



2

Breakneck Ridge Station  
to Dutchess Junction Park

# 2 Breakneck Ridge Station to Dutchess Junction Park

## Existing Conditions

**2.1 - Breakneck Ridge Train Station to Brickyards Parkland:** From the Metro-North footbridge to the northernmost private parcel, there is a hill steadily ascending to the north. The small triangular area of parkland has steep slopes between the road and a wetland area adjacent to the railroad tracks. Two parcels are surrounded by state parkland, while the others comprise 11 privately owned parcels, for a total of 13 privately owned parcels in this area. One parcel, on the north end, is the historic mansion-turned-catering-hall/event space, Dutchess Manor.

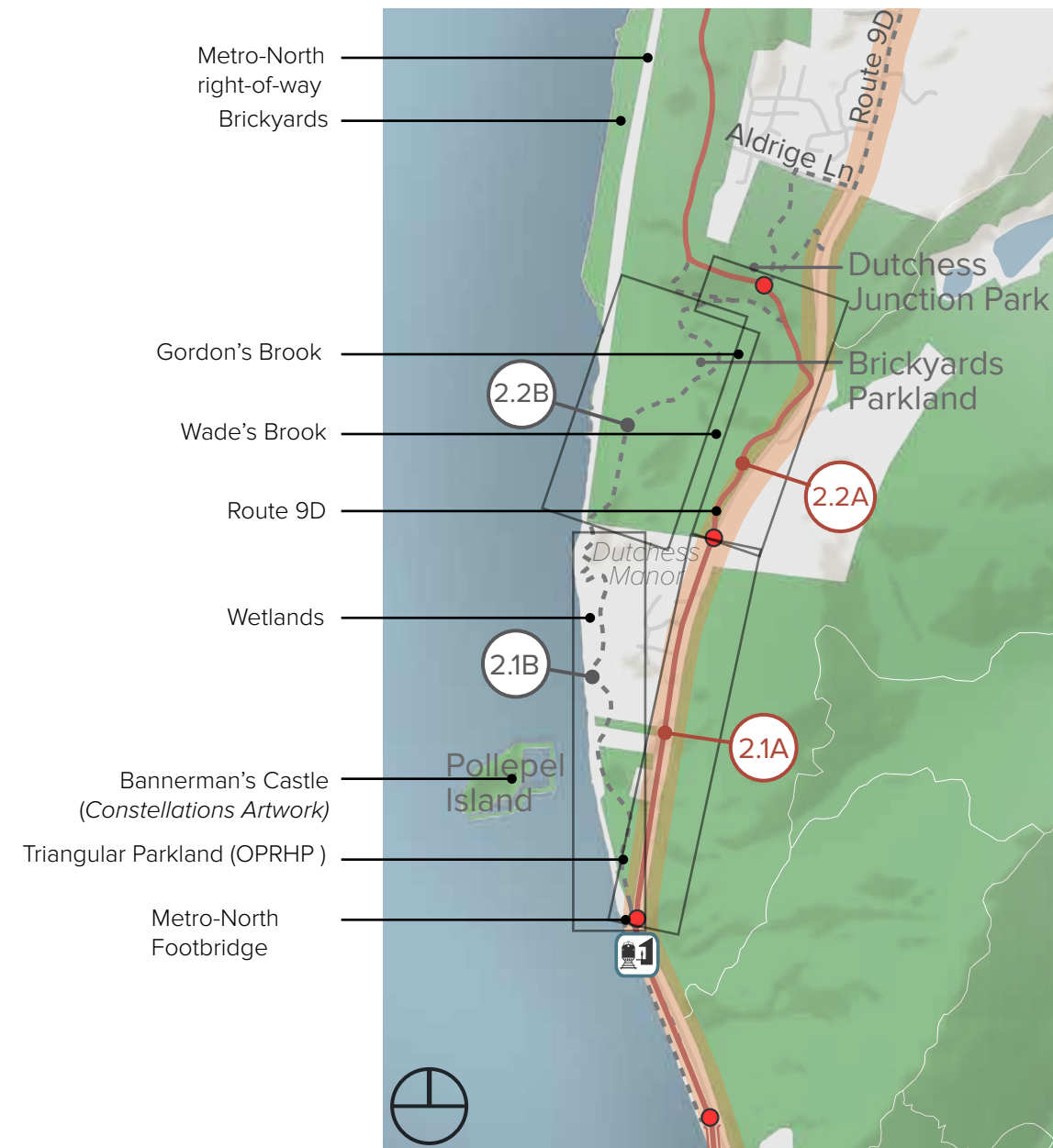
**2.2 - Brickyards Parkland to Dutchess Junction Park:** The Brickyards Parkland was once the site of several brickyards where bricks were produced and distributed throughout the Northeast during the late 19th and early 20th centuries. Several graded roads were created to connect Route 9D to brick-making facilities and residences. Although few structures remain, there are some remnants of the prosperous brick industry, most notably the brick shoreline that appears during low tide. Some of the roads are still used by off-road vehicles and hikers, although the trails are not marked or maintained as hiking trails. This challenging landscape contains several deep gullies that lead into seasonal and year-round streams, most notably Wade's and Gordon's brooks, which drain the highlands east of Route 9D.



High tide along the Brickyards shoreline



Low tide along the Brickyards shoreline



Map 2.0 - Preferred and Alternative Route from Breakneck Ridge to Dutchess Junction Park

### Legend

- Preferred Route
- Change in route segment
- - - Alternate Route
- Proposed Route 9D Corridor safety improvements
- State Parks

# 2.1 Breakneck Ridge Station to Brickyards Parkland

**2.1A - From Breakneck Ridge Station to Brickyards Parkland on Route 9D (eastern upland route):** The option to align the trail along Route 9D was explored out of necessity, due to the privately owned parcels that extend from the roadway to the wetlands between the railroad tracks and the upland area. The existing roadway right-of-way (ROW) is substantially wider than the existing roadway pavement. The paved road, however, is pushed up against the western edge of the ROW adjacent to private properties (see plan on p. 52), with all unused ROW east of the existing paved roadway. To include bikeable shoulders and a walkway requires an extensive roadway realignment, which is a significant capital construction project.

The proposed concept is to fully reconstruct the roadway approximately 10'-12' wider. All of the widening would occur on the east side of the roadway within existing ROW. The trail and shoulder would be located where the southbound moving lane currently

sits. The southbound lane would shift to the approximate location of the northbound lane. The proposed northbound moving lane would require substantial grading and excavation, including rock excavation and construction of new drainage ditches and culverts. There would also be significant tree impacts. Fortunately, existing utility poles on the west side of the road do not need to be moved. It is anticipated that the existing roadway would be milled and repaved, with a new crown to reflect the increased width and shift to the east. It is also recommended that the moving lanes be narrowed to 11 feet to help calm traffic, and to reduce the extent of the road widening (see image below).

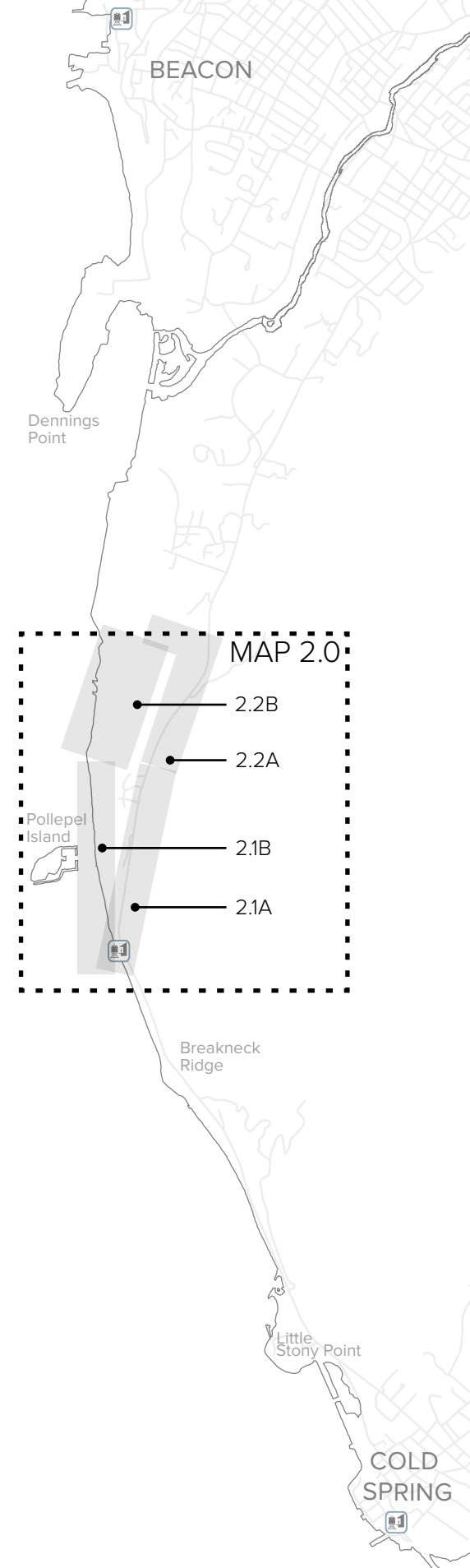
The proposed pedestrian trail would be 6 feet wide, separated from the five foot-wide red bikeable shoulder by a guiderail.



Route 9D at Hartsook Lane, existing condition. View looking north



Route 9D at Hartsook Lane, proposed widened roadway with adjacent trail separated by a bikeable shoulder





**2.1B - From Breakneck Ridge Station to Brickyards Parkland via forest and wetlands (western lowland route):** The parkland on the south end of the triangular area is topographically challenging, with low-lying wetlands rising to a steep hilltop peak in a short distance. To build a trail between the Metro-North footbridge and the wetland area adjacent to the privately owned parcels would require several switchbacks to maintain a reasonable grade, complicated by the need to stay off of private property.

Over the years since the railroad was built, wetlands have formed in the areas sequestered between the mainland and the railroad tracks. These areas were once part of the river, but have developed into wetland and tidal wetland areas with the buildup of sediment and the subsequent growth of wetland vegetation and habitat.

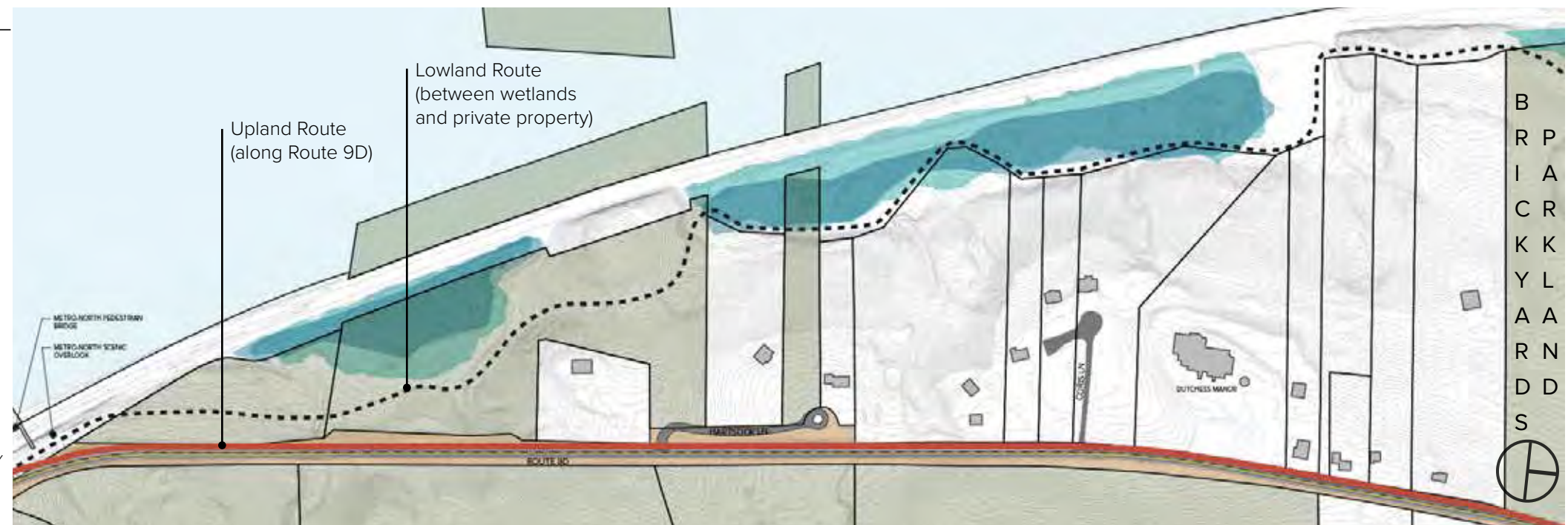
The privately owned parcels end at or near the wetland area, although in some cases the two overlap, as shown in the map below. In other cases, it appears that the steep slope down to the wetlands is outside of the private property line. In order to avoid routing the trail through private property, the trail would have to be placed along the edge of, and sometimes through, the wetlands. Once it reaches the wetlands, the trail would descend to a boardwalk structure built over the wetlands. This structure would maintain an elevation of 10-20 feet above high tide to minimize shading on the underlying wetland area.

The design team has worked with DEC to develop a conceptual design approach for a pile-supported structure to be built hugging the line that distinguishes wetlands from upland forest as much as possible. Based on a combination of follow up meetings with DEC and discussions with property owners, this alignment has serious environmental and property ownership challenges.

On August 6, 2014, a meeting was held at 8 Hartsook Lane to discuss the implications of aligning the trail on or near privately owned parcels. Property owners that had attended the first two public meetings were invited. Potentially feasible alignment on both private property and in the adjacent wetlands were discussed. Case study example photos were used to illustrate design concepts and issues of trail access to and from the privately owned parcels. This meeting was for informational purposes and no final determinations were made. It was conveyed to the property owners that there are design solutions to avoid private property, however, they involve routing the trail over sensitive wetlands and on steep slopes. If small portions of certain parcels that are set back from homes were to be made available for trail access by property owners, the trail may take a more desirable route and grade by avoiding being over the wetlands and following the natural contours of the land. Such access can be granted solely by the property owner. This option should continue be explored with property owners as an off-road route would be preferred.

LEGEND

- PROPOSED MULTI-USE TRAIL PREFERRED ROUTE
- PROPOSED MULTI-USE TRAIL ALTERNATE ROUTE
- EXISTING ROADWAY EDGE
- PARCEL LINE
- ROUTE 9D CORRIDOR
- BUILDING FOOTPRINT
- STATE PARK
- TIDAL WETLAND
- NATIONAL WETLAND INVENTORY
- OVERLAPPING WETLAND TYPES



Parcel map showing location of private property and wetlands

# Summary Evaluation

## GOALS

### SAFETY

**2.1A** Breakneck Ridge Station to Brickyard Parkland - Upland route along Route 9D

This portion of trail would provide a separated, designated walkway where one does not exist, facilitating the connection through this area. This would also provide a safe path for hikers that park as far north as Hartsook Lane for the Breakneck Ridge trailhead.

### RECREATION

This portion of trail would connect to the currently unprogrammed Brickyards Parkland area of Hudson Highlands State Park.

### HIGHLIGHT & RETAIN NATURAL BEAUTY

By avoiding the steep slopes and tidal wetlands, this route segment prevents encroachment on sensitive environmental areas. The disturbance required to build this trail would take place on the upland side of Route 9D, where the habitat is less sensitive.

## CONSTRUCTION FEASIBILITY

This route segment constitutes a substantial construction project, but the work would take place in a less sensitive area than the lowland route. The space for the trail would be within the existing Route 9D right-of-way, which is already publicly owned. However, this alternative would take at least 10 years to fund, design and build, which goes beyond the desired timeframe for implementation.

P R E F E R R E D R O U T E

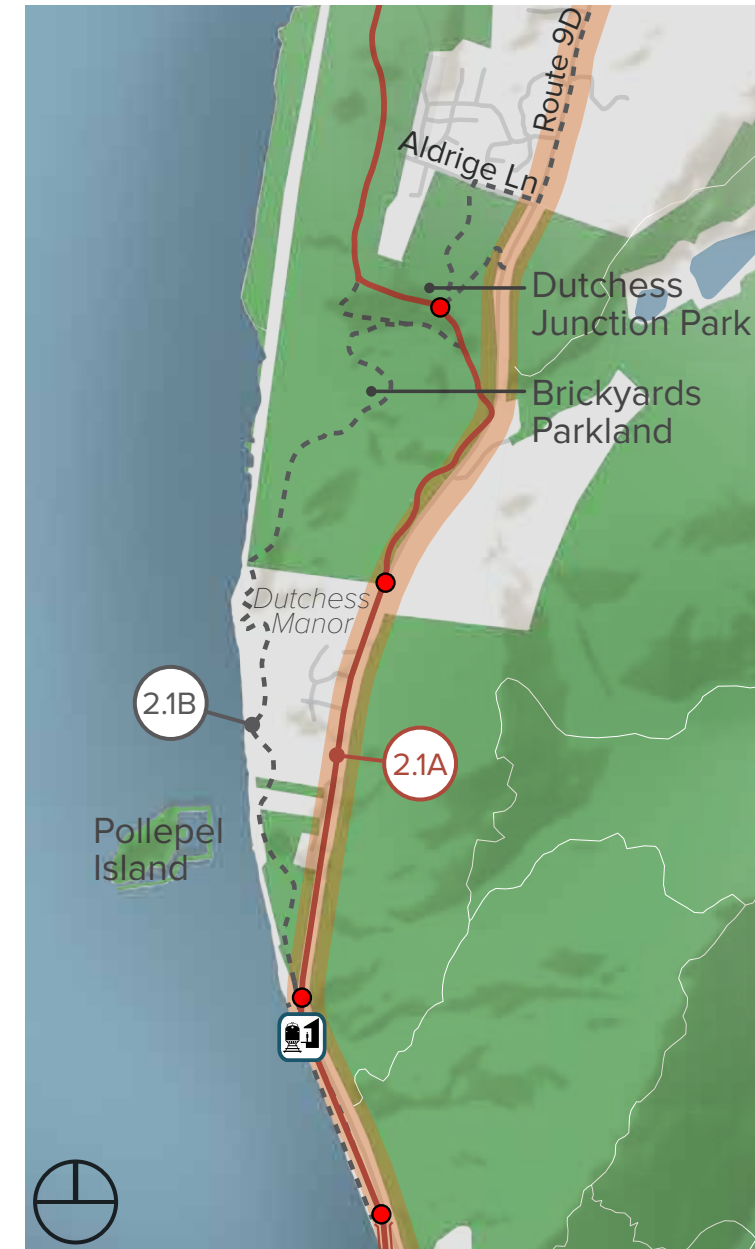
**2.1B** Lowland Route - between wetlands and private property

This route segment would be further removed from Route 9D. For emergency response, it would be the least accessible portion of trail from public property being considered, due to the private parcels between Route 9D and the wetlands. It would also be very isolated.

This alignment would also connect to the Brickyards Parkland, but would be more technically challenging to navigate.

While this alignment would bring trail users closer to the river and Pollepel Island, the construction impacts would be significant as the trail would be built over the wetlands.

In some cases, existing mapped wetlands and tidal wetlands are located on private property. In some instances this route which would be in the wetlands and/or on private property, require permits and easements. Construction impacts and shading to wetland areas would be significant where the trail would be built entirely above the wetlands and not on any private land. To maintain a similar grade to the land outcroppings to the north and south, a boardwalk structure would need to be elevated significantly above the wetland area, requiring deeper footings within the wetland and a sloped trail. This alignment should continue to be explored with property owners.



Map 2.1 - Breakneck Ridge Train Station to Brickyards Parkland

### Legend

- Preferred Route
- Change in route segment
- - - Alternate Route
- Proposed Route 9D Corridor safety improvements
- State Parks

## 2.2 Brickyards Parkland to Dutchess Junction Park

**2.2A - Brickyards Parkland to Dutchess Junction Park (eastern upland route):** The wooded slopes north of the privately owned land in sub-area 2.1 are mostly owned by OPRHP and are part of Hudson Highlands State Park. Dutchess Junction Park sits within the northern portion of the Brickyards Parkland. This former Town of Fishkill park is surrounded by the state parkland and is therefore maintained by, and treated as, part of the State Park.

Upon reaching the boundary between the private property and the Brickyards Parkland, the trail can veer away from the Route 9D right-of-way and enter the Brickyards Parkland. The trail would run with the contours of the land and stay near the road to cross the water courses at the most favorable locations where they are constrained to cross under Route 9D, while also reducing construction impacts and cost.

The entire Brickyards Parkland area shows many signs of the human settlement and industry that once existed here, although most of the structures have been demolished. Graded roads traverse the area, mostly connecting the river to upland

areas. These roads are not blazed as official trails, but are accessible to the public and used informally. There are also wetlands that are adjacent to, and were created by, the construction of the railroad.

The proposed alignment follows the contours of the land roughly parallel to Route 9D. The trail crosses two year-round water courses, Wade's and Gordon's Brooks. By staying close to the road, the trail will cross these brooks where they are narrowest, minimizing the length of any bridges that would be required. The brooks' beds narrow to cross under the roadway, and then quickly widen out as they head downhill away from Route 9D towards the river.

Once the second brook is crossed, the trail would follow an old graded roadway and connect to Dutchess Junction Park. This connection is largely in place, with some additional grading and site preparation needed to address steep sections of roadway and to smooth smaller ditches and gullies formed by water runoff.



Graded roadway in the Brickyards Parkland



Wetlands in the Brickyards Parkland

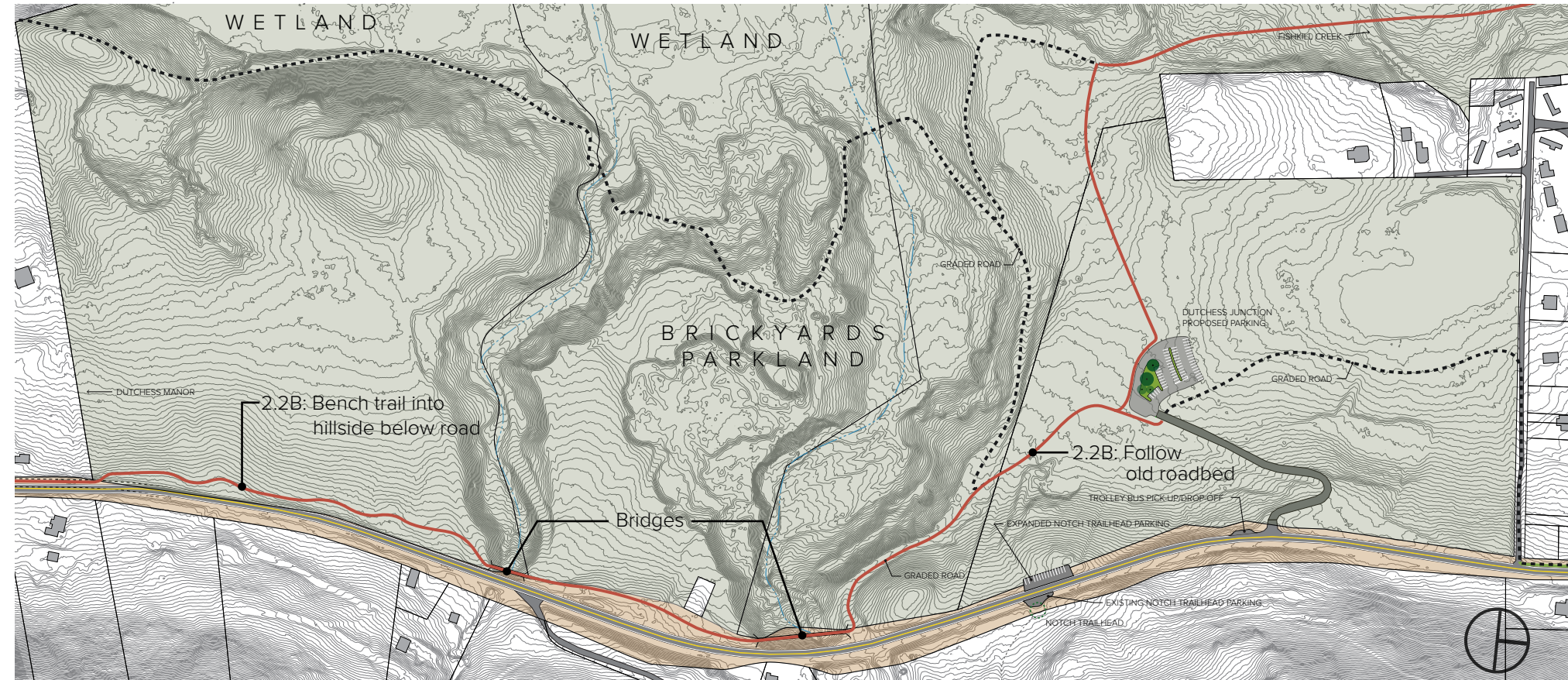
**2.2B - Brickyards Parkland to Dutchess Junction Park (western lowland route):**

Just north of the wetlands and private property in sub-area 2.1 is a drastic change in elevation. This would require several switchbacks and possibly a ramp structure to connect the trail that runs between the wetlands and private property with this high point within the Brickyards Parkland. Moving northward, the trail would follow existing graded roads that remain from when the Brickyards were in operation. To cross Gordon's and Wade's Brooks, and the ravines and gullies they have formed, would require significantly more infrastructure and disturbance than crossing the same brooks uphill closer to the roadway where the brooks are constrained, as proposed for sub-area 2.2.

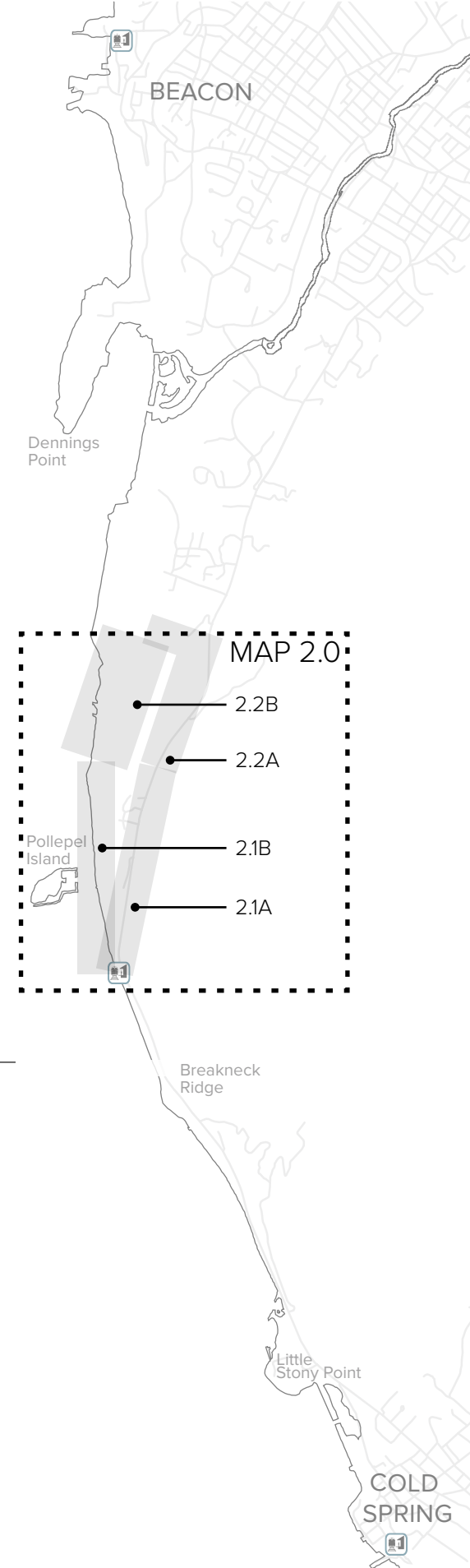
In addition to the challenge of traversing this complex terrain, much of this area is considered to be udorthents (potential historic fill area), as well as potentially archaeologically and culturally significant from both the brickyards era and pre-Contact settlement. There are also wetlands between the Metro-North tracks and the rising

parkland terrain, similar to the larger wetland area adjacent to the private property in sub-area 2.1. All of these conditions present potential permitting challenges, however, as discussed during the second public meeting, they also represent an opportunity for historic and ecological education.

While these rugged conditions make this alignment infeasible for an easily navigable multi-use trail, a footpath along this alignment should be considered as a supplement for able hikers. Furthermore, to strengthen the draw to Dutchess Junction Park as a node, a network of hiking and/or mountain biking trails should be planned and developed as resources become available and NYNJTC volunteers are identified. Using the existing graded roadways and other passable connections, a loop system could be cleared and blazed by volunteers. A welcome area at this location strengthens the feasibility of introducing this new node to the Route 9D recreational corridor by activating this section of parkland and bringing other amenities to Dutchess Junction Park. For additional details, see "Repurposing Dutchess Junction Park" on p. 57.



Brickyards Parkland map



# Summary Evaluation

PROJECT GOALS	
SAFETY	Most of this segment will be off-road, though adjacent to and fully visible from Route 9D.
RECREATION	This portion of the trail will follow contours through the wooded area adjacent to the roadway. The northern section would follow an existing graded, but abandoned, road alignment to connect to Dutchess Junction Park. Walking and bicycling would be easier compared to 2.2B.
HIGHLIGHT & RETAIN NATURAL BEAUTY	While visible to the roadway, the trail would be within a transformational forest environment, back from and below the road. By following existing contours, environmental degradation (cutting and filling) will be minimized. This land has been subject to light infiltration and degradation caused by the roadway cut above and to the east. Construction disturbance will have less impact compared to deeper in the woods while addressing invasive species.
CONSTRUCTION FEASIBILITY	This alignment crosses the two streams where they have already been channelized to pass under Route 9D, making the spans required to cross them significantly shorter than would otherwise be required in lowland areas. Otherwise, the trail follows existing contours and/or existing graded roads. Being closer to Route 9D, construction will be easier, with less distance to transport materials. The property is already owned by OPRHP, but more importantly this alignment connects directly to trail segments that can also be implemented on public land.

**2.2A** Brickyards Parkland to Dutchess Junction Park - Upland route set back from Route 9D

P R E F E R R E D R O U T E

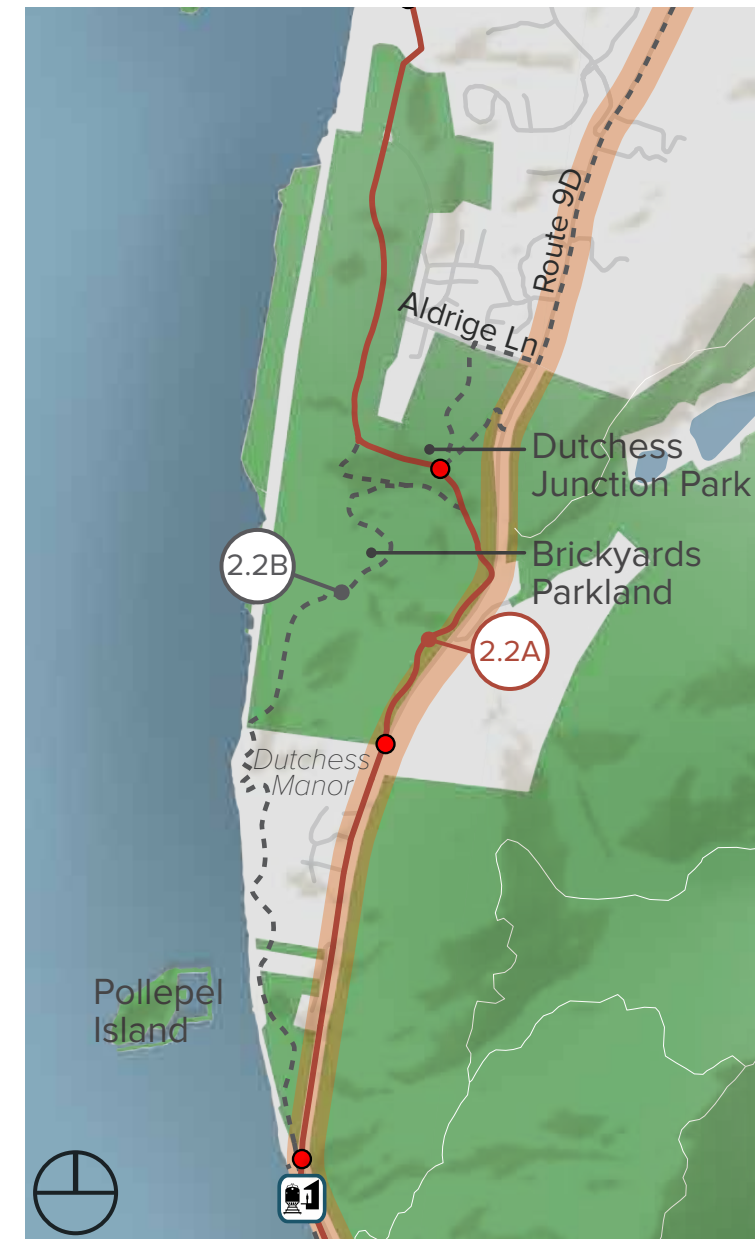
**2.2B** Lowland Route - within Brickyards Parkland

This route segment would have to be built over very challenging terrain, which could limit accessibility for some populations. Located deep in the woods, this route would be visually and audibly isolated.

This alignment would also connect to the Brickyards Parkland, but would be more technically challenging to use and would require a longer distance to connect to the same points as the preferred route.

This alignment would bring trail users closer to the river and Pollepel Island through rugged densely wooded terrain regularly crossed by streams and drainage channels. It would not provide direct views to the river. The trail would be indirect, requiring construction of bridges and/or culverts at streams and boardwalks over wet areas.

Significantly more infrastructure (longer bridges and structures over wet areas) would make the overall cost significantly higher and result in greater disturbance to the surrounding natural environment. As this is a low lying area and mapped as potential historic fill, there are many areas that are wet for part or all of the year. Accessing the site with construction vehicles would also increase the cost in comparison to the preferred route. The likelihood of encountering historic artifacts is also greater in this area.



Map 2.2 - Brickyards Parkland to Dutchess Junction Park

### Legend

- Preferred Route
- Change in route segment
- - - Alternate Route
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- State Parks



# Repurposing Dutchess Junction Park

The open space shown below was once a Town of Fishkill park and playground (of which remnants remain), which was closed in response to low usage and perceived safety concerns. This parkland may be part of the solution to the parking problem 2-3 miles to the south. The access road is navigable for a bus-style trolley that could be used to create a park-and-ride operation, although the possibility of a roadside pick-up location may also be explored to maximize efficiency. The access point to Dutchess Junction Park from Route 9D happens to be conveniently located directly across the road from the Notch trailhead, a popular trail which has very limited trailhead parking (4-5 cars max.)

Dutchess Junction Park could be redesigned to provide much needed parking and a welcome area for the growing visitor population, with frequent, reliable trolley service bringing them to the popular trailheads to the south. The loop trail network discussed in sub-area 2.2B and other amenities such as food trucks and stewardship information could be considered to further activate this new hub. By activating this area with a park-related use that is off-site and removed from the existing hub of activity between the Breakneck Ridge Station and Breakneck Ridge itself, as many as 50-100 vehicles could be accommodated with little impacts to trees.

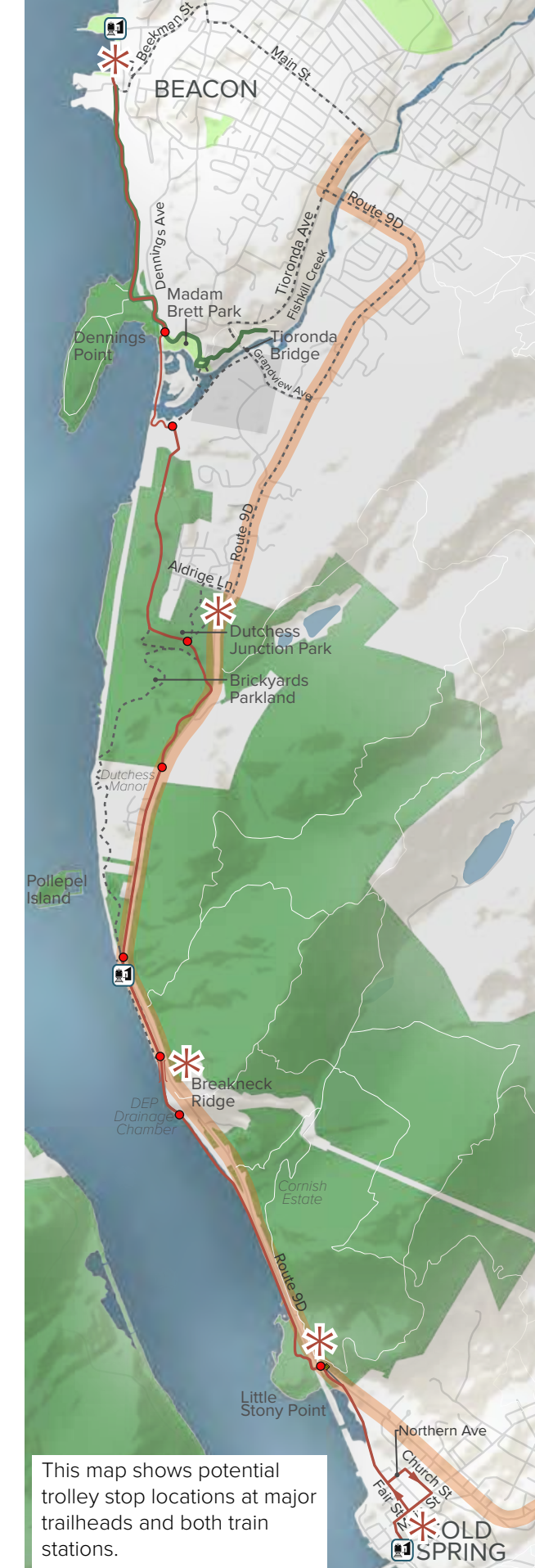
The trolley that serves downtown Cold Spring and the Boscobel Historic House and Gardens, could be expanded during peak hiking season to travel as far north as Dutchess Junction Park to pick up hikers and bring them down Route 9D to the Hudson Highlands State Park Preserve trailheads. Hikers setting out for extended days are best suited to take advantage of this welcome area.



Trolley in Cold Spring, NY



Dutchess Junction Park panoramic view



This map shows potential trolley stop locations at major trailheads and both train stations.

\* Potential trolley stop

A large, bold, green number '3' is positioned in the upper left corner of the image. The background is a lush green forest with a grassy clearing in the foreground.

Dutchess Junction Park to  
Beacon Train Station

# 3 Dutchess Junction Park to Beacon Train Station

## Existing Conditions

The third segment of the trail can be organized into three sub-areas: **3.1** - Dutchess Junction Park to Fishkill Creek, **3.2** - Fishkill Creek Crossing, and **3.3** - Beacon Loop. Multiple options to cross Fishkill Creek were explored, including unused Metro-North causeways crossing the mouth of the creek, as well as the former Tioronda Bridge crossing, accessible from a now-defunct utility easement that runs parallel to the creek on its southern side. Consideration was also given to following Route 9D over the Wolcott Avenue Bridge to cross the creek.

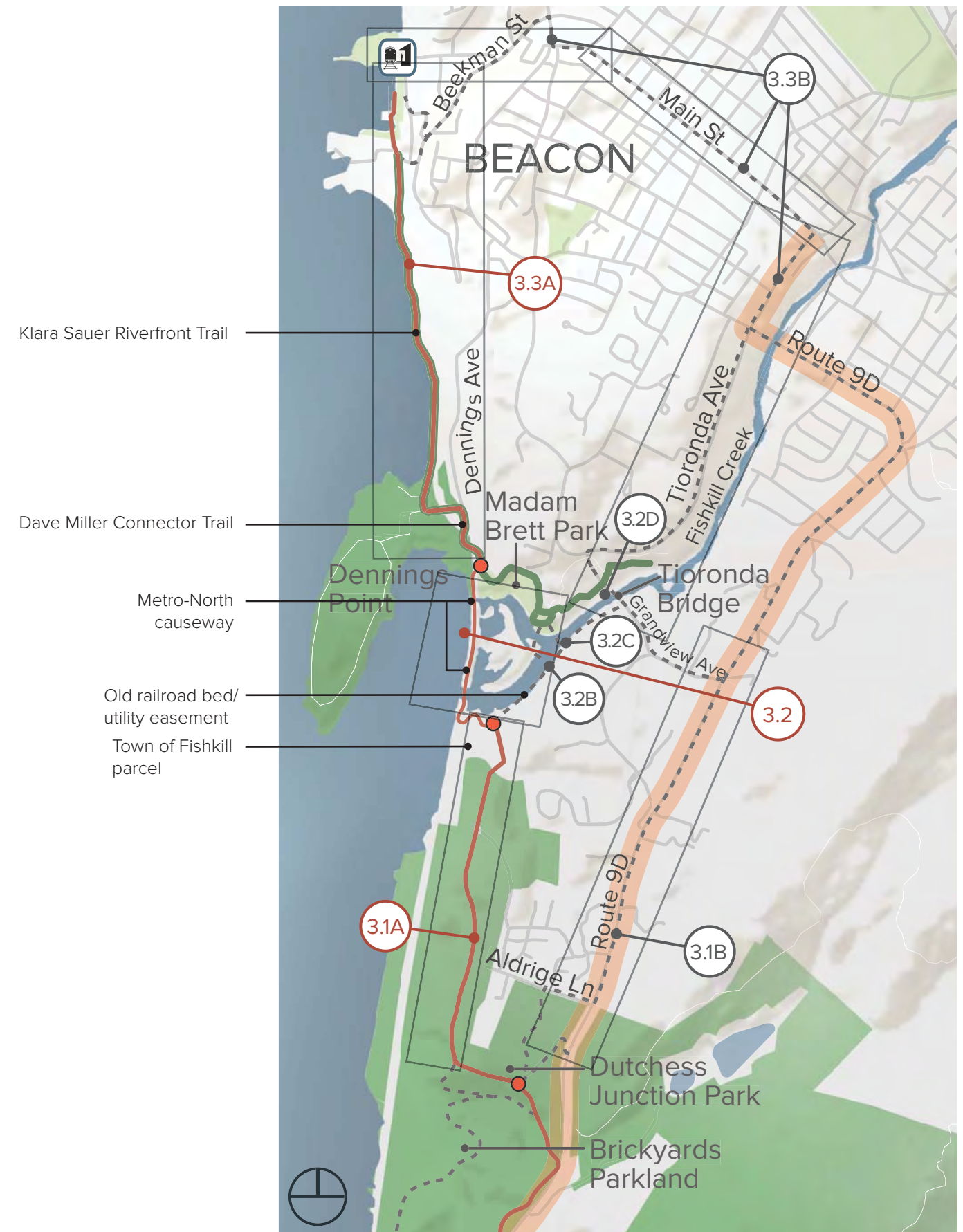
**Brickyards Parkland:** The parkland between Route 9D and the Hudson River slopes down from the roadway to the river. From Dutchess Junction Park, public land, mostly owned by OPRHP and some by the Town of Fishkill, wraps around private parcels and follows the river to the estuary where the Fishkill Creek meets the Hudson River.

The **Beacon Loop** consists of 1.5 miles of existing off-road trails and 2.5 miles of roads connecting to the train station via Main Street. As a loop, the connection from one of the Fishkill Creek crossing locations could reach the station in either a clockwise or counter-clockwise direction.

**Existing Trail Network:** The existing trail network consists of the trail in Madam Brett Park, the Dave Miller Connector Trail and the Klara Sauer Trail.

**Route 9D (Mount Beacon):** From Dutchess Junction Park, Route 9D climbs in elevation to the north towards Mount Beacon, and then turns west and descends down a more steep incline back to the Fishkill Creek. The surrounding land uses here are almost exclusively residential, except for a small portion of parkland ending at Aldrige lane on both sides of the roadway.

**Tioronda Avenue - Main Street - Beekman Avenue:** To reach the train station via city streets, the trail would need to utilize portions of Tioronda Avenue, which intersects with Main Street. Main Street offers many amenities, including restaurants, stores, antiques and art galleries. This part of the Beacon Loop covers most of Main Street, from Tioronda Avenue to Route 9D, at which point it would use a small portion of Route 9D to access Beekman Street. Beekman Street is a relatively steep street with sidewalks on both sides and parking on the east side of the street.



Map 3.0 - Preferred and Alternative Route from Dutchess Junction Park to Beacon Train Station



# 3.1 Dutchess Junction Park to Fishkill Creek

**3.1A - Brickyard Parkland (western lowland route):** The low-lying area along the river (see photo above) was once bustling with several brickyards. The area was likely filled in to expand navigation around the area, including the grading of several roads. The entire land mass to the west of the railroad tracks is in all likelihood entirely fill, based on available data. Aside from roads, there are visible remnants of the brickyard industry, including the piles of two piers. Connecting from Dutchess Junction Park to the shoreline here is not easily done. Intermittent seasonal streams and wetland areas would require construction of raised boardwalks, culverts and small trail bridges. The higher terrain throughout this area will require the construction of perched and/or cantilevered structures to navigate the many steep gullies as conventional cut and fill operations required to build a 'perched' pathway would result in large-scale destruction of the wetland.

**3.1B - Route 9D (eastern upland route):** This option would provide a shoulder of at least 5 feet for bicycles that is being sought for the entire corridor. The roadway is constrained in many locations, making a pedestrian accommodation along this alignment a serious challenge. This alignment would most likely complement a pedestrian-only trail through the low-lying wooded areas closer to the river.

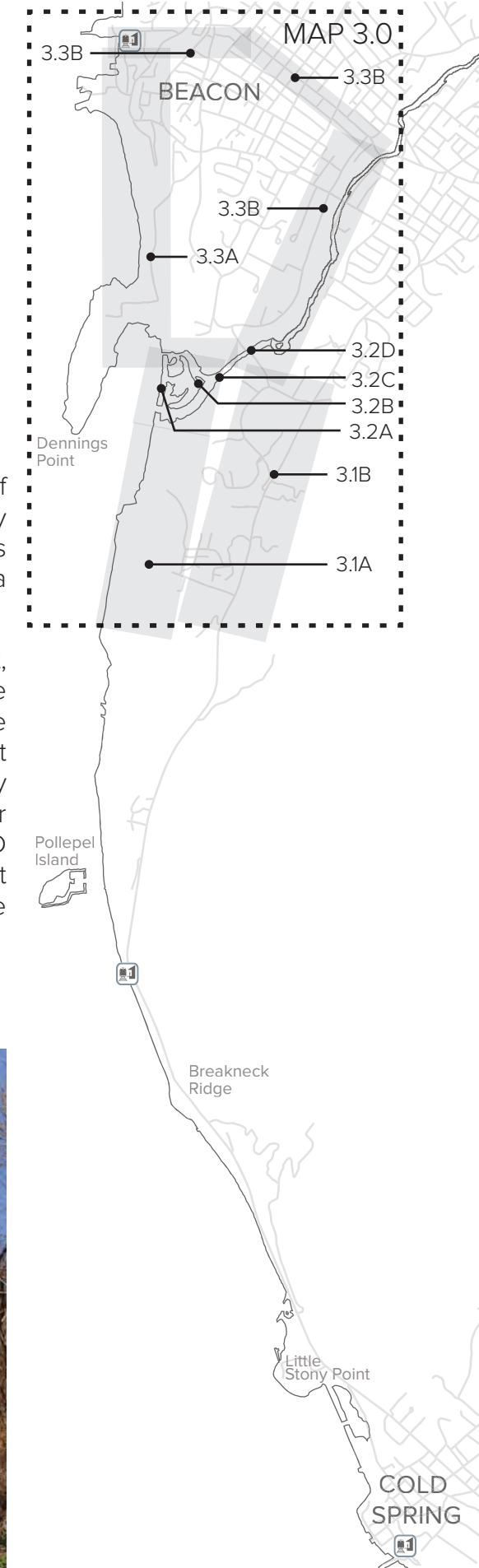
From Dutchess Junction Park, this alignment would begin off-road for a short segment, along a trail that runs parallel to Route 9D, turning back towards Route 9D via Aldrige Lane. At this point, private residential properties line both sides of Route 9D. The DOT right-of-way is still generally wider than the roadway itself but irregular—at times almost as narrow as the roadway. The grade along the sides of the roadway varies, with many steep sections, as well as utility lines and drainage to consider (see sections below). More significantly, however, the upward slope along Route 9D from Dutchess Junction Park to the Mount Beacon parking area is steep enough that it would be an enormously challenging climb, only to bring users back down to the other side of the steep hill to the Wolcott Ave Bridge over the Fishkill Creek.



Route 9D at intersection of Aldrige Lane facing north



Route 9D at intersection of Slocum Road facing north



# Summary Evaluation

3.1A Route 9D via Mount Beacon parking area

## PROJECT GOALS

### SAFETY

Cyclists would use shoulders. Pedestrians would use shoulders or a separate hiking path.

### RECREATION

Shoulders would not provide a sufficient facility for recreational cyclists that are not comfortable riding near vehicles. The steep northbound incline of Route 9D is a serious climb for most cyclists. No pedestrian facility can fit along the Route 9D right-of-way in this area.

### HIGHLIGHT & RETAIN NATURAL BEAUTY

There would be no visual connection to the river and there would not be accommodations to appreciate the natural surroundings as they are mostly privately owned.

## CONSTRUCTION FEASIBILITY

To widen the road in certain locations to achieve a shoulder is a manageable outcome, but this would not allow for a pedestrian accommodation. If a separate pedestrian accommodation were to be pursued, it would likely follow the route of segment 3.1B through the Brickyards Parkland and over one of the two proposed crossings the Fishkill Creek from the Brickyards Parkland.

3.1B Brickyards Parkland

Separated from the road, this trail through the woods would provide greater safety for cyclists and pedestrians, in comparison to Route 9D.

This trail would be in a mostly wooded area of parkland that currently has no programmed uses, with some interesting bends and turns to navigate the terrain. This alignment keeps trail users at a low-lying elevation, which is where the trail needs to be to cross the Fishkill Creek.

The north end of this segment brings users to the delta of the Fishkill Creek, which offers interesting views of a unique habitat. The majority of the segment sits within a wooded portion.

This segment requires some care in cut and fill techniques so as not to disturb adjacent wetlands, and may require structures and/or culverts. Because much of this area is suspected to be fill, environmental testing would be needed to determine the area is free of contaminants. Portions of the trail may need to be routed around sensitive areas, pending the findings of an archaeological survey.

P R E F E R R E D R O U T E



Map 3.1 - Dutchess Junction Park to Fishkill Creek

### Legend

- Preferred Route
- Change in route segment
- - - Alternate Route
- Proposed Route 9D Corridor safety improvements
- State Parks

## 3.2 Fishkill Creek Crossing

The Tioronda Bridge was decommissioned in the 1980s, and demolished in 2006. Before it deteriorated, it accommodated two-lanes of vehicular traffic. Recently, this location was used as a crossing for utility pipes, but they are not designed to support any additional load. A new self-supporting bridge deck would need to be constructed above the utilities to make use of this crossing for the trail and/or vehicles. Getting to the Tioronda Ave Bridge crossing from the Brickyards Parkland (Route Segment 3.1B) would, however, require aligning the trail along the entire length of the utility easement that parallels the creek, and would require additional negotiations with private property owners on whose land this easement exists. Several of these homeowners commented on this proposed trail alignment expressing serious concerns.

**3.2A - Metro-North Causeway:** There are two causeway bridges crossing the mouth of the Fishkill Creek, however both active tracks use only the western bridge. The remaining bridge may be available for the use of the trail, with a physical barrier separating the trail from maintenance vehicles, which occasionally use the causeway to access portions of the tracks south of the Fishkill Creek. Metro-North is reviewing this request with respect to safety concerns and operational requirements.

**3.2B - Bridge Across Wetlands:** In order to avoid using private property, a short section of the utility easement would be used to go as far east as possible on publicly owned land. This land does not extend far enough to reach the point at which the creek narrows, so the bridge would have to cross along the edge of the wetland area. Supports would be placed where there is some stable ground for landings as shown to the right. This bridge would provide visual access to a very unique habitat.



Metro-North Causeway bridges over the mouth of Fishkill Creek with two parallel bridges side by side

**3.2C - Bridge Across Fishkill Creek Mouth:** To minimize shading and wetland impacts to the creek, a shorter span could be used to cross at the mouth where the creek narrows. This would require an easement across one of the privately owned parcels along the creek, but would not extend beyond the first private parcel. A shorter span in this location would reduce the environmental impacts.



Fishkill Creek crossing options. Property lines shown in purple are approximate and not to scale.

**3.2D - Tioronda Bridge via Utility Easement:** This graded land is an old railroad bed and runs through what today is private property. It is currently used as a utility easement for Central Hudson's power lines, and is cleared wide enough for a trail. This would provide an off-road alternative to the 2 mile climb to the Mount Beacon trailhead to cross Fishkill Creek over the Route 9D/Wolcott Ave Bridge, which does not connect directly to the existing trail in Madam Brett Park. Negotiations with private property owners would have to take place in order to align the trail through the easement.

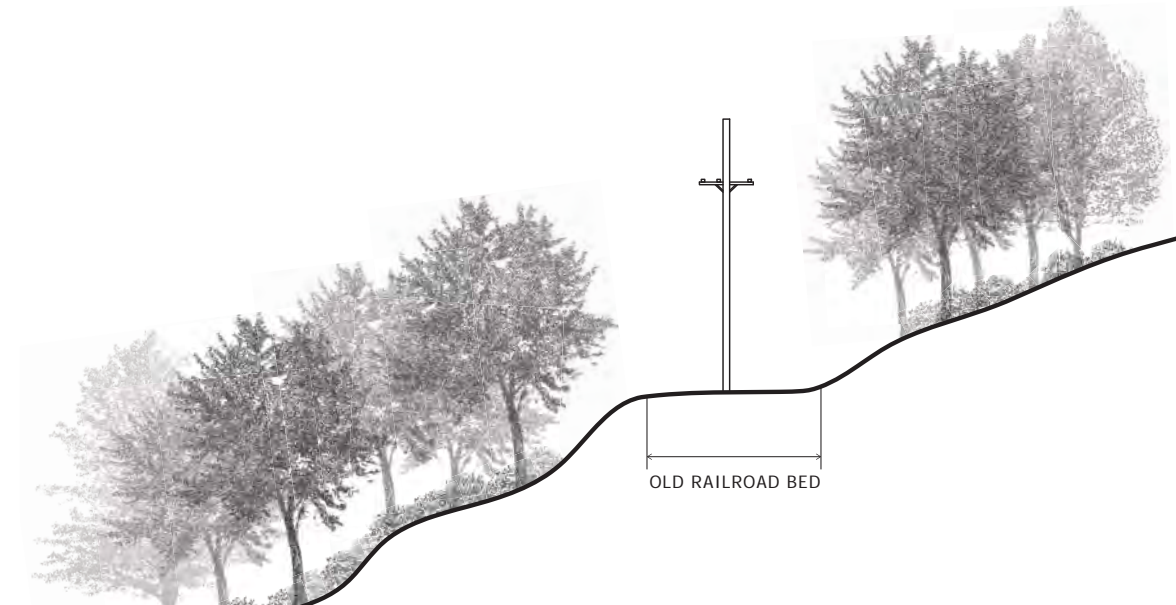
Utility easement runs directly behind this house



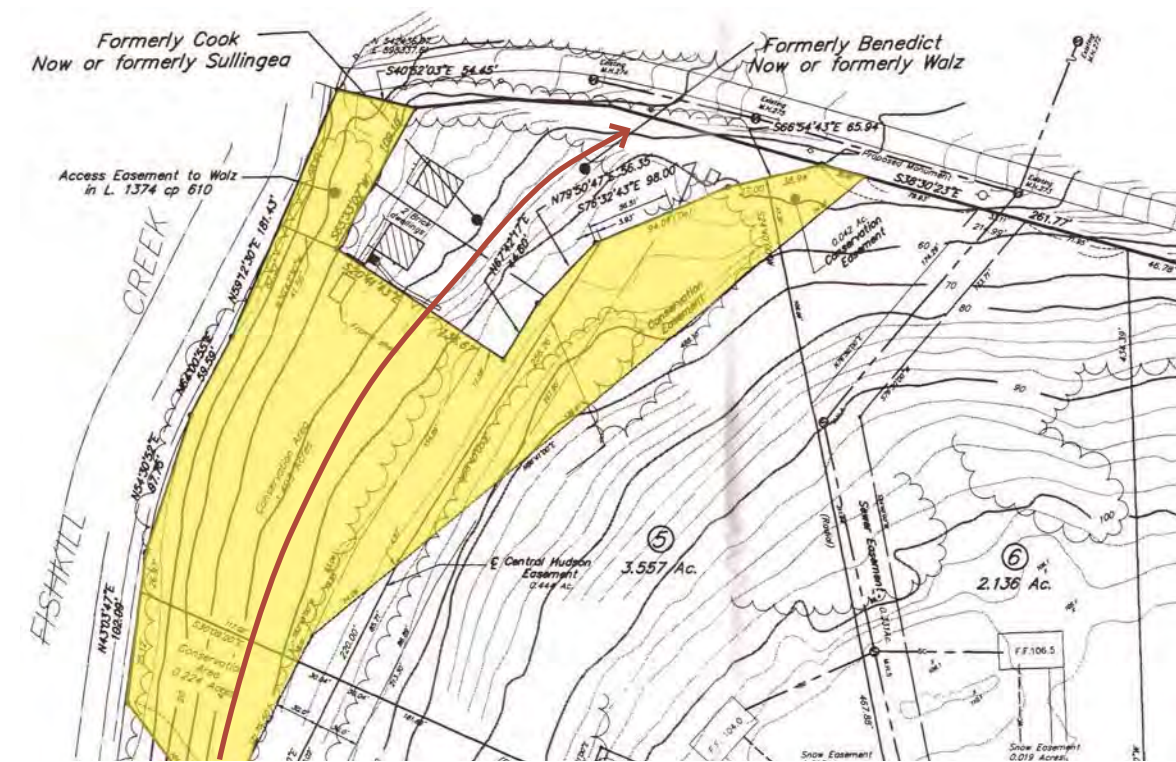
Private property on the south side of Fishkill Creek, Tioronda Bridge (left)



Tioronda Bridge looking north



Old railroad bed/current utility easement facing east



Approximate centerline of utility easement shown in red, yellow shading indicates conservation easement which is unrelated to utility easement

# Summary Evaluation

## GOALS

### SAFETY

#### 3.2A Metro-North Causeway

Active railroad tracks in close proximity. Coordination required with Metro-North.

### RECREATION

This alignment would keep trail users closer and visually connected to the river, and is already ideal for biking and walking due to its smooth, level-graded surface.

### HIGHLIGHT & RETAIN NATURAL BEAUTY

These causeways are between the river and a delicate environment in the creek's delta, which would not be accessible from the trail. Eagles have been observed in the vicinity of these causeways, which may impact wintering bald eagles and could require seasonal closings of this route.

### CONSTRUCTION FEASIBILITY

Active railroad tracks in close proximity. Further review and coordination with Metro-North (owner), DEC and other governing bodies must take place, and necessary agreements must be executed before a trail can be implemented at this location.

P R E F E R R E D  
R O U T E

#### 3.2B Bridge Across Wetlands

Off-road bridge would be very safe from a technical perspective.

This bridge would bring trail users close to a unique environment.

While this bridge would highlight the natural beauty of the area, there would be impacts to the existing wetlands and other habitat.

This bridge would be challenging to design and build without major impacts to the ecosystem. Supports would be placed where there is some existing land to reduce impacts.

#### 3.2C Bridge across Mouth of Fishkill Creek

Off-road bridge would be very safe from a technical perspective.

This bridge would bring trail users close to a unique environment.

This bridge would bring trail users across at a quiet location with views of the unique delta environment without adversely affecting the habitat aside from shading and minor disturbance on the slopes of the creek embankment.

This connection would have moderate impacts and would require the use of one private parcel. However, the creek crossing would be significantly shorter and less expensive to implement compared to the Bridge Across Wetlands.

#### 3.2D Tioronda Bridge Crossing

Off-road and along a graded right-of-way, this trail would be very safe from a technical perspective.

Crossing the Fishkill Creek via the Tioronda Bridge would bring trail users to Madam Brett Park and the waterfall that can be found up the creek from the bridge crossing.

This utility easement has power lines overhead but is otherwise surrounded by trees and the steep slope along the Fishkill Creek, with some obstructed views of the creek. This trail routing option would pass within just a few feet of several private homes.

While the grading remains from the abandoned railroad corridor that passed through this area, it sits on private property. Where the utility easement meets Grandview Avenue, there are two homes within very close proximity of the trail. The issue of access to private property would need to be negotiated with property owners for this alignment to be able to be considered further. One of these two homeowners uses this property to access his home, and as an outdoor work space. This connection also comes within close proximity of Mount Beacon and was desired by the community.



Map 3.2 - Fishkill Creek Crossing

### Legend

- Preferred Route
- Change in route segment
- - - Alternate Route
- Proposed Route 9D Corridor safety improvements
- State Parks



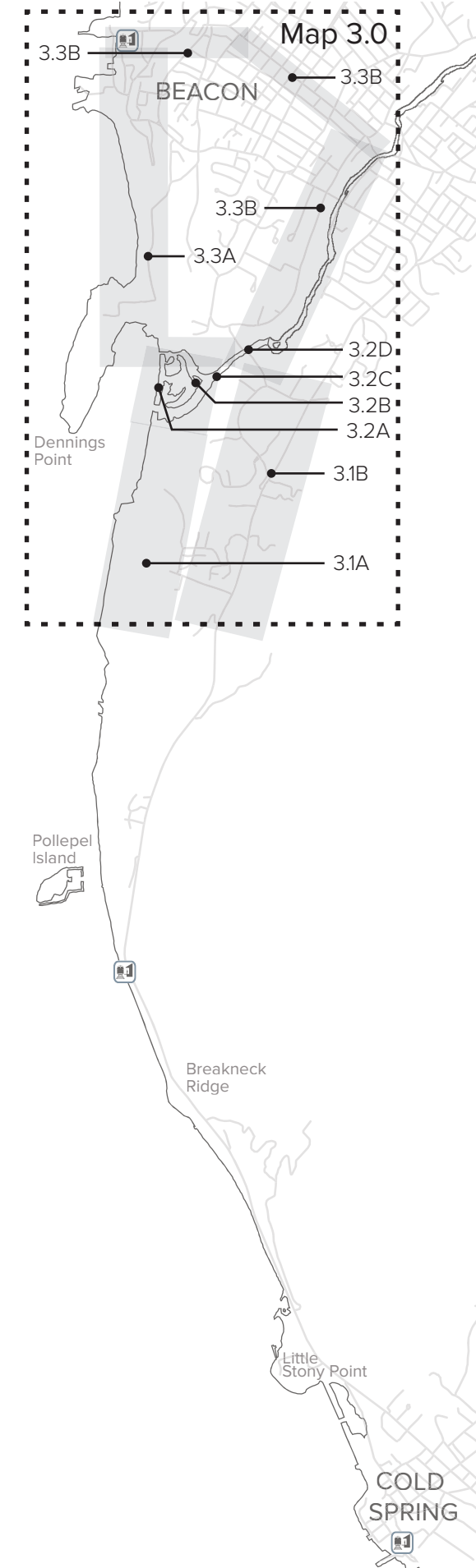
## 3.3 Madam Brett Park to Beacon Train Station

**3.3A - Existing Trail Network:** From the Tioronda Bridge to the Beacon train station there is a continuous trail network that is already well-used by hikers and bicyclists. The trail system, shown on the opposite page, is 1.5 miles long and provides a diverse experience for users. It begins at the Madam Brett parking area on the east side of Tioronda Ave, north of the Fishkill Creek, and continues on the west side of Tioronda Ave on a wooden boardwalk that cantilevers out over Fishkill Creek, alongside an abandoned industrial building (Photo 1, top left). The boardwalk continues south along Fishkill Creek past the brick building until it reaches a wooded trail (Photo 2, top right) passing near viewpoints of the tidal estuary of the Fishkill Creek (Photo 3, below). At the northwestern end of Madam Brett Park, the Dave Miller Connector Trail (Photo 4, bottom left) makes the connection through a railroad underpass and over the railroad tracks to the Klara Sauer Trail, which crosses the railroad tracks to the base of Dennings Point. From Dennings Point, the Klara Sauer trail continues along

the waterfront into Long Dock Park, where it is flanked by landscape berms planted with native grasses (Photo 5, bottom right) before finally connecting to the Beacon train station.

Use of this existing trail network would require minor nominal-cost improvements. At the time of implementation, suitability of existing trail width and condition of surfaces should be evaluated to determine whether they need to be compacted with additional gravel or other materials to maintain a natural surface while also providing additional traction.







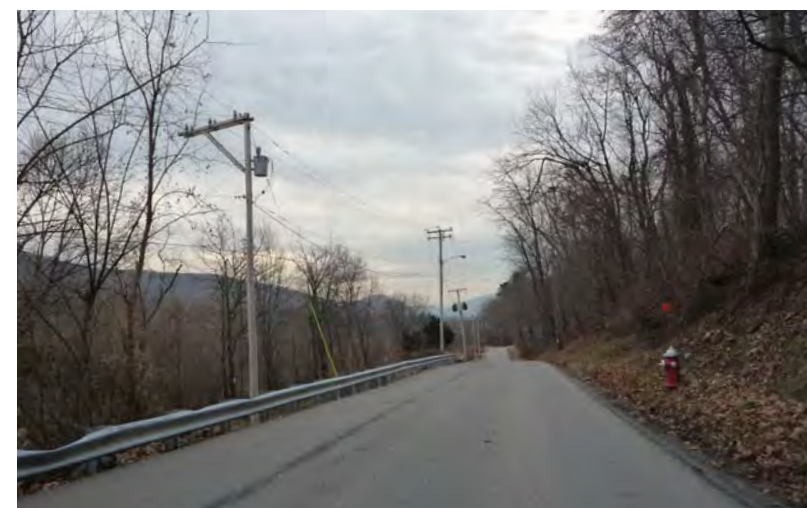
**3.3B - Tioronda Avenue, Main Street and Beekman Street:** This connection consists of on-road connections with sidewalks (where existing). While this route does not provide the level of comfort sought by the trail, it does pass many important amenities along Beacon’s Main Street. It should be highlighted with wayfinding signage directing trail users to Main Street’s amenities.

**Tioronda Ave:** Tioronda Avenue (shown above and below) is a narrow roadway. There is a sidewalk on the west side of the road north of Route 9D to Main Street. South of Route 9D, there are no sidewalks. As shown in the cross-section below, there are slopes, utility lines and other infrastructure on either side of Tioronda Avenue south of Route 9D. Adding a sidewalk in this location is not recommended, with the use of the existing trail network as the preferred alternative in this area.

**Main Street, Beacon:** Main Street is 0.8 miles from Route 9D to Tioronda Ave and offers a variety of retail and cultural amenities. Continuous sidewalks make Main Street pedestrian-friendly, and shared lane markings offer a basic bicycle facility. However, moderate traffic volumes and narrow, shared lanes provide a reduced level of comfort for less experienced cyclists.



Main Street, Beacon

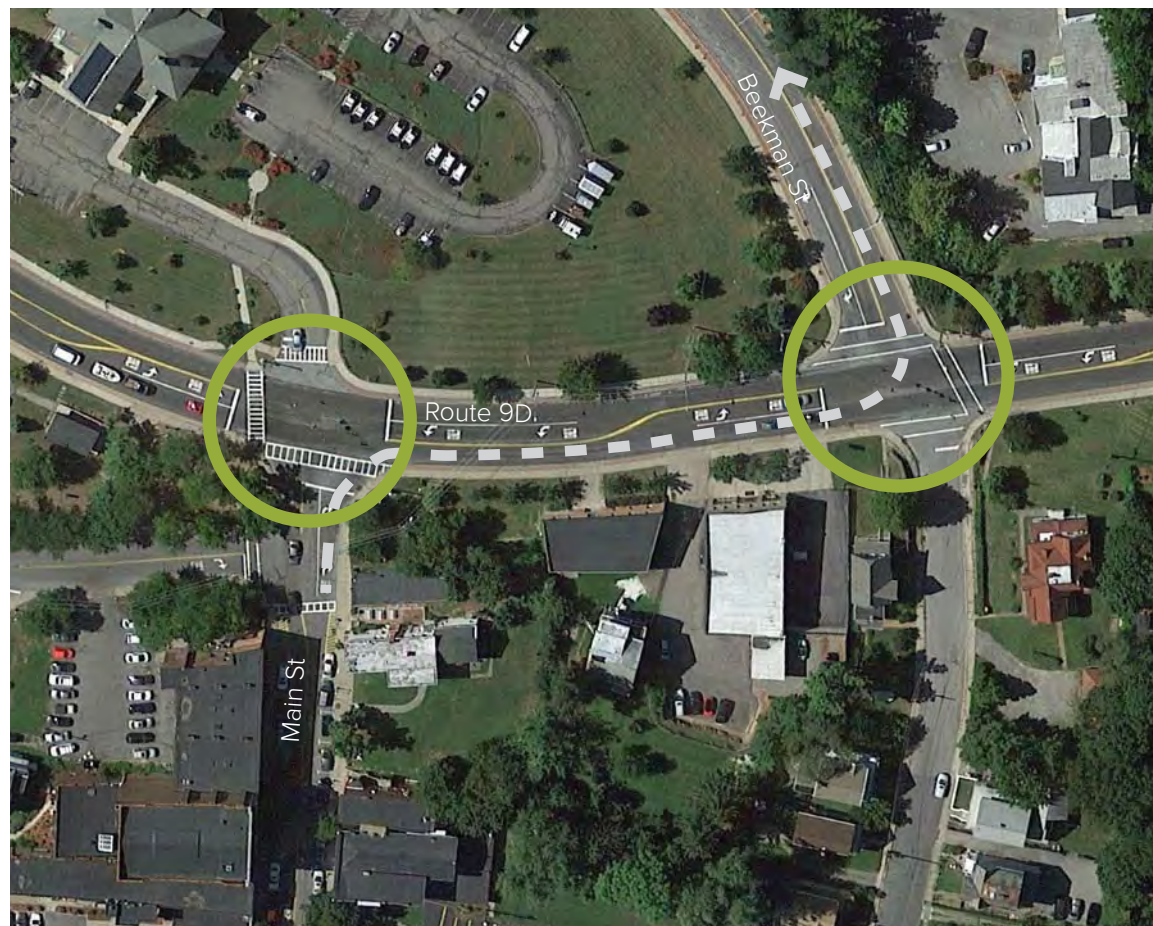


Tioronda Ave between Wolcott Ave and Knevels Ave facing south



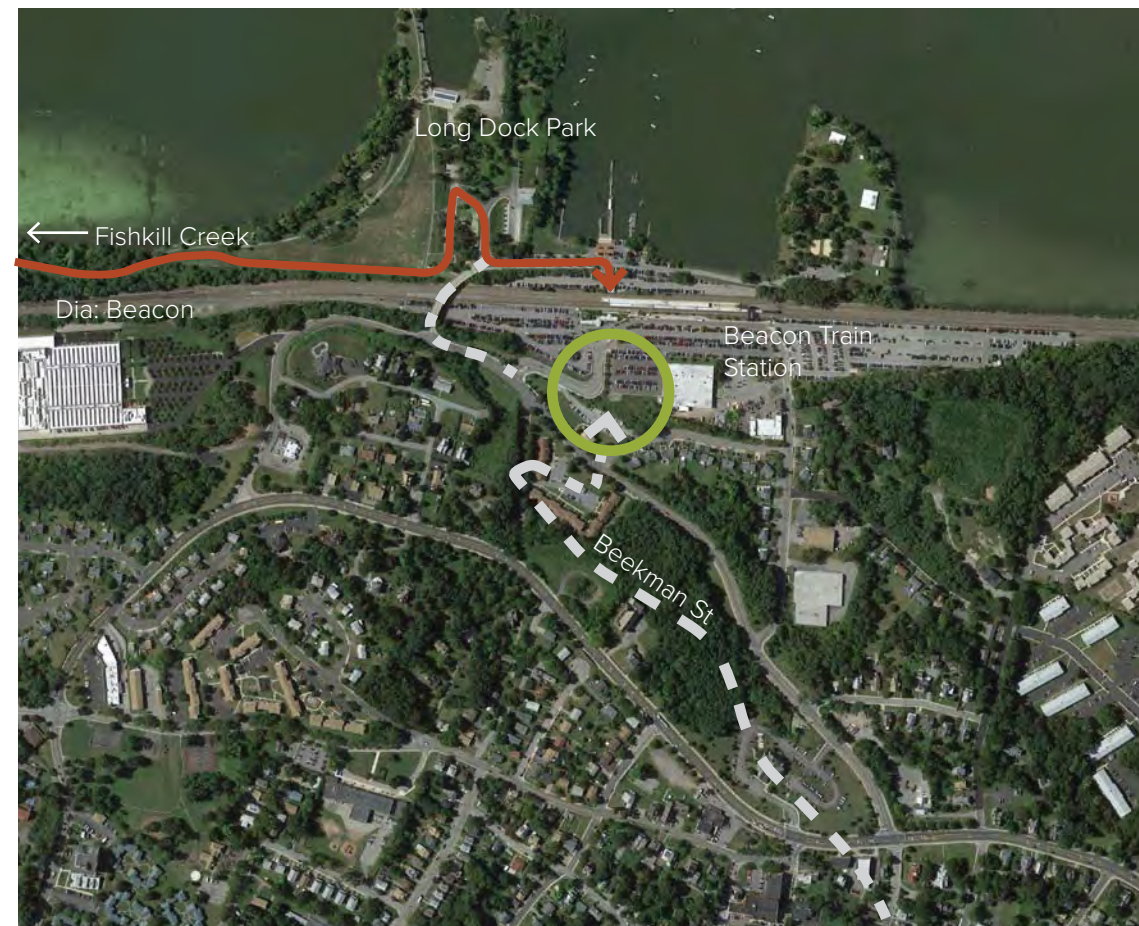
**Crossing Route 9D:** Connecting to the train station via Beekman Street from Main Street requires navigating two complex, signal-controlled intersections with Route 9D, further eroding the level of comfort of both cyclists and pedestrians for this alignment.

While the connection via Main Street is not the preferred route, wayfinding signage should blaze the path from the preferred route, directing trail users to the amenities found in downtown Beacon as well as the train station.

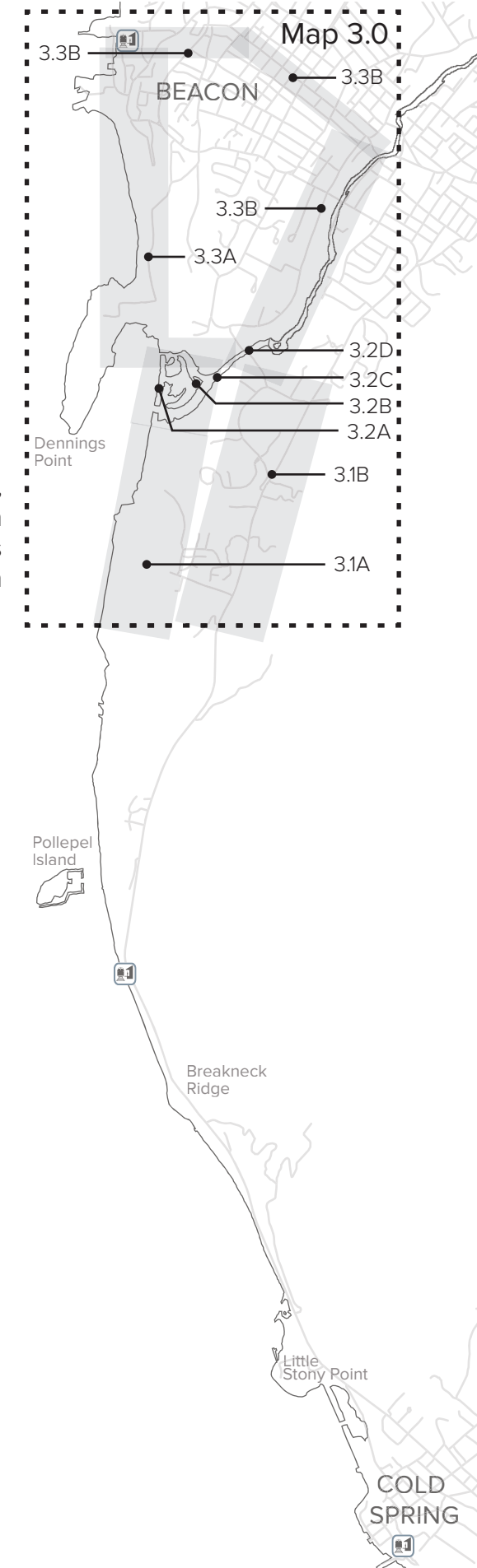


Connection between Main Street and Beekman Street

**Beekman Street:** Beekman Street stands as the last piece of the Beacon Loop, connecting the commercial core of Main Street with the Beacon train station. Beekman Street has two moving lanes with an additional parking lane that alternates sides along the length of the street. The steep slope rising from the waterfront to Beekman Street would make cycling challenging.



Connection along Beekman Street from Main Street to Beacon Train Station



# Summary Evaluation

PROJECT GOALS	
SAFETY	Existing off-road trails provide a safe and comfortable trail experience.
RECREATION	The trails already exist and are open to cyclists and pedestrians, providing unique and beautiful views of Fishkill Creek and the Hudson River through wooded areas.
HIGHLIGHT & RETAIN NATURAL BEAUTY	With no construction required and existing trails, there would be little difference from the existing conditions.
CONSTRUCTION FEASIBILITY	This trail network is in place, with only signage and perhaps some site work necessary.

P R E F E R R E D R O U T E

**3.3A Existing trail network**

**3.3B Main Street connection via Tioronda Avenue and Beekman Street**

This alignment would require shared lane markings for cyclists, which do not provide the level of comfort desired for the trail. Pedestrians would use existing sidewalks, except for the section of Tioronda Avenue south of Route 9D which does not currently have sidewalks.

This segment would be more utilitarian than recreational, aside from the amenities that it would connect to.

With the exception of some views available close to the existing trail network, there would be few areas of natural beauty along this alignment.

Mainly using paint, signage and existing sidewalks, this alignment could be easily implemented but would not provide the level of comfort available using the existing trail network.

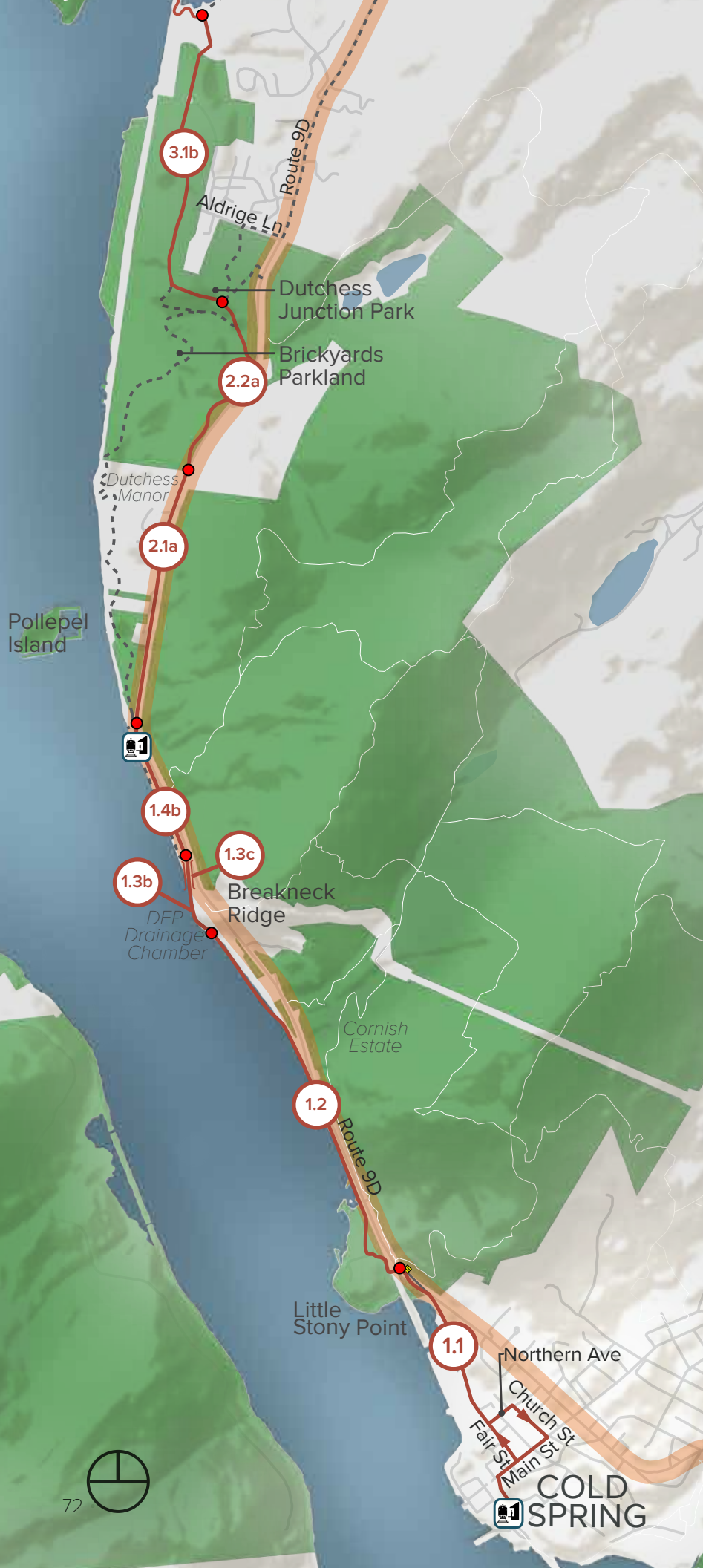


Map 3.3 - Madam Brett Park to Beacon Train Station

- Legend
- Preferred Route
  - Change in route segment
  - - - Alternate Route
  - Proposed Route 9D Corridor safety improvements
  - State Parks

# Implementation





# Implementation Overview

The overall route is broken down into discrete segments with cost and anticipated regulatory requirements. Where there was more than one alternative considered, additional alignments were included to include cost and construction feasibility.

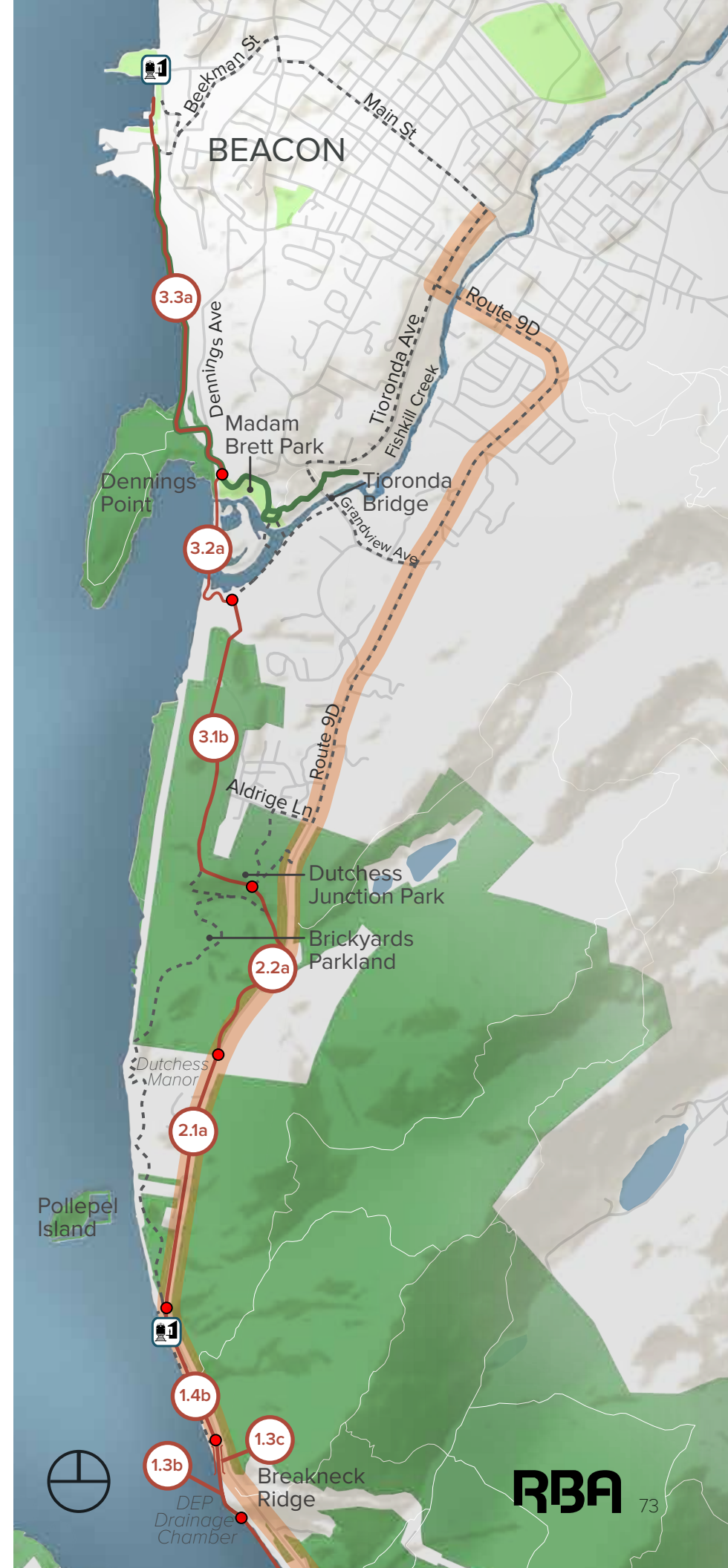
Route Segment	Route Begins	Route Ends	Overview	Distance (linear ft)	Estimated Cost	Involved Agencies	Regulatory Requirements
<b>1 Cold Spring Station to Breakneck Station</b>							
<b>1.1 Cold Spring Station to Little Stony Point</b>							
Train Station area and Main Street	Cold Spring train station at western terminus of Main Street	Fair Street and Route 9D	Shared lane markings, sidewalks, signage	1,470 ft	\$5,000	MNR, Village of Cold Spring	SEQR, SHPO
Fair/Garden Streets to Route 9D/Little Stony Point	Main Street and Garden Street	Intersection of Fair Street and Route 9D	Shared lane markings, sidewalks, signage	3,387 ft	\$35,000	Village of Cold Spring, Town of Phillipstown, DOT	SEQR
Little Stony Point trail	Northwest corner of Fair Street and Route 9D	Pedestrian bridge to Little Stony Point	Multi-use path at grade	642 ft	\$120,000	OPRHP (SHPO)	SEQR, SHPO
<b>1.2 Little Stony Point to Breakneck Ridge</b>							
Shoreline between Little Stony Point and Breakneck Ridge	Little Stony Point pedestrian bridge	Breakneck Ridge headlands	Multi-use path along river's edge including at-grade asphalt path and structures over water	6,600 ft	TBD	MNR, DEC, DOS, ACOE	SEQR, DEC, SHPO, ACOE, DOS, USFWS, NMFS
<b>1.3 Through/Around Breakneck Tunnel/Headlands</b>							
<b>A</b> Breakneck Tunnel	South entrance to Breakneck Tunnel	North entrance to Breakneck Tunnel	Multi-use side path through tunnel with narrowed driving lanes	590 ft	\$200,000	DOT	SEQR, SHPO
<b>B</b> Breakneck Headlands/Shoreline	Beginning of old road bed south of Breakneck Point	North side of Breakneck Ridge headlands	Multi-use path at grade; scramble and/or stair connection to Breakneck Ridge trail	950 ft	\$175,000	MNR, DEC, DOS, ACOE, DEP	
<b>C</b> Bike-Ped bridge over railroad tracks	North side of Breakneck Ridge headlands	Breakneck Ridge trailhead	ADA compliant crossing over the railroad tracks	150 ft	\$600,000	MNR, DOT, DEP	SEQR, SHPO
<b>1.4 Breakneck Connector: Breakneck Tunnel/Headlands to Breakneck Ridge Station pedestrian bridge</b>							
<b>A</b> Shoreline north of Breakneck Ridge	North side of Breakneck Ridge headlands	Breakneck Ridge Station pedestrian bridge	Multi-use trail mostly at grade with some living shoreline segments	2,750 ft	TBD	MNR, DEC, DOS, ACOE	SEQR, DEC, SHPO, ACOE, DOS, USFWS, NMFS
<b>B</b> Along Route 9D (separated)	North entrance to Breakneck Tunnel	Breakneck Ridge Station pedestrian bridge	Multi-use trail partly on structure and partly at grade (2014 CFA Application)	3,113 ft	\$3.7M	MNR, DOT, DEC (wetlands)	SEQR, DEC, SHPO, ACOE, DOS, USFWS, NMFS

Route segments in red indicate preferred alignment

## LEGEND

- Routes considered
- Preferred route
- End of route segment
- Traffic calming: widened shoulders (4-5'), coordinated banners/gateway/wayfinding signage

Route Segment	Route Begins	Route Ends	Overview	Distance (linear ft)	Estimated Cost	Involved Agencies	Regulatory Requirements	
<b>2 Breakneck Ridge Station to Dutchess Junction Park</b>								
<b>2.1 Breakneck Ridge Station to Brickyard Parkland</b>								
<b>A</b>	From Breakneck Ridge Station to Brickyard Parkland on Route 9D (eastern upland route)	Breakneck Ridge Station pedestrian bridge	Brickyards Parkland	Multi-use trail along west side of Route 9D, requires shoulder widening	4,440 ft	\$7 Million	DOT	SEQR, DEC, DOT, SHPO
<b>B</b>	From Breakneck Ridge Station to Brickyard Parkland via forest and wetlands (western lowland route)	Breakneck Ridge Station pedestrian bridge	Brickyards Parkland	Multi-use trail traversing steep slopes, partially on structure over wetlands and benched into slopes or on structure over extremely steep grades* Encroaches on private property	4,900 ft	TBD	DEC, Private property owners	SEQR, DEC, DOT, SHPO, ACOE
<b>2.2 Brickyard Parkland to Dutchess Junction Park</b>								
<b>A</b>	Brickyard Parkland to Dutchess Junction Park (eastern upland route)	Southern boundary of Brickyards Parkland adjacent to Route 9D	Dutchess Junction Park	Multi-use trail benched into slopes (or on structure at streams) adjacent to Route 9D and along old roads*	3,520 ft	\$2 Million	OPRHP, DOT	SEQR, SHPO, ACOE
<b>B</b>	Brickyard Parkland to Dutchess Junction Park (western lowland route)	Brickyards Parkland adjacent to Hudson River and wetlands	Dutchess Junction Park	Multi-use trail at grade and on bridges, across wetlands and over extremely steep and heavily forested terrain*	5,920 ft	\$3.5 Million	OPRHP, DOT	SEQR, SHPO, ACOE
* cut and fill, re-grading, retaining walls and/or tree removal required								
<b>3 Dutchess Junction Park to Beacon Train Station</b>								
<b>3.1 Dutchess Junction Park to Fishkill Creek</b>								
<b>A</b>	Brickyards Parkland	Dutchess Junction Park	Historic railroad bed at South Avenue	Multi-use trail through wooded area	6,500 ft	\$2 Million	OPRHP, Private property owners	SEQR, SHPO, ACOE, DOT
<b>B</b>	Route 9D (via Mount Beacon trailhead)	Dutchess Junction Park/Aldridge Lane	Historic railroad bed at South Avenue	Widened shoulder for bicyclists, no continuous pedestrian amenity south of Beacon city limits	13,000 ft	TBD	DOT, Private property owners	SEQR, SHPO
<b>3.2 Fishkill Creek Crossing</b>								
<b>A</b>	MNR causeway	Historic railroad bed at south end	Madam Brett Park trail	Multi-use trail through wooded area, over existing MNR causeway	2,680 ft	TBD	MNR, OPRHP, Town of Fishkill	SEQR, SHPO, ACOE, DOT
<b>B</b>	Bridge across Wetlands	Historic railroad bed at south end	Madam Brett Park trail	Multi-use trail along utility easement, new bridge crossing wetlands	1,350 ft	TBD	DEC, DOS, ACOE, Town of Fishkill	SEQR, SHPO, ACOE, DOT
<b>C</b>	Bridge across Fishkill Creek Mouth	Historic railroad bed at south end	Madam Brett Park trail	Multi-use trail along utility easement, new bridge crossing mouth of Fishkill Creek	1,410 ft	TBD	DEC, DOS, ACOE, Town of Fishkill	SEQR, SHPO, ACOE, DOT
<b>D</b>	Tioronda Bike-Ped bridge crossing	Historic railroad bed at South Avenue	Madam Brett Park parking area	Multi-use trail along utility easement, deck over and restore crossing to meet bicycle and pedestrian guidelines	150 ft	\$400,000	DEC, DOS, ACOE, City of Beacon	SEQR, SHPO
<b>3.3 Madam Brett Park to Beacon Train Station</b>								
<b>A</b>	Existing Trail Network	Fishkill Creek	Beacon Train Station	Route trail along existing paths in Madam Brett Park, Dennings Point and the Beacon Waterfront; informational and wayfinding signage	8,180 ft	\$20,000	Scenic Hudson	SEQR, SHPO
<b>B</b>	Tioronda Ave	Tioronda Avenue and South Avenue	Tioronda Avenue and Main Street	Shared lane markings, no pedestrian amenities	5,690 ft	\$35,000	City of Beacon	SEQR, SHPO
	Main Street, Beacon	Tioronda Ave and Main Street	Route 9D and Beekman Street	Shared lane markings and sidewalks (existing), restripe intersection of Route 9D at Main Street and Beekman Street	4,745 ft	\$40,000	City of Beacon	SEQR, SHPO
	Beekman Street to Beacon Train Station	Route 9D and Beekman Street	Beacon Train Station	Pavement markings and signage for cyclists, sidewalks (existing)	2,340 ft	\$15,000	City of Beacon	SEQR, SHPO





# Implementation

Due to the length and technical complexity of this trail, it will be constructed in phases. The phasing will be based in part on available funding for design and construction, the permitting process, and the resolution of jurisdictional issues. However, it is recommended that work begin with the Breakneck Connector segment of the preferred route (Segment 1.4B), as this is where the highest level of activity currently takes place and where on-road safety concerns are greatest. In addition, a portion of the funding applied for in the 2014 Consolidated Funding Application (CFA) process was awarded. This and other segments will be implemented opportunistically over time. Given the complexity of the existing conditions and need for a trail, project partners will attempt to advance additional segments as resources allow, until the trail is complete.

After Breakneck Connector, it is recommended that connections south to Little Stony Point be made, specifically Segments 1.2, 1.3B and 1.3C, the Breakneck Headlands and Shoreline trails. It is believed private funding may be available to cover much of the cost associated with building these two segments. The private funding can be used to leverage government grant funding.

While the shoreline trail south of Breakneck Connector is being designed and permitted (estimated to be a 2-year process) funding for the route segment north of the Breakneck Connector should be pursued, as well as funding for improvements to Dutchess Junction Park. The portion immediately north of the Breakneck Connector involves realigning Route 9D, which is also a lengthy process to survey, design, excavate and build the new section of roadway to the east of the existing road. Improvements in Dutchess Junction Park are minimal and could be implemented in the short- to medium-term. While the parking and park amenities are being completed, arrangements to have trolley service begin in advance should be considered. This multi-phase planning and implementation process should continue until connections to each train station (Cold Spring and Beacon) are made.

In order to obtain the necessary environmental permits, the project as a whole will need to go through the SEQR process. It is recommended that the next step be a Generic Environmental Impact Statement (GEIS), evaluating impacts for the entire route (as opposed to individual segments). As such, an alternatives analysis with many or all of the segments considered in this master plan will be undertaken. The SEQR process will identify a preferred alternative, thereby dictating the segments to be implemented with environmental approvals in place.

An engineering feasibility analysis should be undertaken in cooperation with NYS DEC to accurately determine the full impacts of the shoreline trail between Little Stony Point and Breakneck Ridge. After a detailed engineering survey and geotechnical analysis along with detailed site investigations, the team can make a determination about the feasibility of this alignment.

## Route 9D Corridor Improvements

Phasing for the implementation of the Route 9D corridor improvements will likely take place in two parts. Banners, wayfinding and gateway signage can be installed once the public process is complete and a logo and design decided upon. The corridor-wide shoulder widening should be planned and executed by NYSDOT to improve the shoulder condition from the average 1-4' width that currently exists. Once the shoulder widening takes place, it is recommended that Route 9D be considered for re-designation as State Bike Route 9.

# Maintenance and Stewardship

The surface material for each segment of trail will be determined during preliminary design. However, there are a number of possibilities to consider that would fit within the environmental and physical conditions along the trail and with the character of individual route segments. As the trail will be open to multiple users, the surface of those segments designed to accommodate cyclists must be suitable for bicycles.

The likely maintenance partner will be the NY-NJ Trail Conference (NYNJTC). The *NYNJTC Trail Maintenance Manual* would allocate a trail crew and individual maintainers using the same system as other trails in their mission area. The standards and methods for patrolling, reporting and clearing will apply to this trail, particularly in segments of the trail in wooded areas. Basic trailway rehabilitation may be conducted by individual maintainers or trail crews, with the sponsor/owner responsible for larger projects or restoration requiring specialized materials or equipment.

The maintenance requirements will depend on whether the trail is at-grade or on a structure, as well as the surface material. Some segments may have additional requirements. These may include gathering scattered compacted gravel, sweeping permeable concrete or unit pavers to maintain maximum permeability, and reporting damage to structures or paved trail surfaces.

In keeping with the goals of the trail design and the *NYNJTC Trail Maintenance Manual*, all maintenance should respect the natural environment to avoid damage to surrounding habitats and other adverse impacts such as erosion.

Trail blazing maintenance may be required at times when trail signage is damaged. Trail signage type and placement will be determined under the Signage and Wayfinding plan and will be implemented as portions of the trail are built. Replacement trail markers should be installed by the sponsor/owner or appointed agency.

Much like the more heavily used hiking trails along the route, trash-can placement and removal will need to take place on a regular basis, and more often during peak season. It is recommended that this regular trash removal be consolidated under a single agency or under local municipalities.

For portions of the trail that are built to ADA standards, damage to the trail surface that would impede access should also be reported.

If overhead utility lines are relocated underground for any portion of the trail, Central Hudson, the local power authority, will be required to access the lines via manhole covers to test annually for stray voltage. If manhole covers are located on the trail itself, this would result in a temporary closure and should be scheduled for off-peak times for non-urgent maintenance.

Educating trail users will instill a sense of environmental consciousness. Educational information on maps and trailhead kiosks can be combined with the NY-NJ Trail Conference Trail Stewards that are currently stationed at major trailheads during peak season.

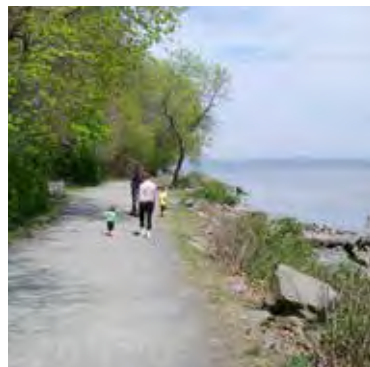
## Possible Trail Surface Materials

- Dirt
- Compacted Gravel
- Asphalt
- Concrete
- Permeable Concrete
- Permeable Unit Pavers
- Wood/Composite Plank
- Metal
- Fiberglass

On Structure At-Grade



Dirt/gravel trail in Madam Brett Park



Compacted gravel trail along the Hudson River, Haverstraw State Park



Asphalt trail at-grade



Installation of Storm-crete™ permeable unit pavers



Concrete structure on piles

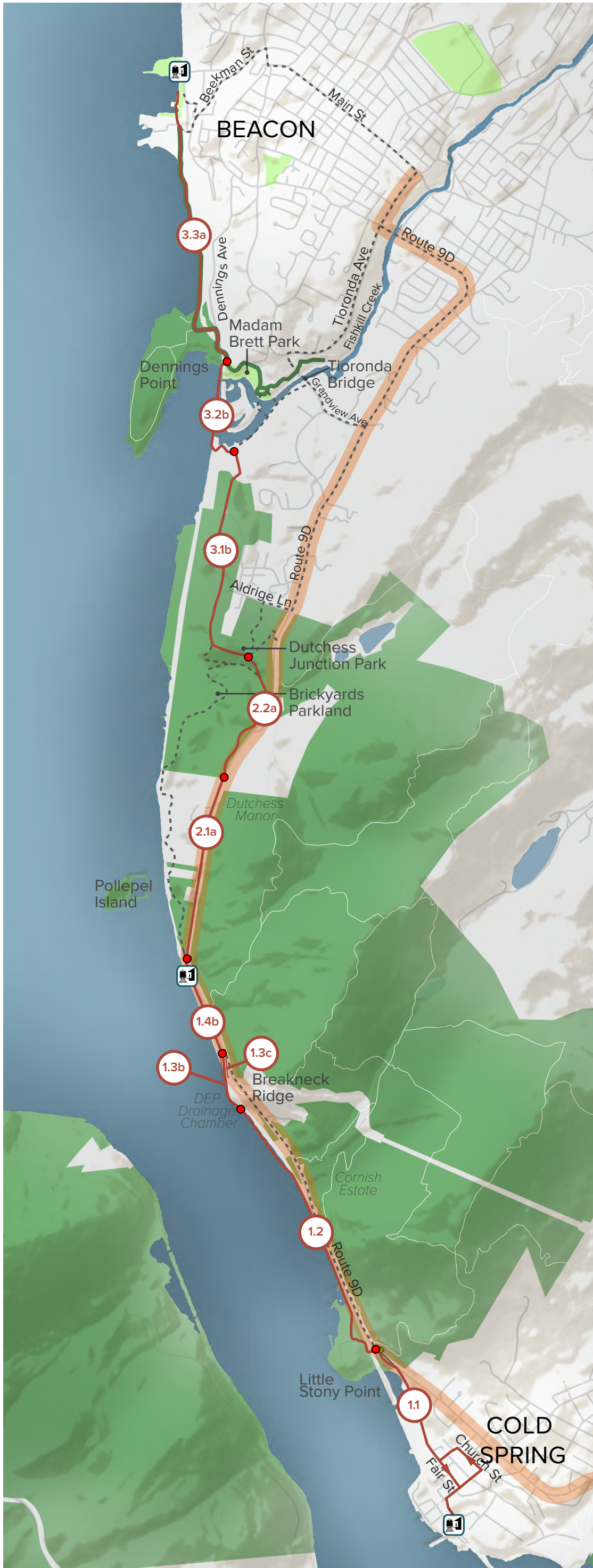


Fiberglass trail over a wetland



# HUDSON HIGHLANDS FJORD TRAIL MASTER PLAN (PRELIMINARY DRAFT)

Public Meeting 3 • 10/23/14  
Preliminary Preferred Alignment • DRAFT



- Routes considered
- Preferred route
- Change in route segment
- Orange shaded area Parkway traffic calming: shoulder bicycle lanes (5'), coordinated banners/gateway/wayfinding signage

- 3.3a Existing trail network**  
Route trail along existing paths
- 3.2b MNR Causeway**  
Multi-use trail over the existing, unused MNR causeway
- 3.1b Brickyards Parkland**  
Multi-use trail through wooded area to the Fishkill Creek
- 2.2a Brickyards Parkland to Dutchess Junction Park (eastern upland route)**  
Multi-use trail at grade passing over two streams on bridges, benched into slopes or on structure over extremely steep grades
- 2.1a Breakneck Ridge Station to Brickyards Parkland**  
Buffer-separated multi-use trail along west side of Route 9D, requires new roadway alignment
- 1.4b Breakneck Connector (2014 CFA application)**  
Multi-use trail partly on structure and partly at grade
- 1.3c Bike-Ped bridge over railroad tracks**  
ADA compliant crossing over the railroad tracks
- 1.3b Breakneck Headlands/Shoreline**  
Multi-use path at grade; scramble and/or stair connection to Breakneck Ridge trail
- 1.2 Shoreline between Little Stony Point and Breakneck Ridge**  
Multi-use path along river's edge including at-grade asphalt path and structures over water
- 1.1 Cold Spring Station to Little Stony Point**  
Shared lane markings, sidewalks, signage; Multi-use path at grade in Little Stony Point

For planning purposes  
Concepts not based on survey



# Route 9D Corridor Improvements

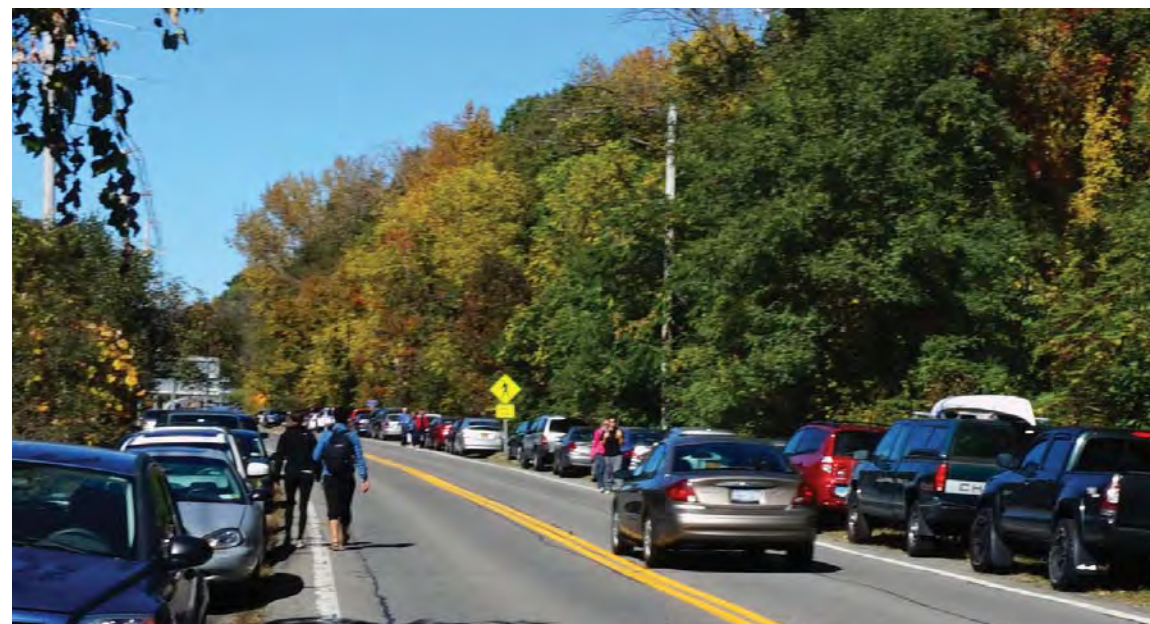


# Proposed Route 9D Corridor-wide Bicycle and Pedestrian Safety and Aesthetic Improvements

The safety of pedestrians, hikers and cyclists on and along Route 9D was a critical factor that prompted local community members and organizations to initiate this master planning process. Trailhead parking on Route 9D is currently minimal, causing people to park precariously along the shoulders, sometimes protrude into the moving lane, and walk along the edge of a busy state highway (see images below). Infrastructure improvements are required to better accommodate the influx of visitors safely.

Between Cold Spring and Beacon, Route 9D has a posted speed limit of 55mph for most of the project area. South of the northern end of the Little Stony Point land mass, the speed limit is 45mph. Within Beacon, the speed limit is 30mph with a short 40mph transition zone approaching the city limits in the northbound direction. With narrow (2'-3') shoulders and high speeds, the state bicycle route designation on this portion of Route 9D was removed, although it provides an important connection for the Route 9 bicycle route and continues to be actively used by bicyclists.

It is important to consider the visual character of Route 9D and its appropriateness for the area, and it is therefore proposed that the corridor be redesigned to create a different look and feel that builds motorist awareness of the State Parks that border the road much of the way through the project limits. This will help improve pedestrian safety along the road in the vicinity of the hiking trailheads, and will also benefit more capable road cyclists who will likely opt to stay on road rather than a more crowded multi-use trail.



In peak season, visitors park on both sides of Route 9D from the Metro-North parking lot north to the footbridge at Breakneck Station

To address these conditions, a corridor-wide *Route 9D Bicycle/Pedestrian Safety Treatment* is recommended from Main Street in Cold Spring to Main Street in Beacon, as well as site specific enhancements.

Proposed corridor-wide infrastructure improvements include:

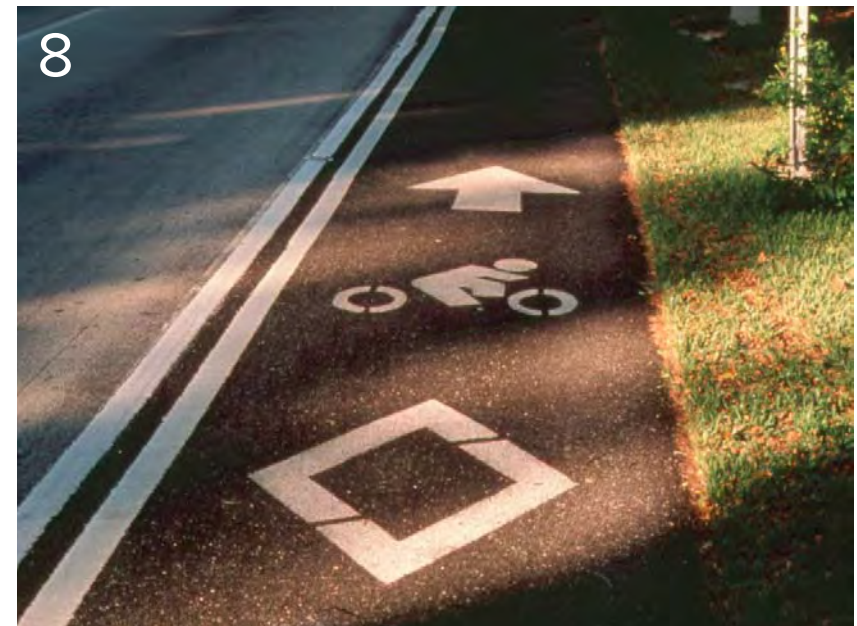
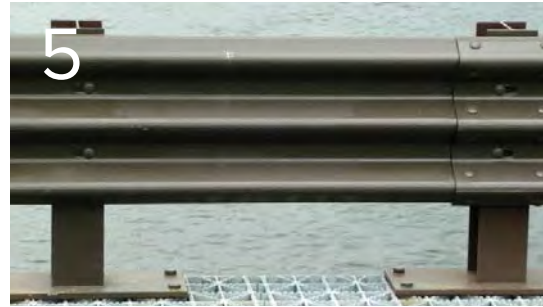
- 5' minimum colored shoulders for the entire Route 9D corridor from Main Street in Cold Spring to Tioronda Ave in Beacon.
- Wide (6") thermoplastic edge line and bicycle-safe rumble treatment are recommended between the moving lanes and the shoulders to increase visibility and awareness. Plowable reflectors should also be considered to provide added visibility in low light conditions.
- Automatic remote-activated signal system with flashing warning beacon for the Breakneck Tunnel passage, which alerts approaching drivers that cyclists are present inside the tunnel.
- 11' moving lanes should be installed where 12' lanes are present when the roadway is resurfaced (to be reviewed and approved by DOT).
- Reduced speed limit will be considered by DOT, once traffic calming treatments are implemented.

Additional aesthetic improvements along the roadside include:

- Monumental gateway signage to signal entering/leaving Hudson Highlands State Park Preserve. Signage to be aesthetically consistent with typical State Parks welcome signage (rustic wood and stone).
- Banners or other placemaking treatment along roadway between gateways to further highlight the area's character.



With no walking path, pedestrians walk along Route 9D where cars travel in excess of 55mph



Example corridor treatments (with non-standard items requiring third-party maintenance noted):

- 1. Steel-backed timber-faced guiderail (non-standard DOT item)
- 2. Gateway signage example
- 3. Banners on Walkway over the Hudson
- 4. Plowable reflector (non-standard DOT item)
- 5. Powder-coated guiderail (not a standard DOT item but used in certain settings)
- 6. Bicycle warning activation device for tunnel
- 7. Green colored shoulder bicycle lane
- 8. Red colored shoulder bicycle lane
- 9. Push-button flashing pedestrian crossing with neck-down and hi-viz crosswalk (RRFB - Rapid Rectangular Flashing Beacon)

Brown metal or wood guiderails are recommended to blend in with the natural surroundings. Timber guiderails, such as Ironwood, are approved by DOT, but are considered non-standard and would require a third-party maintenance agreement before implementation. A powder-coated metal guide rail such as those on the Taconic Parkway is a standard DOT item, and would not require third-party maintenance. Site specific amenities proposed include properly designed welcome areas for parking and trail information, trolley service between welcome areas and major destinations (including trailheads) and a safe walking path parallel to Route 9D with crosswalks

at key points for hikers to get safely from their cars to trailheads. Shoulder parking improvements will support improved pedestrian safety. Parallel parking on cleared and widened shoulders should be implemented where space permits in the short term, although the long term strategy is to remove parallel parking to reduce conflicts. The Washburn and Breakneck Ridge Station parking lots will both be expanded, and it is proposed that Dutchess Junction Park will become a new parking area. Parking in non-designated areas should result in parking fines.



Rendering showing proposed Route 9D improvements near Little Stony Point. View looking north