

Bay Colony Rail Trail Study Report



Medfield

December 11, 2016

Version 1.0

The Medfield Bay Colony Rail Trail Study Committee:

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EXECUTIVE SUMMARY

Key Findings

- A trail is feasible and desirable for the town
- A professional design study will answer important questions and, above all, provide a sound cost estimate. The BCRTA offered to fund up to \$20,000 of the cost.
- The town should sign a lease in 2017 and move forward with a public-private partnership model, provided that an adequate plan to fund the trail can be developed

Why should Medfield move ahead?

- Needham’s trail is not much longer than Medfield’s will be. It is already a great asset for the town.
- The trail in Medfield should not be contingent on a connection to Dover.
- A lease in Medfield is the next step towards the long-term vision of a trail connection to Needham
- The lease will require that construction begins within 3 years. This will be achievable if construction happens in phases.

Investment

Based on the actual cost per mile of trail in Needham, and the fact that Medfield will not require quite as much fencing and guard rails, the Study Committee estimated the investment in Medfield at approximately \$150,000. This could be lower if certain portions of the work are done as in-kind donations.

Phase	Estimate
Phase 1 (rail and tie removal, rough base)	\$75,000
Phase 2 (stone dust, amenities)	\$80,000

Proposed Timeline

Medfield Rail Trail Timeline 2017-2018



1 PREFACE

This document has been compiled by joint effort of town committees in Medfield, Dover and Needham.

The purpose is to provide a framework for evaluating the full range of concerns and considerations when planning for a rail trail in Medfield.

1.1 Overview

The Bay Colony Rail Trail is a proposed multi-use path approximately seven miles in length that traverses through the towns of Needham, Dover and Medfield. There are opportunities to extend the trail northeast from Needham into Newton, and southwest from Medfield into Millis and beyond.

The proposed path will replace the abandoned railway corridor, most recently operated by the Bay Colony Railroad.

The Bay Colony Rail Trail presents a compelling opportunity to create a natural community resource. The proposed path will traverse three communities linking residential areas to business districts, public transportation, schools, and recreation areas. At least half the distance runs through conservation land such as the Needham Town Forest, Dover's Wylde Woods, the Sawmill Brook Conservation land, and the Norfolk Hunt Club in Medfield.

The idea of a contiguous trail connecting Medfield, Dover, and Needham, and ultimately Newton, remains a long-term goal, but each town has now a local initiative with independent objectives, approach, and timeline.

1.2 History

The Bay Colony Rail Trail is one of over a hundred rail trail projects currently underway in Massachusetts. This is due to the fact that, in the late nineteenth century, local industries in the state were among the leaders in developing transportation systems based on the newly emergent railroad capabilities. Across the state, hundreds of miles of track were laid to enable shipping of freight, creating a complex and overlapping system with more linear miles of track per area than almost any other state in the union.

With the decline of railways as a primary means of moving freight, many of these lines fell out of active use and into disrepair. Portions of many corridors were sold to private parties, effectively disrupting future continued use of the real estate.

The corridor between Medfield and Newton was originally known as The Charles River Branch Railroad. Service on the line began in 1852, between Boston and Newton Upper Falls. Within ten years (1861), service continued through Needham and Dover to Medfield.

Since 1972, the corridor between Medfield and Newton has been owned by the MBTA, and has been leased to the Bay Colony Railroad since 1982.

In March 1998, the Boston Region Metropolitan Planning Organization (MPO) completed a study to determine the feasibility of extending commuter rail service westward from Needham to Millis, along the Bay Colony Railroad corridor. The study, which is available upon request from the MPO (www.ctps.org), concluded that a commuter rail extension would not attract sufficient ridership to make it profitable, so any plans for public rail use on that corridor have been dropped.

In 2008, Bay Colony Railroad ceased operations on the Medfield – Newton stretch, and indicated a willingness to formally abandon its lease, reverting control back to the MBTA. The current Long

Range Transportation Plan of the Boston Region MPO 2035 [1] does not include any plans for rail service on this line. While public transportation infrastructure should generally have priority over recreational facilities, it is unlikely that passenger rail service will be reestablished on the corridor in the next 25-30 years. A rail trail is an effective way to preserve the right of way for future generations. This has opened the door to investigating conversion of the corridor to a shared-use recreational path.

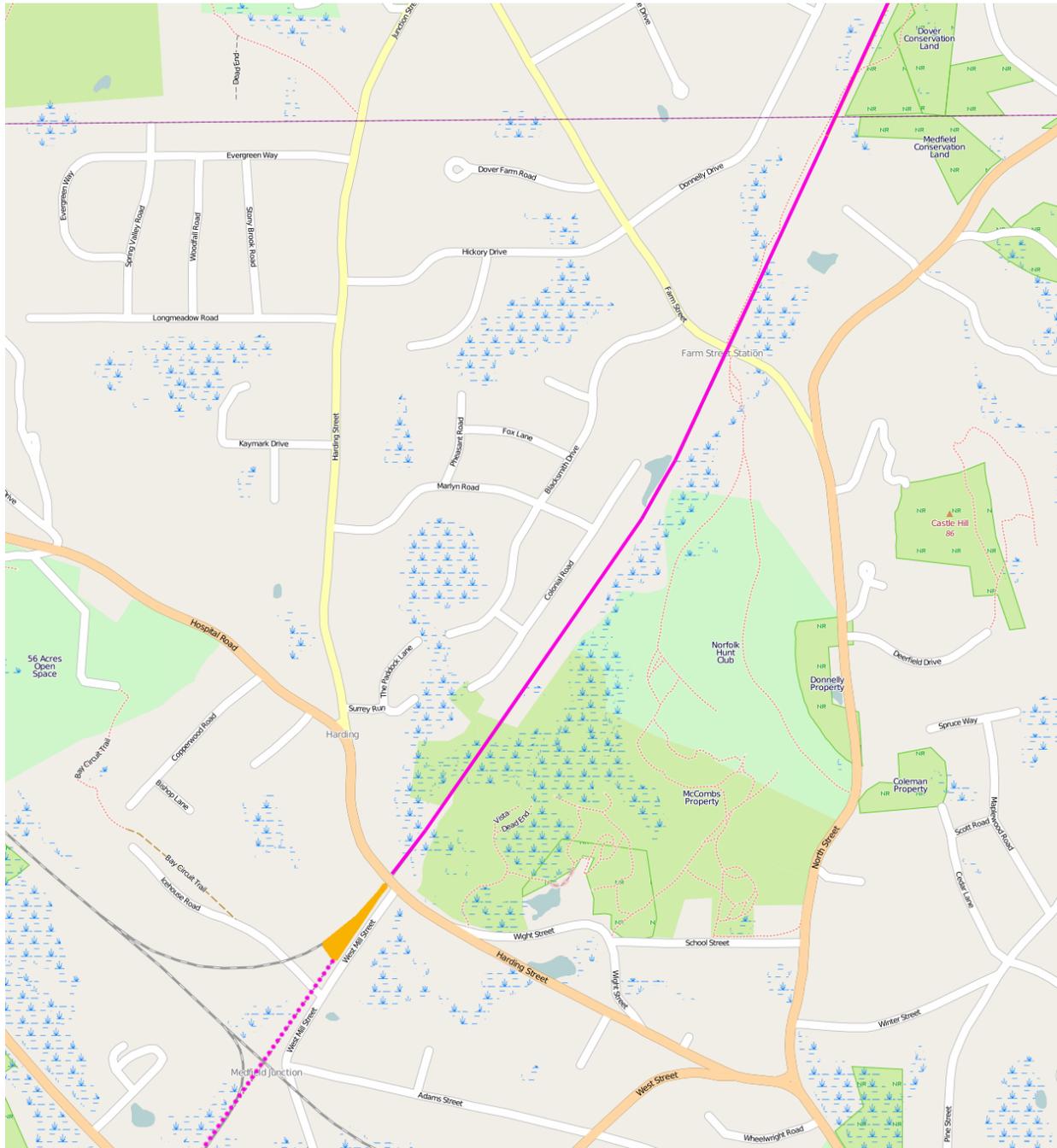


Figure 1 – Location of the proposed rail trail in Medfield (purple solid line)

Medfield’s rail trail would start (or end) at Harding Street and continue north, crossing Farm Street and end at the Dover town line, approximately mid-way between Farm Street and Hunt Drive. On the

opposite of Harding Street, the right of way widens due to the tracks curving off north, and eventually continues on the other side of the active Framingham-Walpole line. The continuation of the trail south of Medfield Junction to Millis was not subject of the Study Committee's research.

In 2008, volunteers from the towns of Newton, Needham, Dover, and Medfield formed the Bay Colony Rail Trail Association (BCRTA), an incorporated 501(c)(3) non-profit organization that has the goal to establish a contiguous trail connecting Medfield with Needham, and then connecting Needham with Newton on the northern side of the line.

In 2012, the BCRTA conducted a legal review of documents obtained from the MBTA and determined that the Bay Colony Railroad owns the right to the corridor and an "abandonment" process was not required for obtaining a lease.

Newton saw the formation of the Friends of the Upper Falls Greenway in 2011, signed a lease with the MBTA in 2012, and engaged with the Iron Horse Preservation Society (IHPS) in 2013. IHPS did not complete the work, and it took until the fall of 2016 for the town to finish and open the trail to the public. See [2] for a history of the Newton initiative.

The BCRTA partnered closely with the Town of Needham in 2014 and the town eventually took over the execution of the project in 2015. The BCRTA raised the funds and donated money to the town to cover construction. A State grant and CPA funds were obtained to cover the funding gap. The work in Needham was put out for bidding in two phases. The 2nd phase was completed in the Spring of 2016 and the trail was opened to the public in May of the same year.

Dover voted in favor of negotiating lease terms for a partial rail trail with the MBTA at their town meeting in 2016. Before a lease can be signed, the town will vote again on the terms. In the meantime, the Friends of the Dover Greenway are raising funds towards construction.

2 FEASIBILITY STUDIES

In 2009, each of the three towns along the proposed rail trail submitted a letter to the Boston Region Metropolitan Planning Organization requesting that a feasibility study be conducted on the proposed trail.

In late 2010, Cathy Buckley, then a member of the Boston Region MPO – or more specifically, the Central Transportation Planning Staff (CTPS) - began to collect information relevant to the study. In May 2011, Cathy walked most of the proposed trail, accompanied by several members of the Bay Colony Rail Trail Association,

In August 2011, Cathy Buckley retired from her post at the CTPS. Her work was passed on to Sean Pfalzer, who released a draft version of his report in March of 2013. This early draft report was forwarded to town officials in Medfield. The CTPS discontinued to fund this work and a final version was never delivered.

Needham commissioned a design study in 2013 – the final document can be found on the web at [3].

Dover conducted a feasibility study in 2016. Their final report is available on the web at [4].

This committee recommends that Medfield move ahead with a formal feasibility study to validate the findings of the town study committee and assist the town in formulating an official action plan for constructing a trail.

3 STRATEGIC QUESTIONS FOR RAIL TRAIL PROJECTS

The Rail Trail project is planned as a series of private-public partnership projects, where the three towns share the planning, funding and administration of the initiative with local “Friends of the Trail” groups.

The objectives of the private-public partnership are as follows:

- Ensure that the resulting shared use recreational path is designed and constructed for optimal benefit to the residents of each town.
- Through volunteer organization and engagement, ensure that residents feel ownership and responsibility for the path, including constructive support, care and treatment, so that it will continue to be a vital part of the community.
- Minimize costs to the town by providing a sustainable organization and process for raising funds and allocating them to optimize the enjoyment and safety of the path.
- Towns will provide municipal support as required from a legal, safety and regulation perspective.

The recommended allocation of responsibilities between the public and private partners:

Towns: The town is responsible for all matters related to approval of the trail; policies and rules governing use of the trail; trail access, traffic, parking and issues related to the intersection of the trail and public roads; securing publicly available funding as appropriate.

Friends Meanwhile, the Friends group is responsible for coordinating the project effort; proposing standards for use, amenities and signage; raising funds from private and public sources. Once the trail is developed, coordinating volunteer efforts for maintaining and improving public resource; developing and maintaining an annual budget and work plan.

BCRTA The BCRT Association is responsible for maintaining the long-term vision, coordinating between towns, sharing information, best practices, and “lessons learned”, and liaising with state officials and national rail trail organizations.

3.1 Role and Structure of a Non-Profit Stewardship Organization

Most "friends" organizations have the following organizational components. Some towns handle each of these similarly while others have specific strategies that are unique to them.

1. Outreach/Communication
2. Organizational/Logistics
3. Education/Knowledge
4. Resources
5. Volunteers/members

3.1.1 Outreach/Communication Strategies

- "Friends of" websites are the most used form of communication. Wayland updates the "friends of" website regularly with specific information about the help that is currently needed i.e. photography and video-graphing of trail events or trail, publicity, website design and content, fundraising. All websites include upcoming events. Many include pictures of past events. Not all Rail Trails had "Friends of" groups.
- Use of town paper to get the word out

- Participate in many community outreach events i.e. Earth Day, tables at town events and concerts.
- Newsletters for members give notice of upcoming trail events and opportunities for volunteering
- Friends of Lexington Bikeway have a very active blog.
- Email lists--increase lists to facilitate quick and cheap communication

3.1.2 Organizational/Logistics Strategies

- Provide and upgrade maps.
- Collect donations. Categories of donations commonly found:
 - Individuals \$10
 - Family \$20
 - Sponsor \$50
 - Conductor \$100
 - Rail Road Tycoon \$500+
- The Friends Group can operate under the umbrella of a 501(c)(3) corporation, such as the BCRTA or the Medfield Foundation, and does not need to seek non-profit status on its own.

3.1.3 Education/Knowledge Strategies:

- Improve and update rail trail website.
- Continue education about the trail with numerous guest speakers at monthly meetings. This was part of the larger trails such as the Bruce Freeman Rail Trail.
- Provide trail use events i.e. local hikes with Senior Center, scouts, newcomers etc. cross country ski tours, bird watchers

3.1.4 Resource Strategies:

- Fundraising campaign
- Memorial funds
- Sale of merchandise sold at area shops i.e. hats, tee-shirts, water bottles.
- Newcomers Club donations
- Local business sponsors: Allow them to advertise on the website, provide advertising trail markers.
- Make donations on website
- Adopt- a-trail Sponsorship in Milford, allows for organization to take certain ownership and care and maintenance of a chosen section of the trail. There is NO FEE associated with the program and the "friends" will place a sign on chosen section for all to see. General responsibilities include: litter removal, general maintenance, and reporting/inspection. Also allows them to put a small ad on the website.

3.1.5 Volunteers/Membership

- Join and renew online option--Milford offers Paypal (note: www.baycolonyrailtrail.org now accepts donations via Paypal)
- Help implement sponsorship agreements
- Staff tables at town events and concerts
- Trail clean ups
- Organize walks

This section was prepared by: Mary McLaughlin, Dover Rail Trail Committee

3.1.6 Recommendation

In the fall of 2016, a *Friends of the Medfield Rail Trail* organization was formed. This group should operate under the umbrella of the Medfield Foundation or the Bay Colony Rail Trail Association that can provide non-profit status. The group should organize volunteer work, collect donations, and work with town departments on defining the scope of the feasibility study and reviewing the scope of the request for proposals. Once built, the Friends will work on keeping the trail usable and attractive and on monitoring trail use patterns, security issues, and coordinate maintenance.

4 PROPOSED TIMELINE

This section details the high-level tasks and milestones for 2017 and beyond.

April 2017 – Town Meeting

Residents vote on

- Insurance policy
- Lease with MBTA
- Construction

Fall 2017

Fundraising

Winter 2017 (depending on achieving the necessary fund-raising objectives)

Construction of the trail – Phase I

- Removal of rails and ties
- Grading

Fundraising for Phase II

Spring – Summer 2018

Construction of the trail – Phase II

- Stone dust surface installed
- Parking area and road crossings prepared

Fundraising for improvements and maintenance

2019 and beyond

Improvements

- Landscaping
- Railing
- Fences

Ongoing maintenance

5 INVESTMENT

The following worksheet contains estimates of various costs (construction and maintenance) and the funding sources. The study committee reviewed the bid sheets of the Needham project ([5] and [6]) and estimated by extrapolating based on a shorter trail and less need for fencing. This can be used to guide the planning for fundraising efforts while more detailed cost estimates are expected to become available within the scope of the design study.

	Timeframe	Minimum	Likely	Worst Case
Study				
Design study (*)	2017	\$15,000	\$20,000	\$25,000
Phase 1				
Rail / tie removal (net cost)	2017	\$25,000	\$30,000	\$50,000
Base surface (crushed stone/reclaimed)	2017-2018	\$30,000	\$45,000	\$50,000
Phase 2				
Final surface (stone dust)	2018	\$40,000	\$45,000	\$50,000
Fencing & railings	2018	\$20,000	\$30,000	\$50,000
Signage, bollards	2018	\$1,000	\$5,000	\$10,000
Parking	2018	tbd	tbd	tbd
Total	2012 - 14	\$131,000	\$175,000	\$235,000

Table 1 – Estimated Cost

(*) The Board of the BCRTA has voted in favor of helping to fund a Medfield Study with up to \$20,000.

6 RIGHT OF WAY

6.1 Current Ownership

From conversations with the MBTA, and review of takings documents, the BCRTA has determined that the MBTA took the parcel from the prior railroad and owns the tracks in fee [7], and that the MBTA owns the right of way [8].

Because of the taking, there needs not be an "abandonment" process now, as the Federal right of way has already been abandoned. Bay Colony Rail Road (BCRR) operated on the lines pursuant to a Modified Rail Certificate [9].

6.2 Lease

For the towns to be able to use the parcels for a rail trail, Medfield would enter into its own 99-year lease with the MBTA [10]. Needham and Newton have completed this step. The lease contains indemnity language that the town will need to consider carefully. In particular, the MBTA indemnity will obligate the town to cover MBTA for prior existing contamination if it were discovered on the lines once developed as trails. No environmental testing is permitted prior to entry into the lease. The only way to avoid the indemnity (as the MBTA is unwilling to negotiate its form of lease), is to take advantage of the provision that says that if the town obtains an insurance policy and names

MBTA as additional insured, the indemnity provisions do not apply (see chapter 9 for a detailed analysis of the liability risks).

7 ABUTTERS

The abutters along Donnelly Drive and Farm Street are all fairly well removed from the rail bed. A horse trail runs alongside the rail bed from Farm Street to the border with Dover. It is separated from the rail bed by brush, and in many places it is well below the grade of the rail bed. As of the time of this initial survey (2010-2012), all the abutters along Donnelly and Farm were contacted and were 100% in favor the project to continue.

The abutters along Colonial Drive are much closer to the rail bed. Many of them will have a winter view of the rail trail. In the summer, there is heavy vegetation between the property line and the rail bed. In some cases, barriers may be necessary to block the rail trail from view. This will be added upon request of the abutter, depending on the availability of funding.

Sixteen abutters live on Colonial Drive. Four were not contacted. Of the remaining, seven are worried about the possibility of increased crime, loss of privacy and foot traffic through their property. They will feel more positive about the project with a fence along their property. The remaining five are 100% positive on the rail trail and are excited about it.

Abutters in Medfield (as surveyed in 2012)

Street	#	Remark
Harding Street	4	Strong support among direct abutters
Colonial Road	16	About half of the interviewed have privacy concerns and want fences
Farm Street	3	Two are supportive, one was not contacted
North Street	?	Dwellings are far removed from the corridor. Individual abutters were not identified or contacted. One abutter is Betsy Scola, a former BCRTA board member.
Donnelly Drive	4	All four contacted residents are 100% supportive.

Surveys performed more recently by the Friends of the Medfield Rail Trail (FMRT) produced similar results.

ENVIRONMENTAL PERMITTING

The Study Committee met with Medfield's Conservation Commission on February 2, 2012 to develop an understanding of the permitting requirements.

The Commission members explained that the first step for the contracted construction firm will be to file a Notice of Intent.

The rail corridor in Medfield does not run through priority habitats of rare species or estimated habitats of rare wildlife, and there are no potential vernal pools in its immediate vicinity.

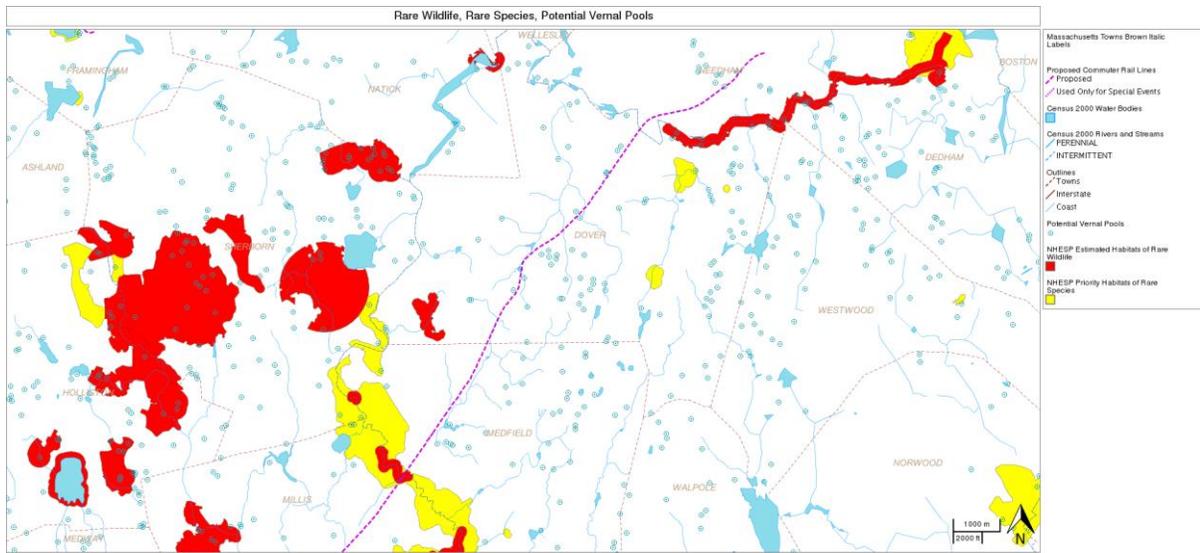


Figure 2 - Map of Estimated Habitats of Rare Wildlife, Rare Species, and Potential Vernal Pools [11]

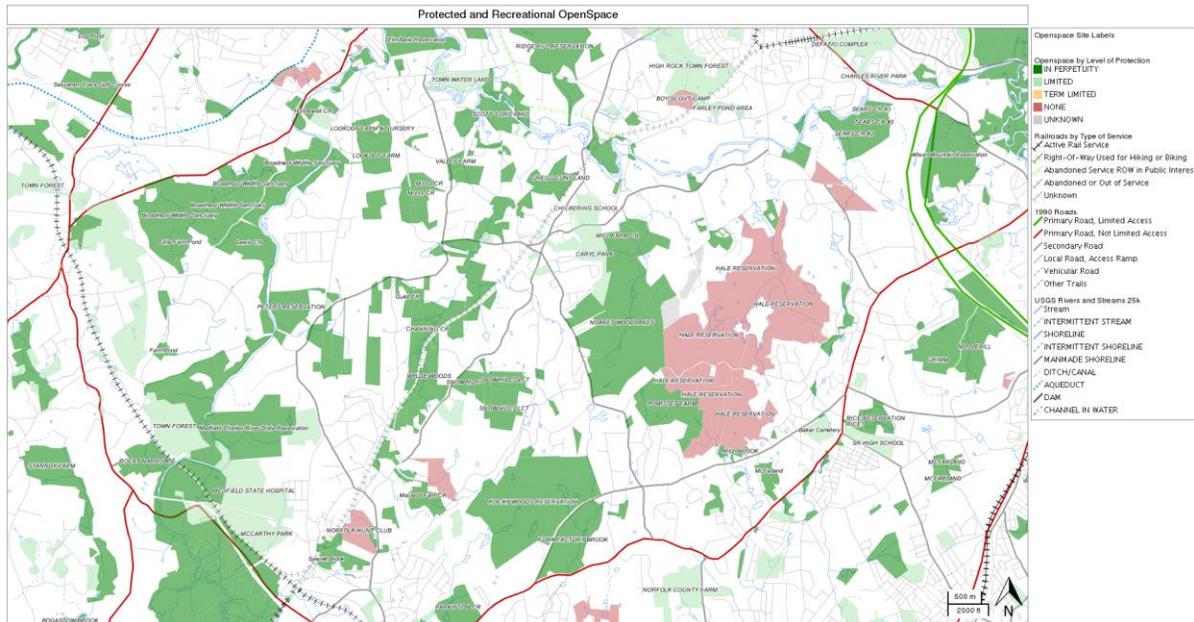


Figure 3 - Map of Open Space [11]

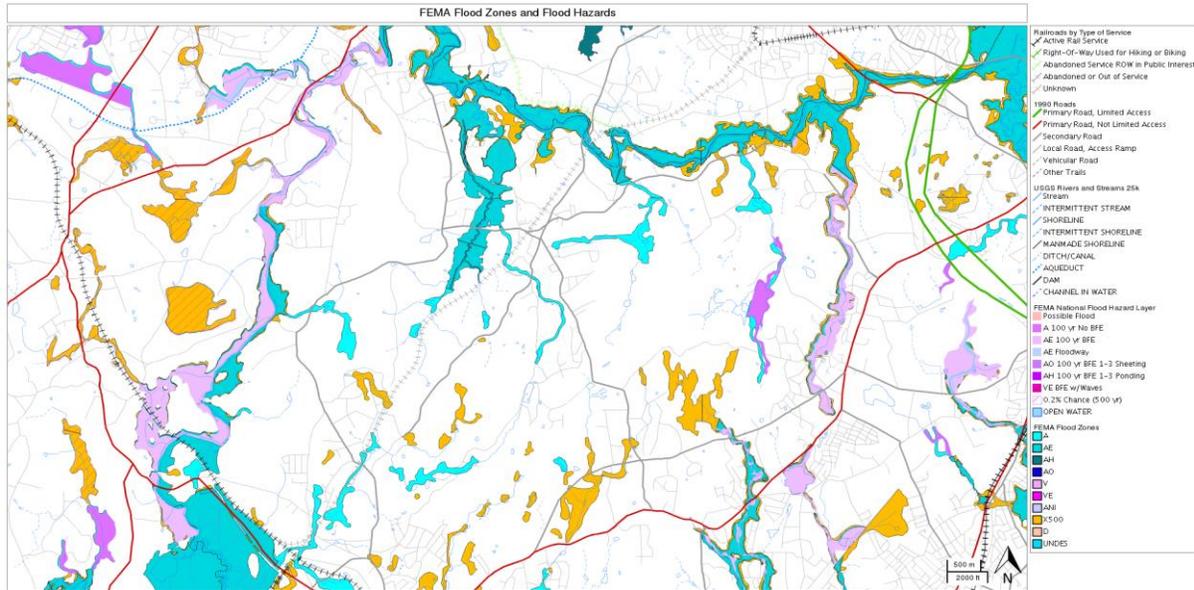


Figure 4 - Map of Flood Zones [11]

A large portion of Medfield's corridor is in a FEMA flood zone A. Zone A is used to designate areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Detailed analyses are not performed for such areas by FEMA.

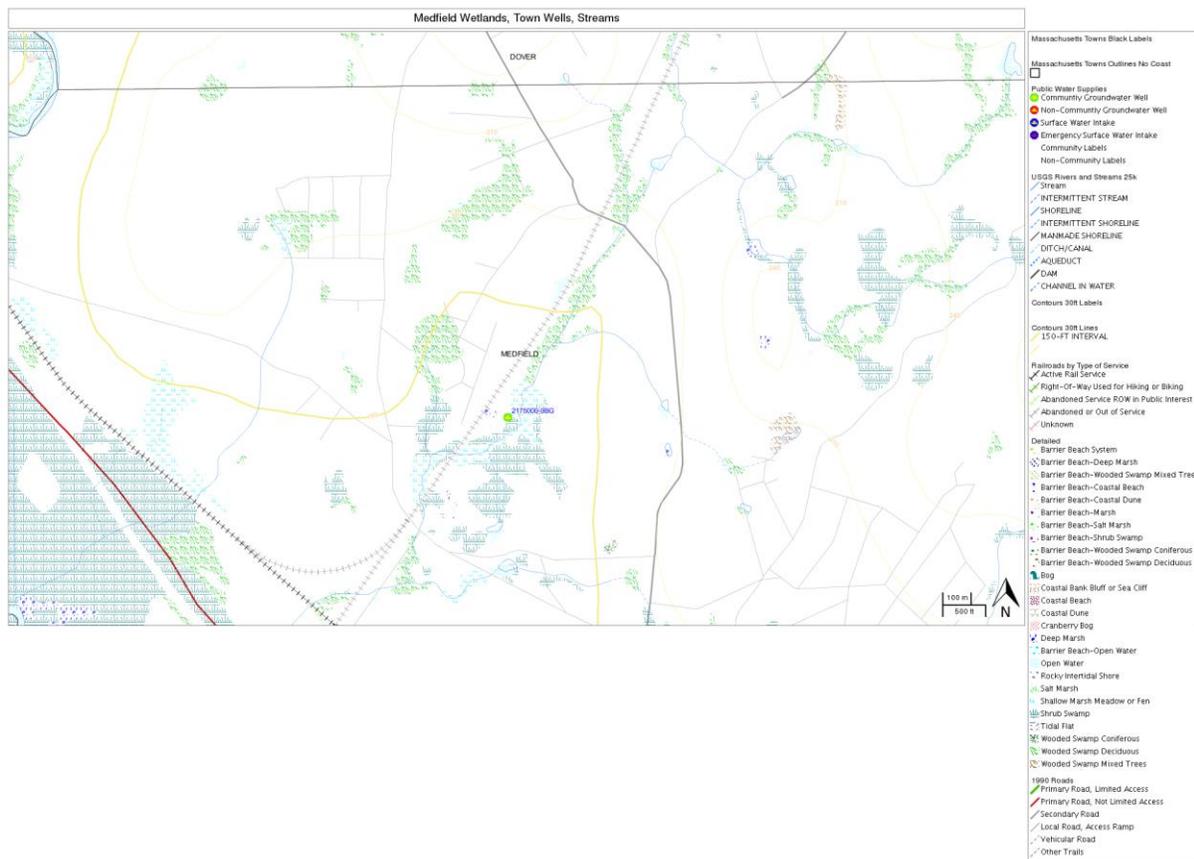


Figure 5 - Map of Wetlands, Wells, and Streams [11]

Figure 4 confirms what we learned during several walks of the corridor at different times of the year: there are wetlands and at least one perennial stream (North Brook) on both sides of the corridor between Harding Street and the Dover line.

8 PUBLIC SAFETY

8.1 Crime on Rail Trails

People using the Bay Colony Rail Trail, adjacent property owners, and the communities of Needham, Dover, and Medfield have legitimate concerns about the incidence of crime on the rail trail. These are very common in discussions about rail trails.

To address these concerns, the BCRT Association has reviewed the experience of other trails throughout the U.S. On the basis of this work, we can provide well-supported quantitative and anecdotal research on the incidence of crime on trails. Further, we can recommend best practices, drawn from the experience of others, to minimize crime.

8.1.1 Crime on rail trails is rare

The rate of crime on rail trails has been studied thoroughly. Researchers have examined the experience of nearly 400 rail trails in urban, suburban and rural environments throughout the U.S. over more than 30 years.

According to this research, there is no evidence that the development of rail trails leads to an increase in crime. In fact, it has been documented that criminal activity on rail trails is significantly lower than the overall rate of crime.

The most extensive study [12], conducted in association with the National Park Service, examined crime on 372 rail trails over a two year-period, including 82 suburban trails that are similar to the proposed BCRT. On the suburban trails, extending over 1100 miles and used by an estimated 14 million people, the report found six incidents of major crime over two years.

This study also reported one break-in of an adjoining property along the 82 suburban trails over the two-year period.

The most common crimes reported on suburban rail trails were minor and affected the rail trail itself, not adjacent property owners. Graffiti was reported on 17% of the trails, littering on 24%, sign damage on 22%, and unauthorized motor vehicle use on 14%.

In addition to the quantitative data, a number of the research reports present anecdotal information from law enforcement officers on the incidence of crime on the rail-trails. These reports [12] indicate that because rail trails attract activity, they can act to deter crime in areas that were previously isolated.

“The trail has not caused any increase in the amount of crimes reported and the few reported incidents are minor in nature.... We have found that the trail brings in so many people that it has actually led to a decrease in problems we formerly encountered such as underage drinking along the river banks. The increased presence of people on the trail has contributed to this problem being reduced.”

- Charles R. Tennant, Chief of Police, Elizabeth Township, Buena Vista, PA

“The trail does not encourage crime and, in fact, probably deters crime since there are many people, tourists and local citizens, using the trail for many activities at various hours of the day.”

- *Pat Conlin, Sherriff, Monroe, Wisconsin*

“There has been no increase in crime in Burlington or Stowe which is attributable to the bike paths....Crime and fear do not flourish in an environment of high energy and healthy information among law abiding community members.”

- *Brian Searles, Chief of Police, South Burlington, Vermont*

8.1.2 Best practices can deter crime

Based on the experience of other communities, BCRT can recommend best practices for patrols, access control & lighting, and signage that have contributed to a low incidence of crime on rail trails.

Patrols: Most trails are patrolled by a combination of public safety officials and volunteers [13]. The volunteers are typically trained in first aid and CPR, they carry mobile phones, and are easily identified with “Bike Trail Volunteer” shirts.

The Minuteman Trail in Bedford MA, for example, implemented an “Explorer” program, training young volunteers to patrol and maintain the trail. Other trails, including the Baltimore and Annapolis Trail Park and the Pinellas Trail in Florida have similarly recruited and trained volunteers to monitor their trails [12].

Access control & lighting: Most of the trails are officially open from dawn to dusk and few have lights [13]. Many have installed barriers to prevent access by unauthorized motor vehicles, though the majority does provide a way for emergency vehicles to get onto the trail [12].

Signage: The experience of other trails indicates that signage can help maintain safety. Signs should post hours of operation and rules of the road, as well as contact information to report emergencies, graffiti, and maintenance needs [14]. It is recommended that the signs themselves be protected from vandalism and that damaged signs be replaced promptly.

9 LIABILITY

9.1 Environmental Contamination and Liability

Possible environmental contamination is of concern to the town, because municipalities leasing railroad corridors from the MBTA are required to either (1) purchase environmental insurance naming the MBTA as additional insured, or (2) indemnify them against potential law suits or other damages, including those resulting from preexisting hazardous materials on the trail. The MBTA as the owner of the corridor, along with the town as the lease holder, could be subject to claims or be required to pay cleanup costs as a result of legal action, if it is determined that exposure to contamination levels resulted in injury of trail users.

The Study Committee developed recommendations by researching best practices for managing environmental risks, by searching for evidence of high-risk activities and spills in the past, and by conducting a visual inspection of the railroad corridor.

9.1.1 Types of Risk

Environmental contaminants can be found on every railroad corridor and commonly include the following substances:

- Arsenic, mercury and asbestos from
 - o Wood preservation
 - o Fuel combustion
 - o Leaking gauges
- Creosote from railroad ties
- Herbicides
- Spilled or leaked liquids such as oil, gasoline, cleaning solvents, etc.

Depending on the severity of contamination, one or more of the following remediation techniques are commonly applied (these are merely examples of best practices, not recommendations for the Medfield section of the trail):

- *Cut and Fill*: Contaminated soil is removed and replaced by clean soil to fill the corridor.
- *Exclusions*: In cases where contamination is, or is perceived to be, higher, a trail developer may choose to exclude a portion of the corridor from purchase and use an alternate route to avoid human contact with the contaminated site.
- *Signage and Fencing*: Signage and fencing are used to keep trail users on the trail and protect them from specific contaminated sites.
- *Phytoremediation*: The process of cleaning contaminated soil and water with plants, phytoremediation is best used for contamination in the top layers of soil, where plants' roots reach.
- *Capping the Surface*: Hard surfaces, such as asphalt and concrete, or soft surfaces, combined with a non-permeable membrane, may be used to cover and isolate contaminated soil along the corridor.

The substance of greatest concern is arsenic, which leaches from pressure-treated railroad ties into the ballast and the surrounding soil. The Massachusetts DEP established several limits for soil arsenic content that range from 20 for long-term risk to 40 parts per million (ppm).

The Rails-to-Trails Conservancy published a report in 2004 with a survey of 63 rail trails around the country regarding environmental contamination. While the quality and level of detail of the responses varies, the Study Committee reviewed the survey results and concluded that

- Very few trail projects underwent rigorous testing, because of a perceived low risk
- In those few instances where test results were substantially above the allowed levels, it was due to adjacent sites/superfund sites and not because of railroad activity
- Isolated cases occurred due to contamination from transported goods, for instance, ore

The stretch of corridor between Ice House Road and the active Sherborn-Walpole line is the section in Medfield the most likely to test at higher levels of contamination because of higher human activities in the area. This stretch is not considered for rail trail development in the initial iteration and should be left undisturbed once the rails are removed.

9.1.2 Analysis of Current and Past Activities along the Corridor

There are several Chapter 21E (“Superfund”) sites in Medfield, but none of them is near the railroad corridor. The map below was obtained from the Mass GIS [11] site and shows that the site on the former State Hospital area is over a mile away. Dover’s only Chapter 21E site is closer to the tracks, near the center of town on Church Street. The well fields on Church Street were closed in the early 1990s because of contamination from leaking tanks at the Mobil station on the other side of the tracks [15].

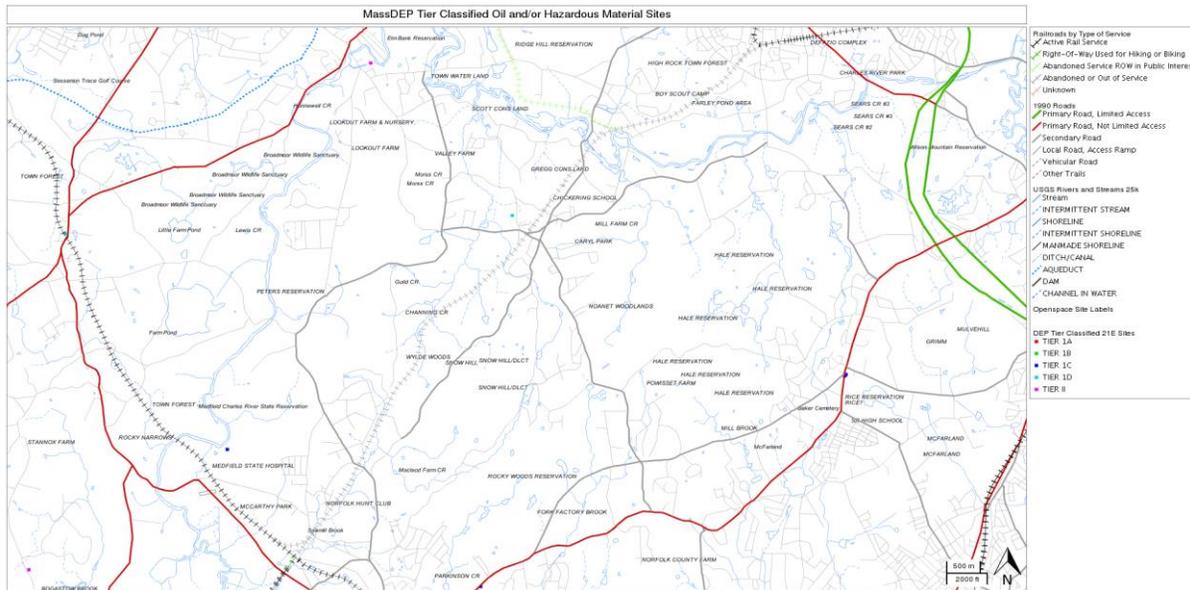


Figure 6 – Chapter 21E sites in the area

The Charles River Branch Railroad was chartered in 1848 and operated all the way through Medfield by 1861 [16]. The following examples of historic maps from the 2nd half of the 19th century and the first half of the 20th century show no evidence of industrial activities along the trail, other than a saw mill, the ice house, and the railroad station on West Mill Street.

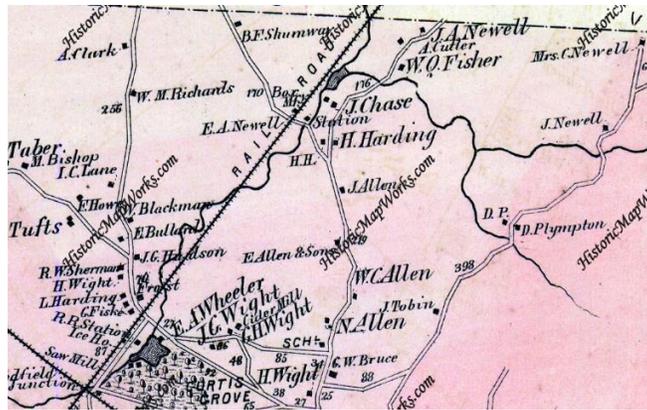


Figure 7 – Map of the area in 1876 [17]



Figure 8 – Map of Norfolk County, 1888 (E. Robinson) [17]

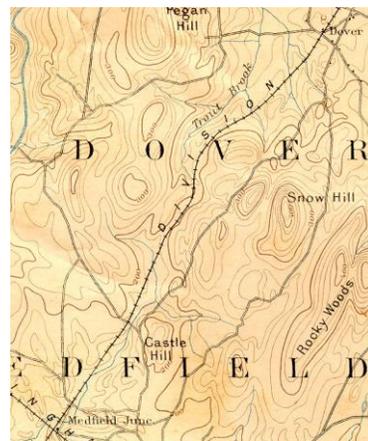


Figure 9 – 1893 - USGS 15 Minute Series (UNH Dimond Library) [17]

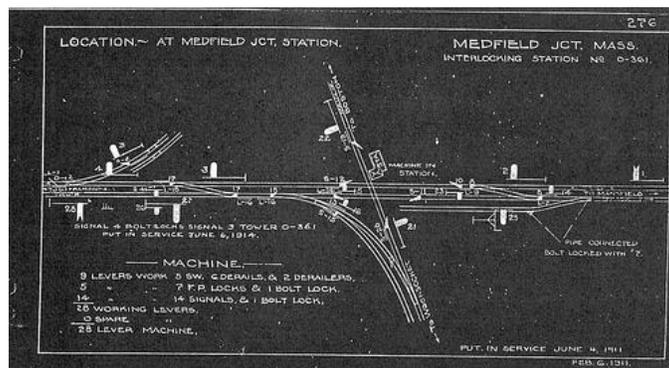


Figure 10 – Medfield Junction circa 1915

The drawing above of the track layout at Medfield Junction from early 20th century shows that at the time the Framingham-Mansfield line had 2 tracks and that the Millis-Needham corridor always only had a single track.

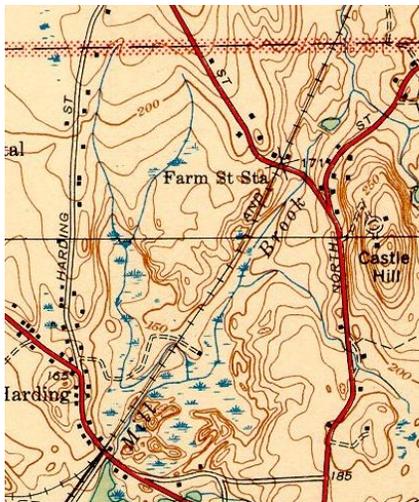


Figure 11 – 1940 - USGS 7.5 Minute Series (UNH Dimond Library) [17]

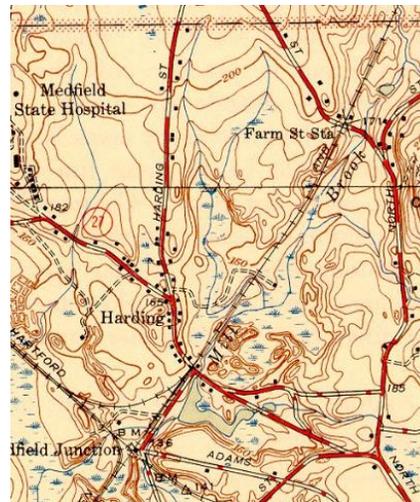


Figure 12 – 1946 - USGS 7.5 Minute Series (UNH Dimond Library) [17]

The following historic photo documents were included in this report because no evidence of industrial sites is visible in the area called *Medfield Junction*.

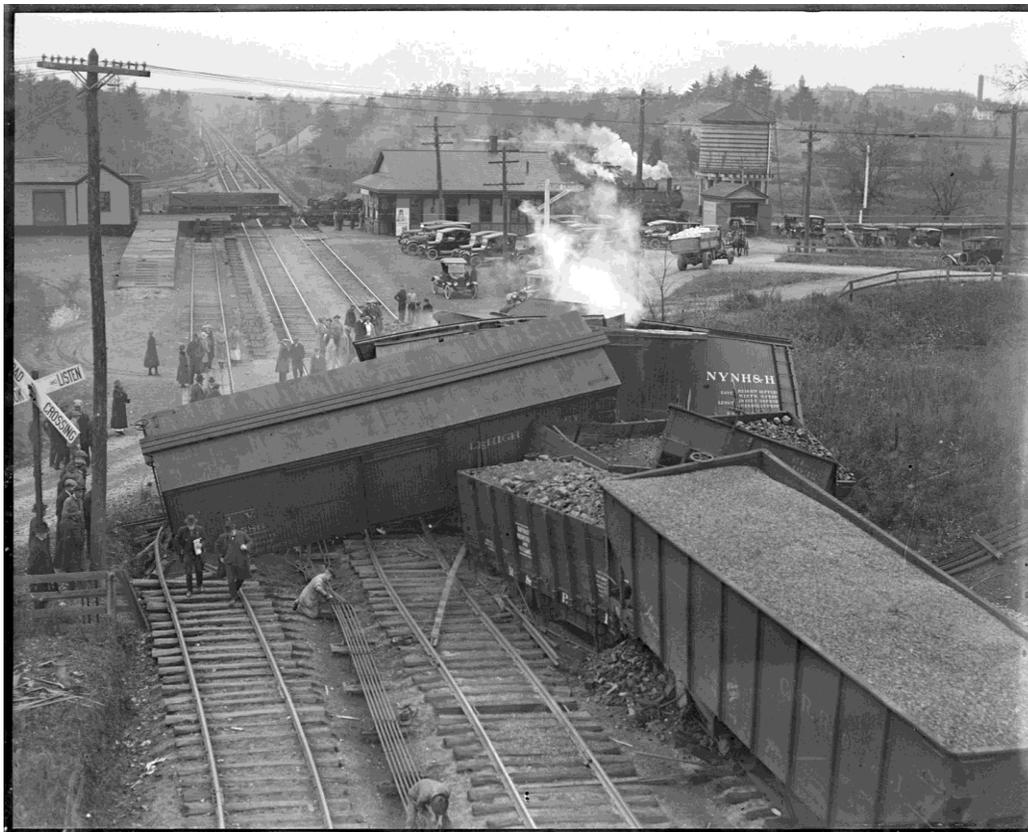


Figure 13 – Train wreck at Medfield Junction looking west, October 22, 1923 [18]

The 1923 train crash (Figure 13) on the Framingham-Walpole line at the West Mill Street intersection involved two steam engines. According to the accident report [18], the train was derailed intentionally as an emergency measure because it had failed to stop at the signal for a crossing train.

It appears that the spilled material was not hazardous. Hospital Hill can be seen in the background, and the area behind the water tower is the site of today’s Kingsbury Club.



Figure 14 – The station at Medfield Junction, undated



Figure 15 – View of Medfield Junction looking east, circa 1920

In the early 1940ies Shell Oil built a pipeline that crosses the corridor at today’s Ice House Road in Medfield. Shell owns a fenced-in parcel at the corner of Ice House and West Mill in Medfield.

The Shell pipeline ceased to operate around the year 2000. It carried various petroleum products, i.e. heating oil, jet fuel, gasoline from a tank storage facility located in Fall River to delivery terminals, presumably in Waltham and Westborough. Shell has shut down the tank storage facility. Town administrator Mike Sullivan thinks that Shell will try to market this facility and the pipeline right-of-way. The pipeline easement enters the Medfield from Walpole and travels north until it exits the Town at the Sherborn town line. To our knowledge there have never been any leaks in the vicinity of West Mill Street, although there were two leaks about twenty five years ago, one in the wetland area behind St. Edward’s church and the other near the railroad tracks north of West Mill Street, but before the tracks cross Hospital Road.

9.1.3 Known Releases

A search for releases of hazardous material on

<http://public.dep.state.ma.us/SearchableSites/Search.asp> returned the following possibly relevant release events in Dover and Medfield:

Release Tracking Number	Date	Location	Material
2-3004125	1/15/1993	Well on Colonial Drive	Petroleum
3-0000486	2/26/1986	Mobil Station, 2 Walpole St	Gasoline
3-0002905	1/15/1990	Church Street Well Fields	Gasoline (related to 3-0000486)
3-0003865	1/3/1992	Highway Department	Unknown

Table 2 – Known releases of hazardous material

9.1.4 The Brownfields Redevelopment Access to Capital Program

The Brownfields Redevelopment Access to Capital Program (BRAC) promotes the clean-up and redevelopment of Brownfields sites throughout the Commonwealth of Massachusetts. The Massachusetts Business Development Corporation (MBDC) created the program in 1999, and since then BRAC has resulted in more than \$4 billion of investment in the clean-up of 347 environmentally contaminated sites [19].

In Massachusetts, BRAC subsidizes insurance policies purchased by municipalities with a 50% match, up to \$25k of a \$50k premium.

The type of insurance policy required by the MBTA lease is available through a number of commercial carriers. The two quotes that we have received to date from insurance companies on the coverage are below \$50k - one is \$41k (Chartis says this is their minimum premium) - the other is \$30k-\$35k (Zürich). From a brief review, the insurance product appears complicated and has a number of exceptions. It may be advisable to consult environmental counsel and determine what exactly is covered, if the towns chose to go this route. The policies all have a \$50k deductible, and cover up to \$3mm of claims for 5 years (after five years, the risk of discovery of environmental issues should have reduced, if trail is developed by that point). Ideally the towns would time the purchase of the insurance with the commencement of trail development.

A full brochure is on file with the Study Committee. The program is managed by Thomas J. Barry, at 781-928-1106.

Needham and Newton purchased insurance policies through the BRAC program.

9.1.5 Summary and Recommendation

In summary, the Study Committee did not find evidence of any past activities on or near the railroad corridor that raised concerns about abnormally high levels of contamination. A visual inspection of the corridor between Harding Street in Medfield and Hunt Drive in Dover showed isolated traces of dumping by abutters along the trail, primarily yard waste and household waste (e.g. paint), but we believe that these few issues can be addressed during clearing and removal of the ties and tracks, and that concerns about the town's exposure to liability lawsuits are minimal and should be addressed with measures commonly applied at other rail trail projects in the region, i.e. by minimizing the disturbance of the rail bed.

The section between Harding Street and the active Framingham-Walpole line appears to carry somewhat higher risks because it is more accessible from adjacent roadways and experienced more dumping.

Approvals for assistance with the purchase of environmental insurance from the BRAC Program remain active for one year from the date the Subsidy Approval Form is issued. If coverage is not bound within that timeframe, the BRAC Program would require that a new Program Eligibility Form be prepared and forwarded for re-approval.

Towns have one year from the date of their submittal to actually bind coverage.

If insurance coverage is deemed unnecessary, then no steps need to be taken, aside from using best practices for construction (minimize disturbance of the rail bed, cap with a layer of crushed stone).

The recommendation of the Study Committee is to not purchase this insurance policy.

9.2 Injuries on the Trail

The following is taken from [20]:

“While concerns about liability are understandable, real-world experience shows that neither public nor private landowners have suffered from trail development. Adjacent landowners are not at risk as long as they abstain from “willful and wanton misconduct” against trespassers such as recklessly or intentionally creating a hazard. Trail managers minimize liability exposure provided they design and manage the trail in a responsible manner and do not charge for trail access.

This report concludes that trail-related liability is primarily a management issue. Laws are in place to protect all parties from unwarranted lawsuits and the rest is up to proper design, maintenance and management. Useful risk management strategies include:

- *During trail design and development, develop a list of potential hazards, design and locate the trail such that dangerous locations are avoided, develop a list of permitted trail uses and the risks associated with each, identify applicable laws, and design and construct the trail in accordance with recognized guidelines.*
- *Once the trail is open for use, conduct regular inspections, document the results of the inspections and any actions taken, and maintain a plan for handling medical emergencies.”*

The Study Committee concluded that Recreational Use Statutes and government immunity from tort claims will protect the town from potential liability claims. We recommend no action in addition to the above risk management strategies.

10 TRAIL RULES

Trail rules will be designed to protect the trail, the safety of all trail users, and the surrounding environment. The study committee has been reviewing trail use guidelines for various other communities and determined that a clear set of established guidelines is appropriate.

Trail rules would be posted at the beginning of the trail head near Ice House Road and at street intersections. They are intended to represent a consensus of opinion in how the trail will be used by the surrounding community. Special consideration was given to the safety of trail users as well as the well-being of trail abutters. To this end, we are proposing that motor vehicle use be prohibited outside of emergency or maintenance crews and that a specific protocol be set for encounters with trail users on horseback.

We believe that the following set of trail use guidelines encompasses the spirit of how we'd like to foster rail trail use in Medfield.

10.1 Recommended Trail Rules

General Guidelines

1. Open from 5am through 10pm
2. Motorized vehicles prohibited except for emergency or maintenance vehicles.
3. KEEP RIGHT except to pass.
4. Pass on the left, only when safe.
5. Give an audible warning before passing.
6. Respect the property rights and privacy of our neighbors
7. No camping or open fires

Bicycling

1. Helmets are highly recommended for all cyclists and mandatory by state law for children under 13.
2. Stop your bicycle, if necessary, to yield or to prevent an accident.
3. Bicyclists must yield to pedestrians.
4. Bicyclists may ride a maximum of two-abreast and only when safe.
5. Bicyclists must yield to horses.
6. Must be equipped with adequate lighting before dawn and after dusk

Walking/Jogging

1. Keep to the right when walking or running on the path.
2. Look before entering the bike-way or changing direction.
3. Don't walk or run more than two-abreast.
4. Pedestrians must yield to horses.

Common Courtesy

1. Do not litter or trespass on private property.
2. Keep your dog on a short leash at all times and pick up after your dog.
3. Respect other trail users. Share the path.

10.1.1 Motorized Vehicles

It is undesirable to mix mopeds, motorcycles, or all-terrain vehicles with bicyclists and pedestrians on shared-use paths. In general, these types of motorized vehicles should not be allowed on shared use paths because of conflicts with slower moving bicyclists and pedestrians. Motorized vehicles also diminish the quiet, relaxing experience most users seek on paths. Motorized wheelchairs are an exception to this rule and should be permitted to access shared use paths [21]. We believe that in the spirit of fostering alternative transportation, electric bicycles and other electric-powered 2-wheeled vehicles (Segway) should also be exempt from a motorized vehicle ban but must adhere to speed limits.

On soft surface trails, high-powered motorized vehicles can create significant damage to the trail. The result is accelerated erosion, the trail will become less attractive for other users, and the cost of maintenance and repairs will increase.

The Study Committee recommends that motorized vehicle be banned from the trail, and that the ban be enforced in an effective manner through the collaboration of volunteers, abutters, and law enforcement.

An amendment to Medfield's current bylaws should be considered that maximizes possible fines and assigns the responsibility for enforcing the rules to law enforcement.

10.1.2 Closing the Trail at Dusk

One of the great potentials of a rail trail running from Medfield to Needham Junction is the possibility of getting commuter traffic off the road and onto the bike path. Medfield and Dover residents will have direct access to the commuter rail station at Needham Junction via this trail.

Work schedules sometimes cannot be planned based on the time of the sunrise or sunset. A person coming back to Needham on a later train should not be forced to ride back home in the dark on the road. We believe that the trail's open hours should be determined by commuter's schedules.



Figure 16 – Trail damage behind Wheelock school in Medfield

11 MAINTENANCE PLAN

11.1 General Maintenance

The Study Committee anticipates the following maintenance activities

Activity	Frequency	Responsibility
Inspections	Monthly	BCRTA
Trash cleanup	As needed	Volunteers, public events, "Cleanup day"
Leaf removal	October-November	Volunteers
Prevent and remove encroaching vegetation	Annually	Volunteers, DPW
Trail surface repair if there is damage from trail use, erosion, or vandalism	As needed	An agreement with the DPW will be desirable
Other vandalism – replace signage and mile markers, bridge railings, etc.	As needed	Volunteer organization
Snow plowing	n/a	Plowing of a soft surface trail is not practical.

Table 3 – Maintenance activities

Maintenance of the rail trail will fall under an agreement between the town and volunteer organizations. Trail maintenance will include keeping the trail bed cleared of vegetation. It will be decided in the future about snow removal. Trash removal will not be a problem as the rules posted will have a carry-in carry-out policy found at most DCR and Trustee of Reservation properties.

It will be determined at a later date by the responsible party(ies) within the town who will be the contact person for the maintenance of the rail trail. At that time a formal agreement will be drawn up and signed by all agencies.

12 DESIGN CONSIDERATIONS

12.1 Road Crossings

A common challenge with trail design is ensuring comfortable and safe conditions at intersections between trails and roads. When trails and roads intersect, two different user types interact; drivers and non-motorized travelers. The two user types need advanced warning of the intersection. Both also need adequate sightlines and a clear indication of the appropriate traffic pattern for the intersection.

The Bay Colony Rail Trail Association conducted a traffic count at all road crossings of the proposed trail in August 2011. On a Saturday morning from 10am to 11am all vehicles, bicycles, and pedestrians were counted by volunteers. The time was chosen because most trail use is expected to occur on weekends.

Based on the results, the following recommendations for yield control were developed in accordance with the recommendations for midblock crossings in the American Association of State Highway and Transportation Officials Guide for the Planning, Design, and Operation of Bicycle Facilities [21]:

Town	Crossing	Motorized	Bikes	Peds	Recommendation
Medfield	Farm St	98	10	1	Priority to roadway, stop sign(s) on path
Medfield	Harding St	185	52	1	Priority to roadway, stop sign(s) on path

Table 4 – Traffic count results and traffic priority recommendations

All crossings should have a marked crosswalk. Priority should be given to path traffic if the expected number of users is higher than the number of vehicles on the road. It is not unusual for trail users to have the right of way at a road crossing (e.g. Minuteman Bikeway in Arlington). Because traffic and path volumes may increase over time, raising the need to re-examine priority assignments, traffic flows at path-roadway intersections should be reviewed occasionally to assure that the priority assignment remains appropriate.

[21] contains detailed recommendations and drawings for sight triangles and the installation of signage and markings.

12.2 Horse Trails and Equestrian Use

Study Committee members in Medfield and Dover spoke with representatives of the Norfolk Hunt Club about their current use of the adjacent land and identified 3 primary concerns.

1. The Hunt Club uses several disjoint properties along the corridor and members ride the trails along the railroad corridor for routine travel between these properties. These trails are adjacent to the tracks and will be preserved, because horses should probably not use the rail trail itself, because other trails report problems on soft surfaces (Robert Dickinson - CT Bicycle Alliance: *“We have a new section of stone dust which became very rough for smaller tire bikes after just a couple of weeks because of equestrians use”*; Topsfield also has this issue).



Figure 17 – Mixed use trail (Heritage Rail Trail County Park, PA)

2. The Hunt Club conducts mock fox hunts in the area further north into Wylde Woods in Dover. There are several locations where the horse trails cross the railroad tracks today. These crossings will also have to be preserved in a way that horses can cross the rail trail without damaging the finished surface.
3. Lastly, there is concern about trail users not being knowledgeable or sensitive about how to approach horses. We believe that this can be addressed by educating users through posted trail rules and signage, and by installing barriers where needed. We found a number of trails in our research where equestrian users coexist peacefully with cyclists, runners, and dog walkers, e.g. the American Tobacco Trail in North Carolina, the Heritage Rail Trail County Park in Pennsylvania, and the W&OD and the New River Trail State Park in Virginia, to name a few.

Horse manure on the trail will not be a concern, because horses will not be on the trail except when they cross it.

The Study Committee recommends a close collaboration between members of the Hunt Club and the construction contractor. [22] is an excellent resource for developing an understanding of the issues and best practices.

12.3 Public Access and Infrastructure

12.3.1 Trail Access and Parking

Entrances to the rail trail will have moveable barriers to prevent unauthorized motor vehicles from entering. They will allow pedestrian, bicycle and equine access. The barriers will be moveable to allow emergency and maintenance vehicles entrance. Trail use rules will be posted at every entrance. In addition; safety rails will run along sections of the trail where there is a steep drop off.

12.3.2 Sanitary Facilities

There are currently no plans to install sanitary facilities along the trail.

12.3.3 ADA Guidelines

Due to the fact that nearly all shared use paths are used by pedestrians, they fall under the accessibility requirements of the Americans with Disabilities Act (ADA). The technical provisions herein either meet or exceed those recommended in current accessibility guidelines.

Paths in a public right-of-way that function as sidewalks should be designed in accordance with the draft Public Rights-Of-Way Accessibility Guidelines, or subsequent guidance that may supersede PROWAG in the future. These guidelines also apply to street crossings for all types of shared use paths.

Shared use paths built in independent corridors should meet the proposed accessibility standards described in the Architectural Barriers Act Accessibility Guidelines for Outdoor Developed Areas (AGODA) 5 (2), or any subsequent guidance that supersedes AGODA. Again, the technical provisions in this manual either meet or exceed those recommended in AGODA.

13 CONSTRUCTION

The value of the rails is estimated between \$40,000 and \$60,000. The MBTA will allow that the contractor removes and sells the rails for scrap, and the proceeds can be applied towards the construction cost.

The existing rails and ties are in poor condition and could not be used for (passenger) rail service without significant repairs.

Needham contracted out the work in phases. Phase 1 was for the removal of rails and ties and left a roughly graded trail. Phase 2 was for installation of the finished surface and for amenities.

The Study Committee recommends a similar approach in Medfield, because it will allow for more achievable fund-raising goals and for construction to start sooner.

14 IMPACT ON COMMUNITY

14.1 Regional Context

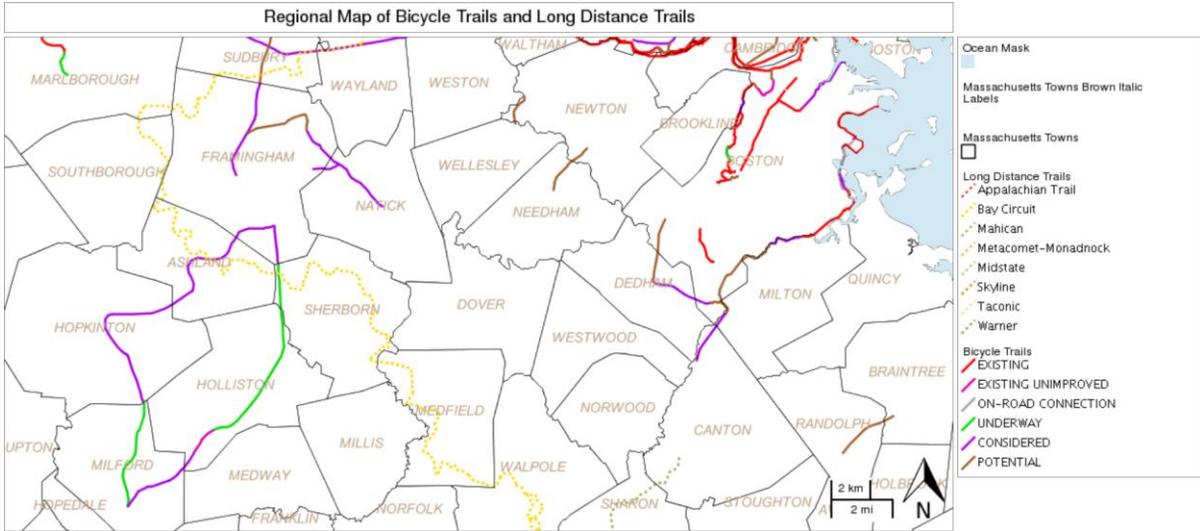


Figure 18 – Bicycle trail and long distance trails in the region

The BCRT would not immediately connect to other shared-use paths or bicycle trails in Medfield, but the possibility of a future extension into Millis exists. A further continuation into Medway is not possible, because portions of the corridor in Millis and Medway were sold to private land owners.



Figure 19 – The Bay Circuit Trail in Medfield

The proposed Bay Colony Rail Trail (purple line) will connect with the Bay Circuit Trail at its Southern end in Medfield. <http://www.baycircuit.org/>. The Bay Circuit Trail is a long-distance trail surrounding Boston.

14.2 Direct Benefits

14.2.1 Recreation Benefits

Depending on the finished surface, rail trails can provide for a variety of activities all year such as walking, hiking, bicycling, running, in-line skating, cross-country skiing, and snowshoeing. The Bay Colony Rail Trail would be a destination for residents of the three communities for these activities

because it runs through wooded areas, away from exhaust fumes, the noise, and the danger of automobiles.

14.2.2 Transportation Benefits

In its final build-out, the Bay Colony Rail Trail would be a safe connection for non-motorized “green” traffic between the towns of Medfield, Dover, and Needham. Residents along the path would be able to access the Commuter Rail station in Needham Heights without having to ride on heavily travelled and dangerous Centre Street in Dover and North Street in Medfield. We recognize that this vision may not be realizable in the short- or medium term.

14.2.3 Health and Fitness Benefits

Rail-trails support the needs of the community by providing natural surroundings for regular exercise. People of all ages can enjoy healthy outdoor activities that are safe and accessible to everyone. Rail-trails typically provide minimal grades that encourage the very young, the elderly, the physically challenged, and the novice exerciser to participate in a variety of activities that promote mental and physical wellness. Needham’s portion of the BCRT is a great example that even a 1.5 mile trail can be a destination for residents who exercise or just want to spend time outside with their families.

14.2.4 Educational Benefits

Trails are virtual laboratories for learning about our natural environment, cultural places, and historic past. Traveling along a trail offers opportunities to view woodlands, farmland, wetlands, and waterways. Trails invite visitors to experience the culture and history of an area. Our railroad corridor has several highlights to offer.

14.2.5 Public Safety and Community Appeal

An unmaintained railroad corridor is unsightly and can give a community the air of decay. Encroaching vegetation and the dilapidated ties, rails, bridges, and other structures make an unmaintained corridor an attractive destination for people who don’t want to be seen drinking and partying, and dumping materials illegally. We found cans of paint, yard waste in large quantities, and a generous amount of other trash along the corridor. A finished trail that is policed by law enforcement, abutters, and the community at large would not be as attractive for unlawful activities and increase the general appeal of our communities.

14.3 Property Values

Rail trail advocates have been circulating several studies and surveys that document the positive influence of rail trails on real estate values (e.g. [23], [24]). Some of these studies are opinion surveys, others use quantitative methods. All studies have in common that they found that rail trails increase the values of adjacent properties.

The most recent and most valuable scientific work is the thesis of Duygu Karadeniz [24], because she used sound statistical methods and included a comparison with the findings of earlier studies. Duygu studied the Little Miami Scenic Trail in Ohio. By using linear regression and network distance analysis, she was able to demonstrate that other variables such as lot size, number of bathrooms, number of garages, number of stories, median household income, and type of zoning have no significance on the effect of the proximity to the rail trail, i.e. the effect applies equally to all types of residential properties.

Duygu found that the trail positively impacts single-family residential property values, with sale prices increasing by \$7.05 for every foot closer a property is located to the trail.

15 LESSONS FROM OTHER TRAILS

In the November 2011, the BCRT Association conducted a set of interviews with officials related to ten other rail trail projects in the Eastern Massachusetts area, to get a perspective on how these towns have handled a range of policy and maintenance concerns.

Towns/Trails Reviewed: Minuteman Bikeway (Arlington, Lexington and Bedford), Bruce Freeman Rail Trail (Lowell, Chelmsford, and Westford), Shining Sea (Falmouth/Hyannis), Upper Charles (Milford), Clipper City (Newburyport), Danvers, Ashuwillticook (Cheshire, Lanesborough and Adams), Topsfield

15.1 Preliminary Summary Points

Trail Amenities

- Some have ordered bike racks (with state reimbursement for all but shipping costs)
- Most don't have benches, lighting, restrooms, etc.; some have porta-potties;
- Some have basic signs with trail rules & regulations
- Some have mile markers (this is a potential revenue source – trail operators can sell sign sponsorships at \$150-\$500 every 1/10 of a mile)

Common Trail Usage Policies

- Typical hours: dawn-to-dusk
- No motorized vehicles (including gas or electric)
- Horses typically OK (but apparently making indentations in the trail in Wenham);
- Dog leashing policies vary, but typically are aligned with the town's general leash laws; no problems reported, aside from leftover dog poop bags
- Trash: typically “carry-in/carry-out” policies, so no trash barrels needed

Maintenance

- Ranges from fully covered by DCR staff, by town DPW, or covered by volunteers (most towns)
- Typically includes mowing, spring/fall clean-up, fixing trail surface, etc.
- Most trails do not plow the snow in the winter; some do for commuting (Minuteman) and winter biking

Public Safety

- Not patrolled by police
- Most police/fire/rescue can access the trail (wide enough on trail and at openings)
- No evidence of security issues, aside from a few car break-ins when parked on side of trail

Governance

- Most towns have an official Rail Trail Committee led by a committee chair with delegation of activities to others
- Rail trail committee is typically the recipient of state grants

Abutter Engagement

- One rail trail committee chair had a “24 hour response” policy for any abutter questions/complaints during the development process – hands on and a good listener

- If funded by federal/state/town money, abutters are offered fences/shrubs to for privacy; if a IHPS project, then towns did not provide shrubs/fences to appease abutters – made them make requests to the selectmen, who essentially stonewalled; people had to fund their own landscaping
- Overall, limited opposition existed; also it faded away once the town approved the concept
- Some “skeptics” now are converted and walk the trail every day

15.2 Detailed Responses

The following sections provide detail on responses from towns on specific issues.

15.2.1 Construction

Danvers

Iron Horse Preservation Society

Topsfield

Iron Horse Preservation Society

Milford, Upper Charles

Approx cost (planning, construction, etc) \$1 million/mile, mostly paid via state TIP funds. Largest expenses asphalt paving and fencing for privacy/safety. Feds paid 80%, state 10%, town 10%. TIP phased in two \$3 million increments.

Falmouth, Shining Sea Bikeway

Surfaces are paved. First two sections paved by town, 6-mile section funded (\$3.2 million) on TIP with town funds for planning.

Ashuwillticook

Mass DOT helped design construction, Fed & State \$ paid for this & DCR maintains & repairs trail. Construction cost around \$4 million in 2000. Iron was removed, but not sure who benefited from Fe (perhaps construction company), may have been removed before acquiring corridor.

Newburyport, Clipper City Trail

The trail ended up costing around \$3 million, all in. It was a MassHighway project (now MassDOT), so the public procurement pushed the cost way up. Most of the cost was in grading, earth removal, clearing, one new bridge, and repair of an existing bridge. The paving part wasn't that expensive.

15.2.2 Trail Surface

What type of trail surface(s) exist?

Danvers

Crushed stone (3/4” max diameter). In one section, they are adding a stone dust topping at an additional cost of around \$12,000/mile.

Topsfield

Stone dust, funded by grants. Suitable for road bikes. A small part of the trail is asphalt (through parking lot).

Milford, Upper Charles

Asphalt paving selected for longevity, ease of maintenance, yet town budget impinges on maintenance, creating (relatively minor) issues.

Falmouth, Shining Sea Bikeway

Trail is paved. Low maintenance except for areas where plants infringe (roots could cause cracks, lifting). Conservation Commission's hard line on controlling brush also makes maintenance difficult.

Ashuwillticook

Paved surface. 10 yrs old now, and has gone well. There are mild cracks developing by Elm & Poplar trees (shallow roots). We've dug the roots along observed cracks in trail. Never put root barriers in when developing (too costly), but they hand dig as roots develop. The river has flooded the trail (150 ft bank) once & repairs costs \$200k (state money) to repair.

Lexington, Minuteman Bikeway

Paved

Bruce Freeman Rail Trail

Paved

Newburyport, Clipper City Trail

Paved

15.2.3 Disability Access (ADA)

Danvers

New ADA regulations exist on handicapped-assisted vehicles

Topsfield

Grant from the DCR requires them to follow Chapter 6 of the highway manual of 2005 (ADA compliant)

Milford, Upper Charles

TIP funding requires ADA compliance.

Falmouth, Shining Sea Bikeway

TIP funding requires ADA compliance.

Ashuwillticook

Trail was compliant with ADA access. Each road crossing has a gate and an opening for wheelchairs (50").

15.2.4 Infrastructure

Does the trail include benches, fences, lighting, bike racks, restrooms, water access? How were they funded/constructed?

Danvers

No fences, benches, lighting. Very low cost effort. Got bike racks from a MAPC grant.

Topsfield

Got bike racks from a MAPC grant. No lighting and don't plan to, except maybe a flashing light at a crossing.

Milford, Upper Charles

Fences are a major issue for cost, installation, maintenance reasons. No restrooms, benches, lighting.

Falmouth, Shining Sea Bikeway

No benches, few fences, no lighting, town and some local businesses/orgs supply port-a-johns in season.

Ashuwillticook

Fences or shrubs were added for abutters who requested it. Two bathrooms

Lexington, Minuteman

Very few amenities along the path

Newburyport, Clipper City Trail

The trail includes benches and some fences, paid for as part of the overall cost.

15.2.5 Working with Abutters

What approaches were used to engage abutters during planning of the rail trail? What worked well/not well? Were any abutter requests for privacy considered and addressed (e.g., shrubs, walls, etc.)?

Danvers

The Chairman was the outreach person. If someone contacted him or town hall, he would meet with them personally within 24 hours to hear their concerns. He was very patient meeting with them. There was only one place where there was griping (condo development that had planted pine trees, but had cut lower 6-feet of branches, so they lost privacy when the trail came). He met with the condo 3 times (1st time 12 people, then 5, then just 1 guy). They told them after the trail went by they would put up a camera -- town hall bought a motion sensitive video camera that records the date/time when someone goes by the trail (6x8 inches camouflage color); Basically, there hasn't been a lot of complaints -- they just want nicer trail surface.

Topsfield

There was a big misinformation campaign after the lease was signed with the MBTA. Opponents complained about a lack of information/participation. RTC worked in response; made note of the charges, wrote them up and presented them to the Selectman and put it in the paper; listed all the open meetings and minutes from the meetings; mentioned that virtually none of the people had attended the meetings; articles in the newspaper; on the website, PDF articles on all the newspaper articles that appeared;

Opponents raised concerns about public safety; we got letters from police chiefs from other towns saying the trails are less of problem now than when were just abandoned tracks

Finally it culminated in a town meeting where abutters had an article to delay the trail; at the town meeting there was a non-binding referendum "do you approve of converting rail trail" -- approved 2-1

Milford, Upper Charles

Very little opposition (more urban setting), residents polled in favor of more off-street recreational options.

Falmouth, Shining Sea Bikeway

Few opposed, but one or two abutters created use issues (property was taken by eminent domain where it straddled the path). Chain link fence was required by one landowner.

Ashuwillticook

People have requested fencing/landscaping in design & construction...once trail opened, only a couple felt that wasn't enough. Since then, not one complaint. No theft complaints along trail. Abutters have been happy with the trail & appreciate the access.

Public meetings all along from design (25% to completion) and public meetings opened all concerns. Used to be used by snowmobiles, but not anymore. Abutters got snowmobiles removed!

Lexington, Minuteman Bikeway

No issues since the trail was built. There are published reports showing that proximity to the rail trail is a positive attribute in real estate transactions.

Newburyport, Clipper City Trail

There was initial hesitancy among a few abutters, but that's completely gone now and the trail is enthusiastically supported by all.

15.2.6 Trail Usage

What users are allowed access to the trail (e.g., horses, in-line skating, skate boards, pedestrian, cross-country skiing, snowshoeing, wheelchairs manual and electric, biking, electric bikes, mountain biking, ATVs, snowmobiles)? Have any of these users created challenges?

Danvers

Horses allowed (in Wenham, the hooves are making indentation)

No ATVs or snowmobiles (Snowmobile access only to prep for x-country skiing)

Their rules don't mention motorized wheelchair or Segways

Topsfield

No motorized vehicles (part of the DCR grant restrictions), except emergency vehicles

No snowmobiles allowed; Horses allowed

Usage of the trail has gone exponential -- connected to Danvers and Wenham. Including Peabody, > 10 miles to ride.

Milford, Upper Charles

Equestrian use was not considered. Motor vehicles are banned. Trail is not cleared in winter for maintenance concerns and to accommodate skiers/snowshoers. No user conflicts to speak of.

Falmouth, Shining Sea Bikeway

Friends group worked with local equestrians to establish crossings and alternative paths. Motor vehicles are banned but as this is a major commuter thoroughfare some issues with electric motors are popping up. These are dealt with one at a time. Half of the path is cleared in winter.

Ashuwillticook

No motorized vehicles allowed on rail trail, but are allowed if disability requires it.

Lexington, Minuteman Bikeway

Open to non-motorized vehicles (electric wheelchairs okay). Issue with electric bikes hasn't come to a head yet, but will since some go faster than the 20 MPH speed limit.

Newburyport, Clipper City Trail

No motorized vehicles allowed on trail.

15.2.7 Hours of Operation

When are people allowed on the trail (dawn to dusk)?

Danvers

Dawn to dusk.

Topsfield

Dawn to dusk.

Milford, Upper Charles

Dawn to dusk.

Falmouth, Shining Sea Bikeway

Dawn to dusk.

Ashuwillticook

Open dawn to dusk, but other times allowed for well-lit commuters.

Lexington, Minuteman Bikeway

While Arlington has a dawn-to-dusk police, Lexington does not.

Newburyport, Clipper City Trail

The trail is open dawn to dusk, but it's not enforced. They haven't had any issues with this.

15.2.8 Dogs

What is the pet policy? Leashes required?

Danvers

Dogs on short leash at all times

Topsfield

No leash law in Topsfield; no signs prohibiting anything on the trail; dogs won't be prohibited. No reports of problems. We have lots of dogs on the trail.

Milford, Upper Charles

Leashes

Falmouth, Shining Sea Bikeway

Same as town policy/law. Leashes are required.

Ashuwillticook

Leashes

Lexington, Minuteman Bikeway

Dogs are supposed to be on a short leash, though there have been issues. Recently a dog caused a bicycle accident resulting in a broken elbow.

Newburyport, Clipper City Trail

The trail is very popular with dog walkers. Dogs must be on leashes and picked up after. One issue they have is that people often leave the filled bags along the side of the trail, apparently expecting someone will pick them up. They now put out barrels specifically for the dog waste. Dog license fees will fund that maintenance of these barrels.

15.2.9 Emergency/Safety

What arrangements exist for fire, rescue, and police? Can rescue vehicles go on it? Do police patrol it? If so, how often and how (foot, bike, etc.?)?

Danvers

Trail is not patrolled at all; Emergency vehicles can go on it. Police or fire had put in for a grant for a 4-wheel ATV for carrying water or for carrying a gurney. Don't have one now, but will reapply. Since the power company can get trucks there, the emergency people can get there.

Topsfield

Not patrolled; emergency vehicles can go down it.

Milford, Upper Charles

TIP funding requires maintenance and safety plan. Police have motorcycles for patrolling but there is little need for formal schedule. A memorandum of understanding delineates responsibilities of police, highway, parks and rec.

Falmouth, Shining Sea Bikeway

Police budget has limited patrols. Committee chairman helped fire dept establish markers and entry points for rescue purposes, which were entered into emergency database.

Ashuwillticook

Every road crossing has emergency equipment & ambulance could drive down trail with key from fire dept.

Lexington, Minuteman Bikeway

The town of Lexington doesn't actively patrol, but they will respond to issues reported on the trail.

15.2.10 Trash

Are there trash bins? Who maintains/empties them?

Danvers

Trash is carry in/carry out; no trash bins (same as major parks in town)

Topsfield

Two trash bins, there before the trail. Trash is a problem; a lot of people used the trail to park at the Topsfield Fair and left trash on the trail.

Milford, Upper Charles

Town highway department maintains.

Falmouth, Shining Sea Bikeway

No trash bins on route, only in parking areas.

Ashuwillticook

Carry-in, carry-out facility works well (therefore no trash cans). Generally good, but small trash where kids hang. Bigger issue with dog poop left in tied bags. Trash receptacles invite animals, so the carry-in/out process has worked well.

Lexington, Minuteman Bikeway

The town empties trash barrels.

Newburyport, Clipper City Trail

The town empties trash barrels.

15.2.11 Trail Maintenance

Which of the following maintenance activities are done on the trail: mowing shoulders, spring clean-up, fall clean-up, snow removal?

Danvers

Town is not going to spend any money on the trail. Clean-up done by volunteers, e.g., Kiwanis did it last spring. Trail still needs a chipper. The DPW usually will bring a truck or we leave it where there is a road crossing. No snow removal at this time (gravel). Overall, it's been very loose-ended.

Topsfield

Volunteers for mowing and clean-up. We have an "adopt a trail" program, people volunteer to take care of their section. John Deere mower that they bought and store at the town shed with a trailer. 4 people, each have a 1/2 mile. Also have stone dust piles to repair the trail surface is there is erosion. 30 or so volunteers.

Snow: people would like snowmobiles to pack down the trail, others just want to use snowshoes/skis; TBD with the town right now.

Milford, Upper Charles

Town highway department maintains.

Falmouth, Shining Sea Bikeway

Town budget is impinging on maintenance. Highway dept prefers to mow only 2x/season. Residents may become stewards to assist with daily maintenance, including clearing broken shells from path.

Ashuwillticook

Maintained by DCR, there is no network of volunteers. There was an initial interest in a friends group, but not ongoing. They have volunteer days.

All but leaf & snow removal; trails are maintained by 2 full-time employees mid-May through mid-October

Lexington, Minuteman Bikeway

The town sweeps the trail bi-weekly, once a week in the fall due to leaves. DPW has been sporadic with their support; the rail trail has a lower priority than their other duties.

Plowing has been a big issue. The town ostensibly covers plowing, but they don't want to be perceived as giving priority to the trail over other sidewalks. So the Friends of Lexington Bikeways raised funds to get the path plowed (\$2.5K - \$4K per year)

15.2.12 Trail Repairs/Upkeep

Who has responsibility for surface repair? For embankment repair? Striping?

Danvers

DPW did a road striping - town planner; Nobody committed to surface repair... would be nice to see what their schedule of maintenance, so the trail committee could work around that.

Topsfield

Put double yellow lines in parking lot the trail crosses; Also put parking lot lines in the parking lot. People park on the trail during mass... starting to become a problem.

Milford, Upper Charles

Town highway department maintains.

Falmouth, Shining Sea Bikeway

Town highway department maintains.

Ashuwillticook

DCR pays, but it would have been better to decide upfront (for example, who pays if damage exceeds a given amount or spans 2 towns?)

Lexington, Minuteman Bikeway

After big storms, DPW picks up big debris, but much of the work is handled by trail "stewards," faithful volunteers that work together. Almost a social event. Every May they host a big trail cleanup.

Newburyport, Clipper City Trail

They clear the trail in the winter. Residents have praised this - they like to have access year round (besides, the cross country skiing would only be worthwhile for a small portion of the average winter). DPW does the plowing, and the workers get overtime for it (\$800 last year). This overtime pay is important: it's part of why DPW employees now like the trail.

15.2.13 Trail Manager

Is there a town trail manager/dedicated resource? If not, who is responsible for oversight of trail activities?

Danvers

Rail Trail Advisory Committee coordinates these things -- meets monthly. The Danvers Bi-Peds will do walks on the trail and publicize things. The Bi-Peds may be do some fundraising

Topsfield

Joe Geller is Chair of the town Topsfield Rail Trail Committee. Delegate to other folks. Six voting members.

Milford, Upper Charles

Parks and Recreation Dept have official oversight of trail, Friends nonprofit group assists with enhancements, volunteer efforts.

Falmouth, Shining Sea Bikeway

Assistant town manager (Falmouth) is semi-official trail resource. Bikeways committee was formed by Town Meeting, so is not directly responsible to Board of Selectmen.

Ashuwillticook

Becky Barnes, Ashuwillticook

Newburyport, Clipper City Trail

Lise Reid is Newburyport's Park's coordinator. They increased her from 10 hours/week to 16 to oversee the rail trail

15.2.14 Operating Expenses

What has been the financial implication on the town(s) for ongoing operating expenses (e.g., Public Safety, Highway, Parks and Recreation, Conservation Commission, etc.)

Danvers

No line item in the town budget

Danvers applied for \$60k DCR grant for landscaping in downtown area; doing some interpretative signs with another grant;

We have put up mile markers every 1/10th of a mile (1/10 of mile \$150/ year, 4x4 sticker with name/website; 1 mile \$500/year, 4x8 sticker with name/website) Danvers Bi-Peds paid for the markers and volunteers put them up. The Danvers Rail Trail Advisory Committee is selling sponsorships for them -- requested by the rescue folks. The money gets funnelled through the Friends of Danvers Recreation. That money will be used to do upgrades and maintenance for the trail.

Topsfield

Zero \$ from the town -- understanding that we wouldn't ask for money. Result of NIMBY activities. Now the trail is just so popular. When we get a license for the next 2 miles, things may change.

Milford, Upper Charles

Maintenance has suffered due to town budget issues.

Falmouth, Shining Sea Bikeway

Town allocates \$4,000 annually: half goes to port-a-john rentals, half to an intentionally vague "communications" fund that may be used for signs, maps, etc.

Ashuwillticook

They only have 2 paid seasonal workers (down from 3, due to budget)

Lexington, Minuteman Bikeway

The town is responsible for striping - every 15 years. They got a \$320K CPA grant to address needed repairs, especially due to root-related damage. There is no official trail manager, but the trail stewards - particularly members of FOLB - are actively involved in oversight activities. One issue they have is that there is no over-arching body looking beyond town borders (the role BCRTA would play), for policy and fund-raising.

Newburyport, Clipper City Trail

\$5K/year covers the trail manager's work (6 hours/week). They have additional budget of around \$10K/year for maintenance and amenities.

16 MEDFIELD SITE FEATURES

The proposed multi-purpose recreational trail runs from Ice House Road in the South to the Medfield-Dover town line in the North. The town line is approximately half way between Farm Street and Hunt Drive. Dover will not be ready for construction at the same time as Medfield. Consequently, the rails can only be removed up to the town line. This does not mean that the trail will initially be a dead end, because pedestrians can continue walking to Hunt Drive on the existing trail system adjacent to the tracks on the same right of way and in Dover conservation land to the east of the tracks.

The contractor will require staging areas where rails and railroad ties can be stored temporarily until they are loaded onto trucks and hauled away. One staging area could be between Harding Street and Ice House Road, and another staging area could be on Farm Street, to the right of the crossing when looking north towards Dover.

The following is a description of noteworthy features along the right of way that will require special attention. The location of where the AT&T Transcontinental Cable line crosses the tracks was not known at the time of this writing. A site meeting with a representative from AT&T was conducted in February of 2014 but was inconclusive. We assume that the cable traverses the right of way on or near the Farm Street crossing.

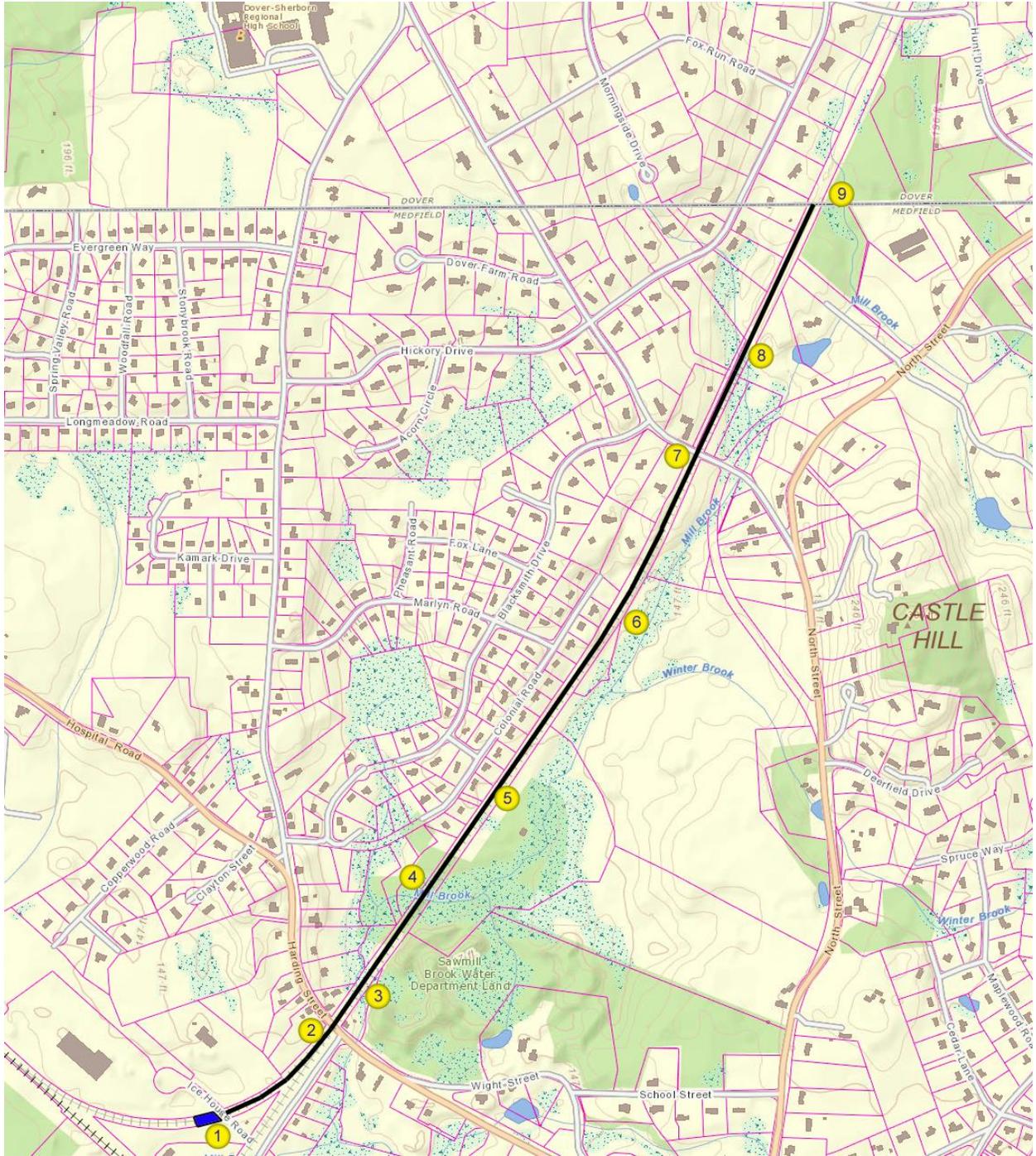


Figure 20 – Location of site features along the proposed Bay Colony Rail Trail in Medfield

16.1 Ice House Road Crossing



Figure 21 – Ice House Road, highlighted is the location of the proposed trail parking area



Figure 22 – Proposed trail head on the opposite side of Ice House Road

The Study Committee identified the following possible locations for parking areas at the Ice House Road trail head:



Figure 23 – Possible parking area locations off of Ice House Road

1. Area to the North of Ice House Road, 16 cars on two sides
2. Area to the South of Ice House Road on the trail head, 16 cars on two sides
3. Area at the Ice House Road entrance, 16 cars on two sides

The Study Committee recommends that option 2 be implemented at the time of initial trail construction, and that the addition of other options be considered in the future, should there be a need for more capacity.

Leaving the parking area unpaved is not a desirable situation. The surface could become muddy during wet weather, vehicles would cause erosion and puddles that would deepen over time, plowing would be difficult, and frequent repairs might be needed. Ideally, asphalt should be applied by the DPW at the time the road crossing is repaved and the equipment is already at the location.

16.2 Harding Street Crossing



Figure 24 – Harding Street crossing looking north towards Dover



Figure 25 – Harding Street crossing looking south towards Ice House Road, first IHPS staging area

The rails at the Harding Street crossing were removed in August of 2016. There is a switch immediately to the North, and the old Millis track continues straight across, while the connection to the Walpole-Framingham line begins to curve off to the right (when facing South). The Millis track has been pulled at some point in the past and the rails are stacked in the area along West Mill Street, as shown in the following photo.



Figure 26 – Rails stored along West Mill Street



Figure 27 – Switch at Harding Street

16.3 Culvert I



Figure 28 – Culvert I looking west (left) and east (right)

The first culvert for Mill Brook, culvert I, connects the rear of lots 73 Harding and 63 Harding and is located approximately 80 meters in from Harding Street. The culvert is sufficiently far below the trail surface so that it will not be disturbed.

16.4 Culvert II



Figure 29 – Culvert II looking west (left) and east (right)

The second culvert for Mill Brook is approximately 300 meters in from Harding Street. The culvert is sufficiently below grade so that it will not be disturbed during construction. A beaver appears to have established a home in this area.



Figure 30 – Beaver dam near culvert II

The dam is about 12 feet away from the edge of the rail bed and will not be disturbed by construction. The Study Committee has not determined if any action is needed to protect the wildlife from construction noise or other hazards.

16.5 Hospital Well Access Road



Figure 31 – Well access road, looking west from the tracks towards Colonial Road

A short stretch of unpaved road between 74 Colonial Road and 78 Colonial Road connects to a building on the other side of the right of way that houses the currently inactive well for the State Hospital. This access road is not closed to the public and has visibly been used for dumping yard waste by the residents in the area.

Some adjacent residents have voiced concerns about this access road being used by trail users who would park their cars along Colonial Road, and that parking restrictions should be enacted.

The study committee does not believe that people will travel to Colonial Road to access the Bay Colony Rail Trail in numbers large enough to cause aggravation for the abutters, and that corrective action should not be taken preventatively.

The Study Committee does believe, however, that vehicles should be prevented from accessing the right of way from Colonial Road, and that a locked gate should be installed at the entrance on Colonial Road. The gate should be constructed so that not only cars are kept out, but also snow mobiles, quad bikes, and dirt bikes. Only pedestrians and people pushing a bicycle should be able to access the trail through the locked gate.

16.6 Culvert III



Figure 32 – Culvert III at 38 Colonial

Culvert III is behind 38 Colonial Road. The rail bed is about 20 feet above grade in this area. The culvert consists of a metal tube that extends away from the embankment on either side so that there is no possibility of damage due to construction.

16.7 Farm Street Crossing

The crossing at Farm Street is notorious for damage to vehicles that approach the tracks too fast. Medfield's new Superintendent of Public Works, Moe Goulet, said in a conversation in September of 2016 that plans are in place to remove the rails at this crossing the same way it was done on Harding Street. We expect this to be done prior to any rail trail construction and that this work will not be in scope.



Figure 33 – Farm Street Crossing looking north towards Dover



Figure 34 – Farm Street crossing looking west, second construction staging area on the right

16.8 Culvert IV



Figure 35 – Culvert IV looking west (left) and east (right)

This is last of the four culverts along the Medfield portion of the tracks. There is also not expected to be any impact from construction to this culvert.

16.9 Town Line – End of Construction

The exact location of the town line is currently not marked and will have to be determined.

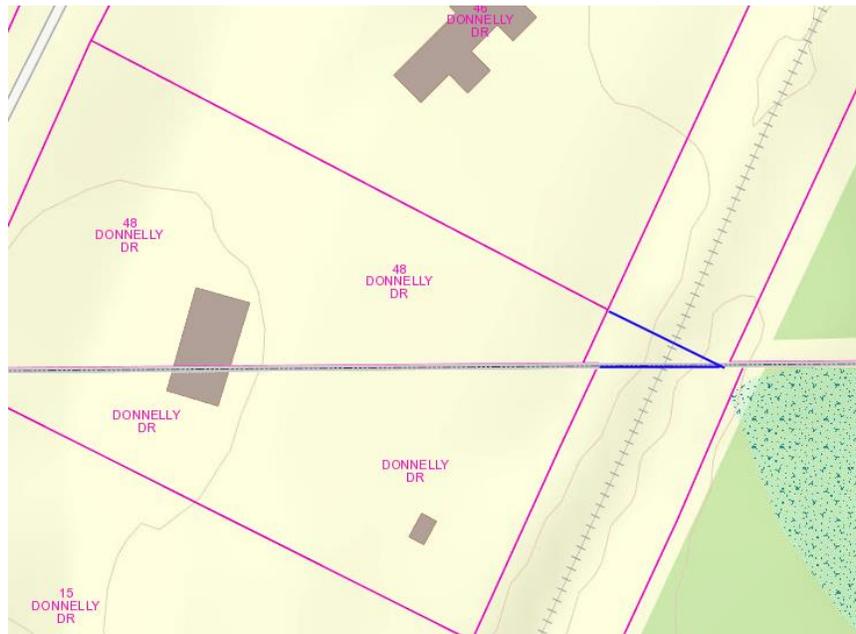


Figure 36 – Location of the town line

By extending the lot line on the right side of 48 Donnelly Drive (when looked at from the rear) across the right of way, and by then drawing an imaginary line in westerly direction, the intersection of this

line with the tracks marks the town line where construction ends. This line would enter the house on 48 Donnelly slightly to the left of the center, at approximately the location of the chimney.



Figure 37 – Existing trail adjacent to railroad on right of way at the town line, looking north towards Hunt Drive

There are existing trails on both sides of the tracks in Dover that can be used to reach Hunt Drive. The Bay Colony Rail Trail will not be a „trail to nowhere“.

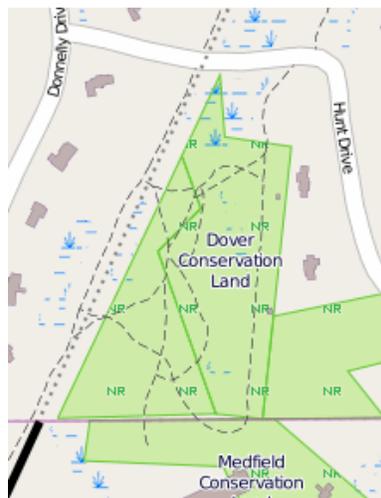


Figure 38 – Existing trails connecting to Hunt Drive along the right of way and Dover conservation land

17 REFERENCES

- [1] Boston Region MPO, "Long-Range Transportation Plan of the Boston Region Metropolitan Planning Organization," 22 September 2011. [Online]. Available: http://www.ctps.org/bostonmpo/3_programs/1_transportation_plan/plan/2035_LRTP_TOC_9.11.pdf.
- [2] "Upper Falls Greenway Website," [Online]. Available: <http://www.upperfallsgreenway.org/>.
- [3] Fay, Spofford & Thorndike, "Needham Bay Colony Rail Trail - Conceptual Design Study," May 2013. [Online]. Available: http://needham.baycolonyrailtrail.org/wp-content/uploads/2013/07/Needham-BCRT-Study-2013-05-31-Final_web.pdf.
- [4] Beals and Thomas, Inc., "Dover Feasibility Study - Final Report," February 2016. [Online]. Available: http://www.doverma.org/PDFs/FINAL_DOVER%20FEASIBILITY_STUDY.pdf.
- [5] T. o. Needham, *Bid Results Town of Needham, Massachusetts Removal Disposal of Rails Ties - 15DPW173C*, Needham, 2015.
- [6] T. o. Needham, *Rail Trail Construction (Phase II) Re-Bid*, Needham, 2015.
- [7] *Deed from Penn Central to the MBTA*, Document on hand.
- [8] *Release of Rights from Conrail*, Document on hand.
- [9] *Modified Rail Certificate*, Document on hand.
- [10] Massachusetts Bay Transportation Authority, *Alternative Transportation Corridor Lease Agreement*, Draft document on hand, 2010.
- [11] Office of Geographic Information, "OLIVER (Online Data Viewer)," [Online]. Available: <http://www.mass.gov/mgis/massgis.htm>.
- [12] R.-t.-T. C. Tammy Tracy & Hugh Morris, "Rail-Trails and Safe Communities: The Experience on 372 Trails,," Jan 1998. [Online]. Available: http://safety.fhwa.dot.gov/ped_bike/docs/rt_safecomm.pdf.
- [13] N. E. R. O. Rails-to-Trails Conservancy, "Rail-Trail Maintenance & Operation," July 2005. [Online]. Available: http://www.brucefreemanrailtrail.org/trail_plans/rail_trail_studies.html.
- [14] City of San Jose, CA, "Trail Security, Trails Program," March 2008. [Online]. Available: <http://www.sjparks.org/trails> .
- [15] Dover Open Space Committee, "Open Space and Recreation Plan, Environmental Inventory and Analysis," [Online]. Available: <http://www.doverma.org/PDFs/OpenSpacePlan/Section%204.pdf>.
- [16] M. Hunter, "The Railroad in Dover," *Dover Historical Society's Old Home Day 2010 Booklet*, 2010.
- [17] "Historic Map Works," [Online]. Available: <http://www.historicmapworks.com/>.

- [18] "Summary of Accident Investigation Reports No 18," United States. Interstate Commerce Commission. Bureau of Safety, Washington, 1924.
- [19] Massachusetts DEP , "Brownfield Insurance Program," [Online]. Available: <http://www.mass.gov/dep/cleanup/brownfie.htm#iif>.
- [20] Rails to Trail Conservancy, "Rail-Trails and Liability," Rails to Trail Conservancy, 2000.
- [21] AASHTO, "AASHTO Guide for the Planning, Design, and Operation of Bicycle Facilities (Draft)," [Online]. Available: <http://www.railstotrails.org/resources/documents/ourWork/trailBuilding/DraftBikeGuideFeb2010.pdf>.
- [22] Federal Highway Administration, "Equestrian Design Guidebook for Trails, Trailheads and Campgrounds," 2007. [Online]. Available: http://www.fhwa.dot.gov/environment/recreational_trails/publications/fs_publications/07232816/index.cfm.
- [23] C. D. Penna, "Home Sales near Two Massachusetts Rail Trails," 2006. [Online]. Available: http://www.brucefreemanrailtrail.org/pdf/Home_Sales_2006.pdf.
- [24] D. Karadeniz, "The Impact of the Little Miami Scenic Trail on Single Family Residential Property Values," 2008. [Online]. Available: http://etd.ohiolink.edu/view.cgi/KARADENIZ%20DUYGU.pdf?acc_num=ucin1211479716.
- [25] Mass DEP, "Waste Site / Reportable Releases Database," [Online]. Available: <http://public.dep.state.ma.us/SearchableSites/Search.asp>.
- [26] Mass DEP, "Best Management Practices for Controlling Exposure to Soil during the Development of Rail Trails," [Online]. Available: <http://www.mass.gov/dep/cleanup/laws/railtrai.pdf>.
- [27] The National Transportation Enhancements Clearinghouse, "Considering Contamination in a Rail-Trail Conversion," [Online]. Available: <http://www.enhancements.org/download/connections/Vol8no1.pdf>.
- [28] Rails to Trails Conservancy, "Understanding Environmental Contaminants," [Online]. Available: http://www.railstotrails.org/resources/documents/resource_docs/EPAReport.pdf.
- [29] Massachusetts DEP, "Definitions of Fields Listed in Search Results (Tier Classification)," [Online]. Available: <http://www.mass.gov/dep/cleanup/sites/statdef.htm>.
- [30] M. DEP, "Brownfield Insurance Program," [Online]. Available: <http://www.mass.gov/dep/cleanup/brownfie.htm#iif>.

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