RECONNECTING WATERWAYS

A WORKSHOP ON REMOVING DAMS & RIGHT-SIZING CULVERTS

AGENDA AT A GLANCE

8:30-9:00 AM – Refreshments & Networking

9:00-9:50 AM – Exhibition Hall | Welcome & Keynote
***Reconnecting Waterways,* Laura Wildman, Save the Sound**

TRANSITION (10 minutes)

TRACK A PROJECT MANAGEMENT	TRACK B ENGINEERING	TRACK C EXCAVATION CONTRACTING
(intended audience is project managers) **Location: Diamond II**	*(intended audience is engineers)* **Location: Exhibition Hall**	*(intended audience is excavation contractors)* **Location: Diamond I**
Moderated by Lyn Munno, Watersheds United Vermont	*Moderated by Alex Connizzo, Vermont Natural Resources Council*	*Moderated by Julie Butler, US Fish & Wildlife Service*

10:00-10:55 AM – Concurrent Session 1

1A. How to Identify Strong Barrier Removal Projects	***1B. Geomorphology Review, Site Assessment & Field Data Collection***	***1C. Getting the Job: Tips for Contractor Bidding***
Mary Russ, White River Partnership; David Minkoff, US Fish & Wildlife Service; Keith Fritschie, VT Dept of Environmental Conservation	Staci Pomeroy, VT Dept Of Environmental Conservation; Jesus Morales, US Fish & Wildlife Service	Jessica Clark Louisos, SLR Consulting; Kolbey Haupt, Hilltop Construction

TRANSITION (5 minutes)

11:00-11:55 AM – Concurrent Session 2

2A. Navigating the Complex Landscape of Project Funding	***2B. Dam Removal & Culvert Design Demystified***	***2C. Managing Sediment on Construction Sites***
Michele Braun, Friends of the Winooski River; Ron Rhodes, Connecticut River Conservancy	Roy Schiff, SLR Consulting	Josh Carvajal and Zapata Courage, VT Dept of Environmental Conservation; Tom Markowski, Markowski Excavating

TRANSITION (5 minutes)

12:00-12:50 PM – Exhibition Hall | LUNCH

TRANSITION (10 minutes)

TRACK A Location: Diamond II	TRACK B Location: Exhibition Hall	TRACK C Location: Diamond I
1:00-1:55 PM – Concurrent Session 3		
3A. A Project Manager's Guide to Undamming Rivers Karina Dailey, Vermont Natural Resources Council; Hilary Solomon, Poultney Mettowee Natural Resources Conservation District; Ron Rhodes, Connecticut River Conservancy	***3B. State & Federal Permitting Review*** Angela Repella, US Army Corps of Engineers; Josh Carvajal, VT Dept of Environmental Conservation	***3C. Construction Process & Methods for Dam Removals and Culvert Replacements*** Ben Canonica, Canonica Landworks; Greg Russ, White River Partnership
TRANSITION (5 minutes)		
2:00-2:55 PM – Concurrent Session 4		
4A. Telling the Story of Place and Impact: Community, Cultural Resources & Monitoring Lauren Weston, Franklin Co Natural Resources Conservation District; Meghan Arpino, Stone Environmental; Evan Carlson, Whiteout Solutions	***4B. Construction Oversight*** Doug Osborne and Jessica Clark Louisos, SLR Consulting	***4C. Elements of Site Restoration in Barrier Removal Design*** Allaire Diamond, Vermont Land Trust; Evan Fitzgerald, Fitzgerald Environmental
TRANSITION (5 minutes)		

3:00-3:50 PM – Exhibition Hall | Panel Discussion: *Collaborations for Success*

Michele Braun, Friends of the Winooski River; Ben Canonica, Canonica Landworks; Roy Schiff, SLR Consulting. Moderator: Chris Smith, US Fish & Wildlife Service

3:50-4:00 PM – Exhibition Hall | Closing

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SESSIONS IN DETAIL

CONCURRENT SESSION 1: 10:00-10:55 AM

TRACK 1A - Project Management

How to Identify Strong Barrier Removal Projects
Mary Russ, David Minkoff, Keith Fritschie
Learn how 3 practitioners are identifying and prioritizing culvert replacement and dam removal projects across Vermont and parts of New York. Panelists will share scoping strategies that target strong projects from flood resilience, fish passage, and phosphorus reduction perspectives. Content will also include existing tools that may be used or replicated, examples of effective partnerships, lessons-learned about garnering landowner and community support, and more.

TRACK 1B - Engineering

Geomorphology Review, Site Assessment & Field Data Collection
Staci Pomeroy, Jesus Morales
The presentation will include an introduction to data resources for use with design, for review of the site and upstream/downstream of the site regarding river network context and will provide an overview of Stream Simulation Design methodology, the recommended scope of the survey, site assessment components, reference reach selection and importance, and available guidelines and resources.

TRACK 1C - Excavation Contracting

Getting the Job: Tips for Contractor Bidding
Jessica Clark Louisos, Kolbey Haupt
Barrier removal projects often ask for non-standard bid items. We will review experiences/challenges and lessons learned on the bid process, what is typically asked for in bid docs, generating cost estimates, qualifications that are helpful to include, and items that are typically hard or unique to estimate for barrier removal type projects.

CONCURRENT SESSION 2: 11:00-11:55 AM

TRACK 2A - Project Management

Navigating the Complex Landscape of Project Funding
Michele Braun, Ron Rhodes
Friends of the Winooski River has only completed two barrier removal projects, but that has meant working with 16 different funding sources. We have eight more projects in various stages of design and will share how we work with our funders and partners to evaluate each project to ensure we select

potential funding sources so that the project outcomes are aligned with the funders' goals. We'll use real examples to illustrate timing of fundraising, how to use matching funds, and more.

TRACK 2B – Engineering

Dam Removal & Culvert Design Demystified
Roy Schiff

This talk will review design stages (feasibility, 30%, 60%, 90%, final) for dam removal and culvert design, and discuss if and when all of these design levels are needed. Design components will be summarized along with important communications with dam owners, municipalities, regulators, funders, and project managers.

TRACK 2C – Excavation Contracting

Managing Sediment on Construction Sites
Josh Carvajal, Zapata Courage, Tom Markowski

This presentation will focus on managing sediments on culvert and dam removal projects; discussing regulatory requirements, means and methods, lessons learned (failures and successes), and repercussions of inadequate sediment management. The presentation will focus on 'collaboration - communication – compliance' between designers, regulators, and contractors.

CONCURRENT SESSION 3: 1:00–1:55 PM

TRACK 3A – Project Management

A Project Managers Guide to Undamming Rivers
Karina Dailey, Hilary Solomon, Ron Rhodes

The Project Manager is responsible for everything, this includes coordinating with interested parties, managing the budget, and completing the goals of the project within the timeframe allotted. The project manager is the point person for communication and is responsible for ensuring everyone is working together effectively.

This team will focus on how to bring a project through to completion and the tips and tricks of project management success. Hilary will open the panel with a focus on landowner outreach and messaging based on the goals of the project, Ron will share strategies for managing the budget and the contractual team, and Karina will address project coordination, communication, and regulation.

TRACK 3B – Engineering

State & Federal Site Permitting Review
Angela Repella, Josh Carvajal

The presenters will discuss federal permit requirements under S. 404 of the CWA/S. 10 of the RHA, the application review process for dam removals and stream crossing structures under the Vermont General Permits, State and Local permitting requirements for dam removal and stream crossing structures including municipal Flood Hazard Area bylaws, VTDEC Stream Alteration, Wetlands, Dam Safey,

Stormwater Construction and Municipal Roads permits, and NRB Act 250 reviews. The presentation will also touch on other federal laws (ESA, historic properties, etc.) often triggered through permitting.

TRACK 3C – Excavation Contracting

Construction Process & Methods for Dam Removals and Culvert Replacements
Ben Canonica, Greg Russ
This presentation will cover the construction process and methods for dam removals and culvert replacements. Walking through a typical dam removal; including access, process/steps, organization & cleanliness, and restoration. Discuss stream rebuilding techniques in the dry, in the wet, and inside of culverts.

CONCURRENT SESSION 4: 2:00-2:55 PM

TRACK 4A – Project Management

Telling the Story of Place and Impact: Community, Cultural Resources & Monitoring
Lauren Weston, Meghan Arpino, Evan Carlson
This presentation aims to cover many topics, everything but the actual dam removal process, based on the experiences of the Franklin County NRCD through two dam removal projects. Topics to be discussed will include public engagement, community meetings, outreach events, storytelling, monitoring and data collection pre and post removal, working with Historic Preservation, and more. Preliminary monitoring data related to channel adjustment, sediment transport, plant communities, and aerial imagery from 2-3 years of post-removal monitoring at the Johnsons Mill Dam site in Bakersfield, VT will be shared.

TRACK 4B – Engineering

Construction Oversight
Doug Osborne, Jessica Clark Louisos
This presentation will review the key elements of construction oversight during dam removal projects. Topics including bid documents, defining roles, communication planning, and permit compliance will be discussed. Examples and lessons learned will be reviewed.

TRACK 4C – Excavation Contracting

Elements of Site Restoration in Barrier Removal Design
Allaire Diamond, Evan Fitzgerald
Barrier removal projects go beyond typical construction methods to accomplish stream system restoration. In this session we will consider three main elements of stream restoration: valley/stream topography, in-stream structure/roughness, and plants. We'll talk about our experience with practical design approaches for sites of various stream size and type.

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PRESENTER & PANELIST BIOS

Meghan Arpino is a Hydrologist at Stone Environmental, specializing in geomorphic and stream habitat assessments, water quality sampling and analysis, hydrologic and hydraulic modeling, and stream and floodplain restoration. She holds a B.S. in Environmental Science from the University of Vermont and M.S. in Hydrology from the University of New Hampshire. As a certified Professional Hydrologist accredited by the American Institute of Hydrology and a Certified Floodplain Manager (CFM), Meghan leverages her expertise on restoration and flood resiliency projects throughout Vermont.

Michele Braun has been the Executive Director of Friends of the Winooski River for the past 7 years. She has a MS in Natural Resources Planning, and has worked nationally on sustainable communities initiatives and locally as a land use planner. Ecological restoration has become her favorite thing, and she enjoys working with the Winooski basin AOP Team to identify, prioritize, and develop barrier removal projects.

Ben Canonica is the owner/operator of Canonica Landworks Inc, based in Chelsea, VT. He offers specialized excavation services with a focus on river restoration projects.

Evan Carlson brings more than 20 years of digital technology design and development experience with startups, non-profits and media companies. Through his work he has developed an innate ability to understand people's pain points with technology and developed solutions to those problems. Since joining Whiteout Solutions, he has become passionate about delivering the best possible data products and reducing the complexity of geospatial technology for its end users while ensuring precision and accuracy.

Josh Carvajal is a River Management Engineer for the Rivers Program in the VT DEC. He manages the permitting of work in perennial streams and flood damage response for the towns in the southwest part of Vermont. Josh is a professional engineer and has been employed by municipalities, state governments, and conservation groups in NY & VT.

Zapata Courage is currently a Wetland Ecologist for the State of VT Wetlands Program. She works with landowners, consultants, and engineers reviewing wetland delineations and providing technical assistance. She manages permitting and compliance issues related to wetlands in her region. Prior to working at DEC, Zapata worked as a consultant, field biologist, and environmental outdoor educator.

Karina Dailey is a Restoration Ecologist for Vermont Natural Resources Council (VNRC). In this position, she is responsible for running VNRC's dam removal program and contributing her scientific knowledge and expertise to policy issues around the conservation and restoration of Vermont's waters. Prior to joining VNRC, Karina worked as a Senior Ecologist at Trudell Consulting Engineers (TCE) in Williston, overseeing the ecology department and managing all-natural resource-related projects. Formerly, Dailey was a Project Manager for the Winooski Natural Resources Conservation District and a Restoration Ecologist for the US Fish and Wildlife Service and Intervale Nursery. Before moving to Vermont, she taught environmental science and worked as an aquatic ecologist in the Greater Yellowstone Region.

Allaire Diamond is an ecologist for Vermont Land Trust. In this position, Allaire seeks to understand the ecological complexity of Vermont's land. She leads wetland and stream restoration projects statewide, conducts ecological assessments, and collaborates with landowners and partners to improve water quality, climate resilience, and biodiversity on conserved lands.

Evan Fitzgerald is Principal Hydrologist/Geomorphologist at Fitzgerald Environmental Associates. He has over 20 years of experience in applied hydrology and geomorphology, including the development of watershed and river corridor restoration plans, and flood recovery and flood resilience efforts on behalf of state and municipal clients throughout the northeast.

Keith Fritschie is a watershed planner covering the White, Winooski, and middle Connecticut River basins for the Vermont Department of Environmental Conservation (VT DEC). Watershed planners work with local, state, and federal partners to develop and implement each basin's five-year tactical basin plan (TBP) which highlights priority surface water management strategies in agriculture, developed lands, wastewater, and natural resource sectors. TBPs include actions to identify and prioritize culvert and dam removal projects that improve water quality, aquatic habitat, and flood resilience.

Kolbey Haupt is the Owner / Operator of Hilltop Construction LLC., based in Randolph, Vermont. Kolbey completed his first dam removal project on Bull Run in Northfield in 2020 and another at Hands Mill Dam in 2024. These dam removal projects expanded Hilltop Construction's river-related work from road embankment stabilization projects and culvert installations that they had previously completed.

Jessica Clark Louisos, PE is a Principal Water Resources Engineer at SLR Consulting in Waterbury, VT. She has helped design dozens of dam removal and barrier replacement projects over the last 15 years in Vermont and the region. Jessica works on barrier removal projects through all stages of design from feasibility to post-construction monitoring, with construction oversight being her favorite stage because construction is where design becomes reality.

David Minkoff is a Fish Biologist with the U.S. Fish & Wildlife Service (USFWS) Lake Champlain Field office in Essex Junction, Vermont. As a member of the USFWS Habitat Team, David's position is focused on aquatic habitat restoration and fish passage. Central to this work is the development of partnerships with Federal, State, local and other NGO partners to identify, develop and implement dam removal and culvert replacement projects that enhance stream connectivity and water quality throughout the Lake Champlain basin.

Jesus Morales is a regional Fish Passage Engineer for the U.S. Fish & Wildlife Service (USFWS), bringing 14 years of experience in water resources, river restoration, and fish passage engineering. In 2010, he graduated from the University of Puerto Rico with a BA in Civil Engineering and subsequently earned a master's degree from the University of Massachusetts in Amherst. Mr. Morales provides technical assistance and engineering services related to the planning, design, construction, and maintenance of fish passage facilities and stream simulation projects. He is currently a licensed Professional Engineer in the state of Massachusetts.

Doug Osborne is a Water Resources Engineer with SLR Consulting, specializing in flood mitigation and analysis, and restoration of rivers, floodplains, and habitat. He received a BS in Civil Engineering from the University of New Hampshire in 2014 and an MS in Civil Engineering with a focus in Water Resources Engineering in 2016. Doug has been with SLR in Vermont for seven years working with communities to become more resilient to flooding and restoring our rivers to function more naturally.

Staci Pomeroy works for Vermont's Agency of Natural Resources Department of Environmental Conservation in the Rivers Program. She leads the Physical Science, Mapping and Restoration section. Her work ranges from working with communities for flood resiliency efforts to working with watershed groups to do river restoration. It is the beauty of VT's rivers, the range in the type of work and the mix of wonderful people she gets to work with that has kept Staci working on VT's rivers. When she is not out looking at other people's rivers, she is playing on the river that crosses their land, camping in the woods, canoeing, or knitting on those days when she cannot be outside.

Angela Repella is a Senior Project Manager with the US Army Corps of Engineers (USACE) Regulatory Program New Hampshire / Vermont Section. She started her career at the New England District Headquarters Office in Concord, Massachusetts after graduating from the University of Massachusetts Amherst. After assisting the USACE Vermont Project Office with the flood response in 2011, she decided to permanently relocate to the beautiful state of Vermont. In her free time Angela enjoys hiking, biking, birding, and botanizing.

Ron Rhodes, joined Connecticut River Conservancy (CRC) in 2011 as the northern NH & VT River Steward, before transitioning in 2020 to leading our Restoration Program where he spent most of his time removing old dams, planting trees, and working with landowners and partners to implement river restoration projects. Ron has served as the project manager for 29 aquatic organism passage projects, opening more than 425 miles of habitat. Now, Ron is the Director of Programs where he leads CRC's various aquatic and riparian habitat programs (Aquatic Invasive Species, Migratory Fish, Recreation & Access, Restoration, and Water Quality Monitoring) throughout the watershed in NH, VT, MA and CT.

Greg Russ is the Watershed Restoration Manager at the White River Partnership. Greg has 15 years' experience developing, implementing, and providing technical oversight for in-stream restoration projects including culvert replacements and dam removals.

Mary Russ has been Executive Director at the White River Partnership (WRP) since 2006. Following Tropical Storm Irene in August 2011, Mary helped develop and support a barrier removal program in the White River watershed, resulting in 15 culvert replacement and dam removal projects to date.

Roy Schiff is a Water Resource Scientist and Engineer with SLR Consulting. Roy received his PhD in Aquatic Ecosystem Studies from the Yale School of Forestry and Environmental Studies in 2005 and his M.S.Eng. in Civil and Environmental Engineering from the University of Washington in 1996. Roy is a licensed Professional Engineer in Vermont and frequently works on applied projects including dam removal, channel and floodplain restoration, and flood mitigation.

Hilary Solomon, Poultney-Mettowee NRCD (PMNRCD), graduated from Duke University with a Master's Degree in Water Resources and worked for the Ohio EPA and Ross County Soil and Water Conservation District for three years, before moving to Vermont. She worked as the bi-state watershed coordinator for the Poultney Mettowee Watershed Partnership from 2004-2008, and returned to the District in 2012 as the Water Quality Specialist. In 2014, Hilary became the District Manager for PMNRCD. She focuses on natural resources conservation projects including project identification and development, stormwater remediation, stream restoration, and agricultural water quality projects. Hilary, with a suite of partners, was recently involved in a series of barrier removals on the Mettowee River.

Lauren Weston has been the District Manager of the Franklin County Natural Resources Conservation District (Franklin Co NRCD) in St Albans, VT for the past four years. During that time, she has overseen the removal of the Johnson's Mill Dam in Bakersfield, VT and several years of post-removal monitoring, as well as the scoping, development, and management of design work for the future removal of the Trout Brook Reservoir Dam in Berkshire, VT. Prior to her time at the District, Lauren worked for

Milone & MacBroom, now SLR International, in Waterbury, VT as a Water Resource Engineer in Training.

Laura Wildman is a professional fisheries and water resources engineer with a passion for restoring ecosystems and reestablishing natural function and aquatic connectivity. She has over 3 decades of experience in engineering, river science, construction, community outreach, and environmental advocacy on hundreds of ecological restoration projects. Laura is a leading and internationally recognized expert in the removal of barriers and enjoys traveling abroad to share her experience with others, in hopes that we leave this world a better place for future generations. She earned a B.S. in civil engineering from the University of Vermont as well as a Master of Environmental Management from Yale University. Laura lives in Glastonbury, CT, with her husband and two daughters, and enjoys spending time with her extended family at their family camp in New Hampshire fishing, paddleboarding, kayaking, hiking, and taking in the view of the lake from the outdoor shower.