

## CONFERENCE SPEAKER PROFILES

**Scott W. Bailey**, Research Geocologist  
*US Forest Service Northern Research Station*  
Scott has a BS in geology from University of Massachusetts, a MS in hydrology from UNH, and PhD in geology from Syracuse University. He has worked as a private environmental consultant and for the past 14 years as a research scientist at the Hubbard Brook Experimental Forest. His research focuses on the influence of substrate, including soils, geologic parent-materials, landforms, and water, on the structure and function of ecosystems.

**Greg Barker**, Hydrogeologist  
*NH Department of Environmental Services*  
Greg received a Bachelors degree in Geology in 1985 from the University of Rhode Island. Since that time he has worked in the environmental consulting field, in both the private and public sectors, concentrating in ground water and watershed processes. Since the late 1990's, Mr. Barker has also been specializing in computer programming as it applies to the geologic sciences and over the last 7 years in Geographic Information Systems (GIS). Recent project work that Mr. Barker has participated in included the evaluating ground water availability in the New Hampshire Seacoast Region and a New Hampshire-wide assessment of water use and potential resulting hydrologic stress and an evaluation of New Hampshire's wetlands to attenuate flood waters.

**Doug Bechtel**, Director of Freshwater Conservation  
*The Nature Conservancy, NH Chapter*  
Doug manages freshwater conservation activities for the NH Chapter of The Nature Conservancy. These include strategies to protect, maintain, or restore freshwater connectivity in rivers, protecting and restoring floodplain forests, and setting priorities to enhance aquatic biodiversity state-wide. Doug has lived and worked in New Hampshire for 15 years after getting his Master's Degree from UVM in 1995.

**Derek Bennett**, Manager, Water Conservation  
*NH Department of Environmental Services*  
Derek manages the Water Use & Conservation Program in the Drinking Water and Groundwater Bureau of NHDES. Derek is responsible for working with the state's largest water users to ensure accurate water use measurement and to identify opportunities for

improvement in water efficiency. Derek was previously employed as a Hydrogeologist with the New Hampshire Geological Survey, and has been with DES for more than 10 years. He obtained his degree in environmental conservation from the University of New Hampshire in 1999.

**John Brooks Ph.D., P.G.**, Senior Geologist  
*Emery & Garrett Groundwater, Inc.*  
For the past 20 years, Dr. Brooks has worked with a team of hydro-geologists at Emery & Garrett Groundwater, Inc. to develop groundwater resources along the US Eastern Seaboard. These groundwater development programs have provided new insights into the long-term sustainability of yield and quality for both bedrock and unconsolidated aquifers. Groundwater resources have been developed for over 1,000 public water systems, residential developments, golf courses, and commercial water users.

**Sonya Carlson**, Beach Inspection Program Coordinator  
*NH Department of Environmental Services*  
Sonya has been the Beach Coordinator for NH NHDES for three years. She oversees the sampling of coastal and freshwater beaches and re-sampling for advisories. Sonya also has a Master's degree in Zoology from the University of New Hampshire where she studied under Dr. Jim Haney, researching cyanobacteria and its effects on zooplankton.

**Fredrick Chormann, Jr.**, Senior Hydrologist  
*NH Department of Environmental Services – NH Geological Survey*  
Fred has been a hydrogeologist with the NHDES since 1984, principally involved with water resources assessment and water quantity issues. He has been a promoter and user of GIS in water resources management throughout his career.

**Steve Couture**, Rivers Coordinator  
*NH Department of Environmental Services*  
Steve is the Rivers Coordinator for the NH Rivers Management and Protection Program at NHDES. Before serving in his current position, he worked in the Biology Section of the NHDES Watershed Management Bureau and the NHDES Wetlands Bureau. Steve works closely with Regional Planning Agencies, the Local River Management Advisory Committees, the Rivers

Management Advisory Committee, and other stakeholders in implementing the Rivers Management Protection Program.

**Robert Craycraft**, Board Member

*New Durham Planning Board*

Mr. Craycraft has served on the New Durham Planning Board for 10 years and has been involved in the development of several ordinances that protect natural resources: steep slope overlay, riparian buffer ordinance and conservation subdivision ordinance. Mr. Craycraft holds a BS in Biology and works professionally at the University of New Hampshire where he is involved in water quality monitoring and assessment projects.

**Cayce Dalton**, Project Manager

*F.B. Environmentalist, Inc.*

Cayce of FB Environmental has conducted stream, lake, and estuary monitoring for nine years in New England, with an emphasis on stormwater, bacteria, and land use analysis. He received his BS in environmental science from the College of William and Mary, and served two years in the Maine Conservation Corps. He coordinated the System Wide Monitoring Program at the Wells National Estuarine Research Reserve. Cayce also has experience in municipal land use regulation and enforcement, GIS analysis, and watershed planning.

**Michelle Daley**, Research Scientist

*NH Water Resources Research Center,  
University of New Hampshire*

Michelle is a research scientist at UNH and the associate director of the NH Water Resources Research Center. She received her B.S. in Environmental Science in 1997 and her M.S. in Natural Resources from UNH in 2002. Her research has focused on the biogeochemistry of suburban watersheds.

**Caleb B. Dobbins**, State Maintenance Engineer  
*NH Department of Transportation, Bureau of  
Highway Maintenance*

Caleb is a civil engineer with over 20 years with the NHDOT, the last 10 years working for the Bureau of Highway Maintenance. He currently oversees all six of the highway maintenance districts in NH and is deeply involved in winter maintenance, roadway maintenance/reconstruction, rest area administration, oversize/overweight vehicle permitting and many other maintenance programs.

**Paul Doscher**, Vice President of Land Conservation

*Society for the Protection of New Hampshire Forests*

**Sarah Flanagan**, Hydrologist

*US Geological Survey, NH/VT Water Science Center*

Sarah is currently working as a hydrologist for the U.S. Geological Survey in the Pembroke, NH/VT Water Science Center. During the last 10 years she has been conducting groundwater-quality studies on both the glacial aquifer system and bedrock aquifer system in New England.

**Sherry Godlewski**, Environmental Program Manager

*NH Department of Environmental Services*

Sherry has worked for NH Department of Environmental Services for 13 years, and has experience in the water, air, waste, and environmental health programs. She currently works on Climate Change Adaptation efforts. She served as facilitator for the Adaptation Working Group; which was part of the Governor's Climate Change Policy Task Force and assisted in the Climate Change Action Plan's adaptation chapter. Sherry has a M.S. in Environmental Communication and Administration from Antioch University.

**Brian Goetz**, Technical Leader, Water Resources and Supply

*Weston & Sampson*

Brian is a Senior Project Manager with Weston & Sampson in Portsmouth, NH. Brian has nearly twenty years of water systems management and consulting experience. He has served as President of the New Hampshire Water Works Association.

**Mark Green, Ph.D.**, Associate Professor of Hydrology

*PSU Center for the Environment & US Forest Service Northern Research Station*

Mark is a hydrologist, working at the Center for the Environment at Plymouth State University and the Northern Research Station of the U.S. Forest Service.

**Rebecca Harvey**, Ecological Manager

*Squam Lakes Association*

Rebecca joined the Squam Lakes Association (SLA) in May of 2008 in a joint position supported by Plymouth State University and the SLA. Rebecca attended PSU, working towards

her Masters in Environmental Science and also gained hands on experience managing invasive plants, organizing the association's volunteer lake monitoring program, and participating in other ecological management projects.

**Steve Howe**, Senior Project Hydrologist  
*AECOM*

Steve is a Senior Project Hydrologist with over 16 years of experience in water supply development and permitting. He has performed extensive research on lacustrine and fluvial hydrology and is an expert in the hydrologic characterization of complex sites involving the interaction between groundwater and surface-water features. He has managed and participated in groundwater and spring-water source development projects in many states including New Hampshire, Pennsylvania, and Colorado.

**Wayne Ives**, Instream Flow Specialist  
*NH Department of Environmental Services*

Wayne has a BA in geology from Albion College. After ten years consulting in groundwater exploration and development, he spent seven years managing remediation of Superfund Sites for NH Department of Environmental Services. As the NH Instream Flow Specialist, Wayne is responsible for developing the methods for assessing flow needs and developing management strategies to balance water use and stream flow.

**Jennifer Jacobs, Ph.D.**, Director,  
Environmental Research Group  
*University of New Hampshire*  
Dr. Jacobs is an Associate Professor in the Department of Civil Engineering and the Director of the Environmental Research Group at the University of New Hampshire.

**Aaron Johnson**, Senior Laboratory Technician  
*Center for the Environment- Plymouth State University*  
Aaron manages the Environmental Research Laboratory at Plymouth State University, which provides support for volunteer water monitoring groups and research projects. His background is in lake and stream management and coordinating community involvement in water resources issues. He received his M.S. in water resources from Indiana University and his B.S. in environmental biology from Michigan State University.

**Sheela Johnson**, Hydrologist  
*White Mountain National Forest*  
Sheela is a hydrologist on the White Mountain National Forest. Her work includes monitoring water quality, incorporating water resource protection into land management, and planning and implementing watershed improvement projects. Sheela holds an M.S. and M.P.A. in water resource management from Indiana University and a B.S. in zoology from Michigan State University.

**Brandon Kernen, PG**, Supervisor, Hydrology and Conservation Program

*NH Department of Environmental Services*  
Brandon has worked with NHDES for over eleven years on research and regulatory programs pertaining to the development of community water supply wells, drought management, large groundwater withdrawals, groundwater discharges, water conservation, water use reporting, well construction, well driller licensing, rock blasting, drinking water residual disposal policies and pharmaceuticals and personal care products in the environment. Brandon has a BS in Hydrology and Water Resources from the University of Arizona and an MS in Civil and Environmental Engineering from Tufts University.

**Marlee Leveille**, Education and Service Learning Manager

*The Student Conservation Association*  
Marlee has been the Education and Service Learning Manager of the SCA NH Corps for the past three years. She is a graduate of Antioch New England University with a Master's degree in Environmental Education.

**Anne Lightbody, Ph.D.**, Assistant Professor  
*University of New Hampshire, Department of Earth Sciences*

Dr. Lightbody is a surface water hydrologist in the Department of Earth Sciences at the University of New Hampshire. Her research focuses on flow and transport within surface water systems, including rivers, streams, lakes, fresh-water wetlands, and salt-water marshes. She holds a BS/MS in Biology from Yale University and an MS and PhD in Environmental Engineering from the Massachusetts Institute of Technology.

**Kevin MacKinnon**, Hydrogeologist

*Weston & Sampson*

Kevin is a professional geologist and hydrogeologist with more than fifteen years experience providing environmental consulting services focusing on water resource studies. His expertise has been applied to numerous projects in groundwater supply exploration, development and protection. In addition to serving as Technical Leader for Hydrogeologic Services at Weston & Sampson, Mr. MacKinnon is currently working on a PhD in Civil Engineering: Water Resources at the University of New Hampshire.

**John Magee**, Fish Habitat Biologist

*NH Fish and Game Department*

John has worked at NH Fish and Game Department since 2004, and has recently focused much of his time on research on wild brook trout populations and the conservation of healthy fish habitat.

**Frank Mitchell**, Extension Specialist, Land and Water Conservation

*UNH Cooperative Extension*

Frank has worked with UNH Cooperative Extension for the past 30 years as an environmental educator and served on the Editorial Review Committee for the *NH Method for Wetland Evaluation*. During the past 20 years, Frank have authored and edited numerous publications for UNH Cooperative Extension, including *Natural Resource Inventories: A Guide for Municipal Planning*, and *Setting Goals, Redefining Boundaries: NH's Coastal Watershed Communities are Addressing Growth*.

**Christopher Nealen**, Graduate Research

Assistant

*Center for the Environment- Plymouth State University*

Chris has a BS in Biology in 2010 from Saint Francis University (PA). Currently, his a research assistant at Plymouth State University's Center for the Environment and a first year Environmental Science and Policy graduate student. His research is focused on forest biogeochemistry.

**Rene Pelletier**, Assistant Director, Water Division

*NH Department of Environmental Services*

Rene is the Assistant Director of the Water Division at NHDES. In this role one of his

responsibilities is the management of the Land Resources Program within the Water Division of NHDES. This program consists of the Wetlands, Alteration of Terrain, Subsurface Systems, Shoreland Protection and Public Water Supply programs. He possesses a Master of Science Degree in Civil Engineering from the University of New Hampshire and is a licensed Professional Geologist. He has just completed his 37th year with the NHDES.

**Julia Peterson**, Extension Specialist

*NH Sea Grant and UNH Cooperative Extension*

As an outreach specialist with UNH, Julia brings science-based information to various audiences through various venues to improve knowledge, attitudes and practices for water resource protection. Julia has an MST in Environmental Education and Biology Teaching from Antioch New England Graduate School and a BA in Child Development from Connecticut College.

**Al Pratt**, PE, Project Engineer

*AECOM*

Al is a Water Resource Engineer with over 18 years of experience in groundwater and surface-water issues related to water supply development, water resources management, and environmental protection. His expertise includes sustainable water-supply and resource planning, and surface-water impact assessments. He has managed and has been a technical lead on many successful large groundwater water-supply development projects for bottled-water companies and municipalities in Maine, New Hampshire, New York, Pennsylvania, and Virginia.

**Mark Prout**, Forest Fisheries Biologist

*US Forest Service*

Mark has been a fisheries biologist for the US Forest Service for 21 years, where he has worked to integrate stream habitat management into overall forest management. He has managed the fisheries habitat program on the White Mountain National Forest for 11 years. Prior to that, he was a district fisheries biologist for 10 years on the Hiawatha National Forest in the upper peninsula of Michigan. Mark received both his bachelor's and master's degrees from Michigan State University.

**Pierce Rigrod**, Environmental Analyst

*NH Department of Environmental Services*

Pierce is an environmental analyst within NH NHDES's Source Water Protection Program.

Pierce is involved in a variety of projects across the state that plan or implement actions to further protect drinking water supplies. He is the program manager for the state's Groundwater Reclassification Program, organizes statewide conferences and contributes to strategies, policies and rules that further protect local water supplies. Pierce holds a master's degree in regional planning and previously has experience as a community land use planner and GIS Research Analyst at the University of New Hampshire.

**Rob Roseen**, Director, UNH Stormwater Center  
*University of New Hampshire*

Rob has been the Director of the UNH Stormwater Center since 2004 and has been involved in the development of the Center since its beginning in 2002. He is a licensed professional engineer and Assistant Research Professor in the Department of Civil Engineering at the University of New Hampshire.

**June Hammond Rowan**, Interim Associate Director  
*Center for the Environment- Plymouth State University*

June Hammond Rowan is the interim associate director at Plymouth State University's Center for the Environment. Previously, she has served as outreach and development coordinator for the Center and as a land use planner for the communities of Berlin and Plymouth, NH. She is also a doctoral candidate in PSU's Ed.D. program in learning, leadership, and community.

**Jennifer Rowden**, Watershed Planner  
*NH Department of Environmental Services*  
Jenn has been a planner with NHDES Lakes & Rivers Management and Protection Programs since 2007 providing technical assistance to individuals, local groups, and state and local officials on a variety of lake and river issues. She has a background in natural resource management and political science from the University of New Hampshire.

**Carolyn Russell**, Senior Environment and Land Use Planner, Office of the Commissioner  
*NH Department of Environmental Services*  
Carolyn has worked at NHDES for over nine years where she has focused on improving land use planning and land development practices to provide superior long-term environmental protection.

**Robyn Saunders**, Senior Project Manager  
*GZA GeoEnvironmental, Inc.*

Robyn works out of the GZA's Portland office, has managed stormwater projects in New England for over 12 years. She was recognized as co-recipient of EPA's Merit Award to the Long Creek Restoration Project Team and nominated to the Long Creek Technical Committee.

**Pat Santoso**, Project Manager  
*University of New Hampshire Technology Transfer Center (T2)*

Patrick has been a project manager at T2 for 3 years. He has a BS and MS in Civil Engineering and is currently perusing a Ph.D. He is involved with projects in: salt reduction in winter maintenance, rapid bridge construction, GIS asset management, & property tax equalization with the New Hampshire Departments of Environmental Services, Transportation, and Revenue Administration.

**Ann Scholz**, Graduate Assistant  
*University of New Hampshire Stormwater Center*

Ann is a graduate research assistant for the UNH Stormwater Center (UNHSC), a licensed professional engineer, and certified professional in stormwater quality. She is taking a break from employment in private consulting to pursue a Master's in Water Resources at the University of New Hampshire. Ann's professional experience is in site design, infrastructure, hydrology and hydraulics. This includes numerous floodplain and floodway hydrologic and hydraulic analysis for encroachments, mitigation and bridge construction.

**Boyd Smith**, Executive Director  
*Newfound Lake Region Association*

Boyd has degrees in Geology, Hydrology and Business and is currently the Director of the NLRA. As program manager for the current 319-funded watershed project, he has the honor of working with a top-notch team of professionals and engaged local volunteers. He and his wife of 20+ years have just begun their "empty-nest" phase.

**Rosalie Starvish**, Project Manager  
*GZA GeoEnvironmental, Inc.*

Rosalie works out of the GZA's Springfield office, is a professional engineer with 8 years experience providing water resource solutions

and currently serves as consultant to the Town of Milford, located in the Charles River Watershed.

**Amanda Stone**, Land & Water Conservation Program Coordinator

*UNH Cooperative Extension*

Amanda was a co-author of the original *NH Method for Wetland Evaluation*. During the past 20 years, Amanda has authored and edited numerous publications for UNH Cooperative Extension, including *Natural Resource Inventories: A Guide for Municipal Planning*, and *Setting Goals, Redefining Boundaries: NH's Coastal Watershed Communities are Addressing Growth*.

**Timothy Stone**, Principal/Hydrogeologist  
*StoneHill Environmental, Inc.*

Timothy is a geologist/hydrogeologist and principal of StoneHill Environmental, Inc., an environmental consulting firm located in Portsmouth, NH. Mr. Stone is a NH Professional Geologist with 29 years of experience in the environmental field and worked for private consulting firms as well as State and Federal environmental agencies prior to co-founding StoneHill in 1990. Mr. Stone specializes in soil and groundwater contamination studies, site remediation, and expert litigation support and water resource impact assessments. He has a Bachelor and Master degrees in Geology from SUNY Oneonta and Binghamton, respectively.

**Jeff Stern**, Environmental Planner

*Androscoggin River Watershed Council*

Jeff has 30 years experience in watershed protection, public health risk assessment and environmental cleanup. He has worked with towns and citizen groups throughout the Androscoggin Watershed in both New Hampshire and Maine on conservation, habitat restoration, river access and pollution control issues. Jeff coordinated the Watershed Council's research project to study the addition of coarse woody material to streams, which was funded through the Eastern Brook Trout Joint Venture.

**Dan Sundquist**, Director of Land Conservation Planning

*Society for the Protection of New Hampshire Forests*

Dan has served on the staff of the Society for the Protection of NH Forests for 17 years, the last ten in the research department, now in the capacity of Director of Land Conservation

Planning in the land protection department; prior to that he was Education Director of the Conservation Institute at the Society, and Science Director. Dan also manages the Society's GIS which serves its research, land protection and land management activities. He has conducted research and mapping of critical water supply lands in NH; population growth, land use conversion and resource fragmentation in the state; and the status of the economic land base for forestry. His most recent project work is focused on regional-scale strategic conservation planning in New Hampshire. He holds a BLA in Landscape Architecture from the SUNY College of Environmental Science and Forestry and an MSc in Education from Syracuse University.

**Paul Susca**, Supervisor, Planning, Protection & Assistance, Drinking Water Groundwater Bureau

*NH Department of Environmental Services*

Paul is a member of the NHDES team which is coordinating work on the Water Plan process. He has taught Water Resources Policy at Antioch New England Graduate School and holds an M.S. in Resource Management and Administration from Antioch and a B.A. in Biology and Environmental Studies from Dartmouth College.

**Sean Sweeney**, Managing Member

*Headwaters Hydrology, PLLC.*

Sean is a NH-licensed professional engineer and certified wetland scientist. He is the managing member of Headwaters Hydrology, PLLC in Littleton, NH and has 15 years of experience assessing stream morphology, determining causes of channel instability, developing stream restoration plans, and supervising construction. Mr. Sweeney was the principal design engineer for the Warren Brook restoration project and provided on-site supervision during construction. He has been, and will continue to, monitor the site to evaluate project success.

**Pat Tarpey**, Watershed Outreach Coordinator  
*Lake Winnepesaukee Watershed Association & Lakes Region Planning Commission*

Pat has been involved with lake related issues in the Winnepesaukee Watershed for the past 10 years. As Team Leader, she managed and supervised the Winnepesaukee Watershed AmeriCorps Program, helped coordinate and facilitate the first subwatershed group of communities to complete a management plan for Winnepesaukee, continues to coordinate

water quality monitoring efforts in the watershed, and has recently been hired as Watershed Outreach Coordinator for the Lake Winnepesaukee Watershed Association to continue efforts focused on development and implementation of subwatershed management plans around the watershed. In addition, she is currently a graduate student in the Master's of Environmental Science and Policy at the Center for the Environment at Plymouth State University.

**Dianne Timmins, Coldwater Fisheries Biologist**  
*NH Fish and Game Department*

Dianne has been working for NH Fish and Game Department since 1996. She received her Bachelor's Degree in Fisheries Science from the University of Rhode Island. She started her career with NHFG as a summer seasonal in Keene and has worked her way up the state, while working her way up the ranks. She is now the Coldwater Project Leader for New Hampshire and resides in the Lancaster Office. She is heavily involved with various research projects involving brook trout and is a founding member of the Eastern Brook Trout Joint Venture (EBTJV).

**Chad Tomforde, PG, Project Manager**  
*StoneHill Environmental, Inc.*

Chad is a geologist/hydrogeologist with over 11 years of experience conducting and managing environmental site investigations including, but not limited to hydrogeologic assessments. Mr. Tomforde has a Masters of Science degree in Geology and is a NH Professional Geologist. Mr. Tomforde has conducted hydrogeologic evaluations for residential developments which included assessing the fate and transport of nitrate in the subsurface from septic systems and lawn fertilizer, and the impacts of rock blasting operations as a source of nitrate and perchlorate contamination in groundwater.

**Michael Towle, PG, Project Manager**  
*StoneHill Environmental, Inc.*

Michael is a hydrogeologist and project manager at StoneHill Environmental, Inc., and a NH Professional Geologist. He has 23 years of experience in the hydrogeologic and environmental consulting field working on environmental projects for private consulting firms. Mr. Towle specializes in soil and groundwater investigations, water resource impact assessments, Phase I and II environmental site assessments, and oversight of

remediation projects involving both petroleum and solvent contamination.

**Danna Truslow, Pricipal Hydrologist**  
*Truslow Resource Consulting*

Danna is a hydrologist with over 20 years of experience in groundwater evaluation and remediation, surface water hydrology and restoration, and water resource planning. She is a certified professional geologist in New Hampshire and Maine and has an M.S. and B.S. from University of New Hampshire in Hydrology and Geology. She is the principal of Truslow Resource Consulting and specializes in restoration hydrology and water resource planning and protection.

**Rick Van de Poll, Ph. D., Principal**  
*Ecosystem Management Consultants*

Dr. Van de Poll is a Certified Wetland Scientist, recently chaired the NH Joint Board, and has completed *NH Method* wetland assessments in eight communities in the state.

**Alison Watts, Assistant Research Professor**  
*Southeast Watershed Alliance*

Dr. Watts is the vice-chair of the Southeast Watershed Alliance, and an assistant research professor in the Department of Civil Engineering at UNH. Her research includes contaminant transport in stormwater, stormwater impacts on surface waters. She is also a member of the Newfields Conservation Commission.

**Steve Whitman, Senior Planner**  
*Jeffrey H. Taylor & Associates*

Steve has a Master's degree in planning, and has worked at the Lakes Region Planning Commission, the NH Office of State Planning, and since 2003 with Jeff Taylor. Together they serve communities and non-profits across the State of New Hampshire providing technical planning assistance (visioning, master planning, and regulation drafting), as well as the design charrettes and other innovative efforts. Steve lives in Plymouth, where he is active in the sustainable development community.

**Eric Williams, Watershed Assistance Section Supervisor**

*NH Department of Environmental Services*

Eric is an environmental planner with over 20 years of local, regional, and state planning experience. He is currently working to develop and implement salt reduction plans for impaired waters in the I-93 corridor.

**Wilfred Wollheim**, Assistant Professor  
*University of New Hampshire, Department of  
Natural Resources*

Dr. Wollheim is an Assistant Professor in the Department of Natural Resources and Environment at UNH. He conducts field research to understand aquatic biogeochemical processes in coastal New England rivers in both Massachusetts and New Hampshire. He has also developed river network models at regional scales that integrate the spatial variability across the landscape and the biogeochemical role of different water bodies ranging in size from small streams to large rivers to lakes. Wilfred is interested in applying research to identify sustainable approaches for land management with respect to water quality.