Charlotte Bicycle and Pedestrian Scoping Study

Final Report

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CHARLOTTE TOWN LINK TRAIL – SCOPING STUDY

PREPARED FOR:

TOWN OF CHARLOTTE

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Introduction

The Town of Charlotte initiated this Bicycle and Pedestrian Scoping Study to identify safe, feasible, and affordable improvements to connect the completed portion of the Charlotte Town Link Trail to two key destinations: Mt. Philo State Park and the West Charlotte Village. The Town of Charlotte applied for and received funding through the Vermont Bicycle Pedestrian Grant Program from the Vermont Agency of Transportation (VTrans) for the Bicycle and Pedestrian Scoping Study – STP BP15(14).

DuBois & King (D&K) was retained by the Town of Charlotte to lead the scoping study to identify options and issues associated with extending the existing two mile trail to the two key destinations, roughly doubling the trail length. This scoping report documents the analysis of alternative trail alignments and concepts, the development of the preferred alternative, phasing and funding options, and the public process.

Methodology

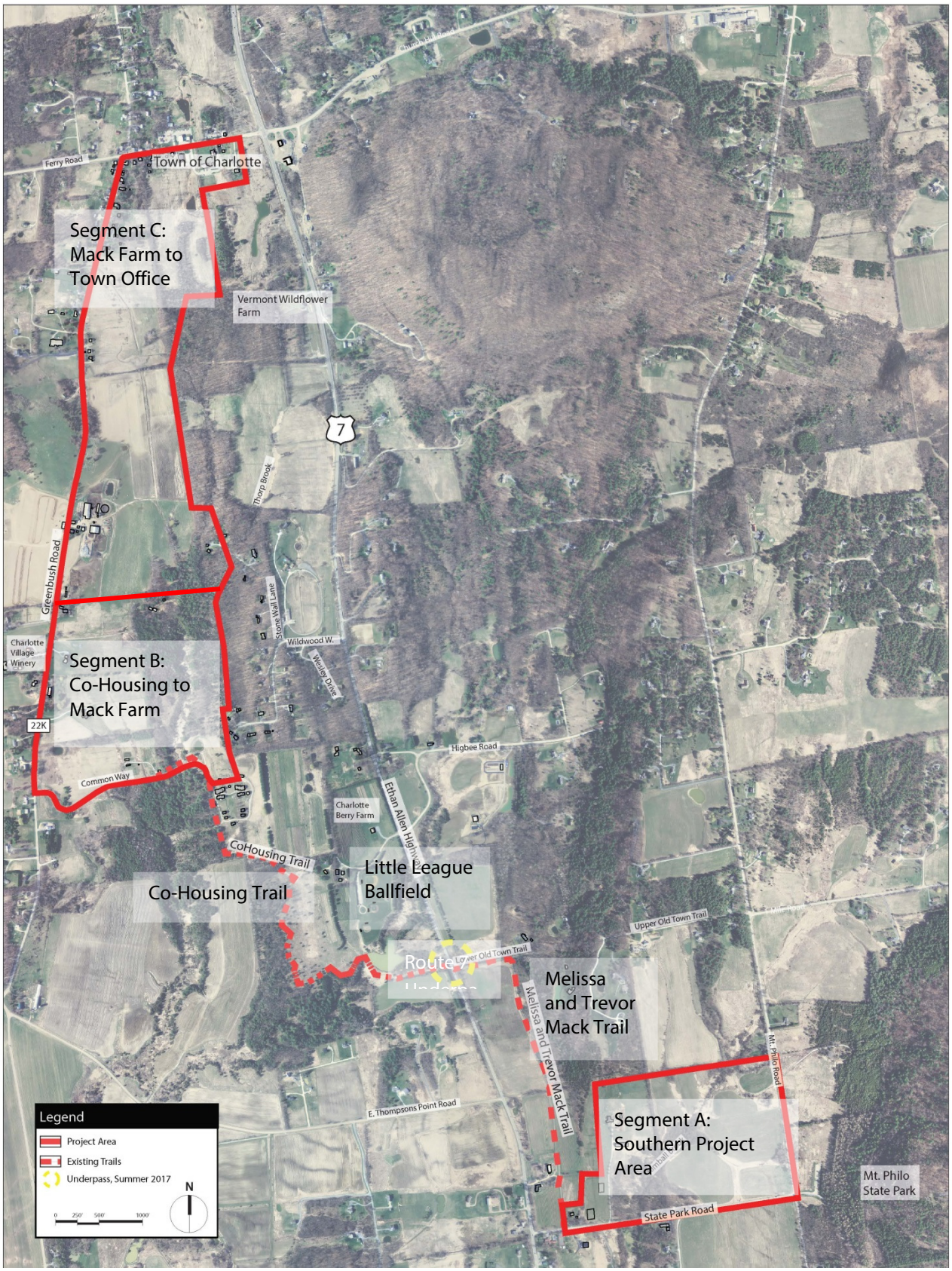
To successfully engage the community in the planning of these two sections of the Charlotte Town Link Trail, and to support and endorse the preferred alternative, a public involvement process is imperative. The study's public and stakeholder involvement process included:

- Trails Committee Meetings
    - Project Kick Off Meeting – September 13, 2016 (with stakeholders from the Town of Charlotte)
    - Landowners Meeting – January 6th, 2017
    - Committee Progress Meeting – May 9th, 2017
- Site visits, site analysis and documentation of existing conditions
- Outreach to landowners via one-on-one meetings, emails and phone calls
- Leading public meetings and outreach
    - Local Concerns Meeting – October 18, 2016
    - Alternatives Meeting – February 28, 2017
    - Final Presentation – June 22, 2017
- Documentation of constraints, easements, and environmental and cultural resources
- Designing and evaluating conceptual alternatives
- Review of alternatives by officials from the Agency of Natural Resources for wetlands, wildlife, rare habitats, and street crossings
- Selecting a preferred alternative based on trails committee, town, state agency and community feedback
- Preparing conceptual cost estimates and implementation timeline

Project Area and Background

The project area, shown in Figure 1, is entirely within the Town of Charlotte. Located in the Champlain Valley, Charlotte's fertile land hosts a variety of working farms that are interspersed with wetlands, forested ridges, and breathtaking vistas of Lake Champlain. The Charlotte Town Link Trail seeks to connect some of these unique assets to the West Charlotte village center and eventually, to the Town of Charlotte Beach. The project area has been broken into three segments to allow for focused evaluation of alternatives in each sub-area.

Figure 1: Project Area



Currently, the Charlotte Town Link Trail has two completed parts: the Melissa and Trevor Mack Trail, which runs parallel to Route 7 from State Park Road to Old Lower Town Trail; and the CoHousing Trail, on the west side of Route 7 to the Champlain Valley CoHousing Development at the end of Common Way. An underpass linking the two sections of existing trail under Route 7 is currently under construction (planned for 2017 completion). Two areas were studied in order to extend the existing Town Link Trail to important destinations: to Mt. Philo State Park (approximately 0.5 miles) and to the West Charlotte Village (approximately 1.5 miles).

Purpose and Need

Purpose

The purpose of the Town Link Trail project is to develop a corridor for shared use (walking and bicycling) that connects key destinations within the town of Charlotte. The Town Link Trail is intended to be both a transportation and recreational facility. Envisioned as a non-motorized spine through Charlotte connecting the Charlotte Town Beach to Mt. Philo State Park, the trail needs to be extended in order to serve the desired transportation function for more town residents. When complete, the Charlotte Town Link Trail will provide residents, employees and visitors to Charlotte an alternative means of transportation to reach any of the key destinations of the trail, to travel to other destinations along the path or to simply enjoy recreating on the trail.

Need

The road network beyond each end of the completed trail, connecting to Charlotte's West Village and Mt Philo State Park, does not serve the less confident non-motorized users. The trail extensions are needed to connect the existing trails to two 'anchors' at either end, which will enable more local residents to take advantage of a trail. This will allow younger and older trail users, less confident riders and eager walkers to travel to Mt. Philo State Park or West Charlotte Village and everything in between in safety and comfort. The conditions on Greenbush Road and State Park Road include narrow to non-existent shoulders, rolling topography with limited sight distance, and typical traffic speeds of greater than 35 mph. This combination of factors makes walking or riding a bicycle feel unsafe. The congestion along US 7 and at the Mt. Philo State Park parking area reinforces the need to provide for alternate modes of transportation in the project area.

Existing Conditions

Existing Trail Network

The existing Charlotte Town Link Trail was developed through the efforts of the Charlotte Trails Committee in three stages, based on priority, availability of easements and availability of funding. The Melissa and Trevor Mack Trail (Mack Trail) was first built between 2001-2003 with funding from a VTrans Local Transportation Facilities (LTF) Enhancement Grant. This portion of the trail is an 8 feet wide gravel path. The CoHousing trail was developed in two stages: first the 'Northern' Section in 2012 through a Vermont Recreation Program Grant with a footbridge constructed by the Vermont Youth Conservation Corps (VYCC) in 2011. The 'Southern' Section was completed in 2014 with funding from the Vermont Recreation Trails Program. The northern section was built approximately six feet wide with a gravel surface. The southern portion is eight feet wide with a gravel compacted surface, and intended for shared use with bicycles.

There are several additional trails that spur from the Town Link Trail. These include the 250 Anniversary Loop Trail from the old Flea Market area, a trail behind the Old Lantern Inn (Frost Property) and a trail easement from Thompson's Point Road to the Cohousing Trail as part of the Big Oak development. Completion of the Town Link Trail is envisioned to eventually connect beyond the project area from West Village of Charlotte to the Charlotte Town Beach to the north-west. The entire

town trail vision is shown in Figure 11. The Town Link Trail is envisioned as a point-to-point trail, an alternative transportation route to travel between West Charlotte Village and Mt. Philo State Park without the need to take a car.

For the purposes of this report, the two connecting trails will be discussed as two separate areas. North of Cohousing will consist of a connection from the trailhead on Common Way to the Town Hall. State Park Road will refer to the portion of trail connecting the southern trailhead of the Melissa and Trevor Mack Trail to the entrance of Mt. Philo State Park.

Figure 2: Existing Town Link Trail (Co-housing Trail, left; Melissa and Trevor Mack Trail, right)

Land Ownership

With the existing trail and vision corridors, the Charlotte Trails Committee has been developing trail segments and obtaining easements as opportunity and priority allows. Figure 3 shows the existing trail and easements in this study area.

There are approximately 1.5 miles separating the northern trailhead of the CoHousing Trail and West Charlotte Village. In addition to the existing trail on CoHousing property on a Town-owned easement, there are several other Town-owned easements within its boundaries. One easement exists between the co-owned portion of StoneWall Lane neighborhood and Common Way. There is an additional easement that runs adjacent to Common Way to Greenbush Road for a recreational pathway and which may run within the road's right of way. Connecting the two destinations of CoHousing and West Charlotte Village has been envisioned near Thorp Brook, in line with existing easement and town land to the north. This focuses trail alignment within the back of several landowner properties with addresses on Greenbush Road, and/or the Wildwood West/Stone Wall Lane neighborhoods in the area south of the Mack Farm. At the Mack Farm, there is an existing one rod (16.5 feet) conservation easement (Vermont Land Trust) along the eastern boundary of the property for public access of a recreational path.

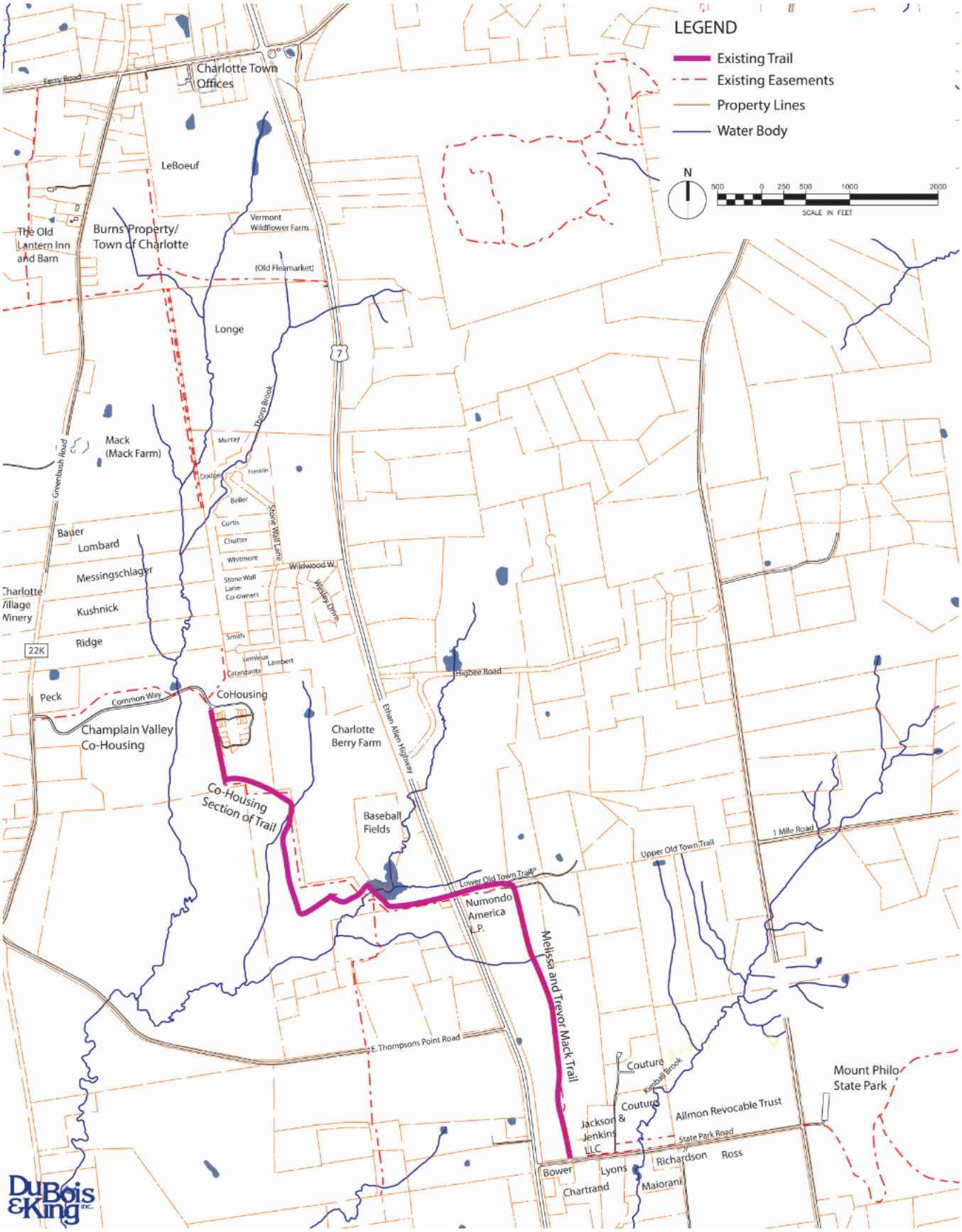
North of the Mack property is town-owned land (known as the Burns Property) with wastewater systems that serve the Town Hall, Senior Center, Library and Fire/Rescue Station. A separate system serves the three dwellings along Greenbush Road, near the southwest corner of the parcel. There is also a trail around the perimeter of the meadow and a trail that connects to US 7 through where the old Charlotte Flea Market was located.

The odd-shaped LeBoeuf property between the Town-owned Burns parcel and the Town Office is currently for sale. Several destinations are located in Charlotte's West Village, including the US Post Office, the Town of Charlotte Clerk/ Town Hall, the Charlotte Recreation Department and the Charlotte Library. The Old Brick Store Town Market is located at the intersection of Greenbush Road and Ferry Road, another destination in West Charlotte.

There is a half-mile separating the southern trailhead of the Mack Trail and Mt. Philo State Park along State Park Road. There are existing easements for a community trail along State Park Road that vary in size. To the west of Vineyard View

Drive, on Lot 4 (formerly Windever Farm – Hinsdale Property), there is a five-foot Trail Easement adjacent to State Park Road right-of-way. To the east of Vineyard View Drive, on Lot 3 (Couture and Anderson Property, formerly Windever Farm – Hinsdale Property) there is a 100' wide area along the State Park Road right-of-way where a 20' Trail Easement can be established in the Open Space Area to locate the Trail to cross Kimball Brook and the adjacent wetland. Between Lot 4 and Mt. Philo Road is a property that was recently purchased and planned for a small subdivision. The Charlotte Trails Committee has contacted the new property owner, who has expressed willingness to provide an easement along their boundary with the State Park Road right-of-way.

Figure 3: Trail easements and property ownership in project area



Land Use

The Town of Charlotte has rural zoning along in most of the project area, with the exception of Village Commercial and West Charlotte Village zoning in the vicinity of the Greenbush Road/Ferry Road intersection. There are several parcels that are conserved, mainly in agricultural use which conserve the views of the area and Lake Champlain. Additional land uses along the potential trail desire line include a berry farm, vineyards, dairy farm, and baseball fields.

Along State Park Road are conserved lands, The Inn at Charlotte, residential development along Vineyard View Drive and a vineyard at the corner of State Park Road and US 7.

Mt Philo State Park is just east of the intersection of State Park Road and Mt Philo Road, which is Vermont's most visited state park. The park has inadequate parking to serve visitors on busy days, which could potentially be alleviated by improved access for other modes of transportation.

Project Area Roadways

The following are the major roadway corridors in the project area:

US Route 7 is a principal arterial of statewide importance, and the primary north-south travel route for western Vermont. It serves high truck volumes. Currently, the portion of the corridor in the vicinity of State Park Road is being reconstructed and widened, which will serve the high volumes of cars and trucks that use the corridor daily. The posted speeds vary along the corridor between 45 and 50 mph through the study area. The Chittenden County Regional Planning Commission (CCRPC) has identified US Route 7 as a major regional corridor. The right-of-way width varies along US 7, as past projects significantly expanded the width over time.

Greenbush Road is a local road with a speed limit of 40mph until residential homes become more frequent upon approaching Ferry Road, when it drops to 25mph. The pavement width of Greenbush Road is approximately 22 feet, and shoulders are not marked. The right-of-way is town owned, with a 3 rod (49.5 ft) width. There is an undulating topography to Greenbush Road which is characteristic of the area and varying concentrations of vegetation between farm fields and hedgerows along the road direct views toward the road. Due to dips in the road, sight distance is limited in several locations. Spot speed measurements were conducted, indicating that the 85th percentile speed in the vicinity of Common Way is 44 mph, slightly above the posted speed limit of 40 mph; and 35 mph at the edge of West Charlotte village, higher than the 25 mph posted speed. While this route is part of the Lake Champlain bikeways, the narrow width, traffic speeds and limited sight distance due to the rolling terrain and occasional steep grades make it unappealing for younger or less confident riders. The photos in Figure 4 show the varying conditions on Greenbush from south to north, with narrow shoulders, trees and utility poles within the right-of-way, and historic structures just outside the right-of-way limits.

State Park Road is a local road without a posted speed limit; therefore the default speed limit is 50mph. The pavement width is 22 feet, and there are 1 ft gravel shoulders on each side. The town-owned right-of-way is 3 rods (49.5 ft). There is limited visibility at two locations along the road due to rolling topography. Both mature trees and scrub brush are found along State Park Road, especially the western portion and increasingly surrounding the brook before opening up to fields as one is closer to Mt. Philo. The narrow width and limited sight distance due to the rolling terrain make the road unappealing for younger or less confident riders. Figure 5 has photos of the area.

Figure 4: Greenbush Road photos

Figure 5: State Park Road photos

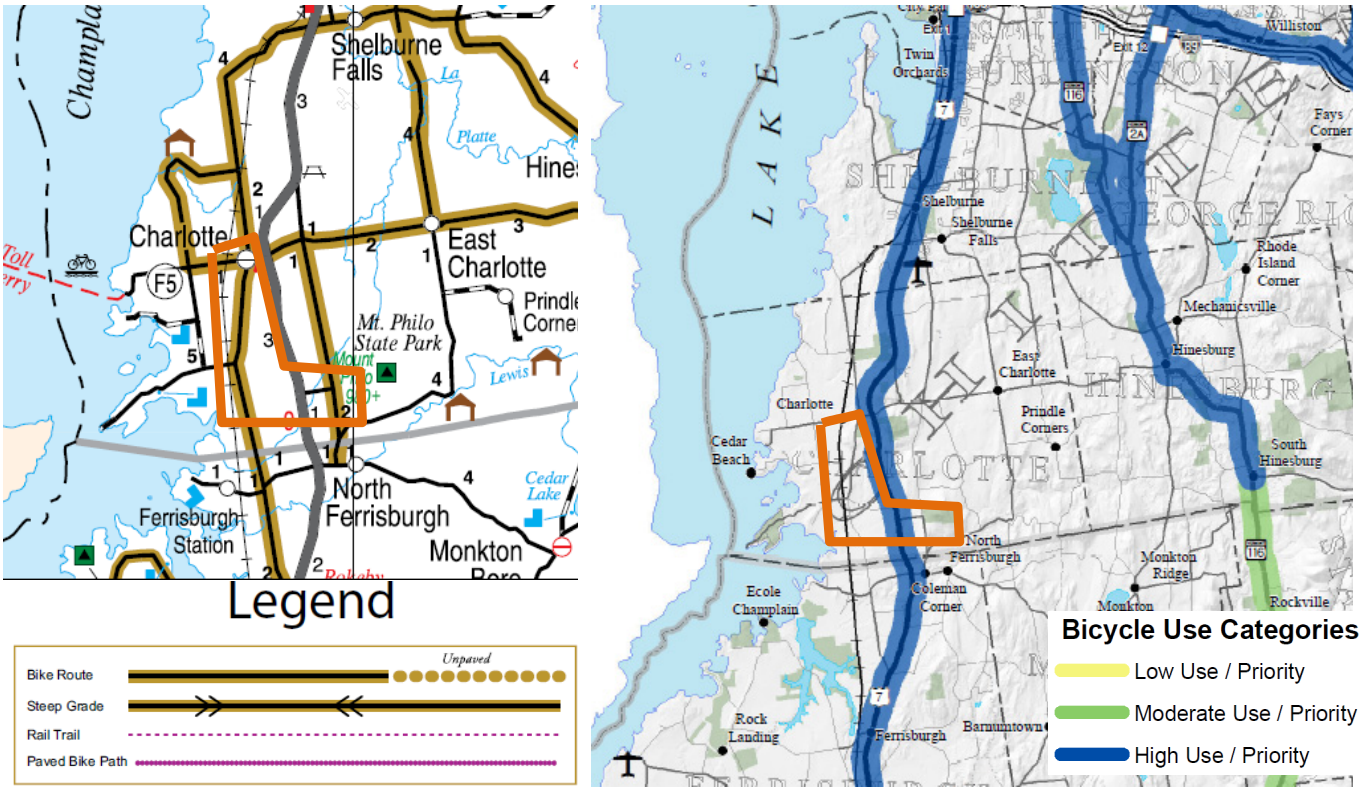
Pedestrian Facilities

Other than the Town Link Trail, which serves shared bicycle and pedestrian use, there are no designated pedestrian facilities in the study area other than walkways to buildings. Pedestrian travel occurs on the road shoulders, most frequently in West Charlotte village.

Bicycle Facilities

The Town Link Trail serves both people biking and walking, but the gravel surface discourages use of narrow-tired road bikes. Its relatively flat grades and complete separation from traffic make it appealing for bicyclists of a wide range of ages and abilities. There are no designated bicycle facilities on any of the project area roads. Greenbush Road is part of the Lake Champlain Bikeway route, which features beautiful views and rolling terrain, and is suitable for more experienced and confident road cyclists who are comfortable riding without separation from vehicular traffic. VTrans has identified US Route 7 as a high priority corridor for bicycle transportation. The intent of this designation is that some accommodation of bicycles in the corridor, either on US 7 or parallel roads, is a priority due to current or potential demand. Figure 6 shows excerpts of the two state bicycle maps for the project area.

Figure 6: Bicycle Network Maps in Project Area



Excerpts from the Vermont Bicycle Byway Map (left) and the VTrans Bicycle State Highway On-Road Bicycle Corridor Priority Map-2017 (right). To note: the Vermont Bicycle Byway Map documents routes identified by bicyclists as desirable routes, but without regard for conditions.

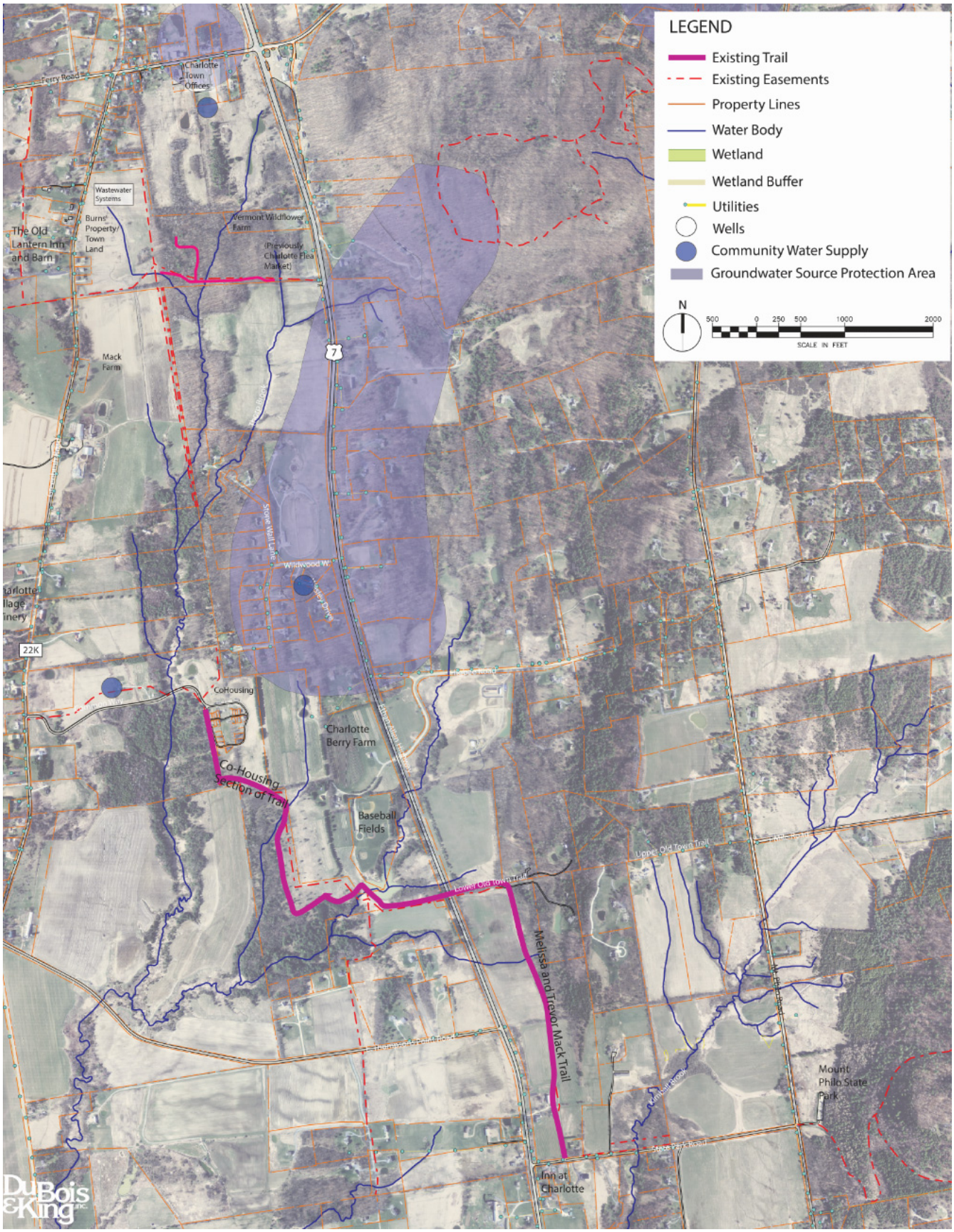
Public Transit

Public Transit in Charlotte is limited to buses traveling along US 7 between Burlington and Middlebury. Route #76 is a Green Mountain Transit LINK Express bus that stops at the Park and Ride at the intersection of US 7 and Ferry Road. In addition, the Lake Champlain Ferry travels from the Ferry off of Ferry Road to Essex in New York State. The Town Link Trail will be in close proximity to this transit stop when it is extended to Ferry Road, and could potentially provide a multimodal transit connection. The former Charlotte Flea Market site, owned by the Town of Charlotte, has been identified as a possible location for a VTrans park and ride and relocated transit stop. This site would be connected to the Town Link Trail as well.

Utilities

The following sections provide detail on the project area utilities which should be considered in the evaluation of alternatives and project design. These are also shown in Figure 7. Utilities are also shown in the sub-area illustrations later in this report.

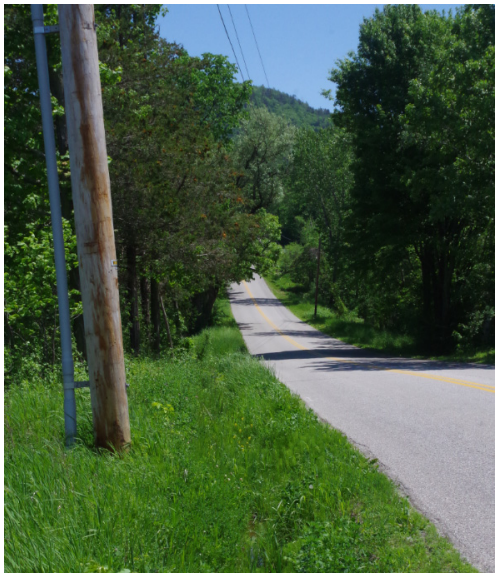
Figure 7: Map of utilities in project area



Overhead Electric

Overhead electric facilities exist along Greenbush Road. Overhead utility posts are located on the east side of Greenbush Road. Overhead electric facilities also exist on State Park Road, on the North side of the road from US 7 until the wetland, then the overhead electric facilities cross to the South side of the road and ending at Windy Ridge Road.

Figure 8: Electric utilities along State Park (left) and Greenbush Rd (right)



Sewer and Water

Charlotte has a Wastewater disposal site on Town owned Burns parcel, located between the Mack Farm property and the LeBoeuf property. The site serves selected land uses in West Charlotte, including the Town offices, Library, Fire Department and Senior Center.

There are several community water supplies in the project area, at Wildwood West and the Lake Champlain Co-Housing. The wellhead protection areas protect each community water supply, and should be considered in the design and alignment of trail alternatives. The septic field for the Co-housing site is located near the trail easement, and should also be avoided.

Stormwater Infrastructure

Per Vermont Agency of Natural Resource's Atlas, only State Park Road has stormwater information. Along part of the road, the municipal road segment is hydrologically-connected. This means that the road network is connected to surface water through ditches, culverts or other drainage structures. These road segments present substantially greater risks to water quality and need to be considered in any redesign of the area. This may entail disconnecting roads from surface waters, re-crowning the road, upgrading or stabilizing road drainage culverts.

Environmental Resources

The project area has numerous environmental resources, which are shown on the map in Figure 9, as well as the photos in Figure 10. A detailed report on wetlands and rare/threatened/endangered species is attached to this report, and summarized here. While the land along the trail corridor is somewhat environmentally sensitive, the goals for the trail are to maintain a light footprint on the environment by maintaining a gravel surface and minimum width. The trail is also an opportunity for travelers to experience Charlotte's natural environment and agricultural activities. The intent of the trail is in part to allow educational and experiential opportunities for trail users to gain a deeper appreciation of the natural world and farming activities.

Figure 9: Environmental resources in the project study area

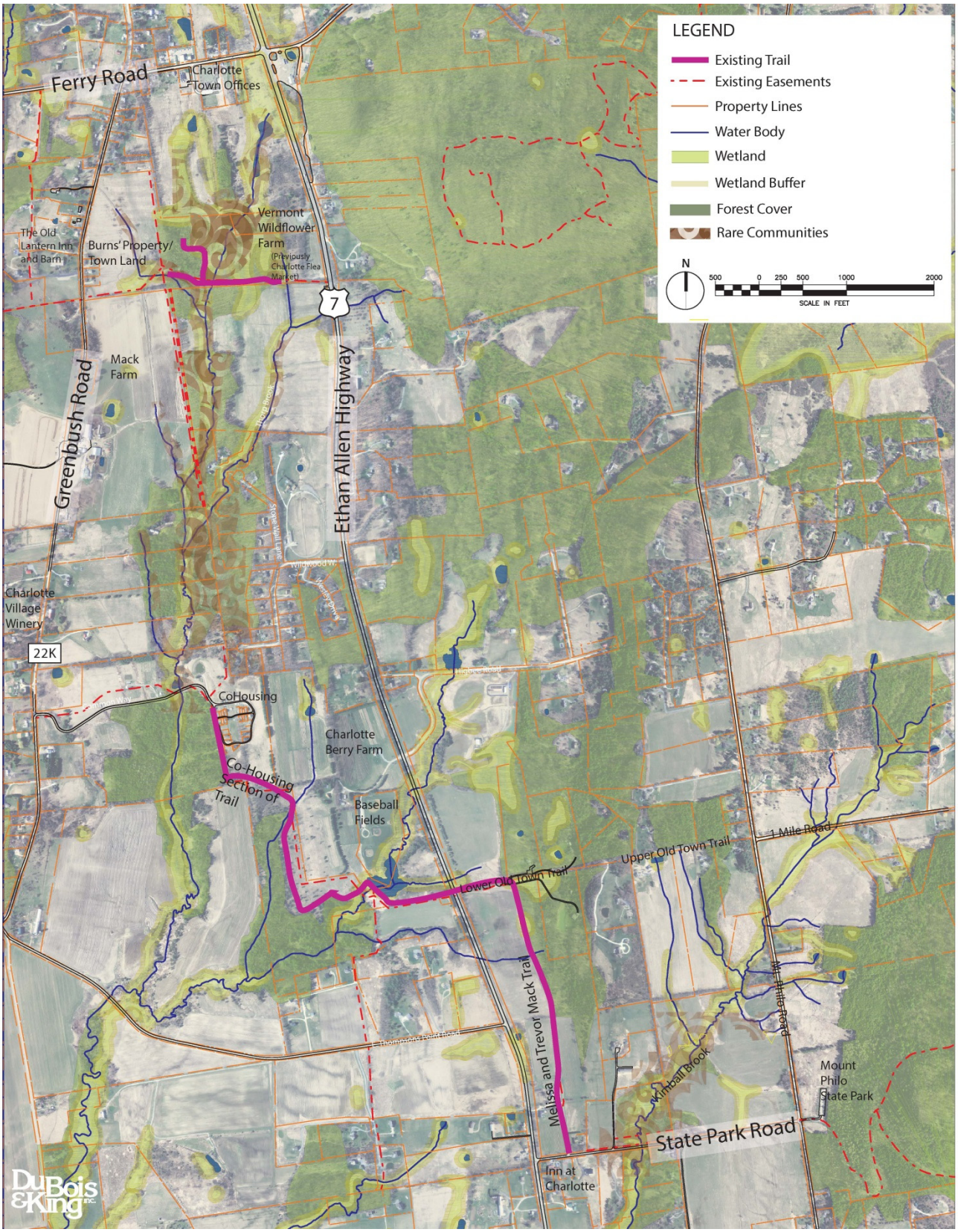


Figure 10: Photographs from environmental surveys in study area ()

soil sampling for hydric soils-top left; wetlands at Thorp Brook – top right; agricultural activities at Co-Housing and Mack Farm, bottom row

Wetlands. Field studies were undertaken in October 2016 that included plant identification and soil examination to determine the presence of hydric soils. GPS locations were noted for wetland areas, which informed the development of trail alignments. After reviewing available state information, the project team visited the sites to discuss and map alignment options that would avoid wetlands to the greatest extent possible.

Rare-Threatened-Endangered Species. A review of state information indicated that there are several significant natural communities found in the project areas, including:

- the mesic clayplain forest, a rare habitat in the Thorp Brook area (segments b and c),
- a wildlife corridor along Kimball Brook,
- an uncommon state plant along the CoHousing-Town Hall alignment and near State Park Road,
- a possible home to a State endangered bird, the Upland Sandpiper,
- Indiana Bat (State and Federal Endangered Species) throughout the Town of Charlotte, and
- Northern Long-Earned Bat (Federal Threatened Species) throughout Vermont.

Agricultural Soils. Much of the project area has prime agricultural soils and several active farming enterprises. Avoiding impacts can be done through using the minimum trail width, and locating the trail to avoid conflicts with ongoing agricultural activities. There is an easement through the back of the Mack Farm, which is a large, active enterprise, which located at the rear of the property in order to avoid impacts to farming activities. The Co-housing owners lease some of their property near Common Way to a local farmer that has used it to raise goats and vegetables.

Rivers and Streams. The trail corridor is crossed by two waterways: Kimball Brook at State Park Road, and Thorp Brook between CoHousing and Mack Farm. Floodplains and river corridors are not defined for these waterways. An analysis of the watersheds indicated that the drainage area for each crossing was less than 1 square mile, and bank-full widths are less than 14 feet. For planning purposes, bridge structures were assumed to be 16 to 18 feet spans.

Significant issues to consider along the potential trail segments include:

Segment A: State Park Road

- Wetlands at Kimball Brook and along State Park Road
- Wildlife Corridor along Kimball Brook (requires a design that will be permeable to wildlife movement)
- Stream crossing of Kimball Brook
- Agricultural soils along State Park Road
- Tree removal will need to be evaluated for potential bat habitat. In most cases, cutting of trees in the winter months will mitigate adverse impacts to the bats.

Segment B: Co-Housing to Mack Farm

- Mesic clayplain forest along Thorp Brook will require minimization of impact
- Small wetland areas and hydric soils along alignment
- Crossing of easterly branch of Thorp Brook
- Agricultural Soils on Co-housing property
- Observations of the Upland Sandpiper, a State endangered bird, near the co-housing site.
- Tree removal will need to be evaluated for potential bat habitat. In most cases, cutting of trees in the winter months will mitigate adverse impacts to the bats.

Segment C: Mack Farm to Town Office

- Wetland areas along alignment
- Crossing of westerly branch of Thorp Brook
- Agricultural Soils on Mack Farm and Town-owned property
- Tree removal will need to be evaluated for potential bat habitat. In most cases, cutting of trees in the winter months will mitigate adverse impacts to the bats.

Cultural Resources

The study report by Hartgen Archaeological Associates is attached to this report. In summary, the project area is generally archaeologically sensitive, and phase 1B study is recommended for any construction in undisturbed areas (i.e. not adjacent to roadways). If the shovel testing conducted in the phase 1B study finds archaeological resources to be present, additional resource excavations will be required if federal funding is used for project construction. The highest area of sensitivity is likely to be along Thorp Brook.

Outside of West Village, there are several historic residential structures along Greenbush Road, adjacent to the public right-of-way. As the trail alignments are intended to be away from traffic and roadway corridors, impacts to historic structures can mostly be avoided. For any trail alignments that are proximate to historic structures, sensitive design should be used to avoid adverse effects.

Consistency with town, regional and state plans

Bicycle and Pedestrian Trail mapping by the Town from the 1990s depicts a desire for a bicycle path along State Park Road, as well as through West Charlotte Village. It also illustrates that Greenbush Road was a desired bike route, though not marked. An updated Trail Vision Map from 2016 (shown in Figure 11) depicts trail goals, including connecting the existing

paths along State Park Road and North of Cohousing to the existing easements and Town land, and to the Village of West Charlotte.

Charlotte Town Plan

Per the (2013) Town Plan, recreation is an asset in Charlotte that needs further expansion given private landownership constraints:

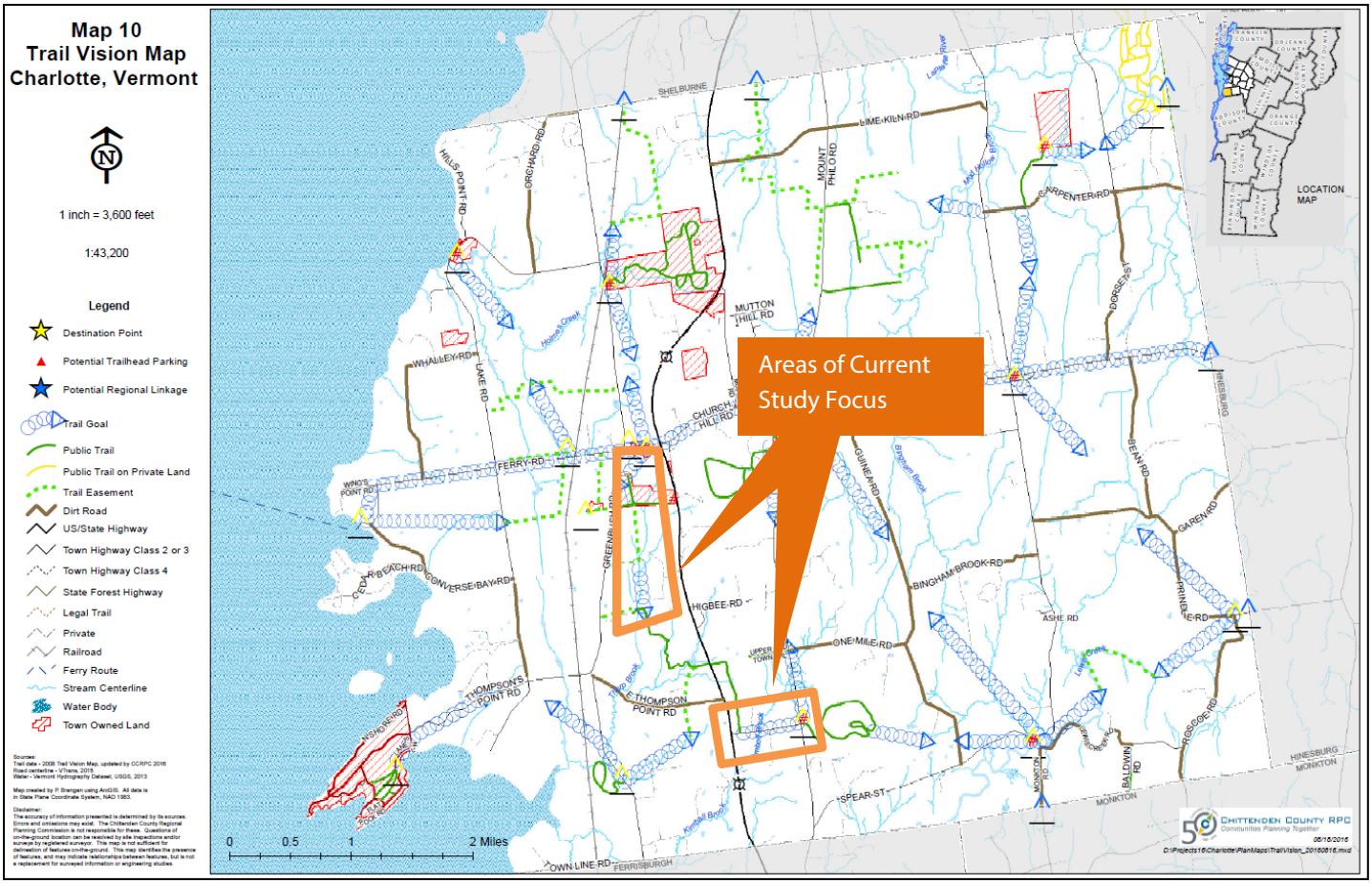
With the growing population, the demand for cultural and recreational services has been increasing. Both the type and amount of recreation facilities need to be expanded. As more land gets developed and posted against trespassing, lands traditionally accessible to Town residents for hunting, fishing, hiking, riding, cross-country skiing, snowshoeing and snowmobiling are closed. The high cost of land, particularly along the shoreline, natural resource protection areas, soils and drainage constraints, and steep topography are affecting the ability of the Town to obtain new property for recreation facilities. Residential development also creates the demand for geographic distribution of recreation facilities; currently, recreation services are concentrated in the western section of Town.

Per the (2013) Town Plan, Charlotte seeks to encourage multi-modal transportation, while acknowledging that extensive portions of the Town's transportation system were designed for use by automobiles. Section 4.7.4 Public Trails and By-Ways emphasizes that:

An integrated trail system that links every section of Town for pedestrian, bicycle, ski, and equestrian travel has been supported by a variety of community groups and planning documents for over 10 years…The resulting "trail vision maps" are included in the Town Plan…and show generally desirable routes, but not actual specific alignments.

Charlotte has established a trail corridor vision map which identifies a connected corridor of trails that will provide both recreation and transportation opportunities, shown below.

Figure 11: Project Area Map



CCRPC

The CCRPC Regional Transportation Plan recognizes that US 7 is an important corridor in the region, and due to its two lane capacity, it should be a priority for investments in alternatives to single occupant driving. The Town Link Trail can be part of a package of projects that the Town of Charlotte has been engaged in with support from the CCRPC, including a park-and-ride lot, improved bus stop for the commuter route serving Route 7, a sidewalk network in West Village, and better bicycle transportation through the Town.

State of Vermont

There are at least two areas in which the Town Link Trail supports statewide plans, both for transportation and for parking management at Mt Philo State Park.

VTrans On-Road Bicycle Plan. VTrans has recently identified the US Route 7 corridor as a key bicycle priority corridor. The intent of the on-road bicycle planning effort is not necessarily that the state highway itself must be modified to accommodate bicycles, and it may often be preferable to accommodate bicycle transportation on more suitable, comfortable parallel routes. The Town Link Trail will provide an important alternative route for low stress bicycling (ie facilities with reduced exposure to or protection from high volume or high speed vehicular traffic).

Mt Philo State Park. This is the most visited State Park in Vermont, and had perennial parking issues, which can create safety concerns along Mt Philo Road due to spillover parking. The Town Link Trail can provide a safe and attractive alternate way to access the park, alleviating the parking pressure at the foot of Mt Philo. The Town Link Trail is intended to have trail head parking (particularly at the former flea market site), information signs and kiosks, and be a realistic and attractive alternate way to access the scenic views of Mt Philo.

Alternatives

The following sections identify the alternatives that were explored, and what options were eventually selected.

Design Criteria

The existing portion of the Town Link Trail was constructed in two phases, and utilized different design criteria for each phase. The Co-Housing trail is a 6 feet wide gravel trail built to recreational trail standards, and the Mack Trail is an 8 ft wide, and built to VTrans shared use path standards. While the Vermont Pedestrian and Bicycle Planning and Design Manual recommends 10 feet for trail width for a shared use path, an 8-foot minimum trail width is expected to be adequate for this project, given the lower volumes of users and speed of riding. Additionally, the sensitive environmental resources in the project area require consideration of design options to reduce impacts. For all these reasons, the proposed design criteria for all sections of the Town Link Trail moving forward is an 8 foot wide aggregate trail, with 2 feet clear shoulders on either side. The Charlotte Trail Committee intends to eventually upgrade the relatively short 6 foot wide segment to match the rest of the trail.

The most recently constructed sections of the Town Link Trail have a 4 inch gravel base. The typical sections for a VTrans standard shared use path has 4 inches of surface gravel, 8 inches of gravel sub base, and up to 1 foot of sand borrow. If the trail is built to the heftier VTrans standards, the cost will be substantially higher, but the durability will be much greater, and the future maintenance burden will decrease. The Trails Committee is interested in keeping both design standards as options, allowing for the selected use of less costly recreation trail standards in appropriate locations. However, where an aggregate base is used on a shared use path, VTrans requirements to provide a firm, stable and slip-resistant surface course will be adhered to in order to provide an accessible path and meet the Americans with Disabilities Act (ADA).

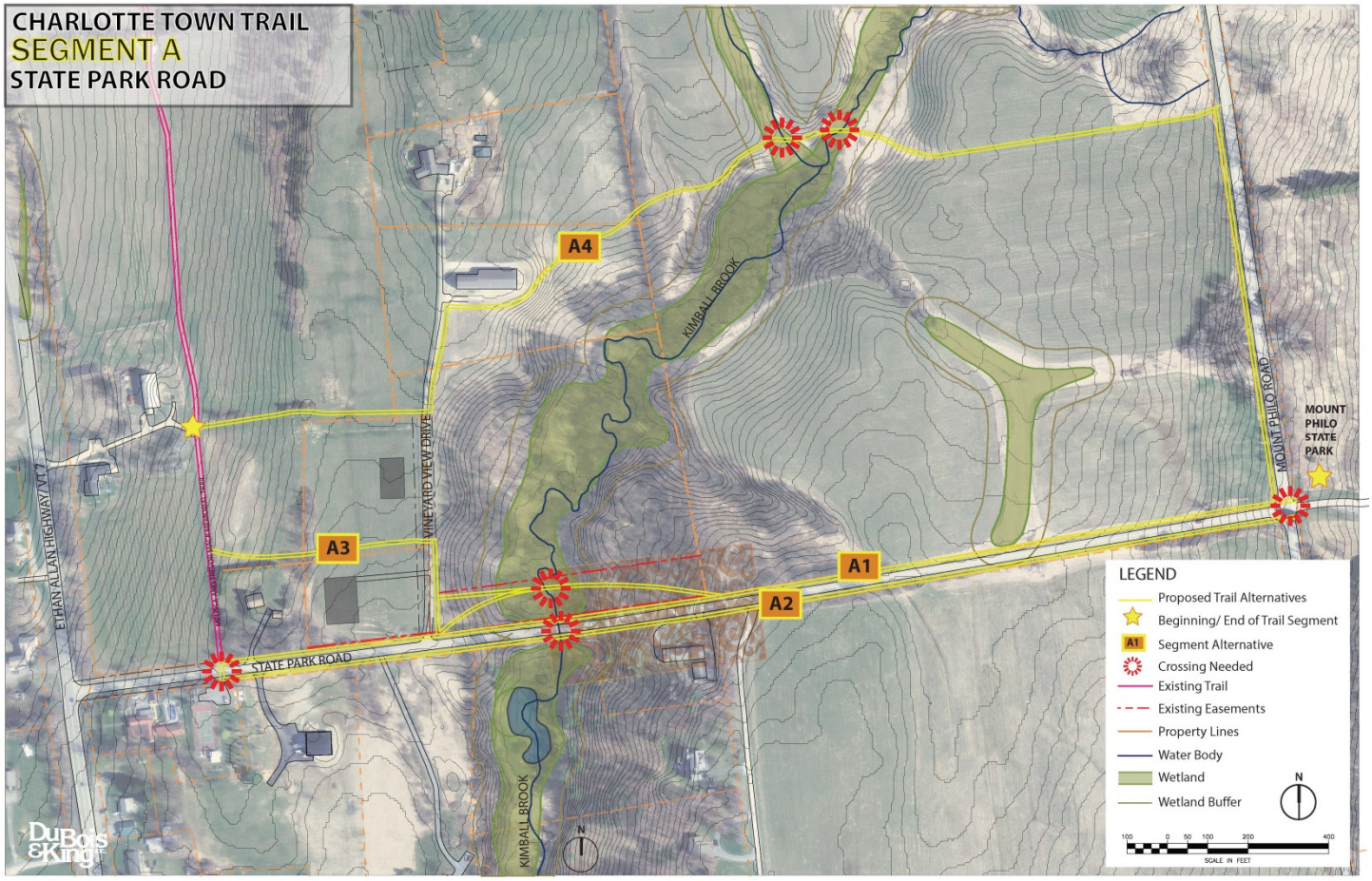
No Build Alternative

The No Build Alternative would leave the trail as it is today once the underpass at US 7 is complete this year: stretching two miles between the CoHousing parcel and ending at State Park Road on the Melissa and Trevor Mack portion of the trail. Without any additional segments added to the trail, two key destinations (West Charlotte Village and Mt. Philo State Park) are left out of reach to those seeking alternative ways to travel to these anchor destinations. Trail-goers who wish to reach Mt. Philo State Park will need to walk along State Park Road, which has very narrow shoulders and limited sight distance due to rolling topography. Without a designated trail along this road, pedestrians and less confident cyclists may forgo visiting the Park or risk conflicts with vehicular traffic. Not building a trail along State Park Road means no further impact to the wetland adjacent to the road. Not building a trail to connect to West Charlotte Village to the CoHousing section of the trail means less impact to the State Clay Plain Forest, although informal trails already exist in this portion of Charlotte.

Segment A: State Park Road

Four possible ways of connecting the Mack Trail with Mt Philo State Park were explored, shown in Figure 12, and described below.

Figure 12: Alternatives for State Park Road – Segment A



Alternative A1: Adjacent to State Park Road, North Side

Alternative A1 is a straight connection between Mt. Philo State Park and the Mack Trail Trailhead along State Park Road and is approximately 2,640 feet. As an option adjacent to the road, the trail could be built within existing easements or within the right-of-way. It is desirable to obtain a narrow easement along the easternmost parcel on this route, that would allow a greater buffer between the road and trail, making it more appealing and easier to address roadway drainage. At the time of this study, this parcel is under sales contract; the Trails Committee intends to contact the new owner after the sale is final.

The primary challenge for A1 is crossing the wetlands surrounding Kimball Brook, given the steep road bank. A 100' easement for a 20' trail corridor allows for several options to be fully evaluated in the design and permitting phase, shown in Figure 13 as a cross section through the wetland area:

a) **Retaining wall**. A buffer between the road/shoulder and the path has also been evaluated, as well as consideration for barriers to the wetland and between the trail and the road. Figure 14 illustrates how locating the path next to the road will require the removal of trees that will alter the feeling of enclosure along State Park Road. The use of a retaining wall material that is permeable to water, such as gabion walls, is desirable for this location.
b) **Boardwalk**. The other option is cross the Kimball Brook wetlands on a boardwalk. To maintain ADA compliant grades, the trail alignment will be routed away from the roadway. This would offer a much higher quality experience, and educational opportunity to experience the wetland, but would be more expensive to build.

Figure 13: Alternatives State Park Road – Segment A: Sections for A1 and A3

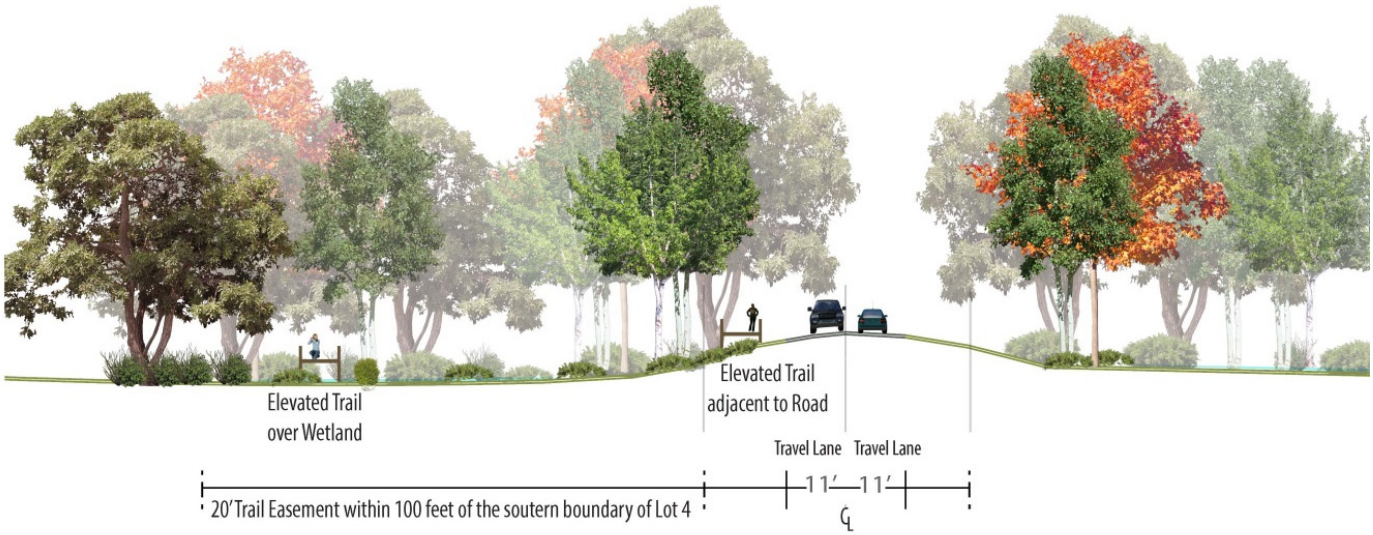


Figure 14: Photosimulation of State Park Road with Trail Adjacent to Road (before/after)

Based on review of both options by ANR wetlands and wildlife officials, it was determined that the retaining wall would hinder wildlife movements, and that a boardwalk would be preferable. However, the alignment of the boardwalk should seek to minimize impacts to the wetlands.

After much discussion at public meetings and consultation with ANR, the boardwalk option is preferred for advancement. It is understood that the wetlands permit process will likely require consideration of both of these options during the permitting process. While the boardwalk will involve disturbance to the wetland during construction, the plant and animal life can recover after it is complete, and long term water quality impacts are expected to be minimal, provided that the boardwalk would be elevated, and allow the passage of water and light and allow plants to grow beneath it. The retaining wall will impact the wetlands buffer, and remove much of the existing vegetation on the road bank. It will be difficult to maintain vegetation on the steeper road bank, which could result in water quality impacts. Tree removal will also be required for the retaining wall, and could be avoided by careful design for the boardwalk. The Town of Charlotte Tree Warden reviewed the alternatives and indicated that approximately 12 trees of value along State Park Road (i.e. mature and in good health) would need to be removed for the retaining wall option. The boardwalk option could be aligned to mostly avoid removal of larger trees, although the precise impact cannot be determined at this time. Consultation with

Vermont Fish and Wildlife included a recommendation for detention areas on either side of the wetland to address stormwater impacts.

Alternative A2: Adjacent to State Park Road, South Side

As illustrated, alternative A2 is also a straight, linear connection between Mt. Philo State Park and the Mack Trail Trailhead along State Park Road. Located adjacent to the road and approximately 2,640 feet; this segment could be built within the Right-of-Way in most locations except for crossing over the Brook/wetland area. There are not any existing easements along the southern side of State Park Road, and this route would require crossing of State Park Road. Sight distance will be a primary consideration for locating the crossing.

Alternative A3: Internal Path from Vineyard View Drive to Melissa and Trevor Mack Trail

Alternative A3 is a combination of segments leading further up the existing Mack Trail than the trailhead, which was proposed as a possible alignment by the landowner at the time that landowner outreach was conducted and is approximately 2,885 feet long. The parcel has been sold and would require an easement. This alternative segment reduces the length of trail along State Park from the road, offering a more appealing experience to trail users. This option could either connect to A4 to the north, or to A1.

Alternative A4: Internal Path from Vineyard View Drive to Mt. Philo Road

The final alternative proposed for State Park Road was an entirely internal path between the Mack Trail and Mt. Philo State Park and approximately 3,892 feet. This alternative was created based on conversations with the existing landowner and speculation that the Allmon property could benefit from having a trail onsite. This alternative crosses wetlands crossings on an existing farm road, reducing impacts. An easement would be required; at the time of this study, the Allmon parcel is for sale, and current owners were not interested in discussing this option. This option could be re-visited with a new owner in the future.

Alternatives Analysis

The following table summarizes the major impacts and issues associated with each alternative.

Table 1: Segment A Alternatives Evaluation

Alternatives	No Build	A1	A2	A3	A4
Benefits/Goals					
Meets Needs	○ Does not address needs	●	◑ Less safe due to crossing of road	●	◑ Longer route is more circuitous
User Experience	○	● boardwalk allows natural experience	◑ Less appealing to be on road	●	●
Impacts					
ROW required	●	◑	◑	○	○
Utilities	●	◑	●	●	●
Wetlands	●	◑	◑	○	○
Relative Cost	-	$$$ (w/boardwalk)	$$	$$$	$$$

Key:

Benefits/Goals	Impacts	Relative Cost
● Meets goals	● Low impacts	$ Low relative cost
◑ Partially meets goals	◑ Moderate impacts	$$ Moderate relative cost

○ Does not meet goals	○ High impact or cost	$$$ High relative cost

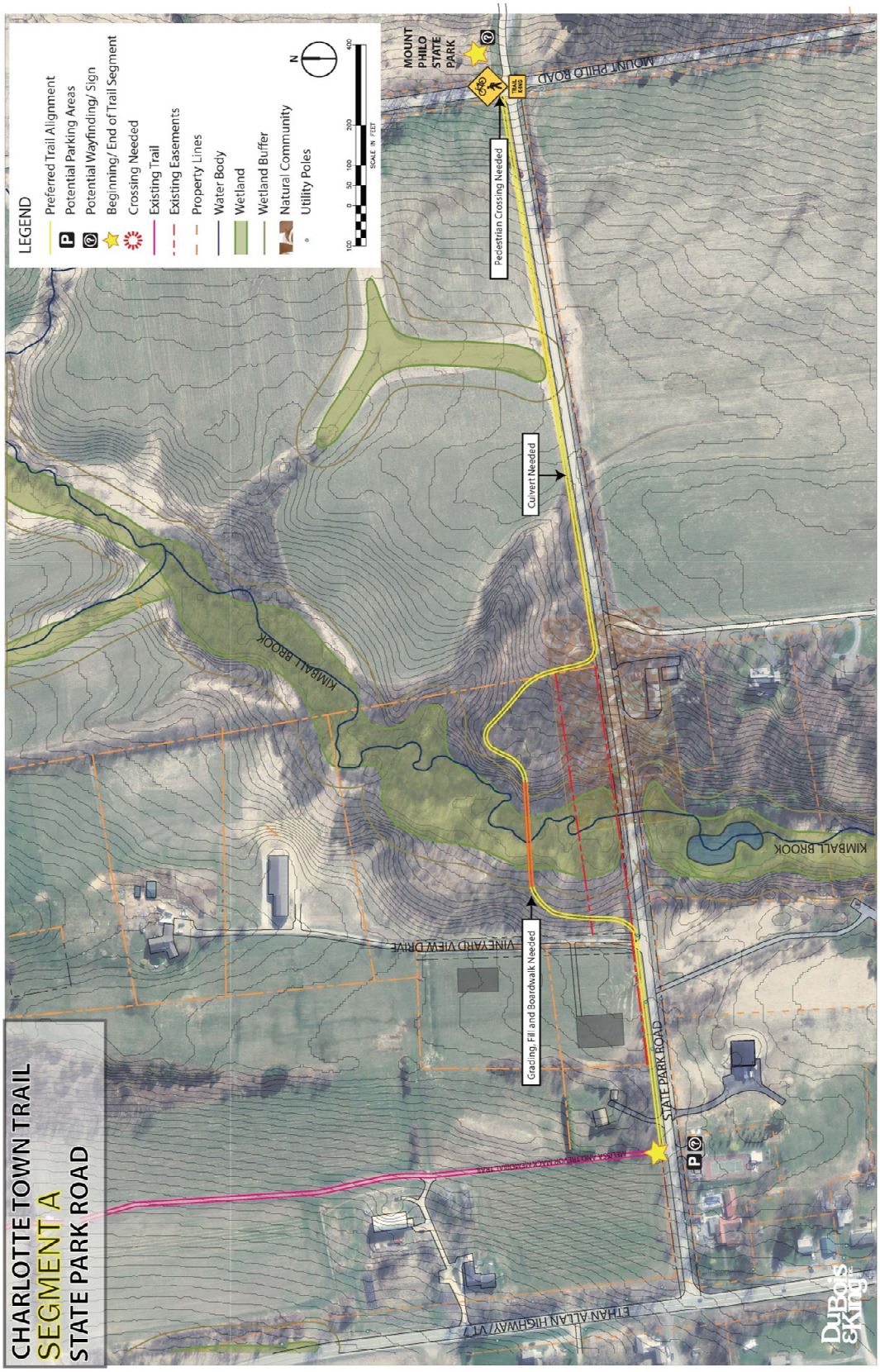
Alternative A1 with a boardwalk is preferred for further development. Both the retaining wall and boardwalk option may need to be advanced through conceptual design in order to meet wetlands permitting requirements to consider alternatives. The retaining wall option can be located within existing easements. The boardwalk option would require additional easements from the landowner to maintain ADA compliance, who is willing to provide them. The retaining wall will require an average height of 4 feet, for approximately 150 feet in length. A permeable wall system such as gabions should be considered. The boardwalk crossing of the wetland and buffer would be about 250 feet in length. The preferred alternative concept is shown in Figure 15 and the construction cost estimate in Table 2. Per the cultural evaluation, there are no substantial areas of level terrain in this area that are considered archeologically sensitive and the soil typology does not support any potentially deep archeological deposits. No further archeological study is recommended along the State Park Road trail alignment, based on the attached report by Hartgen Archeological Associates. Historic structures located along State Park Road are west of the proposed trail alignment area and will not be impacted.

Table 2: Construction Cost Estimate for Segment A preferred alternative VTrans Shared Use Path standards

Trail Segment	Design Options	Quantity	Units	Unit $	Total Cost
Mt. Philo Road to Windy Ridge Road					
	Recovery Area (2')	2,620	sq ft	$2.00	$5,240
	Gravel Path (8')	1,310	ft	$60.00	$78,600
	Recovery Area (2')	5,240	sq ft	$2.00	$10,480
	Culvert crossing	1	ea	$3,500.00	$3,500
Windy Ridge Road to Vineyard View Drive					
	Recovery Area (2')	880	sq ft	$2.00	$1,760
	Gravel Path (8')	440	ft	$60.00	$26,400
	Recovery Area (2')	880	sq ft	$2.00	$1,760
	Boardwalk with railing (360 ft)	2,880	sq ft	$55.00	$158,400
	Timber bridge (18 ft)	144	sq ft	$125.00	$18,000
	Fill	1,700	cu yds	$20.00	$34,000
Vineyard View Drive to Trailhead of Mack Trail					
	Buffer (4')	2,020	sq ft	$2.00	$4,040
	Gravel Path (8')	505	ft	$60.00	$30,300
	Recovery Area (2')	1,010	sq ft	$2.00	$2,020
Entire Length of Trail					
	Signage and Wayfinding kiosks	6	ea	$150.00	$900
	Clearing and Grubbing	0.7	acre	$20,000	$14,000
	Traffic Control (6%)	1	ea	5%	$19,470
	Erosion Control (5%)	1	ea	5%	$19,470
	Mobilization	1	ea	10%	$42,840
Total Construction Items					$471,180
Contingency (10%)					$70,677
Total Construction Cost					$541,857

Additional allowances for project development, construction engineering and local project management as appropriate depending on the funding source.

Figure 15: Preferred Alternative Concept Drawing Segment A



Segment B: Common Way to Mack Farm

One of the primary goals of the study is to identify a safe, connected alignment for a trail segment between Common Way or the CoHousing Trailhead and West Charlotte Village (or the Town Offices, specifically). Segment B includes the area between Common Way and the Mack Farm, illustrated in Figure 16.

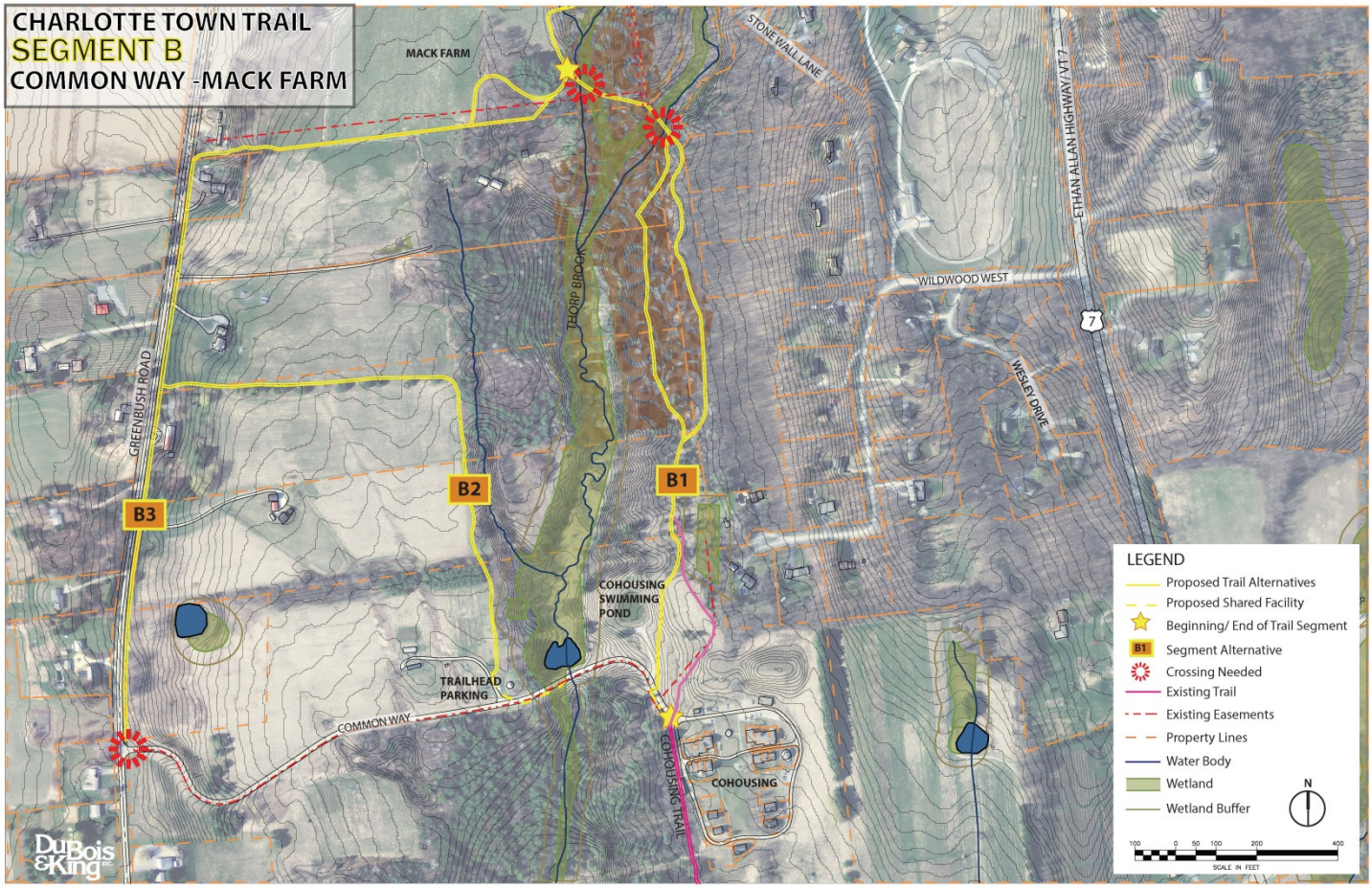
Alternative B1: East of Thorp Brook

Alternative B1 illustrates two options on the east side of Thorp Brook, approximately 3,130 feet long. Two options have been identified, both to avoid steep topography around Thorp Brook and a desire to provide an accessible path. Both options from Common Way depart the trailhead of the existing CoHousing path, crossing Common Way and move around existing trees into the forested area along parcel boundaries. One option crosses the very back of four different parcels before crossing Thorp Brook and its tributary twice before connecting to the existing Mack Farm Easement. The second option in this area crosses the Stone Wall Neighborhood Common Land. Care is taken to avoid sudden grade changes, but both of these options will through a forest block.

Alternative B2: West of Thorp Brook

Alternative B2 begins as another internal path, departing from the Cohousing trailhead parking area and heading north along the west side of Thorp Brook, approximately 5,315 feet in length. Located adjacent to the Brook and along the forested back portion of three private landowners' parcels, the path follows a row of existing mature trees to Greenbush Road between two parcels before connecting to Alternative B3 which is adjacent to Greenbush Road until connecting to the Mack Farm property.

Figure 16: Alternatives CoHousing to Mack Farm – Segment B



Alternative B3: Greenbush Road

Alternative B3 assumed that trail users can depart from the CoHousing trailhead or the Cohousing Segment Parking Area and walk or bicycle up Common Way, which has a trail easement, to Greenbush Road. From this point, the trail is adjacent to Greenbush Road until it connects at the Mack Farm to Segment C and would be approximately 6,810 feet in length.

Preferred Alignment for Segment B: CoHousing to Mack Farm

Alternative B1 is preferred for this segment, as it will provide the most logical and direct alignment to the Mack Farm easement, and also provides a high quality experience of a unique habitat and stream corridor. The other options align the trail much close to residential properties, and would also have significant impacts along Greenbush Road, requiring utility relocations and mature tree removal. As there are historic structures just outside of the right-of-way, costly closed drainage would likely be required.

Table 3: Segment B Alternatives Evaluation

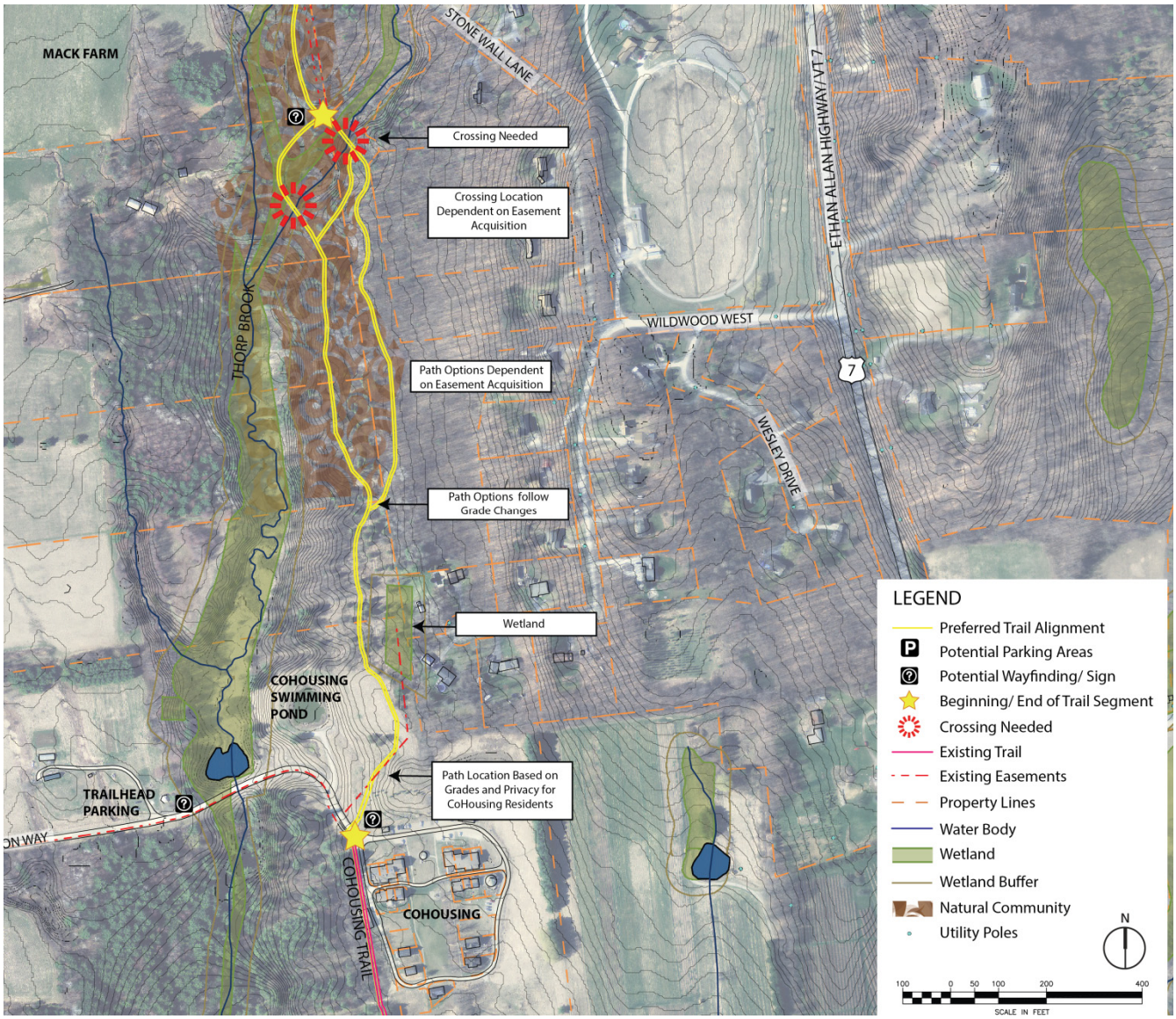
Alternatives	No Build	B1	B2	B3
Benefits/Goals				
Meets Needs	○ Does not address needs	●	◑ More circuitous route	◑ More circuitous route
User Experience	○	● Outstanding experience in natural setting	◑ Less appealing to be on road	◑ Less appealing to be on road
Impacts				
ROW required	●	○ Easements required; landowner concerns	○ Easements required; landowner concerns	○ Easements required; landowner concerns
Utilities	●	●	○ Relocations Required	○ Relocations Required
Wetlands	●	◑ Minor impacts	◑ Minor impacts	◑ Minor impacts
Stream Crossings	●	○ Bridge required	●	●
Agricultural Soils	●	◑	○ Impact to active farm land	○ Impact to active farm land
Archaeological / Historic Resources	●	◑ Phase 1B required	◑ Phase 1B required	◑ Historic structures may be impacted
Relative Cost	-	$$$ (w/boardwalk)	$$$	$$$

Key:

Benefits/Goals	Impacts	Relative Cost
● Meets goals	● Low impacts	$ Low relative cost
◑ Partially meets goals	◑ Moderate impacts	$$ Moderate relative cost
○ Does not meet goals	○ High impact or cost	$$$ High relative cost

Option B1 is selected as the preferred alternative. Two variations in the trail alignment are provided, with the selection among these dependent on landowner receptivity and permitting. Figure 17 shows a concept drawing. Landowners were contacted in the process of this study. Most of the landowners along these alternatives support the trail and feel it will improve the quality of life and neighborhood property values. Two landowners are at this time not willing to provide an easement, and cited concerns about privacy and security. The Trails Committee will continue discussion and outreach at appropriate times, and educate landowners and the communities about management options to address the landowner concerns. The ANR prefers the easterly alignment of this option, which avoids fragmentation of the mesic clayplain forest.

Figure 17: Segment B Preferred Alternative Concept



Two construction cost estimates are provided in Tables 4 and 5. One that assumes the trail is built to recreational trail/mountain bike standards, and the other assuming VTrans shared use path standards and ADA compliance. The Trail Committee has been advised that funding opportunities could be limited if the former approach is used. Because of the concern about the sensitive environment, the Trail Committee would like to keep both options under consideration for future implementation, even though this may result in an inconsistent trail surface and access. These costs are presented in 2017 dollars, and should be adjusted accordingly for future use.

Table 4: Construction Cost for Segment B – Recreation Path Standards

Design Elements	Quantity	Units	Unit $	Total Cost
Gravel Path (8')	2470	ft	$ 40.00	$98,800
Clearing and Grubbing	0.68	acre	$ 20,000.00	$13,609
Bridge (20 ft timber)	200	sq ft	$ 125.00	$25,000
Clear zone + grading allowance	9880	sq ft	$ 2.00	$19,760
Signage and Wayfinding Kiosks	6	ea	$ 300.00	$1,800
Erosion Control (10%)	1	ea	10%	$15,900
Mobilization	1	ea	12%	$9,128
Total Construction Items				$183,997
Contingency (15%)				$27,600
Total Construction Cost				$211,597

Table 5: Construction Cost for Segment B – VTrans Shared Use Path Standards

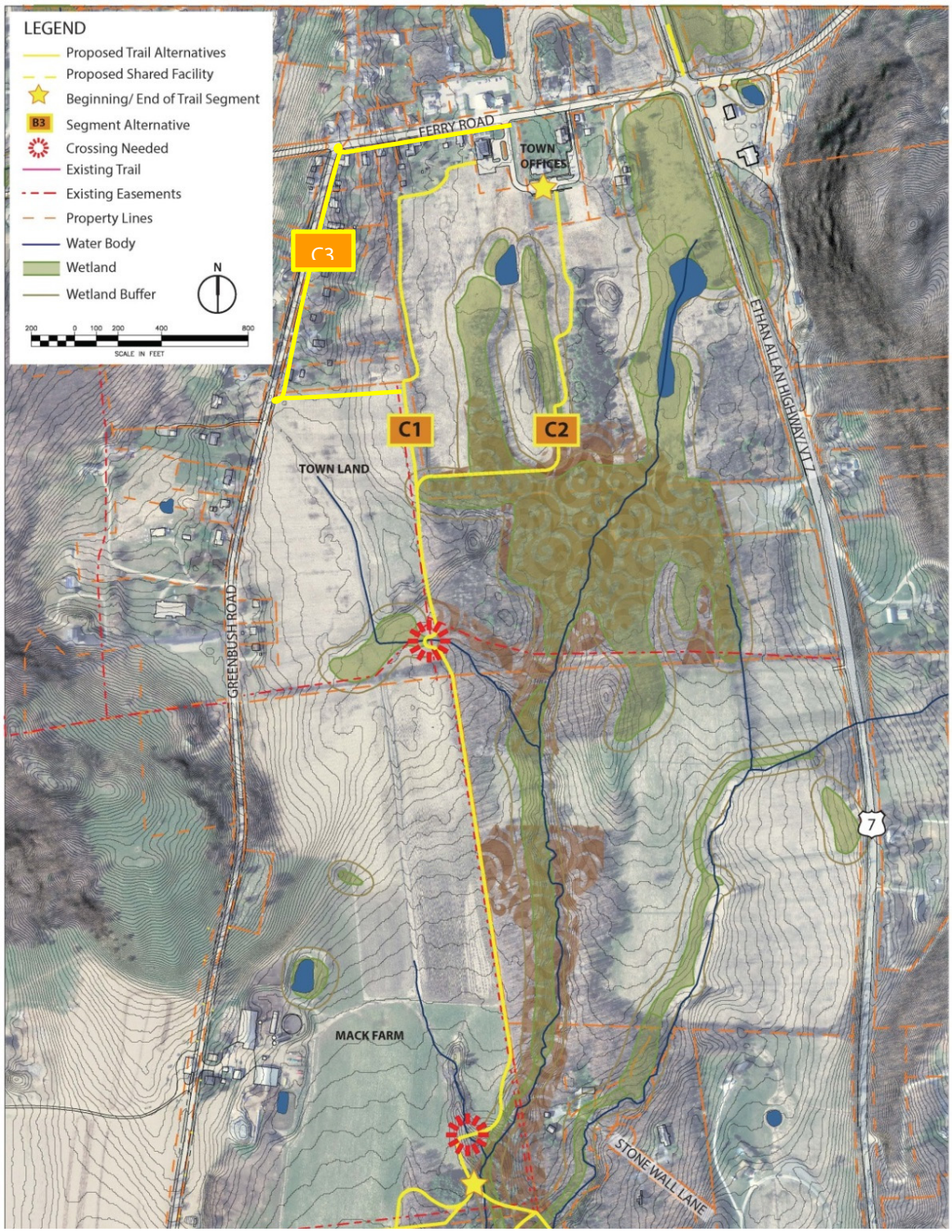
Design Elements	Quantity	Units	Unit $	Total Cost
Gravel Path (8')	2,470	ft	$ 80	$197,600
Clearing and Grubbing	0.68	acre	$ 20,000	$13,609
Bridge (20 ft timber)	200	sq ft	$ 125	$25,000
Clear zone + grading allowance	9,880	sq ft	$ 2.00	$19,760
Signage and Wayfinding Kiosks	6	ea	$ 300	$1,800
Erosion Control (10%)	1	ea	10%	$25,780
Mobilization	1	ea	12%	$10,314
Total Construction Items				$293,863
Contingency (15%)				$44,079
Total Construction Cost				$337,942

Additional allowances for project development, construction engineering and local project management as appropriate depending on the funding source.

Segment C: Mack Farm to Town Offices

Both alternatives for Segment C from the Mack Farm to the Town Offices begin at the southeast edge of the field on the Mack Farm, connecting to Segment B. Both alternatives avoid grading and stream crossing challenges at the southeast corner of the property and then follow the back of the Town Land parcel where they become two options.

Figure 18: Alternative Mack Farm to Town Offices – Segment C



Alternative C1: Internal West Path

Alternative C1 continues north along the eastern boundary of the Town Land parcel and then along the western boundary of what is currently the LeBoeuf property and is approximately 4,415 feet long. As indicated in the field observations, this is higher ground, would have less impact on the emerging wetlands in the area and also reconnects trail users to the community in which it is located with potential 'eyes on the trail' with residences nearby.

Alternative C2: Internal East Path

Alternative C2 turns eastward approximately three-quarters of the way north along the Town Land boundary, through forest blocks and avoiding wetter areas before turning north towards the Town Offices, where it circumvents steep topography and existing vegetation and is approximately 3,685 feet long. This alternative alignment follows the current public access easement between the Town of Charlotte and the Vermont Land Trust. The Burns property, which is owned by the Town, established a conservation agreement with Vermont Land Trust in March 2017 to 'foster the conservation of the State's agricultural, forest, and other natural resources'. The protected area of the property contains Natural Heritage due to the rare and unique forest communities, including areas of Wet-Mesic Clayplain Forest, Very Wet Clayplain Forest, and Mesic Maple-Ash-Hickory-Oak Forest. It also contains 6.6 acres of wetlands, headwaters of and traversed by 750 feet of Thorp Brook and 575 of two un-named tributaries of Thorp Brook; and habitat for several species including the rare broad beech fern, uncommon loose sedge, and uncommon Gray's Sedge. Following the existing trail at this point which is already being mowed would help support this agreement and would provide an opportunity for education about the conserved area.

Alternative C3: On-Road Alternative

This alternative would involve a shared use path along side of Greenbush and Ferry Road between the Burns property and the Town Office. With historic buildings at the right-of-way limits and utility poles within the right-of-way, this option is considered to be infeasible with severe impacts and costs, including 5,450 feet in length.

Figure 19: Historic structures along Greenbush Road

An evaluation of the above alternatives is summarized in Table 6.

Table 6: Segment C Alternatives Evaluation

Alternatives	No Build	C1	C2	C3
Benefits/Goals				
Meets Needs	○ Does not address needs	●	◑ More circuitous route	◑ More circuitous route
User Experience	○	● Outstanding experience in natural setting	● Outstanding experience in natural setting	◑ Less appealing to be on road
Impacts				
ROW required	●	◑ Some easements obtained; landowner is receptive	◑ Some easements obtained; landowner is receptive	○ Easements required; landowner concerns
Utilities	●	●	●	○ Relocations Required
Wetlands	●	◑ Minor impacts	◑ Minor impacts	●
Stream Crossings	●	○ Bridge required	○ Bridge required	●
Agricultural Soils	●	◑ Easement for trail in place; compatible with ag activities	◑ Easement for trail in place; compatible with ag activities	●
Archaeological / Historic Resources	●	◑ Phase 1B required	◑ Phase 1B required	○ Historic structures may be impacted
Relative Cost	-	$$	$$	$$$

Key:

Benefits/Goals	Impacts	Relative Cost
● Meets goals	● Low impacts	$ Low relative cost
◑ Partially meets goals	◑ Moderate impacts	$$ Moderate relative cost
○ Does not meet goals	○ High impact or cost	$$$ High relative cost

For these options, either C1 or C2 are preferred, with the final selection pending discussion with landowners of the LeBoeuf property. The current owners have expressed willingness to accommodate trail in future development plans. The concept is illustrated in Figure 20.

Construction cost estimates for Segment C have been prepared for recreational path standards and VTrans shared use path standards, in order to provide more options for future funding and implementation for the Trails Committee.

In the near term, the Town of Charlotte may consider restriping Greenbush Road between the Burns Property and Ferry Road with Advisory Bicycle Lanes, which could improve safety for people biking and walking, and reduce vehicle speeds.

Figure 20: Preferred Alternative for Segment C

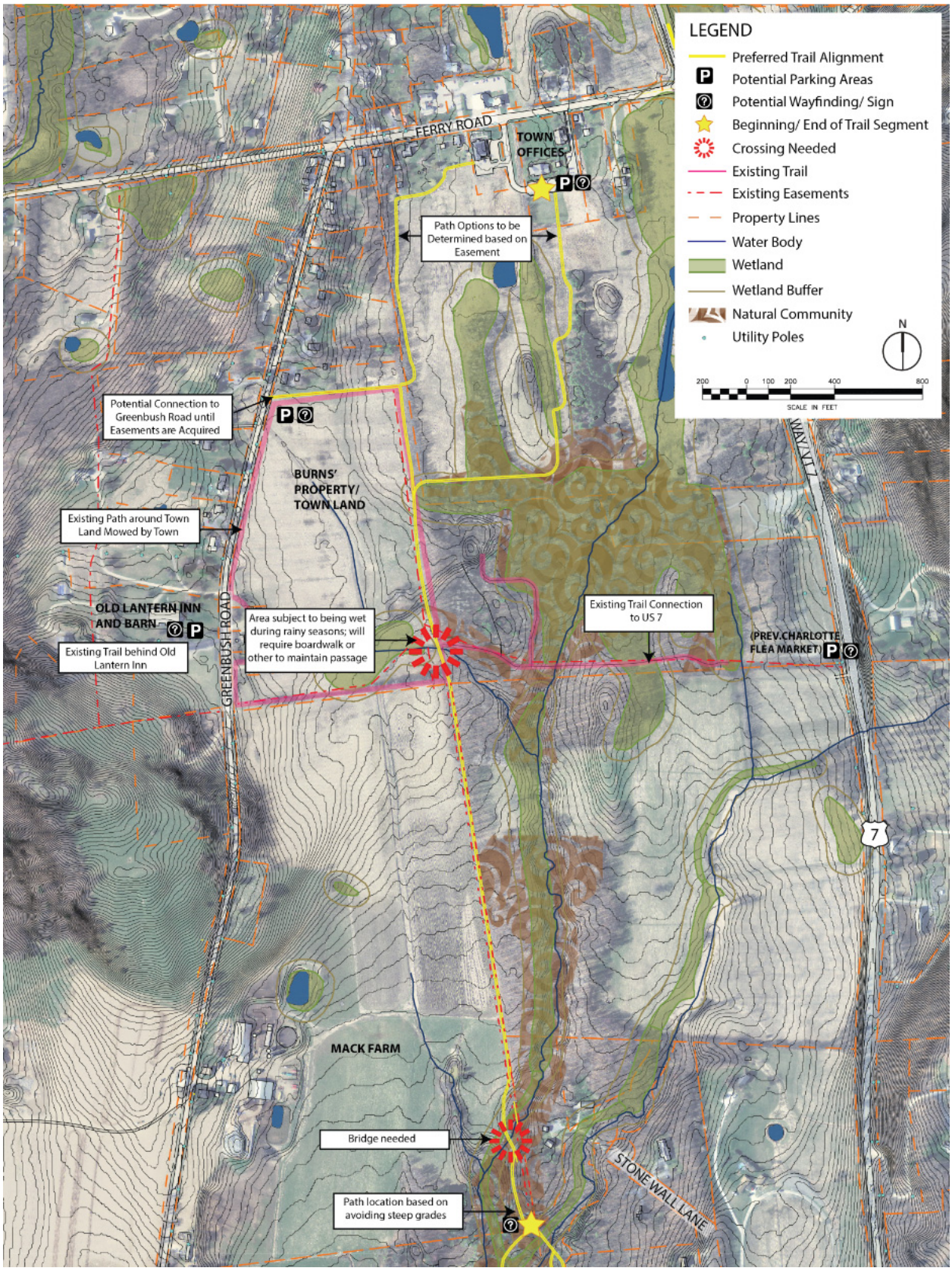


Table 7: Construction Cost for Segment C – Recreation Path Standards

Trail Segment	Design Options	Quantity	Units	Unit $	Total Cost
Mack Farm to Town Offices (C2)					
	Gravel Path (8')	5,451	ft	$ 40	$218,040
	Bridge (20 ft timber)	200	sq ft	$ 125	$25,000
	Boardwalk for wet area	1,500	sq ft	$ 30	$45,000
	Clear zone + grading allowance	10,902	sq ft	$ 2	$21,804
	Clearing and Grubbing	1.50	acre	$ 20,000	$30,033
Connection to Greenbush Road					
	Gravel Path (8')	593	ft	$ 40	$23,720
	Clearing and Grubbing	0.16	acre	$ 20,000	$3,267
Entire Length of Trail					
	Erosion and Sediment Control	1	ea	5%	$18,343.21
	Mobilization	1	ea	10%	$36,686.43
	Signage and Wayfinding Kiosks	10	ea	$300	$3,000
Total Construction Items					$424,894
Contingency (10%)					$42,489
Total Construction Cost					$467,383

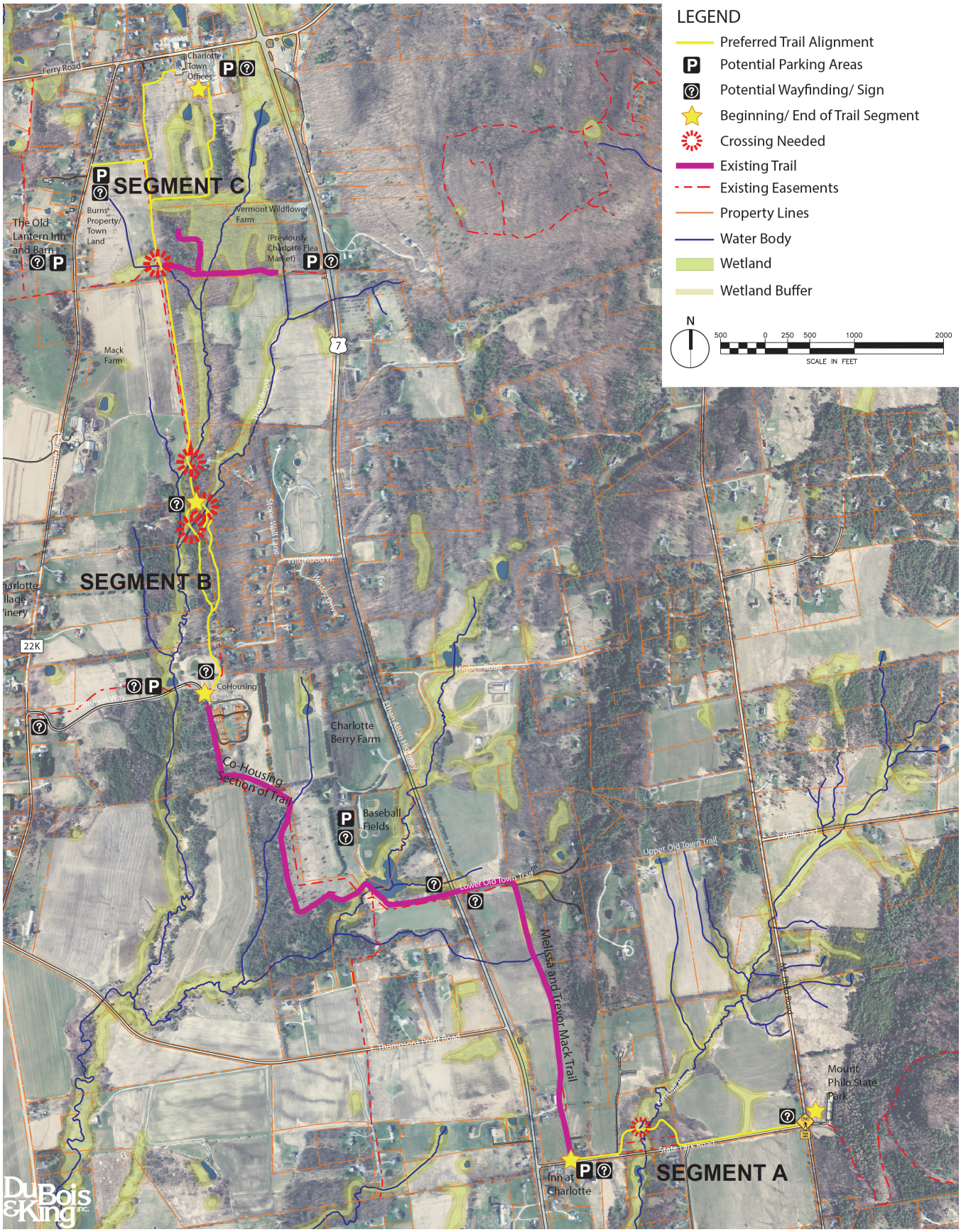
Table 8: Construction Cost for Segment C – VTrans Shared Use Path Standards

Trail Segment	Design Options	Quantity	Units	Unit $	Total Cost
Mack Farm to Town Offices (C2)					
	Gravel Path (8')	5,451	ft	$ 60	$327,060
	Bridge (20 ft timber)	200	sq ft	$ 125	$25,000
	Boardwalk for wet area	1,500	sq ft	$ 30	$45,000
	Clear zone + grading allowance	10,902	sq ft	$ 2	$21,804
	Clearing and Grubbing	1.50	acre	$ 20,000	$30,033
Connection to Greenbush Road					
	Gravel Path (8')	593	ft	$ 80	$47,440
	Clearing and Grubbing	0.16	acre	$ 20,000	$3,267
Entire Length of Trail					
	Erosion and Sediment Control	1	ea	5%	$24,980.21
	Mobilization	1	ea	10%	$49,960.43
	Signage and Wayfinding Kiosks	10	ea	$300	$3,000
Total Construction Items					$577,545
Contingency (15%)					$86,632
Total Construction Cost					$664,177

Trail Management and Maintenance

Topics of concern during the study process included parking, maintenance, and wayfinding. An overview of parking and wayfinding concepts are provided in Figure 21. The following sections discuss additional considerations for trail design.

Figure 21: Overview of Potential Parking and Wayfinding Sites



Trailhead Parking

Concerns expressed at public meetings included that the trail may prove to be an additional attraction that will exacerbate the parking shortage at Mt Philo State Park. A committee of Town volunteers and State officials is currently working on a plan to address the parking issue, so it is anticipated that the parking shortage will be alleviated in the future. Figure 21 illustrates both existing parking options for the Charlotte Town Trail and also potential availability at nearby facilities. Designated parking for the trail currently only exists at the CoHousing Trailhead. Other unmarked options include at the Old Charlotte Flea Market with access from US 7, at the Old Lantern Inn and Barn (easily accessed by the mowed path on Town Land) and the Baseball Fields. With the proposed alignment, further parking options to consider include parking at the Charlotte Town Offices, at the northern boundary of Town Land/ Burns property, and the Inn at Charlotte. Formal agreements for two parking spaces at the Old Lantern Inn, Baseball Fields and Inn at Charlotte are recommended.

Signage and Wayfinding

The Town of Charlotte received funding from the Chittenden Regional Planning Commission to work with LandWorks to develop a signage system for the existing and proposed Charlotte town Trail network. The Guidebook (Signage Plan for the town of Charlotte Path System) provides the design of the hierarchy of signage for the trail based on the blue logo that was developed by David Speidel, town resident, and the anticipated needs of the trail as it becomes longer and available to visitors that are not as familiar with the area as a local. There are details in the guidebook that suggest locations where signage would be important and helpful.

Further recommendations based on the process of this scoping study include providing signage that are regulatory; that is, signage that controls access to the trail due to the proposed alignment being based on private owners' backyards and the concern that those new to the trail may be inclined to wander off the path. To avoid over-signing, emphasizing permitted use is recommended. These signs could be placed at all access points such as trailheads, junctions with other trails, for example. It is recommended that these signs be a priority especially for the North of CoHousing to the Town Hall portion of the trail. Directional arrows are recommended where there are 'jogs' in the trail. Reassurance markers/ blazes are also. recommended on trees along the way, especially on longer segments of trail. These could simply be brushed on paint to nearby trees in the colors of the trail logo. Finally, interpretive signs are recommended in the future to highlight the history of the trail, but also point out the natural communities of significance in the area, such as the ClayPlain Forest. If the trail is constructed with transportation funding, and the trail is to be MUTCD compliant, signage such as Bicycle Guide Signs will be required at key points, such as example M7-1 below. However, minimalist trail signage is recommended if the path is constructed with recreational trail standards, as illustrated below

Figure 22: Signage Examples

M7-1

D1-1b (R)

Maintenance and Management

The Charlotte Town Link Trail is owned by the Town of Charlotte, and currently maintained yearly through community workdays and mowing and repairs as needed with town funds and volunteer effort. The trail will require occasional resurfacing with gravel and grading, addressing any holes or any drainage issues. Mowing of the recovery area and clearing any vegetation within a clear zone to retain a safe trail is also necessary. For planning purposes, annual maintenance costs will be on average 1% of the construction costs each year, although the maintenance schedule will vary year to year as conditions and needs indicate.

Input during the study made it clear that the Town Link Trail is highly successful and valued asset to the Town of Charlotte. However, the issue of conflicts with dogs is one that may require additional management, particularly as discussions with landowners take place for new easements.

Possible approaches for obtaining easements

The alternatives described will all require further design and engineering for implementation, but several steps prior to securing funding can be undertaken. The first would be the conveyance of easements in areas where easements are absent. This would include easements for the trail and potentially conservation easements for further protection of the Clayplain forest and Thorp Brook. Donations could be sought for the easements, proposing tax credits to donors and recognition, if so desired. As the Town has recently conserved 21.5 acres of the Burns property, of which the ClayPlain Forest is a significant part, pursuing conservation of further forest blocks within the area is recommended for both the trail and a need to connect more habitat blocks and protect significant flora and fauna in the area.

Project Phasing and Implementation

For a project of this magnitude, it is essential to break up the implementation into phases, and to proceed based on opportunity and priority. For the Town Link Trail, it is recommended that the first priority, or Phase 1, is to proceed with construction of Segment 1: State Park Road, plus continue planning and securing easements for the Segments 2 and 3. Contact with affected landowners for Segments 2 and 3 is already underway, with many landowners expressing willingness to provide an easement for the trail. As the easements for the entire corridor are obtained, segments 2 and 3 can proceed to design, permitting and construction.

The Charlotte Trail Committee can also work to establishing the trail through signage and mowing for the segments where easements are already in place to promote the trail. These less formal trails can be used and enjoyed for recreational foot traffic as planning to upgrade the trail for shared use with bicycles continues.

Several alternatives for each area were developed based on site opportunities and constraints, as well as local input received throughout the process. The State Park Road portion of the trail is envisioned as the priority segment, given the inevitable draw to Mt. Philo State Park once the underpass is completed and 2 miles of connected trail exist. Several challenges to the portion north of CoHousing, including a need to obtain easements for a preferred alignment, also contributed to this segment becoming a secondary priority.

The following presents a typical timeline for project implementation, assuming a federally funded program such as the VTrans bicycle and pedestrian program is used for construction of Segment A: State Park Road. The timeline provides allowances for obtaining permits and easements, VTrans and other agency review, and raising local matching funds.

Table 9: Typical Project Implementation Timeline for VTrans Funding Programs: Segment A

Activity	Year 1				Year 2				Year 3				Year 4				Year 5			
1) Seek grant funding		■	■	■	■															
2) Receive Grant, hire designer						■	■													
3) Design/Permitting								■	■	■	■	■	■	■	■	■				
4) Bidding																	■			
5) Construction																		■	■	

Resources

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Appendices

- Environmental Review (D&K)
- Historical and Archaeological Review (Hartgen)
- Public Meeting Documentation (Town of Charlotte)
- ANR Comments

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Charlotte W. Brodie
Field Naturalist

ENGINEERING PLANNING SURVEY
PROGRAM MANAGEMENT

MEMORANDUM

623516L

TO: **Lucy Gibson, Sophie Sauve, Project File**
SUBJECT: **Charlotte Trail Scoping Study; Preliminary Wetlands Review and RTE review**
DATE: **May 17, 2017**

Wetlands Review

1. The Charlotte Town Trail Scoping Study will identify alternatives for the construction of several stretches of trail within the town of Charlotte between Ferry Road and State Park Road, and between Greenbush Road and Mount Philo Road, as shown on the attached Existing Conditions Plan.

2. The potential project corridors were field-reviewed for wetlands in October, 2016. Due to the planning level of the study, many wetland boundaries were approximated, to be refined during further review once the alignment is chosen. Certain wetlands were formally delineated in accordance with the COE 1987 Wetland Delineation Manual and the COE 2012 Regional Supplement for the Northcentral and Northeast Region. The wetland areas are shown on the attached annotated Existing Conditions plan and larger scale annotated orthophotos, sheets A1 through A8.

3. The large agricultural field in the vicinity of the Charlotte Post Office is predominantly wetland, in spite of numerous drainage structures (see Wetland 1, Large Scale Orthophoto Sheet A1). The land is very flat and the soil is clayey, both of which impede drainage. Many wetland species have become established within the planted agricultural grasses. Several transects were made through the field, with wetland, non-wetland points observed along the transects. Detailed delineation of this field would be time-consuming, due to the patchy distribution of wetland in many areas and the interpretation required where wetland species are becoming established among the planted agricultural grasses. The land rises to the west in the vicinity of the treeline, where the higher elevation in combination with the drying effect of woody vegetation creates a predominance of upland conditions. If the trail is to go in the field, it would probably be best located along the edge of that treeline.

4. The vicinity of the Mack property is shown on the large-scale orthophoto Sheets A2 to A4. Mr. Mack has stated that he wants the trail to be located along the eastern extreme of his field. The vast majority of that edge is free of wetlands, with strongly upland forest adjoining to the east. At the

southeastern corner of the property, there is a 600 SF (+/-) wetland along a small stream, at point F-1. Just north of the Mack property, on Town property, is an emergent wetland which begins about 40' west of the treeline and continues westward, with the center of the eastern edge shown as Point H1.

5. The land from the northern edge of the existing trail at the co-housing project northward to the southern edge of the Mack property is shown on the small-scale orthophoto, Sheet 1. The stream west of the swimming pool forks to the north in the vicinity of the southeast corner of the Mack property.

To the east of the swimming pool, the land is upland except for a 10' wide ditch at the edge of the grading. This wetland is likely to be non-jurisdictional, due to its development in a man-made ditch in otherwise upland. Jurisdictional emergent wetland is located between points G1 and G2, and scattered patches of wetland are located in the vicinity of point G3. Beginning about 300' north of point G3, and proceeding NNW along the housing development's western boundary, the route enters upland woods, which continue as such all the way to the driveway which crosses the eastern fork of the stream.

The area from G13 north to the "Southeast Corner Mack" point is where the topography includes some fairly steep slopes along the forks of the streams, and where crossings could be tricky due to the grades.

Point G4 is a potential crossing where the slopes are not too extreme on the east side. On the west side, however, the slope is fairly steep up to the back yard of a house.

At point G5, the slope from the Mack property is not too extreme down to a bench along the stream, but the eastern side is a steep hill.

Point G6 appears to have good potential as a crossing, with wide and relatively flat banks.

Point G7 also appears to have relatively good potential as a stream crossing due to relatively mild bank slopes.

Point G8 appears to be the best location for a stream crossing due to mild bank slopes.

At Point G9, there is a 12'-wide wetland channel flowing easterly from the area of a barn. It channelizes into a small stream at the fenceline of the property.

A 20'-wide wetland occurs along the stream between points G10 and G11.

Moving southward, wetland along the stream begins again at point G12, where it is about 40' wide, then widening to about 100' at point G13, and continuing at about that width all the way to Common Way at points G16 and G17.

A 30'-wide wetland ravine enters the main ravine at point G14.

Point G15 is at the center of a 75' X 75' wetland on a bench in the hillside above the main wetland.

Just south of the Mack property, at the end of a long field drive, is an emergent wetland bounded by Points H2 to H9, connected by a culvert under the drive. This wetland is also shown on large-scale orthophoto Sheet A5.

6. The wetlands in the southeastern portion of the study area, in the vicinity of State Park Road, are shown in overview on the small-scale orthophoto, Southeast Cluster, and on the large-scale orthophotos A6 through A8. Note that on the small-scale orthophoto, the points are not registering properly. They appear to be showing approximately 200' north and 100' west of their actual locations. The locations appear to be registering properly on the large-scale orthophotos.

   The small scale orthophoto and the large-scale orthophoto Sheet A6 show two potential routes to tie the existing trail to the west to the driveway to Jonathon's property. There are no wetlands along those potential connectors. A third possible connector is along the north side of State Park Road. An wet meadow, hayfield wetland is shown as Wetland E there.

   To the east of Jonathon's driveway is Wetland F, emergent in the center along an intermittent waterway, with shrubs and trees along the edges. The wetland is bounded by fairly steep slopes on either side, so a potential boardwalk would have to span the majority of the wetland.

   The northeast portion of large-scale orthophoto Sheet A6 shows a potential route from Jonathon's place eastward to Mount Philo Road. Wetland A is emergent, almost exclusively reed canary grass. It continues north to the treeline and south to the main body of this wetland. Wetlands B and C along that route are shown on the small scale orthophoto, Southeast Cluster and the small-scale orthophoto, Overall Wetland Plan. Wetlands B and C are also fingers of a larger wetland to the south. Most of the impacts of this route would be to emergent wetland. The wetland becomes dominated more by scrub-shrub to the south.

   Large-scale orthophoto Sheet A7 shows Wetland D, a mostly emergent (reed canary grass) wetland with some black willow at the edges which drains to the northwest.

   Large-scale orthophoto Sheet A8 shows Wetland G, a scrub-shrub wetland which flows to the northwest. It also shows Wetland H, a mostly emergent (reed canary grass) wetland which flows to the north.

<u>RTE Review</u>

7. Uncommon, rare, threatened and endangered species and a significant natural community in the vicinity of the proposed trail are shown on the attached NRA maps, "RTE North and South," "Indiana Bat Habitat," and "Habitat Blocks."

8. The trail skirts the western edges of a mesic clayplain forest significant natural community at the northern end of the community, then crosses it and skirts the eastern edge at the southern end. Potential impacts should be reviewed with the VANR Wildlife Diversity Program and minimized to the extent practicable.

9. Near the southern end of the trail are two records of a State endangered bird, the Upland Sandpiper. It is a species of open meadows and fields.

10. East of the southern terminus of the trail, on the east side of Mount Philo Road, are a suite of five rare, threatened and uncommon plants species. The threatened plant and the uncommon plant are associated with ledges of Mount Philo. The habitat of the rare S1 plant is low, moist forest openings. The other two species are historic records, not having been found recently.

11. The entire Town of Charlotte is mapped as Indiana Bat (State and Federal Endangered Species) summer range. Also, while not mapped, the entire State is considered habitat for the Northern Long-Eared Bat (State endangered, Federal Threatened). An assessment of trees to be cut in association with the project will need to be made in terms of sizes of the trees and potential bat habitat features. Coordination will be required with the Vermont Fish and Wildlife Department and the US Fish and Wildlife Service. In most cases, cutting of trees in the winter months results in no undue adverse impacts to the bats.

12. Habitat block mapping indicates final weighted scores of the various forest blocks as either 3 or 2, and threat-weighted scores of 4 to 6. These are generally in the middle to lower range of scores for habitat blocks, thus not high priority for protection.

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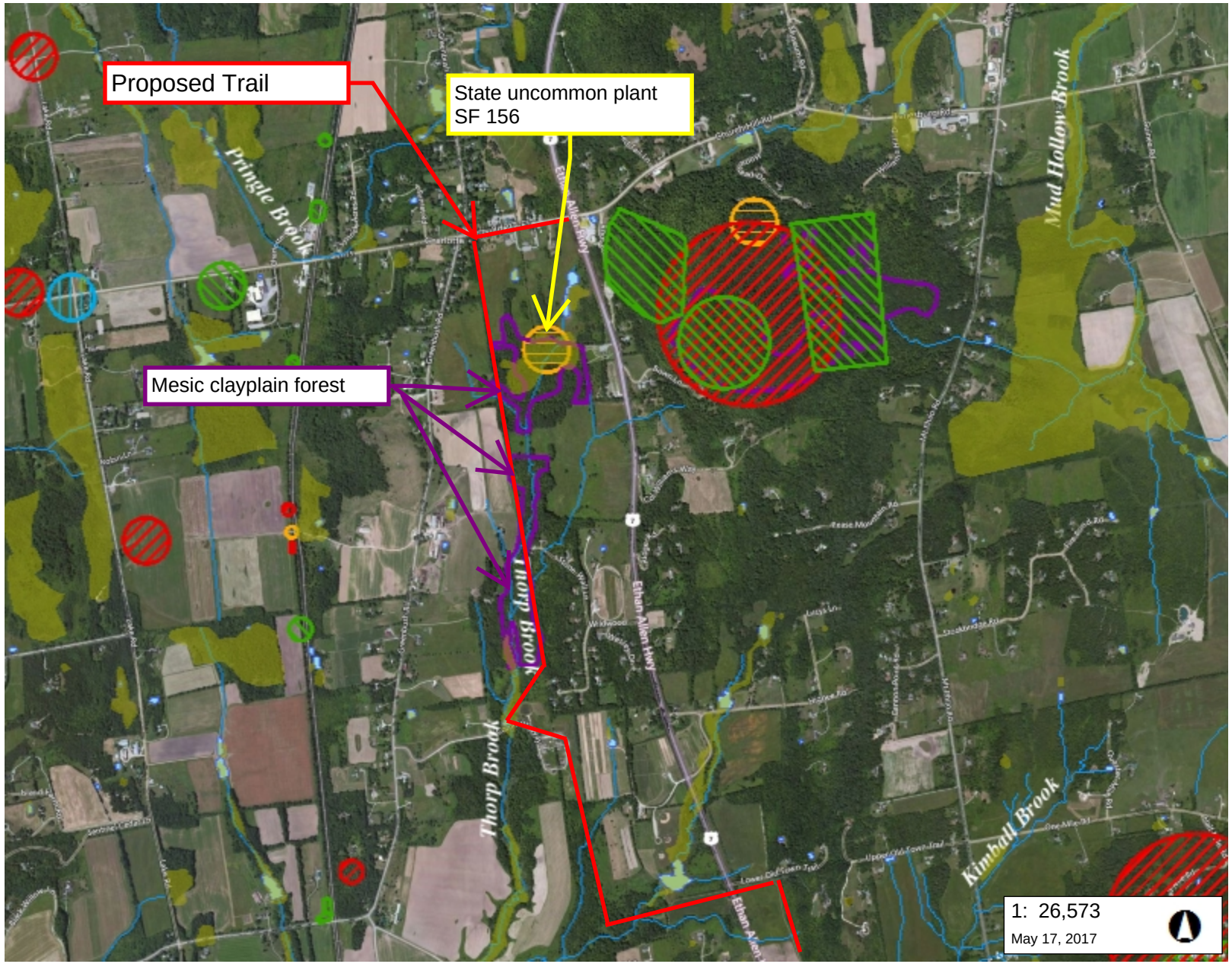
Natural Resources Atlas

Vermont Agency of Natural Resources

vermont.gov



LEGEND

- Wetlands - VSWI
  - Class 1 Wetland
  - Class 2 Wetland
- Amphibian and Reptile Crossir
  - Confirmed
  - Potential
- Rare Threatened Endangered
  - Threatened or Endangered
  - Rare
- Significant Natural Community
- Uncommon Species and Other
  - Animal
  - Plant
  - Natural Community
- Deer Wintering Areas
- Indiana Bat Hibernacula
- Waterbody
- Stream
- Town Boundary

NOTES

Map created using ANR's Natural Resources Atlas

RTE, North

1,350.0 0 675.00 1,350.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere 1" = 2214 Ft. 1cm = 266 Meters

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Natural Resources Atlas

Vermont Agency of Natural Resources

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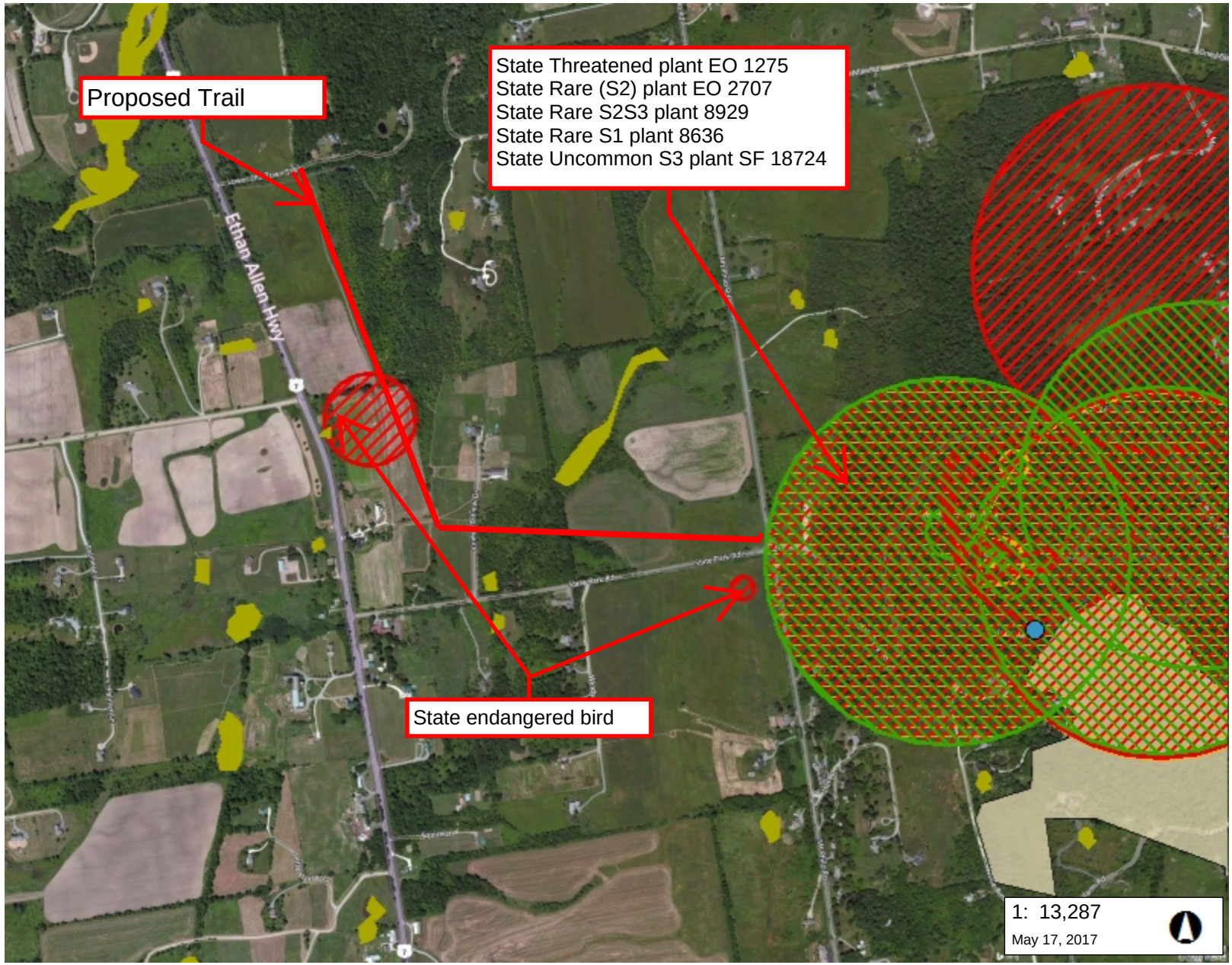

LEGEND

Wetlands - VSWI
- Class 1 Wetland
- Class 2 Wetland

Amphibian and Reptile Crossir
- Confirmed
- Potential

Rare Threatened Endangered
- Threatened or Endangered
- Rare

Significant Natural Community

Uncommon Species and Other
- Animal
- Plant
- Natural Community

Deer Wintering Areas

Town Boundary

NOTES

Map created using ANR's Natural Resources Atlas

RTE, South

675.0 0 338.00 675.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere 1" = 1107 Ft. 1cm = 133 Meters

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LEGEND

- Indiana Bat Hibernacula
- Indiana Bat Summer Range
  - Observed
  - Potential
- Town Boundary

NOTES

Map created using ANR's Natural Resources Atlas

Indiana Bat Summer Range

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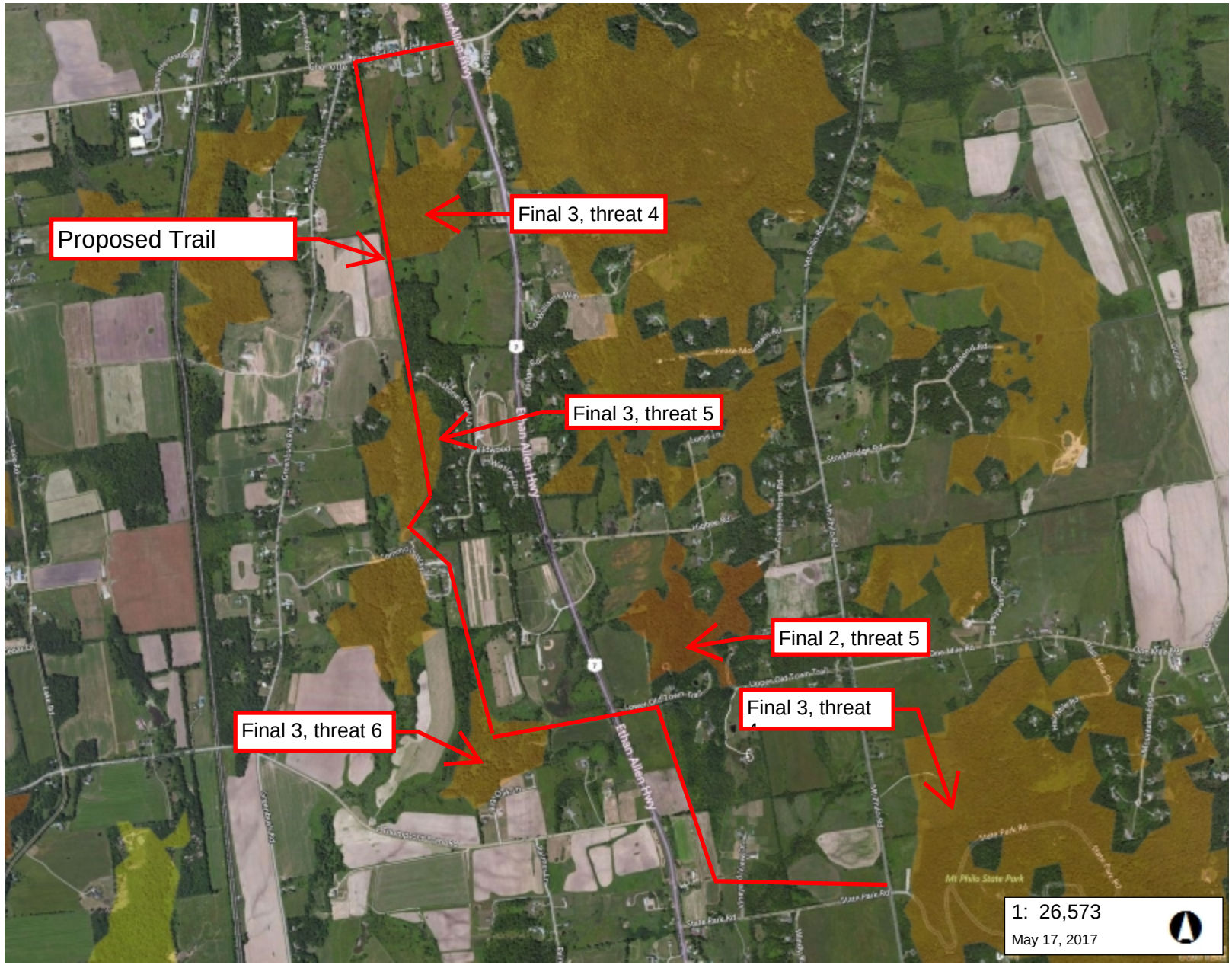

LEGEND

Habitat Blocks

- 10 - Higher Priority
- 9
- 8
- 7
- 6
- 5
- 4
- 3
- 2
- 1 - Lower Priority
- 0

Town Boundary

NOTES

Map created using ANR's Natural Resources Atlas

Habitat Blocks

1,350.0 0 675.00 1,350.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere 1" = 2214 Ft. 1cm = 266 Meters

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HARTGEN
archeological associates inc

ARCHEOLOGICAL RESOURCE ASSESSMENT

Charlotte Bicycle and Pedestrian Path

Town of Charlotte
Chittenden County, Vermont

HAA # 5055.11

Submitted to:

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An ACRA Member Firm
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March 2017

MANAGEMENT SUMMARY

SHPO Project Review Number:
Involved State and Federal Agencies: *Vermont Agency of Transportation (VTrans)*
Phase of Survey: *Archeological Resource and Historical Assessment*

LOCATION INFORMATION

Municipality: *Town of Charlotte*
County: *Chittenden County, Vermont*

SURVEY AREA

Length: *Approximately two miles in total length along the two project area alignments*
Width: *Approximately 10 feet*

RESULTS OF RESEARCH

Precontact Archeological sites within one mile: *12*
Historic Archeological sites within one mile: *2*
NR/NRE districts in or adjacent: *Four Corners Historic District*
Precontact Sensitivity: *high along Charlotte Village alignments, low along Mount Philo alignment*
Historic Sensitivity: *low*

RECOMMENDATIONS

The original proposed Charlotte Village alignment within the Thorp Brook valley is considered archeologically sensitive for the presence of precontact material. The recently proposed Charlotte Village alignment, a portion of which is located along Greenbush Road, is also considered archeologically sensitive for precontact sites. A Phase IB archeological survey is recommended for any areas of ground disturbance along either of these Charlotte Village project alignments, including the location of staging areas. No further archeological study is recommended along the Mount Philo alignment.

Report Authors: *Elise Manning-Sterling and Walter R. Wheeler*

Date of Report: *March 2017*

ARCHEOLOGICAL INVESTIGATION AND HISTORICAL ASSESSMENT

Introduction

Hartgen Archeological Associates, Inc. was retained to conduct an archeological and historical assessment for the proposed improvements for the Charlotte Bicycle and Pedestrian Path located in the Town of Charlotte, Chittenden County, Vermont. The Town of Charlotte has received funding through the 2015 VTrans Bicycle & Pedestrian Program to provide scoping for and identify issues with construction of a pedestrian/bicycle facility in Charlotte.

The Town seeks to scope two sections that would extend the completed portion of the Melissa & Trevor Mack path on both ends to two important destination points: Mount Philo State Park (to the southeast), and the west Charlotte village (to the north) (Maps 1 & 2). The scoping work would look at 1) connecting Mount Philo State Park to the southerly end of the Melissa & Trevor Mack Trail via a bicycle/pedestrian facility along State Park Rd. (approximately .5 miles), and 2) connecting the northerly end of the Co-housing Section to the west Charlotte Village via a new multi-use path (approximately 1.5 miles). The project is under the review of Vermont Agency of Transportation (VTrans). This investigation was conducted to comply with Section 106 of the National Historic Preservation Act of 1966, as amended, and will be reviewed by the VTrans archeology and historic preservation officers. This investigation adheres to the Vermont State Historic Preservation Office's (SHPO) *Guidelines for Conducting Archeology in Vermont* (2002).

The Village of Charlotte is centered at the intersection of Greenbush Road and Ferry Road. The Charlotte Village alignment begins near a wetlands located behind the Charlotte post office located off of Ferry Road (Photo 1). The original proposed path alignment heads south within the Thorp Brook valley, approximately paralleling Greenbush Road, which is situated several hundred feet to its west (Photos 2-4). This proposed path alignment extends south 1.5 miles, ending at a trailhead located directly north of Common Way (Photo 5). Recently, an alternative alignment has been proposed from Common Way, heading northward to the farm complex located south of the Barber Cemetery (Photo 6). This alignment could be located adjacent to Greenbush Road along this alignment, and then connect back to original path near Thorp Brook via previously established rights-of-way.

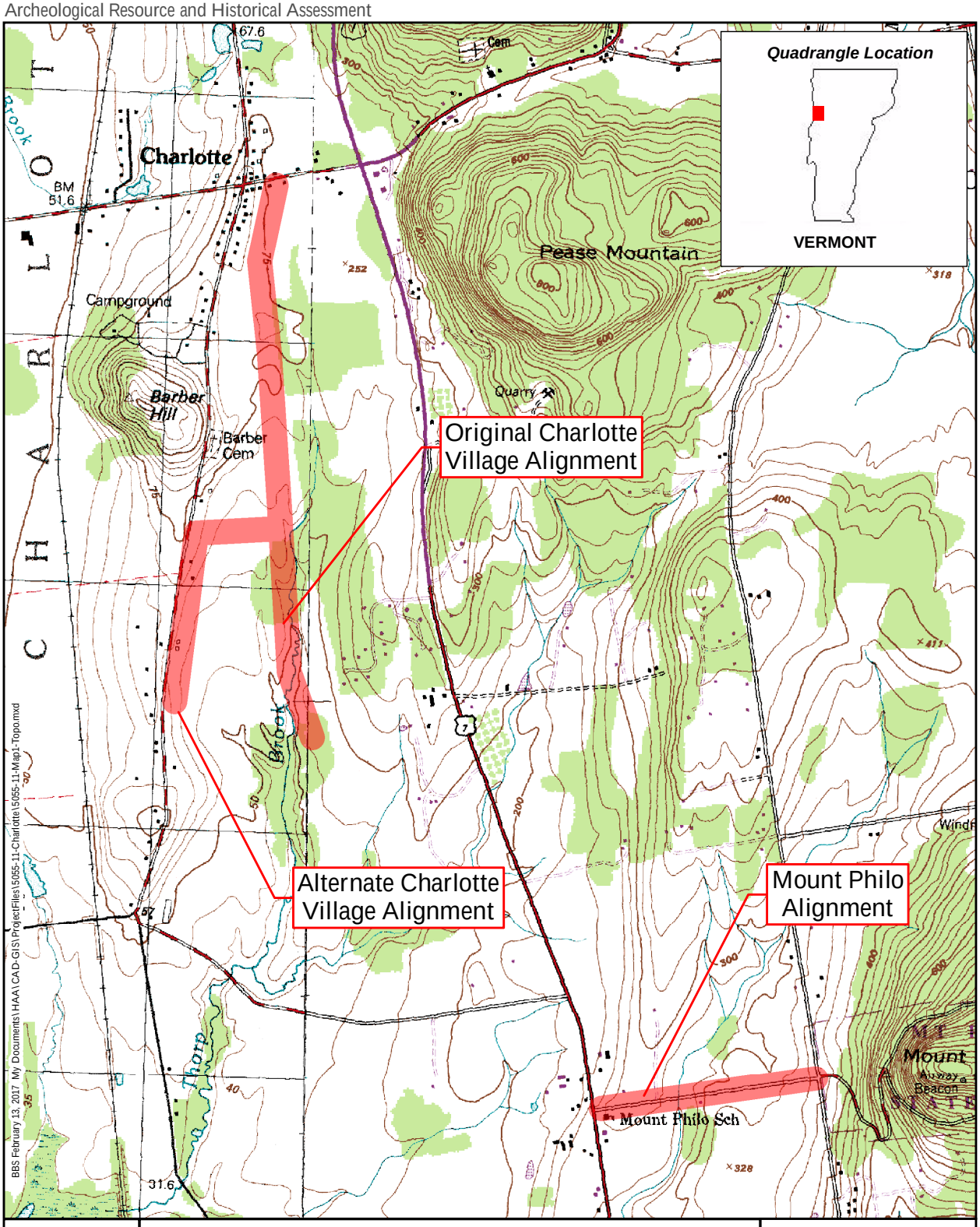
The Mount Philo alignment measures approximately one-half mile in length, extending along State Park Road from its intersection with Mount Philo Road on the east, and its intersection with the Ethan Allen Highway (Route 7) on the west. On the western end of the project alignment, State Park Road is characteristically a raised roadbed, adjacent to which are slopes to gullies, a small stream bed and lower landforms (Photos 7-9). The western half of the project alignment is predominantly slope leading down to the Ethan Allen Highway (Photo 10).

Background Research

Environmental Context

Environmental characteristics of an area are significant for determining the sensitivity for archeological resources. Precontact and historic groups often favored level, well-drained locations near wetlands and waterways. Therefore, topography, proximity to wetlands, and soils are examined to determine if there are landforms in the project area that are more likely to contain archeological resources. In addition, bedrock formations or other lithic sources may contain resources that may have been quarried by precontact groups. Other locations can also be special purpose sacred and traditional use sites. Soil conditions can provide a clue to past climatic conditions, as well as changes in local hydrology.

The project areas are located within the Champlain Lowlands, situated approximately two miles east of Lake Champlain. The western project area, the Charlotte Village portion of the project area, is located on level terrain within the north-south aligned Thorp Brook stream valley. Wetlands at the northern end of the



N

0 2,000 4,000 Feet

0 400 800 1,200 Meters

Note: Contour interval is 20 feet.

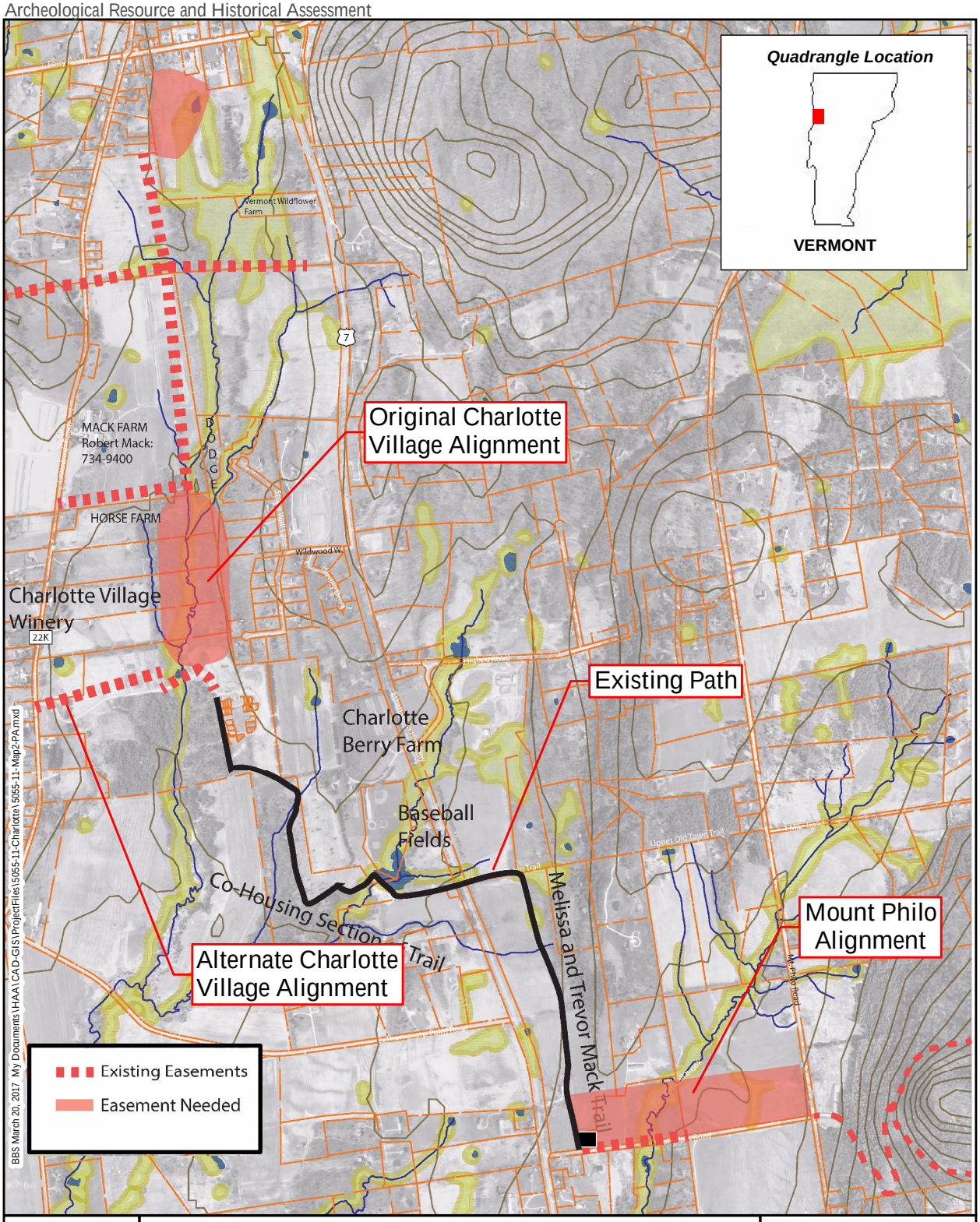
Legend

Project Area/ Alignments

USGS 1999 Willsboro, NY - VT & 1948 Mount Philo, Vermont

HARTGEN archeological associates inc

Map 1



N

0 2,000 4,000 Feet

0 400 800 1,200 Meters

Project Map With Approximater Alignment Locations (Dubois & King 2017, Hartgen 2017)

HARTGEN archeological associates inc

Map 2

Photo 1. Photo shows the wetland located at the north end of the Charlotte Village alignment. View is to the southwest.

Photo 2. Photo shows the Thorp Brook Valley, the proposed location of the original Charlotte Village alignment. View is to the east.

Photo 3. Photo shows the Thorp Brook Valley, the proposed location of the original Charlotte Village alignment. View is to the east

Photo 4. Photo shows the Thorp Brook Valley, and the area adjacent to Greenbush Road, the proposed location of the alternate Charlotte Village alignment. View is to the northeast.

Photo 5. Photo shows the Thorp Brook Valley, and the beginning of the original proposed Charlotte Village alignment directly north of the trailhead on the Common Way. View is to the north.

Photo 6. Photo shows the Barber Cemetery looking southwest toward the Barber House (Structure 1).

Photo 7. Photo shows the start of the Mount Philo project alignment along State Park Road. View is from the Mount Philo State Park looking west.

Photo 8. Photo shows the characteristic sloping terrain adjacent to the proposed Mount Philo path alignment. View is to the west.

Photo 9. Photo shows the sloping north side of State Park Road on the proposed Mount Philo path alignment. A wetland and small stream channel are located at the base of the slope. View is to the west.

Photo 10. Photo shows the slope leading down to the Ethan Allen Highway on the western end of the Mount Philo Path alignment. View is to the west toward Lake Champlain and the Adirondacks.

project area, located behind the U.S. post office in the village, feed into the Thorp Brook. South of the project area, Thorp Brook meets other small streams, and flows southwestward into Town Farm Bay in Lake Champlain just south of Thompson's Point.

The eastern portion of the project area, the Mount Philo alignment, is characterized as level terrain on the eastern end of the alignment, at the base of Mount Philo, and a long slope leading down to Ethan Allen Highway on the western end of the alignment. The proposed bike and pedestrian pathway will be located directly adjacent to State Park Road, most of which is characterized as raised road bed adjacent to slope leading to lower landforms. A small stream flows north-south near the central portion of the Mount Philo alignment. However, there are no substantial areas of level terrain located within the project APE that would be considered archeologically sensitive.

Soil surveys provide a general characterization of the types and depths of soils that are found in an area. This information is an important factor in determining the appropriate methodology if and when a field study is recommended. The soil type also informs the degree of artifact visibility and likely recovery rates. For example, artifacts are more visible and more easily recovered in sand than in stiff glacial clay, which will not pass through a screen easily.

There are a number of varied soil types located in each of the project areas. All of the soils were developed on either glaciofluvial, glaciolacustrine or glacial till. These soils have no potential for deeply stratified archeological deposits. There are a number of relatively small pockets of varied soil types in each of the project areas. These soils include heavy clay deposited by the Champlain Sea and glacial Lake Vermont, as well as a complex combination of glaciofluvial and glacial till over glaciolacustrine deposits (USDA 2016).

The bedrock in the project area is within the Stony Point formation consisting of calcareous shale bedded with limestone. To the east is the Monkton quartzite and to the west is the Glens Falls and other limestones (Ratcliffe 2011). The Monkton quartzite may have been utilized for stone tools, but none of the other formations are known to have been utilized, other than on an expedient basis.

Archeological Site File Research

Hartgen conducted research through the Vermont Division for Historic Preservation (VDHP) files to identify previously reported archeological sites, State and National Register (NR) properties, properties determined eligible for the NR (NRE), and previous cultural resource surveys.

Previous Surveys

Very little archeological investigation has taken place in close proximity to the project area. On file at VDHP are three previous surveys within the general vicinity of the project areas (**Error! Reference source not found.**1). One of these surveys was a Phase I investigation for a housing development northeast of the project area on the opposite side of Jones Hill. This investigation identified site VT-CH-1072, a Late Archaic campsite/lithic reduction location (Fletcher and Crock 2011). The other two reports were cursory investigations for USDA-NRCS funded farm improvement projects, neither of which identified archeological sites (Clay 2012; Skinas 1996).

Table 1. Relevant previous surveys within or adjacent to the Project

Year	Investigator	Methodology	Results	Notes
1996	Skinas	Site visit	No cultural resources affected	E of Jones Hill NE of the APE
2011	Fletcher and Crock	Phase I survey	VT-CH-1072 located and avoided	On E side of Jones Hill, NE of the APE
2012	Clay	Site visit	No cultural resources affected	Along Thorp Brook SW of the APE

Archeological Sites

The archeological site files at VDHP contained 14 precontact and historic sites within one mile (1.6 km) of the project areas (Table). Previously reported archeological sites provide an overview of both the types of

sites that may be present in the APE and the relationship of sites throughout the surrounding region. Within several miles of the project area, there are hundreds of sites, representing all precontact time periods, located on the shores of Lake Champlain, adjacent to its numerous tributaries, and situated near ponds and wetlands.

There are 12 precontact sites located within one mile of the project area that reflect extensive use of the surrounding landscape during the precontact period, including Late Archaic to Late Woodland campsites associated with small drainages and wetlands, as well as a lithic procurement site. The historic sites indicate the area was settled during the end of the 18th century with some businesses such as a blacksmith shop and a tannery established at an early date.

Table 2. Vermont Archeological Inventory (VAI) sites within one mile (1.6 km) of the two project areas

VAI Site No.	Site Identifier	Description
T-CH-53		Quartzite lithics, fire-cracked rock and one biface identified as a surface scatter in a wooded area
VT-CH-78	Horsford	Late Archaic, Middle and Late Woodland, projectile points, bifaces, quartzite
VT-CH-80	Nursery	Unknown precontact
VT-CH-311	Horsford #11	Unknown precontact
VT-CH-538	Farley	Native American procurement site
VT-CH-625	Lot 11	Unknown precontact
VT-CH-846	Langworthy-Pease	Unknown precontact and early 19th-c. blacksmith shop
VT-CH-849	Nathaniel Martin	Late 18th to early 19th-c. residence and tannery
VT-CH-857	Gerry	Late 18th to early 19th-c. farmstead
VT-CH-906	Horsford – Champlain Valley Co-Housing Project	Unknown precontact
VT-CH-1048	Russell	Unknown precontact
VT-CH-1067	Arthaud Native American Isolated Find	Unknown precontact - One quartzite flake recovered
VT-CH-1072		Late Archaic, Otter Creek point, flakes
VT-CH-1196	Mount Philo Waterline Project	Unknown precontact site containing lithics, one bone, and stone tool located at the base of Mount Philo

Two of these sites are located in close proximity to the southern end of the proposed Charlotte Village project alignment. These include the VT-CH-311 and VT-CH-906, which are in close proximity, located on a higher terrace adjacent to Greenbush Road near the intersection of Common Way. Quartzite flakes were reported to have been collected from shovel tests excavated at VT-CH-906.

Site VT-CH-1196 is located on a level terrace near the base of Mount Philo, located to the northeast of State Park Road and the Mount Philo project alignment.

The VDHP Environmental Predictive Model was completed for the project area which produced an overall rating of 96 (Appendix 1), with a rating of 32 or above indicating precontact sensitivity. The majority of the points can be attributed to the Charlotte Village alignments which possess many positive factors for the presence of precontact sites, including the presence of level terrain adjacent to a permanent waterway, the proximity to the head of draw and wetlands, and situated near the Champlain Sea shoreline. Both of the Charlotte Village and the Mount Philo project alignments are situated in an area of high recorded precontact site density. The precontact sensitivity of both of the potential Charlotte Village project alignments are considered to be high because of all these factors.

A small stream flows north-south near the central portion of the Mount Philo alignment. However, there are no substantial areas of level terrain located within the project APE that would be considered archeologically sensitive. The Mount Philo alignment is considered to have a low precontact sensitivity because of the presence of slope, drainage ditches and disturbance from the construction of State Park Road.

Historic Properties

An examination of the files at VDHP identified one National Register (NR) property in the project vicinity and one National Register eligible (NRE) property located directly adjacent to the Charlotte Village project component (Table 3). The one NR property is the Charlotte Center Historic District, listed in 1984 and located approximately one-half mile east of the Four Corners Historic District. The one NRE property is the State Register listed Four Corners Historic District, listed in 1980 and located directly adjacent to the Charlotte Village project component. Both of these historic districts consist of small village centers dating primarily to the 19th century.

Table 3. Inventoried historic districts located in the project area vicinity

NRHD No./VHSSS No.	Property Name/Address	Description
0403-3	Charlotte Center Historic District	c. 1790 to 1900 village center
0403-4	Four Corners Historic District	c. 1790 to 1900 village center

State and National Register Sites

The Statement of Significance for the Charlotte Four Corners Historic District notes that this settlement was the largest of the three town centers. "Its position between the ferry landing and main stage road between Burlington and Vergennes, no doubt, contributed to its settlement and early growth. Development was further stimulated by the location of a railroad station (no longer extant) half a mile west. By the 1880s Charlotte Four Corners contained a church, a school, two stores, a shoe shop, blacksmith shop and about 20 dwellings" (VDHP 1980:1). The architecture of the district reflects the area's development. It is comprised of buildings constructed between 1811 and 1900 in Federal, Greek Revival and Queen Anne styles.

Cemeteries

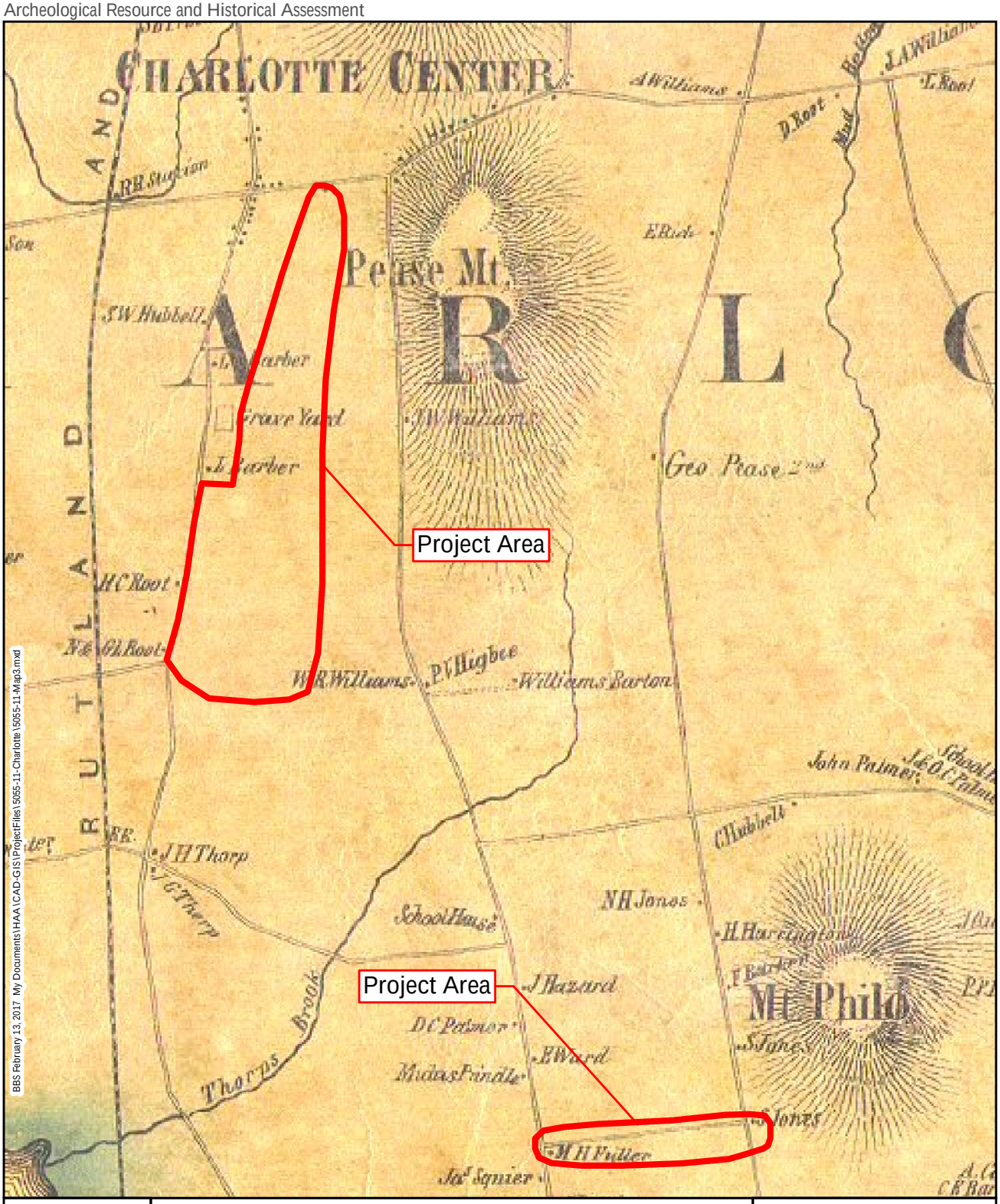
There is one cemetery located adjacent to Greenbush Road within the project vicinity. The Barber Cemetery was first established in 1785 and continued to be used until 1956. It contains over 200 graves, which are enclosed within a chain link fence (Hyde and Hyde 1991). None of the proposed project alignments are located near, or will impact, the Barber Cemetery.

Historic Maps and Archeological Sensitivity

The historic sensitivity of an area is based primarily on proximity to previously documented historic archeological sites, map-documented structures, or other documented historical activities. A review of historic maps of the project area was conducted to attain an overview of the changing historical and environmental landscape within the project area (Map 3 & 4). This review includes the study of historic structures that may be or may no longer be extant, alterations to road and rail systems, and changes in stream and river courses.

There are several historic structures listed on the Vermont Historic Sites and Structures Survey (VHSSS) that are located in the project vicinity which are outlined in Table 4 and shown on Map 5. Several of the modern residences located within the project area are not shown on the most recent USGS map, and are generally shown as Structures 1-6.

The 1857 Walling map of Charlotte shows only the ca. 1785 J. Barber house (Structure 1, Map 5) and associated graveyard located near the Charlotte Village and Greenbush Road alignments. The 1869 Beers map shows this house and graveyard, as well as the addition of the H.C. Root home (Structure 7, Map 5) on the west side of Greenbush Road.



N

0 1,000 2,000 Feet

0 200 400 600 Meters

Note: Graphic scale approximate.

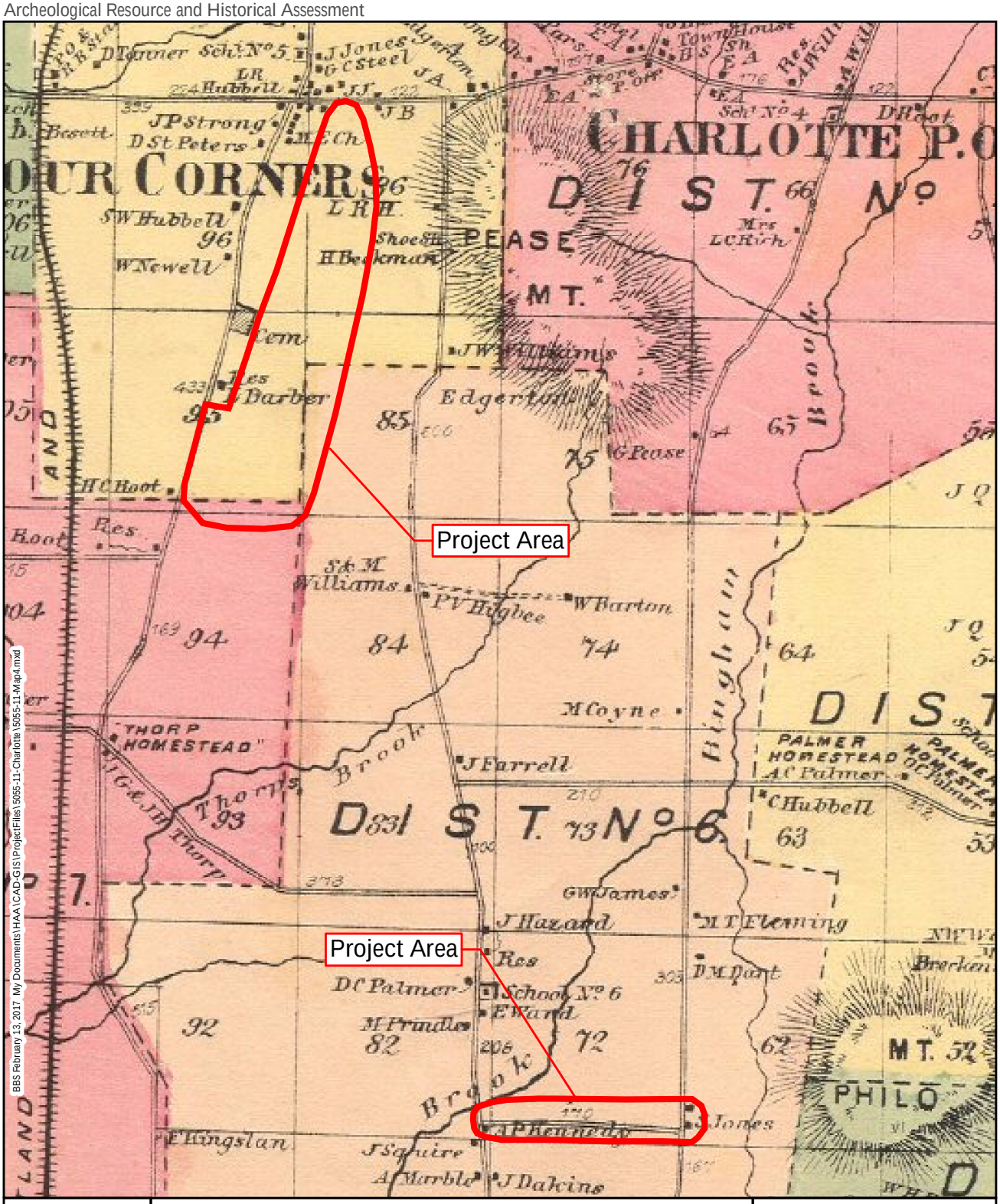
Legend

Project Area

Walling 1857

HARTGEN archeological associates inc

Map 3



N

0 1,000 2,000 Feet

0 200 400 600 Meters

Note: Graphic scale approximate.

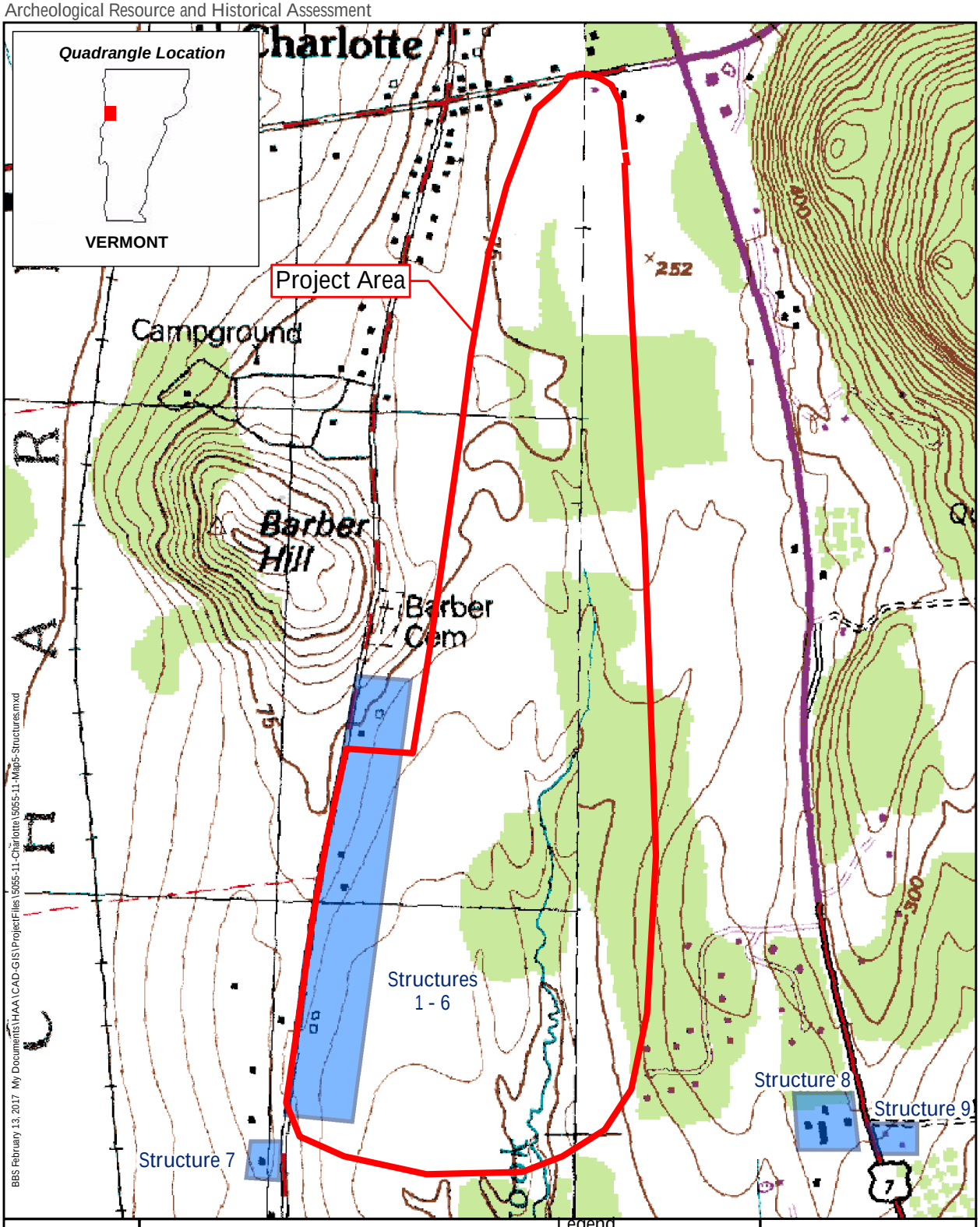
Legend

Project Area

Beers 1869

HARTGEN archeological associates inc

Map 4



N

0 1,000 2,000 Feet

0 200 400 600 Meters

Note: Contour interval is 20 feet.

Legend

Project Area

Historic Structure

USGS 1999 Willsboro, NY - VT
& 1948 Mount Philo, Vermont

HARTGEN archeological associates inc

Map 5

The 1857 map shows the residence of W. H. Fuller is shown at the southeastern corner of the intersection of State Park Road and Ethan Allen Highway on the Mount Philo alignment. At the eastern end of State Park Road, the house of S. Jones is shown. The 1869 map indicates that the Fuller residence was then owned by an A.P. Kennedy. The homestead of S. Jones at the eastern end of the road at the base of Mount Philo is depicted as containing two structures. There are presently no historic structures in this locale on the eastern side of Mount Philo Road. The structure shown on the western end of the alignment as the house of W. H. Fuller (Map 3) and A.P. Kennedy (Map 4) may be the ca. 1850 Aube Tenant house (VHSSS 0403-33) which is located south of the extant Structure 9, which is identified as Schoolhouse #6, and is presently an inn.

There are a few existing structures located adjacent to the Greenbush Road project alignment, the majority of which date to the 20th century and later, and would likely not contain significant archeological deposits. In addition, historic archeological deposits located along roadsides are often absent, or are not considered potentially significant (Borstel 2005). The proposed Greenbush Road alignment is proposed to head eastward across country south of the Hough-Barber-Mack house complex. Therefore, the farm and house yard of this early structure will not be impacted by the bike and pedestrian path construction.

The other three historic structures listed on the VHSSS (Structures 7-9) are located across the road or highway from the proposed pedestrian alignment, and will not be directly impacted by project development.

Archeological Recommendations

The original proposed Charlotte Village alignment within the Thorp Brook valley is considered archeologically sensitive for the presence of precontact material. The recently proposed Charlotte Village alignment, a portion of which is located along Greenbush Road, is also considered archeologically sensitive for precontact sites. A Phase IB archeological survey is recommended for any areas of ground disturbance along either of these Charlotte Village project alignments, including the location of staging areas. No further archeological study is recommended along the Mount Philo alignment.

Architectural Discussion

Historic Context

The standing structures within the project APE were constructed from ca. 1785 to the recent past. The oldest structures represent the agricultural pursuits of the earliest settlers and include large farmhouses and associated outbuildings. Examples from the late 18th to mid-19th century indicate the relative affluence of farmers in the town (Structures 1, 3, 5, and 7 thru 8), (Photos 11 thru 13). A second group of buildings (Structures 2, 4, and 6) represent late-20th century suburbanization. These dwellings follow vernacular models, and are also all of wood-frame construction.

Survey

A total of nine structures are located within the project APE. Four of these have previously been surveyed. Six structures are in excess of 50 years in age (Table 4).

While no state-listed or historic structures are located within the original Charlotte Village alignment, the Four Corner Historic District and other structures are located along Greenbush Road, situated several hundred feet west of this alignment. Along the newly proposed alternative path alignment, there are four historic structures and three modern residences located adjacent to Greenbush Road (Structures 1-7). There are two historic structures located near the proposed Mount Philo alignment (Structures 8 and 9).

The Greenbush Road alignment will pass near or in front of six houses on the east side of the road. At the northern end of the alignment, there is the Hough-Barber-Mack House, a ca. 1785 Georgian vernacular style house and farm complex (Structure 1), one of the earliest structures in the town of Charlotte (VDHP

1976)(Photo 11). The three other houses along this alignment date to the late 20th and early 21st centuries (Structures 2, 4, and 6). On the west side of Greenbush Road, near its intersection with Common Way, there is the ca. 1810 Federal style Root Homestead/ Sampson Residence Avery Palmer residence (Structure 7).

Photo 11. Structure 1, 3633-3637 Greenbush Road, looking north.

Photo 12. Structure 3, 3823 Greenbush Road, looking north-northeast.

Photo 13. Structure 5, barn associated with 4003 Greenbush Road, looking east-southeast.

On the Mount Philo alignment, there are two historic structures listed on the VHSSS, and labeled as Structures 8 and 9 (Map 5). Structure 8 is the ca. 1850 Avery Palmer residence located across the Ethan Allen Highway from the western end of the bike-pedestrian path alignment. According the VHSSS form, Structure 9 is the ca. 1860 schoolhouse #6 which has been converted to a residence, and, more recently, an inn. The structure is located across State Park Road from the western end of the Mount Philo alignment. However, on the 1869 Beers map, Schoolhouse #6 was located further north on Ethan Allen Highway. It is possible that the schoolhouse was moved at a later date to this location.

Table 4. Structures located within or directly adjacent to the project APE

Structure Number	Photo	Property Name or Address	Description	State or National Register	≥50 years of age
1	11	3633-3637 Greenbush Road	Hough-Barber-Mack House and Farm Complex. A two-story center passage wood-frame vernacular house with hipped roof, built in 1785. Together with several outbuildings and a secondary house, an upright-and-wing wood-frame vernacular dwelling.	0403-51	x
2		3783 Greenbush Road	One story wood-frame manufactured house, built ca. 1990.		
3	12	3823 Greenbush Road	A late-19th century two-story wood-frame vernacular house, with substantial late-20th century additions.		x

Structure Number	Photo	Property Name or Address	Description	State or National Register	≥50 years of age
4		3939 Greenbush Road	Two story wood-frame vernacular house with associated outbuilding, built ca. 2000.		
5	13	4003 Greenbush Road	A one-and-one half story wood frame house with gable roofs, of L-shaped plan, consisting of two connected pavilions, together with a two-story wood-frame barn, located on a parcel directly across the street, both dating to the mid-19th century.		x
6		4053 Greenbush Road	Two story wood-frame vernacular saltbox house with three associated wood-frame outbuildings, built ca. 1990.		
7		4206 Greenbush Road	The Root Homestead/Sampson residence, a two-story wood-frame center passage neoclassical house with one story wing, built ca. 1810. Several outbuildings accompany the house.	0403-52	x
8		5582 Ethan Allen Highway	The Avery Palmer Residence, a one-and-one half story wood-frame vernacular house built ca. 1850, with an associated wood frame barn.	0403-36	x
9		32 State Park Road, The Inn at Charlotte	A one-story vernacular wood frame former schoolhouse dating to ca. 1860, converted for hospitality use in the late 20th century, together with one-story wood frame pavilions constructed when the building was converted to an inn.	0403-34	x

Associated Landscape features

There are no sidewalks, curbs, retaining walls or other street furniture within the project APE. The majority of the properties which are in excess of 50 years in age have mature roadside plantings, typically consisting of street trees.

Architectural Recommendations

Impacts to mature plantings associated with structures identified as in excess of 50 years in age should be avoided.

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APPENDIX I: VDHP Environmental Predictive Model

VERMONT DIVISION FOR HISTORIC PRESERVATION

Environmental Predictive Model for Locating Pre-contact Archaeological Sites

Project Name **County** **Town**
DHP No. **Map No.** **Staff Init.** **Date**

Additional Information

Environmental Variable	Proximity	Value	Assigned Score
A. RIVERS and STREAMS (EXISTING or RELICT):			
1) Distance to River or Permanent Stream (measured from top of bank)	0- 90 m 90- 180 m	12 6	
2) Distance to Intermittent Stream	0- 90 m 90-180 m	8 4	
3) Confluence of River/River or River/Stream	0-90 m 90 –180 m	12 6	
4) Confluence of Intermittent Streams	0 – 90 m 90 – 180 m	8 4	
5) Falls or Rapids	0 – 90 m 90 – 180 m	8 4	
6) Head of Draw	0 – 90 m 90 – 180 m	8 4	
7) Major Floodplain/Alluvial Terrace		32	
8) Knoll or swamp island		32	
9) Stable Riverine Island		32	
B. LAKES and PONDS (EXISTING or RELICT):			
10) Distance to Pond or Lake	0- 90 m 90 -180 m	12 6	
11) Confluence of River or Stream	0-90 m 90 –180 m	12 6	
12) Lake Cove/Peninsula/Head of Bay		12	
C. WETLANDS:			
13) Distance to Wetland (wetland > one acre in size)	0- 90 m 90 -180 m	12 6	
14) Knoll or swamp island		32	
D. VALLEY EDGE and GLACIAL LAND FORMS:			
15) High elevated landform such as Knoll Top/Ridge Crest/ Promontory		12	
16) Valley edge features such as Kame/Outwash Terrace**		12	

17) Marine/Lake Delta Complex**		12	
18) Champlain Sea or Glacial Lake Shore Line**		32	
E. OTHER ENVIRONMENTAL FACTORS:			
19) Caves /Rockshelters		32	
20) [ ] Natural Travel Corridor			
[ ] Sole or important access to another drainage			
[ ] Drainage divide		12	
21) Existing or Relict Spring	0 – 90 m	8	
	90 – 180 m	4	
22) Potential or Apparent Prehistoric Quarry for stone procurement	0 – 180 m	32	
23)) Special Environmental or Natural Area, such as Milton acquifer, mountain top, etc. (these may be historic or prehistoric sacred or traditional site locations and prehistoric site types as well)		32	
F. OTHER HIGH SENSITIVITY FACTORS:			
24) High Likelihood of Burials		32	
25) High Recorded Site Density		32	
26) High likelihood of containing significant site based on recorded or archival data or oral tradition		32	
G. NEGATIVE FACTORS:			
27) Excessive Slope (>15%) or Steep Erosional Slope (>20)		- 32	
28) Previously disturbed land as evaluated by a qualified archeological professional or engineer based on coring, earlier as-built plans, or obvious surface evidence (such as a gravel pit)		- 32	
**** refer to 1970 Surficial Geological Map of Vermont**			
		Total Score:	
Other Comments :			
0- 31 = Archeologically Non- Sensitive **32+ = Archeologically Sensitive**			

Bicycle and Pedestrian Scoping Study - Charlotte Town Trail

Local Concerns Meeting Minutes

Local Concerns Meeting

Charlotte Town Offices
159 Ferry Rd, Charlotte, VT 05445

Tuesday, October 19th, 2016
7pm

In attendance:
Dean Bloch (Town of Charlotte)
Daniel Ziegelman
John Limanek
Wolfger Schneider
Dora Coates
Mary Van Vleck
Phyllis Mazorski
Larilee Suiter
Clark and Pam Dodge
Stephanie Hasse
Richard Hendrickson
Jack Pilla
Gary Franklin
Shanley Hingr
Christine Cowart
Laurie Thompson
Lucy Gibson (D&K)
Sophie Sauvé (D&K)

MEETING PURPOSE

Inform residents of Charlotte of the project underway, field questions and concerns that will impact the development of alternatives and siting of the trail.

QUESTIONS/ CONCERNS

Clark and Pam Dodge – Wildwood residents:
What are the negative aspects of the trail – not presented
They enjoy watching owls, deer, coyotes, wolves on their land and hunt: the trail would impact hunters and vice-versa and impact on wildlife.
They are avid hikers and bikers but go to Mt. Philo if they want to hike.
Don't want a trail in their backyard.

Resident on other side of Wildwood West:
What about off-season hunting? People in other areas have been injured (some severely) by off-season hunting on private land (that crosses onto public land).
Who would be liable and pay for the care of someone injured?

Resident/ Dog owner:
Dog not leashed on land; would dogs need to be leashed if the trail went near/ on their property?

Experience from CoHousing residents:
The CoHousing Trail is posted for no hunting
Wildlife love the path: see evidence of scat everywhere
One problem: unleashed dog although posted that dogs must be on leash
Negative impact of the construction of the trail: brought in poison parsnip
Enjoyment and benefits of the trail cannot be beat

Wildwood West Resident:
Would like to avoid using car to go everywhere within Charlotte
Would like to bike into town/ Mt. Philo for a hike rather than need to drive there
Feels cut off from Town
Would like the accessibility

Trails Committee Member:
Benefits of trail adjacent to property: increases home values
Allows children to walk to town

Larilee Suiter, CoHousing Member:
Her property faces the entrance to the CoHousing trail: she can see and hear people go onto the trail
States that the there is a steady but not busy amount of people using the trail
Disappointment is with dog owners letting dogs go off leash on the trail
Has not seen any trash on the trail
The trail is graded for all abilities which is wonderful.
Enjoys visiting the trail with her grandchild = family-friendly
The trail is an asset to the community
When out walking the trail, she sees neighbors and catches up

Question: Mt. Philo's maxed out parking and overflow along Mt. Philo Road
State has been looking at parking and there was a meeting held in May
ACTION: Trails Committee members to follow up with State Parks to find out future of parking at Mt. Philo

Width of trail – Mack trail ~6' with some encroachment that does not allow two people to walk side-by-side and the CoHousing trail is ~8' with edges not being as defined either after time.

CoHousing Trail: has narrower portion of trail in the woods near the entry: would like it to remain enclosed/ intimate rather than widening it.

Reference to Plouffe trail: how the trails committee worked with Town Conservation Commission / successful coordination of the design of the trail with regards to conservation issues.
Plouffe trail has lots of hunting nearby and during fall: wear colors for safety

Clark and Pam Dodge: have discussed their concerns with neighbors, including privacy
Question: will this (the trail) be voted on?
Answer: selectboard will decide/ vote [note: connected trails are in the town plan]

Reference to Fellowship of the Wheel:
Virtually all trails are on private land; have had an overwhelmingly positive experience receiving permission from individuals to use their land (similarly to VAST – receive temporary permissions that can be revoked)

Cathy Rich (has property with double stream at back or property)
Question: Will buying the land outright be a possibility?
Answer: Could be an easement by the town or the land itself.
Stream is stronger than used to be and causes erosion
They have put in four bridges to cross the streams over the years
Ok'd Team to go onto property to assess trail crossing

Underpass background (to be completed in 2017): need to have trail built up to it on both sides for state to consider it as an asset. Very difficult to get approved. Should also serve as a wildlife corridor.

CoHousing residents have walked both sides of the streams and would prefer it going on the west side because have fire pond and gardens to the wast

Clark Dodge: Negative aspects of trail: security, privacy, wildlife impact and crime
Does not want more people invited to the area
What about people who want to use snowmobiles and 4-wheelers on the trail? Not been a problem on the CoHousing trail.

We'll need to identify intended users and how to impede users for which it is not intended.

Other side of Security conversation:
Option to move off road, would be fabulous, especially for small children to avoid aggressive drivers
Gets people out of cars

NEXT STEPS:

Check in at next Trail Meeting, November 15th, 7pm at Town of Charlotte Offices
ACTION: find information on trails and home values as well as safety/ crime prevention
ACTION: reach out to members of the conservation commission to hear of any concerns in the planned areas
ACTION: reach out to Fellowship of the Wheel (Mtn. Biking Group) to hear they form partnerships/ work with landowners

Trail Scoping Project
Notes from Alternatives Analysis (2nd Public Meeting)
Tuesday February 28, 2017 @ 7 PM
Charlotte Town Hall

Present:
Lucy Gibson and Sophie Sauvé from Dubois & King
Dean Bloch, Town Administrator
Residents: Laurie Thompson, Tricia Coyle, Braxton Robbason, Garrett Sadler, Gerald Bouchard, Lane Morrison, Phyllis Mazurski, Catherine Bock, Larilee Suiter, Wolfger Schneider, Matt Burke, Jim Donovan, John Limanek, Stephanie Hasse, Susan Smith, Chris Souliere, Jim Hyde, Susan Hyde, Rich Ahrens

Lucy Gibson gave presentation with PowerPoint. Among items discussed was the width of the trail; the goal is for the trail to be eight feet wide. Lucy thought the existing trail is six feet wide. (Subsequent to the meeting the construction specification of the existing trail was found—the northerly portion of the Co-housing section was built five feet wide and the southerly portion of the Co-housing section was built to 8 feet wide, though grass has grown in on the sides, or in some locations the shoulder slopes).

Public Questions/Comments:

Patricia Coyle asked what steps will be taken to make the trail handicap accessible? Lucy said that, to the extent feasible it will be designed to be ADA compliant—however, there may be some portions that cannot be ADA compliant, for example if the width of the easement doesn't allow switchbacks to reduce grade to ADA standard.

Braxton Robbason asked what is needed to accomplish Route A-4? Lucy said it would need an easement from the property owner, and this may be hard to get.

Patricia Coleman asked what is considered "transportation?" Is motorized allowed? Lucy said no, except motorized wheelchairs, and for maintenance.

Matt Burke commented/asked:

- If Route A-4 is selected, he thinks people will tend to use State Park Road instead of A-4, which is an indirect to Mt. Philo State Park.
- What is the maintenance cost? Margaret described the Trails Committee's budget, the Town's mowing contract (includes mowing shoulders of trails), and the Trails Committee's work-days.
- What is the traffic count on State Park Road? (I don't believe this was answered at the meeting).

Linda Radimer asked if tree removal is required? Can the trail be weaved through trees? Lucy said not along the roadside.

Linda also asked if an 8 foot width is required? Can it be less? Lucy said that 8 feet is the minimum width for two bicycles to pass safely. She said there's a possibility of a "dismounted only" section, which could be narrower if needed.

Garrett Sadler asked if bike lanes on Greenbush Road would be appropriate?

There was discussion about whether purchasing an easement or buying parcels fee simple might be necessary.

Wolfger Schneider said there is a public pedestrian easement within Common Way (private road to Champlain Valley Co-housing)—he wondered who is to pay for maintenance?

Patricia Coyle asked who would be liable if someone was injured. Lucy said that Vermont Law protects property owners if people are hurt on their property, as long as they non-commercial.

Jim Hyde said that there are portions on Route B-3 that have a steep grade—these would require increased maintenance/cost and be less accessible.

Wolfger Schneider said that Route B-1 affects the privacy of the co-housing residents.

Linda Radimer said the Conservation Commission should meet with the Trails Committee.

Wolfger Schneider said that animals use the existing trail. The trail is not necessarily incompatible with wildlife.

Matt Burke said the issue of privacy came up when there was discussion of bringing the trail up along the boundary between Co-housing and the Berry Farm. He said the trail has added value to the Co-housing properties. He favors route B-1.

Patrica Coyle said that lots of hoops (permitting) will be needed for Section 3.

Dean Bloch suggested making a connection/access point from the trail to Greenbush Road at the north end of the Burns property (which is town owned).

There was discussion of funding. Patricia Coyle asked what the origin of the trail plan was? How much "proof" is required before investing? Jim Donovan explained.

Jim Donovan asked if a zoning permit is needed for the trail? He said he doesn't want to penalize property owners.

Margaret Russell said that New Hampshire allows trails on land that is under "current use."
Notes provided by Dean Bloch

ATTENDANCE for meeting of: TRAILS PUBLIC MTG Date: 2·28·17

PRINT NAME	MAILING ADDRESS PLEASE PRINT	Agenda Item you are attending
Laurie Thompson	Charlotte	
Tricia Coyle	PO Bx 27 Charlotte	
Braxton Robbason	Charlotte	
Garrett Sadler	5 Tamarack Rd	
G. A. BOUCHARD		
LANE MORRISON	LAKE RD	
Phyllis Mazurski	3 Common Way	
Catherine Bock	25 Common Way	
[illegible]	1 Common Way	
Wolfgang Schneider	8 "	
MATT BURKE	24 COMMON WAY	
JIM DONOVAN	PO BOX 321	
John Fumcink	455 Carpenter St	Link Trail
Stephany Hasse	2439 Spear	Link Trail
Susan Smith	5166 Lake	"
Chris Sylvia	P.O. Box 24	Link Trail
Jim & Susan Hyde	PO Box 180	Link Trail
[illegible]	42 WISHBONE LN	

Trail Scoping Project
Notes from 3rd & Final Public Meeting
Thursday June 22, 2017 @ 7 PM
Charlotte Town Hall

Present:
Lucy Gibson from Dubois & King
Dean Bloch, Town Administrator; Daryl Benoit, Town Planner
Residents: Tricia Coyle, Shawn Coyle, Laurie Thompson, John Limanek, Margaret Russell, Mary Van Vleck, Susan Smith, Lane Morrison, David Ziegelman, Dora Coates, Christine Cowart, Jim Donovan, Matthew Burke, Carrie Spear, Anne LaBombard, Lucy Beck, Hugh Lewis Jr., Randy Archer

Lucy Gibson gave a presentation with PowerPoint describing the project, the current preferred alternatives, the remaining challenges (particularly for Segments B & C), the potential next steps, and the budget for the State Park Road section (Segment A) for design, permitting and construction.

Public Questions/Comments:

Sue Smith asked if the existing culvert at Kimball Brook is adequate, since the potential plan would be to add fill to the side of the bank, and hold it with a retaining wall? Lucy said the culvert extends far enough.

Sue Smith indicated that the Tree Warden would have to be consulted about removing trees.

Shawn Coyle asked how many parking spaces are there? Lucy said there are not very many, and they are spread around the trail, to allow access from different points.

Patricia Coyle asked what the cost of creating parking areas is, and whether that's included in the cost estimate? Patricia also asked who maintains the parking. Lucy said that the plan does not currently include designing, constructing or maintaining parking areas. She noted in some cases the parking areas already exist, such as at the old flea market, the Town Hall, the Old Lantern, Mount Philo State Park, potentially the Little League Fields, and some other locations that have been discussed but not finalized.

Lane Morrison asked if the space between State Park Road and the proposed path is clear? He noted that sometimes the Park's parking lot is full, and people park down State Park Road. Could people pull onto the path and use it for parking? Lucy suggested that large stones or posts could be placed between the road and the path so that people couldn't pull onto the path. They could be removed in the winter so as not to interfere with snow plowing.

Patricia Coyle asked how will fill effect the wetland and culvert? Lucy said she's been trying to minimize the impact on the wetland. A retaining wall will help do that.

Jim Donovan said that the culvert is down low and extends more than eight feet from the road—so he thinks it's sufficiently long to accommodate some fill.

Lucy was asked to provide construction costs for Segment A using the VTrans specifications, "recreation specifications," and the VTrans specifications with a boardwalk. These are:

VTrans standard = $343,000
Recreation = $249,000
VTrans with boardwalk = $403,000

Lucy described some challenges of Segment B: some easements are needed, and a timber bridge about 20 feet long. She also indicated that there is an interest among Co-housing residents in protecting their privacy at the swimming hole. Also, there are clayplain forests along Thorpe Brook, which the state is trying to protect.

Lucy Beck asked if Lucy Gibson could be more specific with regard to where the trail would go through Co-housing? Lucy Gibson said it would be the "path of least resistance"—and she pointed out the route options and potential difficulties. She said the crossing of Thorpe Brook could use a sensitive design to minimize impacts.

Construction cost for Segment B with the VTrans design is estimated at $337,000, and $211,600 using recreation standards.

Patricia Coyle asked if Lucy could provide specifications for both types of construction? Lucy said she could. Patricia asked which standard would take into consideration handicap access? Lucy said both.

Mary Van Vleck asked if the existing sections are considered handicap accessible? Lucy said she wasn't sure.

Lucy Beck asked if the route through Co-housing would change based on which route was selected further to the north? She wanted to point out that Co-housing is not monolithic—there are 22 families, and many different opinions. She also said her concerns are not just cosmetic—she has concerns about dogs not being under control.

Matt Burke asked how the trail would intersect with the Co-housing access road? Laurie Thompson said that there is usually a "stop" sign on the trail. Lucy said there's also usually a turn, intentionally, so trail users can't just go right out into the road.

Lucy described Segment C in more detail. She said a bridge is needed, and probably a boardwalk on the southerly portion of the Burns property.

Patricia Coyle said the use of the Burns property requires a town vote. There were others who said they have not seen any requirement for this.

Lucy provided the estimates of construction costs for Section C using the VTrans standard the recreational standard.

Patricia Coyle asked if all segments need easements? Lucy said that Segment A doesn't need any more easements to be constructed.

Lucy described next steps:

- She is working on a report to be submitted to VTrans, to wrap of the Scoping Project
- An application for Segment A could be submitted to the Bicycle and Pedestrian Grant Program. The grant request would be $423,424 if the path is located adjacent to the roadway at Kimball Brook, or $513,264 using the boardwalk route.

Lucy said that the Town could potentially provide project management, which is a reimbursable expense, so the overall cost to the town would be reduced by about $33,000.

Patricia Coyle asked how much would this be committing the Town to future maintenance? Dean said that currently the Town mows the shoulders of trails, but, unless there's a washout, there isn't much more maintenance since the Trails Committee trims back the vegetation along the sides.

Patricia Coyle asked what's the average cost of maintenance per mile?

Jim Donovan said that maintenance varies year by year, but he recommends budgeting 1%-2% of the construction cost per year for maintenance.

Patricia Coyle asked Lucy to provide more information about three items:

- The cost of maintenance
- The cost of providing parking
- The difference between VTrans' standards and "recreation" standards

The presentation ended at 9:30 p.m.

Notes provided by Dean Bloch

ATTENDANCE for meeting of: Trails Scoping Project Date: June 22, 2017

PRINT NAME	MAILING ADDRESS PLEASE PRINT	Agenda Item you are attending
Tricia Coyle	PO Box 27	
Shawn Coyle	Charlotte	
Laurie Thompson	Carpenter Rd.	
John Limanek	[illegible]	
Margaret Russell	Lake Rd Charl	Trail J
Mary Van Vlack	26 Common Way	
Susan Smith	5166 Lake Rd	trail
[illegible]	4534 LOKE RD	
David Ziegelman	528 Stockbridge	Trail
Dora Coates	18 Common Way	Trail
Christine Cowart	1290 Carpenter Rd.	Trail
[illegible]	PO Box 321	TRAIL
MATTHEW BURKE	24 COMMON WAY	TRAIL
Carrie Spear	2954 Mt Philo Rd	"
Anne Jabonhead	3768 C Spear St	Trails
Lucy Beck	4 Common Way	Trails
Hugh Lewis Jr	1863 Ferry Rd	"
Randy Archer	2 Common Way	"

State of Vermont
Office of Planning
1 National Life Drive, Davis 2
Montpelier, VT 05620-3901 Ph: (802) 923-6647

Agency of Natural Resources

September 1, 2017

Lucy Gibson, PE
Dubois & King
28 North Main Street
Randolph, VT 05060

RE: Town of Charlotte Trail Draft Feasibility Study

Dear Lucy,

Thank you again for contacting ANR to provide input regarding the Charlotte Trail feasibility study. We performed a site visit on August 9, 2017 with Agency staff from FPR, and DEC Rivers, Wetlands, and Stormwater Programs. Additional input was received from Fish and Wildlife (F&W) Wildlife and Nongame Natural Heritage Program staff based on review of the draft feasibility study. Outlined below are comments and items for future follow up organized by segment. The comments are especially relevant for portions of the trail which are subject to Act 250. ANR is available to review and provide comment on future versions or studies related to the trail alignment as the design and land acquisition process progresses.

General

- **Act 250 jurisdiction** - determine which parcels are currently under Act 250 jurisdiction.
- **RTE Plants** - Where there will be disturbances, perform a rare, threatened and endangered species plant survey in the vicinity of known occurrences and in areas of potential habitat. It is not necessary to include roadsides, lawns, and agricultural fields in the survey area.
- **Natural Communities** - Perform a natural community inventory along the proposed new trail areas.
- **Rivers/Streams**
    - The river corridor and riparian buffers on small streams in the study area is a 50-foot setback from top of bank. Avoid trail alignments that are parallel to the channel within the river corridor and riparian buffer.
    - Utilizing existing stream crossings is preferable to creating new ones as this will minimize new lateral constraints on the stream channels in the project area.

- Several of the channels observed during the site visit showed signs of extreme lateral and vertical instability. Minimizing new crossings in these areas and sizing crossings to accommodate lateral adjustment processes will limit future damages.
- Perennial stream crossings will require authorization under the Stream Alteration Permit. The permitting process will determine the final length of the spans, but will need to be a minimum of 1.2 bankfull width.

- **FPR -** Overall, FPR is supportive of the town's trail project and increased recreational opportunities both for residents and visitors. It is an ambitious project that will undoubtedly have considerable positive benefits to the town. We recognize the significance Mt. Philo State Park has as a recreational asset to the community and are anxious to work with the town to develop a successful trail network.

  As mentioned at the site visit, Mt. Philo State Park visitation is at a level that is causing significant stress on the trails, water supply, wastewater disposal and parking infrastructure at the park. For example, as mentioned in the report, it is common for the parking areas to be filled to capacity resulting in considerable parking along State Park and Mt. Philo Roads. While we are encouraged that additional parking for the new trail is proposed in the vicinity of the park, it is not clear to what extent that will alleviate the serious safety issues that are currently associated with visitors parking on Mt. Philo Road and the State Park Road. Speeding on Mt. Philo Road is known to be a problem especially as it is often used by bicyclists. We strongly suggest the trail project address issues related to roadside parking, safety (of pedestrians, bikers and drivers) and sight lines for motorists and cyclists pulling out onto Mt. Philo Road and State Park Road. A lot of the issues could be minimized by substantially increasing off-road parking away from but still in the vicinity of the state park; banning parking along Mt. Philo and State Park Roads; and addressing a potentially very serious hazard associated with hikers crossing Mt. Philo Road from the end of the trail into the park.

  FPR is open and willing to continue to work with the Town and looks forward to finding solutions to address the trail and State Park use in order to provide a positive user experience at sustainable levels. We are encouraged that the report states: "a committee of town volunteers and State Officials is currently working on a plan to address the parking shortage issue" at Mt. Philo State Park and that they "anticipate that parking shortage will be alleviated in the future". FPR is anxious to be part of that discussion.

Segment A

- **Wetlands, F&W Wildlife and Nongame Natural Heritage Program** – F&W Wildlife staff will work with Wetland staff to provide input for wetland permitting with respect to wildlife functions/values.
  - From a wildlife perspective, option A4 would likely have the least impact to wildlife as it uses an existing farm road and crossing that could be improved during trail

construction. If A4 is not possible, A1 boardwalk option may be viable from Wildlife perspective.

- Kimball Brook and its riparian area includes important wetlands and potential wildlife movement corridor. Both A1 designs, bump out and boardwalk, require a wetland permit.
    - The bump-out option utilizes the existing crossing infrastructure and may be limited to just buffer impacts. However, the requirements of needing fencing and a retaining wall may inhibit wildlife movement.
    - A boardwalk should be designed to have minimal effect on the wetland functions, including maintaining natural hydrology, minimizing tree cutting, and of sufficient height to allow for wildlife movement.
    - State Park Road- wetlands have recently been delineated in the field on the northern side of State Park Road, before the Kimball Brook crossing. The wetlands border a good extent of the road and are designated as Class II. The proposal to bump out this section of the road would require a permit.
- No known state-significant natural communities have been identified along Kimball Brook yet, although soils mapping would indicate that floodplain and clayplain communities are developing in formerly cleared areas.

Segment B

- **Wildlife & Nongame Natural Heritage Program -** Alternative B1 would route the new trail through a state-significant Mesic Clayplain Forest, a rare natural community type. Clearing trees and constructing a gravel path through his natural community would have direct adverse impacts on the community, result in a permanent crossing of two branches of Thorpe Brook and its riparian area, as well as likely resulting in the introduction of additional non-native invasive species into the clayplain forest. Alternatives B2 and B3 appear to have fewer adverse effects.
- **Wetlands -** There are Class II wetlands associated with Thorp Brook; however, the trail route of the site visit was mostly upland (Mesic Clayplain and Hemlock forests). The two proposed crossings over Thorp Brook did not appear to have Class II wetlands in the vicinity.

Segment C

- **F&W Wildlife and Nongame Natural Heritage Program** – Option C3 would have the least wildlife impacts. Alternative C1 appears to avoid most of the wetlands, state-significant natural communities, and uncommon plants in the upper portion of the Thorpe Brook riparian corridor. Alternative C2 appears to have significantly greater impact to these features.
- **Wetlands -** This segment contains extensive Class II wetlands. The property titled "Town Land" on the map contains wetlands that would need to be delineated to determine extent and classification. The rec path should be designed to avoid Class II wetlands on the Town Land due to the flexibility of being owned by the Town. The alternatives C1 and C2 would impact a substantial amount of wetland. A boardwalk through C1 or C2 would also require a

permit. The area C2 crosses has mapped class II wetlands and a mapped Mesic Clayplain Forest. C1 avoids the interior of the wetland complex but would still impact wetlands along most of its route due to the wetlands extending to, and potentially past the tree line. Both C1 and C2 would be difficult to approve, especially with C3 as another alternative outlined in the scoping study. C3 likely avoids or would at least significantly reduce impacts to wetlands and buffers.

Thank you again for the opportunity to provide input early in the process. Please don't hesitate to contact me at Jennifer.mojo@vermont.gov or 802-923-6647 regarding any questions or comments on the above.

Sincerely,

Jen Mojo
Senior Planner
ANR Office of Planning

Cc: Tina Heath, DEC Wetlands
Winn Wilson, DEC Stormwater
Gretchen Alexander, DEC Rivers
Chris Brunelle DEC Rivers
Eric Sorenson, F&W NNHP
Bop Popp, F&W NNHP
Toni Mikula, F&W Wildlife
John Gobeille, F&W Wildlife
Bernie Pientka, F&W Fisheries
Craig Whipple, FPR
Lisa Thorton, FPR
Maria Mayer, FPR