

Dirty Pavement, Dirty River:

Charles River nutrient studies target stormwater pollution

Water quality in the Charles River has improved dramatically in recent years, but there is still much work to do. Recent studies have identified runoff from paved surfaces and rooftops as a major culprit in elevating nutrient levels in the Charles. The problem with nutrients - phosphorus in particular - is that they cause urban rivers such as the Charles to suffer from frequent, explosive algae growth and an over-abundance of floating and underwater plants. This excessive growth causes huge swings in the water's dissolved oxygen levels and damages aquatic life (especially fish). In addition, decaying plant material can choke the river bottom. Although phosphorus is naturally present in the environment, human sources have overloaded the Charles with it. Combined sewer overflows, wastewater treatment plants, and storm-water runoff are major contributors to phosphorus pollution.

Last fall, the U.S. Environmental Protection Agency issued a Total Maximum Daily Load (TMDL) analysis - an estimate of the pollutant load that the river can handle and still be reasonably clean - for the Lower Basin of the Charles. CRWA recently released our own draft TMDL for the Upper/Middle Charles River. Both TMDLs agree that phosphorus pollution in the Charles needs to be cut by about 50% to achieve reasonable water quality and avoid problems with algae and vegetation.

The Massachusetts Water Resources Authority has treated combined sewer overflows to combat bacteria levels in the river, and as a result phosphorus loads from this source have also been minimized. Active wastewater treatment plants in the Charles contribute about one-third of the phosphorus to the river each year. During dry periods, when river flow is low and there is little stormwater pollution, the local impact of these plants may be even greater.

Stormwater accounts for about two-thirds of the river's total annual phosphorus pollution load. Runoff from rainfall or snowmelt transports phosphorus-rich dirt, sand, debris, and plant material to the river. Impervious surfaces such as roads, parking lots, and rooftops - especially in commercial, industrial, and high-density residential areas—contribute



the most phosphorus to the river because water cannot be filtered by passing through them, and stormwater drainage systems connect these surfaces directly to the river. The sources phosphorus in stormwater are: motor vehicle exhaust, fuels, and lubricants; fertilizers; detergents; car wash products; eroded soils; and pet waste.

Since the everyday actions of millions of people determine

what materials are carried to the river in runoff, solving the problem of stormwater pollution is a complex process. Approaches for reducing stormwater phosphorus loads should include: proper disposal of pet wastes; use of low-phosphorus fertilizers for lawns and gardens; programs to find and fix sewage leaks; vacuum street-sweeping; control of phosphorus from municipal sources; control of sediment on construction sites; and specialized stormwater controls.

Stormwater controls prevent polluted runoff from flowing directly into a stream or river by using soil to filter phosphorus from the water before it is discharged. Examples of such controls can be found in Low Impact Development (LID) designs, which use green infrastructure such as tree pits (trees planted in a special mix of soil with room for water to gather and drain around their roots), swales (grassy ditches which slow runoff and allow it to sink in to the ground) and other filtration methods. These approaches also improve air quality, cool the urban environment, and make neighborhoods more attractive by increasing the number of trees and plants. Stormwater controls also reduce flood damage and lessen the need for dredging and weed control. In addition, stormwater that is recharged into the ground can help maintain groundwater levels and sustain drinking water supplies.

Recent TMDL studies show that we must focus on reducing stormwater phosphorus if we hope to see a swimmable, fishable Charles. The process of reducing phosphorus will help make the watershed function more naturally, with the added bonus of many benefits to the environment and our water supply.

*- by Sr. Engineer Nigel Pickering and
Director of Projects Kate Bowditch*

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CRWA is a 501(c)(3) dependent on philanthropic support. We welcome your contributions.



Caroline Dixwell Cabot and Janice & Roger Hunt hosted an elegant picnic on May 18. *Left*, guests listen intently as CRWA's Bob Zimmerman describes our recent progress and challenges in maintaining water quality and stream flow.

Water-Friendly Planning Challenge Grant

CRWA is making progress at the planning table with Harvard, incorporating 'blue' development throughout their new 250-acre campus in Allston, along the Charles River. This work has been possible due to the generous support of the Boston Foundation and additional support from the Cabot Family Charitable Trust. We are now moving into the next phase with Harvard, helping them build in ways that protect the water quality of the Charles and improve public access to the river. CRWA's role in assisting Harvard to create a model, state-of-the-art campus is critical at this juncture. CRWA will need \$300,000 over the next three years to continue the planning and advocacy work we have so successfully undertaken thus far under our Blue Cities Initiative.

Thanks to a generous anonymous donor, CRWA has received a challenge grant of \$50,000 to support this work. The Cabot Family Charitable Trust is contributing \$15,000 towards this match, so there is \$35,000 left to raise in meeting the match. We are asking members to support this ambitious project with a generous gift. The sponsor will match each contribution, which will help make the continuation of the Blue Cities Initiative a reality and the challenge grant a success.

For more information or to donate, contact Peggy Sunshine at 781-788-0007 x235 or psunshine@crwa.org

CRWA, Corporate Wetlands Restoration Partnership and the Public-Private Partnership of Mass. Department of Conservation and Recreation (DCR) joined together to host a ceremony dedicating the new educational kiosk at Watertown Dam on May 21. DCR took the opportunity to honor four awardees, including CRWA, with Certificates of Appreciation for working to protect and restore the Charles River and parklands. *Above*, awardees unveil the kiosk.



River Science Festival:

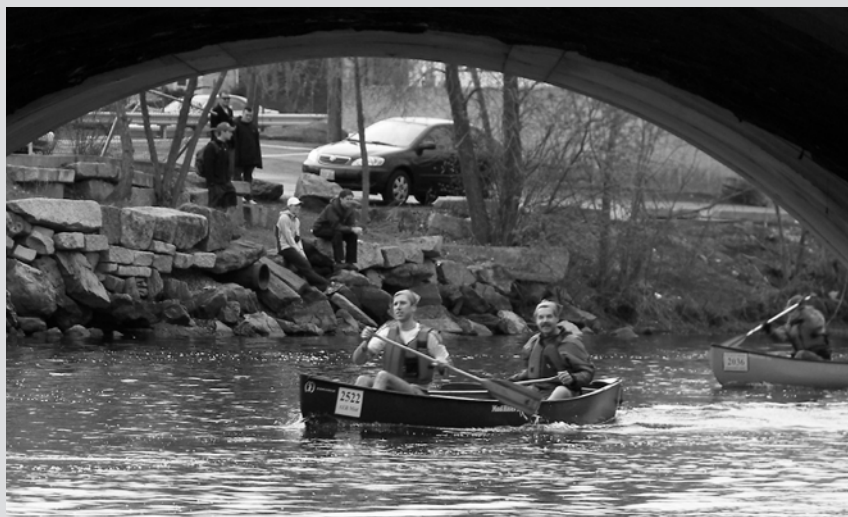
CRWA hosts an experimental laboratory on the river

Science Festival activities on land and water, held during CRWA's Run of the Charles on April 27, were attended by hundreds of budding watershed scientists and their parents. Experiments with water sampling, games introducing watershed science, river stewardship and the flora and fauna of the



Charles animated the hour long 'Eco Boat Trip' on the Charles II Riverboat. Back

on land, exhibitions describing CRWA's Blue Cities work and fish restoration projects informed adults while children experimented with our watershed in a box. CRWA is grateful to the many partners who made this event a success, including CRWA volunteers Diane and Steve Hall, Charles River Boat Company, Massachusetts Water Resources Authority educator Meg Tabasco, REI's 'Leave no Trace' educator Heather Charles and the Cambridge Science Festival.



26th Run of the Charles Canoe and Kayak Race

The Run of the Charles, showcasing the ongoing improvements to the Charles River, drew over 1,400 competitors, more than a hundred volunteers, and thousands of spectators all along the race route on Sunday, April 27 for CRWA's annual celebration on the river.

In the 26-Mile Flatwater Canoe Marathon, the team of Matt and Andy Rudnitsky of New York paired up to take first place. The Quinobequin Canoe Club won the 24-Mile Relay Race for the sixth year in a row. The MassLakes.com Snoopers took back their title by placing first in the Corporate Relay. In the 19-Mile Race, the fastest boat (for the second year in a row) was a kayak paddled by Erik Borgnes of Sturgeon Bay, WI. Cory Lancaster of Medford, MA posted the winning time in the 9-Mile Race. The 6-Mile Race was won by Joe Ervin of Manasquan, NJ.

For complete race results and photos, visit www.charlesriver.org.

9th Annual Earth Day Charles River Cleanup



Many thanks to the 42 local businesses and institutions who supported the event, including our major sponsors New Balance Foundation, The Cadmus Group, Inc., Triumvirate Environmental, and MassLottery. The Annual Earth Day Charles River Cleanup, initiated by CRWA in 2000, is organized by Charles River Watershed Association with help from a steering committee including Senator Tolman's Office, The Esplanade Association, Charles River Conservancy, the City of Newton, The Trustees of Reservations, Emerald Necklace Conservancy, and MA Department of Conservation and Recreation.

The Charles River Cleanup held Saturday, April 26 was a great success, with 2,500 volunteers helping to make it the largest Cleanup ever! Over 105 community groups participated at more than 50 sites along the river. More than 20 tons of garbage was removed from the banks of the river, including uncountable coffee cups, plastic bags, bottles, and cigarette butts; car parts like engines and axels; shopping carts, a typewriter and a refrigerator.



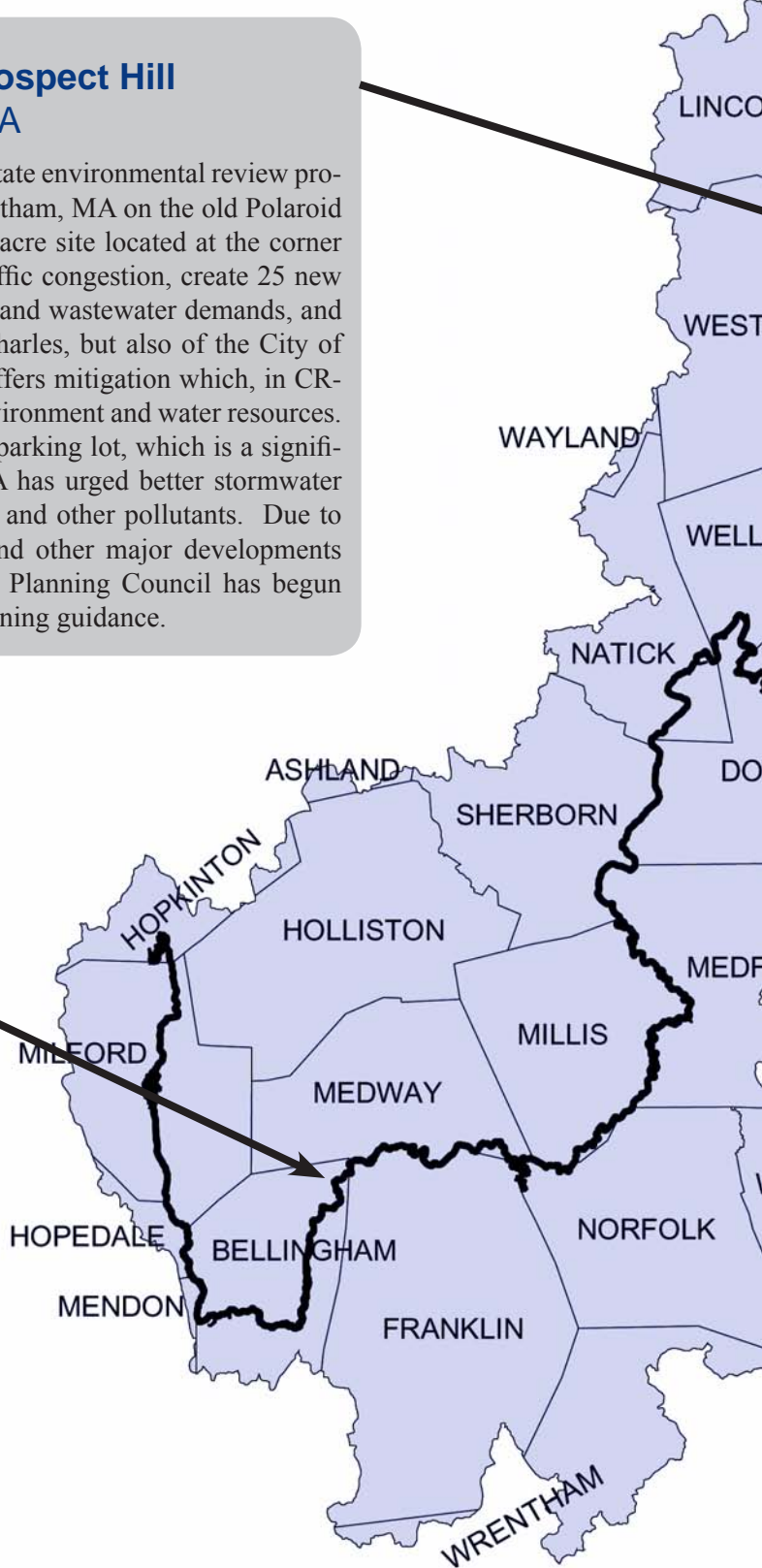
RUN OF THE RIVER

The Commons at Prospect Hill Waltham, MA

In February 2007, CRWA commented in the state environmental review process on a large proposed development in Waltham, MA on the old Polaroid site. The Commons at Prospect Hill, a 120 acre site located at the corner of Main St. and Route 128, will increase traffic congestion, create 25 new acres of impervious surfaces, increase water and wastewater demands, and threaten the water quality not only of the Charles, but also of the City of Cambridge's water supply. The developer offers mitigation which, in CRWA's opinion, is inadequate to protect the environment and water resources. Most of the new impervious surface will be parking lot, which is a significant source of stormwater pollution. CRWA has urged better stormwater management practices that filter phosphorus and other pollutants. Due to the environmental sensitivity of this area and other major developments planned in this area, the Metropolitan Area Planning Council has begun holding stakeholder meetings to provide planning guidance.

Shoppes at Bellingham

The Shoppes at Bellingham is a large-scale development planned for the southwest corner of Hartford Ave (Route 126) and Interstate 495. This development will alter 100 acres of land, create 63.5 acres of imperviousness, and destroy about two acres of wetlands in the watershed. The area's water resources are already strained by increased development, reduced recharge, and wastewater export which results in less water for the Charles and its aquatic life. This is a massive project that could have severe impacts to the Charles. CRWA has provided extensive comments to MEPA arguing for a reduction in the project's size as well as environmental mitigation measures.



CHARLES RIVER WATERSHED ASSOCIATION'S REPORT OF WHAT'S HAPPENING ON AND AROUND THE CHARLES



Harvard University Expansion, Lower Allston, MA

In late 2007, CRWA was appointed by the Secretary of Energy and Environmental Affairs to serve on the newly-created Citizens Advisory Committee (CAC) for Harvard's Institutional Master Plan (IMP) for its Allston campus under MEPA. CRWA is the only CAC member with environmental expertise. In 2008, with the first phase of development (the Science Complex) now underway, Harvard begins a new phase by turning its attention back to the IMP, which will govern development of the new campus over the next 20-50 years. CRWA continues to advocate for designs that will restore natural watershed function, improve water quality, reduce flooding, protect groundwater, and provide public open space corridors that direct both people and water out to the river.

27 Washington Street Redevelopment Wellesley, MA

The site of the former Grossman's in Lower Falls is being redeveloped after years of unsuccessful attempts. The project is a mixture of retail and residential, and will include a riverfront restoration with public pathways and native plantings. CRWA provided the Wellesley Natural Resources Commission (NRC) and the developer with comments and suggestions, and the NRC hired an outside consultant to review the project. As a result, the stormwater management plan will now meet the new state stormwater standards, including treating and recharging runoff from the entire site. The developer has agreed to install signs explaining the on-site rain garden in the public parking area. CRWA has also encouraged protection of the town-owned strip of land adjacent to the site, providing a visual and pedestrian connection from Washington Street to the river.

Chapter 91, statewide

As part of Governor Patrick's initiative to streamline environmental permitting, the Department of Environmental Protection (DEP) has proposed changes to the state Chapter 91 waterways licensing program, which is the primary tool for protecting the public trust and use of Massachusetts tidelands and waterways. One change, proposed to supposedly speed up licensing, would exclude Office of Coastal Zone Management (CZM) participation in the review process unless specifically invited to participate. CZM has expertise in managing coastal resources and its input is invaluable. CRWA advocated for earlier and better coordination with CZM, rather than eliminating it from meaningful participation in DEP's decisions.

Healthy Lawns and Landscapes Workshop

On May 6 CRWA held a Healthy Lawns and Landscapes workshop for watershed residents interested in learning environmentally-friendly landscaping techniques. Presenters included CRWA Landscape Designer Viola Augustin, Ken Dews of Rainstay, and MA Department of Environmental Protection Consumer Waste Reduction Coordinator and Northeast Organic Farmers Association Organic Landcare Professional Ann McGovern who offered lawn care tips (see sidebar). MA Department of Environmental Protection donated a compost bin which was raffled off. If you missed the workshop but would like to learn more, it will air on Newton Community Access Channel; visit <http://www.crwa.org/events/2008/landscaping08.html> for broadcast dates and times, to download presentations and get more tips. This workshop was partially funded by the Massachusetts Environmental Trust.



Healthy Lawn Care Tips

- **Test your soil.** Many soils do not require additional fertilizer and adding fertilizer can actually harm grass and other plants. (UMass Amherst performs soils test for \$9/sample - visit www.umass.edu/plsoils/soiltest)
- If your soil requires additional fertilizer, **use organic fertilizer or compost** which release nutrients slowly over an extended period of time.
- **Select grass species that are appropriate for your site conditions.** Consider using grass seed mixes with a high percentage of fine fescue blend, which require less watering than traditional blends and grow well in shade.
- **Encourage grass to outcompete weeds** by creating proper soil conditions for your grass species: mow high (2-3" grass blades), leave grass clippings on the lawn, and topdress with ¼" compost in spring and/or fall.
- **Prevent turfgrass disease** by irrigating only in the morning, not over-watering, mowing grass only when dry, keeping mower blades sharp, and never removing more than one-third of the grass blade.
- **Do not mow or fertilize brown grass**, which has gone dormant; it is likely still healthy and will return to green when the rain returns.
- **Encourage biological activity in your soil** through composting and mulching. Remember, not all pests are bad, and many are beneficial.
- **Be patient!** If you have used pesticides or synthetic fertilizers in the past it may take a few seasons to restore the natural balance of your yard. In the end, you will be rewarded with a yard that is healthy for you, your children, your pets and the Charles River.

CRWA's Blue Cities Forum in Zakim North

CRWA held the third in a series of "Blue Cities Forums" on March 18, focusing on its Environmentally Sensitive Urban Development (ESUD) work in the Zakim North area, which includes portions of East Cambridge, Somerville, and Charlestown. The forum, held at the East End House in Cambridge, was well attended with representatives from Cambridge City Council, various City departments, neighborhood organizations and interested residents.

Councilor Henrietta Davis welcomed participants, followed by CRWA's Executive Director Robert Zimmerman, Jr. who provided an overview of CRWA's Blue Cities Initiative. CRWA staff presenters Kate Bowditch, Pallavi Mande, and Viola Augustin then discussed our ESUD work in the Zakim North region, CRWA's vision of how redevelopment in the area can and should be designed to restore pre-development hydrology (improving water quality while reducing flooding and combined sewer overflows). Recommendations for 'green' infrastructure, which address green space and public realm improvements, were then presented. For more information on the forum and a copy of the presentations please refer to <http://www.crwa.org/projects/ESUD/ZakimNorth.html>

Urban Stormwater Management Seminar for Municipal Officials

On March 13, CRWA hosted a seminar to inform city and town officials about the latest technologies, research and case studies from stormwater experts about dealing with runoff. Representatives from 18 of the watershed's 35 cities and towns participated in the half day seminar. Presenters included CRWA's Director of Projects Kate Bowditch, Rich Claytor of Horsley Witten Group, Steve Roy of Geosyntec, Paul Iorio of Filterra, Ken Dews of RainStay and Rob Roseen of the University of New Hampshire Stormwater Center. Topics included Low Impact Development (LID) in action around Massachusetts, stormwater best management practices (BMPs) for use in ultra-urban and residential settings, current field testing and research on stormwater BMPs, and strategies for "greening" the public realm. This seminar was funded by the Massachusetts Environmental Trust; breakfast was generously donated by Filterra Systems. If you are interested in obtaining copies of seminar presentations, contact Julie Wood at jwood@crwa.org.

Water Withdrawers Continue to Fight Conservation Requirements

The Massachusetts Department of Environmental Protection (DEP) welcomed in 2008 by renewing 250 registrations for water withdrawals that were “grandfathered” when the state’s Water Management Act (WMA) was enacted in 1985. Grandfathered registrations authorize water suppliers to continue these withdrawals based on their previous annual water use. Registrations have been virtually unregulated until recently, when DEP recognized the need for water conservation measures to improve stream-flow, aquatic habitat, and water quality and tightened their requirements.

CRWA’s work to protect watersheds from excessive water withdrawals has included collaboration with Ipswich River Watershed Association and others and a successful court case that we conducted. Due in part to our efforts, DEP now recognizes the need for stricter conservation measures aimed at curbing lawn-watering and residential use and reducing the amount of water “lost” in the distribution system. These follow on the heels of similar DEP measures regarding WMA permits for new withdrawals of more than 100,000 gallons

per day.

Fearing loss of revenue, public water suppliers have opposed these conservation measures. About 37 water suppliers challenged their registration renewals, claiming that DEP lacks legal authority to place conditions on registrations, and that the conservation measures are unnecessary. In fact, given the increasing stress on our watersheds, CRWA and other environmentalist groups think the new conservation measures are unduly lax. Registrants have ten years to comply, and outdoor watering restrictions are tied to an official state drought advisory that is usually declared far too late to prevent environmental damage. We consider this unacceptable. In the Charles River watershed, the towns of Franklin, Millis, Medfield, Cambridge, Needham, and Wellesley have already appealed their registrations for a DEP administrative hearing. CRWA plans to be involved in the registration appeals in the Charles’ watershed and will argue for stronger, swifter protections.

-by General Counsel Margaret Van Deusen

New Water Sampling Partnership

Woodside Montessori School in Millis has recently partnered with CRWA as part of our twelve-year-old volunteer monthly monitoring program. Five middle school students and their teacher have taken over sampling at the Route 126/North Main Street site in Bellingham.

Teacher Christina Gasbarro found out about the program as she was looking for ways to get her class involved with the Charles River, as part of the school’s experiential, community-based educational philosophy. CRWA Volunteer Coordinator Rebecca Scibek trained Christina as a sampler, then went to the school to do a presentation on CRWA’s work in the watershed and train the middle school students in sampling methodology. Since then, the class has been faithfully monitoring their site at 6am once per month, incorporating hands-on learning about the river and their environment into their classwork.

In addition to their monthly volunteering, the students have had the opportunity to integrate their water monitoring into other aspects of their education. They’ve used their own data to do graphing and analysis, learned about American history in the context of the Charles, and used water sampling as a springboard to discuss a variety of science topics. This integration and community-focused learning have helped make the water sampling project a very meaningful success for the middle school class, and they plan to continue sampling through the next school year.

-by Volunteer Coordinator Rebecca Scibek



Woodside Montessori School

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Charles River Watershed Association

190 Park Road
Weston, MA 02493

Would you prefer to save paper and receive an electronic copy of the Streamer? Contact Rebecca at charles@crwa.org or 781-788-0007 x200.

Upcoming Events at Charles River Watershed Association

June 25 Desserts at Jackson Pond, Dedham

Unwind for a relaxing summer evening with neighbors and friends of our gracious hosts, the Prestons. You'll have a chance to hear about what CRWA is doing about ponds and streams that are running out of water, from CRWA Executive Director Bob Zimmerman.

July 16 Green Masterpieces Concert by Landmark Orchestra, Hatch Shell, Boston

CRWA, Classical 99.5 WCRB, and the Massachusetts League of Environmental Voters are collaborating on a classical music concert of environmental themed masterpieces for orchestra.

July 15, 19, & 20 Water Chestnut Pulling Volunteer Events, Newton

Join Charles River Watershed Association, Charles River Canoe and Kayak, and your neighbors to help rid the Charles River of invasive water chestnuts.

August 6 CRWA featured at Jack Johnson "Village Green", Tweeter Center, Mansfield

Visit CRWA's booth before the concert and learn how you can help keep our water clean and abundant. Go to www.charlesriver.org/jackjohnson.html to learn how you can win tickets to the show!

November 18 CRWA Annual Meeting, Newton Marriott Hotel

Save the date! Join members and friends of CRWA for a report on our past year. We will present a lively panel discussion on the new administration's environmental challenges.

For more information on any of these events, call 781-788-0007 or visit www.charlesriver.org

Staff Transitions

In the fall, CRWA welcomed two new part-time staff members: Finance Assistant Adam Remillard and Landscape Designer Viola Augustin. Leigh Heffernan recently joined the full-time staff in February as Membership and Events Manager. In addition, Julie Dyer Wood was chosen as this year's Rita Barron Fellow, and has since been hired on as a Watershed Scientist.



Sadly, we said goodbye to Anna Eleria in February, who moved with her family back to Minneapolis after 12 years with CRWA. Anna oversaw much of our monitoring, stormwater assessment, and Lower Basin computer modeling work, and initiated the Annual Charles River Cleanup on Earth Day in 2000. We all miss her good humor, quiet competence, and tremendous insight and creativity, but wish her well in her new endeavors and work at Capitol Region Watershed District.