



Selectmen Support Center Road Redesign

By Meg Muckenhoupt

Those orange traffic barrels on Leonard Street were a harbinger of things to come: on June 8, Belmont’s Selectmen approved a concept plan to redesign Belmont Center’s roads to improve travel options for drivers, pedestrians and bicyclists, and to increase green space in the Center.

The concept plan was developed because Belmont Center’s roads are wearing out and need

to be rebuilt. The Board of Selectmen agreed that before the streets are rebuilt, the town should commission a plan to improve the Center’s traffic, pedestrian and bike access, parking, and green space. The plan was created by the BSC Group, the same consultancy that is redesigning the Trapelo Road/Belmont Street corridor. Belmont’s Traffic Advisory Committee (TAC) solicited input at a series of public meetings, and then met as a committee to work on the plan



GLENN CLANCY

Proposed changes to the Center’s Channing/Concord/Leonard intersection.

with BSC. Glenn Clancy, Belmont's director of Community Development, presented the concept plan to the Selectmen on behalf of the TAC.

The plan's highlights include reducing Leonard Street to one lane near the railroad bridge; installing new crosswalks at the Channing/Concord/Leonard intersection; creating new parking spaces on Concord Avenue by the bridge; and eliminating the road and parking spaces in front of Belmont Savings Bank and expanding green space there.

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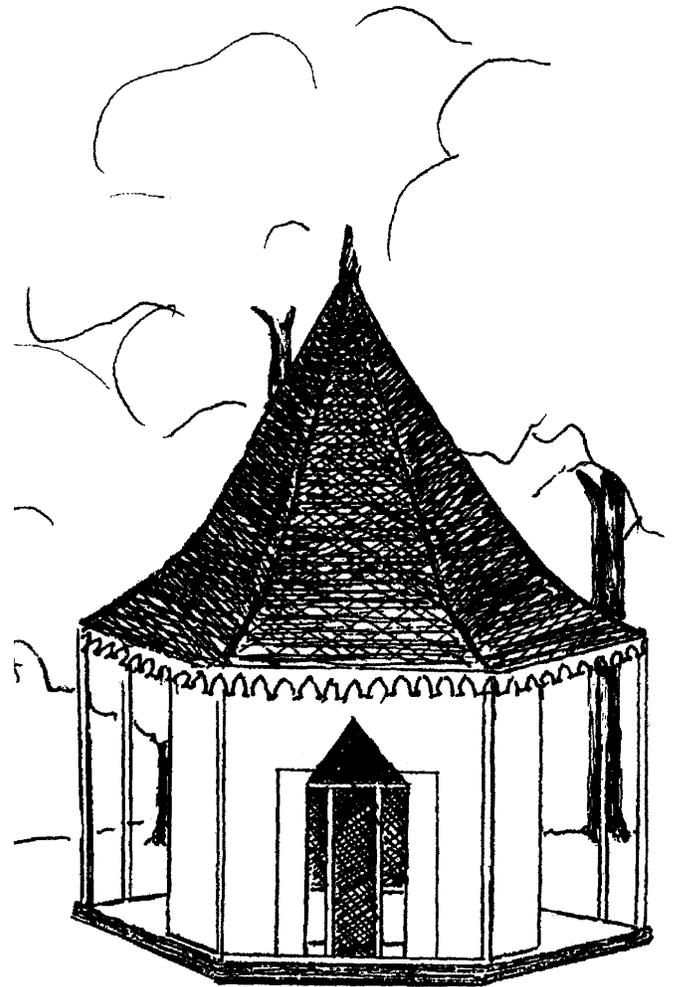
Karen Parmett

Belmont Citizens Forum Inc. is a not-for-profit organization that strives to maintain the small-town atmosphere of Belmont, Massachusetts, by preserving its natural and historical resources, limiting traffic growth, and enhancing pedestrian safety. We do this by keeping residents informed about planning and zoning issues, by participating actively in public hearings, and by organizing forums. Our *Newsletter* is published six times a year, in January, March, May, July, September, and November. Published material represents the views of the authors and not necessarily those of the Belmont Citizens Forum. Letters to the editor may be sent to P. O. Box 609, Belmont MA 02478 or to info@belmontcitizensforum.org.

Traffic Routes Will Stay the Same

Although the BSC Group examined many different options for moving traffic through the center—ranging from one-way streets to roundabouts to just plain closing Leonard Street—in the end, “The volume of traffic during the peak hours and geometric limitations of some of the roadways ... made it impossible to consider any alternative...,” according to Clancy’s report to the Selectmen.

Once changing the street configuration was off the table, the BSC Group focused on improving traffic flow, creating safer pedestrian crossings in the Center and on the south side of the railroad bridge, better access for bicyclists who wish to shop in the Center, and parking. Belmont’s Planning Division of Community Development is also studying parking in the Center, and considering how to manage parking more efficiently.



Wellington Station

Leonard Street to Become Single Lane

The plan calls for reducing the south end of Leonard Street to a single lane. Belmont's morning drivers traveling south on Leonard Street generally break into two lanes. The result is that north-bound drivers have to fight across two lanes of traffic to turn onto Concord Avenue or Moore Street—and drivers in the right-hand south-bound lane cannot see the cars that are trying to turn.

The TAC decided to test keeping Leonard Street a single lane by putting traffic barrels up on Leonard Street from Moore Street to Concord Avenue for several weeks. The TAC received few complaints and plenty of support from drivers who were happy to be able to turn. As Clancy's report states, "There were days when traffic was backed up on Clifton Street, however this is not an unusual occurrence when [traffic] barrels are not in place..."

New Sidewalks, Islands to Ease Crossing

To create single traffic lanes, the TAC plan calls for new, wider sidewalks on Leonard Street—which has the bonus effect of shrinking the distance pedestrians have to travel in the road to cross the street. The plan also calls for making the new crosswalks safer by building raised islands at the Channing/Concord/Leonard intersection and the intersections of Cross Street and Clafin Street with Channing Road. The islands "provide an area of refuge for pedestrians," according to the report.

Parking Shifts, Green Space Grows

The BSC Group suggested widening and recreating the south side of Concord Avenue between the Municipal Light building and the bridge alongside the railroad tracks. That work would result in 10 more parking spaces; a larger, more accessible area of open space alongside the tracks; and "an optional bike trail connecting a rail trail to Concord Avenue and Belmont Center," according to the report. The stone walls along the sidewalk would be eliminated, and the pedestrian tunnel would be shortened.

Across the street, the BSC/TAC plan calls for eliminating the leg of Leonard Avenue in front of Belmont Savings Bank and enlarging the existing plaza of green space. The town would

Thomas Clark House Update

The Thomas Clark House, 59 Common Street, has been sold to a developer, Mike Barons. The house, built in 1760, is one of Belmont's oldest homes. As of press time, Barons is planning to close on the house in late August, then demolish the house and build two new single-family homes on the site.

Belmont Historic District Commission co-chairs Mike Smith and Paul Bell are seeking to meet with Barons to discuss remaining options for preserving the house, which could include moving the house to another location. The house was moved once before in the early 19th century.

For full details on the Thomas Clark House's historic features, see "Can the Historic Clark House be Saved?", Belmont Citizens Forum *Newsletter*, January/February 2011.

retain an access road to the bank. According to the report, the TAC believes that the addition of parking spaces on Concord Avenue will offset the loss of parking in front of the bank. A new crosswalk at the intersection of Concord Avenue and Leonard Street will help pedestrians cross to the bank and the green space.

Although the Selectmen have endorsed the plan, funding has not yet been found for the project. According to Clancy, funds may become available from Belmont's pavement management program, but the exact amount of money available will not be clear until several other pavement management contracts are settled later this summer.

Meg Muckenhaupt is Editor of the Belmont Citizens Forum *Newsletter*.

New Western Greenway Trail Segments Open

By John Dieckmann

Two more pieces of the Western Greenway Trail recently opened for visits—the path from Walnut Street to the Lot 1 trail loop, and the Chester Brook corridor over the YMCA land off of Lexington Street.

Walnut Street Connector Built

About two dozen volunteers participated in two trail-building work days in May to construct the Walnut Street to Lot 1 trail. It begins at Walnut Street, just north of Cart Path Lane, then runs north alongside and parallel to Walnut Street for about 100 yards, where a Western Greenway Trail blaze is visible.

The trail then turns west through trees, crosses a small meadow, then goes back into the woods. It roughly follows a ridge then crosses over to the north slope of the ridge land.

The trail then gradually travels downhill until it meets the existing Lot 1 trails at the trail that goes up to the water tower. The ridge and its northern slope overlook a section of woods featuring very large trees and vernal pools that are present in springtime. Overall, this new segment of trail is 1950 feet long, or a bit less than 4/10 of a mile.

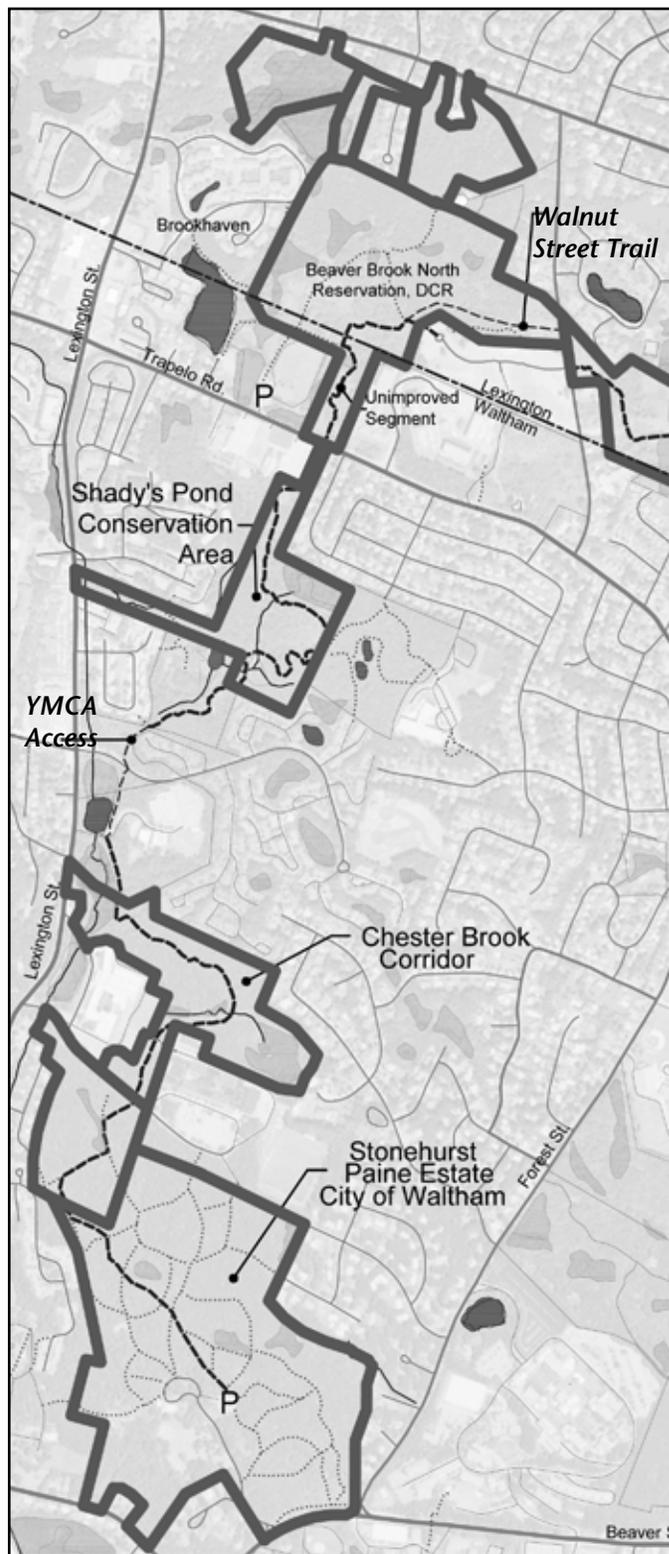
YMCA Allows Trail Access

The YMCA of Greater Boston finally granted permission for walkers to cross their land and driveway after many years of work by the Waltham Land Trust and Trust treasurer Marc Rudnick. The long delay was mainly due to the YMCA's concerns about its potential liability for accidents.

As part of the agreement, the Waltham Land Trust will arrange to have a speed bump added to the driveway near the trail crossing.

For a complete map of the Western Greenway, see the May, 2011 Belmont Citizens Forum *Newsletter* on the Forum's web site, www.belmontcitizensforum.org.

John Dieckmann is a Director of the Belmont Citizens Forum.



Detail of the Western Greenway showing the two new trail segments.

Buy the Right Bicycle for Your Lifestyle

By Adam D. Sacks

Rumor has it that summer has arrived, and what better time to jump on two wheels! You've rescued your circa-1970s Raleigh 3-speed or your once-fancy Peugeot 10-speed (10 whole speeds—wow!) from the basement, and discovered that all the parts are rusted together. Or you've found that just a tune-up and replacing worn metal and rotted rubber parts will cost you upwards of \$250, a common story with beloved oldies as well as with Craigslist and yard-sale "bargains." And even then, the bike won't run anything like a 21st century machine. It's time to buy a new bike.

From a distance, today's bicycles look pretty much like the ones of yore—two wheels, handlebars, fork, brake levers, etc. But in reality, almost all these resemblances are superficial.

Today's bikes use new metal alloys and carbon fiber which are stronger and lighter, making them easier to ride. Brakes are far superior, gear shifting is faster and more accurate, and frame design has advanced to optimize speed, weight, and comfort in any given category of bike.

How Will You Use Your Bike?

If you're ready to buy a new two-wheeler, here's the most important question to ask: What kind of riding do you want to do?

Do you envision peaceful, leisurely weekend rides along our wonderful and growing network of bike paths? Or do 50-mile day trips around the glorious New England countryside appeal to you? Are you gearing up for some exciting races as you get into shape? Or do you want to save a bundle on transportation costs by commuting and shopping by bike? Each of those choices points to a different kind of riding gear.

Shop for Fit, Quality, and Safety

Here are some general tips to keep in mind as you're shopping:

1. Pick a bike that you really, really like (including color), and that feels good to ride. If it doesn't fit right you won't ride it, and you might think you don't like cycling that much when in reality it's just a mismatch between you and bike.

2. Buy a bike at a local bike shop, not at a department store and certainly not online. Local bike shops are staffed with professional mechanics who thoroughly understand how to put the bikes together as well as maintain and fix them.

I've had customers come in with their week-old MegaMart purchases pleading with me to make them work right. Sometimes it's possible, sometimes the quality is so poor that the bike will never be a good ride. Your local bike

New Boston Cycling/Walking Map

The Metropolitan Area Planning Council, a regional planning agency serving Greater Boston, recently published its *Greater Boston Walking and Cycling Map*.

The *Map* includes:

- Hiking trails in conservation lands, paths through campuses, and city parks
- Bicycle lanes, shared lanes, cycle tracks, and select on-road connections
- Shared-use trails on former railroad rights-of-way, rivers, and other corridors
- Improved paths with a stabilized firm surface, ideal for use by road bicycles, wheelchairs, or strollers
- Unimproved paths open to public use for hiking or mountain biking
- Regional Networks—including the Western Greenway, Bay Circuit, Charles River Link, and the Claire Saltonstall Bikeway

The *Map* is available on the web at trailmap.mapc.org





Typical European comfort bike.

shop will sell you a good-quality bike to begin with, and will be there to help you every step of the way, from choosing a bike to fitting to tune-ups and repairs. General and online stores can't do that.

3. You won't get what you don't pay for. Cheap bikes are cheap because every possible corner has been cut, so while they might look shiny, the beauty is paint deep. Everything from the frame to wheels to nuts and bolts is of only sufficient quality to hold the bike together until it rolls out of the store. Not only will the bike not last, but it may never work right and may even be dangerous to ride. So expect to pay at least \$250 for the simplest, decent-quality comfort bike (no gears, no extras), and plan on at least \$500 if you're going to do regular riding.

4. Plan for safety. Helmets are a must! Even if you're just going around the block. All it takes is one fall, not even at high speed (just hit a little boulder at any speed). Brain injuries are forever. Riding without a helmet is never, ever worth the risk. Front and rear lights are also useful, even during the day. If it's sunny and you ride under a tree, you disappear. Stay visible at all times.

Different Bikes Suit Different Riders

Here's a brief general description of some bikes for adults. The price ranges are approximate, and specifics will vary:

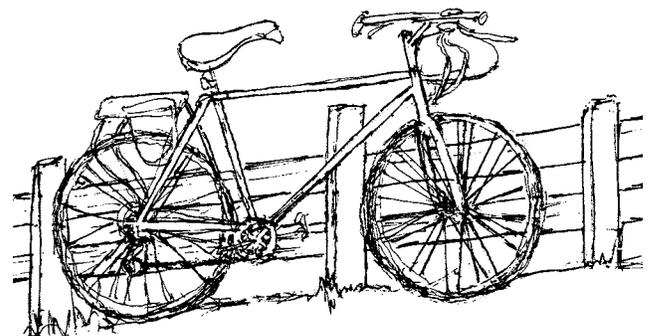
Comfort: Upright position; cushy seat and suspension seat post; 1 to 21 speeds, with gears either inside the rear hub or in a cluster on the outside. They are very comfortable, relaxing, great for local rides, but kind of cumbersome for rides over 25 miles. \$250–\$600.

Hybrid: A loosely defined term for a genetically modified version of a mountain bike kinda sorta mated with a road bike. Some have front shock absorbers. The bikes have 7 to 27 speeds. Riders lean further forward than on a comfort bike, but hybrid bikes are lighter, faster, and more suitable for longer trips. \$400–\$2,000.

Mountain: A heavier, more robust machine, usually with front shock absorbers ("hardtail") or shocks both front and rear ("dual suspension") and 21 to 27 speeds. They have fatter, knobby tires suitable for dirt, grass, and gravel. They're okay on the road too, but they slow you down a bit. Entry-level mountain-style bikes are some people's favorites for a general-purpose ride. Try one out to see if you like it. \$350–\$800.

Road: The classic bike with down-curving handlebars and 24 to 30 speeds. Road bikes are the lightest, fastest, and most nimble of the lot, but they pretty much limit you to asphalt and other hard, smooth surfaces. Getting the right size is particularly important with a road bike, and the shop may need to make some adjustments for you, but when it fits right a road bike can be very comfortable for long or fast rides. \$650–\$15,000+. (You don't need that one, trust me.)

Touring: A variation on a road bike. Touring bikes have a longer frame than road bikes.



They're sturdier for carrying lots of gear and are designed for many consecutive long days in the saddle. \$800–\$3,000.

Cross: Another road bike variation, designed for cyclocross racing, which is an event cleverly constructed to be the messiest, silliest, muddiest, most fun competition ever. It's a tough bike for rough riding and accommodates fatter tires than a road bike, which also makes it a great commuter bike. Some cross bikes can accommodate a rack for carrying lots of work and shopping stuff. \$800–\$4,000.

Triathlon: A bike designed for one thing: speed. Perhaps it was also designed to be uncomfortable, but at least you get it over with relatively quickly. If you want to do triathlons,

try one out with whatever bike you already have before plunking down \$1,000+ for a tri bike.

Finally, check out the statewide bicycle advocacy organization, MassBike (www.massbike.org). MassBike offers events for riders of all skill levels and ages as well as cycling information, safety classes, and resources. The New England Mountain Bike Association (www.nemba.org) also offers skill clinics and group rides.

Happy riding!

Adam Sacks officially retired in 2007 and now goes everywhere in Greater Boston on his bike, a 1993 Gary Fisher hybrid (with a cool leather saddle and hand-built wheels for a touch of upscale). He works at Belmont Wheelworks.



SUSAN B. JONES

Belmont Historical Society Grants Preservation Awards

Iris Ponte, owner of the Henry Frost farmhouse (pictured above), was given a Belmont Historical Society 2011 Historic Preservation award for her work on the farmhouse at the Society's May 18 awards ceremony. Three other projects received preservation awards as well: the Friends of the Benton Branch Library, for their efforts to preserve the Everett C. Benton Library; the Belmont Land Trust, for their efforts to preserve Belmont's open space; and Jeanne and Kevin Krauss, for their work to return their Albert Avenue home to its original construction. Richard Betts was given a lifetime achievement award for his work on local history.

Molasses Disaster Caused by Bad Engineering

By Sumner Brown

Belmont's 2011 One Book, One Belmont selection, Stephen Puleo's *Dark Tide*, details the disastrous 1919 Boston molasses flood that killed 21 people. The book centers on an engineering versus political question: Did an anarchist's bomb cause the deadly mess, or did the molasses tank fail due to defective design and construction?

That question is important because Boston's molasses disaster changed the way that building permits are issued. In 1919, communities relied on builders to check their own plans. Today, building permits are not issued until professionals check the plans for structural soundness and site appropriateness. Glenn Clancy, the director of Belmont's Office of Community Development, sees building plans only after architects or structural engineers certify them to be structurally adequate.

In *Dark Tide*, Puleo writes about the "factor of safety" the tank's owners used to assure that

their tank would not fail. Puleo defines the term in Chapter 11:

"The factor of safety is a number that describes the maximum amount of pressure the walls could stand without buckling: a factor of safety of 3 would mean that the tank could withstand a force equivalent to three times the total pressure exerted on its walls by the contents inside."

Clearly, the factor of safety should be greater than 1.0, or else the tank would collapse the moment it is filled. But how much greater, and why? I will try to fill in key details behind Puleo's description.

According to the book, shortly after the tank failed, Professor Charles M. Spofford of MIT calculated that the failed tank had a factor of safety of 1.8. Superficially, it sounds like the tank was almost twice as strong as it needed to be. But even the experts testifying for the tank owners said that they would have recommended a larger factor of safety.

I asked an architect who happens to be my brother, Tom, how "factor of safety" was used in 1919. He wrote,

"When loaded to failure, the actual failure point has a lot of variables, most of them caused by imperfections in the material, knots in the wood, imperfect bonding between concrete and rebar, irregularly tightened bolts or seated rivets, etc. A lot could go wrong in 1919 ... One bad rivet could pop, load the next and then unzip a seam."

Based on an eyewitness account of rivets flying off the molasses tank like bullets from a Tommy gun, this comes close to describing what apparently happened.



WIKIMEDIA COMMONS

Devastation caused by the molasses flood.

My brother also described the process of a structure approaching failure:

“When something fails it is almost never a case of sudden complete and total failure at some precise load. What occurs is typically a buckling or a deformation and then progressive collapse. A building (think World Trade Center, September 11, 2001) kneels and then goes down.”

Dark Tide contains enough numbers to try my own calculation of a factor of safety in 1919. I assumed that structural steel back then had the same properties it does now, and taking into account rivet holes, and got a factor of safety of 1.8, calculated as the ratio of the ultimate strength of structural material to the structural material's peak stress.

When the tank was full, however, the pressure of the molasses on the steel between the rivet holes would be almost strong enough to permanently stretch the steel.

Well, that is not exciting unless you are an engineer. But consider this; the factor of safety, if I have it right, was based on an easy calculation that ignores many important unknowns: variations in the steel plate thickness, stress-crack propagation with fill-empty cycles, rust, manufacturing tolerances, yielding before failure, and flexing that weakens and loosens rivets.

With a factor of safety of 1.8 and a half-full tank, the tank's steel would stretch elastically so that when emptied, the tank would return to its original size and shape. The amount of stretch would be so small that it would be difficult to notice without careful measurements.



Elevated rail line collapsed by the molasses flood.

When the tank was full, however, the pressure of the molasses on the steel between the rivet holes would be almost strong enough to permanently stretch the steel. The steel around the rivet holes probably deformed so that the holes became elongated because there were too few rows of rivets on each vertical seam to keep it the seam stable. The horizontal seams would flex so as to loosen the rivets, which quite possibly is what led to the tank's persistent molasses leaks before the failure. My guess is that when the molasses tank was fully loaded, what sounded like molasses boiling was the sound of rivets and joints slipping as the tank kneeled.

In other words, a factor of safety of 1.8 meant that the tank was on the edge of failure when full. For most of the rest of the 20th century, structural steel designers used much more conservative factors of safety. In 1919, the inadequate number of rivets was just the final straw of an engineering disaster, not an anarchist terrorist attack. And a sloppy, cost-cutting design cost 21 people their lives.

Sumner Brown is a Director of the Belmont Citizens Forum.

Environmental Events

By Sally Rifkin

Friends of Spy Pond Park Work Day **Saturday, July 16 and August 20, 10 a.m.-1 p.m.**

Bring your own tools. Free. Registration required. Sponsored by Friends of Spy Pond Park. dabirming@gmail.com, gtmccormick@verizon.net, friendsofspypondpark.org. *Pond Lane end of Spy Pond Park, Arlington.*

Naturalist Walks

Saturdays, July 16 and August 20, 1-3 p.m.

Sue Bass Steps Down

After 12 years of serving on the Belmont Citizens Forum Board, founding member and former president Sue Bass has decided to step down. Sue has taken on a new role of volunteer, supporter, and cheerleader.

The Board looks forward to working with Sue in her new role. She will always be part of the Citizens Forum community.



MEG MUCKENHOUP

Sue Bass

Walks will cover wetlands to uplands, exploring all the habitats of the Drumlin Farm sanctuary to look for amphibians, reptiles, mammals, flowering plants, trees, lichens, fungi, insects, and birds. \$10 for Mass Audubon members; \$15 for nonmembers. (781) 221-2206, drumlinfarm@massaudubon.org, <http://www.massaudubon.org>. *Nature Center, Drumlin Farm, 208 South Great Road, Lincoln.*

Tours of the Water Purification Facility **Mondays, July 18 and August 22, 6-7:30 p.m.**

The Cambridge Water Department is offering tours of the Walter J. Sullivan Water Purification Facility. The program will include a virtual tour of the whole Cambridge watershed using the wall-sized map on the second floor and a tour of the purification areas and the lab. Free. Sponsored by the Cambridge Water Department. (617) 349-6489, friendsoffreshpond.org. *Sullivan Water Purification Facility, 250 Fresh Pond Parkway, Cambridge.*

Annual Ice Cream Bike Tour

Saturday, July 23, 10:30 a.m.

Bring your friends, family, and bicycles to this leisurely bike ride to three ice cream stands: Bates at Kimball Farm (Carlisle); Erickson's (Maynard); and Kimball Farm (Westford). Complete the entire 52 miles of the course, and your trip will be about calorically neutral. Free. Sponsored by MassBike. (617) 926-5149, gbreslow@mos.org, www.massbike.org. *On the green by the water fountain in Concord Center, Concord.*

MassBike Summer Century/Family Ride

Saturday, July 30, 8 a.m.-4 p.m.

Join MassBike for a day of riding and exploring beautiful roads and historic towns. Routes include 12, 22, 45, 62, and 100 mile distances. Free. Sponsored by MassBike. (617) 542-6755, <http://www.massbike.org>. *Lexington High School, 251 Waltham Street, Lexington.*

Sustainable Belmont Monthly Meeting

Wednesdays, August 3 and September 7, 7-9 p.m.

All are welcome. *Flett Room, Belmont Public Library, 336 Concord Avenue, Belmont*

Native Ferns of New England

Wednesday, August 3, 7-8:30 p.m.

Learn about the life cycle of ferns and their evolutionary history, spanning 400 million years. This survey, led by Don Lubin, will include techniques for field identification, and a look at the adaptive niche that each species occupies. Free. Sponsored by Grow Native Massachusetts. (617) 354-0502, www.grownativemass.org/programs/eveningswith-experts. Cambridge Public Library, 449 Broadway, Cambridge.

Nature Play Day

Saturday, August 6, 10 a.m.-5 p.m.

Join Drumlin Farm for a day to celebrate fun and creative play the old-fashioned way! You'll be able to romp in the hay playground, try the nature obstacle course, and explore the Forest Discovery Trail! Free. Sponsored by Drumlin

Farm. drumlinfarm@massaudubon.org, www.massaudubon.org. Drumlin Farm, 208 South Great Road, Lincoln.

Boston GreenFest

Thursday, August 18-Saturday, August 20.

Boston GreenFest is organized by the Foundation for a Green Future, Inc. For a schedule of events, see the event website. (617) 477-4840, info@bostongreenfest.org, www.bostongreenfest.org. City Hall Plaza, Boston.

Self-Guided Green Tour

Sunday, September 18.

Sustainable Belmont is looking for Belmont residents who would like their property to be on the first Green Belmont Tour. This tour will feature gardens showcasing organic and sustainable growing practices, energy efficiency techniques, and water conservation. greenbelmont@gmail.com.

We need you.

If you can volunteer even a few hours a month, you can make a difference. You do not need to be an expert—just a person who cares about our town.

I can devote time to:

- Archaeology & Historic Preservation
- Environmental Protection
- Planning & Zoning
- Community Path
- Walking in Belmont
- Mailings
- Newsletter

I can help pay for this newsletter:

It costs about \$4,000 to publish each issue of our newsletter. Please donate for this purpose:

\$25 \$50 \$100 \$250

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July/August 2011

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