



# FB Environmental E-NEWS

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# FB environmental

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## E-news in review

Natural Resources Inventory p. 1
Featured Project- Ogunquit River p. 1
FBE Staff Updates p. 2
Current & Recent Projects p. 2-4
Wetland News p. 4
Conferences & Workshops p. 4

## PRACTICAL LAND CONSERVATION PLANNING: CONDUCTING A NATURAL RESOURCES INVENTORY

### A Natural Resources Inventory (NRI):

- Supports land conservation and resource protection
- Provides a “snapshot” of current conditions
- Evaluates the potential impact of future development
- Allows natural resources information to be included in planning and zoning

**Cumberland, ME and Milford, NH** - Who wouldn't love spending time outdoors, creating an inventory of vegetation and wildlife, taking in the scenic vistas, and exploring the rich history of our New England woods and shores? Working with landowners to develop a Natural Resources Inventory (NRI) is one of the many highlights of our work. When a private property owner, land trust, or municipality is considering acquiring a property, has land donated to them, or is considering changing current land uses to a different use that may impact critical natural resources, they may request a NRI for the property. FB Environmental (FBE) has conducted NRI's from the parcel level to the regional level in Maine and New Hampshire.

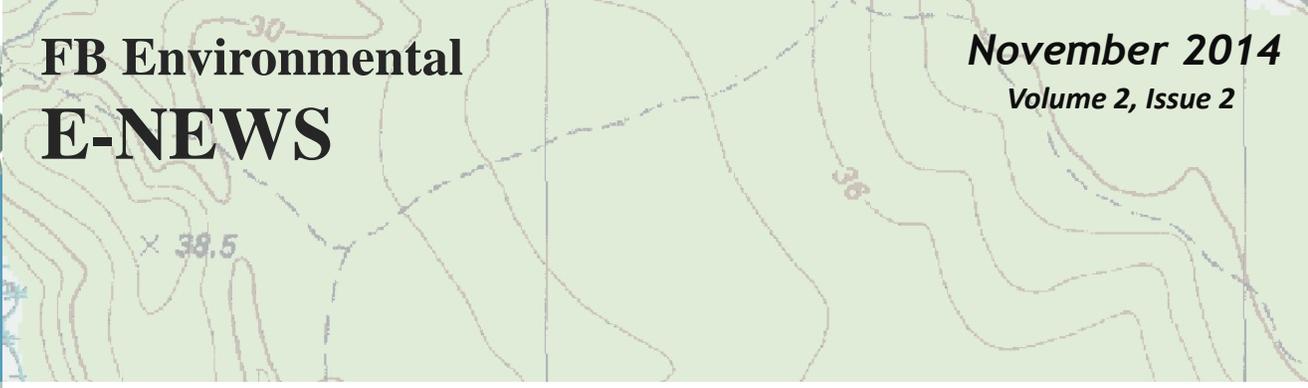
This fall, FBE completed a NRI on a 104-acre coastal parcel in Cumberland, ME considered “one of the last remaining underdeveloped waterfront properties in the Portland area”. The purpose of the NRI was to evaluate the property’s natural and scenic resources, prior to the planned residential subdivision and addition of public access for a new town beach. The NRI and public presentation provided a synthesis of relevant information about the property with specific management recommendations to minimize potential adverse effects related to the future development. FBE is also developing a NRI for a 270-acre town-owned property in Milford, NH. The site includes a rich mosaic of wetlands, numerous vernal pools, and oak woodlands, and is inhabited by several state-listed endangered and threatened fish and reptile species. The land is slated for extensive sand and gravel mining, industrial development, and construction of public facilities (i.e., a school, athletic fields, and a cemetery). FBE's NRI will provide specific recommendations about how to minimize impacts to the state-listed species and their habitats while providing space for the infrastructure needed to support a growing community.

## FEATURED PROJECT: OGUNQUIT RIVER

**Ogunquit, ME**- FBE is working with the Town of Ogunquit, ME on a 319 Phase I initiative to reduce bacteria levels in the Ogunquit River, a state-listed impaired waterbody that has experienced persistent bacterial contamination from unidentified sources. The high bacteria counts and subsequent public beach closures is attributed to nonpoint source (NPS) pollution. The goal of this project is to identify and treat potential sources of bacteria contributing to surface water contamination throughout the watershed. The Town has been proactive in maintaining a bacteria monitoring program at more than ten sites throughout the watershed, and as a result, multiple “hotspots” with high bacteria levels have been identified. With support from the Steering Committee over the next two years, this project will implement several Best Management Practices (BMPs) for stormwater mitigation within the watershed, evaluate potential areas of illicit discharge from septic and sewer systems, and administer a strong public outreach campaign to enhance local awareness of NPS pollution in stormwater.



*Ogunquit River bacteria monitoring station OR-2*



## FBE STAFF UPDATES



*FBE golf event to benefit the Province Lake Association.. FBE Principal Forrest Bell is pictured on the far right.*

- ❖ FB Environmental has been participating in charity fundraising events since we were founded in 2001. Some of our favorite events include charity golf tournaments in which we often sponsor a team and ask our colleagues to join us on the team. Most recently, The **FB Environmental team led by Forrest Bell** finished second in the Greater Portland Convention and Visitors Bureau golf tournament at the beautiful and challenging Purpoodock Club in Cape Elizabeth, Maine.
- ❖ FBE wetland scientist and wildlife biologist, **Kevin Ryan**, has had a very successful mountain bike race season, winning a first place title with a three person co-ed team at the annual 12 Hours of Bradbury Race at Bradbury State Park in Pownal, Maine. He also completed numerous other races, finishing near the top of his age class in other races in Maine, New Hampshire, and Vermont.
- ❖ FBE Project Scientist, **Whitney Baker** and her husband Nick are expecting their first child, a baby girl, at the end of November.
- ❖ After two consecutive years participating in the Natural Resources Council of Maine 5k events, FBE staffer **Jennifer Jespersen** stepped it up to help organize and participate in the Flying Pond Triathlon on August 24, 2014 in Vienna, ME. The triathlon featured a swim across beautiful Flying Pond, a bike ride through Vienna and Mount Vernon, and a run along the shores of scenic Flying Pond and through the quaint village of Mount Vernon.
- ❖ FBE Project Scientist, **Laura Diemer**, will be a guest lecturer this month for a high-level undergraduate/graduate course at UNH-Watershed Water Quality Management. She will discuss setting goals/objectives and evaluating watershed management practices.



*Kevin Ryan during his 2014 mountain bike race season*

## RECENT & ONGOING PROJECTS

### A Proactive Approach to Tracking Stream Health

**Bangor, ME** - Water quality data is a key component for understanding stream health, documenting where, when and what types of pollutants are entering a stream, and for determining if watershed restoration activities are effective. Biomonitoring (documenting the abundance, diversity, and type of aquatic macroinvertebrates in a stream) is one tool for assessing water quality, and is used by the Maine DEP for making aquatic life assessments. Due to the expansive water resources in Maine, and limited state resources, these assessments are typically conducted every 5 years or more.

With seven impaired streams, the City of Bangor is taking a proactive approach to monitoring and assessment. In 2014, FBE assisted the City with several monitoring and watershed planning projects, including development of a watershed management plan for Capehart Brook, continuous water quality monitoring in Birch Stream (data is collected every 15 minutes over the course of the monitoring season), and biomonitoring in all seven streams. Results of the continuous monitoring help determine how the stream responds to stormwater runoff. Annual biomonitoring results (including a professional taxonomic analysis) can be compared against the State's model for determining whether or not a stream is meeting its designated (aquatic life) use. The City intends to conduct this work on an annual basis, and is moving forward with watershed planning in two additional watersheds in 2015. Project partners include the Maine DEP and the City of Bangor.



*A total of 21 rock bags (bottom) were deployed across 7 impaired streams in Bangor in 2014*

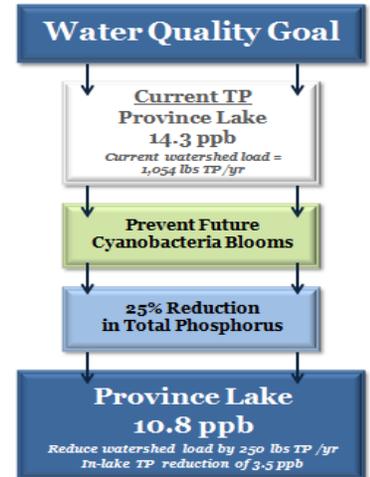
## RECENT & ONGOING PROJECTS, *continued*

### Watershed Planning Effort a Big Success at Province Lake

**Parsonsfield & Newfield, ME and Effingham, Wakefield, & Ossipee, NH** – After more than a year of research, planning and public outreach, FBE has completed the watershed-based management plan for Province Lake, an impaired waterbody located in the White Mountain Region of north-central New Hampshire, and southwestern Maine.

The goal of the plan is to reduce the amount of phosphorus entering Province Lake by 25% in the next 10 - 15 years in order to prevent future occurrence of toxic cyanobacteria blooms which have been documented on the lake since 2010. The action plan targets roads, shorefront properties and the high percentage of old (>20 years) septic systems. The plan includes a summary of the lake's water chemistry, land-use assessments, phosphorus modeling, watershed and septic surveys, a future build-out analysis, BMP Matrix, Action Plan, and a series of informative maps.

This innovative bi-state plan was led by the cooperative efforts of many local and state partners including the Province Lake Association, Maine DEP and New Hampshire DES. Technical support was provided by FB Environmental, the UNH Stormwater Center, UNH, and the Acton Wakefield Watersheds Alliance.



A copy of the Province Lake Watershed Plan is available online:

<http://provincelake.org/water-quality/water-quality-reports/>



Funding for the Province Lake project was provided in part by a Watershed Assistance Grant from NHDES with 319 funds from the US EPA.

### If You Build It, Will they Come? An In Situ Toxicity Study in Long Creek, ME

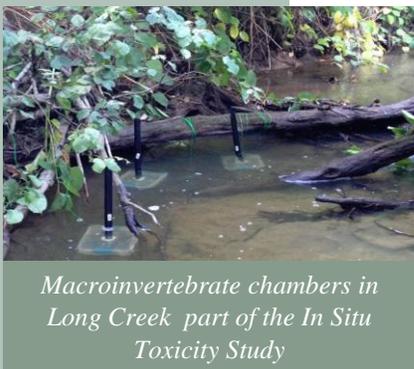
**Portland, ME**– It's no secret that aquatic macroinvertebrates living in the nooks and crannies of rocks and other debris on the bottom of our urban streams are sensitive to high flows, salt, metals, and nutrients that are the result of stormwater runoff. The Long Creek Watershed Management District (LCWMD) hired FB Environmental (FBE) to design and carry out experiments to determine if the water chemistry in Long Creek can support viable populations of aquatic macroinvertebrates. The LCWMD, Stantec and Maine DEP collaborated with FBE on study development and design. A total of 9 macroinvertebrate enclosures (chambers) were deployed in Long Creek and at Douglas Brook in Gorham (reference stream). Each chamber

was populated with 10 mayflies (*Heptageniidae: Maccaffertium*) along with cobbles to provide consistent habitat between sites. Water quality was monitored inside and outside the chambers to compare the environment to ambient stream conditions.

At the end of the seven day exposure period, the percent survivorship of mayflies was enumerated in all chambers. It was found that an average of 67% of mayflies survived in the reference stream, and that average survivorship in the two Long Creek sites was 50% and 40%, respectively. Although chambers from the Long Creek sites had lower survivorship than the reference stream, the groups are not statistically different from one another. These results indicate: 1) that the mayflies in Long Creek survived in the chambers just as well as the mayflies in the Douglas Brook chambers, and 2) that there may be potential for macroinvertebrate communities to exist in Long Creek in the presence of suitable habitat.



Mayfly larvae from the reference stream were used for the study. (Photo: NABS)



Macroinvertebrate chambers in Long Creek part of the In Situ Toxicity Study

**RECENT & ONGOING PROJECTS, *continued***

**FBE & Environmental Canine Services (ECS) Address Bacteria in Salem, NH**

**Salem, NH** – FBE and Environmental Canine Services have been working with multiple communities to help address bacteria issues in their waterbodies. This month, FBE and ECS are working with the town of Salem, NH to conduct shoreline surveys to assess pollutant sources to four of their major lakes. An in-depth shoreline investigation will occur after the winter draw of the two these lakes, ensuring better access to possible sources. The dogs are able to pick up human-specific waste on shoreline areas.



*Karen and Scott with canines Sable and Logan investigate a shoreline in Salem, NH.*

**WETLAND NEWS**

**FBE Wetland Delineators Busy in 2014**

FBE Wetlands Scientists completed several wetland projects this spring and summer, traveling throughout Maine, New Hampshire, Minnesota and Ohio. FBE provides direct support to several state, municipal and private clients. Wetland projects ranged from wetland and stream delineations to GPS technical support.



*FBE Wetland Scientist, Laura Diemer collects GPS points along Otter Brook in NH.*

**CONFERENCES, PRESENTATIONS & WORKSHOPS**

**Northern New England APA Conference ~ Stowe, VT - Sept. 9-12**

- ❖ Forrest Bell co-presented with Town Planners Dan Bacon and Rod Melanson on “*Regional Economic Development and Water Quality and How to Navigate the Urban Impaired Stream Waters*” at the Northern New England Chapter of the American Planning Association conference.

**Cumberland Town Council ~ Cumberland, ME - Oct. 6**

- ❖ Forrest Bell and Kevin Ryan presented to the Cumberland Town Council and a large contingent of citizens on the details of the Natural Resources Inventory for the Payson Property.

**Lake Winnepesaukee Watershed ~ Moultonborough, NH - Oct. 27**

- ❖ Forrest Bell presented on lake and watershed assessment to the Town of Moultonborough NH and citizens of the Lake Winnepesaukee watershed to kick off the Moultonborough Bay Inlet project.

**Maine Lakes Society Board Retreat ~ Belgrade Lakes, ME - Nov. 2**

- ❖ Jennifer Jespersen attended the annual Maine Lakes Board Retreat held at the Village Inn in November. She has served on the Board of Directors for the Maine Lakes Society since 2008.



*Closed gentian (Gentiana clausa) documented along Otter Brook in Sullivan, NH. This species' flowers do not open, and are only pollinated by insects strong enough to force their way in.*