



COMMONWEALTH OF MASSACHUSETTS

Division of Ecological Restoration

www.mass.gov/dfwele/der

2011 ANNUAL REPORT

The Restoration Economy

Bringing you Clean Water, Resilient Ecosystems,
and a Vibrant Economy



For every \$1 Million Dollars Spent on an average DER restoration project,
12 Jobs were sustained or created and there was a 75% return on all investment.

Engineer image courtesy of Powerful Purpose Assoc.; Excavator image courtesy of Sany; River image courtesy of SJNORCAL Goup.com

The Commonwealth of Massachusetts
Deval L. Patrick, Governor
Timothy P. Murray, Lt. Governor

**Executive Office of Energy &
Environmental Affairs**
Richard K. Sullivan, Jr. Secretary



Department of Fish and Game
Mary B. Griffin, Commissioner

Division of Ecological Restoration
Tim Purinton, Director

The mission of the Division of Ecological Restoration is to restore and protect the Commonwealth's rivers, wetlands, and watersheds for the benefit of people and the environment.

DER STAFF LETTER & ACCOMPLISHMENTS

DIRECTORS



Tim Purinton, *Director*
Eileen Goldberg, *Assistant Director*
Hunt Durey, *Acting Deputy Director*

Dear Colleagues and Partners,

The Division of Ecological Restoration (DER) is proud to bring you this annual report. 2011 marks the second year that the Riverways and Wetlands Restoration Programs have been fully integrated, and with that, much success has followed. As a team, DER strives each year to blend education, outreach, and technical assistance, along with project management, to implement meaningful watershed restoration across the Commonwealth. We are often cited for our work replacing tide gates, removing dams, and restoring a suite of aquatic ecosystems--but behind the excavators and the ribbon cuttings, are hours of hard work building campaigns for watershed restoration with a diversity of dedicated partners.

To assist Massachusetts in economic recovery, DER worked closely with Industrial Economics, Inc. to objectively evaluate our restoration projects for the economic impacts and job stimulation these projects can create in our state. The results of this report are overwhelmingly positive. Here are the highlights:

- DER and partner projects produce an average employment demand of 12.5 jobs and \$1,750,000 in total economic output from each \$1 million spent, contributing to a growing restoration economy in Massachusetts.
- Our ecological restoration projects help support a number of economic sectors, including design and engineering, construction, wholesale construction and native plants materials, as well as non-profit science.
- Because of the diversity of contributing sectors and the non-export nature of these projects, the “ripple effect” from a dollar spent on ecological restoration travels widely through the Massachusetts economy.
- Restoration projects generate total economic outputs equal to or greater than other types of capital projects such as road and bridge construction and repair, replacement of water infrastructure, and etc.

These are impressive statistics, especially given that the ecosystem service values produced by our other partner-based projects generate substantial, recurring economic benefits that are not accounted for in this study (e.g. water quality improvement, flood damage reduction, and increased biodiversity).

Thank you for your support. See you on the water!

Sincerely,

Mary B. Griffin, Dept. of Fish & Game Commissioner

Tim Purinton, Director

Hunt Durey, Acting Deputy Director

DER & Partners 2011 Key Accomplishments

- Awarded Outstanding Public Service Award by the Ipswich River Watershed Association.
- Established a regional office in Westfield, MA in partnership with the National Parks Service and Westfield State University.
- Leveraged \$4 million in outside funds.
- Restored access and continuity to 22 miles of river habitat.
- Completed the restoration of 8 wetland projects spanning 143 acres.
- 926 volunteers working in 78 communities devoted over \$150,000 worth of labor toward protecting and restoring the Commonwealth's rivers and wetlands by reading stream gages, conducting river continuity and stream surveys, collecting monitoring data, and participating in restoration planning.
- Assured validity of more than 14,500 water quality sample results at 158 sites.

PHYSICAL HABITAT RESTORATION

DER works with many partners to complete river and wetland restoration projects across the Commonwealth. These projects include anything from dam removal and culvert and bridge replacement, to fill removal, in-stream habitat enhancement, and stream daylighting. In addition to their significant environmental benefits, these projects also support a wide range of careers from construction and engineering to landscaping and surveying. Every year, DER brings not only more jobs throughout the region, but also brings several million dollars of competitive federal funding into the Massachusetts economy.

Estuarine

2011 was a fruitful year for estuarine restoration as DER worked with many partners to complete eight projects restoring tidal flow to over 140 acres of coastal wetlands. One of these successes is the 14-acre Sunken Meadow restoration – the first project to be completed under the \$30 million Cape Cod Water Resources Restoration Plan. Thirteen other tidal restoration projects from the Cape Cod Plan are in various stages of development, with three slated for construction in 2012.

Other highlights from the past year include major progress on development of the 1,000-acre Herring River Estuary Restoration Project in **Wellfleet** and **Truro**; a draft Environmental Impact Statement Report will be released in the first half of 2012. In addition, DER – in partnership with the Department of Conservation and Recreation – obtained a \$1 million Coastal Wetlands Conservation Grant from the U.S. Fish & Wildlife Service to fund the future construction of the the 33-acre Ballard Street Salt Marsh Restoration in the town of **Saugus**.

WETLAND RESTORATION STAFF



Franz Ingelfinger, *Restoration Ecologist*
Georgeann Keer, *Wetland Scientist*
Jeremy Bell, *Restoration Specialist*

For more information about DER Visit:

www.mass.gov/dfwele/der

Check out our interactive project map, highlighting over 80 active and completed projects.

Broad Meadows Salt Marsh Restoration Quincy

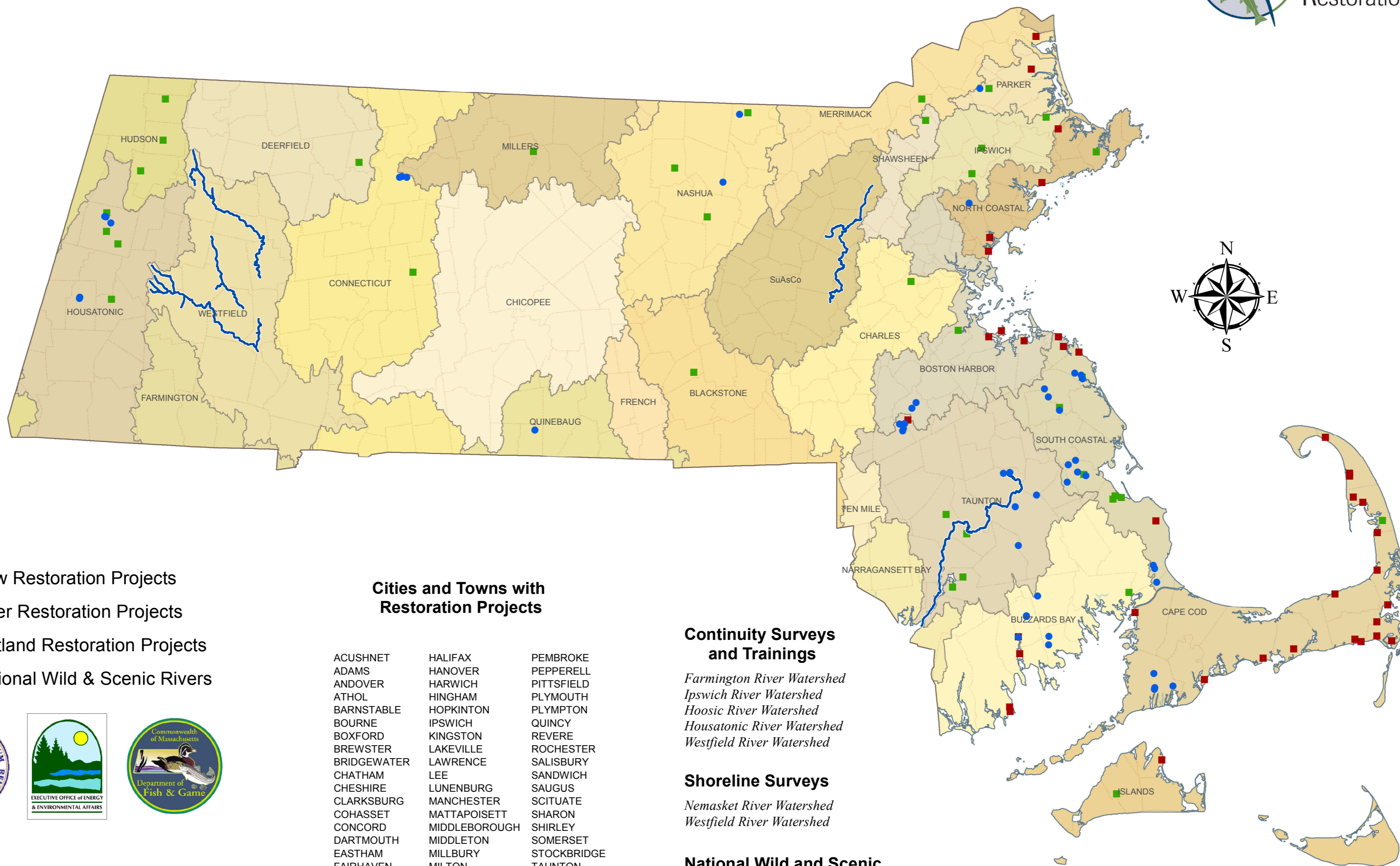
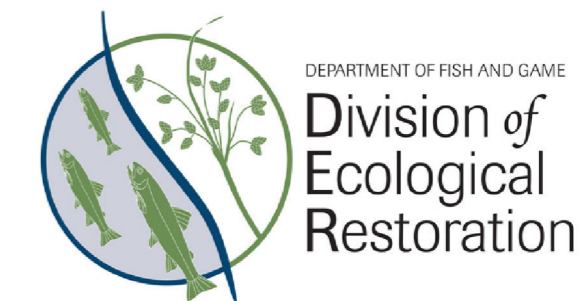
In December of 2011, major construction was completed on the Broad Meadows Project in **Quincy**, as contractors breached an old dredge spoil containment berm, allowing sea water to flood across 50 acres of former wetlands that had been buried under fill for over 60 years. The project was first identified as a restoration opportunity in 1997, but it took 12 years to advance from feasibility through to construction with strong collaboration between the Army Corps of Engineers, DER, and the City of Quincy. Congressman William Delahunt also played a major role championing the project and securing funding, finally getting shovels into the ground –and there were many shovels required!



Restoring Salt Marsh in Broad Meadows, Quincy.

As the largest wetland fill removal project to date in MA, over 500,000 cubic yards of dredged material was excavated to re-create salt marsh and other valuable coastal habitats. Restoration of this site is expected to generate very significant social and environmental benefits for the local community, as well as for the birds, fish, and other wildlife in the region. The total project costs exceeded \$6 million, with the City of **Quincy** contributing over \$1.2 million in non-federal matching funds. DER facilitated a last-minute local contribution of \$150,000 that allowed the restoration of 9 additional acres.

Division of Ecological Restoration 2011 Project Sites



- Legend**
- Flow Restoration Projects
 - River Restoration Projects
 - Wetland Restoration Projects
 - ~ National Wild & Scenic Rivers

Cities and Towns with Restoration Projects

ACUSHNET	HALIFAX	PEMBROKE
ADAMS	HANOVER	PEPPERELL
ANDOVER	HARWICH	PITTSFIELD
ATHOL	HINGHAM	PLYMOUTH
BARNSTABLE	HOPKINTON	PLYMPTON
BOURNE	IPSWICH	QUINCY
BOXFORD	KINGSTON	REVERE
BREWSTER	LAKEVILLE	ROCHESTER
BRIDGEWATER	LAWRENCE	SALISBURY
CHATHAM	LEE	SANDWICH
CHESHIRE	LUNENBURG	SAUGUS
CLARKSBURG	MANCHESTER	SCITUATE
COHASSET	MATTAPOISETT	SHARON
CONCORD	MIDDLEBOROUGH	SHIRLEY
DARTMOUTH	MIDDLETON	SOMERSET
EASTHAM	MILLBURY	STOCKBRIDGE
FAIRHAVEN	MILTON	TAUNTON
FALMOUTH	MONTAGUE	TRURO
FITCHBURG	NEWBURY	WAKEFIELD
FOXBOROUGH	NORTH ADAMS	WELLFLEET
FREETOWN	NORWELL	WESTBOROUGH
GEORGETOWN	OAK BLUFFS	WINDSOR
GLOUCESTER	ORLEANS	YARMOUTH
GREENFIELD	PELHAM	

Continuity Surveys and Trainings

*Farmington River Watershed
Ipswich River Watershed
Hoosic River Watershed
Housatonic River Watershed
Westfield River Watershed*

Shoreline Surveys

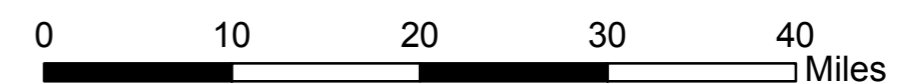
*Nemasket River Watershed
Westfield River Watershed*

National Wild and Scenic Rivers Partnership

*Sudbury, Assabet and Concord Rivers
Taunton River
Westfield River*



DER has additional ecological restoration and protection initiatives. To find out what's happening in your town or watershed, please call us at 617 626-1540.



PHYSICAL HABITAT RESTORATION

Riverine

DER works with municipalities, non-governmental organizations, and state and federal agencies to restore habitat in freshwater streams. We remove dams, replace culverts, and restore riverine wetlands. These projects restore the ecology of rivers and help communities deal with aging infrastructure.

Dam Removal Profile:

Wapping Road Dam

Over the last three years, DER worked together with the Jones River Watershed Association, the Division of Marine Fisheries, the NOAA Restoration Center, US Fish and Wildlife Service, the Town of **Kingston**, and a private dam owner, finally completing the removal of Wapping Road Dam in September of 2011. The dam was the second from the mouth of the Jones River, and the first dam without a fish ladder. More than 22 mainstem and tributary miles are now open to river herring, American eel, and other native fish.



Contractors begin dismantling the Wapping Road Dam in September 2011.



View of the former impoundment with restored channel and native plantings.

RIVER RESTORATION STAFF



Nick Wildman,
Priority Projects
Coordinator



Alex Hackman,
Restoration Specialist



Beth Lambert,
River Restoration
Program Manager

Working With Municipalities

Thirty percent of the Commonwealth's 2,892 dams are owned by municipalities. While some are still in use, many others have outlived their original purpose. DER is working with municipalities to remove town-owned dams in **Plymouth, Phillipston, Cheshire, Middleton, and Greenfield.**

DER also provides technical assistance through engineering evaluations, presentations and trainings, and site visits to municipalities that are considering dam removal.

Tropical Storm Irene

Record floods swept through rivers when Tropical Storm Irene passed through western Massachusetts at the end of August. Almost immediately, DER learned that dams had breached on the Green River in **Greenfield** and the North River in **Colrain.**

DER approached both dam owners to provide technical assistance in considering whether or not to rebuild. Both rivers are high-quality coldwater streams that would benefit from dam removal, but the dams provide water supply for public and industrial uses. DER worked with the owners to evaluate options for alternate water supply options that would not rely on the aging dams.

Looking Ahead to 2012

The River Restoration Program is hitting its stride with 8 to 10 dams scheduled for deconstruction in 2012. Many grants for construction are still pending, but we expect at least 8 projects to be fully permitted and ready to break ground.

If fully funded, dams will be removed in **Cheshire, Taunton, Plymouth, Pelham, Phillipston, and Middleton.**

TECHNICAL ASSISTANCE

DER's Riverways Program provides technical assistance to citizens, municipalities, and watershed groups to protect and restore river corridors and ecological systems, and to facilitate community riverfront revitalization and public enjoyment. The Riverways Program is based on the belief that local action is the key to river protection. Riverways staff work side-by-side with numerous partners to restore and protect the state's rivers and their ecosystems.

TECHNICAL ASSISTANCE

DER continues to provide cutting-edge science and guidance to groups interested in protecting rivers. In 2011, DER staff provided key support resulting in quality assurance review of over 14,500 water quality results at 158 sample sites. We also participated in inter-agency reviews for 7 grant programs.

Urban River Revitalization: The Hoosic River in North Adams

The Hoosic River Revival Project is about restoring a river, but it is also about revitalizing **North Adams**, a resurging former mill town.

Since the early 1950's, the **North Adams** section of the 70 mile Hoosic River has flowed through U. S. Army Corps of Engineer-designed concrete flood chutes. These chutes have saved the city from flooding, but they have also prevented community access, impaired wildlife habitat, and created an unappealing set of visual and physical barriers through the downtown area.



View of the Hoosic River running through North Adams.

DER staff have been involved in the Hoosic River Revival initiative with a goal to take the 20th century flood chutes into the 21st Century and to:

- Encourage river-centered community education, recreation, cultural, and social activity.
- Provide a healthy river ecosystem for aquatic and other wildlife.
- Create a beautiful and vibrant tableau to serve as an economic engine for the city.

TECHNICAL ASSISTANCE STAFF



Cindy Delpapa,
Stream Ecologist
Carrie Banks,
*Stream Team and
Westfield W&S
Coordinator*



Russ Cohen,
Rivers Advocate



Chris Leuchtenburg,
Restoration Analyst



RIVERWAYS PROGRAM

Stream Crossing Standards Lead to Safer Roads

For the past 10 years, the Riverways Program has worked with the Massachusetts River Continuity Partnership to restore fish passage and habitat connectivity at poorly designed stream crossings. These efforts have been expanded throughout the Northeast, and now several states have incorporated Stream Crossing Standards into the designing and permitting of new stream crossings.

Tropical Storm Irene tested many of these new crossings with great results providing sufficient passage of flow, sediment, and debris stirred up by the floods, as well as maintaining safe crossing for emergency personnel and residents. DER staff and river continuity volunteers also documented several crossings which did not meet the current standards and failed during the storm. In some cases, these crossings have failed repeatedly due to their inability to pass high flows and materials moved by our rivers and streams during floods.



The upstream end of a bottomless culvert on Bronson Brook, that DER helped install, post-Tropical Storm Irene. Crossings of this type fared well in the high flows.

FLOW RESTORATION

The River Instream Flow Stewards (RIFLS) Program continues to play a crucial role working for more natural stream flows on both the local and state levels. Rivers and streams across the Commonwealth suffer from a variety of flow problems. The RIFLS staff trains volunteers in watersheds across the state, maintains an interactive web site for the data, and works with the U.S. Geological Survey to develop high quality streamflow data.

RIFLS

DER continues to support a network of people across Massachusetts who monitor trends in their local stream's flow, through the River Instream Flow Stewards program (RIFLS). Watershed groups and towns use this data to inform and support policy and actions that incorporate environmental flow goals. In 2011, 47 volunteers read stream gauges at 50 sites in 25 communities. To learn more, visit us at www.rifls.org.

Restoring Flow in First Herring Brook

Years of RIFLS work with partners in **Scituate** are leading to flow restoration successes. In 2011, we cooperated with the Scituate Water Department and the North and South Rivers Watershed Association on a plan that allows for releases from the town's water supply reservoir when downstream flows fall below seasonal triggers. The Town also upgraded its water supply infrastructure and passed a restriction on in-ground sprinklers during the summer of 2011; these measures together appear to have had a marked reduction in water demand.

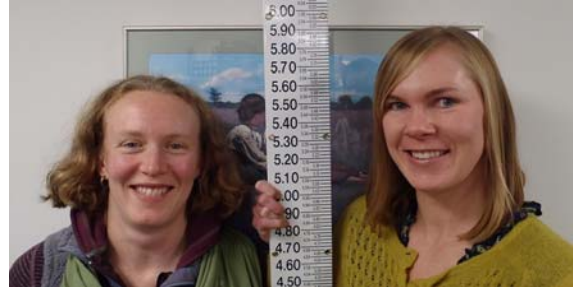


RIFLS staff measuring flows on First Herring Brook
Photo by Mary Ellen Schloss

RIFLS and Climate Change

Long-term streamflow and temperature data can help us to understand the impact of climate change on our aquatic resources. We are looking to build the value of the many years of RIFLS data to climate scientists, by connecting with the Northeast Pilot Climate Change Monitoring Network and by exploring the possibility of adding stream temperature monitoring at certain RIFLS sites.

FLOW RESTORATION STAFF



Laila Parker, *Watershed Ecologist*
Michelle Craddock, *Flow Restoration Specialist*

Progress on the Parker River

RIFLS gauges in the upper Parker River watershed have helped to numerically document extremely low summer flows and identify viable approaches for flow restoration. These include conservation measures and ensuring that stormwater flows back into the stream system. In 2011, DER staff worked with the **Georgetown** planning board and the Parker River Clean Water Association towards modifications to town regulations to incorporate low impact development practices that encourage stormwater infiltration and conserve water on-site. In 2012, we hope to add new gauges on the Mill River in **Rowley**, to better understand flow dynamics in that tributary to the Parker River.

RIFLS Hall of Fame

The following people visited their rivers more than 200 times in 2011 to read stream gauges:

- Wendell Chamberlain, Pine Brook, **Kingston** (8 years as a Hall of Famer)
- Paul Lauenstein, Beaver and Billings Brooks and Great Cedar Swamp, **Sharon** (5 years)
- Bob Race, West Branch of Housatonic River, Onota Lake and Pecks Brook, **Pittsfield** (4 years)
- Kurt Buermann, Billings Brook and Great Cedar Swamp, **Sharon** (4 years)
- Tony Williams, Mattapoissett and Acushnet River, **Mattapoissett** (1 year)

DER extends its heartfelt thanks to all the RIFLS volunteers who donate their time and energy for the protection and restoration of healthy rivers across the Commonwealth. Please be in touch if you'd like to get involved!