

Ashokan Rail Trail Connection Feasibility Study

*City of Kingston to the Town of Woodstock
Ulster County, NY*

May 2023

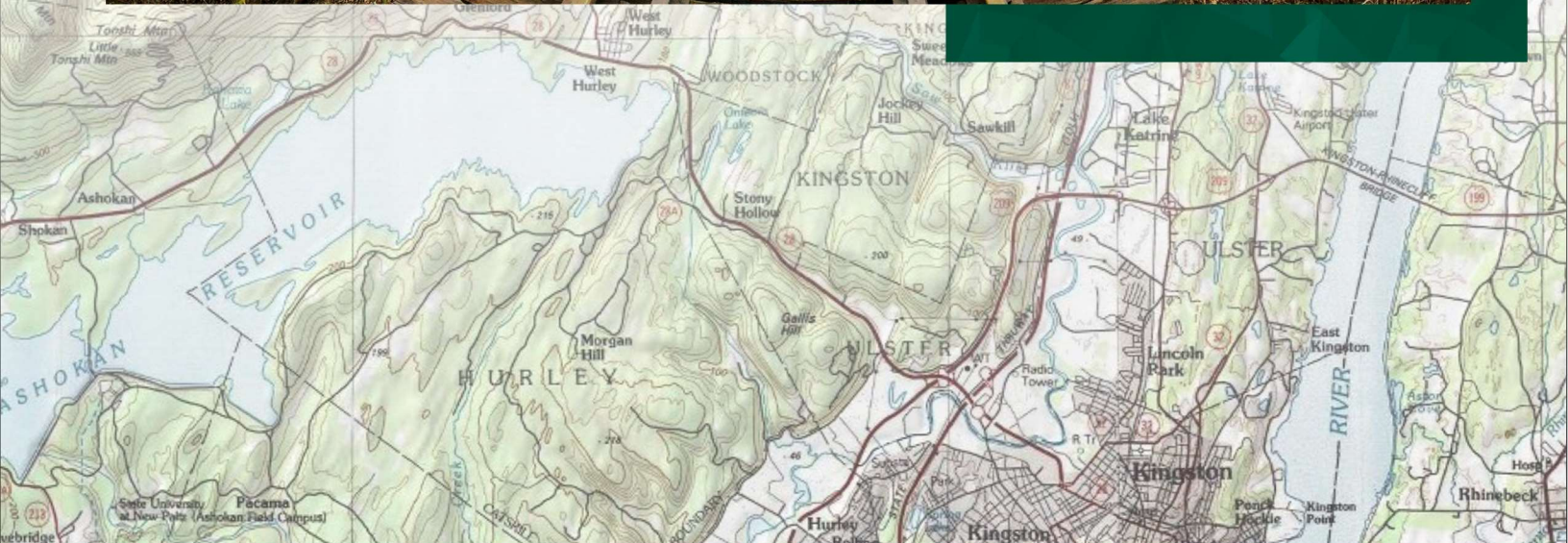


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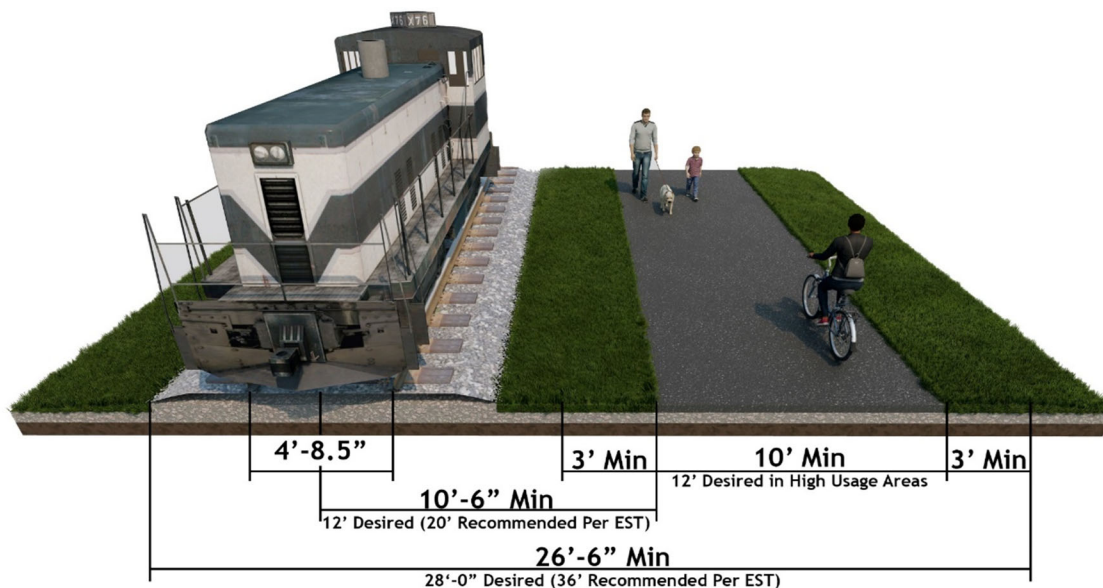
1.0 INTRODUCTION

1.1 Executive Summary

The purpose of this study is to investigate the feasibility of extending the Ashokan Rail Trail (ART) from the City of Kingston's recently completed Midtown Linear Park to its existing terminus in the Town of Woodstock. Currently, the ART and the Midtown Linear Park are segmented and isolated from each other by 6.21 miles of railbed. Establishing a continuous trail corridor along the historic rail line has the potential to provide a premier recreational destination and resource for the region, and this study explores the opportunities for making that possible. Previous reports have studied this trail extension and provided various recommendations, yet this Feasibility Study provides an engineering analysis of the site in order to find the best viable option for implementation.

The proposed trail connection begins in the City of Kingston at Westbrook Lane, the western terminus of the Midtown Linear Park, and continues north-west approximately 6.21 miles to the Basin Road Bridge in the Town of Woodstock (see **Appendix A, Figure 1: Proposed Trail Segments**). The trail connection will enhance and lengthen the existing ART which begins in the Town of Olive and travels west along the northern edge of the Ashokan Reservoir through the Town of Hurley and ends at the Basin Road Bridge. The 6.21-mile trail connection will fill this missing gap in the ART and create a new trail user experience connecting the rural western part of Ulster County to the City of Kingston and other regional trail systems. The trail connection will also link areas of western and southern Ulster County to the Empire State Trail, a continuous 750-mile bicycling and pedestrian path that spans the state from New York City to Canada and Buffalo to Albany, the longest multi-use state trail in the nation. Ultimately the trail will provide an important gateway for communities that have faced barriers to accessing the Ashokan Rail Trail and to the overall regional trail network.

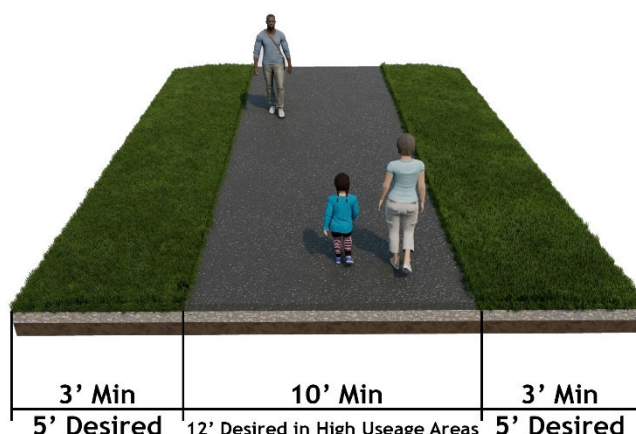
This study examines the feasibility of two options for the trail: Rail with Trail, which is a corridor containing both the existing railroad and a shared use path, and Trail Only, a corridor with a trail in place of the existing railroad. The study area consists of a railroad corridor with the tracks, ties, ballast, and other railroad infrastructure. At the time of this report, the Catskill Mountain Railroad (CMRR) operates a scenic train ride on the rail line between Westbrook Lane (M.P. 3.7) and NY-28A (M.P. 8.32), running approximately 4.62 miles. There is also railroad infrastructure in place from Route 28A (M.P. 8.32) up to the terminus of the existing Ashokan Rail Trail, at the Basin Road bridge (M.P. 10), however the conditions are varied. The United States Department of Transportation guidelines outlined in the *Rails With Trails, Best Practices and Lessons Learned* (May 2021)¹ states: "there is no consensus on setback requirements nor is there a method to calculate the appropriate minimum setback based on corridor characteristics. While guidance documents do provide information on minimum setback standards for bicycle facilities and adjacent walkways, these sources are not considered appropriate for a rail-with-trail." The *AASHTO Guide for the Development of Bicycle Facilities* includes minimum setback standards, but it does not specifically consider the characteristics of adjacent rail use. For the purpose of this study, and taking into account the low volume, and speed of the anticipated parallel trains, as well as other rail with trail projects in New York State, the edge of the trail must be separated by a minimum of 10'-6" from the center of the railroad tracks. The Empire State Trail Design Guide recommends that the preferred separation should be 20', but because the railroad corridor was originally designed for a single-track line a 20' separation is not feasible for a majority of the corridor. For the purposes of this study, a minimum separation of 10'-6" will be presented in all narratives and exhibits, as shown below.



This report finds that a substantial amount of work must be done in order to create a corridor with the minimum separation for a Rail with Trail. Most section of the study corridor need to be widened in order to accommodate a shared use trail alongside the existing railroad. Widening the corridor involves a large amount of earthwork (cuts and fills), which would result in significant impacts to federal and state wetlands, floodplains, private property, and existing infrastructure. Furthermore, new bridges and significant rehabilitation work to existing bridges would be required. The total estimated cost is \$38.5 million.

Table 1-1: Rail With Trail Cost Estimate Summary

Category	Item Description	Subtotal
A. Trail Construction	Clearing, Earthwork, Trail Subbase, & Trail Surface	\$7,920,000.00
B. Roadway Crossings	Crossing Signage & Striping	\$210,000.00
C. Structures	Bridges, Culverts, & Fencing/Barrier	\$7,840,000.00
D. Miscellaneous	Environmental Mitigation, Property Acquisitions, Trail Amenities, & Rail Amenities	\$3,000,000.00
E. Construction Costs	Work zone Traffic Control, Mobilization, & Contingencies	\$9,490,000.00
F. Additional Costs	Survey, Design, & Construction Inspection	\$9,970,000.00
Total Project Cost Estimate		\$38,500,000.00



This report finds that retrofitting the corridor for Trail only use, consisting of a shared use path, is a viable option that can be done with minimal intervention. The shared use path would be constructed on the railroad prism in place of the tracks currently present and would utilize existing railroad infrastructure such as the C9 Bridge over the Esopus Creek and the large culverts. The total estimated cost is \$14.6 million.

Table 1-2: Trail Only Cost Estimate Summary

Category	Item Description	Subtotal
A. Trail Construction	Clearing, Earthwork, Trail Subbase, & Trail Surface	\$2,400,000.00
B. Roadway Crossings	Crossing Signage & Striping	\$210,000.00
C. Structures	Bridges, Culverts, & Fencing/Barrier	\$3,900,000.00
D. Miscellaneous	Environmental Mitigation & Trail Amenities	\$600,000.00
E. Construction Costs	Work zone Traffic Control, Mobilization, & Contingencies	\$3,700,000.00
F. Additional Costs	Survey, Design, & Construction Inspection	\$3,780,000.00
Total Project Cost Estimate		\$14,600,000.00

The Alternatives section of this report provides a detailed feasibility assessment of both the Rail with Trail and Trail Only options at ten locations along the corridor that are representative of the conditions of the entire corridor, outlining the basis upon which the cost estimates were developed.

1.2 History

The Ulster and Delaware Railroad was once deemed the ‘Only All-Rail Route to the Catskill Mountains,’ and it extended 107 miles from the City of Kingston through the Catskill Mountains to the City of Oneonta. During the early 19th century, waterways became the principal form of transportation in New York. The City of Kingston, being located at the confluence of the Hudson River and the Rondout Creek, became a critically important junction between the great network of waterways and railroads, and the port city of Rondout was established to meet the demand of industry. A hub of railroad lines was established at this strategic geographic location, including a spur line that was developed to bring supplies from towns in central and western New York to the port in Rondout. That spur rail line was originally charted in 1868, and in that year started construction. Because of the complexity of construction through the Catskills, the line was not completed until 1874. Various freight and passenger services traveled along the U&D line up to its peak use in 1913 with over 673,000 passengers carried into the Catskills that year. By the time of the great depression, most passenger traffic had ceased and was ultimately lost to private cars on improved highways, and so the passenger rail was shut down in 1954. Ulster County purchased the ROW in the 1970’s with the hopes of revitalizing the railroad as documented in this 1970’s short film entitled the last ride of the U&D <https://www.youtube.com/watch?v=VpDSkxIHcJM>. Since that time the County has commenced various studies to find the best and highest use of this corridor.

1.3 Prior Studies

There have been numerous studies and planning initiatives that have examined the viability of revitalizing the corridor for recreational use since the termination of freight rail. Furthermore, several communities have expressed the need for improved recreational trails, and the desire to create the best public use of the historic rail corridors through their comprehensive planning processes. OSI also identified the Ashokan Rail Trail Connection as a key feature of the *West of Hudson Greenway Trails Vision* which is a regional conservation and recreation vision that encompasses 3 Counties, 6 Rail Trails, and 250+ miles of trails. Just a few examples of locally adopted planning goals and strategies that support this project are shown in **Table 1-3**.

Table 1-3: Previous Studies and Plans Discussing the Study Area

STUDY / PLAN	TRAIL REFERENCE
Ulster County Long Range Transportation Plan 2040 (2020)	Bicycle Accessibility: To provide safe and convenient access for cyclists through a system of on-road accommodations and completion of the Ulster County trail system.
Revitalizing the Esopus/Delaware Region of the Central Catskills (2013)	Enhance trails and pathways as important recreational resources and as a tool for economic development. Additional trail connections should be considered to create opportunities for longer or more varied outings and enhance the region's appeal among experienced hikers and cyclists.
City of Kingston Comprehensive Plan (2016)	Implement the recommendations of the Kingston Greenline Conceptual Plan to convert abandoned railroad beds to multi-use trails providing off-road pedestrian and cyclist routes throughout the City.
Town of Woodstock Comprehensive Plan (2018)	To create trail linkages using former rail corridor and other corridors. To link bike and pedestrian paths and trails to regional and state linear parks and trails.
Town of Ulster Comprehensive Plan (2007)	Provide a variety of recreational resources to serve the needs of the community year-round. Coordinate with Ulster County, the City of Kingston, and the Town of Hurley to create a paved rail trail along the Ontario & Western Railroad rights-of-way between the City of Kingston and Town of Hurley.
CMRR Kingston to Glenford Dike Business Plan for 2020-2024 (2019)	Ridership and revenue data up to 2018 for the Catskill Mountain Railroad. Concept sketches showing rail with trail at the Stoney Hollow Historic Station at Route 28A.
Catskill Mountain Railroad Extension to Basin Road (2021)	Requesting permission to renovate and operate a 1.67-mile length of railroad track from the end of its current permit in Stony Hollow to connect to the Ashokan Rail Trail at Basin Road. The extension will add station stops at Stony Hollow and Beesmer Road and a link to the Ashokan Rail Trail at Basin Road.
Catskill Mountain Railroad Ridership Statistics (2022)	2021 ridership was over 83% from 2020 and increased pre-Polar/Christmas ridership of 69% over 2019. Overall revenues doubled in 2021 over 2020.
Rails With Trails Best Practices and Lessons Learned (2021)	FHWA guidance and examples of existing rail with trail projects. This document expands on the findings from the 2002 USDOT rails with trails report.

2.0 EXISTING CONDITIONS INVENTORY & ASSESSMENT

The primary objective of this study is to identify a feasible trail route connecting the Kingston Linear Park in the City of Kingston to the Ashokan Rail Trail in the Town of Woodstock. An analysis of the existing conditions along the entire corridor was conducted to determine if there are any potential environmental impacts associated with the project. For the purposes of this study, the corridor is divided into four segments that are referenced below.



2.1 General Environmental Conditions

2.1.1 Wetlands

A review of NYSDEC Freshwater Wetland mapping indicates that there is one mapped state-regulated wetland (Wetland ID # KW-3) within or adjacent to the study corridor (Segment 4 in the Town of Ulster) (See **Appendix A, Figure 2: Mapped Wetlands**). A Wetland Delineation and Report will likely need to be performed to determine the boundaries of the wetlands prior to work on the corridor (See **Table 2-1**).

A review of the US Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) mapping indicates that work on segments 1, 2, and 3 will potentially impact four federal wetland communities within the City of Kingston and the Town of Ulster (see **Appendix A, Figure 2: Mapped Wetlands**). If impacts are anticipated, a NYSDEC and United States Army Corps of Engineers (USACOE) joint application permit for wetland impacts must be submitted during the design phase of the project. See **Table 2-1**.

Table 2-1: Mapped Federal and State Regulated Wetlands Within the Study Area

Municipality	Jurisdiction	Wetland ID #	Class	Type	Approximate Size (Acres)
City of Kingston	USACOE	NA	Unknown	Freshwater Emergent Wetland	284
Town of Ulster	USACOE	NA	Unknown	Riverine	1.55
Town of Ulster	USACOE	NA	Unknown	Riverine	3.43
Town of Ulster	USACOE	NA	Unknown	Freshwater Forested/Shrub Wetland	11.98
Town of Ulster	NY State	KW-3	2	Freshwater Forested/Shrub Wetland	106.2

2.1.2 Surface Waters

A review of NYSDEC Environmental Resource Mapper indicates that there are six (6) potential stream crossings (Map Segments 1, 2, and 3) along the study corridor (see **Appendix A, Figure 3: Stream Classification**). Based on available NYSDEC stream classification mapping, the study corridor includes two mapped unprotected Class C streams and two protected Class C(T) or above streams. The Lower Esopus Creek is a Designated Inland Waterway as defined in Executive Law, Article 42, Section 911 which was established to ensure the protection and best use of coastal and inland water resources and promote the revitalization of waterfront communities. A Consistency Review by NY Department of State may be required. The Lower Esopus Creek is also listed by the NYSDEC on the Section 303(d) list as impaired due to turbidity. Close coordination with NYS DEC will be crucial to ensure that any proposed work does not have potentially detrimental impacts to the Lower Esopus Creek. See **Table 2-2**.

Table 2-2: Classified Streams Within the Study Area

Municipality	Jurisdiction	Stream ID #	Stream Name	Class/Status
City of Kingston	NYS DEC	861-104	Unknown	Class C / Unprotected
Town of Ulster	NYS DEC	861-3	Esopus Creek	Class B(T) / Protected
Town of Ulster	NYS DEC	861-109	Unknown	Class C / Unprotected
Town of Ulster	NYS DEC	861-109	Unknown	Class C / Unprotected
Town of Ulster	NYS DEC	861-109	Unknown	Class C / Unprotected
Town of Ulster	NYS DEC	861-112	Unknown	Class C(TS) / Protected

2.1.3 Floodplains

Segments 1 and 2 of the study corridor, located in the City of Kingston and the Town of Ulster, pass through the Floodway and Special Flood Hazard Areas (i.e., the 100-Year Floodplain, Zones A and AE) of the Esopus Creek (see **Appendix A, Figure 4: Mapped Floodplains**). The trail may require rehabilitation of an existing bridge over the Esopus Creek, or construction of a new bridge, and there are several large culverts within the trail corridor. An analysis of the existing and proposed hydraulic (water movement) conditions is required during the design phase to determine if proposed work will have any impact to the current water surface elevation. Each of the bridge crossing locations must be evaluated following the guidelines outlined in the NYSDEC Floodplain Development and Floodway Guidance. The Floodplain Development and Floodway Guidance defines the differences in the two-tiered system of technical evaluation for proposed development in the floodplain. All proposed floodplain development must meet the “No adverse effect” criteria (less than 1-foot rise), while proposed floodway development must also meet the “no-rise” criteria (0.00-feet difference). The study corridor is located east of the Ashokan Reservoir, which is a public water source for the New York City, and lies outside of the reservoir watershed. It is however understood that water quality in the Esopus Creek, a Class B(T) stream is a priority concern and any potential adverse environmental impacts to the Esopus Creek will need to be avoided or mitigated by applying best management practices when designing the trail crossings.

2.1.4 Endangered and Threatened Species

A web-based review of the United States Fish and Wildlife Service (USFWS) IPaC decision support system was conducted for an assessment of Federally listed rare, threatened, or endangered (RTE) species within the study corridor. The following Endangered or Threatened species are potentially located near the study corridor:

- Indiana bat (*Myotis sodalis*) - Endangered
- Northern long-eared bat (*Myotis septentrionalis*) – Threatened

Indiana Bat

The Indiana bat (*Myotis sodalis*) is a state-listed and federally listed endangered species. Indiana bats are known to roost in hardwood forests throughout most of their range in the summer months; in the winter months, they hibernate within caves or crevices in large population densities. With the onset of the White Nose Syndrome

disease, the Indiana bat has been critically threatened (USFWS, 2012). Compounding the adverse effects of this disease, human encroachment into old growth and hardwood forests has severely crippled local populations.

Indiana bats have not been observed above 900 feet above mean sea level (AMSL) in New York State (USFWS, 2012), therefore this species is to be considered for any project in New York State that is located at or below an elevation of 900 feet AMSL and is within 40 miles of a known hibernaculum. Consideration for the Indiana Bat is especially important for projects that involve clearing of trees greater than four inches in diameter at breast height (dbh), as these trees are suitable for a majority of roosting requirements by this species during summer months (USFWS, 2012).

Northern Long-Eared Bat

Northern long-eared bat (*Myotis septentrionalis*) is a state-listed and federally listed threatened species. Habitat for the summer period may include day roosts in buildings, under tree bark or shutters, or caves during the night. In the winter, hibernation sites are often in mines or caves, and this species may co-hibernate with other similar bat species. As a result of this co-habitation behavior, White Nose Syndrome is becoming prevalent in this species and populations have become critically threatened. Compounding the adverse effects of this disease, human encroachment into old growth and hardwood forests has also begun to adversely affect local populations. Foraging habitat for this species includes forested hillsides and ridges and small ponds or streams (USFWS, 2016).

2.1.5 Historical & Cultural Resources

A review of the Cultural Resource Information System (CRIS), a resource provided by the New York State Historic Preservation Office (SHPO) used to locate cultural resources, indicated that a portion of the study corridor is within an Archeologically Sensitive Area. The CRIS also indicated that the Kingston Stockade Historic District is in close proximity to, but not within the corridor (see **Appendix A, Figure 5: National Register Sites**). To ensure that work in the corridor will not have any potentially detrimental impacts to the Archeologically Sensitive Areas, coordination with the SHPO is required during the final design once the Area of Potential Effect (APE) to the trail corridor has been determined.

2.1.6 Stormwater Management & MS4 Areas

Restoration of the rail bed to make the corridor passable will cause some ground disturbance, soil erosion, or otherwise create a source of stormwater discharge that may lead to siltation or other degradation of receiving water bodies. A Stormwater Pollution Prevention Plan (SWPPP) that outlines the measures required for pollution prevention, and erosion and sediment control for the project during and following construction will be required as part of any upgrades to the corridor. According to Appendix B, Table 1 of the SPDES General Permit for Construction Activities (GP-0-15-002), trail projects that sheet flow stormwater runoff to adjacent vegetated areas are exempt from post-construction stormwater management. This study finds that the majority of the trail can be designed to allow stormwater to sheet flow to adjacent vegetated buffers, meeting the permit requirements, yet this does not take the place of a SWPPP. For any work within the corridor a SWPPP must be developed in accordance with the “New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity” General Permit Number GP-0-20-002, effective starting January 29, 2020. The study corridor is located approximately 1,000 feet east of the Ashokan Reservoir and is not within the reservoir watershed, therefore it is not likely that construction activities will cause any potentially adverse impacts to the watershed (see **Appendix A, Figure 6: Mapped Watersheds**).

The study corridor is located within the two Regulated Municipal Separate Stormwater Sewer System (MS4) areas of the Town of Ulster and the City of Kingston (see **Appendix A, Figure 7: Mapped MS4 Areas**). The Lower Esopus Creek is an impaired waterbody within these two regulated MS4 areas. Local coordination and submission of the SWPPP to the MS4 authority for review and acceptance may be required. Further coordination may also be necessary with the Lower Esopus Watershed Partnership, an inter-municipal coalition that includes representatives

from the Town of Saugerties, Town of Ulster, Town of Hurley, Town of Marbletown, Town of Olive, City of Kingston, and the Village of Saugerties.

2.1.7 NYS Parks and NYS DEC Lands

Segments 2, 3, & 4 are within the boundaries of the Catskill State Park, with the majority of Segment 1 being within the City of Kingston. The Catskill Park (also known as the Catskill Forest Preserve) was established in 1885 and encompasses 286,000 acres of state land within the park. The acreage within the preserve includes forest, meadows, wetlands, and lakes and spans four counties: Greene, Ulster, Sullivan, and Delaware. Segment 4 of the study corridor is adjacent to the 3,000-acre NYS Bluestone Wild Forest which contains over 29 miles of hiking and mountain biking trails (see **Appendix A, Figure 8: NYS Parks & DEC Lands**).

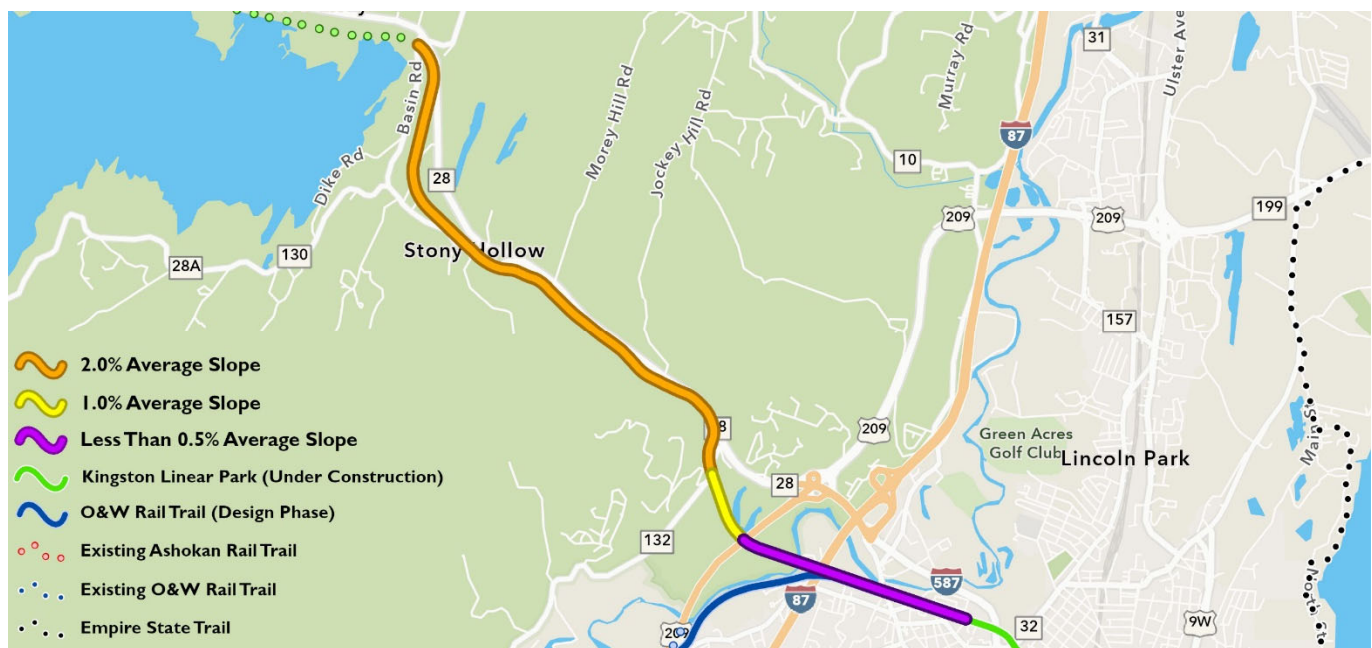
2.1.8 Farmlands

In the Town of Ulster, a large majority of Segment 2 runs through Ulster County Agricultural District 4. In areas where there are active farm operations, the project should retain access to farm fields, and incorporate design features to minimize impacts to adjacent agricultural lands wherever necessary (See **Appendix A, Figure 9: Agricultural Districts**).

2.1.9 Hazardous Waste

According to the NYS DEC Environmental Site Remediation database, the study corridor is adjacent to State Superfund Site 356056 located at 79 Hurley Avenue. In addition, the study corridor is within 2,000 feet of a DEC Remediation Site # C356035 (Brownfield Cleanup Program located at 416 Washington Avenue/167 Schwenck Drive) and #356060, State Superfund Program located at 65 Albany Ave. The sites identified above were documented as having a variety of spills, remediation and hazardous sites of varying degree that have been cleaned or cleared of hazardous materials. If any contamination is encountered during the construction of the project, the spill (including soil contamination) must be called into NYS Spill Hotline (1-800-457-7362) within two hours of discovery (see **Appendix A, Figure 10: Remediation Sites**).

2.2 General Corridor Grades



A review of the LiDAR available from the New York State GIS Clearinghouse for the study area was conducted using GIS software. The image above shows the results of the review. The study area begins in flat grade of the Hurley Flats/Esopus Creek floodplains in the City of Kingston and begins to ascend towards the Ashokan Reservoir at the western terminus once the corridor crosses Hurley Mountain Road. From west to east, the corridor ascends over 425 feet over the 6.21 miles for an average grade of 1.3%.

2.3 Field Inventory of Existing Conditions

A full review of the entire corridor was conducted to inventory and assess the condition of the existing rail bed and the suitability for trail construction. Important considerations for determining the feasibility of the trail route are environmental impacts (temporary or permanent), drainage, safety, aesthetics, trailhead parking and pedestrian, bicyclist, and vehicular access to the various points of interest along the trail route. Due to the length of the corridor, for discussion purposes, the trail extension has been divided into four segments that are defined by at-grade roadway crossings or other definitive splits (See **Appendix A, Figure 1: Proposed Trail Segments**).

2.3.4 Study Area Segment 1

Segment 1 is approximately 1.06 miles in length, beginning at the eastern limits of the study area at Westbrook Lane in the City of Kingston, and runs northwest to the NYS Thruway Bridge (I-87) in the City of Kingston. (See **Appendix B: Field Inventory Summary, Maps 1 thru 6**). The remaining railroad infrastructure in this segment consists of steel rails, wooden ties, stone ballast in good condition. A portion of the railway is currently in use by the Catskill Mountain Scenic Railroad under a lease agreement with the Ulster County IDA. The typical railroad infrastructure conditions for this segment are illustrated in the photos on Appendix B, maps 1-6. **Table 2-6** summarizes the location, type and condition of all bridges and culverts within this segment. This segment runs through a mix of dense residential and commercial development along the Kingston Plaza until it crosses Washington Ave (NY-981K), which has an annual average daily traffic of 21,293 vehicles. Beyond Washington Ave, this segment runs nearly parallel to the O & W rail trail in a heavily wooded section of the City of Kingston ending at the NYS Thruway (I-87) bridge (BIN 5515499) over the railroad corridor.

Table 2-3: Study Area Segment 1: Existing Right-of-Way Bridges and Culverts

Appendix A Map #	Milepost	Bridge Culvert Type	Condition
5	4.56	Buried Culvert	Poor, buried.
5	4.69	Stone Box Culvert	Fair, minor headwall damage and cleaning required.

2.3.2 Study Area Segment 2

Segment 2 is approximately 1.08 miles in length, begins at the NYS Thruway (I-87) Bridge (BIN 5515499) in the City of Kingston, and continues northwest to the Hurley Mountain Road (CR-5) At-Grade Crossing in the Town of Ulster. (see **Appendix B: Field Inventory Summary, Maps 6 thru 10**).

The remaining railroad infrastructure in this segment consists of steel rails, wooden ties, stone ballast in fair to poor condition. The typical railroad infrastructure conditions for this segment are illustrated in the photos on Appendix B, maps 6-10. **Table 2-4** shows for the location, type and condition of all bridges and culverts.

BIN 5515499, the NYS Thruway bridge over the railroad corridor, is a 37' span stringer/multi-beam bridge that was constructed in 1953. The bridge was inspected by the New York State Thruway Authority (NYSTA) on 7/17/2018 and received a condition rating of 5.431 on the NYSDOT condition classification scale. Approximately 100 feet west of the NYS Thruway bridge, there is a private crossing utilized by Adirondack Transit Lines located near milepost 4.8. Continuing west approximately 0.15 miles, at milepost 4.9 is the C-9 bridge over the Esopus Creek, a 325'-6" foot double span truss bridge. The bridge was constructed in 1877 and carries a single track over the watercourse. The bridge received an inspection by Peak Engineering in 2019 and was given an overall rating of 4 out of 7 on the NYSDOT condition classification scale. Farther west at milepost 5.3, the corridors intersection with US Route 209.

This roadway has an AADT of 13,108 and a posted speed limit of 55 miles per hour. The 85th percentile speed observed by NYSDOT in 2019 was 63 miles per hour. Appendix B, map 20 illustrates the existing conditions of the crossing of NY Route 209.

As illustrated on Appendix B, map 10, the existing railroad crosses Hurley Mountain Road (CR-5) at a skewed angle, at approximately milepost 5.85. The roadway has an annual average daily traffic of 1,076 and has a high rate of speed. The major issue at this crossing is the limited sight distance caused by the vertical and horizontal curves of the roadway, mixed with the rock cut in the side of Gaillis Hill that parallels the roadway.

Table 2-4: Study Area Segment 2: Existing Right-of-Way Bridges and Culverts

Appendix A Map #	Milepost	Bridge Culvert Type	Condition
6	4.75	BIN 5515499 - Stringer/Multi-Beam Bridge Carrying NYS Thruway Over Railroad (37' Span)	Minor deterioration, functional (5.431 the NYSDOT Conditional Classification) as per NYSDOT inspection on 7/17/2018
6	4.91	Truss Bridge Carrying Railroad Over the Esopus Creek (325.5' Span)	Shade between serious deterioration and minor deterioration, functional (4 on the NYSDOT Conditional Classification) as per Peak Engineering inspection on 12/24/2019

2.3.3 Study Area Segment 3

Segment 3 is approximately 2.41 miles in length and begins at the Hurley Mountain Road (CR-5) At-Grade Crossing the NY-28A At-Grade Crossing in the Town of Ulster and extends northwest ending at the NY-28A At-Grade Crossing in the Town of Ulster (See **Appendix B: Field Inventory Summary, Maps 10 thru 20**).

The remaining railroad infrastructure in this segment consists of steel rails, wooden ties, and stone ballast in fair to poor condition. The typical railroad infrastructure conditions for this segment are illustrated in the photos on Appendix B, maps 10-20. As illustrated on Appendix B, maps 11-20, storm drainage throughout this segment of the corridor is conveyed by concrete and steel culverts and drainage swales that run parallel to the railroad tracks. **Table 2-4** summarizes the location, type and condition of all bridges and culverts within this trail segment. Appendix B, map 20 also shows that the existing drainage swale along the railroad bed and some existing drainage issues and soil slumping. This segment of the corridor also has some illegal dumping at various points, and a private access point between mileposts 7.9 and 8.0. As shown on Appendix B, map 14, an unused rail station stop exists between the railroad and the Madden House at mileposts 6.7. Appendix B, maps 12 and 13 show private crossing areas near mileposts 6.2 and 6.5.

Table 2-5: Study Area Segment 3: Existing Right-of-Way Bridges and Culverts

Appendix A Map #	Milepost	Bridge/Culvert Type	Condition
11	5.97	Stone Box Culvert	Fair, minor headwall damage and cleaning required.
11	6.01	Stone Box Culvert	Poor, clogged. Cleaning required.
11	6.06	24" Iron Pipe Culvert	Fair, minor headwall damage and cleaning required.
12	6.20	12" HDPE Pipe Culvert	Good, free flowing
12	6.36	Buried Pipe Culvert	Fair, minor headwall damage and cleaning required.
13	6.45	15" HDPE Pipe Culvert	Good, free flowing
13	6.57	Stone Box Culvert	Good, free flowing
14	6.76	Stone Box Culvert	Good, free flowing
15	7.06	Stone Box Culvert	Fair, minor headwall damage and cleaning required.
17	7.43	Stone Box Culvert	Good, cleaning required
17	7.54	Stone Box Culvert	Good, cleaning required
18	7.68	Stone Box Culvert	Good, free flowing
19	8.10	Stone Box Culvert	Good, free flowing
20	8.22	18" HDPE Pipe Culvert	More cover over pipe likely required.
20	8.24	12" Iron Pipe	Good, free flowing

2.3.4 Study Area Segment 4

Segment 4 is approximately 1.67 miles in length and begins at the NY-28A At-Grade Crossing in the Town of Ulster, continues north through the Towns of Hurley and Kingston, and ends at the western limits of the study area at the Basin Road Bridge in the Town of Woodstock (see **Appendix B: Field Inventory Summary, Maps 1 thru 8**).

This segment is abandoned rail right-of-way, which begins at the Girder Bridge which carries the railroad over Beesmer Road (BIN 7713420). This 26' Span - 14.5' Interior Width Girder Bridge appears to be in good condition. Another girder bridge which carried the original railroad over Basin Road, is located at milepost 8.88. The existing 55' bridge span with an out to out total width is in overall good condition.

The remaining railroad infrastructure in this segment consists of steel rails, wooden ties, and stone ballast in fair to poor condition. The typical railroad infrastructure conditions for this segment are illustrated in the photos on Appendix B, maps 1-8. In general, there are many areas of rotten railway ties, wash outs, down trees, and overgrown brush covering or encroaching upon the right-of-way. A large rock cut that is approximately 3,400 feet in length, with a width to the inside face of rock of 25 feet, is a significant feature within this segment. There are also a few illegal dumping areas within the corridor (see Appendix B, maps 24 and 25) and a potential encroachment near milepost 9.3. Also shown on Appendix B, map 23 is a private crossing of the tracks located between milepost 8.8 and 8.9. **Table 2-3** summarizes the location, type and existing condition of bridges and culverts within this section.

Table 2-6: Study Area Segment 4: Existing Right-of-Way Bridges and Culverts

Appendix A Map #	Milepost	Bridge Culvert Type	Condition
20	8.32	Stone Box Culvert	Good, free flowing
23	8.88	BIN 7713420 - Thru Girder Bridge Carrying Railroad Over Beesmer Road (26' Span - 14.5' Interior Width)	Overall Good Condition (As per cursory inspection conducted on 04/22/21)
27	9.91	Girder Bridge Carrying Railroad Over Basin Road (55' Span - 11' Interior Width)	Overall Good Condition (As per cursory inspection conducted on 04/22/21)

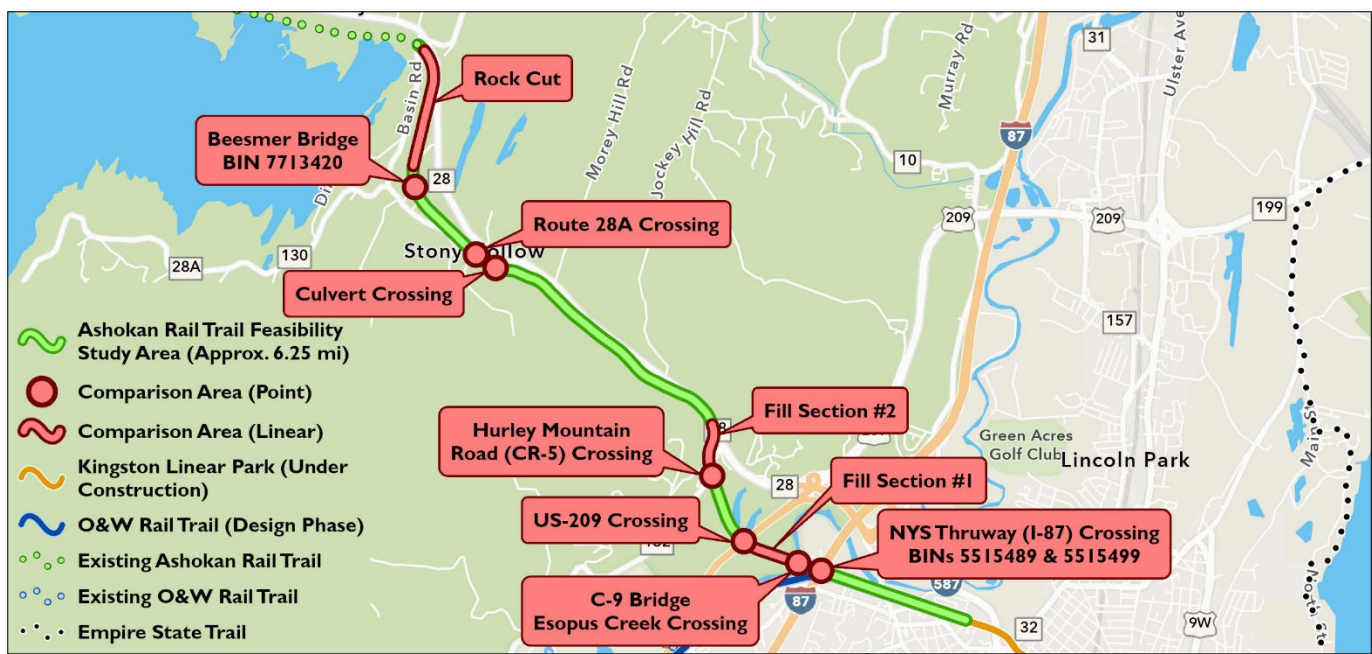
3.0 ALTERNATIVES

Two alternatives will be discussed and compared in detail in this section, which are Rail with Trail and Trail Only. The Rail with Trail entails a corridor containing both the existing railroad and a shared use path alongside, whereas the Trail Only implies a corridor with a trail in place of the existing railroad. The Rail with Trail alternative will assume the railroad will remain unmodified in its current location at the center of the prism. Ten specific locations within the study area were chosen to show the potential impacts, required infrastructure, and cost estimates of both alternatives.

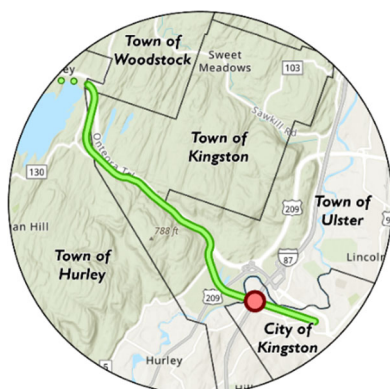
Comparison Areas

A detailed analysis of ten locations is presented here to provide a side-by-side comparison of the two alternatives. These locations are representative of the conditions along the entire study area:

1. Thruway (I-87) Grade Separated Crossing
2. C-9 Bridge over the Esopus Creek
3. Section Between the US Route 209 Crossing and the C-9 Bridge over the Esopus Creek (Fill Section #1)
4. US Route 209 at-grade crossing
5. Hurley Mountain Rd (CR5) at-grade crossing
6. Section North of the Hurley Mountain Road (CR-5) Crossing (Fill Section #2)
7. Box Culvert South of the State Route 28A at-grade crossing
8. State Route 28A at-grade crossing
9. Railroad Bridge over Beesmer Road (BIN 7713420)
10. Rock Cut Between the Basin Road Beesmer Road Bridges



3.1 Location 1: Thruway (I-87) Grade Separated Crossing



Approximately one mile west of the Kingston Linear Park, the corridor intersects the New York State Thruway (I-87). BIN 5515499 carries 4 lanes of the Thruway over 110'-6" of the corridor. Currently, train tracks run in the

center of the 36 feet horizontal clear width under the bridge. 225 feet to the south of BIN 5515499 is BIN 5515499 that carries 4 lanes of the Thruway over the abandoned O&W railroad corridor. This corridor will soon be under construction to become the Kingston Rail Trail that extends the O&W Rail Trail from NY 209 to Washington Avenue in the City of Kingston. The O&W corridor parallels the Ashokan corridor for a half of a mile just east of the Thruway Crossing. Another 100 feet to the west, the corridor intersects with a private driveway for the Adirondack Transit Line to access their garage.

Rail With Trail Alternative

BIN 5515499 under the Thruway creates a chokepoint for the rail with trail alternative and would require either rerouting of the train tracks or finding an alternative crossing under the Thruway for the trail. With the train



tracks located in the center of the 36-foot clear width, the remaining width would only allow for a 7-foot trail wide trail up against the concrete wall of the structure. The most feasible and cost-effective alternative is to cross trail users over to the future Kingston Rail Trail corridor to the south. As shown in the figure below, approximately 300 feet of the private driveway would be converted into a walk-bike roadway, allowing trail users to share the lane

with motorists. Pavement markings, such as sharrows and crosswalks, and MUTCD compliant signage would be installed to notify motorists of trail users in the lane. Utilizing the private driveway would require property rights from Adirondack Transit Lines and the Central Hudson Corporation. As this area is within the 100-year and 500-year floodplains, any earthwork would require additional hydraulic analyses and a permit.

Trail Only Alternative

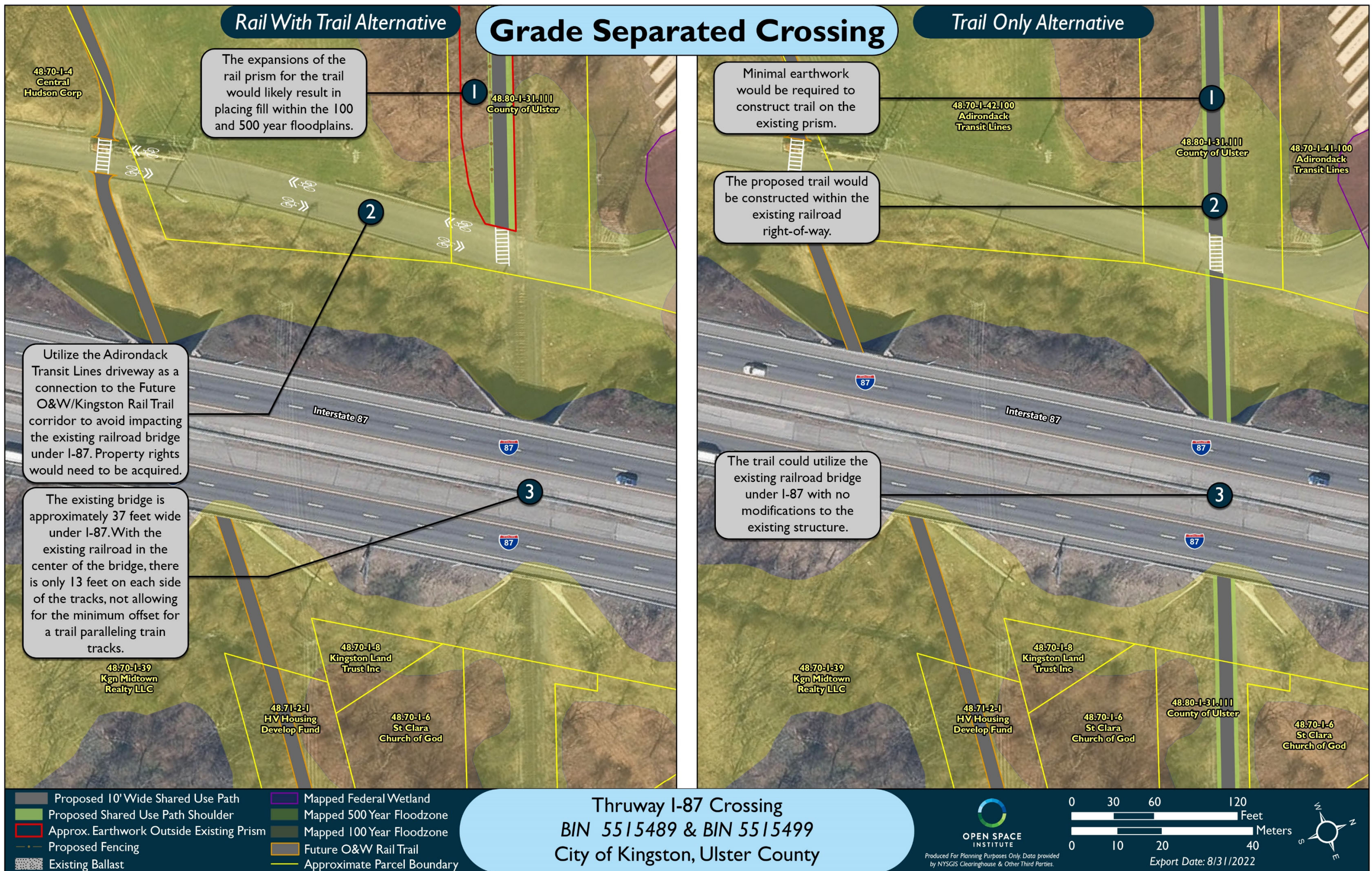
The trail only alternative would utilize the top of the existing railroad prism as a shared use path after the railroad infrastructure was removed. BIN 5515499 under the Thruway would remain unmodified as the 37-foot clear width would easily accommodate a 10-foot-wide trail with 5-foot shoulders. MUTCD compliant warning signage and pavement markings would need to be installed at the private driveway crossing for the transit company to warn both trail users and motorists of the intersection. The trail would continue east towards the City of Kingston utilizing the existing railroad prism and parallel the future Kingston Rail Trail. The opportunity to use the existing rail prism would likely prevent impacts to adjacent properties, wetlands, and the floodplain as earthwork would be limited to the top of the rail prism to install the trail subbase and top course.

Cost Estimate

Category	Rail With Trail Subtotal	Trail Only Subtotal
A. Trail Construction ¹	\$37,000.00	\$21,000.00
B. Intersections & Crossings ²	\$40,000.00	\$25,000.00
C. Miscellaneous ³	\$15,000.00	\$17,000.00
The estimated total below includes additional contingencies, inflation, design, etc. See Section 6.0 for more details.		
Estimated Total	\$190,000.00	\$130,000.00

Notes:

1. Includes Clearing & Grubbing, Trail Construction, and Earthwork
2. Includes Concrete Ramps, Detectable Warnings, Signs, and Striping
3. Includes Trail Amenities, Railroad Amenities, and Environmental Mitigation



3.2 Location 2: C-9 Bridge over the Esopus Creek



The existing railroad bridge over the Esopus Creek (C-9) is a double span truss constructed in 1887 that spans approximately 325.5 feet. The bridge was inspected by Peak Engineering on December 24th,

2019. The overall condition rating was deemed a 4 out of 7, between Minor deterioration and serious deterioration. The bridge was given a cursory inspection on 4/22/21. The inspection verified the findings of the 2019 inspection by Peak Engineering, wherein the following items were identified as issues of note, which would require either more analysis, or repair prior to repurposing the structure for pedestrian trail use.

- Concrete backwall cracked and displaced in contact with truss at East abutment.
- Crevice corrosion between built up members potentially compromising some of the members.
- Failed Paint system.
- Pitting and light corrosion of truss steel. Section loss on some diagonal members.
- Section loss on top chord members including possible perforation.
- Bent lateral brace at end abutment.
- Corroded and failed expansion bearings at west pier.
- Stone Masonry piers show moderate degrading of mortar joints which need to be repointed.
- Concrete cracking and spalling of U-wall at west abutment Pitting and light corrosion of steel members.

Rail With Trail Alternative

The C-9 bridge was designed for a single track, with the inside-to-inside width of approximately 14'-2". This width eliminates the possibility of having a trail parallel the existing railroad on the bridge without significant modifications or replacement. The more cost-effective measure would be to make no modifications to the

existing railroad bridge and construct a separate shared use path bridge. The proposed bridge is a 220' double span prefabricated structure. Construction of the new bridge approaches would require placing approximately 1,000 cubic yards of fill, all of which either being in the 100-year floodplain or the Esopus Creek floodway. This fill and other bridge elements would likely require private property acquisition as shown on the figure below, as well as potentially impacting the adjacent mapped federal wetlands and the floodplains. Placing fill is prohibited within the floodway unless it has been demonstrated that it will not result in any increase in flood levels, so additional hydraulic analyses would need to be conducted



Trail Only Alternative

For the rail bridge to be converted into a trail bridge, several repairs and rehabilitation measures would need to be taken based upon the findings listed above, and further structure analysis. The conversion would also require removing the existing timber railroad ties, constructing a new timber deck, and Pedestrian and Bicycle Railing (5-Rail) on the existing steel girders. Utilizing the existing rail prism would likely prevent impacts to adjacent properties, wetlands, and the floodplain as earthwork would be limited to the top of the rail prism to install the trail subbase and top course.

Cost Estimate

Category	Rail With Trail Subtotal	Trail Only Subtotal
A. Trail Construction ¹	\$143,000.00	\$18,000.00
B. Intersections & Crossings ²	\$2,280,000.00	\$770,000.00
C. Miscellaneous ³	\$130,000.00	\$10,000.00
The estimated total below includes additional contingencies, inflation, design, etc. See Section 6.0 for more details.		
Estimated Total	\$5,170,000.00	\$1,620,000.00

Notes:

1. Including Clearing & Grubbing, Trail Construction, and Earthwork
2. Including Bridge Work, Fencing, Retaining Walls
3. Includes Trail Amenities, Railroad Amenities, Right of Way Acquisitions, and Environmental Mitigation

Trail Only Alternative

3.3 Location 3: Fill Section Between the US Route 209 Crossing and the C-9 Bridge over the Esopus Creek



The 2,000 linear foot section of the corridor between US-209 and the C-9 bridge over the Esopus Creek sits between private farmlands in the flat topography of the Esopus Creek floodplains. Closer to US-209, the top

of the prism sits approximately four feet above the adjacent private farmlands, with the elevation difference increasing to about ten feet as you head towards the C-9 bridge. The adjacent farmlands are a part of the Ulster County Agricultural District 4, and this whole area is within the 100-year floodplain of the Esopus Creek. As of June 2022, the Catskill Mountain Railroad utilizes this segment for their scenic tour.

Rail With Trail Alternative

For the railroad to remain in its current location accommodate a shared use path, the top of the existing prism would



need to be widened approximately 13 feet, resulting in about 3,000 cubic yards of fill being placed. The side slope of the prism expansion would be a maximum of

50%, causing the limits of fill to extend approximately 25 feet from the current top of the prism. Additional

hydraulic analyses would need to be conducted and a permit would need to be acquired to place fill within the 100-year floodplain. It is anticipated that the fill would remain within the Ulster County property and not impact the adjacent farmlands.

Trail Only Alternative

The trail only alternative will require most of the existing railroad infrastructure (i.e., rails, ties, ballast, etc.) to be removed to accommodate the trail on the center of the railroad prism. The ties used on this railroad are likely treated with creosote for preservation of the wood. Per NYDEC regulations, these ties can only be disposed of in a permitted landfill or a NYSDEC approved municipal waste combustion facility. The top of the existing prism is approximately 20 feet wide, enough to accommodate the construction of a 10-foot-wide shared use path with five-foot-wide shoulders. The anticipated limits of earthwork would be contained within the existing rail prism, resulting in no direct impacts to adjacent farmlands. Minimal fill would be placed for this alternative, therefore the impacts to the 100-year floodplain are expected to be minimal. Additional hydraulic analyses would need to be conducted and a permit would need to be acquired to place fill within the 100-year floodplain.

Cost Estimate

Category	Rail With Trail Subtotal	Trail Only Subtotal
A. Trail Construction ¹	\$251,000.00	\$133,000.00
B. Intersections & Crossings ²	\$140,000.00	\$0.00
C. Miscellaneous ³	\$85,000.00	\$25,000.00
The estimated total below includes additional contingencies, inflation, design, etc. See Section 6.0 for more details.		
Estimated Total	\$970,000.00	\$320,000.00

Notes

1. Includes Clearing & Grubbing, Trail Construction, and Earthwork
2. Includes Fencing
3. Includes Trail Amenities, Railroad Amenities, Right of Way Acquisitions, and Environmental Mitigation

Rail With Trail Alternative

Fill Section

Trail Only Alternative

The expansions of the rail prism for the trail would likely result in approximately 3,000 cubic yards of fill within the 100 year floodplain for this 2,000 LF section. (100 year floodzone not depicted as it encompasses the entire area.)

Continue construction of the trail on the western side of the tracks with the crossover at Hurley Mountain Road.

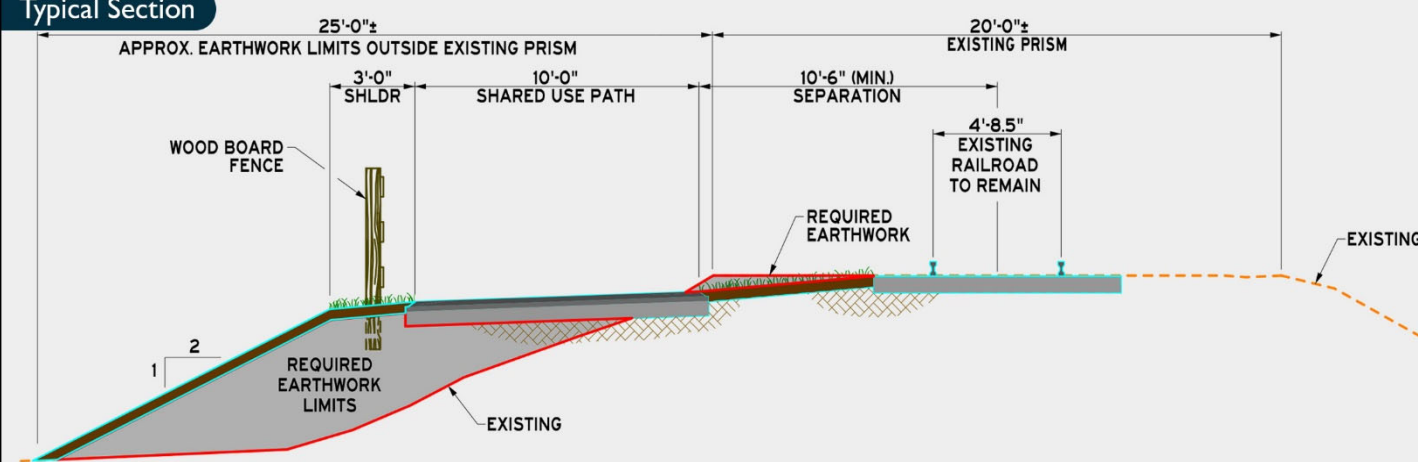
Earthwork for the expansion of the rail prism to accommodate the trail would likely remain within the existing railroad right of way.

Minimal earthwork would be required to construct trail on the existing prism.

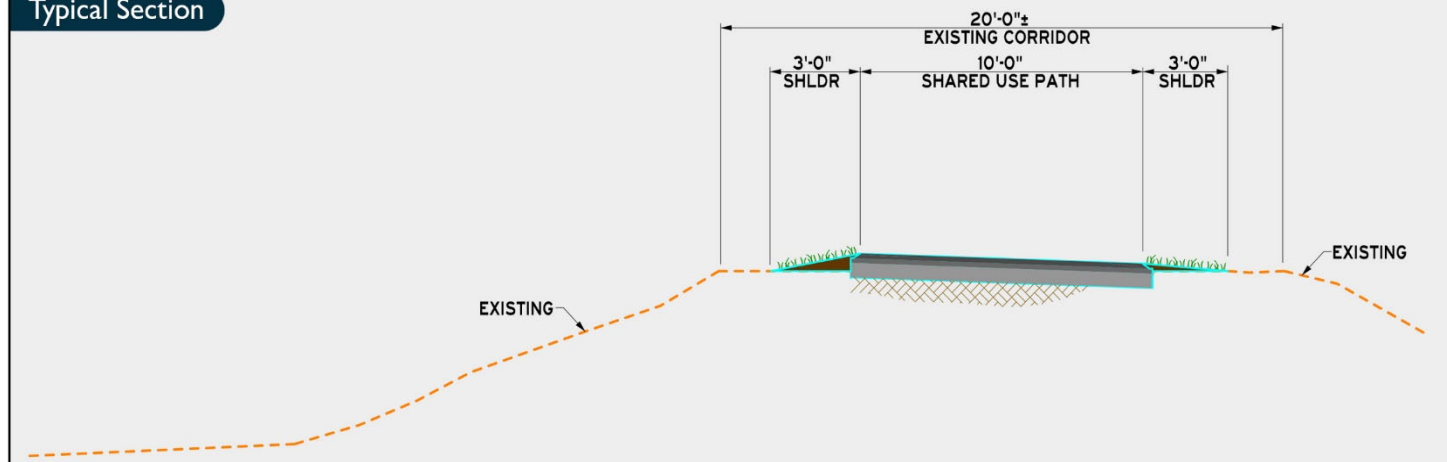
Construct trail on the center of the existing railroad prism.

The proposed trail would be constructed within the existing railroad right-of-way.

Typical Section



Typical Section

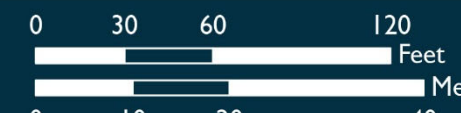


- Proposed 10' Wide Shared Use Path
- Proposed Shared Use Path Shoulder
- Proposed Fencing
- Existing Ballast
- Limits of Earthwork Outside Prism
- Approximate Parcel Boundary
- Existing Rail

Between US-209 & C9 Bridge
Approximately 2,000 Linear Feet
Town of Ulster, Ulster County, NY



Produced For Planning Purposes Only. Data provided by NYSGIS Clearinghouse & Other Third Parties.



Export Date: 8/31/2022



3.4 Location 4: US Route 209 Crossing



United States Route 209 is an urban principal arterial with an average annual daily traffic of 13,108 vehicles, 6% of those vehicles being trucks. The posted speed limit is 55 miles per hour, with the 85th percentile speed

observed by NYSDOT in 2019 being 63 miles per hour. According to the Empire State Trail Design Guide⁵ the suggested maximum posted speed limit for an at-grade crossing without a full traffic signal is 45 miles per hour. It is anticipated this trail crossing would not meet the MUCTD requirements for a traffic signal, but future traffic studies are warranted to confirm. Considering the high design speed (85th percentile speed) and the high traffic volumes, this report suggests all alternatives for the US 209 crossing propose an above grade separated trail crossing.

Rail With Trail Alternative

The rail with trail alternative recommendation includes the same 300-foot, triple span, prefabricated bridge as the trail only alternative. This alternative would require the trail to climb at a maximum grade of 5 percent over approximately 425 linear feet to meet the minimum vertical clearance over US-209. This alternative would require approximately 15 percent more fill compared to the trail only alternative, about 9,500 cubic yards total. The additional fill is needed to compensate for the expansion of the rail prism which would accommodate the paralleling shared use path. The bridge is proposed to be 30 feet south of the center of the existing tracks. Existing rail crossing infrastructure will remain, but additional warnings for northbound traffic is suggested as their view of the crossing will be slightly impeded by the new bridge.

Trail Only Alternative

All proposed earthwork for both alternatives in this area would take place in the 100-year floodplain. Additional hydraulic analyses would need to be conducted to ensure



the fill does not significantly alter the floodplain and a permit would be required to place fill into the 100-year floodplain.

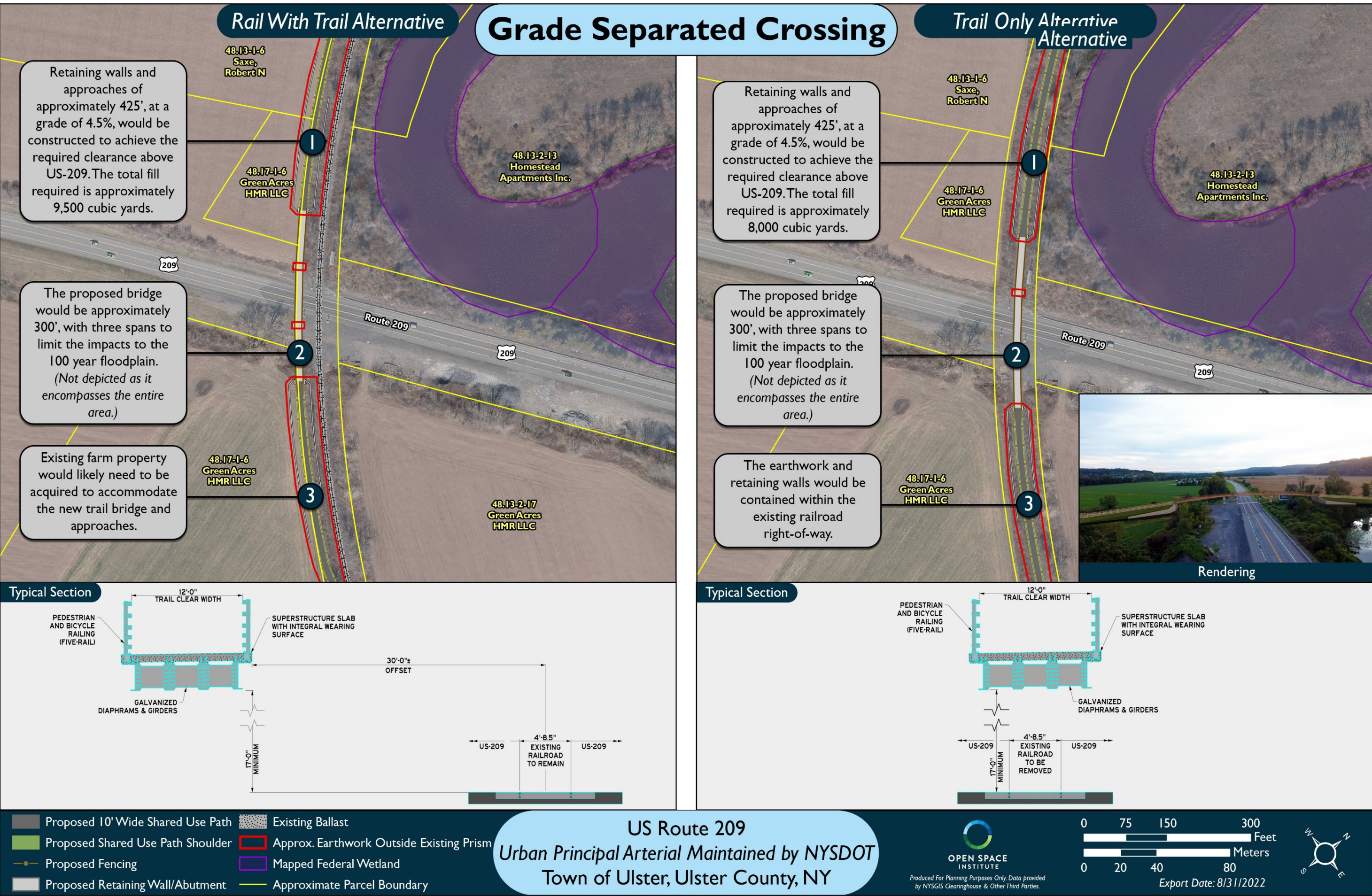
This report proposes a triple span, 300-foot bridge for both alternatives to reduce the required fill to build up the bridge approach embankments. The minimum vertical clearance for bridges above this class of roadway is 17'-0" according to NYSDOT, which would require the trail to climb at a maximum grade of 5 percent over approximately 425 linear feet to meet the minimum clearance over US-209. For the trail only alternative, this would equate to approximately 8,000 cubic yards of fill. The trail only alternative would utilize retaining walls for the fill sections close to the bridge abutments to limit the required fill and keep all proposed work within the Ulster County property.

Cost Estimate

Category	Rail With Trail Subtotal	Trail Only Subtotal
A. Trail Construction ¹	\$468,000.00	\$423,000.00
B. Intersections & Crossings ²	\$3,974,000.00	\$3,753,000.00
C. Miscellaneous ³	\$149,000.00	\$75,000.00
The estimated total below includes additional contingencies, inflation, design, etc. See Section 6.0 for more details.		
Estimated Total	\$9,300,000.00	\$8,610,000.00

Notes

1. Includes Clearing & Grubbing, Trail Construction, and Earthwork
2. Includes Fencing, Proposed Bridge, and Retaining Walls
3. Includes Trail Amenities, Railroad Amenities, Right of Way Acquisitions, and Environmental Mitigation



3.5 Location 5: Hurley Mountain Rd (CR5) At-Grade Crossing



Hurley Mountain Road, County Route 5, is an urban minor collector with an average annual daily traffic of 1,219 vehicles, 5% of those vehicles being trucks. As shown by the photo to the right, the crossing is slightly skewed and

has severely limited horizontal and vertical sight distances in both directions. This study recommends that all alternatives create a side path along Hurley Mountain Road and cross the roadway approximately 550 feet to the north of the existing railroad crossing. The side path would continue south along the other side of Hurley Mountain Road to bring users back to the rail corridor. This report suggests that the new crossing location should have enhanced warnings such as rectangular rapid flash beacons (RRFBs).

Rail With Trail Alternative

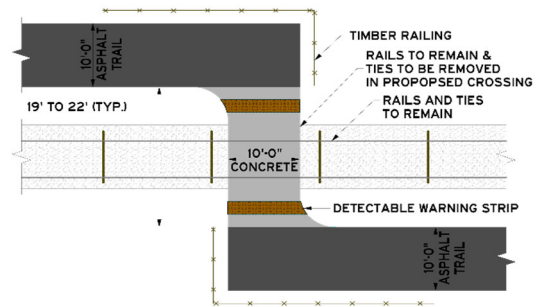
Both alternatives propose similar elements, with the main difference being the severity of impacts to wetlands, floodplains, and private property when the



trail comes back to the existing prism. Both alternatives will require earthwork within the 100 and 500-year floodplains for the construction of the side path

along Hurley Mountain Road. Property rights will likely need to be acquired from parcel number 48.13-2-3 as the anticipated earthwork for the constructing the trail off the existing prism will extend into that parcel. The Rail

with Trail alternative proposes the same switch back and moving of the crossing location as the Trail Only alternative, but with additional earthwork to expand the rail prism and a crossing of the trail over the railroad. Moving the trail to the



southside of the tracks reduces the environmental and property impacts farther down the corridor, including the US-209 crossing and Esopus Creek crossing.

Trail Only Alternative

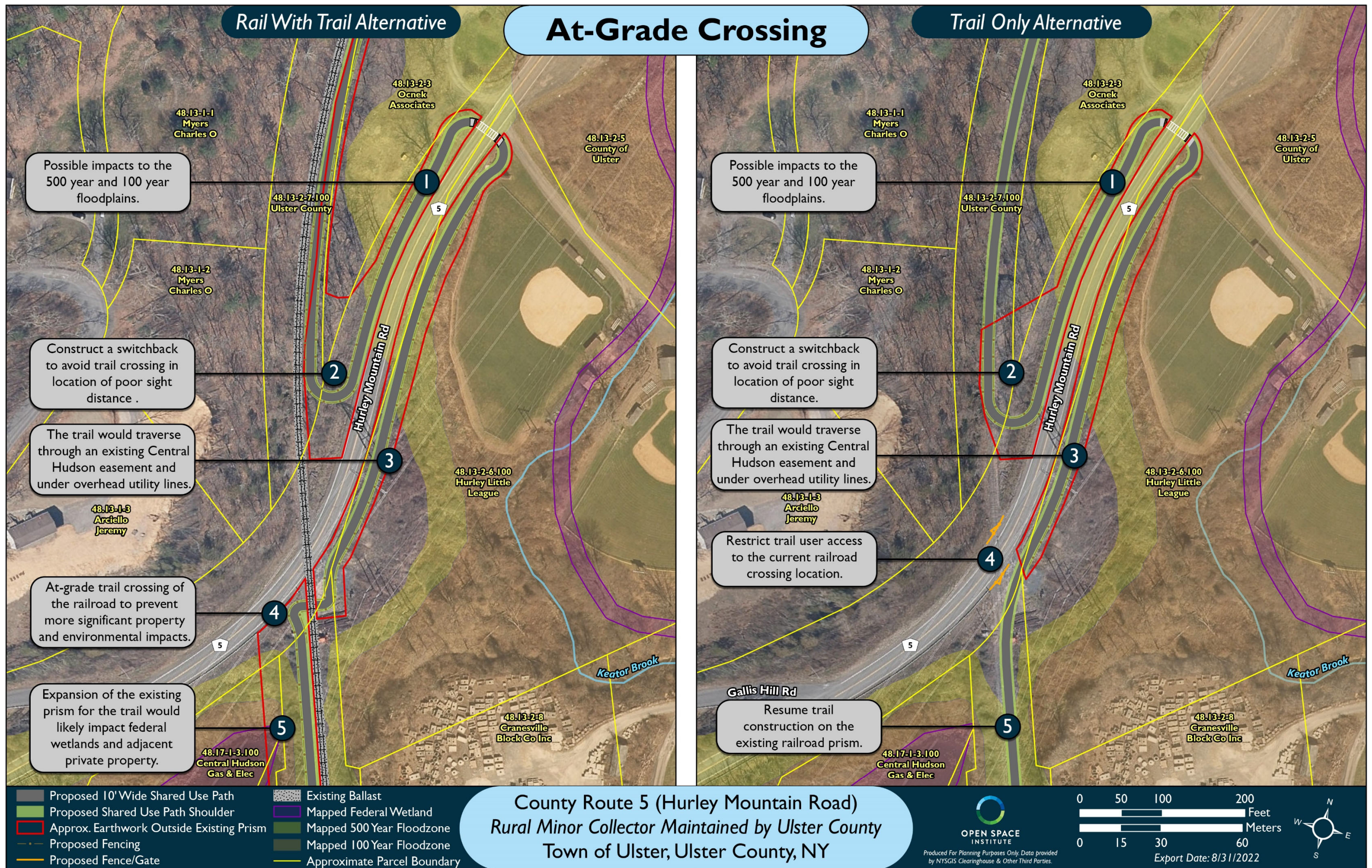
The trail only alternative will only require additional earthwork outside the existing prism for the construction of the Hurley Mountain sidepath and for the switchback on the west side of the crossing. No impact to state or federal wetlands is anticipated for this alternative. To prevent trail users from using the previous crossing location, but still allow maintenance staff to access the corridor, it is suggested that lockable gates be installed at each end of the old crossing location.

Cost Estimate

Category	Rail With Trail Subtotal	Trail Only Subtotal
A. Trail Construction ¹	\$405,000.00	\$197,000.00
B. Structures ²	\$168,000.00	\$84,000.00
C. Intersections & Crossings ³	\$70,000.00	\$70,000.00
D. Miscellaneous ⁴	\$170,000.00	\$110,000.00
The estimated total below includes additional contingencies, inflation, design, etc. See Section 6.0 for more details.		
Estimated Total	\$1,650,000.00	\$940,000.00

Notes

1. Includes Clearing & Grubbing, Trail Construction, and Earthwork
2. Includes Fencing
3. Includes Concrete Ramp, Detectable Warnings, Signs, RRFB's, and Striping
4. Includes Trail Amenities, Railroad Amenities, Right of Way Acquisitions, and Environmental Mitigation



3.6 Location 6: Fill Section North of the Hurley Mountain Road (CR-5) Crossing



The segment of the corridor between the Hurley Mountain Road (CR-5) crossing and approximately 1,000 linear feet to the north, is benched into the side of Gaillis Hill. The existing railroad sits in the center of

the bench which has a width of approximately 19 feet. The slopes on either side of the corridor vary between 25 and 80 percent, with the steeper being on the westside of the tracks, and the less steep slopes being on the east side towards NY-28. As of September 2022, the Catskill Mountain Railroad utilizes this segment in their scenic tour.

Rail With Trail Alternative

The feasibility of constructing the shared use path on the west side or east side of the tracks was evaluated during the study. Based upon field investigations, it was



determined that cutting into the westside of the bench could destabilize the slope. Placing fill on the eastern slope to

expand the rail prism is likely to be less intrusive to the stability of the bench. Placing the trail on the east side of the tracks would require the trail to cross over the rail line

south of NY-28A before this segment. The top of the prism would need to be expanded approximately 13'-6" to accommodate the minimum separation of the rail and the shared use path. The eastern side of the slope would tie back into the existing slope at a grade of 50%. The base of the new eastern slope would extend an average of 52 feet from the original edge of the bench, resulting in impacts to adjacent private properties. Expansion of the rail prism would result in approximately 12,000 cubic yards of fill for this 1,000-foot-long segment.

Trail Only Alternative

The trail only alternative will require most of the existing railroad infrastructure (i.e., rails, ties, ballast, etc.) to be removed to accommodate the trail on the center of the railroad prism. A byproduct of removing this infrastructure is disposing of the wooden creosote-treated railroad ties in accordance with NYDEC regulations. The 19-foot-wide bench allows for the construction of a 10-foot-wide shared use path with four and a half foot wide shoulder. The anticipated limits of earthwork would be contained within the existing rail prism, resulting in no direct impacts to adjacent properties, or wetlands.

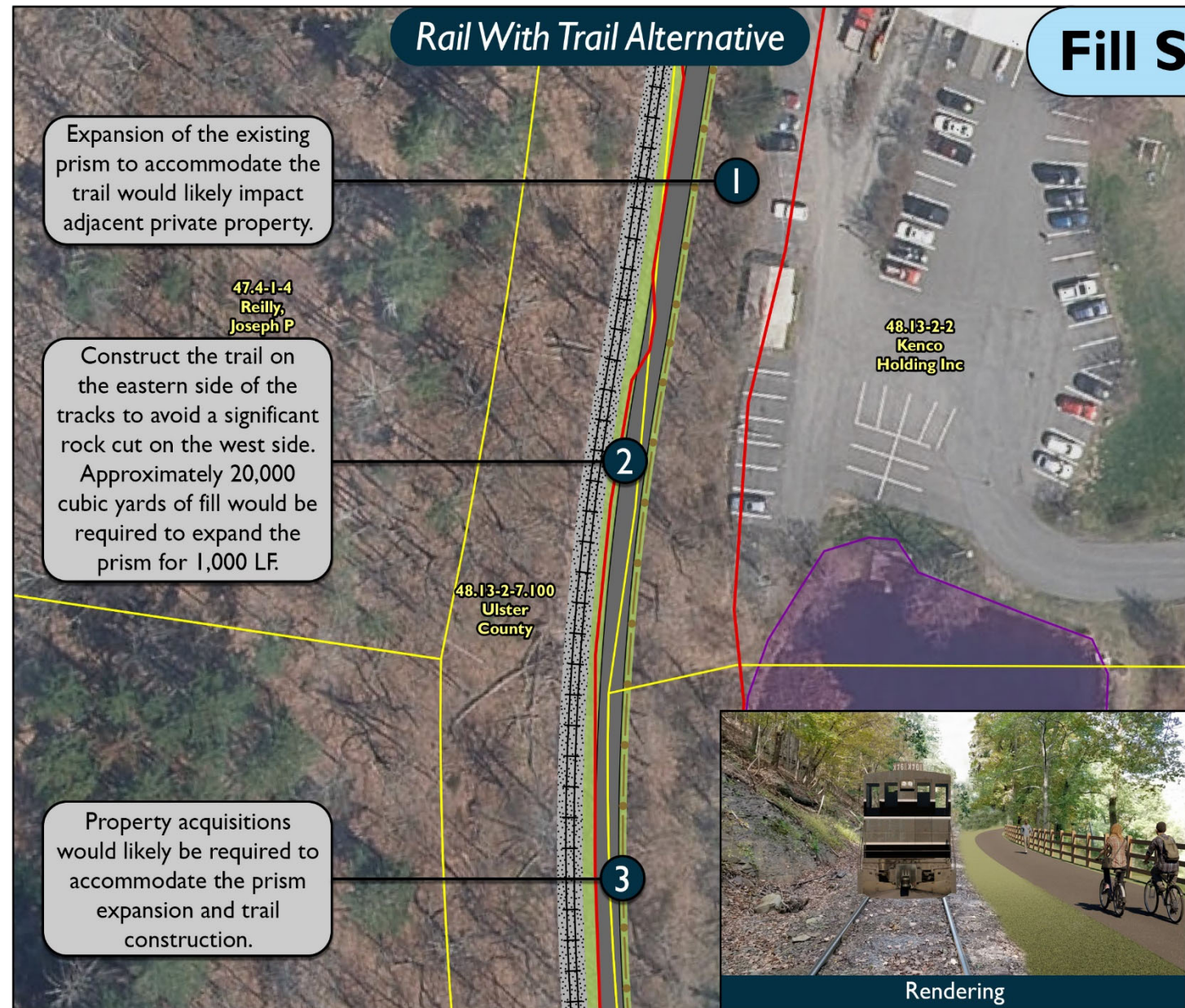
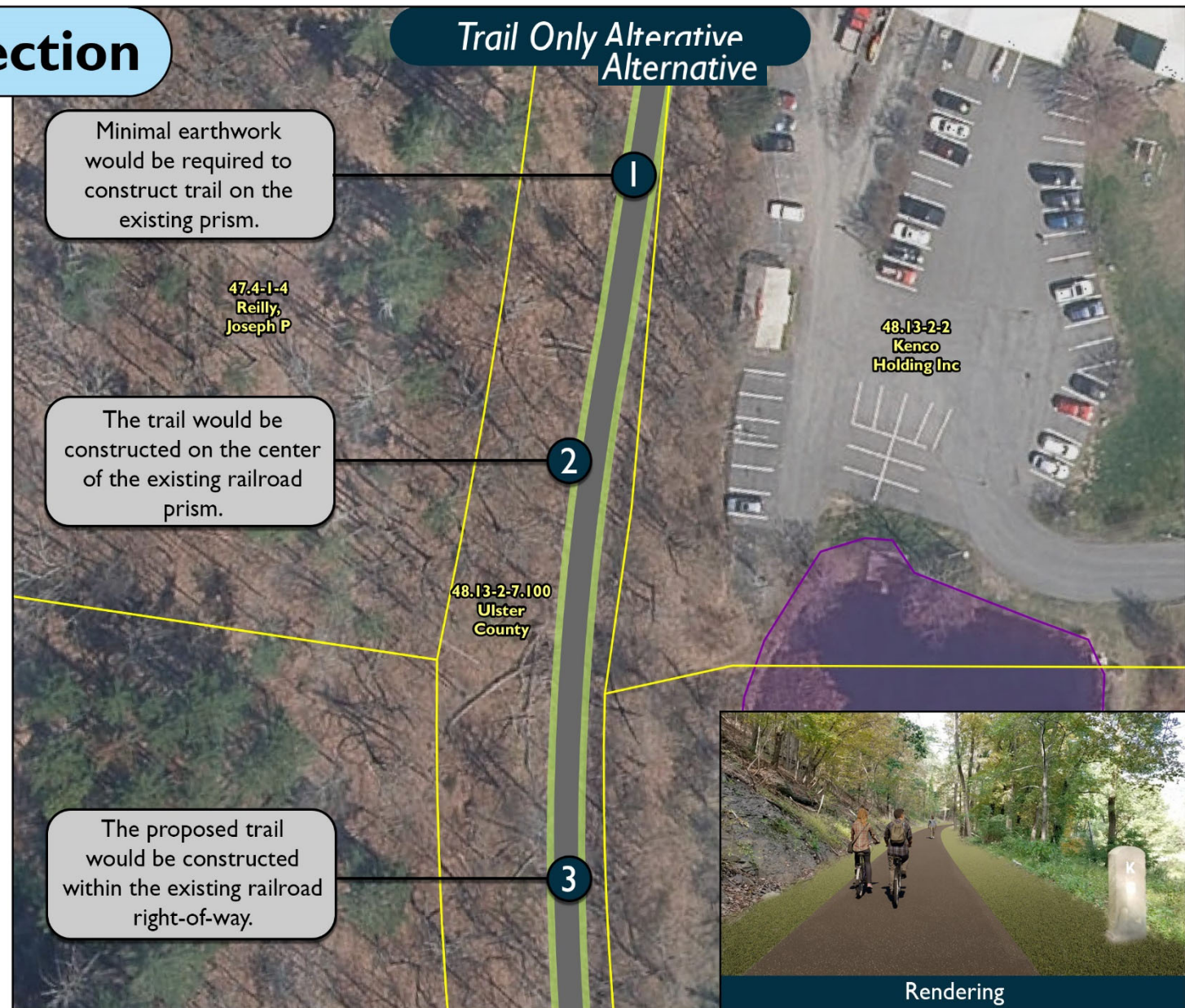
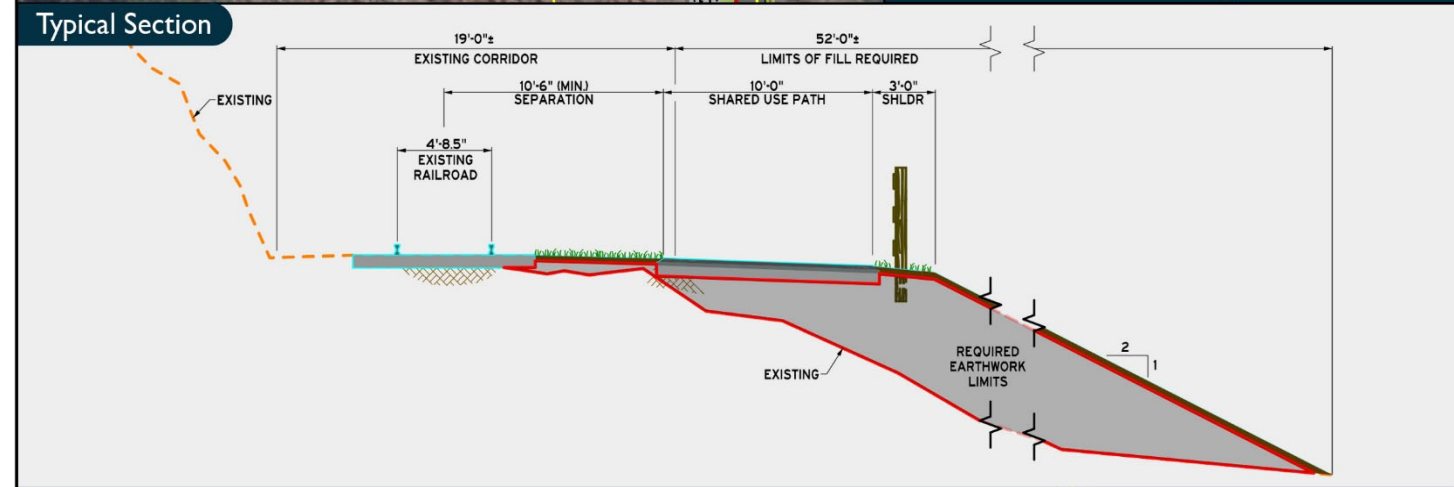
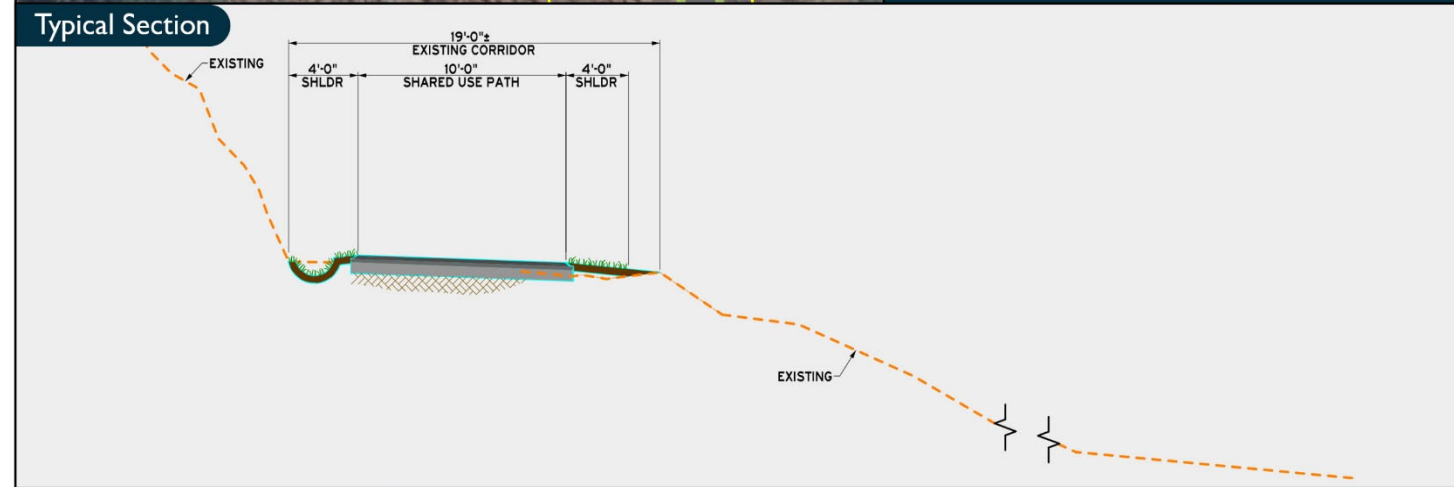
Cost Estimate

Category	Rail With Trail Subtotal	Trail Only Subtotal
A. Trail Construction ¹	\$781,000.00	\$68,000.00
B. Intersections & Crossings ²	\$70,000.00	\$12,000.00
C. Miscellaneous ³	\$139,000.00	\$10,000.00
The estimated total below includes additional contingencies, inflation, design, etc. See Section 6.0 for more details.		
Estimated Total	\$2,010,000.00	\$180,000.00

1. Includes Clearing & Grubbing, Trail Construction, and Earthwork

2. Includes Fencing

3. Includes Trail Amenities, Railroad Amenities, Right of Way Acquisitions, and Environmental Mitigation



- Proposed 10' Wide Shared Use Path
- Proposed Shared Use Path Shoulder
- Proposed Fencing
- Approx. Earthwork Outside Existing Prism

- Existing Ballast
- Existing Rail
- Mapped Federal Wetland
- Approximate Parcel Boundary

North of Hurley Mountain Road

Approximately 1,000 Linear Feet

Town of Ulster, Ulster County, NY

OPEN SPACE INSTITUTE

Produced For Planning Purposes Only. Data provided by NYSGIS Clearinghouse & Other Third Parties.

0 30 60 120 Feet

0 10 20 40 Meters

Export Date: 8/30/2022

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May 18, 2023
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3.7 Location 7: Box Culvert – South of the State Route 28A At-Grade Crossing

During the corridor fieldwork conducted in April of 2021, there were 18 culverts discovered, ranging from 12-inch HDPE pipes to 8-foot-tall stone box culverts. All culverts within the study area were designed to carry a single-track railway, therefore limiting the useable width without modifications. The culverts vary in condition, some requiring only cleaning to prevent future failures, while others likely require significant repairs as the structure has significantly deteriorated over the years. Further structural inspections need to be conducted to make final determinations on necessary repairs (see the Field Inventory section of this report, or



the **Field Summary Maps in Appendix B**). The specific culvert shown here is located approximately 800 feet south of the NY-28A at-grade crossing. The structure is an eight-foot by four-foot stone box culvert, with an approximate length of 50 feet.



Both the prism and the culverts would need to be widened/extended to retain the existing rail and a paralleling shared use path. The specific culvert in the graphic below would require a 15-foot extension for the

Rail With Trail Alternative

prism expansion. The suggested method of the culvert extension is to install an interior ovalized pipe, typically made of high-density polyethylene, HDPE. This method would help solve structural concerns with the existing culvert and allow for easier extension of the culvert. Culvert end sections and stone armoring would be installed as necessary.

Trail Only Alternative

The proposed shared use path would be able to use this structure, as the current prism width would accommodate a ten-foot trail with 5-foot shoulders. For all culverts, repairs may be necessary depending on the results of future structural inspections.



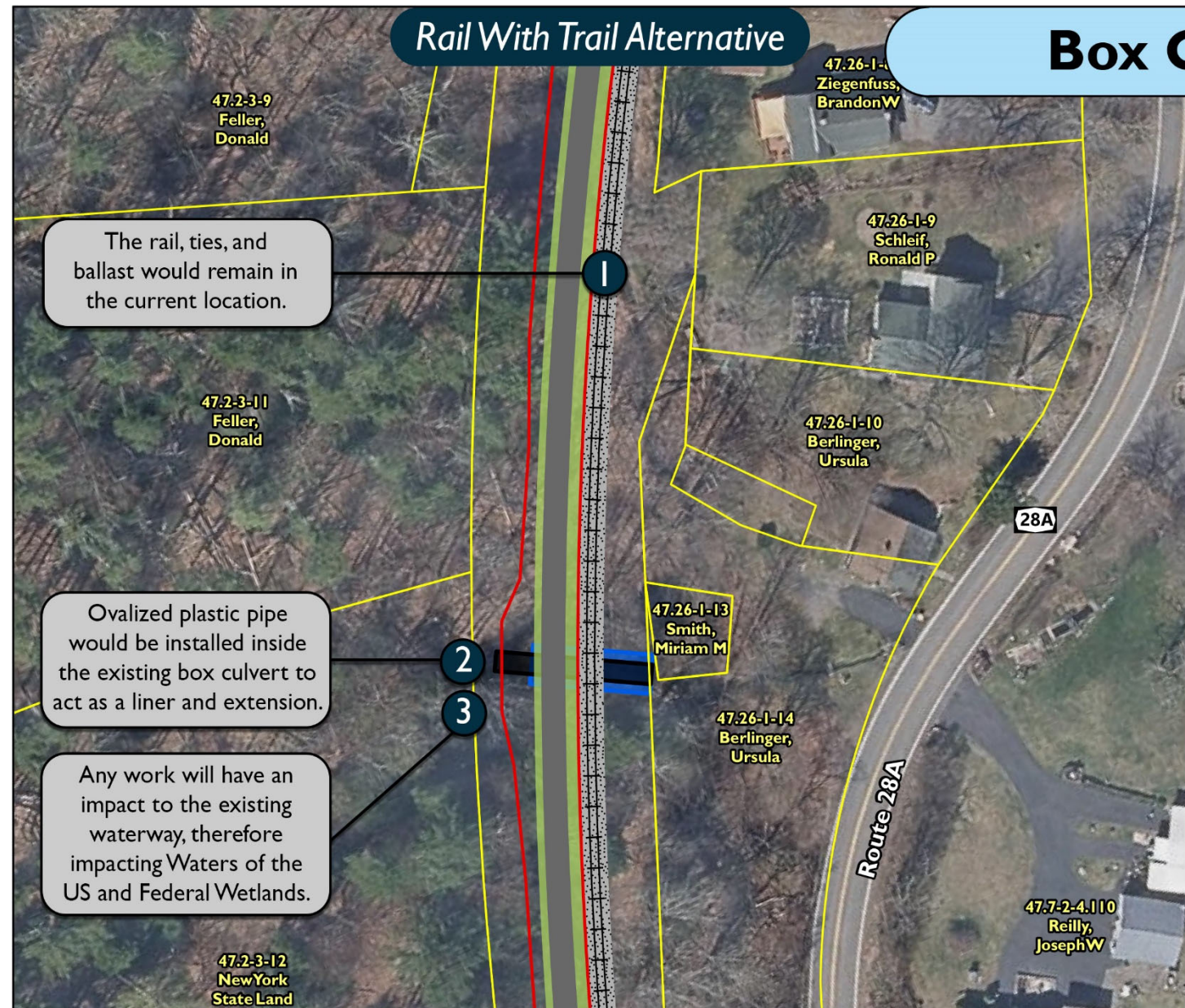
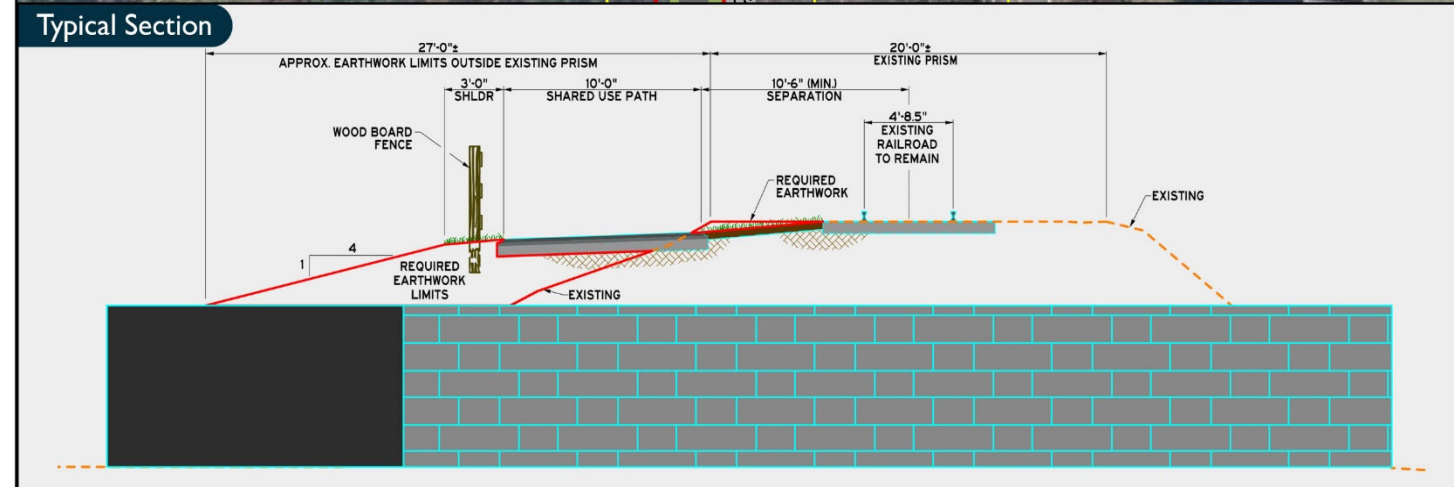
Fencing may need to be installed along the trail passing over culvert locations if the steep drop off is greater than a 50% slope, with a drop of more than four feet, and is within 5 feet of the edge of trail. If no work to the culvert is needed, there will be no impact to the waterway or to federal wetlands.

Cost Estimate

Category	Rail With Trail Subtotal	Trail Only Subtotal
A. Trail Construction ¹	\$94,000.00	\$36,000.00
B. Intersections & Crossings ²	\$56,000.00	\$6,000.00
C. Miscellaneous ³	\$60,000.00	\$0.00
The estimated total below includes additional contingencies, inflation, design, etc. See Section 6.0 for more details.		
Estimated Total	\$430,000.00	\$90,000.00

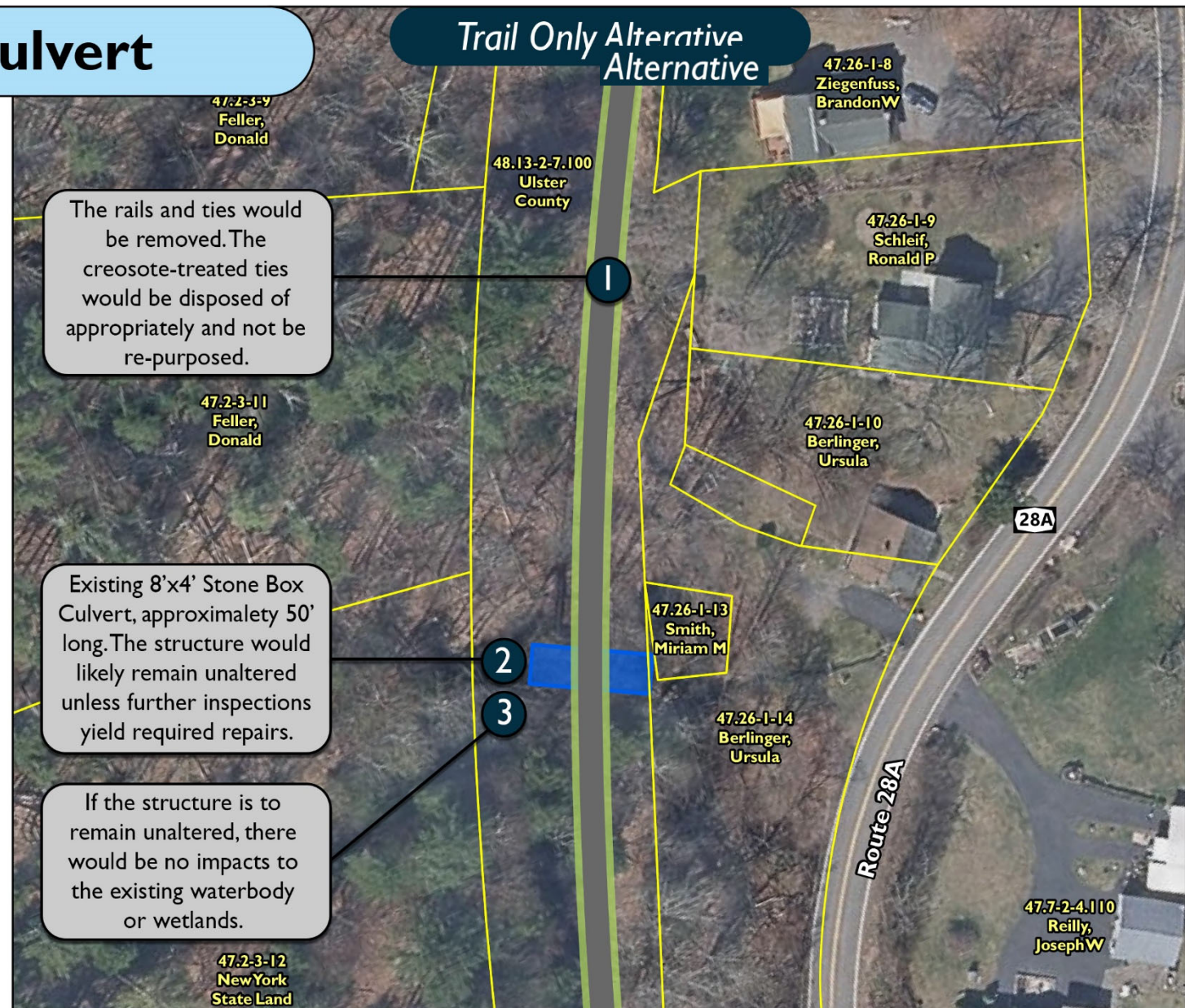
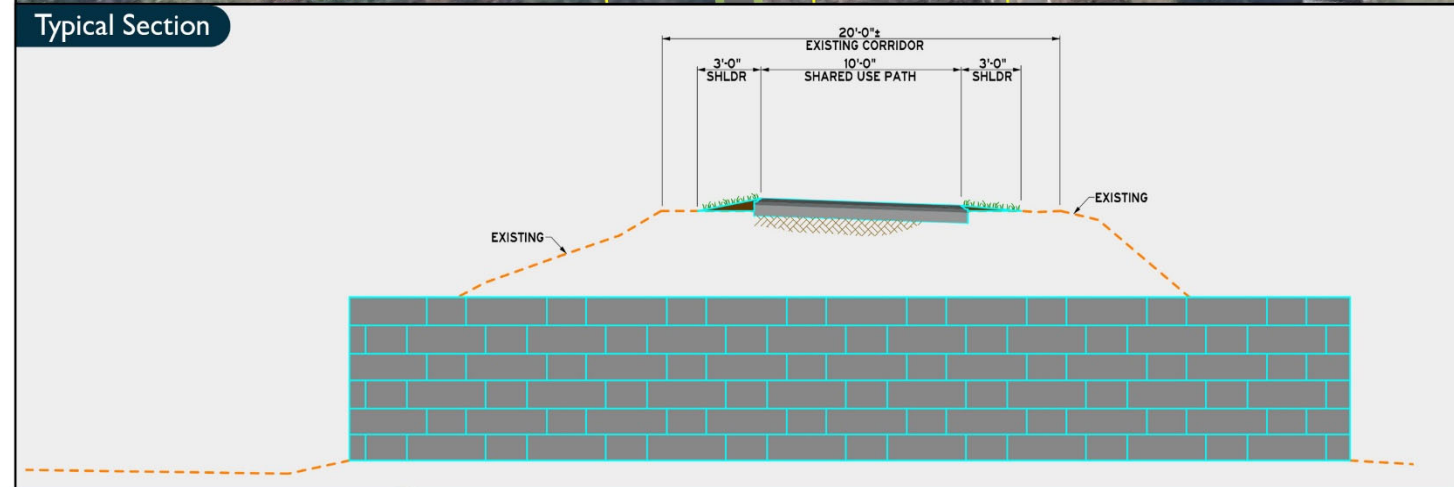
Notes

1. Includes Clearing & Grubbing, Trail Construction, and Earthwork
2. Includes Fencing and Culvert Modifications
3. Includes Trail Amenities, Railroad Amenities, Right of Way Acquisitions, and Environmental Mitigation



- Proposed 10' Wide Shared Use Path
- Proposed Shared Use Path Shoulder
- Existing Stone Box Culvert
- Proposed Ovalized HDPE Pipe
- Approx. Earthwork Outside Existing Prism
- Existing Rail
- Existing Ballast
- Approximate Parcel Boundary

Box Culvert



Stone Box Culvert South of New York State Route 28A Crossing Town of Ulster, Ulster County, NY

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Export Date: 8/30/2022

0 30 60 120 Feet
0 10 20 40 Meters

3.8 Location 8: State Route 28A At-Grade Crossing



New York State Route 28A is a rural minor collector with an average annual daily traffic of 1,576 vehicles, with 5% of those vehicles being trucks, and a posted speed limit of 35 miles per hour. According to the

NYSDOT roadway

inventory, the roadway is maintained by Ulster County despite the New York State Route designation. The existing railroad crossing infrastructure was removed during the last mill and overlay of NY-28A. As shown by the photo to the right, the crossing is heavily skewed from the desired 90-degree perpendicular crossing. Another unique feature of the crossing is the remains of an abandoned concrete bridge abutment, located on the west side of the tracks, on the southside of the crossing. This bridge abutment retains a large embankment of rock and soil from spilling into the rail corridor. As of June 2022, the scenic railroad ends their tour on the southside of the crossing, but the rails, ties, and ballast remain on the northside of the crossing.

Rail With Trail Alternative

Expansion of the rail prism to accommodate the adjacent trail will result in approximately 1,200 cubic yards of earthwork at the NY-28A crossing. Most of this excavation is removal of the bridge abutment and the associated embankment behind it. The resulting earthwork is likely to directly impact adjacent private property, state wetlands, and federal wetlands behind the bridge abutment. The trail should remain on the south/west side of the tracks to avoid additional impacts to adjacent property as the tracks are currently bordering the northern parcel boundary. The crossing would remain skewed to stay within the Ulster County property, and

there would still be concerns about the horizontal sight distance for both motorists and trail users. It is recommended that a form of enhanced warning, such as rectangular rapid flash beacons (RRFBs), be installed at the crossing to combat the sight distance concerns.

Trail Only Alternative

The trail only alternative will require most of the existing railroad infrastructure (i.e., rails, ties, ballast, etc.) to be removed to accommodate



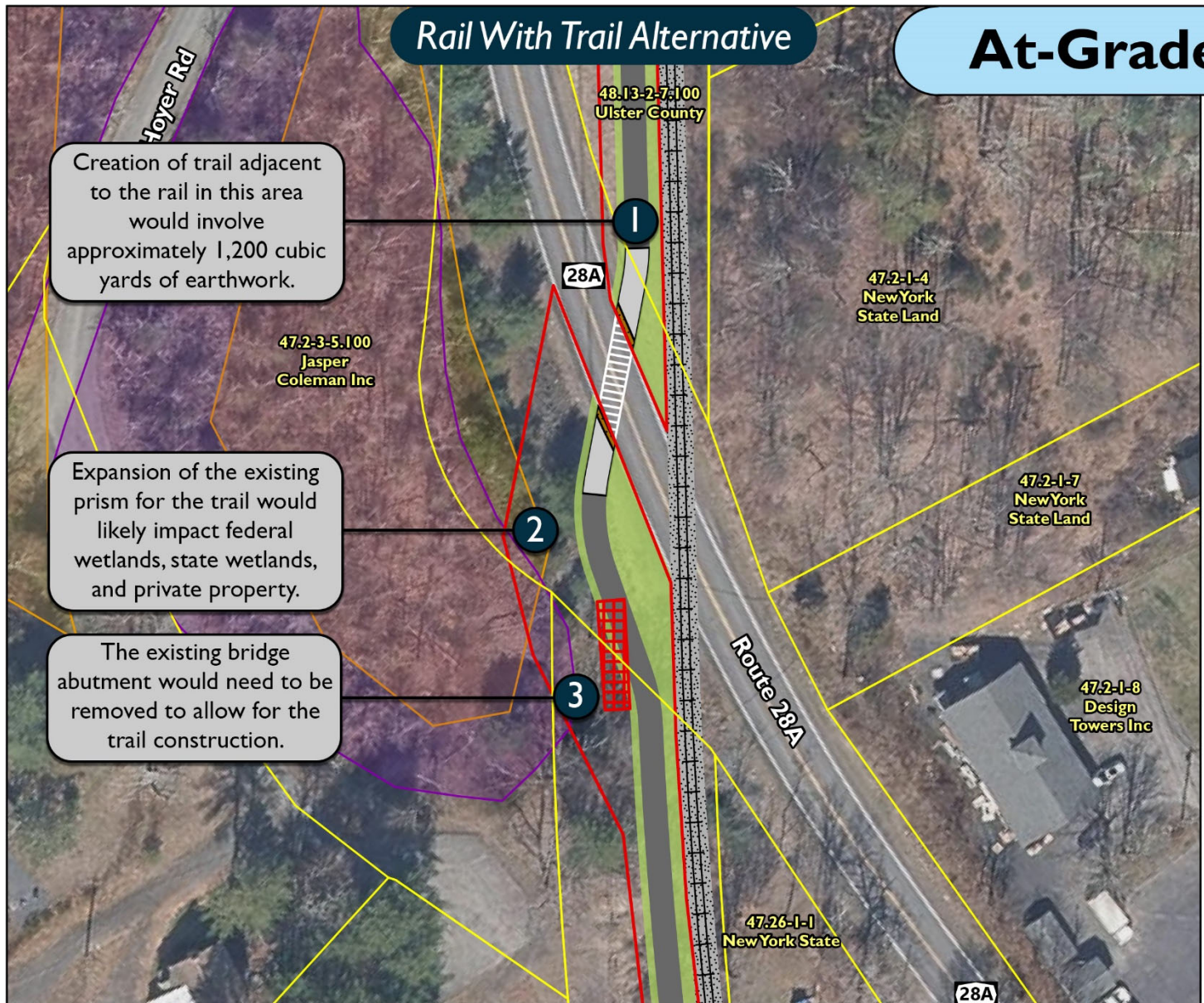
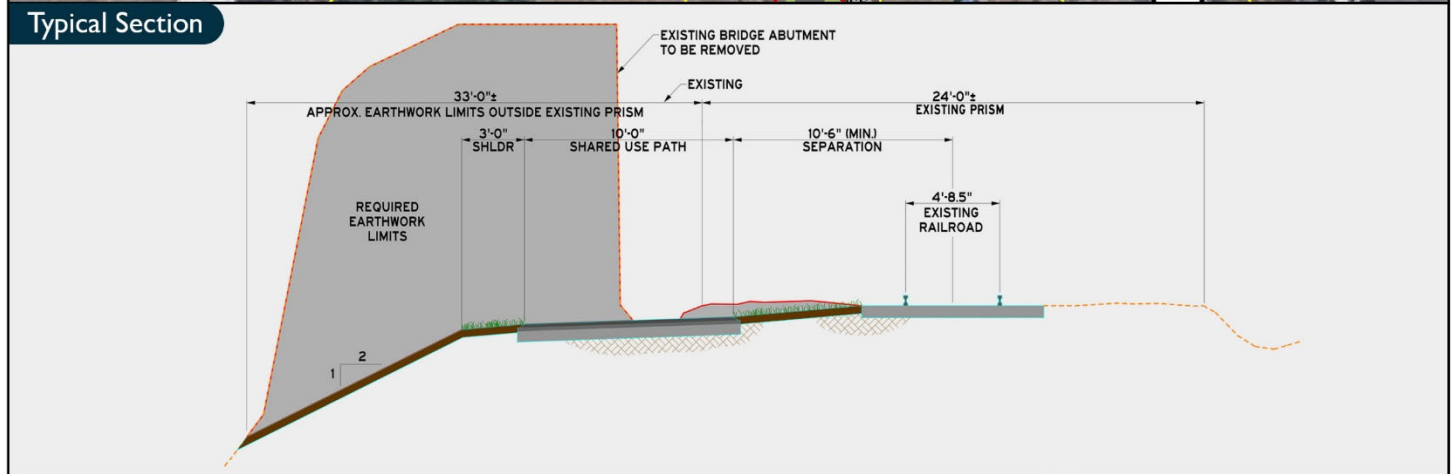
the trail on the center of the railroad prism. A byproduct of removing this infrastructure is disposing of the wooden creosote-treated railroad ties as per NYDEC regulations. The anticipated limits of earthwork would be contained within the existing rail prism, resulting in no direct impacts to adjacent properties, wetlands, or the existing bridge abutment. Mapped state wetland KW-3 is adjacent to the crossing and any work will likely impact the 100-foot adjacent area. Like the trail only alternative, it is suggested that an enhanced warning be installed to help prevent motorist and trail user conflicts.

Cost Estimate

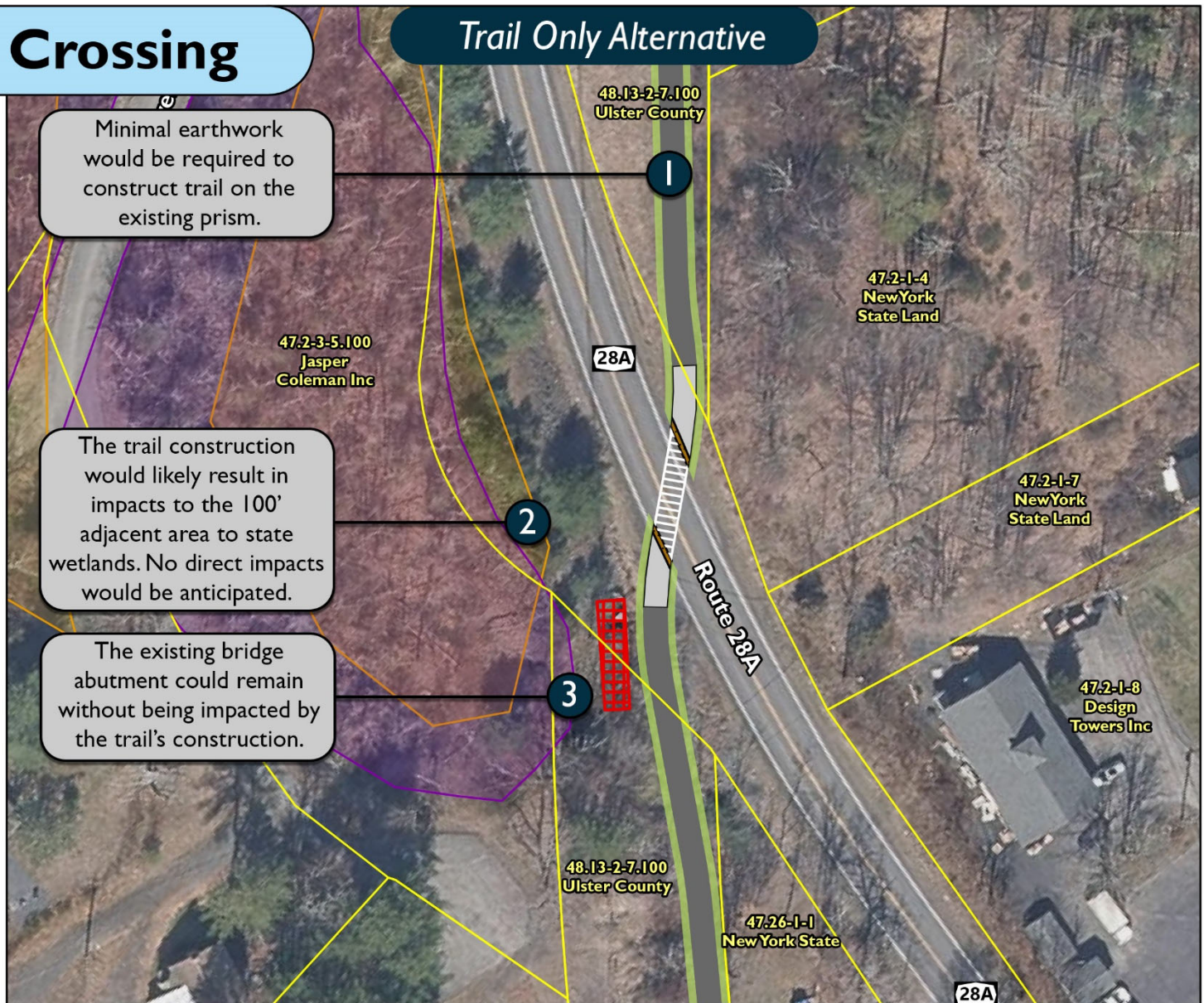
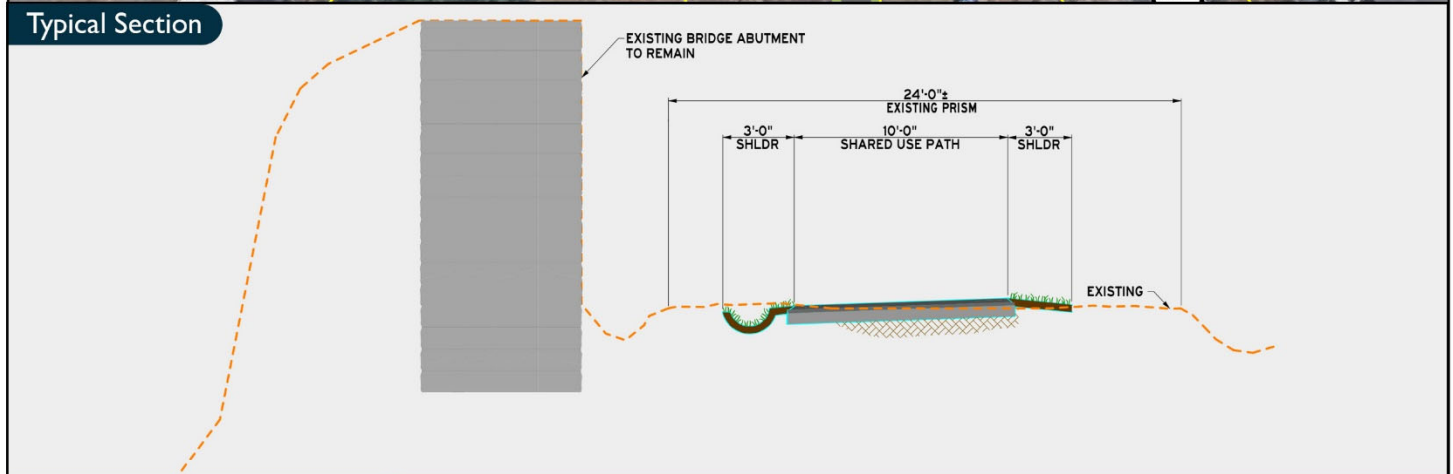
Category	Rail With Trail Subtotal	Trail Only Subtotal
A. Trail Construction ¹	\$92,000.00	\$33,000.00
B. Intersections & Crossings ²	\$70,000.00	\$70,000.00
C. Miscellaneous ³	\$71,000.00	\$10,000.00
The estimated total below includes additional contingencies, inflation, design, etc. See Section 6.0 for more details.		
Estimated Total	\$480,000.00	\$230,000.00

Notes:

1. Includes Clearing & Grubbing, Trail Construction, and Earthwork
2. Includes Concrete Ramp, Detectable Warnings, Signs, RRFB's, and Striping
3. Includes Trail Amenities, Railroad Amenities, Right of Way Acquisitions, and Environmental Mitigation



- Proposed 10' Wide Shared Use Path
- Proposed Shared Use Path Shoulder
- Existing Bridge Abutment Remains
- Approx. Earthwork Outside Existing Prism
- Existing Rail
- Existing Ballast
- Mapped Federal Wetland
- Mapped State Wetland
- Approximate Parcel Boundary



New York State Route 28A
Rural Minor Collector Maintained by Ulster County
Towns of Ulster & Kingston, Ulster County, NY

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0 30 60 120 Feet

0 10 20 40 Meters

Export Date: 8/30/2022

3.9 Location 9: Railroad Bridge over Beesmer Road (BIN 7713420)



The existing railroad bridge over Beesmer Road (BIN 7713420) is a steel girder structure constructed in 1911 that spans approximately 26 feet with a deck width of

approximately 15'-4". Vertical clearance under the bridge is signed at 10'-7", which is well below the NYSDOT standard of 15'-6" per Section 2.4 of the NYSDOT Bridge Design Manual. Overhead utility lines are also run under the bridge with no enclosure to protect motorists. The bridge was given a cursory inspection on 4/22/21, and the following issues were identified: concrete scaling and spalling at abutments, failed paint system, and pitting and light corrosion of steel members. These deformations may require repair to preserve the life of the structure prior to repurposing it for pedestrian trail use. Overall, the structure has a condition rating of good.

Rail With Trail Alternative

All the bridges within this corridor were designed to carry a single track, which eliminates the possibility of having a trail parallel the existing railroad on the bridge structure without significant modifications or replacement. In Figure 3-2, the proposed bridge is shown to be constructed approximately 36 feet from BIN 7713420 to prevent impacts to the existing railroad substructure. A significant amount of fill would be required for construction of a new bridge, including graded approaches with retaining walls and side slopes of 50%. This fill and other bridge elements would likely require private property acquisition as shown on the figure below, as well as potential impacts to the adjacent mapped federal wetlands. Another potential impact would be modification of the at grade driveway crossing for access to parcel 38.4-6-20.100, which

would currently be too low to accommodate the new bridge approaches.

Trail Only Alternative

The trail only alternative will require the removal of the rails, ties, and ballast from the bridge decking and approaches to allow for the trail to be constructed. The railroad bridge substructure and superstructure would remain and be rehabilitated to be converted into a trail bridge.

Rehabilitation measures to be undertaken on this structure would likely include installing Pedestrian and Bicycle Railing (5-Rail) at the edge



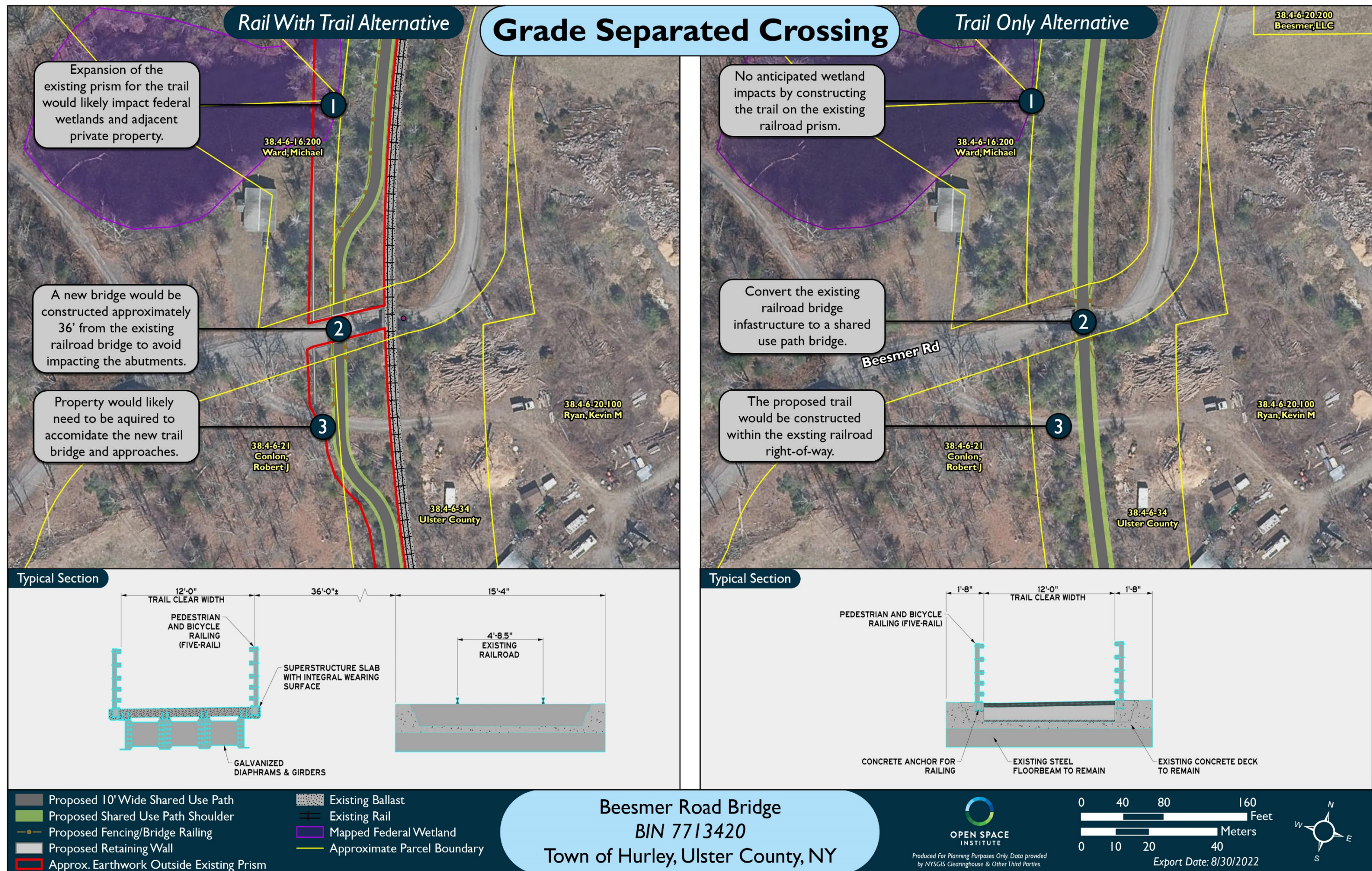
of the proposed 12-foot-wide trail over the structure, installation of Pedestrian Fencing for Bridges immediately beyond the back face of the Pedestrian and Bicycle Railing (5-Rail), removal of the existing paint and repainting of the bridge, and minor repairs to the existing abutments. Utilizing the existing rail prism would likely prevent impacts to adjacent properties and federal wetlands as earthwork out be limited to the top of the rail prism to install the trail subbase and top course. If the bridge is simply rehabilitated, then structures' vertical or horizontal clearances would not be modified.

Cost Estimate

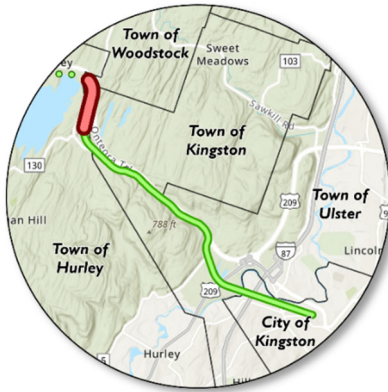
Category	Rail With Trail Subtotal	Trail Only Subtotal
A. Trail Construction ¹	\$140,000.00	\$23,000.00
B. Intersections & Crossings ²	\$1,060,000.00	\$270,000.00
C. Miscellaneous ³	\$133,000.00	\$5,000.00
The estimated total below includes additional contingencies, inflation, design, etc. See Section 6.0 for more details.		
Estimated Total	\$2,700,000.00	\$610,000.00

Notes:

1. Including Clearing & Grubbing, Trail Construction, and Earthwork
2. Including Bridge Work, Fencing, Retaining Walls
3. Including Trail Amenities, Railroad Amenities, Right of Way Acquisitions, and Environmental Mitigation



3.10 Location 10: Rock Cut Between the Basin Road Beesmer Road Bridges



This section passes through a large rock cut between the Basin Road Bridge, and the Beesmer Road Bridge. The rock cut is approximately 1 mile long, varies in depth between 14 feet and 30 feet, and is

approximately 18 feet wide at the base of the cut. As expected with large cuts that have poorly maintained ditches, this segment is showing signs of poor drainage from adjacent areas. Several trees and large rocks have fallen into the tracks with falling debris signs currently scattered within the area to alert anyone of the condition. As of May 2022, the scenic railroad does not utilize this segment, but the rails, ties, and ballast remain in its original location in the center of the corridor.

Rail With Trail Alternative

To accommodate a paralleling ten-foot-wide trail to the existing rail line, the existing 18-foot corridor width would need to be widened to approximately 34 feet, resulting in approximately 36,000 cubic yards of rock excavation. This additional cut is expected to stay within the existing railroad right of way and not



significantly impact adjacent properties. In Figure 3-1, the trail is proposed on the west side of the existing railroad tracks to prevent an unnecessary crossover of the track/trail infrastructure west of the Basin Road Bridge.

Trail Only Alternative

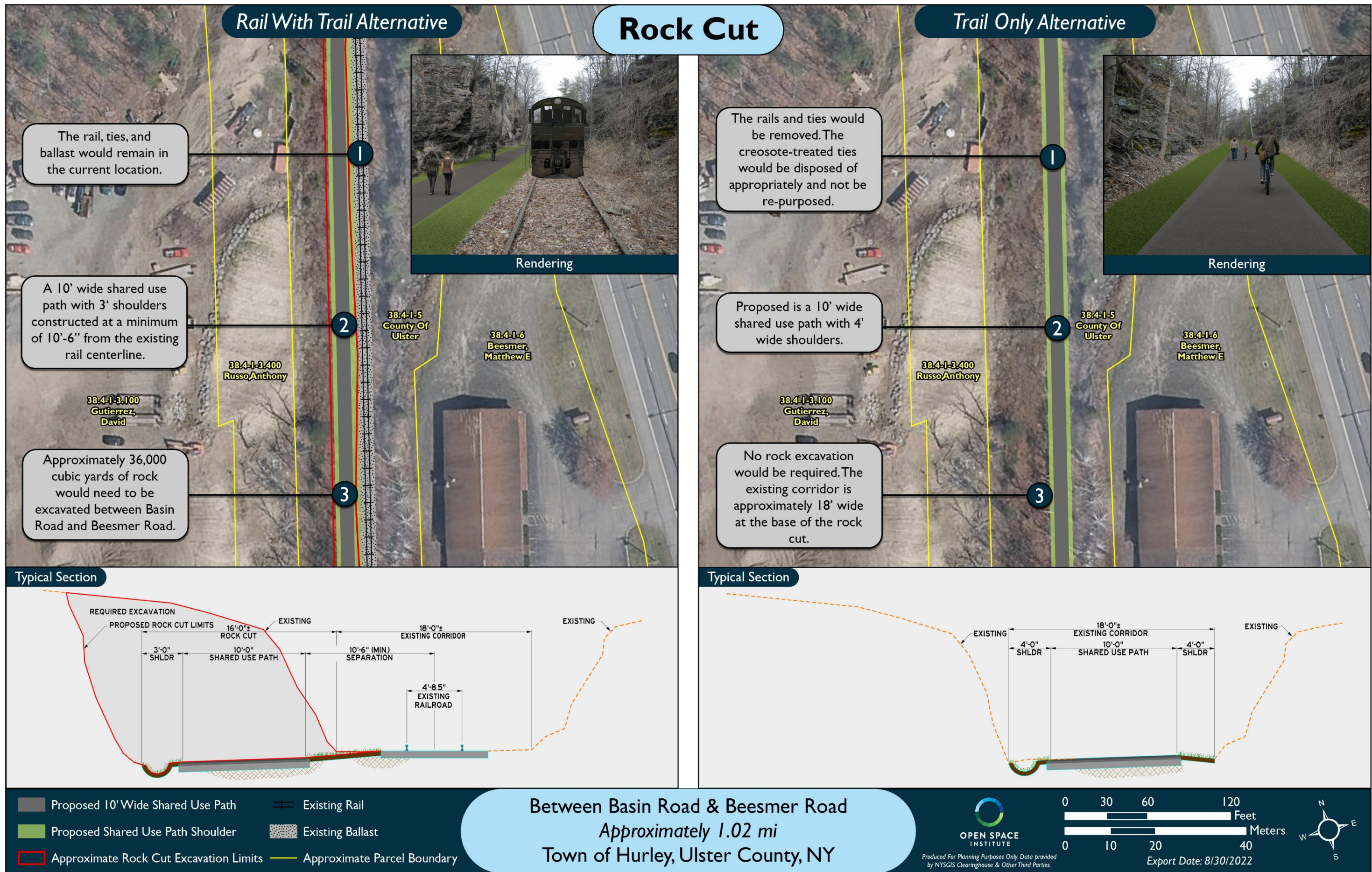
The trail only alternative will require most of the existing railroad infrastructure (i.e., rails, ties, ballast, etc.) to be removed to accommodate the trail on the center of the railroad prism. A byproduct of removing this infrastructure is disposing of the wooden creosote-treated railroad ties. The NYSDEC states the following regarding creosote treated wood: "The NYS Phase-Out of Creosote Law (Article 27, Title 25) bans the manufacturing, sale and use of creosote and products containing creosote in NYS. In NYS, creosote and any wood or other product treated with or containing creosote can only be disposed of in a landfill permitted by the Department of Environmental Conservation (DEC) to accept this waste." Another option would be to stockpile ties for future repairs on other track sections, if determined salvageable. The existing 18-foot-wide corridor from the face of rock to face of rock is wide enough to accommodate a ten-foot-wide shared use path with four-foot shoulders/swales on each side without having to excavate into the existing rock face. To improve the drainage within the cut, at least one shoulder would be converted into a stormwater runoff ditch and the rock face would be required to be machined scaled for loose rocks.

Cost Estimate

Category	Rail With Trail Subtotal	Trail Only Subtotal
A. Trail Construction ¹	\$1,531,000.00	\$358,000.00
The estimated total below includes additional contingencies, inflation, design, etc. See Section 6.0 for more details.		
Estimated Total	\$2,840,000.00	\$730,000.00

Notes:

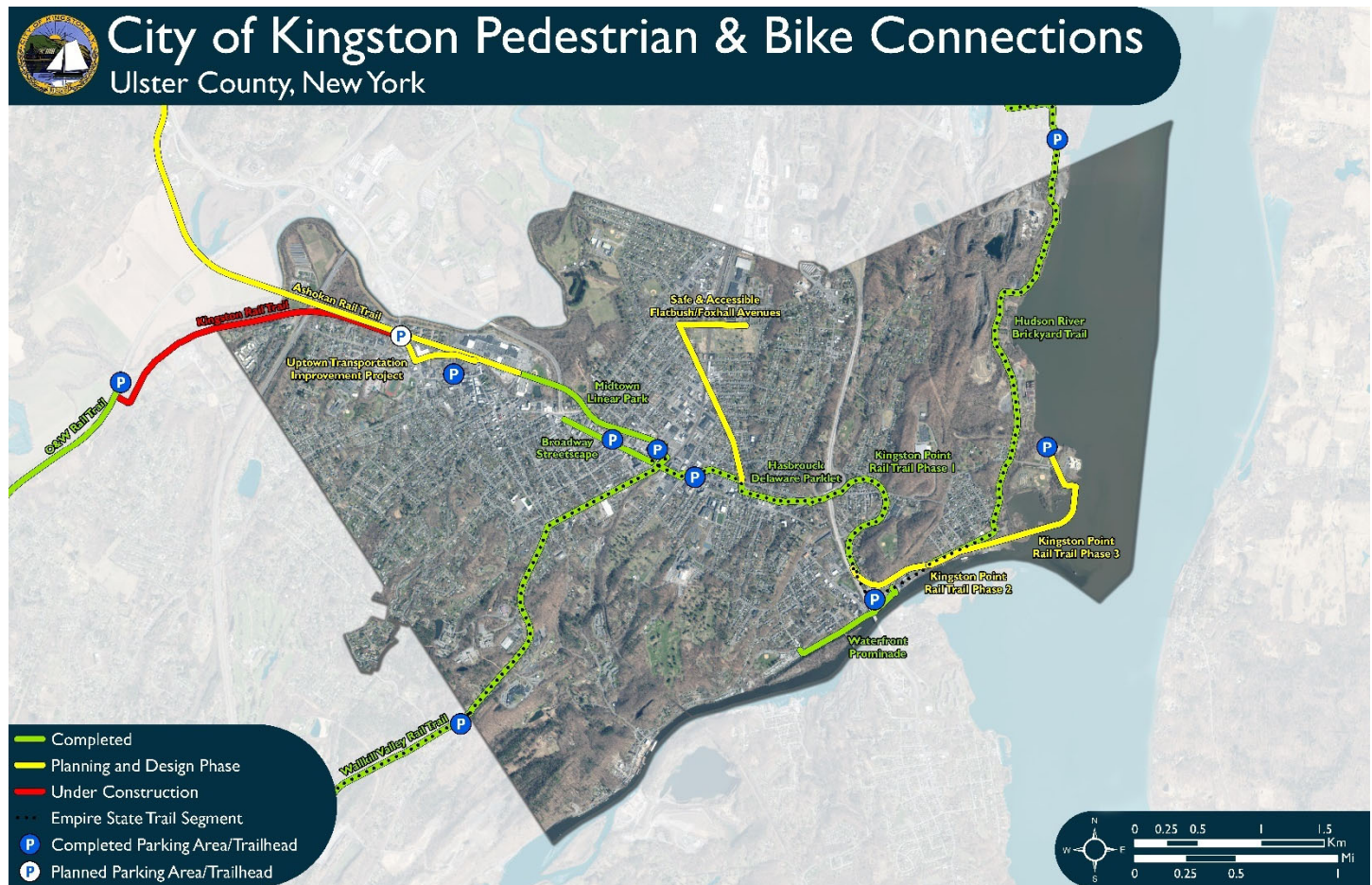
1. Including Clearing & Grubbing, Trail Construction, Earthwork, and Rock Excavation



4.0 CONNECTIONS

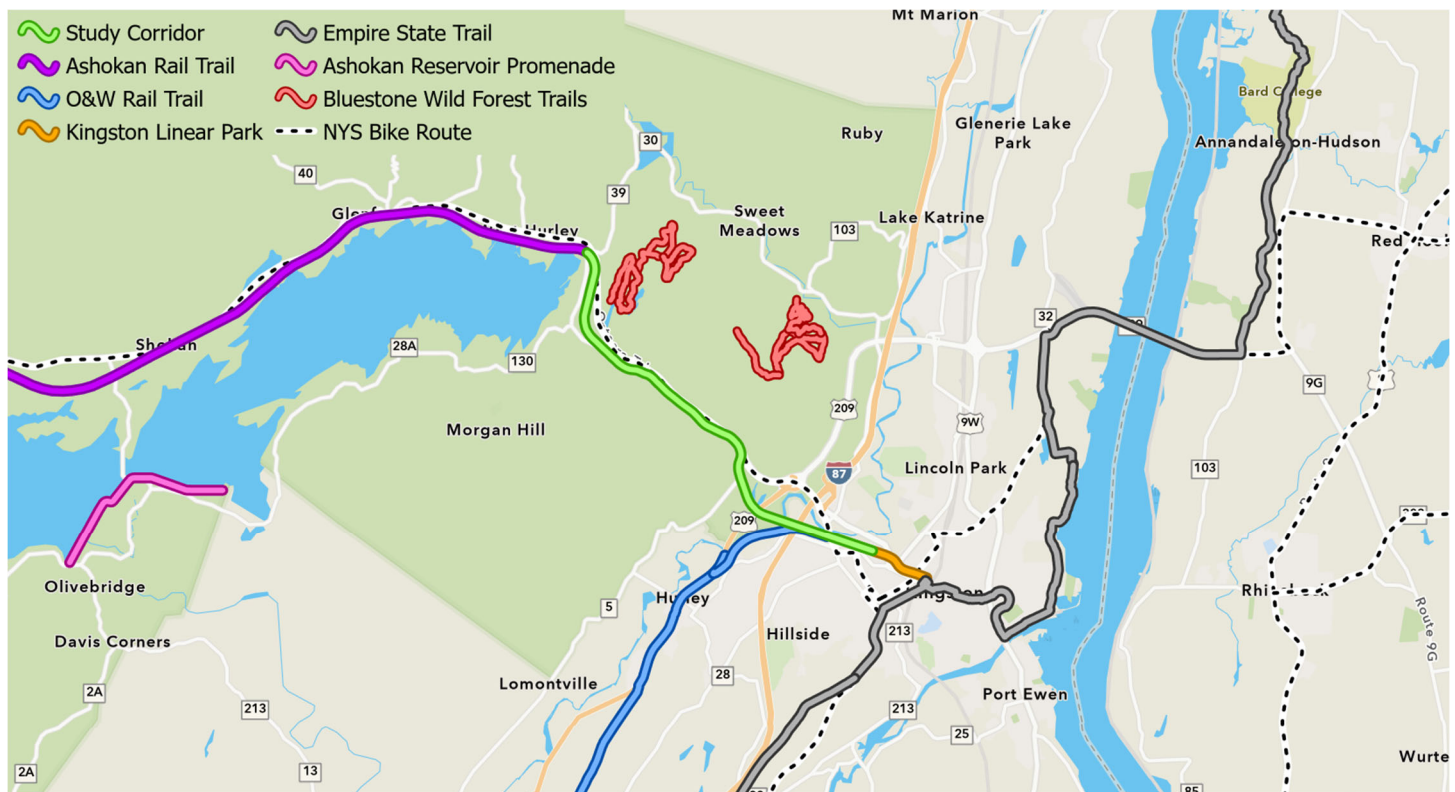
4.1 Kingston & Empire State Trail Connections

The eastern terminus of the corridor studied here is located in the City of Kingston at the beginning of the Mid-town Linear Park at Westbrook Lane. Both alternatives discussed in this report have options for connection to other pedestrian and bike facilities located in the City of Kingston and beyond.



In order to establish connections from the study corridor to various bicycle and pedestrian friendly points in the City of Kingston the trail must cross Washington Avenue (NY-981K). Washington Avenue has an average annual daily traffic of 21,203 as of 2019 and a posted speed limit of 30 miles per hour. With traffic volumes this high, installing a mid-block crossing at the current railroad crossing at Washington Avenue is not feasible without installing a pedestrian hybrid beacon or full traffic signal, both of which would use a red signal head to stop traffic to allow trail users to safely cross the roadway. The more economical solution is to bring users down to the full traffic signal with pedestrian phases at the Washington Avenue, Schwenk Drive, and Hurley Avenue intersection. Users could then utilize the proposed sidepath along Schwenk Drive that has been shown in the preliminary plans for the Uptown Transportation Improvement Project that that extends from Washington Avenue to Fair Street. At Fair Street the Schwenk Road sidepath could connect back into the study corridor and extend to the Midtown Linear Park at Westbrook Lane. Once at the Kingston Linear Park, you can utilize the other pedestrian and bicycle friendly corridors in the City of Kingston such as the Broadway Streetscape corridor or the Kingston Point Rail Trail to connect to the Empire State Trail.

4.2 Other Connections



As shown on the map above, there are several other connections to trails and bicycle routes outside of the City of Kingston. Starting on the western limits of the City of Kingston, the O&W Rail Trail is planned to extend up to Washington Avenue and connect to the existing trail near US Route 209, which extends an additional 12 miles south. Future development of the O&W Rail corridor could extend the trail over 50 more miles down to the City of Port Jervis near the New York New Jersey state line. Farther east the study corridor runs adjacent to the Bluestone State Forest and its trail systems that include over 29 miles of hiking and bike trails. At the western limits of the study corridor, the existing Ashokan Rail Trail has its eastern terminus at the Basin Road bridge. The existing Ashokan Rail Trail extends an additional 11.5 miles to the west along the northern side of the Ashokan Reservoir. New York State Route 28 runs parallel to the study corridor, and also serves as New York State Bicycle Route 28, connecting to the Empire State Trail and Bike Route 32 to the east.

5.0 COORDINATION

5.1 Anticipated Approvals, Reviews and Permits

The anticipated permits and approvals required for the project are listed below.

Table 4-1: Anticipated Approvals, Reviews and Permits

Regulatory Agency	Permits and Approvals
Federal	
USACOE	Federal Wetlands (Section 404 Clean Water Act, Section 10 Rivers and Harbors Act)
US Fish & Wildlife	Threatened and Endangered Species Determination
State	
NYSDOT	ROW/Access Highway Work Permits
NYSTA	ROW/Access Highway Work Permits
NYSOPRHP	Coordination/Approval
NYSDEC – Region 3	City of Kingston and Town of Ulster MS4 Catskill Park Management Unit Coordination Article 15, Title 5, Protection of Waters-Stream Disturbance, Excavation/Fill in Navigable Waters; Article 24, Freshwater Wetlands; State Pollutant Discharge Elimination System (SPDES) for stormwater discharge from construction Water Quality Certification (Section 401 of the Clean Water Act)
NYS DOS, Division of Coastal Resources (LWRP)	Coastal Zone Management Approval and State Consistency Determination
Regional	
Ulster County Highway	ROW/Access Permits
Local	
Town of Woodstock	Coordination, ROW/Access Permits, Maintenance Agreements
Town of Kingston	Coordination, ROW/Access Permits, Maintenance Agreements
Town of Hurley	Coordination, ROW/Access Permits, Maintenance Agreements
Town of Ulster	Coordination, ROW/Access Permits, Maintenance Agreements
City of Kingston	Coordination, ROW/Access Permits, Maintenance Agreements

6.0 COST ESTIMATE

6.1 Trail Only Alternative Cost Estimate

Category	Item Description	Unit	Unit Price	Quantity	Subtotal
A. Trail Construction	Clearing & Grubbing	AC	\$20,000.00	16	\$320,000.00
	Track Removal	LF	\$20.00	33,200	\$664,000.00
	Excavation	CY	\$35.00	8,200	\$287,000.00
	Fill	CY	\$45.00	2,050	\$93,000.00
	Trail Top Course (Asphalt)	TON	\$280.00	831	\$233,000.00
	Trail Subbase	CY	\$80.00	6,150	\$492,000.00
	Grass Shoulder	SY	\$10.00	29,520	\$296,000.00
B. Intersections & Crossings	Trail Roadway Crossing Ramp, Detectable Warnings, & Crosswalk	EA	\$30,000.00	3	\$90,000.00
	Single Post-Mounted Signs	EA	\$1,000.00	54	\$54,000.00
	Rectangular Rapid Flashing Beacon (Solar)	EA	\$15,000.00	4	\$60,000.00
C. Structures	Beesmer Road Bridge Decking and Railing	LS	\$250,000.00	1	\$250,000.00
	Route 209 Bridge	LS	\$2,500,000.00	1	\$2,500,000.00
	C-9 Bridge Decking and Railing	LS	\$750,000.00	1	\$750,000.00
	Wooden Pedestrian Railing	LF	\$70.00	4,560	\$320,000.00
D. Miscellaneous	Environmental Mitigation	LS	\$100,000.00	1	\$100,000.00
	Trail Amenities	LS	\$500,000.00	1	\$500,000.00
Totals	% WZTC based on project complexity	10%	Percentage	1	\$710,000.00
	% for Mobilization	10%	Percentage	1	\$740,000.00
	% for Incidentals, Inflation and Contingencies	30%	Percentage	1	\$2,250,000.00
	Total Construction Cost =				\$10,710,000.00
	% for Survey	10%	Percentage	1	\$1,080,000.00
	% for Design	10%	Percentage	1	\$1,080,000.00
	% for Construction Inspection	15%	Percentage	1	\$1,610,000.00
	Total Project Cost =				\$14,480,000.00

6.2 Rail With Trail Alternative Cost Estimate

Category	Item Description	Unit	Unit Price	Quantity	Subtotal
A. Trail Construction	Clearing & Grubbing	AC	\$20,000.00	39	\$780,000.00
	Excavation (Including Rock Cut)	CY	\$35.00	69,990	\$2,450,000.00
	Fill	CY	\$45.00	81,445	\$3,666,000.00
	Trail Top Course (Asphalt)	TON	\$280.00	831	\$233,000.00
	Trail Subbase	CY	\$80.00	6,150	\$492,000.00
	Grass Shoulder	SY	\$10.00	29,520	\$296,000.00
B. Intersections & Crossings	Trail Roadway Crossing Ramp, Detectable Warnings, & Crosswalk	EA	\$30,000.00	3	\$90,000.00
	Single Post-Mounted Signs	EA	\$1,000.00	54	\$54,000.00
	Rectangular Rapid Flashing Beacon (Solar)	EA	\$15,000.00	4	\$60,000.00
C. Structures	Beesmer Road Pedestrian Bridge	LS	\$1,000,000.00	1	\$1,000,000.00
	Route 209 Pedestrian Bridge	LS	\$2,750,000.00	1	\$2,750,000.00
	Esopus Creek Pedestrian Bridge	LS	\$2,250,000.00	1	\$2,250,000.00
	Wooden Pedestrian Railing	LF	\$70.00	13,360	\$940,000.00
	Culvert Extensions	EA	\$50,000.00	18	\$900,000.00
D. Miscellaneous	Environmental Mitigation	LS	\$1,500,000.00	1	\$1,500,000.00
	Trail Amenities	LS	\$500,000.00	1	\$500,000.00
	Rail Amenities	LS	\$500,000.00	1	\$500,000.00
	Right of Way Acquisitions	LS	\$500,000.00	1	\$500,000.00
Totals	% WZTC based on project complexity	10%	Percentage	1	\$1,900,000.00
	% for Mobilization	10%	Percentage	1	\$1,900,000.00
	% for Incidentals, Inflation and Contingencies	30%	Percentage	1	\$5,690,000.00
	Total Construction Cost =				\$28,460,000.00
	% for Survey	10%	Percentage	1	\$2,850,000.00
	% for Design	10%	Percentage	1	\$2,850,000.00
	% for Construction Inspection	15%	Percentage	1	\$4,270,000.00
	Total Project Cost =				\$38,500,000.00

End Notes

¹*Rails With Trails, Best Practices and Lessons Learned* (May 2021) , https://www.railstotrails.org/resourcehandler.ashx?name=rail-with-trails-best-practices-and-lessons-learned&id=26482&fileName=Rails-Trails-Layout_06_17_21_508.pdf

²Active Living Research, <https://activelivingresearch.org/taxonomy/transportation>

³ 2020-2025 Statewide Comprehensive Outdoor Recreation Plan, pg 41, <https://parks.ny.gov/documents/inside-our-agency/20202025StatewideComprehensiveOutdoorRecreationPlan.pdf>

⁴NYS Department of Health, Prevention Agenda 2019-2024: New York State's Health Improvement Plan, https://www.health.ny.gov/prevention/prevention_agenda/2019-2024/

Appendices



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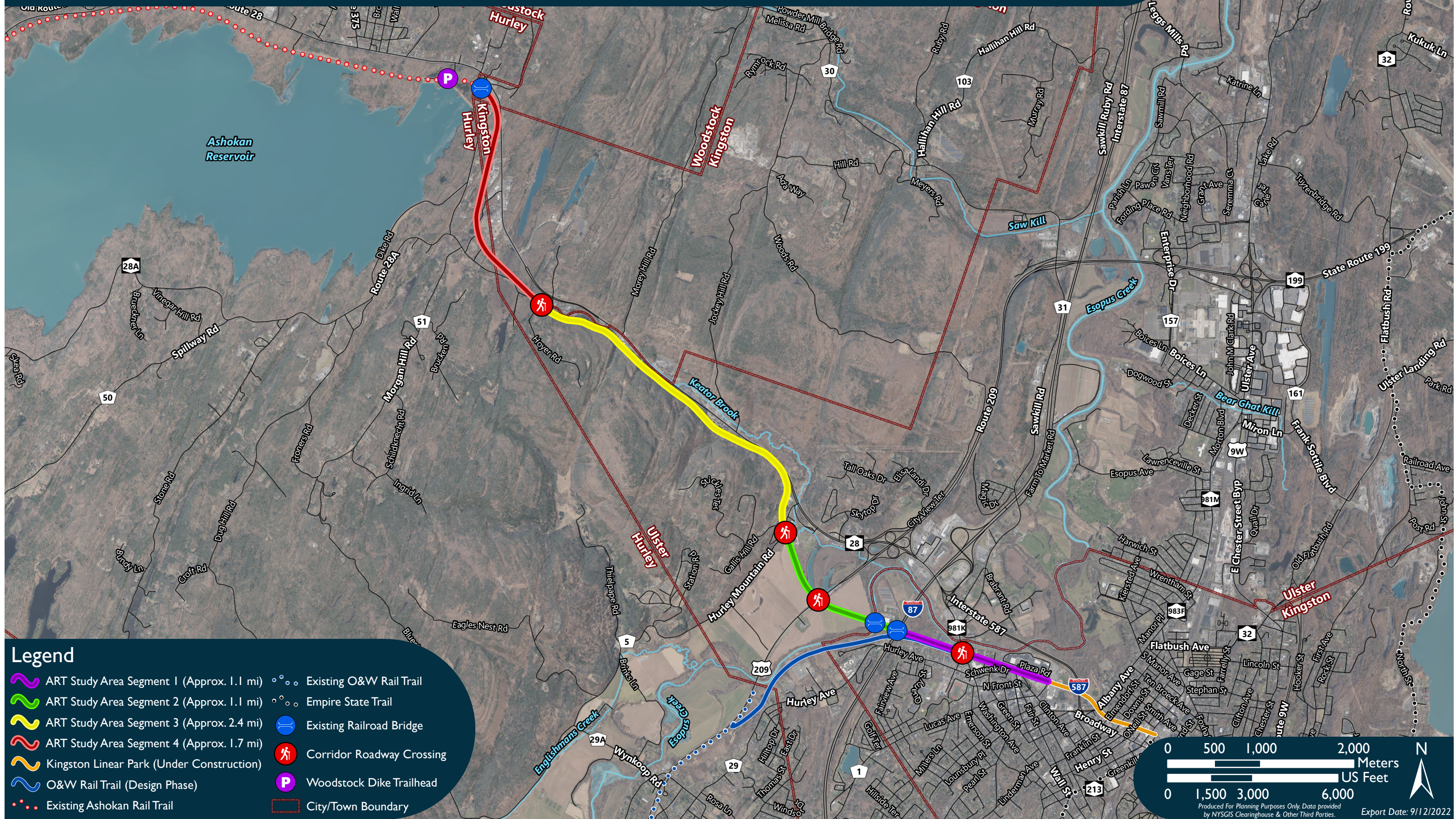
APPENDIX A



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Ashokan Rail Trail Feasibility Study - Segment Map

Figure No. I

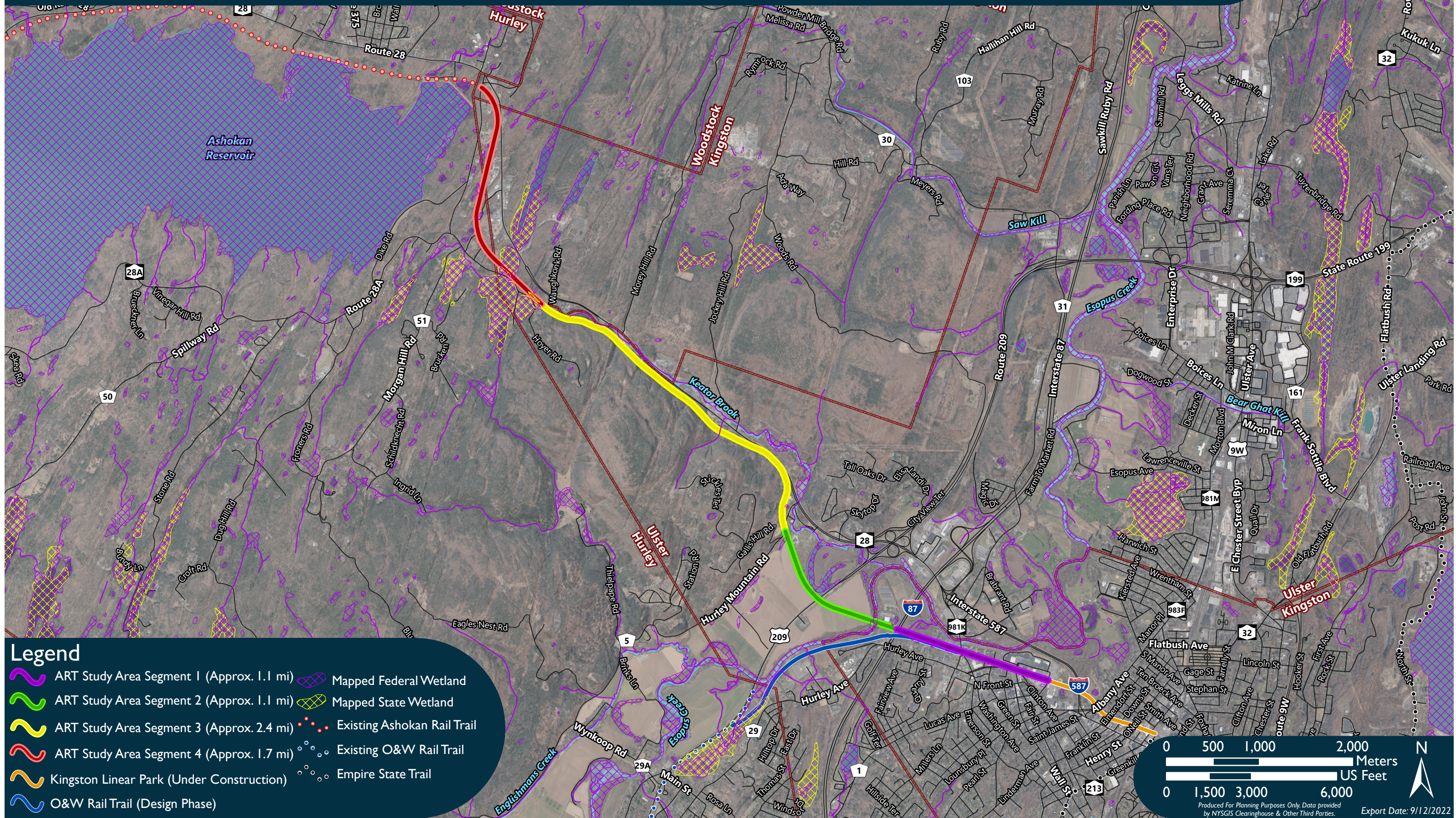




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Ashokan Rail Trail Feasibility Study - Mapped Wetlands

Figure No. 2

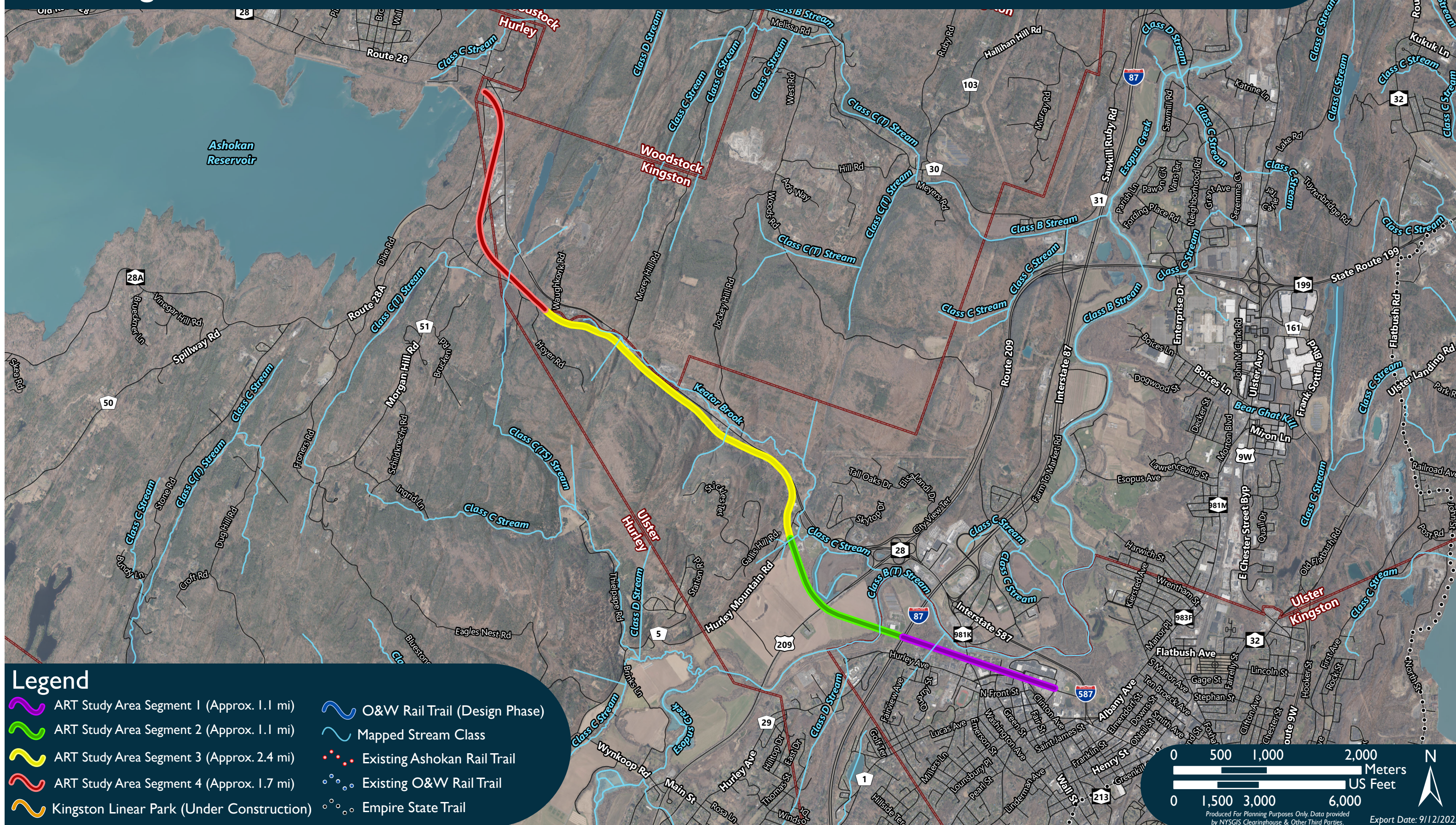


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Export Date: 9/12/2022



Figure No. 3

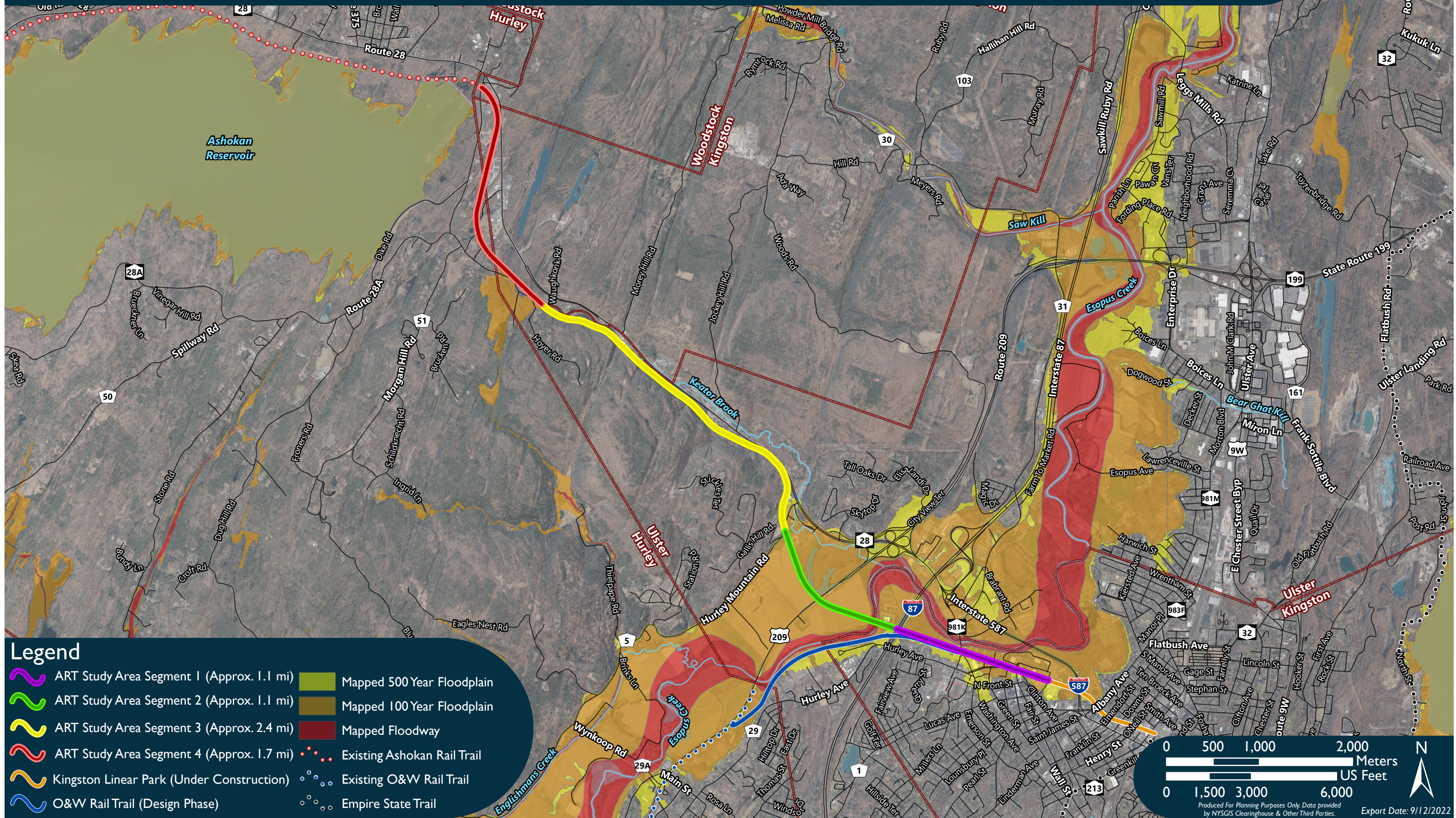




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Ashokan Rail Trail Feasibility Study - Mapped Floodplains

Figure No. 4



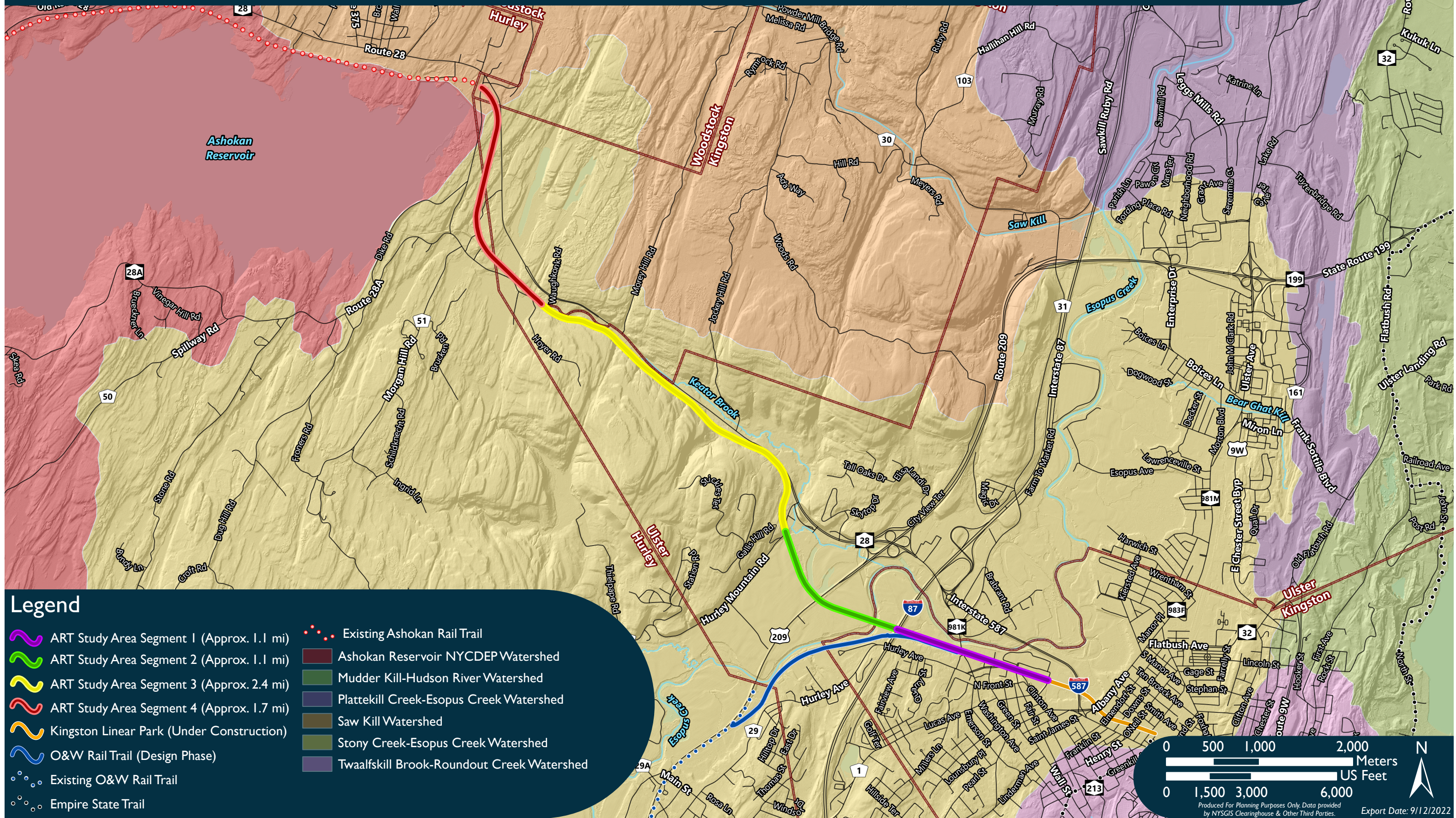




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Ashokan Rail Trail Feasibility Study - Mapped Watersheds

Figure No. 6

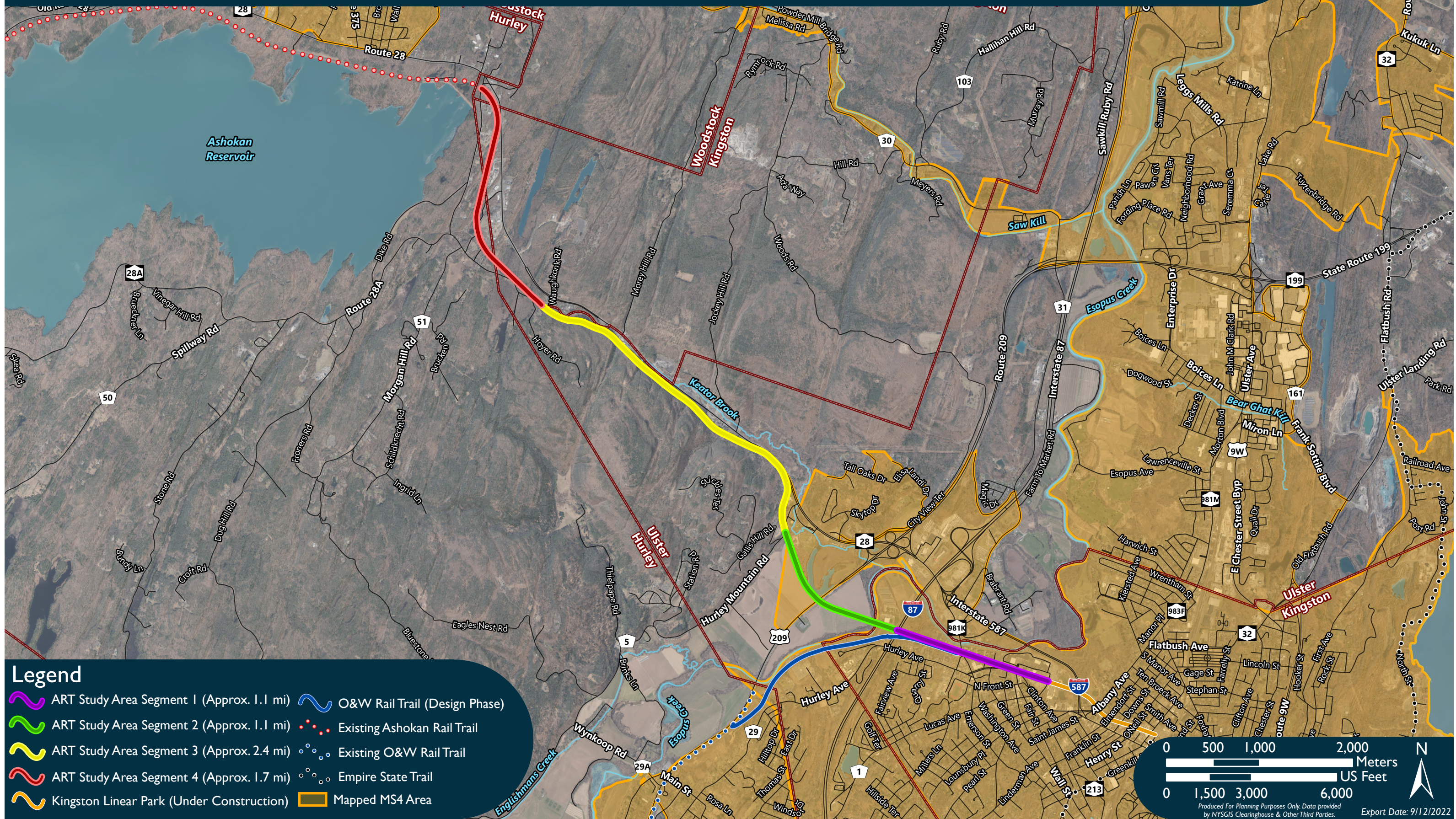




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Ashokan Rail Trail Feasibility Study - Mapped MS4 Areas

Figure No. 7

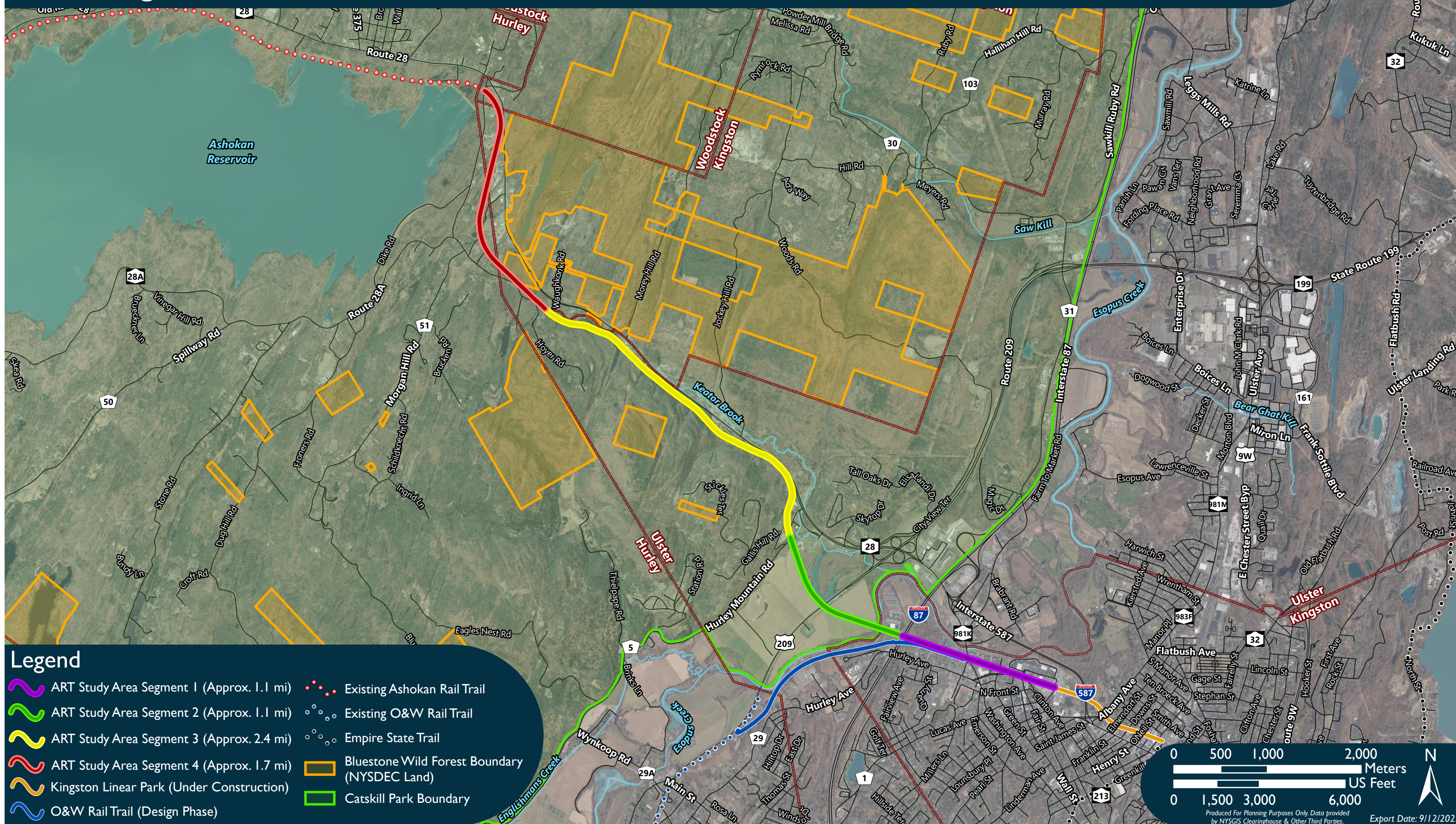




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Ashokan Rail Trail Feasibility Study - Parks & DEC Lands

Figure No. 8



Legend

- ART Study Area Segment 1 (Approx. 1.1 mi)
- ART Study Area Segment 2 (Approx. 1.1 mi)
- ART Study Area Segment 3 (Approx. 2.4 mi)
- ART Study Area Segment 4 (Approx. 1.7 mi)
- Kingston Linear Park (Under Construction)
- O&W Rail Trail (Design Phase)
- Existing Ashokan Rail Trail
- Existing O&W Rail Trail
- Empire State Trail
- Bluestone Wild Forest Boundary (NYSDEC Land)
- Catskill Park Boundary

0 500 1,000 2,000 Meters
0 1,500 3,000 6,000 US Feet



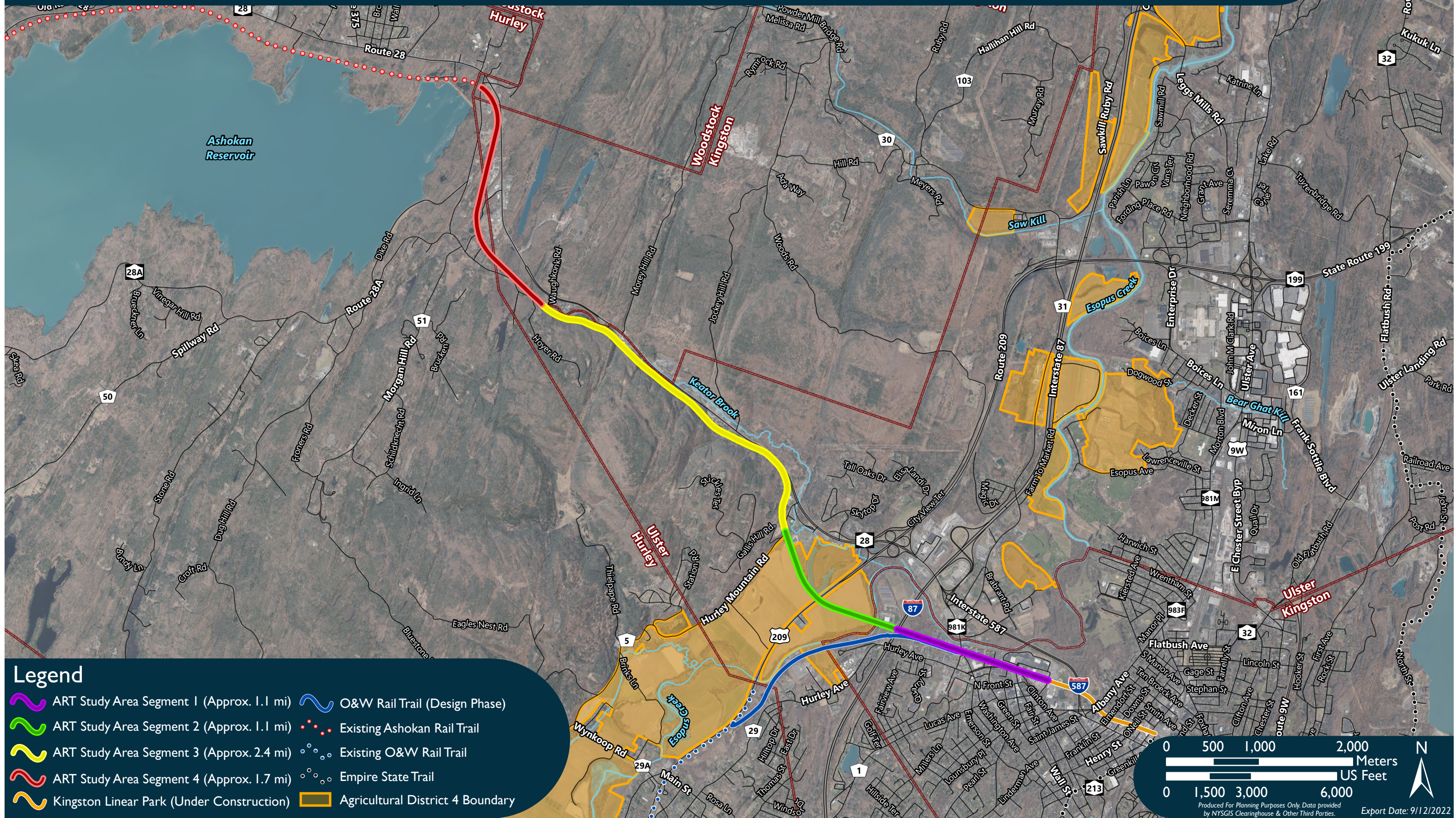
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Ashokan Rail Trail Feasibility Study - Agricultural Districts

Figure No. 9

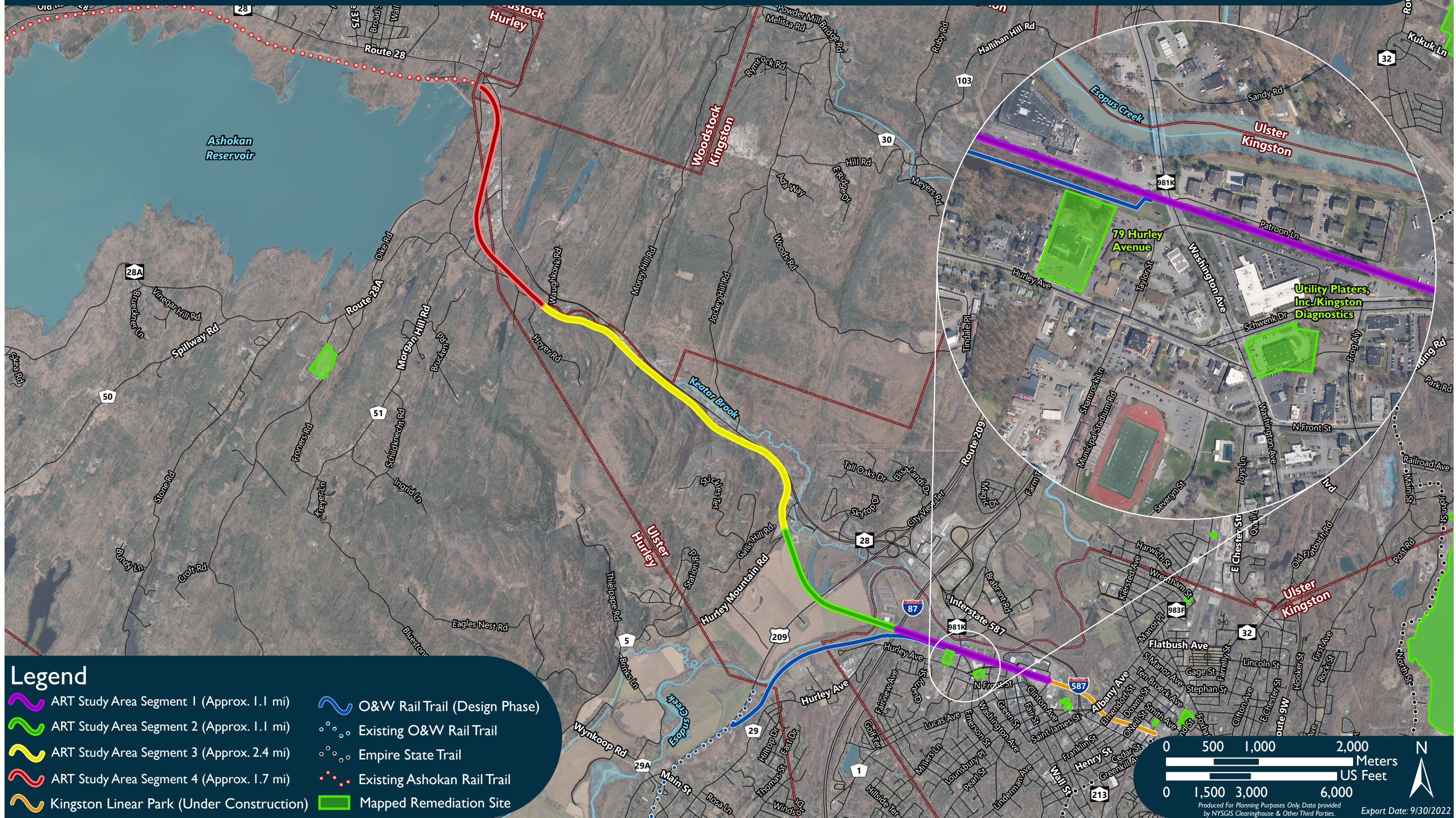




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Ashokan Rail Trail Feasibility Study - Mapped Remediation Sites

Figure No. 10



Appendices



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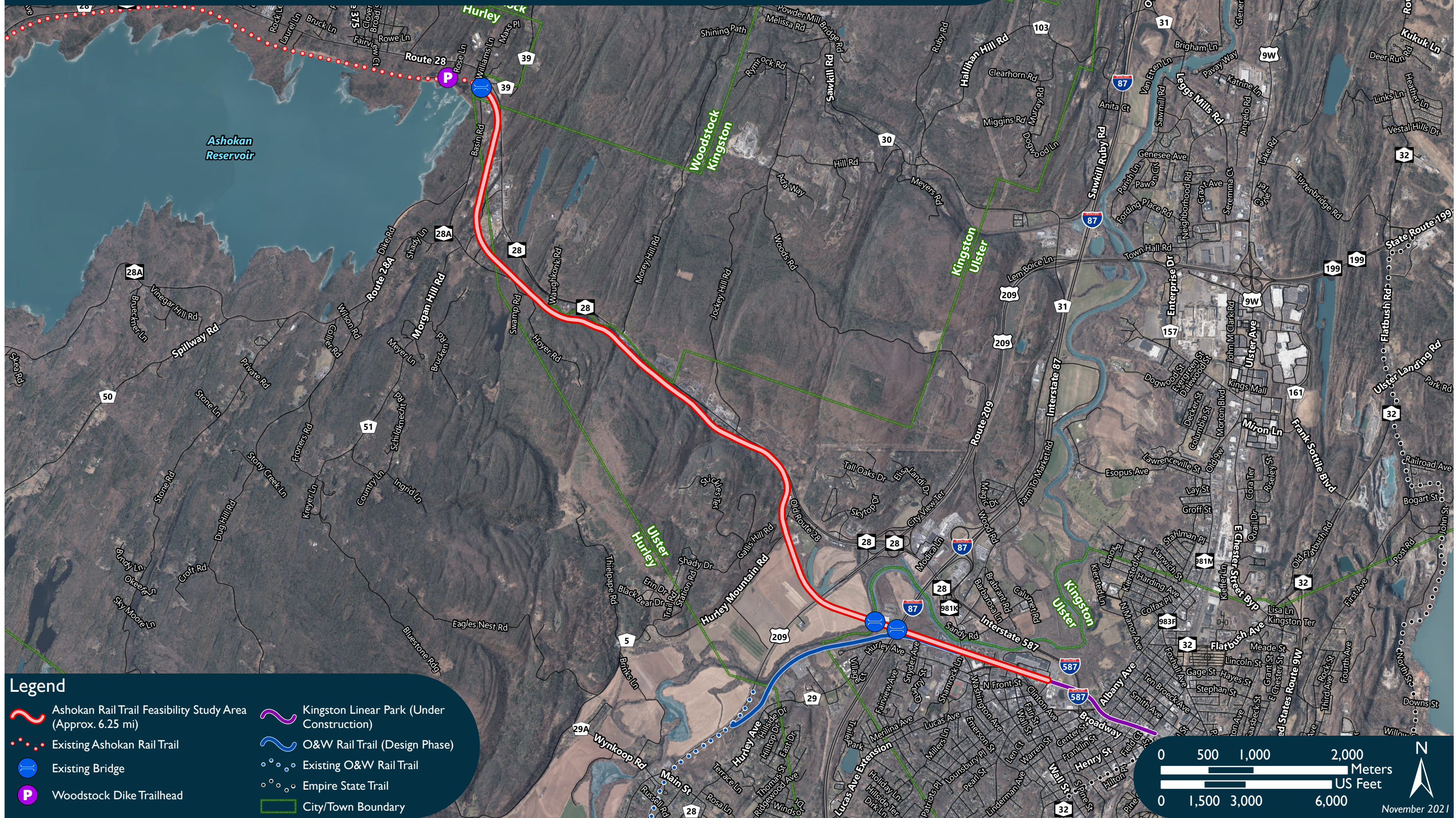
APPENDIX B



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Ashokan Rail Trail Feasibility Study

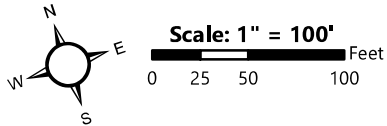
City of Kingston to the Town of Woodstock, Ulster County, NY



Ashokan Rail Trail
Field Inventory Summary
From the Town of Woodstock
to the City of Kingston
Ulster County, NY

Legend

- Bridge
- Culvert
- Major At-Grade Crossing
- Minor At-Grade Crossing
- Potential Encroachment
- Private Trail Access/Crossing
- Trail Corridor Photo
- Wet Area/Washout
- Rock Cut
- Existing Ashokan Rail Trail
- Proposed Kingston Linear Park
- Ulster County Property
- Approximate Parcel Boundary

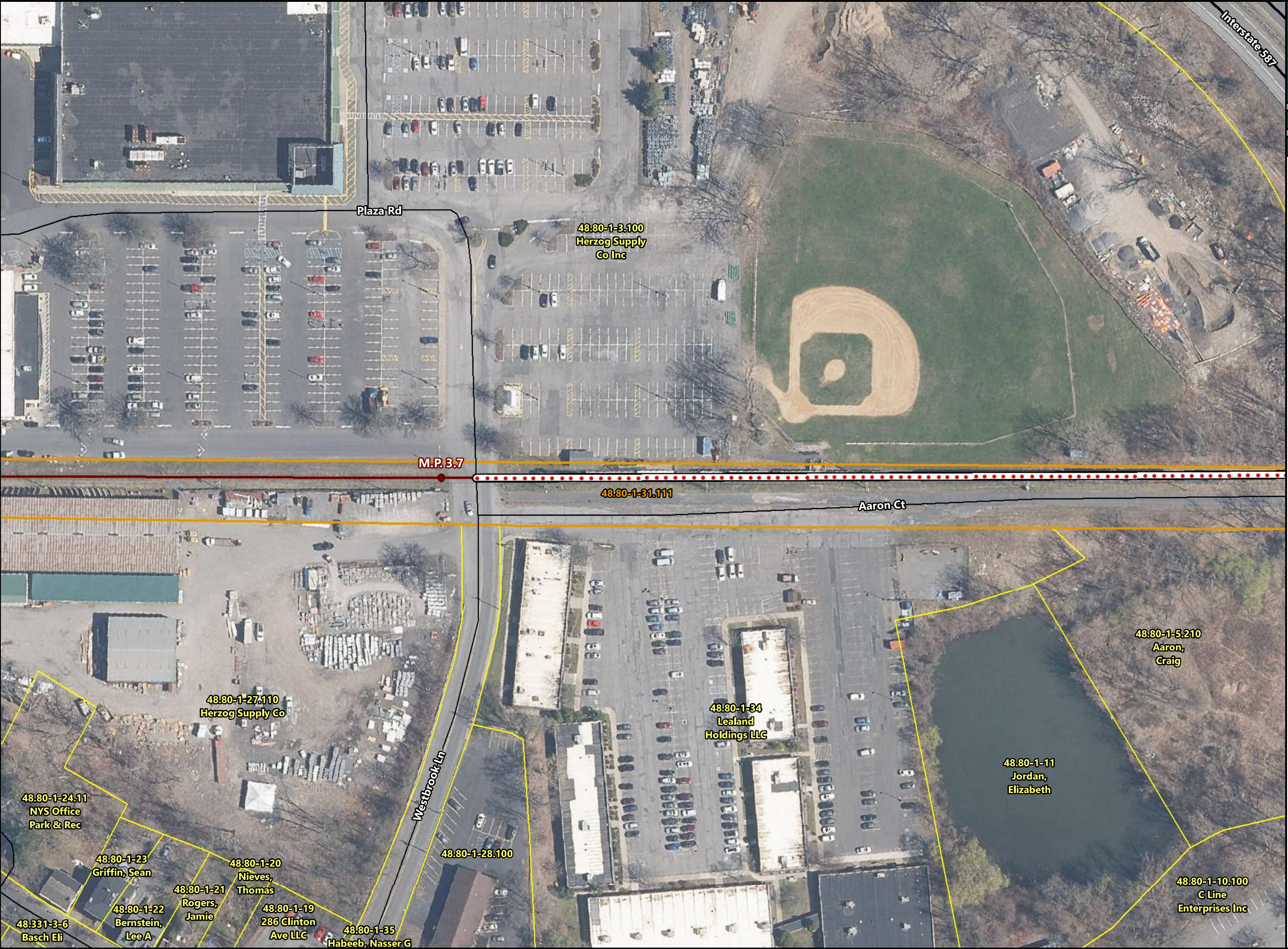


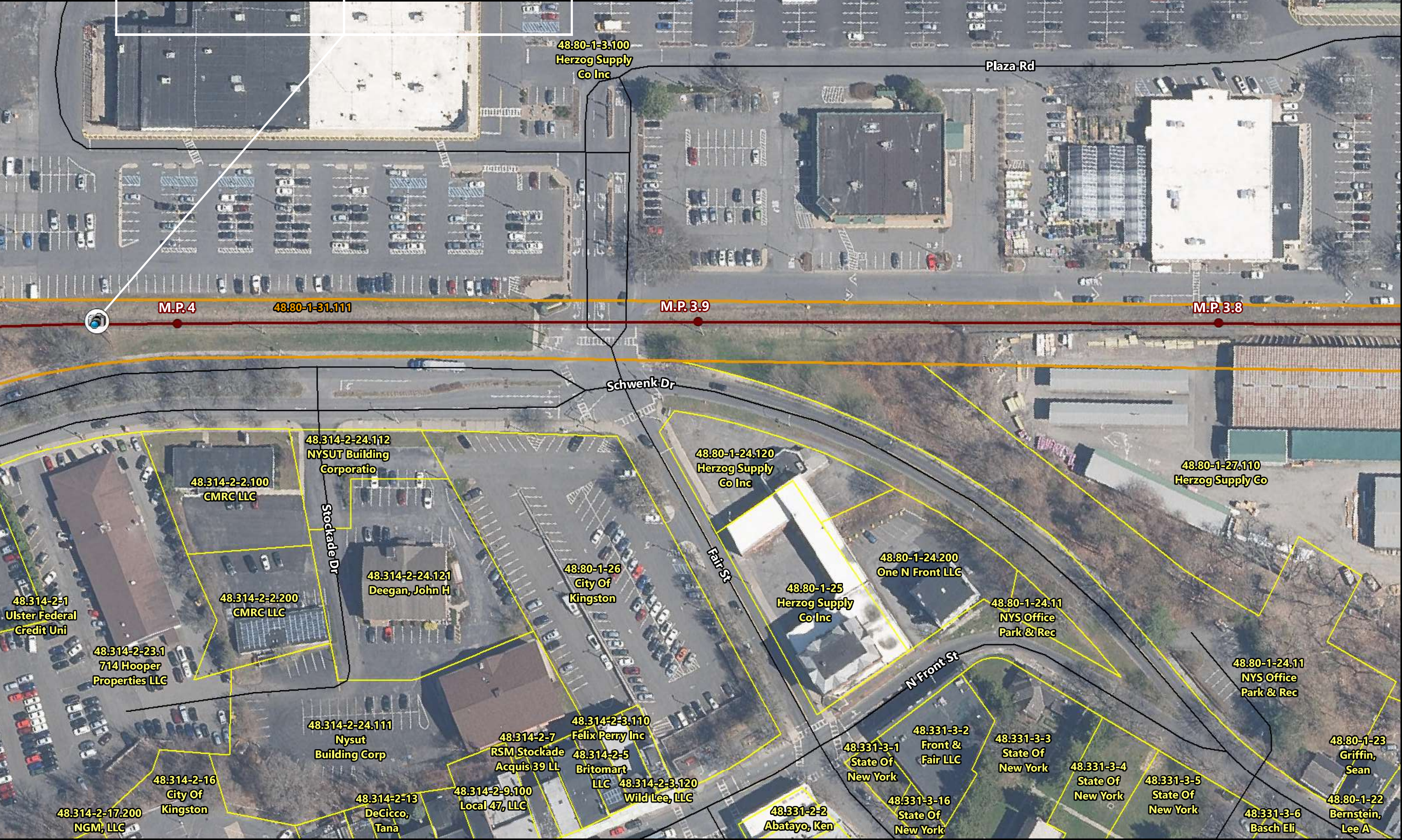
OPEN SPACE
INSTITUTE

GPI

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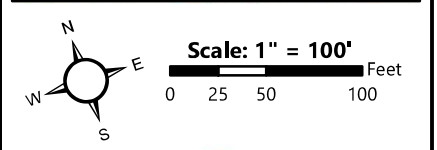


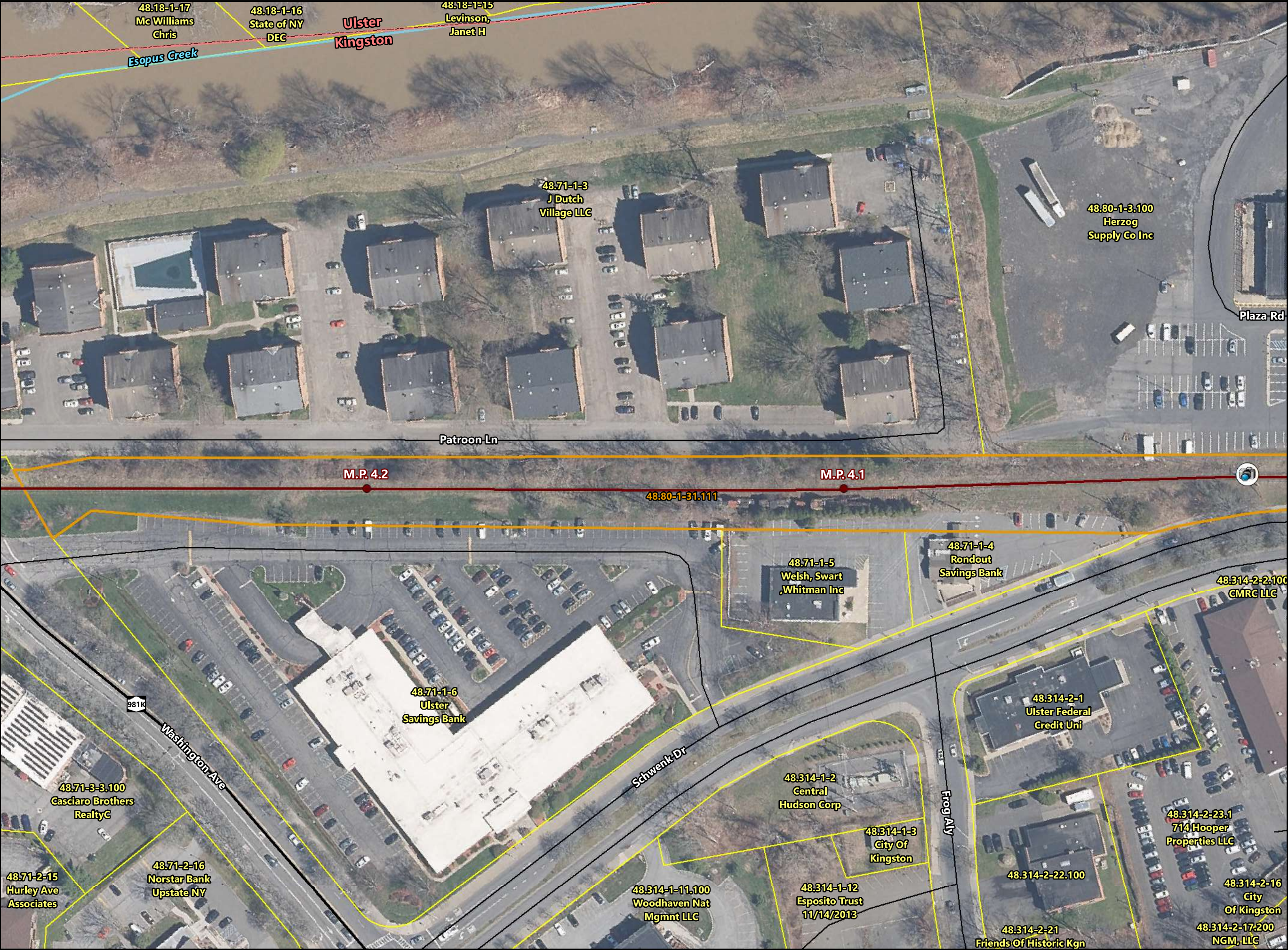


Ashokan Rail Trail
Field Inventory Summary
From the Town of Woodstock
to the City of Kingston
Ulster County, NY

Legend

- Bridge
- Culvert
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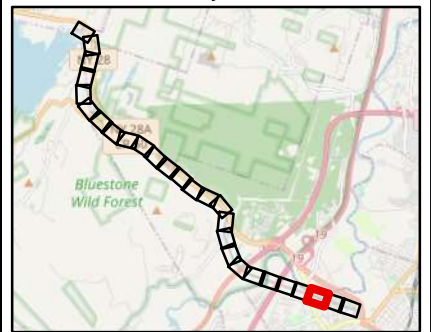
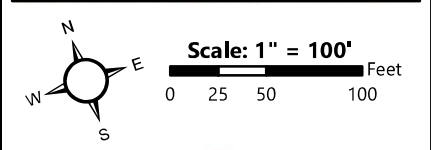




**Ashokan Rail Trail
Field Inventory Summary
From the Town of Woodstock
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Ulster County, NY**

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Ashokan Rail Trail
Field Inventory Summary
From the Town of Woodstock
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Ulster County, NY

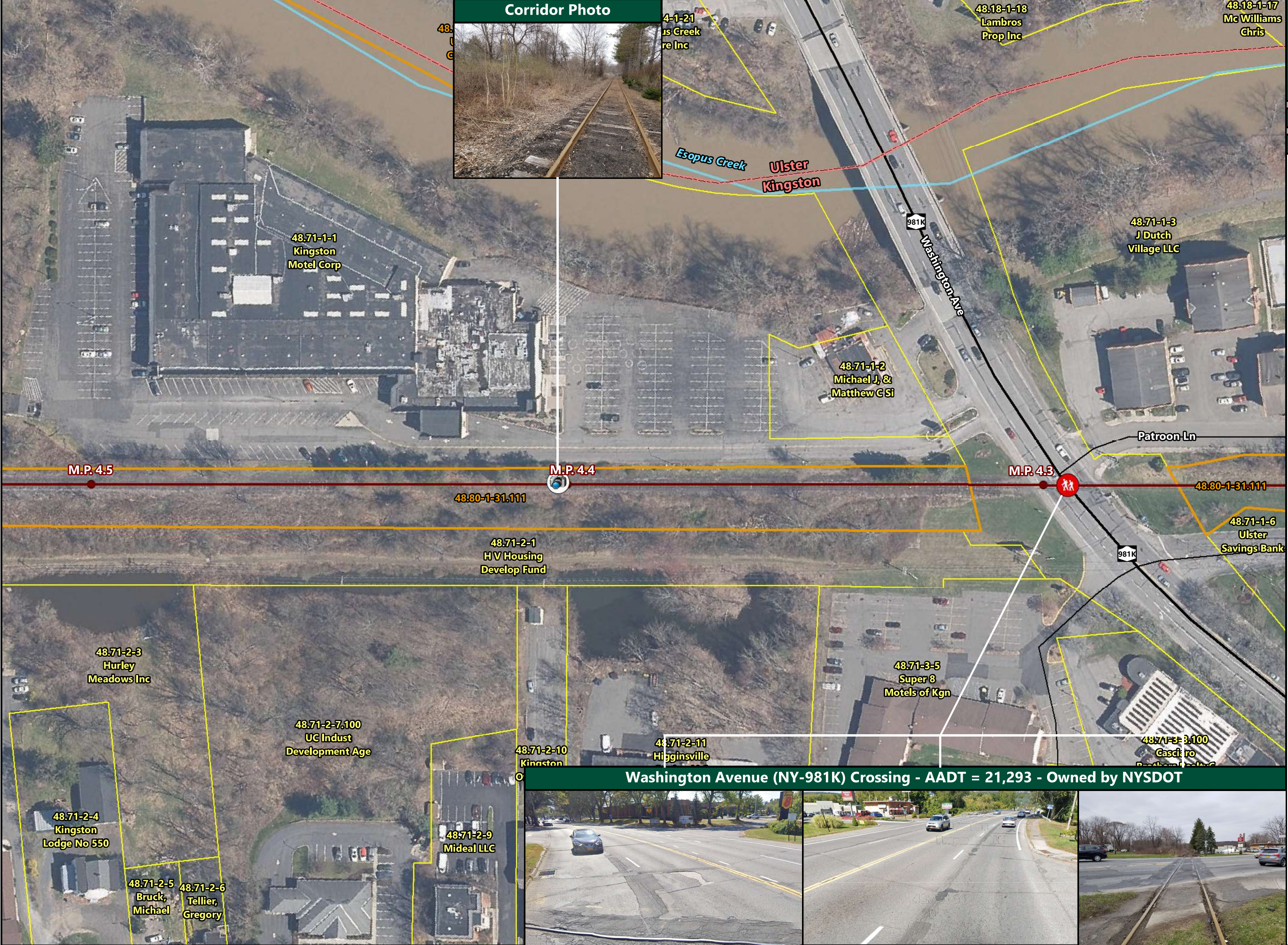
Legend

- Bridge
- Culvert
- Major At-Grade Crossing
- Minor At-Grade Crossing
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Corridor Photo



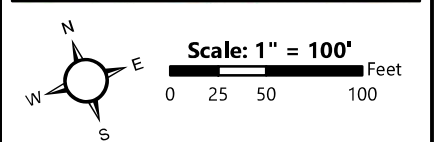


Ashokan Rail Trail Field Inventory Summary From the Town of Woodstock to the City of Kingston Ulster County, NY

Page 5 of 27

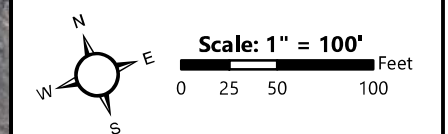
Legend

- Bridge
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Page 6 of 27

- Bridge
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M.P.5

48.13-2-17
Green Acres
HMR LLC

**48.13-2-25
Adirondack
Transit Lines**

48.70-1-41.100
Adirondack
Transit Lines

48.13-2-7.100
Ulster County

M.P. 4.9

48.80-1-31.111

M.P. 4.8

**48.70-1-42
Adirondack
Transit Lines**

**48.17-1-6
Green Acres
HMR LLC**

48.70-1-5.21
Annona Corp

48.70-1-3.200
Appleyard,
Donna

48.70-1-5.120
DeStefano,
Eugene

48.70-1-39

Private Crossing

dtown

**-1-10
NY LLC**



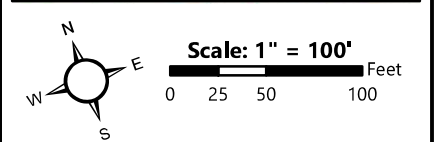
48.13-2-17
Green Acres
HMR LLC



Ashokan Rail Trail
Field Inventory Summary
From the Town of Woodstock
to the City of Kingston
Ulster County, NY

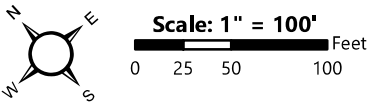
Legend

- Bridge
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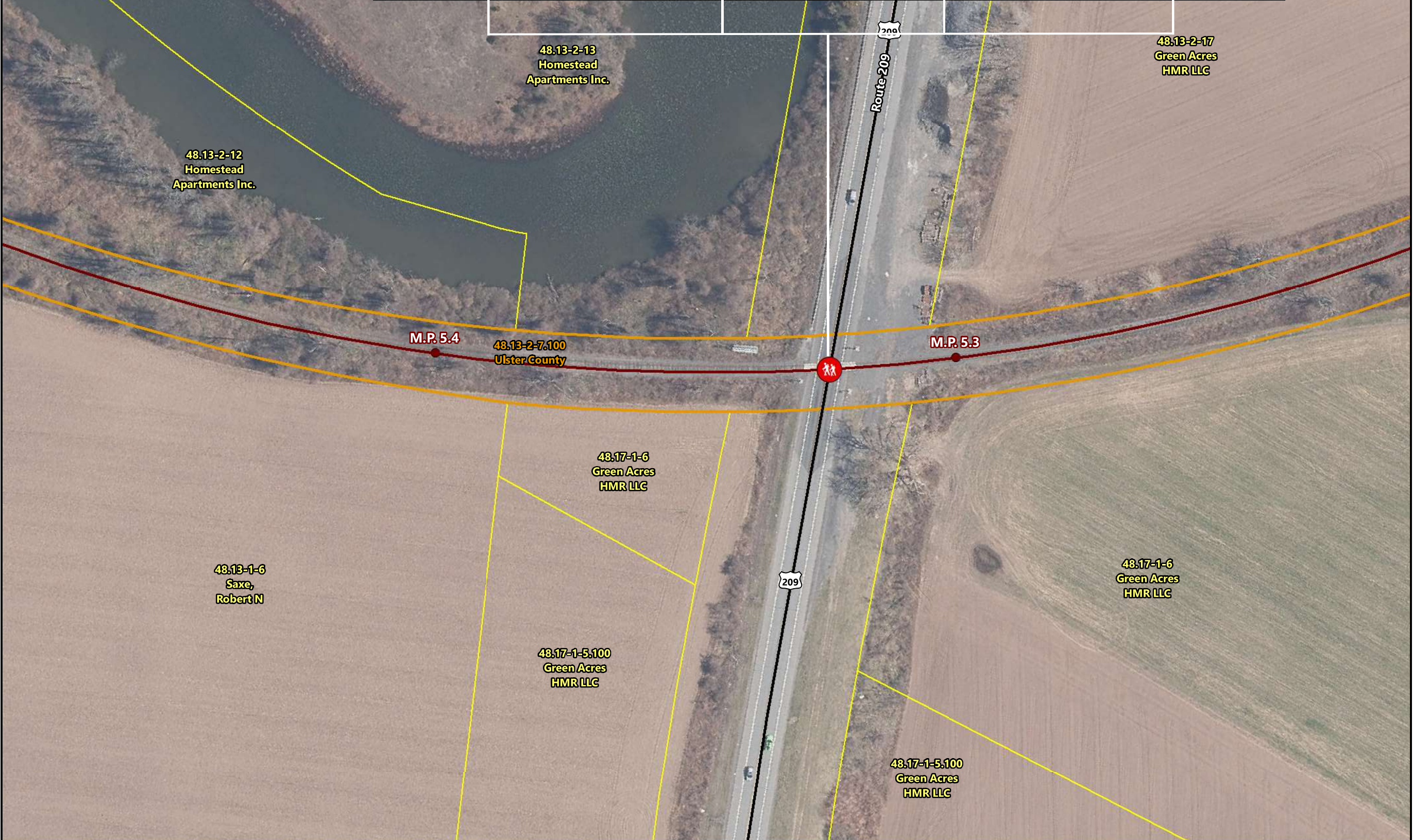


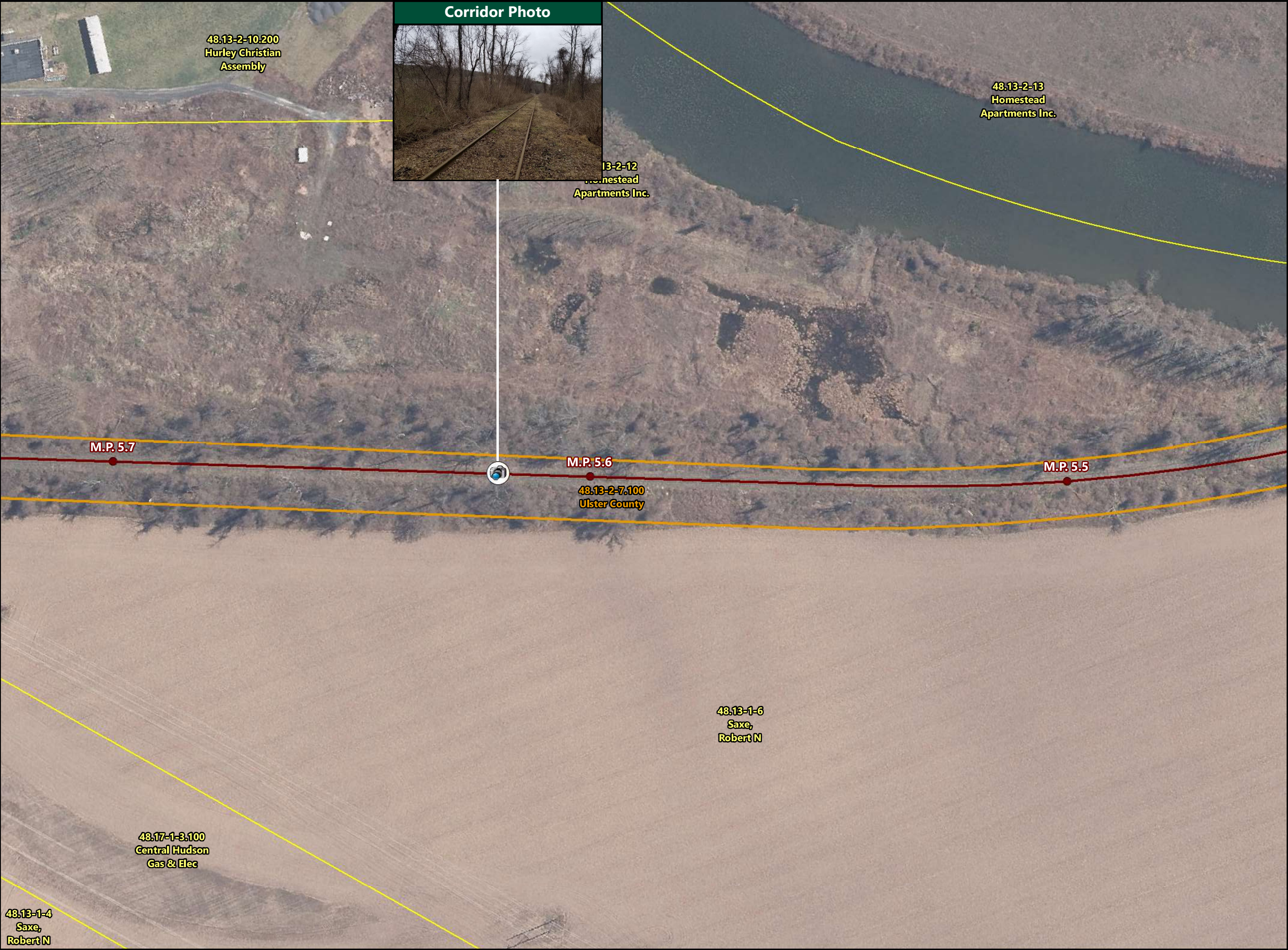
OPEN SPACE
INSTITUTE

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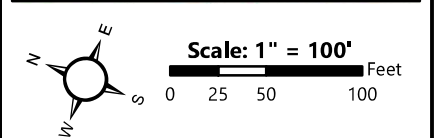


**Ashokan Rail Trail
Field Inventory Summary
From the Town of Woodstock
to the City of Kingston
Ulster County, NY**

Page 9 of 27

Legend

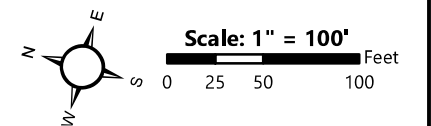
- Bridge
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- Minor At-Grade Crossing
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Ashokan Rail Trail
Field Inventory Summary
From the Town of Woodstock
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Ulster County, NY

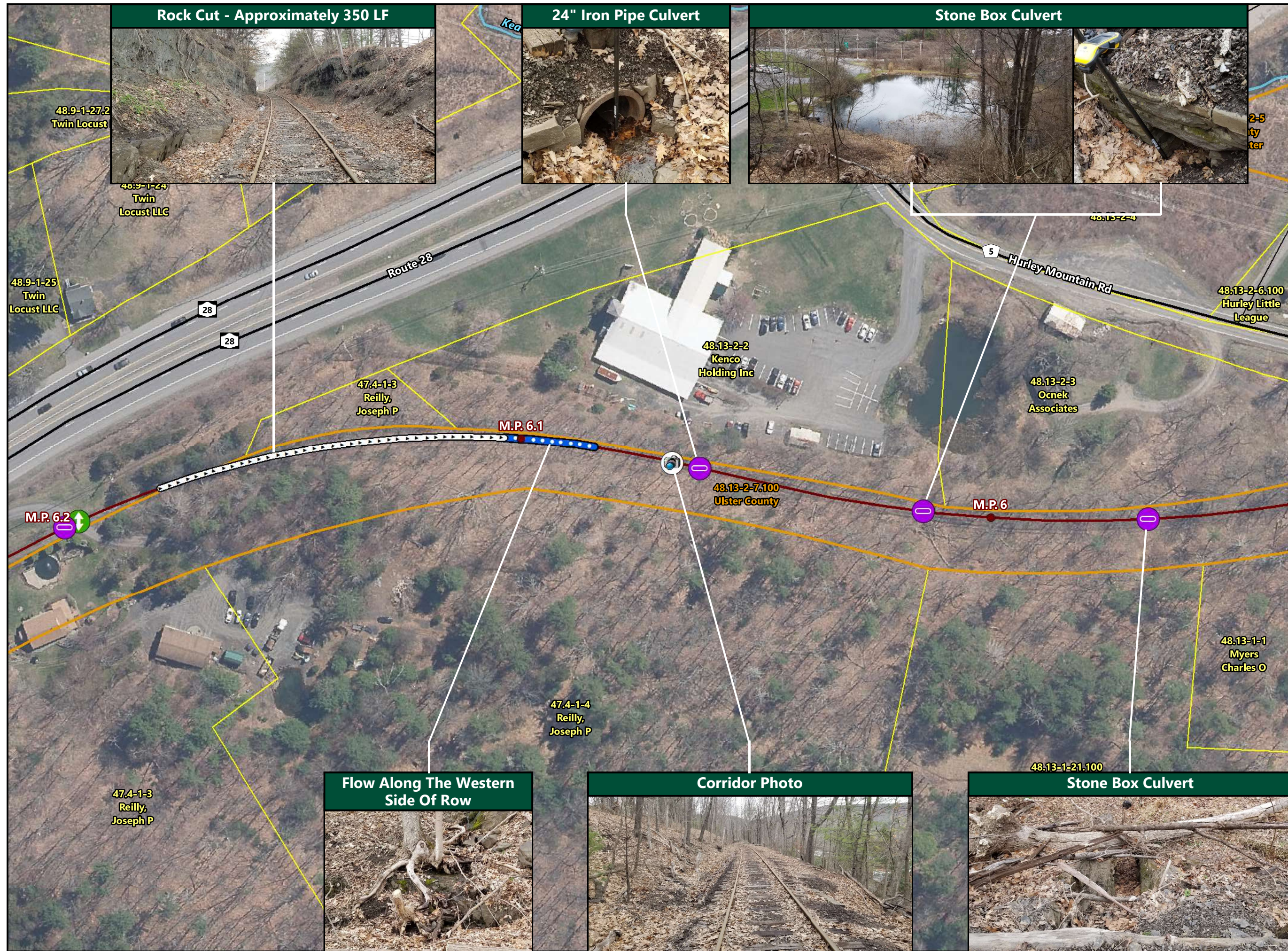
Legend

- Bridge
- Culvert
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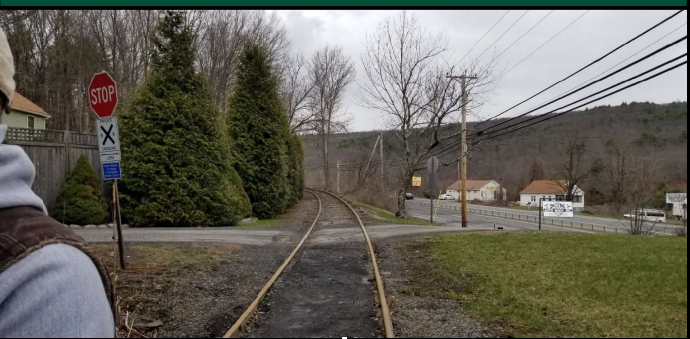
Corridor Photo



Corridor Photo



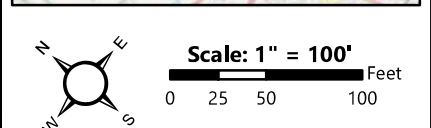
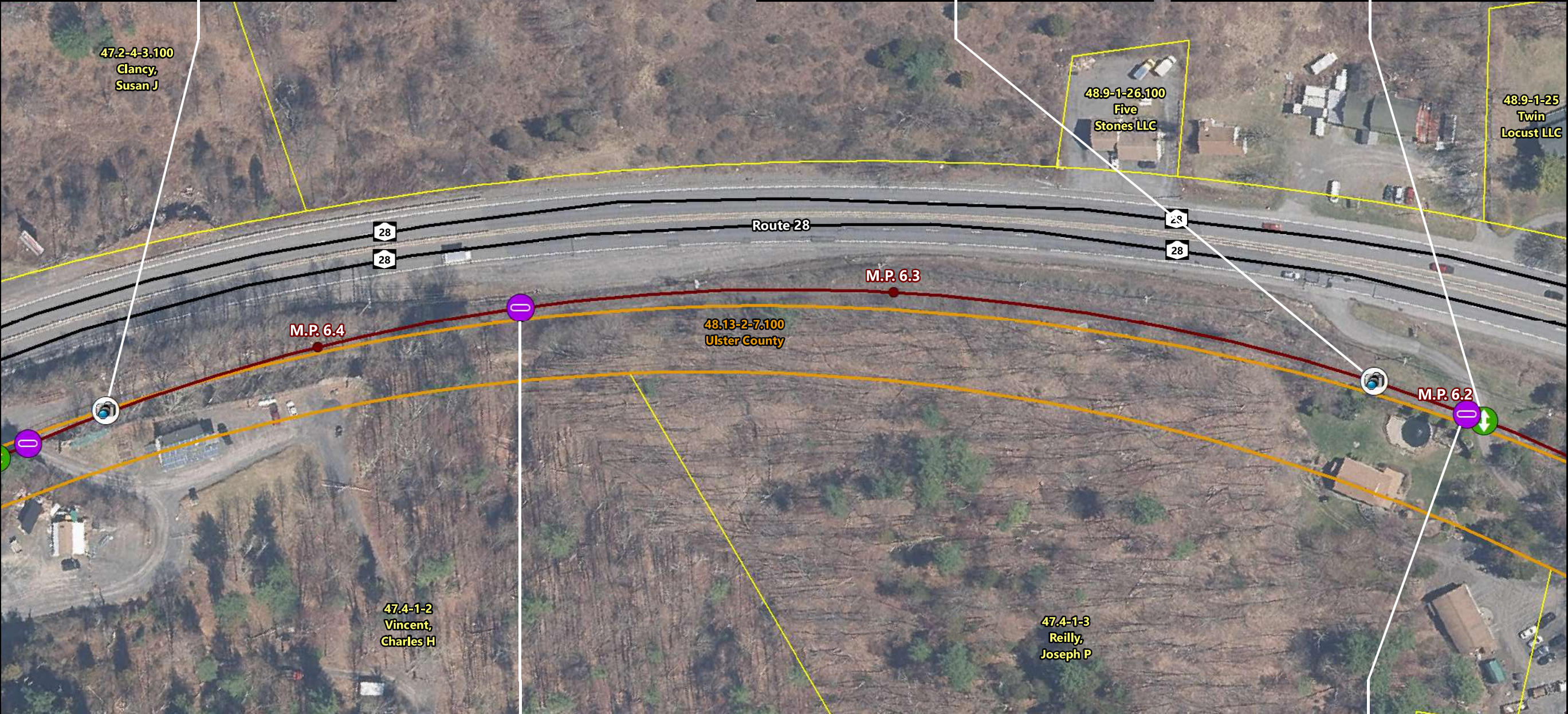
Private Crossing



Ashokan Rail Trail
Field Inventory Summary
From the Town of Woodstock
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Ulster County, NY

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Buried Pipe Culvert

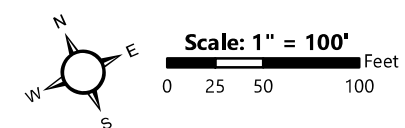


12" HDPE Pipe Culvert



- Bridge
- Culvert
- Major At-Grade Crossing
- Minor At-Grade Crossing
- Potential Encroachment
- Private Trail
Access/Crossing
- Trail Corridor Photo

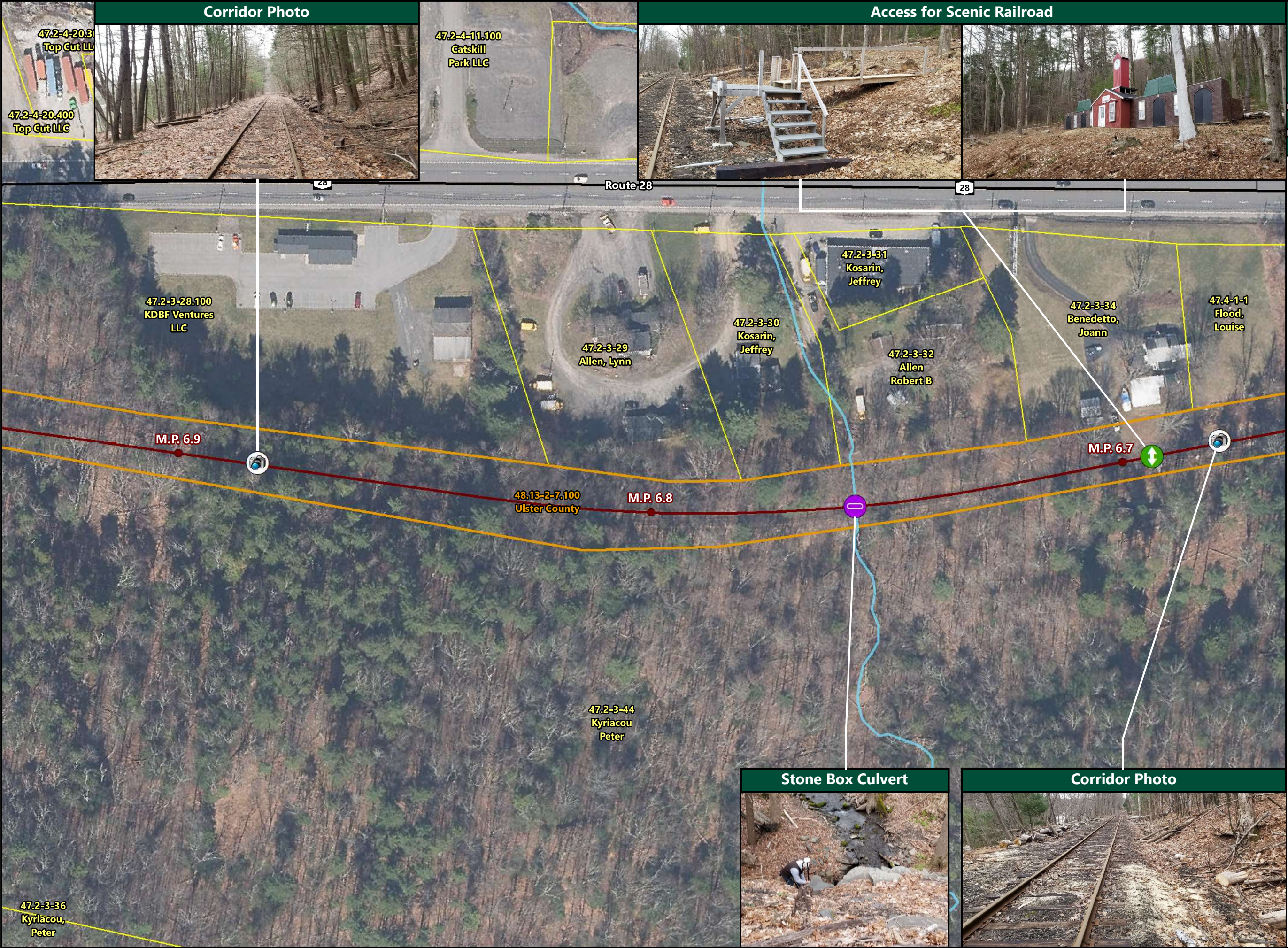
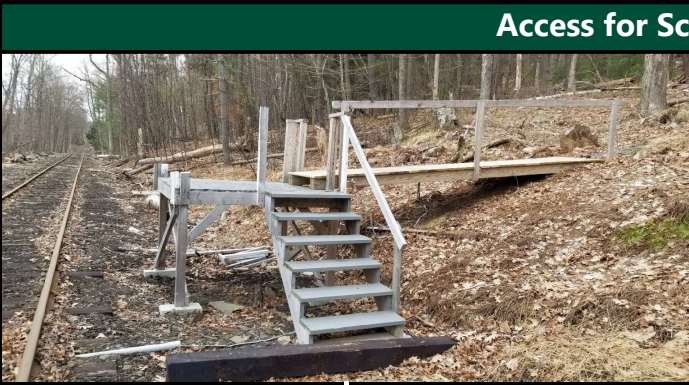
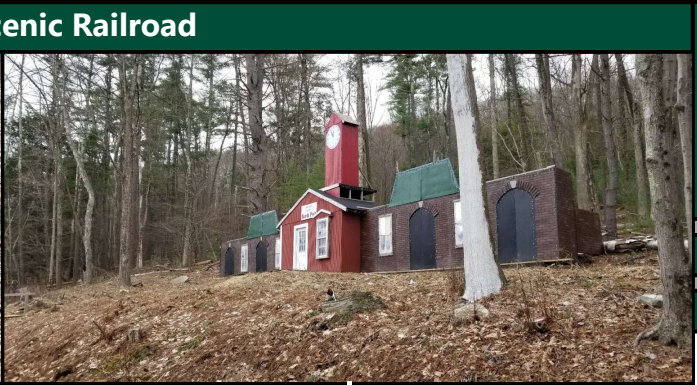
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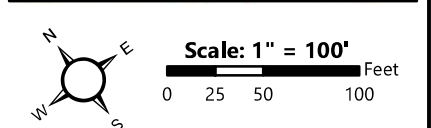
A photograph showing a railroad track curving through a wooded area. The ground is covered in fallen leaves and branches, and several large logs are stacked on the left side of the track.

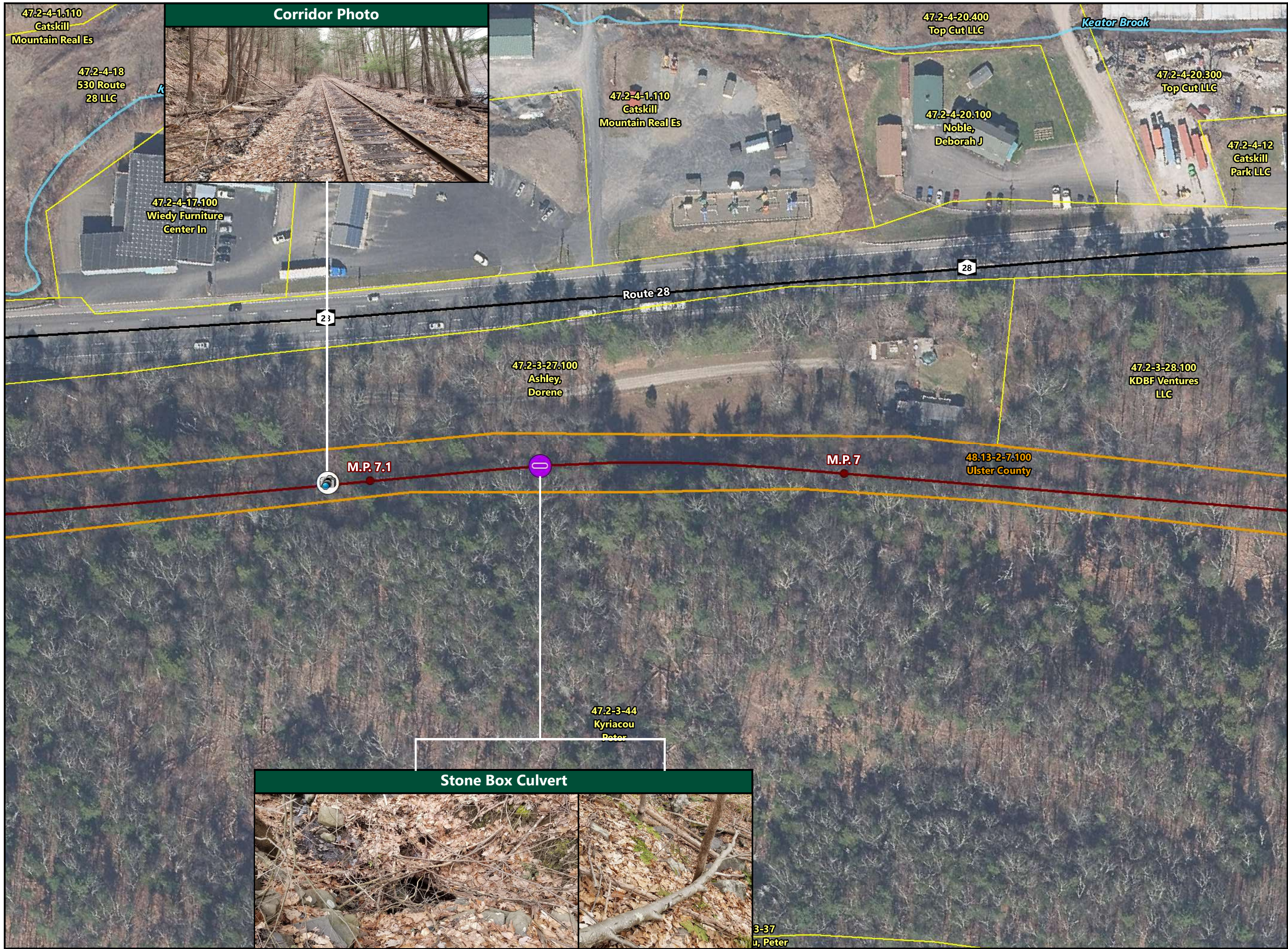


**Ashokan Rail Trail
Field Inventory Summary
From the Town of Woodstock
to the City of Kingston
Ulster County, NY**

Legend

- Bridge
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Ashokan Rail Trail
Field Inventory Summary
From the Town of Woodstock
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Ulster County, NY

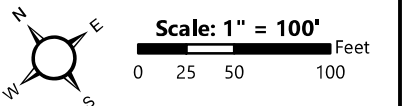
- Legend**
- Bridge
 - Culvert
 - Major At-Grade Crossing
 - Minor At-Grade Crossing
 - Potential Encroachment
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 - Trail Corridor Photo
 - Wet Area/Washout
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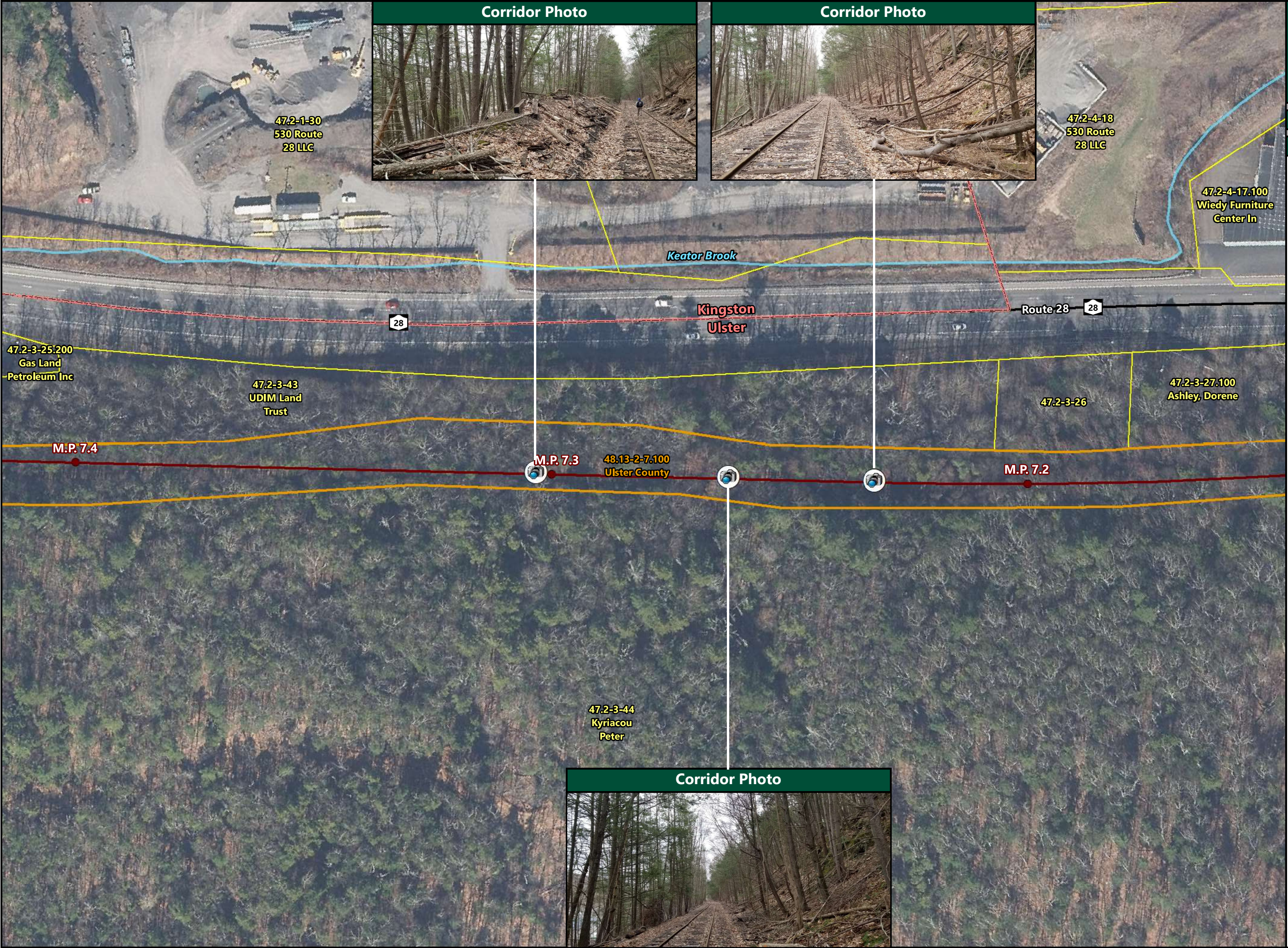
Ashokan Rail Trail
Field Inventory Summary
From the Town of Woodstock
to the City of Kingston
Ulster County, NY

Legend

-  Bridge
-  Culvert
-  Major At-Grade Crossing
-  Minor At-Grade Crossing
-  Potential Encroachment
-  Private Trail Access/Crossing
-  Trail Corridor Photo
-  Wet Area/Washout
-  Rock Cut
-  Existing Ashokan Rail Trail
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-  Approximate Parcel Boundary



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Corridor Photo



Stone Box Culvert

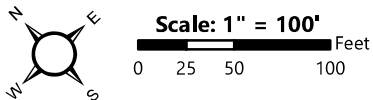


Ashokan Rail Trail
Field Inventory Summary
From the Town of Woodstock
to the City of Kingston
Ulster County, NY

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Legend

- Bridge
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- Major At-Grade Crossing
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- Trail Corridor Photo
- Wet Area/Washout
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- Existing Ashokan Rail Trail
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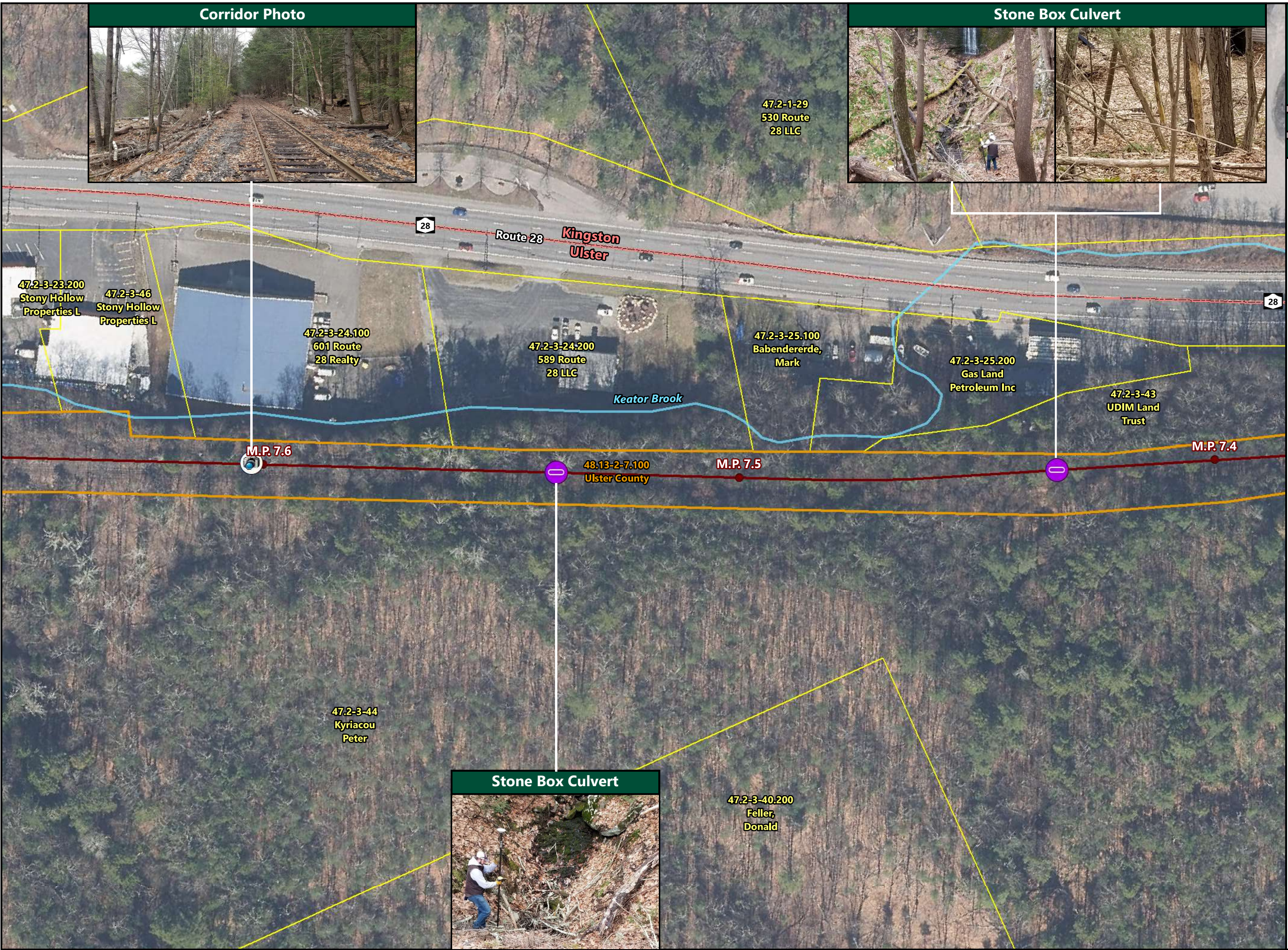


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INSTITUTE

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Issuance Date: 9/13/2022



47.2-1-29
530 Route
28 LLC

47.2-3-23.200
Stony Hollow
Properties L

47.2-3-46
Stony Hollow
Properties L

47.2-3-24.100
601 Route
28 Realty

47.2-3-24.200
589 Route
28 LLC

47.2-3-25.100
Babendererde,
Mark

47.2-3-25.200
Gas Land
Petroleum Inc

47.2-3-43
UDIM Land
Trust

M.P. 7.6

48.13-2-7.100
Ulster County

M.P. 7.5

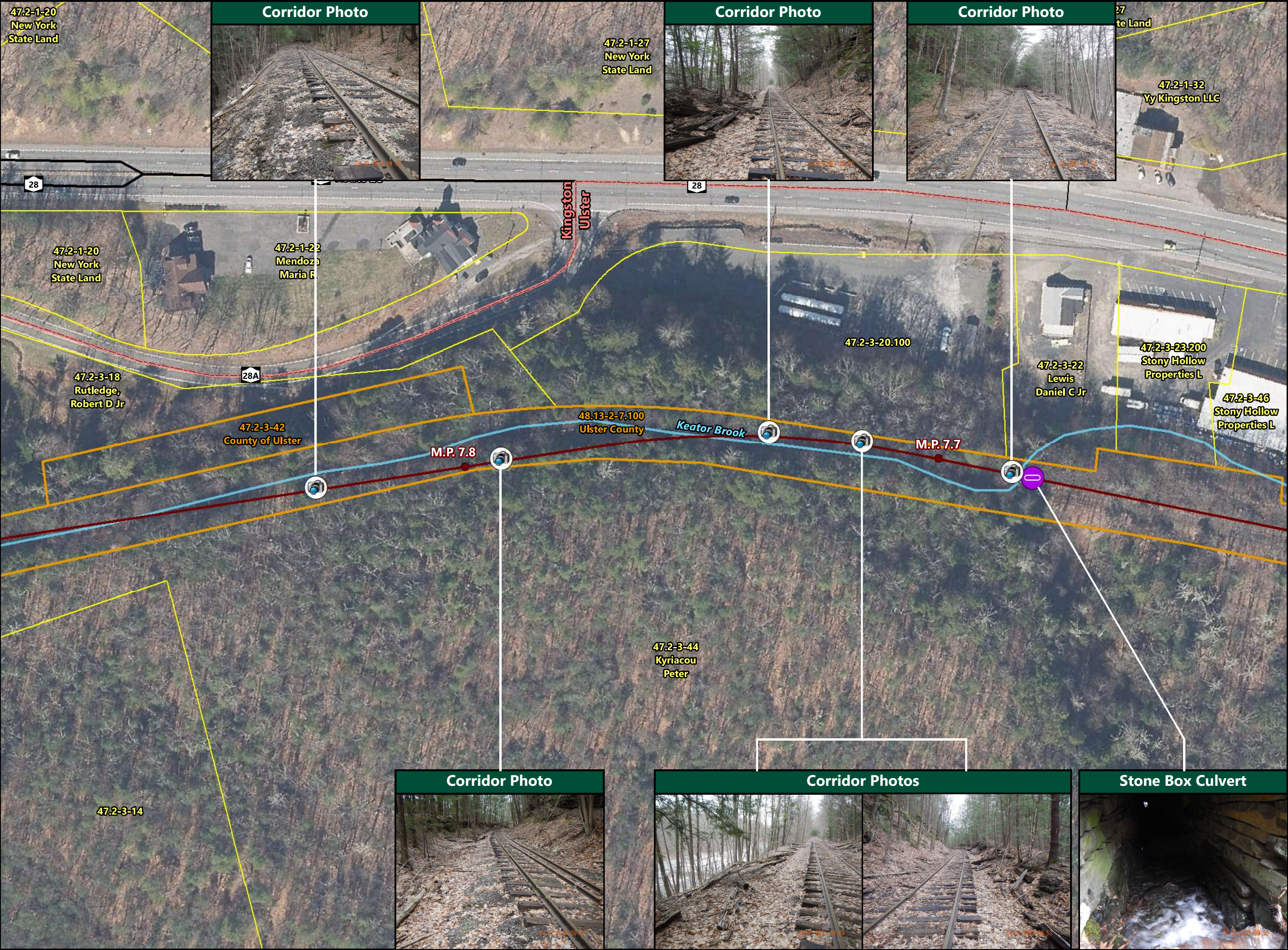
M.P. 7.4

47.2-3-44
Kyriacou
Peter

Stone Box Culvert



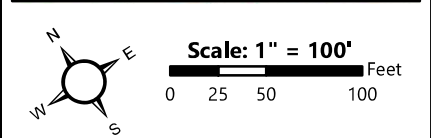
47.2-3-40.200
Feller,
Donald

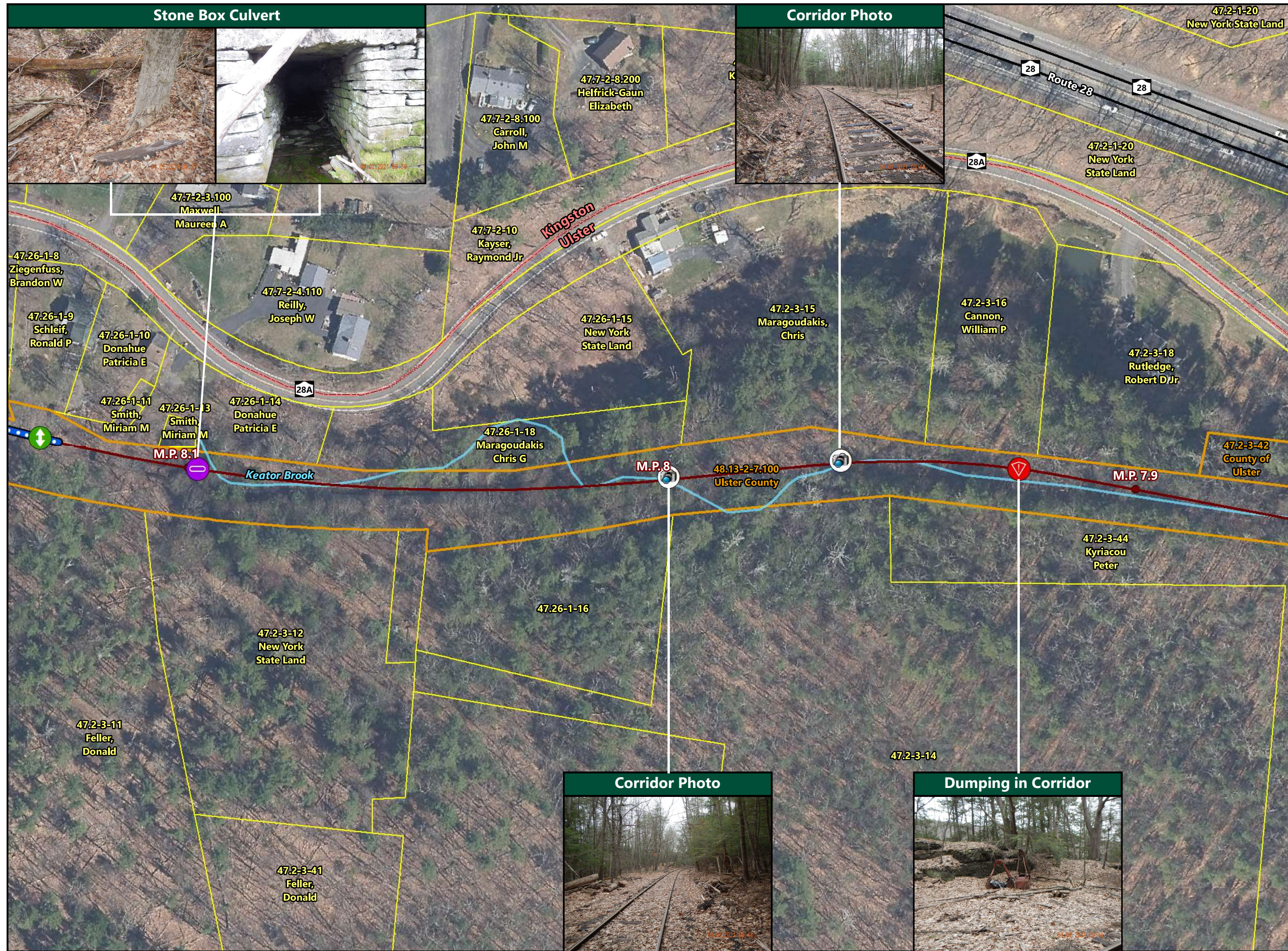


Ashokan Rail Trail
Field Inventory Summary
From the Town of Woodstock
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Ulster County, NY

Legend

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- Rock Cut
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- Ulster County Property
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Stone Box Culvert



12" Iron Pipe Culvert



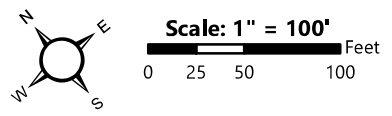
Wet Area - Approximately 500 LF



Ashokan Rail Trail
Field Inventory Summary
From the Town of Woodstock
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Ulster County, NY

Legend

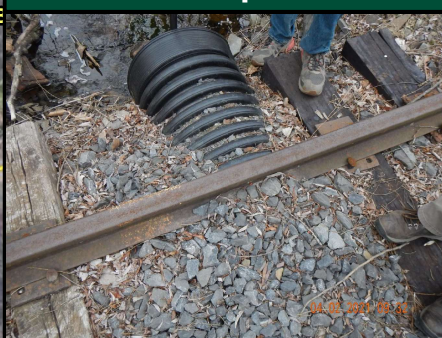
- Bridge
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- Minor At-Grade Crossing
- Potential Encroachment
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- Trail Corridor Photo
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NY-28A Crossing - AADT = 1,355 - Owned by Ulster County



18" HDPE Pipe Culvert



Dumping in Corridor



Private Access



Corridor Photo



Corridor Photo



Corridor Photo

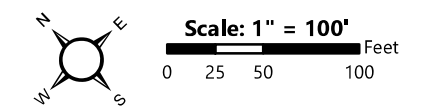


Ashokan Rail Trail Field Inventory Summary From the Town of Woodstock to the City of Kingston Ulster County, NY

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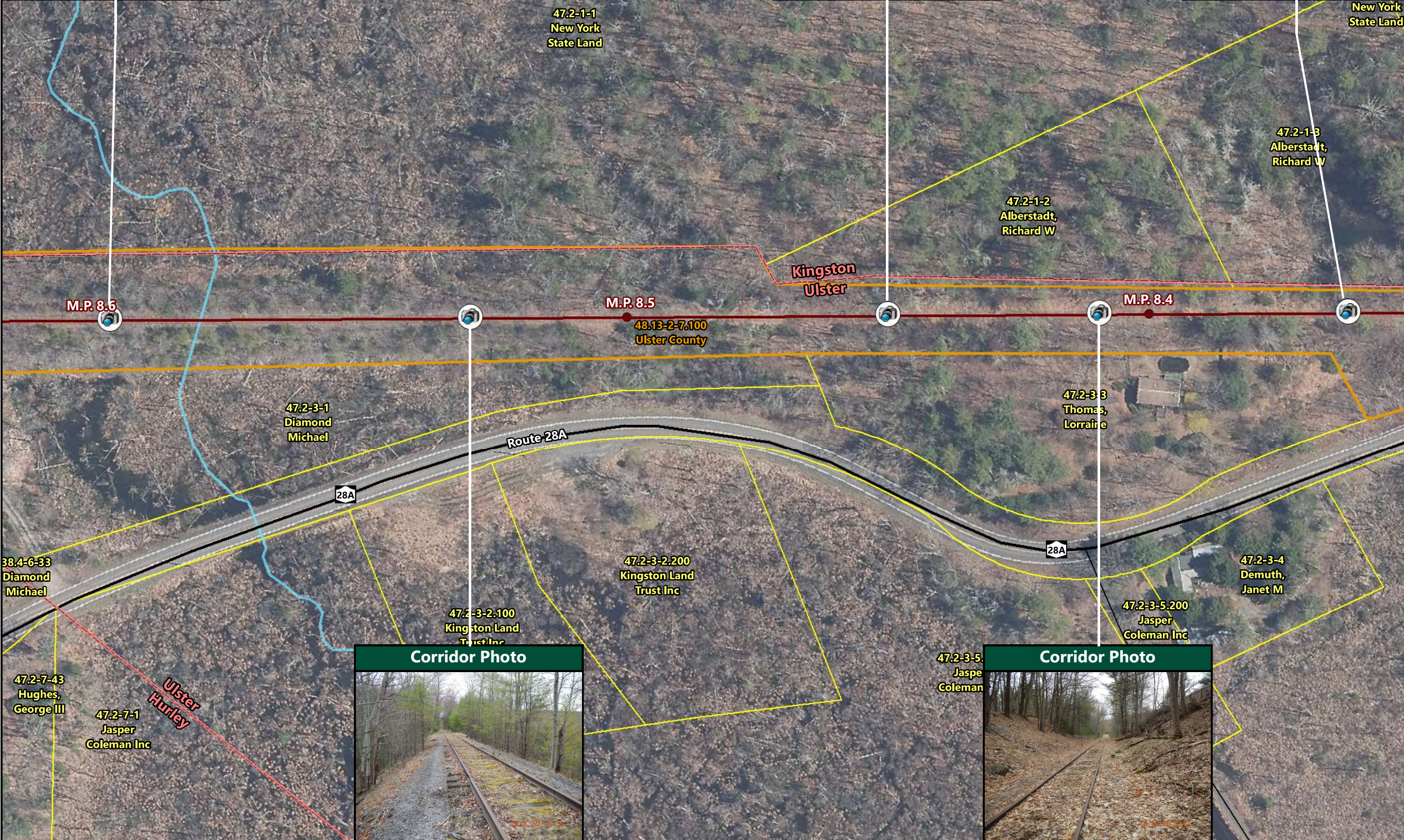
Legend

- Bridge
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Corridor Photo

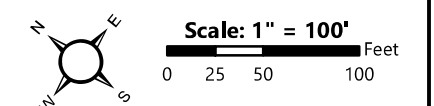


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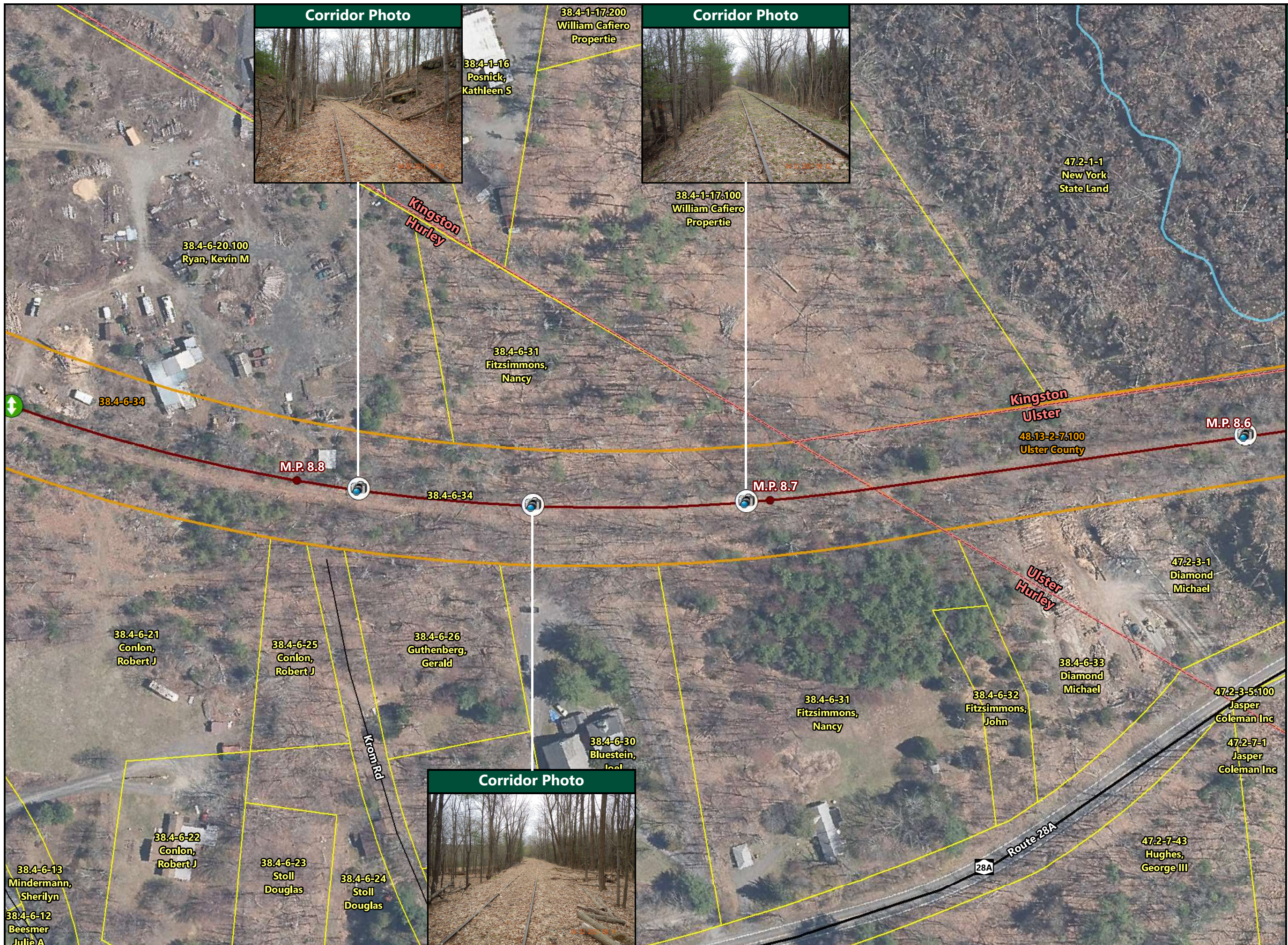
Page 22 of 27

- Bridge
- Culvert
- Major At-Grade Crossing
- Minor At-Grade Crossing
- Potential Encroachment
- Private Trail
Access/Crossing
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Park
- Ulster County Property
- Approximate Parcel
Boundary



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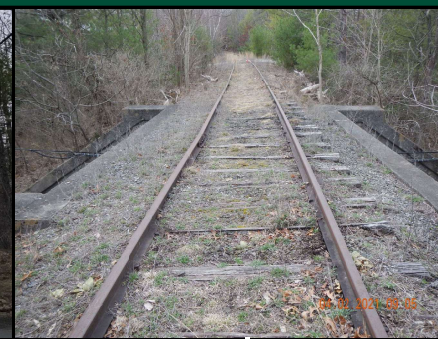


Corridor Photo



38.4-1-12.200
Catskill Mountain
Real Es

BIN 7713420 - Thru Girder Bridge Carrying Railroad Over Beesmer Road- 26' Span - 14.5' Interior Width

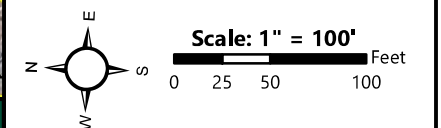


Ashokan Rail Trail Field Inventory Summary From the Town of Woodstock to the City of Kingston Ulster County, NY

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Legend

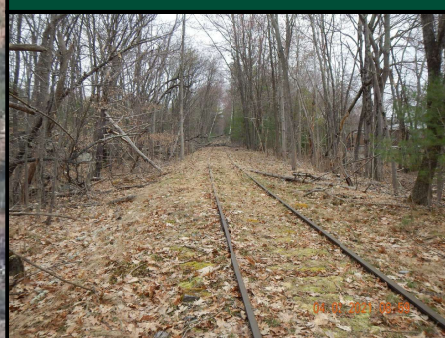
- Bridge
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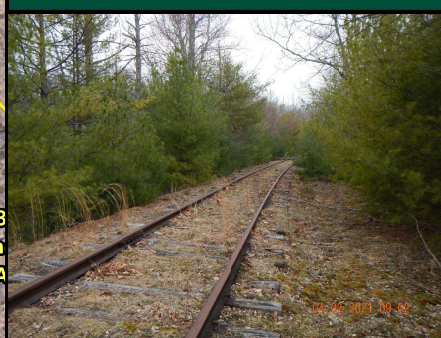
Corridor Photo



Corridor Photo



Corridor Photo



Private Crossing

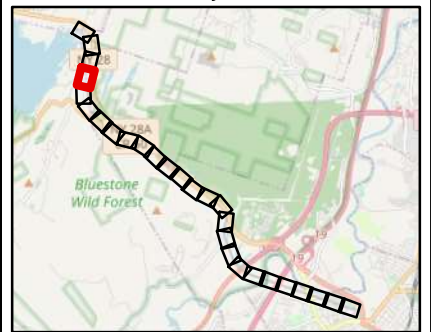
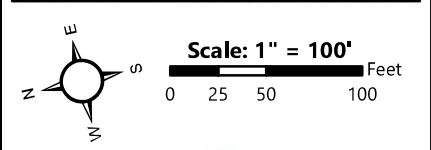


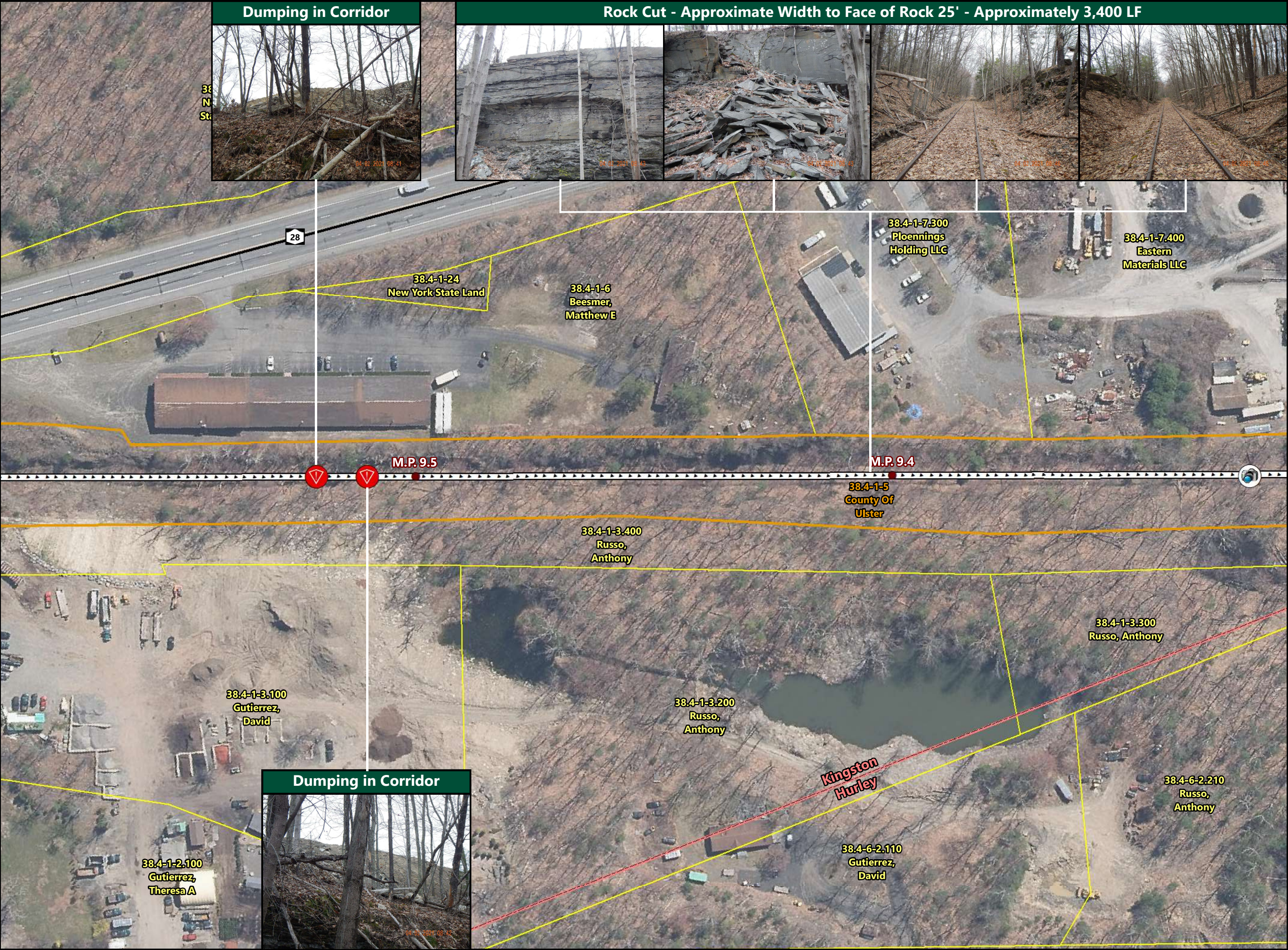


Ashokan Rail Trail
Field Inventory Summary
From the Town of Woodstock
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Ulster County, NY

Legend

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Dumping in Corridor



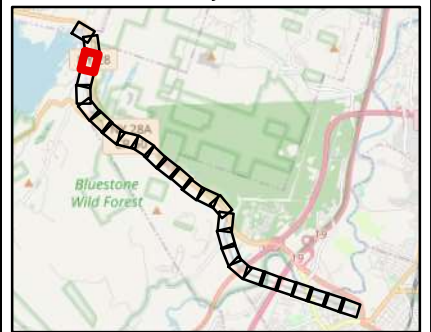
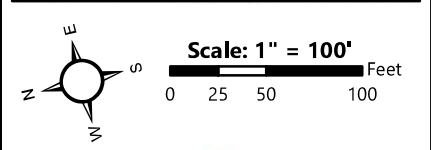
Rock Cut - Approximate Width to Face of Rock 25' - Approximately 3,400 LF

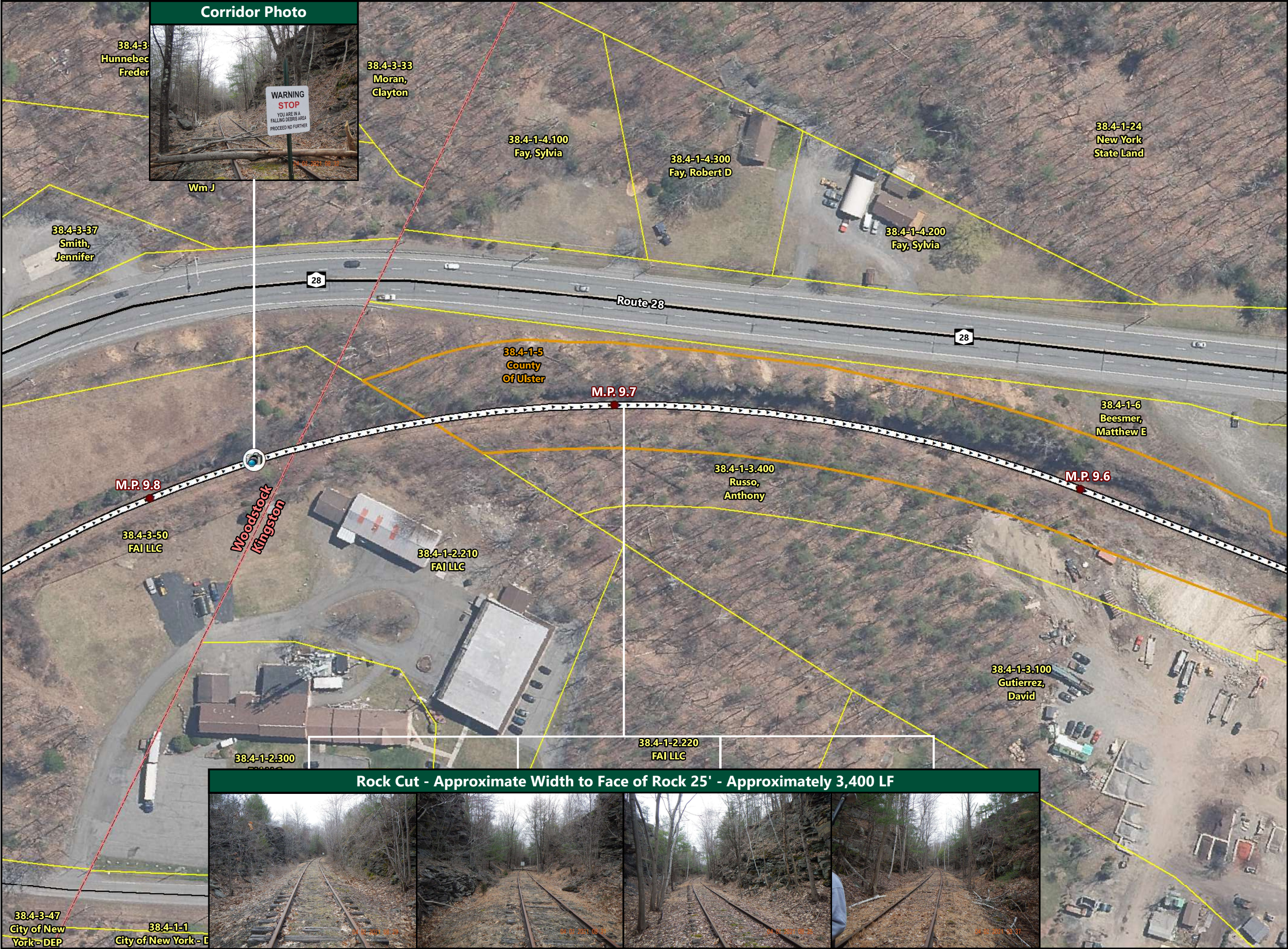


Ashokan Rail Trail
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- Wet Area/Washout
- Rock Cut
- Existing Ashokan Rail Trail
- Proposed Kingston Linear Park
- Ulster County Property
- Approximate Parcel Boundary

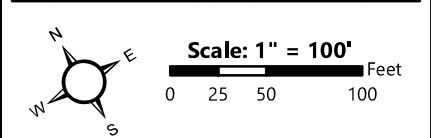






Ashokan Rail Trail
Field Inventory Summary
From the Town of Woodstock
to the City of Kingston
Ulster County, NY

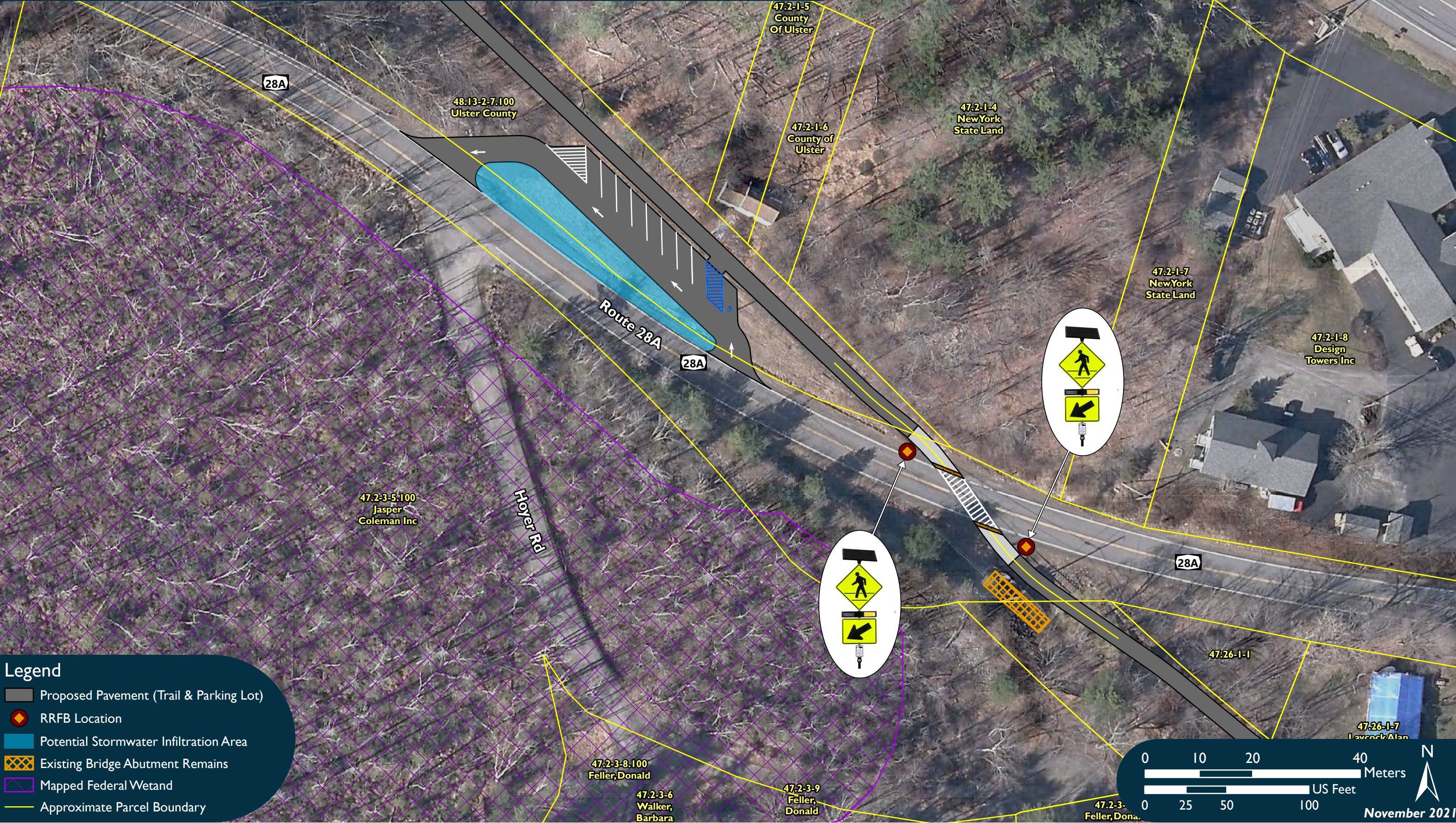
- Legend**
- Bridge
 - Culvert
 - Major At-Grade Crossing
 - Minor At-Grade Crossing
 - Potential Encroachment
 - Private Trail Access/Crossing
 - Trail Corridor Photo
 - Wet Area/Washout
 - Rock Cut
 - Existing Ashokan Rail Trail
 - Proposed Kingston Linear Park
 - Ulster County Property
 - Approximate Parcel Boundary





Ashokan Rail Trail Feasibility Study

NY-28A Crossing & Trailhead Concept





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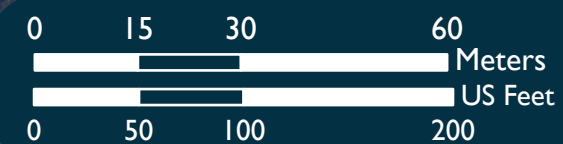
Ashokan Rail Trail Feasibility Study

Hurley Mountain Rd (CR-5) Crossing & Trailhead Concept



Legend

- Proposed Pavement (Trail & Parking Lot)
- Proposed Fence/Gate
- RRFB Location
- Mapped Federal Wetand
- Approximate Parcel Boundary



November 2021

Ashokan Rail Trail
Feasibility Study
Potential Alternatives
Town of Ulster &
City of Kingston, NY

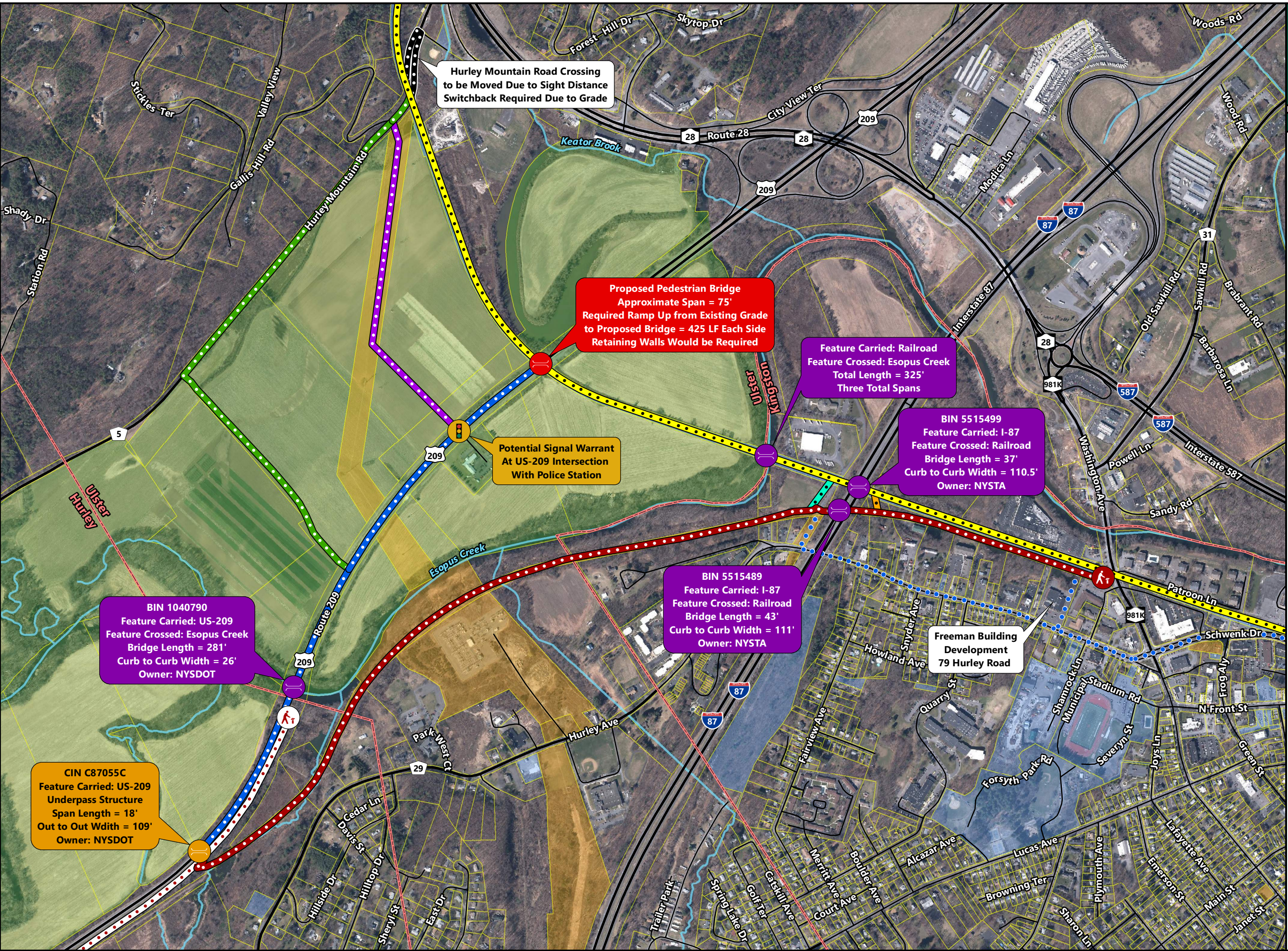
Legend

- 209 Cattle Crossing Alternative
- Farm Access Road Alternative
- Utility Corridor/Police Station Alternative
- NYSTA Crossover Alternative
- Adirondack Transit Cut-Through Alternative
- Hurley Mountain Road Switchback Alternative
- Potential Trail Connection
- Existing Ashokan Rail Corridor
- Proposed O&W Rail Trail
- Existing O&W Rail Trail
- Proposed US-209 Pedestrian Bridge
- Potential Traffic Signal
- Existing Cattle Crossing
- Existing Bridge
- Proposed O&W Trailhead
- Existing O&W Trailhead
- Central Hudson Property
- County/City Property
- Hudson Valley Farm Hub Lands
- Approximate Parcel Boundary

Scale: 1" = 800'
0 200 400 800 Feet



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Data provided by NYS GIS Clearinghouse &
Other Third Parties.
Issuance Date: 7/13/2021



Appendices



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APPENDIX C

Rail With Trail Alternative

Grade Separated Crossing

Trail Only Alternative

The expansions of the rail prism for the trail would likely result in placing fill within the 100 and 500 year floodplains.

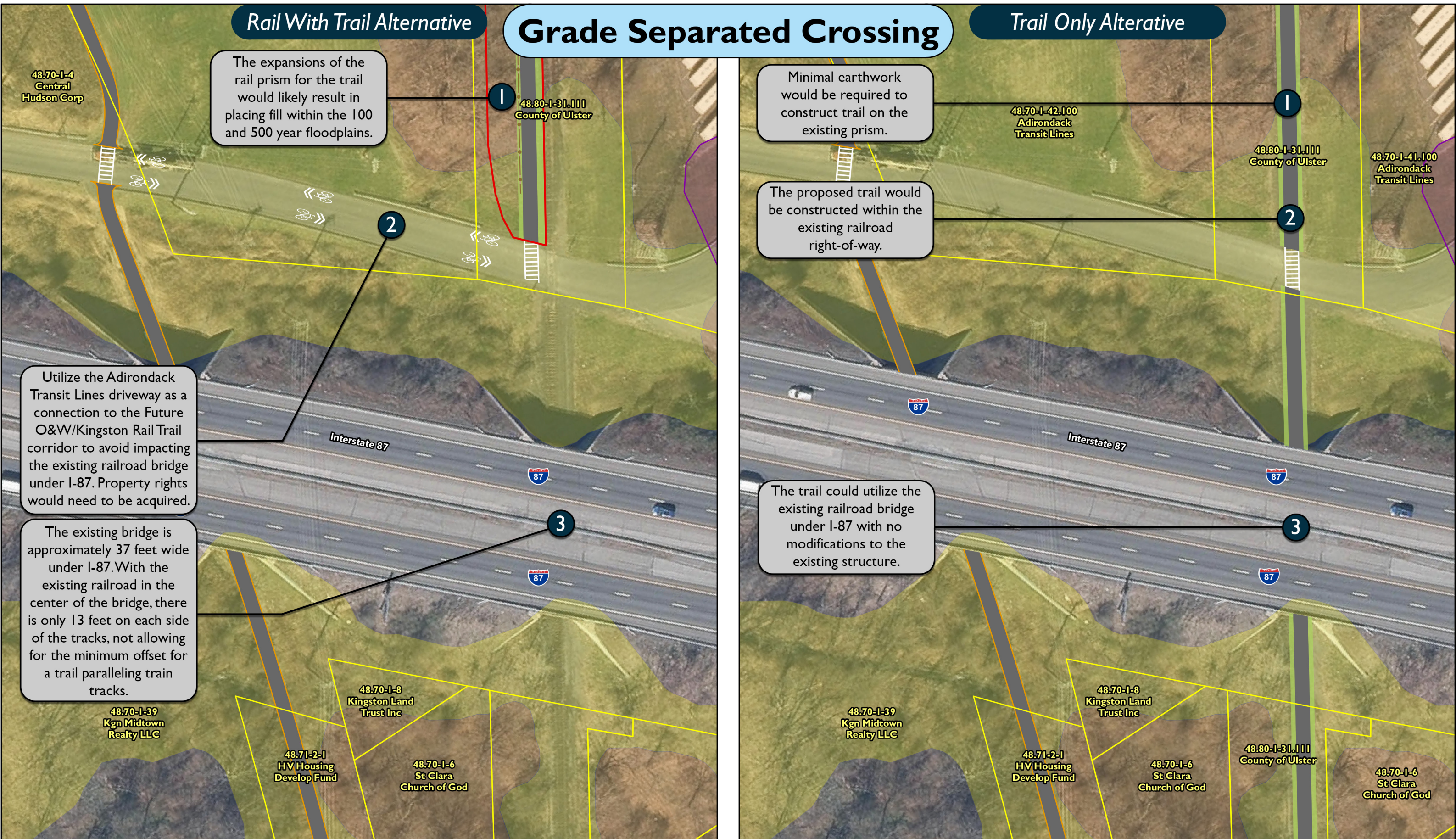
Minimal earthwork would be required to construct trail on the existing prism.

The proposed trail would be constructed within the existing railroad right-of-way.

The trail could utilize the existing railroad bridge under I-87 with no modifications to the existing structure.

Utilize the Adirondack Transit Lines driveway as a connection to the Future O&W/Kingston Rail Trail corridor to avoid impacting the existing railroad bridge under I-87. Property rights would need to be acquired.

The existing bridge is approximately 37 feet wide under I-87. With the existing railroad in the center of the bridge, there is only 13 feet on each side of the tracks, not allowing for the minimum offset for a trail paralleling train tracks.



- Proposed 10' Wide Shared Use Path
- Proposed Shared Use Path Shoulder
- Approx. Earthwork Outside Existing Prism
- Proposed Fencing
- Existing Ballast
- Mapped Federal Wetland
- Mapped 500 Year Floodzone
- Mapped 100 Year Floodzone
- Future O&W Rail Trail
- Approximate Parcel Boundary

Thruway I-87 Crossing
BIN 5515489 & BIN 5515499
City of Kingston, Ulster County

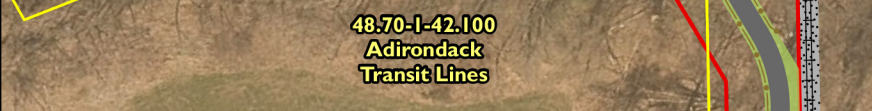


Rail With Trail Alternative

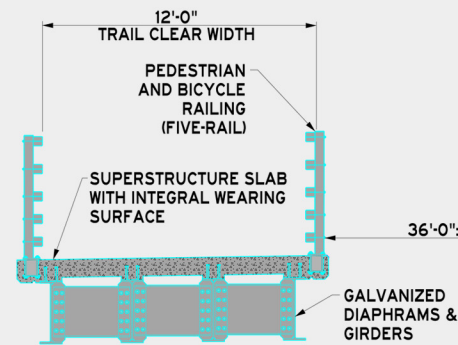
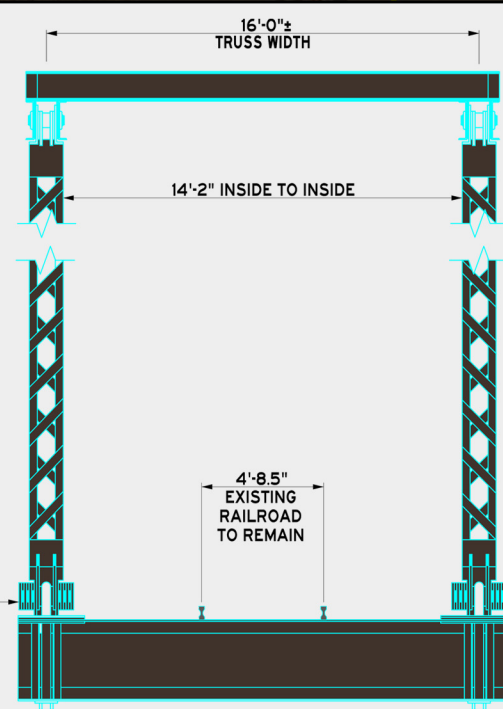
Approximately 1,000 cubic yards of fill would be placed within the 100 year floodplain, floodway, and federal wetlands to construct the bridge approaches, abutments, and piers.

The bridge would likely need to be two spans, one spanning 110' of the floodway, and the other spanning approximately 220' over the main watercourse.

Property would likely need to be acquired to accommodate the new trail bridge approaches and abutments.



Typical Section



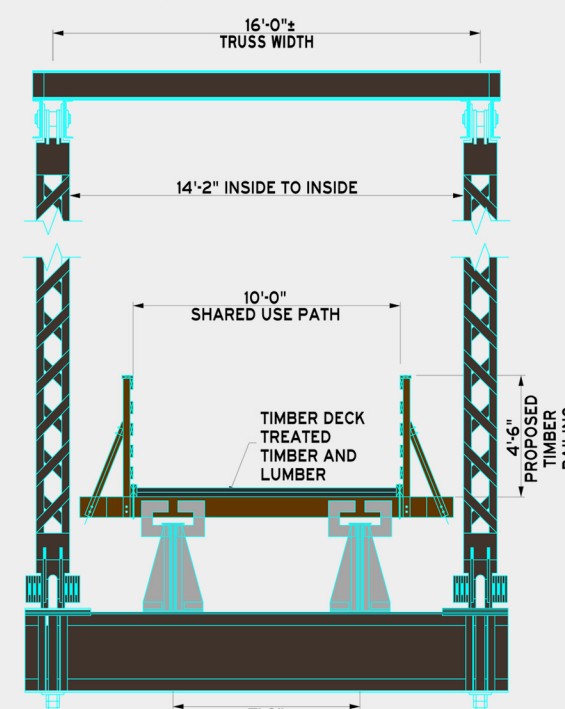
C9 Bridge

Minimal earthwork would be required to construct trail on the existing prism.

The existing railroad bridge infrastructure would be converted to a shared use path bridge. More analysis would be required to investigate potential repairs required for the retrofit.

The proposed trail would be constructed within the existing railroad right-of-way.

Typical Section



Trail Only Alternative

48.13-2-7.100
Ulster County

48.80-1-31.111
County of Ulster

48.13-2-25
Adirondack
Transit Lines

48.70-1-41.100
Adirondack
Transit Lines



Rendering

Esopus Creek

- Proposed 10' Wide Shared Use Path
- Proposed Shared Use Path Shoulder
- Proposed Abutment/Retaining Wall
- Limits of Earthwork Outside Existing Prism
- Existing Ballast
- Mapped Federal Wetland
- Mapped 500 Year Floodzone
- Mapped 100 Year Floodzone
- Mapped Floodway
- Approximate Parcel Boundary

C9 Bridge Over The Esopus Creek
325.5' Span Truss Built in 1877
Town of Ulster/City of Kingston, Ulster County



Produced For Planning Purposes Only. Data provided by NYSGIS Clearinghouse & Other Third Parties.

0 50 100 200 Feet
0 15 30 60 Meters
Scale: 1" = 100' Export Date: 8/31/2022



Rail With Trail Alternative

The expansions of the rail prism for the trail would likely result in approximately 3,000 cubic yards of fill within the 100 year floodplain for this 2,000 LF section. (100 year floodzone not depicted as it encompasses the entire area.)

Continue construction of the trail on the western side of the tracks with the crossover at Hurley Mountain Road.

Earthwork for the expansion of the rail prism to accommodate the trail would likely remain within the existing railroad right of way.

48.13-2-7.100
Ulster County

48.17-1-6
Green Acres
HMR LLC

48.13-2-17
Green Acres
HMR LLC

Fill Section

Minimal earthwork would be required to construct trail on the existing prism.

Construct trail on the center of the existing railroad prism.

The proposed trail would be constructed within the existing railroad right-of-way.

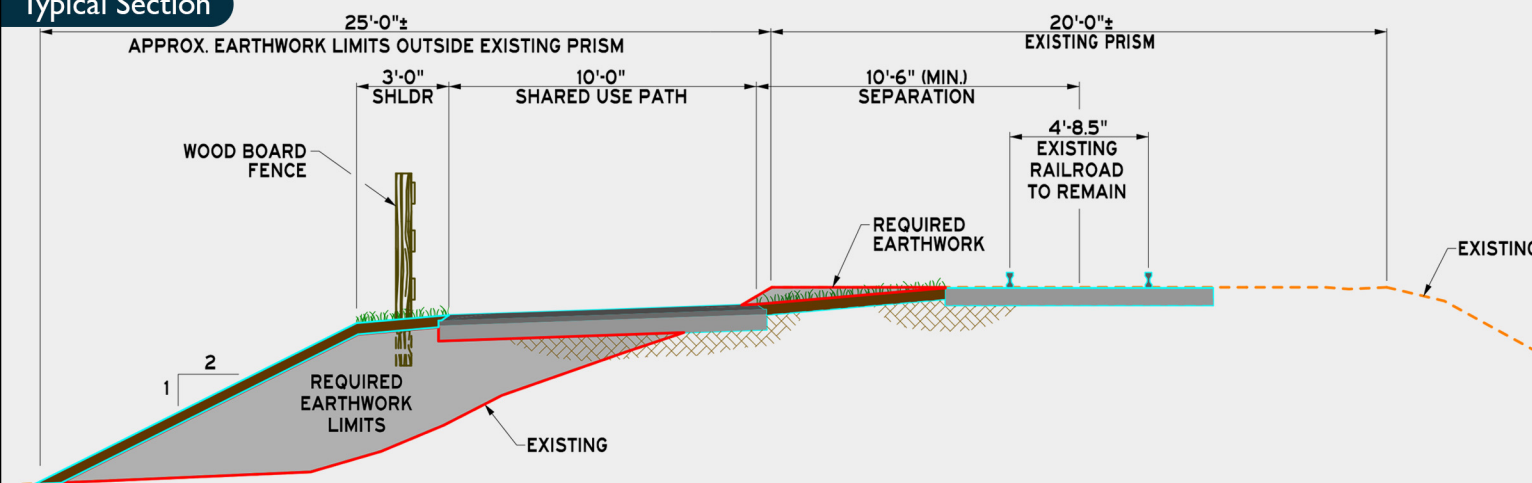
Trail Only Alternative

48.13-2-7.100
Ulster County

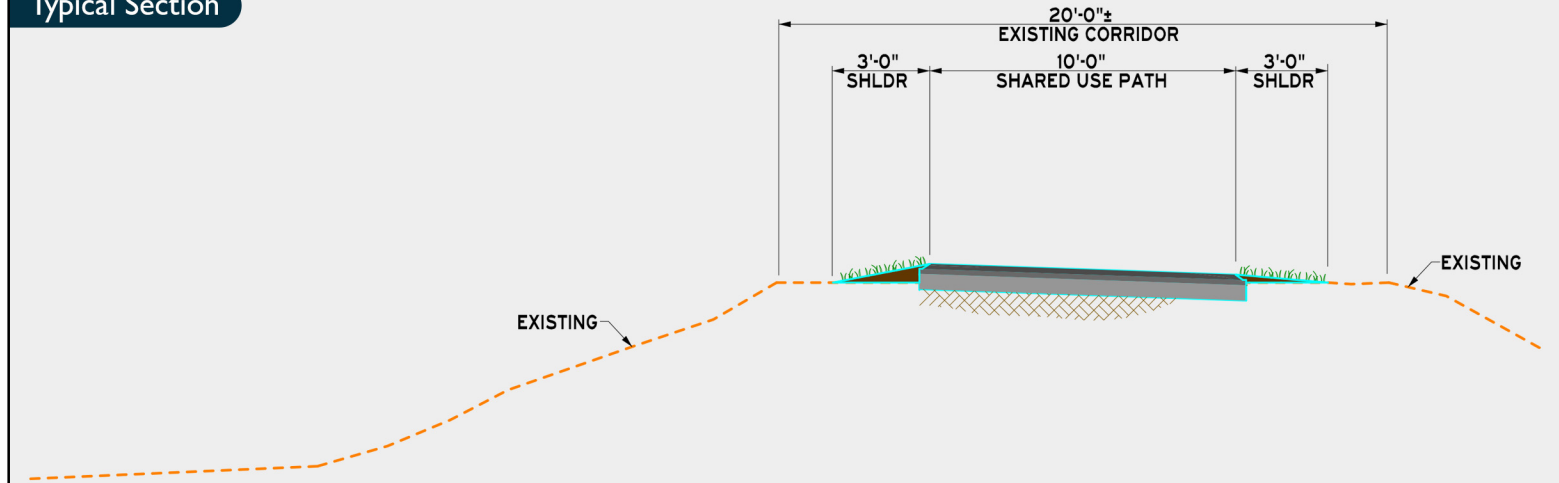
48.17-1-6
Green Acres
HMR LLC

48.13-2-17
Green Acres
HMR LLC

Typical Section



Typical Section



- Proposed 10' Wide Shared Use Path
- Proposed Shared Use Path Shoulder
- Proposed Fencing
- Existing Rail
- Existing Ballast
- Limits of Earthwork Outside Prism
- Approximate Parcel Boundary

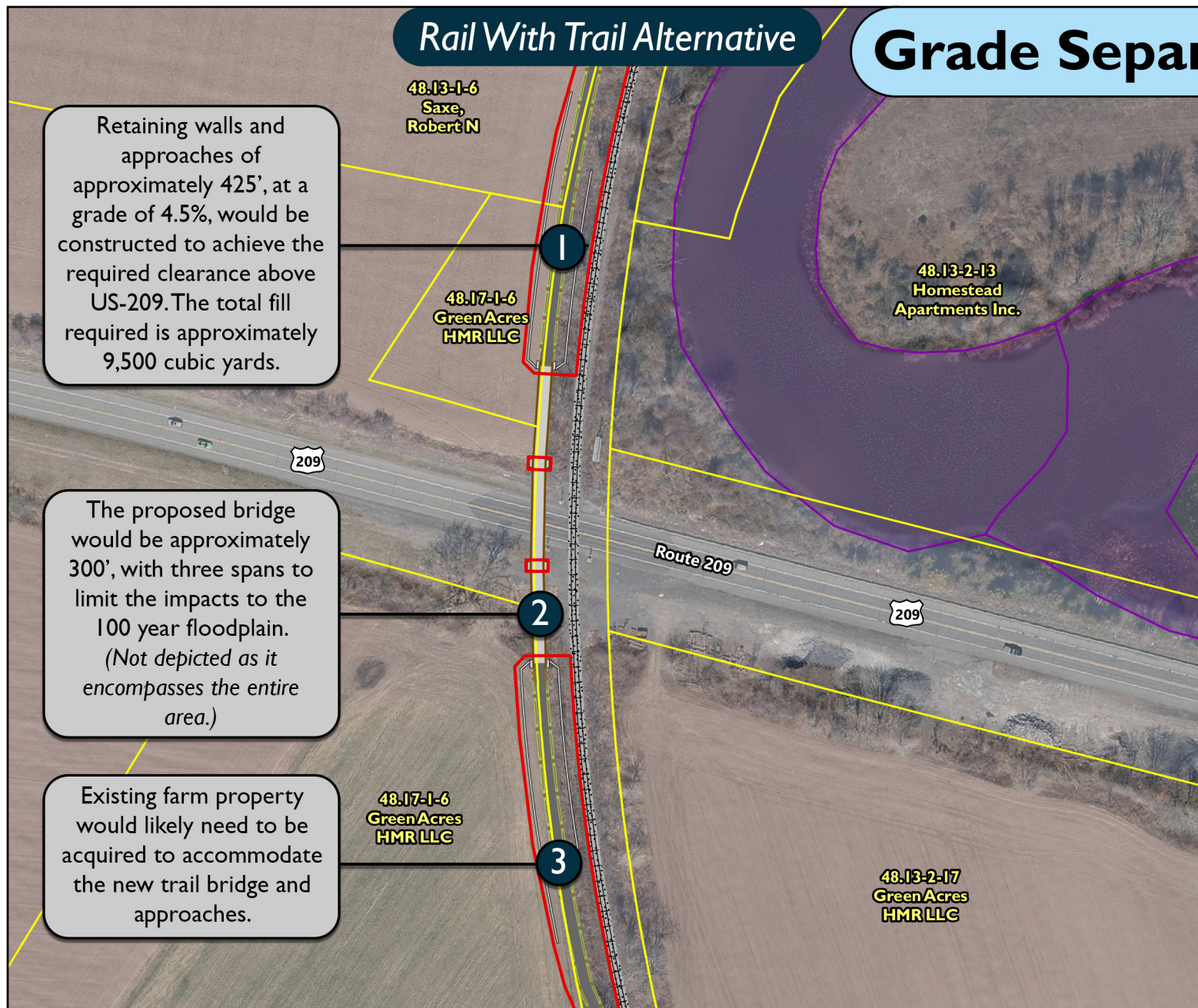
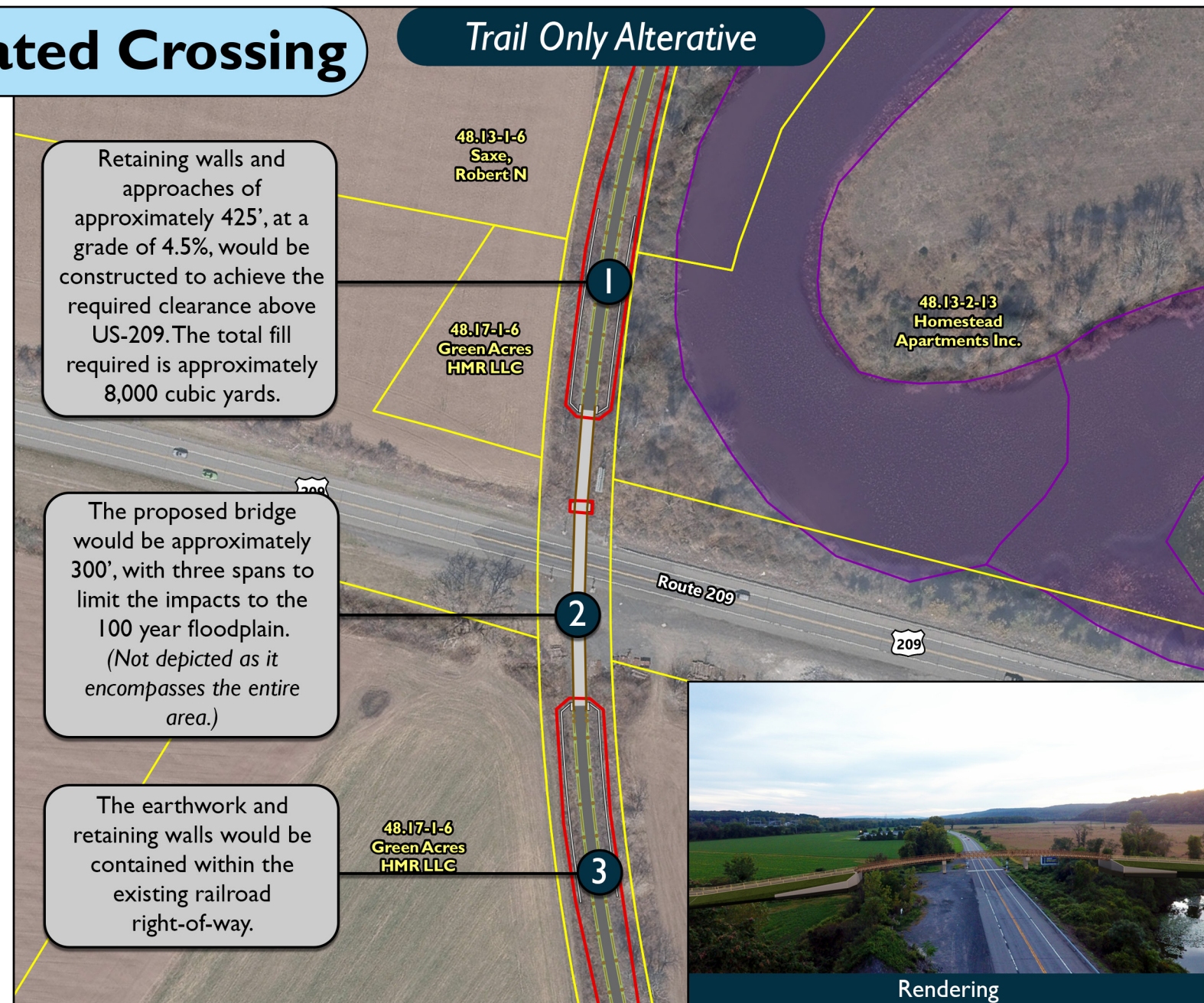
Between US-209 & C9 Bridge
Approximately 2,000 Linear Feet
Town of Ulster, Ulster County, NY



Rail With Trail Alternative

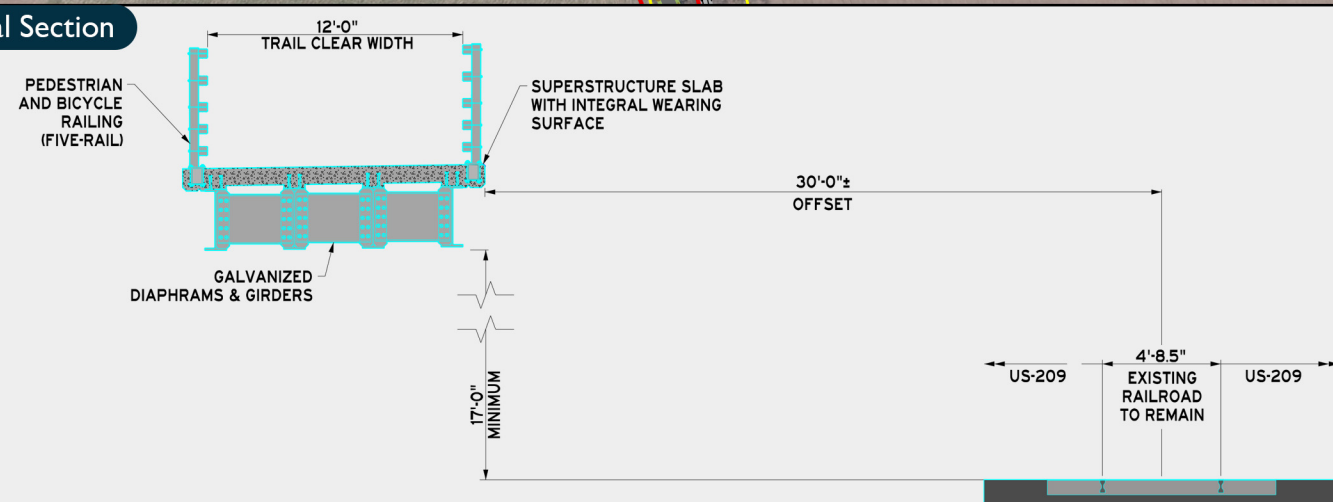
Grade Separated Crossing

Trail Only Alternative

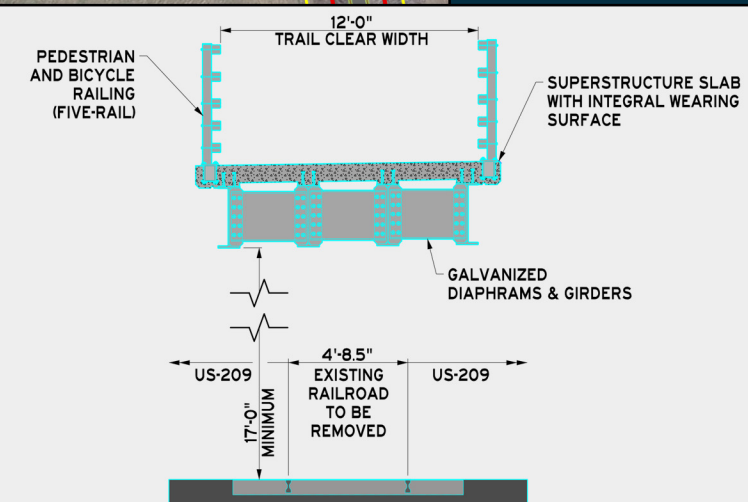


Rendering

Typical Section



Typical Section



- Proposed 10' Wide Shared Use Path
- Proposed Shared Use Path Shoulder
- Proposed Fencing
- Proposed Retaining Wall/Abutment
- Existing Ballast
- Approx. Earthwork Outside Existing Prism
- Mapped Federal Wetland
- Approximate Parcel Boundary

US Route 209
Urban Principal Arterial Maintained by NYSDOT
Town of Ulster, Ulster County, NY

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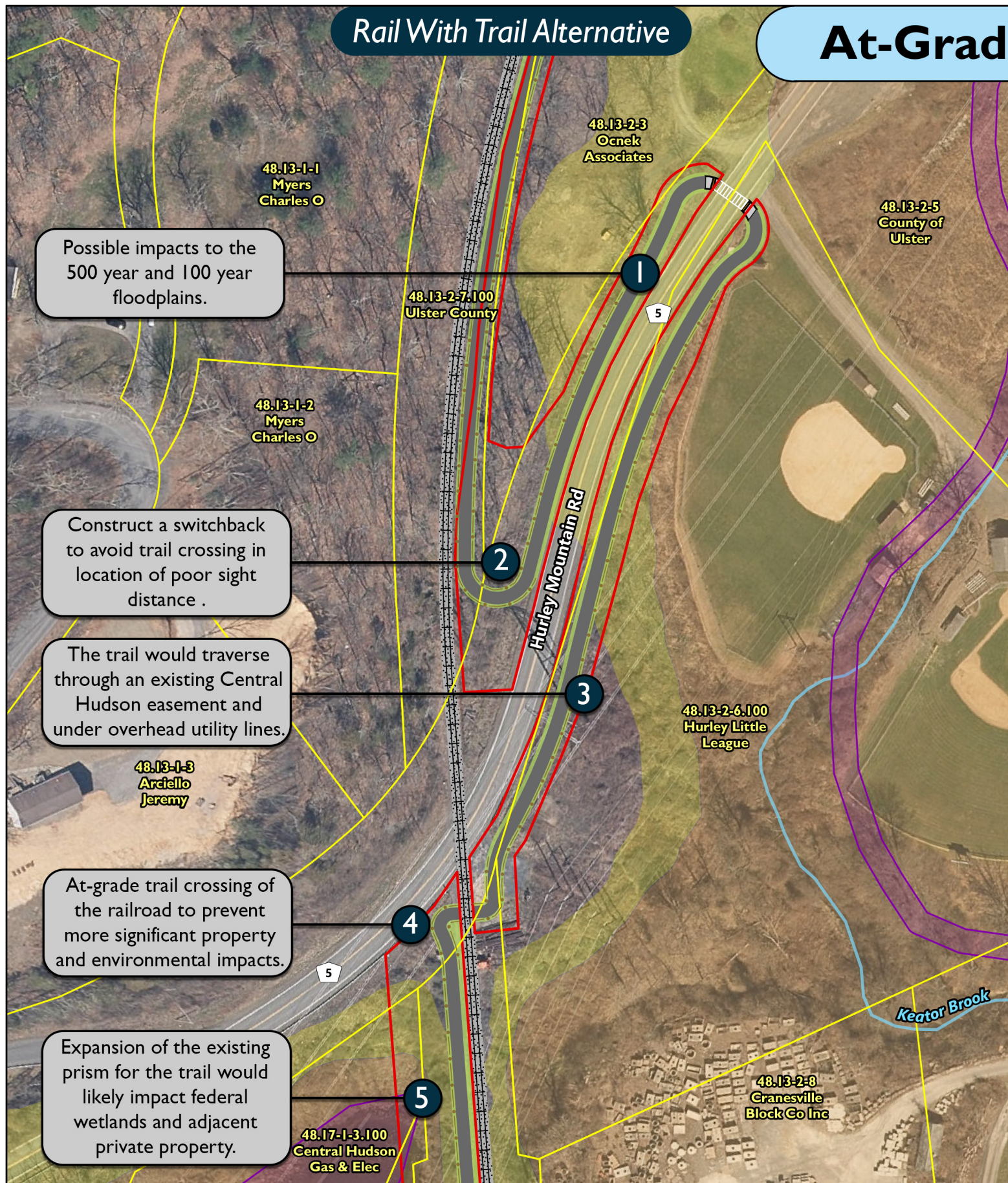
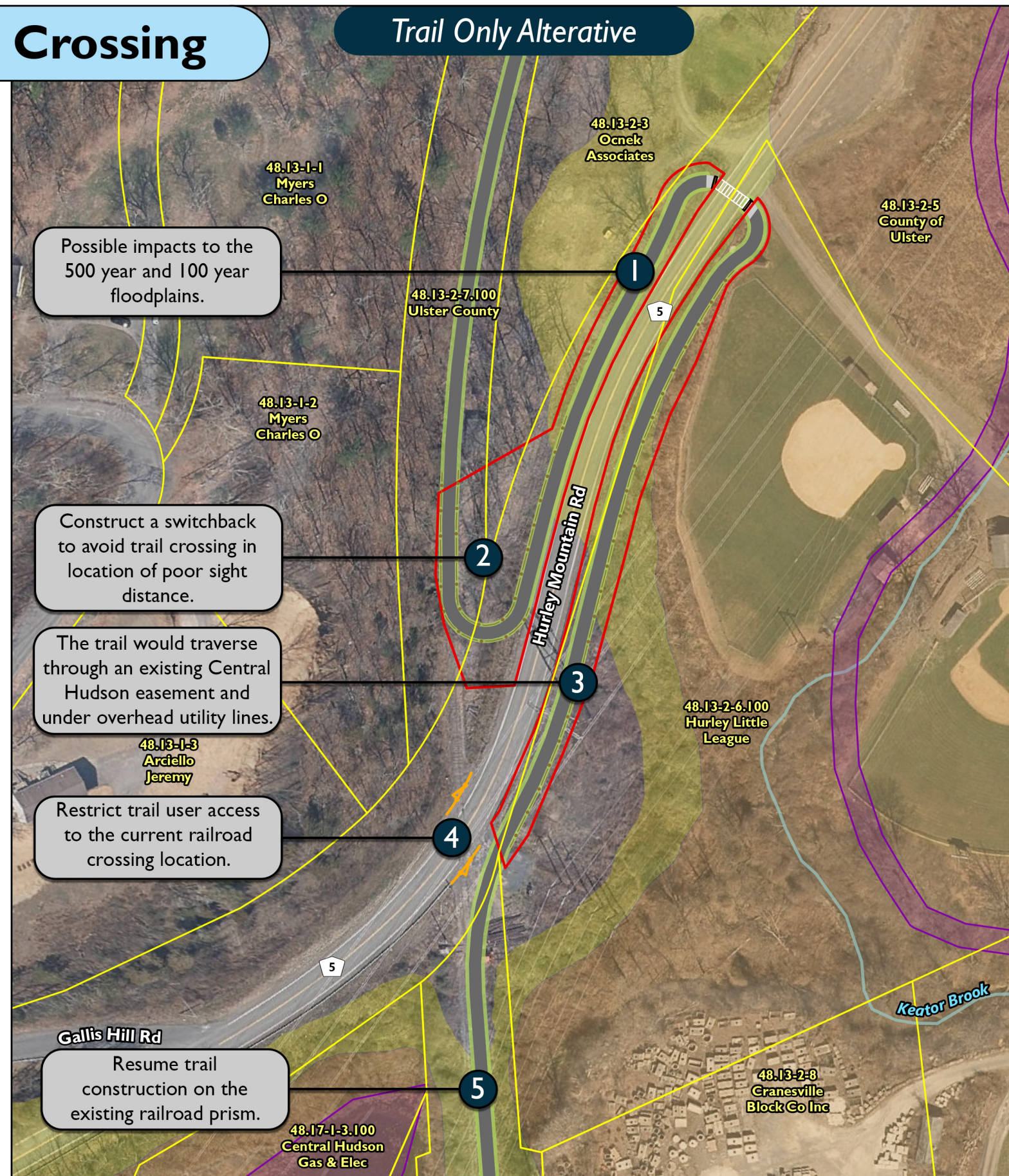
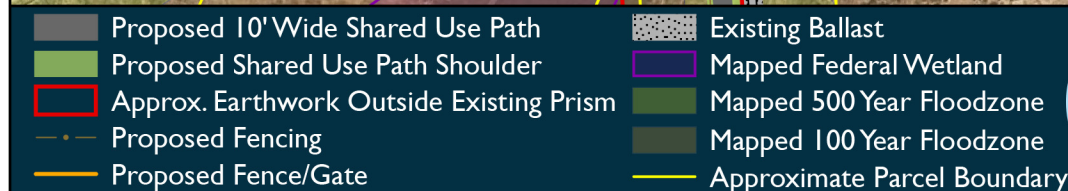
0 75 150 300
 Feet
 0 20 40 80
 Meters
 Scale: 1" = 150' Export Date: 8/31/2022



Rail With Trail Alternative

At-Grade Crossing

Trail Only Alternative



County Route 5 (Hurley Mountain Road)
Rural Minor Collector Maintained by Ulster County
Town of Ulster, Ulster County, NY

Rail With Trail Alternative

Expansion of the existing prism to accommodate the trail would likely impact adjacent private property.

47.4-1-4
Reilly,
Joseph P

Construct the trail on the eastern side of the tracks to avoid a significant rock cut on the west side. Approximately 20,000 cubic yards of fill would be required to expand the prism for 1,000 LF.

Property acquisitions would likely be required to accommodate the prism expansion and trail construction.

48.13-2-7.100
Ulster
County

48.13-2-2
Kenco
Holding Inc



Rendering

Fill Section

Minimal earthwork would be required to construct trail on the existing prism.

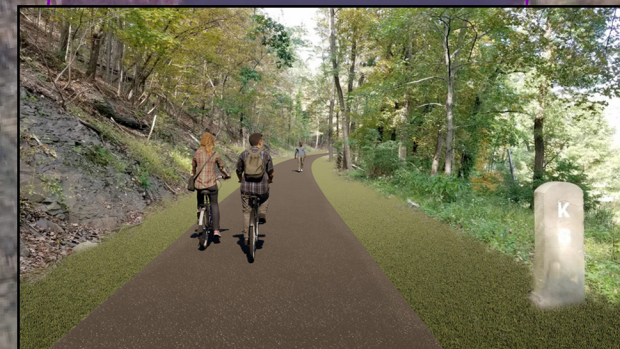
The trail would be constructed on the center of the existing railroad prism.

The proposed trail would be constructed within the existing railroad right-of-way.

Trail Only Alternative

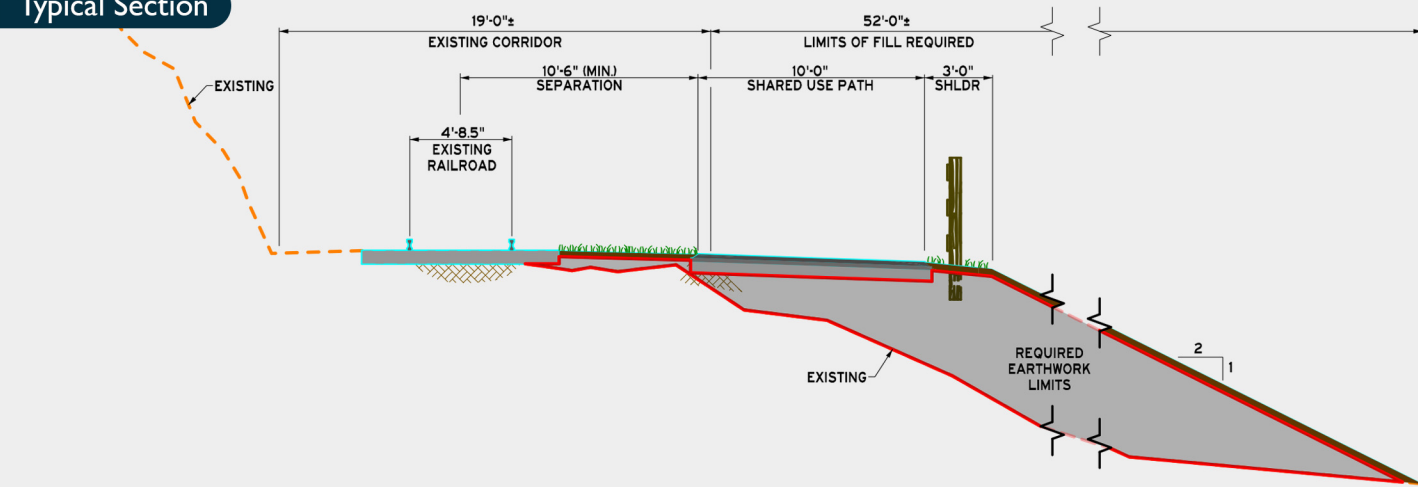
48.13-2-7.100
Ulster
County

48.13-2-2
Kenco
Holding Inc

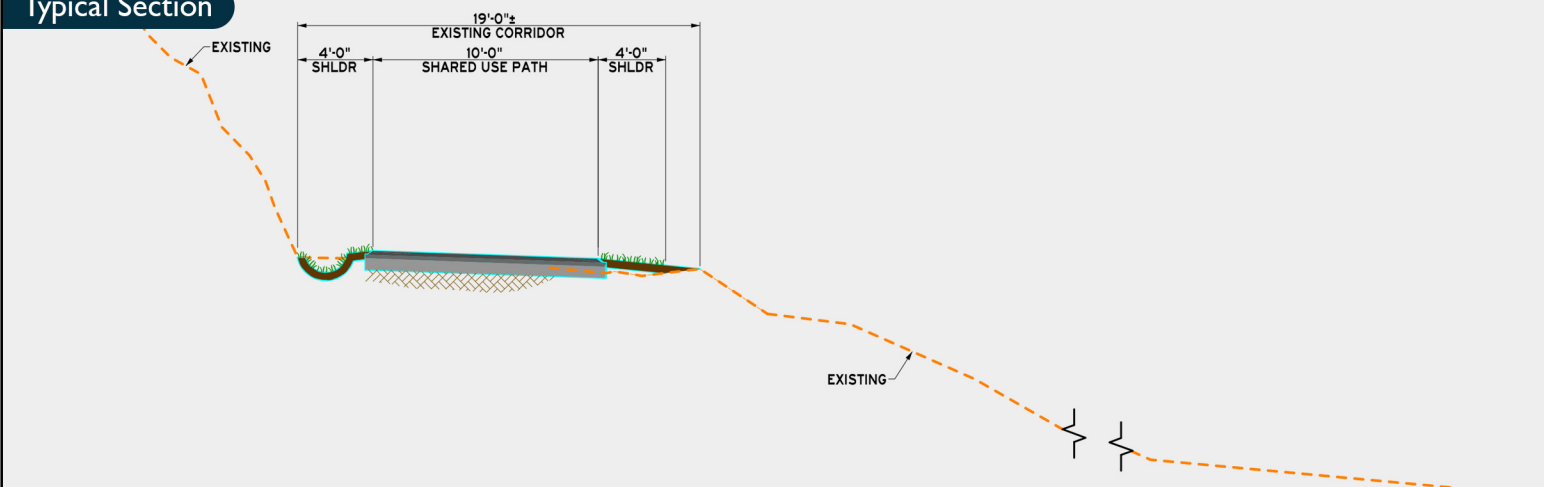


Rendering

Typical Section



Typical Section



- Proposed 10' Wide Shared Use Path
- Proposed Shared Use Path Shoulder
- Proposed Fencing
- Approx. Earthwork Outside Existing Prism
- Existing Ballast
- Existing Rail
- Mapped Federal Wetland
- Approximate Parcel Boundary

North of Hurley Mountain Road
Approximately 1,000 Linear Feet
Town of Ulster, Ulster County, NY

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INSTITUTE

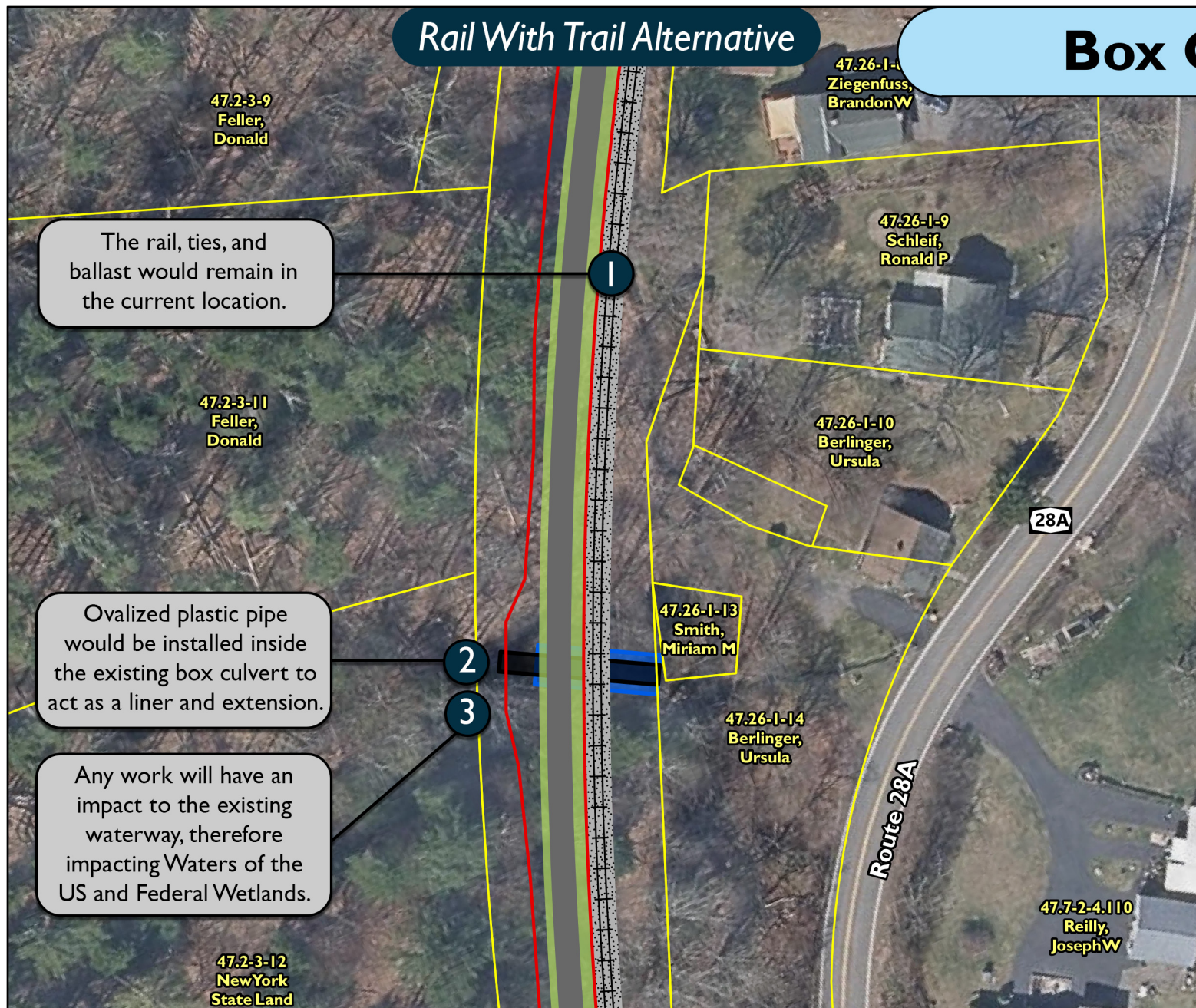
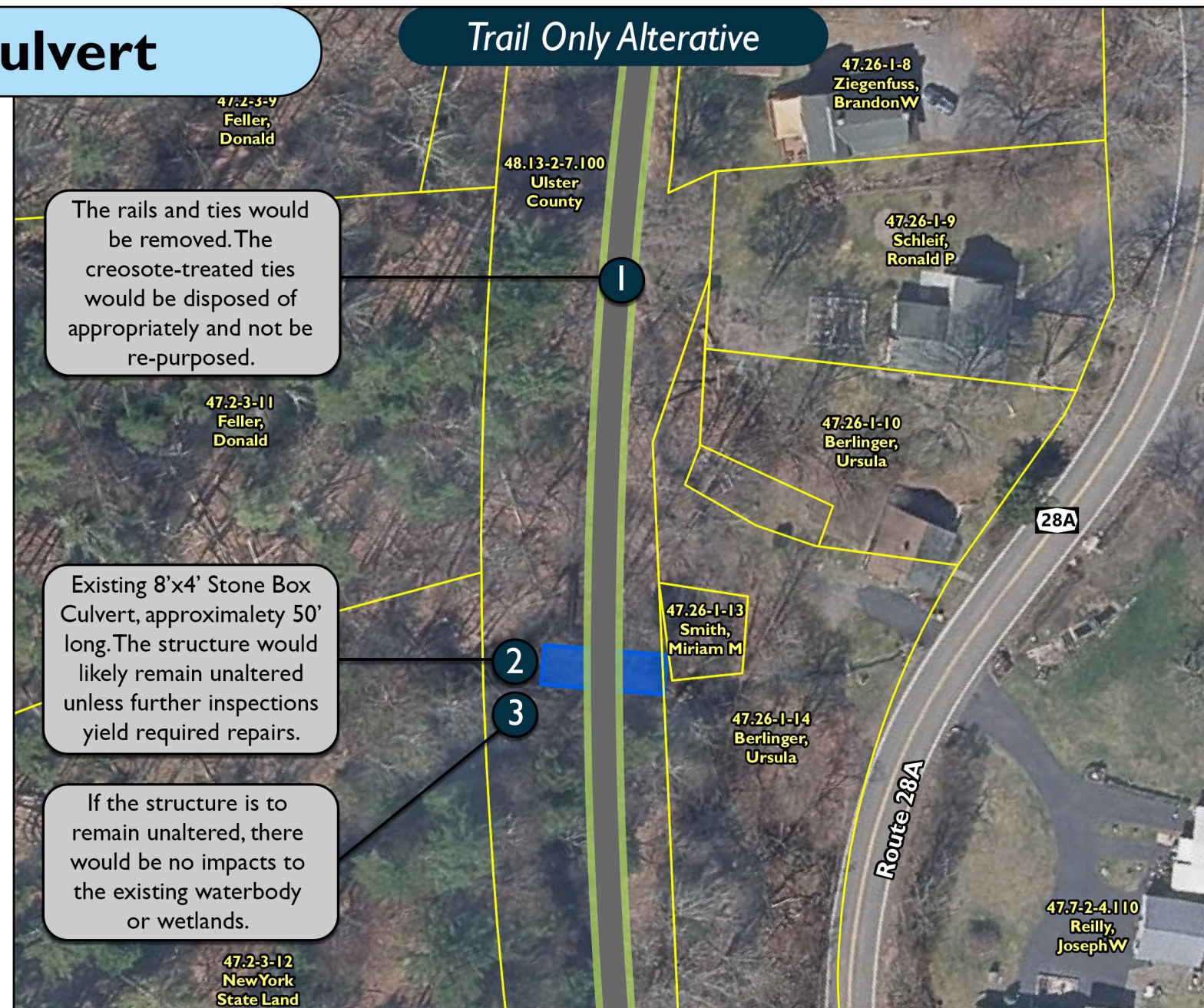
Produced For Planning Purposes Only. Data provided by NYSGIS Clearinghouse & Other Third Parties.



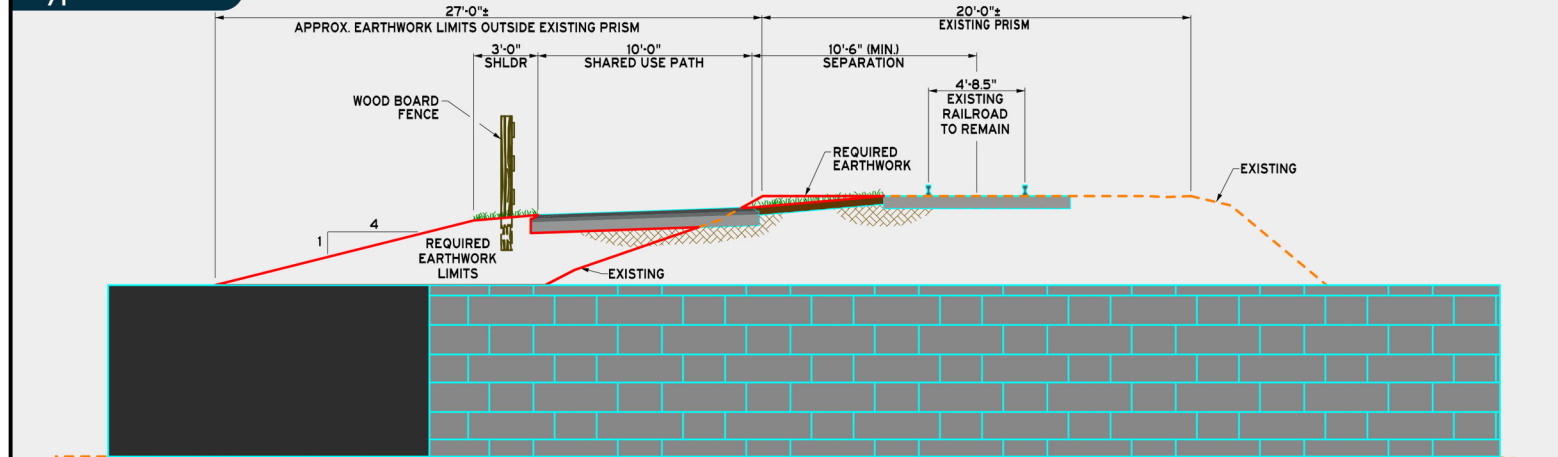
Rail With Trail Alternative

Box Culvert

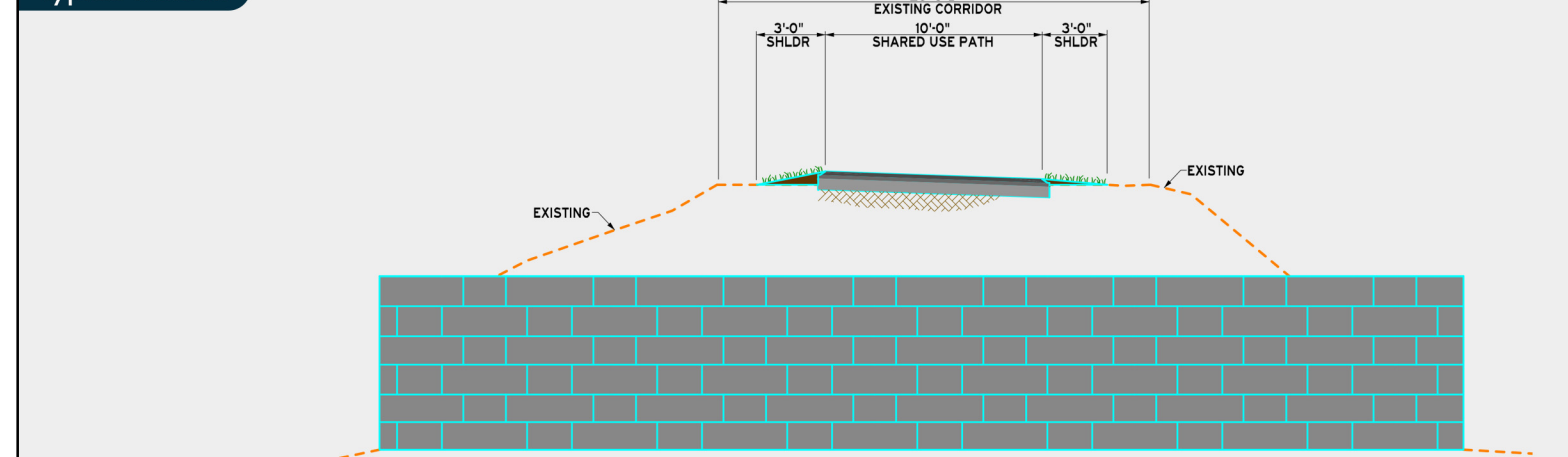
Trail Only Alternative



Typical Section



Typical Section



- Proposed 10' Wide Shared Use Path
- Proposed Shared Use Path Shoulder
- Existing Stone Box Culvert
- Proposed Ovalized HDPE Pipe
- Approx. Earthwork Outside Existing Prism
- Existing Rail
- Existing Ballast
- Approximate Parcel Boundary

Stone Box Culvert

South of New York State Route 28A Crossing

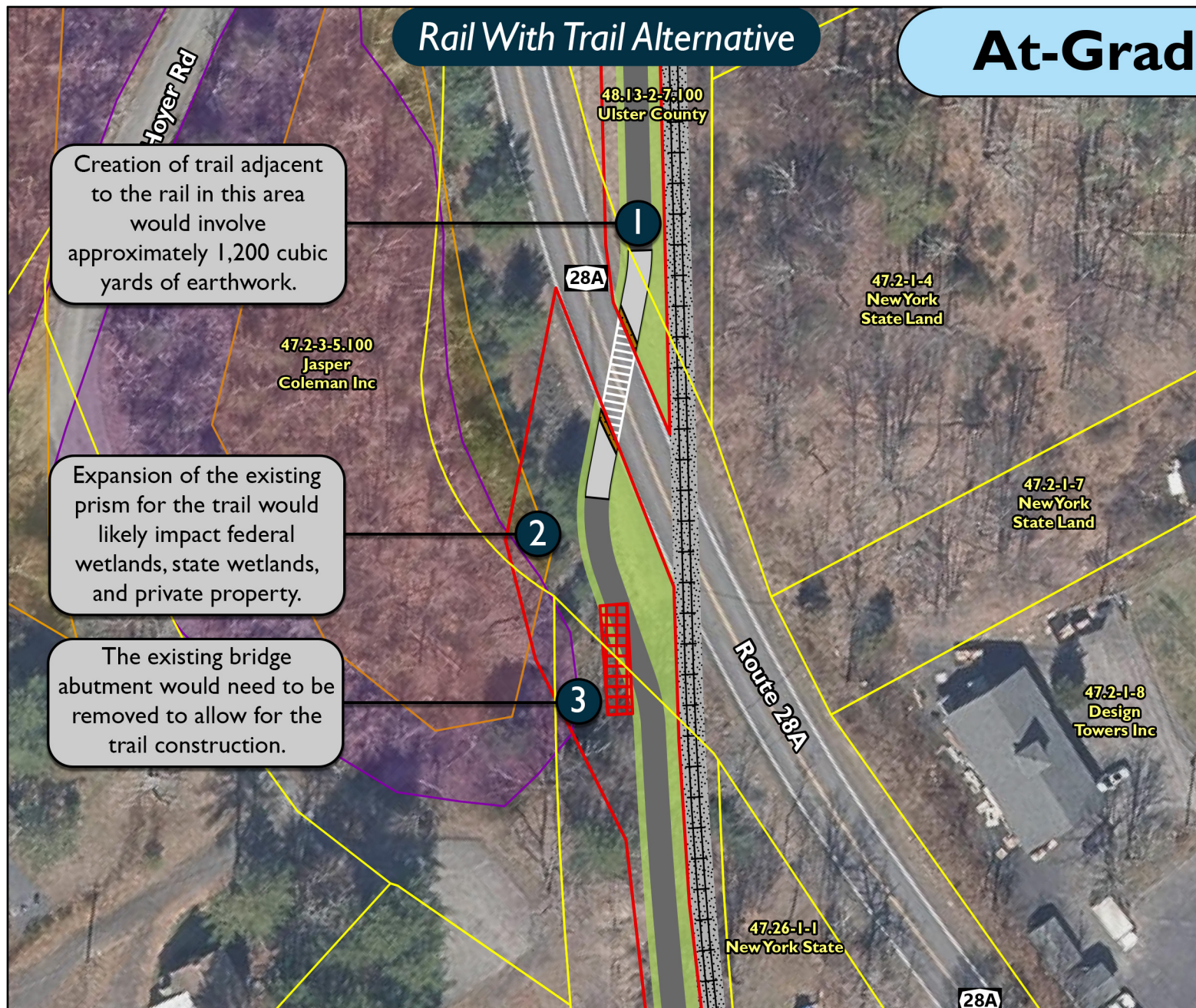
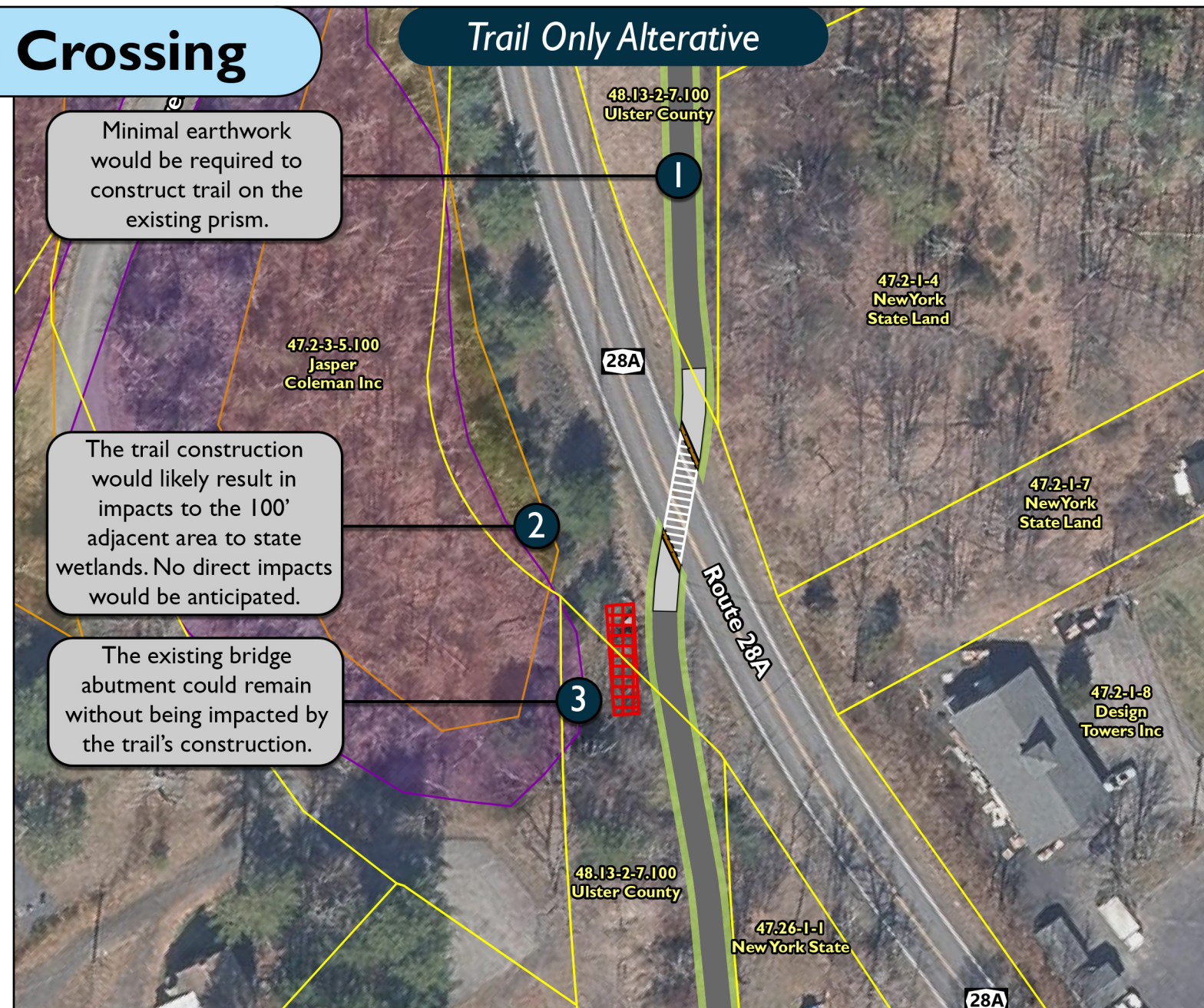
Town of Ulster, Ulster County, NY



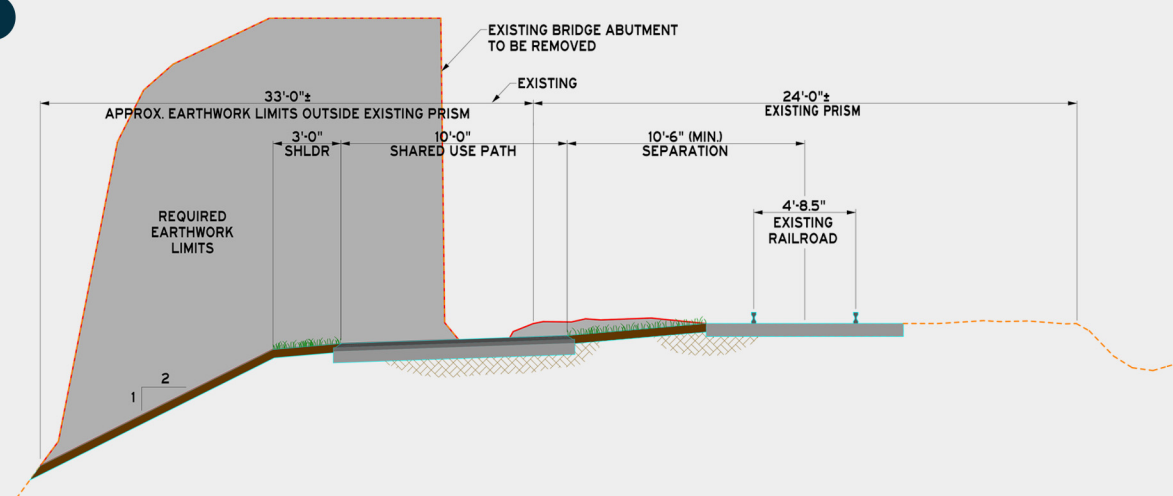
Rail With Trail Alternative

At-Grade Crossing

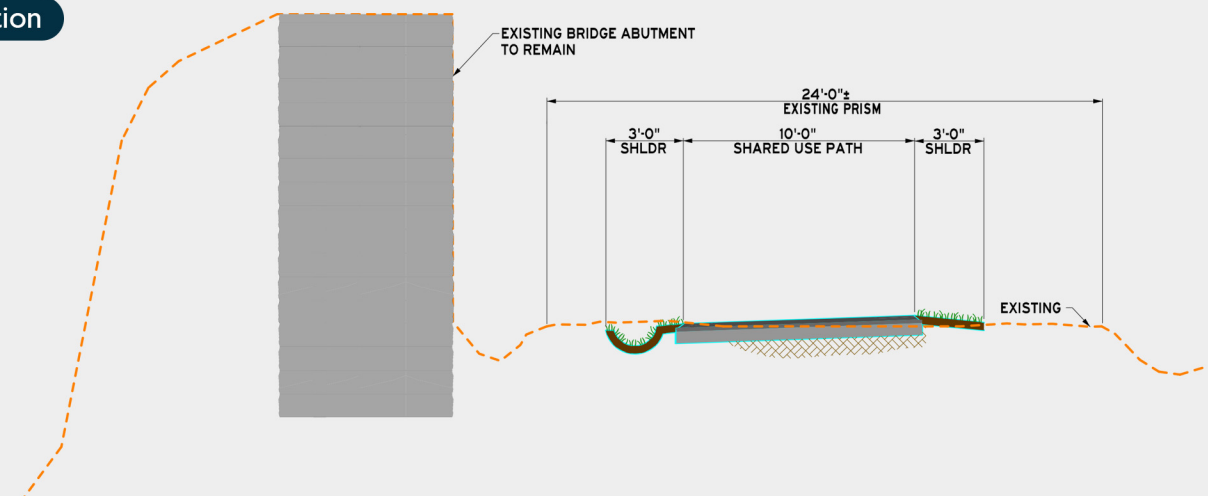
Trail Only Alternative



Typical Section



Typical Section



- Proposed 10' Wide Shared Use Path
- Proposed Shared Use Path Shoulder
- Existing Bridge Abutment Remains
- Approx. Earthwork Outside Existing Prism
- Existing Rail
- Existing Ballast
- Mapped Federal Wetland
- Mapped State Wetland
- Approximate Parcel Boundary

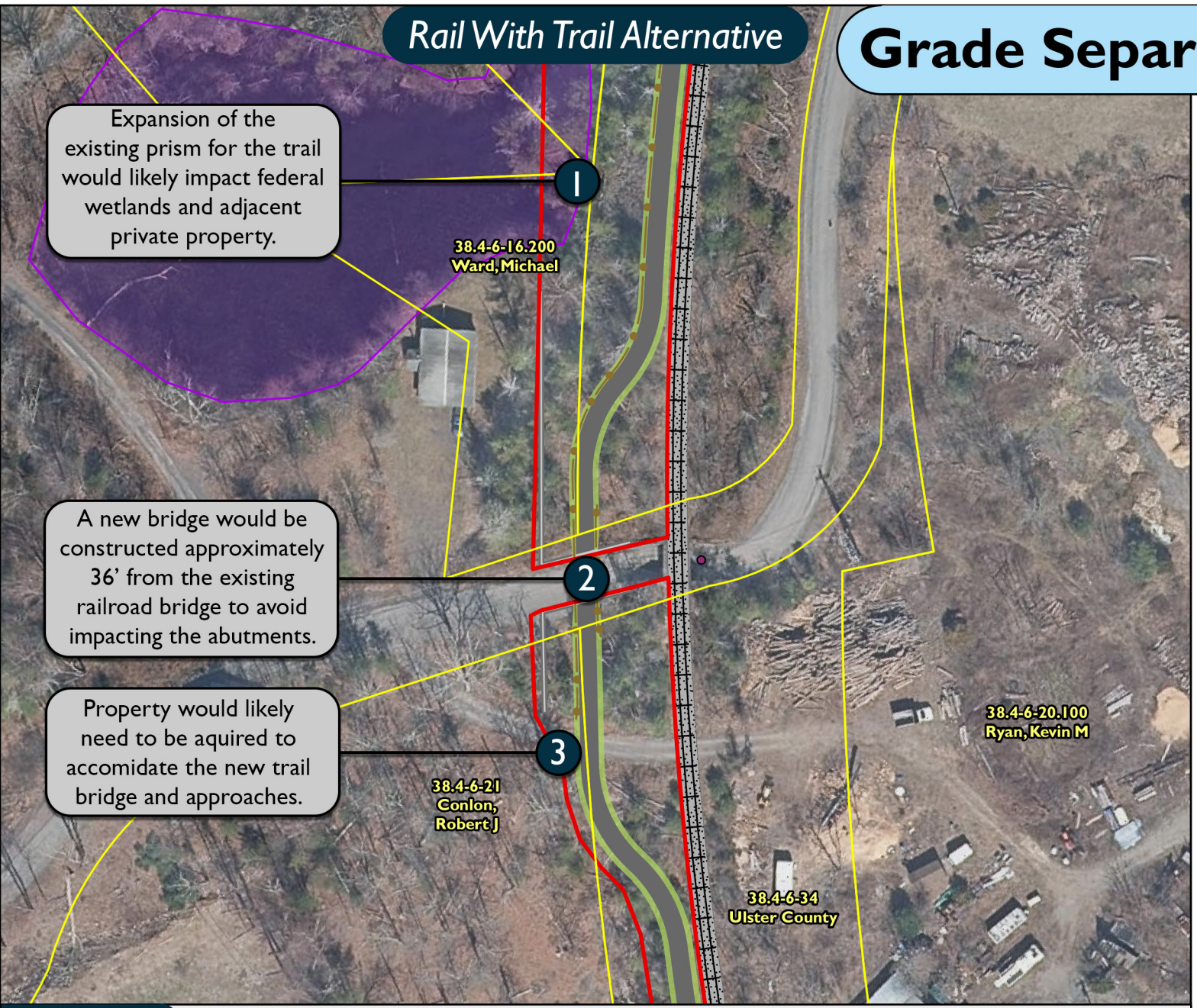
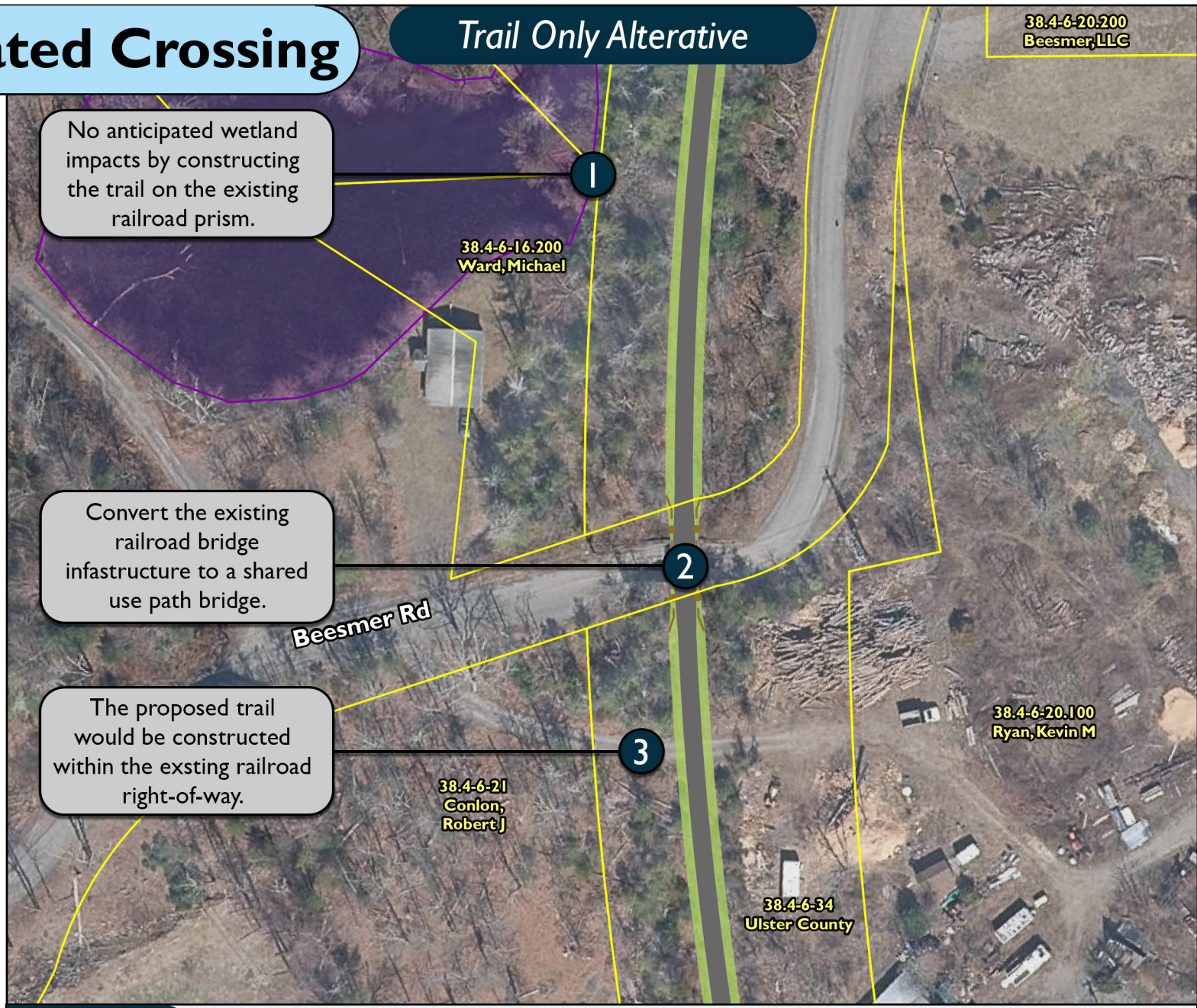
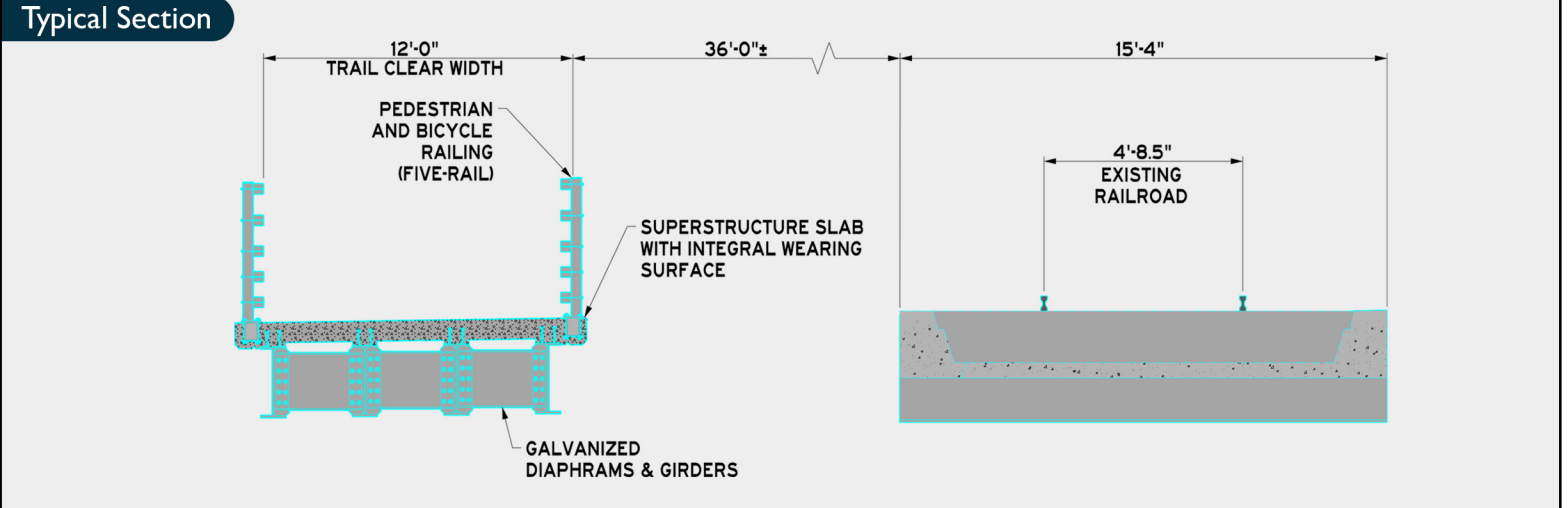
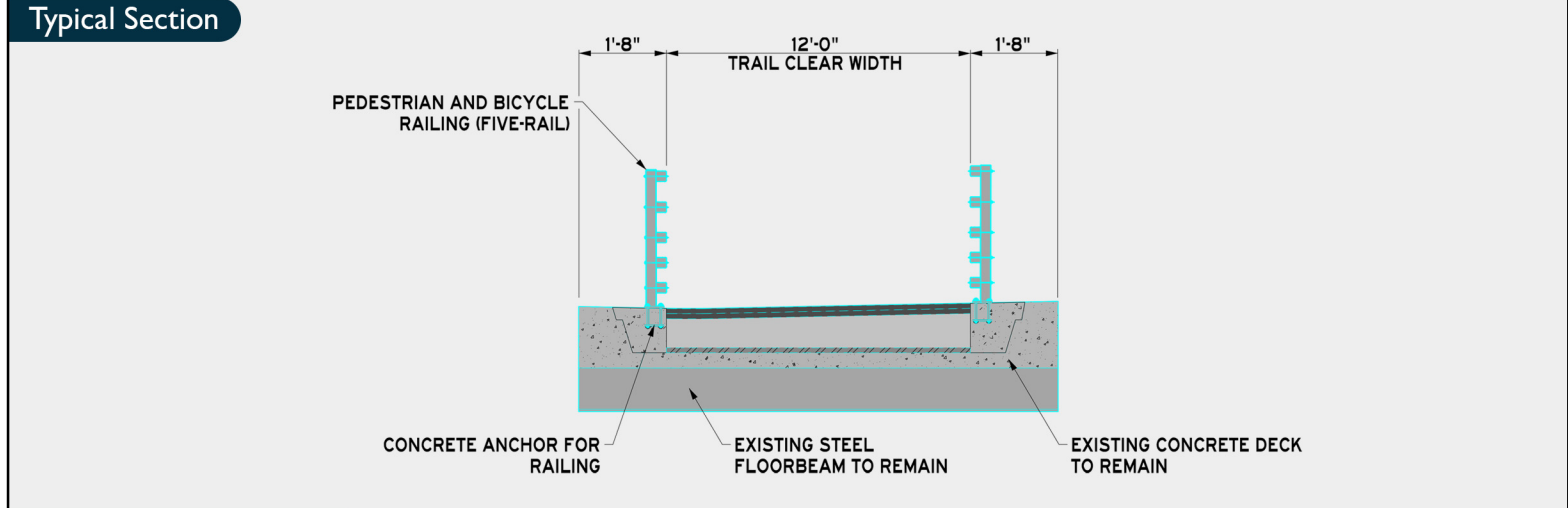
New York State Route 28A
Rural Minor Collector Maintained by Ulster County
Towns of Ulster & Kingston, Ulster County, NY



Rail With Trail Alternative

Grade Separated Crossing

Trail Only Alternative



- Proposed 10' Wide Shared Use Path
- Proposed Shared Use Path Shoulder
- Proposed Fencing/Bridge Railing
- Proposed Retaining Wall
- Approx. Earthwork Outside Existing Prism
- Existing Ballast
- Existing Rail
- Mapped Federal Wetland
- Approximate Parcel Boundary

Beesmer Road Bridge
BIN 7713420
Town of Hurley, Ulster County, NY

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0 40 80 160 Feet

0 10 20 40 Meters

Scale: 1" = 60' Export Date: 8/30/2022

N

W

E

S

Rail With Trail Alternative

Rock Cut

Trail Only Alternative

The rail, ties, and ballast would remain in the current location.

A 10' wide shared use path with 3' shoulders constructed at a minimum of 10'-6" from the existing rail centerline.

Approximately 36,000 cubic yards of rock would need to be excavated between Basin Road and Beesmer Road.



Rendering

The rails and ties would be removed. The creosote-treated ties would be disposed of appropriately and not be re-purposed.

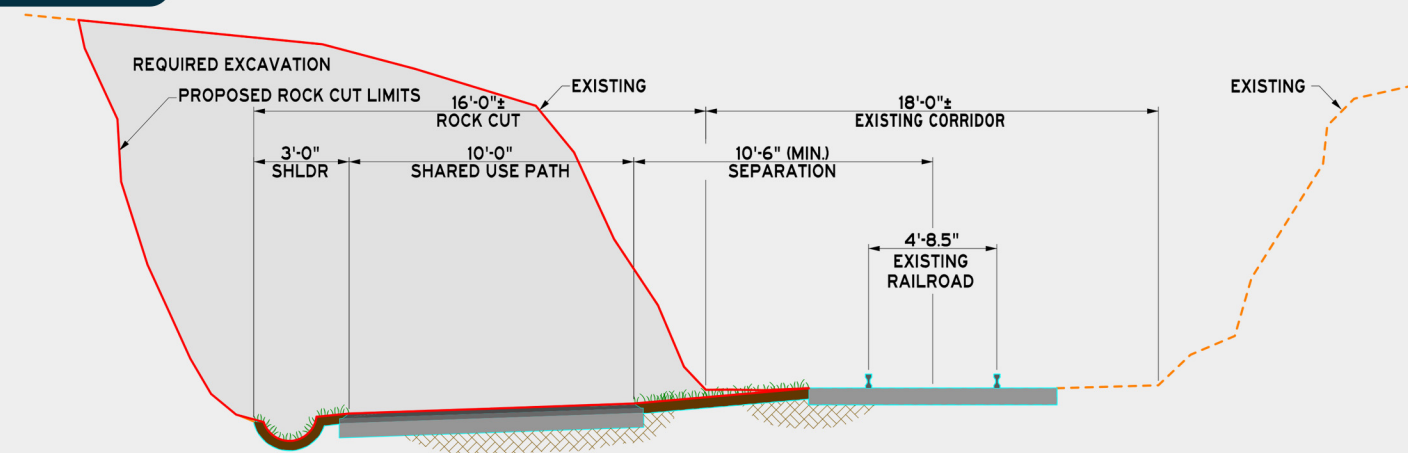
Proposed is a 10' wide shared use path with 4' wide shoulders.

No rock excavation would be required. The existing corridor is approximately 18' wide at the base of the rock cut.

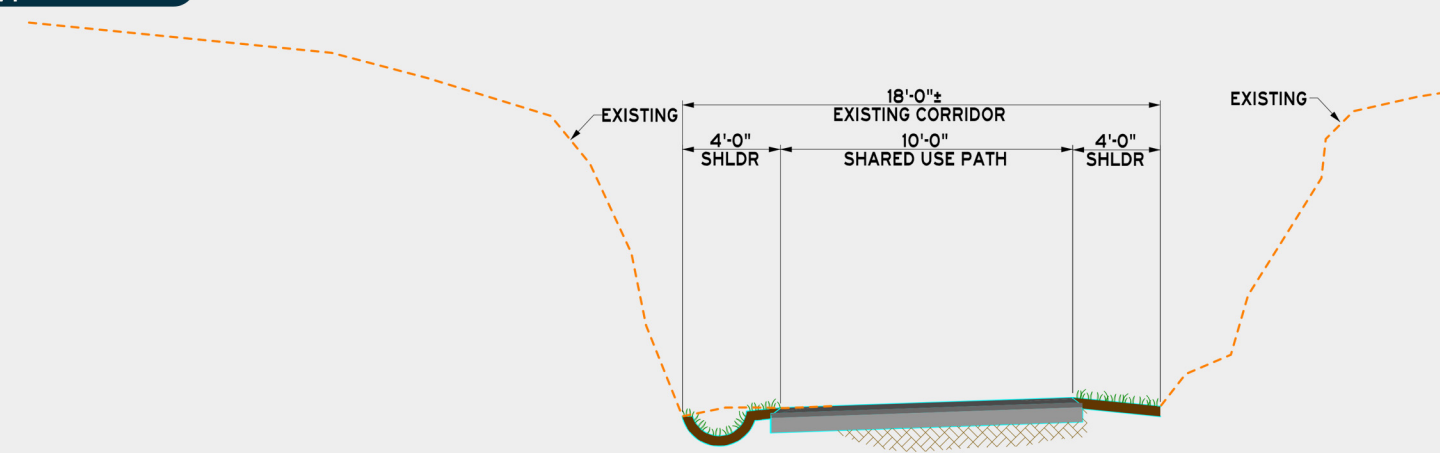


Rendering

Typical Section



Typical Section



- Proposed 10' Wide Shared Use Path
- Proposed Shared Use Path Shoulder
- Approximate Rock Cut Excavation Limits
- Existing Rail
- Existing Ballast
- Approximate Parcel Boundary

Between Basin Road & Beesmer Road
Approximately 1.02 mi
Town of Hurley, Ulster County, NY





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City of Kingston Pedestrian & Bike Connections

Ulster County, New York





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Ashokan Rail Trail Feasibility Study

Uptown Kingston Connections Concept (Shared Use Path)



Appendices



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APPENDIX D

Ashokan Rail Trail Feasibility Study

November 22nd, 2021



Agenda

- **Study Goals, Benefits, and Vision (OSI)**
 - West of Hudson Greenway Trails Vision
 - Ulster County Trails
 - City of Kingston Greenline
- **Study Process (GPI)**
 - Inventory of Assets
 - Alternatives
 - Rail with Trail
 - Trail only
 - Connectivity and Opportunities
 - Costs
- **Next Steps**

Study Goals, Benefits and Vision

The **Goals** of this study are threefold.

- To extend OSI's commitment to making access to nature and open spaces more available and welcoming
- To increase the diversity of trail users that benefit from trails
- To modernize trail designs and react to the changing needs of the communities they connect

The main **Objectives** of this study is to provide the County with:

- A physical inventory of current corridor conditions
- An engineering assessment of dual and single-use alternatives including cost estimates
- Other relevant constraints and opportunities that impact development of the corridor

**All to support the County's future assessment of the
current Ulster & Delaware Corridor Rail & Trail Use Policy**

West of Hudson Greenway Trails

(3 Counties, 6 Rail Trails, 250+ miles)

Greenway Trail



Empire State Trail

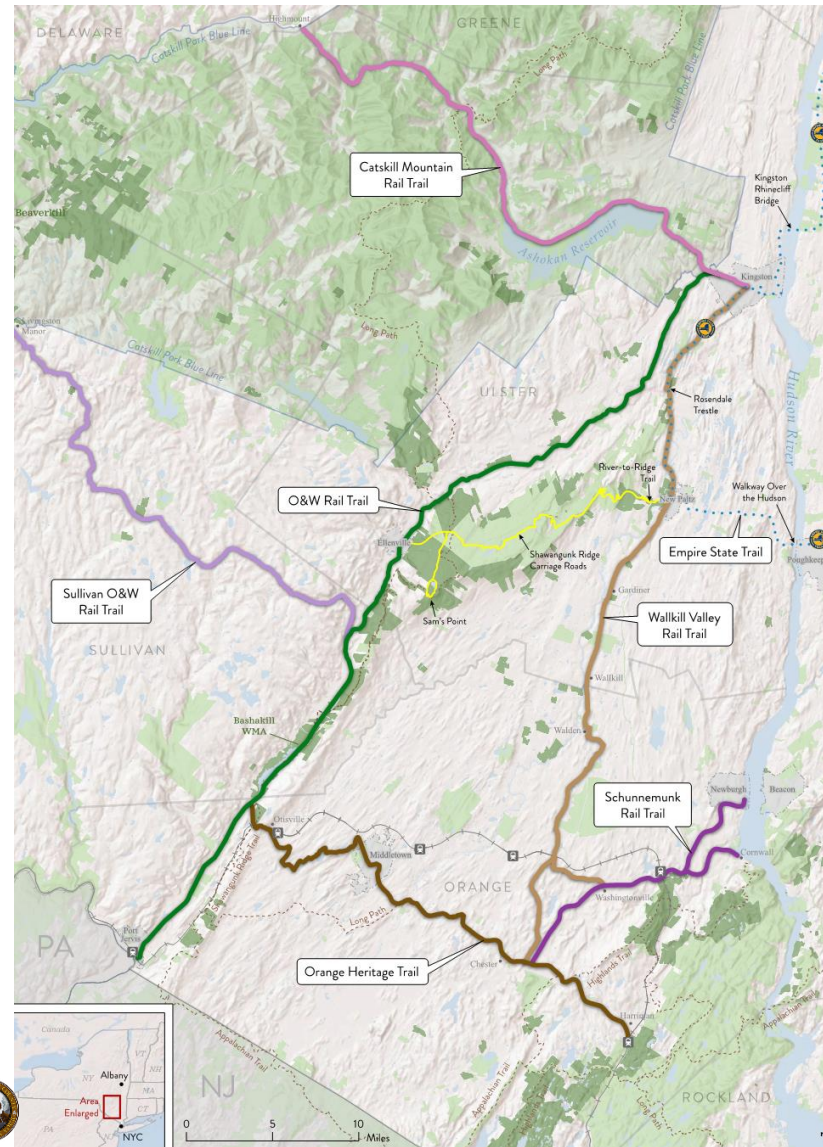
Other Trail



Commuter Rail Line
(Hoboken, NJ to Port Jervis, NY)

OSI-Protected Land

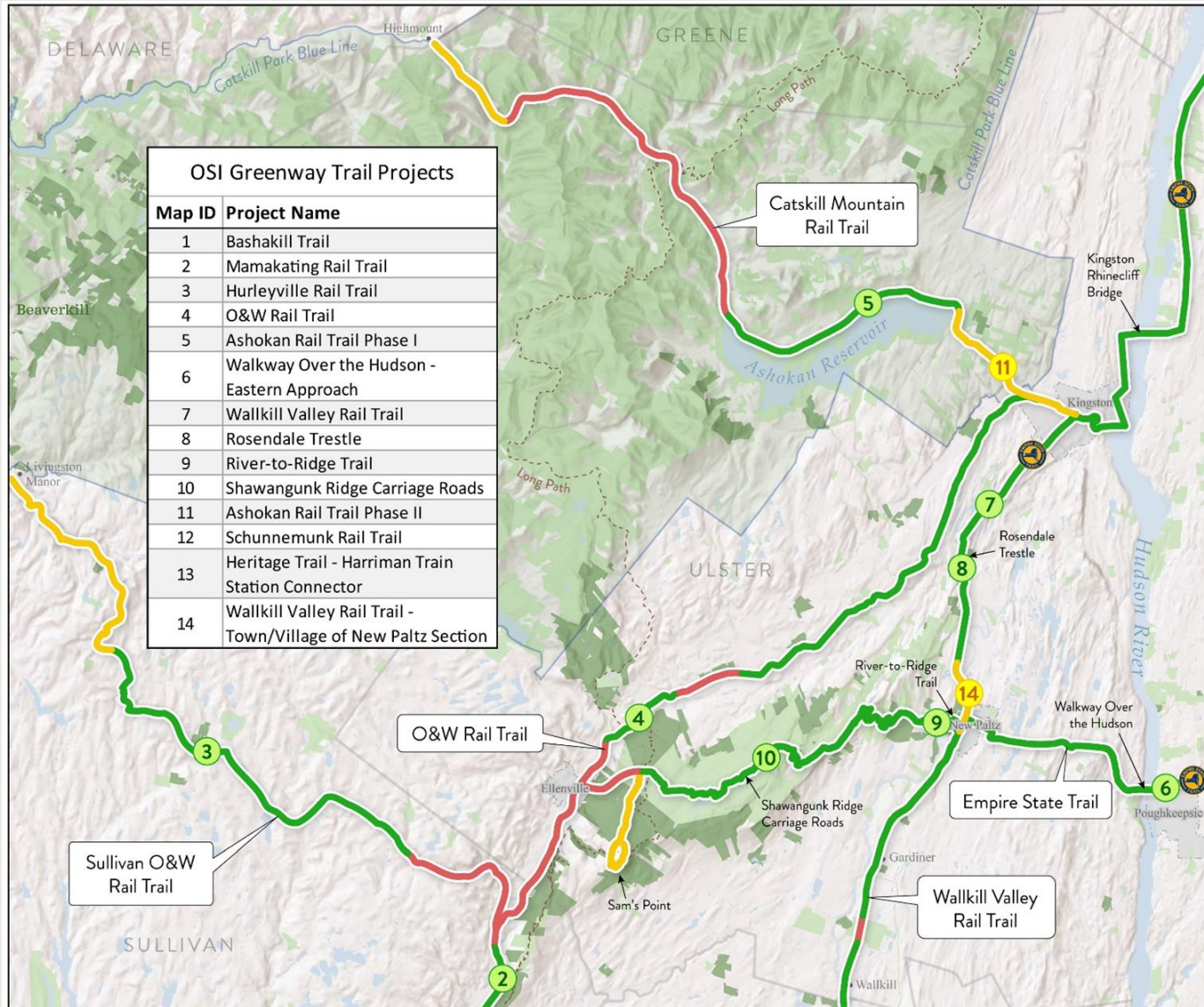
Other Protected Land



0 5 10 Miles

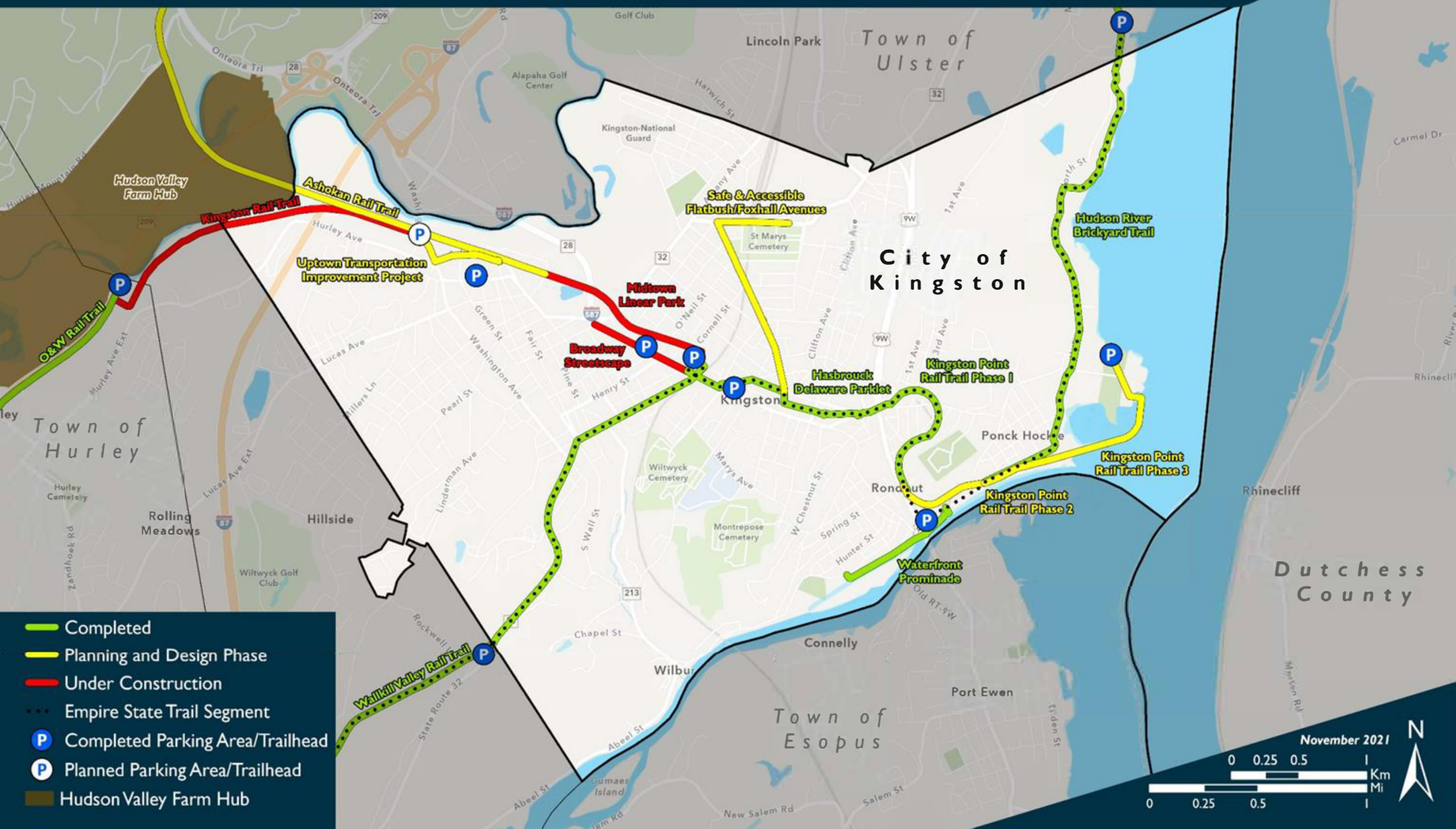
GPI

Ulster County Greenway Trails



City of Kingston Pedestrian & Bike Connections

Ulster County, New York



[illegible]

- Ashokan Rail Trail
- Feasibility Study Area (Approx. 6.25 mi)
- Existing Ashokan Rail Trail
- Kingston Linear Park (Under Construction)
- O&W Rail Trail (Design Phase)
- Existing O&W Rail Trail
- Empire State Trail

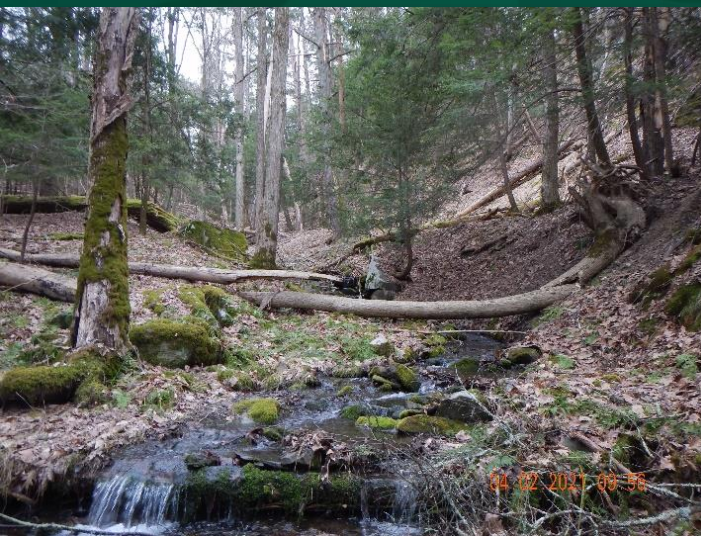
Inventory

- **Site Inspections of Corridor Conducted in Spring of 2021**
 - Railroad Bed Conditions
 - Cuts/Fills
 - Rock Cuts & Steep Slopes
 - Drainage Patterns and Culverts
 - ROW and Width
 - Bridges / Structures
 - At-Grade Road Crossings
 - AADT & Sight Distances
 - Other Environmental Constraints i.e. Wetlands
 - Trailhead Opportunities
 - Connections

Conditions - Basin Road to NY-28A



Conditions - NY-28A to Hurley Mt. Road



Conditions -Hurley Mt. Road to Kingston



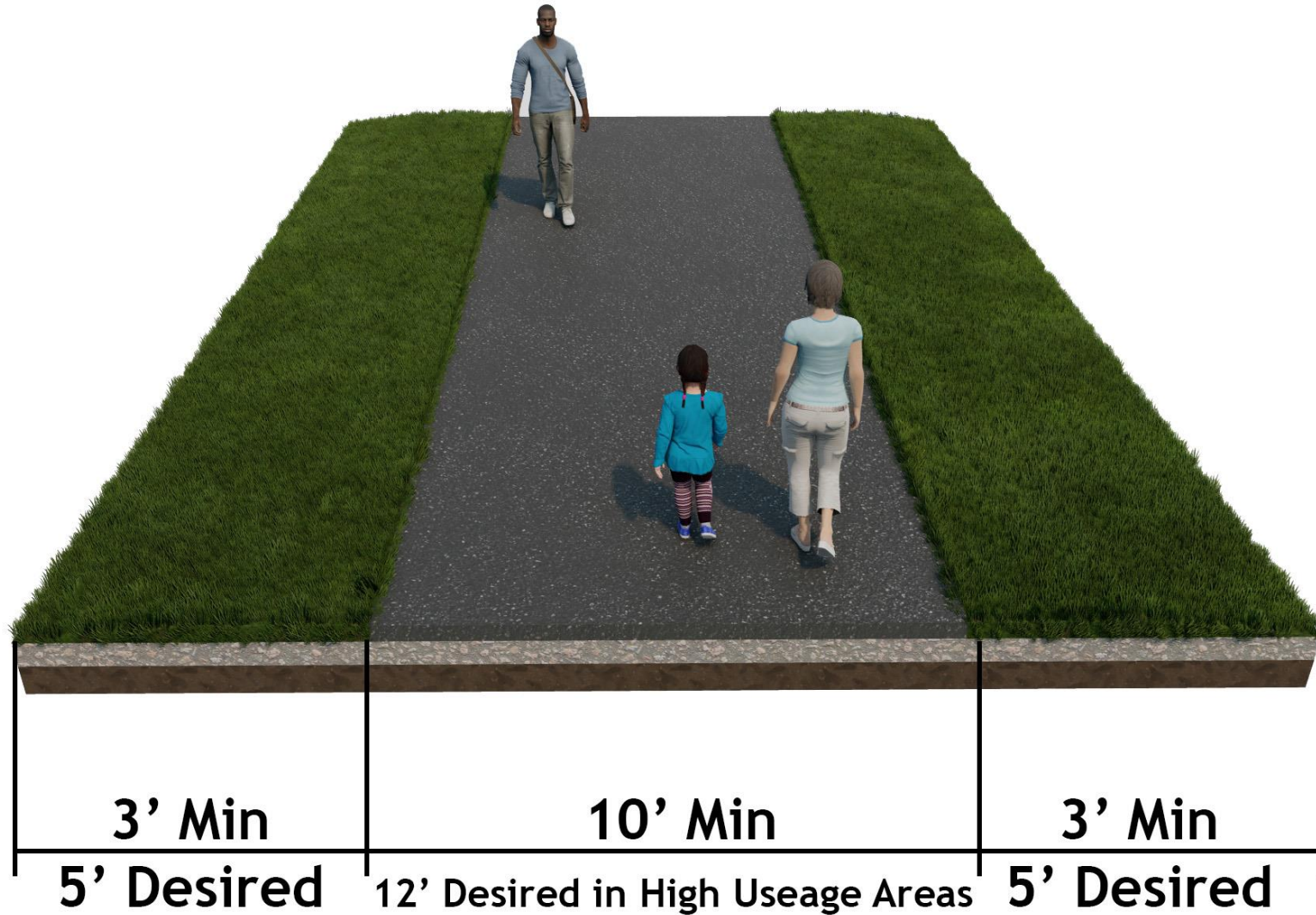
Conditions - At-Grade Road Crossings



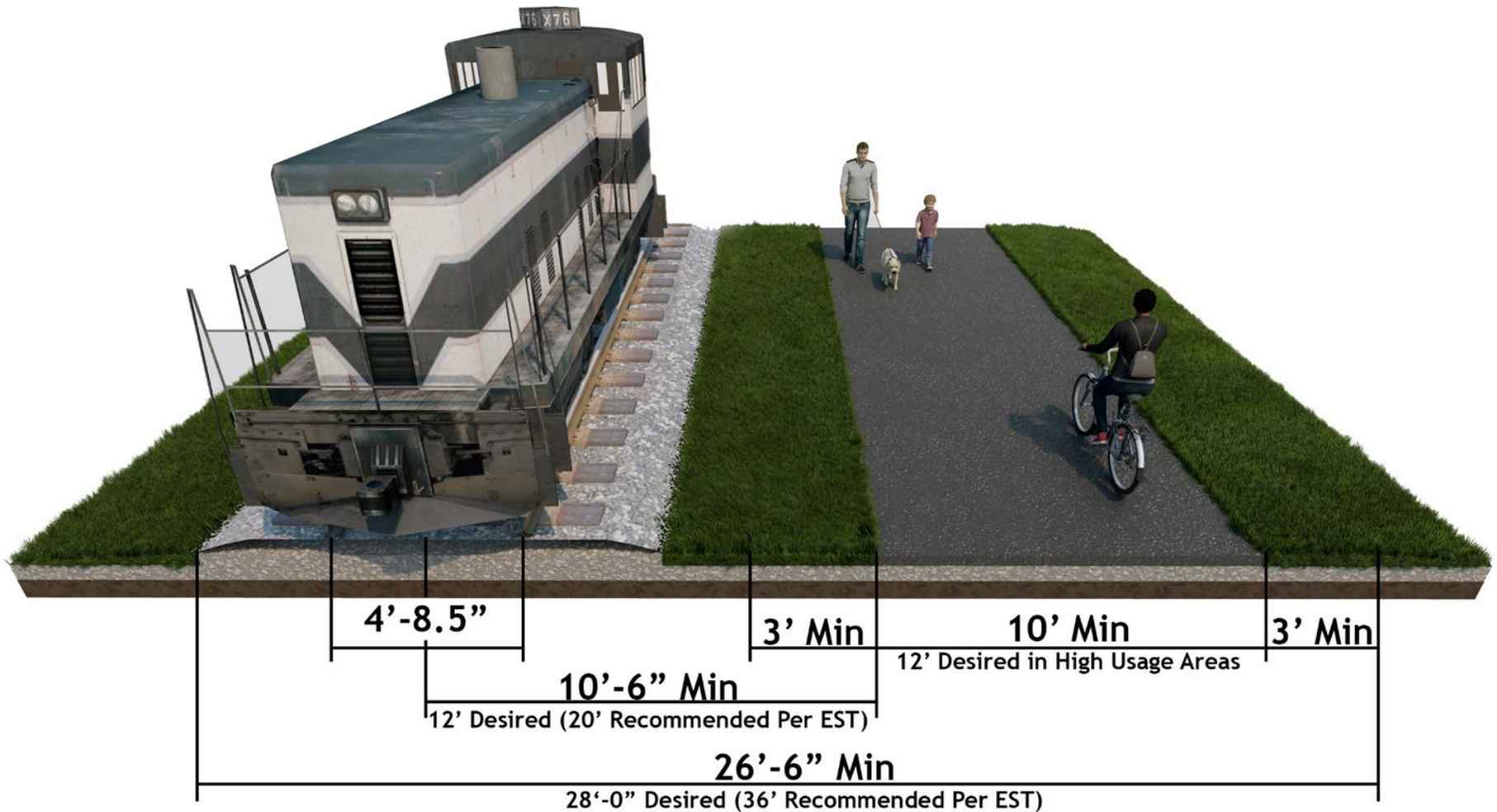
Conditions - Bridges



Typical Section - Trail only



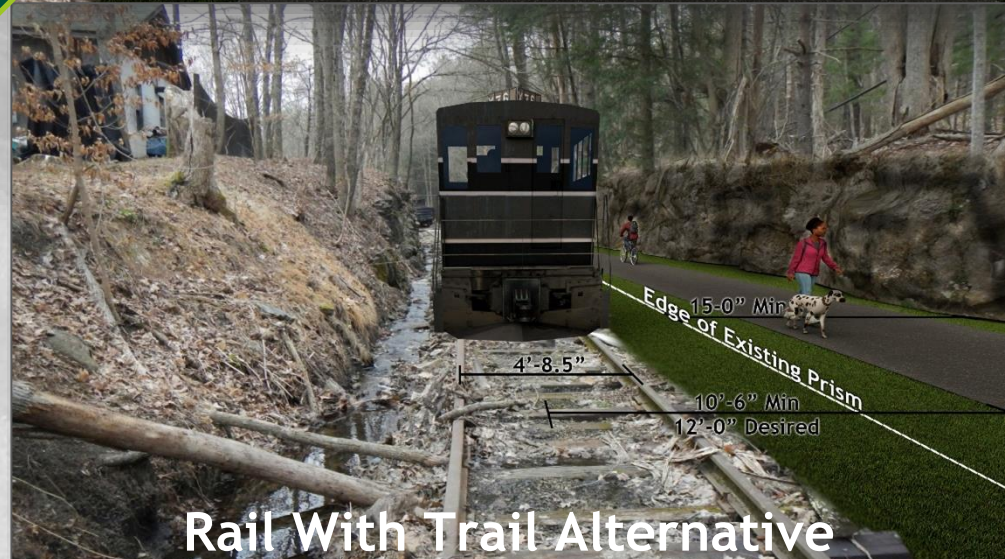
Typical Section - Rail With Trail



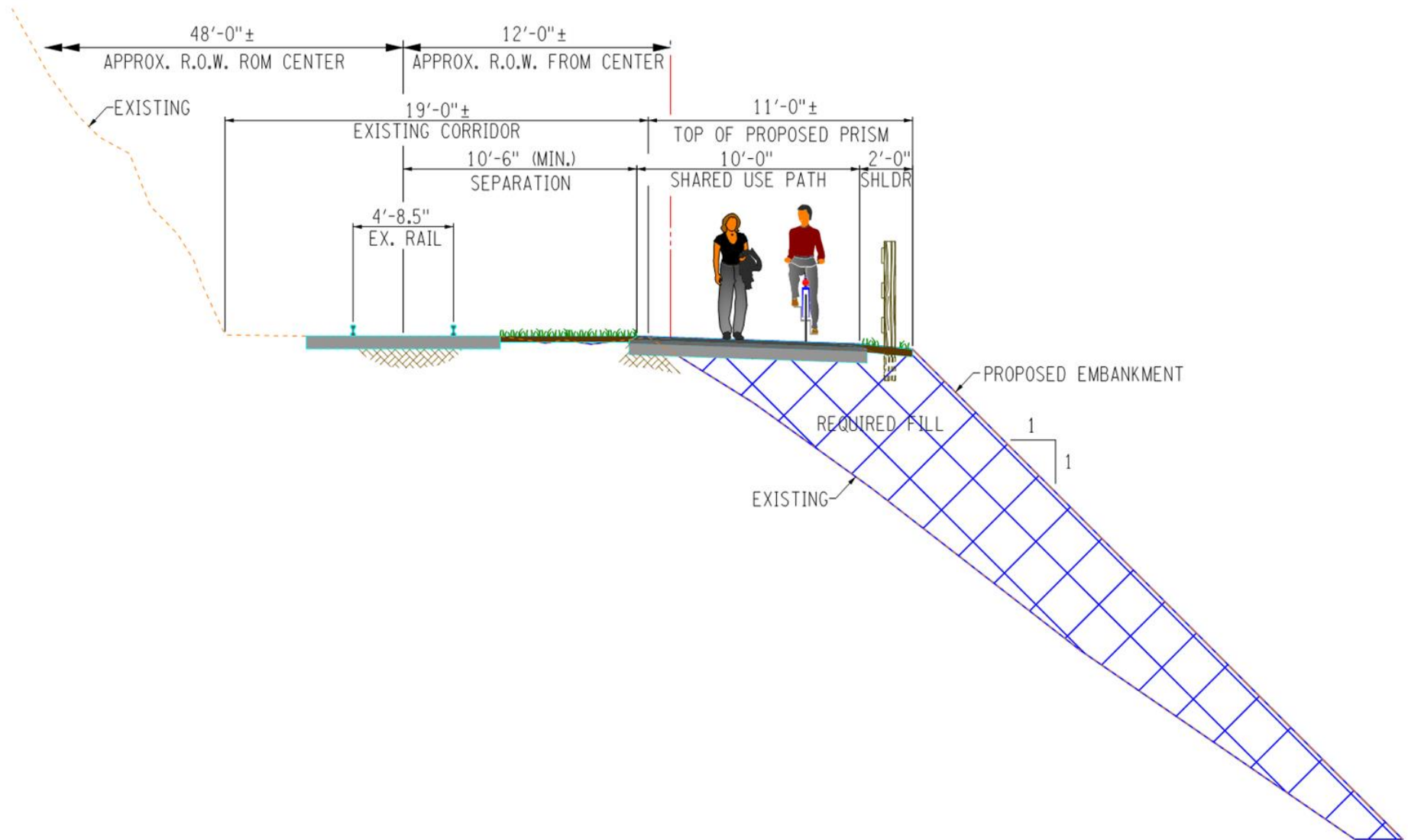
Trail Typical Section #1



Trail Typical Section #1



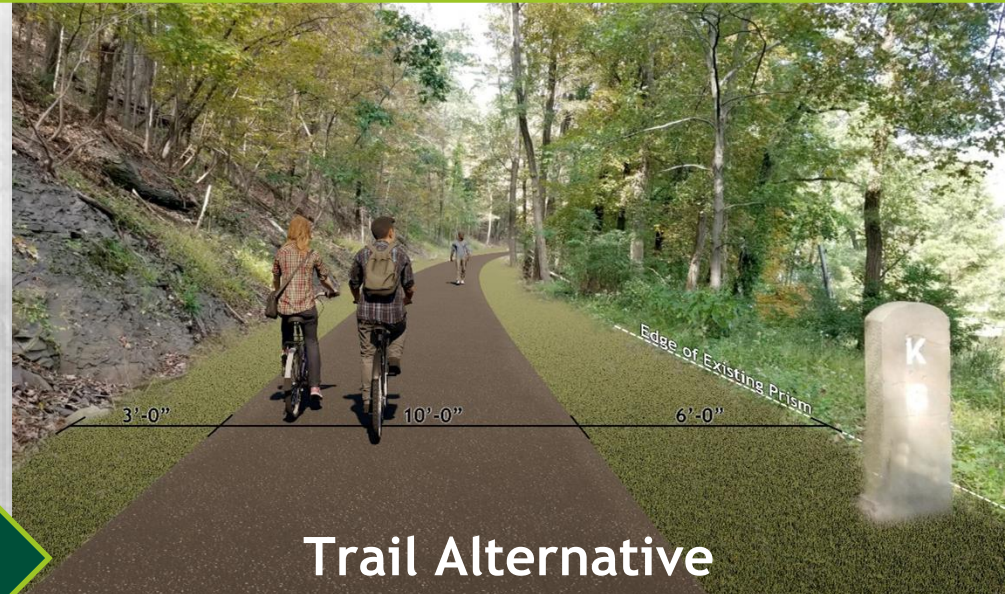
Typical Section #2 Rail With Trail Impacts



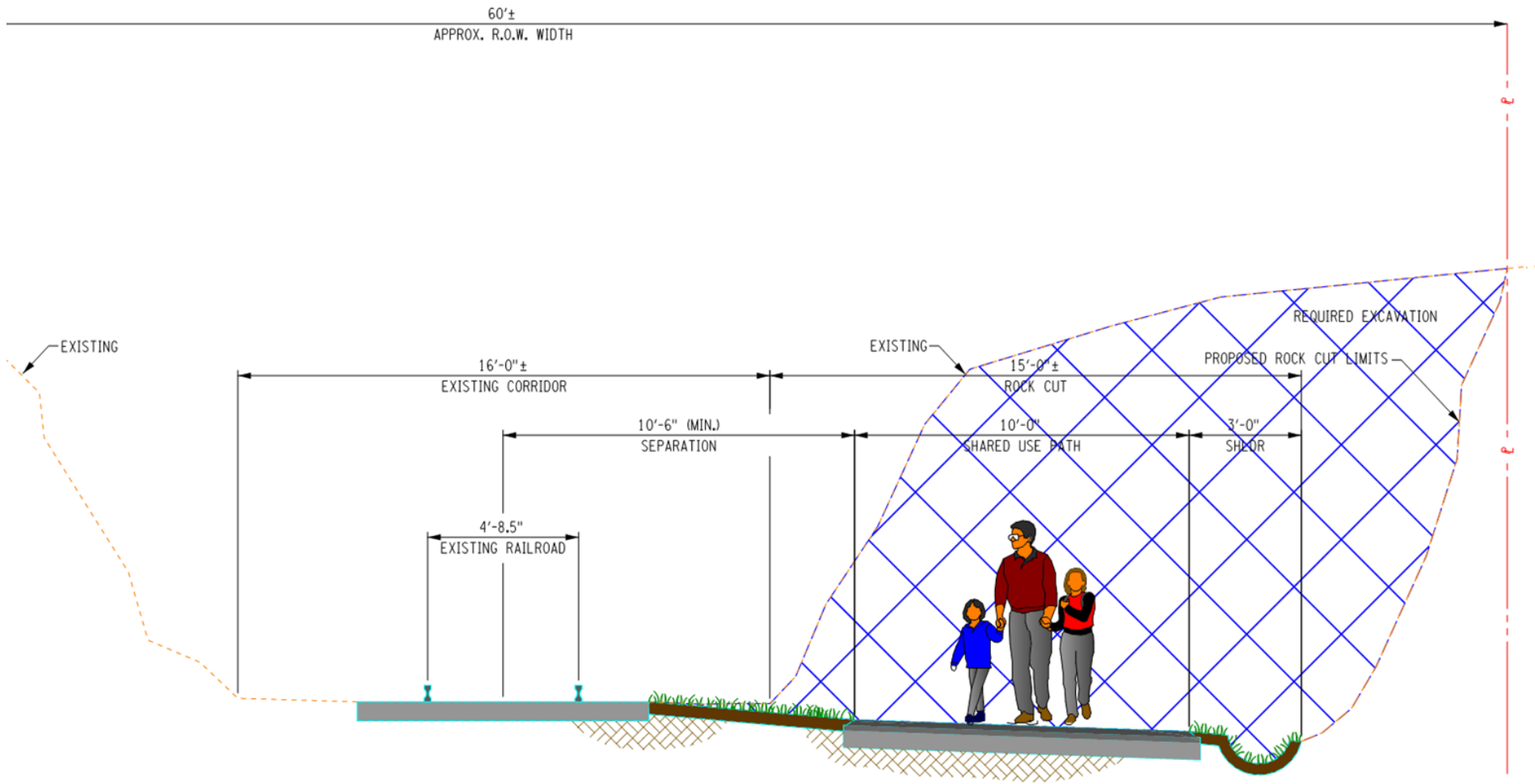
Trail Typical Section #2



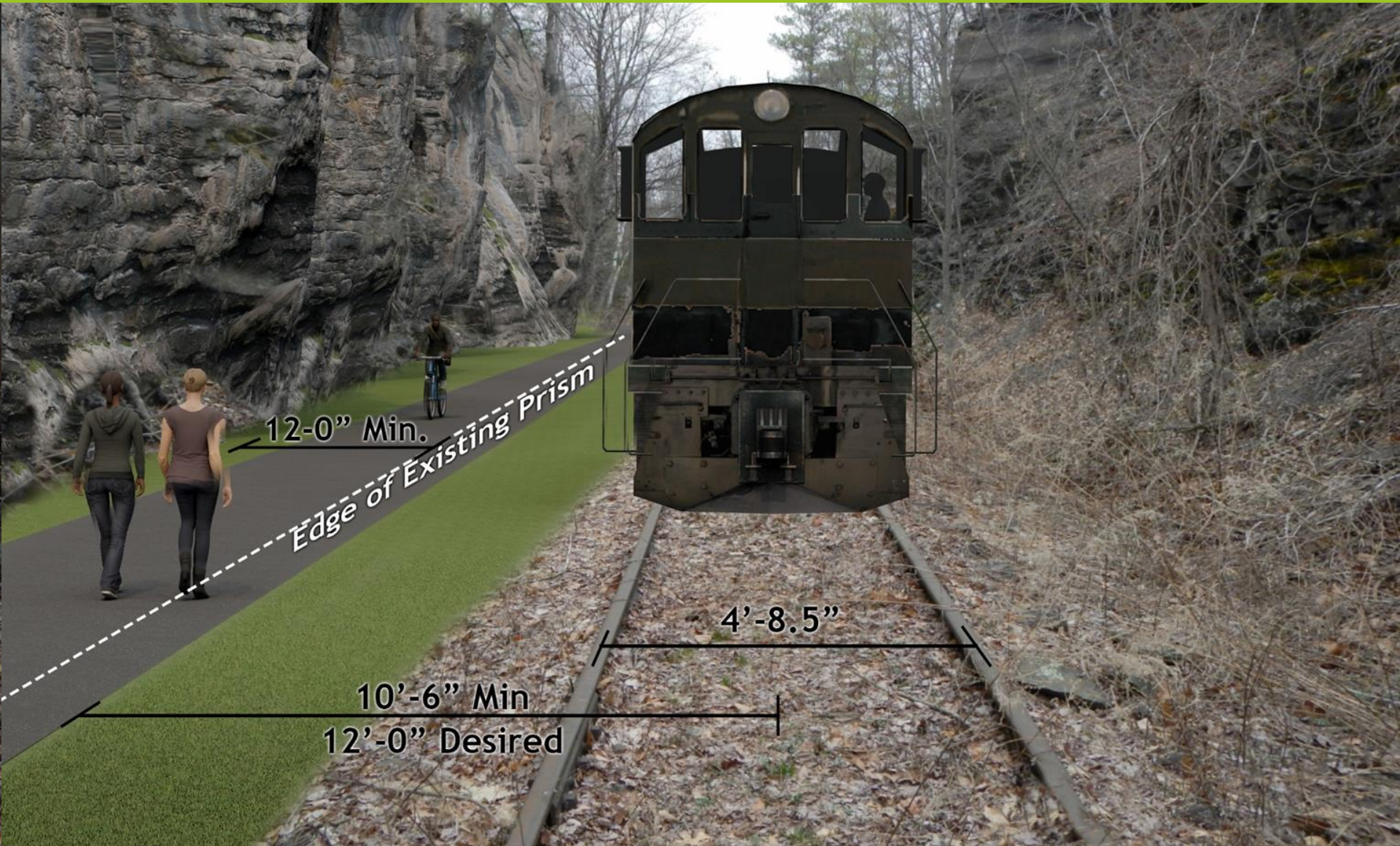
Trail Typical Section #2



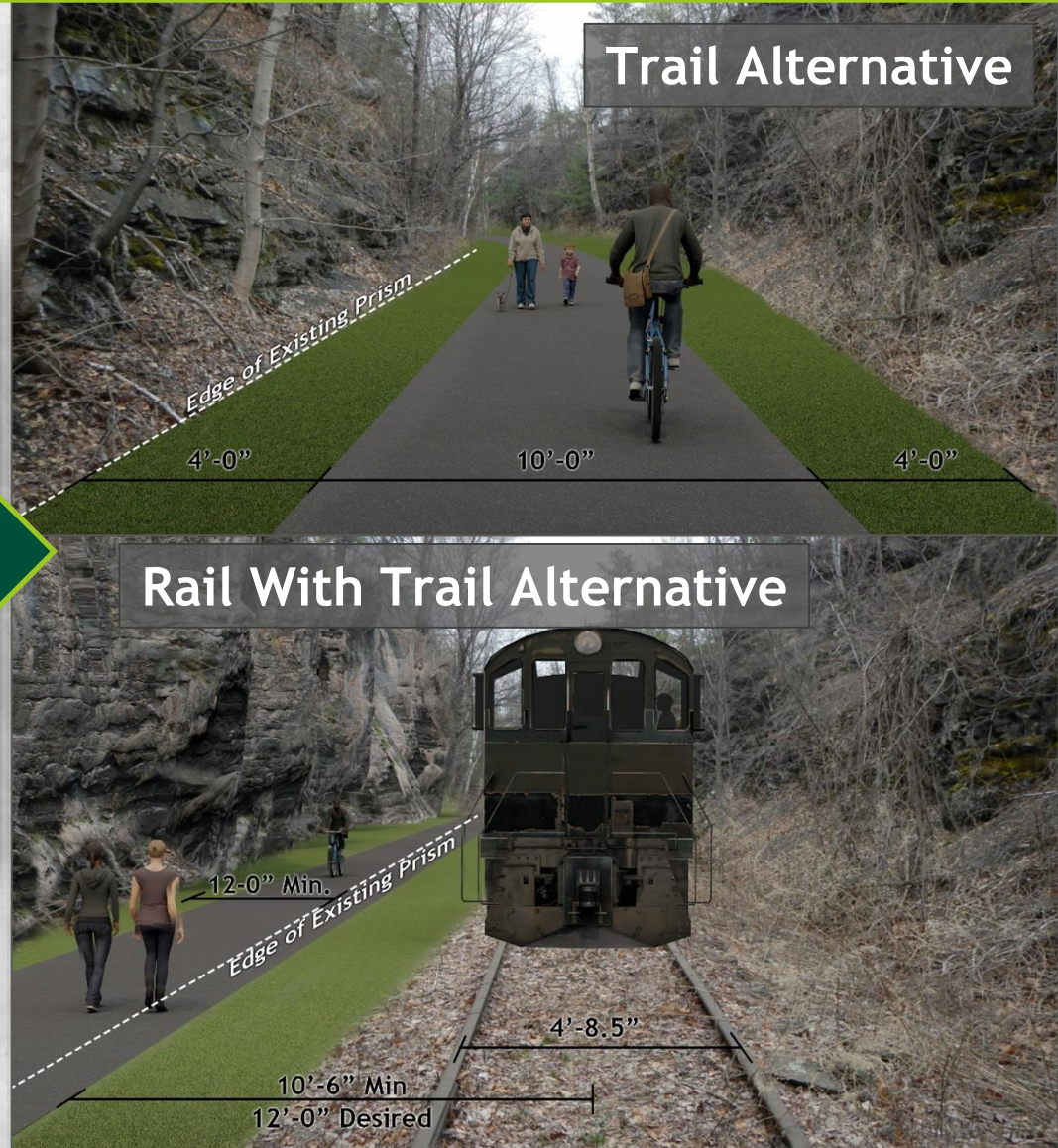
Typical Section #3 Rail With Trail Impacts



Trail Typical Section #3



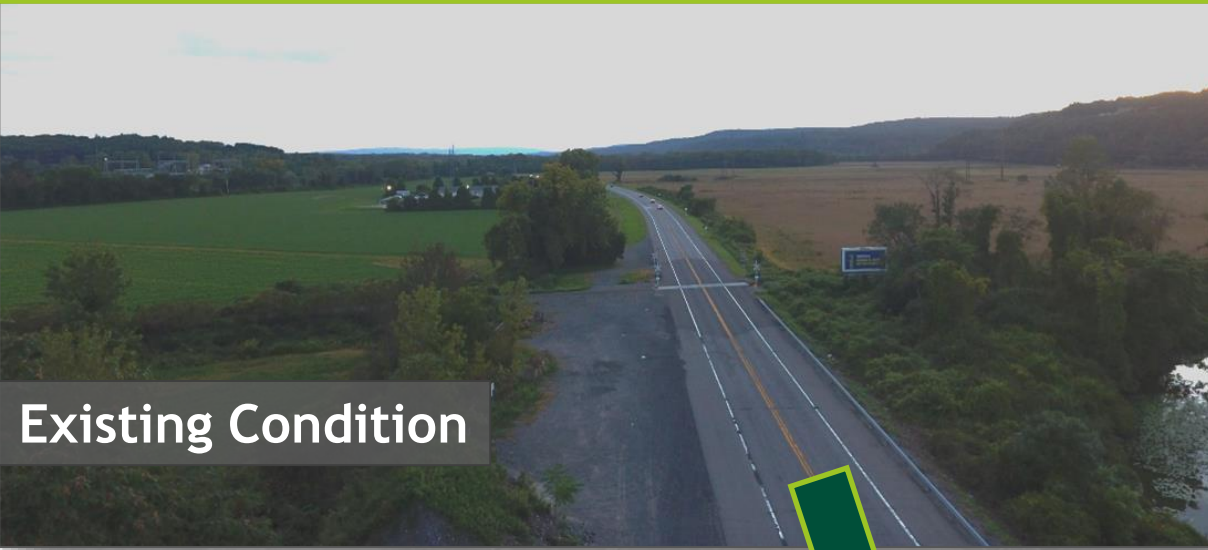
Trail Typical Section #3



US-209 Pedestrian Bridge



US-209 Pedestrian Bridge



Existing Condition



Proposed Pedestrian Bridge

C-9 Bridge Over the Esopus Creek



12'-0"

C-9 Bridge Over the Esopus Creek



Existing Condition



Proposed Pedestrian Bridge

C-9 Bridge Over the Esopus Creek



12'-0"

C-9 Bridge Over the Esopus Creek



Existing Condition



Proposed Pedestrian Bridge

Uptown Kingston Connection



Uptown Kingston Connection



Ashokan Rail Trail Feasibility Study

NY-28A Crossing & Trailhead Concept

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Legend

- Proposed Pavement (Trail & Parking Lot)
- RRFB Location
- Potential Stormwater Infiltration Area
- Existing Bridge Abutment Remains
- Mapped Federal Wetland
- Approximate Parcel Boundary



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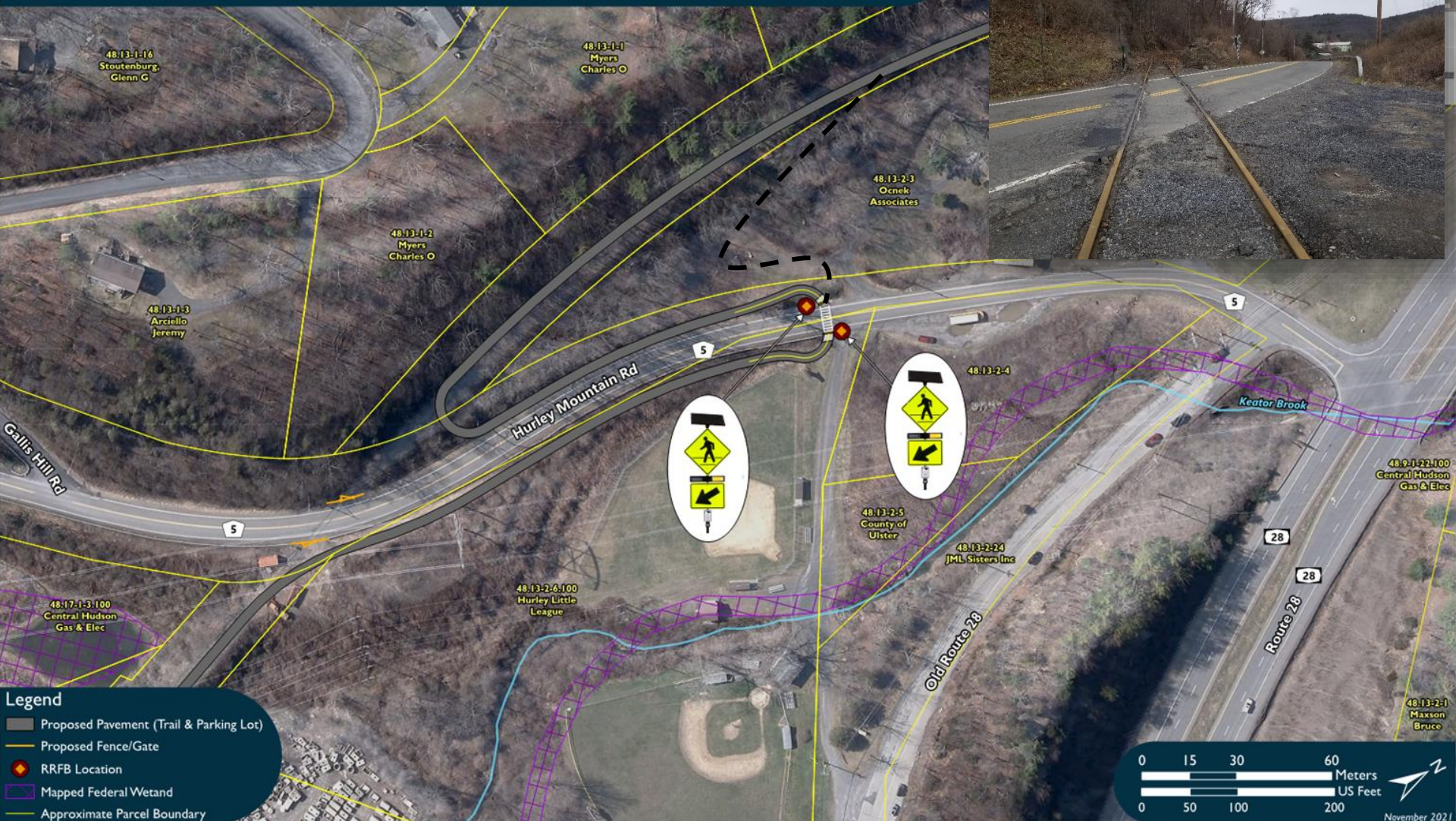
November 2021
GPI



Ashokan Rail Trail Feasibility Study

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Hurley Mountain Rd (CR-5) Crossing & Trailhead Concept

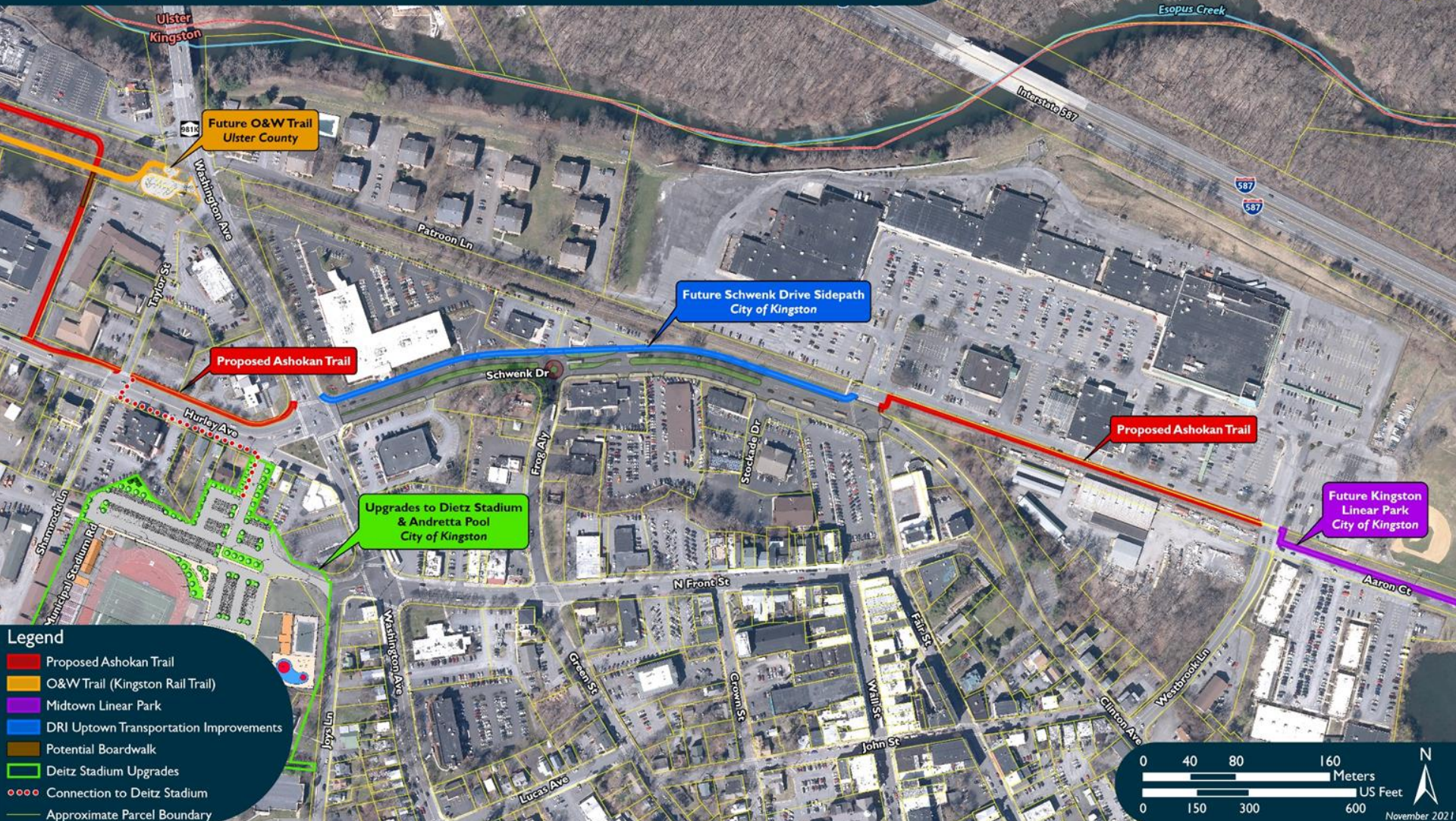




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Ashokan Rail Trail Feasibility Study

Uptown Kingston Connections Concept (Shared Use Path)



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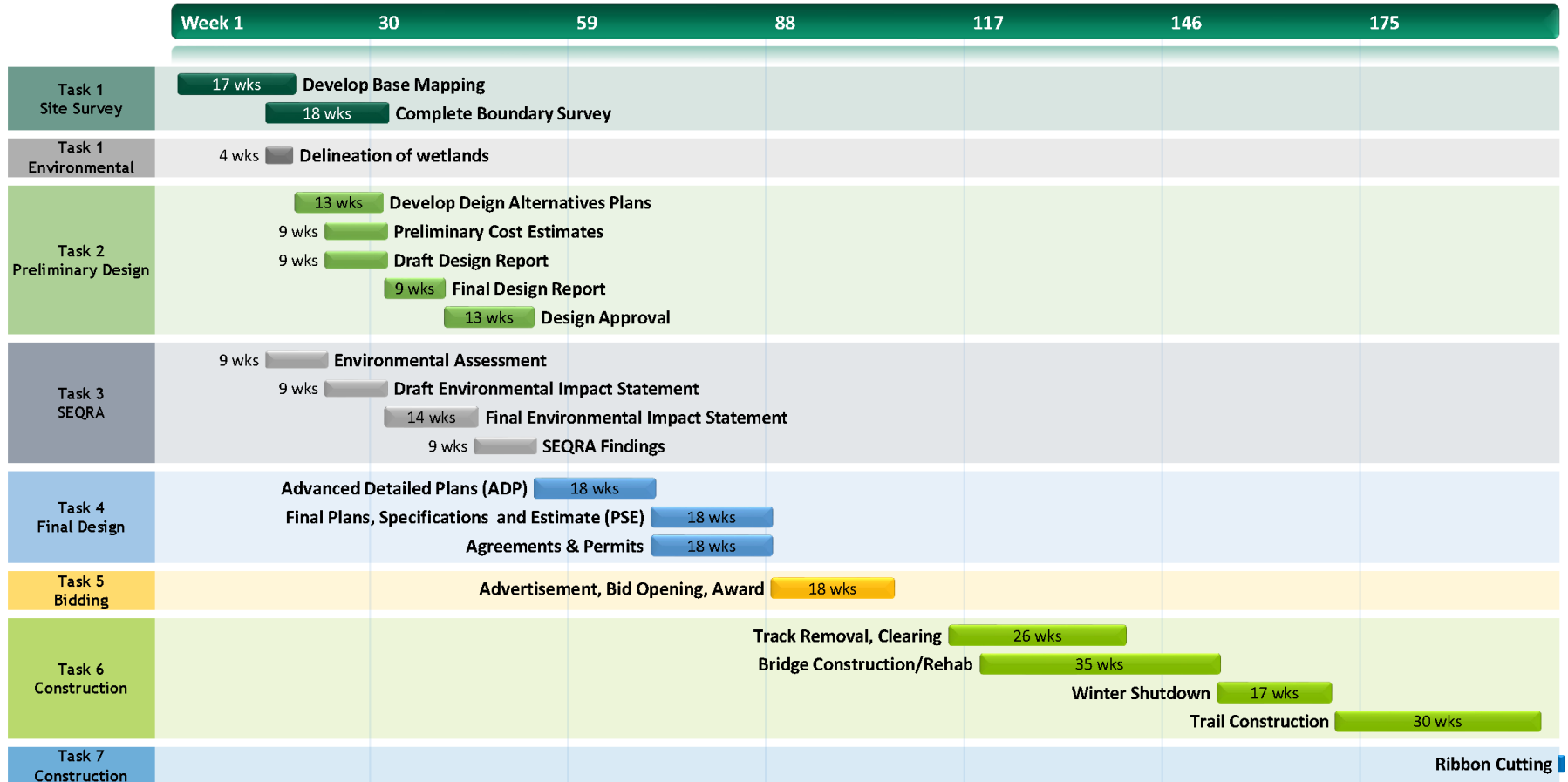


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(DRAFT) Order of Magnitude Cost Estimate

<u>Construction</u>	<u>Trail Only</u>	<u>Rail with Trail</u>
▶ Site Preparation		
▶ Clearing and Grubbing	\$230,000	\$610,000
▶ Track Removal	\$750,000	\$0
▶ Bridges		
▶ Esopus (C-9) Bridge	\$750,000	\$2,000,000
▶ Others	\$250,000	\$1,000,000
▶ Drainage	\$500,000	\$1,000,000
▶ Roadway Crossings	\$250,000	\$250,000
▶ Route 209 Bridge	\$2,500,000	\$2,500,000
▶ Trail		
▶ Earthwork	\$500,000	\$7,400,000
▶ Subbase	\$440,000	\$440,000
▶ Trail Surface	\$1,000,000	\$1,000,000
▶ Fencing	\$300,000	\$700,000
▶ Amenities	\$500,000	\$500,000
▶ Environmental Mitigation	\$100,000	\$1,000,000
▶ Mobilization and Contingencies	\$2,500,000	\$5,500,000
▶ <u>Soft Costs</u>		
▶ Survey and Boundary	\$100,000	\$1,200,000
▶ Design	\$1,570,000	\$3,580,000
▶ Construction Inspection	\$1,250,000	\$2,860,000
▶ ROW Acquisition Costs	\$0	\$500,000
▶ Total	\$13,400,000	\$33,000,000

(DRAFT) Anticipated Schedule



Next Steps



