."

"How to educate private land owners. about the connection between watershed management on their property and how it links to the drinking water they or others consume."

"Awareness of independent work being done to meet on shared goals - the forum can help make those connections!"

> "Staying connected and engaged with stakeholders/other interested parties"

"We get a lot of runoff from S. Chickamauga Creek after it rains as the dirty water hugs the river bank on our side all the way down to us, also our water source is used by all sort of boat traffic, barges, recreational etc, and we are way downstream from a nuclear plant. Moving the intakes futher into the river would help but require money, permits, etc. We do extra monitoring for radiologicals out of caution."

"Challenges have been board engagement with Covid and funding is always a challenge as a nonprofit."

"Taste and odor issues in the summer ; pac helps but when it is really bad, doesn't take it all out"

## SoutheasternPartnership.org

## APPENDIX 2: Contact List

FIRST	LAST	ORGANIZATION	PHONE	EMAIL
Ronne	Adkins	TN Department of Environment & Conservation (TDEC)	901-568-2535	ronne.adkins@tn.gov
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