VIII. Transportation

A. Introduction

Chapter Update Process

This Master Plan identifies areas for protection and closely-controlled development, as well as areas where growth can be accommodated with little or manageable impact on adjacent lands and neighbors. Key issues that require attention include:

- Sensitivity to the impact traffic and development along NH Route 25 has on Moultonborough residents' quality of life and highway carrying capacity limitations on future development.

- Planning for the Village and other commercial and residential nodes.

The transportation chapter vision is:

Moultonborough's road network will be maintained in an efficient and organized manner. The safety needs of drivers, cyclists and pedestrians will be considered. Moultonborough will be open to practical, affordable public transportation solutions and other alternatives to single-occupancy automobiles. The Town's communication and transportation infrastructure should be able to support the needs of its citizens and businesses.

Implemented Recommendations - 2008 Master Plan

The town has worked towards the implementation of several goals identified in the 2008 Master Plan including: fostering a partnership with the Tri-County Community Action Program to advance public transportation initiatives; conceptual engineering for the construction of sidewalks in the village to connect with the schools and the requirement for new business to participate in advancing the sidewalk network; and ongoing dialog and cooperation with NHDOT District 3 to advance local access management standards identified in the NH Route 25 Corridor Study.

During this same time, the Highway Department implemented Road Surface Management Systems (RSMS) as a tool to track highway improvements and the impacts on the town roadway network over time. The results of the Community Survey conducted in 2013 indicate 64 percent of respondents' rate road maintenance as good or very good.

Key Findings and Trends

The US Census Bureau reports the overall percentage of New Hampshire residents with a disability was 12.7 percent. This means that 166,300 of 1,309,800 people in New Hampshire have one or more disabilities. This does not consider persons with temporary disabilities due to an accident or sickness.[1] Moultonborough needs to be aware of these needs.

Nearly three-fourths (74 percent) of NH residents think that policy makers should invest more money in maintaining roads, highways and bridges (with 53 percent indicating a willingness to pay more in taxes to do so), followed by improving availability of senior and special needs transportation (55 percent) and the availability of bicycle paths (53 percent).[2]

2013 Moultonborough Master Plan Survey respondents were most divided about the need for more, less or the same emphasis on public transportation, sidewalks and crosswalks in their answers to transportation specific questions. Public transportation had the highest percentage (38 percent) of respondents indicating "no opinion". Almost half the respondents (49 percent) were divided between the need for more (26 percent) and less (23 percent) emphasis on sidewalks and crosswalks.

While the preservation of the town's rural character was indicated as a priority by most master plan survey respondents, the importance of designating scenic roads as a strategy was less certain: Yes (37 percent); No (35 percent); and Don't Know/No Opinion (28 percent).

The clear majority of master plan survey respondents (94 percent) indicated clean lakes, rivers and ponds are the leading resources contributing to the town's unique character and quality of life. Regional and local projects are underway to increase awareness of transportation network impacts on water quality.

B. Existing Conditions

Road Network Maintenance

The Moultonborough Department of Public Works consists of three divisions: Highways, Facilities and Grounds, and Waste Management. The Highway Division maintains approximately 77 miles of town road (26 unpaved and 51 paved miles). An additional 11 miles of state highways and 180 miles of private roads are winter maintained (for fire access) by the Highway Division. In addition to winter maintenance, the division is responsible for the maintenance of drainage, asphalt surfaces, street signs, department equipment and tree trimming. The division also works closely with local contractors for services including catch basins, large tree removal, asphalt maintenance, excavation of streets and drainage, street sweeping and highway markings. Currently, the Highway Division is staffed by seven full-time and up to three intermittent staff.

[1] Americans with Disabilities Act Title 2 Transition Plan, NHDOT, draft July 2016

[2] UNH Survey Center, A Granite State Future, July 2013.

Traffic Volume

The regional planning commissions in New Hampshire conduct traffic counts within their respective regions for the NH Department of Transportation. Traffic movement data is collected on a three-year rotation and is used in the statewide traffic model which aids in determining maintenance schedules and long term planning for the movement of people and goods. A total of ten locations are collected in Moultonborough; the average annual daily traffic (AADT) is displayed in Table 1 for each of these locations between 2005 and 2015. As an average, these traffic counts can be exceeded during busy peak season days. The data show some variability, but do not indicate dramatic changes over the past 11 years.

Table 1: Moultonborough Annual Average Daily Traffic Volumes 2005-2015

Location	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1. NH109 south of Bodge Hill Road			5,700			4,300			4,500		
2. NH109 at Shannon Brook	3,300			2,600			2,400			2,400	
3. Moultonborough Neck Road south of NH25				5,300		6,300			5,200		
4. NH109 at Sandwich Town Line		780			780			800			790
5. NH25 at Sandwich Town Line		4,800			4,000			4,600			5,000
6. NH25 at Red Hill River		11,000			10,000			10,000			11,000
7. NH109 west of NH171		3,900			4,400			2,900			3,900
8. NH25 west of Moultonborough Neck Road	14,000			12,000			13,000			12,000	
9. Moultonborough Neck Road east of Kona Farm Road	3,700			2,700			3,200			2,200	
10. Moultonborough Neck Road south of Winaukee Road		950			750			1,500			980
11. Ossipee Mountain Road over Halfway Brook	370			300			280			260	

It is common practice to base road improvements on AADT, which accounts for average traffic conditions without building projects to accommodate seasonal conditions. While AADT is a fundamental measure for management of transportation systems, studies have shown AADT values can vary by at least 11 percent in 95 percent of cases with regional routes serving commuter and business trips. Regional routes with these characteristics represent the smallest AADT estimation errors; heavy traffic rural routes serving recreation areas have shown the highest estimation errors. As the town of Moultonborough considers traffic calming and other roadway improvements along village gateways, the actual peak season traffic volumes should be used when engineering improvements.

Pavement Management

The Moultonborough Department of Public Works uses a comprehensive evaluation tool for pavement management called Road Surface Management Systems (RSMS). Originally developed by UNH Technology Transfer Center, this software is currently being updated through a cooperative effort between the NH Department of Transportation, UNH and the Regional Planning Commissions. This method of prioritizing road improvements, calculating costs and forecasting road network condition changes is dependent on periodic field review of pavement conditions network-wide. Pavement conditions are field surveyed and input into the program which in turn generates a Pavement Condition Index (PCI) for each section of road. The PCI is a measure of pavement condition on a scale from 0 (failed) to 100 (excellent). The results provide supporting information for the local Capital Improvements Program and can be updated on a two to three-year basis to provide

future road improvement budgeting information and a way to track and re-prioritize road improvements over time.

The 12 to 15-year lifecycle of a paved road surface has observed characteristics and costs associated with four basic categories of repair: routine maintenance, preventative maintenance, rehabilitation and reconstruction. Generally, $1 spent on routine maintenance postpones progressively higher costs; $2 for rehabilitation and $6-8 for roadway reconstruction. The life expectancy of a roadway can be significantly increased and the high cost of reconstruction postponed with careful management and the appropriate level of funding. In 2009, the Moultonborough DPW estimated an annual expenditure of $600,000 to $650,000 over a five to ten-year period would produce a slight increase in the network pavement condition index (PCI) which at that time was rated 75 out of 100; the current level of annual funding is approximately $825,000.

Table 2: Moultonborough Municipal Roadway Improvements 2012-2015

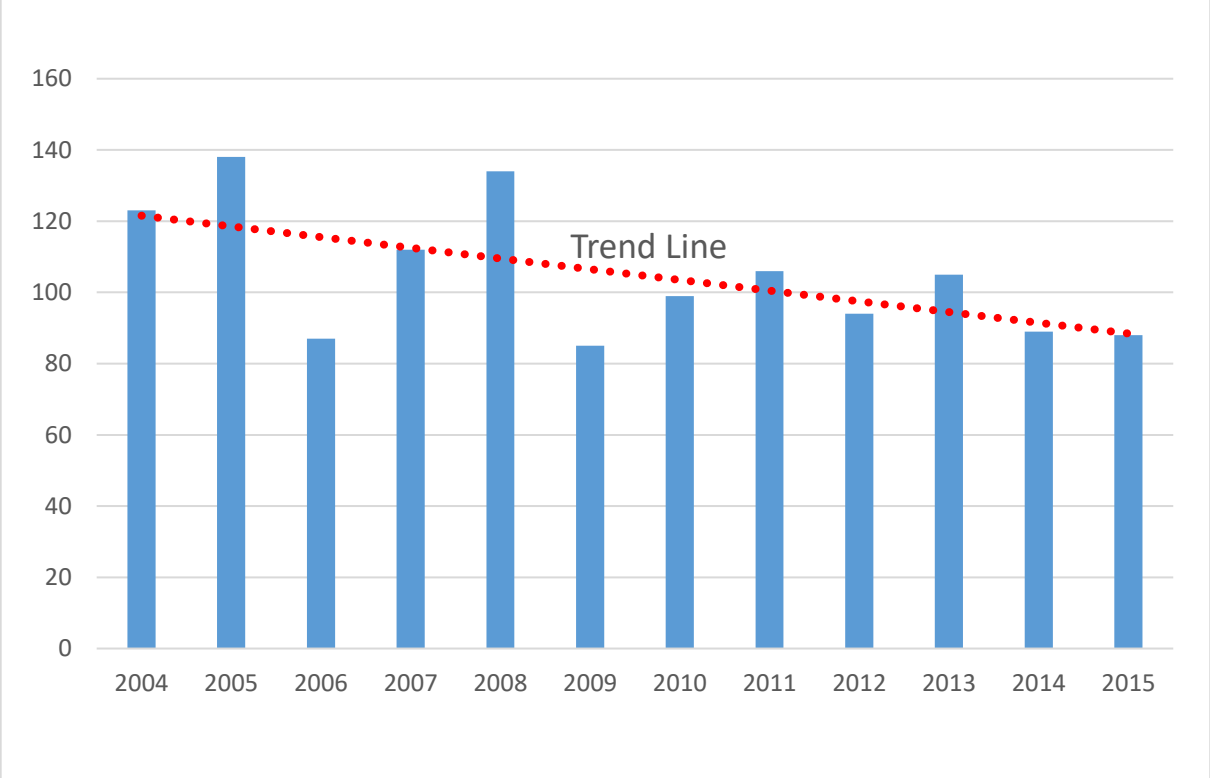
		Feet	Crack Sealing	Chip Seal	Shim	Paving	Reclaim	Reconstruct	Revert to Gravel
2015	Lee Road (Lee's Mill Rd. to NH109S)	3,200				X	X		
	Ossipee Mountain Road	2,900				X	X		
	Randall Road	1,500				X			
	Fox Hollow Road	500			X				
	Playground Drive	1,100			X				
	Ames Road	600			X				
	Myers Road	300			X				
	Redding Lane	variable	X						
	Krainewood Drive	variable	X						
	Hanson Drive	variable	X						
	Driftwood Drive	variable	X						
	Butternut Drive	variable	X						
	Victory Lane	450		X					
2014	Lee Road	2,600				X	X	X	
	Lee's Mill Road	1,650				X	X	X	
	Wentworth Shore Road	2,600				X	X		
	Saw Mill Way, Red Hill Road	1,400			X	X			
	Redding Lane	3,200			X	X			
	Paradise Drive	4,200			X	X			
2013	Bodge Hill Road	7,391				X	X		
	Old Route 109	4,100				X	X		
	Clarks Landing, Black Point Road	1,200				X		X	
	Severance Road	2,200				X	X		
2012	Lake Shore Drive East	2,600				X	X		
	Sheridan Road North	3,700				X	X		
	Sheridan Road	1,200				X		X	
	Ossipee Mountain Road	4,200				X			
	Highway Garage Road	750				X			
	Randall and School House Roads	1,550							X

The cost of Moultonborough Department of Public Works transportation improvements for the six-year period 2017-2022 is estimated at $6.217 million or an average $1.036 million annually. Nearly 90 percent of the costs identified in the draft 2017-2022 Capital Improvements Plan are dedicated to road projects while the remainder is capital cost for equipment lease/purchase and replacement. During the four-year period from 2012 to 2015 the DPW completed an average of approximately three miles of roadway repairs with the annual appropriation. The types of completed roadway improvements and locations are outlined in Table 2.

Accidents and Safety Assessment

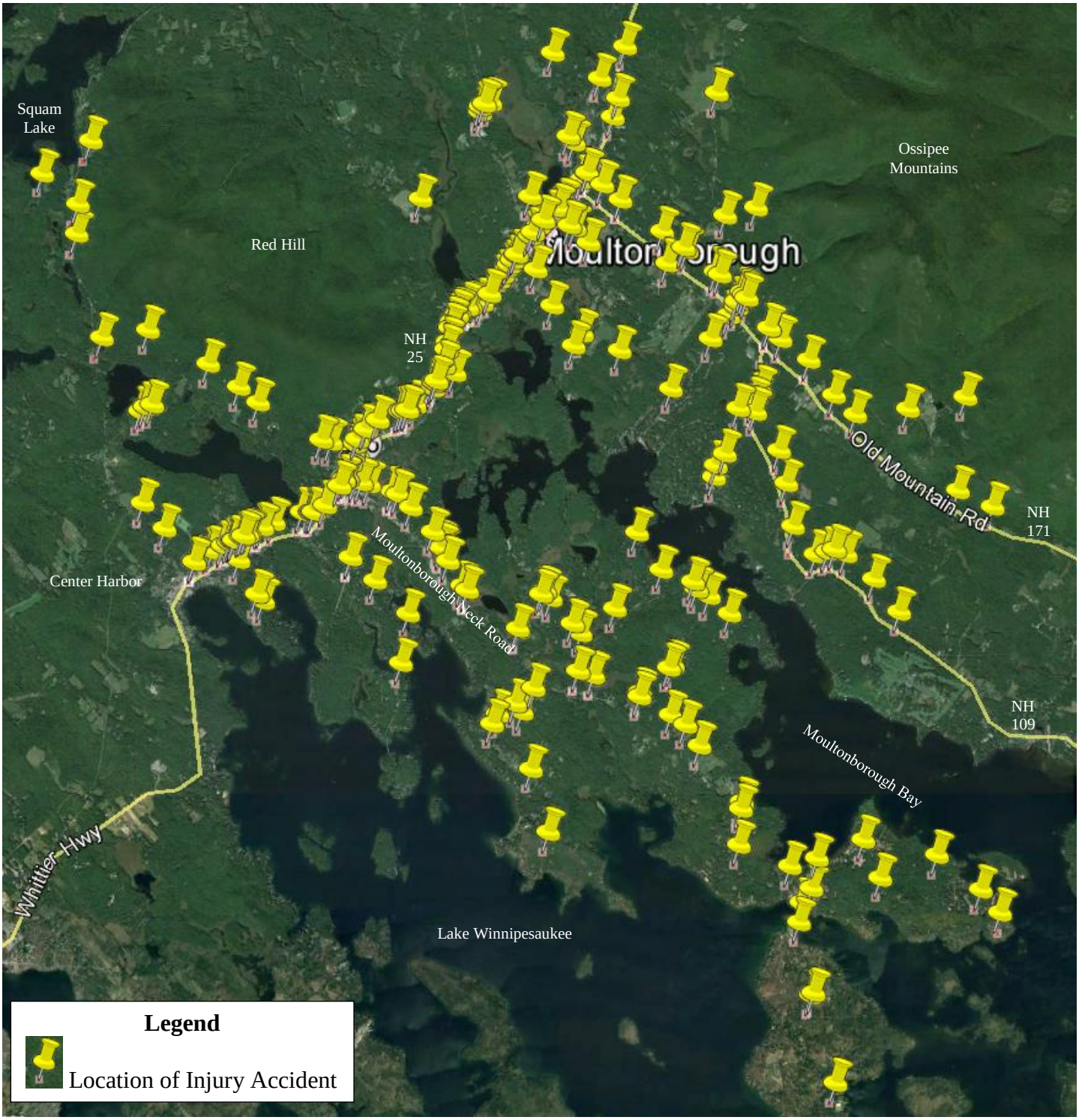
During the twelve-year period from 2004 to 2015, there were a total of 1,260 accidents on roadways in Moultonborough that met the state reporting threshold of damage totaling $1,200 or more. As illustrated by the trend line in Graph 1, the general trend during this period is fewer accidents annually, where five out of seven years (2009-2015) there were fewer than 100 accidents annually.

Graph 1: Reported Accidents on Roadways in Moultonborough 2004-2015



The reported and locatable motor vehicle accidents resulting in injury and/or fatality during the period from 2004 to 2015 are illustrated in Map 1. Some accident reports provide insufficient or conflicting information about the location that prevents placement on a map. The accident reporting system in NH is being modified to include GPS coordinates for crash locations to improve location information.

Map 1: Approximate Location of All Locatable Injury Accidents 2004-2015



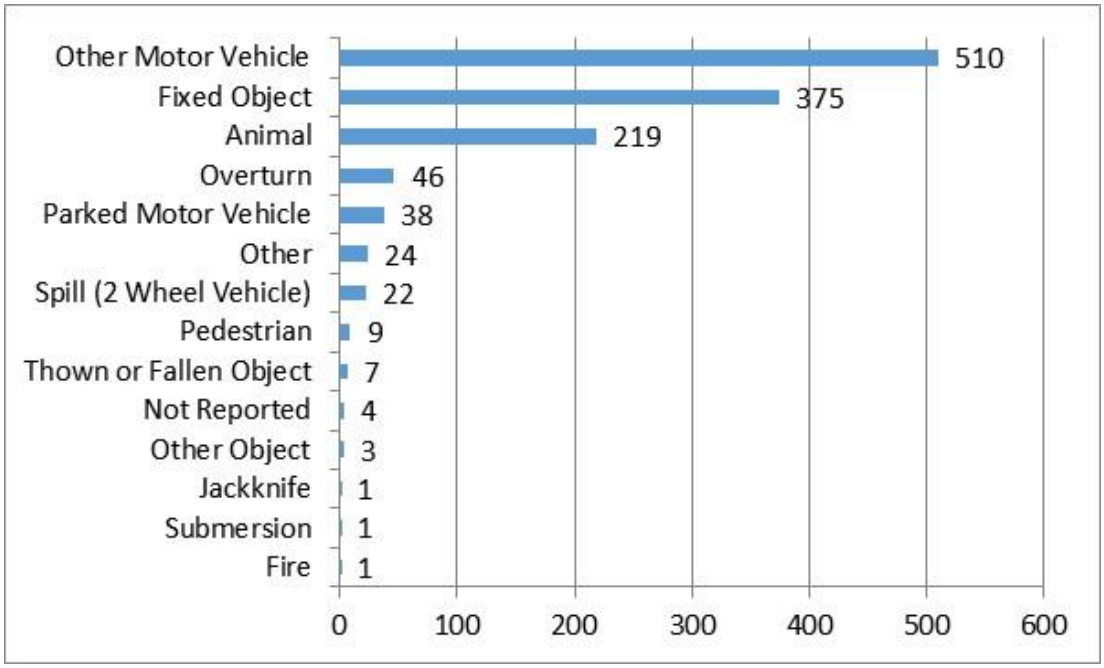
The reported motor vehicle accidents during this time-period resulted in a total of 31 fatal or severe injury crashes. Highlighted in Table 3 are the roadways where multiple fatal or severe injury crashes were reported.

Table 3: Location of Fatal and Severe Injury Accidents 2004-2015

Road	Fatal/Severe
NH Route 25	12
NH Route 109	5
Moultonborough Neck Road	4
Shaker Jerry Road	2
Paradise Drive	2
Tara Road	1
Redding Lane	1
Red Hill Road	1
Jacobs Road	1
Skyline Drive	1
Holland Street	1
	31

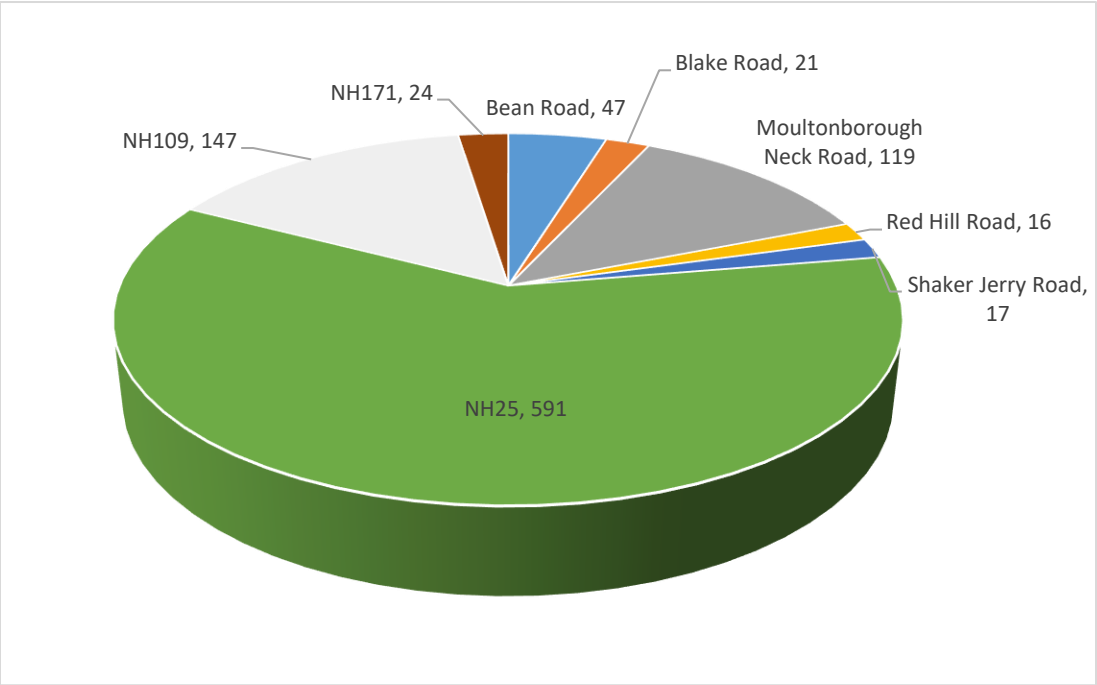
The types of motor vehicle accidents that occurred between 2004 to 2015 are outlined in Graph 2. The leading type of accident involved multiple vehicles; which accounted for 40 percent of the total accidents. There was a total of nine reported motor vehicle accidents involving a pedestrian and none involving bicycles. This could be the result of multiple factors including: not meeting the damage threshold for reporting, the relatively low numbers of bicyclists and/or a high level of bicyclist safety.

Graph 2: Types of Reported Accidents on Roadways in Moultonborough 2004-2015



The roadways with an average of one or more accidents per year are summarized in Graph 3. In total these roadways represented 79 percent of the accidents town wide during the twelve-year period; accidents on state routes (25, 171, 109, Bean Road and Moultonborough Neck Road) represented three quarters of all accidents (75 percent). In 2008, a *NH Route 25 Corridor Study* was conducted by the Lakes Region Planning Commission and consulting engineers from Fay, Spofford and Thorndike. The study identifies the intersections of leading concern along NH Route 25 in the towns of Center Harbor and Moultonborough. The intersections of leading concern in the NH25 corridor for the town of Moultonborough include the NH25 intersection with: Fox Hollow Road, Glidden Road, Sheridan Road, and Redding Lane. Improvements have recently been made at Fox Hollow Road.

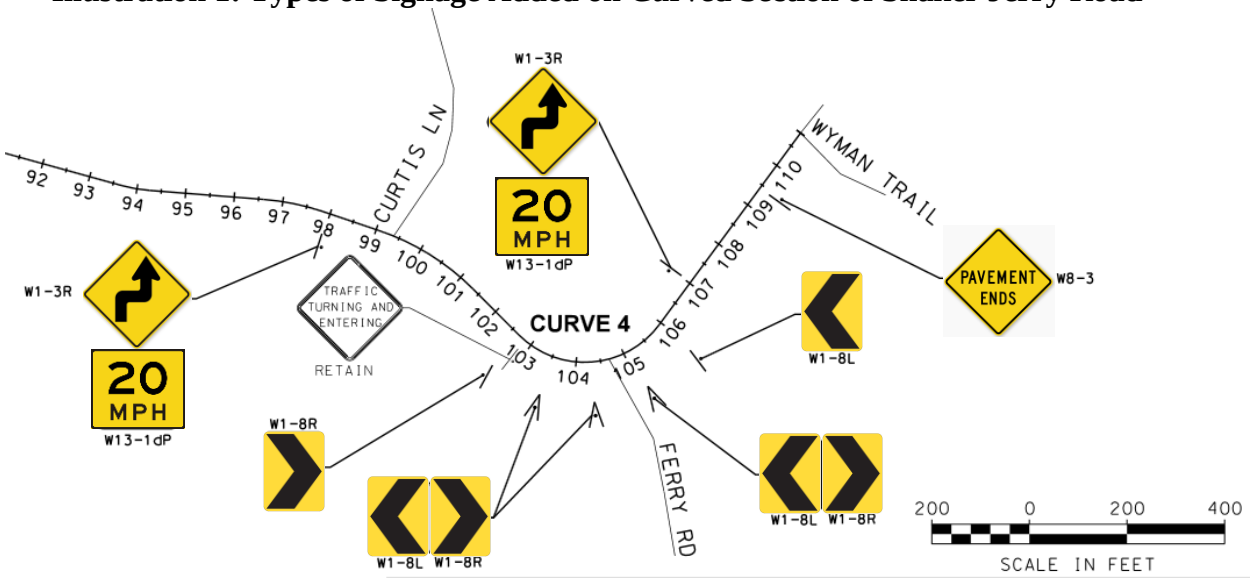
Graph 3: Roadways with an Average of More than One Accident Annually 2004-2015



Traffic calming is the use of engineering, education and enforcement to effectively slow motorists especially in areas with higher foot traffic and residential and commercial development.
An example is the speed feedback sign on NH25 by the Central School and western approach to the village. Additional safety benefits may result from traffic calming measures in the village centers as outlined in the Land Use Chapter.

Completed in 2015, the town participated in the Rural Road Signage program to evaluate existing signs, replace older roadway signage with new high retroreflective signs and add signs where needed in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) to improve safety. Conducted under the High Risk Rural Roads Program - several of the roadways with higher accidents were scheduled for the replacement of older roadway signage with new high retroreflective warning signs, object markers and delineators including: Sheridan, Holland, Shaker Jerry, Moultonborough Neck and Blake Roads. Illustration 1 shows the types of fluorescent signs added to inform motorists of sharp curves on Shaker Jerry Road in proximity to Ferry Road intersection.

Illustration 1: Types of Signage Added on Curved Section of Shaker Jerry Road



While scheduled in the out-years of the recently approved 2017-2026 State Ten Year Plan for transportation improvements, safety improvements are included for NH25 from west of the Lake Shore Drive (west intersection) to east of the Lake Shore Drive (east intersection). The schedule consists of - Preliminary Engineering, 2022; Right of Way, 2024; and Construction, 2025. The total project cost is estimated at $679,138.

In 2008, the town fully reconstructed Ossipee Park Road to facilitate the heavy tractor trailer truck traffic generated by the CG Roxane bottling plant with funds appropriated at Town Meeting (cost estimate $992,000, with $600,000 contributed by CG Roxane). Significant truck accidents on Ossipee Park Road at NH171 led to an evaluation of this access road in 2012 and culminated in the *Traffic Control Device Evaluation: Ossipee Park Road.*[3] This report examined crash history, bottling plant load data, existing roadway conditions including signage, and made recommendations on signage, mitigation strategies, and runaway truck ramps (emergency escape ramps) with potential locations.

Parking

Parking in Moultonborough is governed by the Zoning Ordinance and *Ordinance Relative to Parking Regulations*, March 2015. The zoning ordinance provides that adequate off-street parking is the requirement of new and changed uses. Buildings with a footprint of up to 25,000 square feet and permitted by special exception within Commercial Zones A and B, are subject to additional requirements including: 50 percent of parking in rear of building, interconnection with adjoining lot and shared driveway for access management purposes. Where dedicated on-street parking is not provided in Moultonborough, the parking regulations require vehicles parked on-street to provide space in the travelway of at least 12 feet. The regulations further specify areas where parking is prohibited such as adjacent to a school. Recently, a new "no parking zone" was added on Old NH 109 near the Lions Club on the north side 250 feet from the intersection with NH109.

[3] Stephen G. Pernaw & Company, January 2013.

C. Regional Network

Bridges

There is a total of eight state owned and two municipally owned bridges in Moultonborough. The bridges in New Hampshire are inspected by NHDOT regularly and the inspection frequency is increased for bridges with structural deficiencies to monitor safety. The redlist is comprised of bridges with known structural deficiencies, poor structural conditions or weight restrictions. Currently there is one state owned bridge on the 'redlist' in Moultonborough. Added to the redlist in 2010, bridge 140/251 is scheduled for rehabilitation by the NHDOT Bridge Maintenance Bureau in 2016. The NH109 bridge over Shannon Brook was removed from the redlist in 2015 after undergoing superstructure and deck rehabilitation.

Table 4 displays bridge condition attributes including: age, span, condition ratings, etc. Condition ratings are based on a 0-9 scale for each of three structural elements: deck, super-structure and sub-structure. Map 2 on the next page provides the location of all state bridges and municipal bridges in Moultonborough. The bridge reference numbers are associated with the state bridge inventory.

Table 4: Attributes of Bridges in Moultonborough

State Bridge Number	Location	Ownership	Span	Condition Ratings			Built	Rebuilt	Restrictions
				Deck	Super-structure	Sub-structure			
183/231	Ossipee Mountain Road over Halfway Brook	Municipal	39'	8	8	8	1949	1996	-
160/221	Lee Road over Halfway Brook	Municipal	17'	7	7	7	1930	1990	-
221/177	NH171 over Shannon Brook	NHDOT	19'	6	6	6	1900	1955	-
192/101	Long Island Road over Winnipesaukee	NHDOT	141'	7	8	8	1988	-	-
189/201	NH109 over Shannon Brook	NHDOT	12'	6	6	6	1929	1980	-
186/193	NH109 over Shannon Brook	NHDOT	25'	7	7	6	1929	1993	-
171/227	NH109 over Halfway Brook	NHDOT	17'	7	7	7	1928	1981	.
165/257	NH25 over brook	NHDOT	12'	6	6	7	1900	1976	-
140/251	NH109 over Berry Pond Brook	NHDOT	17'	3	3	4	1927	-	Redlist
136/215	NH25 over Red Hill River	NHDOT	27'	6	6	6	1940	1984	E-2

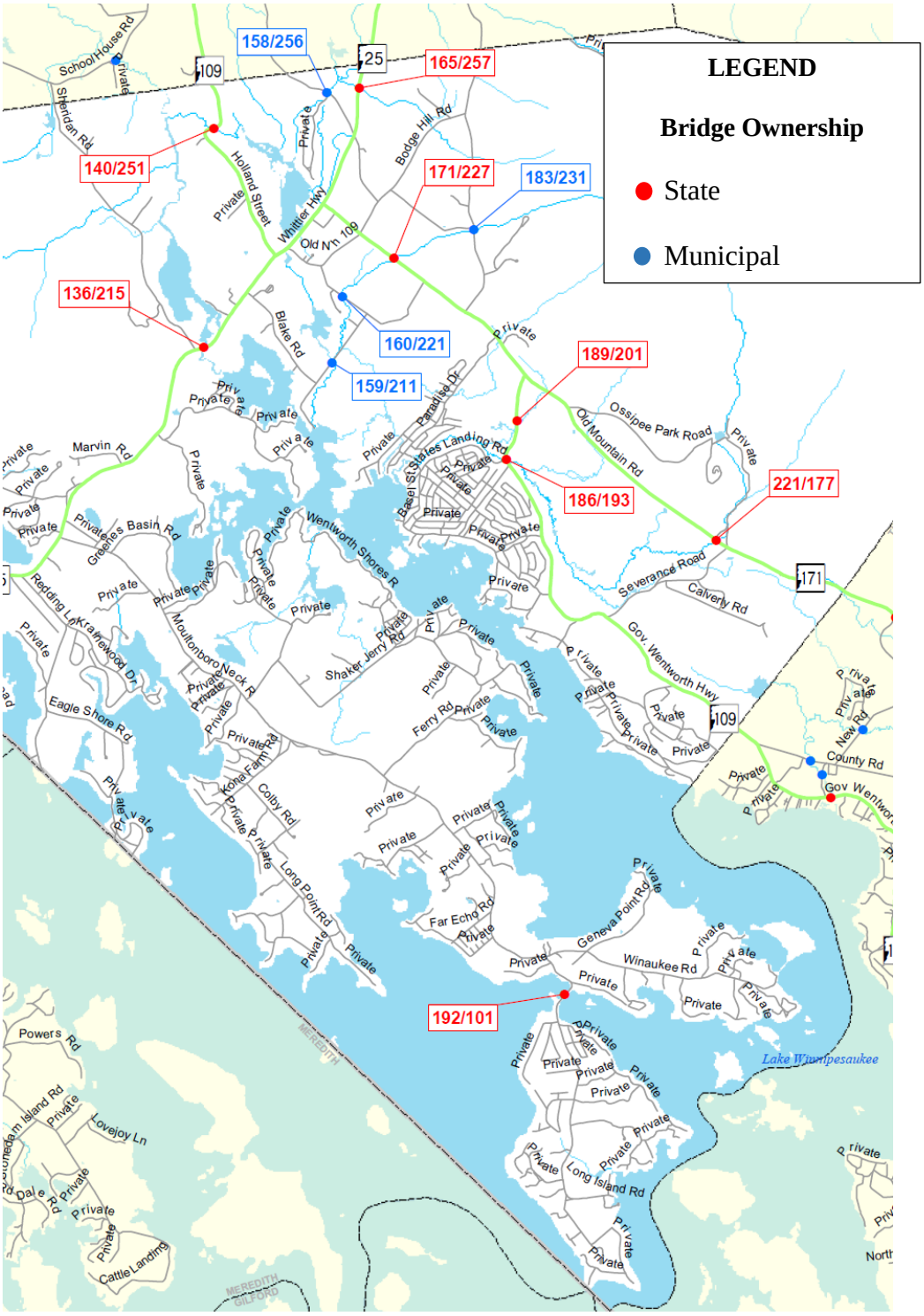
Bridge Condition Rating Guide

0 Bridge closed
1 this value of rating code not used
2 Basically, intolerable requiring high priority replacement
3 Basically, intolerable requiring high priority corrective actions
4 Meets minimum tolerable limits to leave in place
5 Somewhat better than minimum adequacy
6 Equal to present minimum criteria
7 Better than present minimum criteria
8 Equal to present desirable criteria
9 Superior to present desirable criteria

A posting of "E-2" refers to the 'exclusion' of certified single unit and combination vehicles from crossing a bridge while traveling at the higher weight limit as outlined in NH RSA 266:18-c. This type of posting changes frequently as bridge improvements are made. To keep the trucking industry

apprised of load limitations updates are posted on the NHDOT website.[4] While improvements were made to the bridge over NH25 bridge over Red Hill River in 2016, the bridge remains E-2 posted.

Map 2: Location of Municipal and State Bridges in Moultonborough



[4] Source: ftp://nhftp.admin.state.nh.us/nhdot_posted_bridge_byroute.pdf, viewed September 22, 2016.

Bridges over waterways are subjected to the potential adverse impacts of moving water, especially in flood conditions. The erosion of bridge footings and foundations is a leading cause of bridge failure in the US according to the Federal Highway Administration.[5] Flood conditions can rapidly advance 'scour' and in some cases cause bridge collapse. Since 2010, Plans of Action for vulnerable bridges have become a requirement. Today, National Bridge Inspection Program metrics are used to evaluate bridge scour in New Hampshire. The "Scour Critical Rating" of all municipal and state owned bridges in Moultonborough is "stable for extreme flood".

Pavement Maintenance and Markings

In recent years, the NH Department of Transportation has made changes that increase cooperation with municipalities related to paving maintenance on state routes. In 2015, the department began publishing a three-year paving plan identifying the proposed location and extent of pavement rehabilitation statewide. Around the same time a policy for lane widths and pavement markings was established. The policy allows any municipal legislative body opportunity to request a roadway lane width change in advance of a paving project. An example of successful implementation in the Lakes Region is US Route 3 in Bridgewater and Hebron, where the Newfound Pathway Committee is working to create an on and off-road pathway around Newfound Lake. The Boards of Selectmen requested NHDOT to restripe a section of roadway with ten foot lanes, allowing for additional shoulder space for pedestrians and bicyclists. A similar request may be effective in Moultonborough when considering traffic calming measures for the villages along NH25.

As paving projects are scheduled timing can fluctuate. For example, the 2017 Moultonborough Neck Road paving project illustrated in Map 3 was completed in 2015. These scheduling changes increase the need for a community to be aware of revised dates. The Regional Planning Commission advocates for communities to be notified of actual paving schedules to provide an increased opportunity for coordination where desirable.

The delineation of lane widths is dependent on roadway edge and center lines. In many Lakes Region communities, town roads especially those with low traffic volumes do not have painted edge or 'fog lines'. In recent years, the NH Department of Transportation has not had adequate staffing to restripe all state roads after they have been paved. Thus, many Tier 4 routes and state routes with less than 6,000 vehicles per day have not been striped. In Moultonborough, Tier 4 routes include: NH 171, Moultonborough Neck, High Haith, Greens Basin and Bean Roads. Edge line markings can be effective for improved safety and potential reductions in maintenance costs in the following ways:

- Road markings are among the most cost-effective treatments to make roads safer.
- Delineation improvements have been shown to reduce head-on and run-off road crashes.
- Helps drivers to maintain a safe and consistent lateral vehicle position within the lane.
- Reduction in nighttime and low-visibility crashes.
- Reduction in pavement deterioration due to vehicles driving onto the shoulder.[6]

[5] http://cenews.com/article/8898/protecting_bridges_from_scour

[6] Road Safety Toolkit, International Road Assessment Programme (iRAP), http://toolkit.irap.org/, Accessed October 21, 2016.

Map 3: State Highway Proposed Paving - Moultonborough 2016-2018

Network Impacts on Water Quality

The Lakes Region Transportation Technical Advisory Committee (TAC) has been engaged in a study of transportation network impacts on water quality. The purpose of the study is to identify areas of concern with the potential for best management practices to be applied when future projects are undertaken. The study area includes the primary catchments around Lake Winnipesaukee. The purpose of the study is to gain a better understanding of opportunities to minimize stormwater impacts on lake water quality. To do this, the planning commission has teamed with Plymouth State University to model areas of leading concern based on land development density, soil types, slopes, proximity of highways to surface waters and other characteristics. As the model is developed the TAC will be engaged in weighting the assessment criteria to establish regional priority locations of concern.

During data development, the eight public works directors from communities with Lake Winnipesaukee shorefront were interviewed or surveyed to assess local areas of leading concern, the status of underground stormwater infrastructure and outfalls mapping and the existence of written local catch basin cleanout policies. Moultonborough was the only one of eight communities with a comprehensive GIS underground stormwater infrastructure inventory. The inventory is accessible to municipal staff as a mapping layer available through the town's online mapping tool. Each feature

has information such as condition, GPS location, ownership (private, municipal or state) and direction of flow.

An area of concern in town, which led to stormwater erosion in the past, has since been resolved. The town continues to work towards the identification of phosphate sources that contribute to surface water degradation.

It is estimated that catch basins maintained in good working order are 5-25 percent effective in removing suspended solids from stormwater. Supplemental stormwater treatment is often needed to treat specific pollutants. This is especially true for chloride and sodium which requires special treatment such as the use of detention basins which require periodic maintenance. Prior to 2009, the town of Moultonborough used on average 1,200 to 1,400 tons of salt on town roadways annually. The 2009 DPW budget predicted a reduction of salt use to 950 tons based on the experimental use of 'Magic Salt' which is applied at the reduced rate of approximately 350 pounds per lane mile compared to the rock salt application rate of 600-700 pounds per lane mile. Magic Salt is applied earlier at the beginning of a storm event and then at the end of the storm to clear the pavement. The experiment has the potential for multiple benefits including improved roadway conditions and reduced damage to the environment and traveling vehicles.[7]

While surface waters serve as an economic engine for the region, there may be water quality impairments directly attributable to transportation such as culvert and catch basin discharges, runoff from unpaved roads, etc. Proactive measures may be beneficial to reducing the risk of contamination. For example, it is known that the first inch of rain in storm event, is effective in rinsing most contaminants from the roadway. What is largely unknown is to what extent these contaminants are effectively filtered before entering the lake. Current water samples are largely diluted when the lake is sampled. The UNH Stormwater Center has developed continual water sampling technology for stormwater outfalls that is producing very different results than traditional sampling measures. Moultonborough should explore this technology and implement where appropriate.

A recommendation from the 2008 master plan outlines the need for Moultonborough to adopt low salt areas. Using the stormwater infrastructure inventory to identify areas for potential best practices may be beneficial as well. An additional recommendation for consideration is to explore the catch basin inventory to identify which catch basins have outfalls that flow directly into surface waters and to explore opportunities for complementary "green infrastructure". The Moultonborough Bay Inlet Sub-watershed is currently being studied. The sub-watershed totals 31,556 acres, 68 percent of which is in Moultonborough. Potential sources of non-point pollution include: 51.6 miles private; 44 miles local and 27 miles of state roads.

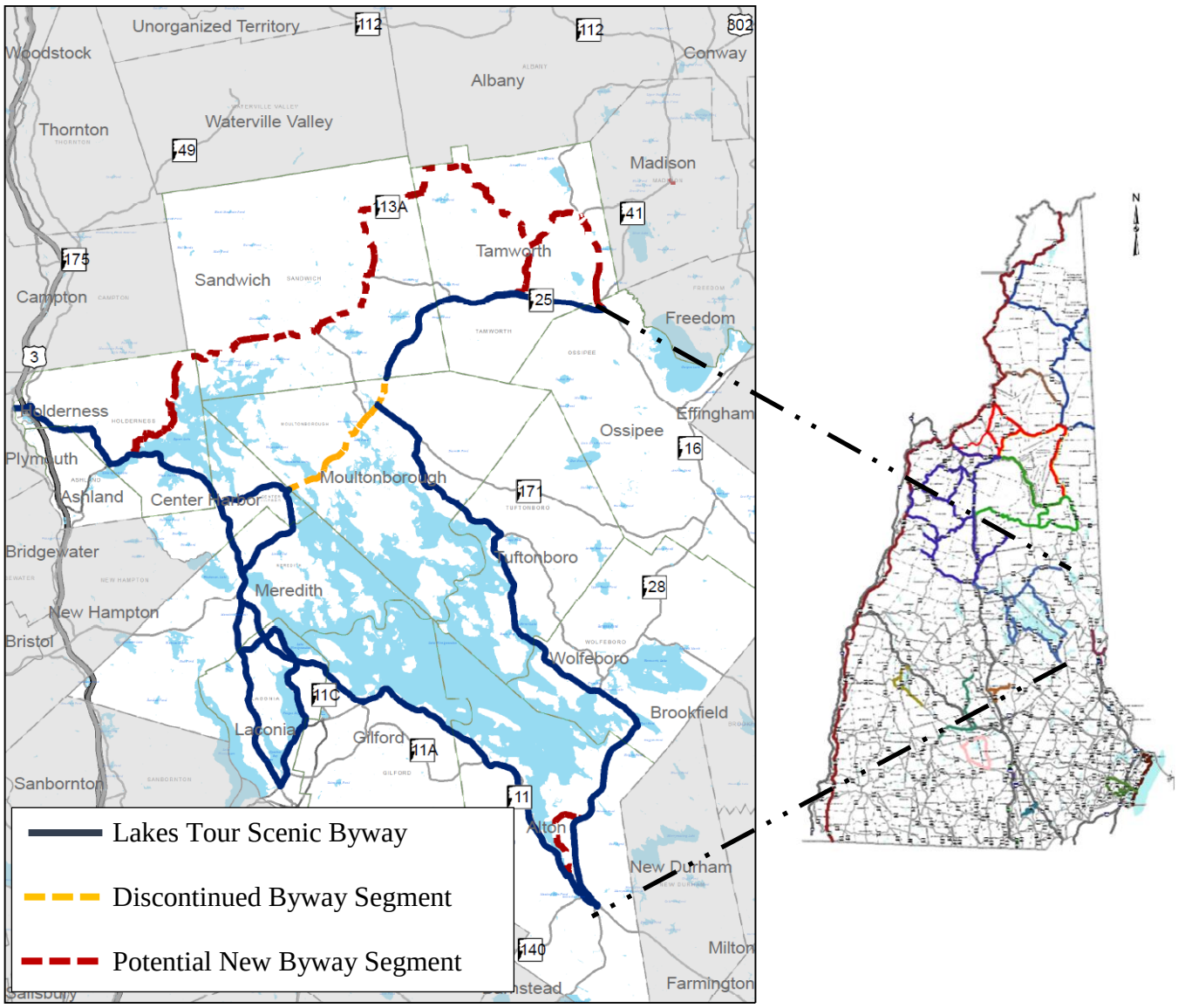
Scenic Byway

The New Hampshire Scenic and Cultural Byways program was established in 1992 (RSA 238:19) The Lakes Tour Scenic Byway (1999) around Lake Winnipesaukee is one of fifteen state-designated and three federally-designated byways in New Hampshire, covering more than 1,000 miles. Scenic Byway funds have been used for interpretive centers, signage, scenic overlooks, safety improvements, maps and other marketing material along these routes. As illustrated in Map 4 by the

[7] *Moultonborough Highway Explores Expanded Use of Magic Salt,* Moultonborough DPW, 2009

lack of Byway connectivity between Center Harbor and Sandwich, NH25 through Moultonborough was de-designated in the late 1990s at the request of town officials, and the signs on NH25 have gradually been removed. The remaining signs on NH109 are dated and should be replaced in coordination with the regional Scenic Byway Advisory Committee.

Map 4: Lakes Tour Scenic Byway



Moultonborough has recently completed a village visioning review. Many of the recommendations and conclusions are consistent with a byway. The village area reviewed includes two schools, several businesses, and a host of historic buildings. The area includes portions of NH25 and NH109 and represents a commercial zone. Included in the vision are: lane width changes for traffic calming and sharing the travel way with vehicles, walkers, and bikers, wayfinding signage, enhanced Berry Pond and Sandwich Mountain views, improved pedestrian and bicycle connectivity and a park with public restrooms.

A past concern with the byways program is the off-premise sign restriction. Where businesses exist off NH25, consideration for their ability to have a sign on NH25 has been a concern. As recommendations from the Village Vision are implemented, it may be an opportune time for the community to revisit the designation of NH25 considering the commonality of goals.

Outside of the Village there may exist opportunity to share local resources and amenities with travelers. Examples include recreational and services signs for: Red Hill hiking trails accessed from NH 25 via Sheridan Road, the Sutherland Park and Scenic Area on NH 25 and State's Landing beach and boat launch accessed from NH 109. Challenges to views protection has led to ongoing dialog where maintenance within a state right-of-way is required to protect locally important scenic views. This is not an uncommon concern a with recent highway maintenance budget cuts. Several views were identified as part of the Scenic Byway Corridor Management Plan. The views in Moultonborough on or near the byway include:

Location	Facing	Accessibility	Characteristics
NH109 northwest of Tuftonboro town line	Northeast	View from vehicle, limited shoulder space	View of the Ossipee Range
NH109 (south of NH171)	East	View from vehicle, limited shoulder space	View of farm fields and Ossipee Range
NH109 at NH25 intersection	Northeast	Shoulder	View of Sandwich Range
NH109 (near Ossipee Mountain Road)	West	View from vehicle, limited shoulder space	View of orchard and Sandwich Range
NH25	Northeast	Shoulder	View of airport and Sandwich Range
NH25	North	Sutherland Park - gravel pull-off with picnic tables	View of Berry Pond, marsh, and Sandwich Range
NH25	North	Small, gravel NHDES pull-off with cartop launch	View of Lake Kanasatka and Mountains beyond
NH171 to Ossipee Park Road (< .5 miles from byway)	South	Access to hiking trails.	Multiple views of Lake Winnipesaukee and the islands

Scenic Roads

Under New Hampshire RSA 231:157, any road in a town (other than class I or II highway) may be designated as a scenic road, which protects trees and stonewalls situated in the public right-of-way. Scenic Roads are established upon petition of ten people who are either voters in the town or who own land abutting the subject road. Formal designation occurs by vote at any annual or special town meeting. The law provides exceptions for public safety and utilities.

Designation as a Scenic Road means that repair, maintenance, and reconstruction work to the roadway should not involve the cutting or removal of trees 15 inches in diameter or more; or the tearing down or destruction of stone walls without prior written consent of the planning board or

board responsible for the local Scenic Roads program. The designation of a roadway does not affect the rights of any abutting landowners on their property, and does not affect the eligibility of the town to receive construction, maintenance, or reconstruction aid.

D. Active Modes of Transportation

Sidewalks and Pedestrians

A sidewalk network in Moultonborough village is virtually non-existent, except for small portion (approximately 175 feet) of paved walk with raised curbing around the front of the Old Country Store. This segment of walkway does provide a vital connection from the store property to a crosswalk on NH 109 that provides passage to the library and town hall parking lot. Beyond the crosswalk on NH109 there are limited shoulders; the curbing ends on NH25 at a section of variable width shoulder, generally five to eight feet wide that can accommodate on street parking, but is not delineated for parking. Moving forward improved pedestrian safety is important for the town of Moultonborough.

The roadways within a one-mile radius of the Moultonborough Central School were assessed for walkability as part of the development of a Safe Routes to School travel plan. Conducted by community volunteers using a methodology developed by the National Highway Traffic Safety Administration. In general, the observed roads were unfriendly for pedestrians largely due to safety concerns related to the lack of sidewalks and shoulders.

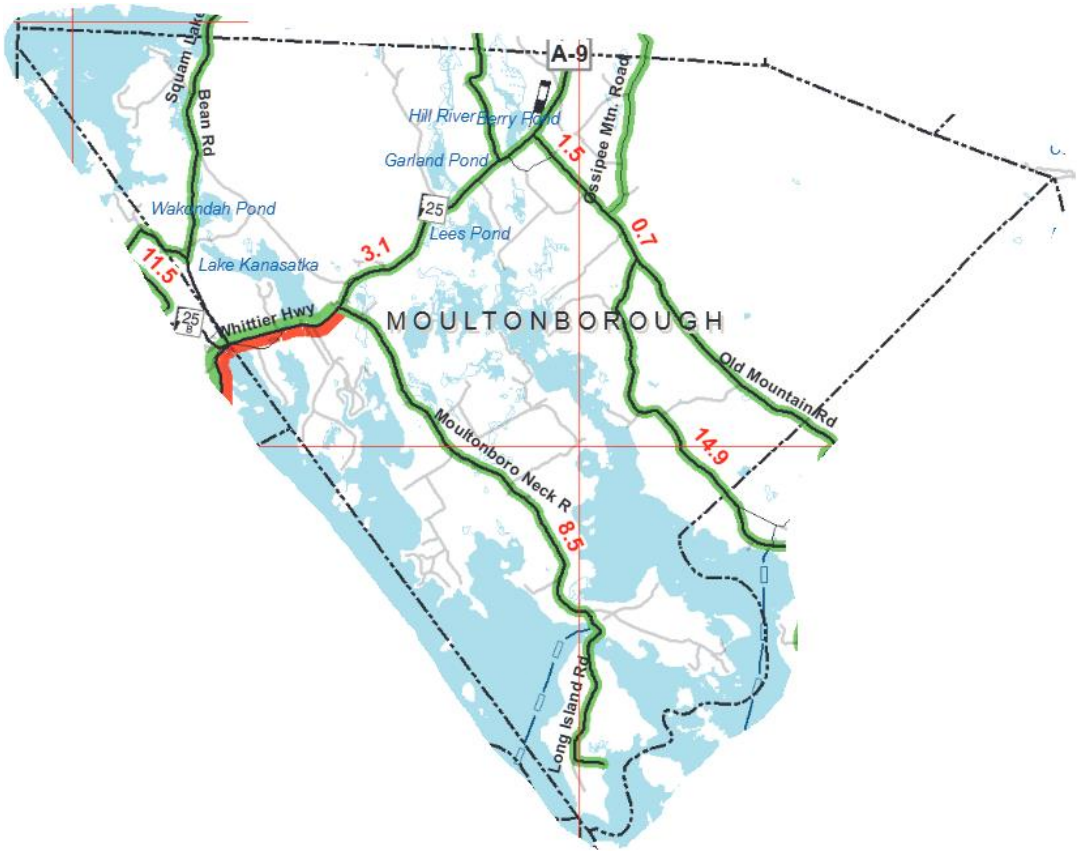
The Travel Plan, finalized in 2010, contains series of recommendations for improving both pedestrian and bicycle access to the school. A significant limitation to encouraging students to walk or bike is the volume and speed of traffic on NH25 where the schools are located. The recommendations to build a sidewalk from the village to the Central School are currently in the engineering phase, but do not have approved funding for construction through a town meeting vote.

The community has discussed the need for sidewalks in other planning efforts including the Village Vision Report finalized in 2015. The culmination of several reports and studies about different issues in the village, the report associates the ability to provide bike and walking opportunities as an integral element of a comprehensive community economic development strategy. A first segment of sidewalk will be built because of a condition of approval for a new retail store in 2016. As a sidewalk network is built, the need for and cost of winter maintenance will need to be considered and planned for. Currently the town does not own a sidewalk plow.

Bicycles

Several roadways in Moultonborough are identified as bicycle routes on the *New Hampshire Bicycle Map – Lakes Region* as illustrated in Map 5. Last updated in 2008, the recommended routes (identified in green) represent the most direct routes between population centers and were not chosen based on safety or adequacy of shoulders to accommodate bike travel. The map does identify routes where advanced skills are recommended, such as NH25 from the Center Harbor town line to Moultonborough Neck Road (designated in orange/green).

Map 5: Moultonborough Bicycle Routes



A bicycle assessment conducted by volunteers as part of a Safe Routes to School travel plan concluded travel by bicycle on the roadways within a two-mile radius of Moultonborough Academy was 'unpleasant' and in some instances frightening. The contributing factors to the poor ratings included: lack of shoulders, fast and heavy traffic, large trucks, difficult intersections and inappropriate driver behavior. Family oriented bicycle rides may be experienced in some of the larger residential neighborhoods such and Balmoral and Suissevale with lower speeds and traffic volumes however there is a need for rider education and understanding of the rules of the road whenever roadways are used. Further consideration is needed regarding town-wide connectivity.

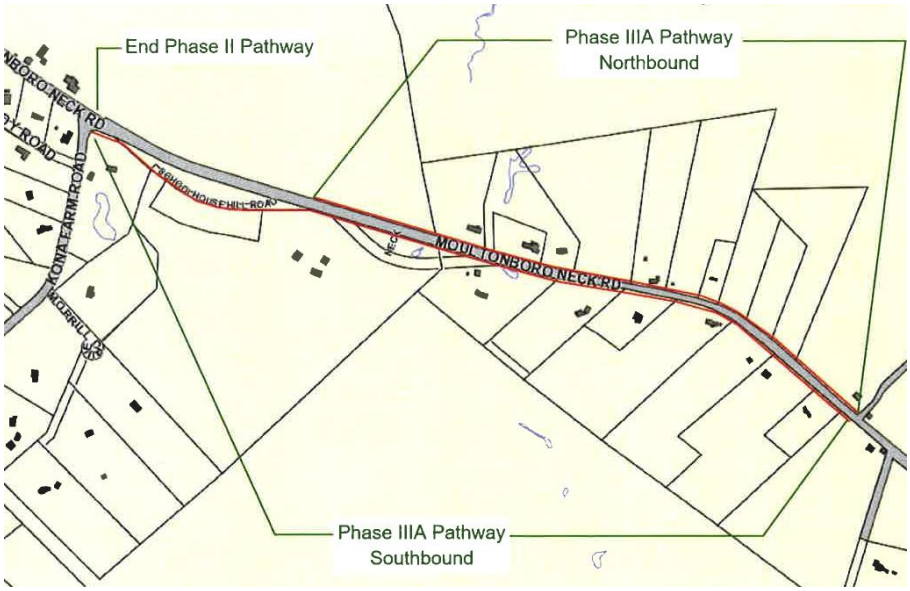
The Moultonborough Neck Pathway resulted in resident interest in promoting alternative modes of transportation in an area of high seasonal traffic influx in the summer months. The citizen formed Pathway Committee has since become the Moultonborough Neck Pathway Association. The pathway will span the length of Moultonborough Neck, from the town playground to the town beach when fully constructed. The estimated cost of the three-phase project totals nearly $1.4 million of which the town received Transportation Enhancement program funds of $672,000 towards the completion of Phase 1 and Phase II. A middle segment of the pathway remains to be built to connect the first two phases. Consisting of sections of on-road dedicated bicycle lanes and a four-foot pathway with separation from the roadway, the path significantly increases travel ability and safety for bicycles and pedestrians alike.

Moultonborough Neck Pathway Construction Phases

Phase II - Opened 2004	Phase III - To Be Constructed	Phase I- Opened 2007
Playground Drive ←2.5 miles→ Kona Farm Road	Kona Farm Road ←1.7 miles→ Ferry Road	JoJo Country Store ←2.3 miles→ Winaukee Road

In addition to grant and municipal matching funds, private donations and fundraising for the project have totaled over $150,000. Map 6 shows the details of Phase III, for which the town has applied for 80 percent of the project cost to be funded through the Transportation Alternatives Program (TAP).

Map 6: Moultonborough Neck Pathway Phase III Detail



Mode Share

Like many other rural communities in New Hampshire and Carroll County with limited practical opportunities to commute to work by means other than vehicle, it is estimated that only one percent of Moultonborough workers bike or walk to work. In part, a limiting factor is the distance traveled to work. For Carroll County, the average travel time to work is 25.8 minutes and for Moultonborough it is an average of 36.3 minutes. Table 5 indicates the means of travel to work as provided by the 2014 American Community Survey. Despite the low percentages of walkers and bikers, the value of pedestrian and bicycle travel cannot be understated in advancing economic opportunity.

Table 5: Percentage of Workforce by Means of Travel to Work

	Carroll County	Moultonborough
Single Occupancy Vehicle	81.9	83
Carpool	7.2	4.9
Public Transportation	0.4	0.4
Walk	2.2	0.4
Other Means	1.8	0.6
Work at Home	6.4	10.8

E. Other Modes of Transportation

Air

Moultonboro Airport (5M3) is a privately-owned airstrip in Moultonborough that is open to public use. Activated in 1973, services include 100 octane aviation fuel, aircraft parking (ramp or tie down) and aircraft maintenance, modifications and painting. Aircraft operations averaged 90 per week in 2014, consisting of approximately two-thirds transient and a third local general aviation. There are: one ultralight, 15 single engine and 2 multi-engine aircraft based on the field. The closest airports in the region are Laconia Municipal Airport (KLCI) 12 miles south in Gilford and Eastern Slopes Regional Airport (KIZG) 23-mile northeast in Fryeburg, Maine.

Public Transportation

As with many rural communities, public transportation services are limited in Moultonborough. The recent operation of the Blue Loon route from West Ossipee through Moultonborough with a connection in downtown Laconia has been discontinued. The Tri-County Community Action Program (TCCAP) provides a Door-2-Door service in Carroll County. For Area 2, which includes West Ossipee, Tamworth, Chocorua, Moultonborough and Sandwich, service is currently available week-days from 8:00am to 5:00pm for a nominal fee for the public or suggested donation for riders 60 years or older and the disabled. Scheduled rides require 24-hour notice through a toll-free telephone number.

The TCCAP also operates a Long Distance Medical Program that transports passengers who have no other way to get to their medical appointments. Volunteer drivers are an important component of this program and can receive mileage reimbursement for the use of their personal vehicle. Efforts are being made in New Hampshire to coordinate public transportation through regional coordination councils (RCC). A product of the Carroll County RCC is the *Community Transportation Services Directory for Carroll County*. Published in 2014, the directory is updated periodically to provide: a comprehensive list of transportation providers regionally, where services are offered, fare/rate and contact information and provider websites.

It is estimated that public transportation between the only cities in the Lakes Region, Laconia and Franklin, provides approximately 7,000 rides annually over 252 service days. The estimated cost to operate the system is $33.61 per hour or approximately $15.75 per passenger. Fares range from $.50 to $2.00; which provide limited operating revenue and require subsidies to maintain operations. Moultonborough will continue to be receptive to public transportation solutions.

F. Corridor Management

The term corridor management refers to the decisions made about a highway and the closely associated land uses and transportation facilities. Like most Lakes Region communities, a state highway serves both the purpose of efficient movement of goods and people through town and ‘Main Street’ which is the traditional center for social, cultural and economic activity. With careful management, potential conflicts resulting from differing highway purposes can be minimized.

The Moultonborough Village Vision Report (2015) is a cornerstone of Moultonborough's effort to reclaim Main Street (NH25) as a traditional center for local activity. This long-range initiative identifies key transformative changes on NH25 which will best accommodate desirable land use. Envisioned are 'nodes' along the length of NH25 in Moultonborough connected by limited commercial areas. A near-term focus is the existing Village Center where 2017 zoning changes are being considered which will allow greater density, protection of historic and natural resources, the provision of pedestrian connectivity and the potential for gathering space(s). Priority transportation enhancements supporting the near-term recommendations include traffic calming, pedestrian connections (crosswalks and sidewalks) and Holland Street/NH25 intersection improvements.

Future corridor management considerations include village gateway treatments designed to slow traffic and orient motorist to village nodes, the potential for connector roads, improved traffic calming, parking and access management, consideration for bike lanes and aesthetic street treatments such as street trees, street lighting, pedestrian scale signage.

G. Goals and Strategies

The following goals are advanced by the Moultonborough Planning Board as the Town's transportation policy to support effective land use practices:

Preserve water quality – minimize the impacts of the transportation network on water quality.

Protect Rural Character - maintain and enhance the rural character through transportation best practices.

Promote Safety – improve transportation safety, traffic flow and connectivity for all users.

Each goal equally important and works in concert to achieve the community vision for the future. The Master Plan Steering Committee, Planning Board Chairman and Planning Consultant developed Objectives, Strategies and Tactics to achieve the goals. Priority strategies were determined based on the timeframe for implementation. Generally, the timeframe is defined as: near-term - six months to three years; mid-term – three to five years; and long-term – greater than five years.

H. Implementation

Goal: Preserve Water Quality.				
Objectives	**Strategies**	**Tactics / Comments**	**Short: 6mo.- 3 yrs. Mid: 3 -5 yrs. Long: > 5 years**	**Responsible Party/Board/Commission**
1. Reduce the transportation network's negative impact on water quality.	Explore the feasibility of local stormwater samples at outfalls into surface waters.	Investigate water quality sampling method developed by UNH cost and feasibility.	Short	Planner/Planning Board/Code Enforcement
	Based on water quality samples, determine areas of leading concern.	Identify and implement the appropriate mitigation strategies to minimize stormwater impacts including: - Adoption of low salt zones - Site specific stormwater best management practice - Use of street trees and other green techologies.	Mid	
	Review and revise existing policies as needed.	Evaluate installation and maintenance guidelines a for stormwater infrastructure including catch basins, detention/retention basins, etc.	Mid	
Goal: *Protect Rural Character* - Maintain and enhance community character.				
Objectives	**Strategies**	**Tactics / Comments**	**Short: 6mo.- 3 yrs. Mid: 3 -5 yrs. Long: > 5 years**	**Responsible Party/Board/Commission**
1. Foster the protection of Scenic Roads as defined in NH RSA 231:157.	Summarize program requirements.	Identify potential road candidates.	Mid/Long	Planner/Planning Board/BoS
2. Consider protection of wildlife corridors in zoning.	Explore wildlife habitats is relation to transportation corridors.	Creation of future nodes and gateways to consider wildlife when established.	Mid	Conservation Commission/Planning Board/ZBA
3. Protect the carrying capacity and a rural character of NH25 outside village.	Consider limited access.	Work in cooperation with NHDOT District 3.	Long	Planner//Planning Board/BOS
4. Provide additional access for expansion of village center.	Explore potential access routes and parcels based on a recommendations from charrette and village vision documents.	Develop detailed recommendation for consideration by town.	Long	Planner/Planning Board/BoS

Goal: ***Promote Safety*** - Improve transportation safety, traffic flow and connectivity for all users.				
Objectives	**Strategies**	**Tactics / Comments**	**Short: 6mo.- 3 yrs. Mid: 3 -5 yrs. Long: > 5 years**	**Responsible Party/Board/Commission**
Improve intersection safety on NH25.	Implement improvements for intersections identified in NH25 Corridor Study.	Identify appropriate improvements and funding sources for NH25 intersections as prioritized by municipal officials.	Mid	Planner/DPW Director/BOS
Advance state Ten Year Plan projects in Moultonborough.	Advocate for local safety projects.	Maintain town representation on Lakes Region Transportation Technical Advisory Committee (TAC) and advocate for project at GACIT hearings.	Long	Planner/BOS
Promote opportunties for improved area public transportation.	Support efforts of groups and agencies working on public transportation initiatives.	Continue participation with Carroll County Transit System and Carroll County Regional Coordination Council.	Mid-Long	Planner/BOS
Enhance pedestrian and bicycle connectivity in village and priority areas within town.	Construct sidewalkes in within Village core and between village nodes as created.	Establish as community pathway committee to identify priority initiatives	Mid	Planner/Planning Board