FINAL VERSION

NORTH WILLISTON ROAD SCOPING STUDY EXISTING CONDITIONS

DECEMBER 2017

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TOWN OF WILLISTON
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CHITTENDEN COUNTY REGIONAL PLANNING COMMISSION

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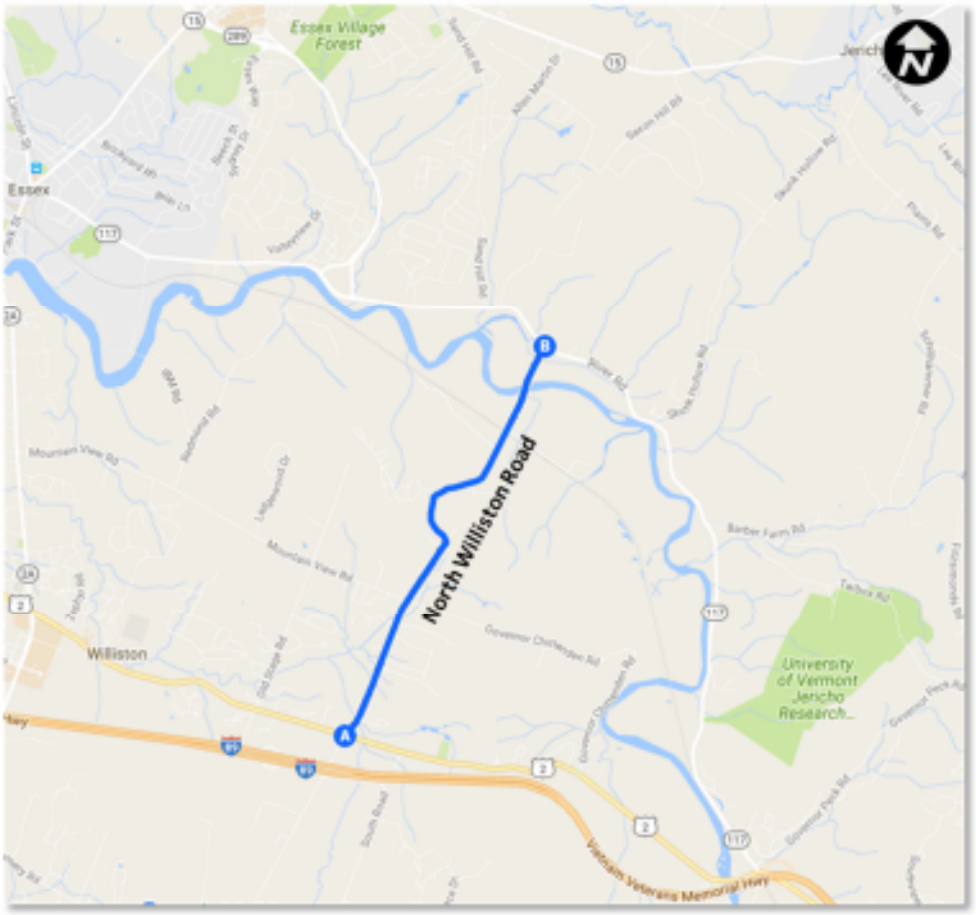
1.0 INTRODUCTION

1.1 | PROJECT BACKGROUND

North Williston Road is a 3.1-mile, two-lane town highway in Williston, Vermont, running north-south between US Route 2 and Vermont Route 117. It serves as a key regional connection over the Winooski River between Vermont Route 15 and I-89 - a connection of increased significance now that the Circumferential Highway plans have been discontinued. The road also intersects Mountain View Road, which serves as a secondary east-west route through the Town of Williston. In addition to its significance in the larger roadway network, North Williston Road is an important local roadway; the town center, residential side streets, two popular recreational areas, and two shared-use paths are some of the community destinations off or along North Williston Road.

Figure 1-1. Context Map



Pedestrians, drivers, transit riders, and bicyclists alike travel along North Williston Road as part of their regular commutes and errands. A gravel extraction site towards the north end of the project area generates heavy vehicle truck loads, while pedestrians and bicyclists may travel along this road for recreation. From the residential section to the rural and forested section to the agricultural Winooski River valley, the road is home to natural beauty, industrial and agricultural activities, and community connections tying the region together.

Considering the local context, multiple modes of transportation, and increasing traffic volumes, the Town of Williston is conducting this multimodal transportation infrastructure scoping study along North Williston Road. The study was originally identified in the Town's 2011 Comprehensive Plan. The goal of this study is to identify the appropriate roadway cross sections, drainage and stormwater enhancements, and safety improvements to accommodate the increased demands associated with nearby land development, growth in commuter traffic, demands for growing bicycle and pedestrian traffic, and changing hydraulic conditions.

1.2 | STUDY AREA

The geographic area of the study includes four distinct roadway segments along North Williston Road: residential, rural, hollow, and river (Figure 1-2). In the residential section, the roadway is 26-feet wide, with 10-foot travel lanes and 3-foot shoulders in both directions. In the remaining three segments, north of Mountain View Road, North Williston Road is approximately 24-feet wide, with 11-foot travel lanes and 1-foot shoulders. The right-of-way is assumed to be a 3-rod width (49.5 feet), according to the Town.

There are three significant intersections along North Williston Road: US-2 (Williston Road) / Oak Hill Road at its southern end, VT-117 (River Road) at its northern end, and Mountain View Road / Governor Chittenden Road where the landscape changes from residential to rural. There are no signalized intersections along North Williston Road.

Figure 1-2. Roadway Segments

The **residential** segment is between Williston Road (US Route 2) and Mountain View Road, characterized by a denser development pattern with looping streets and cul-de-sacs that funnel vehicular traffic onto North Williston Road. The terrain is relatively level, and an existing 6-foot asphalt path runs along the western side of the roadway.

The **rural** segment is between Mountain View Road and Peterson Lane, characterized by less dense development, relatively level terrain, and no existing bicycle or pedestrian infrastructure.

The **hollow** segment is between Peterson Lane and Fay Lane, characterized by the relatively steep and winding descent northbound from the rural plateau to the Winooski River valley. The upper portion of the hollow is relatively undeveloped, with more houses towards the river. Toward the middle of this segment is the tee intersection of Williston Woods Road, which provides access to a senior living community consisting of 122 manufactured homes. Throughout the rest of the Hollow segment, the roadway appears relatively narrow, with significant drainage ditches on both sides and no bicycle or pedestrian infrastructure.

The **river** segment is between Fay Lane and the Winooski River and includes the North Williston Historic District whose prominence came about with the advent of the railroad that passes through the area. The area is comprised of residential homes and agricultural use. There are no dedicated bicycle or pedestrian facilities on this roadway segment.

1.3 | PROJECT GOALS AND OUTCOMES

GOALS

- Evaluate the existing traffic and safety operations
- Identify opportunities and constraints for improvement
- Propose preferred treatments for an improved transportation system

OUTCOMES

- Documentation of traffic, safety, environmental, stormwater, and historic issues
- Compilation of "spot studies"
- Incorporation of public input and support
- Estimate of the future traffic demands
- Improvement plan to realize the community vision
- Compile all the above in a final report

2.0 PURPOSE AND NEED STATEMENT

The purpose and need statement is a summary of the context and issues related to the project that justifies the need for action. It was initially based upon the analyses of existing and future conditions and was revised following input at the Local Concerns Public Meeting (May 2, 2017). Alternative designs are evaluated relative to their ability to satisfy the project's purpose and need statement.

PROJECT PURPOSE

The purpose of this project is to ensure that North Williston Road is a resilient travel corridor and that all travelers - including vehicles, pedestrians, and bicyclists - can travel safely and efficiently along the corridor.

PROJECT NEED

The need for this project is documented by:

- Traffic demands exceeding the roadway's initial design expectations;
- Proposed reconstruction of the River Road intersection, which may bring more traffic through the corridor;
- Evidence of erosion and underperforming drainage structures;
- Concerns from residents of unsafe speeds and driver behavior along the roadway
- Lack of bicycle facilities, despite being identified as a bike route
- Several separate "spot" intersection studies with no coordinated plan; and
- Continued regional land use development leading to North Williston Road as a significant regional traffic link.

3.0 PAST STUDIES AND PLANS

Several studies have been conducted by the Town of Williston and Chittenden County Regional Planning Commission along and adjacent to the corridor over the past 15 years. These studies and their recommended preferred alternatives are summarized in this section.

US 2 / NORTH WILLISTON ROAD INTERSECTION SCOPING STUDY

Chittenden County Metropolitan Planning Organization, 2009 | Link

Prepared by: RSG

This study reviewed the intersection of Williston Road (US-2) and North Williston Road, in Williston Village. The needs listed in the final report included:

- congestion and significant queues during peak hours
- the intersection's classification as a High Crash Location, and
- the number of pedestrians in this historic, dense section of town.

There were four considered alternatives, including a signal, a roundabout, and modifications of these. The Town Selectboard's initial preferred alternative was the roundabout alternative; however, following much public input, the decision was modified in favor of keeping the intersection as a four-way stop-controlled intersection

Figure 3-1. Roundabout Alternative of the US-2 Intersection Study

NORTH WILLISTON ROAD AND MOUNTAIN VIEW ROAD INTERSECTION STUDY

Chittenden County Regional Planning Commission, 2012 | Link

Prepared by: RSG

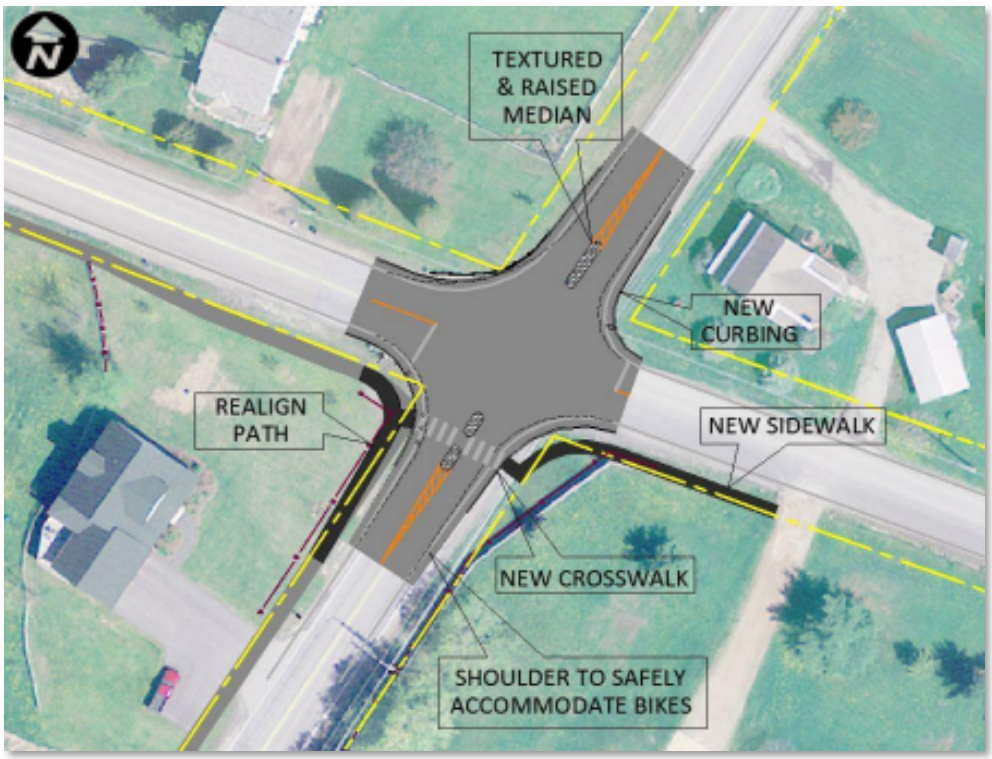
This study reviewed the needs and possible improvement options at the intersection of North Williston Road and Mountain View Road / Governor Chittenden Road.

The report lists several traffic contributions of significance:

- The IBM campus to the northwest is a significant trip generator
- North Williston Road makes connections from Essex, Jericho, and points northeast to Williston and South Burlington via its Winooski River crossing. It is sometimes referred to as the "de facto" Circ Highway.
- The Fontaine sand pit generates dump truck traffic with varying intensities depending on the season and degree of economic activity.
- Events at the Catamount Family Outdoor Center on Governor Chittenden Road also influence vehicle, bicycle and pedestrian traffic at this intersection.

Six build alternatives were considered, ranging from converting to an all-way stop, to installing a roundabout. The preferred alternative was a combination of safety and traffic calming measures, which was partially implemented in the spring of 2013.

Figure 3-2. One Set of the Final Recommendations of the Mountain View Road Intersection Study



MOUNTAIN VIEW ROAD BICYCLE / PEDESTRIAN FACILITIES STUDY

Chittenden County Regional Planning Commission, 2014 | Link

Prepared by: Stantec Consulting Services Inc.

This study looked at the Mountain View Road corridor for suitability of bicycle and pedestrian infrastructure. It evaluated a widened roadway with shared use shoulders, or an off-road path on either side of Mountain View Road. The widened roadway was selected as the preferred alternative, which included a crown shift and widening 4-feet on one side of the road to provide 11-foot travel lanes and 4-foot, uncurbed, shared-use shoulders in both directions.

VT117-NORTH WILLISTON ROAD SCOPING STUDY

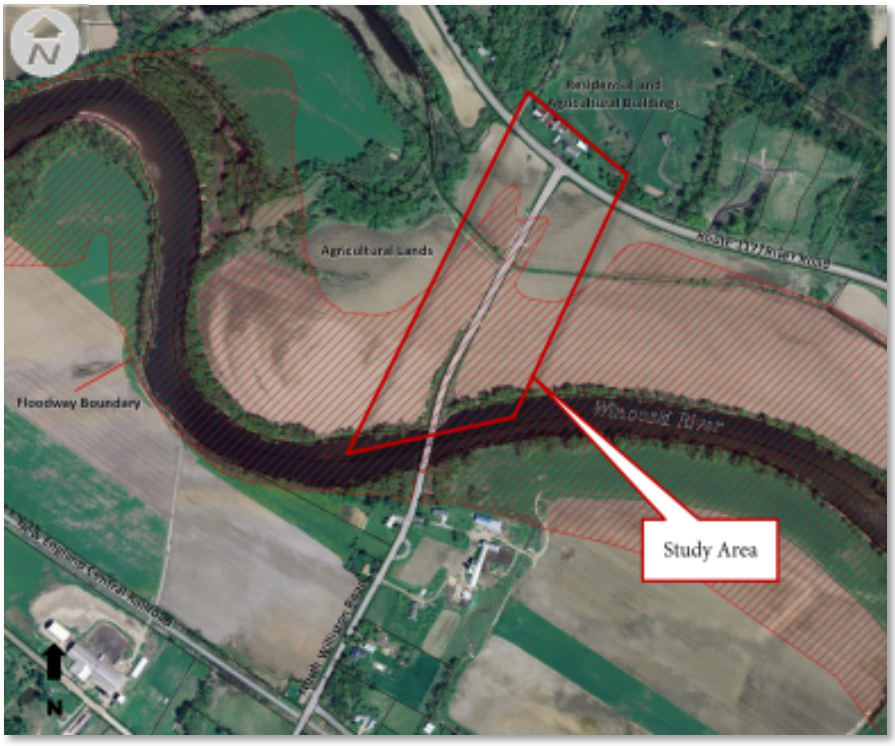
Chittenden County Regional Planning Commission, 2013 | Link

Prepared by: Dubious & King, Inc.

The intersection of VT-117 and North Williston Road was studied after being identified as a critical intersection in need of improvement during the Williston-Essex Network Transportation Study (WENTS). This intersection study responded to two major issues:

1. Queuing and vehicle crashes during peak hours, partially caused by left turns from North Williston Road onto VT-117
2. Flooding of North Williston Road between this intersection and the Winooski River bridge several times each year

Figure 3-3. Floodway Boundary and VT-117 Intersection Study Area



This study recommended alternatives to meet the two major needs of the intersection and surrounding roadway: 1) a resiliency project to reduce the duration and impact of roadway closures (including a wider culvert, reconstructed roadway banks, and a network of roadway closure alert signs), and 2) a roundabout or signal at the intersection of VT-117.

TRANSPORTATION IMPROVEMENT PRIORITIZATION PLAN

Town of Williston, 2006 | See Appendix

Prepared by: RSG

The purpose of this study was for the Town to have a prioritization methodology to prioritize the construction of projects funded through its capital program, though the methodology was ultimately not adopted. Projects were prioritized based on safety, congestion, potential use, connectivity, multi-modal travel, natural/cultural resource, and enhancements. The intersections of North Williston Road with US-2 and Mountain View Road were two of the prioritized projects in the study, ranking as #1 and #2, respectively, of the eight intersections studied.

4.0 EXISTING CONDITIONS

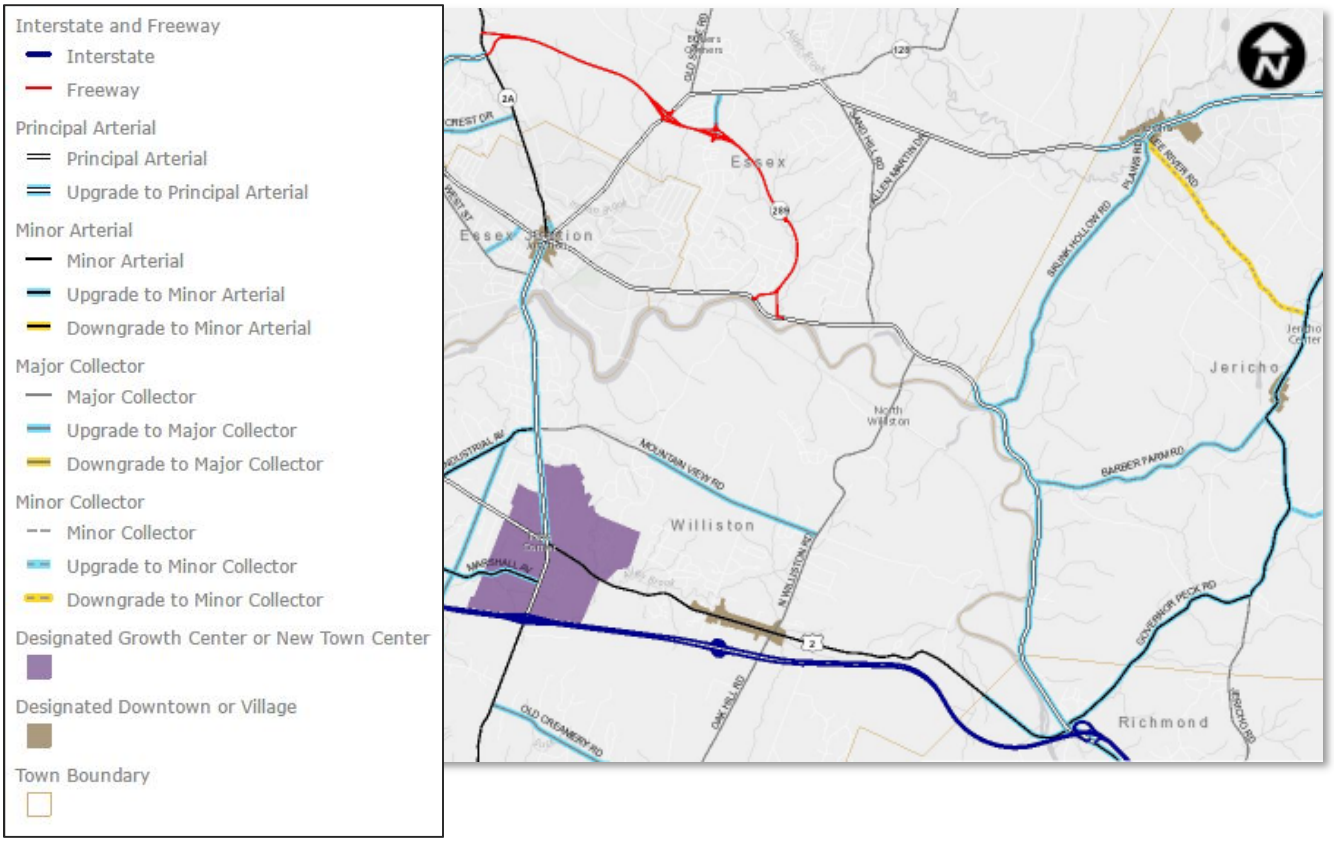
4.1 | NETWORK CONNECTIVITY

ROADWAY NETWORK

North Williston Road is classified as a major collector in the state's functional classification system. The CCRPC recently evaluated and proposed numerous changes to the functional class system in Chittenden County. These changes were approved by the Federal Highway Administration (FHWA) on September 21, 2017. The changes upgrade and downgrade some road segments based on how they presently operate. North Williston Road remains a major collector, and the segment of Mountain View Road immediately west of North Williston Road has been upgraded from a local road to a major collector.

Due to classification as a major collector, North Williston Road is on the federal aid system and is eligible to receive federal funding for improvements.

Figure 4-1. Proposed Changes to the Function Classification System (CCRPC)



VT Route 289, shown in red in Figure 4-1, is part of the originally planned Circumferential Highway (the "Circ"). Had plans for the Circ been continued, this route would have extended south to I-89. Circ plans were discontinued in 2011, resulting in North Williston Road continuing as one of the few connections between VT-117 and VT-289 to the north and US-2 and I-89 to the south.

Winooski River Crossing

North Williston Road is also one of just eight non-interstate, public roadway crossings of the Winooski River in Chittenden County. Only four of these are off the state highway system, including North Williston Road, making it particularly valuable for bicycle riders and pedestrians, who may not feel comfortable using a higher-volume road to cross the river. The next closest public crossings of the Winooski are both at least 3.5 miles away, and both are state highway crossings (US 2 and VT 2A).

Truck Traffic

The legal load limit on North Williston Road is 24,000 pounds, which would restrict access by Class 7 (fuel trucks, larger dump trucks, and beverage delivery) and Class 8 (tractor trailer trucks) heavy duty vehicles. Larger vehicles are allowed to use the roadway after obtaining an overweight vehicle permit from the Town.

Figure 4-2 shows the locations of weight limit signs in the northbound and southbound directions on North Williston Road.

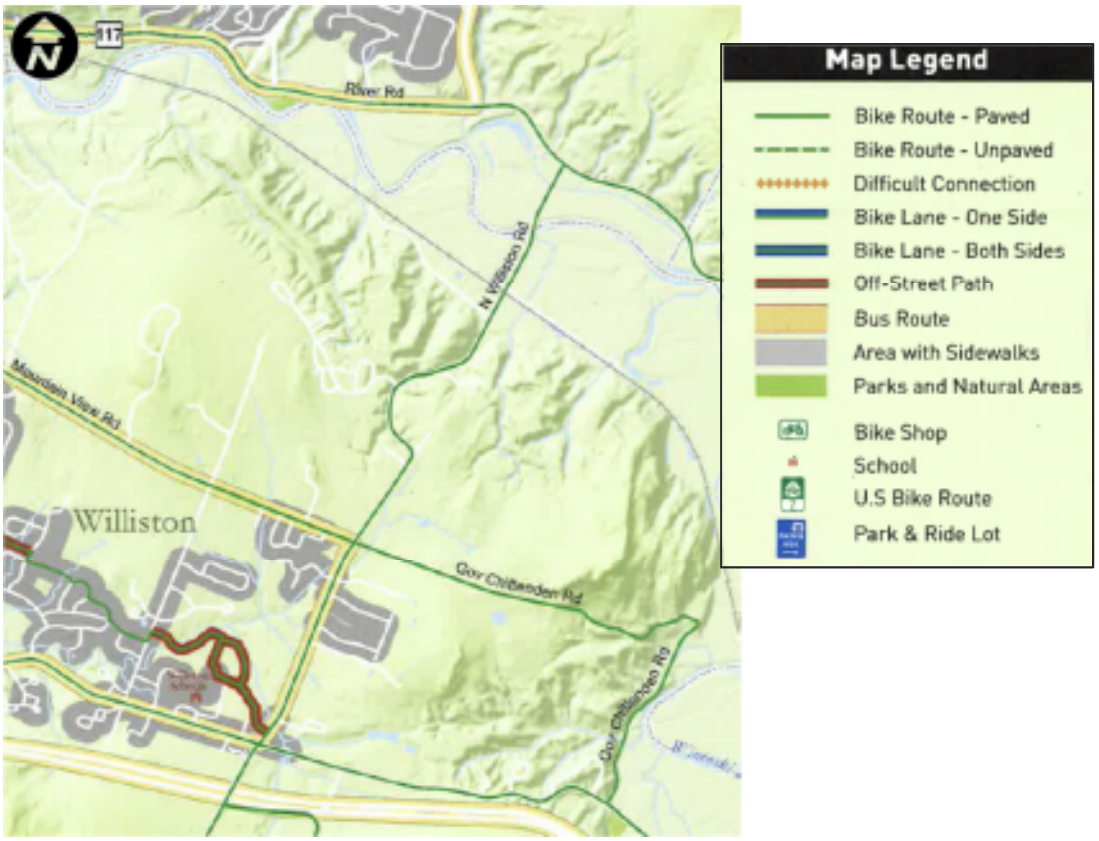
Figure 4-2: Weight Limit Signs on North Williston Road

BICYCLE AND PEDESTRIAN NETWORK

Bicycle Accommodations

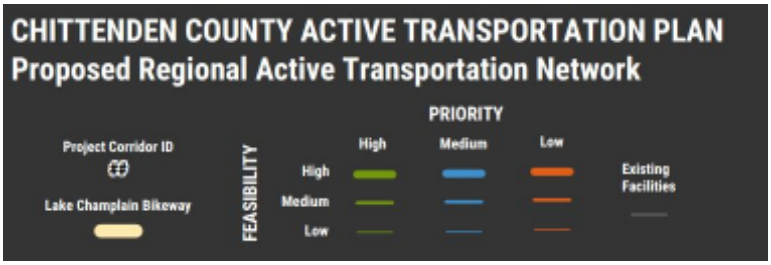
As one of few crossing opportunities of the Winooski River, North Williston Road is a common on-road bicycle route. The route is identified on the Local Motion Burlington Area Walk-Bike Map. However, the road does not have marked bicycle facilities other than occasional "Share the Road" signs. According to recommended best practices, even the wider 3-foot shoulders south of Mountain View Road are not wide enough to serve as informal bike lane alternatives.

Figure 4-3: Excerpt from Burlington Area Walk-Bike Map (2016).



The CCRPC's 2017 Regional Bicycle/Pedestrian Plan identifies VT-117, Mountain View Road, Governor Chittenden Road, and US-2 as high priority bicycle routes with high feasibility for future bicycle facilities, but it does not identify North Williston Road as a priority bicycle route. However, just as North Williston Road serves as a key connection for vehicles between these higher volume routes, it may serve bicyclists similarly once bicycle accommodations are installed on these intersecting roads.

Figure 4-4. 2017 Chittenden County Active Transportation Plan (CCRPC)



Pedestrian Accommodations

A sidewalk runs along the west side of North Williston Road along its residential section between US-2 and Mountain View Road. 90% of it is a six-foot wide asphalt sidewalk. Between the small bridge crossing of Allen Brook (across from Lefebvre Lane) and US-2, it is a five-foot concrete sidewalk. A sidewalk is on both sides of US-2 in Williston Village, and a sidewalk runs on the south side of Mountain View Road just west of North Williston Road. There are no other pedestrian facilities along North Williston Road or intersection roads, except for sidewalks on a few neighborhood streets.

Figure 4-5. Existing Sidewalks

There are six marked pedestrian crossings on North Williston Road, all of which are between US-2 and Mountain View Road. The Mountain View Road intersection has a crosswalk across the southern leg (northbound approach), with rectangular rapid flashing beacons (RRFBs).

Figure 4-6. Pedestrian Crossing at Mountain View Road

Cross Vermont Trail

The **Cross Vermont Trail**, an in-progress recreational path across the state being stitched together by a multitude of local paths, runs along the segment of North Williston Road south of Mountain View Road (unmarked), then veers off to the west on a marked Cross Vermont path. This off-road segment travels past Williston Central School and ends at Old Stage Road. Bicyclists on the segment along North Williston Road might use the asphalt sidewalk on the west side of the road or travel on the road itself.

Figure 4-7. Cross Vermont Trail Map

Figure 4-8. Cross Vermont Trail - Off-Road Segment

TRANSIT SERVICE

Green Mountain Transit serves North Williston Road with the #1V (Williston Village) bus. The #1V bus is a spur of the #1 (Williston) route, which runs seven days a week between the Downtown Transit Center in Burlington and Tafts Corner in Williston. The #1V travels along US-2 between Tafts Corner and North Williston Road, along North Williston Road to Mountain View Road, and along Industrial Ave to US-2. The #1V loop occurs five times in a weekday and does not run on weekends. Along North Williston Road, it stops at the Williston Federated Church and Fairway Drive.

Figure 4-9. Green Mountain Transit Bus Routes and Stops

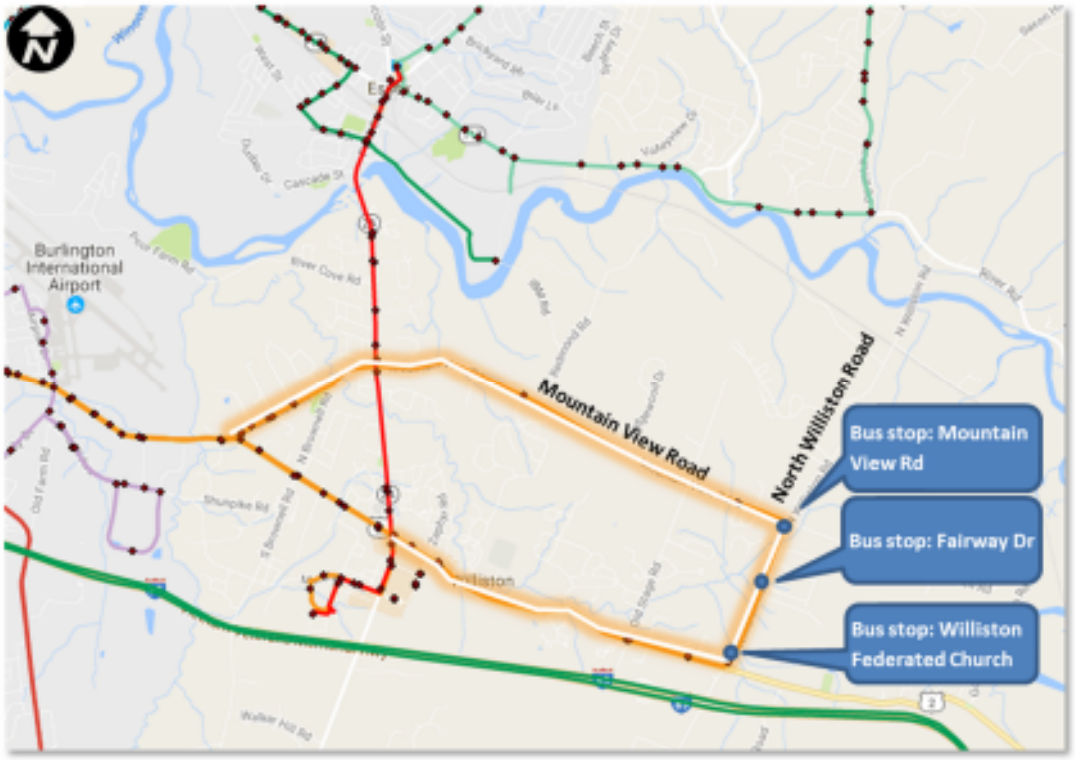


Figure 4-10. Bus Stop Near Williston Federated Church

4.2 | COMMUNITY CONSIDERATIONS

LOCAL DESTINATIONS

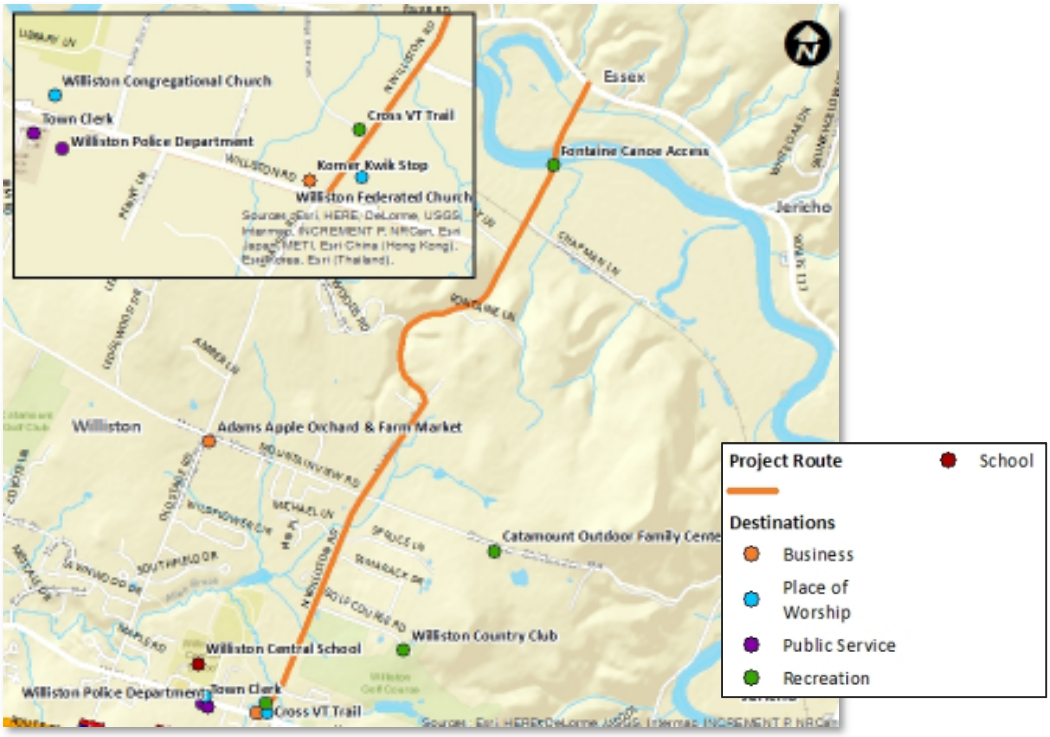
Although North Williston Road is largely treated as a north-south through route, there are many places that Williston residents and visitors travel to along North Williston Road or very close by. It is important to consider these destinations in terms of how they may affect traffic volume and circulation and modes of transportation, as well as how they influence the character of the area and the context of future improvements.

The historical Williston Village along US-2 is home to the town library, the Williston Central School (serving grades 3-8), two churches, and several small businesses. Up North Williston Road are Williston Woods Senior Living Community, access to the Cross Vermont Trail, and the Williston Country Club. Down Governor Chittenden Road is the popular Catamount Outdoor Family Center, which draws people from all over the county to its 20 miles of biking and cross-country ski trails and frequent events.

These local destinations should be considered as both social context to any future improvements, as well as traffic context. In particular, traffic of the following should be considered:

- **Williston Central School:** school bus pick-up and drop-off, students walking and bicycling to school, sporting events
- **Catamount Outdoor Family Center:** Summer camps, Tuesday night trail running series, Wednesday night mountain bike series, larger events

Figure 4-11. Community Destinations



HISTORIC DISTRICTS AND SITES

There are a number of historic sites along North Williston Road, as well as a high concentration along US-2 in Williston Village. Williston Village and the segment of North Williston Road between Fay Lane and the Winooski River - part of the area of town sometimes called North Williston - are both historic districts. Development in North Williston was spurred by construction of a Central Vermont Railroad depot in 1850. The historic sites along North Williston Road shown in Figure 4-12 are largely houses and farmhouses built in the mid-1800s.

Figure 4-12. Historic Sites and Districts

4.3 | WATERSHEDS, DRAINAGE, AND EROSION

North Williston Road lies within two watersheds: the Allen Brook Watershed (approximately south of Peterson Lane) and the Winooski River Watershed (approximately north of Peterson Lane). The Allen Brook Watershed is an urban stormwater impaired watershed. As with other impaired watersheds in Vermont, the Allen Brook Watershed has been assigned a Total Maximum Daily Load (TDML), an EPA-approved document that determines how much a pollutant must be reduced for the water to meet water quality standards.

North Williston Road crosses both the Allen Brook and the Winooski River. It also crosses several smaller seasonal and year-round streams, which can continue their natural path through culverts under the road. There are 14 culvert crossings of North Williston Road, several of which are smaller than VTrans' 18-inch minimum diameter, shown in Figure 4-13.

Figure 4-13. Culverts Across North Williston Road

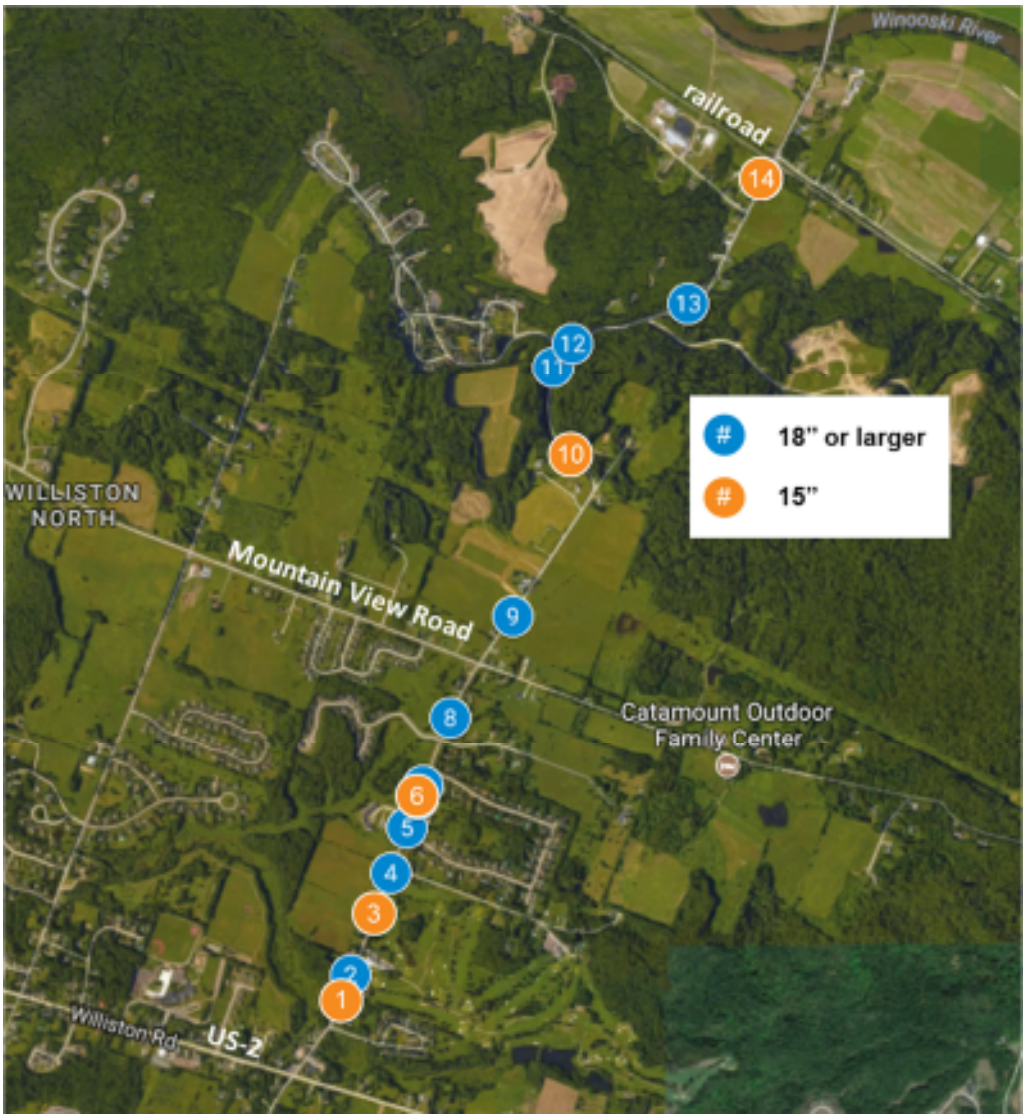
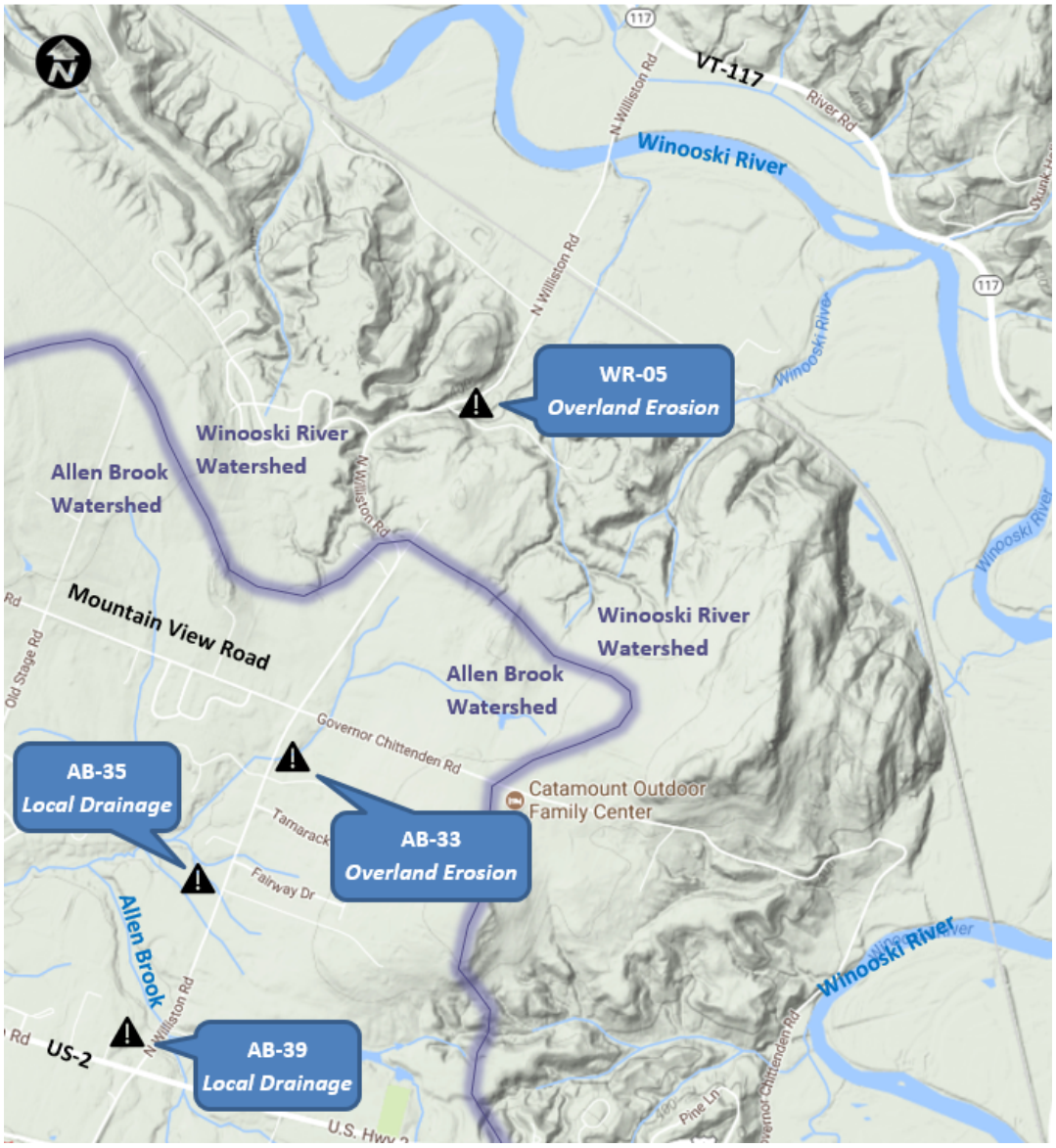


Image source: Google Satellite. Data source: Vermont Gas and VTculverts.org. Graphic source: RSG

Drainage ditches or shallow swales run the length of most of the road and become very steep in certain areas. RSG observed erosion along some of the drainage ditches, which puts the structural integrity of the road at risk. Several problem areas were identified in the Town of Williston's Town-Wide Watershed Improvement Plan (February 28, 2013) and are documented in Figure 4-14 and Table 4-1 below. Of these, only one was determined in the plan to have an impact on public infrastructure - location WR-05.

Figure 4-14. Watershed Problem Areas Along North Williston Road



Source: Town-Wide Watershed Improvement Plan, 2013

Table 4-1. Watershed Problem Area Descriptions

Problem Area ID	Problem Type	Date of Field Data Collection	Description of Observed Conditions
WR-05	Overland Erosion; impacts public infrastructure	5/14/2012	Erosion occurring on both sides of No. Williston Road near intersection with Fontaine Lane, due in part to heavy weight vehicles turning in/out. Ditches are eroding across from drive for #1923/1925.
AB-33	Overland Erosion; no impact to public infrastructure	7/11/2012	Ponding of water before entering marsh area. Pond is 8' by 12' about 8" deep. Signs of small dam/blockage at one point with rebar in stream; obstruction has been breached.
AB-35	Local Drainage; no impact to public infrastructure	7/11/2012	Loose gravel around underground pipe is eroding. Pipe end is filling in with material and channelization occurring immediately after outfall. Pipe appears to drain field and house area upstream. Problem caused by piping and burying the natural drainage which conveys runoff form the golf course.
AB-39	Local Drainage; no impact to public infrastructure	7/11/2012	Run-off from gravel parking lot flows to natural area/wetland between gas station parking lot and bike path parking lot. Sediment has built up along north side of parking lot. No catch basins in area.

Source: Town-Wide Watershed Improvement Plan, 2013

The following photographs document existing drainage and roadside slope conditions in various sections of North Williston Road.

Figure 4-15. Drainage Ditch - Looking North from Spruce Lane

Figure 4-16. Culvert Across Williston Woods Road

Figure 4-17. Steep Roadside Slopes in the Hollow

4.4 | ENVIRONMENTAL CONSIDERATIONS

A number of environmental resources were reviewed. Relevant resources and impacted segments of North Williston Road are described below.

- **Habitat blocks** (Figure 4-18)**:** The section of roadway between Peterson Lane and Fontaine Lane, in the "hollow", is part of a habitat block.
- **Deer Wintering Areas** (Figure 4-18**:** The section of roadway between Peterson Lane and Fontaine Lane, in the "hollow", is part of a deer wintering area.
- **Wetlands:** Several wetlands, as identified by the Vermont Significant Wetlands Inventory, are scattered near the roadway. Only one wetland crosses the roadway; the Allen Brook crosses North Williston Road at its southern end (see Figure 4-19).
- **Conserved Lands:** There are no conserved lands along North Williston Road.
- **Rare, Threatened, and Endangered Species and Significant Communities:** There are no plant or animal species or natural communities along North Williston Road.
- **Core Forest Areas:** There are no core forest areas along the roadway.

Figure 4-18. Habitat Blocks and Deer Wintering Areas

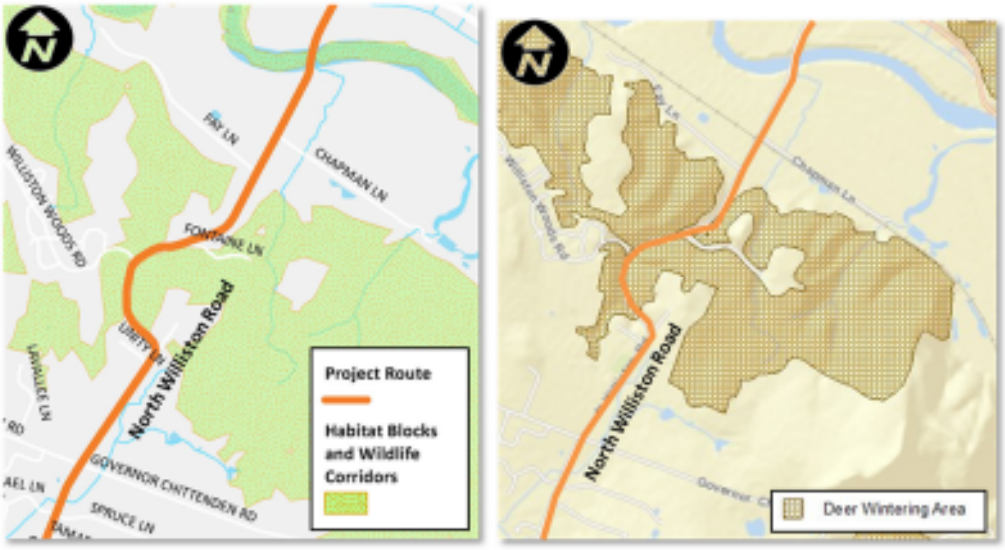


Figure 4-19. Allen Brook View from Pedestrian Bridge Along North Williston Road

4.5 | OTHER LAND USE CONSIDERATIONS

- **Prime Agricultural Soils** (not pictured)**:** Nearly the entire length of North Williston Road is on prime agricultural soils.
- **Utilities** (Figure 4-20)**:** Water and gas lines are along North Williston Road between US-2 and Williston Woods Road. Sanitary sewer service is located underneath the northbound travel lane, south of Mountain View Road.
- **Special Flood Hazard Areas** (Figure 4-21)**:** Along North Williston Road, the areas around the Winooski River and the Allen Brook are classified as special flood hazard areas. They both have a 1% chance of flooding annually. The Winooski River floodway extends from VT-117 to just north of Chapman Lane. The Allen Brook floodway is more localized due to the narrow width of the Allen Brook at this point.
- **Hazardous Waste Sites** (Figure 4-22)**:** There are three hazardous waste sites along North Williston Road. None of them are priority sites. All three are located at the southern end of North Williston Road.
    - **Korner Kwik Stop**
        - **Site #:** 880188
        - **Land Use Restriction:** No
        - **Priority:** NFAP - No further action planned
        - **Source of contamination:** Underground storage tank - Gasoline
    - **Williston Country Club**
        - **Site #:** 951765
        - **Land Use Restriction:** Yes

- **Priority:** SMAC - site management activity completed
- **Source of contamination:** Underground storage tank - Gasoline

o **Alden Bryan Residence (69 North Williston Road)**

- **Site #:** 921345
- **Land Use Restriction:** Yes
- **Priority:** SMAC - site management activity completed (SMAC'd with the Williston Country Club)
- **Source of contamination:** Underground storage tank - Gasoline

Figure 4-20. Utilities

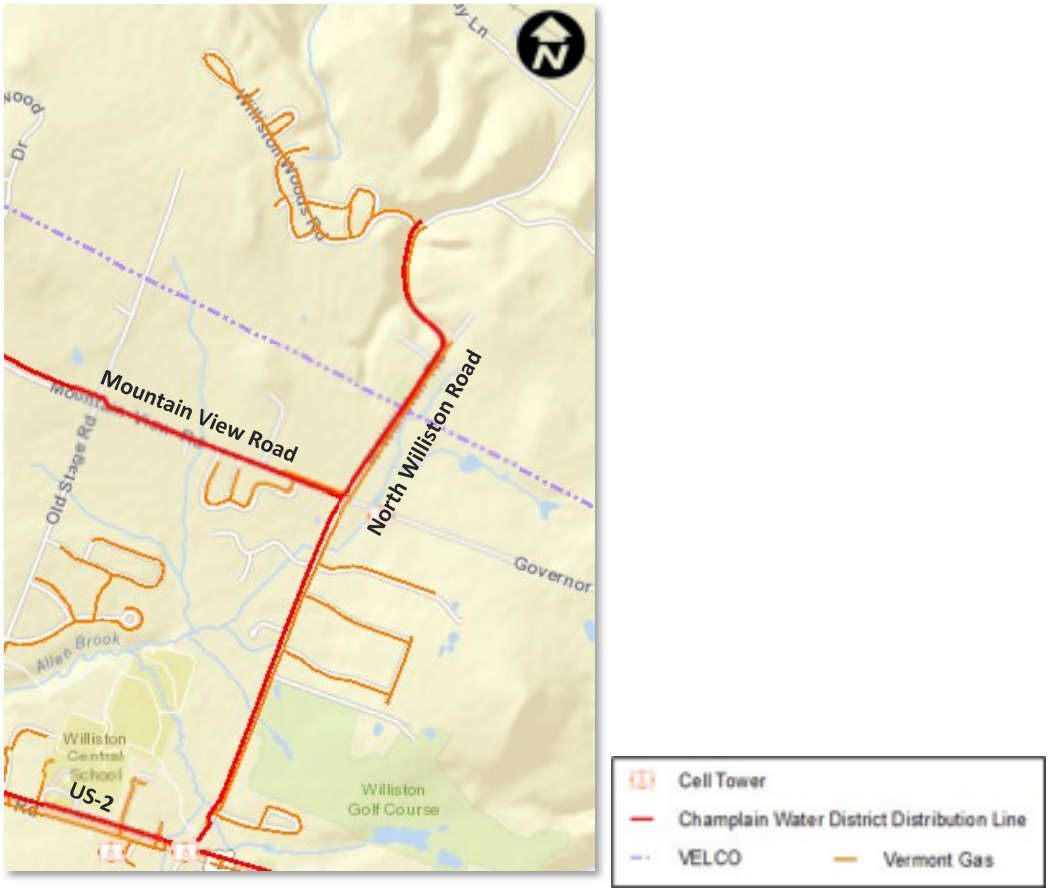


Figure 4-21. Flood Hazard Areas

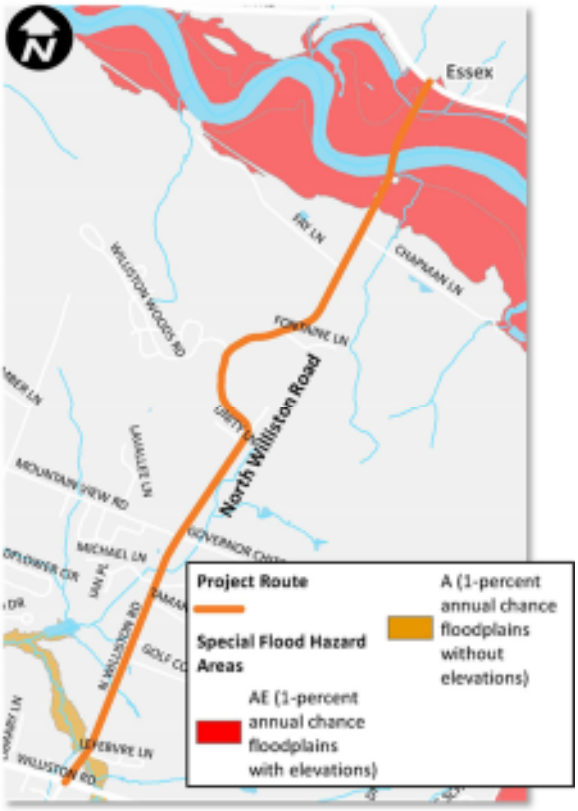


Figure 4-22. Hazardous Waste Sites

5.0 TRAFFIC AND SAFETY

5.1 | AVERAGE DAILY TRAFFIC

There are three automatic traffic recorder (ATR) locations along North Williston Road with recent data. Two of them have historic data that shows an increase in traffic of 6 to 18 percent between 2005 and 2013. The nearby continuous traffic counter (CTC) on VT Route 289 also shows an increase in traffic over this time period. Contrary to these increases, a nearby CTC along US-2 just east of Industrial Ave experienced a 6% decline in traffic between 2005 and 2013, and other nearby ATRs have also experienced a decline in traffic.

Figure 5-1. Automatic Traffic Recorder Locations and Data

Source: VTrans Transportation Data Management System and the VTrans 2013 Route Log for Federal Aid Urban Streets

5.2 | SPEED

The posted speed limit on North Williston Road is 35 mph. The speed limit remains the same throughout the entire corridor - including along the flat, straight sections of the road and through the narrow and curved hollow. An adequate number of speed limit signs are posted throughout the corridor in both directions. The northbound speed limit sign prior to the hollow is co-located with a curve warning sign (Figure 5-2). The MUTCD recommends separate installation for separate, unrelated signs. Additionally, both signs appear to be placed below recommended installation height.

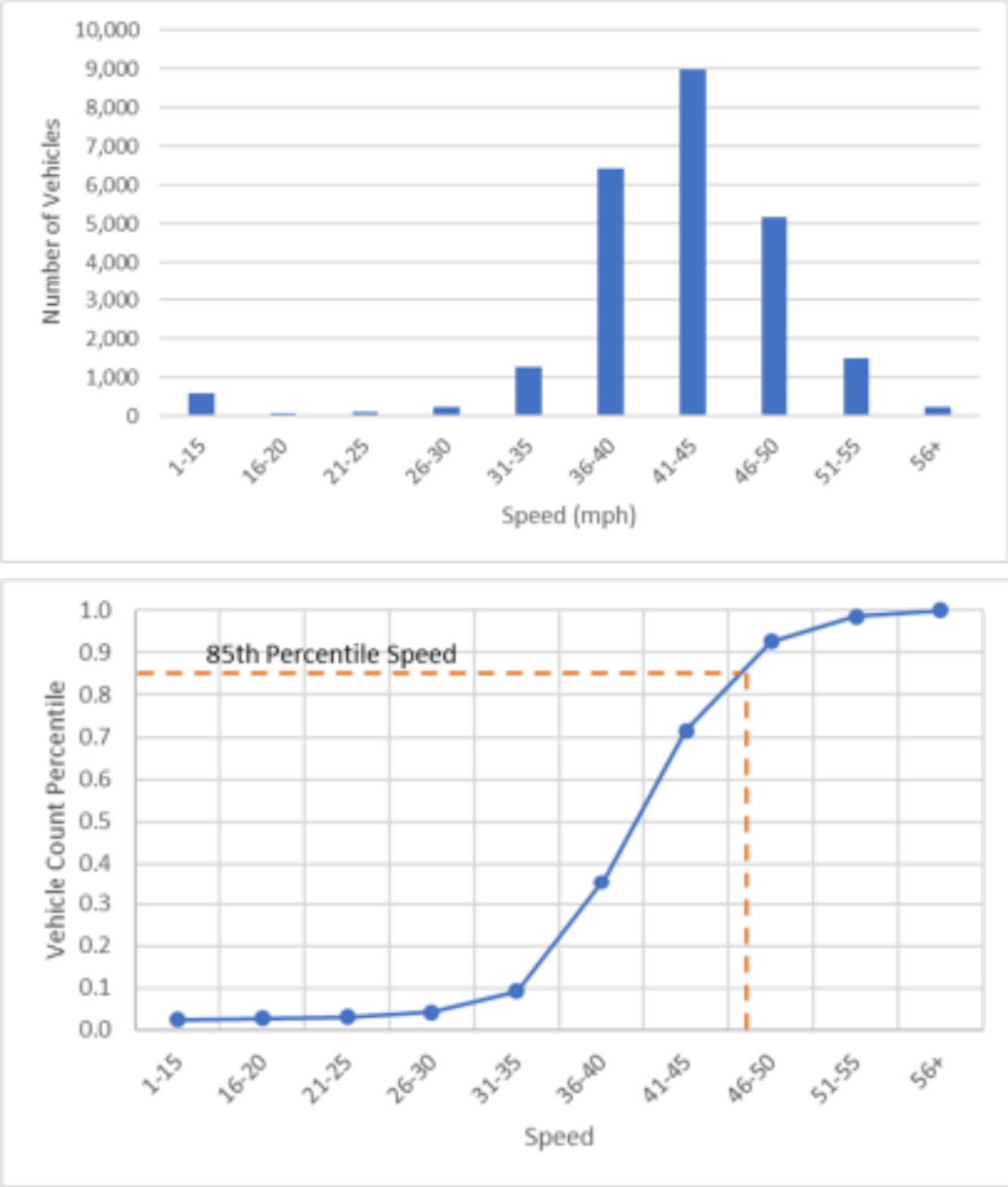
Figure 5-2 Low-Sitting Signage

SPEED DATA

The CCRPC collected speed data on North Williston Road in both 2016 and July 2017. As shown in Figure 5-1, the 2016 data was collected north of Mountain View Drive with automatic traffic recorder (ATR). In July 2017, a 4-day count, including the weekend, was conducted south of Fay Lane with ATR WILL70. In both data collection periods/locations, the 85th percentile speed was determined to be over 10 miles over the posted speed limit of 35 mph. In 2016, north of Mountain View Road, the 85th percentile speed was in the **46-48**

mph range. In 2017, south of Fay Lane, the 85th percentile speed was in the **46-50 mph** range. The data from 2017 is illustrated in Figure 5-3.

Figure 5-3 Speed Data South of Fay Lane in July 2017



Data Source: CCRPC

5.3 | EXISTING TRAFFIC AT KEY INTERSECTIONS

Recent turning movement counts at the three key intersections along North Williston Road were reviewed and adjusted. The US-2 intersection and VT-117 intersection both had turning movement counts completed in 2016 and were found on the VTrans online Transportation Data Management System. The VTrans tool did not have data for Mountain View Road / Governor Chittenden Road, but because of a study completed this intersection in 2011, RSG had archives of two counts there: in 2011 (just during the PM peak hour), and 2009 (a twelve-hour count). Analysis for the Mountain View Road intersection was based on the more complete 2009 data, but was compared to the more recent 2011 data and the adjusted peak hours were very close.

Table 5-1. Turning Movement Count Metadata

Intersection	Year	AM Count	PM Count	Source
US-2 (Williston Road)	2016	Friday, August 5. 6am-12pm	Thursday, August 4. 12pm-6pm	VTrans (#30417755)
Mountain View Road / Governor Chittenden Road	2011	n/a	Friday, May 6. 4:45pm-5:45pm	RSG Previous Study
	2009	Thursday, July 9, 7am-7pm		RSG Previous Study
VT-117 (River Road)	2016	Friday, July 8. 6am-12pm	Thursday, July 7. 12pm-6pm	VTrans (#30406888)

The observed evening peak hours of motorized traffic were determined to be 4:45 pm-5:45 pm for all intersections, except for the 2009 count at Mountain View Road, the peak hour of which was 4:30 pm - 5:30 pm.

Following VTrans traffic study guidelines, observed peak hour traffic volumes were adjusted to represent the design hour volume (DHV)[1]. Design hour adjustment factors for each of the three intersections are based on the same automatic traffic recorders that were identified earlier in this report to determine annual average daily traffic (AADT) along segments of the road.

[1] The DHV is the 30th highest hour of traffic for the year and is used as the design standard in Vermont.

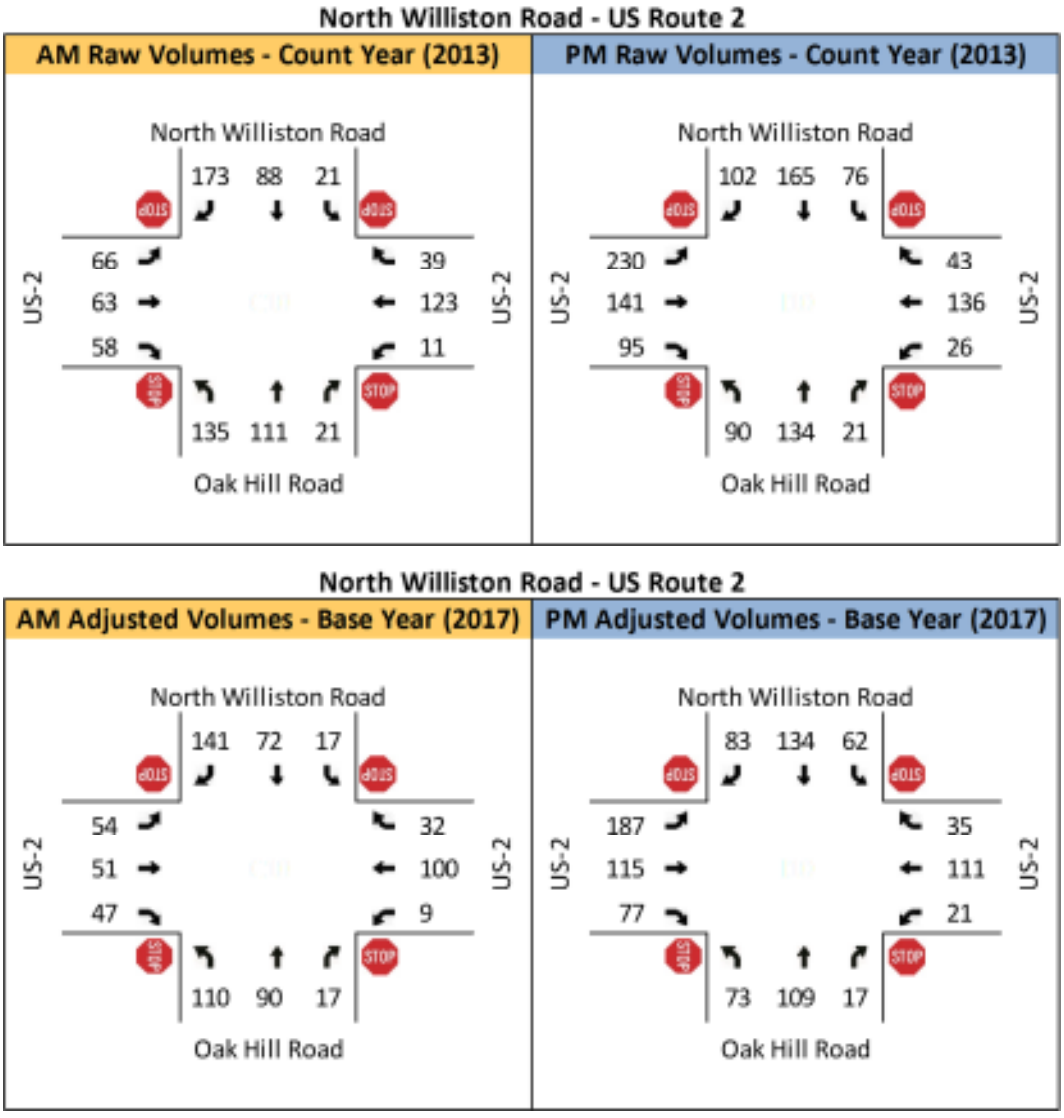
- The count at US-2 was adjusted to ATR D345, just north of US-2.
- The counts at Mountain View Road were adjusted to ATR WILL59, just north of Mountain View Road.
- The count at VT-117 was adjusted to ATR D323, just south of VT-117.

The calculations to adjust observed traffic volumes to the DHV are as follows:

1. The AADTs from the ATRs were adjusted to 2016 volumes (the year of the most recent turning movement counts). At Mountain View Road, because the AADT from ATR WILL59 is from 2016, a growth factor was not applied. Growth at US-2 and VT-117 (from the AADT year of 2013 to the turning movement count year of 2016) was based on Continuous Traffic Counter (CTC) D531, located on Route 289.
2. The DHV was found by multiplying the VTrans k factor for urban areas, 0.1061, by the adjusted AADTs found in Step 1.
3. Depending on where the ATR is relative to the intersection, the relevant entering and exiting volumes of the peak hours of the turning movement counts were added together. For example, because ATR D345 is north of US-2, vehicles exiting to the north and vehicles entering from the north in the peak hour were added together. In this case, this sum of actual vehicles was greater than the DHV.
4. DHV adjustment factors for the turning movement counts were found by comparing the sum of actual vehicles (from Step 3) to the DHV.
5. At this point, all turning movement counts have been adjusted to 2016. To adjust to present day (2017), a growth factor of 1.0 was applied.
6. The final adjustments for each of the intersections are as follows:
    a. US-2: 0.81
    b. Mountain View Road (based on 2011 turning movement count): 1.03
    c. Mountain View Road (based on 2009 turning movement count): 0.94
    d. VT-117: 0.85

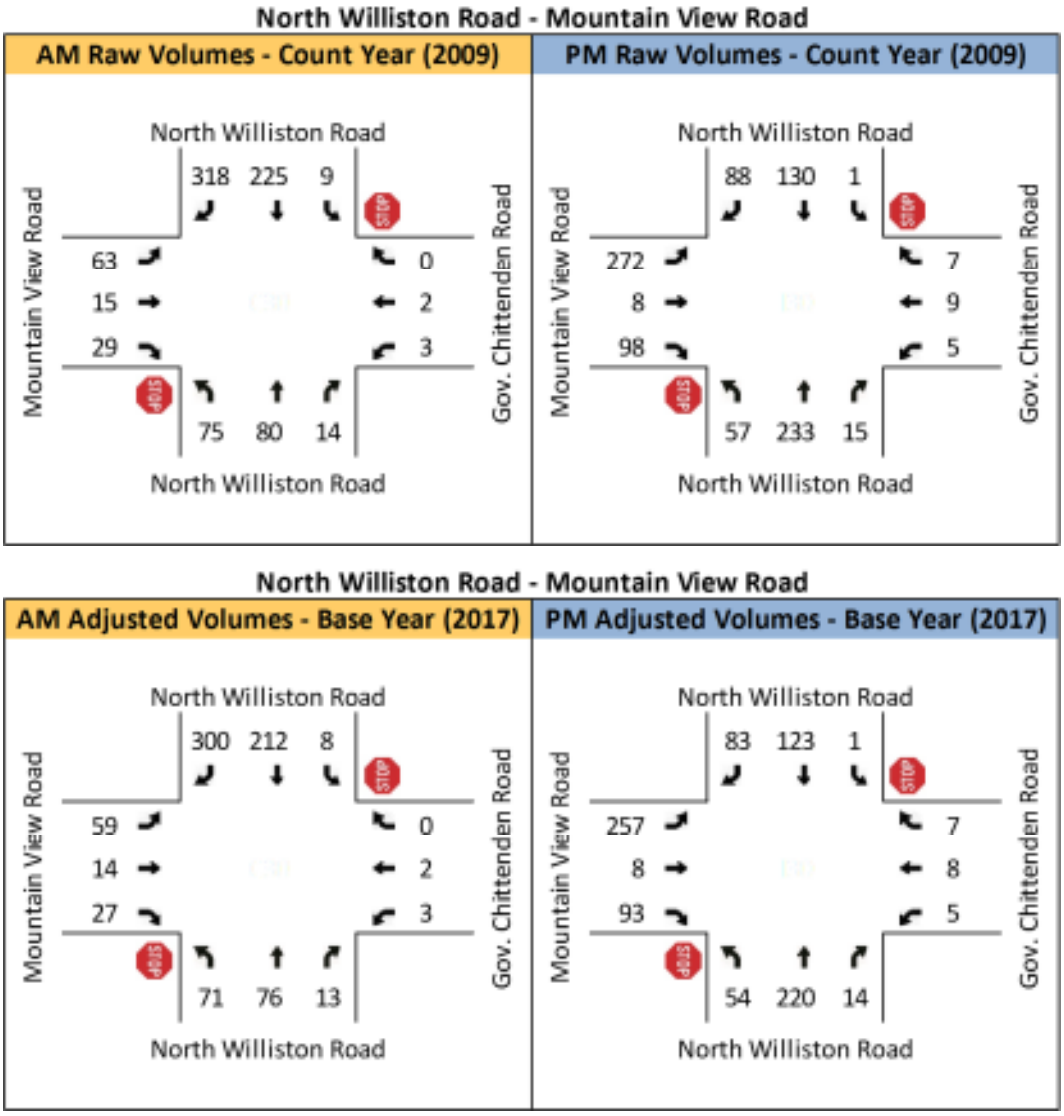
The raw and adjusted volumes are shown in Figure 5-4, Figure 5-5, and Figure 5-6 on the following pages. The figures show a decrease in volumes; rather than this being a sign of decreased traffic between the count years (2009 and 2016) and present day (2017), this is likely a sign that the turning movement counts were conducted on days with higher traffic than average. Another possibility is that the increase in traffic along North Williston Road was greater than the increase in traffic along VT-289, where the CTC is located that informed the growth rate of the ATRs (which only had data as recent as 2013 for two of the intersections).

Figure 5-4. Turning Movement Counts at US Route 2



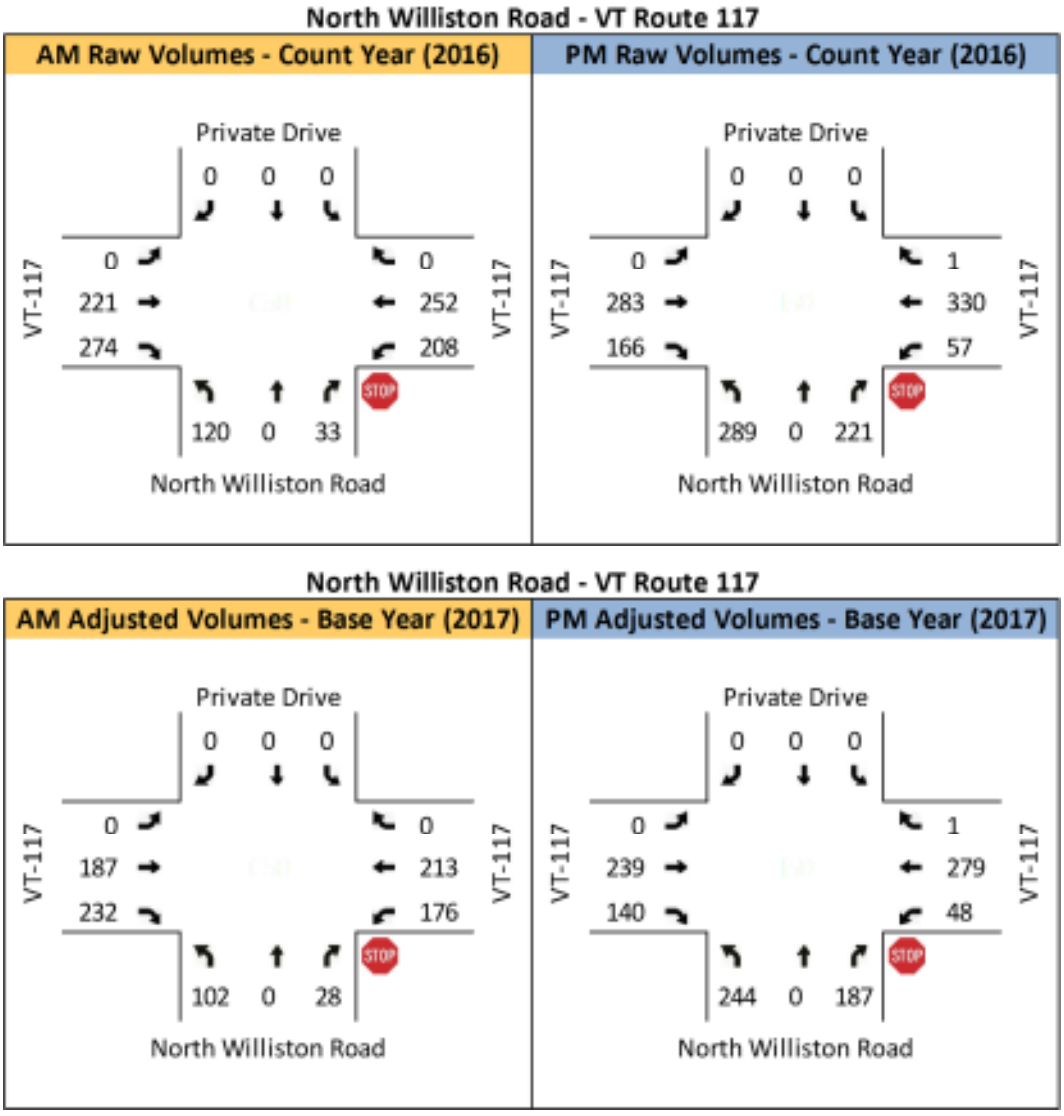
ATR Data Year: 2013

Figure 5-5. Turning Movement Counts at Mountain View Road



ATR Data Year: 2016

Figure 5-6. Turning Movement Counts at VT Route 117



ATR Data Year: 2013

5.4 | SIGHT DISTANCES

Stopping sight distance is the distance required for a vehicle, traveling at the design speed, to stop before reaching a stationary object in its path, such as a stopped vehicle. Intersection sight distance is the distance required for drivers to stop or adjust their speed, as appropriate, to avoid colliding with a potentially conflicting vehicle leaving an intersection.

STOPPING SIGHT DISTANCES

Stopping sight distances were measured along North Williston Road in areas where it was unclear if vehicles would have adequate sight distance. The three areas measured are shown in Figure 5-7. They include one crest curve in the residential section of the road and two horizontal curves in the hollow. Only one of the measurements was less than the recommended minimum sight distance of 250 feet - in a horizontal curve of the hollow, caused by the sharp turn coupled with the presence of a bank on the sides of the road with dense vegetation (see Figure 5-8).

Figure 5-7. Stopping Sight Distances (Measured on Site)

Figure 5-8. Restricted Stopping Sight Distance in the Hollow

INTERSECTION SIGHT DISTANCES

Intersection sight distances (from Policy on Geometric Design of Highways and Streets) were found in the previous studies for each of the three major intersections along North Williston Road.

- **At US-2:** All approaches to this intersection meet the minimum intersection sight distances; however, a crest curve limited sight distance to pavement markings.
    - US-2 approach minimum: 440 feet (Met)
    - North Williston Road minimum: 440 feet (Met)
    - Oak Hill Road minimum: 495 feet (Met)
- **At Mountain View Road:** Intersection sight distance was not provided in the past study. However, from observations in the field, the eastbound and westbound approaches may have intersection sight distances less than the minimum required due to large trees in the corners of the intersection. The desirable intersection sight distance would be 390 feet from Mountain View Road and from Governor Chittenden Road.
- **At VT-117:** Sight distance to the east of the intersection meets the minimum intersection sight distance criteria, but sight distance to the west does not.
    - **Minimum sight distance to the east:** 500 feet (Met)
    - **Minimum sight distance to the west:** 500 feet (Not Met. Measured = 430 feet)

5.5 | CRASH SUMMARY

Crash records were found using the VTrans Public Crash Data Query Tool and by requesting crash records from the Town of Williston Police Department to determine the number, type, and location of reported crashes along North Williston Road **between April 1, 2012 and April 1, 2017**. In total, there were **76 reported crashes** over this time period, 12 (16%) of which resulted in injury. This equates to at least 15 crashes per year on average, with at least two resulting in injury. Figure 5-9 shows the location and number of all crashes in this time period, both at intersections and along the road.

During this time period, one reported crash involved a motorcyclist; this crash occurred at the intersection of North Williston Road and Unity Lane, at the south end of the hollow, and resulted in injury. None of the crashes involved pedestrians or bicyclists.

Notably, following the 2013 partial implementation of safety recommendations at the Mountain View Road and North Williston Road intersection, crashes have reduced from 18 collisions in a five-year period (January 1, 2006 – December 31, 2010) to 11 collisions in the most recent five-year period (April 1, 2012 – March 31, 2017).

Figure 5-9. Crash Locations

Figure 5-10 shows the details of crashes at the intersections with the highest number of crashes, and Figure 5-11 shows the proportion of crashes during each type of road condition (dry, wet, snow, etc.). Not all crash reports included this information; the charts only include crash records with information for these.

Figure 5-10. Types of Crashes at Intersections with High Crash Rates

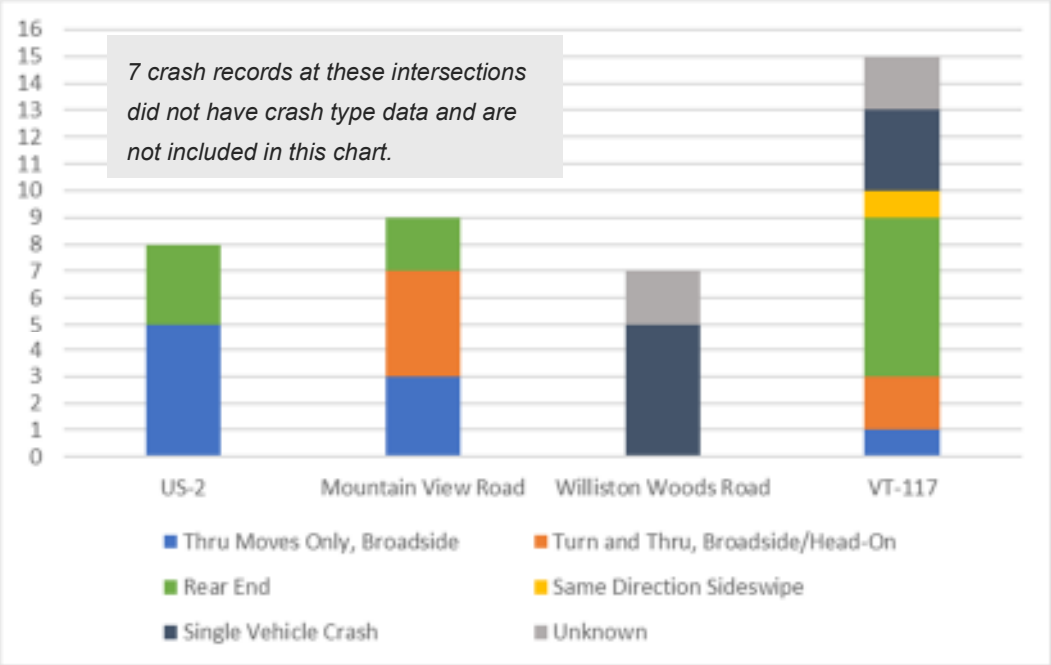
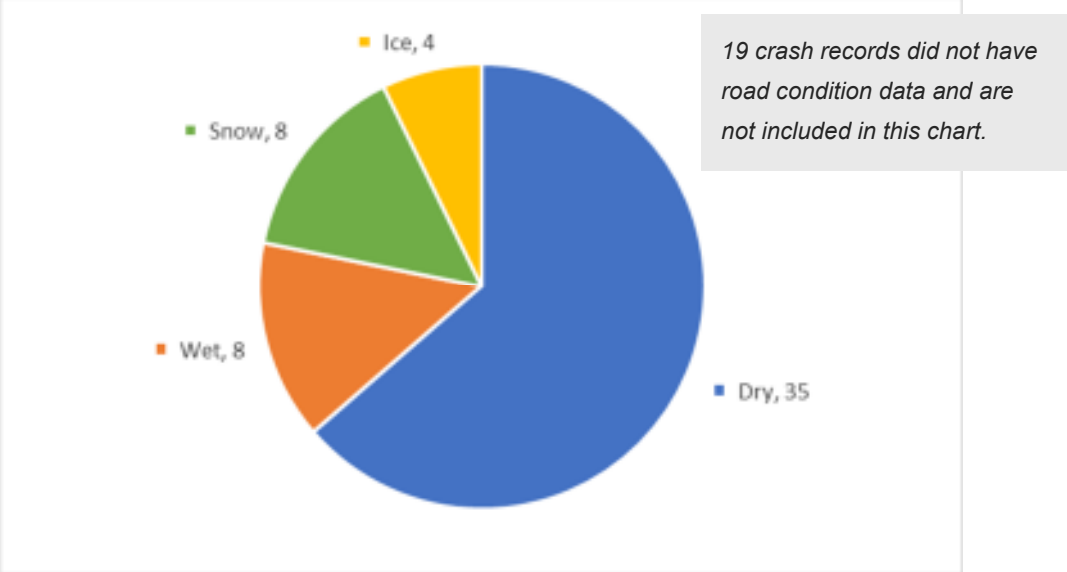


Figure 5-11 Road Conditions for All Crashes



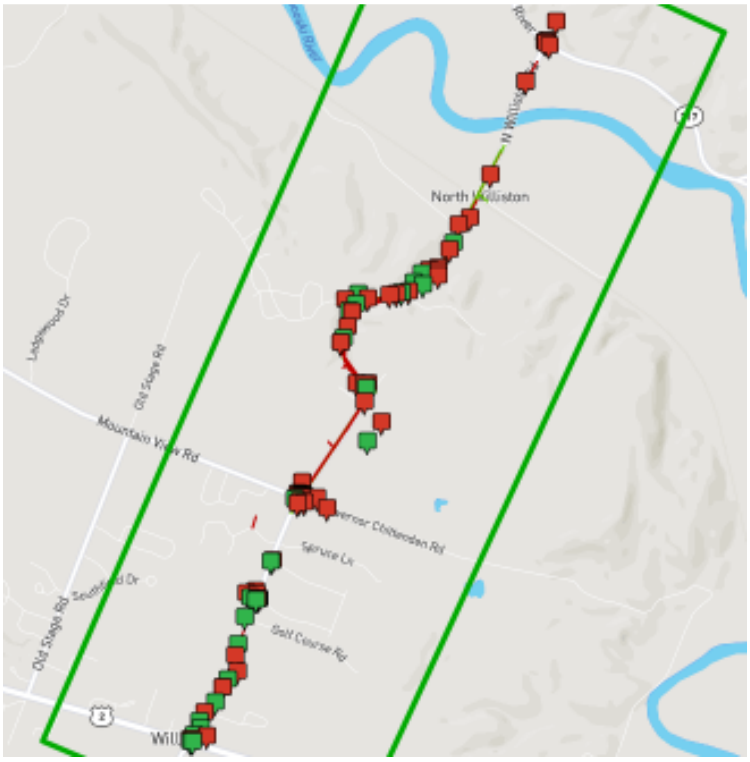
6.0 PUBLIC INPUT

6.1 | SOURCES OF PUBLIC INPUT

As part of this study's Public Participation Plan, the project team has sought public input through several channels in order to receive feedback from as many people as possible. As of the end of May, sources of public input have included:

- **Local Concerns Meeting** on May 2 as part of the Town of Williston Selectboard Meeting
    - 33 sign-ins from the general public
    - The project team took notes of the discussions and comments that took place at this meeting
    - Worksheets were distributed for attendees to take notes and optionally submit with comments and questions (one was submitted)
- **Wikimapping** webpage open April 12 - May 25
    - Approximately 90 people commented
    - Total of 137 comments (see Figure 6-1 Wikimap with All Drawn Features
- **Individual Contact**
    - 14 emails were sent to the project team

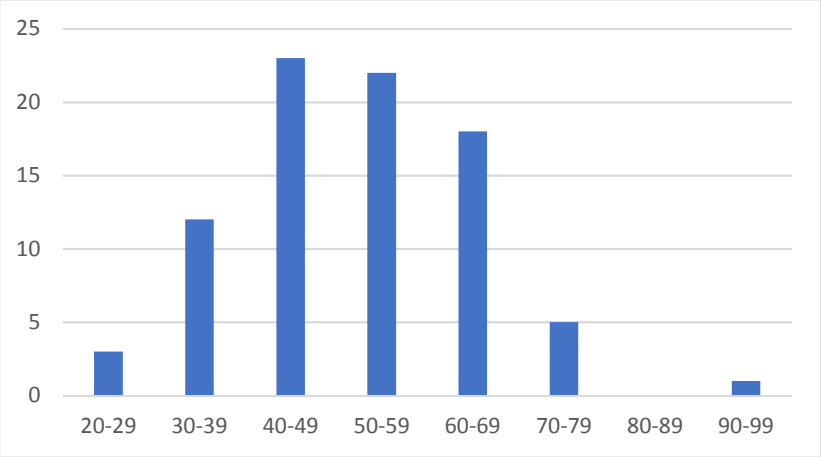
Figure 6-1 Wikimap with All Drawn Features



DEMOGRAPHICS FROM THE WIKIMAP

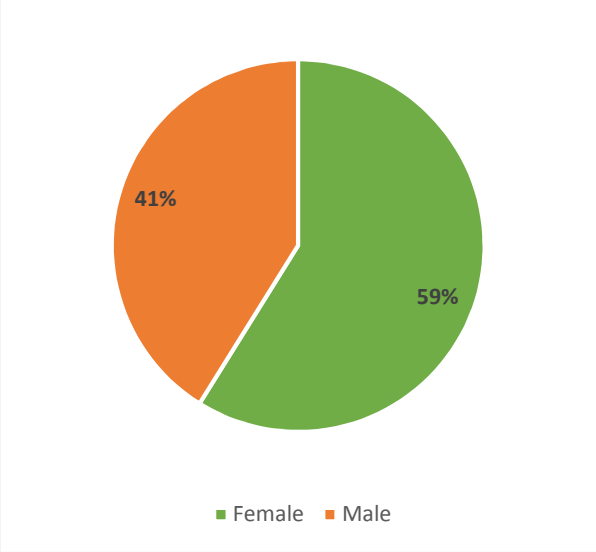
To understand who participated in the Wikimapping exercise and to have context for the responses, each participant was required to take a survey to gather basic demographic information. The following charts summarize findings from this survey.

Figure 6-2 Age Ranges of Participants



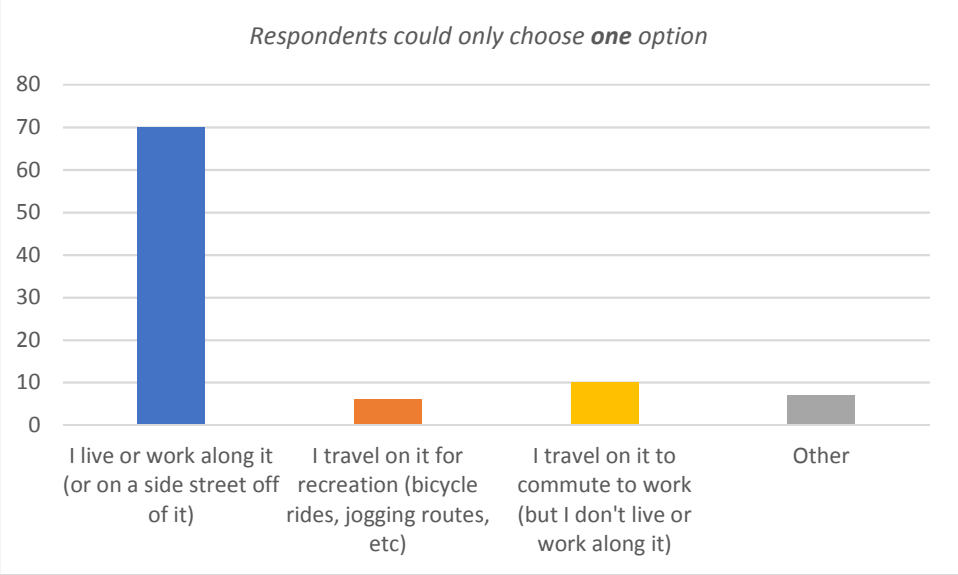
Source: Wikimap Survey Results

Figure 6-3 Gender Split of Participants



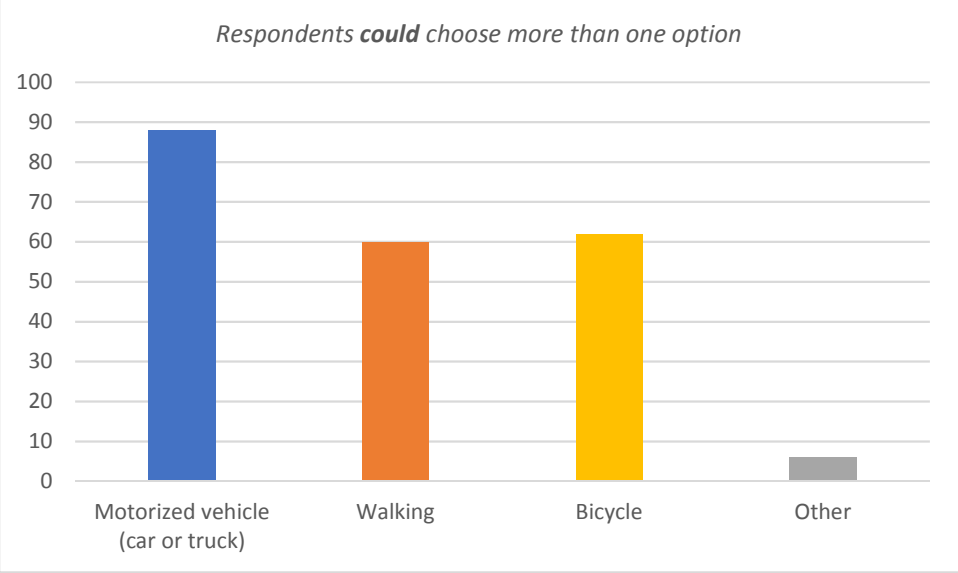
Source: Wikimap Survey Results

Figure 6-4 Participants' Relationship to North Williston Road



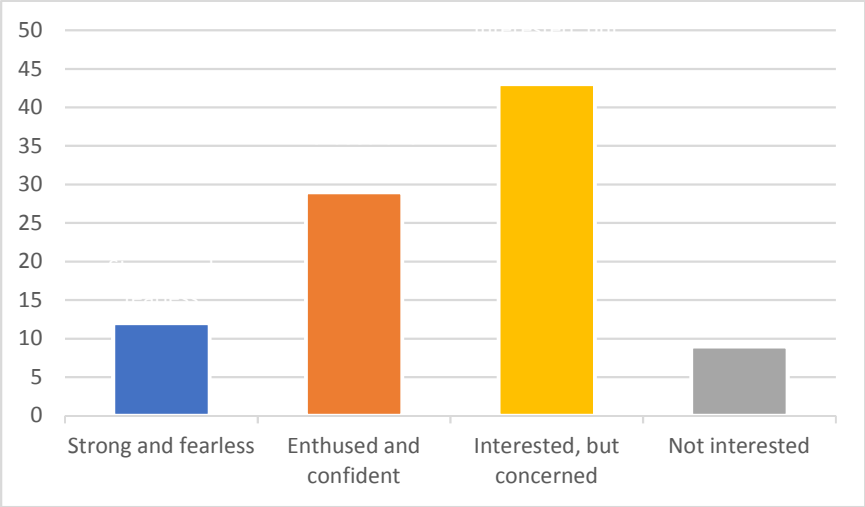
Source: Wikimap Survey Results

Figure 6-5 Forms of Transportation Used on North Williston Road



Source: Wikimap Survey Results

Figure 6-6 Bicycle Level of Confidence/Interest



Source: Wikimap Survey Results

6.2 | SUMMARY OF INPUT

OVERALL FINDINGS

- Speeding is the biggest corridor-wide concern, especially as it relates to pedestrians, bicyclists, and neighborhood children. There are also a number of reports of drivers illegally passing other vehicles that are turning onto a side street or driveway.
- The hollow is considered the most dangerous segment - for all modes - due to the minimal sight distances, the lack of bicycle and pedestrian facilities, and speeding.
- Pedestrian and bicycle facilities are desired north of Mountain View Rd, where there currently are none.
- A 4-way stop is desired at the Mountain View Road / Gov. Chittenden Road intersection.
- Other than the three largest intersections (US-2, Mountain View Rd, and VT-117), Fairway Drive and Williston Woods Road are intersections of highest concern.
    - The most common concern at Fairway Drive is safety for pedestrians - especially children and students - crossing the street to access the side path. There is a crosswalk, but cars often do not stop for pedestrians.
    - The most common concern at Williston Woods is driver safety when cars are turning in and out of Williston Woods, due to high speeds and restricted sight distance.

DISCUSSION FROM THE LOCAL CONCERNS MEETING

At the Local Concerns Meeting, topics of greatest concern were speeding and cut-through traffic. The following is a summary of the discussions and questions posed at the meeting.

Comments from the public with the most consensus:

Speeding

- There was a strong desire by many to slow down traffic on North Williston Road. Frequently, vehicles driving fast along the straight sections continue their speed when entering the hollow or just do not realize that the road will curve so suddenly. Motorcycles in particular were noted as speeding through the hollow.
- There were several reports that aggressive drivers may pass other cars that are slowing to turn onto a street or driveway, or pass vehicles that were traveling at a slower speed through the hollow as they enter the flatter portions of North Williston Road in the river valley or rural areas.
- Families with children would like to walk or ride bicycles along the road but are concerned about the speed of traffic.

Cut-through traffic:

- There was a common frustration from residents that much of the traffic is due to non-Williston residents. This was seen not only as a traffic volume issue but as a fair tax-paying issue.

General Planning:

- Important to identify a horizon year for planning purposes, and ensure the horizon is realistic.
- Impacts to residents need to be weighed, not just impacts to through travelers.

Comments from the Selectboard

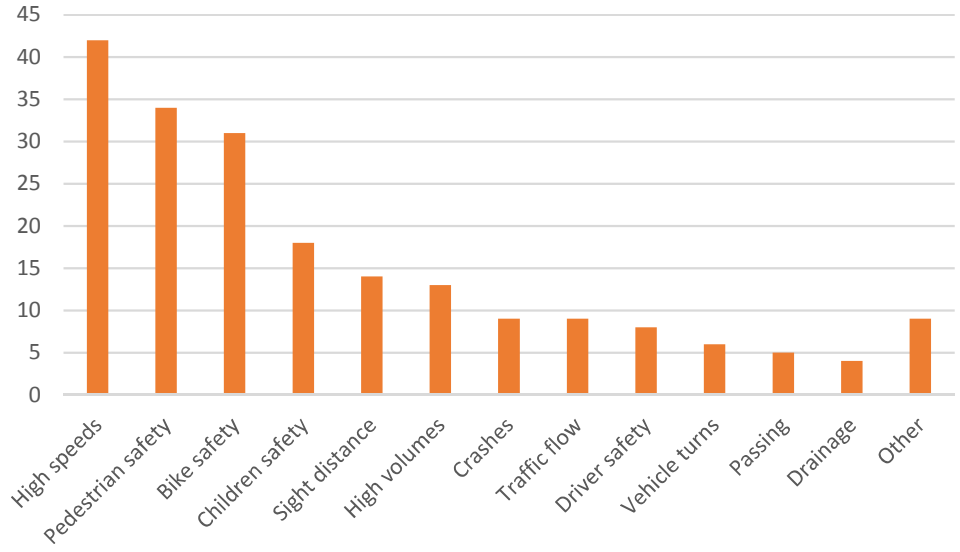
- One Selectboard member summarized the overarching challenge of this study: Can we both maintain/increase livability *and* accommodate traffic needs? These may be competing interests. He is concerned that by trying to meet both, we will meet neither.
- One Selectboard member emphasized the importance of having mutual respect between drivers and bicyclists.

COMMENTS FROM THE WIKIMAP AND EMAILS

The following charts summarize the combined comments from the Wikimap and individual emails. Comments were searched for key terms (partly automated and partly manual) to tally the locations, concerns, and desires of each comment. Because Wikimapping allows upvotes and downvotes, upvotes were considered an additional comment, and downvotes were

subtracted from the total; the totals below are the net agreement (= original comments + upvotes - downvotes). (There were only 8 downvotes throughout the entire corridor.)

Figure 6-7 Common Concerns (Sum of All Locations)



Examples of "Other" include driveway access, road condition, and flooding.

Figure 6-8 Common Segments of Concern

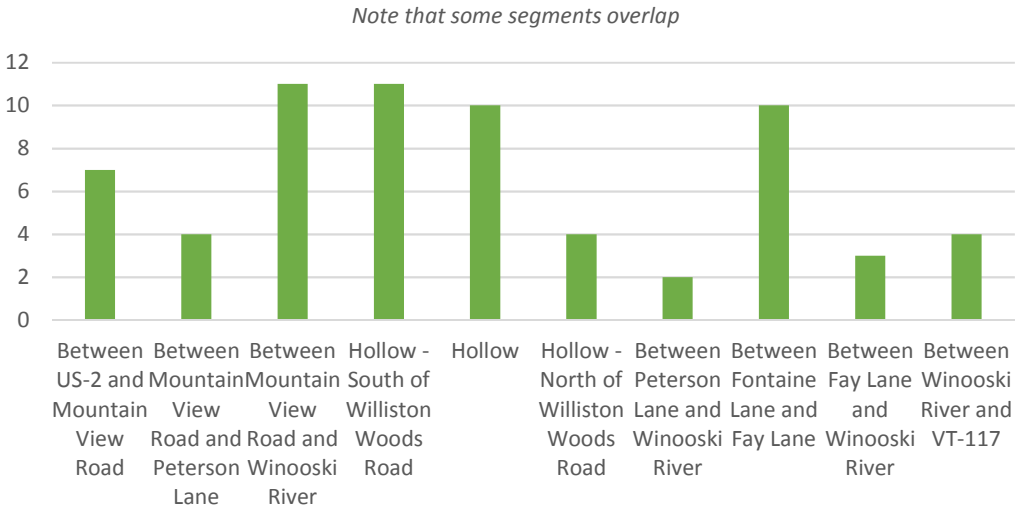
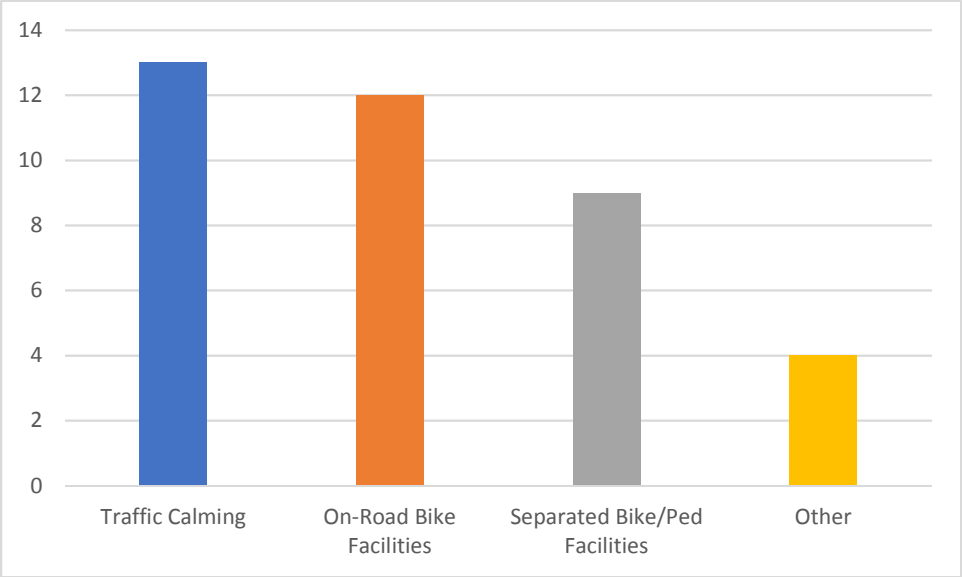


Figure 6-9 Desired Improvements for Road Segments



Examples of "Other" include police presence and restricting engine braking.

Figure 6-10 Common Intersections of Concern

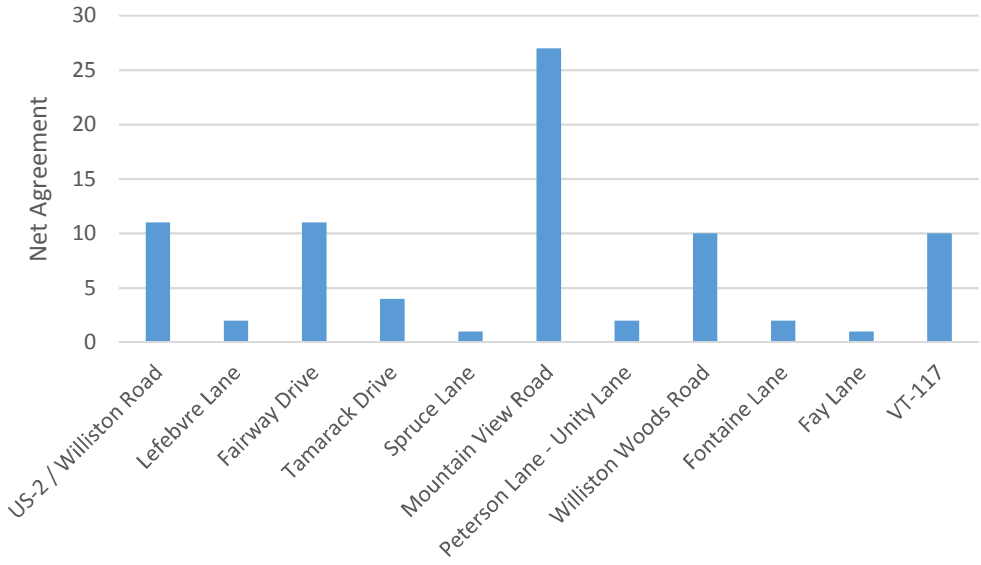


Figure 6-11 Intersection-Specific Concerns

Intersections	Sum of Original Comments	Sum of Net Likes	Net Agreement	Most Common Concern(s)	Most Common Desire(s)
US-2 / Williston Road	8	3	11	traffic flow, pedestrian safety	Roundabout
Lefebvre Lane	1	1	2	pedestrian safety	
Fairway Drive	6	5	11	pedestrian safety, childrens safety	Pedestrian Signal
Tamarack Drive	3	1	4	pedestrian safety, childrens safety	Pedestrian Signal
Spruce Lane	1	0	1	pedestrian safety	Crosswalk
Mountain View Road	23	4	27	traffic flow	4-Way Stop
Peterson Lane - Unity Lane	2	0	2	sight distance	
Williston Woods Road	4	6	10	high speeds	
Fontaine Lane	2	0	2	sand buildup, pedestrian safety	
Fay Lane	1	0	1	childrens safety	
VT-117	6	4	10	safety for all modes	Signal/Roundabout