Belmont Uplands: History, Relevance

A Belmont Perspective on Some Regional Issues

Anne-Marie Lambert
Belmont Citizens Forum
ammlambert@gmail.com

Sustainable Belmont Meeting
Belmont Public Library
April 2, 2014
Where is it?
• Near where Spy Pond drains under Route 2
• Between Route 2 and Fresh Pond (formerly Belmont)
• In a remote corner of today’s Belmont
• On Acorn Park Drive
• Next to DCR’s Alewife Reservation
How to get there from here?

- **By Canoe**
  - From Hoitt Road

- **By Bike**
  - via bike path to Subway
  - then walk to Acorn Park drive
  - then Alewife Reservation North Trail

- **By Road (Car or Bike)**
  - via Cross St. to Lake St.
  - to Frontage Rd. to Acorn Park Drive
  - then Alewife Reservation North Trail

- **By Bus/Subway (see “By Bike”)**
1600s-1700s: Uplands property

- A hill surrounded by the tidal “Great Swamp” between Fresh Pond and Spy Pond; near Little Pond, Spy Pond, Little River
- Little River and Alewife Brook join “Menotomy River” (now considered part of Alewife Brook) in the Great Swamp
- Native Americans make weirs to catch the “aloof” fish at their summer camp between Spy and Little Pond
- 1600s: King Charles grants land from Malden to “Cambridge Rocks” (Belmont Hill), including the “Turkey Swamp”.
- 1635: Abraham Hill (#1) of Malden, owns this land. He farms a portion, sells much of the rest.
- 1600s-1700s: “Useless Marshes” portion of the land grant stays in the Hill family; only hay meadows are developed
- Colonialists control fish weir, set up day-of-week fishing rights
Salmon weir at Quamichan Village on the [Cowichan River, Vancouver Island, ca 1866]
Belmont Uplands

Amelia Earhart Dam (1966-present)

Belmont Hill

Craddock Dam (1909-1967)

Tidal Marshes Til 1875

Broadway Gates 1875-1900

Tidal Marshes 1900-1909 (Broadway Gates removed)

Malden
Belmont Uplands (not on map)
1600s-1700s:
Uplands a neglected Hill family inheritance, surrounded by farms and fish

• Originally “De la Montangue” of Devon, England
• Abraham Hill (#1) (1615-1670) m. Sarah Long
• Zachary Hill (1644-1672) m. Deborah Morton
• Abraham Hill (1672-1746) m. Sarah Cooper
  – Builds the Hill House, 318 Pleasant Street
• Zachariah Hill (1708-1768) m. Rebecca Cutter
• William Hill (1743-?) m. Mercy Perry
• Amos Hill m. Rebecca Hopkins Davis
  – Inherits land, including Belmont Uplands
1700s-1800s: Belmont Farms

Plan of Early Farmers 1853

Belmont
Uplands
Alewife Brook
Little River
Belmont Farms
1845-1900:
Farming Begins at the Uplands

- 1834: Boston & Maine Railroad
- 1845: Lucy Ann Hill (daughter of Amos & Rebecca) m. Warren Heustis (Sr.) of Vermont
- 1845: Amos gives 13, then 24 acres to Lucy and Warren Heustis, neighboring land owned by Lucy’s brothers Henry Y and Amos Jr.
- 1850s: Immigrant labor arrives from Ireland, Italy, French Canada and work local farms, brick industry
- 1866: Heustis Farm accessible via bridge across Little River, via cart roads and via an ice track (RR); hay meadows likely used to sell to the ice industry
- 1875: Broadway tidal gates installed on Alewife Brook @ Broadway
- 1879: “Heustis & Son”: 1 house, 1 barn, piggery
- 1894: Warren H. Heustis (Jr.) has 1200 pigs, 2500 boxes of ‘Belmont’ strawberries
- 1900: Broadway tidal gates removed (til Craddock dam in 1909)
- 1902: 10 acres, 2 houses, farm house, 2 barns, piggery, windmill
1866: Marshes, RR, conduit

Belmont Uplands

Little River

Alewife Brook
Heustis Farm 1910

Source: Belmont Historical Society newsletter, March 1993
1807-1880: Country grows, Town borders change

- 1807: West Cambridge (now Arlington) established as independent town (previously part of Cambridge)
- 1807-1819: Embargo Act, War of 1812, Panic of 1819
- 1820s: New England focus on specialized crops & livestock; landscape gardening; Little Pond ice farm
- 1840s: Fitchburg, B&M, Lexington & West Cambridge RR; “Bellmont” country estate
- 1859: Belmont founded as a railroad suburb
- 1867: “West Cambridge “ renamed “Arlington”
THE NEW TOWN OF BELMONT, MASSACHUSETTS.
1870-1910:
Risks to Health and Economic Stability

- 1870s-1890s: Pollution in the Great Swamp grows (manure, tanneries, slaughter houses, Combined Sewer Overflows)
- 1875: Cambridge raises Fresh Pond to block Alewife Brook flow
- 1880: Cambridge re-annexes part of Belmont in dispute over water quality
- Olmsted & Eliot at the forefront of Metro Boston Parks design
- Metro Boston utilities consolidated: sewer 1889, water 1895
- 1900s: Hay meadows no longer in demand (electric street car in 1889 marks transition from horses; electric refrigeration in 1900s marks end of ice industry);
- 1900s: MidWest Farm belt grows, competes with NorthEast farms
- 1904: Malaria epidemic in Belmont and Cambridge
- 1907: Eliot, Alewife advocate, dies of cerebrospinal meningitis
- 1909: “The Taking”: Alewife Brook Reservation established as State park; Little River moved and widened to drain the Great Swamp
- 1910: Heustis gets permit to take irrigation water
1904: Malaria epidemic

- Belmont Uplands
- Little River
- Alewife Brook
Belmont Uplands

Little Pond

Little River

"The Taking" of Alewife Reservation
“For every thousand dollars judiciously invested in a park, the dividends to the second generation possessing it will be much larger than the first; the dividend to the third much larger than the second.”

Frederick Law Olmsted, 1821-1903
1908-1930: Population Pressure

- 1908: Cambridge Water Department granted Right-of-Way for conduit from Little to Fresh Pond to supplement water supply
- 1908-1928: Alewife Brook Parkway constructed (Olmsted & Eliot firm design)
- 1910-20: Immigrants arrive from Armenia, Russia
- 1912: Belmont is the first to adopt the Tenament House Act to discourage low-income residents
- 1914: Last known Passenger Pigeon dies in captivity
- 1918: Influenza epidemic
- 1920s: Zoning regulations begin (e.g. set backs)
1930-1960s: Highways and Hurricanes

- 1934: Concord Turnpike moved to Pond St. (today’s Route 2)
- 1938: Category 5 Hurricane wipes out commercial greenhouses
- 1941-1953: MDC sells Alewife Reservation parcels (e.g. CPD)
- 1948: Heustis Farm sold to George Miles (?); split farmhouse moved to Lake St.
- 1948: State Highway Master Plan includes “Route 695” as an Inner Belt Highway (subsequently abandoned due to protests in Tip O’Neill era)
- 1953: Heustis Farm (penultimate farm in Belmont) and Lyman Farm (last farm in Cambridge) sold to Arthur D. Little Co.; Acorn Park Drive constructed
- 1950s: Homeless family on Uplands property; bridge over Little River in tact
- 1954: W.R. Grace Asbestos purchases Dewey and Almy Chemical
- 1955: Hurricanes Carol and Diane a reminder of wetlands’ value
1946: Route 2, Hill Road
1960s: Buildings and Regulations

- 1960s: “Hill Estates” built on south side of Little River
  - note: no regulations to protect wetlands
- 1962: Mass Pike extension into Boston completed
- 1962: Federal Aid Highway Act requires regional coordination
- 1963: Wetlands Protection Act (Massachusetts is first in US)
- 1967: Amelia Earhart Dam replaces Craddock Dam
- 1967-68: Governor Volpe’s Route 2 widening project
  - Arlington ConCom sues and wins in Mass Superior Court
  - Volpe uses emergency legislation to claim Route 2 as an evacuation route in case of nuclear attack
  - Spy Pond flow to Little Pond culverted: no passage for alewife
  - Former Heustis house on Lake Street taken for Route 2 entrance ramp
  - Huge dirt pile on Uplands property from Route 2 construction
- 1969: Comprehensive Permit Act (40B, Massachusetts)
1973, from Hill Estates

Belmont Uplands

Little River

- 1972: Clean Water Act (EPA); National Environmental Policy Act requires Environmental Impact Statements; Mystic River Watershed Association (MyRWA) founded
- 1970s: 300 luxury homes built around Little Pond
- 1960s-70s: Spy Pond pollution (arsenic, Rotodane)
- 1976: Arlington rejects proposal to extend Red Line
- 1980s: Alewife T station and exit ramp built; Grace Chemical asbestos pollution discovery results in replacement of development with sports fields
- 1980s: EPA adopts National Pollutant Discharge Elimination System (NPDES) Phase 1 (for large cities)
- 1990s: “Silver Maple Forest” grows rapidly on Uplands
2014, North Trail, Alewife Reservation + Uplands: white-tailed deer, coyote, red fox, gray fox, river otter, wild turkey, red-tailed hawk, blue heron, snapping turtle, wood peckers, American Woodcock, cotton-tail rabbit, muskrat, fisher, black-capped chickadee,...
1980s-2000s: Citizen activism (sample)

- 1980s: Citizens for Alewife Coalition (TCAC), Citizen’s Coalition for Alewife, Alewife Neighbors, Coalition for Alewife
  - Herb Meyer, Carolyn Mieth, Joe Joseph, Alice Wolf, others
- 1990s: Friends of Alewife Reservation (Ellen Mass), North Cambridge Stabilization Committee (Richard Clarey, Michael Brandon), Belmont Citizens Forum (Sue Bass), others
- 1990s-2000s: Unaffiliated Citizen Voices (Naturalists, Bird-watchers, Engineers, Citizens)
  - Elsie Fiore (Arlington), Stew Sanders (Belmont), Ralph Yoder (Cambridge), Steve Kaiser (Cambridge), Sumner Brown (Belmont)
- 2000s: Coalition to Protect the Belmont Uplands, Fresh Pond Residents Alliance
- Authors
  - 1970s: Arthur Krill, Jerry Howard
  - 2000s: Sheila Cook, Rick Beinecke, James C. O’Connell
2000s: Northeast Climate Change Reality

- Warmer average annual temperatures - up 2°F since 1970
- Warmer winters - up 5.2°F since 1970
- Sea surface temperatures – up by 2.3°F between 1970-2002
- Sea level rise – 22 cms between 1921-2006
- Decreasing winter snowpack & earlier snowmelt
- Earlier flowering plants
- Many nesting birds disappearing – 24% breeding bird species have smaller distributions since 1979
- Earlier nesting for 28 migrating bird species on the east coast
- More frequent extreme summer heat

Source: Mass. EOEEA
Sea Level Rise:
10” over past 100 years

Source: Mass. EOSEA
### Predicted Northeast Climate Change Impacts

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>CURRENT (1961-1990)</th>
<th>PREDICTED RANGE by 2100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Temperature (°C)</td>
<td>8</td>
<td>10 to 13</td>
</tr>
<tr>
<td>Annual Precipitation (inches)</td>
<td>41</td>
<td>43 to 46</td>
</tr>
<tr>
<td>Sea Level Rise (inches)</td>
<td>3.1</td>
<td>11 to 79</td>
</tr>
<tr>
<td>Streamflow-spring peak flow (days from January 1)</td>
<td>85</td>
<td>74 to 75</td>
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<tr>
<td>Short Droughts (#/30 yr)</td>
<td>13</td>
<td>16 to 23</td>
</tr>
<tr>
<td>Snow Days/Month (days)</td>
<td>5</td>
<td>3 to 1</td>
</tr>
<tr>
<td>Length of growing season (days)</td>
<td>184</td>
<td>213 to 227</td>
</tr>
</tbody>
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*Hayhoe et al., 2006*

**Sea level rise prediction for 2100: 11 to 79 inches, or 1 foot to 6+ feet**
What would it take to breach the dam?

The Mystic River Dam (Amelia Earhart Dam) has a height of 11.55 feet NAVD88*.

Army Corps of Engineers:

- With NW or WNW moving storm, **hurricanes that are category 2 or above** can produce a tidal surge that exceeds the height of the Dam.
- Without NW or WNW moving storms, **hurricanes that are category 3 or above** can produce a tidal surge that exceeds the height of the Dam.

<table>
<thead>
<tr>
<th>Worst case tide:</th>
<th>All storms</th>
<th>Excluding NW/WNW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dam height</td>
<td>11.55 feet</td>
<td></td>
</tr>
<tr>
<td>Category 1</td>
<td>Under 11.55 feet</td>
<td>Under 11.55 feet</td>
</tr>
<tr>
<td>Category 2</td>
<td>15.5 feet</td>
<td>Under 11.55 feet</td>
</tr>
<tr>
<td>Category 3</td>
<td>20.0 feet</td>
<td>13.2 feet</td>
</tr>
<tr>
<td>Category 4</td>
<td>23.5 feet</td>
<td>15.7 feet</td>
</tr>
</tbody>
</table>

*Note: typical sea level metric is either NAVD88 (1988 datum) or NGVD29 (1929 datum); in this area, NAVD88 is .8’ less than NGVD29 (e.g. NAVD88 6.8’ = NGVD29 7.6’), mainly due to differences in the modeling used for each metric (NAVD88 accounts for more variables)

Storm Data Source: ACoE
1998-2014: O’Neill ownership

- 1998: Uplands included in sale of former ADL land to O’Neill
- 1999: Uplands NOT included in sale of former ADL land to Bullfinch
- 2000: O’Neill R&D office and lab space proposal
  - After much debate, Town rezones to commercial, O’Neill signs MOU
  - Commercial real estate market falls, project abandoned
- 2004: O’Neill Luxury condo proposal
  - Town rejects request to rezone back to residential;
  - O’Neill rejects proposed land swap with former MDC skating rink
- 2005: O’Neill Affordable Housing proposal
  - 298 units total, of which 60 are “affordable”
  - Chapter 40B Comprehensive Permit granted in 2007
- 2007: 40B Comprehensive Permit granted
- 2010: Building Permit Application Process begins
- 2013: State Highway Access Permit Application Process begins
Source: AP Cambridge Partners II 40B Building Permit Application for ‘Residences at Acorn Park’
2004-2014: Belmont Legislative Actions

- 2004: Selectmen sign Resolution on Uplands Preservation
- 2007: ZBA grants 40B Comprehensive Permit with 42 Conditions; ConCom denies WPA Environmental Permit; O’Neill appeals to DEP and wins; Concom appeals
- 2008: Citizens Coalition appeals DEP ruling
- 2012: 27 Precinct 8 Town Meeting Members sign Petition to support acquisition effort
- 2013: Town Meeting preserves Richardson farm (last farm in Belmont) with a new agricultural zoning district
- March 2013: ConCom terminates appeal
- April 2013: Town Meeting passes Stormwater Bylaw
- September 2013: Mass Appeals Court denies Coalition Appeal
- January 2014: Trust for Public Lands reports on Conservation Transaction offer to O’Neill, who is not interested at this time
Cambridge Legislative Actions (sample)

- 2006: City Council Adopts Uplands Policy Order opposing any development (Councilors Craig Kelley and Tim Toomey)
- Cambridge declines to allow sewer hook up direct to Cambridge system
- 2012 City Council Environmental Committee invites Chair of Belmont Selectmen to attend Alewife Discussion
- 2013 City Council resolution to thank Belmont Conservation Commission (Councillor Minka vanBeuzekom)
- 2014 Climate Change Vulnerability Analysis (first draft target November 2014)
2004-2014 Cambridge Planning and Transit-Oriented Development

- Constructed Wetlands on Alewife Reservation as a response to EPA-mandated stormwater clean-up
- After failed legal appeal, project is improved
- "Vox on Two" (former "Faces" site)
- Acorn Park Drive "2004 Master Plan" for office park ("Transit-Oriented Development")
- Nearby Developments: Cambridge Park Drive, Fawcett Street, many North Cambridge developments....

Goal: high density to allow land preservation elsewhere

Challenge: "The Return of the Great Swamp" in this low-lying area
Belmont Uplands

2004: ADL buildings

2008: Master Plan Restoration in progress

Source: BSC Group Notice of Intent for DEP File # 123-0180 Cambridge Discovery Park, 600 Acorn Park Drive
Belmont Uplands (not in photo)

2004: ADL Buildings, Parking Lot

2014: “Vox on Two” (former Faces site)

Source: BSC Group Notice of Intent for DEP File # 123-0180 Cambridge Discovery Park, 600 Acorn Park Drive
1990s-2000s: State Legislature

- 1996: Rivers Protection Act added to WPA
- 2003: EPA adopts NPDES Phase 2 (for urbanized areas)
- 2008: Global Warming Solutions Act
- 2008: Governor Patrick vetoes Environmental Bond Bill for $6M towards Silver Maple Forest acquisition.
- 2011: EOEEA Climate Change Adaptation Report
- 2011: DCR Appraisal of $13.5M; House 701 passes again, but Governor Patrick declines to sign it
Regional Planning

- Metropolitan Area Planning Council (MAPC)
  - vulnerability analysis of 101 communities
- 2005-2010: Tri-Community Flooding Board (Arlington, Belmont, Cambridge)
- 2013: Tri-Community Flooding Board re-authorized until 2017
Meanwhile....

Sunday, March 30, 2014
Height of Alewife Brook (& Little River)

http://waterdata.usgs.gov/nwis/uv/?site_no=01103025
Summary

• Belmont Uplands is a privately owned property next to the Alewife Reservation

• Other than a few cart paths, 100 years of farming, and a pile of dirt added in the 1960s, it’s mostly been left to Nature, providing floodplain forest habitat with 70’ trees on ground 5-15 feet higher than the surrounding wetlands

• A Building Permit Application for 40B residential development is in progress but is still incomplete

• As a result of surrounding developments, the Alewife Brook sub watershed has 47% impervious surface

• As a result of green house emissions, the climate of the North East is changing; expect sea rise and hurricanes

• Regulations may not be keeping up with the reality of Climate Change and increases in impervious surface; finding ways to preserve remaining open space is more valuable than ever
Learn from the Past!
With Thanks

• Sustainable Belmont  
  – Darrell King, Fred Paulsen
• Friends of Alewife Reservation  
  – Ellen Mass
• Belmont Citizens Forum  
  – Sumner Brown, Radha Iyengar
• Mystic River Watershed Association  
  – Patrick Herron
• Coalition to Preserve the Belmont Uplands  
  – Idith Haber
• Belmont Historical Society  
  – Lydia Ogilby, Sam James, Viktoria Haase
Additional Sources

- “Great Swamp”, Sheila Cook
- “The Hub’s Metropolis”, J. O’Connell
- Bullfinch Group submissions to DEP and City of Cambridge
- AP Cambridge Partners II submissions to DEP and Town of Belmont
- Town of Belmont web site, Glenn Clancy
- Town of Arlington web site, Wayne Chouinard
- Belmont Historical Society Newsletter, esp. R. Betts
- “Experience Belmont” DVD by Belmont Historical Society, V Haase
- “Hill Family” DVD, Lydia Ogilby, Viktoria Haase, Samuel James, 1976
- “Spy Pond Stories”, Eva Balasz
- “Mystic River”, R. Beinecke
- “Growing Up in North Cambridge” newsletters
- Elsa Fiore
- EOEEA Kathy Baskin
- Conservation Commissions of Belmont, Cambridge
- Massachusetts Registry of Deeds
- Army Corps of Engineers Hurricane Inundation Maps
- Google Maps, Google Books
- Wikipedia
Additional Sources (continued)

• “Cambridge, Massachusetts: The Changing of a Landscape”, by Department of Landscape Architecture, Harvard University, 1978

• “Report on Improvement of the Upper Mystic River and Alewife Brook by means of Tide Gates and Large Drainage Channels”, J. R. Freeman, Mass. Metropolitan Park Commission, 1904

• “The Petition of the Mayor of Cambridge for Annexation of a Part of Belmont, Hearing Before the Committee on Towns.”, Boston, 1880

• “FRESH POND MARSHES REQUIRE ATTENTION, William Lyman Underwood Tells of their Condition in Address Before Cambridge Club”, Cambridge Chronicle 21 March 1903
1884-90: Railroad spurs

Belmont Uplands
Belmont Uplands

Ice Track

Belmont Uplands

1877