Metacomet Greenway | Rail Trail Feasibility Study
Plainville to Norfolk

Wrentham, Massachusetts

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PREPARED FOR

Town of Wrentham, MA

PREPARED BY

VHB

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1.0 Project Background

This Feasibility Study includes compiling an existing conditions base map, development of conceptual alternatives, verification of the anticipated impacts, development of estimated construction costs, anticipated right-of-way/ property impacts, and anticipated permitting actions associated with the construction of a Shared Use Path (SUP) along the former Old Colony Railroad railbed in Wrentham, MA. The purpose of this Feasibility Study is to help inform the Town's decision on whether to pursue further the right-of-way coordination, design, and construction of a rail-to-trail facility or a practical feasible alternative.

Previous transportation studies in the area include:

- Route 1A Corridor Study in Wrentham, 2017, Federal Highway Administration (FHWA)/Boston Region Metropolitan Planning Organization (MPO)
- Road Safety Audit: Dedham Street (Route 1A) at North Street and Winter Street, Town of Wrentham, October 2019

2.0 Project Area Boundaries

The project corridor is located along the former Old Colony Railroad/New York, New Haven & Hartford Railroad railbed in Wrentham from the Plainville town line to the Norfolk town line.

2.1 Project Area General Land Uses

Most of the existing rail corridor remains physically intact from the Plainville town line to the Norfolk town line and is currently in use as an informal off-road walking and dirt bike trail. South of the Town center, the corridor serves as an overhead electric transmission line owned by National Grid. There is a segment north of the Town center where portions of the existing corridor have been obliterated by residential use from the Route 1A overpass to a point approximately 2,000 feet north of Winter Street.

Several bridges have been removed from the corridor, including the Winter Street road overpass (structure removed and road grade lowered), the Franklin Street/Route 140 (MA 140) road overpass (structure removed and gap filled in), the railroad overpass at Creek Street (structure and abutments removed), and the railroad overpass over West Street/Route 121 (structure and abutments removed). The MA 1A road bridge over the RR was replaced by Mass Highway Department in 1970 (original superstructure removed, RR abutments modified, and new superstructure constructed).

Adjacent Land uses include:

- Industrial/commercial use from the Plainville town line to West Street/Route 121 – gravel pit/aggregate plant, Wrentham Village outlet shopping mall, and small individual retail/commercial parcels.
- Residential single-family homes from West Street north to just south of MA 140 crossing where the land use changes to retail/commercial use near Wrentham center.
- From the MA 140 crossing north to the Norfolk town line, the adjacent land use is mostly single-family residential with a short section of industrial use at the Norfolk Town Line. A section of the railbed from the point 2,000 feet north of Winter Street is bordered on both sides by undeveloped natural area (including wetlands) owned by the Commonwealth of Massachusetts.

3.0 Design Policy Related to Bicycle and Pedestrian Accommodation

U.S. Department of Transportation (USDOT) and Massachusetts Department of Transportation (MassDOT) policy is to incorporate safe and convenient walking and bicycling facilities into transportation projects. The USDOT policy states that every transportation agency, including state DOTs, has the responsibility to improve conditions and opportunities for walking and bicycling and to integrate walking and bicycling into their transportation systems. Because of the numerous individual and community benefits that walking and bicycling provide – including health, safety, environmental, transportation, and quality of life – transportation agencies are encouraged to go beyond minimum standards to provide safe and convenient facilities for these modes.

3.1 Definitions of Bikeway Types

The following types of bikeways were considered during the preparation of this report. These bikeway definitions are taken from the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, 2012, Fourth Edition (AASHTO Bike Guide).

Shared Lane Bikeway: Shared lane bikeways are best used on minor local neighborhood streets with low speeds and low traffic volumes where bicycles can share the road without special provisions. Generally, the speed differential between motorists and bicyclists is typically 15 mph or less with motor vehicle speeds of 30 mph or less. Traffic volumes on the roadway are typically less than approximately 1,000 vehicles per day.

Marked Shared Lane Bikeway: Marked shared-lane bikeways are best used on local collectors or minor arterials with narrow travel lanes where bike lanes are not feasible due to narrow lanes, space constraints, and right-of-way limitations. Traffic volumes can be variable, but the motor vehicle speed limit should be 35 mph or less.

Rail-to-Trail: A rail-to-trail is a SUP constructed within the remaining bed of a former rail line. Often the rail bed had been constructed by cutting and filling the existing terrain to maintain straight alignment and gentle even grades which is compatible with ADA accessibility requirements.

Bike Lane: A bike lane is a portion of a roadway that has been designated for preferential or exclusive use by bicyclists by pavement markings and, if used, signs. Bike lanes can be used on major roads to provide quick and direct bicycle access to the same destinations as motorists. Bike lanes can also be used on collector roads or congested urban streets. Generally, roadway design speeds are more than 25 mph. Traffic volumes can vary as the motor vehicle/bicycle speed differential is generally a more important factor in the decision to provide bike lanes.

Shared Use Path/Sidepath: A shared use path (SUP) is a bikeway outside of the roadway traveled way and physically separated from motorized vehicular traffic by a buffer or barrier. The SUP can be either within the roadway right-of-way or on an independent alignment. SUPs are also used by pedestrians, including skaters, wheelchairs users, and joggers/walkers. The types of design criteria for SUPs (design speed, minimum curve radii, stopping sight distance, etc.) are of similar type for design of roadways but modified based on the operating characteristics of a bicycle as a vehicle and a bicyclist as a vehicle operator.

Paved Shoulder: Paved shoulders are paved areas adjacent to the roadway travel lanes delineated by a longitudinal pavement marking. Paved shoulder bikeways are best used on rural roadways that connect town centers or other attractions but can be used in urban areas. Traffic volumes can be variable, but the motor vehicle posted speed should be in the range of 40-55 mph. The width of the shoulder should be dependent on characteristics of the adjacent motor vehicle traffic (i.e. wider shoulders should be used on higher speed roadways) but a shoulder width of 4 feet is considered the minimum for bicycle travel.

3.3 Design Criteria

The project criteria have been derived based on standard engineering practice and the successful application of regulatory standards and guidelines. The primary references for the project criteria listed include:

- The American with Disabilities Act (ADA) Design Guidelines for Shared Use Paths
- The Massachusetts Department of Transportation (MassDOT) Massachusetts Highway Department Project Development and Design Guide, 2006 (MassDOT PDDG)
- The Massachusetts Department of Transportation (MassDOT) Separated Bike Lane Planning and Design Guide, 2012
- The American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, Fourth Edition, 2012 (AASHTO Bike Guide)
- The American Association of State Highway and Transportation Officials (AASHTO) A Policy on Geometric Design of Highways and Streets, 2018 (AASHTO Green Book)
- The Manual on Uniform Traffic Control Devices (MUTCD) 2009 Edition with revisions and applicable Interim Approvals
- Applicable MassDOT Engineering Directives

4.0 Project Corridor

The former Old Colony Railroad corridor can be divided into three distinct segments based on the current condition of the railbed and the ownership of the land parcels.

4.1 Segments

Segment 1 – Plainville Town Line to Wrentham Center/Route 140 (Franklin Street: From the Plainville town line to Wrentham Center/MA 140 crossing, the existing railbed is physically intact and privately owned. Most of this segment, from the Plainville town line to Creek Street, is owned by National Grid and functions as a utility corridor with active overhead utility lines.

A new bicycle/pedestrian bridge is the preferred option for crossing West Street however that will most likely require some modifications to/relocation of existing overhead utility lines along West Street.

Segment 2 – Wrentham Center/Route 140 (Franklin Street) to Winter Street: From Wrentham Center/MA 140 crossing to a point just north of the bridge on the MA 1A bridge, the existing railbed is physically intact and privately owned. Approaching Winter Street to a point approximately 2,000 feet north of Winter Street, the existing railbed has been mostly obliterated by residential use. This segment does not have any overhead utility infrastructure.

Segment 3 – Winter Street to Norfolk Town Line: From a point 2,000 feet north of Winter Street to the Norfolk town line, the existing railbed is physically intact and privately owned. There is active trail use along the former railbed. Approaching the Norfolk town line, a short length of the railbed embankment has been excavated and has active commercial landscape business use. There is an active footpath along the south side of the railbed that could be utilized for the Greenway.

An existing footpath extends from Cushing Drive to the railbed then along the railbed in both the north and south directions. This segment does not have any overhead utility infrastructure.

4.2 Alternatives

Based on the existing conditions and current uses of the former railbed, the possible routes for the Metacomet Greenway include:

Segment 1 – Plainville town line to Wrentham center: A shared-use path rail-to-trail facility along the existing railbed from the Plainville town line to Wrentham Center/MA 140 crossing.

Traffic volumes from the 2017 Route 1A Corridor Study are shown in the table below:

TRAFFIC VOLUMES

	Outlet Blvd	RT 121 (Franklin St)	Creek St	RT 140 (East St)	RT 1A (Dedham St) So. of Town Ctr	RT 1A (Dedham St) No. of Town Ctr
AADT	-	11,800	5,000	11,100	15,800	9,500
Peak Hour Volume	992	-	-	-	-	-

Consideration of a Rapid Rectangular Flashing Beacon (RRFB) to enhance crosswalk markings should be evaluated for the path crossings at Franklin Street/MA 140 and Creek Street.

The signal at the entrance roadway to Wrentham Village Outlets will require modification to accommodate the path crossing.

A new bicycle/pedestrian bridge is the preferred option for crossing West Street/MA 121 given the traffic volumes and proximity to the MA 1A/MA 121 signal however MassDOT has been requiring a 17-foot ground clearance for trail bridges over state highways. That clearance will most likely require some modifications to/relocation of existing overhead utility lines along the railbed and along West Street.

If utility modifications/ relocations are not feasible, installation of a crosswalk and a HAWK beacon should be evaluated.

Path crossings of other existing roadways should include crosswalk markings and trail crossing warning sign assemblies.

Segment 2 – Wrentham center to north of Winter Street: From a point 2,000 feet north of Winter Street to Wrentham Center/MA 140 crossing, there are three (3) possible alternatives:

- **Alternative 1 – Along Former Railbed**

  This alternative uses the existing railbed for the entirety of the greenway, including Segment 2 from north of Winter Street to Wrentham Center/MA 1 crossing. Since portions of the railbed are in private ownership and have been obliterated by residential construction from Winter Street to the Dedham Street/Route 1A bridge, this alternative is neither practical nor feasible.

- **Alternative 2 – Across MA 1A and through the Rice Complex**

  This alternative extends from the former railbed via existing easements on privately owned parcels out to MA 1A, then crosses Route 1A into the former Wrentham State School on property owned by the Commonwealth. The proposed SUP then crosses North Street at Emerald Street and travels along the perimeter of the Rice Complex. The path rejoins the existing rail corridor at the MA 1A bridge connecting to Segment 1 south of the Franklin Street/MA 140 crossing.

  MA 1A is under Mass DOT jurisdiction and is classified as a minor urban arterial but the roadway is not part of the National Highway System. Speed limit is posted at 45 mph. Daily traffic volume is approximately 9,500.

  The MA 1A crossing should be evaluated for a High-Intensity-Activated-Crosswalk-Beacon (HAWK) due to the relatively high traffic volumes and speeds.

  Path crossings of other existing roadways should include crosswalk markings and trail crossing warning sign assemblies.

- **Alternative 3 – Along Route 140**

  This alternative leaves the intact former railbed approximately 3,000 feet north of Winter Street and traverses an undeveloped State-owned parcel to the southeast until it reaches Everett Street and the Route 140/East Street. The route would then follow Route 140/East Street to the intersection with MA 1A in Wrentham center then continuing along MA 140 to the crossing at the end of Segment 1. The Greenway would be a SUP parallel to the road or on-street bike lanes similar to those proposed in the long-term improvements in the Route 1A Corridor Study (see Appendix). Based on the daily traffic volume on MA 140 of approximately 11,100, MassDOT Engineering Directive E-20-001 (01/02/2020) would require a minimum 2-foot buffer for on-street bike lanes. MA 140 has a wider cross section and ROW width than MA 1A, making bike accommodations more feasible.

  Minor widening of the sidewalk area along the north side of MA 140 and drainage modifications would be required. Some minor right-of-way acquisitions would be required in constrained width sections approaching the town center.

  Relocations of some utility poles may also be required.

Segment 3 – North of Winter Street to Norfolk town line: A SUP rail-to-trail facility along the existing railbed from north of Winter Street to the Norfolk town line.

Only minor clearing and grading would be required to construct a Greenway along this Segment. Removal of some remaining wood RR ties as solid waste is required.

On the approach to the Norfolk town line, the original RR embankment has been removed and the area is an active commercial landscape business. The Greenway alignment would be shifted east/south to an existing active footpath. Clearing and grading would be required to accommodate the Greenway. Some temporary easements may be required for grading beyond the original RR right-of-way line.

Coordination with the Town of Norfolk will be required to match any Greenway plans for their section.

5.0 General Applicable Environmental Guidance

This Feasibility Study was developed using data provided by the Massachusetts Office of Geographic Information (MassGIS). This database is a compilation of information acquired from a broad base of public and private agencies and serves as a useful tool for the purposes of planning and assessing potential suitability of land use and development. The findings below are useful for identifying stakeholders and anticipating permitting requirements for the proposed alternatives. Further research, field verification, and field survey will be needed to verify the findings of this report before proceeding to final design.

5.1 Anticipated Impacts and Criteria

This section describes the anticipated environmental impacts of the proposed SUP and other criteria for evaluation, including:

- Relocation Impacts and Right of Way Acquisition
- Considerations Relating to Pedestrians and Bicyclists
- Air Quality Impacts
- Noise Impacts
- Impacts to Outstanding Resource Water
- Impacts to Wetlands
- Floodplain Impacts
- Impacts to Certified Vernal Pools
- Impacts to NHESP Priority and Estimated Habitats
- Impacts to Areas of Critical Environmental Concern
- Impacts to National Register Historic District and Property
- Wellhead Protection Areas
- Impacts to Hazardous Waste Sites
- Construction Impacts
- Visual Impacts
- Impacts to Public Utilities
- Public Facilities Connections
- Environmental Justice Impacts
- Construction Costs
- Maintenance and Operations

A matrix ranking the alternative greenway routes based on the listed environmental criteria is provided in the Appendix.

5.1.1 Relocation Impacts and Right-of-Way Acquisition

The ideal alignment for the greenway uses publicly owned parcels where possible to minimize the need for right-of-way acquisition. Many of the parcels in the study area are owned by either the Town or the State, but there are multiple privately-owned parcels that will be affected regardless of the route chosen.

Segment 1 – Plainville Town Line to Wrentham Center/Route 140 (Franklin Street): The existing railbed in this segment is owned by National Grid from the Plainville town line to Creek Street. It is anticipated that an agreement can be reached between the Town and National Grid that allows the greenway to run along the former railbed while maintaining access to the overhead utility infrastructure. North of Creek Street, there are three privately-owned parcels that will be impacted by the proposed route – one residential building off of William Galvin Way with an active footpath across the driveway and two industrial/commercial lots of off of Kendrick Street.

Segment 2 – Wrentham Center/Route 140 (Franklin Street) to Winter Street:

- **Alternative 1** – This route, which uses the former railbed, would require right-of-way acquisitions of existing residential dwellings and/or easements from eight residential parcels. Given the extent of the anticipated impacts, this alternative is not a practical feasible option.
- **Alternative 2** – This route, which deviates from the railbed, crosses a wetland to Dedham Street/Route 1A and connects to the Rice Complex, would impact two residential parcels between the railbed and MA 1A. Both parcels have existing easements for the Commonwealth which may allow Greenway access.
- **Alternative 3** – This route, which connects to East Street/Route 140 via an easement for the Commonwealth, would not require right-of-way acquisition for the section from the railbed to MA 140. Right-of-way strip takings to construct a path along the north side of MA 140 would be required in the constrained width area near the town center.

Segment 3 – Winter Street to Norfolk Town Line: The existing railbed in this segment is composed of three privately owned commercial parcels that will require right-of-way acquisitions or easements.

5.1.2 Considerations Relating to Pedestrians and Bicyclists

The goal of the Greenway project is to provide a non-motorized transportation alternative for local travel for both pedestrians and bicyclists.

A Greenway along the railbed in Segments 1 and 3 meets that goal.

The Greenway alternative for Segment 2 – Alternative 1 (Greenway along the original railbed) would require significant right-of-way acquisitions including existing residential dwellings. Given those impacts, Alternative 1 was deemed to not be a practical feasible alternative.

The Greenway Alternatives 2 and 3 for Segment 2 diverge from the original railbed and have the following advantages/disadvantages that affect pedestrians and bicyclists:

- **Segment 2 – Alternative 2:** This alternative provides an off-road path on independent alignment but requires crossing Dedham Street/MA 1A to connect to the Rice Complex. The crossing would also be in proximity to the North Street/Winter Street/MA 1A intersection which has been considered for improvements. Given the relatively high traffic volumes and speeds on MA 1A, the crossing of MA 1A should be evaluated for installation of a HAWK. The crossing should also be coordinated with potential improvements to the North Street/Winter Street/MA 1A intersection.
- **Alternative 3:** This route, which connects to East Street/MA140, would avoid the wetland impacts of Alternative 2 but requires pedestrians and bicyclists to travel along MA 140 for approximately 2.1 miles. This alternative provides a direct connection to attractions in Wrentham center. While the Greenway could be separated from traffic by construction of a sidepath in the existing sidewalk area, the Greenway would not be on a completely independent alignment.

5.1.3 Air Quality Impacts

Air quality in the study area would not be substantially affected by project construction because of the temporary nature of path construction.

In the long-term, one positive result of a path project is improvement in air quality by encouraging walking and biking instead of driving. Additionally, providing a designated path for biking and walking that is separated from traffic reduces the traffic-related air pollution.

5.1.4 Noise Impacts

Construction activities would result in a moderate but temporary noise impact at various locations adjacent to proposed construction. Noise levels would vary depending on the type and number of pieces of equipment active at any one time. Noise impacts during construction can be mitigated by limiting the construction time periods.

5.1.5 Impacts to Outstanding Resource Water

Massachusetts Department of Environmental Protection (DEP) has designated certain waters for protection based on their outstanding socio-economic, recreational, ecological and/or aesthetic values.

Based on the MassGIS database, the proposed work impacts a public water supply watershed that is designated as Outstanding Resource Water. All alternatives are within this resource area in Segment 2. Based on the length of the three proposed alternatives through the watershed area, Alternatives 2 (Rice Complex) has the least length in the resource area and Alternative 3 (Route 140) has the longest length in the resource area. Given the limited nature of the Greenway construction and relatively minor increase in impervious surface, impacts are anticipated to be minimal.

5.1.6 Impacts to Wetlands

Potential impacts to wetlands fall under the jurisdiction of the local Conservation Commission. Wetlands meeting the regulatory definition are subject to jurisdiction under Sections 401 and 404 of the federal Clean Water Act. All wetland resource areas identified at the site are subject to federal jurisdiction.

Under Section 401, projects which fill less than 5,000 square feet of federally regulated wetlands do not require an individual 401 Water Quality Certification provided that the work is done with a valid Order of Conditions and that 1:1 wetland replacement is provided. Projects filling greater than 5,000 square feet of federally regulated wetlands require an individual 401 Water Quality Certification.

Pursuant to Section 404 of the Clean Water Act, the placement of fill material and other alterations within federally regulated wetlands requires authorization from the U.S. Army Corps of Engineers (USACE). Projects filling less than 1-acre of federal wetlands may be covered under the Massachusetts General Permit (GP). Projects eligible for coverage under the GP may be automatic (non-reporting) if total wetland impacts are less than 5,000 square feet. Projects filling 5,000 square feet to one acre are classified are reviewed by the USACE and other federal agencies to determine if the project meets the conditions of the GP. Alterations to regulated wetlands in excess of 1-acre are not eligible for the GP and require an Individual Permit.

Any alteration or work proposed within the state and locally regulated wetlands would be limited to 5,000 square feet of alteration unless the proposed work qualified as a “limited project” (310 CMR 10.53), such as an Ecological Restoration limited project. A Notice of Intent would need to be filed with the Wrentham Conservation Commission under the WPA and Bylaw for approval of alteration of a wetland resource area. Any wetlands alterations on the site will require 1:1 wetland replication that meets applicable performance standards.

Based on the MassGIS database, the proposed work for Segment 1 (Plainville town line to Wrentham center) and Segment 3 (north of Winter Street on the railbed) will not impact wetland resource areas regulated by the Massachusetts Wetlands Protection Act (WPA).

For Segment 2 (Wrentham center to north of Winter Street):

- **Alternative 1 (on the existing railbed)** will not impact wetland resource areas regulated by the Massachusetts Wetlands Protection Act (WPA) but is not a practical feasible alternative due to right-of-way impacts.
- **Alternative 2 (through the Rice Complex)** will impact wetland resource areas regulated by the Massachusetts Wetlands Protection Act (WPA) in excess of 5,000 square feet between the railbed and MA 1A. It is anticipated that there will be direct impact to freshwater wetlands and 100’ buffer area impacts. This alternative would provide a connection to the Rice Complex but would also incur significant wetland impacts between the railbed and MA 1A and through the Rice Complex which would significantly increase the environmental permitting requirements and may not be approved.
- **Alternative 3 (SUP along MA 140)** will not impact wetland resource areas regulated by the Massachusetts Wetlands Protection Act (WPA).

5.1.7 100-Year Floodplain Impacts

Based on the MassGIS database, portions of the study area are within the Federal Emergency Management Agency (FEMA) 100-year floodplain and a regulatory floodway as follows:

Segment 1 – Plainville town line to Wrentham center: No encroachment into the floodplain.

Segment 2 – Wrentham center to north of Winter Street:

- **Alternative 1 (along the railbed):** Minor floodplain encroachment near the MA 1A bridge.
- **Alternative 2 (through the Rice complex, across MA 1A to the railbed):** Significant floodplain encroachment through the Rice Complex and from MA 1A to the railbed.
- **Alternative 3 (path along MA 140):** Minor floodplain encroachment.

Segment 3 – north of Winter Street to Norfolk town line: No encroachment into the floodplain.

5.1.8 Certified Vernal Pools

Based on the MassGIS database, the proposed work may impact certified or potential vernal pools as identified by the Massachusetts Natural Heritage and Endangered Species Program (NHESP) as follows:

Segment 1 – Plainville town line to Wrentham center: No impacts to certified or potential vernal pools anticipated.

Segment 2 – Wrentham center to north of Winter Street:

- **Alternative 1 (along the railbed):** Possible direct impact to a potential vernal pool anticipated.
- **Alternative 2 (across MA 1A to the railbed and through the Rice complex):** No direct impacts to certified or potential vernal pools anticipated.
- **Alternative 3 (path along MA 140):** No direct impacts to certified or potential vernal pools anticipated.

Segment 3 – north of Winter Street to Norfolk town line: No direct impacts to vernal pools anticipated.

5.1.9 NHESP Priority and Estimated Habitat

NHESP maintains a database of the habitats of State-listed rare species in Massachusetts based on observations documented in the last 25 years.

Work will require review under the Massachusetts Endangered Species Act (MESA). The WPA NOI will be reviewed by NHESP to determine if the project needs to be conditioned to avoid impacting rare species.

Based on the MassGIS database 2017 Edition of the Massachusetts Natural Heritage Atlas, there is no NHESP Priority Habitat of Rare Species and Estimated Habitat of Rare Wildlife located within the project limits.

5.1.10 Areas of Critical Environmental Concern

The Secretary of Energy and Environmental Affairs (EEA) has designated places in Massachusetts that receive special recognition because of the quality and significance of their natural and cultural resources. These areas, identified as Areas of Critical Environmental Concern (ACEC), require a stricter environmental review of certain kinds of proposed development administered by the Department of Conservation and Recreation (DCR) on behalf of the EEA.

Based on the MassGIS database, there are no ACECs identified within the project limits.

5.1.11 National Register of Historic Properties and Districts

The historic resources considered in this analysis are those included in the Massachusetts Cultural Resource Information System (MACRIS) maintained by the Massachusetts Historical Commission (MHC). These resources include buildings, burial grounds, structures, and objects as well as areas and districts recognized by the National Register of Historic Places and local historic and preservationist agencies.

- **Alternative 1:** The MACRIS database indicates there are eight previously surveyed properties comprising five individual properties and three areas, that have no National Register eligibility determinations that are within or immediately adjacent to the Alternative 1 project limits.

MHC NO.	PROPERTY NAME	LOCATION	NR STATUS	WITHIN OR ADJACENT TO PROJECT LIMITS
WRE.105	George Fuller House	46 West Street, Wrentham	INV	Adjacent
WRE.121	Wampum Corner Railroad Station	46 West Street, Wrentham	INV	Adjacent
WRE.100	South Street - Wharf - Wampum Schoolhouse	592 South Street, Wrentham	INV	Adjacent
WRE.C	South Street Area - Southwest	South Street, Wrentham	INV	Adjacent
WRE.D	South Street Area - Northeast	South Street, Wrentham	INV	Adjacent
WRE.A	Wrentham Center	Route 1A/Dedham Street, Wrentham	INV	Direct

INV - Previously surveyed and unevaluated property in MACRIS

- **Alternative 2:** The MACRIS database indicates there are nine previously surveyed properties comprising five individual properties and three areas that have no eligibility determinations and one National Register-listed Historic District that are within or immediately adjacent to the Alternative 2 project limits.

MHC NO.	PROPERTY NAME	LOCATION	NR STATUS	WITHIN OR ADJACENT TO PROJECT LIMITS
WRE.105	George Fuller House	46 West Street, Wrentham	INV	Adjacent
WRE.121	Wampum Corner Railroad Station	46 West Street, Wrentham	INV	Adjacent
WRE.100	South Street - Wharf - Wampum Schoolhouse	592 South Street, Wrentham	INV	Adjacent
WRE.C	South Street Area - Southwest	South Street, Wrentham	INV	Adjacent
WRE.D	South Street Area - Northeast	South Street, Wrentham	INV	Adjacent
WRE.A	Wrentham Center	Route 1A/Dedham Street, Wrentham	INV	Direct
WRE. B	Wrentham State School	Emerald Street, Wrentham	NRDIS; NRMPS	Adjacent

INV - Previously Survey and unevaluated property in MACRIS

NRDIS/NRMPS - National Register Historic District/National Register Multiple Property Submittal

- **Alternative 3:** The MACRIS database indicates there are ten previously surveyed properties comprising five individual properties and four areas that have no eligibility determinations and one individually listed National Register property that are within or immediately adjacent to the Alternative 3 project limits.

MHC NO.	PROPERTY NAME	LOCATION	NR STATUS	WITHIN OR ADJACENT TO PROJECT LIMITS
WRE.105	George Fuller House	46 West Street, Wrentham	INV	Adjacent
WRE.121	Wampum Corner Railroad Station	46 West Street, Wrentham	INV	Adjacent
WRE.100	South Street - Wharf - Wampum Schoolhouse	592 South Street, Wrentham	INV	Adjacent
WRE.C	South Street Area - Southwest	South Street, Wrentham	INV	Adjacent
WRE.D	South Street Area - Northeast	South Street, Wrentham	INV	Adjacent
WRE.A	Wrentham Center	Route 1A/Dedham Street, Wrentham	INV	Direct
WRE.G	Original Congregational Church of Wrentham	1 East Street, Wrentham	NRIND	Adjacent
WRE.E	East Street Area	East Street, Wrentham	INV	Direct

INV - Previously Survey and unevaluated property in MACRIS

NRIND - Property Individually listed in the National Register

5.1.12 MassDEP Approved Wellhead Protection Area (Zone I and Zone II)

Wellhead protection areas are important for protecting the recharge area around public water supply (PWS) groundwater sources.

A Zone I is the area closest to the well and is a defined protective radius needed around a public water supply (PWS) well or wellfield. The PWS groundwater source locations are buffered to produce the Zone I area. Buffer radii values are determined from pumping rate information as provided by the MassDEP DWP and vary between 100'-400'.

A Zone II is a wellhead protection area that has been determined by hydro-geologic modeling and approved by the DEP's Drinking Water Program (DWP). A Zone II classification is that area of an aquifer which contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated (180 days of pumping at approved yield, with no recharge from precipitation).

Based on the MassGIS database, portions of the proposed alignments are not located near a Zone I Approved Wellhead Protection Area but are located within a Zone II Approved Wellhead Protection Areas. Impacts to wellhead protection zones are not anticipated.

5.1.13 Hazardous Materials Sites

VHB evaluated the Project Area with respect to documented disposal sites that are governed under the Massachusetts Contingency Plan per 310 CMR 40.0000. The presence of a disposal site indicates that a release of oil and/or hazardous materials (OHM) has been reported to MassDEP. VHB reviewed the Massachusetts Department of Environmental Protection (MassDEP) Bureau of Waste Site Cleanup (BWSC) online database of disposal sites to identify OHM concerns located at properties abutting or within the Project Area. Based on VHB's review, a total of 19 state-listed disposal sites were identified as abutting or within the Project Area. Based on regulatory status, a total of 18 disposal sites were deemed to have the potential to impact environmental conditions within the Project Area. The remaining disposal site achieved regulatory closure and concentrations of OHM were reduced to background conditions. Disposal sites with the potential to impact environmental conditions within the Project Area are described below:

- **Former Crosby Valve & Garage Inc., 40-43 Kendrick Street, Release Tracking Numbers (RTNs) 4-20487, 4-18729, 4-17511, 4-15358, 4-15015, 4-14577, 4-28829, & 4-22725, Within the Project Area:** The property historically operated as an automobile dealership and maintenance facility since 1983. In March 1999, elevated concentrations of metals and chlorinated volatile organic compounds (VOCs) were first detected in groundwater at 43 Kendrick Street and assigned RTN 4-14577. Nearby properties at 0 and 40 Kendrick Street filed Downgradient Property Status (DPS) Opinions indicating that chlorinated VOC-impacted groundwater was migrating onto the nearby properties. The remainder of the RTNs are associated with the detection of chlorinated VOCs and metals in soil and groundwater at the property. All RTNs have achieved regulatory closure in accordance with the MCP with the exception of RTN 4-22725 where response actions are ongoing. According to the latest MCP report, the disposal site extends into the Project Area. Therefore, a Release Abatement Measure (RAM) Plan would be required per 310 CMR 40.0444 during construction within this portion of the Project Area.

- **Commercial Property, 1130 South Street, RTN 4-28947, Abutting the Project Area to the East:** In August 2021, elevated concentrations of per- and polyfluoroalkyl substance (PFAS) were detected in groundwater in excess of the applicable reportable concentrations and RTN 4-28947 was assigned to the release. Response actions are ongoing and the exact extent of the release is unknown. Therefore, there is the potential for PFAS-impacted groundwater to migrate into the Project Area. Therefore, a RAM Plan may be required per 310 CMR 40.0444 during construction within this portion of the Project Area.
- **Gensis Logistics, 1170 South Street, RTN 4-23077, Approximately 350 feet South of the Project Area:** In January 2011, a release of 50 gallons of diesel fuel occurred from a truck and impacted asphalt pavement and nearby snow and ice. RTN 4-23077 was subsequently assigned to the release. A Class A-2 Response Action Outcome (RAO) Statement was submitted for the disposal site in March 2011 indicating regulatory closure was achieved; however, residual concentrations of petroleum constituents remained in soil. Although residual constituents remain in soil, based on the confined nature of the release and the distance to the Project Area, it is unlikely to impact environmental conditions within the Project Area.
- **Wrentham Steel Products, 30 Kendrick Street, RTN 4-18124, within the Project Area:** RTN 4-18124 was assigned to the property in November 2013 following the identification of petroleum constituents and VOCs in soil and groundwater in excess of the applicable reportable concentrations. A Temporary Solution Statement was submitted for the disposal site in December 2014 indicating that response actions are ongoing. The full extent of the groundwater plume has not fully been delineated; however, the latest MassDEP report depicts the groundwater plume within the Project Area. Therefore, a RAM Plan would be required per 310 CMR 40.0444 during construction within this portion of the Project Area.
- **Former Gasoline Service Station, 630-650 South street, RTNs 4-14575,4-15175, 4-27467, 4-25191 4-24553, & 4-24894, Partially within the Project Area:** RTN 4-15175 was assigned to a disposal site at 650 South Street in November 1999 due to the detection of petroleum constituents in groundwater in excess of the applicable reportable concentrations. During assessment activities, new reportable conditions were identified at the property associated with a leaking underground storage tank (RTN 4-25191), lead-impacted fill material (RTN 4-27467), and petroleum impacted groundwater at 630 South Street (RTN 4-14575). All secondary RTNs were linked to primary RTN 4-15175 and response actions were conducted under the primary RTN. In April 2020, a Permanent Solution Statement with Conditions with no Activity and Use Limitation was submitted under RTN 4-15175 indicating that regulatory closure was achieved; however, residual concentrations of petroleum constituents remain in soil and groundwater.

  RTN 4-24553 was assigned to 650 South Street in May 2013 due to a release identified from an underground holding tank. During response actions, tetrachloroethene (PCE) was also detected in groundwater and secondary RTN 4-24894 was assigned to the disposal site and subsequently linked to RTN 4-24553. Regulatory closure was achieved with the submittal of a Permanent Solution Statement with No Conditions in March 2018; however, residual concentrations of PCE and petroleum constituents remain in groundwater. The disposal site boundary is within the Project Area. Although the disposal has achieved regulatory closure, there is the potential for petroleum or PCE-impacted groundwater to be present within this portion of the Project Area.
- **Mass Highway Temporary Construction, 660 South Street, RTN 4-19241, Within the Project Area:** Elevated concentrations of petroleum constituents were detected in soil within the Project Area in June 2006 and RTN 4-19241 was assigned to the release. The disposal site is classified as a Tier 1 disposal site indicating that regulatory closure has not been achieved. **Therefore, a RAM Plan would be required per 310 CMR 40.0444 during construction within this portion of the Project Area.**

The approximate locations of the MassDEP disposal sites are included on the Project Overview Map (Figure 2).

Prior to construction phases of the Project, the MassDEP Rail Trail guidance requires an MCP Phase I level of investigation be conducted for the Project Area to identify sources of contamination outside of typical railroad contaminants. Portions of the Project Area where concentrations of OHM are identified may require the implementation of best management practices or other mitigation measures pursuant to the MCP and/or associated MassDEP guidance to protect public health and the environment during and post construction.

Due to the presence of active disposal sites within the Project Area (RTN 4-18124, 4-19241, and 4-22725), any soil excavation within the active disposal site limits will need to be conducted under a Utility-related Abatement Measure (URAM), RAM or Soil Management Plan under the supervision of a Licensed Site Professional (LSP) in accordance with 310 CMR 40.0440. These regulatory submittals will need to be prepared prior to construction phases of the Project. Furthermore, application conditions/obligations of the Activity and Use Limitations must be maintained during construction.

5.1.14 Construction Impacts

Construction of the project will result in temporary disruption to allow construction vehicle access to the work area. Depending on which alternative is selected, temporary construction access to and from the project corridor from local roadways will be required. Appropriate temporary traffic controls (TTC) will be required in the form of construction signing and temporary markings. Typical Traffic Management Plans (TMP) should be developed and included in the construction documents for construction access to/from these roadways.

A more detailed TMP may be required for access to the railbed from the entrance roadway to Wrentham Village Premium Outlets.

Greenway construction in Segment 1 will require measures to implement a Release Abatement Measure Plan to address site contamination at several locations in the project corridor.

5.1.15 Visual Impacts

For Segment 1 and Segment 3, the project proposes to construct a path along existing railbed. The extent of additional clearing and grading will be minimal since the railbed in those segments currently hosts trail activities such as walking, hiking and mountain biking. The visual impact may be beneficial as it will remove invasive plant species and some trash/debris from the former railbed.

For Segment 2, Alternative 2 (new trail from the railbed through the Rice Complex), clearing and grading for a trail on a new alignment will be required.

For Segment 2, Alternative 3 (new path along the side of MA 140), the area behind the roadway curb line is mostly a flat grassed area. Construction of a path would appear as a sidewalk of slightly wider than a typical sidewalk. Relocation of some existing walls and/or fences may be required in constrained areas.

5.1.16 Public Utilities

For Segment 1 (Plainville town line to Wrentham center), there are two (2) existing overhead electric transmission lines located along the proposed path alignment. It is anticipated that the 19 feet minimum ground clearance over roadways from the roadway surface to the maximum sag point of the overhead transmission will need to be maintained along the Greenway. The finish grade of the path should not be raised above existing elevations.

Based on the location of the proposed work and a field review, major impacts to electric facilities within the railbed are not anticipated along the corridor. Placement of a bicycle/pedestrian bridge over West Street (to replace the original RR bridge) will most likely require some modifications to the overhead utility lines on West Street.

In addition, coordination with National Grid will be required for the temporary protections during construction along the railbed/transmission corridor from the Plainville town line to Wrentham center. Coordination with National Grid for work along the transmission corridor will most likely require a submission to review and approve plans and construction activities, including a plan for maintenance and protection of the National Grid during construction. Upon approval of the construction work, National Grid may require safety inspections and scheduling. There may be a fee involved with the review and approval process.

For Segment 2, Alternative 3 (path along MA 140), some widening of the sidewalk area and minor utility cover and drainage modifications will be required. In addition, some utility pole relocations will be necessary to accommodate a separate shared-use path and maintain sufficient clear space between bicyclists and vertical obstructions.

5.1.17 Public Facilities

The proposed greenway will provide a pedestrian and bicycle connection from Plainville north through Wrentham center to Norfolk to the north that doesn't exist today. Ideally both Plainville and Norfolk will extend the SUP through their respective towns, providing an even greater degree of connectivity.

In Wrentham, the connection to the Rice Complex as part of Alternative 2 for Segment 2 is extremely desirable due to the recreation opportunities the facility provides.

5.1.18 Environmental Justice

According to the MassGIS database, the project is not located within an area identified as an Environmental Justice Zone.

5.1.19 Construction Cost

The estimated construction costs for the Greenway are summarized below:

SEGMENT	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
Segment 1	$4,247,500	$4,247,500	$4,247,500
Segment 2	*Along Railroad* $1,980,000	*Rice Complex* $5,425,000	*Route 140* $2,850,000
Segment 3	$726,875	$726,875	$704,875
Total Alternative	**$6,954,375**	**$10,399,375**	**$7,801,875**

These costs do not include right-of-way acquisition costs—which could be significant for Alternative 1. Refer to the Appendix for a detailed cost estimate breakdown, including contingencies and design costs.

5.1.20 Maintenance and Operations

Maintenance: Basic maintenance activities include keeping the trail surface free of debris, identifying and correcting surface hazards, keeping signs and pavement markings in good condition, and cutting back encroaching vegetation to maintain adequate sight distances on the path and at road crossings. Having a written operations and maintenance plan and an emergency response plan will also enable Town officials to determine manpower and budgets needed to implement these plans.

We recommend coordination with the Department of Public Works and the Recreation Department regarding access and maintenance so that their recommendations can be incorporated into the project design.

Operations: The goal of this project is a continuous facility for non-motorized travel suitable for use by both bicyclists and pedestrians. The alternatives presented comply with accepted industry standards and criteria for a SUP and encourage users to comply with uniform traffic operations and laws. The signs, pavement markings, and other amenities should be designed to convey that message using common standards of color, shape, and graphics as used on typical roadway signs without "over-signing" the natural landscape.

It is recommended that "trail use rules" be posted at trail access points, as appropriate.

It is also recommended that the Town review their existing by-laws as they relate to trails and shared-use facilities to verify if changes or additions are needed.

6.0 Conclusion

Existing Conditions and Next Steps

Segment 1 has the highest potential for a greenway in the short term because the parcel is physically intact and legally intact with a single property owner (National Grid) up to Creek Street. Provided that National Grid grants permission for the greenway, greenway construction is feasible from the Plainville line to Creek Street. North of Creek Street to Route 140, easements for the greenway will be required across the privately-owned parcel at William Galvin Way as well as the developer-owned parcel at the former Crosby Valve site.

For **Segment 2**, the portion of the original railbed from Route 140 up to Route 1A is still physically intact, but north of Route 1A, major lengths of the railbed have been obliterated by residential development. In some locations, the original right-of-way parcel lines have also been obliterated. Conversion of the intact former railbed from Route 140 up to Route 1A will require an at-grade crossing of Route 140 and right-of-way/easement actions and wetland permitting to connect to the Rice Complex. Conversion of the former railbed in Segment 2 north of Route 1A to a greenway is not a practical or feasible alternative because of the residential development and obliteration of the parcel lines.

Segment 3 is physically intact and privately-owned from a point 2,000 feet north of Winter Street to the Norfolk line, but this portion of the railbed dead ends at a location that makes connection to Route 1A and the Rice Complex difficult. Use of the existing utility easement from Route 1A to the former railbed is not feasible for a shared use path without additional right-of-way action. An alternative connection to Segment 1 via Route 140 was evaluated and is feasible but does not connect with the Rice Complex. An additional alternative is outlined below.

We recommend the Town consider phasing the development of the greenway with Segment 1 initially proceeding into preliminary design, right-of-way/easement negotiations, final design, and construction. Segment 1 can function as a stand-alone facility linking downtown Wrentham to the residential neighborhoods along Route 1A, the commercial areas near Plainville, and to the intact Town-owned railbed in Plainville.

Cushing Drive and Shire Drive Alternative

Based on the difficulty of connecting Segment 3 to the Rice Complex and the proposed greenway in Wrentham center, an alternative route connecting Segments 2 and 3 via Cushing Drive and Shire Drive is presented in the Appendix.

Action Items

Segment 1

- Meet with representatives of National Grid and property owners along the corridor south of Route 140 to discuss requirements for greenway construction along that corridor.
- Obtain additional funding for design and construction from Town budget and various trail funding sources such as the MassTrails Program at MassDOT and MassDCR.
- Complete the preliminary design and final design for Segment 1.

Segment 2

- Meet with property owners along the corridor from Route 140 to Route 1A to secure easements for a greenway connection from Route 140 to the Rice Complex.
- Obtain additional funding for design and construction from town budget and various trail funding sources such as the MassTrails Program at MassDOT and MassDCR.
- Complete the preliminary design and final design for Segment 2.

Segment 3

- Coordinate with the Town of Norfolk on greenway connection along the Cushing Drive/Shire Drive alternate.

Appendices

- Matrix
- Typical Sections
- Cost Estimate
- Maps
- Route 140 Town Center Concepts
- Cushing Drive and Shire Drive Alternative

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Alternatives Ranking Matrix - MGRT

#	Impact Criteria	Alternative 1 (along former railroad right of way)	Rank[1]	Alternative 2 (through Rice Complex)	Rank[1]	Alternative 3 (to Route 140)	Rank[1]
1.	Relocation Impacts and ROW Acquisition	Easements required from National Grid.	3	Impacts to two parcels in between rail corridor and Route 1A; may make use of previously established state easements. Coordination with Wrentham State School property. Impacts to private parcels near Route 1A bridge.	1	Some ROW strip takings needed along Route 140 frontage.	1
2.	Considerations Relating to Pedestrians and Bicyclists	Complete separation betweens bikes/peds and cars except at crossings	3	Bikes/peds mostly separated from traffic except at crossings	2	Shared use path (SUP) or on-street bike lanes would run parallel to Route 140	1
3.	Air Quality Impacts	No significant short-term air quality impacts from construction. Long-term, best air quality for path users.	3	No significant short-term air quality impacts from construction. Long-term, good air quality for path users.	3	No significant short-term air quality impacts from construction. Long-term, air quality not as good as other options for path users.	1
4.	Noise Impacts	Some impact to residential properties along existing rail corridor in terms of construction and long-term path use.	2	Minimal construction noise impacts. Minimal long-term trail use impacts.	3	Some impact to residential properties along Route 140 in terms of construction and long-term path use.	1
5.	Outstanding Resource Water (ORW) Impacts	All alternatives go through a public water supply watershed. The route along the original rail corridor has more impact to the ORW than the route through the Rice Complex and less impact than the path along Route 140.	2	All alternatives go through a public water supply watershed. The route through the Rice Complex has the least impact.	3	All alternatives go through a public water supply watershed. The route along Route 140 has the longest length of path within ORW of the alternatives.	1
6.	Wetlands	Minor wetland impacts along corridor near Route 1A bridge.	3	Significant wetland impacts from railroad corridor out to Route 1A and within the Rice Complex.	1	No wetland impacts.	3
7.	Floodplain Impacts	Minor floodplain impacts near Route 1A bridge.	2	Significant floodplain impacts from railroad corridor out to Route 1A and within the Rice Complex.	1	Minor floodplain impacts from railroad corridor out to Route 140.	3
8.	Certified Vernal Pools	All alternatives pass by Potential Vernal Pools, but no impacts to Certified Vernal Pools.	-	All alternatives pass by Potential Vernal Pools, but no impacts to Certified Vernal Pools.	-	All alternatives pass by Potential Vernal Pools, but no impacts to Certified Vernal Pools.	-
9.	Threatened or Endangered Species (NHESP)	Proposed alignment is in the proximity of NHESP Priority Habitats of Rare Species in Segment 1, but the areas are not directly affected.	-	Proposed alignment is in the proximity of NHESP Priority Habitats of Rare Species in Segment 1, but the areas are not directly affected.	-	Proposed alignment is in the proximity of NHESP Priority Habitats of Rare Species in Segment 1, but the areas are not directly affected.	-
10.	Areas of Critical Environmental Concern (ACEC)	No impacts anticipated.	-	No impacts anticipated.	-	No impacts anticipated.	-
11.	National Register Districts	Six Massachusetts Historical Commission properties within or nearby proposed alignment.	3	Seven Massachusetts Historical Commission properties within or nearby proposed alignment; one confirmed on National Register.	2	Eight Massachusetts Historical Commission properties within or nearby proposed alignment; one confirmed on National Register.	1
12.	Contaminated Sites	Release Abatement Measure (RAM) plan required for Segment 1.	3	Release Abatement Measure (RAM) plan required for Segment 1.	3	Release Abatement Measure (RAM) plan required for Segment 1.	3
13.	Construction Impacts	Once ROW is acquired, fewer construction obstacles compared to alternatives.	3	Boardwalk segments will lengthen construction duration.	2	Construction will impact traffic on Route 140.	1
14.	Visual Impacts	Clearing and grubbing required. Most of the trail visible only to trail users.	2	Some clearing and grubbing required. Visual enhancement to the Rice Complex area.	3	Most drastic visual change with the sidepath along Route 140.	1
15.	Public Utilities	No significant impacts anticipated.	3	Will affect some existing easements between railroad corridor and Route 1A.	2	Drainage modifications and utilitiy pole relocations will be required along Route 140.	1
16.	Public Facilities Connections	New connection from Town Center to Winter Street	2	Connection to the Rice Complex	3	No new connections; more bike/ped friendly on Route 140	1
17.	Environmental Justice	No impacts anticipated.	-	No impacts anticipated.	-	No impacts anticipated.	-
18.	Construction Cost	Excluding ROW acquisition costs, constructing the greenway on the existing railroad corridor is estimated to cost the least ($11.4M). Town approval to acquire existing residential properties unlikely.	3	Boardwalks and HAWK signal add to the cost ($17.0M).	1	Utility pole relocations and drainage modifications add to the cost for this alternative, but it is less expensive than going through the Rice Complex ($12.7M).	2
19.	Operations and Maintenance	Typical shared-use path maintenance and operations anticipated.	2	Additional maintenance will be required for the HAWK signal across Route 1A and the boardwalk segments in the wetlands.	1	Maintenance and plowing could be incorporated into the roadway/sidewalk plowing schedule.	3
	Final Score		**39**		**31**		**24**
	Final Ranking		**3**		**2**		**1**

[1] 3=Most Preferred, 1=Least Preferred

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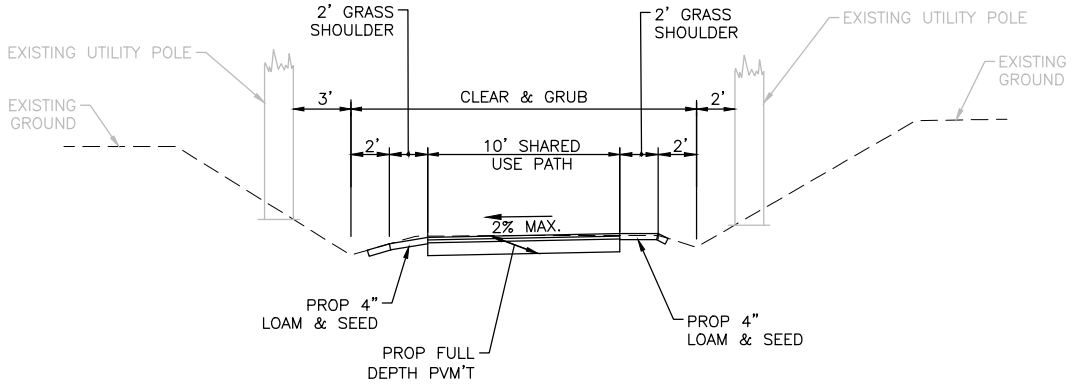


PROPOSED SECTION

SHARED USE PATH ON EXISTING RAILBED
WRENTHAM CENTER TO PLAINVILLE TOWN LINE
LOOKING SOUTH

EXISTING SECTION

FORMER RAIL BED
LOOKING SOUTH

PAVEMENT NOTES:

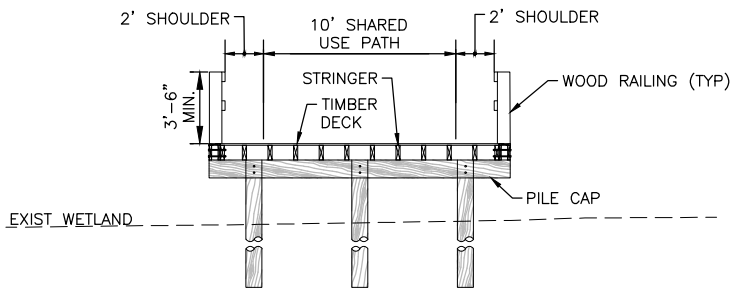
PROPOSED FULL DEPTH PAVEMENT

SURFACE: 1-3/4" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER
2-1/4" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC-19.0) OVER

SUBBASE: 8" GRAVEL BORROW, TYPE b

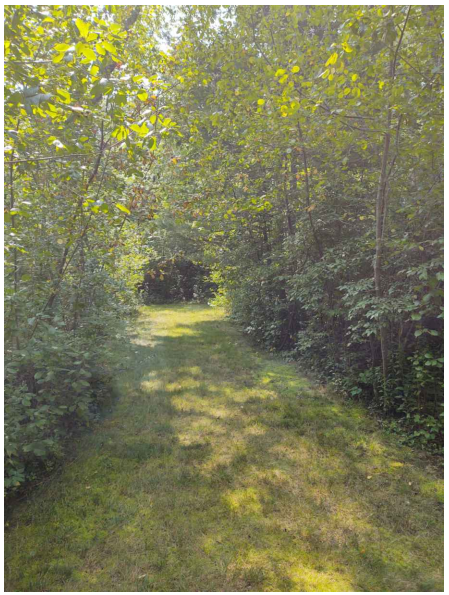
Typical Section
Metacomet Greenway Rail Trail
Town of Wrentham, MA

Segment No. 1



PROPOSED SECTION

BOARDWALK

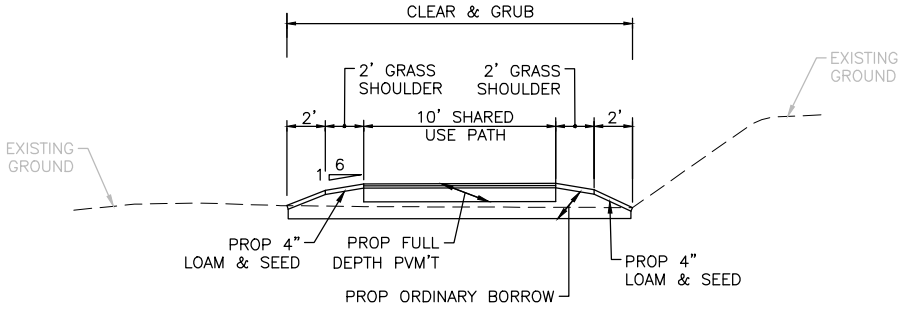


EXISTING SECTION

WETLAND AREA

Typical Section
Metacomet Greenway Rail Trail
Town of Wrentham, MA

Segment No. 2
Alt. 2



PROPOSED SECTION

SHARED USE PATH ON NEW ALIGNMENT
RICE COMPLEX
LOOKING SOUTH

PAVEMENT NOTES:

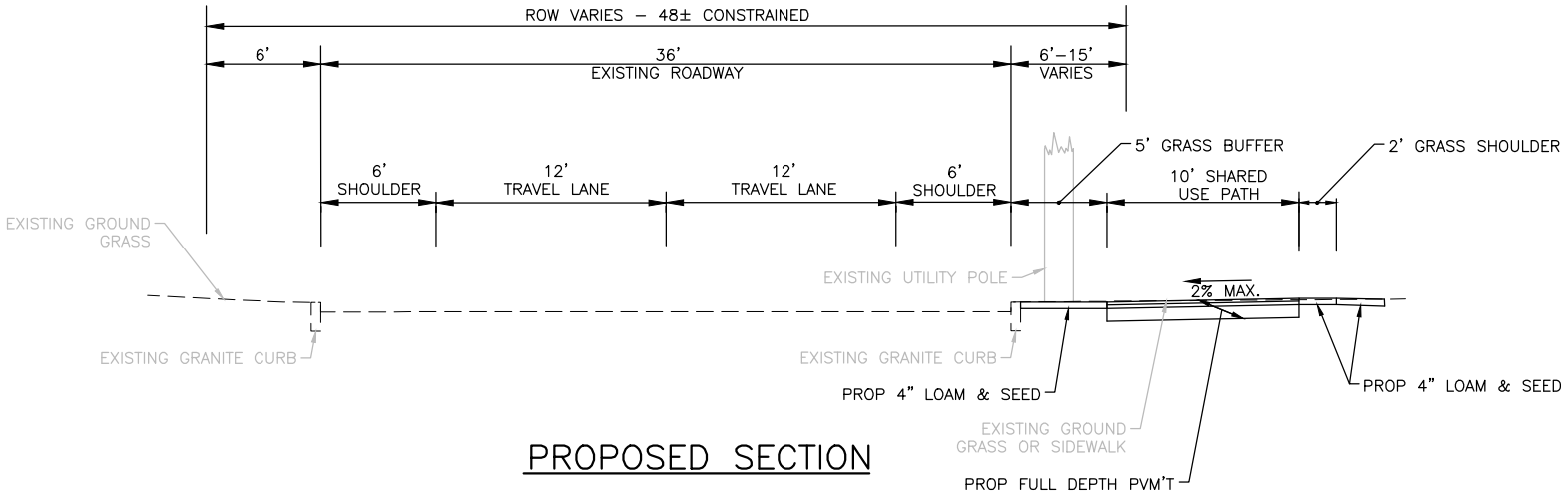
PROPOSED FULL DEPTH PAVEMENT

SURFACE: 1–3/4" SUPERPAVE SURFACE COURSE 12.5 (SSC–12.5) OVER
2–1/4" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC–19.0) OVER

SUBBASE: 8" GRAVEL BORROW, TYPE b

Typical Section
Metacomet Greenway Rail Trail
Town of Wrentham, MA

Segment No. 2
Alt. 2



PROPOSED SECTION

SHARED USE PATH SIDEPATH
EAST STREET (ROUTE 140)
LOOKING NORTH/WEST

EXISTING SECTION

EAST STREET (ROUTE 140)
LOOKING NORTH/WEST

PAVEMENT NOTES:

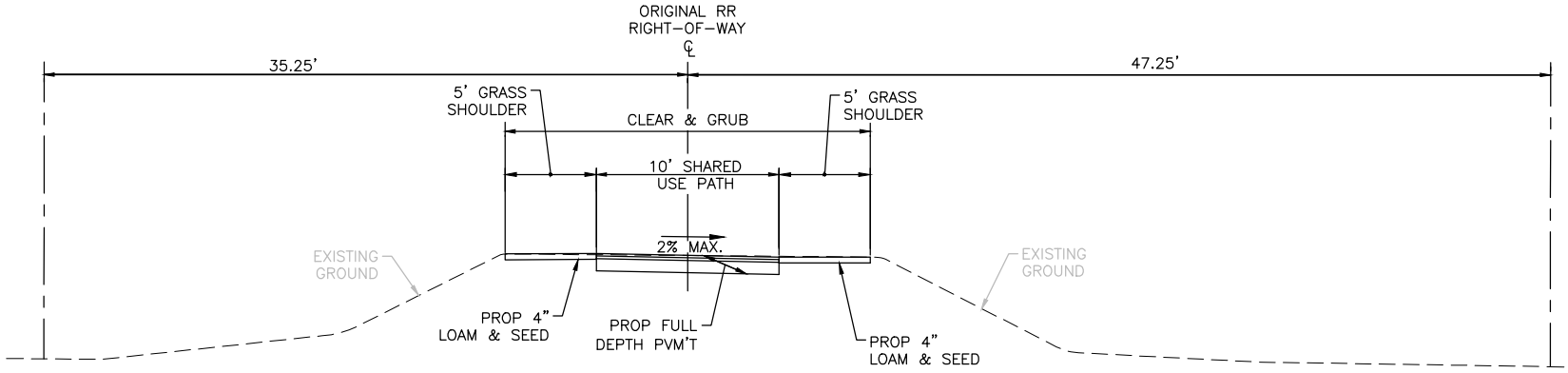
PROPOSED FULL DEPTH PAVEMENT

SURFACE: 1–3/4" SUPERPAVE SURFACE COURSE 12.5 (SSC–12.5) OVER 2–1/4" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC–19.0) OVER

SUBBASE: 8" GRAVEL BORROW, TYPE b

Typical Section
Shared-Use Sidepath
Metacomet Greenway Rail Trail
Town of Wrentham, MA

Segment No. 2
Alt. 3



PROPOSED SECTION

SHARED USE PATH ON EXISTING RAILBED
NORTH OF WINTER STREET
LOOKING SOUTH

EXISTING SECTION

FORMER RAILBED
NORTH OF WINTER STREET
LOOKING SOUTH

PAVEMENT NOTES:

PROPOSED FULL DEPTH PAVEMENT

SURFACE: 1-3/4" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER 2-1/4" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC-19.0) OVER

SUBBASE: 8" GRAVEL BORROW, TYPE b

Typical Section
Metacomet Greenway Rail Trail
Town of Wrentham, MA

Segment No. 3

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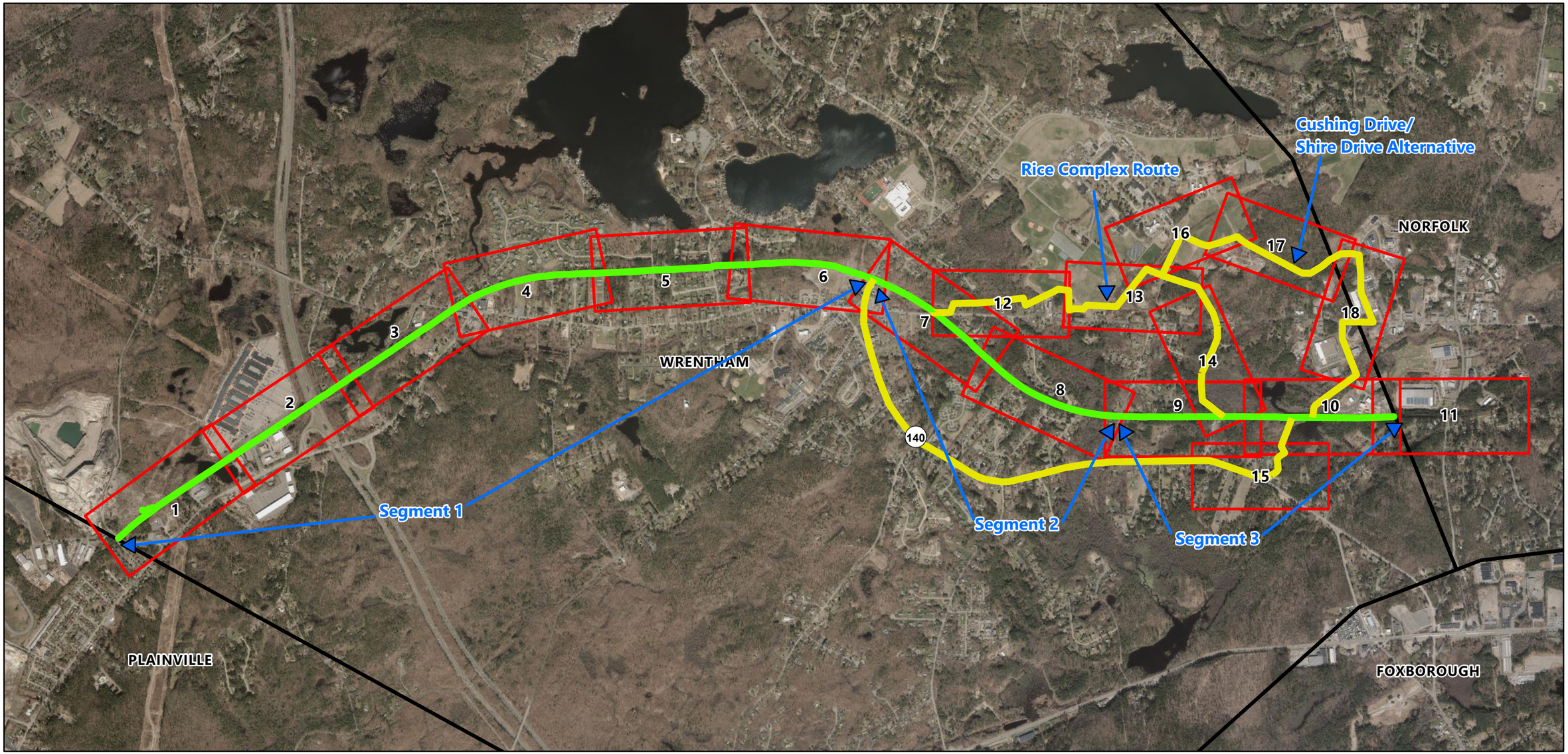
Figure 1: Overview/Index Map

Metacomet Greenway | Wrentham, Massachusetts



0 2,000 4,000 6,000 Feet

Rail Trail Route

Alternate Trail Route

Map Index

Town Line

Source: VHB, MassGIS, ArcGIS Online

Alternative 1 - Segment 1 railbed/Segment 2 railbed/Segment 3 railbed

Alternative 2 - Segment 1 railbed/Segment 2 Rice Complex Route/Segment 3 railbed

Alternative 3 - Segment 1 railbed/Segment 2 Route 140/Segment 3 railbed

Alternative 4 - Segment 1 railbed/Segment 2 Rice Complex/ Segment 3 Cushing Drive/Shire Drive Alternative

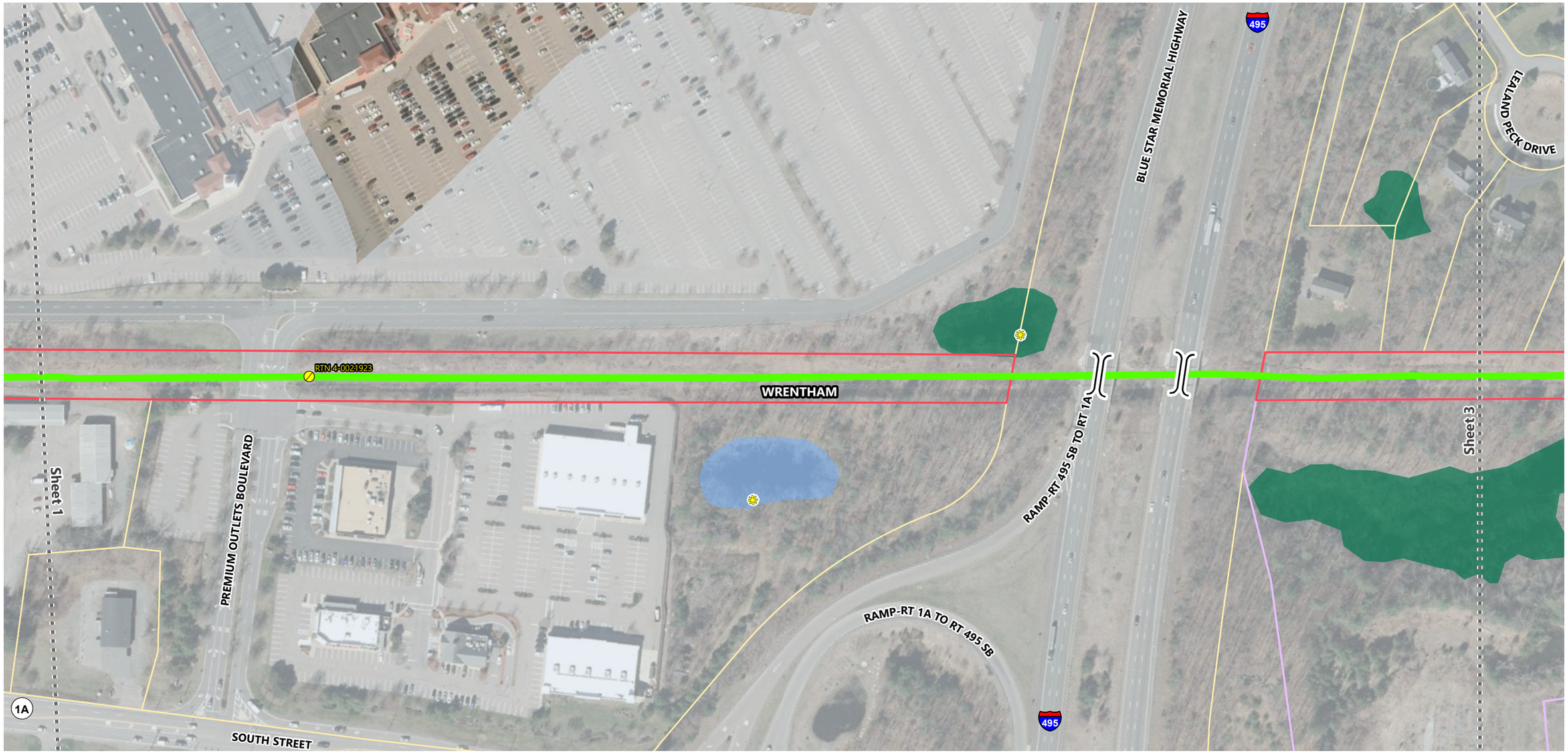
Figure 2: Detail Map

Metacomet Greenway | Wrentham, Massachusetts

Source: VHB, MassGIS, ArcGIS Online

Figure 2: Detail Map

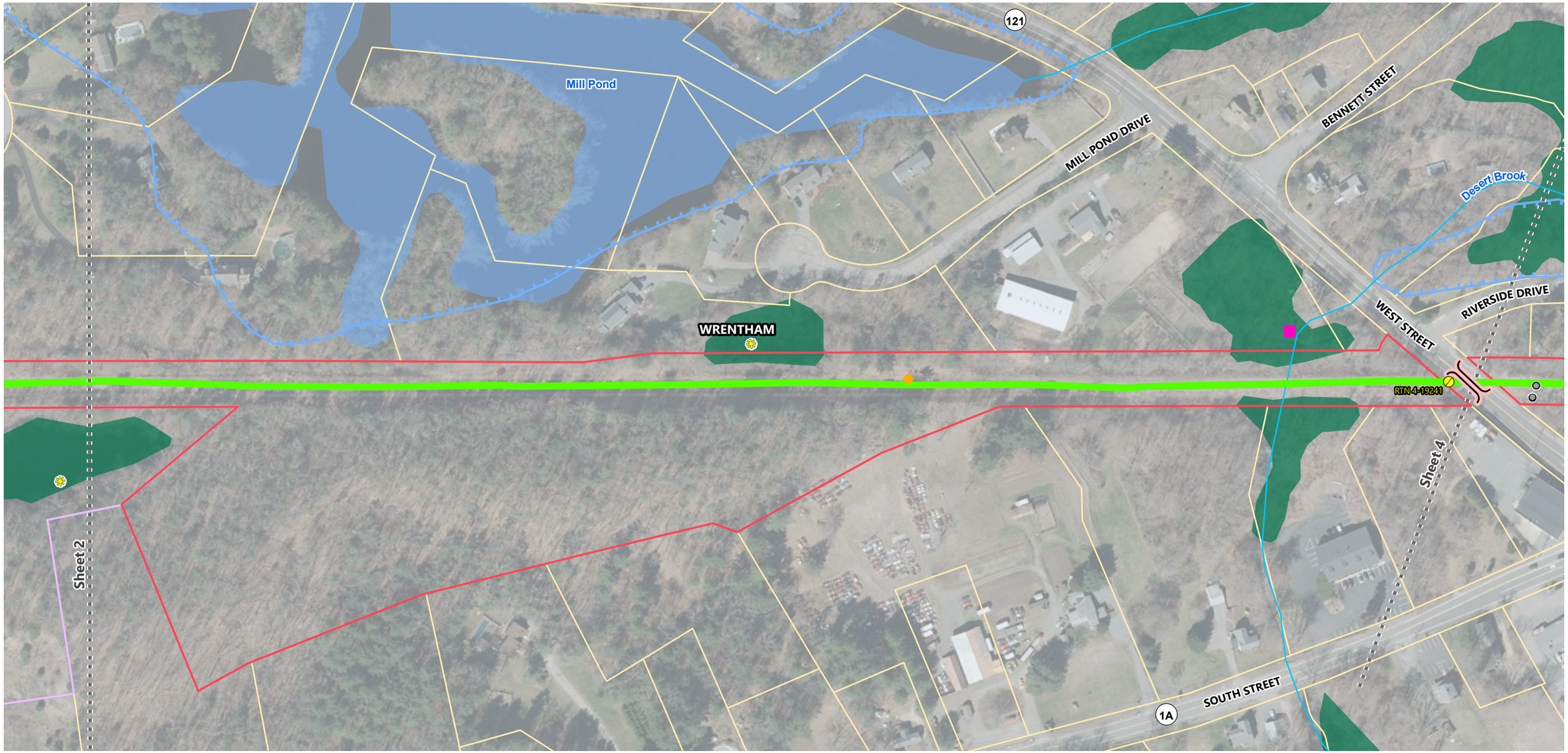
Metacomet Greenway | Wrentham, Massachusetts



Source: VHB, MassGIS, ArcGIS Online

Figure 2: Detail Map

Metacomet Greenway | Wrentham, Massachusetts



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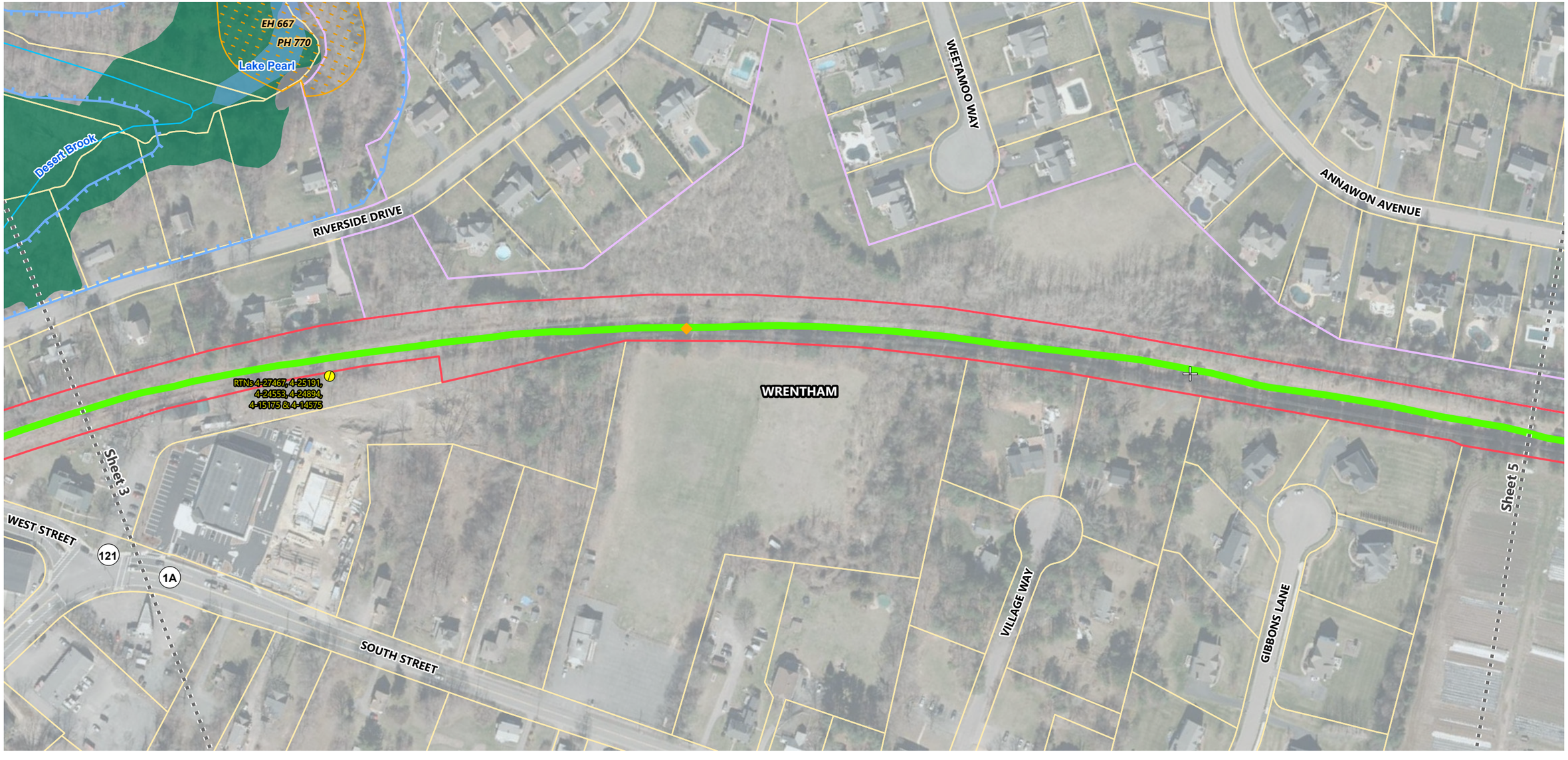
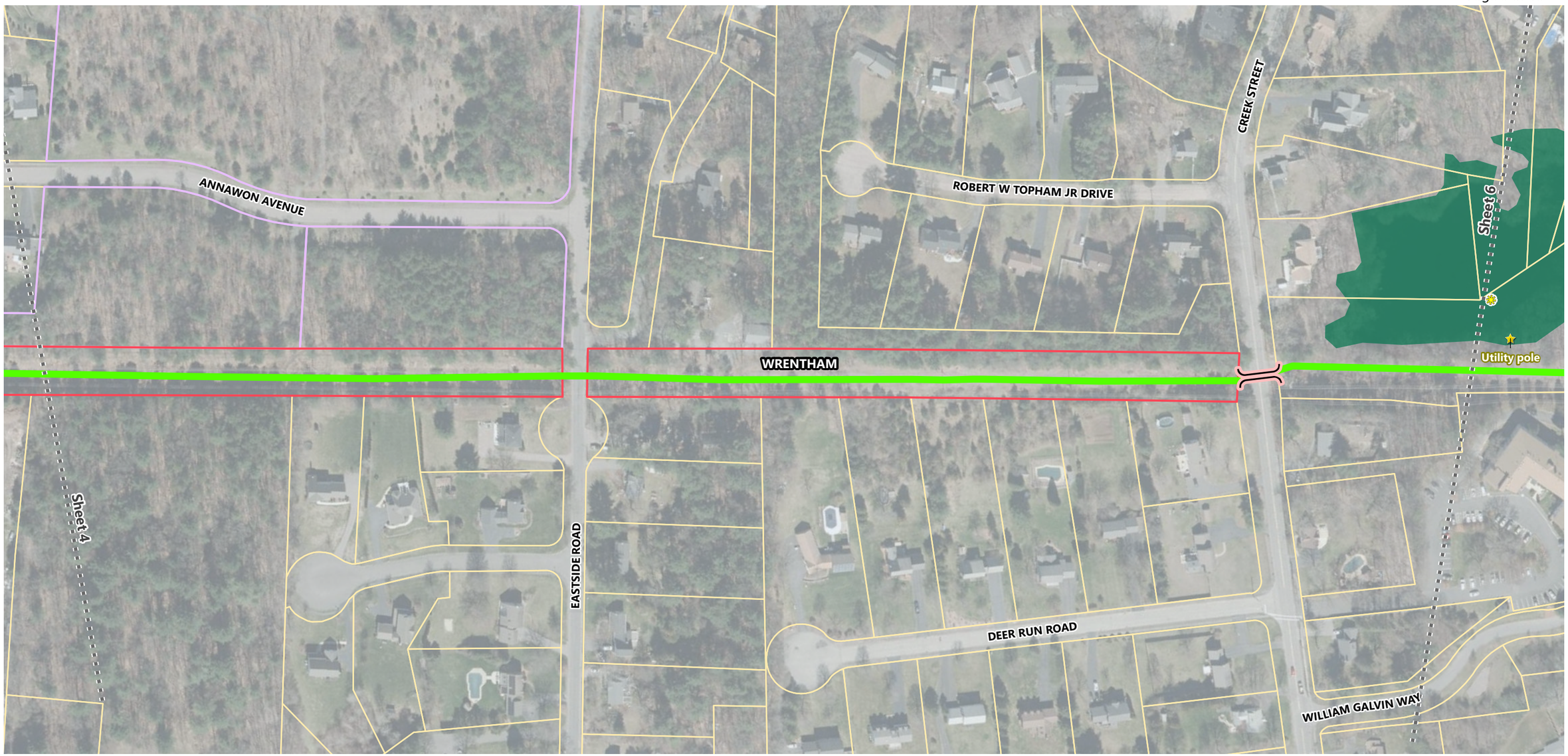


Source: VHB, MassGIS, ArcGIS Online

Figure 2: Detail Map

Metacomet Greenway | Wrentham, Massachusetts



Source: VHB, MassGIS, ArcGIS Online

Figure 2: Detail Map

Metacomet Greenway | Wrentham, Massachusetts

Source: VHB, MassGIS, ArcGIS Online

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Metacomet Greenway | Wrentham, Massachusetts

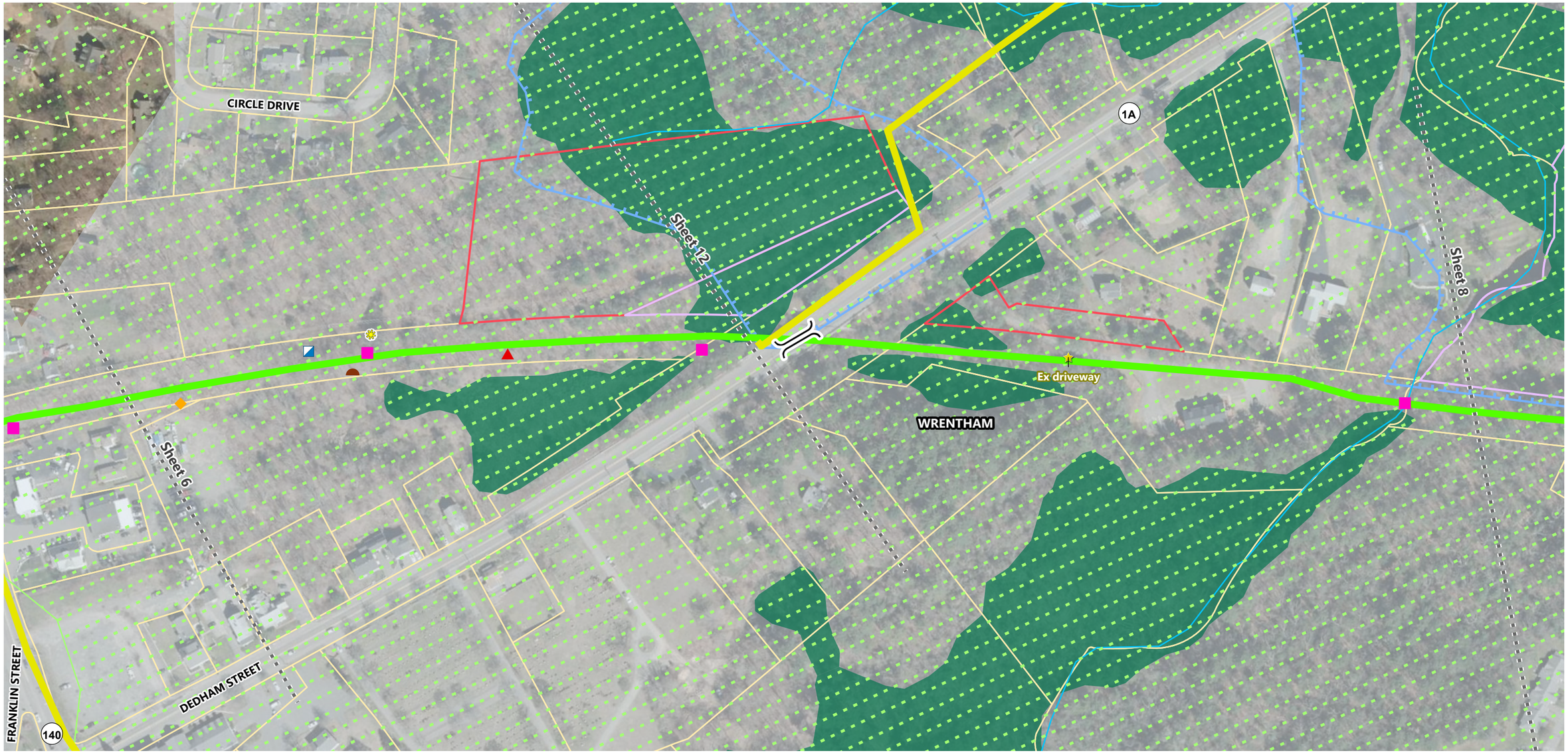

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Figure 2: Detail Map

Metacomet Greenway | Wrentham, Massachusetts

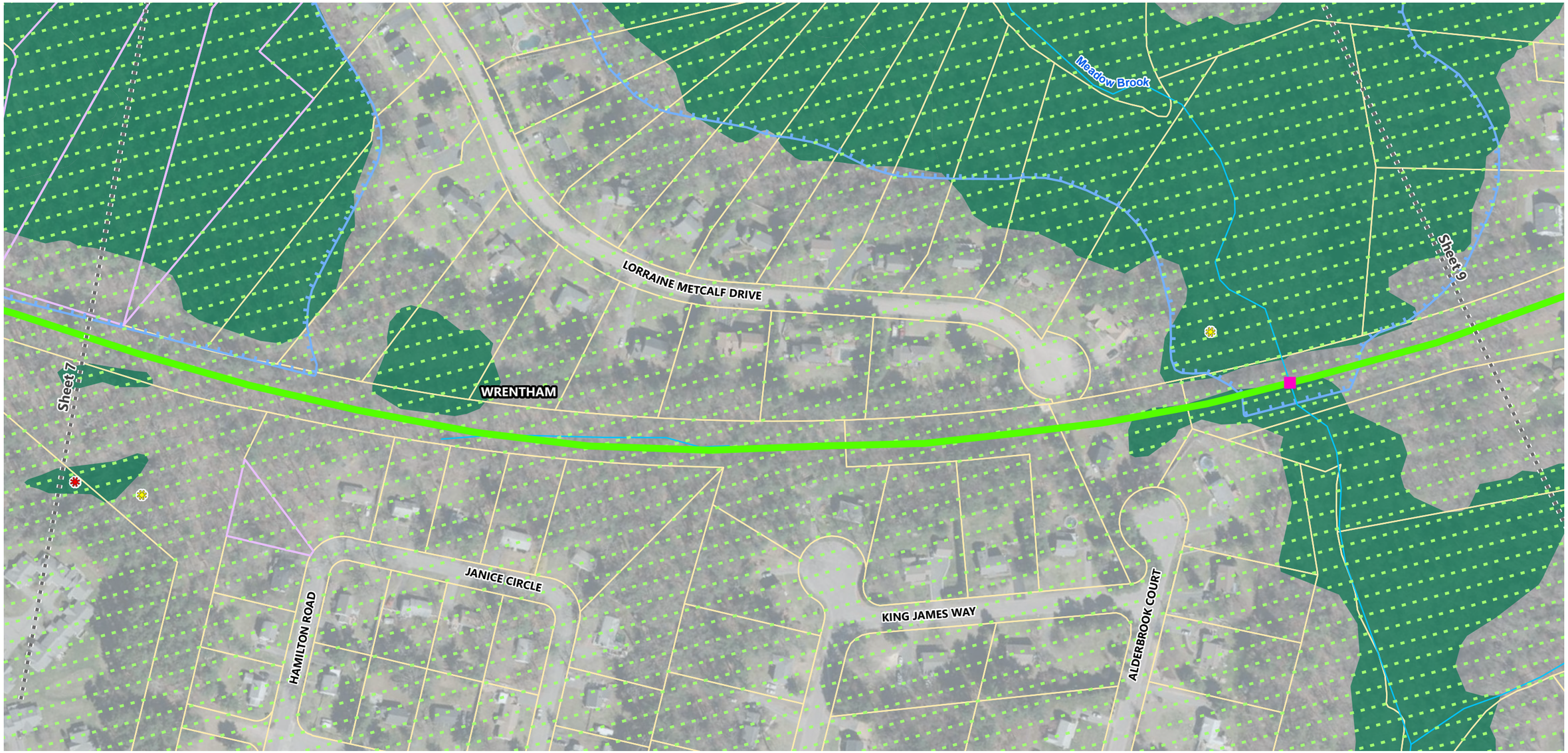

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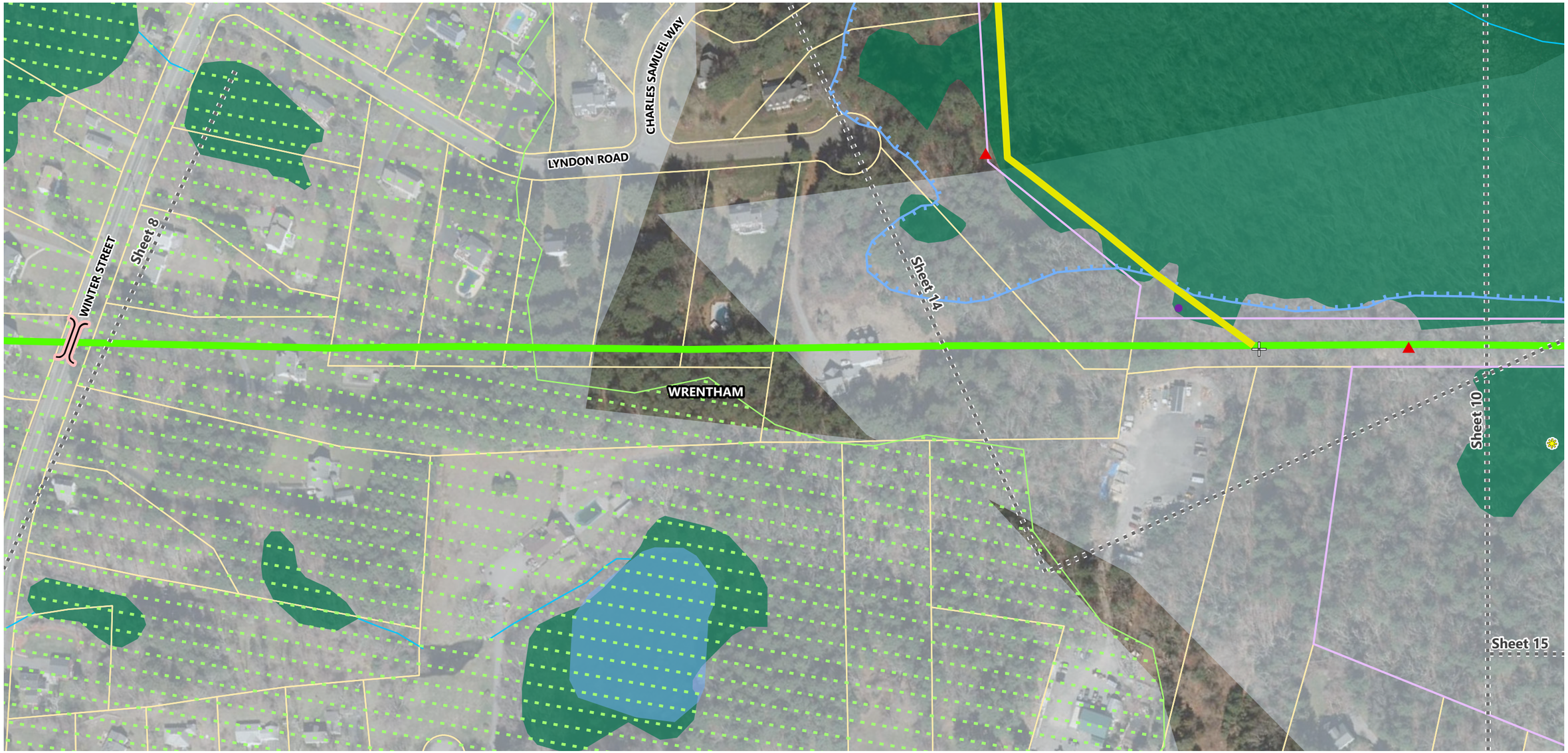
Figure 2: Detail Map

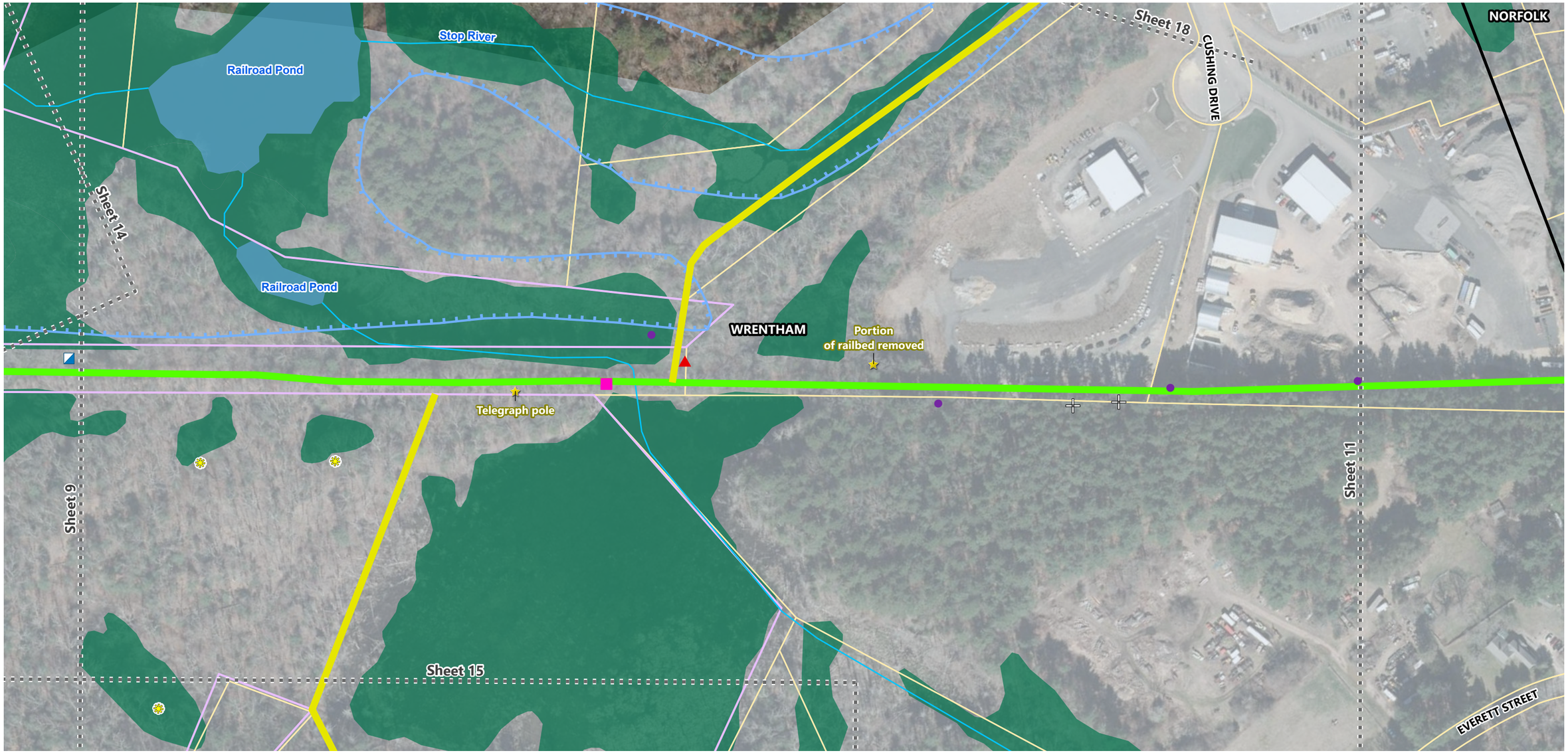
Metacomet Greenway | Wrentham, Massachusetts



Source: VHB, MassGIS, ArcGIS Online

Figure 2: Detail Map

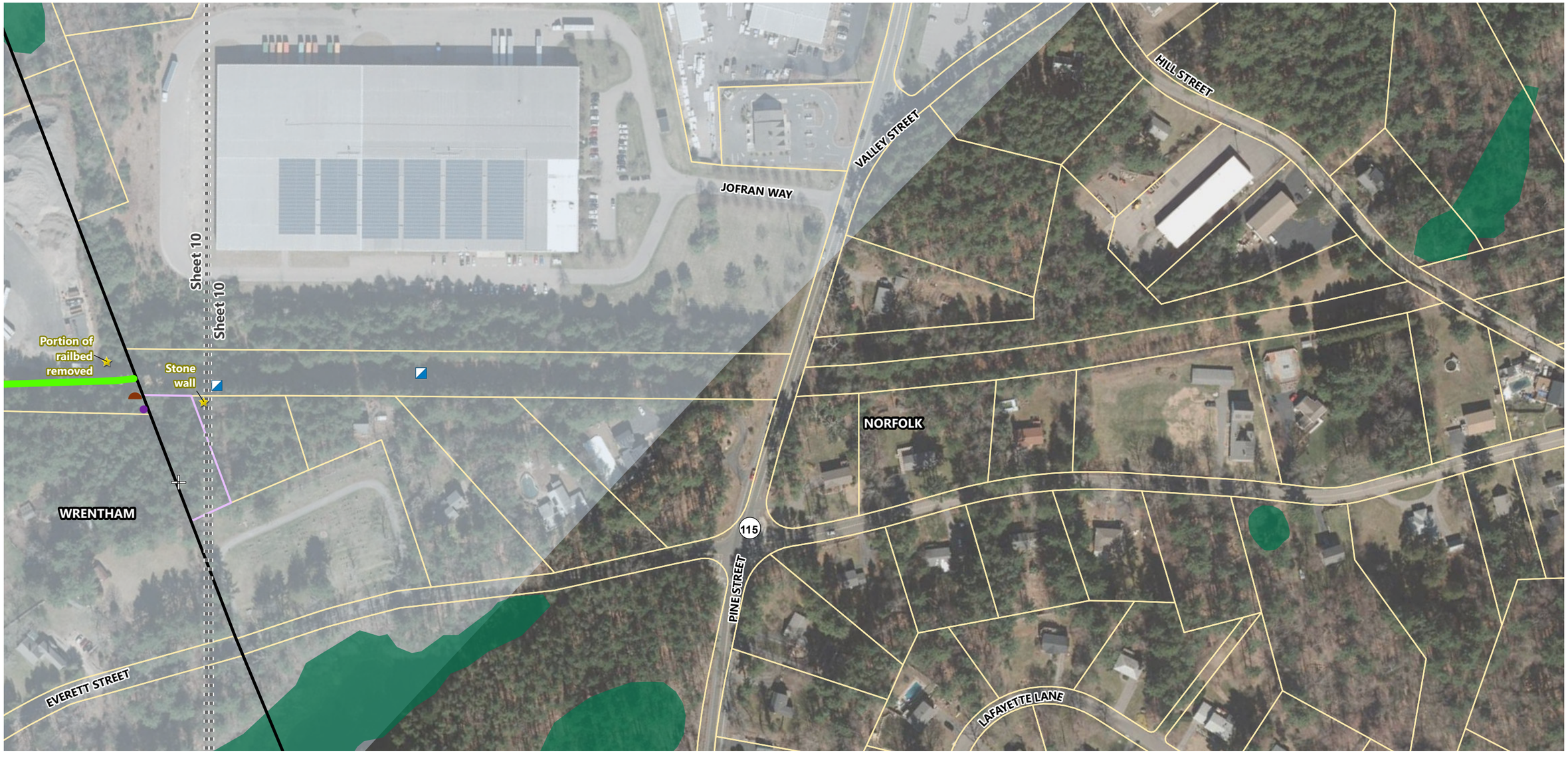
Metacomet Greenway | Wrentham, Massachusetts



Source: VHB, MassGIS, ArcGIS Online

Figure 2: Detail Map

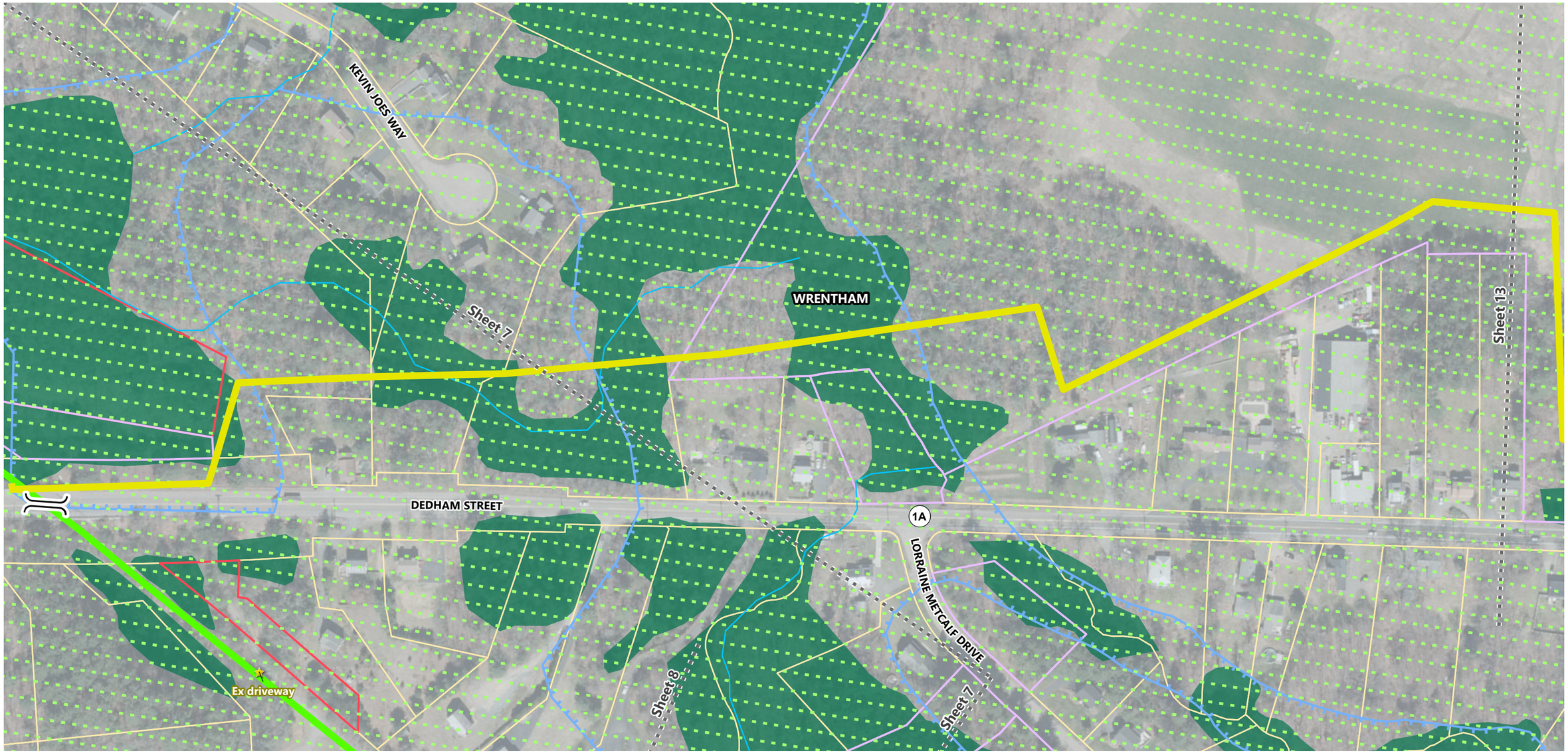
Metacomet Greenway | Wrentham, Massachusetts



Source: VHB, MassGIS, ArcGIS Online

Figure 2: Detail Map

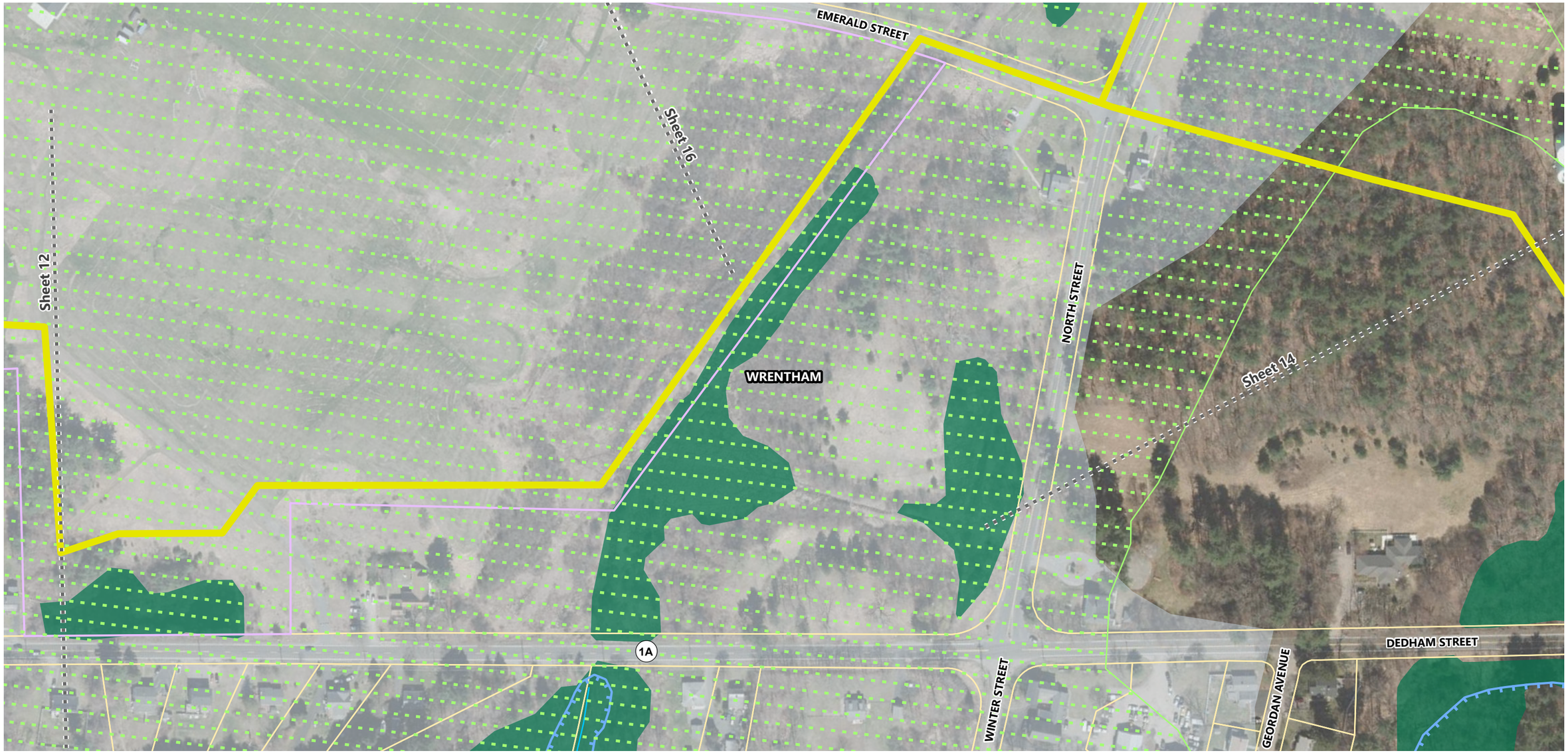
Metacomet Greenway | Wrentham, Massachusetts



Source: VHB, MassGIS, ArcGIS Online

Figure 2: Detail Map

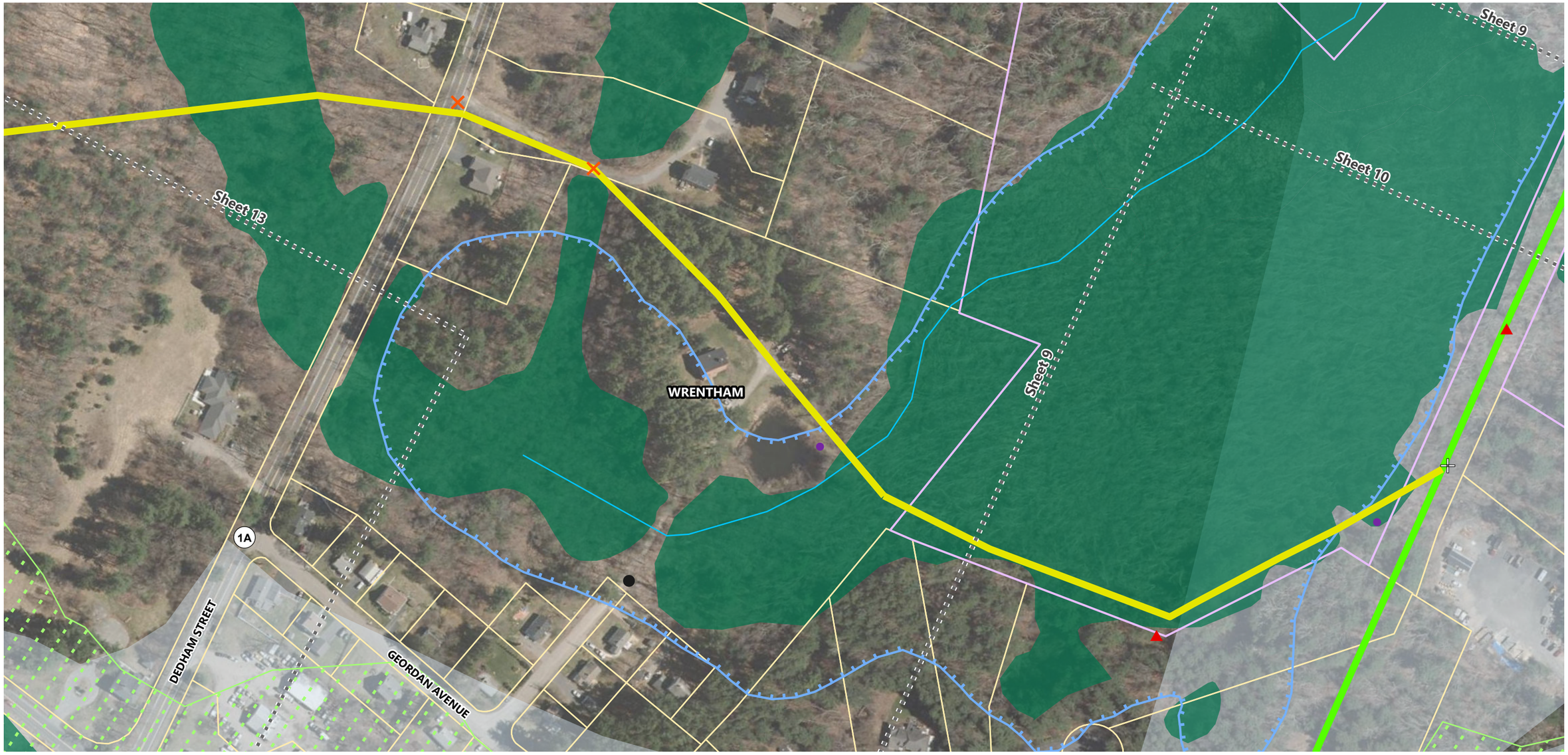
Metacomet Greenway | Wrentham, Massachusetts



Source: VHB, MassGIS, ArcGIS Online

Figure 2: Detail Map

Metacomet Greenway | Wrentham, Massachusetts



Source: VHB, MassGIS, ArcGIS Online

Figure 2: Detail Map

Metacomet Greenway | Wrentham, Massachusetts

Source: VHB, MassGIS, ArcGIS Online

Figure 2: Detail Map

Metacomet Greenway | Wrentham, Massachusetts

Source: VHB, MassGIS, ArcGIS Online

Figure 2: Detail Map

Metacomet Greenway | Wrentham, Massachusetts

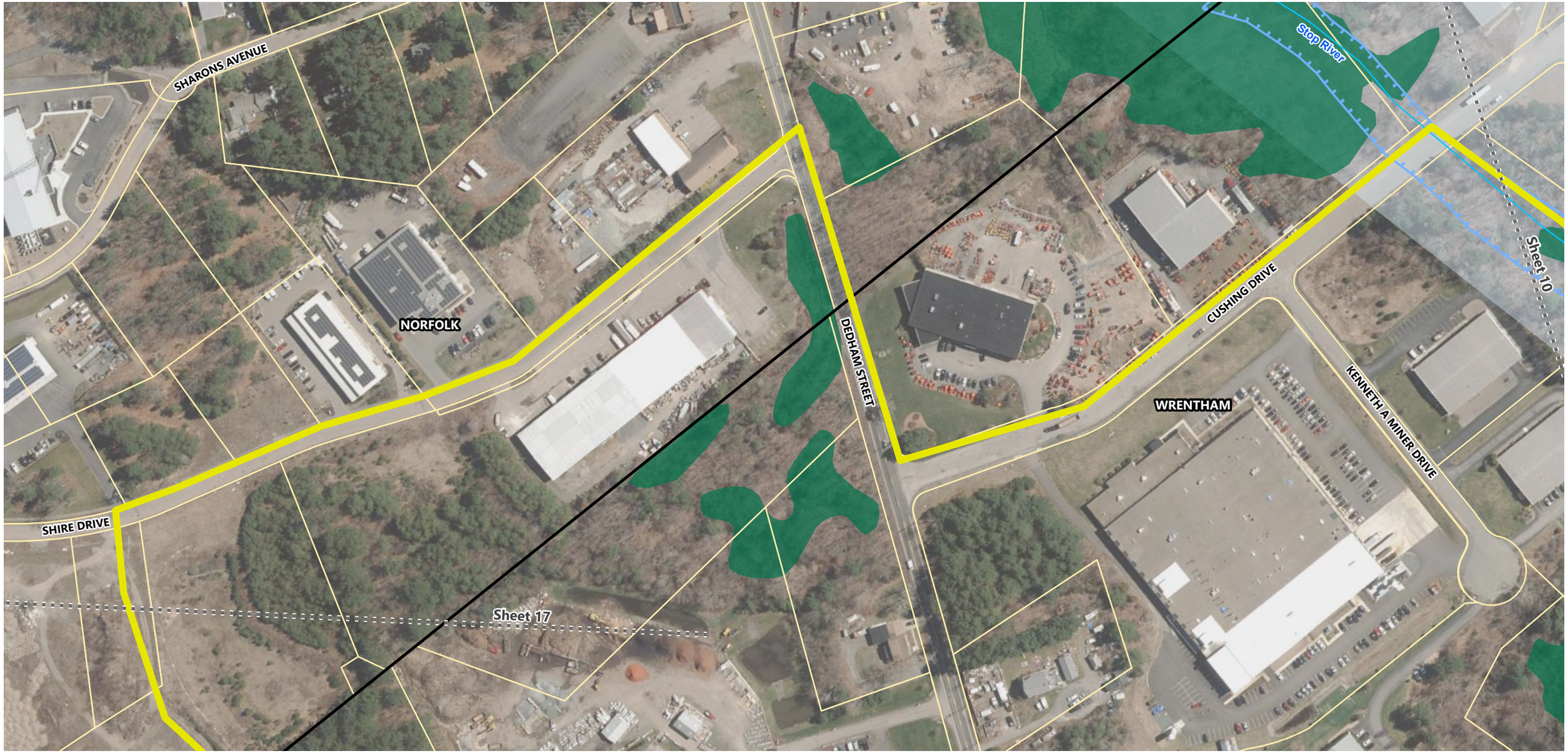
0 175 350 525 Feet

- Rail Trail Route
- Spur Trail Route
- Alternate Trail Route
- Town Boundary
- Private Owned Parcel
- Public Owned Parcel
- Utility Owned Parcel
- Parcel Boundary
- MassDEP Streams
- Waterbodies
- Wetlands (MassDEP)
- Outstanding Water Resource
- FEMA 100-Year Flood Zone
- Certified Vernal Pool
- Potential Vernal Pool
- MassDEP Disposal Sites
- NHESP Prioirty and Estimated Habitat
- Approved Wellhead Protection Areas (Zone II)
- National Register of Historic Places
- Inventoried Property
- National Register of Historic Places
- Inventoried Area
- Existing Roadway
- Roadway Grade Crossing
- Railroad Pass
- Powerline
- Culvert
- Cut Section
- Fill Section
- Post
- Point of Interest
- Existing Footpath
- Trail Intersection
- Angle Point in EX Trail
- Concrete Barrier
- Fence
- Private Road
- Sheet Match Lines
- Existing Bridge
- Missing Bridge

Source: VHB, MassGIS, ArcGIS Online

Figure 2: Detail Map

Metacomet Greenway | Wrentham, Massachusetts



Source: VHB, MassGIS, ArcGIS Online

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Metacomet Greenway Rail Trail - Wrentham, MA
Preliminary Construction Cost Estimate - February 2022

Alternative 1	Existing Feature	Proposed Treatment	Length	Approx. Cost (per ft)	Estimated Construction Cost	Notes
Segment 1	Dirt path along existing utility corridor	Off-Road Shared Use Path	16,500	$200.00	$3,300,000.00	
	Wrentham Village Outlets signal	Signal Modifications			$50,000.00	
	West Street crossing	Bike/Pedestrian Bridge	125	$5,500.00	$687,500.00	- Grade difference between existing path and road make bridge necessary
		Utility Modifications			$150,000.00	- Utility pole and wire relocations
	Creek Street crossing	Rapid Rectangular Flashing Beacon (RRFB)			$30,000.00	
	Route 140 (Franklin Street) crossing	Rapid Rectangular Flashing Beacon (RRFB)			$30,000.00	
Segment 2 - Alt. 1	Original rail corridor through residential parcels	Off-Road Shared Use Path	7,800	$250.00	$1,950,000.00	- Right-of-way costs will be additional
	Winter Street crossing	Rapid Rectangular Flashing Beacon (RRFB)			$30,000.00	
Segment 3	Existing wooded footpath	Off-Road Shared Use Path	3,400	$200.00	$680,000.00	
		RR Tie Disposal			$46,875.00	125 tons at $375/ton
Miles:	5.27	Linear Feet:	27,825	**Subtotal**	**$6,954,375.00**	

Alternative 2	Existing Feature	Proposed Treatment	Length	Approx. Cost (per ft)	Estimated Construction Cost	Notes
Segment 1	Dirt path along existing utility corridor	Off-Road Shared Use Path	16,500	$200.00	$3,300,000.00	
	Wrentham Village Outlets signal	Signal Modifications			$50,000.00	
	West Street crossing	Bike/Pedestrian Bridge	125	$5,500.00	$687,500.00	- Grade difference between existing path and road make bridge necessary
		Utility Modifications			$150,000.00	- Utility pole and wire relocations
	Creek Street crossing	Rapid Rectangular Flashing Beacon (RRFB)			$30,000.00	
	Route 140 (Franklin Street) crossing	Rapid Rectangular Flashing Beacon (RRFB)			$30,000.00	
Segment 2 - Alt. 2	Rice Complex / State School property	Off-Road Shared Use Path	8,300	$250.00	$2,075,000.00	
	Route 1A (Dedham Street) crossing	High-Intensity Activated Crosswalk Beacon (HAWK)			$100,000.00	
	Existing easements in residential area	Off-Road Shared Use Path	1,000	$250.00	$250,000.00	
	Wetland area	Boardwalk	2,500	$1,200.00	$3,000,000.00	
Segment 3	Existing wooded footpath	Off-Road Shared Use Path	3,400	$200.00	$680,000.00	
		RR Tie Disposal			$46,875.00	125 tons at $375/ton
Miles:	6.03	Linear Feet:	31,825	**Subtotal**	**$10,399,375.00**	

Alternative 3	Existing Feature	Proposed Treatment	Length	Approx. Cost (per ft)	Estimated Construction Cost	Notes
Segment 1	Dirt path along existing utility corridor	Off-Road Shared Use Path	16,500	$200.00	$3,300,000.00	
	Wrentham Village Outlets signal	Signal Modifications			$50,000.00	
	West Street crossing	Bike/Pedestrian Bridge	125	$5,500.00	$687,500.00	- Grade difference between existing path and road make bridge necessary
		Utility Modifications			$150,000.00	- Utility pole and wire relocations
	Creek Street crossing	Rapid Rectangular Flashing Beacon (RRFB)			$30,000.00	
	Route 140 (Franklin Street) crossing	Rapid Rectangular Flashing Beacon (RRFB)			$30,000.00	
Segment 2 - Alt. 3	Route 140 (Franklin Street)	Shared Use Path Side-Path w/ Buffer	11,000	$250.00	$2,750,000.00	- Right-of-way costs will be additional
		Utility/Drainage Modifications			$100,000.00	
Segment 3	Existing wooded footpath	Off-Road Shared Use Path	3,400	$200.00	$680,000.00	
		RR Tie Disposal			$24,375.00	65 tons at $375/ton
Miles:	5.88	Linear Feet:	31,025	**Subtotal**	**$7,801,875.00**	

Additional Notes:

- Assume 10-foot path for trail with 5-foot shoulders where possible.
- Right-of-way acquisitions and easements are not included.
- Assumes that wayfinding signage, benches, and other amenities are covered under contingencies.
- No major lookout or hardscape features anticipated.
- No path/street lighting included.
- Boardwalk has been assumed to be H-10 loading for emergency vehicle access.

Total Projected Costs:	Alt. 1	Alt. 2	Alt. 3
Subtotal (from above):	$6,954,375.00	$10,399,375.00	$7,801,875.00
Traffic Management 1%	$69,543.75	$103,993.75	$78,018.75
Mobilization 3%	$208,631.25	$311,981.25	$234,056.25
Police Details 3%	$208,631.25	$311,981.25	$234,056.25
Construction Oversight 10%	$695,437.50	$1,039,937.50	$780,187.50
Construction Contingency 10%	$695,437.50	$1,039,937.50	$780,187.50
Construction Subtotal	**$8,832,056.25**	**$13,207,206.25**	**$9,908,381.25**
Inflation (3%/year over 5 years)	$1,406,717.58	$2,103,565.55	$1,578,148.25
Construction Total	$10,238,773.83	$15,310,771.80	$11,486,529.50
CONSTRUCTION TOTAL	**$10,300,000.00**	**$15,400,000.00**	**$11,500,000.00**
Design Fee (15% of subtotal before contingencies)	$1,043,156.25	$1,559,906.25	$1,170,281.25
DESIGN TOTAL	**$1,100,000.00**	**$1,600,000.00**	**$1,200,000.00**
PROJECT TOTAL	**$11,400,000.00**	**$17,000,000.00**	**$12,700,000.00**

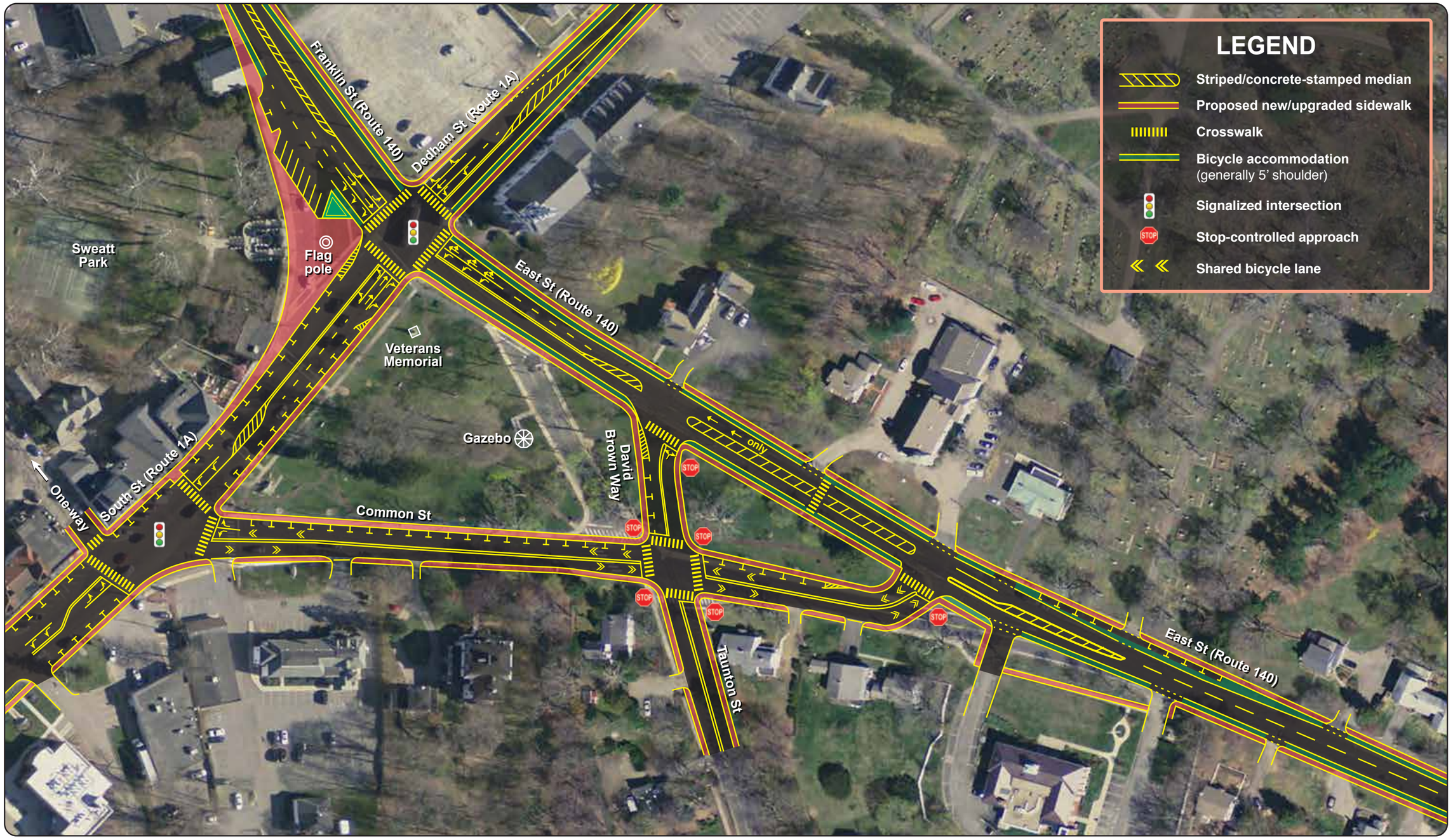

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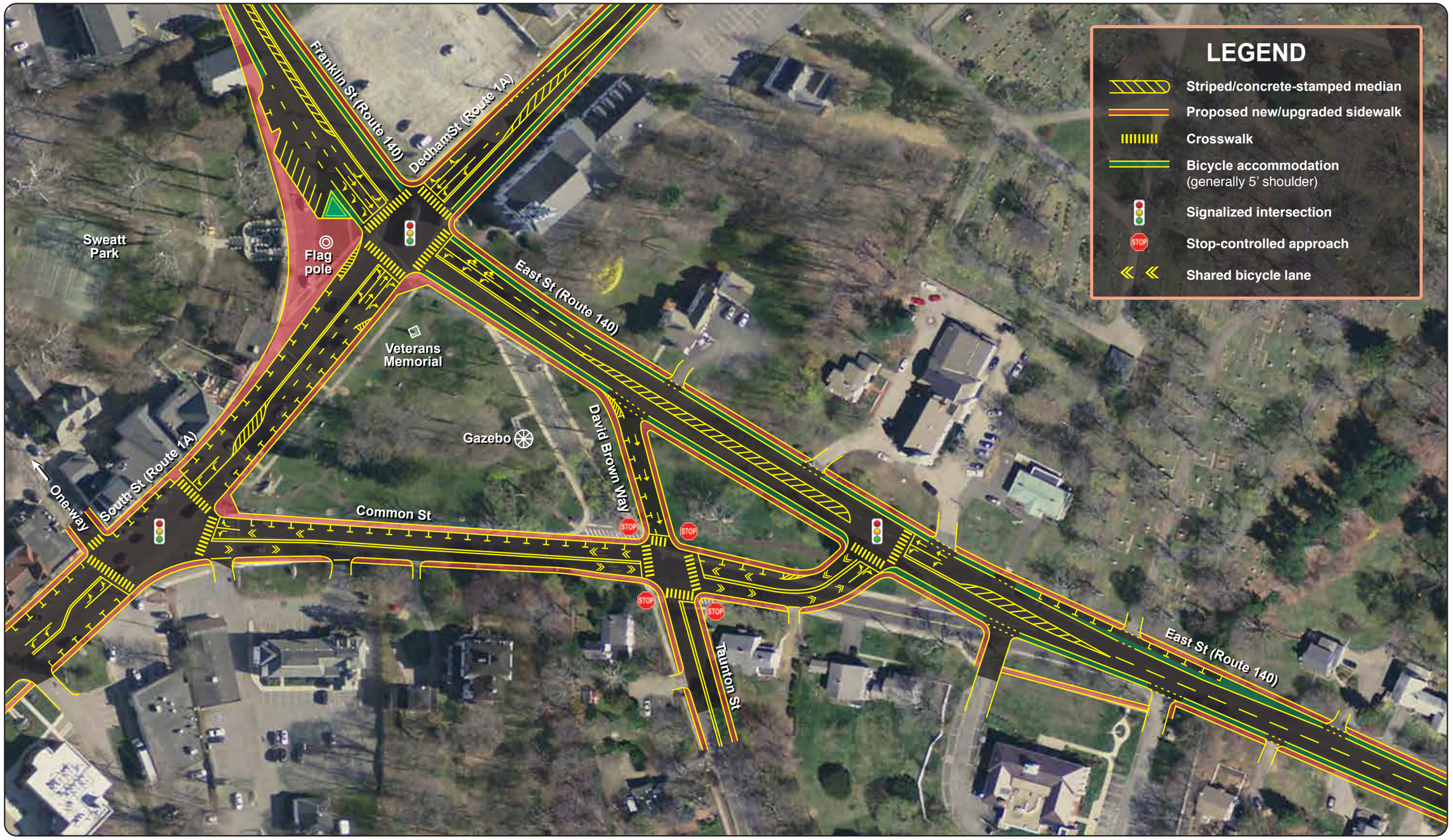
Figure 10
Proposed Long-Term Improvements: Wrentham Common Area Plan A
Route 1A in Wrentham

Addressing Safety, Mobility, and Access on Subregional Priority Roadways



BOSTON REGION MPO

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Figure 11
Proposed Long-Term Improvements: Wrentham Common Area Plan B
Route 1A in Wrentham

Addressing Safety, Mobility, and Access on Subregional Priority Roadways

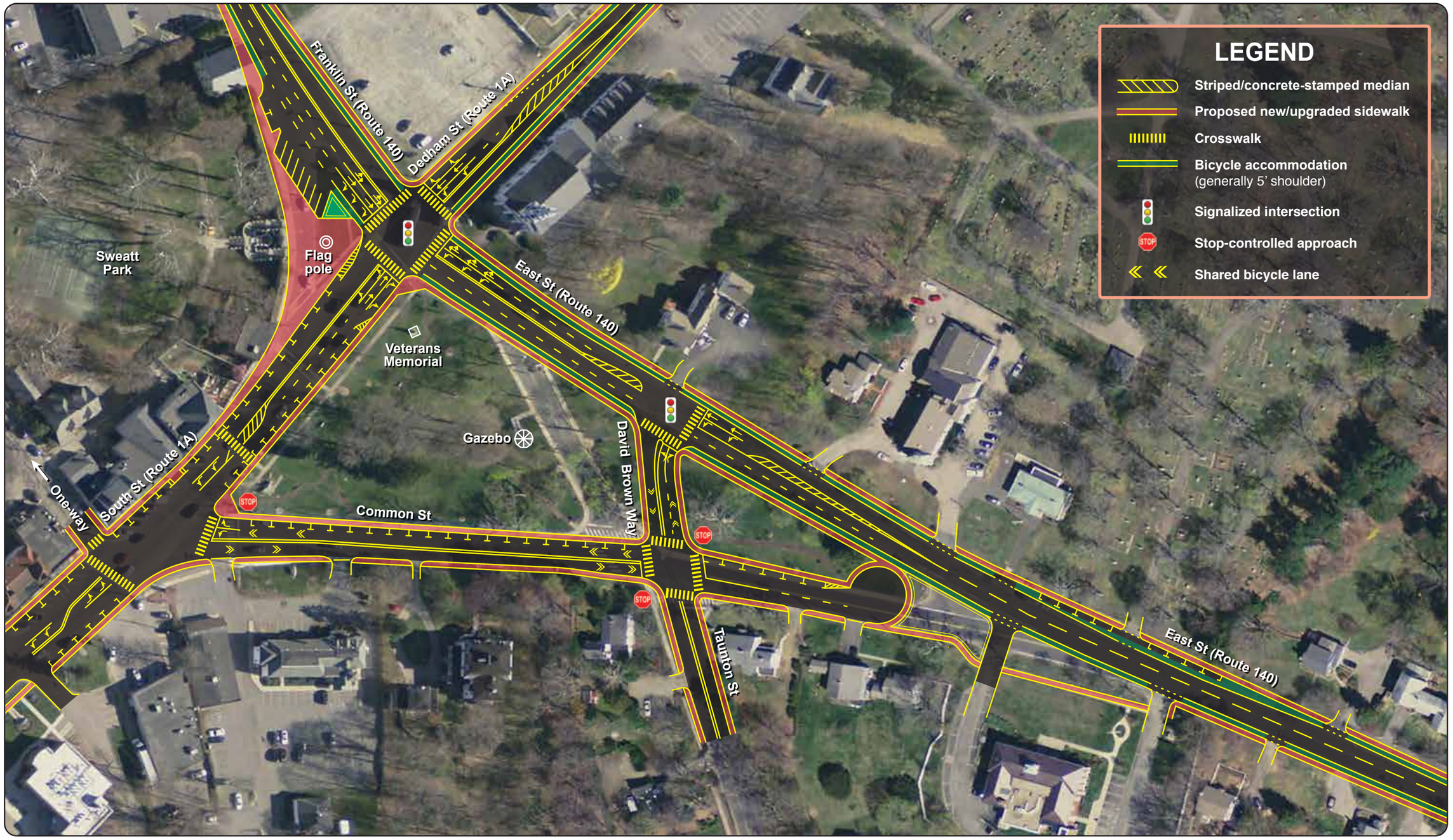

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Figure 12
Proposed Long-Term Improvements: Wrentham Common Area Plan C
Route 1A in Wrentham

Addressing Safety, Mobility, and Access on Subregional Priority Roadways

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Cushing Drive and Shire Drive Alternative

As a result of discussion with the Town of Norfolk, an additional potential greenway route was evaluated. From talks with the Towns and the Metacomet Greenway Association, it's clear that the connection between Segments 2 and 3 – from the former railbed, across private property to Route 1A then to the Rice Complex – will be difficult due to both environmental impacts, right-of-way acquisitions, and engineering constraints.

The Cushing Drive/Shire Drive alternative diverts from the former railbed in Segment 3, making use of an existing footpath connection to Cushing Drive. The greenway would then follow the north side of Cushing Drive as a shared-use path along the roadway ("sidepath") out to Route 1A, travel north along Route 1A as a sidepath to Shire Drive, cross Route 1A to the north side of Shire Drive, and then follow Shire Drive as a sidepath to the new housing development at Weber Farm Road. From there, the greenway would follow Weber Farm Road as an on-road bikeway until meeting State/Town-owned property and traversing this property past the dog park out to North Street. The proposed path would then be a side path on the side of North Street and Emerald Street to connect to Segment 2 at the Rice Complex.

Advantages to this new proposed route as compared to Segment 2, Alternative 2 as detailed in the feasibility study include simpler right-of-way negotiations, reduced wetland impacts, and a more optimal location for the Route 1A crossing due to lower vehicle speeds near the Route 1A/Route 115 signalized intersection and more favorable existing vertical geometry for sight distance. This alternative crosses back into Norfolk at Shire Drive, requiring coordination between the Towns.

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