



January 2021

# Hanover Rails To Trails Project Feasibility Study

**Prepared for: Hanover Rails to Trails Committee**

**Town of Hanover, Massachusetts**

# **Table of Contents**

## **1.0 Introduction and Background**

## **2.0 Hanover Branch Railroad History – Kezia Bacon Article**

## **3.0 Existing Conditions and Rail Corridor Sections**

## **4.0 Ownership Documentation**

## **5.0 Potential Construction Costs**

## **6.0 Trail Maintenance Plan Development**

### **EXHIBITS**

- EXHIBIT A - Rockland-Hanover Greenways Trail Maps (Hanover Assessors Maps Only) – MapWorks, 1999
- EXHIBIT B – Rockland-Hanover Greenways Trail Brochure
- EXHIBIT C - Hanover Rails to Trails – Potential Corridor Mapping
- EXHIBIT D – Site Inspection Notes and Photos

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## **1.0 Introduction and Background**

Merrill Engineers and Land Surveyors (Merrill) was selected by the Town of Hanover to complete a Feasibility Study for a proposed Rails to Trails along the Hanover Branch Railway within Hanover, Massachusetts. Previous reports including Rockland-Hanover DEM Greenways Trail “Walk to The Sea” by Herb Heidt, Map Works in 1999 and Title Search for the “Hanover Branch Railway” compiled by Old Colony Title Company in 1995 have reviewed and outlined initial action strategies for the successful completion of the long-term goals for the expansion of the trail corridor through several communities including Hanover.

The intent of this study is to provide a summary of the rail corridor conditions, site constraints, potential trail routes, possible construction costs and our recommendations for further due diligence tasks to help understand the rail corridor’s potential use as an intercommunity trail.

It is important to note that the findings outlined herein are preliminary, based on GIS information such as aerial imagery, property lines and location of wetland resources, also visual inspection of the corridor and surrounding properties and information readily available online and provided by the Town of Hanover.

Trail Plans depicting compiled aerial imagery, property boundaries, available information obtained from MassGIS, limits of flood plains and wetland resource areas and other pertinent publicly available data is attached for your use.

## **2.0 Hanover Branch Railroad History**

### **Rockland’s Rail Trail Article by Kezia Bacon, June 26, 2018**

*Do you know about the Hanover Branch Railroad? It extended 7.8 miles from Hanover Four Corners, through South and West Hanover, across Rockland, to North Abington, where it connected with the Old Colony Railroad to Plymouth. Incorporated in 1846, and constructed over the better part of the next 20 years, it officially opened for service in 1868.*

*E. Y. Perry, who operated a large tack factory in South Hanover, was largely responsible for the creation of the railway. He also owned a general store (now Myette’s) and constructed the building in South Hanover that for many years housed a series of a shoe factories – Goodrich, Cochran, and Shanley -- and later the Clapp Rubber Company. The railway facilitated the transport of materials and finished products to and from these and other businesses, but also offered passenger service. Amusingly, in its latter years, when the businesses along its route had shut down, it continued to carried passengers, . . . but only by self-propelled cars!*

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*The Old Colony Railroad absorbed the Hanover Branch in 1887. In 1893, the New York, New Haven and Hartford Railroad took over the lease. These days, many of Massachusetts' former railroad beds are overseen by the state Department of Conservation and Recreation.*

*From Luddams Ford Park in Hanover, along the Indian Head River to the Hanson line, much of the former Hanover Branch railroad bed has been converted into a very pleasant 1-mile walking trail. Another section, which begins on the Hanover-Rockland line and extends through Rockland to the current MBTA Commuter Rail at North Abington, more recently was transformed into a mostly-paved, mostly-flat, 10-foot wide, 3-mile long walking and biking trail.*

*This is exciting news for the South Shore! Thanks to a grant from the Massachusetts DCR, the recent paving of the Rockland portion makes the trail significantly more accessible to the general public. Now, not only hikers and mountain bikers can use it, but also people who rely on walkers, wheelchairs, and baby strollers.*

*There are numerous access points to the Rockland Rail Trail. From the eastern side, you can park in the cul de sac at the very end of Circuit Street in West Hanover, near the Colby-Phillips Conservation Area, and follow a short path through the woods to the railroad bed. It's important to know, however, that this is by far the most rustic portion of the trail. The ties and rails are still intact! So for anyone traveling with wheels, this isn't a good option.*

*At the portion of the Rockland Rail trail that extends into Hanover, railroad ties and rails are still in place from many decades ago. Fascinating to see, but not so great when exploring the trail via bicycle. The trail turns to gravel a little farther down the line, so don't let this stop you! Eventually the vestiges of the former railroad give way to a gravel path, which continues through the woods to the Rockland Police Station. This is where you'll encounter first of several road crossings, each marked with a yellow metal gate that permits individuals to pass, but not cars. It is also where the paved trail begins.*

*The trail is very easy to follow. Each time it crosses a road, a crosswalk and signage give trail users the right of way. Still, it's important to proceed with caution through all intersections. Some of them are relatively quiet, but others involve major roadways such as Routes 139 and 123.*

*Heading west, the trail continues through residential areas and eventually passes by Rockland's Senior Center, golf course, and high school. On the day I visited, I just happened to arrive at the Abington line, the trail's western terminus, as a MBTA Commuter train was passing by. How fun to hear a train whistle on a historic rail trail!*



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*Some other features worth noting are the “A” and “W” markers along the trail east of Union Street. In the days of the old railroad, the “A” indicated “approach,” which meant that the conductor should be prepared to stop. The “W” was for “whistle stop,” a reminder to sound the whistle while nearing a road crossing.*

*It took about an hour for my 12-year-old son and I to ride our mountain bikes along the full extent of the trail – from Hanover to Abington and back. This included numerous pauses -- for photos, water breaks, road crossings, and to read the information in the historic kiosk at Union and East Water Streets. Plus, we mostly walked our bikes over the “rustic” section, when it proved to be far too bumpy to ride.*

*If you go, keep the well-posted Trail Rules in mind. The trails are open from dawn to dusk. Cyclists must yield to pedestrians. Dogs must be kept on a short leash at all times. Clean up after your pets. Horses and motorized vehicles are prohibited, as are fires, alcohol and smoking.*

*by Kezia Bacon  
June 2018*

*Kezia Bacon's articles appear courtesy of the North and South Rivers Watershed Association, a local non-profit organization devoted to protecting our waters. For membership information and a copy of their latest newsletter, contact NSRWA at (781) 659-8168 or visit [www.nsrwa.org](http://www.nsrwa.org). To browse 22+ years of nature columns, visit <http://keziabaconbernstein.blogspot.com>*

### **3.0 Existing Site Conditions and Rail Corridor Sections**

We have developed trail mapping from aerial imaging, Mass GIS information and Town of Hanover Assessors maps. Refer to Exhibit C.

There is approximately four (4) miles of existing rail bed, formerly known as the Old Colony Hanover Branch Railroad within the Town of Hanover. The limits are from the Rockland/Hanover town line near the termination of Circuit Street in West Hanover to Broadway near Washington Street also known as Four Corners area. The trail crosses Hanover Street, Mayflower Drive, Phillips Lane, Circuit Street, Myrtle Street, Center Street, Cross Street and Broadway, then follows the Indian Head River and Water Street, before crossing Elm Street and Columbia Road to Broadway near Washington Street. This trail route could provide linkage of the Rockland Rail Trail and Colby-Phillips Trails in West Hanover to several other Open Space trails and public fields such as Ellis Fields, Myrtle Fields and the Senior Center, Nava & Tindale Bog/Beach Trails, Indian Head River Trails, Luddam's Ford Park Trails and Chapman's Landing Iron Mine Brook Trails in East Hanover creating a town-wide trail system.

The existing rail bed is in relatively good condition in that it is mostly stable with minimal signs of erosion. At the western end, Rockland Town line, there are portions of existing

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rail and ties that remain intact that will require removal. Large sections of the former rail bed have had the rail and ties removed and have become informal trails, while other portions have been converted to Town trails. For the most part, the rail bed trail will require clearing of brush and overgrowth prior to construction. The trail system is located along critical natural resources including rivers, associated floodplains and wetland resource areas including Cushing Brook, Drinkwater River, Torrey Brook, Indian Head River, and Iron Mine Brook.

There are a few locations where existing slopes may exceed universally accessible limits of 5% for a sloped walkway. These areas are mostly along existing trails and could be regraded while being mindful of protecting the surrounding vegetation.

## **Rail Corridor Sections**

To better describe both existing conditions and the conceptual layout for the rail trail, we have broken the overall 4+ mile corridor into four sections. This would also allow a phased implementation strategy that allows for incremental construction projects should full funding not be available all at once.

The multi-use trail conceptual design anticipates a typical shared use path consisting of a 10 ft wide paved path with 3 ft. minimum graded shoulders within a 20 to 24 ft wide cleared area. This section will be a continuation of the Rail Trail with in the Town of Rockland.

**West Section** – Rockland Town Line to Drinkwater River Bridge

**Central 1 Section** – Drinkwater River Bridge to Myrtle Street Fields

**Central 2 Section** – Myrtle Street Fields to Luddam's Ford Park

**East Section** – Luddam's Ford Park to Broadway

- West Section – Rockland Town Line to Drinkwater River Bridge

The West Section consists of approximately 0.81 miles of rail corridor owned by the Commonwealth of Massachusetts DCR. There is approximately 0.54 miles (2,830 ft) of existing rail and ties to be removed. The rail bed is overgrown with several encroachments. The properties along Hanover Street look to have encroached into the rail corridor with fill and debris. The trail route will require access to the Hanover Street sidewalk and crosswalk at the intersection of Hanover Street and Pleasant Street. Just before getting to the Drinkwater River crossing, there is a possible path connection to the Ellis Field via an existing walking path over private property. This section ends at the Drinkwater River bridge crossing. The bridge crossing will need to be improved for trail access. The bridge abutments look to be stable, but will require a structural engineer to evaluate the abutments for support prior to design.

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A bridge on a multi-use trail should be able to support at least 12,500 pounds. Its superstructure can be made of wood, metal, concrete, high-strength metal alloys, steel cable or rope, while its decking can be made of wood or concrete poured over corrugated metal. The decking of a biking/pedestrian bridge should be durable and non-slip; avoid steel grating because it is very slippery for bicycles when wet. If the chosen decking is treated wood planks, they should be laid perpendicular to the trail to prevent bike tires from catching on an edge and throwing the bicycle off balance. Typical railing height is 42 to 48 inches; although, if there are equestrians on the bridge, the railing should be higher. Horse riders should dismount their horses and lead them across bridges or next to bridges that only cross shallow bodies of water. Since not all users will adhere to this rule, make rails sturdy and at least 54 inches in height when expecting horse traffic.

Constructed from wood, steel, high-strength metal alloys or concrete, “prefab” bridges have several advantages, including low cost, minimal disturbance to the project site and, usually, simple installation that requires minimal skill and expertise. In addition, the bridge can be manufactured in advance of other construction. We have investigated a prefab bridge consisting of a truss construction (H10 loading) with concrete decking and weathered steel.

This section will require rail removal, possible sidewalk and crosswalk improvements, a bridge crossing, vegetation clearing, fill encroachment evaluation along 1340-1356 Hanover Street properties and two possible parking areas. One parking area is anticipated at the end of Circuit Street with approximately 5 parking spaces and an existing gravel parking area with approximately 10 parking spaces and possible trail kiosk. Possible easement coordination with private property owners to maintain an existing walking path connection from the rail trail to Ellis Field. The majority of the trail route is located near wetland resources and will require permitting through the Hanover Conservation Commission.

- Central 1 Section –Drinkwater River Bridge to Myrtle Street Fields

The Central 1 Section consists of approximately 1.51 miles of rail corridor. Ownership along this section includes multiple commercial and residential properties. Starting at the Drinkwater River bridge, there is approximately 0.18 miles (976 ft) of existing rail and ties to be removed. This area is a potential rest area with benches. As the trail route enters the industrial area near Mayflower Drive, the rail corridor is impassible due to property development, therefore an alternate route around the industrial developments is proposed. The alternate route will follow around the parking area to the north of 108 Mayflower Drive then follow Mayflower Drive south just past the 111 Mayflower Drive property. There is an existing rail switch pot monument within this area that would be a historical benefit to the trail. Then the trail is proposed to follow the rear property line east, through 111 Mayflower Drive, 353 and 347 Circuit Street properties to Circuit Street. The rail route will cross Circuit Street and following along the rear property lines of multiple residential properties within a utility easement path. The existing rail route continues along in an easterly direction through three residential

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properties making this section impassible. The trail route is proposed to be rerouted to continue along the utility easement to 208 Myrtle Street property, following the existing driveway to Myrtle Street then crossing to the Myrtle Street Fields. This section requires intensive private property coordination.

This section will require extensive private property coordination/easement, possible fencing between developments or residential properties and the trail, a short section of rail removal, rest area benches, crosswalk at Circuit Street and Myrtle Street, potential kiosk location at existing parking area at Myrtle Fields, and vegetation clearing. The majority of the trail route is located near wetland resources and will require permitting through the Hanover Conservation Commission.

- Central 2 Section – Myrtle Street Fields to Luddam's Ford Park

The Central 2 Section consists of approximately 2.24 miles of rail corridor. The trail route begins at Myrtle Street Fields following the Tindal Trail to Stasiluk Nava Conservation Area, crossing Center Street to the Tindale Bog and Beach area to Cross Street. Sidewalk improvements will be needed to continue to the Indian Head River Trail entrance on Broadway through Cross Street and Broadway intersection. Potential signage at each entrance to the trail should be considered. The trail route continues along the Indian Head River trail route as it continues around the Trailside Lane and Meadow Drive residential properties within a conservation area to Water Street. This area of the trail route follows an existing trail along the Indian Head River and will require additional grading to widen the trail and address the steeper slopes. Then the trail route follows along Water Street passing 360 Water Street property where the trail begins to follow the rail bed to the Luddam' Ford Park trails then the existing trail diverts to follow along the Indian Head River to the parking area off W. Elm Street. The majority of the section follows existing trail routes on property owned by either the Town of Hanover, within Conservation Area or Pantooset Farms, Inc..

This section will require trail grading to address areas with steeper slopes, crosswalk at Center Street, sidewalk and crosswalk improvements at Cross Street and Broadway, two possible kiosk locations at Stasiluk Nova CR area and potential parking area on Water Street, rest area benches, additional signage and vegetation clearing. The majority of the trail route is located near wetland resources and will require permitting through the Hanover Conservation Commission.

- East Section – Luddam's Ford Park to Broadway

The East Section consists of approximately 0.91 miles of rail corridor. The trail route diverts from the rail bed beginning at the Luddam's Ford Park parking area existing onto Elm Street north to Riverside Drive, follow east to the Indian Head River Conservation Area with a potential new parking area with kiosk where the trail route begins to follow the rail bed again just past the Iron Mine Brook crossing

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to Tolman Road crossing where the rail bed runs through several residential properties to the rail bed property owned by Zona running along Broad Oak Way where the walkable trail route ends. Coordination with private property owners will be required along this route. Potential parking area at the NE Telephone and Telegraph property with access through the 325 Columbia Road property, but will require private property coordination/easement.

This section will require property coordination/easement, sidewalk and crosswalk improvements along Elm Street and Riverside Drive, vegetation clearing, and two potential parking areas with kiosk and signage. The majority of the trail route is located near wetland resources and will require permitting through the Hanover Conservation Commission.

#### **4.0 Ownership Documentation**

The previous report, Title Search for the “Hanover Branch Railway” compiled by Old Colony Title Company in 1995 prepared a title search of the Hanover Branch Railway to help determine the ownership of portions of the rail right of way from Abington town line through Rockland and Hanover to its former terminus near the intersection of Broadway and Columbia Street in Hanover. Attached is a copy of the Summary of the Research. Merrill reviewed current Assessors information along the rail line and prepared a spreadsheet with property information, owner, deed and plan information when available.

Also attached is a document discussing trail related liability issues and risk management techniques entitled “Rail-Trails and Liability” prepared by Rails to Trails Conservancy in September 2000 for review.

Ownership Analysis

Address	Owner	Assessors Parcel	Deed Book	Plan	Rail Easement?	Contact Person	Notes
West Hanover Lot 29	Commonwealth of Massachusetts	43/29	<a href="#">5148/211</a>	Deed description			
126 Mayflower Drive	Lorie Faulkner Trustee	52/29	<a href="#">C94772/D4409</a>	<a href="#">Lot 6 on Plan #38427D</a>		Lorie Faulkner/George Davis	Brockton Edison Company Easement, two National Fireworks Easements, pole and wire Easement for Tedeschi Realty Corp.
96 Mayflower Drive	Lorie Faulkner Trustee	52/25	<a href="#">17030/0120</a>	Deed Referenced Parcel Three		Lorie Faulkner/George Davis	
Circuit Street Rear	Lorie Faulkner Trustee	51/59	<a href="#">17030/0120</a>	Deed Referenced Parcel Four		Lorie Faulkner/George Davis	
102 Mayflower Drive	Lorie Faulkner Trustee	52/33	<a href="#">17030/0120</a>	Deed Referenced Parcel Two		Lorie Faulkner/George Davis	
108 Mayflower Drive	Lorie Faulkner Trustee	52/34	<a href="#">17030/0120</a>	Deed Referenced Parcel One		Lorie Faulkner/George Davis	
111 Mayflower Drive	Robert Sennett	52/36	<a href="#">C122860</a>	<a href="#">Plan #32390A</a>		Robert Sennett - 781-831-5461	<a href="#">Overhead wire easement, Brockton Edison Company Easement, New England Telephone Company Easement, The Home Gas Corporation of Hanover to Brockton Edison Company and New England Telephone and Telegraphy Company</a>
335 Circuit Street	Robert Hale and Steven Aronson	52/1	<a href="#">3863/0640</a>	<a href="#">Plan of Land off Circuit Street</a>	Rail Easement	Hapco Inc. - 781-826-8801	Deed references rail access
100 Wearguard Drive	Meredith Winston, LLC	52/38	<a href="#">43970/0067</a>	<a href="#">38427 A/B</a>	Deed states right to use RR	Robert Sennett - 781-831-5461	*Sold from Robert Sennett to Meredith Winston, LLC. Robert Sennett runs LLC
347 Circuit Street	Andry and Dolores Lagsdin Trustee	52/41	<a href="#">10079/0012</a>	<a href="#">3656/115</a>	Rail discussed in deed	Andry Lagsdin/Stoughton Steel Company 781-826-6496	
342 Circuit Street	4M 16 Commerce LLC	62/21	<a href="#">C120923</a>	<a href="#">Plan No. 1150 of 1972, Plan No. 876 of 1974, PB 21 page 850, Plan #32228A</a>		781-829-2031	Rights to way for National Fireworks Ordinance Corp
0 Circuit Street	Brockton Edison Company	60/140	<a href="#">3373/0345</a>	<a href="#">PB 14, Page 532</a>			Deed discusses utility right of way
22 Indian Brook Lane	22 Indian Brook Lane Realty Trust	61/88	<a href="#">43821/0099</a>	<a href="#">PB 26, Page 883</a>		Kevin and Kathy McLaughlin	Edison Electric Easement shown on plan
25 Indian Brook Lane	Bodkin Family Irreovocable Trust	61/87	<a href="#">49251/0020</a>	<a href="#">PB 26, Page 883</a>		781-826-4143	Edison Electric Easement shown on plan
Indian Brook Lane	Robert and George Rugman	61/86	<a href="#">46104/0178</a>	<a href="#">PB 26, Page 883</a>		George Rugman (781)826-4566	
Myrtle Street	Robert and George Rugman	61/7	<a href="#">46104/0181</a>	<a href="#">PB 47, Page 1083</a>		George Rugman (781)826-4566	
72R Myrtle Steet	Robert and George Rugman	61/17	<a href="#">46104/0184</a>	Assessors Map referenced		George Rugman (781)826-4566	
Myrtle Street	Joseph McDonald Trustee	61/84	<a href="#">16305/0348</a>	<a href="#">Lot 3, PB 25, Page 1113</a>		Joseph McDonald (508) 822-2754	
160 Myrtle Street	George W. Rugman Jr.	61/10	<a href="#">13451/0073</a>	Assessors Map referenced		George Rugman (781)826-4566	
Myrtle Street Rear	William M Bates Estate	61/11	<a href="#">3845/0658</a>	Assessors Map referenced			
Myrtle Street	Thelma L Shaw	61/09	<a href="#">3962/0688</a>	Parcel Deed Referenced		Dana Shaw (781)826-3686	
Myrtle Street	Thelma L Shaw	61/89	<a href="#">3962/0688</a>	Parcel Deed Referenced			
**Old Railroad Bed	Pantooset Farms	69/13	<a href="#">9460/0226</a>	<a href="#">Deed References this plan.(PB 33, Page 698) doesn't show majority of railbed</a>		Joe Polsinello (617)826-1128	Already a Hanover Conservation Trail running thorough this parcel, large parcel of old railbed
Water Street	Leonard Realty Trust	79/8	<a href="#">32968/0292</a>	<a href="#">Plan No. 3 of 1959, Plan No. 334 of 1959, PB 4 Page 909, PB 51 Page 993</a>			
182 River Road	Jason and Lora Webster	65/29	<a href="#">49429/0282</a>	<a href="#">PB 41, Page 80</a>			
River Road Rear	Pantooset Farms	68/87	<a href="#">9211/0108</a>	<a href="#">Plan No. 28606A, PB 30 Page 665, PB 3830 Page 580, PB 4 Page 661</a>			
1 Tolman Road	Brian and Maura Banks	65/88	<a href="#">48615/0222</a>	<a href="#">PB 57, Page 1038</a>			
5 Tolman Road	Stephen and Kara Virta	65/89	<a href="#">50534/47</a>	<a href="#">PB 57, Page 1039</a>			
Old Railroad Bed	Leo P. Zona, Jr.	65/80	<a href="#">7906/0254</a>	Deed description		Leo Zona	
Colubia Road	NE Telephone and Telephone Co	57/91	<a href="#">3949/0150</a>	<a href="#">Parcel A, Plan Dated October 3, 1973</a>			

JAN 15 1997

# **TITLE SEARCH FOR THE "HANOVER BRANCH RAILWAY"**

compiled by:  
**Old Colony Title Company**

For:  
**The North and South Rivers Watershed Association's  
Indian Head River Greenway Project**

Completed:  
**January 18, 1995**

Funded by:  
**Department of Environmental Management's  
Greenways & Trails Small Grants**



Return to: Judy Grecco



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BARNEY J. MURPHREE, JR.

January 18, 1995

Debbie Linehan, Executive Director  
North and South Rivers  
Watershed Association, Inc.  
P.O. Box 43  
Norwell, MA 02061

RE: Title Research - Hanover Branch Railway

Dear Debbie:

At the request for the Directors of the North and South Rivers Watershed Association, Inc., I have reviewed the title research compiled by Old Colony Title Co., Inc. of Plymouth, Massachusetts in an effort to determine the holder of record title to that portion of the "Hanover Branch Railway" extending from the Abington town line eastward through the towns of Rockland and Hanover to its former terminus near the intersection of Broadway and Columbia Street in Hanover.

Please accept this letter as a summary of the results of this title research.

Summary of Research

1. The "Locus" consists of that portion of the railroad right of way or roadbed of the West Hanover Secondary Branch, identified as Line Code 4179 in the records of the United States Railway Association, which lies within the towns of Rockland and Hanover.

2. The railroad bed originates in North Abington and terminates in Hanover, near the intersection of Broadway with Columbia Street (formerly Washington Street). The Locus is clearly shown on a series of plans entitled "Right of Way and Track Maps" numbered V 522 1 through 8, which maps were prepared for the Old Colony Railroad Company and are dated June 30, 1915. Copies of the maps are incorporated in this report and are an integral part of in this abstract. The maps are not on record at Plymouth County Registry of Deeds, and were furnished to the examiners by the NSRWA.

Debbie Linehan, Executive Director  
January 18, 1995  
Page -2-

3. Each of the eight maps has imprinted thereon a "Schedule of Title" which includes the service of title to each parcel of land acquired by the Railroad and upon which the railroad bed was constructed. These acquisitions were made by the Hanover Branch Railroad Company and the Old Colony Railroad Company between the years 1860-1910. Based upon the authenticity and detail of the records, some of which has been verified at random, we have assumed title is fee simple in the railroad bed as of June 30, 1915 in Old Colony Railroad Company.
4. Grantor schedules of the Hanover Branch and Old Colony from 1860 through 1914 are shown at Sheet 2. There was very little activity during this period.
5. Grantor schedules of Old Colony Railroad Company and its Lessee/Successor-in-Title, New York, New Haven and Hartford Railroad Company from 1915 through 1959 are shown at Sheet 3-3B. The most relevant activity during this period includes a conveyance by the Railroad to National Fireworks, Inc. in 1945. This deed is shown at Sheet 4 herein, and describes a portion of the railroad bed in Hanover extending from Circuit Street on the northeast to Center Street on the southeast. This portion of the railroad bed is referred to as the "Green Line" and is delineated in green on portions of Map 4 & 5. The Chain of Title to this area is included herein at Sheet 23.
6. In 1947, as part of a reorganization in bankruptcy, the real property of the Old Colony Railroad is conveyed to its successor, New York, New Haven and Hartford Railroad Company by deed at Sheet 5.
7. The only other activity of note during the period from 1915 to 1959 are certain conveyances of railroad land which abut, but do not include, the railroad bed; grants of easements for grade crossings and utility facilities; and takings for highway layouts. These transactions are included on the schedules, and copies of some of the instruments and plans are shown at Sheet 37.
8. On December 31, 1968, an Indenture and Deed in another bankruptcy proceeding conveyed title to the remaining portions of the Locus and all other railroad land to Penn Central Company, the successor-in-interest to the New York, New Haven and Hartford Railroad Company (see Sheet 9A).

Debbie Linehan, Executive Director  
January 18, 1995  
Page -3-

9. Grantor schedules of Penn Central Company and its successors from January 1, 1969 to date are shown on Sheet 10 through 10(d). It is during this period that the most significant activity relevant to this examination occurred.

- a. In 1969 Penn Central Company became Penn Central Transportation Company.
- b. On October 13, 1978, as part of a reorganization in bankruptcy, Penn Central Transportation Company conveyed all of its operating assets to Conrail (see Sheet 11). The locus portion of the West Hanover Branch was excepted from this conveyance. The only portion included in the conveyance was the portion in North Abington.
- c. On November 16, 1978, also as part of the reorganization, Penn Central Transportation Company conveyed to Penn Central Corporation (its successor-in-title) its remaining property, including The Locus.

10. As shown on Grantor schedules 10(c) & 10(d), Penn Central Corporation subsequently made two conveyances of the Locus:

- a. The first occurred on May 14, 1982, and was a conveyance to the Commonwealth of Massachusetts of a 3.49 mile portion of the West Hanover Secondary Track, extending on the west from North Abington through Rockland, and terminating on the east near Circuit Street in Hanover. This conveyance is described in the deed shown at Sheet 13 and is delineated in orange on the railway maps numbered 1 through 4 (the "Orange Line"). The Grantor schedule of the Commonwealth indicates no subsequent conveyance of any portion of the Locus (Sheet 14).
- b. The second conveyance occurred on August 3, 1987, and consisted of the transfer of a section of the railroad bed 13,960 feet long (or 2.64 miles) to Leo P. Zona, Jr. See deed at Sheet 15 for a particular description.

Debbie Linehan, Executive Director  
January 18, 1995  
Page -4-

11. Zona alone held title until November 15, 1989, when he conveyed the major portion of his acquisition to Pantooset Farms, Inc., by deed at Sheet 17. Zona reserved to himself a portion of the Locus at the easterly end of the roadbed. The area now owned by Zona is shown in blue on railway map 8 (the "Blue Line"), and on the plan at Sheet 17A. That portion of locus now owned by Pantooset Farms is the portion outlined in yellow on Maps 5 through 8 (the "Yellow Line").

12. During the period from 1978 through 1985, Penn Central Corp. made some non-locus conveyances of land abutting the railroad bed in Hanover and Rockland. These are shown at Sheets 20 to 22.

13. After the Zona conveyance in 1987, there was no Penn Central activity in the area of the Locus, and it is believed, therefore, that the Penn Central Corporation owns no portion of the Locus at this time.

#### Conclusion

The portion of the railroad bed that begins at the Abington/Rockland town line and extends eastward for a length of approximately 3.49 miles into West Hanover (orange line) is owned by the Commonwealth of Massachusetts, acting through the Executive Office of Transportation and Construction pursuant to M.G.L. Chapter 161C, Section 4.

\* To date, I have not determined the record owner of the approximately 700 feet of railroad bed extending from the eastward end of the orange line owned by the Commonwealth of Massachusetts easterly to Circuit Street. This section will require further study.

That portion of the railroad bed extending from Circuit Street easterly to Center Street (the "Green Line") appears to be owned by National Fireworks, Inc. or its successor-in-title.

Most of that portion of the railroad bed beginning at Center Street and extending easterly across Cross Street and Broadway and along the Indian Head River past Water Street and across Elm Street (the "yellow line") is owned by Pantooset Farms, Inc. There are, however, several parcels of this "yellow line" that are not owned by Pantooset Farms, Inc.:

Debbie Linehan, Executive Director  
January 18, 1995  
Page -5-

First, there is a portion of the railroad bed surrounding Cross Street and Broadway that is owned by the Hanover Conservation Commission (see Map No. 6);

\* Second, two parcels, one containing approximately 1.5 acres and another containing approximately 1.2 acres of land located where the railroad bed intersects with Water Street (where the house appears to be built on the railroad bed) are owned by Helen U. and Ann Marie Holsinger (see Sheet 35).

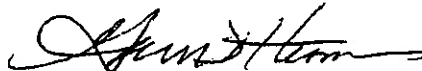
Third, just east of Elm Street in Hanover, two lots of land off Riverside Drive bisect the railroad bed, one owned by William G. and Anne M. Flaherty, and another owned by Cathleen Bobzin (see Sheets 36 to 36G). Access to the railroad bed, however, is available by travelling across Riverside Drive and through Hanover Conservation Commission property.

Finally, a small portion of the railroad bed east of the Flaherty/Bobzin parcels is owned by the Hanover Conservation Commission.

The eastern most portion of the railroad bed extending from the Pantooset Farms parcel to the end of the line (the "blue line") is owned by Leo P. Zona, Jr.

After you have had a chance to review this report with the Board of Directors, I would be pleased to meet with you to discuss any questions that you may have.

Very truly yours,

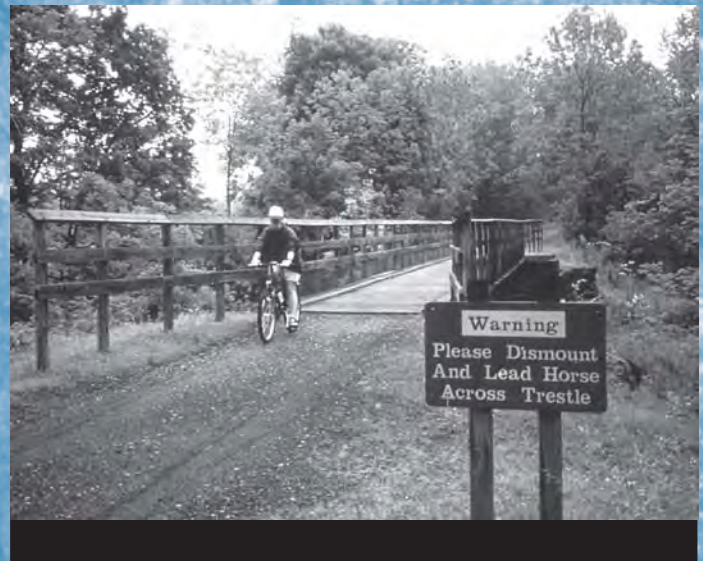


Gary D. Thomas

GDT:jml



# RAIL-TRAILS AND LIABILITY



A PRIMER ON TRAIL-RELATED  
LIABILITY ISSUES & RISK  
MANAGEMENT TECHNIQUES



## ACKNOWLEDGMENTS

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## RAILS-TO-TRAILS CONSERVANCY

This report was produced by the Rails-to-Trails Conservancy. Founded in 1986, Rails-to-Trails Conservancy is the nation's largest trails organization with 100,000 members and donors dedicated to connecting people and communities by creating a nationwide network of public trails from former rail lines and connecting corridors. RTC has helped provide new opportunities for outdoor exercise by creating and extending a nationwide network of public trails and greenways. Rails-to-Trails is a 501(c) (3) nonprofit organization and has over 100,000 individual members and donors who support the RTC mission of building and maintaining trails.



# RAIL-TRAILS AND LIABILITY

A Primer on Trail-Related Liability Issues  
& Risk Management Techniques



Written by Hugh Morris  
Rails-to-Trails Conservancy

*in cooperation with*

National Park Service  
Rivers, Trails and Conservation Assistance Program

SEPTEMBER 2000

# CONTENTS

Executive Summary .....	3
I. Introduction .....	4
II. Trail Liability Concerns and Solutions .....	5
Forms of Protection .....	6
Duty of Care .....	6
Recreational Use Statutes .....	7
Public Agency Liability .....	8
Insurance .....	9
Risk Management .....	9
Managing Special Situations .....	11
Rails-with-Trails .....	11
Pesticides From Adjacent Farms .....	11
Hunting Adjacent to Trails .....	12
Use of Volunteers for Trail Work .....	12
Railroad Hazardous Material Remains .....	12
III. Results From the Real World .....	13
Findings From RTC's Trail Manager Survey .....	13
Case Studies .....	14
The Cowboy Trail .....	14
Marsh Creek Trail .....	15
Baltimore and Annapolis Trail Park .....	15
IV. Conclusions .....	16
Appendix .....	
I. General Discussion of Tort Law .....	17
II. Glossary .....	19
III. State Tort Claims Acts and Recreational Use Statutes .....	20
Endnotes .....	22
References .....	23
Resources .....	23

# EXECUTIVE SUMMARY

The need for outdoor recreation areas has increased as our population has grown, our built environment has consumed more open space, and people have become more aware of the need to maintain a healthy level of physical activity.

One type of open space that has been receiving increasing amounts of attention and funding is trails. Trails are being built in urban, suburban, and rural areas. They are being built on former rail corridors as well as in vast public lands. People use trails for: walking, jogging, biking, in-line skating, skiing; even equestrians, snowmobilers and people in wheelchairs use them.

With all these uses in a variety of settings come a host of concerns about liability issues. Public agencies that are considering building a trail may worry about user injuries on the trail. Similarly, private landowners who own land adjacent to a trail may worry about trail users wandering off the trail, onto their land and injuring themselves or causing property damage. Or landowners may like to open up their land for recreational use but are concerned about the liability they may incur in doing so.

Fortunately, most states have laws that substantially limit public and private landowner liability. Recreational Use Statutes protect private landowners who want to open their land to the public for recreation free of charge. In some states, these statutes serve to protect public agencies as well. Public agencies, if not protected by the Recreational Use Statute, are often protected by governmental immunities or possess limited liability under a

State Tort Claims Act. Private landowners who have land adjacent to a trail are also protected by trespassing laws. For all these parties, insurance can provide protection as well.

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. The table below provides a summary of the protections available and who they apply to.

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.

TYPE OF PROTECTION	PUBLIC LANDS	PRIVATE LANDS	ADJACENT LANDOWNER
1) Insurance	Yes	Yes	Yes
2) Recreational Use Statute	Some	Yes	No
3) Trespass Law	No	No	Yes
4) Government Immunity/State/Federal Tort Claims	Yes	No	No

# I. INTRODUCTION

Along with the fear of increased crime rates and decreased property values, fear of being threatened with a lawsuit is a common concern among landowners adjacent to a proposed trail. Some landowners fear that a trail user will wander onto their property, get hurt, and sue. Private landowners who permit the general public to use their land for recreational purposes may have these concerns as well.<sup>1</sup> Likewise, potential trail owners and managers are sometimes leery of undertaking a trail project because of the liability exposure. In general, not only are there legal protections for these circumstances but the real threat of such liability does not seem to be common.

Virtually all rail-trails managers dismiss liability as a problem.



with a trail tend to be folded into the overall insurance policy of the city, county or state. When asked, most trail managers were not able to identify the insurance costs associated with their trail.

Questions related to legal liability for accidents or injuries on or adjacent to trails must be answered in terms of state common (judge-made) law,<sup>2</sup> which varies from state to state. The following discussion provides a broad overview of trail



Warning signs help minimize the threat of liability. (John McDermott)

liability issues, forms of protection, and a discussion of risk management techniques that can be used to minimize risk and reduce liability.

This report outlines the general legal issues associated with trails, including the risks and responsibilities of various constituencies. The intent is to provide trail advocates, adjacent landowners, and trail managers with a background on liability issues to prepare them to pose appropriate questions to their legal counsel when developing a trail or when an accident occurs. This report is not intended as legal advice. If you have a question pertaining to a trail in a specific jurisdiction you should consult a lawyer familiar with the case law pertaining to that jurisdiction.

## II. TRAIL LIABILITY CONCERNS AND SOLUTIONS

There are two primary categories of people who might be concerned about liability issues presented by a trail: the trail managing and owning entity (typically a public entity) and private landowners. Private landowners can be divided into two categories, those who have provided an easement for a trail over their land and those who own land adjacent to a trail corridor.

Similarly, there may be a preexisting corridor traversing or lying adjacent to their property such as a former rail corridor that has been converted to a trail. In either situation, private landowners may have some concerns about their liability should a trail user stray onto their land and become injured. In the first instance, where an easement is granted, the concern may be over injuries both on the granted right-of-way as well as injuries that may occur on land under their control that is adjacent to the trail. Under the latter condition, where the landowner has no ownership interest in the trail, the landowner will only be concerned with injury to trail users wandering onto their property and getting hurt or perhaps a tree from their property falling onto the trail.

In general, people owning land adjacent to a trail—whether the trail is an easement granted by them or is held by separate title—foresee that people using the trail may be endangered by a condition on their land. Potential hazards such as a pond, a ditch, or a dead tree may cause the landowner to worry about liability for a resulting injury. The landowner may reduce their liability by taking the following actions (BCEMC 1997, p. 58):

- ▼ Work with trail designers to have the trail located away from hazards that cannot be corrected.
- ▼ Make it clear that trail users are not invited onto the adjoining land. This can be aided by having the trail designer develop signs, vegetative screening, or fencing.
- ▼ If a hazardous condition does exist near the trail, signs should be developed to warn trail users of the hazard if it cannot be mitigated.

Of particular concern to adjacent landowners are attractions to children that may be dangerous, such as a pond. Many states recognize that children may trespass to explore an attractive nuisance. These states require a legal responsibility to children, even as trespassers, that is greater than the duty of care owed to adults (BCEMC 1997, p. 58).

If a landowner provides an easement for a public-use trail, the easement contract should specify that the managing agency will carry liability insurance, will design the trail to recognized standards, and will develop and carry out a maintenance plan. The landowner may also request that an indemnification agreement be created in their favor.

Abutting property owners frequently express concern about their liability to trail users. In general, their liability, if any, is limited and is defined by their own actions in relation to the trail. If an abutting property owner possesses no interest in the trail, then he or she does

not have any right or obligation to warn trail users about defects in the trail unless the landowner creates a dangerous condition on the trail by his own act or omission. In that event, the abutting landowner would be responsible for his own acts or omissions that caused the injury to a third party using the trail, just as the operator of one

The owner of land adjoining a trail may reduce their liability by making it clear that trail users are not invited onto the adjoining land. This can be aided by having the trail designer develop signs, vegetative screening, or fencing.



car is responsible to the operator of another for an accident he caused on a city street (Montange 1989, p. 127).

The fact that a trail is formed on a railroad right-of-way pursuant to section 8(d) of the Trails Act (16 U.S.C. § 1247 (d)), commonly known as railbanking, and that some of the parcels of land comprising the right-of-way were held by the railroad only in easement form does not alter the duty of care of the abutting property owners holding the fee to trail users and is no more than the abutting landowner owed the railroad. A railroad easement generally affords the railroad exclusive use and excludes the adjacent landowner from any occupation of the surface absent the railroad's consent. An abutting property owner cannot be responsible for the condition of property from which he or she is excluded (Montange 1989, p. 128).

## FORMS OF PROTECTION

There are three legal precepts, either alone or in combination, that define and in many cases limit liability for injury resulting from trail use. The first is the concept of duty of care which speaks to the responsibility that a landowner (private or public) has to anyone on their land. Second is the Recreational Use Statute (RUS) which is available in all 50 states and provides protection to private landowners and some public landowners who allow public free access to land for recreational purposes. For those public entities not covered by a RUS, states tend to have a tort claims act which defines and limits governmental liability. Third, for all private and public parties, liability insurance provides the final line of defense. Trail owners can also find much protection through risk management.

## DUTY OF CARE

Tort law, with regard to finding fault for an incident that occurs in a particular location, is concerned with the "class" of person who sustained the injury and the legal duty of care owed to a person in that class. The legal duty of care that a landowner owes a member of the general public varies from state to state but is generally divided

into four categories. In most states, a landowner's responsibility for injuries depends on the status of the injured person. A landowner owes increasingly greater duties of care (i.e.; is more at risk) if the injured person is a "trespasser," a "licensee," an "invitee," or a "child."

**TRESPASSER**—a person on land without the landowner's permission, whether intentionally or by mistaken belief that they are on public land. Trespassers are due the least duty of care and therefore pose the lowest level of liability risk. The landowner is generally not responsible for unsafe conditions. The landowner can only be held liable for deliberate or reckless misconduct, such as putting up a trip wire. Adjacent landowners are unlikely to be held liable for injuries sustained by trespassers on their property.

**LICENSEE**—a person on land with the owner's permission but only for the visitor's benefit. This situation creates a slightly higher liability for the landowner. For example, a person who is permitted to hunt on a farm without paying a fee, if there were no RUS, would be classified as a licensee.

If the landowner charged a fee, the hunter would probably be classified as an invitee. Again, the landowner is not responsible for discovering unsafe conditions; however the landowner must provide warning of known unsafe conditions.

**INVITEE**—a person on the owner's land with the owner's permission, expressly or implied, for the owner's benefit, such as a paying customer. This is the highest level of responsibility and therefore carries the highest level of liability. The owner is responsible for unknown dangers that should have been discovered. Put a different way, the landowner has a duty to:

- 1) Inspect the property and facilities to discover hidden dangers;
- 2) Remove the hidden dangers or warn the user of their presence;
- 3) Keep the property and facilities in reasonably safe repair; and
- 4) Anticipate foreseeable activities by users and take precautions to protect users from foreseeable dangers.

If a trail manager charges a fee for access to a recreational facility, the facility provider tends to owe a greater duty of care to the user and thus has a greater risk of liability





The landowner does not ensure the invitee's safety, but must exercise reasonable care to prevent injury. Generally, the landowner is not liable for injuries caused by known, open, or obvious dangers where there has been an appropriate warning. For example, customers using an ice rink open to the public for a fee would be invitees.

**CHILD**—even if trespassing, some states accord children a higher level of protection. The concept of “attractive nuisance” is particularly relevant to children. Land forms such as ponds can be attractive to children who, unaware of potential danger, may be injured if they explore such items.

Prior to the widespread adoption of RUS' by the states (see discussion below), this classification system defined the liability of adjacent landowners. Even now, trail managers or private landowners who charge a fee are at greater risk of liability because they owe the payee a greater responsibility to provide a safe experience.

Thus, where no RUS exists or is unavailable, trail users would be of the licensee class, provided the trail manager does not charge an access fee. If a trail manager charges a fee the facility provider tends to owe a greater duty of care to the user and thus has a greater risk of liability if a trail user is injured due to a condition of the trail.

## RECREATIONAL USE STATUTES

The Council of State Governments produced a model recreational use statute (RUS) in 1965 in an effort to encourage private landowners<sup>3</sup> to open their land<sup>4</sup> for public recreational<sup>5</sup> use by limiting the landowner's liability for recreational injuries when access was provided without charge (Kozlowski, p. VID1).

Recreational use statutes are now on the books in all fifty states. These state laws provide protection to landowners who allow the public to use their land for recreational purposes. The theory behind these statutes is that if landowners are protected from liability they would be more likely to open up their land for public recreational use and that, in turn, would reduce state expenditures to provide such areas. To recover damages, an injured person must prove “willful and wanton misconduct” on the part of the landowner essentially the same duty of care owed to a trespasser. However, if the landowner is charging a fee for access to the property, the protection offered by the recreational use statute is lost in most states.

The preamble of the model RUS is clear that it was designed for private landowners but the actual language of the model legislation does not differentiate between private and public landowners. The result is that while some states have followed the intent of the model statute and limited the immunity to private landowners, other states have extended the immunity to cover public landowners either legislatively or judicially (Goldstein 1997, p. 788).

Under the Federal Tort Claims Act, the federal government is liable for negligence like a private landowner under the law of the state. As a result, RUSs intended for private individuals have been held applicable to the federal government where it has opened land up for public recreation (Kozlowski, p. VID1).

Under lease arrangements between a public agency and a private landowner, land can be provided for public recreation while the public agency agrees to defend and protect the private landowner. The private landowner may still be sued but the public agency holds the landowner harmless, taking responsibility for the cost of defending a lawsuit and any resulting judgments (Kozlowski, p. VID2).

While state RUSs and the court interpretations of these laws vary somewhat, a few common themes can be found. The statutes were created to encourage landowners to make their land available for public recreation purposes by limiting their liability provided they do not charge an access fee. The RUS limits the duty of care a landowner would otherwise owe to a recreational licensee to keep his or her premises safe for use. It also limits a landowner's duty to warn of dangerous conditions provided such failure to warn is not considered grossly negligent, willful, wanton, or reckless. The result of many of these statutes is to limit landowner liability for injuries experienced by people partaking in recreational activities on their land. The existence of a RUS may also have the

The statutes were created to encourage landowners to make their land available for public recreation purposes by limiting their liability provided they do not charge an access fee.





effect of reducing insurance premiums for landowners whose lands are used for recreation (BCEMC 1997, p. 58).

To use Colorado as an example, a landowner who directly or indirectly invites or permits any person to use his or her property for recreational purposes without charge, does not:

- ▼ Extend any assurance that the premises are safe for any purpose;
- ▼ Confer upon such person the legal status of invitee or licensee to whom a duty of care is owed;
- ▼ Assume responsibility or incur liability for any injury to person or property or for the death of any person caused by an act or omission of such person (Montagne 1989, p. 128).

The above protections are voided if:

- ▼ The landowner willfully or maliciously fails to guard or warn against a known dangerous condition, use, structure, or activity likely to cause harm;
- ▼ The landowner charges the person who enters or goes on the land for recreational use thereof; except that, in the case of land leased to the state or a political subdivision thereof, any consideration received by the owner for such lease shall not be deemed a charge, nor shall any consideration received by an owner from any federal governmental agency for the purpose of admitting any person constitute such a charge;
- ▼ The landowner maintains or attracts a nuisance;
- ▼ The landowner causes injuries due to a use of the land for a commercial or business enterprise (Colo. Rev. 33-41-103-104).

The recreational use statutes appear to be “working” in the sense that they are limiting liability to the extent that was intended. In addition to recreational use statutes, some states have special statutes limiting liability that may be applicable. Pennsylvania, for example, has a specific trails statute (Act 32 P.S. §§ 5621 et seq.) which limits liability for landowners who allow their land to be used for trails, trail owners, and adjacent property owners with protections similar to a recreational use statute.



A good management plan will allow for detection and warning of non-permanent hazards. (David Burwell)

These laws do not prevent somebody from suing a trail manager/owner or a private property owner who has made his or her land available to the public for recreational use, it only means the suit will not advance in court if certain conditions hold true. Thus, the trail manager/owner may incur costs to defend himself or herself. Such costs are the principal reason for purchasing liability insurance.

A list of most state RUSs can be found in the appendix. It is useful to obtain a copy of your state's RUS to discover its peculiarities as well as to find out the extent to which it has been tested in court.

## PUBLIC AGENCY LIABILITY

As stated in the introduction, governments (federal, state, and local) can also find protection from lawsuits under Sovereign Immunity. The concept holds that the sovereign entity (the government) is generally immune from liability. However, the federal government and most state and local governments have waived this privilege of immunity, in many contexts, including trail user injuries, by enacting a Tort Claims Act. Such acts stipulate that the government can be held responsible for negligence under some circumstances

(Goldstein 1997, p. 793). A list of tort claims acts is in the appendix.

At the federal level, the Federal Tort Claims Act serves as a basis for the federal government's liability and many state Tort Claims Acts follow the content of the federal version. These laws lay out the limit of a state's liability and in some states the recreational use statute serves as a protection for public entities.

The Federal Tort Claims Act defines the instances under which the federal government is liable which are similar to the liability of a private individual.

The state Tort Claims Act defines the scope of liability for each state and usually pertains to the county and municipal levels of that state as well. Some states have followed the Federal Tort Claims Act and hold agencies to the same liability standards as private individuals. In these states, the RUS often applies to the public entity as well. In other states where there is a State Tort Claims Act, it will control the definition of liability under recreational circumstances. Lastly, some states have gone beyond the RUS and have enacted a law specifically to address public liability on recreational lands including on trails.

## INSURANCE

Insurance is the last line of defense. While the above laws may mean a lawsuit does not ultimately prevail in the courts, they cannot prevent a suit from being filed. Insurance is necessary for both trail owners/managers as well as adjacent landowners. Fortunately, both tend to have insurance already. Most trails are owned and operated by a public entity such as a parks department. Under this structure, the responsible entity most often is covered by an umbrella insurance policy that protects all municipal activities and facilities. Such entities are self-insured. Some trails are owned by non-governmental organizations. In this case, the organization should purchase a comprehensive liability insurance policy.

These policies can be purchased from some insurance agencies, although such policies can be hard to come by. For example, Lake States Insurance, which insures the Leelanau Trail, does so only because the trail is local. Conversations held with representatives of the agency indicate that insurance has never been brought into any activity resulting from injuries on the trail. The insurance

agency recommends that trail groups carry liability insurance, workman's compensation insurance if they have any employees, and insurance to protect any equipment the group may own from vandalism, theft, or fire. The basic coverage in this case is \$1 million per occurrence. This costs the trail group about \$1,100 per year. The premium rates are based primarily on the length of the trail as well as any infrastructure associated with the trail.

The official person or organization responsible for maintaining the trail is most vulnerable to a lawsuit should an injury occur. The responsible management entity must have a liability policy sufficient in scope to cover the costs of a jury award. The policy should also provide for the insurer to cover the costs of defending a suit for injury. The management entity must be prepared to pay for the costs of defending a suit no matter how groundless (BCEMC 1997, p. 60).

Private land trusts may especially be concerned with obtaining liability insurance, if for no other reason than to cover attorney's fees. There are at least six different types of coverage to consider (LTA 1991, p. 9):

1. Comprehensive general liability;
2. Non-owned automobile liability for liability in excess of the auto owner's limits for work associated with your organization's property;
3. Property and owned assets insurance covering buildings and personal property, if any, at the site;
4. Volunteer worker accident insurance;
5. Workers compensation/employer liability insurance if you have a paid staff;
6. Association or "directors' and officers'" liability insurance.

If economical insurance is not available, your organization may be able to join Land Trust Exchange (LTE). Member land trusts can obtain economical insurance in all six categories. Check with the Land Trust Alliance in Washington, D.C. ([www.lta.org](http://www.lta.org)).

While the class of person and the recreation use statutes may afford protection against a successful lawsuit, these safeguards do not prohibit a liability suit from being filed. This is why private land owners as well as public entities alike main-

tain some level of general liability insurance that can be used for defending against such suits.

## RISK MANAGEMENT

All of the above mentioned forms of protection aside, perhaps the best defense a trail manager has is a sound policy and practice for trail maintenance and usage. Developing a comprehensive management plan that uses risk management techniques is the best defense against an injury-related lawsuit (BCEMC 1997, p. 60).

Trails that are properly designed and maintained go a long way to warding off any potential liability. There are some general design guidelines (AASHTO and MUTCD)<sup>6</sup> that, if adhered to, can provide protection by showing that conventional standards were used in designing and building the trail. Trails that are designed in accordance with recognized standards or “best practices” may be able to take advantage of any design immunities under state law. Within the spectrum of public facilities, trails are quite safe, often less risky than roads, swimming pools, and playgrounds.

The managing agency should also develop a comprehensive maintenance plan that provides for regular maintenance and inspection. These procedures should be spelled out in detail in a trail management handbook and a record should be kept of each inspection including what was discovered and any corrective action taken. The trail manager should attempt to warn of or eliminate any hazardous situations before an injury occurs. Private landowners that provide public easements for a trail should ensure that such management



Trail managers cite warning signs as a good risk management technique.

plans are in place and used to reduce their own liability. Key points include (BCEMC 1997, p. 57); (LTA 1991, p. 8):

During trail design and development:

- ▼ Develop an inventory of potential hazards along the corridor;
- ▼ Create a list of users that will be permitted on the trail and the risks associated with each;
- ▼ Identify all applicable laws;
- ▼ Design and location of the trail such that obvious dangers are avoided. Provide warnings of potential hazards to the extent possible;
- ▼ Complete trail design and construction by persons who are knowledgeable about design guidelines, such as those listed in AASHTO and MUTCD documents;
- ▼ Post and enforce trail regulations.

Once the trail is open for use:

- ▼ Regular inspection of the trail by a qualified person who has the expertise to identify hazardous conditions and maintenance problems;
- ▼ Correct and document maintenance problems quickly. Where a problem cannot be promptly corrected, provide warnings to trail users;
- ▼ Develop procedures for handling medical emergencies. Document these procedures as well as any occurrence of medical emergencies;
- ▼ Maintain records of all inspections, what was found, and what was done about it. Photographs of found hazardous conditions can be useful.

These risk management techniques will not only help to ensure that hazardous conditions are identified and corrected in a timely manner, thereby averting injury to trail users, but will also serve to protect the trail owner and managing agency from liability. Showing that the agency had been acting in a responsible manner can serve as an excellent defense in the event that a lawsuit develops (BCEMC 1997, p. 58).





Sixty-one rails-with-trails now operate safely in the United States. For more information, see *RAILS-WITH-TRAILS*, by Rails-to-Trails Conservancy. Photo by Gwen Loose.

## MANAGING SPECIAL SITUATIONS

The following are circumstances that Rails-to-Trails Conservancy has heard about through numerous conversations with local trail advocates who have expressed concern about situations that might present themselves. For the most part, these situations can be addressed through management techniques.

### RAILS-WITH-TRAILS:

A variation on rails-to-trails is rails-with-trails where a trail is built along an active rail line. Sixty-one such trails exist today and there has been scant evidence of conflicts between trail users and trains (RTC, 2000). Nonetheless, railroad companies are often hesitant to place people in such close proximity to their locomotives. While this issue is a sticking point for many such projects, several projects have provided the railroad company complete indemnification with regard to any accidents that involve trail users.<sup>7</sup> In theory, depending on the state and the facts, a Recreational Use Statute should protect the railroad in this situation. At the time of publication, however, we could not confirm that this had been tested in court.

### PESTICIDES FROM ADJACENT FARMS:

Many rail-trails traverse rural countryside and active farmland. Questions have been raised (though no incidents reported to Rail-to-Trails Conservancy) about trail users being contaminated with pesticidal spray. While a farmer may technically be liable for such an incident because it is generally unlawful to conduct a hazardous activity that can migrate onto adjacent property, simple warnings to trail users can be used to avoid such conflicts. Because such spraying is only a periodic activity, farmers can provide trail managers with notification of when such activity will occur and the trail manager can place warning signs at the trailheads. See the Marsh Creek Trail case study on page 14.

### HUNTING ADJACENT TO TRAILS:

Some trails traverse public and/or private land that, may at certain periods permit hunting. Such proximity can expose trail users to potential injury. Like pesticide use/application hunting tends to take place at limited times during the year. Thus a similar mitigation technique can be used: post signs at the trailheads when hunting season is open.



Using volunteers is a great way to keep your trail operating smoothly and create a feeling of community ownership. (Dave Dionne)

## USE OF VOLUNTEERS FOR TRAIL WORK:

Trail managers often use volunteers for routine trail maintenance or even for trail construction. What happens if the volunteer is injured while performing trail-related work? What happens if an action taken by a volunteer leads to an injury of a trail user? First, make sure your insurance covers volunteer workers. Second, the trail manager should be protected from any user injury created by an act of a volunteer provided the act is not one of willful or reckless misconduct. The volunteer worker is protected by the Federal Volunteer Protection Act of 1997. This act protects volunteers of nonprofit organizations or governmental entities. The Act states that such volunteers are not liable for harm caused by their acts of commission or omission provided the act was in good faith.

## RAILROAD HAZARDOUS MATERIAL REMAINS:

Concern over the remnants of railroad operations are often raised when a trail is proposed for development. Railroads often used toxic substances in their operations and then there is the occasional accidental spill. Provided the trail owning/managing agency practices “due diligence” prior to acquiring and developing the corridor and no hazardous items were discovered at that time, the trail owner would probably not be considered liable for and toxic substances discovered subsequently.

Since hidden environmental hazards may exist within the corridor, it is a good idea to hire an environmental engineer to conduct an environ-

mental assessment of the property before it is purchased. The nature of the assessment will depend on the property and the potential for contamination but should include at a minimum the equivalent of a Phase I assessment.

A Phase I assessment combines research into the property’s history with a visual inspection. Courthouse records, title abstracts, historic aerial photographs, and newspaper accounts that offer background on the past uses of the site might provide some insight into the property’s history. Interviews with local government representatives, adjacent landowners, and state and federal officials may also uncover historical events about which the current railroad knows nothing.

A Phase II assessment involves more thorough testing of water, air, and soil samples, as well as a more thorough investigation of the site. If contamination is found, a Phase III assessment will provide the remediation plan for clean-up.

While the techniques for identifying environmental contamination have become increasingly sophisticated, the cost and responsibility for clean-up and restoration are less clear. Federal law targets past and present owners, operators, transporters and generators of hazardous substances. Assigning responsibility and collecting money for clean-up is complicated by the history of contamination and the likelihood that the original contaminators may no longer be traceable, or if they still exist, do not have the financial capacity to pay for clean-up. Although the railroad has certain responsibilities as the property owner, do not be surprised if the railroad’s representative(s) want to include clean-up costs as a negotiating point.

Overall, an environmental assessment can cost anywhere from a few thousand dollars to more than \$20,000 if extensive soil and water samples are taken over a broad area. The assessment and its results can quickly become a critical issue in negotiations to acquire the property. Before you take title to the property, make sure the purchase contract clearly states who will pay for any environmental problems that have been discovered. See warranties and representations from the railroad that indicate there is no known contamination, or if that is not the case, that disclose the actual situation and plans for remediation.

# III. RESULTS FROM THE REAL WORLD

Theory and practice are often two very different worlds. Fortunately, in the case of trails and liability risk, theory has translated into effective practice. This section first presents the results of a trail manager survey conducted by Rails-to-Trails Conservancy in the fall of 1997. Second, a series of brief case studies show how trails managers have dealt with some of the issues raised above.

## FINDINGS FROM RTC'S TRAIL MANAGER SURVEY

In 1997, Rails-to-Trails Conservancy surveyed many rail-trail managers to ascertain, among other things, their experience with legal issues. The results of the survey show that from 1995 to 1996 only 19 of the 362 trails studied reported any claims. Of those 19 claims, only two involved instances where private property owners had suits filed against them.

The survey showed that 213 of the 362 trails were covered under a general umbrella policy or a trail specific policy. Eighty-eight trails were not covered at all and the contacts for the remaining 61 trails were unsure if the trail was covered. There were 203 responses to the question concerning the type of policy covering the trail, whether it be a trail specific policy, or an umbrella policy. Out of these trails, 192 of them were covered under a general umbrella policy, and the remaining 11 under a trail specific policy. The extra cost for a trail specific policy ranged from roughly \$1,000 to \$4,500 annually. Very few responded to what exactly the pay-out limit on the policies is, but those who did respond indicated a range from \$300,000 to \$5,000,000 per individual and \$500,000 to \$5,000,000 per year.

Several trails reported a total of 19 claims over a two-year period. These claims ranged from snowmobilers hitting posts to cattle from adjacent farms breaking onto the trail and knocking over

bicyclists. All but two of these cases were covered under the trail's insurance policy. There were two cases in which nearby landowners were sued. The first suit was brought about when a homeowner planted a bush on the curve of the trail such that a biker, unable to see around a corner, hit an on-coming biker. The second suit was due to an accident. Cases such as the first are of concern to trail managers who, on occasion, have discussed their concerns with adjacent landowners to encourage them to remove fences, sheds, gardens and other obstructions from trail property.



## CASE STUDIES

The liability concerns of a trail manager can be divided into two categories: generic and situational. Generic liability concerns are those that all trail managers face and usually pertain to a trail user getting hurt. Situational liability concerns are a function of the trail location. For instance, a trail through farmland raises concerns about trail users interacting with livestock or pesticide contamination. Trails through public or private wild lands can have issues regarding hunting. These case studies aim to illustrate real strategies trail managers use to mitigate their liability in a variety of situations.

### THE COWBOY TRAIL

*320 miles (when complete) through  
Nebraska farmland.*

Larry Voecks took over management of the Cowboy Trail project in 1996. Four years later, 50 miles of the trail are open for public use, in three sections. Much of the trail traverses rural Nebraska farmland and the concerns of the farmers have been an issue from day one. The farmers were worried about the liability issues that trail users would create by crossing onto their property and using stock tanks or stock dams to bath in or drink from, get in trouble with a bull, or try to pet calves and otherwise harass livestock. Voecks has spent much of his time educating the adjacent landowners about the various legal mechanisms that would protect them if a trail user were injured on their property, including discussions of trespassing laws and the state's recreational use statute. Now that pieces of the trail have been operating for a couple of years, Voecks says that he still hears these concerns from time-to-time but not as frequently as he used to. The state also recently passed legislation to provide the adjoining landowner with the ability to obtain new fencing and fence materials from the state. The legislation defined these fences as being designed to exclude intruders. In an interesting twist to the trespass protection, Voecks suggested that it is possible that if an adjacent landowner sees a trail user on his land and does not communicate to the trail user that they are trespassing then that lack of response could be construed as tacit approval for being there.

With regard to the state's liability for trail operations, Voecks feels adequately protected there as well through a thorough signage program. Signs with trail rules are posted at all access points and at every location where trail passes are sold. Further, signs on the trail suggest that trail users dismount at bridges and at road crossings.

Should the trail managing agency be sued, Voecks says they are insured by the state. Happily, however, Voecks says that in the three years since the opening of the first section of the Cowboy Trail neither the State Game and Parks Commission nor adjacent land owners have had a suit brought against them.

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Hugh Morris



## MARSH CREEK TRAIL

*6.5 miles through rural Contra Costa County, California*

When the East Bay Regional Park District set out to create the Marsh Creek Trail, they encountered some resistance from farmers who own land adjacent to the trail. The farmers worried about their liability because they periodically spray their crops with pesticides and felt that such operations would endanger trail users and that they would be held liable for any harm. To address these concerns, the East Bay Regional Park District (EBRPD) set out to convince the farmers that they could work together to responsibly operate the trail in a way that would protect trail users from spraying and thus, in turn, protect the farmers. The first step was to write language into the trail master plan that said that the EBRPD would close the trail whenever the farmers told them they were going to apply pesticides. This is not a major inconvenience as most farmers make such applications once or twice a year. This system appealed to some of the farmers and the EBRPD was able to open up a section of the trail. To date the system has worked well. There are still some sections of the trail that are not open because farmers have not yet been convinced. But the EBRPD indicates that having some farmers buy into the plan has helped convince other farmers to sign-on as well; thus more trail has opened as the operational experience has proved positive.

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## BALTIMORE & ANNAPOLIS TRAIL PARK

*14 miles through suburban Maryland*

Dave Dionne has been managing the Baltimore & Annapolis Trail for thirteen years. The B&A Trail runs nearly 14 miles from Baltimore, MD to Annapolis, MD. It has an asphalt surface and runs primarily through suburban areas with both residential and commercial land uses bordering the trail. Dionne says that he and his staff keep meticulous notes about their management activities. They patrol the trail twice a day and document what they find. If they find a hazard they either correct it on the spot or provide warnings to trail users until it can be corrected. This thorough management style has paid off for Dionne several times. He reports that on three occasions a trail user has been injured on the trail and proceeded with a lawsuit against the park authority. In each case, when the plaintiff's lawyers discovered the meticulous methods used by Dionne and his staff to ensure a consistently safe experience for trail users the lawyers have backed off the case because they knew that the trail manager had been acting in a prudent manner.

Dionne also developed a volunteer trail patrol program. These volunteers help trail users in need and also report any unpermitted uses, crime, and maintenance needs to the park headquarters. The patrol consists of approximately thirty volunteer Trailblazers, ranging in age from eleven to seventy-eight. These folks receive three weekends of training for first aid, CPR, and patrol technique from the park rangers. They patrol the trail by foot, bike, and in-line skate. The Trailblazers supplement the park rangers' daily patrols.

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## IV. CONCLUSIONS

General surveys of rail-trail managers conducted by Rails-to-Trails Conservancy indicate that rail-trails have not posed significant problems from the point of view of legal liability. This probably reflects the fact that trail managers are generally taking appropriate action to design, construct, and maintain recreational trails in a fashion which takes into account the safety of trail users.

In addition, it reflects that most trails are safer for bicycle and pedestrian use than the major alternatives such as public highways and roads. This point can be put another way: the risks of liability for bicycle and pedestrian use of trails are less than those associated with similar use of streets and highways. The reason is the user is less likely to be hit by a car or to run afoul of the detritus thrown from cars or other vehicles when the user is on a trail where such vehicles are prohibited. Indeed, the relative safety of trails is one of the major reasons that they are so popular with pedestrians and cyclists (Montagne 1989, p. 132).

In sum, there are no special or surprising problems associated with rail-trails or trails in general from the point of view of legal liability or risk management. The laws that protect adjacent landowners as well as trail managers, coupled with strategies for designing and managing a trail, should provide ample protection for trail managers and adjacent land owners alike from a successful lawsuit.

The key, as pointed out in the case studies, is to design and manage a trail according to generally accepted guidelines. That, coupled with a sound management policy that involves regular inspection of the trail and thorough documentation of those inspections and any resulting actions, appears to provide a sound defense should an accident occur. Permanent and as-needed warning signs provide trail users with the information they need to act responsibly and safely.



## APPENDIX I: A GENERAL REVIEW OF TORT LAW<sup>8</sup>

Common law consists of three major parts: property, contract, and tort. Property law governs the acquisition of rights persons have in external things and even in themselves. Contract law governs the transfer of rights so acquired and protected. Tort law governs the protection of things reduced to private ownership. Questions of liability for accidents or injuries on trails, or otherwise, are a matter of the law of torts—literally “civil wrongs.” Tort law is sometimes called the law of accidents, even though it encompasses liability for intentional misconduct as well (Montange 1989, p. 125).

Under the tort law of most states, one person (Person A) may be liable to another person (Person B) for an accident if three factors are demonstrated: 1) that Person B was injured, 2) that Person B’s injury was “proximately caused” by Person A’s action or inaction, and 3) that Person A’s action or inaction which proximately caused Person B’s injury violated an applicable “standard” or “duty” of care to the class of which Person B is a part (see page 6 for discussion of this concept). The injury may be property loss, physical injury, or, in some cases, mental trauma (“pain and suffering”). The question of proximate cause relates to when responsibility ends, and tends to be case specific. However, much can be said about the question of standard of care and related matters (Montange 1989, p. 125).

The most general standard of care is the so-called “negligence” or “fault” standard. Under this standard, Person A owes Person B a duty to “do what a reasonable person would do under similar circumstances.” In the case of a trail, this translates into an obligation to design, construct, and maintain the trail as a reasonably prudent trail manager would do. When the conduct that is allegedly the cause of the harm involves activities which are ordinary, the standard is that of a “reasonable person” and is decided by the jury without the expert guidance of what is reasonable. If the activity is somewhat out of the ordinary, the standard of care (i.e., the balance for determining whether the conduct was negligent) is often established by expert testimony. If the conduct violates

an applicable law, however, some states deem it to be negligence *per se* or at least evidence of negligence (Montange 1989, p. 126).

“Contributory negligence” is a classic general defense to tort claims. Suppose Person B sues Person A alleging breach of standard of care by Person A proximately causing Person B’s injury. Person A responds that Person B was contributorily negligent, that is, that Person B would not have sustained the injury but for his own misconduct, such as failure to heed a posted warning to walk one’s bicycle across a bridge, climbing over a fence, or going too fast. Contributory negligence, if proved, would bar a recovery under classic tort law. However, the contributory negligence defense has tended to shift in some states to a comparative negligence standard. Under this standard, the trier of fact (usually the jury unless both parties elect a trial to the judge) must assign weights to the relative negligence of both sides. The parties are then responsible for their share of the overall negligence. For example, suppose again the scenario of Person B suing Person A, with Person A asserting that Person B failed to heed a warning. The jury, depending on the evidence, may determine that it was unreasonable for Person A not to afford a better warning, but that it was unreasonable for Person B to be so oblivious to the warning posted by Person A. The jury accordingly finds each side 50% responsible. In some states following strict contributory negligence rules, this may mean no financial liability on the part of Person A. Other states may require Person A to compensate Person B for the relevant percentage of B’s loss; still others will do so only if Person A is found more than 50% responsible (Montange 1989, p. 126).

Governments, such as the United States government, were generally immune from liability (so-called “sovereign immunity”), except to the extent that they have waived such protection. The federal government, again generally speaking, has waived immunity for purposes considered here. Under the Federal Tort Claims Act, the United States is liable for tort claims “in the same manner and to the same extent as a private individual under like

circumstances...” (28 U.S.C. § 2674). Many states have similarly waived a portion of their sovereign immunity, and this waiver tends to apply to local governments as well (Montange 1989, p. 126).

It may be helpful to illustrate these principles with a concrete example. Colorado has waived a portion of its sovereign immunity through the Colorado Governmental Immunity Act (10 Colo. Rev. Stat. § 24-10-101 to -120). Under that statute, a local government may be held liable for injuries which were caused as a result of the breach of its duty to maintain a recreational trail in a reasonably safe condition for travel. The basic standard of care is the same as that applicable to city streets. The general rule in Colorado is that a city is under a duty to maintain its streets in a reasonably safe condition for travel. According to the

Colorado Supreme Court (Montange 1989, p. 127):

*This duty may be satisfied in one of two ways: When the city knows or, in the exercise of reasonable care, should know of a defect or dangerous condition in its streets it must either 1) repair or remedy the defect, or 2) exercise reasonable care to give adequate warning of the existence of the condition to the users of its streets (Wollman, supra).*

If the defective condition arose due to the action of a third party, the third party may of course be liable for his or her acts and omissions that proximately caused the injury (Montange 1989, p. 127).

## APPENDIX II: GLOSSARY (DRAKE, 1995)

**Contributory Negligence:** If the injured party (plaintiff) was not acting in a reasonable and prudent manner, he or she may be shown to have contributed to the cause of the accident. This “contributory negligence” often results in rulings against the plaintiff.

**Deep Pocket:** Well-insured and well-funded organizations and individuals are considered by some plaintiffs to be likely sources for court settlements. They are said to have “deep pockets”. Often plaintiff’s attorneys bring cases against “deep pocket” agencies, corporations or individuals in an effort to maximize settlement amounts.

**Defendant:** The party charged with causing the loss.

**Discoverable:** The degree to which the defendant agency or individual was aware of or could have reasonably “discovered” the condition that most directly contributed to the accident. The longer the agency can be proved to have knowledge of the condition, the more “discoverable” it is. The longer the “discoverable” condition is present and not corrected, the greater the risk of an accident and the weaker a defendant agency’s case generally becomes.

**Duty:** Before “negligence” can be proven, courts first determine if the subject agency or individual had a “duty” to provide for the injured party in some way. This is one of the easiest elements to prove since by definition agencies exist to provide specified services and facilities.

**Liability:** “Liability” indicated “responsibility.” If the actions or duties of an individual, agency, or corporation lead to a loss, that party can be held responsible for the loss.

**Negligence:** An act or omission within the scope of the duties of an individual, agency, corporation, or other organization that leads to harm of a person or the public is said to be “negligence”. Negligence must be proved. Public and private professionals are expected to exercise “ordinary care” in performance of their duties and to be “reasonable and prudent” in their actions.

**Ordinary Care:** Courts base settlements on the level of care that a reasonably experienced and prudent professional or other individual would have taken in the same or similar event, action, or circumstances. This level of care is referred to as “ordinary care”. Ordinary care is distinguished legally from “extra-ordinary care” which parties are not expected to meet. Standards for separating “ordinary” from “extra-ordinary” are based on the expectation that 85% of travelers operate in a responsible manner (the “85th Percentile Rule”).

**Plaintiff:** The party that suffered the loss.

**Proximate Cause:** The most direct omission or act of “negligence” leading to damage and/or an injury is considered the most immediate, or “proximate cause”.

**Reasonable and Prudent:** All parties are expected to exercise responsibility, a basic level of skill and judgment in their actions. When they do, they are considered to be acting in a “reasonable and prudent” manner. When they do not, either party (plaintiff or defense) may be found liable for actions that caused or contributed to the injury or loss or harming another.

**Sovereign Immunity:** An agency that has full “sovereign immunity” is not required to pay settlements. Starting in the 1950s, courts began to erode government immunity, exposing them to significant court settlements. Since that time, the trend in the U.S. is to make governments responsible for their actions. Many states, but few cities, have partial immunity. This immunity puts a cap on how much can be awarded or limits exposure to certain areas such as maintenance and operations.

**Tort:** A wrongful act, not including breach of contract or trust, that results in injury to another’s person, property or the like and for which the injured party is entitled to compensation.

## APPENDIX III: STATE TORT CLAIMS ACTS AND RECREATIONAL USE STATUTES

Note: This chart is meant only as a guide. Statutes are frequently amended.

State	Tort Claims Act	Recreation Use Statute
Alabama	Code of Ala. §§ 41-9-62 et seq. Code of Ala. §§ 11-93-1 et seq.	Ala. Code Sec. § 35-15-1
Alaska	Alaska Stat. §§ 09.50.250 et seq.	Ak. Stat. Sec. 09.45.795
Arizona	Ariz. Rev. Stat. Ann. §§ 12-820 et seq.	Az Rev. Stat. Ann. Sec. § 33-1551
Arkansas	Ark. Code 1987 §§ 21-9-201 et seq.	Ar. Stat. Ann. Sec. 50-1101 to 1107
California	Cal. Tort Claims Act, Deering's Cal. Gov. Code §§ 810-996.6 et seq.	Ca Gov't Code Sec. 846
Colorado	Colo. Governmental Immunity Act, Colo. Rev. Stat. §§ 24-10-101 et seq.	Co Rev. Stat. Sec. 33-41-101 to 106
Connecticut	Conn. Gen Stat. Ch 53 §§ 4-141 et seq. (administrative claims procedure).	Gen. State Sec. 52-557 f to k
Delaware	Del. Tort Claims Act, Del. Code Ann. Tit. 10, Ch 40 §§ 4001 et seq. (state and local).	De Code Ann. Title 7 Sec. 5901 to 5907
District of Columbia	D.C. Code §§ 1-1201 et seq.	Unknown
Florida	Fl. Tort Claims Act, Fla. Stat. §§ 768.28 et seq.	Fl State Ann. Sec. 375.251
Georgia	Official Code of Ga. Ann. §§ 36-33-1 et seq.	Ga Code Ann. Sec. 51-3-20 to 26
Hawaii	Hi. Rev. Stat. §§ 662-2 et seq. (State).	Hi Rev. Stat. Sec. 520-1 to 8
Idaho	Id. Code §§ 6-901 et seq.	Id Code Sec. 36-1601 to 1604
Illinois	Court of Claims Act, Ill. Rev. Stat. Ch 37 ¶ 439.8 (state); Ill. Rev. Stat. Ch 85 ¶¶ 1-101 to 10-101 (local gov't. units).	Il Ann. Stat. Ch 70 Sec. 31 to 37
Indiana	Ind. Tort Claims Act., Ind. Code §§ 34-4-16.5-1 et seq.	In. Code Ann. Sec. 14-2-6-3
Iowa	Ia. Tort Claims Act, Ch 25A (state); Tort Liability of Governmental subdivisions, Ch 613A.	Ia Code Ann. Sec. 111C.1 to .7
Kansas	Kan. Stat. Ann. §§ 75-6101 et seq.	Ks Stat. Ann. Sec. 58-3201 to 3207
Kentucky	Ky Board of Claims against the Commonwealth, Ky. Rev. Stat. §§ 44.070 et seq.	Ky Rev. Stat. Ann. Sec. 150.645 & 411.190
Louisiana	LA Const. Any. 12§ 10	La Rev. Stat. Ann. Sec. 2791 & 2795
Maine	Me. Tort Claims Act, Me. Rev. Stat. Ann. §§ 14-8101 et seq.	Me Rev. Stat. Ann. Title 14. Sec. 159-A
Maryland	Md. Tort Claims Act, Ann. Code of Md., S.G. §§ 12-101 et seq. (state gov't); CJ §§ 5-401 et seq. (local gov't).	Md Nat. Res. Code Ann. NR Sec. 5-1101 to 1108
Massachusetts	Ma. Tort Claims Act, Ann. Laws of Ma., Ch 258.	Ma Gen. Law Ann. Ch 21 Sec. 17c
Michigan	Mi. Comp. Laws §§ 691.1401-691.1415.	Mi Comp. Laws Ann. Sec. 324.73301
Minnesota	Mn. Tort Claims Act, Mn. Stat. Ann. §§ 3.736 et seq. (state); Mn. Stat. Ann. §§ 466.01 et seq. (local).	Mn Stat. Ann. Sec. 87.01-.03
Mississippi	MS Code Ann. §§ 11-46-1 to 11-46-16	Ms Code Ann. Sec. 89-2-1 to 7, 21-27
Missouri	Mo. Stat. §§ 537.600 et seq.	Ch 357 Sec. 537.345-.348
Montana	Mt. Comprehensive State Insurance Plan and Tort Claims Act, Mt. Code Ann. §§ 2-9-101 et seq. (state and local). Municipal immunity is waived pursuant to Mt. Code Ann. § 7-1-4125, which refers to the tort claims act.	Mt Rev. Code Ann. Sec. 70-16-301, 302
Nebraska	Ne. State Tort Claims Act, R.R.S. §§ 81-8,029 et seq.; Political Subdivisions Tort Claims Act. §§ 23-2401 et seq.	Ne Rev. Stat. Sec. 37-1001 to 1008



State	Tort Claims Act	Recreation Use Statute
Nevada	Nv. Rev. Stat. §§ 23-2401 et seq.	Nv Rev. Stat. Sec. 41.510
New Hampshire	NH Rev. Stat. Ann. §§ 541-B: 1 et seq. (administrative claims against the state; political subdivisions excluded).	NH Rev. Stat. Ann. Sec. 212.34
New Jersey	NJSA 59:1-1 et seq.	NJ Stat. Ann. Sec. 2A:42A-1 to 7
New Mexico	NMSA 27 §§ 41-4-1 to 41-4-27.	NM Stat. Ann. Sec. 16-3-9: 17-4-7
New York	CLS, Court of Claims Act § 8.	NY Gen. Oblig. Law Sec. 9-103
North Carolina	NC Gen. Stat. §§ 143-291 to 143-300.1	NC Gen Stat. Sec. 113A-95
North Dakota	NDCC Ch 32-12.1 (Chapter 303, S.L. 1977), applicable to political subdivisions of state.	ND Cent. Code Sec. 53-08-1 to 06
Ohio	Court of Claims Act, RC Ch 2743, applicable only to the state and its agencies or instrumentalities. Political Subdivisions Act, RC Ch 2744 applicable to political subdivisions of state.	Oh Rev. Code Ann. Sec. 1533.18; 1533.181
Oklahoma	Ok. Political Subdivision Tort Claims Act, 51 Ok. Stat. Supp. §§ 151 et seq.	Ok Stat. Ann. Title 76 Sec. 10 to 15
Oregon	Or. Rev. Stat. §§ 30.260-30.300; 30.265(2) (state and subdivisions).	Or Rev. Stat. Sec. 105.655 to .680
Pennsylvania	1 Pa. Consol. Stat. § 2310 (commonwealth); 42 Pa. Consol. Stat §§ 8541 et seq. (local Agencies); Pa. Rules of Civ. Proc. 2101 et seq. (commonwealth and political subdivisions).	Pa Stat. Ann. Title 68 Sec. 477-1 to 8
Rhode Island	RI. Gen. Laws Ann. §§ 9-31-1 et seq. (state and subdivisions).	RI Gen. Law Sec. 32-6-1 to 7
South Carolina	SC Tort Claims Act, SC Code §§ 15-78-10 et seq. (state and local).	SC Code Ann. Sec. 27-3-10 to 70
South Dakota	SD Cod. Laws 3-21-1 et seq. (state).	SD Comp. Laws Ann. Sec. 20-9-12 to 18
Tennessee	Tn. State Board of Claims Act, Tn. Code Ann. §§ 9-8-101 et seq. (administrative claims procedure against state); Tn. Governmental Tort Liability Act, T.C.A. §§ 29-20-101 et seq., applicable only to units of local government and not to the state.	Tn Code Ann. Sec. 70-7-101 to 104; Sec. 11-10-101 to 104
Texas	Tx. Rev. Civ. Stat. Ann. Art. 6252-19.	Civ. Prac. & Rem. Code Sec. 75.001 to .003
Utah	Ut. Governmental Immunity Act, Ut. Code Ann. §§ 63-30-1 to 63-30-34.	Ut Code Ann. Sec. 57-14-1 to 7
Vermont	Vt. State Tort Claims Act, Vt. Stat. Ann. 12 §§ 5601 et seq. (state).	Vt Stat. Ann. Title 10 Sec. 5212
Virginia	Va. Tort Claims Act. Code of Va. §§ 8.01-195.1 et seq. (state); Code of Va. § 8.01-222 (notice of claim to cities and towns).	Va Code Sec. 29.1-509
Washington	Wa. Rev. Code Ann. § 4.92.090 (state and subdivisions).	Wa Rev. Code Ann. Sec. 4-24.200 & .210
West Virginia	WV Court of Claims Act, WV Code §§ 14-2-1 et seq. (state); Governmental Tort Claims and Insurance Reform Act, WV Code §§ 29-12A-1 et seq. (political subdivisions).	WV Code Sec. 19-25-1 to 5
Wisconsin	Wi. Stat. Ann. § 893.80.	Wi Stat. Ann. Sec. 895.52
Wyoming	WY stat. § 1-39-101 to 1-39-118	Wy Stat. Ann. Sec. 34-19-101
Source: Tort Claims Act cites: "Landowner Liability." International Mountain Bicycling Association. Recreational Use Statute cites: Montange, C., 1989. "Preserving Abandoned Railroad Rights-of-Way for Public Use: A Legal Manual." Rails-to-Trails Conservancy, Washington, D.C.		

## ENDNOTES

<sup>1</sup> There is a long history in the United States of private landowners allowing public use of their land for recreation. This can happen in an informal way such as for hunting or fishing, or in a more formal way where a trail is established.

<sup>2</sup> Sometimes federal law will relate to the issue. For example, if a former railroad right-of-way is being used for interim trail purposes pursuant to a Surface Transportation Board order implementing section 8(d) of the National Trails System Act, the interim trail user may indemnify or otherwise hold the railroad harmless from legal liability.

<sup>3</sup> Recreational Use Statutes protect the property “owner.” While the definition of “owner” can vary somewhat from state to state, most define it broadly to include the legal owner of the land, a tenant, lessee, occupant, or person in control of the premises. Some statutes specifically include public entities in the definition of owner while other states specifically exclude public entities, while still others have left it for the courts to decide.

<sup>4</sup> In most states, Recreational Use Statutes apply to both land and water areas as well as to buildings, structures, and other items on the land.

<sup>5</sup> Most states define recreational use in the statute by listing a broad range of activities such as swimming and hiking and may even include the phrase “includes, but is not limited to” in order to prevent as narrow interpretation of the term recreation.

<sup>6</sup> “Guide for the Development of Bicycle Facilities.” American Association of State Highway and Transportation Officials, 1999. More information about AASHTO can be found at: [www.aashto.org](http://www.aashto.org). Manual on Uniform Traffic Control Devices. More details of the MUTCD can be found at: [www.ohs.fhwa.dot.gov/devices/mutcd.html](http://www.ohs.fhwa.dot.gov/devices/mutcd.html).

<sup>7</sup> See “Rails-with-Trails: Design, Management, and Operating Characteristics of 61 Trails Along Active Railroads.” Published by the Rails-to-Trails Conservancy, September 2000.

<sup>8</sup> This section of the report draws directly from a prior Rails-to-Trails Conservancy Publication, *Preserving Abandoned Railroad Rights-of-Way for Public Use: A Legal Manual*. See the reference section for full citation. This publication is no longer in print.

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- RTC, 2000. "Rails-with-Trails: Design, Management, and Operating Characteristics of 61 Trails Along Active Rail Lines." Rails-to-Trails Conservancy. Washington, D.C., 2000.
- TCRP, 1998. "Strategies to Minimize Liability under Federal and State Environmental Laws." Transit Cooperative Research Program, Legal Research Digest. Transportation Research Board, National Research Council, Washington, D.C.

## RESOURCES

- "Guide for the Development of Bicycle Facilities." American Association of State Highway and Transportation Officials. Washington, D.C., 1999. ISBN 1-56051-102-8.
- "Manual of Uniform Traffic Control Devices." Federal Highway Administration, U.S. Department of Transportation, Washington, D.C., 1988.
- "Trails for the Twenty-First Century." Island Press, Washington, D.C., December 2000.





**Rails-to-Trails Conservancy**

1100 Seventeenth Street, NW  
Washington, DC 20036

Tel: 202-331-9696 • Fax: 202-331-9680

Web site: [www.railstotrails.org](http://www.railstotrails.org)



**National Park Service**

Rivers, Trails and Conservation  
Assistance Program

1849 C Street, NW, Room 3606  
Washington, DC 20240-0001

Tel: 202-565-1200 • Fax: 202-565-1204

Web site: [www.ncrc.nps.gov/rtca/](http://www.ncrc.nps.gov/rtca/)

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## **5.0 Potential Construction Costs**

We have coordinated with a local contractor, Acella Construction to prepare a potential construction cost evaluation for each Section of the Trail Corridor. Pricing has been developed by evaluating previous budgets provided by Town of Rockland DPW for the construction work completed on the Rockland Rail Trail projects as well as construction estimates provided by Acella Construction.



## Potential Construction Costs

20-Jan-21

### West Segment - Rockland Line through Hanover Street/Circuit Street to Drinkwater River Bridge (Ellis Filed)

	Length (Miles)	Length (Feet)	
Rail Removal	0.54	2,830	
New Trail	0.69	3,652	
Relocated Trail	0.00	0	
Ex Trail Expansion	0.00	0	
Sidewalk Improv.	0.12	639	
Total Length (Linear Feet)		4291	

Misc Work		Est. Quantity	Cost
Classic Trail head Kiosk - Timberhomes Vt	\$2,550 material only	1	\$2,550.00
Mini Kiosks - Timberhomes VT	\$1,500 Material only	0	\$0.00
Fence - Wood Split Rail	\$18 / If installed	800	\$14,400.00
Fence - White Vinyl Privacy Fence	\$30 / If installed	0	\$0.00
Benches	\$300 - \$1,000	1	\$500.00
Trail Signage	TBD		\$810.00
		Total	\$18,260

\$5.00 per LF

Municipal Cost Estimate					
	Length (Miles)	Length (Feet)	Cost/Foot	Cost Estimate	Price Per Linear Foot
Rail Removal	0.54	2,830	\$0.00	\$0.00	
Trail Clearing	0.69	3,652	\$3.00	\$10,956.00	
Grading/Prep	0.69	3,652	\$3.00	\$10,956.00	
Gravel Base	0.69	3,652	\$2.50	\$9,130.00	
Paving	0.69	3,652	\$25.00	\$91,300.00	
Misc Work	0.69	3,652	\$5.00	\$18,260.00	
Sidewalk Improv.	0.12	639	\$0.00	\$0.00	
Bridge Crossing	0.01	30		\$53,682.00	
Construction Cost Estimate				\$194,284.00	\$45.28
Survey				\$12,000.00	
Design & Conservation Permitting				\$7,000.00	
Total Cost Estimate				\$213,284.00	\$49.70
Contingency 10%				<b>\$234,612.40</b>	<b>\$54.68</b>

Private Cost Estimate					
	Length (Miles)	Length (Feet)	Cost/Foot	Cost Estimate	Price Per Linear Foot
Rail Removal	0.54	2,830	\$8.00	\$22,640.00	
Trail Clearing	0.69	3,652	\$4.25	\$15,521.00	
Grading/Prep	0.69	3,652	\$7.30	\$26,659.60	
Gravel Base	0.69	3,652	\$17.43	\$63,654.36	
Paving	0.69	3,652	\$34.00	\$124,168.00	
Misc Work	0.69	3,652	\$5.00	\$18,260.00	
Sidewalk Improv.	0.12	639	\$34.00	\$21,726.00	
Bridge Crossing	0.01	30		\$53,682.00	
Construction Cost Estimate				\$346,310.96	\$80.71
Survey				\$12,000.00	
Design & Conservation Permitting				\$7,000.00	
Total Cost Estimate				\$365,310.96	\$85.13
Contingency 10%				<b>\$401,842.06</b>	<b>\$93.65</b>

#### Notes:

1. Rail removal does not account for rail credit given back to the Town - price fluctuates.
2. Rockland pricing was adjusted at 5% inflation from 2018 to 2021
3. Drinkwater River Bridge crossing span = 30 ft
4. Municipal cost estimate includes municipal involvement, with limited sidewalk improvements
5. Private cost estimate includes private construction co. involvement, including additional sidewalk improvements

## Potential Construction Costs

20-Jan-21

### Central 1 Segment - Drinkwater River Bridge through Industrial Area to Mrytle Street Fields (Tindale Trail)

	Length (Miles)	Length (Feet)	
Rail Removal	0.18	976	
New Trail	0.72	3,812	
Relocated Trail	0.79	4,145	
Ex Trail Expansion	0.00	0	
Sidewalk Improv.	0.00	0	
Total Length (Linear Feet)		7957	

Misc Work		Est. Quantity	Cost
Classic Trail head Kiosk - Timberhomes Vt	\$2,550 material only	0	\$0.00
Mini Kiosks - Timberhomes VT	\$1,500 Material only	1	\$1,500.00
Fence - Wood Split Rail	\$18 / lf installed	1,800	\$32,400.00
Fence - White Vinyl Privacy Fence	\$30 / lf installed	800	\$24,000.00
Benches	\$300 - \$1,000	2	\$1,000.00
Trail Signage	TBD		\$777.50
		Total	\$59,678

\$7.50 per LF

Municipal Cost Estimate					
	Length (Miles)	Length (Feet)	Cost/Foot	Cost Estimate	Price Per Linear Foot
Rail Removal	0.18	976	\$0.00	\$0.00	
Trail Clearing	1.51	7,957	\$3.00	\$23,871.00	
Grading/Prep	1.51	7,957	\$3.00	\$23,871.00	
Gravel Base	1.51	7,957	\$2.50	\$19,892.50	
Paving	1.51	7,957	\$25.00	\$198,925.00	
Misc Work	1.51	7,957	\$7.50	\$59,677.50	
Sidewalk Improv.	0.00	0	\$0.00	\$0.00	
Bridge Crossing	0.00	0	\$0.00	\$0.00	
Construction Cost Estimate				\$326,237.00	\$41.00
Survey				\$22,000.00	
Design & Conservation Permitting				\$9,500.00	
Total Cost Estimate				\$357,737.00	\$44.96
Contingency 10%				\$393,510.70	\$49.45

Private Cost Estimate					
	Length (Miles)	Length (Feet)	Cost/Foot	Cost Estimate	Price Per Linear Foot
Rail Removal	0.18	976	\$8.00	\$7,808.00	
Trail Clearing	1.51	7,957	\$4.25	\$33,817.25	
Grading/Prep	1.51	7,957	\$7.30	\$58,086.10	
Gravel Base	1.51	7,957	\$17.43	\$138,690.51	
Paving	1.51	7,957	\$34.00	\$270,538.00	
Misc Work	1.51	7,957	\$7.50	\$59,677.50	
Sidewalk Improv.	0.00	0	\$34.00	\$0.00	
Bridge Crossing	0.00	0	\$0.00	\$0.00	
Construction Cost Estimate				\$568,617.36	\$71.46
Survey				\$22,000.00	
Design & Conservation Permitting				\$9,500.00	
Total Cost Estimate				\$600,117.36	\$75.42
Contingency 10%				\$660,129.10	\$82.96

#### Notes:

1. Rail removal does not account for rail credit given back to the Town - price fluctuates.
2. Rockland pricing was adjusted at 5% inflation from 2018 to 2021
3. Municipal cost estimate includes municipal involvement, with limited sidewalk improvements
4. Private cost estimate includes private construction co. involvement, including additional sidewalk improvements

## Potential Construction Costs

20-Jan-21

### Central 2 Segment - Mrytle Street Fields (Tindale Trail) to Luddam's Ford Park (Elm St)

	Length (Miles)	Length (Feet)
Rail Removal	0.00	0
New Trail	1.35	7,145
Relocated Trail	0.00	0
Ex Trail Expansion	0.75	3,972
Sidewalk Improv.	0.14	724
Total Length (Linear Feet)		11841

Misc Work		Est. Quantity	Cost
Classic Trail head Kiosk - Timberhomes Vt	\$2,550 material only	0	\$0.00
Mini Kiosks - Timberhomes VT	\$1,500 Material only	2	\$3,000.00
Fence - Wood Split Rail	\$18 / lf installed	1,200	\$21,600.00
Fence - White Vinyl Privacy Fence	\$30 / lf installed	600	\$18,000.00
Benches	\$300 - \$1,000	6	\$3,000.00
Trail Signage	TBD		\$1,647.25
		Total	\$47,247

\$4.25 per LF

Municipal Cost Estimate					
	Length (Miles)	Length (Feet)	Cost/Foot	Cost Estimate	Price Per Linear Foot
Rail Removal	0.00	0	\$0.00	\$0.00	
Trail Clearing	2.11	11,117	\$3.00	\$33,351.00	
Grading/Prep	2.11	11,117	\$3.00	\$33,351.00	
Gravel Base	2.11	11,117	\$2.50	\$27,792.50	
Paving	2.11	11,117	\$25.00	\$277,925.00	
Misc Work	2.11	11,117	\$4.25	\$47,247.25	
Sidewalk Improv.	0.14	724	\$0.00	\$0.00	
Bridge Crossing	0.00	0	\$0.00	\$0.00	
Construction Cost Estimate				\$419,666.75	\$35.44
Survey				\$32,000.00	
Design & Conservation Permitting				\$12,500.00	
Total Cost Estimate				\$464,166.75	\$39.20
Contingency 10%				\$510,583.43	\$43.12

Private Cost Estimate					
	Length (Miles)	Length (Feet)	Cost/Foot	Cost Estimate	Price Per Linear Foot
Rail Removal	0.00	0	\$8.00	\$0.00	
Trail Clearing	2.11	11,117	\$4.25	\$47,247.25	
Grading/Prep	2.11	11,117	\$7.30	\$81,154.10	
Gravel Base	2.11	11,117	\$17.43	\$193,769.31	
Paving	2.11	11,117	\$34.00	\$377,978.00	
Misc Work	2.11	11,117	\$4.25	\$47,247.25	
Sidewalk Improv.	0.14	724	\$34.00	\$24,616.00	
Bridge Crossing	0.00	0	\$0.00	\$0.00	
Construction Cost Estimate				\$772,011.91	\$65.20
Survey				\$32,000.00	
Design & Conservation Permitting				\$12,500.00	
Total Cost Estimate				\$816,511.91	\$68.96
Contingency 10%				\$898,163.10	\$75.85

#### Notes:

1. Rockland pricing was adjusted at 5% inflation from 2018 to 2021
2. Municipal cost estimate includes municipal involvement, with limited sidewalk improvements
3. Private cost estimate includes private construction co. involvement, including additional sidewalk improvements

## Potential Construction Costs

20-Jan-21

### East Segment -Luddams's Ford Park (Elm St) to Four Corners (Broadway)

	Length (Miles)	Length (Feet)
Rail Removal	0.00	0
New Trail	0.59	3,092
Relocated Trail	0.08	415
Trail Expansion	0.00	0
Sidewalk Improv.	0.25	1,321
	Total Length	4828

Misc Work		Est. Quantity	Cost
Classic Trail head Kiosk - Timberhomes Vt	\$2,550 material only	1	\$2,550.00
Mini Kiosks - Timberhomes VT	\$1,500 Material only	1	\$1,500.00
Fence - Wood Split Rail	\$18 / lf installed	0	\$0.00
Fence - White Vinyl Privacy Fence	\$30 / lf installed	400	\$12,000.00
Benches	\$300 - \$1,000	2	\$1,000.00
Trail Signage	TBD		\$1,361.75
		Total	\$18,412

\$5.25 per LF

Municipal Cost Estimate					
	Length (Miles)	Length (Feet)	Cost/Foot	Cost Estimate	Price Per Linear Foot
Rail Removal	0.00	0	\$0.00	\$0.00	
Trail Clearing	0.66	3,507	\$3.00	\$10,521.00	
Grading/Prep	0.66	3,507	\$3.00	\$10,521.00	
Gravel Base	0.66	3,507	\$2.50	\$8,767.50	
Paving	0.66	3,507	\$25.00	\$87,675.00	
Misc Work	0.66	3,507	\$5.25	\$18,411.75	
Sidewalk Improv.	0.25	1,321	\$0.00	\$0.00	
Bridge Crossing	0.00	0	\$0.00	\$0.00	
Construction Cost Estimate				\$135,896.25	\$28.15
Survey				\$13,000.00	
Design & Conservation Permitting				\$7,000.00	
Total Cost Estimate				\$155,896.25	\$32.29
Contingency 10%				<b>\$171,485.88</b>	<b>\$35.52</b>

Private Cost Estimate					
	Length (Miles)	Length (Feet)	Cost/Foot	Cost Estimate	Price Per Linear Foot
Rail Removal	0.00	0	\$8.00	\$0.00	
Trail Clearing	0.66	3,507	\$4.25	\$14,904.75	
Grading/Prep	0.66	3,507	\$7.30	\$25,601.10	
Gravel Base	0.66	3,507	\$17.43	\$61,127.01	
Paving	0.66	3,507	\$34.00	\$119,238.00	
Misc Work	0.66	3,507	\$5.25	\$18,411.75	
Sidewalk Improv.	0.25	1,321	\$34.00	\$44,914.00	
Bridge Crossing	0.00	0	\$0.00	\$0.00	
Construction Cost Estimate				\$284,196.61	\$58.86
Survey				\$13,000.00	
Design & Conservation Permitting				\$7,000.00	
Total Cost Estimate				\$304,196.61	\$63.01
Contingency 10%				<b>\$334,616.27</b>	<b>\$69.31</b>

#### Notes:

1. Rockland pricing was adjusted at 5% inflation from 2018 to 2021
2. Municipal cost estimate includes municipal involvement, with limited sidewalk improvements
3. Private cost estimate includes private construction co. involvement, including additional sidewalk improvements

Potential Construction Costs

20-Jan-21

			Overall Price Per Linear Foot	
	Municipal	Private	Municipal	Private
Project Total Cost	\$1,310,192.40	\$2,294,750.52	\$45.31	\$79.36
Project Total Length (miles)	28917	5.48		
	linear ft	miles		

- Notes:
- 1. Rail removal does not account for rail credit given back to the Town - price fluctuates.
  - 2. Rockland pricing was adjusted at 5% inflation from 2018 to 2021
  - 3. Drinkwater River Bridge crossing span = 30 ft
  - 4. Municipal cost estimate includes municipal involvement, with limited sidewalk improvements
  - 5. Private cost estimate includes private construction co. involvement, including additional sidewalk improvements



## **Pricing Backup Information:**

Jan. 20, 2021

### **Acella Construction Pricing for entire project with assumptions:**

Tree Clearing - \$117,000

Grading/Prep - \$210,000

Gravel Base - \$504,000

Sidewalks - \$144,000

Paving - \$984,000

**Total = \$1,959,000**

A few items to consider here:

1. We didn't figure work associated with removal of the rails.
2. We didn't figure for any obstructions, structures, boulders, ledge, etc which might be in the patch of travel.
3. Erosion control measures are unknown, I would figure if there needs to be a silt fence along the entire run carry about \$300,000.
4. We didn't figure for any landscaping, mulch/straw berms or anything of that nature. Would be something a landscaper would handle.
5. Assumed it is relatively minor grading needs here.
6. Sidewalks are based on 4" thickness at 4' widths and no curbing.

### **Railroad Track Company:**

He said that their labor cost would be between \$25k-\$30k and salvaging the railroad track its self would probably result in a credit back to the owner. He explained to me that the price for the track fluctuates and couldn't give me a estimate on how much they would pay for it at this time. Attached I've presented the costs associated with Acella running the project

Here is the contact for National Salvage that I was speaking to for your use

### **Nick Mood**

#### **Business Development – Short Line/ Industrial**



#### **National Salvage & Service Corporation**

**Direct:** (812) 823-4225 | **Mobile:** (812) 320-1009

**Email:** [nick.mood@nssccorp.com](mailto:nick.mood@nssccorp.com)

**Address:** 6755 S.Old SR37, Bloomington, IN 47401

**Mail:** P.O. Box 300, Clear Creek, IN 47426

**Web:** [www.nssccorp.com](http://www.nssccorp.com)

**Date:** January 18, 2021

**Project:** Rails to Trails – Hanover MA

**Scope:** Design/Engineering, Manufacturing, & Bridge Supply

**Company:** Bridge Brothers Inc

**Contact:** Wynn Copeland

Bridge Brothers scope will include all structural engineering associated with the bridges and issue our state stamped PE design package. The bridge structures and all associated designs will be in adherence to AISC and AASHTO design guide for bridge structures. See below for further breakdown of our scope of work:

**Structural & Civil Engineering:**

---

- MA PE Stamped Design & Calculation Package for the Bridges

**Bridge 1 Manufacturing:** **\$56,103.00**

---

- Qty (1) 10 x 50' Pedestrian Bridge
- Weathering Steel Bridge
- Pratt Truss Configuration
- 90 PSF Live Load
- H-10 Vehicle Loading
- Decking Prepped for Concrete (provided by others)
- Horizontal Railing
- Bearing Pads Included
- Freight to project site (shipped in one piece)

**Bridge 1 Erection Only:** **\$21,000.00**

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**Bridge 2 Manufacturing:** **\$35,182.00**

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- Qty (1) 10 x 30' Pedestrian Bridge
- Weathering Steel Bridge
- Pratt Truss Configuration
- 90 PSF Live Load
- H-10 Vehicle Loading
- Decking Prepped for Concrete (provided by others)
- Horizontal Railing
- Bearing Pads Included
- Freight to project site (shipped in one piece)

**Bridge 2 Erection Only:** **\$18,500.00**

---

TURN KEY PREFABRICATED **BRIDGES**

**Bridge 3 Manufacturing: \$18,066.00**

- Qty (1) 10' x 10' Pedestrian Bridge
- Weathering Steel Finish
- Pratt Truss Configuration
- 90 PSF Live Load
- H-10 Vehicle Loading
- Decking Prepped for Concrete (provided by others)
- Horizontal Railing
- Bearing Pads Included
- Freight to project site

**Bridge 3 Erection Only: \$15,000.00****Estimated Project Schedule**

- |                                  |          |
|----------------------------------|----------|
| • Structural Designs             | 4 Weeks  |
| • Bridge Manufacturing & Freight | 12 Weeks |

If you have any questions or require additional information, please call. Pricing is valid for 30 days from date on proposal unless otherwise noted.

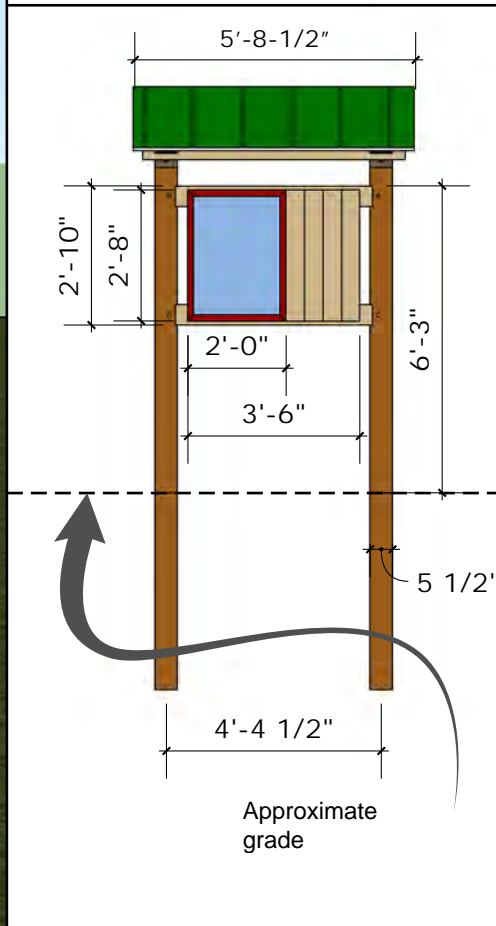
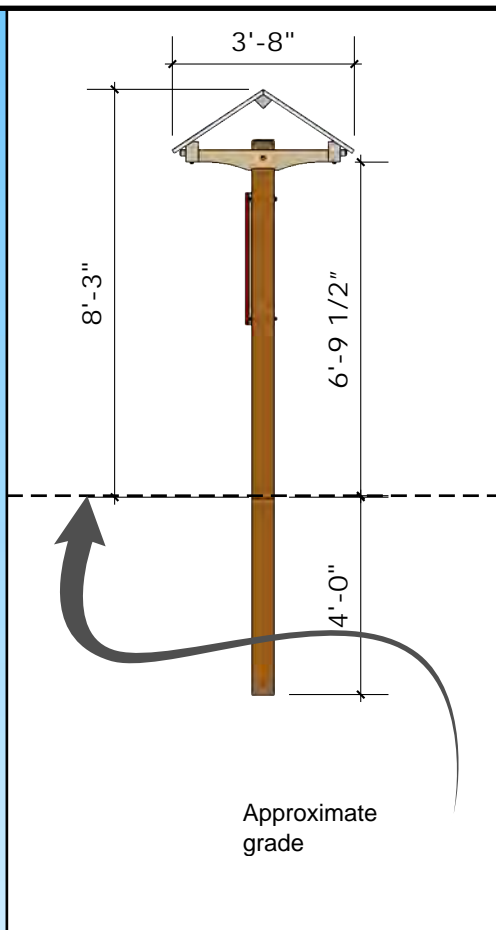
\* All prices shown are valid for thirty (30) days only unless otherwise stated above. Unless otherwise agreed in writing, the information herein is a proposal only and should not be construed as a promise to perform absent the separate written consent of Bridge Brothers, Inc.

Regards,

**Wynn Copeland** / Project Engineer / 404.304.0452 / [Wynn@bridgebrothers.com](mailto:Wynn@bridgebrothers.com)



TURN KEY PREFABRICATED **BRIDGES**





## Specifications:

- Posts are Black Locust, all other timbers are White Pine.
  - Principle timber joints secured with White Oak pegs.
- Posts are 5.5"x5.5"; Girts are 4"x5"; Ties are 5.5"x5"; Plates are beveled 3"x4"; Ridge is 3"x3".
  - Roof is rough sawn pine boards with channel drain roofing.
- Signboard 42"x32" of 3/4" tongue-in-groove eastern white cedar.

## Installation:

- Kiosk comes in three parts: roof assembly, signboard assembly, and posts
- Purchase will include installation directions including exact center-to-center measurements for excavation
  - After digging holes, installation should take crew of 4 strong people about 1 hour
    - We strongly recommend burying 12" x 4' sonotubes in post locations
    - Insert posts into tubes and backfill with clean crushed stone.
- Concrete footings are not necessary, and burying bottoms of posts in concrete is not recommended

## Recommendation:

The Black Locust posts are the best all natural wood choice available from the Northeastern forest.

They should have a service life of many decades with an in ground installation. Regardless,  
we strongly recommend:

- Following THVT's best installation practices described on the website and in the installation directions
- Annual inspection of the post bases to ensure safe post condition, especially after the first decade of service.

## Options:

THVT's Classic Kiosks have a range of possible roof and signboard customizations as well as possible add-ons. Please consult our website.

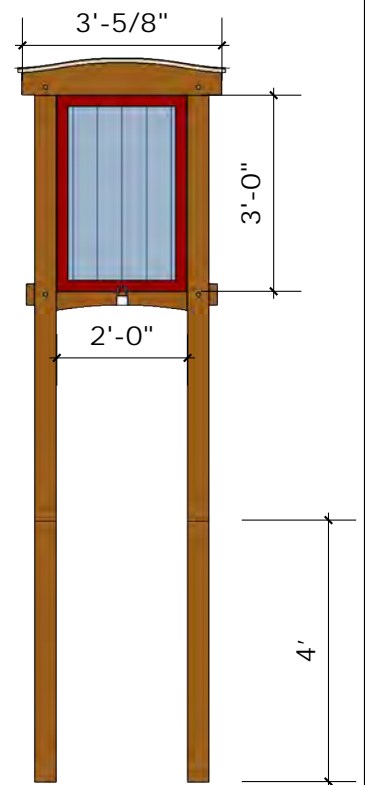
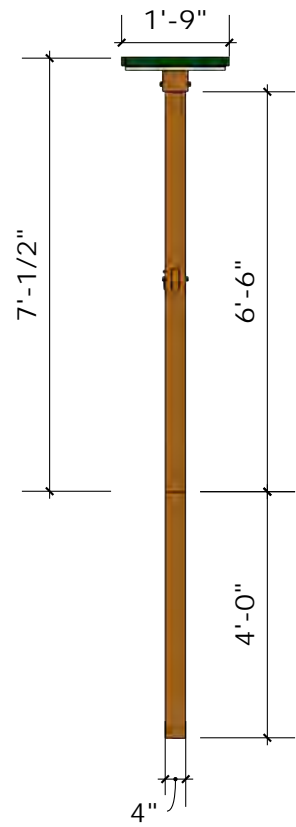
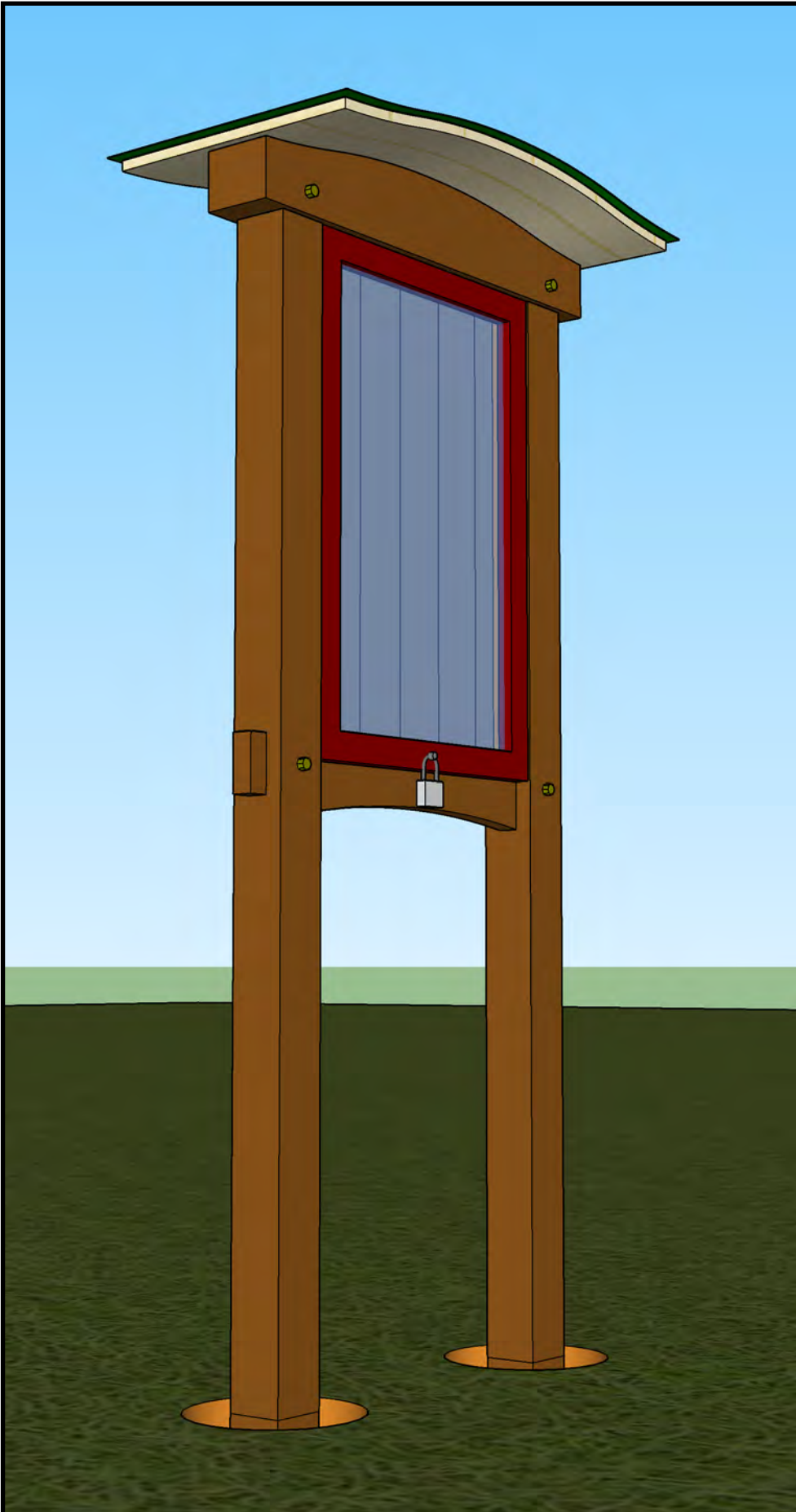
If needed, THVT can supply steel post bottom brackets. Please inquire for details.

For photos and more information, visit our website: [www.timberhomesllc.com/kiosks](http://www.timberhomesllc.com/kiosks)

Prices are for pickup in Montpelier or Vershire, Vermont. Delivery quotes upon request.  
Site preparation and installation are NOT included in unit cost.

TimberHomes Vermont | 21 Fork Road | Montpelier, VT 05602  
Contact: [info@timberhomesllc.com](mailto:info@timberhomesllc.com), (802) 685-7974  
Made in Vermont by a Worker-Owned Company





## Specifications:

- Posts are Black Locust, all other timbers are white pine with 1/4" chamfer throughout.
  - Principle timber joints secured with white oak pegs.
  - Posts are 4"x4"; Girts are 2"x6"; Headers are 5"x6"
  - Roof is rough sawn pine boards with metal roofing.
- Signboard 2'x3', made of 3/4" tongue-in-groove eastern white cedar. Front side has a hinged, top-swinging lockable Cherry/plexi signboard cover

## Installation:

- Kiosk will come in three parts: roof assembly, signboard assembly, and posts.
- With your kiosk purchase, THVT will include installation directions, including the center-to-center hole measurement for excavation
  - After digging holes, installation should take a crew of 4 strong people only about an hour.
  - We strongly recommend burying 12"x4' sonotubes centered on the post locations
    - Insert kiosk posts into tubes, and backfilling with clean crushed stone.
- concrete footings are not necessary, and burying post bottoms in concrete is not recommended

## Recommendation:

The Black Locust posts used as posts are the best all natural product available from the Northeastern Forest. They should have a service life of many decades with an in-ground installation. Regardless, we strongly recommend:

- Following THVT's best installation practices described above and in the installation directions
- Inspection of the post bases annually to ensure safe post condition, especially after the first decade of service.

## Options:

THVT's Classic kiosks have a range of possible upgrades and add-ons. Please consult our website to see if you're thinking of upgrading your kiosk.

If needed, THVT can supply post base bottoms for concrete pier installations. Call to discuss.

For photos and more information, visit our website: [www.timberhomesllc.com/kiosks](http://www.timberhomesllc.com/kiosks)

Prices are for pickup in Montpelier or Vershire, Vermont. Delivery quotes upon request.

TimberHomes Vermont | 21 Fork Road | Montpelier, VT 05602

Contact: [info@timberhomesllc.com](mailto:info@timberhomesllc.com), (802) 685-7974

Made in Vermont by a Worker-Owned Company

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## **6.0 Trail Maintenance Plan Development**

Attached find documentation from the Rails to Trails Conservancy entitled “Maintenance Practices and Costs of Rail-Trails” June 2015 for support in determining the potential trail maintenance and costs. In summary, the results of the study determined that the maintenance costs on average range from \$500 to \$1,000 per trail mile per year depending on the surface.





# Maintenance Practices and Costs of Rail-Trails



**rails-to-trails**  
conservancy





# CONTENTS



Wallkill Valley Rail Trail, NY.

Executive Summary .....4

Methodology .....7

Major Maintenance Tasks.....8

    Administration .....8

    Vegetation – Grass, Trees, Herbicides and Invasives! .....9

    Surface – Repair, Clearing, Snow.....14

    Drainage.....18

    Trailhead Amenities.....19

    Sanitation .....21

    Signage .....22

    Access Control.....23

    Trail Features .....24

    Other.....25

Conclusions .....27

Appendix A: 2014 Survey Results .....30

Appendix B: List of Participants ..... 42

Rails-to-Trails Conservancy serves as the national voice for more than 160,000 members and supporters, 30,000 miles of rail-trails and multiuse trails, and more than 8,000 miles of potential trails waiting to be built, with a goal of creating more walkable, bikeable communities in America. Since 1986, we have worked from coast to coast, supporting the development of thousands of miles of rail-trails for millions to explore and enjoy.

Rails-to-Trails Conservancy  
Northeast Regional Office  
2133 Market Street, Suite 222  
Camp Hill, PA 17011  
Tel 717.238.1717 / Fax 717.238.7566

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# ACKNOWLEDGMENTS

## *Produced by Rails-to-Trails Conservancy*

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**June 2015**

The team wishes to recognize and thank RTC staff and others who contributed to the accuracy and utility of this report. Thanks to the trail managers and RTC staff who contributed photos for this report.

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# EXECUTIVE SUMMARY

For the past three decades of rail-trail development, maintenance costs have generally been seen as being expensive. These expenses, however, have remained largely untracked on a state or national basis. Further, a comprehensive breakdown and ranking of maintenance priorities did not exist.

To better understand this issue, RTC conducted a comprehensive survey of trail maintenance costs. Results of this study show that, contrary to popular belief, maintenance costs are not as high as many perceive them to be. In fact, when taking into account for volunteers, this study found that maintenance costs on average range from \$500 to \$1,000 per trail mile per year depending on surface.

In the 10 years that RTC's Northeast Regional Office has tracked technical inquiries, there has been a steady decline in the number of maintenance-related request. There are likely several reasons for this decline. Rail-trail managers and others share maintenance methods through a variety of networks, in addition to providing direct assistance to one another. Earlier documents on maintenance best management practices have also likely been helpful. In addition, many individual trails have been combined into larger systems, thus creating economies of scale. Volunteer programs also have grown in size and dependability and have taken on more responsibility.

Finally, it is evident that maintenance also has been deferred.

Therefore, it is possible that although maintenance costs have declined over time, perception of those costs has remained the same.

Trail managers and local stakeholders often cite the need for dedicated state or federal funding to help pay for trail maintenance. Up to this point, RTC has lacked sufficient data to make that case effectively to decision-makers at the state or federal level. This study was initiated to bring some clarity to this issue. Whether in a town hall meeting or a discussion with a member of Congress about the reauthorization of federal funding, more accuracy regarding rail-trail maintenance costs is required.

Because funding for rail-trails is difficult to secure, over-estimating maintenance costs can inadvertently give opponents easy leverage to speak against rail-trail development. In addition, funders often question if all aspects of any community development project should be funded by state and federal grants, particularly maintenance-related costs, which are often perceived as a "local issue."

This study presents a more comprehensive understanding of rail-trail maintenance, as has been done for other rail-trail issues such as construction costs, economic impact and rails-with-trails. Such an approach enables the rail-trail community to focus its limited resources more effectively on addressing the most critical issues.



St. John Valley Heritage Trail, ME.

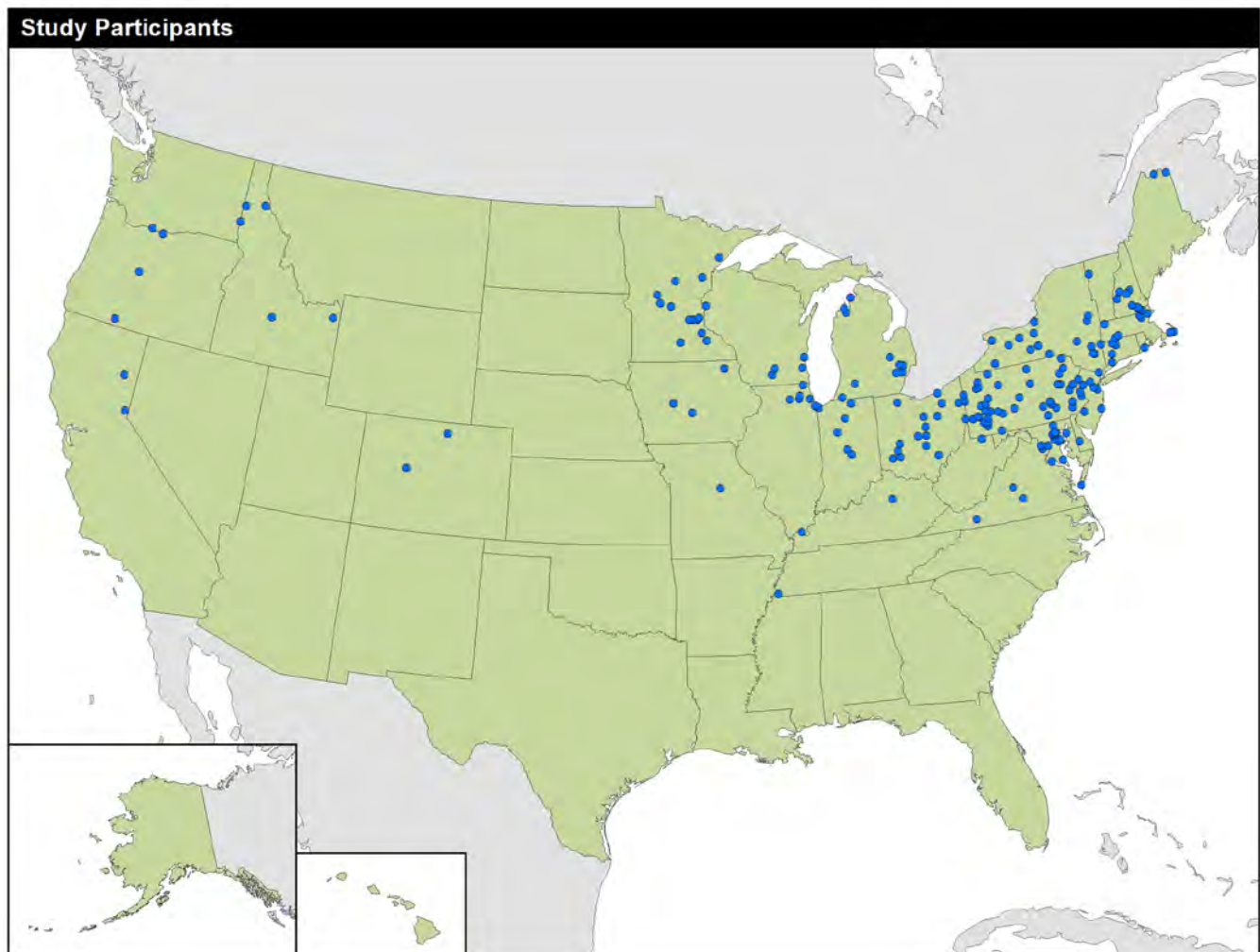


This publication is the third in a series of similar works prepared by the RTC Northeast Regional Office. The first was released in 1996 in collaboration with a U.S. Department of Agriculture AmeriCorps staff member based in Fayette County, Pennsylvania. The second was released in 2005 and, as with this document, was made possible through a Growing Greener grant from the Commonwealth of Pennsylvania, Department of Conservation and Natural Resources, Bureau of Recreation and Conservation.

Each successive study has grown in size and scope and, ideally, usefulness. The 1996 study contained 40 questions and received responses from 60 rail-trail managers. The 2005 study expanded to 70 questions and 100 respondents. This latest version asked 117 questions and drew answers from 200 respondents.

Of all the 2014 participants, 37 percent represented rural rail-trails, 14 percent urban, 13 percent suburban and 36 percent mixed. The mixed category contained primarily a rural/suburban combination.

In addition to identifying the types and frequency of maintenance tasks, this study sought for the first time to secure data on the cost of rail-trail maintenance. Almost 50 percent of the 200 trail managers provided a total maintenance cost, though far fewer had an actual budget. With the help of several veteran trail managers, RTC went a step further and prepared an additional 44-question survey that broke down the cost of each task. Only 25 managers completed this survey, and many of these required repeated follow-up by e-mail and phone.



**Figure 1. Map of Trail Groups Participating in Study**



State and county managers said that it was too difficult to separate these costs from larger existing budgets. Small entities and private nonprofits said they simply did not have the capacity to track these figures.

If the need for maintenance funding is so critical, however, it would stand to reason that this data would be more available or that completion of the questionnaire would

have greater value. This research indicates that the more likely explanation for why these costs are not tracked more rigorously is that rail-trails do not require as much maintenance as some fear or promote. This finding is critical in the ongoing case for funding support for rail-trails.



Snow covered bridge on the Piscataquog Trail in NH.



# METHODOLOGY

The comparisons illustrated in this study are mostly between the 2005 and 2014 findings. The 1996 study contained too many “check all that apply” questions, which resulted in multiple answers and thus participation greater than 100 percent; comparison of the latter two studies was more reliable, as the answers in each added up to 100 percent. Further, not all the same trails were surveyed in the three studies. Unfortunately, only including those trails that participated in all three studies would have yielded too low a number to be significant.

The 2014 study began with a review of the earlier studies to determine which topics required updating. Our technical assistance team provided additional insights of the questions they typically are asked. We then did a review to determine what, if any, recent literature addressed the topics of trail maintenance activities and associated cost.

We then developed a survey instrument that would collect as much information as possible regarding the most important topics. During this process, we realized that there were different sets of questions for different trail surface types. This increased the number of questions in the survey to an overwhelming 195, which could prove prohibitive to trail managers.

This potential problem was solved by the decision to create the cost survey in Survey Monkey. Using this vehicle, we could provide trail managers with a link to the online survey, and they could take the survey at their convenience. This also enabled us reduce the number of questions by utilizing the skip logic in Survey Monkey, the manager of an asphalt-surfaced trail, for example, could “skip” all of the questions not applicable to their surface type.

To make comparisons across the trails, we limited our query to states with four seasons. We did not send invitations to trail managers in the southern tier of states.

Links to the online survey were sent to approximately 300 trail management organizations contained in RTC’s national trails database as of January 6, 2014. Reminders to participate were sent to those organizations that did not immediately respond.

Of the responding trail management organizations, 95 indicated that they had a trail maintenance budget. A follow-up survey to gather more detailed maintenance cost information was sent to these 95 organizations. This was not an online survey but a Microsoft Excel spreadsheet, with 48 maintenance tasks as rows. Columns captured labor hours, hourly labor cost, volunteer hours, equipment costs, material costs, contracted services and total cost.

Many follow-up emails, phone calls and personal pleas were made over several months to encourage participation in this phase of the study.



Trail side mowing along the Perkiomen Trail in PA.





# MAJOR MAINTENANCE TASKS

The 2005 study indicated that trail group volunteers performed maintenance tasks on 46 percent of the survey trails. In the 2014 study, this percentage increased to 58 percent. Municipal government was the second most cited entity for performing maintenance tasks after trail-group volunteers, at 32 percent in 2005 and jumping to 43 percent in 2014. The percent of municipal governments owning trails remained nearly the same in the two studies, at 30 percent and 34 percent in 2005 and 2014, respectively.

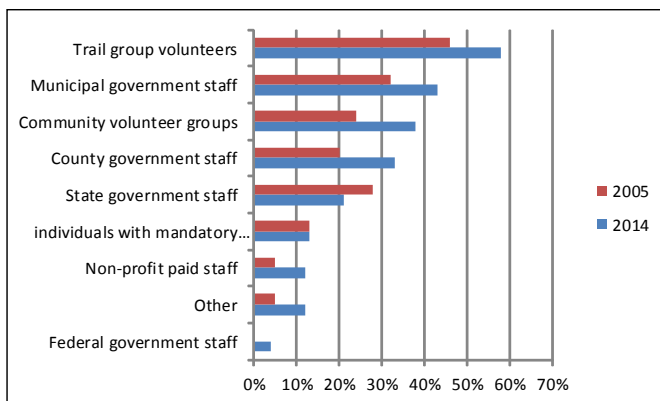


Figure 2. Who Performs Maintenance (2014 Survey)

## Administration

### Written trail maintenance plan

We were surprised that 60 percent of the responding trail managers indicated they do not have a written trail maintenance plan. A written maintenance plan will save time and money and contribute to a better experience for trail users.

### Funding trail maintenance

In the 2014 survey, municipal government was the leading funder of trail maintenance, mentioned by 42 percent of respondents. This is a significant increase from the 2005 maintenance study, when 26 percent mentioned municipal government funding. Funding by a nonprofit fell slightly from 34 percent in 2005 to 32 percent in 2014.

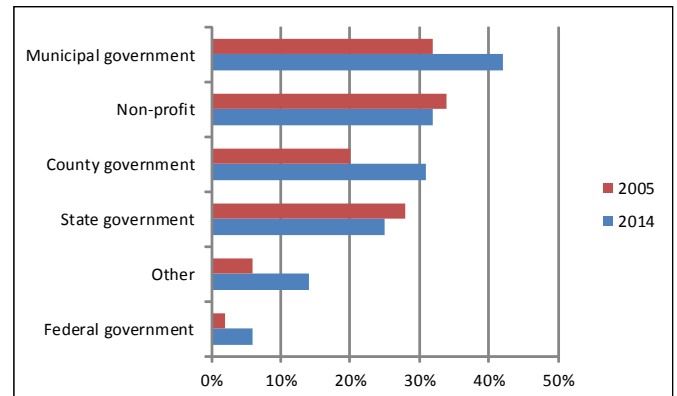


Figure 3. Trail Maintenance Funders (2014 Survey)

Of the trail managers who indicated that they had a budget specifically for trail maintenance, the figures for that budget ranged from less than \$500 to more than \$700,000. This range is nearly identical to that reported in the 2005 study.

### Tracking annual users

Although not strictly a maintenance issue, the number of annual users of a trail does affect maintenance needs. Fifty four percent of our respondents indicated that they do not currently track the number of trail users; another 23 percent indicated that they guess or estimate. Of those trail managers who do conduct user counts, 16 percent do a manual count, and 23 percent conduct the count using an automated counter of some type. The reported annual usage ranged from 2,000 to more than 2 million.

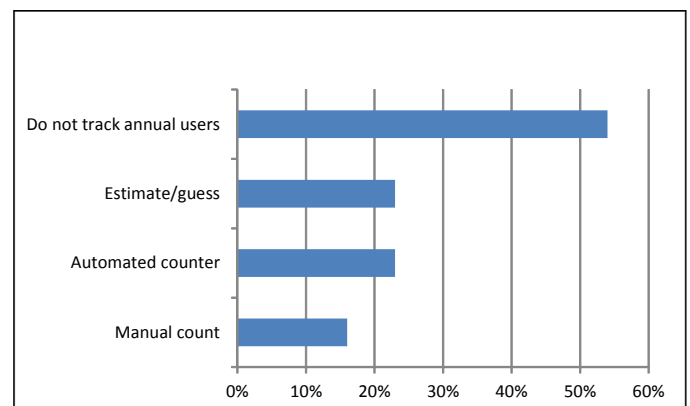


Figure 4. Tracking by Trail Managers (2014 Survey)

## Hours of operation

Consistent with the 2005 trail maintenance and operations study, two-thirds of the trails surveyed in 2014 are open on a dawn-to-dusk schedule.

## Vegetation – Grass, Trees, Herbicides and Invasives!

### Mowing

Sixty percent of detailed cost survey respondents reported that mowing was a labor-intensive maintenance activity and a significant component of the annual maintenance budget. We conducted a correlation analysis to determine if there was a relationship between labor hours and the length of trails. The graph below reveals that such a relationship does not exist.

Based on the data provided in the detailed cost analysis, it is apparent that the amount of time and expense associated with mowing is really a function of how the trail was designed. Some trails have a lot of grassy areas on the shoulders of the trail tread, while others have crushed stone or other shoulder materials that don't require periodic mowing.



Perkiomen Rail Trail, PA.

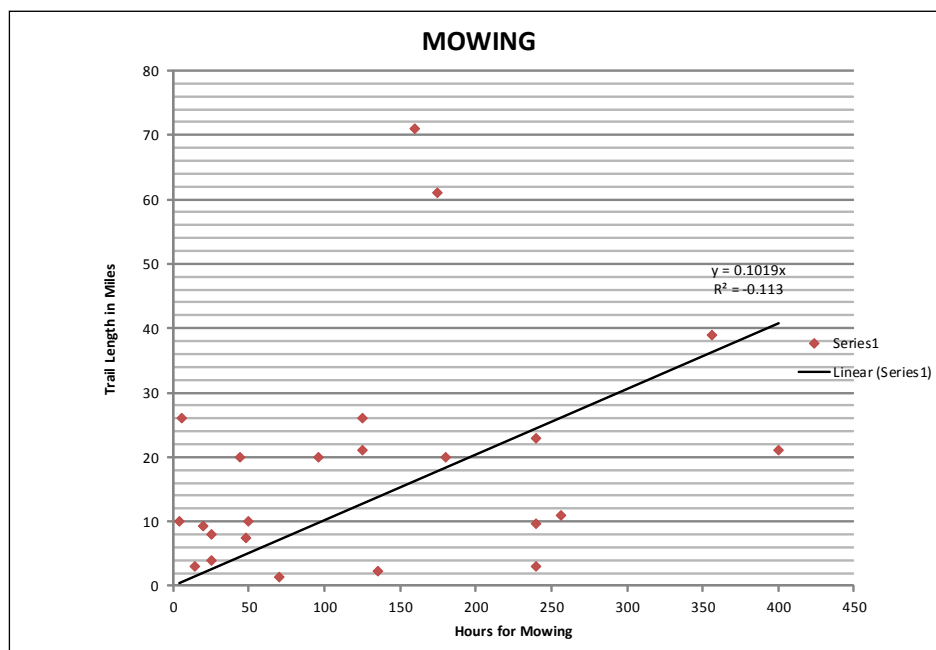
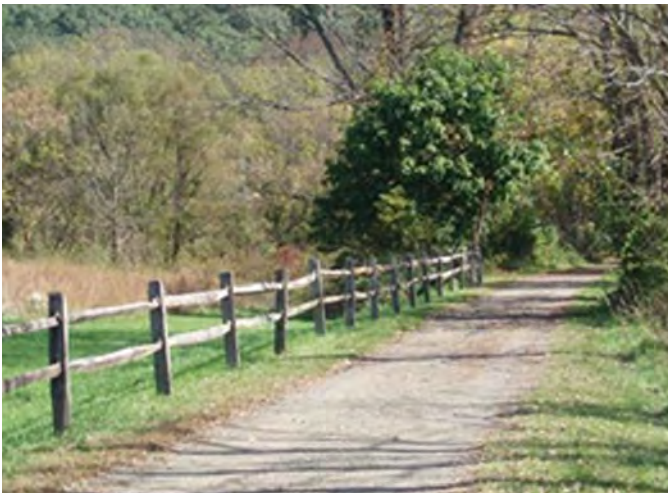


Figure 5. Correlation analysis shows no relationship between labor hours and length of trails.



# MAJOR MAINTENANCE TASKS



**Perkiomen Rail Trail, PA**  
**20 miles**  
**Annual mowing costs \$12,542**

**Rio Grande Rail Trail, CO**  
**20 miles**  
**Annual mowing costs \$2,112**

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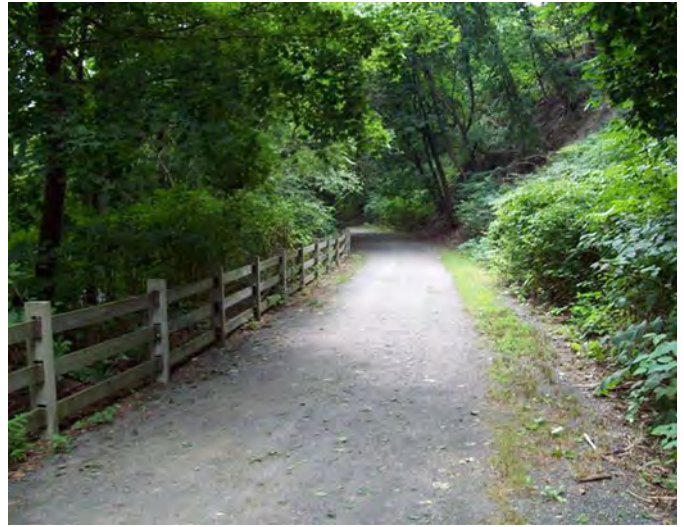
The Perkiomen Trail has a significant amount of grass along the shoulders of the trail and fencing that needs to be cut around manually. On the other hand, the Rio Grande Trail has more native vegetation or stone shoulders that do not require frequent mowing.

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**Heritage Rail Trail County Park, PA**  
**21.1 miles**  
**Annual mowing costs \$6,000**



**Lackawanna River Heritage Trail, PA**  
**19.9 miles**  
**Annual mowing costs \$7,367**



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The mowing cost for these two trails is fairly close on a per mile basis. The Heritage Rail Trail has a parallel rail bed along most of its length that requires herbicide treatment but no mowing. The Lackawanna Trail allows natural vegetation to grow along the shoulders or has placed stone shoulders.

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# MAJOR MAINTENANCE TASKS



**Lititz-Warwick Trailway, PA**  
**3 miles**  
**Annual Hours mowing 240**  
**Annual mowing costs \$3,553**



**Oil Creek State Park Trail, PA**  
**9.7 miles**  
**Annual hours mowing 240**  
**Annual mowing costs \$3,739**



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The Lititz-Warwick Trailway has significant amounts of grassy areas that require mowing along trail edges in a primarily suburban setting. Oil Creek State Park Trail is more rural and relies on natural vegetation along the trail edges that does not require much maintenance. Surprisingly, however, both reported 240 hours was required for mowing each year. This example appears to indicate that there is no correlation between labor hours and costs.

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## Vegetation Management

We asked trail managers how much time they dedicate to vegetation management along the trail because this work is the second most labor-intensive, costly maintenance item reported by respondents to the detailed cost analysis survey. Of these respondents, 62 percent reported on this maintenance activity. The amount of time reported on a per-mile basis varied from as little as 0.25 hours per mile to 106 hours per mile (most of this work is carried out by volunteers).

We provided a list of 12 tasks to 2014 maintenance survey respondents when asking about their management of trail-side vegetation. More than 90 percent of our respondents reported that they do litter cleanup, tree pruning, fallen tree removal, tree removal as a safety issue, and mowing.

Removal of invasive tree species is becoming an increasingly necessary maintenance task. In the 2005 report, 36 percent of respondents reported invasive species removal as an important task; in 2014, almost 93 percent reported it as a major activity.

In the 2005 survey, about a third of the respondents indicated that they used a chemical herbicide to control vegetation. That percentage increased to 55 percent in the 2014 survey. Seventy-five percent of 2014 respondents reported that trail maintenance staff has responsibility for application of the herbicide. This activity was contracted out by only 14 percent of the respondents.



Tree down on Heritage Rail Trail County Park, PA.



Volunteers trimming brush, Three Rivers Heritage Trail, PA.

On average, respondents said they spent 13.5 hours per mile on vegetation management. The cost of vegetation management varied widely, from less than \$100 for a four-mile trail to more than \$55,000 for a 24-mile trail. Much of this work is carried out by trail management staff or volunteers, although some trail organizations do contract out this type of work. Volunteers should have some degree of training and supervision, especially when working with an herbicide.

## Tree Removal

Tree removal was a significant maintenance task reported in our detailed maintenance cost analysis survey. Most of the reported costs were in excess of \$1,000. Forty percent of the reporting trails indicated that they contracted out this activity. There are a number of reasons stated for removing trees. In some cases storms cause trees to block the trail. In others, a dead tree presents a potential hazard to trail users and is removed before limbs come crashing down on the trail.

## Surface – Repair, Clearing, Snow

In the 2014 study we asked respondents to identify the predominant trail surface material based on six choices: asphalt, concrete, crushed stone, original railroad cinders, dirt/soil and boardwalk. The number of responses for concrete, railroad cinders, dirt and boardwalk were so small (seven or fewer) that analysis was not possible. Therefore, we concentrated our analysis on asphalt and crushed stone.

In the 2005 study, 45 percent of respondents indicated that their trails were composed of asphalt, and 41 percent said crushed stone. In 2014, asphalt increased to 52 percent, and crushed stone decreased to 34 percent. This increase in asphalt could either be because of increased use of asphalt surfaced trails or the samples included in the survey. In some cases, state policy dictates that trails must have an asphalt surface.

### Maintenance of Non-asphalt Trails

The labor hours and resulting cost of repairs to non-asphalt trails varied widely among survey respondents. Labor hours reported for repairs ranged from 0.2 hours per mile for an 11-mile trail in Pennsylvania to 9.3 hours per mile for a three-mile trail in Massachusetts. The total cost of making repairs varied from a low of \$31 to a high of nearly \$13,000.

Not only did these costs vary widely across our sample, but they also varied widely from year to year. The major cause of damage to non-asphalt trails was because of water erosion, as reported by 55 percent of survey respondents.

The second biggest cause for repairs is because of vegetation, as reported by 25 percent of survey respondents. This can be caused by grass growing through non-asphalt trail surface, vegetation encroaching on trail edges or proliferation of invasive species. Controlling damage caused by vegetation encroachment is manageable with a program of regular, scheduled inspection and preventative maintenance.



Beaver caused erosion damage, Ashuelot Rail-Trail, NH.

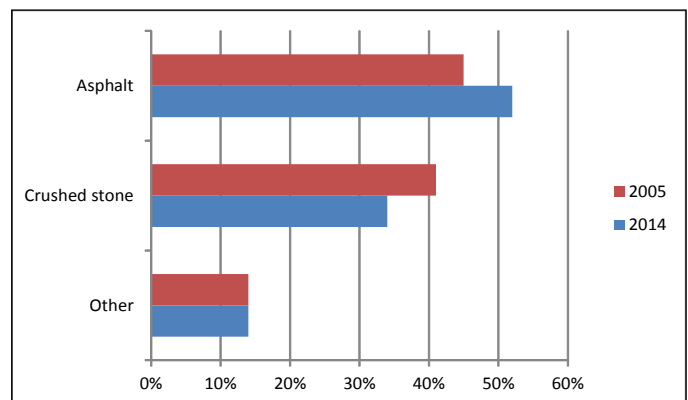


Figure 6. Predominant Trail Surfaces (2014 Survey)



Uncontrolled weed growth through trail surface.

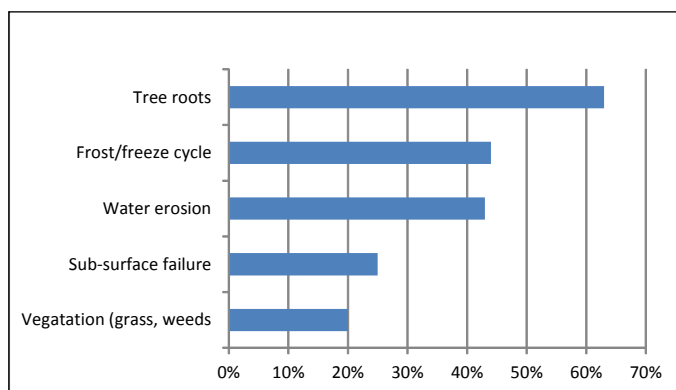


Regrading of some or the entire surface is another requirement in non-asphalt trail maintenance. The amount of labor hours involved to perform this task varied widely, from 14 hours to regrade a three-mile trail to two hours to regrade a 10-mile trail. The nature of the re-grading process and the type of equipment used contribute to this variability. A good estimate of the average, based on those reporting this activity, is two hours per mile for re-grading a non-asphalt surface trail.

## Maintenance of Asphalt Surfaced Trails

New to the 2014 were questions regarding causes of damage to asphalt trails. Survey respondents could list multiple causes of damage. As shown in Figure 7, tree roots are by far the leading cause of damage to an asphalt trail surface at 63 percent. The frost/freeze cycle and water erosion rank second and third, at 44 and 43 percent, respectively.

Respondents to the detailed maintenance cost survey submitted significant costs for repair of asphalt-surfaced trails. Examples include \$9,600 for a 71-mile trail; \$7,350 for a three-mile trail; and \$7,200 for 39-mile trail. Only 30 percent of trail managers reported any asphalt repair. Only eight percent of managers of asphalt-surface trails reported that they seal-coated their trail. On a three-mile trail, the cost of the sealant material was \$4,000 and the labor to apply it took 24 hours, or three work days.



**Figure 7. Sources of Surface Damage (2014 Survey)**



**Tree root damage Manhan Rail Trail, MA.**

Another task required for maintenance of asphalt trails is crack sealing. The Willard Munger State Trail in Minnesota reported spending 240 hours sealing cracks on the 71-mile trail. That's \$5,760 in labor costs and \$2,500 in material costs. Similarly, the Oil Creek State Park Trail in Pennsylvania had labor costs of \$935 and material costs of \$1,500 to seal cracks along the 9.7-mile asphalt trail. Lack of a crack-sealing program can lead to vegetation growing up through the cracks, and this will contribute to deterioration of the asphalt surface.



# MAJOR MAINTENANCE TASKS

## Maintenance of crushed stone

More than one-half, or 56 percent, of 2014 respondents with a predominantly crushed stone surfaced trail reported that their trail had been resurfaced since original construction. This is a decrease from two-thirds in the 2005 study. In 2014, the most mentioned interval for resurfacing was 10 years or longer, compared with nine years in the 2005 study.

Consistent with the 2005 study, 71 percent of respondents indicated that crushed surface trails are primarily repaired manually, with a rakes, shovels and other hand tools. Light duty power equipment such as a Bobcat was used to repair damage by 42 percent of the respondents, and 32 percent responded that they utilized heavy equipment such as a grader. The type of equipment used is dictated by the severity of the damage to the crushed stone surfaced trail.

Forty-four percent of our survey respondents indicated that their crushed stone trail had been regraded since its original construction. This maintenance activity is carried out on an as-needed basis by 70 percent of the trail managers.

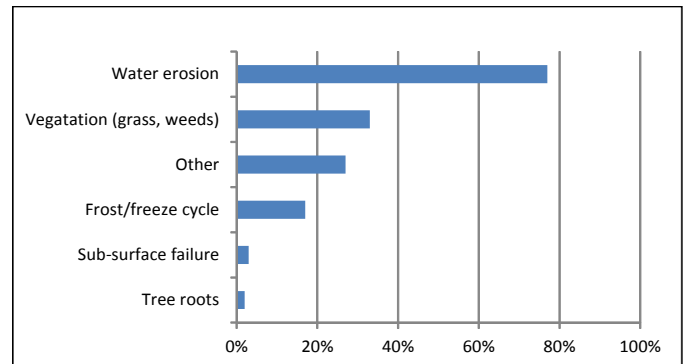
Water erosion is the most frequently mentioned cause of damage to a crushed stone surfaced trail, with 77 percent of respondents reporting it the 2014 study.

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*Water erosion is the most frequently mentioned cause of damage to a crushed stone surfaced trail.*

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Vegetation encroaching through the trail surface was the second most common cause of damage to a crushed stone trail, with one-third of respondents citing this cause. Less than 2 percent of respondents indicated tree roots as a cause of damage to a crushed stone surface trail.



**Figure 8. Sources of Damage to Crushed Stone Surface (2014 Survey)**

## Surface Clearing of Trail

For the purpose of the survey, trail clearing was defined as the removal of material such as leaves, sticks and stones from the trail surface. A third of the respondents to our detailed cost survey indicated that time was spent clearing the surface of the trail. This activity was mostly confined to asphalt surfaced trails. On average, surface clearing took 3.5 hours per mile, at an average cost of \$22.25 per hour.



**Erosion damage to stone dust trail.**

## Maintenance of Pavement Markings

Pavement markings are generally associated with asphalt-surfaced trails. This study found that a painted center line was the most common type of pavement marking. Other pavement markings are safety or instructional in nature. Some markings are painted on the trail surface, while others are applied thermally. The detailed cost analysis revealed that this activity, while not reported by many respondents, varied in cost from \$19 per mile to \$140 per mile.



Pavement markings, Hanover Trolley Trail, PA.

## Snow Removal



Winter use of the Torrey C. Brown Trail, MD.

In the general maintenance study, 33 percent of respondents reported that they removed snow from portions of the trail, and 9 percent reported that they remove snow from the entire length of the trail. Generally, full or partial snow removal was more common on trails in urban or suburban areas.

According to respondents to the detailed cost study who reported snow removal (25 percent), the time and cost of snow removal varied widely. Time spent ranged from 500 hours on the 71-mile Traverse Area Recreation Trail in Michigan to 15 hours on the 24-mile Three Rivers Heritage Trail in Pittsburgh, Pennsylvania. This activity varied widely from year to year based on the frequency and amount of snowfall.

Some trail managers who did not report clearing snow from the trail surface did report that they cleared snow from trailhead parking lots. Trails can get a great deal of winter use if potential trail users have a place to park. Cross country skiing is a popular activity on many rail-trails in snow country. The Heritage Rail Trail County Park in Pennsylvania spent \$600 clearing trailhead parking lots for skiers but does not clear the trail surface. In 2014, 63 percent of respondents reported doing trailhead snow removal, compared with half that number in 2005.





# MAJOR MAINTENANCE TASKS

## Drainage

Maintenance of drainage areas is critical to helping minimize the damage to both asphalt and crushed stone surfaced trails caused by water erosion. As we found in the 2005 survey, this activity is primarily carried out manually with the use of rakes and shovels. In both surveys, this manual activity was reported by 70 percent or more of the respondents.

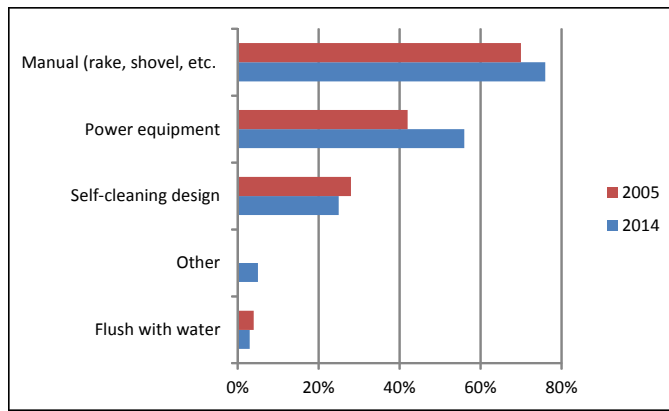


Figure 9. Drainage Activities (2014 Survey)



Culvert failure, Allegheny River Trail, PA.

## Clearing of drainage swales and culverts

Periodically investing several hundred or even several thousand dollars in maintaining trail drainage systems and culverts can prevent catastrophic damage to a trail when a major water event occurs.

Forty-one percent of respondents to the detailed cost analysis survey reported spending staff and volunteer hours on this task. A quarter of those reporting indicated that this activity was carried out entirely by volunteers.

Volunteers on the four-mile Greater Hazelton Rails to Trails in Pennsylvania spent 60 hours on this task.

Of those trail management organizations that reported carrying out this activity, the cost varied from \$85 per mile to \$350 per mile. Cost depended



Culvert failure, Manhan Rail Trails, MA.

on the type of drainage system used along the trail, the number of culverts that required cleaning and the method used to clean drainage swales and culverts.

The Montgomery County Pennsylvania Regional Trail maintenance schedule requires that drains, pipes, culverts and inlets are cleared out three times per year and must be checked after all heavy rainfalls. All leaf litter, branches and other debris are required to be removed at inlets and along drainage swales.

The West Penn trail maintenance plan calls for clearing drainage swales twice a year or as needed. Most of this work is done with rakes and shovels. Some larger ditches may require the use of a backhoe.



**Drainage swale in need of cleaning.**

## Trailhead Amenities

Between 2005 and 2014, dramatic changes were made in the types of facilities that trail managers provide at trailheads.

In 2005, only 58 percent of the survey respondents indicated that they provided an information kiosk at the trailheads. In the 2014 survey, however, 83 percent of respondents indicated that an information kiosk was part of the trailhead facility.

Availability of a permanent restroom facility increased from 25 percent in 2005 to 43 percent in 2014. Availability of portable toilet facilities at trailheads increased from 33 percent in 2005 to 45 percent in 2014, and the availability of trash receptacles increased from 42 percent to 61 percent over the decade between surveys.

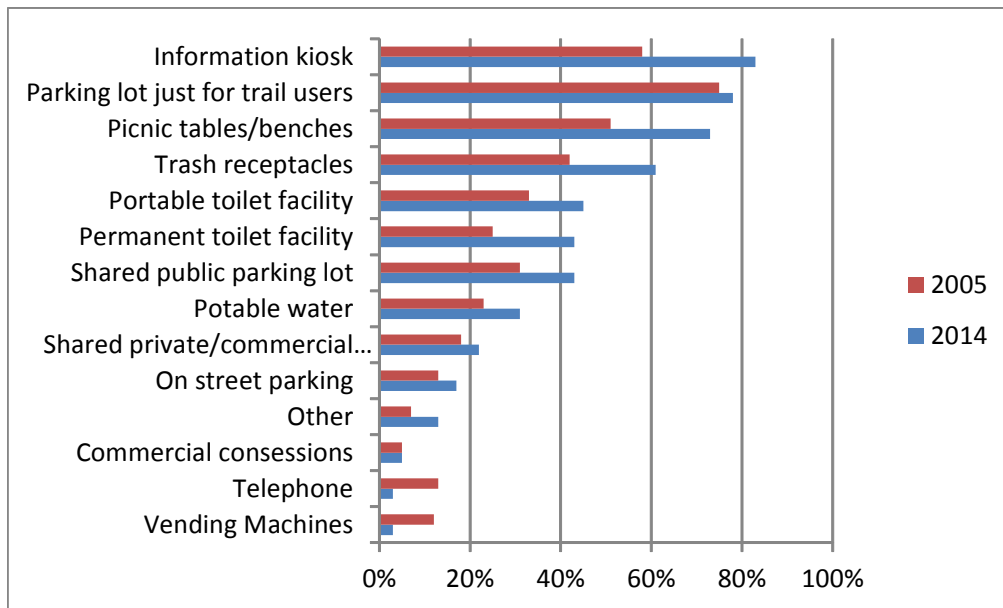


**Down East Sunrise Trail, ME.**





# MAJOR MAINTENANCE TASKS



*Between 2005 and 2014, dramatic changes were made in the types of facilities that trail managers provide at trailheads.*

**Figure 10. Trailhead Features (2014 Survey)**

In 2005, 51 percent of the respondents reported trailheads featuring picnic tables and benches; that number increased to 73 percent in 2014. Telephones at trailheads fell from 13 percent in 2005 to 3 percent in 2014, consistent with an overall decline in public phones in the United States.

In 2005 only 43 percent of survey respondents reported the availability of picnic tables and benches along the trail. Today, 76 percent of trail managers' report that picnic tables or benches are provided along their trails.

## Trailheads

Respondents were asked to provide a detailed cost for several aspects of trailhead maintenance, including landscaping, toilet facilities and kiosks. For the majority of those reporting, landscaping at trailheads was carried out by volunteers. Volunteer hours annually ranged from as few as eight to as many as 500. The largest cost item at trailheads was maintenance of restroom facilities. The lowest cost item was maintenance of informational kiosks at the trailhead.

## Amenities

The cost of maintaining amenities such as picnic tables and benches varied among trail managers reporting detailed cost information. It was most strongly correlated to the length of the trails, as longer trails required more benches and picnic tables to maintain. For example, the 71-mile Willard Munger State Trail in Minnesota spent \$1,260 on maintenance of amenities, while the eight-mile section of the Ghost Town Trail in Pennsylvania spent only \$25. This type of maintenance spending likely also varies on a year to year basis.



**Trailhead signage, Youghiogheny Rive Trail, Great Allegheny Passage, PA.**

## Sanitation

### Litter Clean-Up

More than half of the trail managers who responded to the detailed trail maintenance cost survey reported on the number of hours spent cleaning up litter. Although the amount of time spent on litter removal is greater along urban trails, rural trails also require this task. Friends of the Riverfront, which manages the 24-mile Three Rivers Heritage Trail system in Pittsburgh, spends 2,000 hours annually on litter control. The 56-mile Trail of the Coeur d' Alenes in Idaho spends 300 hours on litter cleanup.

### Restroom Maintenance

Maintenance of restroom facilities, whether at trailheads or along the trail, can be an ongoing annual expense. Respondents to the detailed cost analysis survey provided information about maintenance of both permanent facilities and portable toilets. Costs varied widely. The Heritage Rail Trail County Park in Pennsylvania has both permanent and portable toilets at trailheads along the 21- mile trail. Maintenance costs for these facilities were reported at more than \$14,000 a year.



Permanent toilet facility along the Pine Creek Rail Trail, PA.



Cub Scouts help with litter clean-up on the Heritage Rail Trail County Park, PA.



Earth Day trash pick up along the Capital Greenbelt, Harrisburg, PA.





# MAJOR MAINTENANCE TASKS

## Signage

The 2014 survey revealed that trail managers are increasing the number and types of signs along trails, which adds to the need for maintenance. Posted trail identification signs increased from 75 percent in 2005 to 91 percent in 2014. More trails have mileage markers as well, an increase from 55 percent in 2005 to 74 percent in 2014. The placement of interpretive signs has also grown substantially, from 31 percent in 2005 to 57 percent in 2014. All of this additional signage helps to provide a better trail experience. However, 76 percent of trail managers reported that their signs were subject to vandalism.

## Repair and Maintenance of Signage

Another major maintenance task is the repair and maintenance of trail signage. More than 40 percent of respondents reported this as a significant maintenance activity. In this case, trail length is correlated with cost: typically, the longer the trail the more signs that need to be maintained and the more time and cost is involved.

The four-mile Path of the Flood Trail in Pennsylvania reported spending two hours on signage repair and maintenance, and the 26-mile Catskill Scenic Trail in New York reported spending 135 hours on this work.

More than 75 percent of the respondents to the general maintenance survey reported that vandalism was the major cause of damage requiring signage repair and maintenance.



Welcome sign, Ashuelot Rail Trail, NH.



Greenline Trail sign used for target practice.



## Access Control

### Maintenance of Gates and Bollards

Gates and bollards are used to keep automobiles and other motorized vehicles off of trails that are intended only for non-motorized use. While maintenance costs associated with gates and bollards were reported by only 15 percent of detailed cost analysis respondents, most indicated costs of between \$2,300 and \$5,000.



**Bollard at intersection, Bruce Freeman Rail Trail, MA.**

### Fencing

A majority of the respondents to our survey, 51 percent, indicated that they had some type of fencing along their trail. Most common was split rail wooden fencing, which was mentioned by 45 percent of the respondents. Over time this becomes a maintenance issue, as posts and rails rot or become damaged in some way.

Fencing generally is deployed along trails to protect trail users from a potential danger, such as a steep slope, or to prevent them from entering adjacent properties. In the detailed cost analysis, we looked at three types of typical trail side fencing: wooden, chain link and vinyl.

Of these three types, wooden fencing was reported to require the most maintenance. Thirty percent of the detailed cost survey respondents reported time repairing wooden fencing. This maintenance can take the form of replacing fencing that had rotted or fencing that had been damaged by accident or acts of vandalism. Only 8 percent of respondents reported repairs to chain link fence. No respondents reported repairs to vinyl fencing.



**Damaged split rail fence along the Pine Creek Rail Trail, PA.**





# MAJOR MAINTENANCE TASKS



Split rail fencing, Pine Creek Rail Trail, PA.

## Trail Features

### Bridges

A full 88 percent of the trail managers indicated that they have at least one bridge along their trail. The most common — 61 percent — are original railroad bridges. The second most common type of bridge is new bike/pedestrian bridges with vehicle capacity. Surprisingly, 43 percent of respondents indicated that their bridges are not inspected on a regular basis by a certified inspectors or professional engineers. Fortunately, the number of trail managers reporting that their bridges are inspected increased from 33 percent in 2005 to 57 percent in 2014. The most frequent interval for bridge inspections reported in 2014 was two to three years, which is a shorter interval than that reported in 2005.



Scott Glen Bridge, Ghost Town Trail, PA.



## Tunnels or Culverts

Tunnels are one of the most distinctive features of many rail-trails. In our 2014 survey, 41 percent of the surveyed trails reported that they had a tunnel on the trail, an increase of 14 percent from those reporting in 2005. Forty percent of the tunnels are illuminated, mostly on a dusk-to-dawn basis, with lighting triggered by a light sensor and powered by a municipal utility.

## Other

### Vandalism and Illegal Dumping

A third of the respondents to our detailed cost analysis survey reported that they spent time repairing trails due to acts of vandalism or dumping along the corridor. Managers of four trails between 21 and 26 miles long in predominantly suburban/rural environments spent between 40 and 150 hours repairing trails after acts of vandalism or illegal dumping.



Cleaning-up illegal dumping along the Hanover Trolley Trail, PA.

## Average Labor Rate

Fifty nine percent of the respondents to the detailed maintenance cost survey reported labor rates for various trail maintenance activities. The rates ranged from a low of \$10 per hour to a high of \$75 per hour. Most labor rates were clustered around \$25 per hour plus or minus \$5. The average labor rate for all activities was \$22.25.

## Contracted Services

Many trail maintenance activities were carried out by trail management organizations and volunteers. Some, however, are better performed by outside contractors. In the survey, activities most commonly reported as being completed by contractors included tree removal, restroom maintenance, herbicide application, bridge inspections and clearing of drainage culverts and mowing.



Volunteers painting over graffiti.





Howard Tunnel, Heritage Rail Trail County Park, PA.



# CONCLUSIONS

To better understand this issue, RTC conducted a comprehensive survey of trail maintenance costs. Results of this study show that, contrary to popular belief, maintenance costs are not as high as expected. Per mile yearly average costs for rail-trail maintenance assessed in this study ranged from \$1,000 to \$2,000, depending on whether the trail was asphalt or stone dust. This assessment supports the findings of the more detailed budgets that a few dozen trail managers provided, which averaged \$2,026 per mile per year. This figure includes the value of volunteer service, which was assigned an equivalent hourly rate. When compared against the finding that 58 percent of trails reported using volunteers, both of the annual cost figures may decrease significantly.

Several additional significant findings from this study are summarized below.

## **Damage to asphalt trails from tree roots is significant and growing.**

More than 60 percent of asphalt trail managers reported tree roots as the major source of trail damage. Clearly, as more asphalt trails are being built rather than stone dust trails (as required by some departments of transportation and metropolitan planning organizations); the true costs of these facilities needs to be better understood and shared. Replacing asphalt after several years is costly and frequently becomes a rebuild that is often funded by Transportation Enhancement (TE) programs or Transportation Alternatives Programs (TAP). This costly maintenance requirement might be prevented with better construction standards and possible use of root barriers in certain segments of a trail or periodic trenching to cut root growth. The removal of healthy trees several years after the trail is built is not the only option.

As an additional way to save money, several trail groups could work together to purchase materials or share equipment. State Departments of Natural Resources might use Recreation Trails Program funding to purchase equipment that can be used by any trail.



**Tree pruning even occurs in the dead of winter, Three Rivers Heritage Trail, PA.**

## **Invasive species concerns nearly tripled in importance from 2005 to 2014.**

Some invasive species can be disproportionately destructive compared with native vegetation because natural control mechanisms do not exist in their new environment. This study found an increase in herbicide use, which is needed to control some invasive species. As a secondary issue, because trail groups rely heavily on volunteers and only contract out a small percent of herbicide application to professionals, it is logical to question if volunteers are adequately trained. Municipal workers, who would have adequate training, may be doing most of the herbicide application; however, this potential safety issue may warrant further examination.



# CONCLUSIONS

## Surprisingly, the survey found that 60 percent of rail-trails do not have maintenance plans.

This is surprising not only from a management perspective, but from a liability standpoint. All trail managers should have proof that they exercise a reasonable amount of due diligence to ensure that the trails are safe. Many government-owned and maintained rail-trails are included under larger park or civil works maintenance schedules. As a result, managers may believe that specific safety assurance for trails is not required. However, any trail that is owned, maintained or operated by a private, nonprofit organization should have a detailed safety management and maintenance plan with a schedule of tasks and inspections of related structures and facilities.

## Estimating per-mile costs.

A total of 95 survey respondents provided an annual budget amount required to maintain their trail representing 40 percent of the trails included in the survey. Using the interquartile range (IQR) of those 95 trails gave us a total annual budget amount for maintenance. We determined that, of the sample group, annual maintenance cost per mile in 2013–2014 averaged \$1,006 for a crushed stone trail and \$1,971 for a paved asphalt trail. These figures do not include any extensive or exceptional repairs and are assumed to include only the most basic maintenance tasks needed to keep the trail usable.

**Table 1. Estimated Costs Per Mile**

Source	Asphalt Surface	Non-Asphalt Surface
RTC Maintenance & Operations Report - 2014	\$1,971/mile	\$1,006/mile
RTC Maintenance & Operations 2004 Report	\$1,458/mile	\$1,478/mile

## Cost per activity.

Based upon the detailed cost analysis survey, we were able to determine the percentage that each activity represents in a typical trail maintenance budget. Data on asphalt and non-asphalt surfaces have been combined.

**Table 2 Typical Maintenance Budget**

Maintenance Activity	Percent of Budget
Surface clearing of trail	10.8%
Mowing	12.0%
Vegetation management (leaf clearing, pruning, etc.)	11.2%
Keep trail-side land clear of trash and debris	11.5%
Whole tree removal	5.4%
Application of herbicides or pesticides	2.3%
Clearing of drainage channels and culverts	5.4%
Surface maintenance of parking areas	2.7%
Litter clean up, trash cans	2.7%
Maintenance of toilets at trailheads	13.0%
Maintenance of toilets along the trail	1.2%
Trailhead parking snow removal	1.1%
Repair/maintenance of signs	6.3%
Recovery from illegal acts of vandalism/dumping	5.3%
Other trail maintenance activities	9.1%



## Summary

Trail managers and local stakeholders often cite the need for dedicated state or federal funding to help pay for trail maintenance. Up to this point, RTC has lacked sufficient data to make that case effectively to decision-makers at the state or federal level. This study was initiated to bring some clarity to this issue. Because funding for rail-trails is difficult to secure, over-estimating maintenance costs can inadvertently give opponents easy leverage to speak against rail-trail development. In addition, funders often question if all aspects of any community development project should be funded by state and federal grants, particularly maintenance-related costs, which are often perceived as a “local issue.”

This study presents a more comprehensive understanding of rail-trail maintenance, as has been done for other rail-trail issues such as construction costs, economic impact and rails-with-trails. Such an approach enables the rail-trail community to focus its limited resources more effectively on addressing the most critical issues.



Volunteers clear storm damage along trail in Heritage Rail Trail County Park, PA.



Please answer the following questions as completely and accurately as possible. If it is necessary to have more than one person in your organization answer different questions based on their personal areas of experience and expertise, please do so.

Please provide accurate information about the person to be contacted if any follow-up information is needed.

**1. Please provide you name and contact information**

Name  
Title/Agency  
Email  
Phone

**2. What is your Trail Name and state:**

Trail name  
State  
Mileage

**ADMINISTRATIVE**

**3. What is the trail surrounding Environment (check all that apply):**

37% Rural  
12% Urban  
13% Suburban  
38% Mixed

**4. What are the permitted uses on your trail? (check all that apply)**

3% ATV  
99% Bike  
79% Cross Country Skiing  
Fishing  
40% Horseback Riding  
56% Inline skating  
66% Mountain Biking  
16% Snowmobile  
100% Walking  
86% Wheelchair Access

**5. Who owns the land under the trail? If more than one, please indicate an approximate percentage.**

23% Federal government  
43% State government  
34% Municipal government  
42% County government  
31% Railroad  
9.9% Single private owner  
46% Non-profit entity  
21% Utility  
12% Multiple private owners

**6. On a general basis, who PERFORMS maintenance of the trail? If more than one, please indicate an approximate percentage.**

58% Trail Group Volunteers  
39% Other volunteer community groups (please specify)  
13% Individuals with mandatory community service  
4% Federal government  
21% State government  
33% County government  
43% Municipal government  
12% Non-profit entity (paid staff)  
12% Other (specify)

**7. Do you have a written Trail Maintenance Plan?**

40% Yes  
60% No

**8. Who FUNDS maintenance of the trail? If more than one, please indicate an approximate percentage.**

6% Federal government  
31% County government  
32% Non-profit entity  
25% State government  
42% Municipal government  
14% Other (specify)

# Rail-Trail Maintenance and Operations

9. What is the annual maintenance budget for this trail? (Average for all respondents that provided a budget.)

\$66,430

9.a. If known, please provide the dollar amounts for the following within your maintenance program.

(Insufficient data)

Labor

Equipment

Supplies

10. How is the maintenance funded?

- |     |  |
|-----|--|
| 7%  | Federally legislated (REC Trails funding)  |
| 24% | State Budget   |
| 49% | Municipal Budget   |
| 9%  | Unique funding streams or fees collected through the community (e.g. hotel tax)? |
| 39% | Local Fundraising activities (please describe)                                   |
| 29% | In-kind Donations  |

11. Is the trail covered by liability insurance?

77% Yes (If yes go to 12)

23% No (If no go to 15)

12. What is your coverage amount ?

Most indicated \$1 - 2 Million

13. Who is your carrier?

Various

14. What is your annual cost?

Various

15. In what year was the trail first opened for public use?

Various

16. How do you track annual users:

- |     |  |
|-----|--|
| 54% | Do not currently track the number of annual users (Skip to 18) |
| 23% | Estimate / guess   |
| 16% | Manual count   |
| 23% | Automated counter  |

17. How many users does your trail have on an annual basis?

Varied

18. What are the hours of operation of your trail?

- |     |                 |
|-----|-----------------|
| 63% | Dawn until dusk |
| 30% | Open 24/7       |
| 7%  | Other           |

## SURFACE - GENERAL

19. What is the average width of your trail?

- |     |                 |
|-----|-----------------|
| 6%  | 6ft.            |
| 16% | 8ft.            |
| 60% | 10ft.           |
| 15% | 12ft.           |
| 3%  | Other (specify) |

20. What surface material exists on any sections of your trail? (check all that apply)

- |     |                 |
|-----|-----------------|
| 76% | Asphalt         |
| 7%  | Concrete        |
| 55% | Crushed Stone   |
| 9%  | Cinders         |
| 21% | Dirt/ Soil      |
| 8%  | Other (specify) |

21. Please indicate any reused or recycled materials used in the surface of your trail?

69%	None
1%	Tires or other rubber
0%	Glassphalt
19%	Asphalt / pavement milling
2%	Coal ash (cinders)
8%	Quarry waste from stone/rock processing (tailings, etc.)
5%	Other (specify)

22. What is the predominant surface material on your trail?

52%	Asphalt	(Go to 23)
2%	Concrete	(Go to 35)
40%	Crushed Stone	(Go to 43)
4%	Original railroad cinders	(Go to 53)
4%	Dirt / Soil	(Go to 59)
0%	Boardwalk	(Go to 65)
5%	Other (specify)	(Go to 72)

## SURFACE - ASPHALT

23. Has your trail been repaved or resurfaced since the original paving construction?

35%	Yes	(If yes go to 24)
65%	No	(If no go to 29)

24. At what frequency (in years)?

45%	Recurring
3%	3 to 5
7%	6 to 10
45%	10 plus

25. Has your trail been seal-coated since the original paving?

25%	Yes	(If yes go to 26)
75%	No	(If no go to 27)

26. At what frequency (in years)?

41%	Recurring
27%	3 to 5
23%	6 to 10
9%	10 plus

27. Do you have a crack sealing programing?

35%	Yes	(If yes go to 28)
65%	No	(If no go to 29)

28. At what frequency (in years)?

78%	Recurring
13%	3 to 5
9%	6 to 10
0%	10 plus

29. What are the major causes of damage to your asphalt surfaced trail?

43%	Water/erosion
63%	Tree roots
20%	Vegetation (grass, weeds)
25%	Sub surface failure
44%	Frost/freeze cycle

30. Is snow removed from your trail?

9%	Yes, fully
33%	Yes, partially
58%	No

31. How is the surface of your trail kept clear of trash and debris? (Check all that apply)

9%	Street sweeper
18%	Rotary brush
65%	Blower
58%	Manual (broom, rake, etc.)
7%	Other (specify)



# Rail-Trail Maintenance and Operations

32. Does your trail employ pavement markings?  
(Check all that apply.)

51% No (if no skip to 72)  
49% Yes

33. Do you indicate a Center Line of the trail?

44% Yes  
24% Painted  
4% Thermal transfer  
51% No

34. Do you employ other safety markings?

61% Yes:  
35% Painted  
14% Thermal transfer  
35% No

## SURFACE – CONCRETE

35. Have sections of your trail been re-poured or resurfaced since the original paving construction?

25% Yes (If yes go to 36)  
75% No (If no go to 37)

36. At what frequency (in years)?

Recurring  
3 to 5  
6 to 10  
10 plus

37. What are the major causes of damage to your concrete surfaced trail?

67% Water/erosion  
33% Tree roots  
0% Vegetation (grass, weeds)  
0% Sub surface failure  
33% Frost/freeze cycle  
33% Other

38. Is snow removed from your trail?

33% Yes fully  
0% Yes partially  
67% No

39. How is the surface of your trail kept clear of trash and debris? (Check all that apply)

33% Street sweeper  
33% Rotary brush  
100% Blower  
0% Manual (broom, rake, chainsaw, etc)  
Other (specify)

40. Does your trail employ pavement markings?  
(Check all that apply.)

67% Yes (if yes go to 41)  
33% No (If no go to 72)

41. Do you indicate a center line of the trail?

100% Yes  
0% Painted  
0% Thermal transfer  
0% No

42. Do you employ other safety markings?

100% Yes:  
0% Painted  
0% Thermal transfer  
0% No

## SURFACE – CRUSHED/GRANULAR STONE

43. How was trail surface applied?

60% Paving machine  
21% Box spreader  
23% Tailgate from dump truck  
11% Bucket spread from loader  
0% Wheelbarrow or other manual  
8% Other (specify)

44. Has your trail been re-surfaced since the original construction?

56% Yes (If yes go to 45)  
48% No (If no go to 46)

45. At what frequency (in years)?

32% Recurring  
3% 3 to 5 years  
21% 6 to 10 years  
44% 10 years or longer

46. How is the surface material compacted?

14% Not  
38% Steel drum roller (static)  
47% Steel drum roller (vibratory)  
5% Rubber tired roller  
0% Rammer  
7% Vibratory plates  
10% Other (specify)

47. If applicable, please indicate the size of aggregate used for your trail surface.

40% Unknown  
10% 1A  
0% 1B 3% 2A  
0% 2B 2% 2RC  
30% AASHTO #10  
2% DSA  
18% Other (specify)

48. Do you use any type of soil or aggregate binder?

97% No  
3% Yes

49. What are the major causes of damage to your crushed stone surfaced trail:

77% Water/erosion  
2% Tree roots  
2% Vegetation (grass, weeds)  
3% Sub surface failure  
17% Frost/freeze cycle  
27% Other (specify)

50. How are damages to your trail surface repaired:

32% Grader or other heavy equipment  
42% Light duty power equipment  
40% Dragging  
71% Manual (rake, shovel, etc.)  
13% Other (specify)

51. Has your trail been re-graded since the original construction?

44% Yes (If yes go to 34a)  
54% No (If no go to 36)

52. At what frequency (in years)?

74% Recurring  
4% 2 to 3 years  
4% 4 to 5 years  
19% 6 to 10 years

## SURFACE – ORIGINAL RAILROAD CINDERS

53. How was the surface prepared after removal of the rails and ties

56% Grader or other heavy equipment  
11% Light duty power equipment  
33% Dragging  
11% Manual (rake, shovel, etc.)  
22% Other (specify)

# Rail-Trail Maintenance and Operations

## 54. How was the surface material compacted ?

20%	Steel drum roller (static)
80%	Steel drum roller (vibratory)
0%	Rubber tired roller
0%	Rammer
0%	Vibratory plates
0%	Other (specify)

## 55. What are the major causes of damage to your cinder surfaced trail?

87%	Water/erosion
0%	Tree roots
25%	Vegetation (grass, weeds)
13%	Sub surface failure
50%	Frost/freeze cycle

## 56. How are damages to your trail surface repaired?

63%	Grader or other heavy equipment
63%	Light duty power equipment
25%	Dragging
50%	Manual (rake, shovel, etc)
	Other (specify)

## 57. Has your trail been re-graded since the original construction?

71%	Yes	(If yes go to 58)
29%	No	(If no go to 65)

## 58. At what frequency (in years)?

100%	Recurring
0%	2 to 3 years
0%	4 to 5 years
0%	6 to 10 years

## SURFACE – DIRT/SOIL

## 59. How was the surface prepared?

43%	Grader or other heavy equipment
43%	Light duty power equipment
15%	Dragging
29%	Manual (rake, shovel, etc)
	Other (specify)

## 60. How was the surface material compacted?

20%	Steel drum roller (static)
20%	Steel drum roller (vibratory)
20%	Rubber tired roller
20%	Rammer
20%	Vibratory plates
40%	Other (specify)

## 61. What are the major causes of damage to your dirt/soil surfaced trail?

71%	Water/erosion
14%	Tree roots
14%	Vegetation (grass, weeds)
14%	Sub surface failure
29%	Frost/freeze cycle
43%	Other (specify)

## 62. How are damages to your trail surface repaired?

29%	Grader or other heavy equipment
71%	Light duty power equipment
0%	Dragging
71%	Manual (rake, shovel, etc)
0%	Other (specify)

## 63. Has your trail been re-graded since the original construction?

50%	Yes	(If yes go to 64)
50%	No	(If no go to 65)



## 64. At what age / frequency (in years)?

33%	Recurring
0%	2 to 3 years
33%	4 to 5 years
33%	6 to 10 years

**SURFACE – BOARDWALK**

## 65. Does your trail contain any segments of boardwalk?

18%	Yes	(If yes go to 66)
82%	No	(If no go to 53)

## 66. How long is the boardwalk segment of your trail?

0 %	10 feet or less
23%	10 to 50 feet
19%	51 to 100 feet
29%	101 to 500 feet
8%	501 to 1,000 feet
19%	1,001 feet or more

## 67. How wide is the boardwalk segment of your trail?

28%	5 to 7 feet
37%	8 to 10 feet
28%	11 to 12 feet
6%	Greater than 12 feet

## 68. What is the decking material of the boardwalk?

6%	Wood ( pine, oak, et.) not pressure treated
0%	Wood (teak, red wood, etc.)
84%	Wood – pressure treated
3%	Synthetic wood (Trex, NewTechWood, ArmorGuard etc.)
0%	Concrete
7%	Other

## 69. How old is the boardwalk segment of your trail?

23%	1 to 3 years
42%	4 to 9 years
26%	10 to 20 years
10%	More than 20 years

## 70. Has your boardwalk been re-decked since its original construction?

33%	Yes	(If yes go to 71)
67%	No	(If no go to 72)

## 71. At what frequency has re-decking occurred?

11%	2 to 3 years
0%	4 to 5 years
22%	6 to 10 years
67%	More than 10 years

**ADJACENT LAND AND VEGETATION**

## 72. Does annual or perennial vegetation grow along your trail?

97%	Yes	(if yes go to 73)
3%	No	(if no go to 75)

## 73. Do you use any herbicides or pesticides in your trail maintenance?

45%	Yes	(If yes go to 73a)
54%	No	(If no go to 75)

If yes, please list:

## 74. Who is responsible for herbicide/pesticide application (check all that apply)

77%	Trail maintenance staff
20%	Volunteers
14%	Contractor

# Rail-Trail Maintenance and Operations

## 75. Do trees grow along your trail?

100%	Yes
0%	No

## 76. If planting new trees, what is the distance between the trees and the edge of the trail?

15%	8
7%	10
6%	12
5%	20
7%	other?

## 77. Please indicate any activities that are performed relative to trail side vegetation. (Check all that apply.)

93%	Litter clean-up
91%	Tree pruning
30%	Tree and shrub planting
90%	Tree removal - Safety
44%	Tree removal - Health
93%	Tree removal - Fallen
26%	Tree removal - Aesthetics (improve view shed)
92%	Mowing
40%	Leaf removal
62%	Invasive species removal
27%	Flower and ground cover planting
3%	Other (specify)

## 78. How is drainage accommodated? (Check all that apply.)

80%	Trail surface is crowned or sloped
76%	Trail-side drainage channels (ditches, gullies)
72%	Culverts
5%	Other (specify)

## 79. How are drainage areas kept clear? (Check all that apply.)

56%	Power equipment (backhoe, etc.)
76%	Manual (rake, shovel, etc.)
3%	Flush with water
25%	Self-cleaning design
5%	Other (specify)

## PARKING, TRAILHEADS, and SANITATION

## 80. How many trailheads are there along your trail?

5%	None
26%	1-3
28%	3-5
26%	5-10
12%	10-15
4%	Other (please specify)

## 81. Please indicate the features of your trailheads. (Check all that apply.)

78%	Parking lot just for trail users
22%	Shared private/commercial parking lot
43%	Permanent toilet facility
83%	Information kiosk
31%	Potable water
5%	Any other commercial concession
3%	Telephone
43%	Shared public parking lot
45%	Portable toilet facility
17%	On-street parking
61%	Trash receptacles
3%	Vending machines
73%	Picnic tables/benches
13%	Other (specify)

82. What is the primary surface material for your trailhead parking area(s)?

53%	Asphalt
38%	Crushed Stone
0%	Cinders
6%	Dirt / Soil
3%	Other (specify)

83. Is snow removed from your trailhead parking lots?

63%	Yes
37%	No

84. Aside from trailheads, are any of these amenities provided along your trail. (Check all that apply.)

22%	Permanent toilet facility
52%	Informational kiosk
24%	Potable water
7%	Any other commercial concession
62%	Interpretive signage
22%	Portable toilet facility
43%	Trash receptacles
1%	Vending machines
76%	Picnic tables/benches
8%	Other (specify)

## SIGNS, ACCESS CONTROL AND PUBLIC SAFETY

85. What types of signs do you use? (Check all that apply.)

91%	Trail identification sign ("welcome to ABC Trail")
74%	Mile marker
6%	Quarter miles
7%	1/10 mile
77%	Traffic control for trail users (stop, yield)

60%	Traffic control for cars at crossings
75%	Trail rules and regulations
25%	Property boundary sign (no trespassing)
57%	Interpretive signs
28%	Wayfinding on trail
20%	Wayfinding (off trail)
2%	No trail specific signage
12%	Other (specify)

86. Do you experience vandalism of your signs?

76%	Yes
24%	No

87. Please indicate any techniques you use to separate users by direction of travel or use? (e.g. pedestrian vs. bicycle) Check all that apply.

68%	None
13%	Pavement markings
23%	Signs
3%	Physical separation
3%	Different surface type
4%	Separate tread (Bridle or carriage path)
3%	Other (specify)

88. Is your trail patrolled by any professional policing authority?

65%	Yes	(If yes go to 89)
35%	No	(If no go to 90)

89. Police agency type:

5%	State police or state sheriff
42%	Municipal police
33%	Park or trail rangers
20%	Other (specify)



# Rail-Trail Maintenance and Operations

90. Is your trail patrolled by a volunteer or a non-police group (e.g. crime watch)?

30%	Yes
70%	No

91. Do you have an on-going problem with any of the following activities on the trail? (Check all that apply.)

49%	Dumping
12%	Crimes against persons
28%	After hours use
17%	Trespass
71%	Vandalism
21%	Crimes against property
22%	Other (specify)

92. Are your trailheads lighted?

16%	Yes	(If yes go to 93)
84%	No	(If no go to 96)

93. During what times?

75%	Dusk until dawn
25%	Other

94. How are the lights controlled? (Check all that apply.)

13%	Always on
4%	Manual switch
25%	Clock / timer
75%	Light / dark sensor
4%	Motion sensor
18%	Other (specify)

95. How are the lights powered?

96%	Municipal power supply
4%	Solar panel
0%	Battery

96. Do you have emergency call boxes on along your trail or trailhead?

3%	Yes
97%	No

97. How is vehicular access to your trail controlled? (Check all that apply.)

22%	Vehicular access is not controlled
45%	Gates
26%	Fixed bollards
54%	Removable bollards
11%	Other (specify)

98. Do you use fencing along your trail?

64%	Yes	(if yes go to 99)
36%	No	(if no go to 101)

99. What types of fencing do you use?

18%	Chain link
45%	Split rail
7%	Woven Wire
3%	Stockade
27%	Other (specify)

100. What is the average height of the fence (in INCHES)?

48 "	most common
------	-------------

**101. In what areas have you made accommodation for ADA standards or handicapped accessibility?**

78%	Parking
50%	Restrooms
35%	Picnic tables
12%	Visitor's Center
15%	Interpretive areas
75%	Grade of trail
61%	Grade of access to trail
67%	Trail Surface
3%	Our trail has specific features for individuals with sight, hearing, or other impairments.
5%	Other (specify)

## BRIDGES, TUNNELS and ROAD CROSSINGS

**102. Do you have any bridges on your trail?**

88%	Yes	(If yes go to 103)
12%	No	(If no go to 109)

**103. What types of bridges do you have?**

61%	Existing railroad bridge
33%	Pre-Fabricated
9%	New Bike/Ped (no vehicular capacity)
40%	New bike/ped (with vehicle capacity)
16%	Small foot bridge(less than 5' wide)
8%	Other (specify)

**104. What is the deck material on your bridges? (Check all that apply.)**

74%	Wood
9%	Synthetic lumber
1%	Rubber
11%	Metal
16%	Asphalt
36%	Concrete
11%	Stone/dirt/cinders
	Other (specify)

**105. Do you have railings on your bridges?**

97%	Yes	(If yes go to 106)
3%	No	(If no go to 109)

**106. What is the height of the fence/railing (in INCHES)?**

48"	most common
-----	-------------

**107. Are your bridges inspected on a regular basis by a certified inspector or professional engineer?**

57%	Yes
43%	No

**108. At what frequency (in years)?**

0%	Recurring
66%	2 to 3 years
23%	4 to 5 years
11%	6 to 10 years

**109. Do you have any tunnels or culverts for user passage under roads etc.**

41%	Yes	(If yes go to 110)
59%	No	(If no go to 114)

# Rail-Trail Maintenance and Operations

## 110. Are your tunnels lighted?

40%	Yes
60%	No

## 111. During what times?

31%	24/7
61%	Dusk to dawn
8%	Other (please specify time of day/ night)

## 112. How are lights controlled?

23%	Always on
0%	Manual switch
31%	Clock / timer
46%	Light / dark sensor
0%	Motion sensor
	Other (specify)

## 113. How are the lights powered?

92%	Municipal power supply
8%	Solar
0%	Battery
0%	Generator

## 114. Do you paint/stain/treat bridge structures or decks, tunnel/underpass walls, etc?

45%	Yes	(If yes go to 115)
54%	No	(If no go to 116)

## 115. At what frequency (in years)?

68%	Recurring
0 %	2 to 3 years
10%	4 to 5 years
23%	6 to 10 years

## 116. How are at-grade crossings of roads controlled? (Check all that apply.)

89%	Stop sign for trail users
17%	Yield sign for trail users
17%	Traffic signal (red, yellow, green)
69%	Ped /bike crossing sign
17%	Stop sign for road users
20%	Yield sign for road users
30%	Pedestrian crossing signal (walk)
51%	Road striping
	Other (specify)

Trail Name	State	Opened	Mileage	Surface
Tahoe City Public Utility District Multi-use trails	CA	1991	20	Asphalt
Bizz Johnson National Recreation Trail	CA	1983	25.4	Ballast, Gravel
Fort Collins City Trails	CO	1998	36	Concrete
Rio Grande Trail	CO	1987	42	Asphalt
Middlebury Greenway	CT	2008	5	Asphalt
Sue Grossman Still River Greenway	CT	1995	3	Asphalt
Trumbull Rails to Trails	CT	2006	7	Crushed Stone
Farmington Canal Heritage Trail	CT	2010	56	Asphalt
Metropolitan Branch Trail	DC	2000	3.5	Asphalt
Prairie Farmer Recreational Trail	IA	1999	22	Asphalt
Raccoon River Valley Trail	IA	1990	89	Asphalt, Concrete
Gay Lea Wilson Trail	IA	2000	17	Asphalt, Concrete
Ashton-Tetonia Rail Trail	ID	1913	30	Crushed Stone
Latah Trail	ID	1984	16	Asphalt
Trail of the Coeur d'Alenes Recreational Trailway	ID	2006	73	Asphalt
Wood River Trail	ID	1990	22	Asphalt
Route of the Hiawatha	ID & MT	1986	15	Ballast, Dirt, Gravel
George Rogers Clark Discovery Trail	IL	2010	9.2	Concrete
Forest Preserves of Cook County	IL	2009	100	Crushed Stone
Burnham Greenway	IL	2004	2.5	Asphalt
Millennium Trail and Greenway	IL	2003	8	Crushed Stone
Great Western Trail	IL	1990	12	Crushed Stone
Illinois Prairie Path	IL	1966	62	Crushed Stone
DeKalb Nature Trail	IL	1985	1.2	Asphalt
Oak Savannah Trail	IN	2010	8	Asphalt
Nickel Plate Trail	IN	2012	35	Crushed Stone
Pumpkinvine Nature Trails	IN	1996	20	Asphalt
Delphi Historic Trails	IN	2008	10	Crushed Stone
Zionsville Rail Trail	IN	1997	3.75	Asphalt
Monon Trail	IN	1997	9	Asphalt, Crushed Stone
Brighton East Rail Trail	KY	1998	2	Asphalt, Crushed Stone
Narrow Gauge Rail Trail	MA	2010	3	Crushed Stone
Bruce Freeman Rail Trail	MA	1992	6.8	Asphalt
Cape Cod Rail Trail	MA	2011	22	Asphalt
Methuen Rail Trail	MA	1995	2.4	Crushed Stone
Danvers Rail Trail	MA	1994	4.3	Crushed Stone
Old Colony Rail Trail	MA	1992	3	Asphalt
Southwick Rail Trail	MA	1994	6	Asphalt
Springfield Riverfront Bikeway/Walkway	MA	1994	3.7	Asphalt
Ashuwillticook Rail Trail	MA	2003	11	Asphalt
Gwynns Falls Trail	MD	2005	15	Asphalt



Trail Name	State	Opened	Mileage	Surface
Jones Falls Trail	MD	2006	9.1	Asphalt
Herring Run Trail	MD	1978	2.5	Asphalt
Stony Run Trail	MD	2013	2.9	Asphalt
Three Notch Trail	MD	2013	7	Asphalt
Gilchrest Trail	MD	2011	1.2	Asphalt
Broadneck Trail	MD	2000	6.6	Asphalt
Washington, Baltimore & Annapolis Trail	MD	1983	10.25	Asphalt
Baltimore Washington International Airport Trail	MD	2013	12.5	Asphalt
Torrey C. Brown/Northern Central Railroad Trail	MD	1984	20	Crushed Stone
Baltimore & Annapolis Trail	MD	1991	14	Asphalt
Catonsville Short Line Trail	MD	2013	3.5	Dirt, Gravel
St. John Valley Heritage Trail	ME	1998	29	Crushed Stone
Bangor Aroostook Trail & Aroostook Valley Trail	ME	1999	61	Gravel, Dirt, Soil
Aroostook Valley Trail	ME	1991	28	Crushed Stone, Dirt
Polly Ann Trail	MI	1998	30	Asphalt, Crushed Stone
Riverfront Trail	MI	2005	2.25	Asphalt
Kalamazoo River Valley Trail	MI	1999	17	Asphalt
Clinton River Trail	MI	2004	1	Crushed Stone
Flint River Trail	MI	2009	20	Asphalt
Leelanau Trail	MI	1987	20	Asphalt
I-275 Metro Trail	MI	mid-1970's	30	Asphalt
Conner Creek Greenway	MI	2009	9.5	Asphalt
Traverse Area Recreation Trail	MI	1831	10.5	Asphalt
Little Traverse Wheelway	MI	1996	26	Asphalt
Dakota Rail Regional Trail	MN	2002	12.4	Asphalt
Rocori Trail	MN	2005	12.9	Asphalt
Paul Bunyan and Cuyuna State Trails	MN	2004	128	Asphalt
Kenilworth Regional Trail	MN	2005	0.15	Asphalt
Central Lakes State Trail	MN	1986	55	Asphalt
Willard Munger State Trail (Gateway Segment)	MN	1993	18	Asphalt, Crushed Stone
Bruce Vento Trail	MN	2010	23	Asphalt
Willard Munger State Trail (Matthew Lourey State Trail)	MN	1980	80	Asphalt, Crushed Stone
Cannon Valley Trail	MN	1986	20	Asphalt
Dairyland Trail	MN	1995	6.2	Crushed Stone
Lake Wobegon Trail	MN	1999	54	Asphalt
Sakatah Singing Hills State Trail	MN	1980	38	Asphalt
Duluth Winnipeg and Pacific Trail	MN	1985	8	Gravel
Douglas State Trail	MN	1974	26	Asphalt
MKT Nature and Fitness Trail	MO	1982	8.9	Concrete, Crushed Stone
Northern Rail Trail	NH	1995	23	Crushed Stone
Sugar River Trail	NH	1997	9	Dirt, Soil

Trail Name	State	Opened	Mileage	Surface
Goffstown Rail Trail	NH	2005	5.5	Crushed Stone
Windham Rail Trail	NH	2000	4	Asphalt
Winnepesaukee River Trail	NH	2005	7.9	Crushed Stone
WOW Trail	NH	1990	1.3	Asphalt
Derry Rail Trail	NH	2004	4.5	Asphalt
Gloucester Township Health & Fitness Trail	NJ	2001	2	Asphalt
Henry Hudson Trail	NJ	1995	24.5	Asphalt
Delaware and Raritan Canal State Park	NJ	1980	80	Crushed Stone
Barneget Branch Trail	NJ	1971	15.6	Crushed Stone
Middlesex Greenway	NJ	2006	3.1	Asphalt
Columbia Trail	NJ	1990	7.5	Crushed Stone
Paulinskill Valley Rail Trail	NJ	1992	27	Cinders, Dirt, Grass, Ballast
Traction Line Recreation Trail	NJ	1986	3	Asphalt
Dutchess Rail Trail	NY	1991	13.5	Asphalt
Oswego County Recreation Trail	NY	1979	24.35	Original railroad cinders
Joseph B. Clarke Rail Trail	NY	1998	2.5	Asphalt
Ontario Pathway	NY	1992	23.5	Cinders, Grass, Gravel
Town of Ballston Veterans Bike Path.	NY	1960	3.6	Asphalt
Auburn Trail	NY	1993	10	Crushed Stone
Clarence Bike Paths	NY	2004	10.2	Asphalt
Hudson Valley Rail Trail	NY	1824	3.6	Asphalt
Pat McGee Trail	NY	1987	13	Crushed Stone
South Hill Recreation Way	NY	1988	3.4	Crushed Stone
Wallkill Valley Rail Trail	NY	2000	24	Asphalt, Cinders, Gravel
Harlem Valley Rail Trail	NY	1978	17	Asphalt
Genesee Valley Greenway	NY	1992	90	Original railroad cinders
Catskill Scenic Trail	NY	1990	26	Original railroad cinders
Catharine Valley Trail State Park	NY	2002	10	Crushed Stone
Ballston Veterans Bike Path	NY	1994	20	Asphalt
Vestal Rail Trail	NY	2002	5	Asphalt
Heritage Trail	NY	1996	11	Asphalt, Crushed Stone
Hockhocking Adena Bikeway	OH	1990	21	Asphalt
Kokosing Gap Trail	OH	1982	13.5	Asphalt
4-C Bicentennial Trail and Peace Path	OH	1972	2.5	Asphalt
Fairfield Heritage Trail	OH	1999	9.3	Asphalt
Infirmity Mound Park trails	OH	1991	7	Asphalt, Dirt
Taft Reserve Trails	OH	1992	8	Asphalt, Dirt
Lobdell Reserve Trails	OH	1992	8	Asphalt, Dirt
Holmes County Trail	OH	1995	15	Asphalt
Richland B&O Trail	OH	1999	18.4	Asphalt
Lebanon - Countryside YMCA Trail	OH	2011	8	Asphalt

Trail Name	State	Opened	Mileage	Surface
Cleveland Metro Parks	OH	1990	250	Asphalt, Crushed Stone, Dirt
Heart of Ohio Trail	OH	1989	16	Asphalt
MetroParks Bikeway	OH	1990	11	Asphalt
Bike & Hike / Towpath / Freedom	OH	1966	60.4	Asphalt
Simon Kenton Trail	OH	2003	18	Asphalt
Alum Creek Trail	OH	2010	20	Asphalt
Hock-Hocking Adena Bikeway	OH	1992	22	Asphalt
Slippery Elm Trail	OH	1995	13.5	Asphalt
Creekside trail and others	OH	2005	62	Asphalt. Concrete
Deschutes River Railbed Trail	OR	2008	16	Dirt, Soil
Deschutes River Trail (some surfacing cut off)	OR	1989	24	Crushed Stone. Asphalt, Ballast, Cinders
OC&E and Woodslane State Trail	OR	1994	108	Woodchips
Panhandle Trail in Allegheny County	PA	1999	7.5	Crushed Stone
Chester Valley Trail	PA	2007	11.5	Asphalt
Capital Area Greenbelt	PA	1978	22	Asphalt
Five Star Trail	PA	1990	7.75	Crushed Stone
McClintock Trail	PA	1996	3.5	Asphalt
Trout Island Trail	PA	1980	2.5	Asphalt
Greater Hazleton Rails to Trails	PA	2011	6	Crushed Stone
Steel Valley Trail	PA	1988	19	Asphalt
Warren/North Warren Bike/Hike Trail	PA	2011	3	Asphalt
Allegheny River Trail	PA	1983	34.2	Asphalt
Sandy Creek Trail	PA	1998	12	Asphalt
Great Allegheny Passage (Yough River Trail)	PA	2000	185	Crushed Stone
Path of the Flood Trail	PA	2012	9	Asphalt, Ballast
Luzerne County National Recreation Trail	PA	1989	1.8	Crushed Stone
Ghost Town Trail	PA	1992	18	Crushed Stone
Stavich Bike Trail	PA	1983	7	Asphalt
Swatara Rail Trail	PA	1994	10	Crushed Stone
Roaring Run Trail	PA	2005	5	Crushed Stone
Clarion-Little Toby Trail	PA	1994	18	Crushed Stone
Lebanon Valley Rail-Trail	PA	1987	15.5	Crushed Stone
Lehigh Gorge Trail	PA	1994	26	Original railroad cinders
Queen City Trail	PA	2008	1	Asphalt
Montour Trail	PA	1985	47	Crushed Stone
Pine Creek Rail Trail - Tioga County	PA	2001	27	Crushed Stone
Great Allegheny Passage - Somerset County Segment	PA	2001	42	Crushed Stone
Butler Freeport Community Trail Council	PA	1997	20.4	Crushed Stone
Warwick Trail system	PA	1992	6	Asphalt
Perkiomen Trail	PA	2010	20	Crushed Stone

Trail Name	State	Opened	Mileage	Surface
Lackawanna River Heritage Trail	PA	1986	35	Crushed Stone
Oil Creek State Park Bike Trail	PA	1998	9.7	Asphalt
Great Allegheny Passage	PA	1996	150	Crushed Stone
Delaware Canal State Park	PA	2003	60	Crushed Stone
West Penn Trail	PA	1991	15	Crushed Stone
Three Rivers Heritage Trail	PA	1986	24	Asphalt
D&H Rail-Trail	PA	1997	38	Original railroad cinders
York County Heritage Rail Trail	PA	1999	23.5	Crushed Stone
The Lower Trail	PA	1998	17	Crushed Stone
Redbank Valley Trail	PA	1999	51	Crushed Stone
Armstrong Trail	PA	1992	36	Crushed Stone
Plainfield Township Trail	PA	1991	6.7	Crushed Stone
Pine Creek Rail Trail - Lycoming County	PA	1992	38	Crushed Stone
Blue and White Trails	PA	2002	2	Asphalt
Delaware Canal State Park Towpath	PA	1940	60	Crushed Stone, Dirt
Coal and Coke Trail	PA	2007	5	Asphalt, Crushed Stone
Five Star Trail	PA	1997	7.5	Crushed Stone
Ironton Rail Trail	PA	1995	9.2	Asphalt
West Penn Trail	PA	2002	15	Crushed Stone
Panhandle Trail - Washington County	PA & WV	1999	17	Crushed Stone
William O'Neill/South County Bike Path	RI	2013	8	Asphalt
Shelby Farms Greenline Trail	TN	1966	6	Asphalt
High Bridge Trail State Park	VA	2007	30.9	Crushed Stone
Virginia Capital Trail	VA	2005	16	Asphalt, Boardwalk
Southern Tip Bike & Hike Trail	VA	2008	2.6	Asphalt
New River Trail State Park	VA	2007	57	Asphalt
Virginia Blue Ridge Railway Trail	VA	1987	7	Crushed Stone
Dahlgren Railroad Heritage Trail	VA	1998	15.7	Dirt, Soil
Washington & Old Dominion Trail	VA	2001	45	Asphalt
Burlington Bike Path	VT	1987	25	Asphalt
Klickitat Trail	WA	2002	31	Gravel, Dirt
Ozaukee Interurban Trail	WI	1963	29.5	Asphalt
Hank Aaron State Trail	WI	2006	14	Asphalt
Gandy Dancer Trail	WI	2001	20.3	Crushed Stone
Badger and Glacial Drumlin State Trails	WI	1984	60	Crushed Stone
Southwest Path	WI	2010	4.5	Asphalt
Mon River	WV	2008	6	Crushed Stone
Caperton Trail	WV	1999	6	Asphalt
Deckers Creek Trail	WV	1999	19	Asphalt, Crushed Stone









**rails-to-trails**  
conservancy

**National Headquarters**

2121 Ward Court, NW, 5th Floor  
Washington, DC 20037  
tel 202.331.9696

[railtrail@railstotrails.org](mailto:railtrail@railstotrails.org)

[railstotrails.org](http://railstotrails.org)

[www.TrailLink.com](http://www.TrailLink.com)

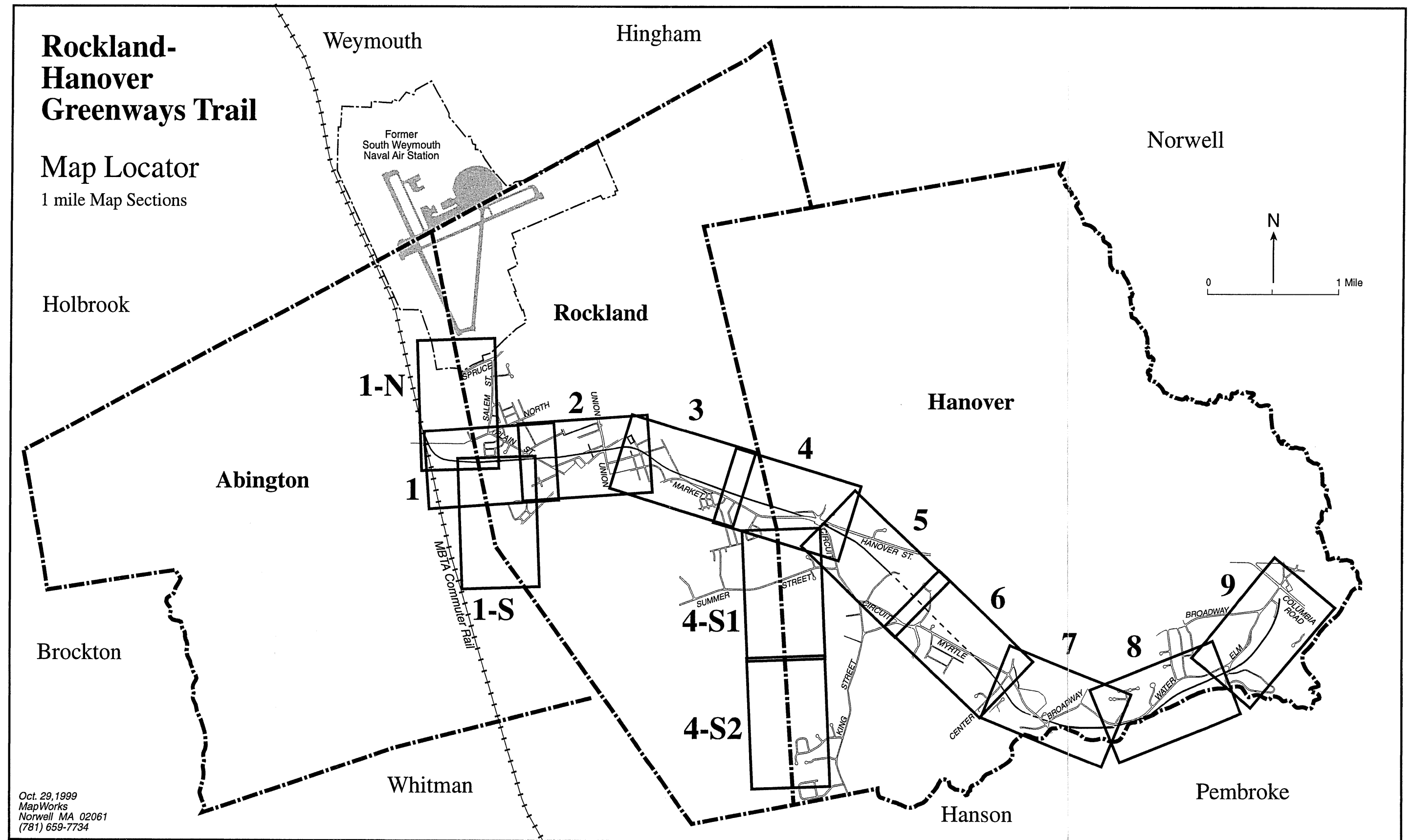
## **EXHIBIT A**

Rockland-Hanover Greenways  
Trail Maps (Hanover Assessors  
Maps Only) – MapWorks, 1999

# Rockland-Hanover Greenways Trail

## Map Locator

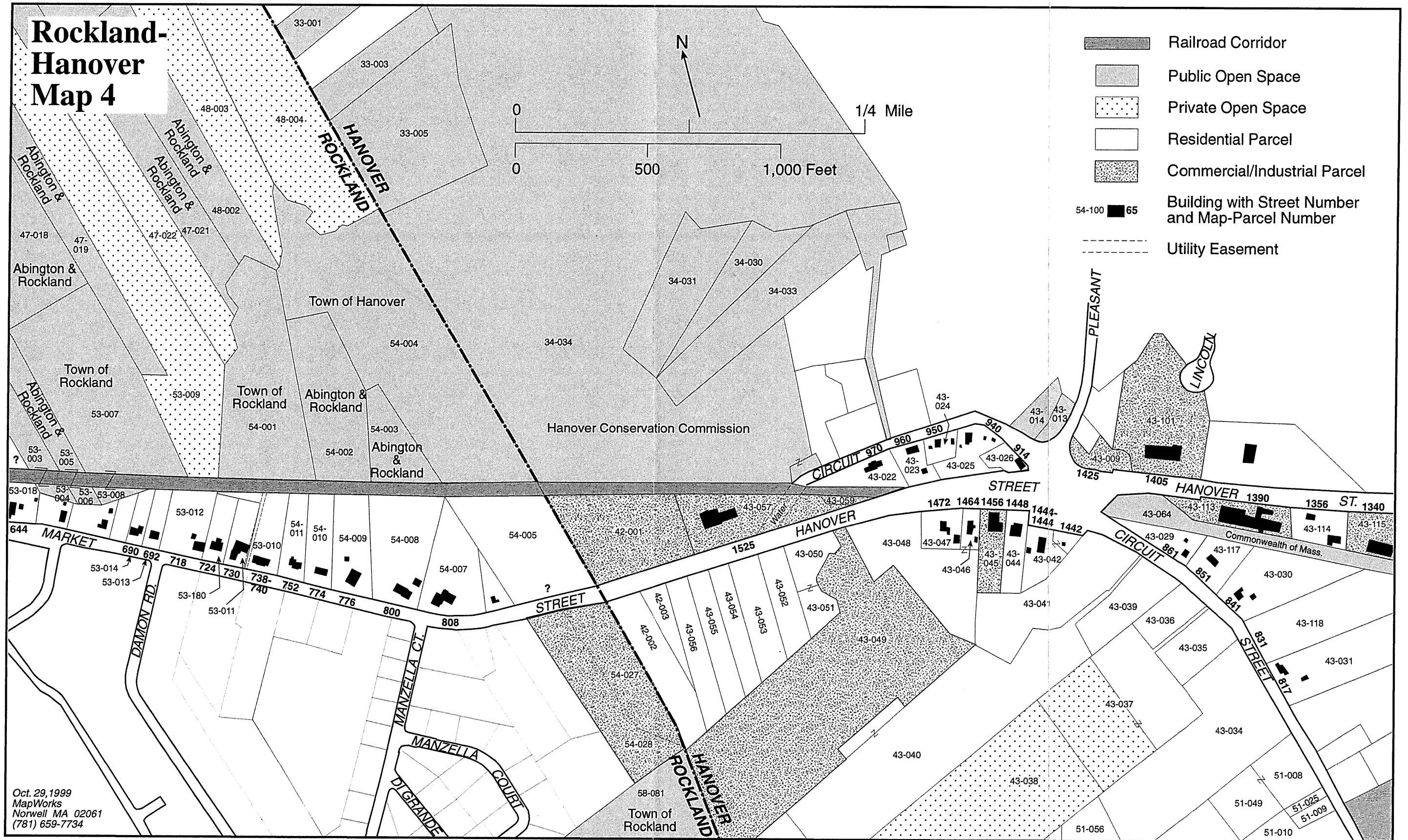
1 mile Map Sections



Oct. 29, 1999  
MapWorks  
Norwell MA 02061  
(781) 659-7734






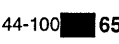
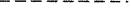


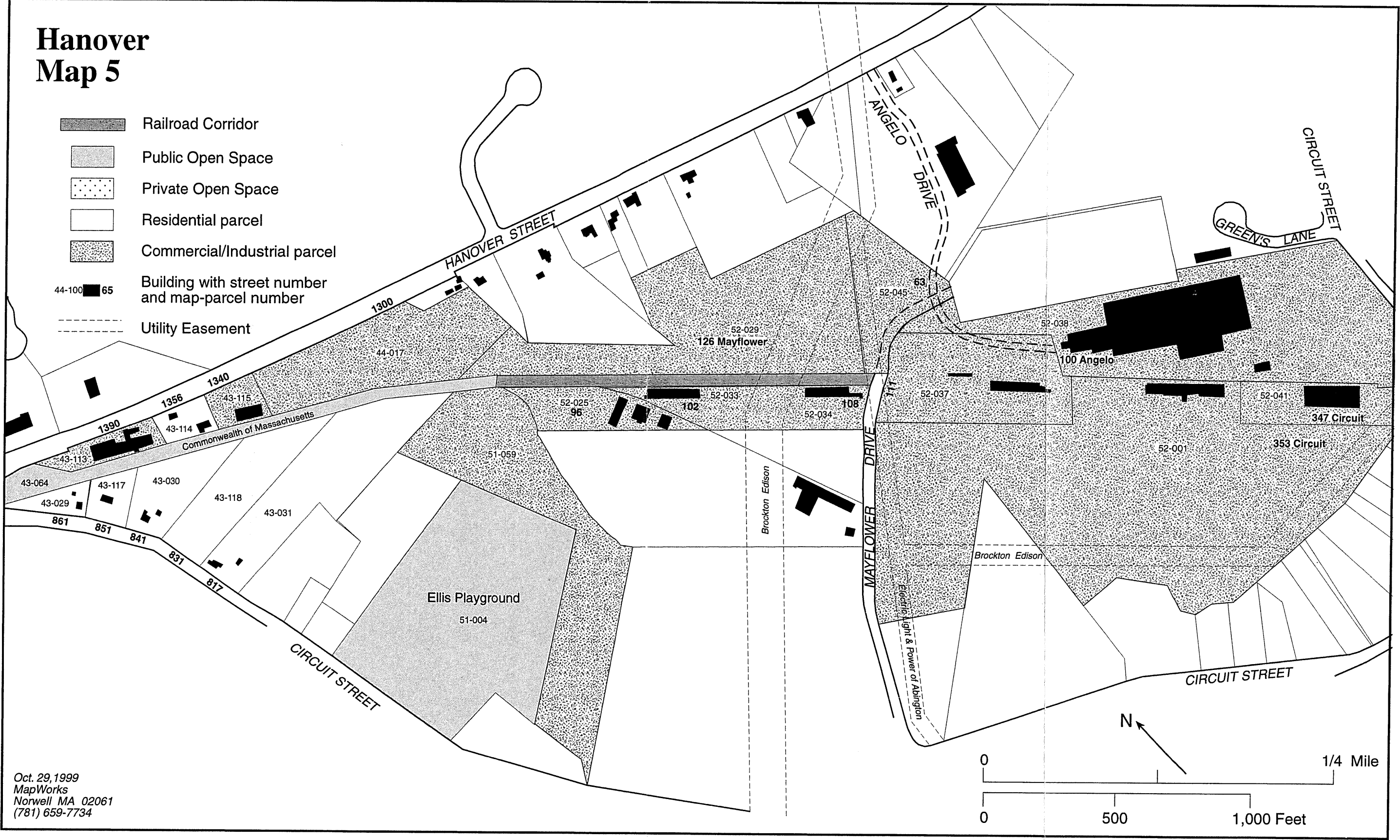
# Rockland-Hanover Map 4



Oct. 29, 1999  
MapWorks  
Norwell MA 02061  
(781) 659-7734

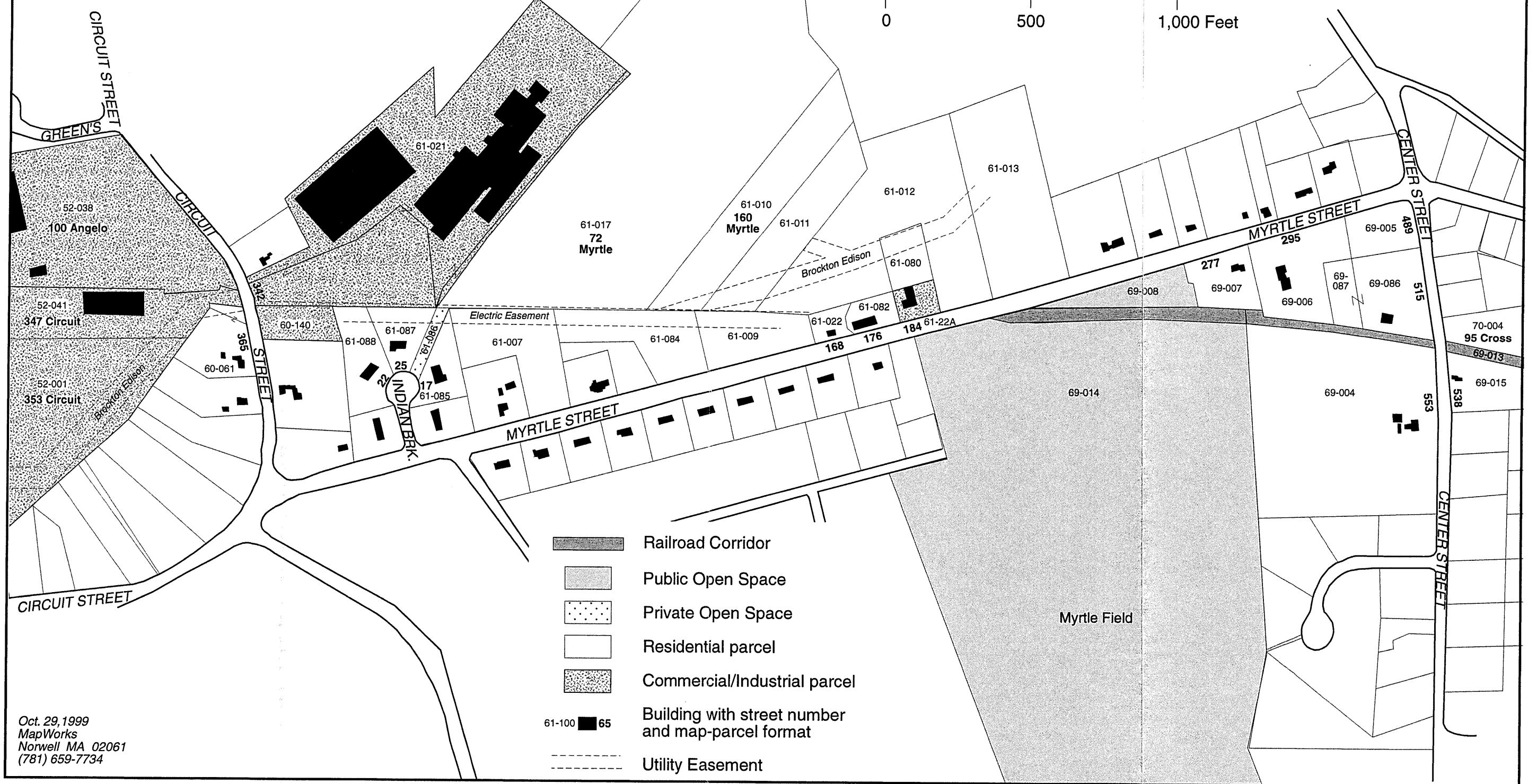
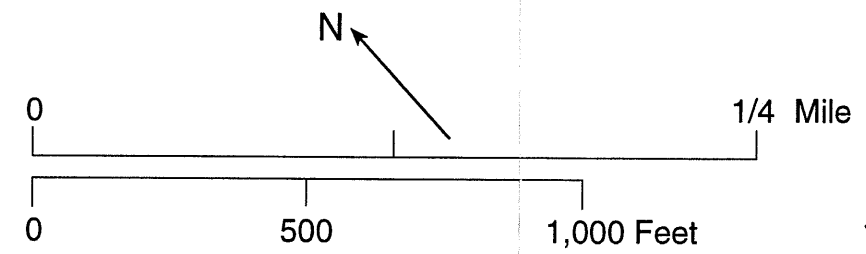
**Hanover  
Map 5**

-  Railroad Corridor
-  Public Open Space
-  Private Open Space
-  Residential parcel
-  Commercial/Industrial parcel
-  Building with street number and map-parcel number
-  Utility Easement



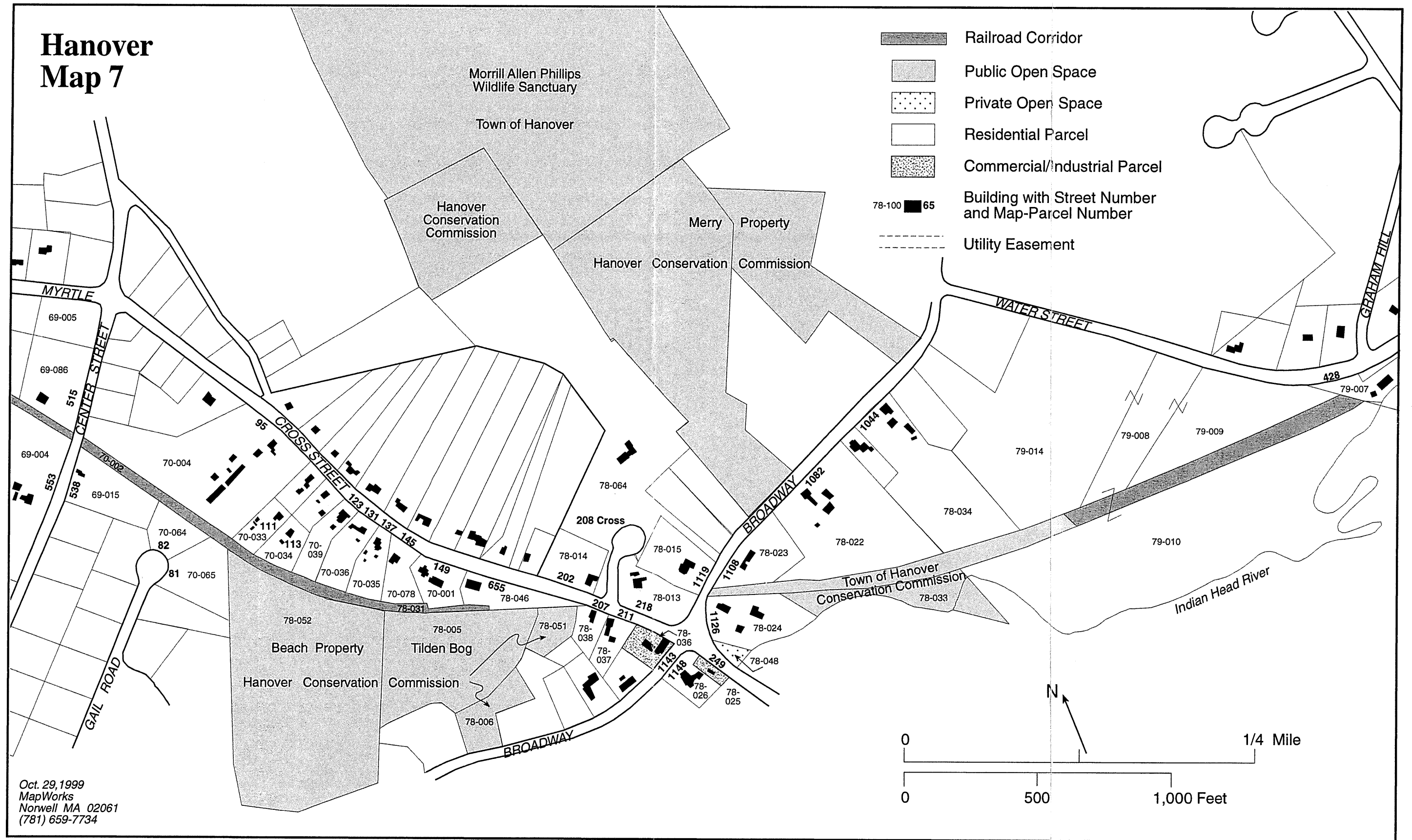
Oct. 29, 1999  
MapWorks  
Norwell MA 02061  
(781) 659-7734

# Hanover Map 6



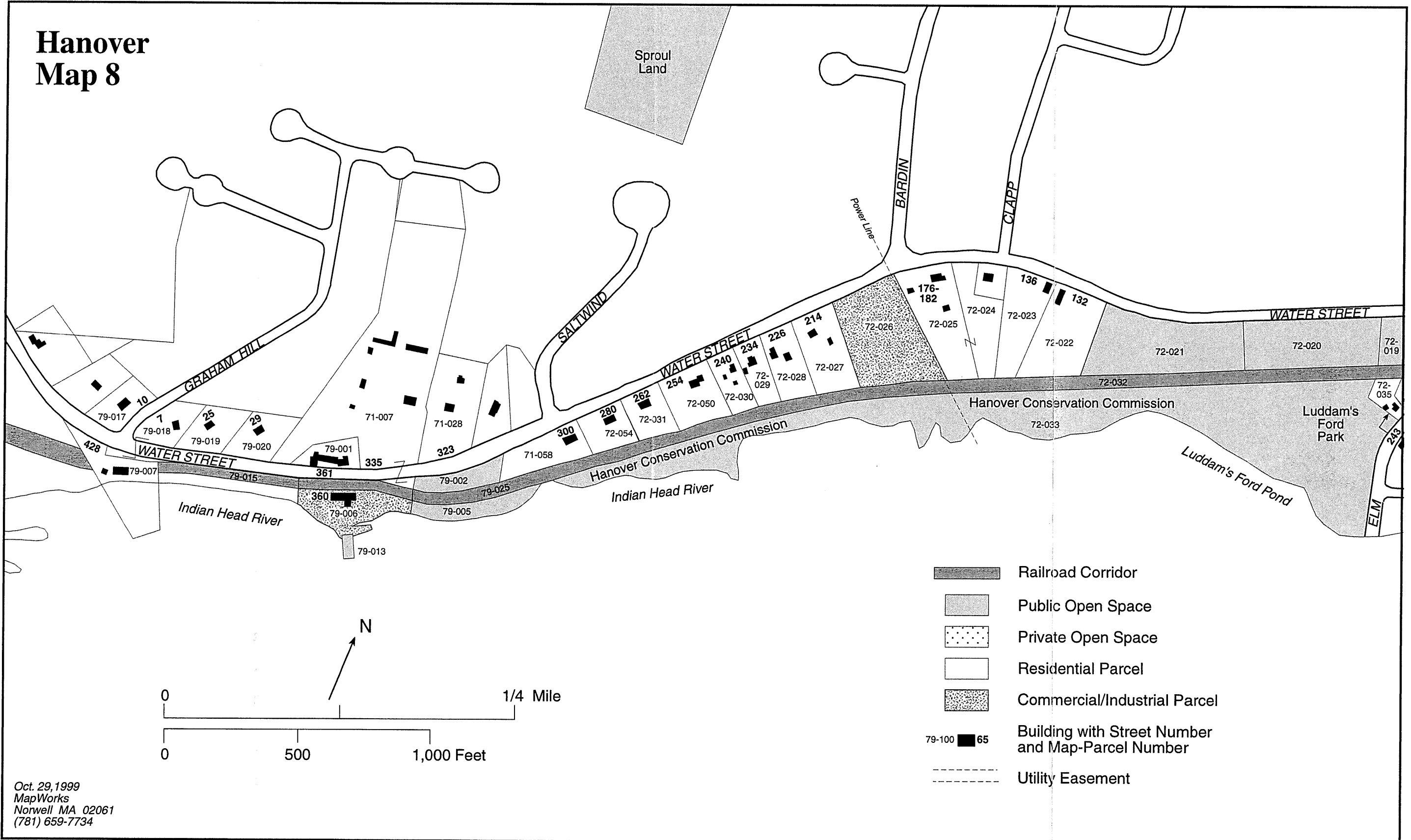


# Hanover Map 7

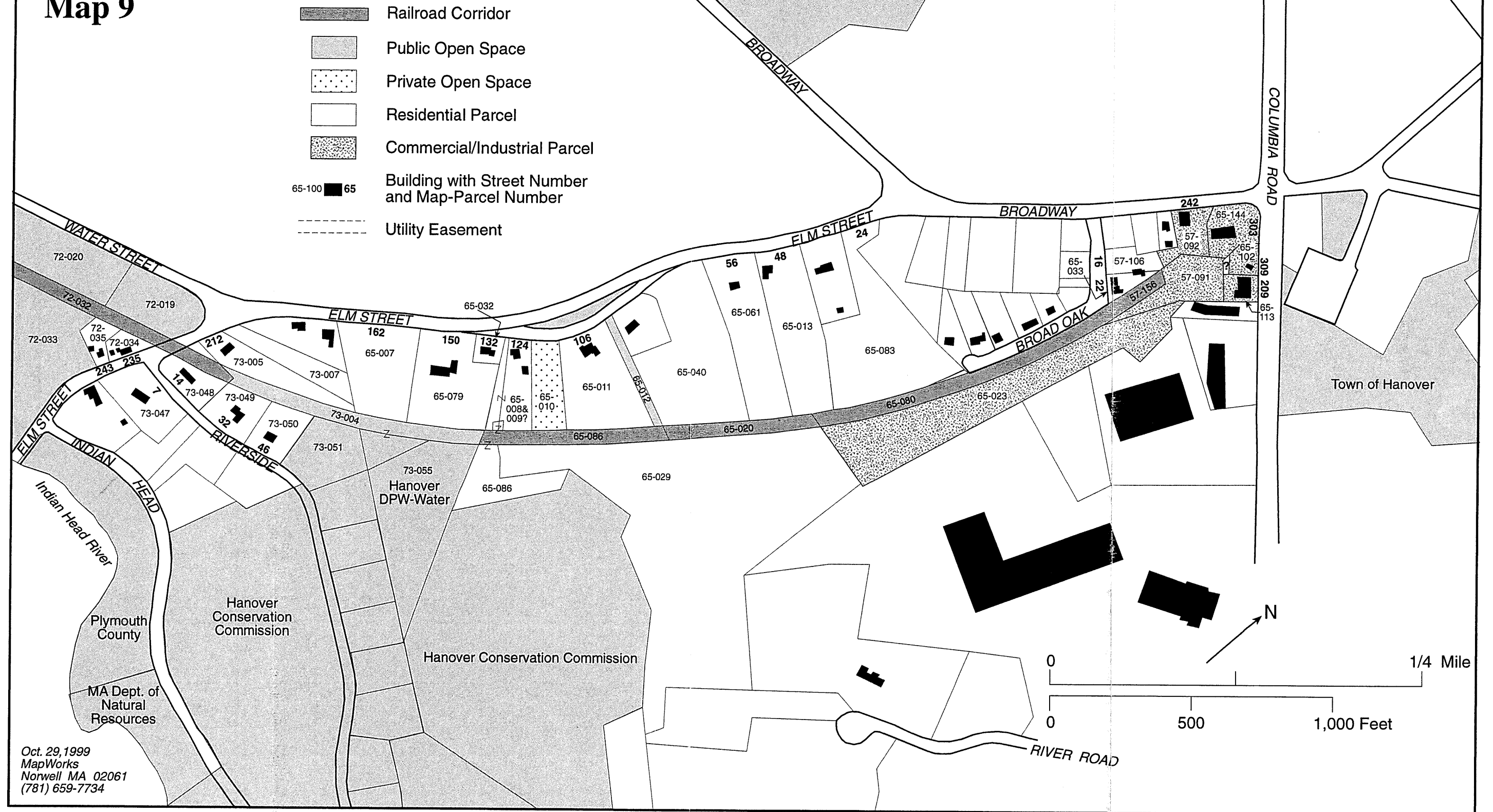




# Hanover Map 8



## Hanover Map 9



## **EXHIBIT B**

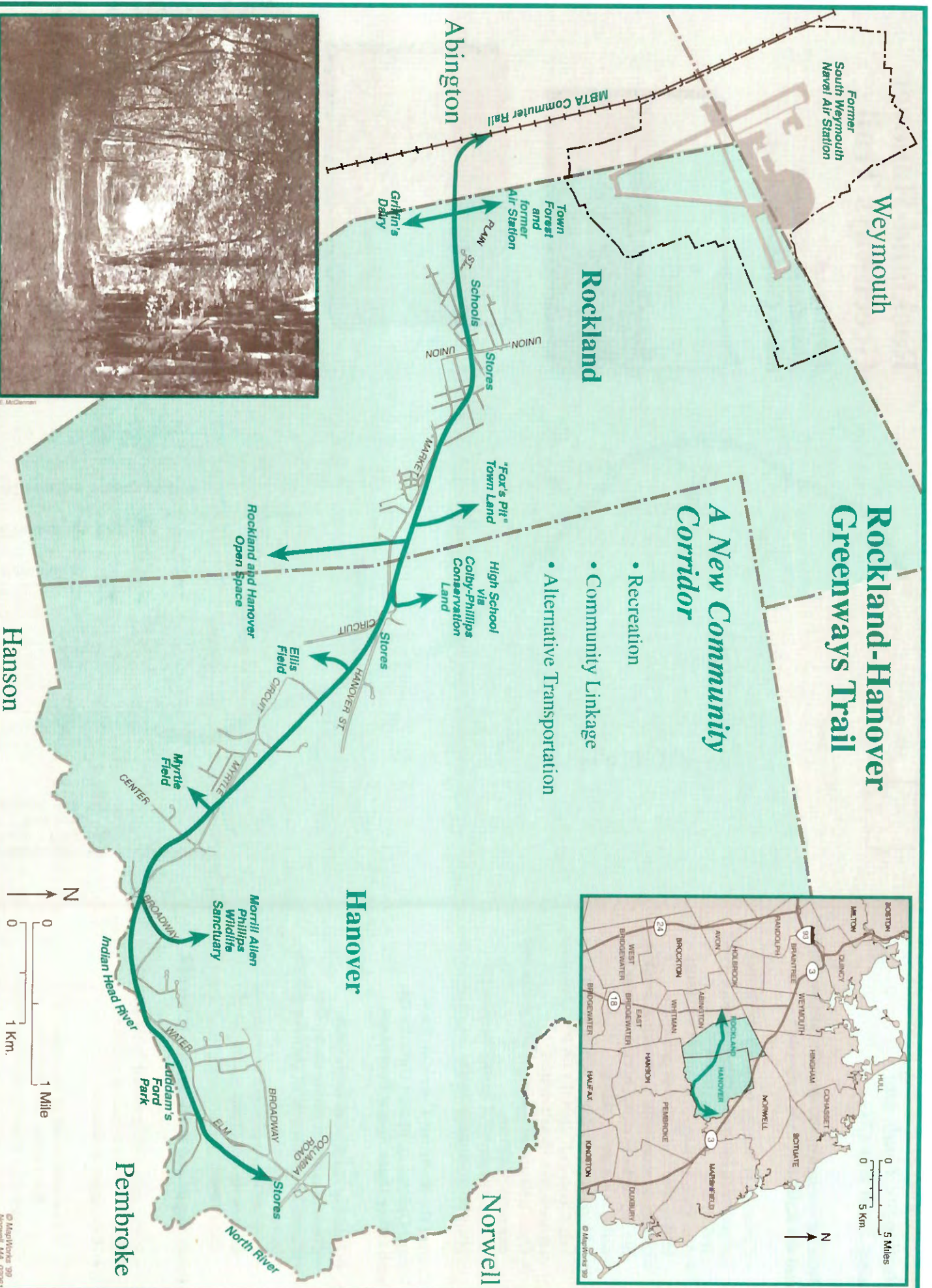
### Rockland-Hanover Greenways Trail Brochure



# Rockland-Hanover Greenways Trail

## A New Community Corridor

- Recreation
- Community Linkage
- Alternative Transportation





## Greenways..... Challenges, Goals and Long Term Benefits

### • Take Advantage of the Benefits of Greenways and the Rails-to-Trails Approach.

- Community linkage between residential areas, open space/recreation lands, schools and stores.
- Alternative transportation to Commuter Rail at low cost and low pollution.
- Off-street recreation for walking, jogging, biking, roller blading, horseback riding, and cross-country skiing.
- Abandoned corridor overgrown with vegetation and littered with trash becomes an open and attractive trail.
- Open trail allows for improved police and emergency access.
- A negative physical barrier becomes a positive community asset.

### • Protect the Railroad Corridor from Future Development and Coordinate with Other Open Space Purchases.

- Zone the corridor as open space.
- Confirm corridor parcel ownership.
- Control possible sale of corridor parcels by state government.
- Propose land purchases to complete town-wide links both in and out of the corridor.

### • Public Input and Participation is Needed.

- Participate: Get involved in the process.
- Help organize clean-up projects.
- Help improve access.

*Community support is needed!  
For further information  
contact your Open Space Committee*

*Hanover: 826-6505  
Rockland: 871-1892*

Rockland Open Space Committee  
Rockland Town Hall  
242 Union Street  
Rockland, MA 02370



## Rockland-Hanover Greenways Trail

*Turning an  
Abandoned Railroad  
into a Community Asset.....*

*Past*



*Present*



*Future?*




### *A New Multi-Use Community Corridor*

*Brochure funded by  
Massachusetts DEM Greenways and Trails  
Demonstration Grants Program*



## HANOVER OPEN SPACE TRAILS

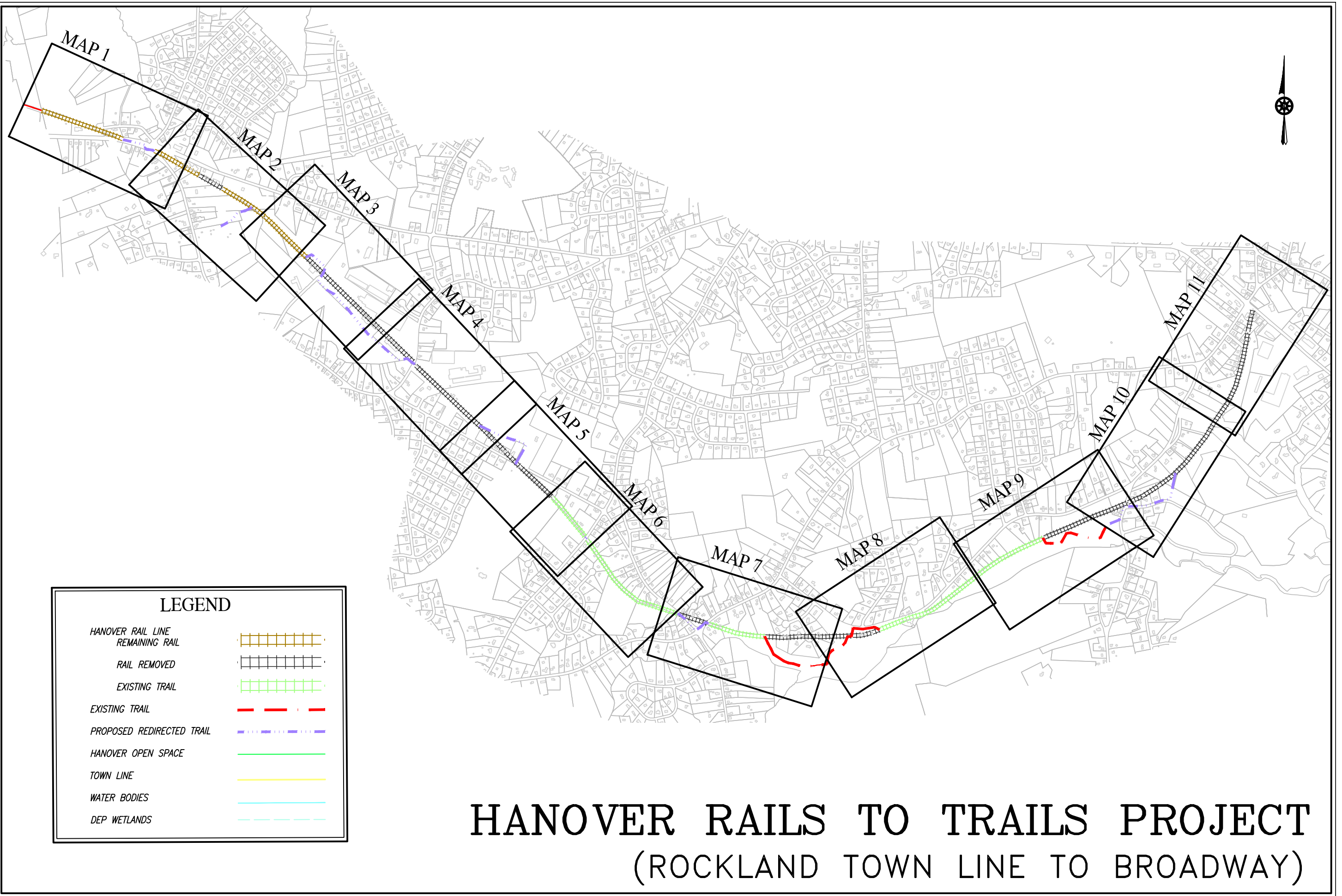
February, 2014

1. CHAPMAN'S LANDING & IRON MINE BRK
  2. COLBY-PHILLIPS TRAILS
  3. DENHAM POND TRAILS
  4. FIREWORKS TRAILS
  5. FOLLY HILL & BOG IRON TRAILS
  6. FORGE POND PARK TRAILS
  7. INDIAN HEAD RIVER TRAILS
  8. LUDDAM'S FORD PARK TRAILS
  9. MELZAR HATCH WILDLANDS TRUST  
(Cross Country Trail)
  10. PHILLIPS SANCTUARY & FIREHOUSE
  11. PLAIN STREET & PINE ISLAND TRAILS
  12. SR CENTER, NAVA & TINDALE BOG
-  PARKING/TRAIL ACCESS

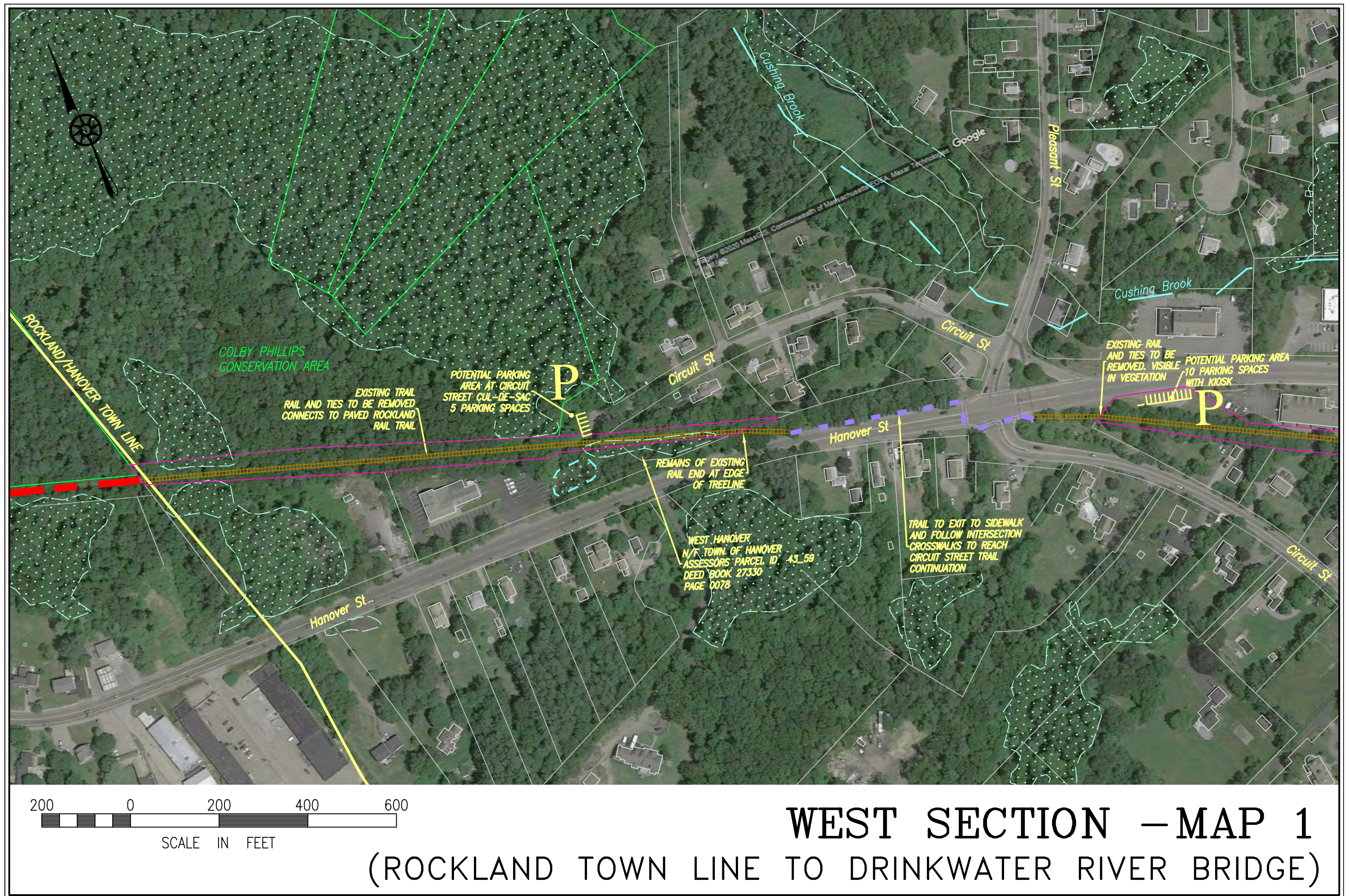
# **EXHIBIT C**

## **Hanover Rails to Trails – Potential Corridor Mapping**

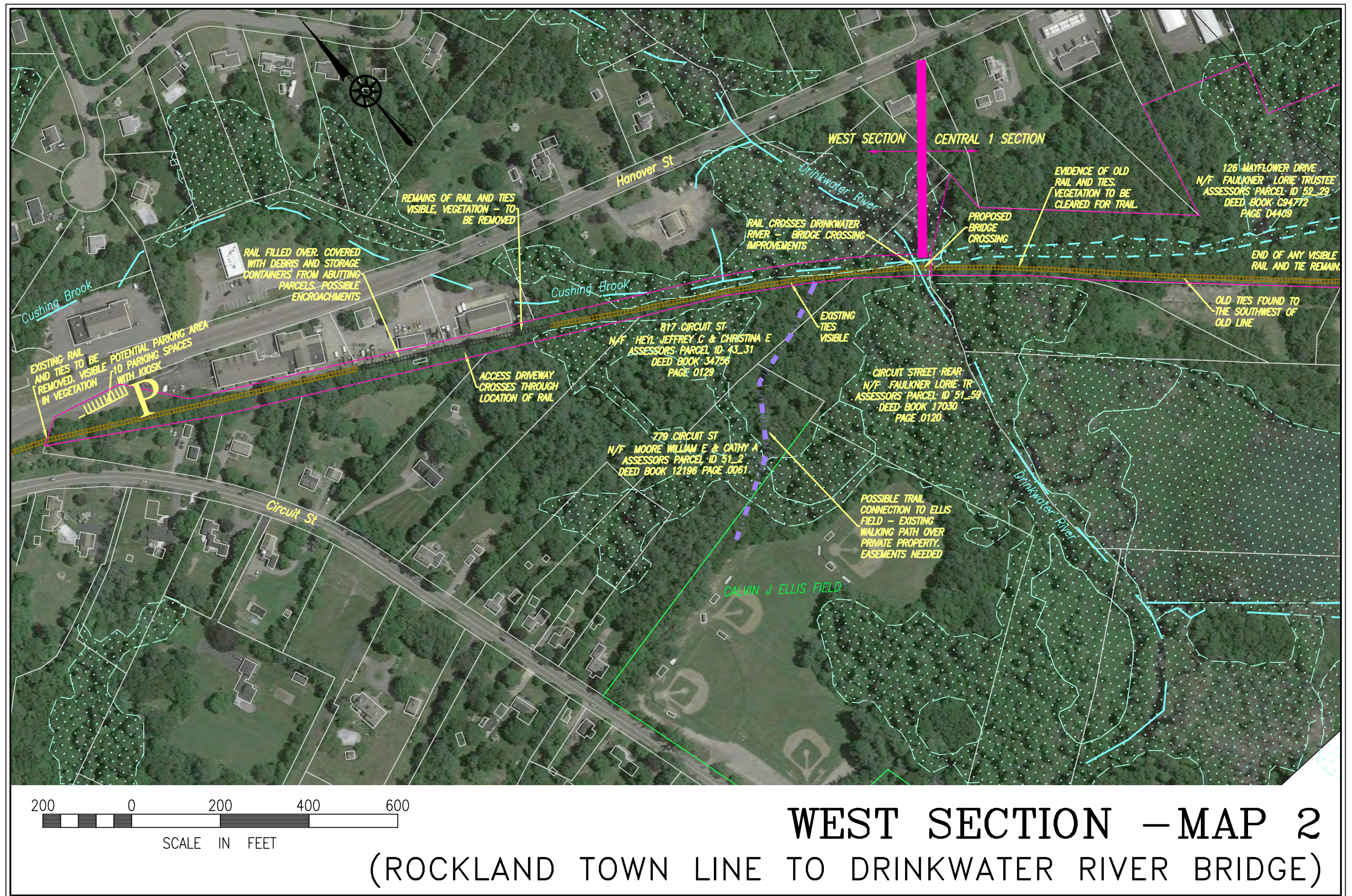




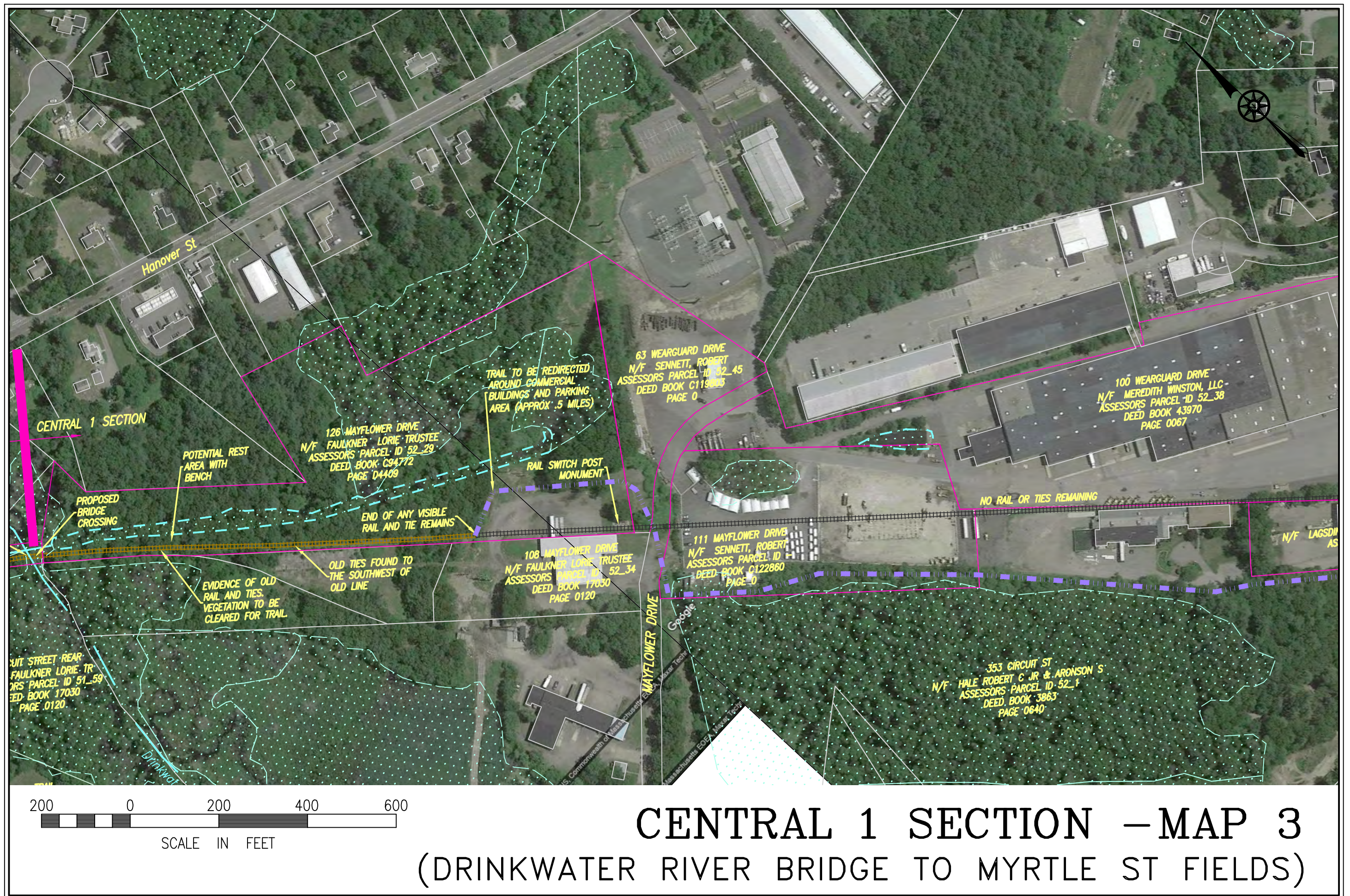




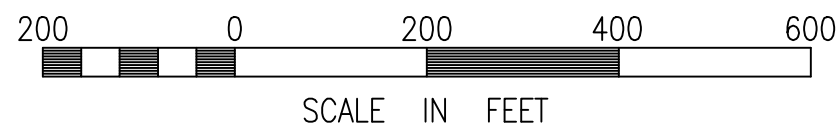








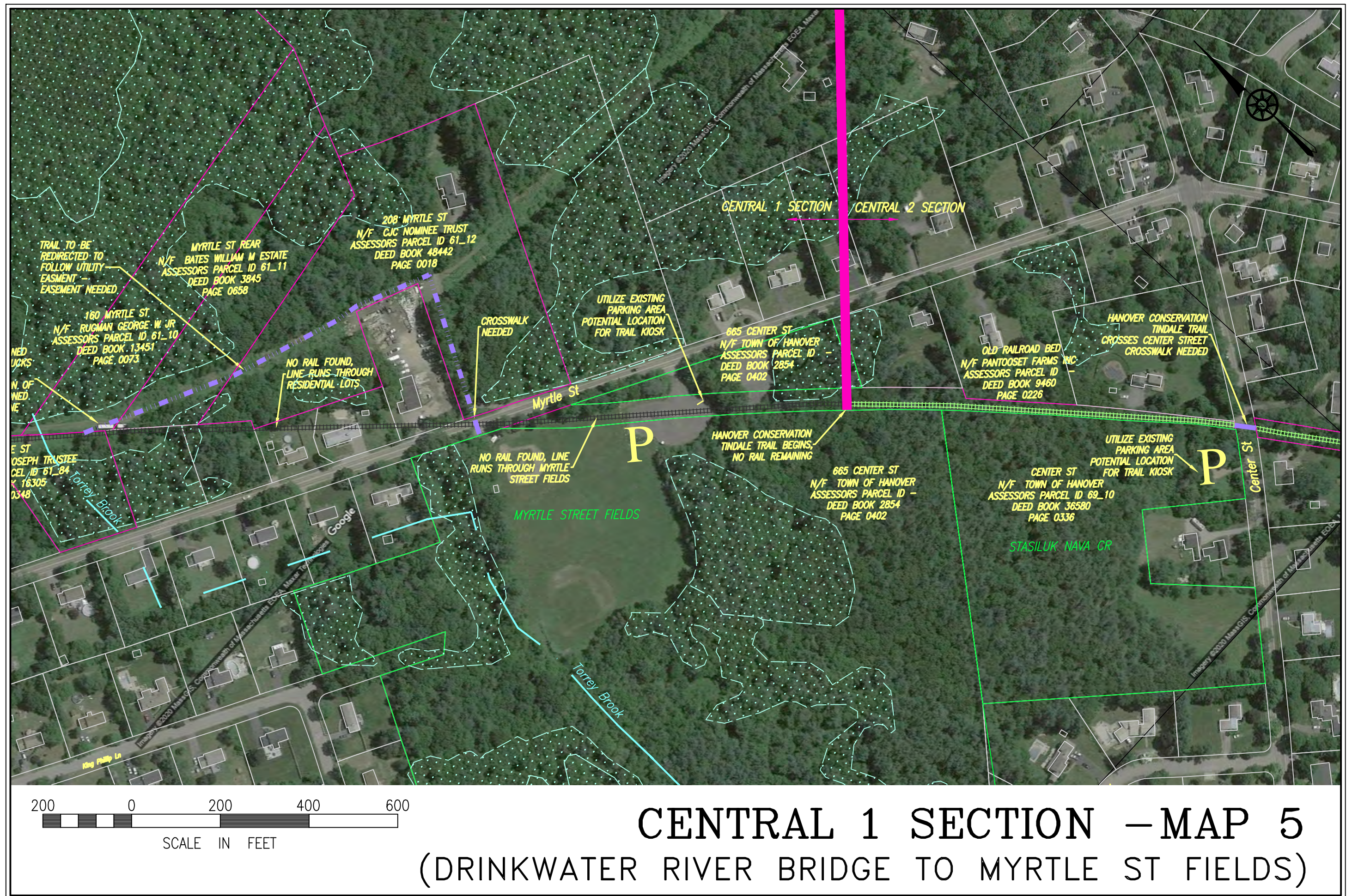




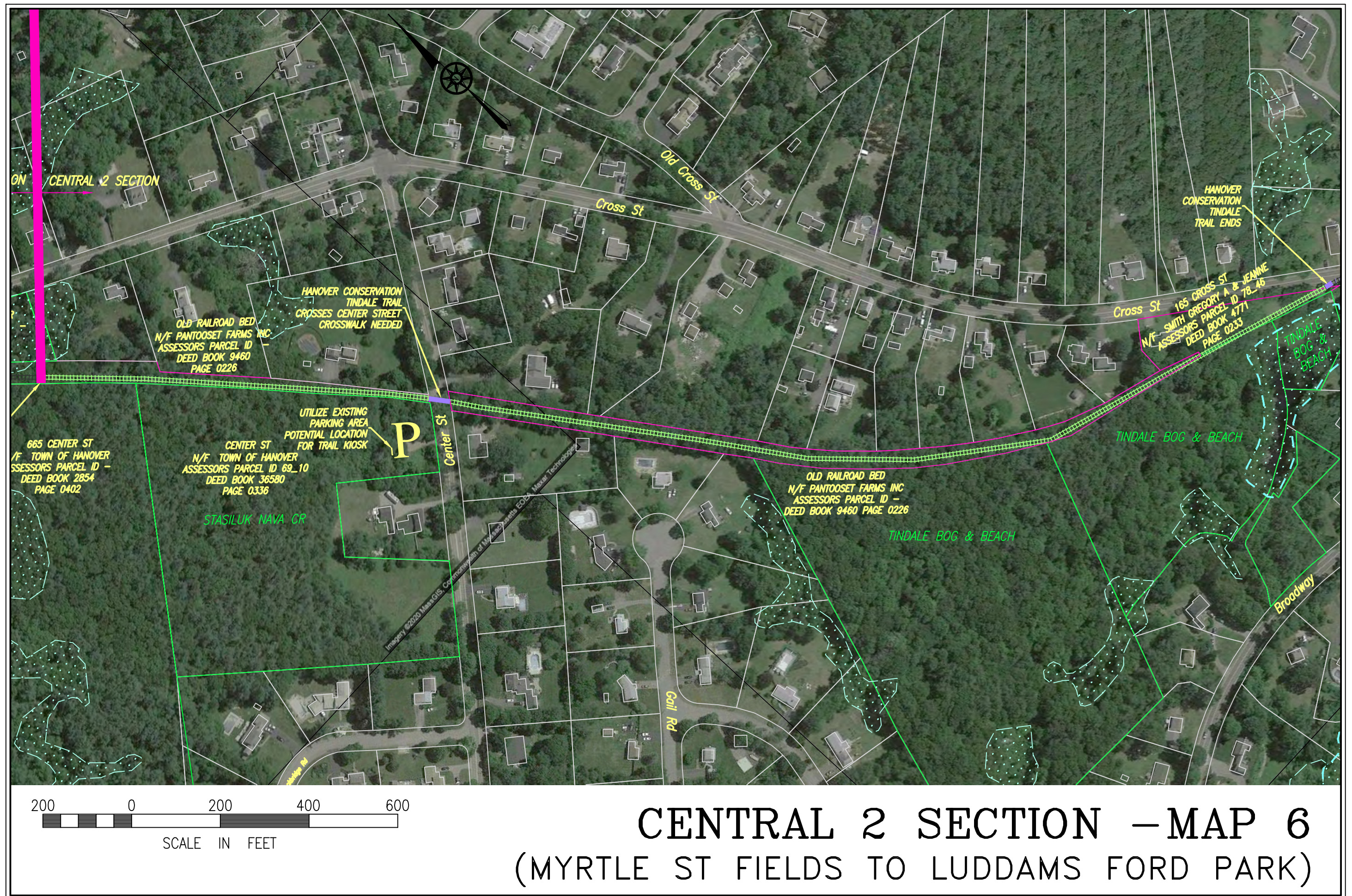
# CENTRAL 1 SECTION – MAP 4

(DRINKWATER RIVER BRIDGE TO MYRTLE ST FIELDS)

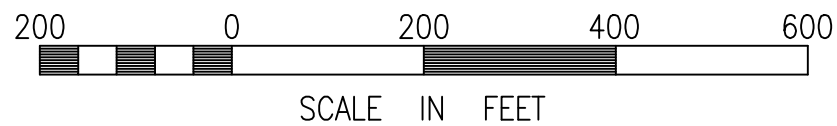
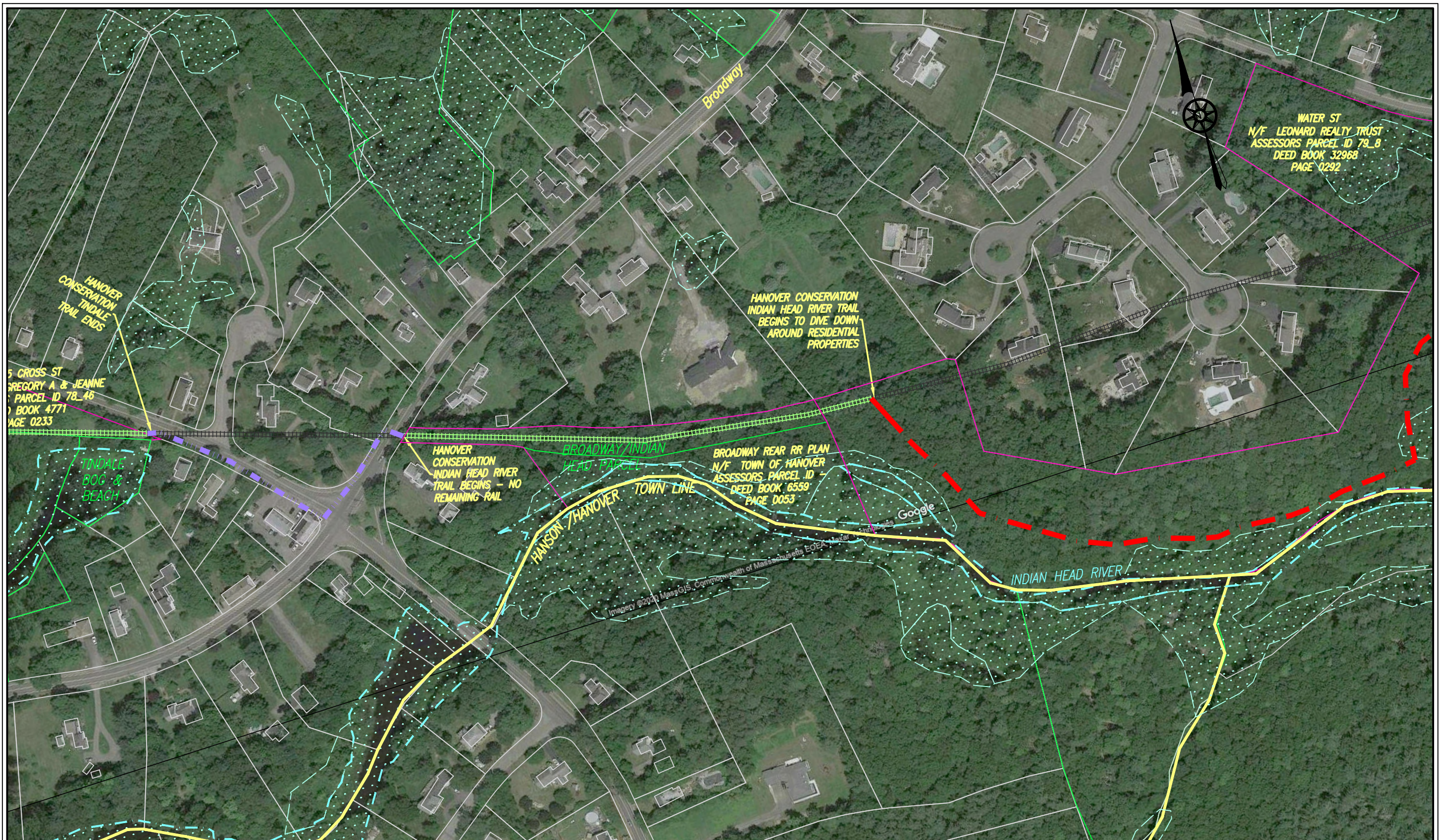








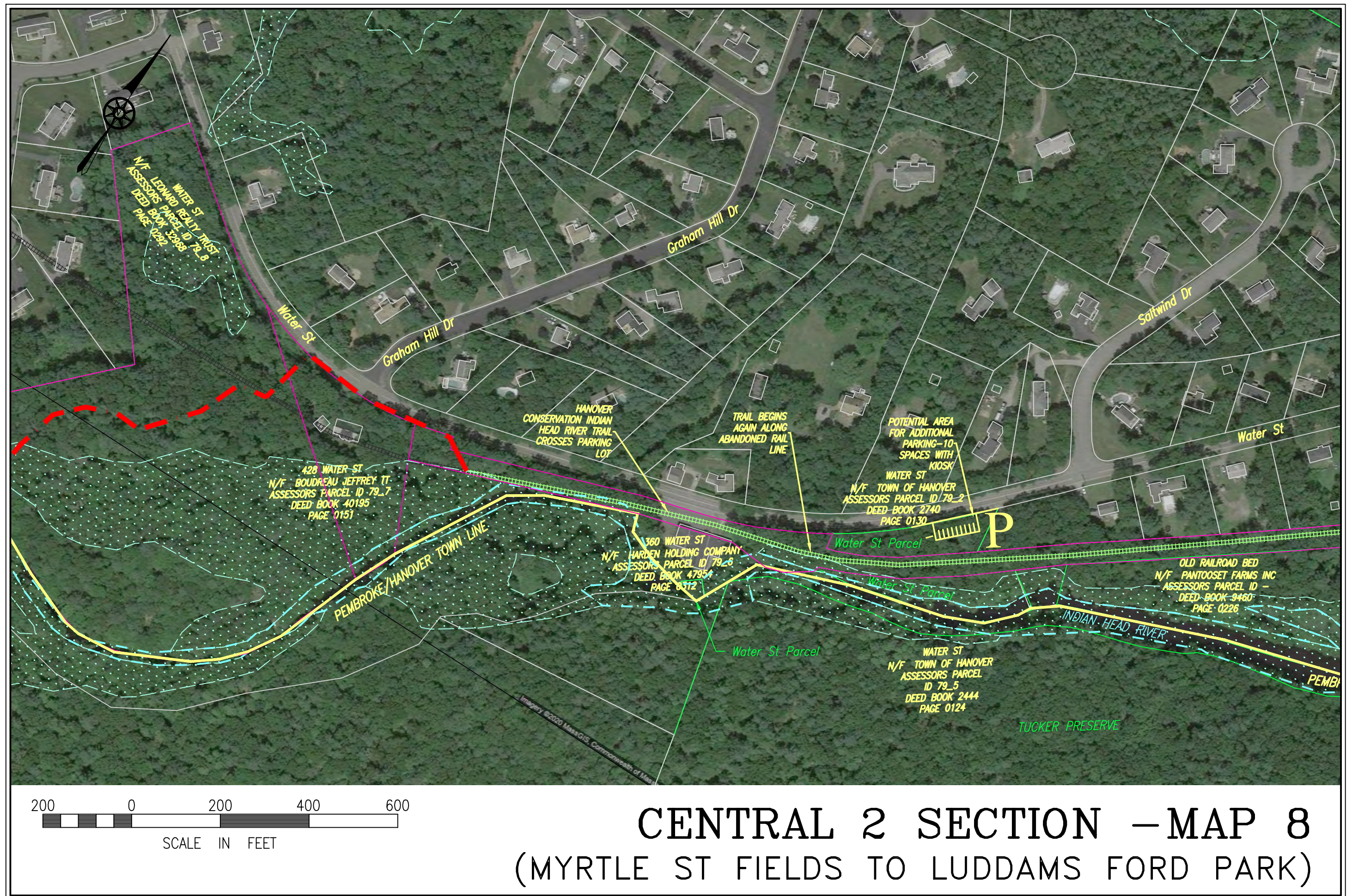




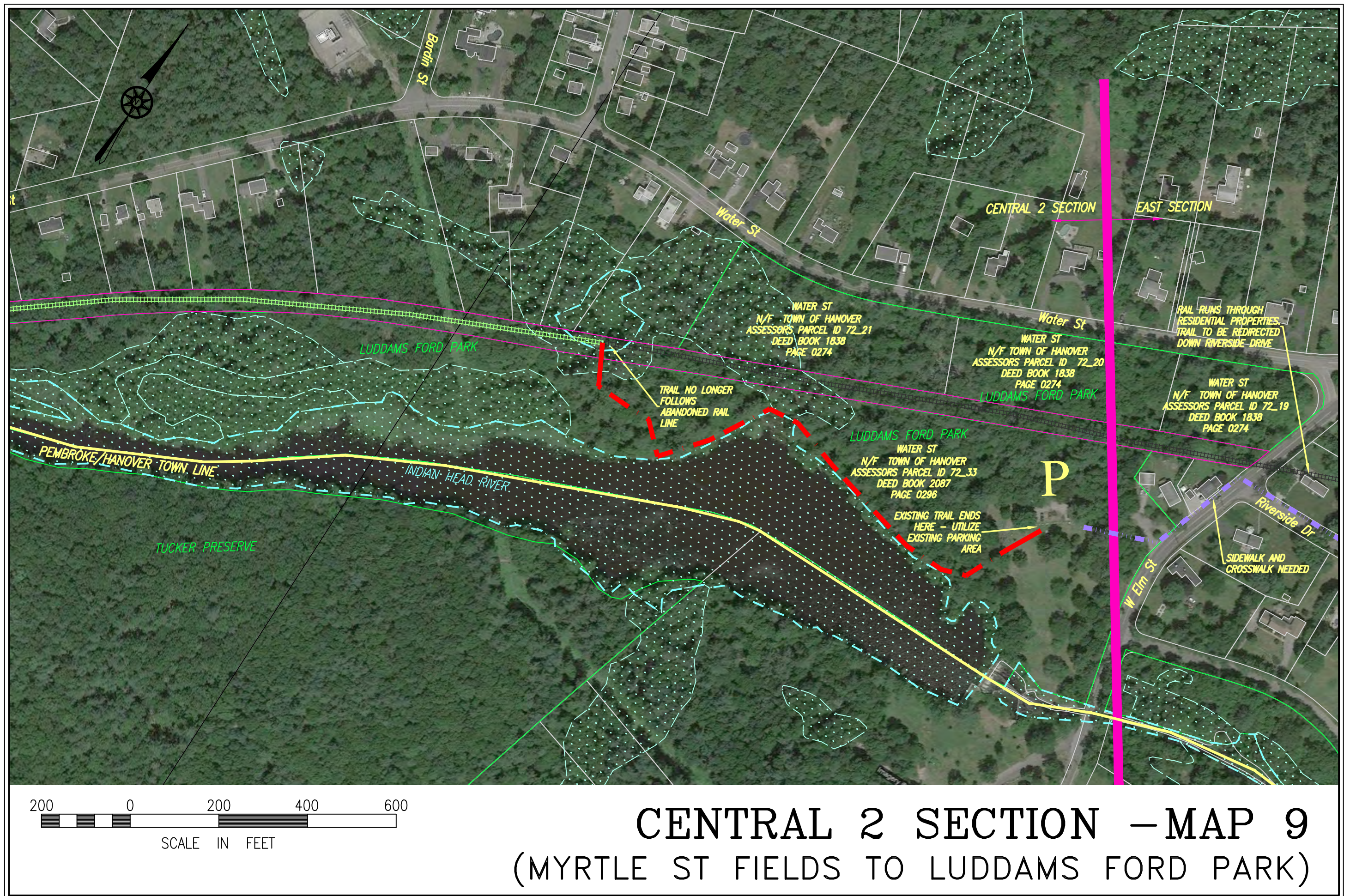
# CENTRAL 2 SECTION – MAP 7

(MYRTLE ST FIELDS TO LUDDAMS FORD PARK)





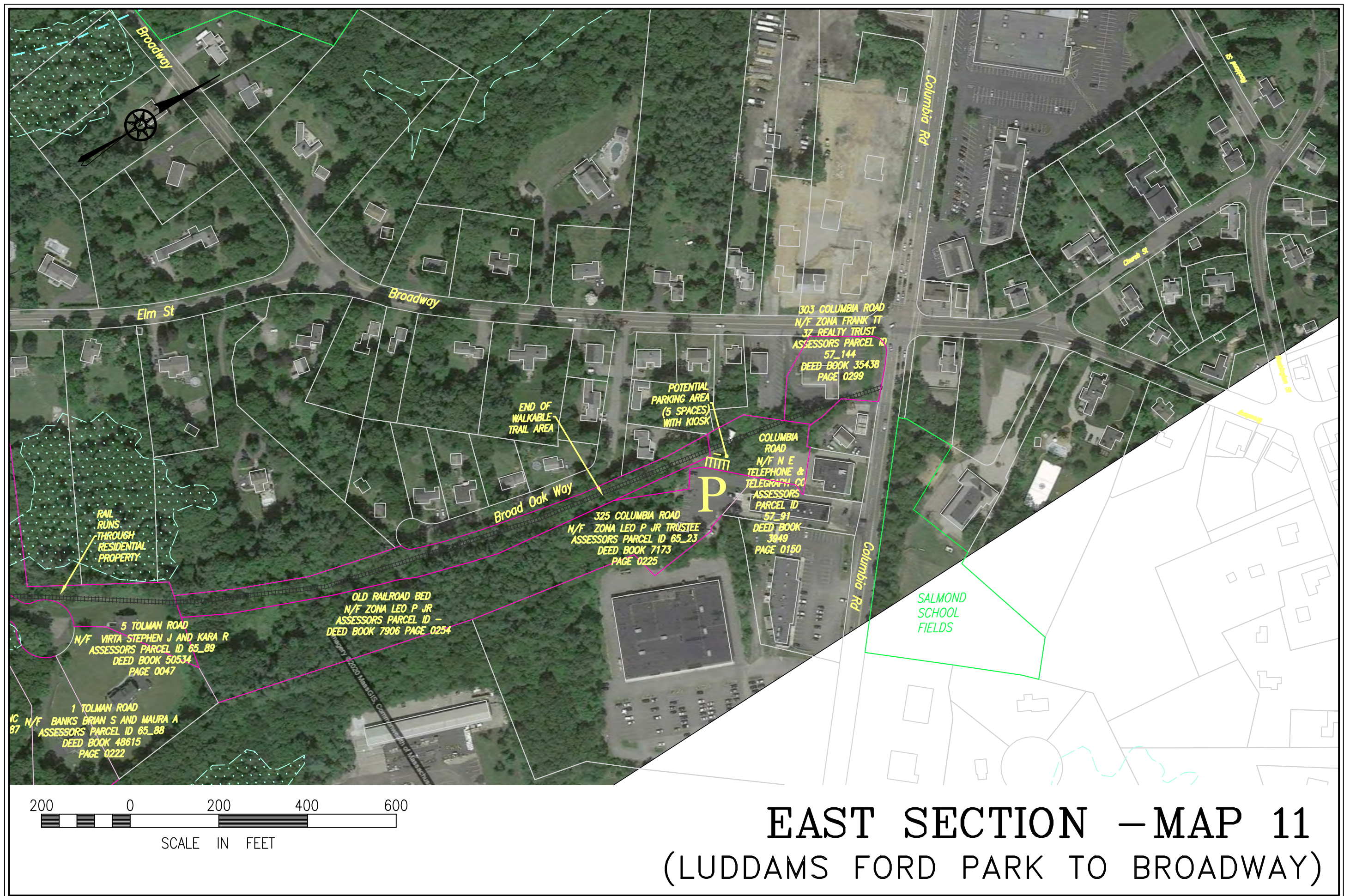




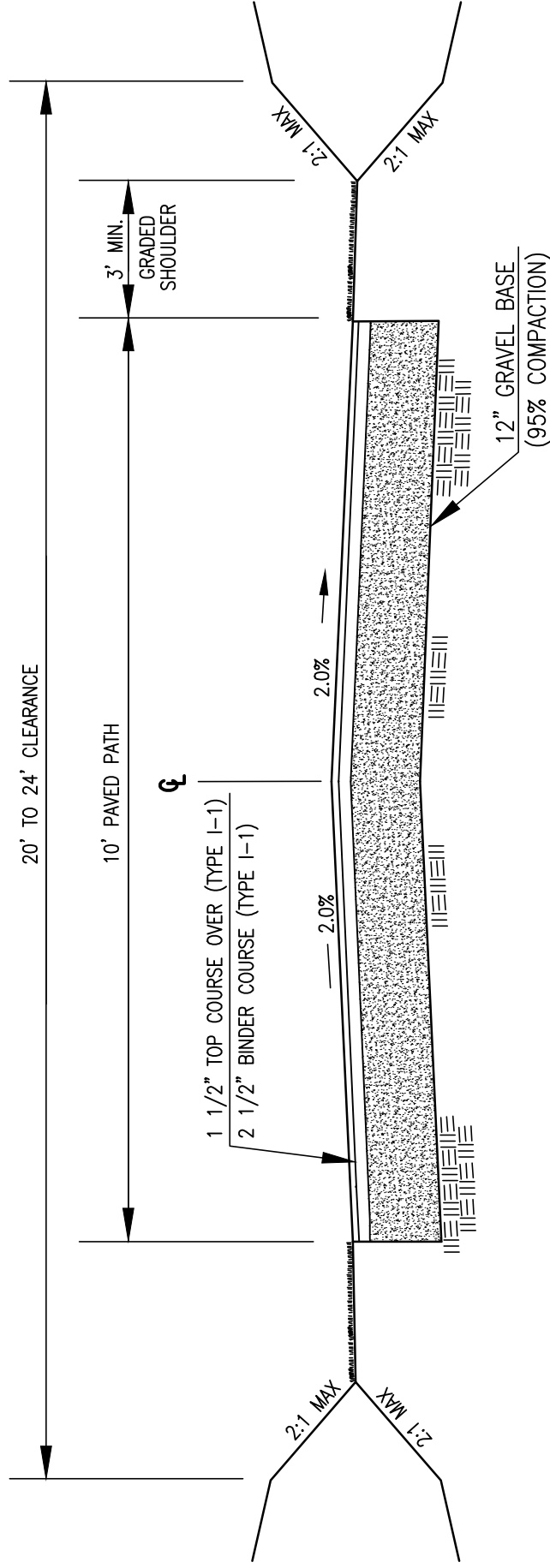












**TYPICAL PATH SECTION NOTES:**

- SUBGRADE SHALL BE CRUSHER RUN GRAVEL, CONSISTING OF INERT MATERIAL THAT IS HARD, DURABLE STONE, AND COURSE SAND, FREE FROM LOAM AND CLAY, SURFACE COATING AND DELETERIOUS MATERIALS. IT SHALL MEET THE FOLLOWING GRADATION.
 

SIEVE	PERCENT PASSING
3"	100
1.5"	70-100
.75"	50-85
#4	30-60
#200	0-12
- ALL PAVING MATERIAL TO BE BITUMINOUS CONCRETE TYPE I-1 PER MASS DOT STANDARDS.
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH HANOVER DPW RULES AND REGULATIONS.

**TYPICAL CROSS SECTION OF SHARED USE PATH**

(NOT TO SCALE)



## **EXHIBIT D**

### Site Inspection Notes and Photos

#	Assessors Parcel	Legal Reference	Owner	Street Address	Notes	Photos
1	43-29	50217/189	Joleme Family Trust	861 Circuit Street	Vegetation in railbed. Owner unclear	<a href="#">20-23</a>
2	43-64	5148/211	Commonwealth of Massachusetts	West Hanover Lot 29	Vegetation/owned by Mass. Rail buried-one visible.	<a href="#">29-45</a>
3	43-117	18817/340	Michael Gallagher	851 Circuit Street	Vegetation	<a href="#">46-49</a>
4	43-30	43084/108	Alan and Susan Creech	841 Circuit Street	1356- Fill/debris/storage container	<a href="#">50-53</a>
5	43-118	46030/198	George E Davis Trust	831 Circuit Street	1340 driveway access, buried rail, filled, part of rail visible	<a href="#">54-69</a>
6	43-31	34756/129	Jeffrey and Christina Heyl	817 Circuit Street	On brook, rail no visible, can't cross brook, potential vegetation	<a href="#">69-78</a>
7	51-2	12196/61	Cathy and William Moore	779 Circuit Street		
8	51-59	17030/120	Lorie Faulkner Trust	Circuit Street Rear	Rail in place over creek. Rail pretty walkable	<a href="#">108-132</a>
9	52-24	3967/659	Graphic Developments Inc	80 Mayflower Drive		
10	52-25	17030/120	Lorie Faulkner Trust	96 Mayflower Drive	Visible rail, lots of vegetation, 12' widepath, ties in place next to creek, no actual rail, go through back of 108 to access	<a href="#">94-107</a>
11	52-33	17030/121	Lorie Faulkner Trust	102 Mayflower Drive	Some visible rail- moved conc pad, TBR, abandoned buildings, veg	<a href="#">85-93,</a> <a href="#">133</a>
12	52-29	C94772/D4409	Lorie Faulkner Trust	126 Mayflower Drive	Small portion visible, rest path goes through building, ties visible until abandones edge of parking.	<a href="#">78-84,</a> <a href="#">134-135</a>
13	52-34	17030/121	Lorie Faulkner Trust	108 Mayflower Drive	Small portion visible, rest path goes through building, ties visible until abandones edge of parking.	<a href="#">78-84,</a> <a href="#">134-135</a>
14	52-45	C119803	Robert Sennett	63 Wearguard Drive		
15	52-36	C122860	Robert Sennett	111 Mayflower Drive	Paved parking lot for Pilgrim property	<a href="#">136</a>
16	52-38	43970/67	Meredith Winston, LLC	100 Wearguard Drive	No rail visible, commercial building, parking ,etc.	<a href="#">137</a>
17	52-01	3863/640	Robert and Aronson Hale	353 Circuit Street	No rail visible, commercial building, parking ,etc.	

## Rail Bed Site Inspection Notes Photos

## Hanover Conservation

#	Assessors Parcel	Legal Reference	Owner	Street Address	Notes	Photos
18	52-41	10079/12	Andry and Dolores Lagsdin Trustee	347 Circuit Street		
19	60-140	3373/345	Boston Edison Company	Circuit Street Rear		
20	61-21	C120923	4M 16 Commerce LLC	342 Circuit Street	Power lines- nothing visible, runs fown fence line	<a href="#">138-140, 145-150</a>
21	61-17	46104/184	Robert and George Rugman	72R Myrtle Street	Down path	
22	61-07	46104/181	Robert and George Rugman	72 Myrtle Street	Down path	
23	61-84	16305/348	Joseph McDonald Trustee	Myrtle Street	Driveable path. Possible abandoned rail, lots of 1-2" gravel	<a href="#">158-159</a>
24	61-10	13451/73	George Rugman	160 Myrtle Street		
25	61-11	3845/658	William Bates Estate	Myrtle Street Rear		
26	61-09	3963/688	Thelma Shaw	Myrtle Street	Drainage ditches on either side. Appears to be old railbed, lots of veg.	<a href="#">151-157</a>
27	61-89	3962/688	Thelma Shaw	Myrtle Street		
28	61-12	48442/0018	CJC Nominee Trust	208 Myrtle Street		
29	61-22	24308/168	Katy Lynne Hamilton and Stephen Green	168 Myrtle Street		<a href="#">144</a>
30	61-82	49520/0216	Dustin and Kristen Lindsey	176 Myrtle Street	House and landscape where railbed should be	<a href="#">143</a>
31	61-80	5106/0391	Andry and Dolores Lagsdin Trustee	184 Myrtle Street	Paved parking area where rail is supposed to be	<a href="#">142</a>
32	61-12	48442/18	CJC Nominee Trust	208 Myrtle Street		
33	69-14	2854/402	Town of Hanover	665 Center Street	Town of Hanover existing marked trail. Rail comes out to Center Street.	<a href="#">160-173</a>
34	69-13	9460/226	Pantooset Farms Inc.	Old Railroad Bed		<a href="#">160-173</a>



## Rail Bed Site Inspection Notes Photos

Num	Assessors Parcel	Legal Reference	Owner	Street Address	Notes	Photos
35	78-05	3540/130	Town of Hanover	Broadway		
36	78-46	4771/0233	Gregory and Jeanne Smith	165 Cross Street		
37	78-51	3540/130	Town of Hanover	Cross Street Rear	Walking trail with no visible rail. Outlet of trail in this parcel.	<a href="#">174-185</a>
38	78-38	33231/0275	Joshua Wright and Lisa Bumbalo	207 Cross Street		
39	78-13	26924/105	Michael and Jennifer Bertoncini	218 Cross Street	Rail gone	<a href="#">186</a>
40	78-15	51562/59	Stephen and Susan Scott	1119 Broadway	Rail gone	<a href="#">188</a>
41	78-33	6559/0053	Town of Hanover	Broadway Rear RR Plan	Trail	<a href="#">189-190</a>
42	79-08	32968/0292	Leonard Realty Trust	Water Street	Trail	<a href="#">191-192</a> <a href="#">196-198</a> <a href="#">202</a>
43	79-36	46099/0057	Joul Metri and Rita Nassour	42 Trailside Lane	Rail through house- all gone	<a href="#">193-194</a>
44	79-39	40741/0254	Robert and Jody Spencer	33 Meadow Drive		
45	79-38	39712/0126	Raymond and Melissa Ellis	15 Meadow Drive		
46	79-42	45452/0017	Steven and Rebecca Revocable Trust	40 Meadow Drive		<a href="#">195</a>
47	79-41	37417/0204	Robert and Linda Poznauskis	58 Meadow Drive		
48	79-08	32968/0292	Leonard Realty Trust	Water Street		
49	79-07	40195/0151	Jeffrey Boudreau	428 Water Street	Runs through back of house	<a href="#">199-204</a>
50	79-06	47954/0312	Harden Holding Company	360 Water Street	Trail ends at beginning of drive, picks up after all rail gone, follows most of walking trail then falls in veg between two stone retaining walls.	<a href="#">205</a>
51	69-13	9460/226	Pantooset Farms Inc.	Old Railroad Bed		<a href="#">206-228</a>

## Rail Bed Site Inspection Notes Photos

Num	Assessors Parcel	Legal Reference	Owner	Street Address	Notes	Photos
52	73-48	43996/40	Andrew and Eileen Kuhn	14 Riverside Drive		
53	73-49	48366/243	Jennifer Wrynn and Justin Schuler	32 Riverside Drive		
54	73-50	7550/0015	Michael and Karen Johnson	46 Riverside Drive		<a href="#">229-230</a>
55	73-04	5148/0211	Town of Hanover	Elm Street Rear-Railroad Bed		<a href="#">231-239</a>
56	65-86	14092/262	Pantooset Farms Inc.	Elm Street		<a href="#">240-245</a>
57	65-29	49429/0282	Jason and Lora Webster	182 River Road		
58	65-87	9211/108	Pantooset Farms Inc.	River Road Rear		
59	65-88	48615/222	Brian and Maura Banks	1 Tolman Road		
60	65-89	50534/47	Stephen and Kara Virta	5 Tolman Road		<a href="#">246-248</a>
61	65-80	7906/254	Leo Zona Jr.	Old Railroad Bed		<a href="#">249-254</a>
62	65-33	29353/0286	Leo and Mary Ann Zona	22 Broad Oak Way		
63	57-91	3949/0150	N E Telephone and Telegraph Co.	Columbia Road		
64	57-144	35438/0299	Frank Zona Realty Trust	303 Columbia Road		
65	57-102	43546/0263	JNJ Realty Service LLC	309 Columbia Road		



# Site Photographs



#29 above; #31 below







#33 above, #38 below







#40 above, #50 below







#56 above, #60 below







#80 above, #100 below







108 above, #118 below







#135 above, #138 below







#139 above, #149 below







#155 above, #160 below







#172 above, #176 below







#180 above, #181 below







#186 above, #188 below







#190 above, #195 below







#196 above, #200 below







#204 above, #205 below







#208 above, #210 below







#221 above, #227 below







#230 above, #231 below







#236 above, #237 below







#239 above, #243 below







#246 above, #249 below



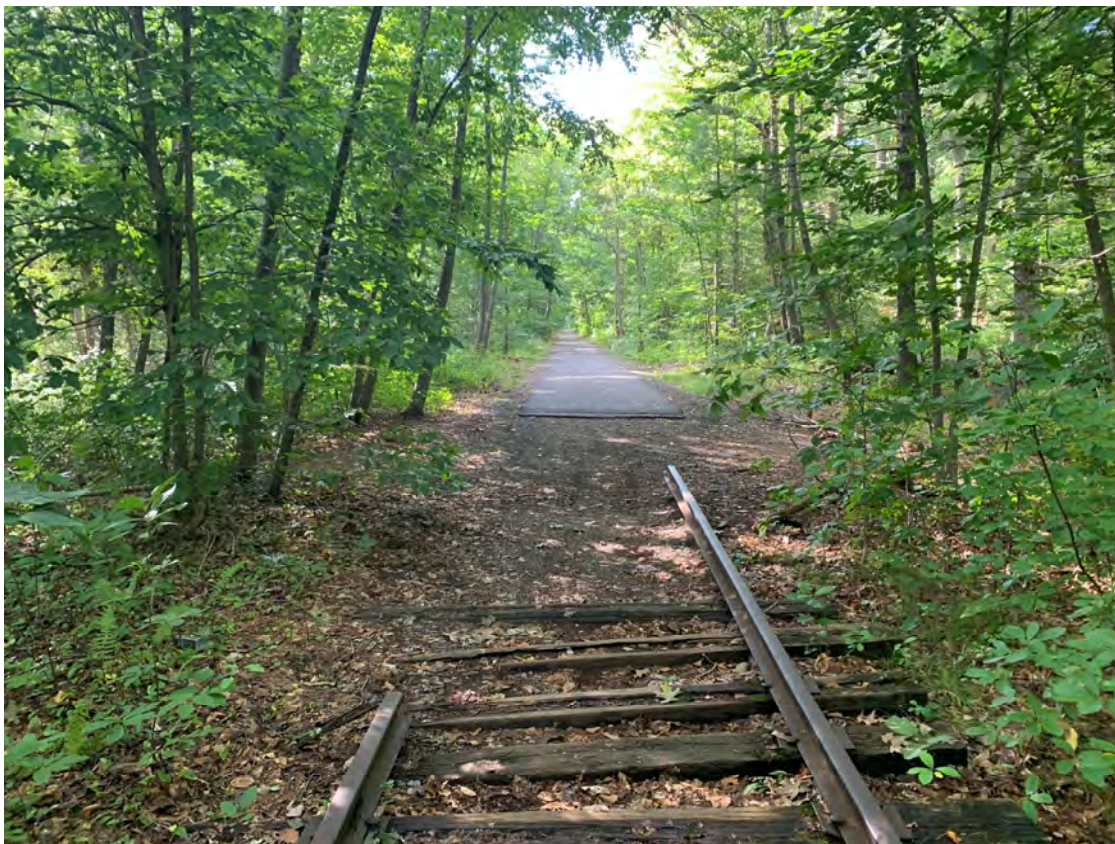




#252 above, #253 below







Looking towards Rockland Rail Trail



Looking toward Hanover from Rockland Town Line