December 2016
Volume 4, Issue 2

FB Environmental E-NEWS

FB environmental

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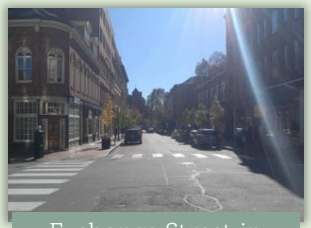
E-NEWS IN REVIEW



Exchange Street in Portland, ME

Early morning reflections on the Little River in North Hampton, NH

A large snapping turtle on the Salmon Falls River in Berwick, ME

FEATURED PROJECT: LAKE WINNIPESAUKEE

Roughly 215,133 acres of land drain to Lake Winnipesaukee in the New Hampshire Lakes Region. The Lake Winnipesaukee watershed is home to an abundance of natural and economic resources. To protect the outstanding water quality of the lake and the local economy that depends on it, the Lake Winnipesaukee Association and numerous stakeholders have teamed up with FBE to develop plans that address threats to clean water, especially excess phosphorus runoff resulting from human activities. Because of its large size, the Lake Winnipesaukee watershed was divided into multiple subwatersheds to facilitate drafting of targeted management plans.

Winnipesaukee Gateway

FBE is currently completing a watershed restoration plan for the Moultonborough Bay Inlet, a 1.6-square-mile waterbody that drains into Moultonborough Bay and ultimately Lake Winnipesaukee. The Inlet is threatened by excess phosphorus loading from existing development. To create these plans, FBE scientists thoroughly assess existing water quality data and conduct watershed, stormwater, and shoreline surveys to pinpoint sources of pollution and document land cover. These data are incorporated to a land use model that provides phosphorus load estimates for past, current, and future conditions. Model results inform stakeholders, who determine appropriate water quality goals. Once the goals are set, specific action items are developed to help reach those goals over a set period. Benchmarks are used to check progress and adaptive management strategies are employed if benchmarks are not being met. These plans are the first critical step to protecting or restoring our valuable water resources.

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Project Scientist, Lauren Bizzari, samples beach seeps overnight in Rye, NH

RECENT & ONGOING PROJECTS

Watchic Lake Water Quality Monitoring

In 2016, FBE, in cooperation with the Watchic Lake Association (WLA), began conducting annual lake monitoring at the deepest spot in Watchic Lake. FBE and WLA also designed and deployed a buoy system that suspends three data loggers at set depths (2, 5, and 11 meters) below the water surface to record dissolved oxygen and temperature continuously throughout the field season from May through October. These depths mark critical layers in the water column, which becomes thermally stratified during the summer months. With these data, FBE and WLA will be able to track the onset of thermal stratification from year to year, pinpoint spring and fall turnover, and determine the extent and duration of anoxia in the bottom waters.

Moultonborough Natural Resources Inventory

FBE was hired by the Town of Moultonborough, New Hampshire to conduct a town-wide natural resources inventory (NRI). FBE worked with the Conservation Commission to establish project goals and to develop a document that provides citizens with a better understanding of the community's natural resources. By identifying and describing natural resources in a local setting, the NRI provides the community with a strong foundation for better informed decision-making. Project tasks included mapping and describing the town's natural resources and modeling the co-occurrence of important features to identify resource-rich areas within the town. FBE Project Manager and Ecological Services Lead, Kevin Ryan, previously conducted a build-out analysis for Moultonborough; the analysis identified environmentally-constrained, non-buildable areas, and buildable areas throughout the municipality. Overlaying development constraints layers developed as part of the build-out, in conjunction with the areas identified during the co-occurrence modeling, helped to identify which developable portions of Moultonborough should be targeted for conservation versus those that are better-suited for development.

Early autumn colors on Watchic Lake in Standish, ME

Riverside Golf Course Pest Monitoring

FBE is monitoring the implementation of a novel method for pest management at the Riverside Golf Course, the City of Portland's municipal public course. The 27 holes of the north and south courses are being subject to a new method of pesticide application. Only nine holes will receive pesticide treatment per year with groups of nine holes being treated on a three year rotation – one year receiving treatment and two years of no treatment. FBE's role in this project is to act as a neutral third party observer and systematically document the location and abundance of plant and insect pests within the project area, specifically dandelion (*Taraxacum* spp.), plantain (*Plantago* spp.), clover (*Trifolium* spp.), crabgrass (*Digitaria* spp.), and Japanese beetle (*Popillia*

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Praying mantis checking out FBE's conductivity meter in North Hampton, NH

RECENT & ONGOING PROJECTS

Riverside Golf Course Pest Monitoring (Continued)

japonica) grubs. Infestation locations are being documented via a handheld GPS; information accompanying location data includes spatial distribution and percent areal cover. FBE is also assisting the Riverside Golf Course with the certification process for Audubon International's Cooperative Sanctuary Program for Golf Courses. The program helps golf courses implement and promote sound environmental conservation practices while preserving the natural heritage of the game. FBE has also worked with another private golf course in Maine to achieve certification.

Project Scientist, Maggie Burns, during a Bank Erosion Hazard Index (BEHI) survey

Kittery Trading Post Best Management Practice

FBE has been part of the Spruce Creek Watershed Restoration Project (SCWRP) since 2008, working to improve the creek, which is impaired due to high levels of bacteria. Through collaboration with the Town of Kittery, the Spruce Creek Association, Maine DEP, and other partners, more than 60 Best Management Practices (BMPs) have been implemented over the course of the project. These BMPs reduce bacteria and other pollutants from entering Spruce Creek. In Summer 2016, a new BMP was installed at the Kittery Trading Post (KTP) along Route 1.

BEFORE

AFTER

Lauren deploying a data sonde in Spruce Creek, Kittery, ME

Engineers from ACF Environmental designed a stormwater treatment area to treat runoff from 0.68 acres of impervious surface. Previously, this stormwater was piped under the parking lot and directly into the creek where high bacteria counts were measured. The installed BMPs included a "FocalPoint" high rate biofiltration system to treat the first half inch of runoff from the front parking lot, a rain garden "Turret" system to screen out larger pollutants and trash, and plantings within the "FocalPoint" itself. These BMPs are designed to encourage infiltration of stormwater to the ground. The successful collaboration between KTP and the Town of Kittery resulted in a highly visible BMP for added educational and outreach value.

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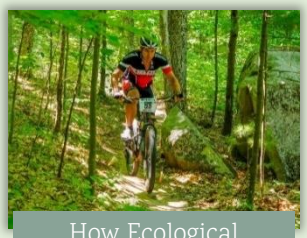

How Ecological Services Lead, Kevin Ryan, spends his weekends

Julia Bell, daughter of Forrest, at bat for the FB Environmental Green Dragons

Administrator Deb Mayo (in navy blue) at her son's wedding this past August

Special thanks to Lynn and Maynard Webster for a refurbished laptop donation in 2016

PUBLICATIONS & PRESENTATIONS

Publication by Staff Scientist, Margaret Burns, in Water Resources Research

- **Burns, M. A.**, H. R. Barnard, R. S. Gabor, D. M. McKnight, and P. D. Brooks (2016), Dissolved organic matter transport reflects hillslope to stream connectivity during snowmelt in a montane catchment, Water Resour. Res., 52.

Greater Lovell Land Trust and Interested Citizens

- Project Manager Kevin Ryan presented the five main aspects of the **Build-Out Analysis for the Town of Lovell**, ME on September 15, 2016

One Water! Southern Maine Conservation Collaborative Summer Member Event

- Kevin Ryan and Margaret Burns presented **Stories from the Field: Land and Water** at University of New England, Biddeford, ME on July 19, 2016

46th Annual Maine Lakes Conference

- Project Manager Laura Diemer presented on **effective tools for translating water quality data** in Unity, ME on June 25, 2016

NH Lakes Congress

- Laura Diemer and FBE Principal Forrest Bell presented on **citizen-driven watershed-based plans for lake protection: a how-to** in Meredith, NH on June 3, 2016

Maine Sustainability and Water Conference

- Project Scientist Lauren Bizzari presented on **tracking fecal contamination in coastal communities** at the Augusta Civic Center in Augusta, ME on March 29, 2016

New England Association of Environmental Biologists Conference (NEAEB)

- Laura Diemer and Jake Riley from Stantec presented on **pH trends in the Kezar Lake watershed and potential impacts to coldwater fisheries** in Rockport, ME on March 25, 2016

Town of Rye Public Forum

- Laura Diemer and Forrest Bell presented on **tracking human fecal sources to Parsons Creek: progress to date and next steps** at the Rye Public Library, Rye, NH on January 13, 2016

STAFF UPDATES

• **Laura** and her husband, Tom, welcomed their first baby boy, George (right), weighing in at 6.0 lbs on August 3rd.

• **Deb** and her husband, Scott, gained a daughter, Jen, when her son, Nate, got married in Ogunquit in August. They also excitedly await the arrival of their first grandchild, a girl, arriving to parents Jeff and Sasha in February.

• **Forrest** coached the FB Environmental Green Dragons, a U10 girl's softball team, to a winning season (10-2) and deep into the playoffs, where they lost in the final thrilling game of a best-out-of-three series. FBE is proud to sponsor such an amazing group of young ladies.

• **Kevin** competed in six mountain bike races in 2016; his daughter Lily celebrated her first birthday in August and Kevin looks forward to teaching her how to ride.

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