Regional Naugatuck River Greenway Routing Study

Town of Thomaston, Connecticut

TOWN OF THOMASTON CONNECTICUT

DECEMBER 2010

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PREPARED FOR:
Council of Governments of the Central Naugatuck Valley

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Cover image: Future greenway trail alignment along Hill Road (Rte. 222, Thomaston)

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1. Overview

The Regional Naugatuck River Greenway Routing Study report recommends routing for the Naugatuck River Greenway (NRG) trail through the Town of Thomaston, Connecticut. The routing is the product of a year-long effort to study, analyze and develop routing recommendations for a Naugatuck River Greenway trail along the Naugatuck River in Western Connecticut. As part of this project, greenway routing reports were also created for Watertown, Naugatuck, and Beacon Falls. A routing report was also created for Waterbury, as part of a separate process. The overall goal of these reports is to identify a route for a 22-mile long regional greenway trail in the Central Naugatuck Valley Region. It is envisioned that this greenway will ultimately extend 44 miles from Torrington in the north to Derby in the south.

The two primary goals of the Naugatuck River Greenway (NRG) are:

1) To develop a non-motorized transportation facility for walkers and cyclists.
2) To provide public access to the Naugatuck River.

The NRG will provide Thomaston residents with a safe pedestrian and bicycle path that will connect to neighboring municipalities. The NRG will facilitate river access for fishing and small boat launches. The trail will be alongside or within view of the Naugatuck River for as much of the recommended alignment as possible. The NRG will also connect existing facilities and attractions in town such as the Thomaston Dam, New England Railroad Museum, the historic Clockwalk, and Thomaston Opera House.

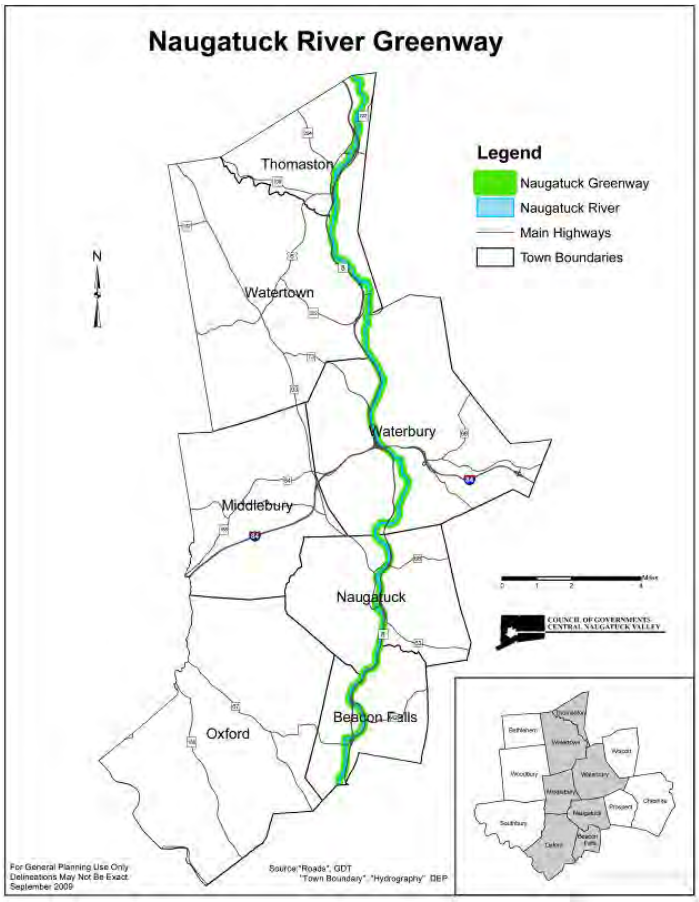


Figure 1: Map showing the five municipalities affected by this Study, though the alignment through Waterbury was determined separately.

In most areas along the length of the alignment, the preferred greenway route was apparent due to the relative ease of developing a trail along one side of the river versus the opposite bank. In a handful of locations, however, routing options were presented and narrowed down after input from the general public, the Regional Naugatuck River Greenway Committee, town officials and Council of Governments of the Central Naugatuck Valley (COGCNV) staff.

For the Study, a greenway is defined as "*a corridor of land that connects people and nature together,*" and a trail is defined as "*a linear facility for non-motorized transportation and recreation.*" The future trail's design will be context sensitive; in some sections it may be a paved, shared-use path for pedestrians and bicyclists, while in others, the trail may be a rustic, natural-surface path that is more amenable to equestrians. The

Study also makes recommendations for the trail and related improvements such as trailheads, parking areas, canoe/kayak landings, on-street bike improvements and other spur connections.

The scenic quality of some sections of the Naugatuck River rivals that of rivers nearly anywhere in New England.

Throughout the planning process, care was taken to ensure that recommendations coming from this Study fully considered recommendations from the Waterbury Naugatuck River Greenway Routing/ Feasibilty Study as well as the various greenway-planning efforts occuring separately in all four municipalities. The Regional Naugatuck River Greenway Routing Study also recommends connections to nearby parks, schools, state forests and town centers along the route.

The Naugatuck River is the Central Naugatuck Valley Region's primary natural resource. While in many stretches the river has an industrial nature, in others it takes on the traits of a wild river running through far less developed areas, such as northern New England or the Berkshires.

Today, there is a new appreciation of the value of this resource in the heart of Western Connecticut. The COGCNV recognizes this portion of the Naugatuck River Greenway as the core of an inter-connected greenway system that will eventually connect to Oxford, Middlebury and Southbury via Larkin State Park Trail and to Connecticut Forest and Park's Blue-Blazed hiking trail network. When complete, the Naugautck River Greenway will:

- Serve as alternative 'green' transportation facility.
- Provide recreation opportunities for residents and visitors.
- Improve the quality of life in local communities.
- increase property values adjoining the greenway.
- Help retain and attract new businesses and residents.
- Raise awareness and help build appreciation of the value of the Naugatuck River.

Greenway-oriented economic development adjacent to the Sue Grossman Still River Greenway in Torrington. (photo: Peter Kisselburgh)

2. Mission and Goals

The following Mission and Goals provide a measurable set of guidelines for the development of the Naugatuck River Greenway.

Mission: Develop an interconnected greenway trail along the Naugatuck River corridor from Thomaston to Beacon Falls that incorporates existing and planned trails and open spaces, and connects to nearby parks, schools, downtowns, public transportation and other destinations in order to create opportunities for non-motorized transportation and for communities to reconnect with the natural environment along the river.

Goal 1: Connect Thomaston, Watertown, Waterbury, Naugatuck and Beacon Falls with a contiguous multiuse greenway trail. Furthermore, access points and connectivity to commuter and tourist train stations and bus routes are necessary for the proposed trail to be a successful transportation and recreational facility.

Goal 2: Increase the number of people walking and bicycling for transportation and recreation and the number of children walking and bicycling to school in the Central Naugatuck Valley Region, helping to reduce traffic congestion, greenhouse-gas emissions and sedentary lifestyles.

Goal 3: Support each community's economic development efforts by routing the greenway to serve their downtown areas.

Goal 4: Incorporate context-sensitive design in the planning and development of the greenway trail. The trail will be sensitive to local conditions. Individual sections of the trail may be designed as a rustic, natural-surface trail or as a paved, shared-use path based on local conditions. Some stretches could be designed to encourage equestrians, depending on local conditions. Interpretive elements will reflect each community's unique heritage and culture, while a greenway logo will establish a consistent identity along the entire greenway trail.

Goal 5: Reconnect the communities of the Central Naugatuck Valley Region to the Naugatuck River. Provide access to the river for recreational, educational and public safety purposes. Encourage municipalities and residents to better protect the river corridor.

3. Study Methodology

One of the break-out group tables at the community meeting held in Thomaston on November 18, 2009.

The Regional Naugatuck River Greenway Routing Study followed a methodology that included community workshops, site walks, stakeholder meetings, reviews of relevant planning documents and field observations to identify short-term and long-term alternatives for development of the regional greenway. Planning tools such as GIS-based data analysis and review of aerial photography were employed as well. The mission and goals outlined in the previous section guided the planning process. A series of site walks and meetings with stakeholders in each of the communities occurred in the fall of 2009 and continued on an as-needed basis through the summer of 2010. Public workshops for the data-gathering stage were held on November 17 and 18, 2009 in Naugatuck and Thomaston, respectively and on March 23 and 24, 2010 in Beacon Falls and Watertown, respectively. Additionally, the project website (http://www.cogcnv.org/greenway) was maintained throughout the duration of the Study.

A core element of the Routing Study was to identify gaps in the current greenway system and propose short- and long-term alternatives for closing the gaps and connecting existing or planned sections of the greenway. Gaps were evaluated for:

- Land ownership issues
- User accessibility
- Environmental concerns
- Physical barriers such as topography, major roads and rail lines, etc.
- Permitability, constructability and cost
- Adjacent planned development
- Community support or opposition
- Overall character, including view opportunities
- Adjacency to points of interest
- Potential or lack of access points

After the Gap Evaluation, an analysis of opportunities and challenges within the project corridor was conducted to refine the routing alternatives. Working with COGCNV planners and the Naugatuck River Greenway Committee, the alternatives were narrowed down to a recommended greenway alignment that had the community's support. In conjunction with the routing recommendations, a phasing plan for implementation, along with cost estimates for each phase were developed. The phasing recommendations take into account that greenway planning, design and development often occur over extended periods of time and early successes can help to maintain overall project support, funding and momentum.

The planning and conceptual design of the trail follows appropriate trail-related design guidelines. For example, the typical cross-section for the NRG is based on the AASHTO 1999 *Guide for the Development of Bicycle Facilities,* which recommends a ten foot-wide shared-use path with two-foot soft shoulders (fourteen feet total) with a minimum dimension of eight feet to clear pinch points. This does not preclude, however, the possibility that some sections of the trail may include stretches that are narrower and made of permeable surfaces due to local conditions and other constraints.

4. Study Area

The study area is a 22-mile corridor along the Naugatuck River within the municipalities of Thomaston, Watertown, Waterbury, Naugatuck and Beacon Falls. The corridor is approximately one-half to one mile in width but can vary to allow for a full range of opportunities for consideration, including the potential for trails on both sides of the river or along roads, highways and rail corridors. Recommendations for the greenway alignment extend from the Thomaston Dam in Thomaston to Toby's Pond and Recreational Park in Beacon Falls. Connections further north to Torrington and south to Derby are being coordinated by the Litchfield Hills Council of Elected Officials and the Valley Council of Governments, respectively.

Within the nearly four-mile long river corridor in Thomaston, the study area focused on an approximately half-mile wide corridor between North/South Main Street on the west bank and the rail line on the east bank and the Route 222 / Hill Road corridor to the Thomaston Dam. Within the corridor, the study area is varied from an environmental and land-use point of view. At the northern-most end, the river corridor runs through federal lands that are undeveloped except for the dam structure. Running downriver (south), the character of the river's edges becomes more industrial as it passes through downtown Thomaston, where factories and mills were built in the 19th century. Just north of downtown, Route 8 passes over the river and turns to the south, running along the east bank for nearly two miles until it crossing again to the west side of the river.

Industrial uses along the river in downtown Thomaston.

South of downtown, on the west bank, there are a collection of commercial and industrial uses along the river, most fronting either South Main or River streets. Downriver from the Reynolds Bridge, the Naugatuck River corridor then proceeds into Watertown as it cuts a channel into the hills of the Mattatuck State Forest.

5. Potential Greenway Routing Analysis

The analysis of Potential Greenway Routes is based on meetings and walking tours with stakeholders, field observations and the examinations of aerial photos and GIS-based maps. This analysis is based on the long-term desire to incorporate a 8-12' wide stone dust or paved trail in close proximity to the Naugatuck River, but a narrower dirt hiking trail or on-street bike lanes in the short term are not precluded. These may be necessary to avoid difficult stretches where property-ownership issues, engineering challenges or environmental constraints exist.

Within the Town of Thomaston's Greenway Routing Analysis Map (see Figure 2 on page 10) there includes:

- Identification of cultural and historic destinations and scenic areas that should be connected to the greenway.
- Existing, planned or proposed local greenways.
- Portions of the corridor for which no apparent routing options currently exist, i.e. gaps.
- Identification of potential spurs and loops that connect to other greenways, amenities and destinations.

For the latter two bullets points, the map features elements along the river that present existing and potential conditions along the Naugatuck River. Potential conditions and example situations from the region are presented below:

- **No apparent routing option along the river** – typically due to the placement of Route 8 along the edge of the river or very steep hills or cliffs that may present significant challenges (note that this does not preclude the possibility of a narrow, short-term path as mentioned above).

Example: North of the Prospect Street Bridge in Naugatuck where Route 8 runs very close to the river's edge.

- **Potential 'rail with trail' along active rail line** – an active rail line with an adjacent level shelf, unutilized spur or maintenance way that is potentially wide enough to accommodate the greenway trail with an appropriate setback (ideally 20-25' but potentially as low as 10') from the rail line.

Example: The rail corridor through parts of Naugatuck may offer an opportunity for a rail-with-trail greenway section.

- **Potential trail adjacent to the river** – portions of the riverbank where spatial and topographical constraints do not prevent the routing of the trail close to the river's edge.

Example: Portions of the greenway trail within Toby's Pond and Recreational Park are likely to run adjacent to the river.

- **Potential connection along existing access road or street rights of way (ROW)** – areas where the greenway may be able to use an adjacent access road or the portion of an adjacent road ROW with sufficient width to accommodate a trail.

Example: A dirt maintenance roadway that runs between the rail line and Route 8 in Watertown is an opportunity for the trail.

- **Potential spur trail/street improvements** – these are on-road improvements that may involve creating bicycle lanes and improved pedestrian facilities such as sidewalks. These on-road improvements can help to connect the greenway to other trails, schools, cultural destinations and downtown areas.

Example: Streetscape enhancements along Elm Street in Thomaston will improve connections between the future Naugatuck River Greenway and the Clock Walk.

Figure 2: Greenway Routing Analysis in Thomaston.

6. Obstacles to Access and Connectivity (Gap Analysis)

Throughout the nearly four-mile NRG trail corridor in Thomaston, there are a number of obstacles to accessibility and trailhead parking. At the Thomaston Dam, it is possible to walk along a series of informal trails along the east bank of the river, below the dam, between the Vista Picnic Area and the Hill Road bridge over the Naugatuck River. However, access downriver (south) from this area is difficult on foot or bike on either riverbank because of private property, the Route 8 interchange (exit 40) and the rail line. There is only one river access point between Route 222 and the East Main Street Bridge via Railroad Street Annex. An unused access road through the Plume & Atwood site provides some opportunity for access in the future.

South of the East Main Street Bridge, steep slopes and private property create obstacles to access immediately adjacent to the river. Following the Clock Walk along the Elm Street is recommended for the greenway as an alternative to the steep riverfront corridor. The east bank of the river from here to Reynolds Bridge is constrained by the close proximity of the rail line, Route 8 and the Naugatuck River. The west bank does offer some opportunities for connectivity, but some obstacles are present including private property along the river, South Main Street's narrow right of way and the on/off ramps for Route 8 (exit 38).

Only one parking area open to the public currently exists along the proposed routes—the Vista Picnic Area at the Thomaston Dam—but it is only open from May until mid-October. The other proposed parking area along Hill Road is not currently a formally-designated parking area, though it is used by hunters and fishermen. The other recommended parking area at the Thomaston Sewer Plant is currently not open to the public. While all of these parking areas will include trailheads to the NRG, care will need to be taken—through bollard placement and signage—to ensure that ATV's and other motorized vehicles do not have access onto the trail.

7. Affected Property Data

The parcels falling within or adjacent to the study area boundary have been identified and shown on the figures provided in Appendix B. A table with parcel size and property-owner information is also provided in Table 2 within Appendix B. The parcel inventory is intended to facilitate future correspondence between the municipality and affected property owners. The parcel table was developed from the COGCNV GIS parcel database. In some instances the information may be incomplete.

In Thomaston, a total of 16 parcels have been identified within the study corridor, not including public rights of way. Key parcels of public land within the corridor include:

- U.S. Army Corps of Engineer's land surrounding the Thomaston Dam
- Town of Thomaston Fire Station
- CTDOT's Route 8 right of way
- CTDOT / Naugatuck Railroad's rail corridor
- CTDOT District IV facility (on South Main Street) and salt shed area
- Mattatuck State Forest

8. General Construction Feasibility and Cost

Experience on other greenway projects can be used to infer a planning-level estimate of expected construction cost for the Naugatuck River Greenway in Thomaston. For a typical greenway with conventional structure types in a rural setting, expected greenway construction costs for either a 10-12' paved or stone dust path range from $0.75 to $1.25 million per mile. Many factors will affect final cost including construction materials, commodity prices, property impacts of the selected alignment and other undetermined issues.

Costs for a greenway trail along the Naugatuck River corridor, as with most greenway projects, will be largely driven by the requirements of structural components (e.g., bridges, pile-supported walkways, etc.). Fortunately, completing the entire corridor within Thomaston town limits will not require any expensive new bridges over the Naugatuck River. However, a handful of other design elements will require engineered solution that will increase the cost of some individual segments of the NRG. For instance, to provide a route for the trail across the East Main Bridge, the narrow south sidewalk is recommended for widening to 10-12', a significant cost. Also, while far less expensive than Naugatuck River crossings, two or three new brook bridges are recommended in Thomaston. Also, a possible trail section on piles will be needed to bypass the wetland area behind the auto dealership between the Route 8 on and off ramps at South Main Street. The option to avoid these wetlands could be expensive as well as, requiring multiple retaining walls to keep the NRG along the river and below Route 8.

9. Brownfields and Environmental Constraints

Land use within the greenway corridor in Thomaston varies from industrial and mixed commercial/ residential sites to undeveloped forestland. Each of the various land uses brings its own set of environmental challenges.

In urbanized environments with a history of industry like Thomaston, it is common to find sites contaminated with oils or hazardous materials. Older development frequently included use of urban fill materials (e.g., brick, block and asphalt within a soil and ash matrix). Due to the presence of ash and asphalt within the urban fill, it is common to find pollutants such as heavy metals and polycyclic aromatic hydrocarbons (compounds commonly found in petroleum and combustion by-products) within urban fill materials. These concerns will likely complicate the acquisition of parcels for greenway development. As definitive designs for the various greenway segments are developed, the designer should identify parcels with known or potential historic releases of contaminants. This will allow trail designs to incorporate appropriate mitigation measures.

A first-order assessment of potential contamination can be made by reviewing the Connecticut Department of Environmental Protection's (CTDEP) "List of Contaminated or Potentially Contaminated Sites in Connecticut" and "List of Significant Environmental Hazards Reported to the DEP." As of September 2009, known contaminated or potentially contaminated sites near the greenway corridor in Thomaston include:

- Tyler Automatics, 437 South Main Street
- Plume & Atwood Brass Mill Division, 235 East Main Street
- Drawn Metal Tube Company, 219 Elm Street

As of February 2010, no sites with significant environmental hazards were reported to the CTDEP near the greenway corridor in Thomaston. However, these lists are not exhaustive and only provide information about sites that the CTDEP is aware of. If warranted, a more detailed evaluation in the form of a Phase I/II Environmental Site Assessment may need to be undertaken.

Constructing portions of the greenway in Thomaston may require disturbing polluted soil. Special consideration should be given to the following:

- *Soil disposal:* If excess soil is generated during the construction of the trail, it may require special handling and disposal due to the presence of pollutants. We recommend that the trail be designed in a manner to reduce the amount of excess soil generated during the project to mitigate the potential for excessive costs associated with polluted soil disposal.

- *Potential for exposure:* Although the greenway may be paved, thereby mitigating the potential for users to come into contact with pollutants directly beneath the trail, soil located along the shoulders of the trail could provide a potential exposure pathway. Surficial soil quality testing may reveal these conditions and permit the designer to incorporate mitigating measures (e.g., separation fabrics, clean fill, etc.).

In less developed areas, environmental constraints relate less to mitigating man-made contamination and more to protecting and managing natural resources. Sensitive resources include: wetlands, flood plains, endangered or threatened species habitat, steep slopes or erosive soils and archeological resources. In these resource areas, a special effort should be made to maintain and/or re-establish riparian buffers adjacent to the river or wetlands. These buffers help protect water quality, lower water temperatures and provide wildlife corridors. Where the greenway is proposed to cross an area identified as a potential endangered or threatened species habitat, a review by the CTDEP should be sought early in the design process. The CTDEP will advise the municipality on appropriate measures to protect the critical habitat. In Thomaston, the greenway will pass through at least one, and possibly two, areas known to be potential endangered-species habitat. If the CTDEP determines that the proposed project is likely to impact a listed threatened or endangered species, or significant natural communities, department staff will provide recommendations to avoid or minimize impacts to these species and habitats. The CTDEP permit analysts reviewing the project environmental permit applications will consider these recommendations during their review and typically incorporate appropriate conditions as part of the permit.

Where appropriate, municipalities are encouraged to work with their design professionals to incorporate low-impact design (LID) principles into the greenway. LID allows for more natural stormwater drainage patterns and promotes groundwater recharge. It helps to decrease the adverse effects of development upon our water resources. Common LID measures include permeable pavements, rain gardens, bio-filtration swales, etc. These measures may not be appropriate, however, in areas where underlying soils are polluted.

10. Safety and Security

Trail safety is a major concern of both trail users and those whose property is adjacent to a greenway trail. Emergency vehicles access to the NRG is paramount and the alignment and access point locations were planned with this in mind. The Town of Thomaston should plan for regular security patrols for the section of the trail within its jurisdiction and develop an emergency response plan for police, fire and ambulance service. Creating a safe trail environment goes beyond design and law enforcement, however and should involve the entire community. The most effective and most visible deterrent to illegal activity on the NRG will be the presence of legitimate trail users. Getting as many "eyes on the trail" as possible is the most effective deterrent to undesirable activity. There are several components to accomplish this:

Provide good access to the trail

Access ranges from providing conveniently-located trailheads along the Greenway, to encouraging the development of sidewalks and bike facilities along public roadways that connect to, or intersect, the NRG. Access points should be inviting and signed to welcome the public onto the trail.

Good visibility from adjacent neighbors

Neighbors adjacent to the trail can potentially provide 24-hour surveillance of the trail and can become an ally to the municipalities' police departments. Though some screening and setback of the trail may be needed for privacy of adjacent neighbors, complete blocking out of the trail from neighborhood view should be discouraged. This eliminates the potential of neighbors' "eyes on the trail," and could result in a tunnel effect along the trail.

High level of maintenance

A well maintained trail sends a message that the community cares about the public space. This message alone will discourage undesirable activity along the trail.

Programmed events

Community events along any of the various segments of the Naugatuck River Greenway will help increase public awareness and thereby attract more people to use the trail. Various civic organizations can help organize public events along the trail which will increase support. Events might include a day-long trail cleanup or a series of short interpretive walks led by knowledgeable residents or a naturalist.

Community projects

The support generated for the NRG could be further capitalized by involving neighbors and friends of the trail in a community project. Ideas for community projects include volunteer planting events, art projects and interpretive research projects. These community projects create a sense of ownership along the greenway and serve as a strong deterrent to undesirable activity along the trail.

Adopt-a-Trail Program

Nearby businesses, community institutions and residential neighbors often see the benefit of their involvement in trail development and maintenance. Businesses and developers may view the trail as an integral piece of their site planning and may be willing to take on some level of responsibility for the trail as well. Creation of an adopt-a-trail program should be explored to capitalize on this opportunity and build civic pride in the greenway.

11. Permitting Issues

The construction of the regional greenway along the Naugatuck River will require permits from various agencies. A brief description of each anticipated permit is provided below. It should be noted that each permit may not be required for each individual section of the greenway trail.

Municipal Inland Wetlands and Watercourses Permit for Regulated Activities

Basis: Delegated authority from the State based on Connecticut General Statutes.

Threshold: Any regulated activity within a State regulated wetland, or upland review area. Can also be required if the activity is in an upland area, drains to a regulated wetland area and/or is deemed to have a potential impact on the wetland.

Process: Application must be made to the Municipality and most include a Connecticut Department of Environmental Protection Reporting Form. At the first meeting after application is received, it is formally accepted by the Commission. This begins the time periods as defined in the State Statues. If the proposed activity is deemed to be a potentially significant activity, then a Public Hearing must be held before a decision can be made by the Commission. If the activity is found to have no significant impact, then the Commission may hold a public hearing, if it is found to be in the public good, or may render a decision without holding a hearing. Following the formal publication of the decision, there is a 15-day appeal period.

Time Line: Normally takes three to six months, depending on whether a Public Hearing is required. Application must be submitted prior to or concurrent with the Planning and Zoning Permit, if required.

Municipal Planning and Zoning or Municipal Zoning Department Permit (Site Plan Approval)

Basis: Local authority granted under Connecticut General Statutes, but based on local bylaws and regulations.

Threshold: Any significant earthwork or work requiring a building permit. A Zoning permit may not be required for basic greenway trail projects. This should be discussed with each municipality's Planning and Zoning staff once the corridor and proposed construction methods are sufficiently defined.

Process: Application is made to the Municipality. At the first meeting after the application is received, it is formally accepted by the Commission. This begins the time periods as defined in the State Statues and local bylaws. Certain activities require a special permit which requires a public hearing and must be held before a decision can be made by the Commission. Also, the Commission cannot make a decision until the Inland Wetlands Commission has made a decision. Following the formal publication of the decision, there is a 15-day appeal period. Plans must normally be approximately 70% construction document level in order to contain sufficient information to gain approvals.

Time Line: Normally takes three to six months, following submission, depending on whether a public hearing is required. The permit application cannot be submitted prior to the application for Inland Wetlands, although they can be submitted on the same day.

FEMA Floodplain Development and Conditional Letter of Map Revision

Basis: Federal law with some review authority delegated to the municipality.

Threshold: Any earthwork or construction within a designated flood plain; work over, or in a designated floodway.

Process: A floodplain permit is required before construction begins within any Special Flood Hazard Area (SFHA), or any flood-prone areas if no SFHA has been defined. Permits are required to ensure that the proposed development project meets the requirements of the National Flood Insurance Program and the community's floodplain management ordinance. In Connecticut, this review is usually performed by the Planning and Zoning or Wetlands Commissions. Generally, passive recreation, such as bicycle and pedestrian trails, are allowed as permitted use in flood-prone areas. However, if the proposed construction affects the elevation or horizontal spread of flood waters, the applicant may need to apply for a Conditional Letter of Map Change (CLOMR). Application is made to

FEMA with the concurrence of the municipality. The application must demonstrate that the water surface elevation will not increase by more than one foot (cumulatively with other developments) in the flood plain or by any amount in the regulatory floodway through use of hydraulic modeling software. It should be noted that some municipalities have floodplain-management regulation more restrictive than these requirements. Following construction, an application must be made for a Letter of Map Revision (LOMR) depicting actual "as-built" conditions and modeling demonstrating that the data presented in the application is valid.

Time Line: Normally takes twelve to eighteen months for CLOMR.

Connecticut Flood Management Certification (FMC)

Basis: Connecticut General Statutes and CTDEP Regulations.

Threshold: All State of Connecticut actions in or affecting floodplains or natural or man-made storm drainage facilities, including projects undertaken by municipalities with funding provided by the State.

Process: Application is made to the Connecticut Department of Environmental Protection (CTDEP). Upon receipt of a request for CTDEP approval of a state agency's flood management certification, the application is assigned to a project manager and is reviewed for sufficiency. If the application is sufficient, a detailed technical review is initiated. These reviews consist of an evaluation of the technical documentation provided in the application as well as an independent assessment of the site and of the project's consistency with the flood management standards and criteria.

Time Line: Normally processed within three months. If other CTDEP approvals are required, the FMC will be processed concurrently with the other applications.

Stream Channel Encroachment Permit

Basis: State regulation of specific stream channels as defined by Connecticut General Statutes and CTDEP Regulations.

Threshold: Any earthwork within the stream channel encroachment line.

Process: Application is made to the CTDEP. Application must include hydrologic analysis proving that activity does not negatively impact flood water or impede flow within the channel.

Time Line: Normally takes six to twelve months depending upon the nature of the proposed construction.

Connecticut Department of Environmental Protection General Permit for the Discharge of Stormwater and Dewatering Wastewater from Construction Activities

Basis: Connecticut General Statutes and CTDEP Regulations.

Threshold: Compliance with the General Permit is required for all projects that disturb one or more acres of total land area. Projects with five or more total acres of disturbance, regardless of phase must also file a registration with the CTDEP. Projects exceeding 10 acres of total disturbance must obtain an approval of registration, including a detailed review of the required Stormwater Pollution Control Plan.

Process: Application is made to CTDEP.

Time Line: Must be submitted at least sixty days prior to the start of construction.

Army Corps of Engineers (ACOE) Permit

Basis: Section 404 of the Clean Water Act

Threshold: There are three categories of ACOE permits based on the total area of disturbance of federally regulated wetlands. The federal definition of wetland is different from the Connecticut definition. Although the limits of both federal and state wetland tend to be the same, there are sometimes differences. ACOE jurisdiction is triggered by any fill-in, or secondary impact to, a federally regulated wetland. If the ACOE has jurisdiction, then the category of permit is decided based on the total direct and secondary impacts to wetlands. Direct impacts include earthwork operations. Secondary impacts can include changes in drainage patterns or groundwater hydrology, clearing/cutting of vegetation, or alteration of shade patterns.

Category I General Permit (less than 5,000 square feet of disturbance)

Category II Programmatic General Permit (PGP) (5,000 square feet to 1 acre of disturbance)

Category III Individual Permit (one acre, or more, of disturbance)

Process: For Category I, there is no application required. For Category II and III permits, application is made to the ACOE. Review is conducted jointly by the ACOE and the CTDEP (see CT 401 Water Quality Permit). Additional review by the U.S. Fish and Wildlife and other federal agencies is conducted for Category II and III permits. Category II permits can be changed to Category III if requested by reviewing agencies based on potential impacts of the wetlands or wildlife habitat.

Time Line: Category II permits normally take six to nine months depending on complexity, quality/function of wetlands, and surrounding habitats. Category III can take one year or more. Category II and III permits cannot be granted until the CTDEP issues a 401 Water Quality Permit.

Connecticut Section 401 Water Quality Certification

Basis: Federal authority, under the Clean Waters Act, delegated to the State of Connecticut.

Threshold: Category II or III ACOE Permit, or any State of Connecticut Project.

Process: Application to the ACOE is jointly reviewed by the Connecticut Department of Environmental Protection (CTDEP). The CTDEP often requires additional information to be submitted which is not required by the ACOE.

Time Line: Normally takes four to six months. This certification must be granted before the ACOE can issue a Category II or III permit.

12. Coordination with Other Studies

Along with the Regional Naugatuck River Greenway Routing Study, other relevant studies have recently been completed or are occurring concurrently. In some cases, some of these studies have had an impact on the routing decisions for the NRG and recommendations from this Study have led to proposal alterations to the other studies. The other studies include:

- The **Waterbury Naugatuck River Greenway Routing and Feasibility Study** recommends a hybrid greenway alignment through the city that utilizes public and private property along the east

and west banks of the river, numerous bridges, and a handful of roadway corridors to link difficult-to-bridge gaps along the river. The Study includes numerous loops and spur connections to important nearby destinations, as well as nature trails that run adjacent to the wider, paved greenway trail. At the north end, the Waterbury Greenway is proposed to terminate at the City Line with Thomaston adjacent to Thomaston Avenue with a long-term recommendation for a new bridge to span the river at this location, connecting with the trail running north in Watertown.

- The **Connecticut Bicycle and Pedestrian Transportation Plan** was updated by the Connecticut Department of Transportation in 2009. The effort includes a state-wide plan and detailed map that illustrates the state's policies, existing facilities and future needs for safe and efficient travel by bike or by foot. The official bike map includes two cross-state routes that cross the Naugatuck River Valley within the Regional Greenway study area. These include a route through Thomaston from the west along Route 109, along South Main and out of Thomaston via Hill Road.

13. Community Input

The Council of Governments of the Central Naugatuck Valley (COGCNV) hosted two pairs of public workshops for the Naugatuck River Greenway Routing Study. A workshop was held in each of the four greenway study municipalities.

The first public workshops were held on November 17 and 18, 2009 in Naugatuck and Thomaston, respectively. The purpose of the first set of workshops was to gather input from all four communities to assist in determining opportunities and challenges along the corridor and potential routing options for the greenway trail. The meeting on the 17th was focused on the issues and routing in both Naugatuck and Beacon Falls, while the next night, discussion focused on the issues and routing in Watertown and Thomaston.

First Selectman Ed Mone addresses workshop attendees in the Thomaston High School cafeteria on November 18, 2009.

The second of the two pairs of public workshops were held on March 23 and 24, 2010 in Beacon Falls and Watertown, respectively. The purpose of these meetings was to gather input from the four communities on the proposed preliminary routing as well as areas where they would like to see additional amenities along the Naugatuck River Greenway.

Overall, the four community meetings, combined with other stakeholder meetings and site walks, provided the COGCNV and the consultant team with valuable input on routing recommendations, design options and property-ownership issues. The team also learned of the important local connections to adjacent neighborhoods and commercial areas outside of the corridor. Additional trail spurs and other connections were added to the recommendations as a result. One attendee even suggested the clever idea

of using the 22-mile greenway, plus some spurs, as the route for the Naugatuck River Marathon in the future.

Draft routing maps were also posted on the project website. Comments on the greenway routing maps were received at the workshops, via e-mail and by U.S. Mail.

Press releases were published for both sets of workshops in the Republican American and other town newspapers. Articles were written and published on the workshops, including references to the project website. Video of the Thomaston workshop was posted to the Republican American website.

Subsequent to the community meetings, members of the Connecticut Horse Council and the Connecticut Equine Advisory Council investigated key trail connections that currently exist in the Naugatuck River corridor area. They provided a detailed memo to the COGCNV and mapped the connections in a GIS database, some of which helped the consultant team recommend spur-trail links important to equestrians.

A final public meeting was held on September 14, 2010 at the COGCNV's offices in Waterbury. The completed draft study was presented to the Regional Planning Commission and members of the public in attendance. Members of the public and RPC commissions voiced support for the greenway study. One member of the public emphasized the importance of designing the greenway to not take away from the beauty of the Naugatuck River.

14. Opportunities and Challenges

Part of the community and stakeholder meetings, field work and analysis during the easy stages of this Study included the documentation and analysis of existing opportunities and challenges to the development of a greenway trail within the Naugatuck River corridor in Thomaston. This analysis is shown in a diagrammatic map, Figure 3, on the following page.

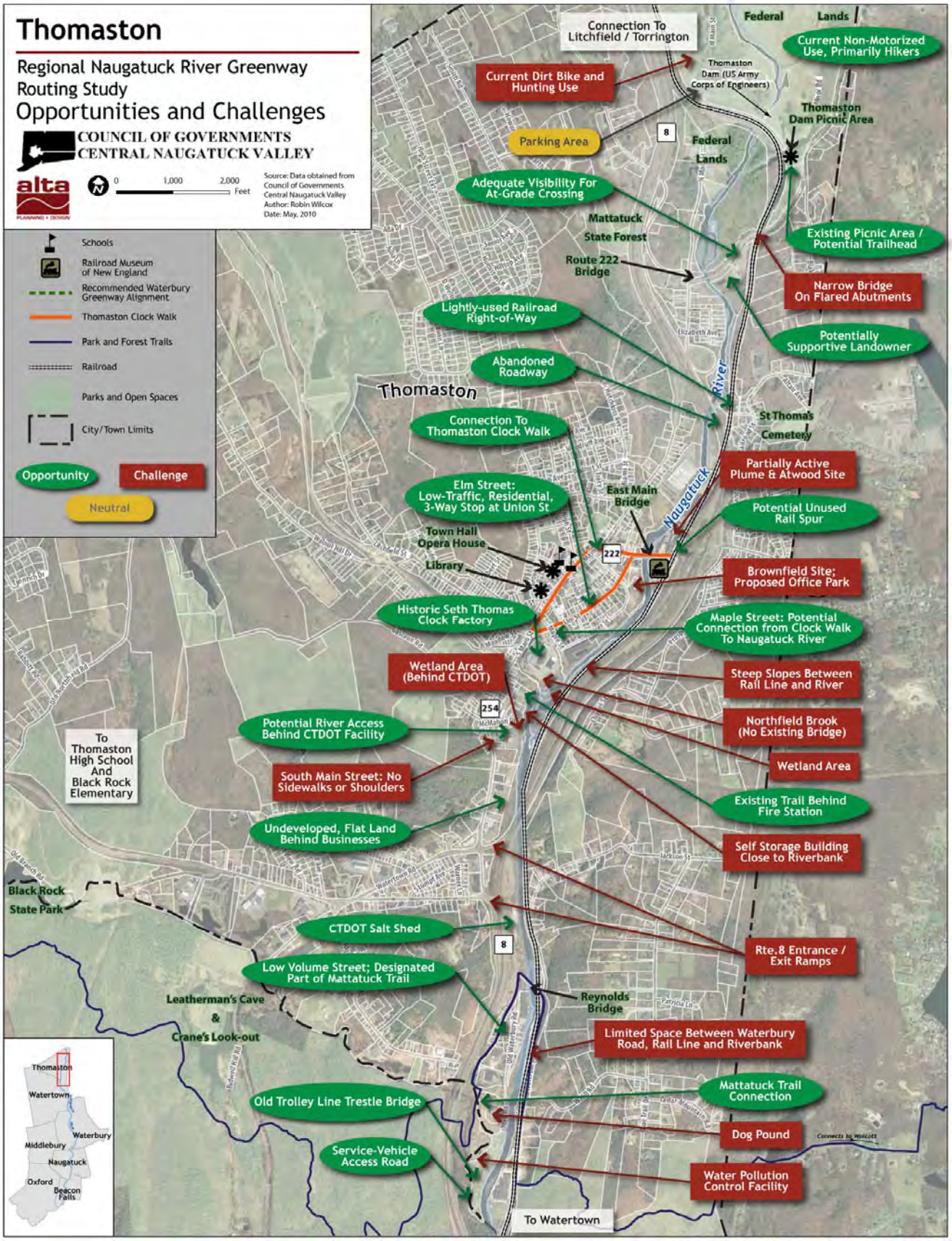
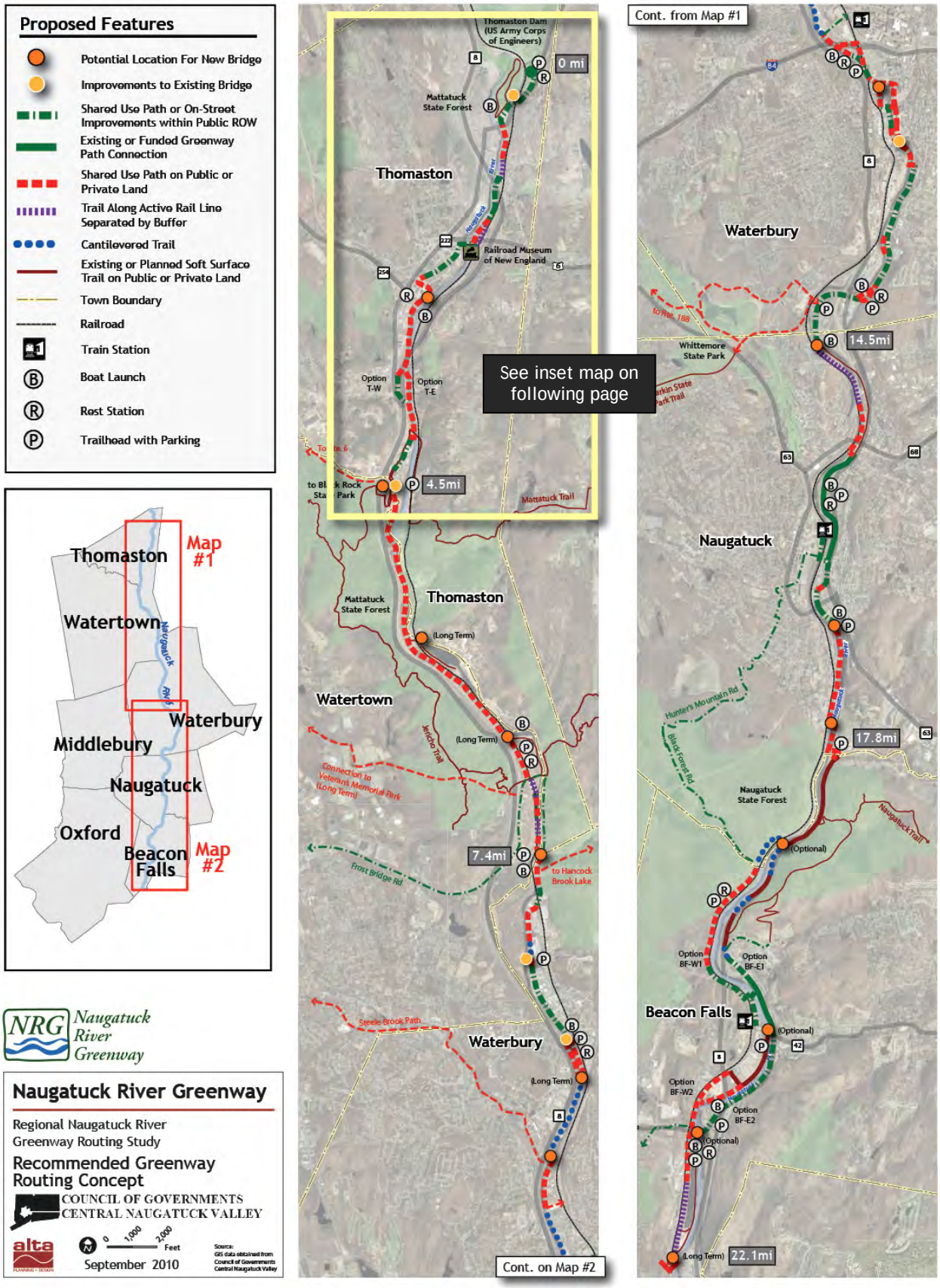


Figure 3: Opportunities and Challenges for Potential Greenway Route in Thomaston.

15. Recommended Greenway Routing



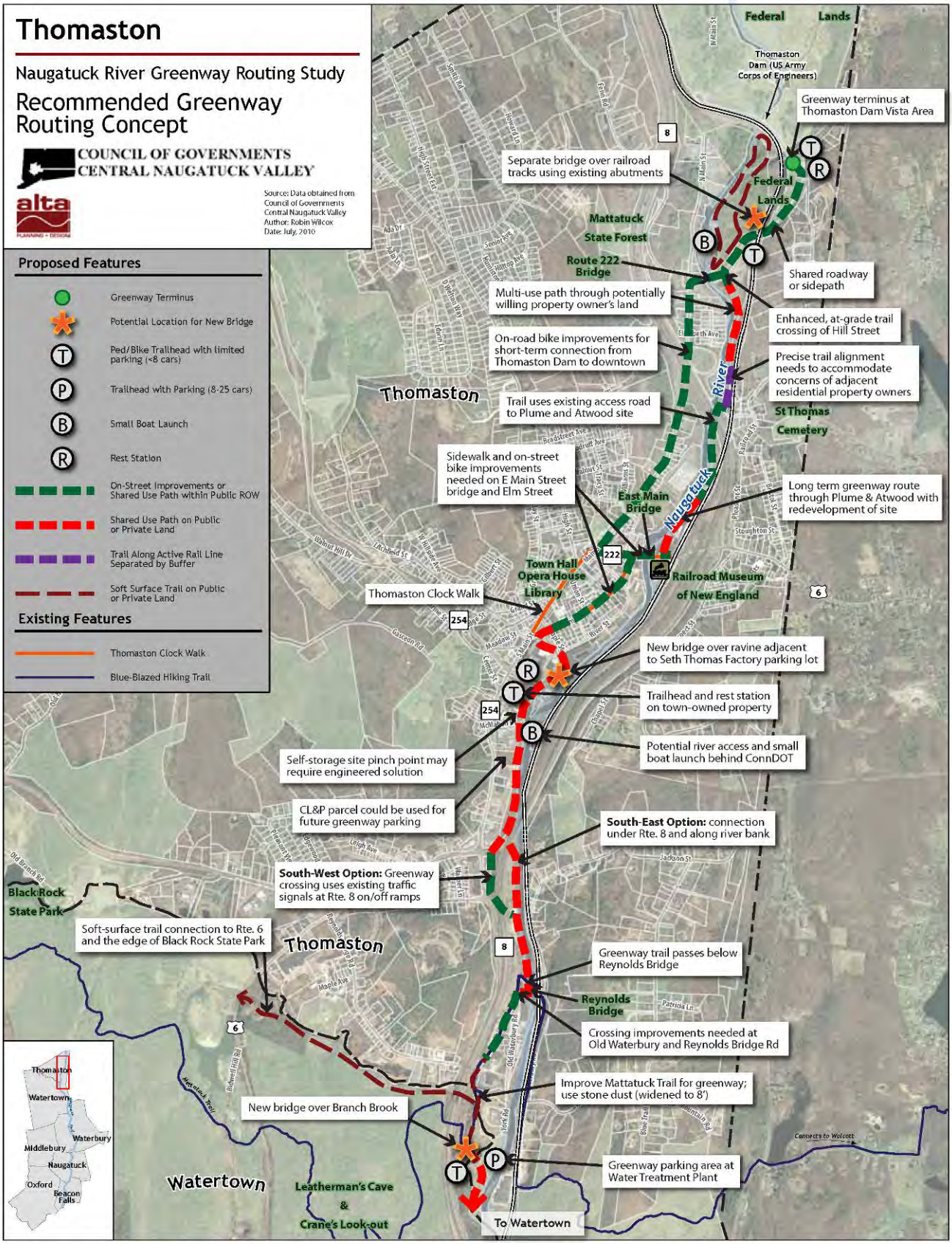
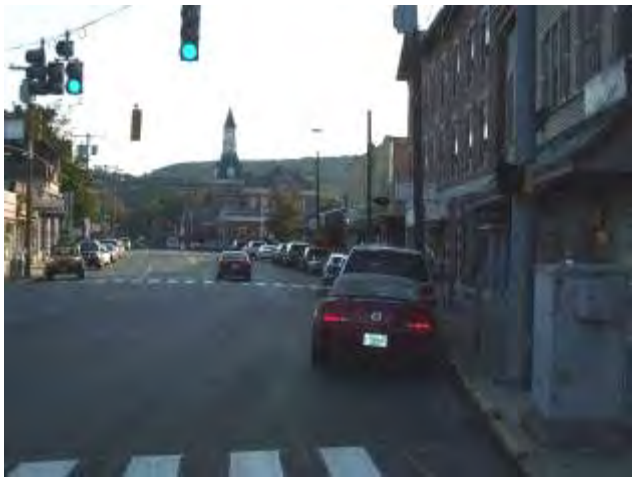


Figure 4: Recommended Greenway Routing Concept in Thomaston.

The Naugatuck River Greenway (NRG) within the Town of Thomaston will provide a diverse experience for walkers, runners and cyclists. The 4.5 mile trail includes portions set adjacent to existing roadways, soft-surface pathways close to the river and streets shared with low-speed traffic. The route will provide connections to many attractions in town: the Thomaston Dam, the Railroad Museum of New England, the Clock Walk, the Thomaston Opera House and the Blue-Blazed Mattatuck Trail at the Watertown line. Trail-side amenities will be provided along the route, including: small parking lots, picnic areas, small boat launches (for canoes and kayaks), rest stops, seating, water fountains, public art, and interpretive signage and kiosks. Future greenway connections south to Watertown and Waterbury and north to Litchfield and Harwinton will also provide safe corridors for walking and biking and encourage additional non-motorized trips in town.



The greenway trail will offer improved connections from the river to downtown Thomaston.

A. Recommended Greenway Trail Alignment

Until a future greenway connection is developed to the north, the northern terminus of the recommended NRG alignment is the Vista Picnic Area at the U.S. Army Corps of Engineers' Thomaston Dam. To discourage trail use by ATVs and other motorized vehicles, signs and bollards will be needed here and at all other trailheads. Neither are a panacea however and enforcement will be needed to ensure that only non-motorized uses take place on the NRG.

From the picnic area, the greenway runs along the west side of Hill Road (Route 222), separated from motorized traffic by a crash barrier. To accommodate the eight to ten foot wide trail and one to two foot wide buffers on each side (10-14 feet total), the travel lanes on Hill Road are narrowed to eleven feet with one to two foot wide shoulders. The trail utilizes the unpaved shoulder area along the west edge of the pavement. Because some areas feature a slope immediately adjacent to the road, a small retaining wall will help to create a flat enough grade for the paved pathway. At the bridge location over the railroad line, a new trail bridge will span the tracks using the sloping abutments as structural supports. West of the rail line, the path will continue another 600-700 feet and then cross Hill Road where sight lines are adequate, between the two relatively sharp turns to the east and west. This roadway crossing features a high-visibility crosswalk and a median island in the center of the roadway to slow traffic and create a refuge for pedestrians and cyclists between the two travel lanes (see Figure 5 on the following page). To the north, a recommended walking trail loop along an undeveloped section of the river will showcase the natural beauty of the river.

Existing Hill Road dry bridge over the railroad line just south of the Thomaston Dam.

From the east side of Hill Road, the greenway will travel directly south along an easement through a wedge of private property set between Hill Road, the rail line and the river. The south end of this property borders two residential properties, and care must be taken to ensure the privacy of those living in both houses. The trail will either loop to the east of the houses at the base of the railroad embankment—within the state rail corridor—or to the west, as close to the river as practicable. In either case, a security fence, low wall and/or dense landscaping should be considered to ensure the maximum physical and visual separation between the residences and trail users. In the years leading up to the development of the NRG, the Town of Thomaston should consider purchase of this residential property in the event it is for sale. (At the very least, the Town should purchase rights of first refusal from the current owner.) If and when this occurs, the Town could then resell the property with an easement legally attached as a pre-existing condition to the subsequent owner of the property. This short stretch of trail within either the state-owned rail corridor or adjacent to the river will bring the trail to Railroad Annex, a public right of way that passes below Route 8. Here, trail users will share the roadway as the route continues to the south and connects to the access road that leads to the former Plume & Atwood industrial site. Currently, this private roadway is closed by a locked gate, but it is in good condition and runs close to the river.

Figure 5: Existing (top) and proposed view looking southwest to the new at-grade crossing of Hill Road.

The most likely connection to the East Main Bridge will occur on a trail that runs relatively close to the river through the historic Plume & Atwood parcel when the site is redeveloped in the future (presumably as a commercial, institutional or residential project). Because this is likely a long term scenario, on-road improvements for cyclists—wider shoulders, signage, etc.—are recommended along North Main Street from Hill Road to East Main Street. A connection for the trail was studied along the rail corridor adjacent to Plume & Atwood but was determined to be infeasible due to the difficulty of relocating the existing siding, the challenges or using an at-grade crossing for the NRG and the Railroad Museum of New England's desire to incorporate another rail siding in the future.

From the Plume & Atwood site, the greenway alignment continues under the East Main Bridge to the Railroad Museum and then up onto the Bridge via the existing off ramp. Improvements are needed on both the off ramp and the East Main Street Bridge over the Naugatuck River. A wider sidewalk and improved railings will provide an improved pedestrian and bike connection to downtown Thomaston and the Town's historic Clock Walk. The Elm Street portion of the Clock Walk will receive dual designation as the NRG to provide a connection through downtown and back to the river (via Maple Street) behind the former Seth Thomas Factory building. Elm Street will be enhanced with an on-street bikeway (striped shoulders and signage), sidewalk improvements and traffic calming features such as speed humps or curb bump-outs, where appropriate, to help slow traffic.

A wider south sidewalk and other enhancements to the East Main Bridge over the river will improve connections from downtown to the Railroad Museum.

The NRG will run downriver (south) along the west bank of the Naugatuck from the Seth Thomas Factory parking lot for at least a half mile. The trail will utilize easements at the far east end of a handful of properties that front the river: the former Seth Thomas Factory building, the Thomaston Fire Station (Town-owned property), a self-storage building, CTDOT's district headquarters (State-owned property), and a handful of privately-owned commercial and retail properties. Nearly all of the commercial properties front South Main and are set back a good distance from the river, providing space to accommodate the ten to twelve foot wide greenway trail with two foot shoulders. Within this stretch there are opportunities for a small boat launch behind the CTDOT building, a trailhead adjacent to the Fire Station and picnic areas in multiple locations. At least one new trail bridge will connect the greenway across a small ravine and brook adjacent to the former Seth Thomas Factory and over wetland areas.

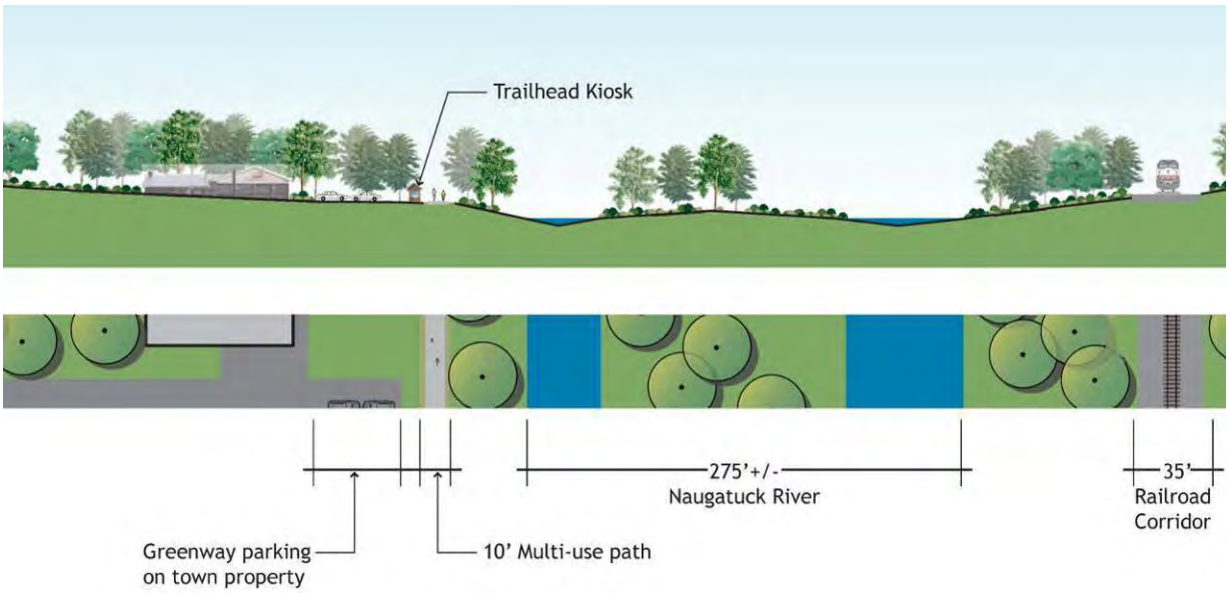


Figure 6: Site cross-section showing the recommended greenway alignment adjacent to the commercial properties between the river and South Main Street.

Where the NRG approaches the south-bound Route 8 exit 38 off ramp, two options for the trail alignment are recommended for further study. One follows along the edge of the curving off ramp to the signalized intersection at South Main Street and Route 6. After crossing the off-ramp (where cars stop for a red light), the trail will wind behind the auto dealership on either the edge of the dealership's parking area or along the edge of the Route 8 embankment, in order to avoid the existing wetland. It will then cross at the signalized intersection that provides access to the north-bound Route 8 on-ramp. Narrowing the wide travel lane and shoulder of the on-ramp will provide the space for the trail to pass under Route 8 and connect back again to the west bank of the Naugatuck. The second option in this area will maintain the trail along the west river bank below the two decks of Route 8 and connect to the CTDOT salt shed area after running within the shoulder of the exit 38 north-bound on ramp for a short distance.

The structural arches below the Reynolds Bridge.

From the CTDOT maintenance yard and salt shed, the NRG will continue south through the CTDOT-owned property and connect below Reynolds Bridge. The spacing of the structural arches below the bridge requires the use of two bays for the trail, creating a split in the trail with two narrower segments running side-by-side. Reynolds Bridge, with its vaulted concrete arches, will be a landmark of engineering and architectural interest along the NRG and should be interpreted with a sign or plaque. Heading south from the bridge, the trail will cross Old Waterbury Road at its intersection with Reynolds Bridge Road, a low-volume road that could provide a comfortable shared environment for vehicles and bicycles. A new sidewalk will line the east side of the road to provide access for walkers. Where Reynolds Bridge Road intersects York Road, the greenway route will divert from the right-of-way and enter the wooded area to the south. Here, the Mattatuck Trail will be utilized as the NRG, requiring a widened and improved surface to accommodate walkers and bicycles (whether this stretch of the greenway can be ADA accessible needs further exploration in subsequent design work for the greenway). The improved Mattatuck Trail will link with the Watertown portion of the greenway via an new trail bridge over Branch Brook, the boundary between Watertown and Thomston. From this location, a soft-surface spur trail will connect along the former trolley bed that runs west to Route 6 and Black Rock State Park. Drivers wishing to enter the NRG at this location will have the opportunity to park at a recommended parking lot for up to 25 cars at the Thomaston Sewer Plant. From there, walkers and cyclists will access the greenway using the historic trolley line bridge at the south end of the Sewer Plant. The York Road/Old Trolley Bridge connection can also serve as the main greenway route in the event that the proposed new bridge over Branch Brook along the Mattauck Trail is not able to be funded or permitted.

The Mattatuck Trail may someday look more similar to this stone dust trail in Keene, New Hampshire.

B. Greenway Trail Alignment Options

There is one location along the NRG in Thomaston where more than one routing option has been developed. This occurs between South Main Street and the river at the Route 8 exit 38 on/off ramps near the Reynolds Bridge.

Figure 7: View looking west to the Pine Hill/Waterbury Road intersection from below Route 8 (top) with proposed trail runs.

West Option

In this option, the NRG trail will continue alongside the north edge of the southbound Route 8 off-ramp to Watertown Road. At the signalized intersection, the trail will cross the off ramp and continue alongside a car dealership. The commercial uses of the site are very close to the edge of the roadway so it may not be possible to run the trail within the public right-of-way unless the centerline of South Main Street in this area is shifted to the west to provide space for the ten foot wide trail. The alignment could instead go around the dealership to the east (closer to Route 8) but this wetland area will create permitting issues and other complications. The trail then will cross the Route 8 on-ramp at a signalized intersection and cross below Route 8 along the shoulder of the on-ramp itself. After passing the overpass, the trail will continue on to CTDOT-owned property currently occupied by a salt shed.

East Option

An alternative to crossing the two signalized intersections, the East Option will follow the river more closely and pass under Route 8 twice. There are steep slopes and limited space below Route 8 (see photo at right), so a highly-engineered trail section is likely in this area. Beyond the overpasses, the trail will run along the top of the river bank to a narrower spot immediately adjacent to the on ramp. For a 100-200 foot long stretch, the actual path will use a portion of the north-bound on ramp shoulder. South of this pinch point, the trail connects to CTDOT-owned property occupied by the salt shed.

View of the west riverbank below Route 8.

C. Greenway Trail Characteristics

The primary goal of the NRG is to provide a continuous pathway through Thomaston that is accessible to pedestrians, cyclists and, where possible, people using wheelchairs or other accessibility devices. The dawn-to-dusk pathway will be designed for use as both a transportation corridor (commuting, errands, etc.) and for recreational purposes. Ideally, the trail will be separated from nearby roadways by a five to ten foot wide landscaped buffer or, at a minimum, a crash barrier set within a three foot wide grassy shoulder. This Study recommends the accommodation of all of these users for the maximum length of the trail as practicable. Some discrete locations may not accommodate ADA requirements and bicycles, at least for the short term. Ultimately, these narrow pinch points and other spots requiring signficant engineering solutions should be designed to accommodate all users in a safe and comfortable environment. In some sections, "single track" natural trail surfaces for hiking, mountain biking and/or equestrian use may be the best available options. Water trail or 'blueway' options are also an important consideration so the Naugatuck River can be accessed by canoe or kayak. In Thomaston, two areas are recommended for paddlecraft boat launches and take-out areas. One is within the Federally-owned, riverfront land managed by the U.S. Army Corps of Engineers to the north of Hill Road. The proposed small parking area along Hill Road (Route 222) will provide convenient access for canoeists and kayakers to park their vehicles. The second proposed boat launch/take-out area could be accessed behind the parking lot at the CTDOT District IV facility along South Main Street, where a gradual slope leads down to the Nauguatuck River. In conjunction with the potential boat launch, negotiations with CTDOT for the use of a portion of their existing lot for boater parking will be needed.

Within Thomaston, most of the greenway is intended to be a ten feet wide, shared-use asphalt path, with eight foot widths in constrained areas. Two-foot-wide soft-surface shoulders will be included with a white shoulder line set eight to twelve inches from the edge of the asphalt. This trail configuration is appropriate for the vast majority of the greenway through Thomaston. Locations close to the river or wetland areas can be a permeable or semi-permeable surface (stone dust or packed aggregate with a binding agent) to reduce storm-water run off and make for a more natural appearance within environmentally sensitive areas. In Thomaston, this condition occurs in some locations south of Hill Road, the section of trail south of the Fire Station and where the NRG trail overlaps with the Mattatuck Trail. Along East Main Street, Maple Street and Reynolds Bridge Road, the trail alignment will utilize existing (in some case widened) sidewalks for pedestrians, wheelchairs, and young cyclists, and roadway improvements such as bike lanes, shoulders and signage will improve conditions for most cyclists.

D. Access Points and Amenities

The NRG trail includes a number of parking areas and trailheads to provide access to the transportation and recreational corridor. Some will formalize *de-facto* parking areas (such as the shoulder along Hill Road), while others are new parking lots, (such as the area adjacent to the Thomaston Sewer Plant). The potential use of the CL&P property adjacent to the Fire Station for new surface parking for the NRG should be considered, as well as non-business-hour use of the former Seth Thomas Factory building lot (with owner's permission). In the long-term, if emergency-vehicle access issues can be addressed, some parking could be incorporated near the Fire Station. All parking lots include trailheads and/or kiosks that feature maps, dog-waste bag dispensers, safety information and environmental and historical interpretive materials. To discourage trail use by ATVs and other motorized vehicles, signs and bollards will be needed at all trailheads as well. Some parking areas are located near small boat launches so people can park and carry their canoes and kayaks a short distance to the river. These locations will also work well for fishing access.

Other trail-related amenities will be determined on a case-by-case basis and could include:

Rest Stations
Rest stations that include bathrooms and water fountains are important amenities that provide a more comfortable environment for greenway users, especially those with young children. There is a rest station adjacent to the Vista Picnic Area at the Thomaston Dam, but it is open only seasonally. The Town of Thomaston should consider discussions with the Army Corps about the possibility of keeping it (and the adjacent parking area) open for longer periods during the year.

Interpretive Installations
Interpretive installations and signs will enhance the trail experience by providing information about the history of the community. Installations can also discuss local ecology, environmental concerns and other educational information. Public health can be integrated with 'calorie counter' maps that encourage physical activity along the trail.

Pedestrian-scale Lighting
Pedestrian-scale lighting improves safety along public streets that double as the NRG route, at key intersections and at trailheads. In Thomaston, locations for proposed lighting improvements include the trail crossing at Hill Road, the East Main Street Bridge over the river, Maple Street, and the West Option for the trail that crosses the Route 8 on/off ramp intersections. Lighting fixtures should be consistent with other design elements, possibly emulating a historic or cultural theme.

Seating
Providing benches and seating at key rest areas and viewpoints encourages people of all ages to use the trail by ensuring that they have a place to rest along the way. Benches can be simple (e.g., wood timbers) or more ornate (e.g., stone, wrought iron, concrete, or Adirondack chairs).

Maps and Signage
A comprehensive signing system that is consistent along the entire length of the Naugatuck River Greenway will make the trail network much easier to use. Informational kiosks with maps at trailheads and other key destinations will provide enough information for someone to use the trail system with little introduction – perfect for bike commuters, tourists and local residents alike.

Public Art
Local artists can be commissioned to provide art for the trail system, making the trail unique to its community. Many trail art installations are functional as well as aesthetic, as they may serve as mile markers and places to sit and play. Public art installations along the greenway should be consistent with a design theme, based on the surrounding context. In Thomaston, public art should be considered at key locations along the NRG, such as where the trail enters/exits the downtown area next to the former Seth Thomas factory building or at the East Main bridge.

16. Use of Rail Corridor

Throughout discrete portions of the 22-mile Naugatuck River Greenway (NRG), the recommended trail route runs within the state-owned, active rail corridor. In Thomaston, the tracks are primarily used by the Naugatuck Railroad, providing scenic tours of the river valley from the Thomaston Dam to a spot just south of Huntingdon Avenue in Waterbury. This service is active only seasonally and is run by volunteers from the Railroad Museum of New England. Freight trains also occasionally run along the tracks both north and south of Waterbury.

Because of the use patterns of the rail line adjacent to the river, the NRG's alignment will need to be carefully designed so as not to disrupt train service. Early on in the planning process, members of the project team met with rail operations officials from the Connecticut Department of Transportation (CTDOT) in New Haven to better understand their needs for the corridor. According to CTDOT, the agency is open to considering having a greenway trail as long as operations are not disrupted and the following conditions are met:

- A 25 foot setback/buffer from the centerline of the tracks to the edge of the trail
- Unencumbered access for service and emergency vehicles
- A security fence with intermittent gates for maintenance access
- Any maintenance of the railroad corridor should be coordinated with future greenway construction for maximum efficiency of time and funding

The project team also met with members of the Railroad Museum of New England (RMNE) and written comments from the Executive Director were subsequently received as well. The RMNE is a strong supporter of the NRG Greenway and endorses the planning efforts. They understand that there is a potential synergy between the trail and the museum and that some visitors to the RMNE may arrive by foot or bike after the NRG is built. Additionally, it is hoped that some greenway users may use the Naugatuck Railroad as a shuttle service and take the train one way and walk or bike back to their original destination. Along the NRG adjacent to the rail line used by the Naugatuck Railroad, the trail will need to be designed for accessibility by railroad personnel needing to clear obstructions that may result from a storm or other damage.

In Thomaston, there is one potential location where the NRG may run within the existing, active rail corridor. To avoid two homes sit along Railroad Annex, the trail may run within the rail corridor to the east and at the base of the existing embankment for a short distance. North of the residential property, the trail alignment may incorporate some sections of abandoned and active rail corridor to avoid wetlands, but is intended to run closer to the river between Railroad Annex and Hill Road.

Many of these conditions are consistent with research conducted for the U.S. DOT's *Rail-with-Trails: Lessons Learned* document by Alta Planning + Design (see: http://www.fhwa.dot.gov/environment/rectrails/rwt/toc.htm). This document showed that well-designed rail-with-trail projects typically meet the operational needs of railroads. In some locations, the setback/buffer can be as low as ten feet in constrained areas within rail corridors that have a low frequency and low-speed train service. Regardless of setback distance, some recommended NRG rail-with-trail portions may not fit neatly on to the existing rail bed. In some cases, achieving the 25 foot setback may require the cutting of adjacent trees, re-grading of a portion of the bed and, in some cases, potentially building small retaining walls to accommodate the additional width. In extreme pinch points, the bare minimum setback will need to be at least twelve feet to accommodate maintenance vehicles and other machinery.

It is also important to recognize, according to the U.S. DOT's report, that the rail-with-trail portions of the greenway can provide benefits to the rail-corridor owner and operator. This includes providing them with a new, well-maintained service corridor adjacent to the tracks (in the form of a greenway trail), and a reduction of illegal track crossings, dumping and trespassing by ATV's, dirt bikes and those on foot. In addition, towns and cities have seen benefits with increased adjacent property values and enhanced access to the rail corridor by law enforcement and emergency vehicles.

Greenway trail in Portland, Oregon whose edge runs within 10-15' of the centerline of the adjacent active rail line.

17. Recommended Trail Section Limits

Two separate, but related, questions must be answered in order to develop a recommended sequence of greenway construction: What are the limits of each individual construction phase? What is the best sequence in which to complete these sections? Section limits were determined with an eye toward the following characteristics:

- Connectivity – Individual phases should be useful as stand-alone projects and connect to existing public rights-of-way adjacent to residential neighborhoods or an employment area.
- Funding Availability – The complete greenway program should be broken into reasonably-sized projects likely to attract funding.
- Logical Termini – Since several years may pass between the completion of one section and the beginning of the next, each section should have a logical terminus, such as at an existing public road or park.
- Momentum Building – Greenway sections likely to generate the greatest excitement and enthusiasm in the community should be built first.
- Consistency of Character – Areas in which the character remains consistent from one end to the other.

Using these criteria as a guide, recommended section limits for the Naugatuck River Greenway in Thomaston were created and shown in Figure 8 at right.

Figure 8: Thomaston Greenway Sections

Section	Description	Length (miles)
T-1	Thomaston Dam to Railroad Museum	1.5
T-2	East Main Street Bridge and Elm Street	0.5
T-3	Seth Thomas Factory to Watertown Line	1.9
	Total Length	**3.9**

18. Trail Section Prioritization

Whenever possible, greenway facilities should be developed as single construction projects or use as few phases as possible. This allows project proponents—elected officials, business interests, community groups, etc.—to realize significant cost savings by performing the design, permitting and construction administration more efficiently. However, it is quite likely that financial constraints will require the various sections of the Naugatuck River Greenway to be completed in several phases. For Thomaston, a recommended phasing plan was created by weighing seven criteria (relative weighting of each criterion shown in parentheses) with the prioritization matrix shown in Table 1 at bottom:

1. Connectivity (25%) – Does the phase connect to existing or funded portions of the greenway, destinations, or amenities?
2. Permitting Requirements (15%) - Will the phase be easy to permit?
3. Construction Cost (10%) – Will the phase be economical to construct?
4. Ease of Construction (10%) – Will the phase create fewer disturbances to the community?
5. Private Property Impacts (15%) – Does the phase avoid private property or adversely impacting adjacent property owners?
6. Momentum Building (15%) – Will the phase generate excitement and enthusiasm within the community for the overall greenway?
7. Cultural Benefits (10%) – Are there natural, historical, environmental, recreational, or educational resources that will be accessed or protected by the phase?

Criteria	% of Evaluation	Scoring	T-1	T-2	T-3
Connectivity *Prioritize phases that will build the greatest connectivity*	25%	Connects to at least two existing or funded greenway facilities: 2**5** Connects to one existing or funded greenway facility or downtown area: **10-15** Long-term link needed to build regional network: **0**	**10**	**10**	**25**
Permitting Requirements *Favor phases that involve fewer regulatory hurdles*	15%	Can be constructed with only Local Approval: **15** Requires only "General Permits" at the state or federal level: **10** Extensive individual state and federal permits required: **0**	**10**	**15**	**10**
Construction Cost *Prefer phases with a lower cost per linear foot of completed trail*	10%	Per Linear Foot cost less than $150: **10** Per Linear Foot cost is between $150 and $250: **5** Per Linear Foot cost exceeds $250: **0**	**5**	**5**	**0**
Ease of Construction *Select phases with less disturbance to local community over more invasive projects*	10%	Can be built with little or no inconvenience to the community: **10** Construction will create only minor inconvenience: **5** Construction will entail significant inconvenience or temporary closure of road/rails: **0**	**5**	**0**	**10**
Property Impacts *Favor projects that require fewer Rights-of-Way on private property*	15%	Phase entails no impacts to private landowners: **15** Phase requires easements or acquisition across 1-3 private properties: **10** Phase requires easements or acquisition across >3 private properties: **0**	**10**	**15**	**0**
Momentum Building *Prioritize phases that will generate the greatest excitement and enthusiasm within the community*	15%	Completion is likely to create significant enthusiasm within the community: **15** Completion is likely to create some enthusiasm within the community: **10** Phase serves will serve most users only after adjacent connections are made: **0**	**15**	**10**	**15**
Cultural Benefits *Select phases that provide greater access to natural, historical, recreational, archeological or educational resources*	10%	This section contains significant cultural resources: **10** This section contains some cultural resources: **5** This section contains few cultural resources: **0**	**5**	**10**	**10**
Total Score	100%		**60**	**65**	**70**

Table 1: Thomaston Trail Section Prioritization Matrix.

19. Cost Estimate

Right-of-Way Acquisition Costs

Payments to owners for the easements and parcels required to construct the greenway vary widely depending up existing land use, size and utility of the portion of a parcel acquired, development potential of the area, and a host of other factors. Based upon recent greenway projects within Connecticut, these costs may range between $40,000 and $100,000 per parcel. In addition to the payments to property owners, the services of a licensed surveyor will be needed during the ROW process. The survey firm will perform boundary surveys and prepare easement maps that must be recorded in the town's land records. These services typically cost $3,000 to $5,000 per easement. Note: this range assumes that easement maps are prepared after survey base maps of the proposed corridor are developed. Finally, legal services will be needed to perform the property transactions. A relatively simple easement transaction will typically cost on the order of $1,500 per transaction if performed by outside counsel.

Engineering Costs

Engineering costs cover a variety of professional services, including:

- Survey (including preparation of easement maps as described above)
- Preliminary, Semi-Final and Final Design
- Public Participation
- Permitting (Local, State and Federal as required)
- Preparation of Construction Documents
- Bid Assistance
- Construction Observation and Contract Administration

Based upon similar project experience and the proposed greenway features, the engineering costs for the greenway are expected to be in the range of 8-12% of the estimated construction cost. However, the actual cost of these services will vary widely depending on project phasing. To a large extent, the cost of permitting, preparing bid documents and administering the construction for a single phase is the same as the cost for the entire project. Similarly, survey and design are more cost effective if done at one time. For this reason, significant cost savings can be realized by developing the greenway as a single project.

Construction Costs

Preliminary estimates of construction costs based upon the recommended greenway sections are described in this report. Important assumptions used to arrive at these estimates include:

- All costs are in 2010 dollars (no adjustments for inflation)
- Costs do not include property acquisition
- Peripheral roadway intersection improvements are not included (e.g., replacing a poorly functioning intersection with a round-about)
- Standard construction methods and materials are used

These estimates were prepared using the latest revisions to the CTDOT's **Preliminary Cost Estimating Guidelines,** dated January 2010. In keeping with CTDOT's cost estimating guidelines, the costs include a number of miscellaneous items that are based on a percentage of construction costs (e.g., maintenance and protection of traffic [4%], minor items [25%] and incidentals [21%]). These percentages tend to be conservative estimates of actual cost. Where appropriate, adjustments to the typical unit prices were made to reflect current market conditions and the consultant team's experience with other greenway

construction projects. The guidelines were supplemented where necessary for atypical items (e.g., pre-fabricated pedestrian bridges, boat launches, etc.).

Since these preliminary estimates are based on a planning-level understanding of trail components, rather than a detailed design, they should be considered "order of magnitude" estimates. ASTM Standard E2620 defines order of magnitude as being accurate to within plus 50% or minus 30% of actual cost. This broad range of potential costs is appropriate given the level of uncertainty in the design at this point in the process. Many factors can affect final construction costs, including:

- Revisions to the design as required by local, state and federal permitting agencies
- Additional requirements imposed by property owners as a condition of granting property rights (e.g., fencing, vegetated buffers, etc.)
- Fluctuations in commodity prices during the design and permitting processes
- Selected construction materials
- Type and quantity of amenities (e.g., benches, lighting, bike racks, etc.)
- Extent of landscaping desired

As the project progresses through preliminary, semi-final, and final design phases, these uncertainties will begin to diminish. With each round of refinement, the range of expected construction costs will become more accurately known.

20. Community Phasing Plans

The following table provides a description of phase limits, phase lengths, recommended construction priority, and estimated cost for each of the greenway trail phases in Thomaston. (The detailed cost estimation tables and location map are provided in Appendix C.) The table and appendix are also broken down into "Primary" and "Secondary" portions, i.e. trail elements that are necessary for the completion of the primary portion of the NRG trail vs. secondary elements such as spurs, loops and streetscape improvements that are not integral to the full completion of the trail within the town limits.

Section	Description	Length (miles)	Phase	Total Cost
T-1	Thomaston Dam to Railroad Museum	1.5	3	$1,716,000
T-2	East Main Street Bridge and Elm Street	0.5	2	$1,913,000
T-3	Seth Thomas Factory to Watertown Line	1.9	1	$1,900,000
	Total Construction Cost - Primary	**3.9**		$5,529,000
	Total Construction Cost - Secondary*			$372,000

** These secondary items are highlighted on the trail segment cost estimate table on the second page of Appendix C.*

21. Greenway Zoning

Greenway/River Overlay Zoning

A greenway/river overlay zone is a land use regulation established by a municipality for the purpose of protecting a linear corridor for recreational and conservation purposes. These zones have also demonstrated ancillary benefits such as spurring economic development, facilitating redevelopment of underutilized parcels, improving flood management and water quality and preserving critical habitat.

When incorporated into municipal zoning regulations, overlay zones modify the underlying zone's bulk standards and uses. This tool can be used to encourage or dissuade various development scenarios. Relevant to greenway development, overlay zones may be used to:

- Alter setback requirements.
- Provide incentives in the form of higher development density in exchange for public access to a greenway or river corridor.
- Provide incentives for granting easements or providing related amenities for the greenway.
- Stipulate landscaping requirements.
- Require construction of greenway segments as a condition of site development.

Excellent examples of the greenway overlay zoning that have served as model ordinances for communities across the nation include:

- Portland, OR - http://www.portlandonline.com/bds/index.cfm?a=53351 (Chapter 33.440 of the Portland Zoning Regulations)
- Davidson, NC - http://www.ci.davidson.nc.us/DocumentView.aspx?DID=1304 (Section 11 of the Town of Davidson Planning Ordinance)

Riparian Habitat Zones

A riparian habitat ordinance is narrowly focused on protecting the unique habitat present along stream channels and wetland areas. Unlike the Greenway and River Overlay zones described above, a riparian habitat zone does not contain specific requirements for public access or accommodation of a greenway and can be used in areas adjacent to the NRG or along tributaries of the Naugatuck River. Elements of effective riparian habitat ordinances include:

- Defines a protected buffer.
- Requires a written plan for the protection of the resource.
- Requires approval of mitigation measures as a condition of project approval.

An example riparian habitat ordinance from Napa, California can be found at the National Center for Appropriate Technology's (NCAT) Smart Communities Network website: www.smartcommunities.ncat.org/codes/napaord.shtml. This site is a clearinghouse for sustainable development and energy conservation ideas.

Complete Streets

Complete streets are designed and operated to enable safe access for all users.[1] The State of Connecticut enacted Public Act 09-154 in June of 2009, "An Act Improving Bicycle and Pedestrian Access". This law requires transportation planners to accommodate all users as "a routine part of the planning, design construction and operating activities of all highways…" This change in focus from car-centric to user-centric planning helps create safer, healthier, greener and more livable communities. The law also mandates that at least 1% of highway funding be spent on pedestrian and bicycle facilitates.

[1] National Complete Streets Coalition, "Complete Streets FAQ." 2009.http://www.completestreets.org/complete-streets-fundamentals/complete-streets-faq/ (accessed May 19, 2010).

Many municipalities are choosing to formalize their commitment to include all users in the transportation planning process by adopting Complete Streets ordinances. Whereas the overlay zoning regulations described above focus on protecting undeveloped or underdeveloped corridors, Complete Streets ordinances focus on improving facilities within public rights-of-way. Several excellent examples of successful municipal ordinances can be found at: www.completestreets.org/webdocs/policy/cs-chart-samplepolicy.pdf

An ideal complete streets policy

- Includes a vision for the community's complete streets.
- Defines 'all users.'
- Encourages street connectivity for all modes.
- Is adoptable by all agencies to cover all roads.
- Applies to both new and retrofit projects.
- Makes exceptions specific and requires approval of exceptions.
- Directs the use of the latest and best design standards.
- Complements the context of the community.
- Establishes performance standards with measurable outcomes.
- Includes specific next steps for implementation of the policy.

Adopted from National Complete Streets Coalition

22. Funding Sources

Generally, greenways are funded through a combination of local, state, and federal sources. Many funding programs require a minimum local match (e.g., 80% federal funds, 20% local). In some instances communities have successfully leveraged grant money from private foundations or state programs as a match for other funding sources. Land donations or town public works crew's labor may be counted as local match under some funding programs.

Community leaders and elected officials from Thomaston should pursue a variety of funding sources for land acquisition and greenway construction. Reliance on a single funding source can lead to a boom/bust cycle of construction as funding levels shift with the political winds. The following lists an overview of the major funding programs:

Municipal Bonds

Municipalities have access to the commercial financial markets via bonds. Use of this funding mechanism is dependent upon strong community support in order to pass the required bond referendum. This is frequently used to obtain the required local match for state and federal funding program.

Greenway Trust Fund

A strategy used by some communities is the creation of a trust fund for land acquisition and facility operation. These are typically administered by a non-profit group or by a local greenway commission. These trusts can perform a variety of functions such as property acquisition, fund raising, volunteer organization, community outreach and advocacy. Money may be contributed to the trust fund from a variety of sources, including the municipal general funds, private grants and gifts.

Adopt-A-Trail Programs

These programs are often administered by a local greenway commission and used to fund new construction, renovation, trail brochures, informational kiosks, and other amenities. These programs can also be extended to include sponsorship of trail segments for housekeeping needs.

Federal Transportation Bill

The Congress appropriates funding for federal transportation projects every 5 years. The federal transportation bill has been the primary source for greenways construction money in recent years. Various funding programs within the legislation relate to greenway development, including the High Priority Projects (commonly referred to as "earmarks"), Recreational Trails, and Safe Routes to Schools programs. These funds are administered through the Connecticut DOT and the Connecticut DEP. The current iteration of the federal Transportation Bill, the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) expired on September 30, 2009. Funding has been continued by continuing resolutions until the next federal transportation bill is approved. The next transportation bill is currently being developed by Congress. This presents an opportunity for municipalities to discuss greenway funding under the High Priority Projects program with their representatives in Congress.

Recreational Trails Program

These annual grants are available to government and non-profit agencies, for amounts ranging from $5,000 to $50,000 or more, for the building of trails. It is a reimbursement grant program (sponsor must fund 100% of the project up front) and requires a 20% local match. These grants are authorized by the SAFETEA-LU (reauthorization in progress, see above), and in Connecticut they are administered by the Department of Environmental Protection.

Design Arts Program

The National Endowment for the Arts provides grants to states and local agencies, individuals and nonprofit organizations for projects that incorporate urban design, historic preservation, planning, architecture, landscape architecture and other community improvement activities, including greenway development. Grants to organizations and agencies must be matched by a 50-percent local contribution. Agencies can receive up to $50,000.

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACOE) provides grants as part of their USACOE Handshake Program. The link to find out more information can be found at: http://corpslakes.usace.army.mil/employees/challenge/handshake.cfm

23. Next Steps

The Regional Naugatuck River Greenway Routing Study is just the first step in the development of the Naugatuck River Greenway (NRG) in Thomaston. The NRG will be a long-term, multi-phase project led by all of the municipalities in the corridor, in cooperation with state and federal agencies. It will require the continued involvement of members of the public, elected officials at all levels of government and community groups in order to support and guide the implementation effort. The following 'next steps' are recommended in order to move the effort forward in a sustainable fashion:

- **Adopt the Study:** The City of Waterbury has recently adopted its plan for the portion of the NRG that runs through the city. Thomaston could do the same and amend their Plan of Conservation and Development to incorporate the greenway alignment. The Town could also pursue endorsement of the Study by their Planning and Zoning Commission, Economic Development Commission and Recreation Commission.
- **Create the Right-of-Way:** This will ensure that the proposed alignment for the trail is gradually assembled and made available for public access. This can be accomplished by using:
    - **New zoning regulations** to ensure that the greenway is accommodated into redevelopment proposals along the alignment (see Greenway Zoning section of the report for more detail). A greenway overlay district, in particular, can be an effective tool for Thomaston to require that trail facilities are integrated into redevelopment projects. A greenway district could also shape the quality of the development by ensuring that only uses compatible to the greenway can be located along side of it.
    - **Solicitations of easement or outright ownership** should also be considered when key privately-owned parcels are on the market. This is especially critical for the residential properties at the west end of Railroad Annex. This is a tight spot for the Greenway alignment and an easement along the edge of these properties would be beneficial. The Town should consider purchasing a right of first refusal for the property so that they have the option to purchase the property if and when it goes on the market.
    - **Begin negotiations with public agencies** to ensure that all necessary approvals and permits are completed in order to create an easement across public lands. This can be a lengthy process, especially in areas of environmental sensitivity or at brownfield sites. Stretches of the NRG that permit access to equestrians will need to be considered by the Town as well.
- **Find Project "Champions" to Raise Awareness and Money:** The Town should identify an individual, commission or committee to oversee subsequent steps in the design, funding and implementation process for the greenway. (The involvement of the local business community and/or Chamber of Commerce will be critical as well.) This will ensure continuity of effort even as elected officials and First Selectmen change. Fundraising, in particular, is an important component that should begin immediately. Available funding opportunities including: federal transportation funds, regional TIP funding (via COGCNV), economic stimulus grants, national recreational trails grants, and state open space grants should be pursued on an annual basis to ensure success (see Funding Sources section of the report for more detail).
- **Establish a Public-Private-Non-Profit Partnership:** Establishment of a "Friends of the NRG" non-profit organization can be an effective advocate for the project. In conjunction with the project "Champion", this non-profit organization can coordinate volunteers, develop

an 'adopt-a-mile' program and raise funds through the sale of trail elements including benches, bridges, trailheads, public art, bike racks and trees.

- **Find "Early Win" Projects:** Support for continued action at the local level will grow out of small successes that move the project or individual pieces of the project forward. Neighborhood cleanups and 'adoption' of future trail sections can help build long-term support. Frequent ribbon cuttings, festivals and events create long-term visibility for the project. Development of maps and other NRG promotional material will help to publicize the future trail and build excitement. Celebrating every opportunity, no matter how small, can be just as important as a major ribbon cutting for the finished project.
- **Negotiate with CTDOT**: Thomaston officials and future design consultants will need to work closely with the Connecticut Department of Transportation to:
    - **Ensure that the needs of the railroad corridor are met.** In particular, coordination with CTDOT on the federally-mandated Positive Train Control (PTC) Plan will be necessary to ensure that the PTC Plan does not preclude the greenway's routing and incorporates the trail's recommended alignment.
    - **Coordinate with the Highway Division on the use of state highway rights of way.** The NRG alignment utilizes the shoulders of Hill Road/Route 222, Route 8's exit 38 northbound on-ramp and the use of the state-owned East Main Street bridges for greenway access. Additionally, bicycle improvements such as shoulder striping and signage are recommended on North Main Street/Route 222.
- **Negotiate with U.S. Army Corps of Engineers**: Town of Thomaston planners and future design consultants will also need to work closely with the US Army Corps of Engineers to ensure the continuity of the NRG into the Federal lands that surround the Thomaston Dam. The alignment will need to be incorporated into the Corps of Engineer's master plan for the Thomaston Dam. According to the Corps, their master planning process will include land surveys, National Environmental Policy Act (NEPA) analyses, cost sharing and alternative analyses as well as real estate out-granting of a lease of license for the trail. All of this will be subject to public input and a hearing.

With these actions moving forward, the Naugatuck River Greenway will be a significant asset for the Thomaston's residents, businesses and visitors. The trail will enhance non-motorized transportation opportunities and bring a recreational amenity that rivals any within the state of Connecticut.

Appendices

Appendix A – Community Input Detailed

A key component of the Council of Governments of the Central Naugatuck Valley (COGCNV) and the consultant team's efforts was community involvement and seeking input on the identification of a feasible greenway routing.

After a number of years of inactivity, the Regional Naugatuck River Greenway Committee (RNRGC) was reconvened to help steer routing study. Representatives on RNRGC included officials from Thomaston, Watertown, Waterbury, Naugatuck and Beacon Falls as well as representatives from state and federal agencies, such as Connecticut DOT and DEP, National Parks Service and the Army Corps of Engineers. Staff members of two U.S. Representatives that represent the Naugatuck River Valley were also on the committee. The committee met every six to eight weeks and all meetings were open to the public. The RNRGC played an important role in guiding the direction of the routing study and in keeping municipalities, government agencies and U.S. Representatives informed about study progress.

Supplementing the RNRGC input was a series of public workshops. One workshop was held in each of the four study communities. The first two public workshops were held on November 17 and 18, 2009 in Naugatuck and Thomaston, respectively. The purpose of the first set of workshops was to gather input from all four communities to assist in determining opportunities and challenges along the corridor and potential routing options for the greenway trail. The meeting on the 17th was focused on the issues and routing in both Naugatuck and Beacon Falls, while the next night, discussion focused on the issues and routing in Watertown and Thomaston.

The second two public workshops were held on March 23 and 24, 2010 in Beacon Falls and Watertown, respectively. The purpose of the meeting was to gather input from the four communities on the proposed preliminary routing as well as areas where they would like to see additional amenities along the Naugatuck River Greenway.

Overall, these four community workshops, combined with other stakeholder meetings and site walks, provided COGCNV and the consultant team with valuable input on routing recommendations, design options and property-ownership issues. The team also learned of the important local connections to adjacent neighborhoods and commercial areas outside of the corridor. Additional trail spurs and other connections were added to the recommendations as a result. One attendee even suggested the clever idea of using the 22-mile greenway, plus some spurs, as the route for the Naugatuck River Marathon in the future.

Draft routing maps and study reports were also posted on the project website which was established at the beginning of the process and maintained until the very end of the process. Comments on the greenway routing maps were received at the workshops, via email, and by U.S. Mail.

Press releases were published for both sets of workshops in the Republican American and weekly town newspapers. Articles were written and published on the workshops, including references to the project website. Video of the Thomaston workshop was posted to the Republican American website.

The second half of each workshop featured a small-group exercise. Using large maps as references, community members were asked to discuss the following questions and mark up the maps with their suggestions, ideas and concerns.

1. What are the key places/destinations that the Greenway trail should connect to?
2. Where are the critical gaps between these places and the Naugatuck River?
3. Where along the river are the best places for amenities *besides* a trail, such as a small boat launch, a picnic area, parking, rest station, etc.
4. What are your comments on the draft recommended routing?
5. Where along the proposed greenway are the best places for amenities besides a trail, such as a small boat launch, a picnic area, parking, rest station, etc.?

Each meeting wrapped up after the smaller groups reported back to the entire group with their comments on local conditions as well as recommendations for potential routing options and the placement and nature of greenway amenities.

Subsequent to the four community workshops, members of the Connecticut Horse Council and the Connecticut Equine Advisory Council investigated key trail connections that currently exist in the Naugatuck River corridor area. They provided a detailed memo to COGCNV and mapped the connections in a GIS database, some of which helped the consultant team recommend spur-trail links important to equestrians.

A meeting was also held with representatives of the Railroad Museum of New England, the operator of the Naugatuck Railroad. They explained their future plans for the museum and support for the greenway project. The museum representatives also explained their safety concerns and maintenance requirements for the rail with trails sections of the greenway route.

After comments were gathered from the workshops and other key stakeholders, draft reports for the four municipalities and the overall region were written and made available for public comment. Printed copies were available at Town Clerks' offices as well as at the Thomaston, Watertown, Naugatuck and Beacon Falls public libraries. The project website included links to electronic copies of the draft reports.

A fifth and final public meeting was held in Waterbury on September 14, 2010, in conjunction with the monthly meeting of the Regional Planning Commission. This provided a final opportunity for the public to weigh-in on the final draft recommendations of the Greenway Routing Study. During the month of October, public presentations of the final recommendations were made in Thomaston, Watertown, Naugatuck and Beacon Falls. (The alignment for the Naugatuck River Greenway in Waterbury had been determined in an earlier study and adopted in early 2010.) These gave their respective communities and elected officials the opportunity to see the final recommendations in a Powerpoint slideshow format. Simultaneously, electronic copies of the final reports for the individual municipalities as well as the Regional Report and Executive Summary were made available on the project website.

Appendix B – Land Parcel Inventory and Maps

ID	Owner's Name	Parcel Location	Mailing Address	City	State	Zip	Land Use	Map/ Block Lot	Parcel Area (Acres)
0	THOMASTON TOWN OF	200 OLD WATERBURY RD	PO BOX 136	THOMASTON	CT	06787	COMM. LAND	65-01-01	9.570
1	ENTERPRISES	OLD WATERBURY RD	250	BLUE BELL	PA	19422	IND. LAND	65-01-02	2.060
2	THOMASTON TOWN OF	237 SOUTH MAIN ST	PO BOX 136	THOMASTON	CT	06787	COMM. LAND	48-03-14	2.686
3	NITSA LLC	205 SOUTH MAIN ST	205 SOUTH MAIN ST	THOMASTON	CT	06787	COMM. LAND	48-03-19	2.495
4	LLC	135 SOUTH MAIN ST	135 SOUTH MAIN ST	THOMASTON	CT	06787	IND. LAND	48-03-21	13.584
5	THOMASTON ENTERPRISES	OLD WATERBURY RD	490 NORRISTOWN RD STE 250	BLUE BELL	PA	19422	VACANT RES. LAND	65-01-03	4.910
6	STATE OF CONNECTICUT	359 SOUTH MAIN ST	359 SOUTH MAIN ST	THOMASTON	CT	06787	COMM. LAND	48-03-06	6.013
7	THOMASTON INDUSTRIAL SPACE LLC	401 MCMAHON DR	401 MCMAHON DRIVE	THOMASTON	CT	06787	COMM. LAND	48-03-07	2.065
8	TYLER AUTOMATICS INC	437 SOUTH MAIN ST	437 SOUTH MAIN STREET	THOMASTON	CT	06787	VACANT RES. LAND	55-02-07	2.158
9									4.505
10	LYLES DONNA L & NOLAN DONNA A (JT)	60 RAILROAD ST ANNEX	60 RAILROAD ST ANNEX	THOMASTON	CT	06787	RES. LAND	24-03-01	0.572
11	KELLER GEORGE W JR & ANNE S	74 RAILROAD ST ANNEX	74 RAILROAD ST ANNEX	THOMASTON	CT	06787	RES. LAND	24-03-02	1.430
12	DLM SERVICES LLC	HILL RD	210 CARTER RD	THOMASTON	CT	06787	VACANT RES. LAND	24-03-03	1.904
13	P & A REALTY COMPANY LLC	235 EAST MAIN ST	PO BOX 218	MIDDLEVILLAGE	NY	11379	IND. LAND	32-04-01	12.434
14	DLM SERVICES LLC	HILL RD	210 CARTER RD	THOMASTON	CT	06787	VACANT RES. LAND	17-04-01	9.185
15	UNITED STATES OF AMERICA	BLAKEMAN RD	HILL RD	THOMASTON	CT	06787	VACANT RES. LAND	17-06-01	26.712
16									2.840
17									10.853
18									11.853

Table 2: Land Parcel Inventory (see maps on following pages).

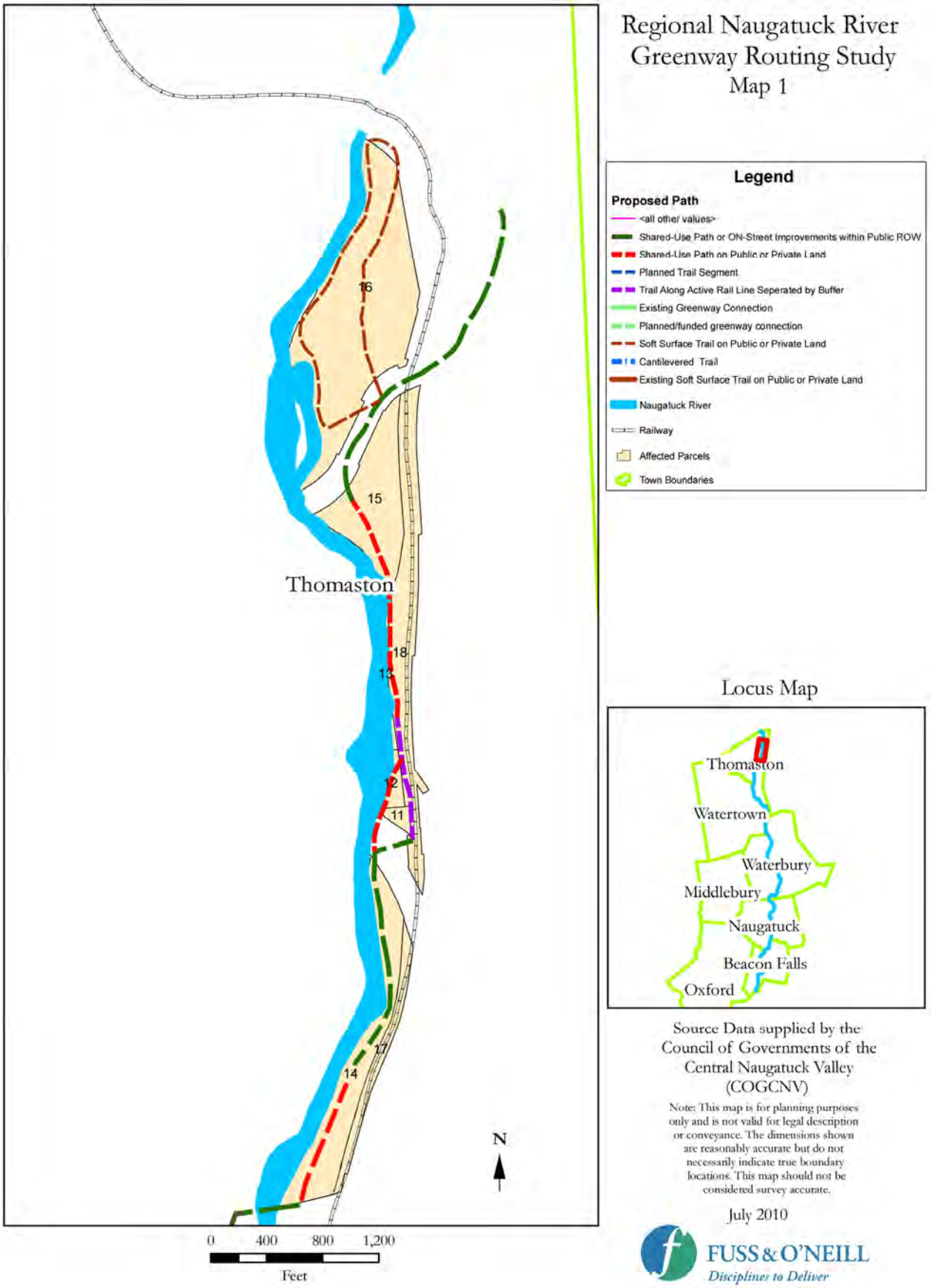


Figure 9: Land Parcel Inventory Map 1 for Thomaston

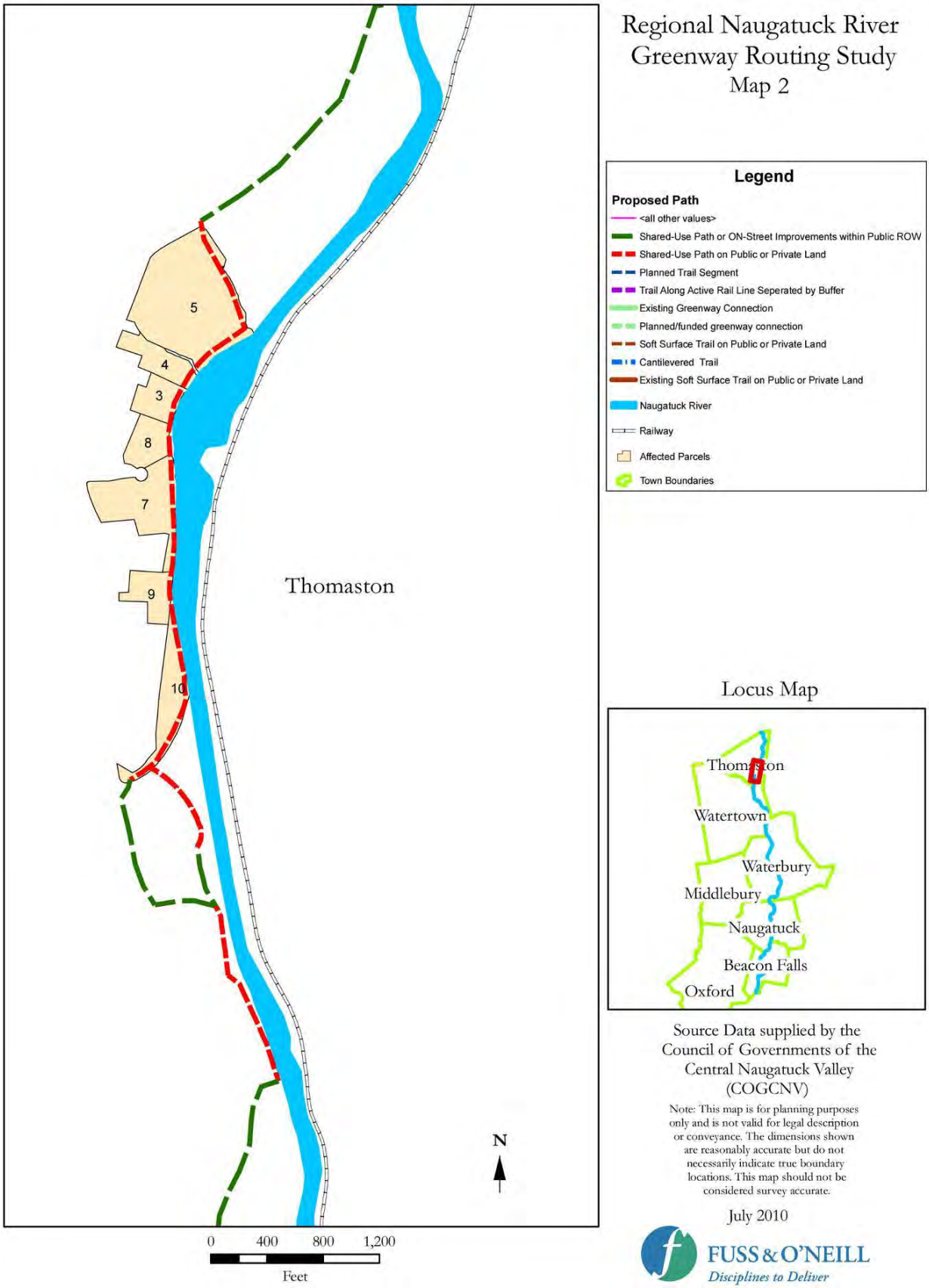


Figure 10: Land Parcel Inventory Map 2 for Thomaston

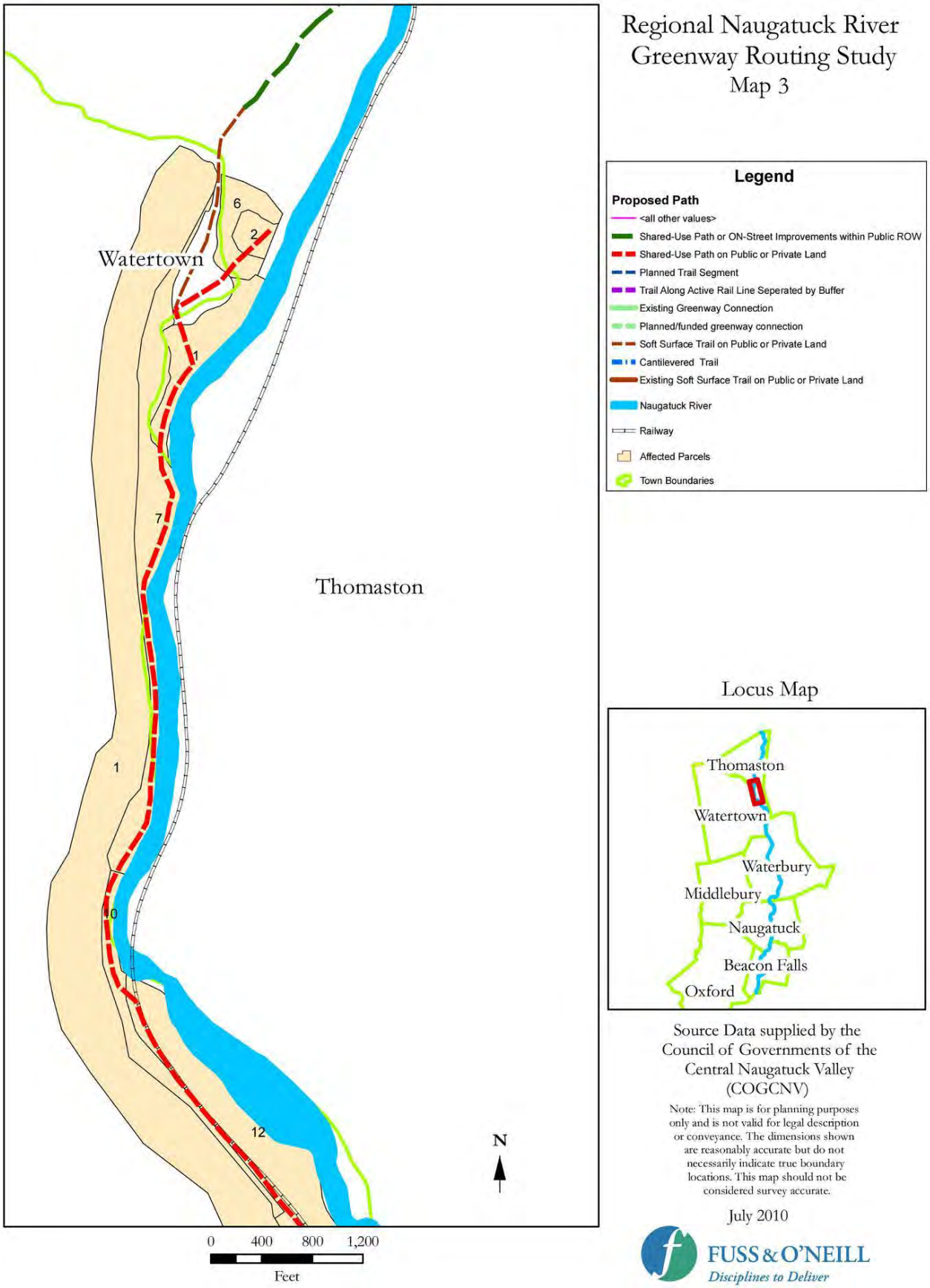


Figure 11: Land Parcel Inventory Map 3 for Thomaston/Watertown

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Appendix C – Detailed Cost Estimate Tables

Preliminary estimates of construction costs based upon the recommended greenway sections are described in this report. Important assumptions used to arrive at these estimates include:

- All costs are in 2010 dollars (no adjustments for inflation)
- Costs do not include property acquisition
- Peripheral roadway intersection improvements are not included (e.g. replacing a poorly functioning intersection with a round-about)
- Standard construction methods and materials are used

These estimates were prepared using the latest revisions to the CTDOT's **Preliminary Cost Estimating Guidelines,** dated January 2010. In keeping with CTDOT's cost estimating guidelines, the costs include a number of miscellaneous items that are based on a percentage of construction costs (e.g., maintenance and protection of traffic [4%], minor items [25%] and incidentals [21%]). These percentages tend to be conservative estimates of actual cost. Where appropriate, adjustments to the typical unit prices were made to reflect current market conditions and the consultant team's experience with other greenway construction projects. The guidelines were supplemented where necessary for atypical items (e.g., pre-fabricated pedestrian bridges, boat launches, etc.).

Regional Naugatuck River Greenway

Routing And Feasibility Study

Town of Thomaston, Connecticut

Trail Descriptions of Each Trail Segment
North to South

#	SECTION	SEGMENT	APPROX LENGTH	SEGMENT DESCRIPTION	COST
START OF GREENWAY (North)					
Thomaston - Start (North)					
1	T-1	Shared-Use in ROW	2760	10' width - from Thomaston Dam, cross RR to Rte222 bridge crossing at Hill St.	$ 1,061,100
2		Soft Surface Trail	5370	Loop trail west of Thomaston Dam - Federal Lands (SECONDARY)	$ 104,800
3	T-1	New Bridge	40	10' width - separate bridge over RR using existing abutments	$ 144,100
4	T-1	Shared-Use Off-Street	1430	10' width - east of River - from new Hill St. crossing to trail along RR	$ 131,000
5	T-1	Trail Along Active Rail	640	10' width - S. of Hill St. towards Railroad Museum	$ 91,700
6	T-1	Shared-Use in ROW	3060	10' width - use existing access road to Plume and Atwood site, develop trail within an easement across the P&A property in close proximity to the River, then pass under E. Main St. bridge	$ 288,200
7	T-2	Bridge Improvements	350	E. main St. Bridge sidwalk and on-street bike improvments - Structural Bridge Widening for off ramp portion (150')	$ 864,600
8	T-2	Shared-Use in ROW	2510	10' width - E.Main St. bridge to Maple St. (shared portion with Thomaston Clock Walk) - including Elm St. sidwalk and on-street bike improvments - clearing and grubbing and new signage	$ 1,048,000
9	T-3	Shared-Use Off-Street	4860	10' width - from Maple St. to Rt.8 ramp near highway crossing over River - trail is West of highway, RR and River	$ 445,400
10	T-3	New Bridge	80	12' width - over ravine adjacent to Seth Thomas factory parking lot	$ 222,700
11	T-3	Shared-Use in ROW	1460	10' wide - crossing at Rt. 8 on/off ramps with ex. Traffic signals, ends south of ramps	$ 524,000
11(b)	T-3	Shared-Use in ROW	1430	10' wide - from ramps, connection under Rt.8 and along bank of River - cut into bank with retaining walls (OPTION 2)	$ 786,000
12	T-3	Shared-Use Off-Street	1440	10' wide - from ramp crossing to Old waterbury and Reynolds Bridge Rd crossing, trail passes below Reynolds Bridge	$ 131,000
13	T-3	Road Crossing	25	Old Waterbury Road	$ 52,400
14	T-3	Road Crossing	25	Reynolds Bridge Road	$ 52,400
15	T-3	Shared-Use in ROW	1340	10' width - from Old Reynolds Bridge road towards Mattatuck Trail	$ 419,200
16	T-3	Mattatuck Trail	550	Widen and pave existing trail - Thomaston portion of Mattatuck Trail to Thomaston-Watertown Townline	$ 52,400
17		Shared-Use in ROW	6100	On-street bike improvements for short-term connection from Thomaston Dam to downtown ($5,000 - $50,000 cost for signage) (SECONDARY)	$ 5,000
Thomaston - End (South)					
		TOTAL LENGTH:	26120	ft	
		(grey segments are not included)	4.95	mi	

	MISC ITEMS	NUMBER REQ	DESCRIPTION	COST
T	Ped / Bike Trailhead	2	Informational Kiosk with maps/branding/parking	$ 104,800
B	Small Boat Launch	2	Walk-in / Walk-out launch for canoes and kayaks	$ 13,100
R	Rest Area	1		$ 13,100
P(L)	Parking (Large)	1	10 Stalls and larger	$ 131,000

Note:
1) Items highlighted in Gray represent optional routing of the trail. These items are not included in the cost summary.
2) Items highlighted in Blue represent "Seconday Loops and Connections" that are not critical to completing the greenway route.

Figure 12:Trail segment Cost Estimate Location Diagram

Regional Naugatuck River Greenway
Routing And Feasibility Study

Town of Thomaston, Connecticut

Engineer's Order of Magnitude Opinion of Probable Construction Cost
Summary by Recommended Section

Section	Description	Length (Miles)	Total Cost
T-1	Thomaston Dam to Railroad Museum	1.5	$1,716,000
T-2	East Main Street Bridge and Elm Street	0.5	$1,913,000
T-3	Seth Thomas Factory to Watertown Line	1.9	$1,900,000
	Total Construction Cost Primary Greenway	3.9	$5,529,000
	Total Construction Cost Secondary Loops and Connections		$372,000

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Thomaston**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Shared-Use in ROW**
From Sta:
To Sta:
A length of **2,760** Feet as shown on the plans

Segment No.	Segment Description
#1	10' width - from Thomaston Dam, cross RR to Rte222 bridge crossing at Hill St.

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	2,760	LF	$14.00	$38,640
processed aggregate	2,760	LF	$17.00	$46,920
superpave	2,760	LF	$20.00	$55,200
Steel-Backed Timber Guide Rail	2,760	LF	$125.00	$345,000
Railroad/Ped Crossing Warning Devices	1	EA	$100,000.00	$100,000
Contract Items			**SUBTOTAL**	$585,800
Clearing and Grubbing Roadway		2.0%		$11,700
M & P of Traffic		4.0%		$23,400
Mobilization		7.5%		$43,900
Construction Staking		1.0%		$5,900
Minor Items (Applied to Roadway Items only)		25.0%		$136,800
Contingencies & Incidentals		**CONSTRUCTION TOTAL**		$810,000
INCIDENTALS		21.0%		$170,100
CONTINGENCIES		10%		$81,000
		TOTAL ESTIMATED COST		**$1,061,100**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Thomaston**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth:
Type: **Soft Surface Trail**
From Sta:
To Sta:
A length of **5,370** Feet as shown on the plans
Price Base Yr **2010**

Segment No.	Segment Description
#2	Loop trail west of Thomaston Dam - Federal Lands (SECONDARY)

Roadway Items	Est. Quant.	Unit	Unit Price	Total
Stone screening	5,370	LF	$10.00	$53,700
Clearing and Grubbing	5,370	LF	$3.00	$16,110
Contract Items			**SUBTOTAL**	$69,800
M & P of Traffic		4.0%		$2,800
Mobilization		7.5%		$5,200
Construction Staking		1.0%		$700
Minor Items (Applied to Roadway Items only)		25.0%		$0
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$80,000
INCIDENTALS		21.0%		$16,800
CONTINGENCIES		10%		$8,000
			TOTAL ESTIMATED COST	**$104,800**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Thomaston**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth:
Type: **New Bridge**
From Sta:
To Sta:
A length of **40** Feet as shown on the plans

Segment No.	Segment Description
#3	10' width - separate bridge over RR using existing abutments

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
Class A Conc (attach to ex. piers / abutt)	2	EA	$5,000.00	$10,000
pre-fabricated ped steel truss bridge	40	LF	$1,500.00	$60,000
water handling	1	LS	$20,000.00	$20,000
Crane	1	LS	$8,000.00	$8,000
Contract Items			**SUBTOTAL**	$98,000
Clearing and Grubbing Roadway		2.0%		$2,000
M & P of Traffic		0.0%		$0
Mobilization		7.5%		$7,400
Construction Staking		1.0%		$1,000
Minor Items (Applied to Roadway Items only)		0.0%		$0
Contingencies & Incidentals		**CONSTRUCTION TOTAL**		$110,000
INCIDENTALS		21.0%		$23,100
CONTINGENCIES		10%		$11,000
		TOTAL ESTIMATED COST		**$144,100**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

Notes:

1) Cost for bridge may vary widely based on selected materials, structure width, span between supports, etc. This estimate assumes a 10' clear width pre-fabricated truss bridge,with synthetic lumber decking and a single clear span of 40 feet.

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Thomaston**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Shared-Use Off-Street**
From Sta:
To Sta:
A length of **1,430** Feet as shown on the plans
Price Base Yr **2010**

Segment No.	Segment Description
#4	10' width - east of River - from new Hill St. crossing to trail along RR

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	1,430	LF	$14.00	$20,020
processed aggregate	1,430	LF	$17.00	$24,310
superpave	1,430	LF	$20.00	$28,600
Contract Items			**SUBTOTAL**	$72,900
Clearing and Grubbing Roadway		5.0%		$3,600
M & P of Traffic		4.0%		$2,900
Mobilization		7.5%		$5,500
Construction Staking		1.0%		$700
Minor Items (Applied to Roadway Items only)		25.0%		$13,200
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$100,000
INCIDENTALS		21.0%		$21,000
CONTINGENCIES		10%		$10,000
			TOTAL ESTIMATED COST	**$131,000**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Thomaston**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Trail Along Active Rail**
From Sta:
To Sta:
A length of **640** Feet as shown on the plans

Segment No.	Segment Description
#5	10' width - S. of Hill St. towards Railroad Museum

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	640	LF	$14.00	$8,960
black vinyl chain link fence	640	LF	$30.00	$19,200
processed aggregate	640	LF	$17.00	$10,880
superpave	640	LF	$20.00	$12,800
Contract Items			**SUBTOTAL**	$51,800
Clearing and Grubbing Roadway		5.0%		$2,600
M & P of Traffic		4.0%		$2,100
Mobilization		7.5%		$3,900
Construction Staking		1.0%		$500
Minor Items (Applied to Roadway Items only)		25.0%		$10,700
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$70,000
INCIDENTALS		21.0%		$14,700
CONTINGENCIES		10%		$7,000
			TOTAL ESTIMATED COST	**$91,700**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Thomaston**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Shared-Use in ROW**
From Sta:
To Sta:
A length of **3,060** Feet as shown on the plans
Price Base Yr **2010**

Segment No.	Segment Description
#6	10' width - use existing access road to Plume and Atwood site, develop trail within an easement across the P&A property in close proximity to the River, then pass under E. Main St. bridge

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	3,060	LF	$14.00	$42,840
processed aggregate	3,060	LF	$17.00	$52,020
superpave	3,060	LF	$20.00	$61,200
Contract Items			**SUBTOTAL**	$156,100
Clearing and Grubbing Roadway		2.0%		$3,100
M & P of Traffic		4.0%		$6,200
Mobilization		7.5%		$11,700
Construction Staking		1.0%		$1,600
Minor Items (Applied to Roadway Items only)		25.0%		$39,000
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$220,000
INCIDENTALS		21.0%		$46,200
CONTINGENCIES		10%		$22,000
			TOTAL ESTIMATED COST	**$288,200**

Estimated By:VC
Checked By:

Date of Estimate: 06/27/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Thomaston**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth:
Type: **Bridge Improvments**
From Sta:
To Sta:
A length of **350** Feet as shown on the plans

Segment No.	Segment Description
#7	E. main St. Bridge sidwalk and on-street bike improvments - Structural Bridge Widening for off ramp portion (150')

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
Class A Conc (attach to ex. piers / abutt)	2	EA	$5,000.00	$10,000
Structural improvements to ramp	150	LF	$2,500.00	$375,000
conc sidewalk	350	LF	$56.00	$19,600
Concrete barrier	350	LF	$135.00	$47,250
water handling	1	LS	$20,000.00	$20,000
Crane	1	LS	$8,000.00	$8,000
Contract Items			**SUBTOTAL**	$479,900
Clearing and Grubbing Roadway		2.0%		$9,600
M & P of Traffic		4.0%		$19,200
Mobilization		7.5%		$36,000
Construction Staking		1.0%		$4,800
Minor Items (Applied to Roadway Items only)		25.0%		$110,500
Contingencies & Incidentals		**CONSTRUCTION TOTAL**		$660,000
INCIDENTALS		21.0%		$138,600
CONTINGENCIES		10%		$66,000
		TOTAL ESTIMATED COST		**$864,600**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

Notes:

1) Cost for bridge may vary widely based on selected materials, structure width, span between supports, etc.

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Thomaston**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Shared-Use in ROW**
From Sta:
To Sta:
A length of **2,510** Feet as shown on the plans

Segment No.	Segment Description
#8	10' width - E.Main St. bridge to Maple St. (shared portion with Thomaston Clock Walk) - including Elm St. sidwalk and on-street bike improvments - clearing and grubbing and new signage

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	2,510	LF	$14.00	$35,140
processed aggregate	2,510	LF	$17.00	$42,670
superpave	2,510	LF	$20.00	$50,200
Steel-Backed Timber Guide Rail	2,510	LF	$125.00	$313,750
conc sidewalk	2,510	LF	$56.00	$140,560
Contract Items			**SUBTOTAL**	$582,300
Clearing and Grubbing Roadway		2.0%		$11,600
M & P of Traffic		4.0%		$23,300
Mobilization		7.5%		$43,700
Construction Staking		1.0%		$5,800
Minor Items (Applied to Roadway Items only)		25.0%		$136,800
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$800,000
INCIDENTALS		21.0%		$168,000
CONTINGENCIES		10%		$80,000
			TOTAL ESTIMATED COST	**$1,048,000**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Thomaston**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Shared-Use Off-Street**
From Sta:
To Sta:
A length of **4,860** Feet as shown on the plans

Segment No.	Segment Description
#9	10' width - from Maple St. to Rt.8 ramp near highway crossing over River - trail is West of highway, RR and River

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	4,860	LF	$14.00	$68,040
processed aggregate	4,860	LF	$17.00	$82,620
superpave	4,860	LF	$20.00	$97,200
Contract Items			**SUBTOTAL**	$247,900
Clearing and Grubbing Roadway		5.0%		$12,400
M & P of Traffic		4.0%		$9,900
Mobilization		7.5%		$18,600
Construction Staking		1.0%		$2,500
Minor Items (Applied to Roadway Items only)		25.0%		$45,000
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$340,000
INCIDENTALS		21.0%		$71,400
CONTINGENCIES		10%		$34,000
			TOTAL ESTIMATED COST	**$445,400**

Estimated By: VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Thomaston**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth:
Type: **New Bridge**
From Sta:
To Sta:
A length of **80** Feet as shown on the plans

Segment No.	Segment Description
#10	12' width - over ravine adjacent to Seth Thomas factory parking lot

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
Class A Conc (attach to ex. piers / abutt)	2	EA	$5,000.00	$10,000
pre-fabricated ped steel truss bridge	80	LF	$1,500.00	$120,000
water handling	1	LS	$20,000.00	$20,000
Crane	1	LS	$8,000.00	$8,000
Contract Items			**SUBTOTAL**	$158,000
Clearing and Grubbing Roadway		2.0%		$3,200
M & P of Traffic		0.0%		$0
Mobilization		7.5%		$11,900
Construction Staking		1.0%		$1,600
Minor Items (Applied to Roadway Items only)		0.0%		$0
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$170,000
INCIDENTALS		21.0%		$35,700
CONTINGENCIES		10%		$17,000
			TOTAL ESTIMATED COST	**$222,700**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

Notes:

1) Cost for bridge may vary widely based on selected materials, structure width, span between supports, etc. This estimate assumes a 10' clear width pre-fabricated truss bridge,with synthetic lumber decking and a single clear span of 15 feet.

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Thomaston**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Shared-Use in ROW**
From Sta:
To Sta:
A length of **1,460** Feet as shown on the plans
Price Base Yr **2010**

Segment No.	Segment Description
#11	10' wide - crossing at Rt. 8 on/off ramps with ex. Traffic signals, ends south of ramps

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	1,460	LF	$14.00	$20,440
processed aggregate	1,460	LF	$17.00	$24,820
superpave	1,460	LF	$20.00	$29,200
Steel-Backed Timber Guide Rail	1,460	LF	$125.00	$182,500
Minor Intersection Modification	1	EA	$30,000.00	$30,000
Contract Items			**SUBTOTAL**	$287,000
Clearing and Grubbing Roadway		2.0%		$5,700
M & P of Traffic		4.0%		$11,500
Mobilization		7.5%		$21,500
Construction Staking		1.0%		$2,900
Minor Items (Applied to Roadway Items only)		25.0%		$66,600
Contingencies & Incidentals		**CONSTRUCTION TOTAL**		$400,000
INCIDENTALS		21.0%		$84,000
CONTINGENCIES		10%		$40,000
		TOTAL ESTIMATED COST		**$524,000**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Thomaston**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Shared-Use Off-Street**
From Sta:
To Sta:
A length of **1,440** Feet as shown on the plans

Segment No.	Segment Description
#12	10' wide - from ramp crossing to Old waterbury and Reynolds Bridge Rd crossing, trail passes below Reynolds Bridge

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	1,440	LF	$14.00	$20,160
processed aggregate	1,440	LF	$17.00	$24,480
superpave	1,440	LF	$20.00	$28,800
Contract Items			**SUBTOTAL**	$73,400
Clearing and Grubbing Roadway		5.0%		$3,700
M & P of Traffic		4.0%		$2,900
Mobilization		7.5%		$5,500
Construction Staking		1.0%		$700
Minor Items (Applied to Roadway Items only)		25.0%		$13,300
Contingencies & Incidentals		**CONSTRUCTION TOTAL**		$100,000
INCIDENTALS		21.0%		$21,000
CONTINGENCIES		10%		$10,000
		TOTAL ESTIMATED COST		**$131,000**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Thomaston**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Road Crossing**
From Sta:
To Sta:
A length of **25** Feet as shown on the plans

Segment No.	Segment Description
#13	Old Waterbury Road

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	25	LF	$14.00	$350
processed aggregate	25	LF	$17.00	$425
superpave	25	LF	$20.00	$500
Minor Intersection Modification	1	EA	$30,000.00	$30,000
Contract Items			**SUBTOTAL**	$31,300
Clearing and Grubbing Roadway		2.0%		$600
M & P of Traffic		4.0%		$1,300
Mobilization		7.5%		$2,300
Construction Staking		1.0%		$300
Minor Items (Applied to Roadway Items only)		25.0%		$7,700
Contingencies & Incidentals		**CONSTRUCTION TOTAL**		$40,000
INCIDENTALS		21.0%		$8,400
CONTINGENCIES		10%		$4,000
		TOTAL ESTIMATED COST		**$52,400**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Thomaston**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Road Crossing**
From Sta:
To Sta:
A length of **25** Feet as shown on the plans

Segment No.	Segment Description
#14	Reynolds Bridge Road

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	25	LF	$14.00	$350
processed aggregate	25	LF	$17.00	$425
superpave	25	LF	$20.00	$500
Minor Intersection Modification	1	EA	$30,000.00	$30,000
Contract Items			**SUBTOTAL**	$31,300
Clearing and Grubbing Roadway		2.0%		$600
M & P of Traffic		4.0%		$1,300
Mobilization		7.5%		$2,300
Construction Staking		1.0%		$300
Minor Items (Applied to Roadway Items only)		25.0%		$7,700
Contingencies & Incidentals		**CONSTRUCTION TOTAL**		$40,000
INCIDENTALS		21.0%		$8,400
CONTINGENCIES		10%		$4,000
		TOTAL ESTIMATED COST		**$52,400**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Thomaston**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Shared-Use in ROW**
From Sta:
To Sta:
A length of **1,340** Feet as shown on the plans

Segment No.	Segment Description
#15	10' width - from Old Reynolds Bridge road towards Mattatuck Trail

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	1,340	LF	$14.00	$18,760
Steel-Backed Timber Guide Rail	1,340	LF	$125.00	$167,500
processed aggregate	1,340	LF	$17.00	$22,780
superpave	1,340	LF	$20.00	$26,800
Contract Items			**SUBTOTAL**	$235,800
Clearing and Grubbing Roadway		2.0%		$4,700
M & P of Traffic		4.0%		$9,400
Mobilization		7.5%		$17,700
Construction Staking		1.0%		$2,400
Minor Items (Applied to Roadway Items only)		25.0%		$54,300
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$320,000
INCIDENTALS		21.0%		$67,200
CONTINGENCIES		10%		$32,000
			TOTAL ESTIMATED COST	**$419,200**

Estimated By: VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Thomaston**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Mattatuck Trail**
From Sta:
To Sta:
A length of **550** Feet as shown on the plans
Price Base Yr **2010**

Segment No.	Segment Description
#16	Widen and pave existing trail - Thomaston portion of Mattatuck Trail to Thomaston-Watertown Townline

Roadway Items	Est. Quant.	Unit	Unit Price	Total
earth excavation	550	LF	$14.00	$7,700
processed aggregate	550	LF	$17.00	$9,350
superpave	550	LF	$20.00	$11,000
Contract Items			**SUBTOTAL**	$28,100
Clearing and Grubbing Roadway		2.0%		$600
M & P of Traffic		4.0%		$1,100
Mobilization		7.5%		$2,100
Construction Staking		1.0%		$300
Minor Items (Applied to Roadway Items only)		25.0%		$5,100
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$40,000
INCIDENTALS		21.0%		$8,400
CONTINGENCIES		10%		$4,000
			TOTAL ESTIMATED COST	**$52,400**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Thomaston**
Funding:
Project #: **2009303.A10**
Width: **10'**
Depth: **12"**
Type: **Shared-Use in ROW**
From Sta:
To Sta:
A length of **6,100** Feet as shown on the plans

Segment No.	Segment Description
#17	On-street bike improvements for short-term connection from Thomaston Dam to downtown ($5,000 - $50,000 cost for signage) (SECONDARY)

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
Cost for Path Signage (include this cost only)	1	LS	$5,000.00	$5,000
earth excavation	6,100	LF	$14.00	$85,400
processed aggregate	6,100	LF	$17.00	$103,700
superpave	6,100	LF	$20.00	$122,000
Contract Items			**SUBTOTAL**	$311,100
Clearing and Grubbing Roadway		2.0%		$6,200
M & P of Traffic		4.0%		$12,400
Mobilization		7.5%		$23,300
Construction Staking		1.0%		$3,100
Minor Items (Applied to Roadway Items only)		25.0%		$56,400
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$410,000
INCIDENTALS		21.0%		$86,100
CONTINGENCIES		10%		$41,000
			TOTAL ESTIMATED COST	**$5,000**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

Note:
1) The cost for new signage for this segment may vary between $5,000 and $50,000.

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Thomaston**
Funding:
Project #: **2009303.A10**
Width:
Depth:
Type: **Ped / Bike Trailhead**
From Sta:
To Sta:
A length of

T

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
7 stall parking lot	2	EA	$20,000.00	$40,000
Ped / Bike Trailhead	2	EA	$8,000.00	$16,000
Contract Items			**SUBTOTAL**	$56,000
Clearing and Grubbing Roadway		5.0%		$2,800
M & P of Traffic		4.0%		$2,200
Mobilization		7.5%		$4,200
Construction Staking		1.0%		$600
Minor Items (Applied to Roadway Items only)		25.0%		$14,000
Contingencies & Incidentals		**CONSTRUCTION TOTAL**		$80,000
INCIDENTALS		21.0%		$16,800
CONTINGENCIES		10%		$8,000
		TOTAL ESTIMATED COST		**$104,800**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Thomaston**
Funding:
Project #: **2009303.A10**
Width:
Depth:
Type: **Small Boat Launch**
From Sta:
To Sta:
A length of

B

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
Small Boat Launch	2	EA	$5,000.00	$10,000
Contract Items			**SUBTOTAL**	$10,000
Clearing and Grubbing Roadway		5.0%		$500
M & P of Traffic		4.0%		$400
Mobilization		7.5%		$800
Construction Staking		1.0%		$100
Minor Items (Applied to Roadway Items only)		25.0%		$2,500
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$10,000
INCIDENTALS		21.0%		$2,100
CONTINGENCIES		10%		$1,000
			TOTAL ESTIMATED COST	**$13,100**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Thomaston**
Funding:
Project #: **2009303.A10**
Width:
Depth:
Type: **Rest Area**
From Sta:
To Sta:
A length of

R

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
Rest Area	1	EA	$5,000.00	$5,000
Contract Items			**SUBTOTAL**	$5,000
Clearing and Grubbing Roadway		5.0%		$300
M & P of Traffic		4.0%		$200
Mobilization		7.5%		$400
Construction Staking		1.0%		$100
Minor Items (Applied to Roadway Items only)		25.0%		$1,300
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$10,000
INCIDENTALS		21.0%		$2,100
CONTINGENCIES		10%		$1,000
			TOTAL ESTIMATED COST	**$13,100**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
FUSS & O'NEILL
PRELIMINARY COST ESTIMATE

City of: **Thomaston**
Funding:
Project #: **2009303.A10**
Width:
Depth:
Type: **Parking (Large)**
From Sta:
To Sta:
A length of

P(L)

Price Base Yr **2010**

Roadway Items	Est. Quant.	Unit	Unit Price	Total
25 stall parking lot	1	EA	$70,000.00	$70,000
Contract Items			**SUBTOTAL**	$70,000
Clearing and Grubbing Roadway		5.0%		$3,500
M & P of Traffic		4.0%		$2,800
Mobilization		7.5%		$5,300
Construction Staking		1.0%		$700
Minor Items (Applied to Roadway Items only)		25.0%		$17,500
Contingencies & Incidentals			**CONSTRUCTION TOTAL**	$100,000
INCIDENTALS		21.0%		$21,000
CONTINGENCIES		10%		$10,000
			TOTAL ESTIMATED COST	**$131,000**

Estimated By:VC
Checked By:

Date of Estimate: 05/18/2010

The NRG will connect to the Clock Walk through downtown Thomaston.

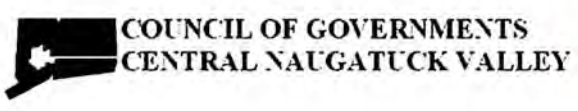
alta PLANNING + DESIGN

COUNCIL OF GOVERNMENTS CENTRAL NAUGATUCK VALLEY

TOWN OF THOMASTON CONNECTICUT

For more information, contact: Council of Governments of the Central Naugatuck Valley

60 North Main Street, 3rd Floor, Waterbury, Connecticut 06702-1403 • 203-757-0535 • www.cogcnv.org


COUNCIL OF GOVERNMENTS
CENTRAL NAUGATUCK VALLEY
alta
PLANNING + DESIGN