Southern Pinelands Natural Heritage Trail Scenic Byway Corridor Management Plan

Task 10: Transportation Safety and Accident Record Study

August 2008

Howard/Stein-Hudson Associates, Inc.

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Introduction

An essential ingredient for the success of this proposed Corridor Management Plan for the Southern Pinelands Natural Heritage Trail (SPNHT) is to appropriately match management measures to the priorities of the scenic byway. The following sections review these priorities in terms of safety and transportation, and make recommendations that aim to preserve, protect, enhance, and improve the byway.

These recommendations are based on review of available data and interviews with professionals who possess experiential knowledge of the Southern Pinelands Natural Heritage Trail and of the surrounding communities. Through this integrated research, analysis, and interview approach, Howard/Stein-Hudson Associates (HSH) has formulated recommendations that match the priorities of the byway and promote a safer, more accessible Natural Heritage Trail.

The management plan reviews the various segments of the byway and describes them through the lens of the transportation planner. This report first takes stock of the existing roadway conditions. The descriptions focus on information such as number of lanes, posted speed limits, and edge treatments.

For this report, the study team used New Jersey Department of Transportation (NJDOT) crash records for the years 2006 and 2007. The study reviews all of the accidents that occurred along the byway and in its immediate vicinity. These crashes indicate potential safety hazards along the trail, and suggest locations for further exploration as well as possible mitigation measures.

The study team consulted transportation and planning professionals as well as local officials from communities around the corridor. These individuals described priority issues regarding safety, access, and circulation, as well as any current or future plans that may impact the byway. Their comments are summarized and followed by a list of noted issues and opportunities for this plan to address and capitalize upon.

Finally, the study team has synthesized all of the information gathered in the steps described above into detailed recommendations for a Transportation Plan. These include recommendations that address the priorities of the local communities, improve safety, confront issues, capitalize on opportunities, and enhance access and use of the Southern Pinelands Natural Heritage Trail.

Existing Conditions

For the purposes of this study, the byway is divided into 10 segments,[1] each composed of one or more roads and numbered routes that share common characteristics. The following text defines and describes these segments, organized according to the three byway areas defined in previous reports, i.e., Northern Loop, Central Spine, and Southern Loop.

Northern Loop

The Northern Loop links Tuckerton and Smithville on the Atlantic coast with Batsto and Pleasant Mills on the west, along the Mullica River corridor. This portion of the byway is made up of three segments: (1) US 9 along the coast between Tuckerton and Smithville, (2) County Routes 542 and 653 and Stage Road between Nesco and Tuckerton, and (3) County Routes 561 Alt, 575, 624, 563, 643, and 623 between Smithville and Pleasant Mills (including CR 563 between Weekstown and Green Bank).

US Route 9

This approximately 17-mile segment provides a connection between Tuckerton in the northeast and Smithville in the south. Route 9 provides access to Tuckerton Seaport, the New Gretna Historic District, the Jacques Cousteau National Estuarine Research Reserve, and the Port Republic Wildlife Management Area, and it also passes along Bass River State Forest and the Edwin P. Forsythe National Wildlife Refuge (the main entrance and visitors center for the Forsythe National Wildlife Refuge are on US 9 in Oceanville, approximately 1.7 miles south of Smithville).

The roadway features several distinct portions with varying characteristics. Between Tuckerton and New Gretna, the roadway passes through several commercial areas. Here, the roadway is generally one lane in each direction with occasional turning lanes. Paved shoulders vary from 3 to 12 feet. The posted speed limit varies between 35 mph and 55 mph. At New Gretna, Route 9 joins the Garden State Parkway. Here, the route is characterized by two lanes of traffic in each direction. The northbound and southbound lanes are separated by concrete jersey barriers. The posted speed limit is 65 mph. Route 9 exits the Garden State Parkway at Port Republic City and continues south. This portion is characterized by a single lane of traffic in each direction. The posted speed limit varies from 25 mph in commercial and dense residential areas to 40 mph in less dense areas. Significant curves are identified with yellow chevron signs.

County Route 542 and 653 and Stage Road

This is the northernmost east–west segment, connecting from County Route 658 at Nesco in the west to County Route 653 and Tuckerton in the east. It measures approximately 17 miles. Destinations along this segment include the Wharton and Bass River State Forests, Batsto Village, the Mullica River Canoe Landing, Crowley's Landing Recreation Area, and the Swan Bay Wildlife Management Area.

The roadway is characterized by a single lane of traffic in each direction. The lanes are typically divided by a double yellow line with occasional passing opportunities. Paved shoulders are generally 2 to 5 feet, although some locations have no paved shoulder. Guide rails are present

[1] Note that these segments are not the same as the 81 segments defined for the Physical Survey and Visual Survey in Tasks 5 and 6.

on water crossings and select curves. In the eastern portion of the segment, between CR 653 and the Garden State Parkway, parts of the Stage Road roadway feature deep potholes.

County Routes 561 Alt, 575, 624, 563, 643, and 623
This approximately 18-mile segment connects Route 9 at Smithville to County Route 542 at Pleasant Mills in Mullica Township. A separate section of CR 563 diverges at Weekstown and crosses the Mullica River at Green Bank, connecting to the CR 542/653 segment. These routes provide access to the Port Republic City Historic District, the Port Republic and Hammonton Creek Wildlife Management Areas, the Clarks Landing and Pleasant Mills Preserves, and portions of Wharton State Forest (including the former Green Bank State Forest).

The roadway is characterized by a single lane of traffic in each direction (east–west). The posted speed limit varies between 40 and 50 mph. A paved shoulder varies in width from 6 to 8 feet, although some places have no shoulder. Guide rails are present on water crossings and on select curves.

Central Spine

The Central Spine of the byway runs north-south connecting the northern loop at Nesco and Pleasant Mills and the southern loop at Corbin City and Tuckahoe.

County Routes 559, 623, and 658
This approximately 17-mile segment connects Nesco and Mays Landing. This segment features several scenic pullouts and provides access to the Hammonton Creek and Makepeace Lake Wildlife Management Areas, Atlantic County Parks at Lake Lenape and Weymouth Furnace, the Mays Landing Historic District, and Gaskill Park in Mays Landing.

The roadway is characterized by a single lane of traffic in each direction (north–south). Through much of the segment, passing slower vehicles is allowed in both directions. The posted speed limit varies from 25 mph to 45 mph. Guide rails are present on water crossings, on select curves, and along the west side of the road for most of the segment through the Makepeace Lake Wildlife Management Area (WMA). A paved shoulder with a width of 4 to 6 feet is present on some segments. Other segments lack a paved shoulder or, in some cases, any shoulder at all.

Route 50 and 557
This approximately 11-mile segment of the byway runs from Mays Landing in the north to Tuckahoe in the south. This segment passes alongside Atlantic County Park at Estell Manor and provides access to historic ruins at Belcoville and Estellville, the Great Egg Harbor Scenic and Recreational River, and the Great Egg Harbor River and Lester G. MacNamara (Tuckahoe) Wildlife Management Areas.

This segment is generally composed of a single travel lane in each direction (north–south), with occasional center turning lanes in more highly congested portions. The directions of travel are typically divided by a double yellow line with occasional passing zones. The paved shoulder width varies from 6 to 10 feet. Guide rails are generally present on water crossings and select curves. The posted speed limit varies from 50 miles per hour (mph) along most of the segment to 30 mph near traffic lights.

Southern Loop

The Southern Loop is defined by Corbin City and Tuckahoe in the northeast, Port Elizabeth in the west, and Dennisville in the southeast. It includes Weatherby Road (CR 548/632) through the Peaslee Wildlife Management Area, Delsea Drive (NJ 47) along the Delaware Bayshore, and CR 550 through Woodbine and Belleplain State Forest.

Aetna Drive and Head of River Road

This segment connects Route 50 in Corbin City to Route 49 in Upper Township. Both this segment and the Route 49 segment below provide access to the 1792 Head of River Church. The segment measures approximately 4.5 miles.

The roadway is characterized by a single lane in each direction (east–west). The directions of travel are separated by a double yellow line. There is no consistent shoulder. For much of this segment, the road is flanked by a grassy embankment sloping away from the roadway. The posted speed limit is 35 mph for most of this segment. Guide rails are generally present on water crossings and on select curves.

State Route 49

This segment completes a loop from the intersection of Head of River Road to Route 50 in Tuckahoe. The approximate length is 3.5 miles. This segment provides access to Belleplain State Forest, the Tuckahoe and Marshallville Historic Districts, and the Tuckahoe Railroad Station.

The roadway is composed of a single lane in each direction. The lanes are divided by a double yellow line with occasional passing zones. The posted speed limit is 50 mph. The paved shoulder has a width of 9 feet.

A short distance south of the Tuckahoe River is the beginning of the large southern loop, where Route 49 connects to both CR 648 (Weatherby Road) to Port Elizabeth and CR 605 (Belleplain Road/Tuckahoe Road) to Belleplain.

County Route 548 (Weatherby Road)

This approximately 9-mile segment connects Route 49 in the east to Port Elizabeth in the west, passing through the Peaslee Wildlife Management Area for much of its length.

The roadway is characterized by a single lane of travel in each direction (east–west). Through much of the segment, passing slower vehicles is allowed in both directions. The paved shoulder ranges in width from 5 to 6 feet on the eastern half of the roadway. On the western end there is no paved shoulder; the road is flanked by 5 to 10 feet of grass embankment. Guide rails are present on a curvilinear bridge crossing.

State Route 47 (Delsea Drive)

This approximately 15-mile segment extends from Port Elizabeth (at Route 548) southeast to Dennisville (at Route 610), providing access to the Maurice River Scenic and Recreational River, the Eldora Natural Preserve, and portions of Belleplain State Forest and the Cape May National Wildlife Refuge.

The segment is characterized by a single lane of traffic in each direction (north–south). The lanes are typically divided by a double yellow line, with occasional passing opportunities. The shoulder varies from 6 to 8 feet for much of the segment. In places, there is no shoulder. The

posted speed limit varies from 45 to 50 mph. Guide rails are generally present on water crossings and on select curves.

County Routes 610, 550 and 605

This approximately 10-mile segment completes the southern loop, connecting Route 47 to Route 49. This segment provides access to the Dennisville Historic District, the Sam Azeez Museum of Woodbine Heritage, and the Lake Nummy State Recreation Area.

The segment is characterized by a single lane of traffic in each direction (north–south). The lanes are typically divided by a double yellow line, with occasional passing opportunities. The paved shoulder width varies from 4 to 6 feet. Through denser residential areas such as Dennisville, there is no shoulder. The posted speed limit varies from 35 mph to 50 mph.

Crash Data and Analysis

A critical component of the Corridor Management Plan is to protect the route as well as those traveling it. By reviewing historical information about crashes on and near the byway, the plan seeks to identify locations where safety is potentially compromised. Further, by reviewing common types of crashes, the plan seeks to make recommendations that will address the conditions that promote these types of crashes.

Data Collection

The study team downloaded New Jersey crash data from the NJDOT Web site for the five counties involved in the study (Atlantic, Burlington, Cumberland, Ocean, and Cape May) for the years 2006 and 2007. These data were imported into ArcGIS and geolocated by latitude/longitude information. Longitudinal data were unavailable for years prior to 2006. The study team digitized the Trail using available NJDOT road data and created a buffer of 50 feet around the route. All crash data points that occurred within that buffer zone were extracted from the county level accident data for further analysis. Table 1 summarizes these data by crash type and whether they included fatalities.

Table 1: Accidents Along the Southern Pineland Natural Heritage Trail, 2006-2007

Code	Crash Type	Number	Fatalities
1	Same direction (rear end)	184	0
2	Same direction (side swipe)	43	0
3	Right Angle	81	1
4	Opposite direction (head on, angular)	25	4
5	Opposite direction (side swipe)	12	0
6	Struck parked vehicle	4	0
7	Left turn / U turn	19	1
8	Backing	10	0
9	Encroachment	1	0
10	Overturned	19	1
11	Fixed object	254	6
12	Animal	123	0
13	Pedestrian	6	0
14	Pedalcyclist	4	0
15	Non-fixed object	23	0
16	Railcar-vehicle	0	0
	(not specified)	10	2
		818	15

Analysis

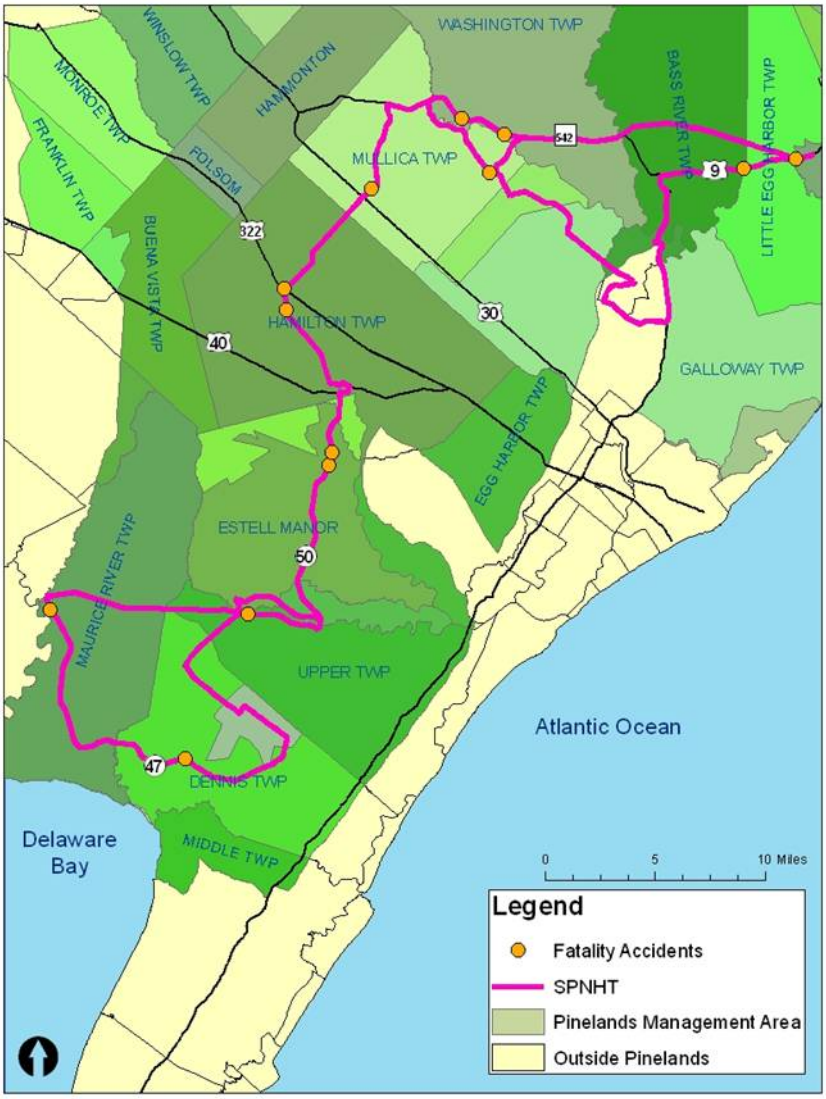
Once mapped, the crash data points were screened for various criteria, including fatalities, pedestrian and bicycle involvement, and fixed object crashes. The study team further evaluated roadway segments that featured clusters of crashes that matched these criteria, and performed a visual inspection of videotapes of the various routes. Possible safety hazards or potential contributing factors were noted at both general and location-specific levels.

Many of the SPNHT roadway segments feature similar characteristics, and the crash data reflect those similarities. Some areas, however, have greater concentrations of various types of crashes. As expected, segments that feature higher traffic volumes also exhibit higher numbers of crashes. The following analysis examines the locations and conditions involved in fatal accidents, accidents involving pedestrians or cyclists, and the four types of crashes with the highest frequencies – fixed-object crashes, same direction (rear-end) crashes, accidents involving animals, and right-angle crashes (these four groups accounted for nearly 80 percent of all crashes during the two-year period).

Fatal Accidents

In the years 2006–2007, 14 fatal accidents occurred along the byway route (see **Map 1).** Of these, 1 accident resulted in 2 fatalities, and 13 accidents had single fatalities. Alcohol was involved in 2 of the 14 accidents; mobile phone usage was involved in none.

Map 1: Fatal Crashes



Of the 14 crashes, 6 involved a ***fixed object*** as the first event. These accidents occurred in various locations on the byway: 1 on Route 47, 2 on Route 50, 1 on Route 559, 1 on Route 623, and 2 in the Borough of Tuckerton on Route 9. Review of these segments did not reveal any attributable conditions. Of these fixed object fatalities, 3 occurred after dusk, and 2 of those 3 were on segments without streetlights; 1 occurred on Route 50 in Estell Manor, while the other occurred on Route 559, just south of Weymouth.

Of the fatal crashes, 3 were characterized as ***head-on collisions.*** These 3 accidents occurred on different roads, and there was no spatial pattern. Each occurred in daylight. One head-on fatality accident occurred on Route 47, just south of Port Elizabeth, in the rain, at a curve that features guide rails on both the interior and exterior lanes and is signed with yellow chevrons.

Of the 14 fatal crashes in the study years, 2 were ***angle crashes:***

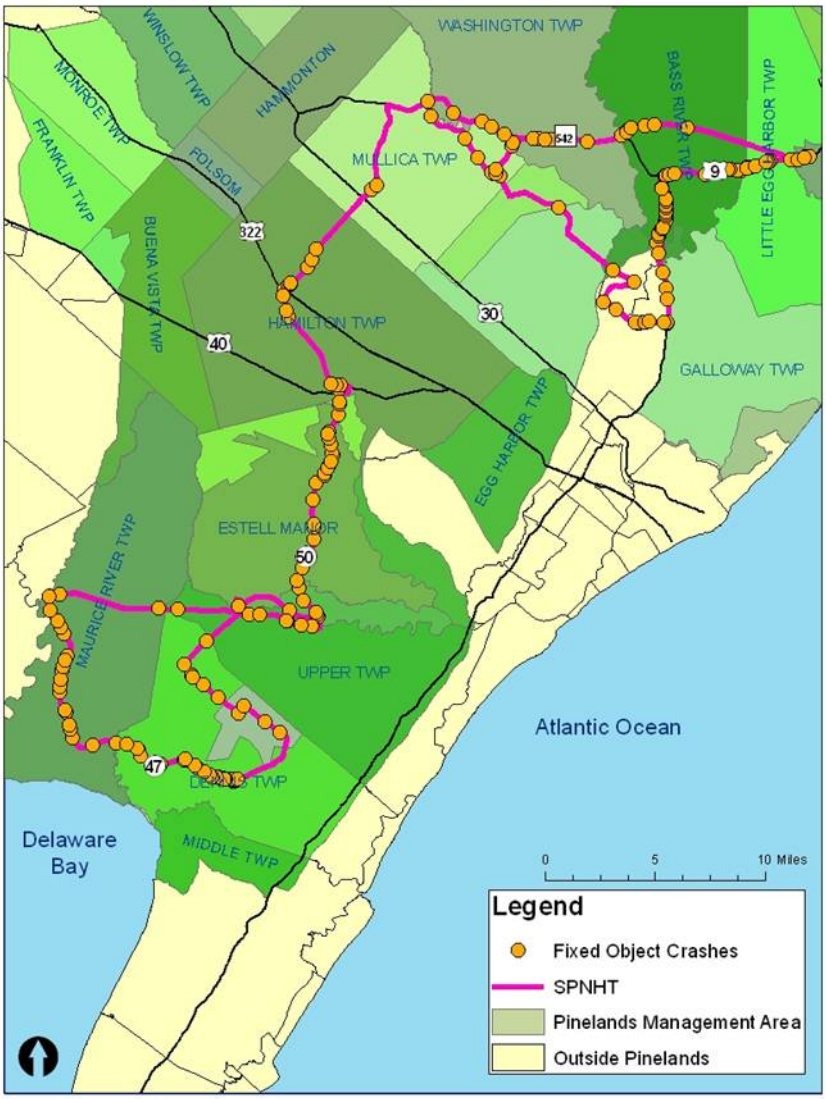
- 1 at the intersection of County Route 643 (Pleasant Mills Road) and County Route 612 (Weekstown Road) as a vehicle attempted to make a left turn at the intersection. No video footage of this intersection was available. This may be a location warranting further investigation, since the left turn coincides with a curve in the roadway and sightlines are limited.

- 1 on County Route 561 (Moss Mill Road) at its intersection with the byway on Route 623 (Weymouth Road). This intersection is signalized, and sightlines on Route 623 seem to be relatively clear. Though the accident occurred at dusk, there were no attributable environmental conditions cited. A review of the crash data indicated no other potential cause of this accident; it could have been caused by the motorist running a red light. Further investigation such as a Road Safety Audit may be warranted. It is possible that the clearance intervals are too short or that the signal heads are not very visible at certain times of day.

Fixed Object Crashes

In the 2 study years, 254 crashes on or along the byway involved a fixed object as the first event (31% of all crashes) (see **Map 2).** Alcohol was involved in 44 of those crashes. Mobile phone use was involved in 1 fixed object crash.

Map 2: Fixed Object Crashes

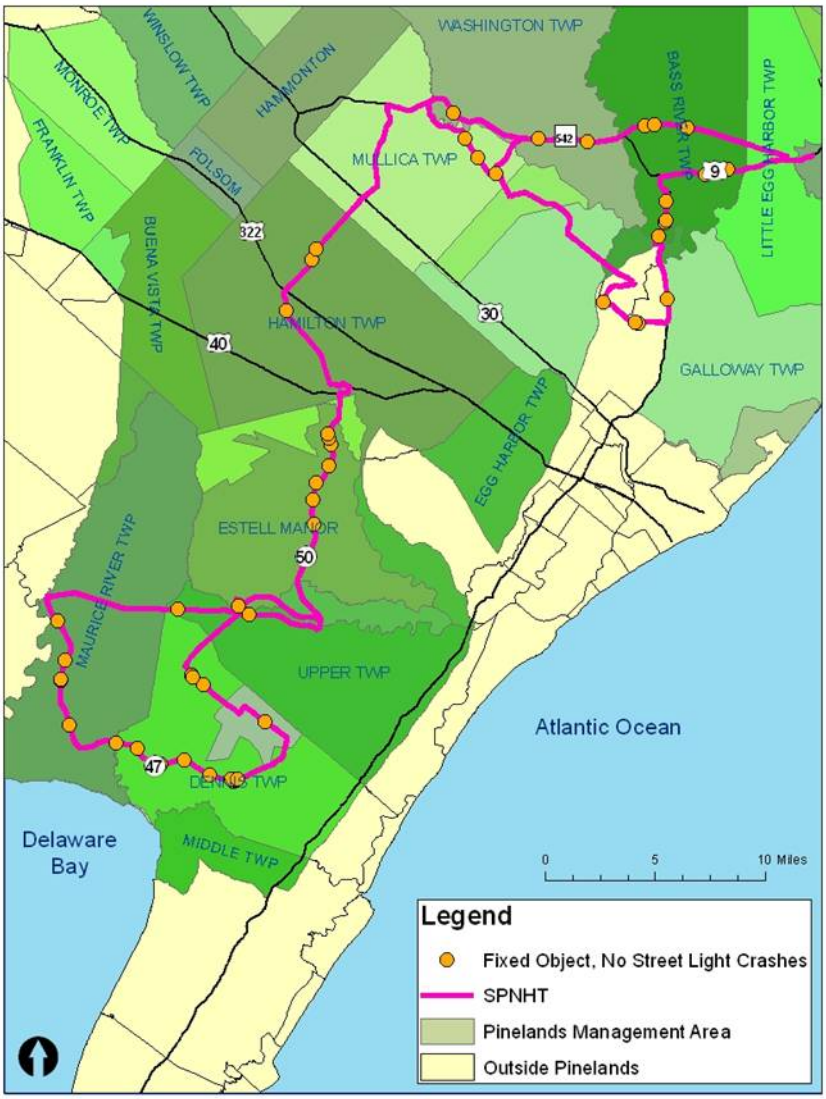


Over half (140) of fixed object crashes occurred on roadway sections where the speed limit is 50 mph. This is not surprising, since much of the byway features a posted speed limit of 50 mph. However, further investigation of possible speed limit reductions may be warranted on segments with particularly high concentrations of this type of accident. This includes all of Route 47 (with emphasis on the segments between Port Elizabeth and Delmont, and between its intersection with State Route 347 and Dennisville); Route 50 between Mays Landing and Corbin City (with emphasis between 17th Street and Walkers Forge Road south of Belcoville); Route 542 between Batsto and Route 653; and on Route 9 between Munion Field Road and Otis Bog Road.

Of fixed object crashes, 86 occurred in curves; 52 of these occurred on dry roads, and 23 on wet roads. These wet roadway crashes on curves were geographically spread along the byway. One small cluster occurred on Route 559 just west of Mays Landing; another on the exit ramp where Route 9 departs the Garden State Parkway toward Port Republic.

Of fixed object crashes, 56 occurred at night on segments of road without street lights (see **Map 3).** These crashes are generally concentrated on road segments with high overall levels of fixed object crashes. Route 50 south of Mays Landing and Route 47 feature clusters of crashes with these characteristics. These areas may warrant further investigation for increased or improved street lighting.

Map 3: Fixed Object Crashes on Roads Without Streetlights

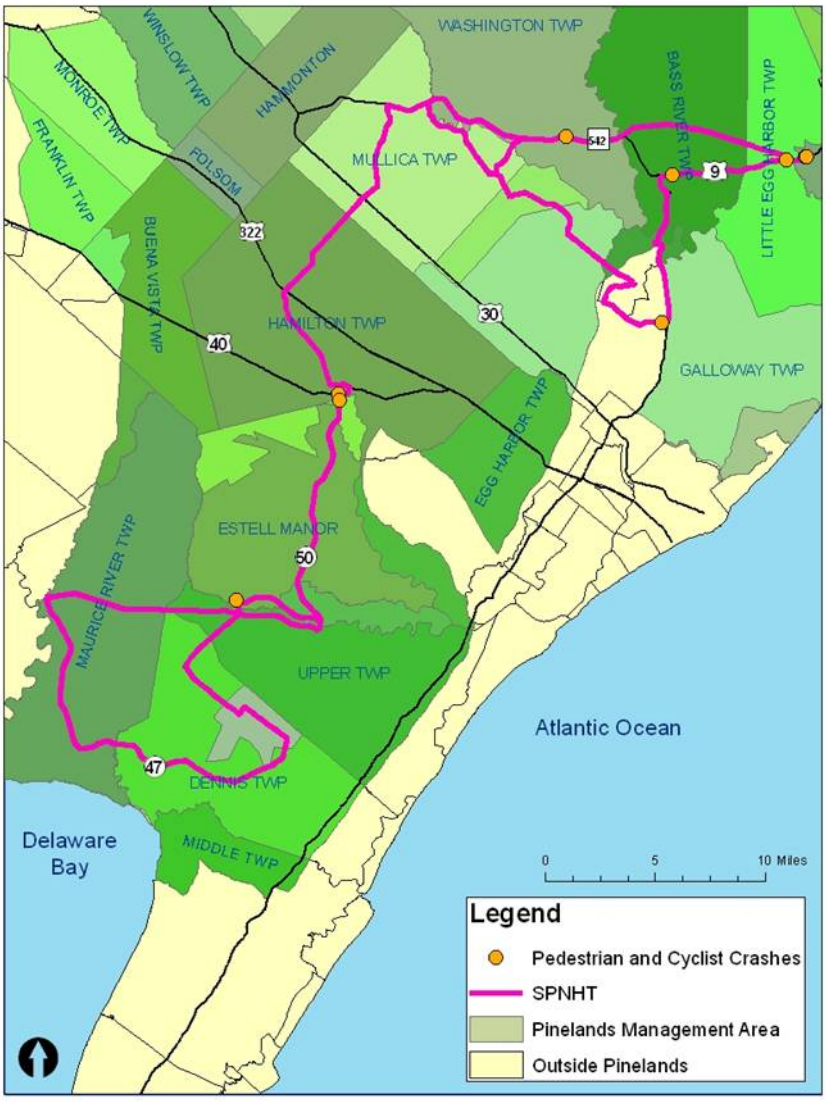


During daylight hours, 87 fixed object crashes occurred in clear weather on dry roads. Of these, 56 met those criteria, occurred on straight segments of road, and did not involve alcohol or mobile phones. In short, these 56 crashes are not attributable to factors contained in the available data. These accidents are most concentrated on Route 47 between its intersection with Route 347 and Dennisville, and on Route 9 between Munion Field Road and Otis Bog Road, although others occur elsewhere along the byway. A Road Safety Audit may be warranted for Route 47.

Pedestrian and Cyclist Accidents

As **Map 4** shows**,** few crashes along the Trail involved pedestrians and/or cyclists.

Map 4: Crashes Involving Pedestrians or Cyclists



Though specific accommodations for bicyclists are relatively few along the byway, vehicle/cyclist conflicts are relatively uncommon, representing less than 1% of all crashes along the byway. It is unclear whether this is due to a low volume of bicycle traffic in the area or other determining factors. For instance, much of the byway does feature ample paved shoulders of 6 feet to 8 feet. Cyclists probably use these facilities regardless of whether they are designated bicycle facilities.

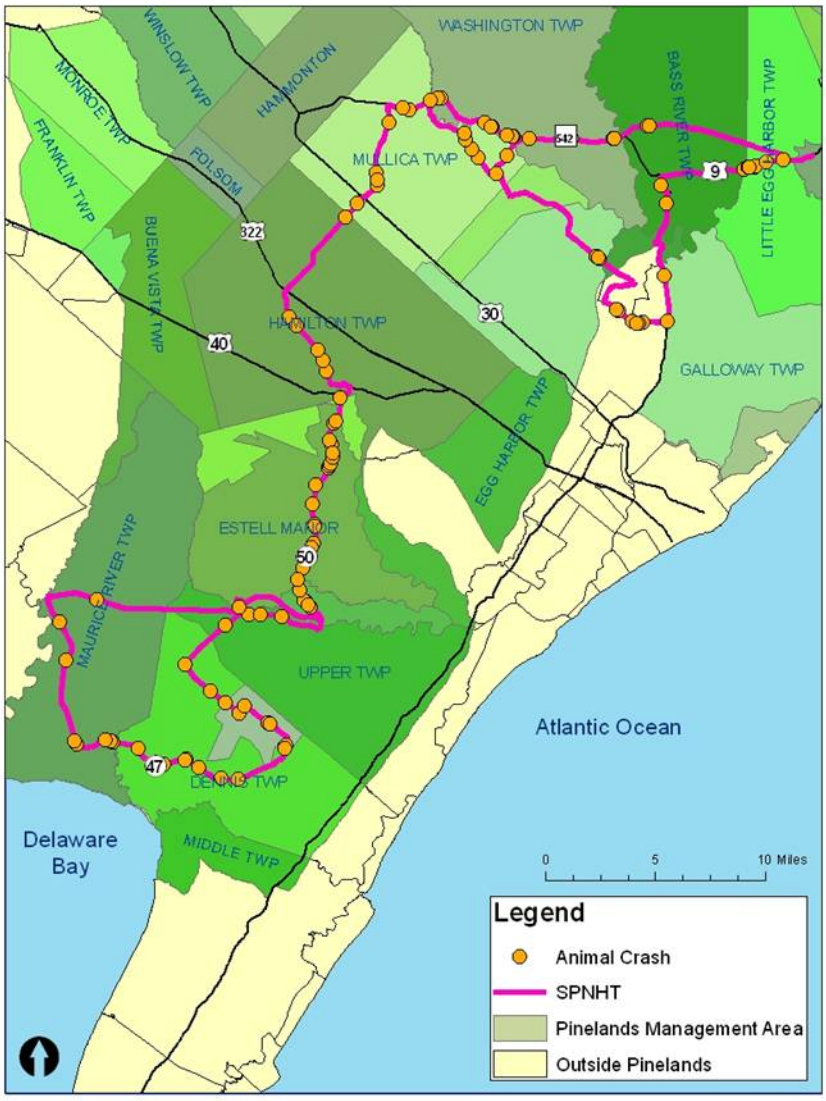
Similarly, pedestrian conflicts are uncommon in relation to the total number of accidents. Spot inspection of crash locations failed to indicate factors contributing to these disparate incidents for both bicycles and pedestrians.

Both of these types of conflicts generally occurred at intersections. Route 9 was the site of 3 conflicts, 2 of which occurred in Tuckerton; and 1 cyclist crash occurred on Route 542, an NJDOT-recommended bicycle route.

The 2 crashes that took place just south of Mays Landing along Route 50 occurred several blocks apart, but both occurred along a small commercial strip. Further investigation may be warranted regarding access management. The conflicts on this segment may be reducible by managing entry/exits points from the roadway.

Animal Crashes

Map 5: Crashes Involving Animals



In the study years, 123 crashes occurred in which the first event involved an automobile/animal conflict (see **Map 5)**.

The loop created by County Routes 542, 563, and 643 features a concentration of this type of crash, as does Route 50 between Mays Landing and Corbin City.

Of these crashes, 44 occurred in the dark, on roadway segments with no street lights. These accidents are distributed along the byway corridor and do not feature significant clustering.

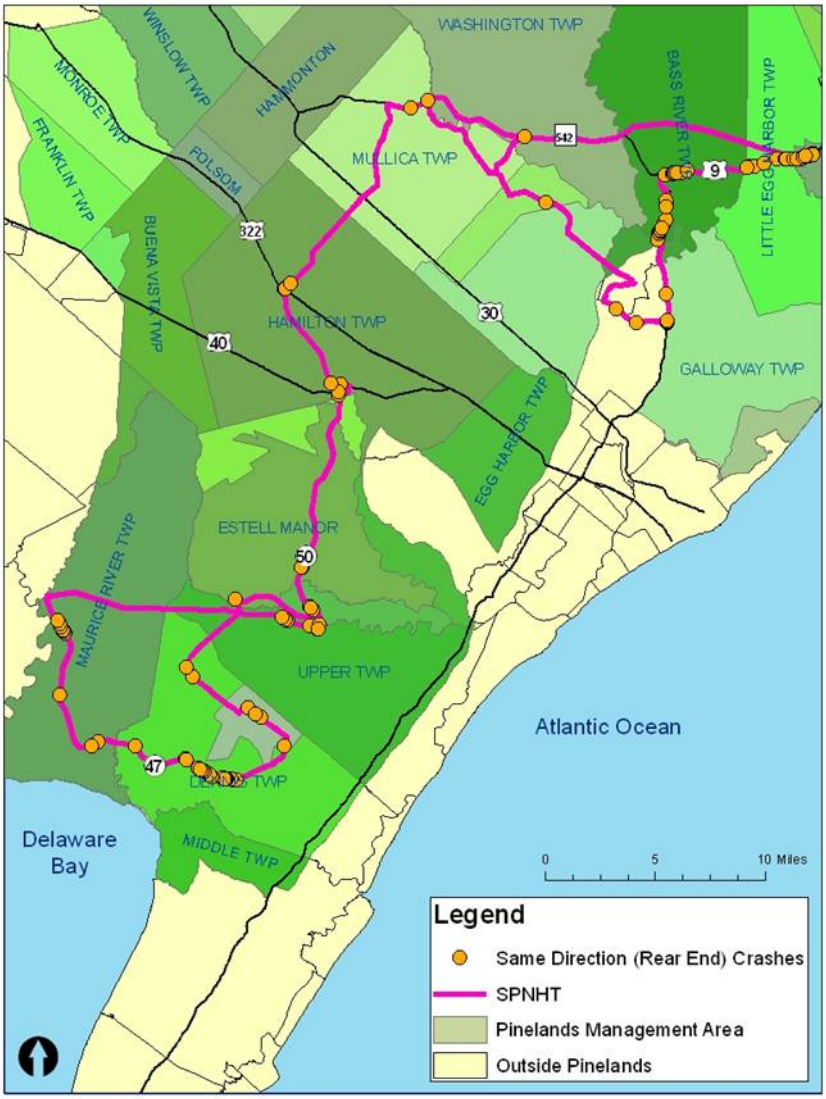
A significant portion of these accidents (94%) occurred on segments that feature 50-mph posted speed limits. Again, since much of the byway features 50 mph speed limits, this statistic is not surprising. However, investigations for possible reductions in speed limits may be warranted in some of these locations, especially where high numbers of animal crashes coincide with high

numbers of fixed object crashes. Some locations, such as Route 47, may also warrant additional warning signage.

Same Direction (Rear End) Crashes

In the study years, 184 rear end crashes occurred along the Trail, generally clustered around intersections and traffic signals (see **Map 6).** Areas with the highest concentration of this type of accident include Route 9 in Tuckerton to Ash Road in the west; along Route 47 near Dennisville and at the intersection with Cumberland County Road 670; on Route 50, around the intersection with Route 49; and on Route 9 where it runs concurrent with the Garden State Parkway. This portion of Route 9 has no traffic signals, and intersections are limited to on- and off-ramps.

Map 6: Rear-End Crashes

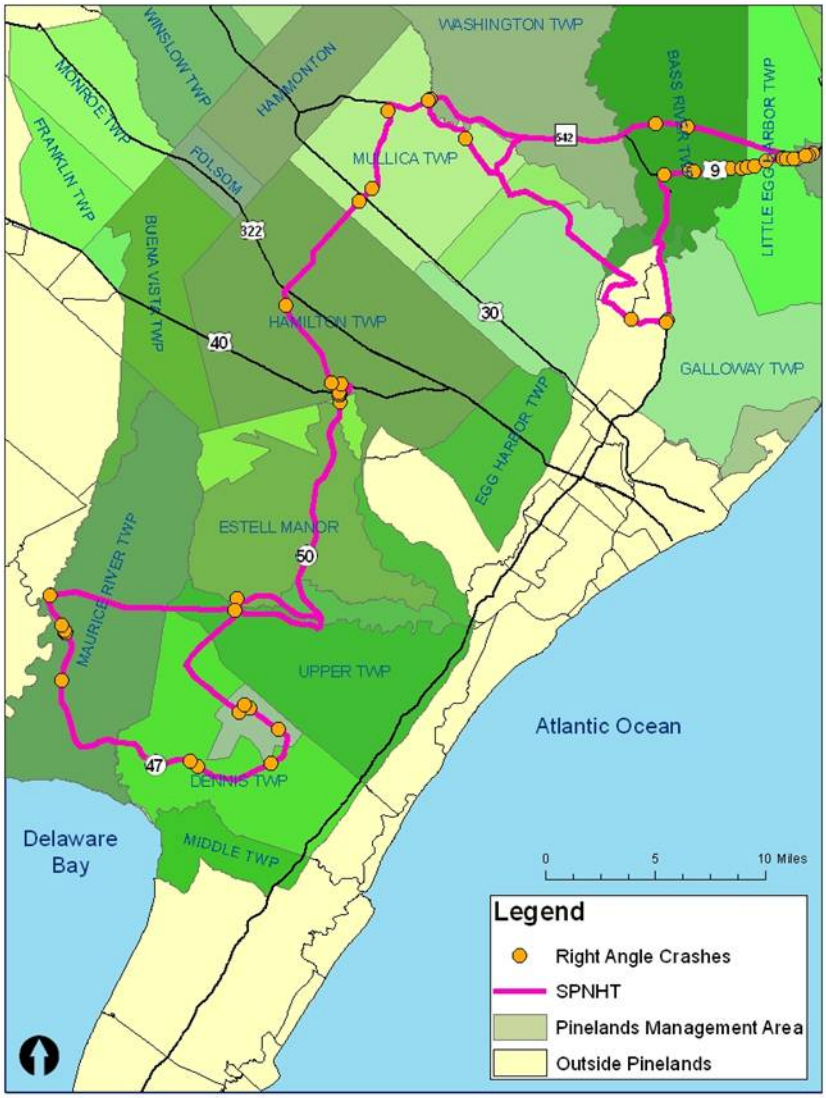


Of the 184 rear end crashes, 57 involved at least 1 injury; 27 involved 2 or more injuries. Further study of the red and yellow clearance intervals at the signals at intersections along Route 47 and Route 9, and in populated places such as Mays Landing and Tuckahoe may be warranted.

Problematic “dilemma zones” may also exist in higher speed (40 mph or greater) areas. A “dilemma zone” is a no-man’s land in which a driver must decide whether to stop for a yellow light or proceed through it. After a certain point, the driver no longer has the required distance to stop safely and must proceed through the signal. Traffic signal technology is available to ensure that such dilemma zones are minimized.

Right Angle Crashes

Map 7: Right-Angle Crashes



During the study years, 81 right angle crashes occurred along and around the Trail (see **Map 7).** Though some locations along the byway feature scenic turnouts with limited signage, visibility, and—in some cases—require backing out into traffic (e.g., Route 623 near the Makepeace Lake WMA), few if any right angle crashes can be attributed to these locations. The vast majority of these crashes appear to have occurred at roadway intersections. Those that have not occurred at roadway intersections seem to have occurred at private driveways and parking lot entrances.

These accidents are particularly concentrated on Route 9 in and close to Tuckerton, on Route 47 at Bricksboro and near Dennisville, in Woodbine, Corbin City, and Mays Landing.

Summary

Analysis of the crash data has revealed significant road safety hazards for the byway. Based on this analysis, this study suggests locations warranting further investigation, as summarized in Table 2).

Table 2: Crash Summary

Accident Type	Incidents	Areas for Further Study
Total Crashes	818	
Fatality Crashes	14	▪ Intersection of Route 643 & Route 612
Pedestrian/Cyclist Crashes	10	▪ Route 542, Route 9
Fixed Object Crashes	254	
Daylight, dry, straight, no alcohol	56	▪ Route 47 (between Route 347 and Dennisville) ▪ Route 9 (between Munion Field Road and Otis Bog Road)
Dark, no street lights	56	▪ Route 47 ▪ Route 50 (between Mays Landing and Corbin City)
In curve	86	▪ Route 559 (just west of Mays Landing) ▪ Route 9 (southern exit ramp from the Garden State Parkway)
Animal Crashes	123	▪ North Short Loop (542, 563, 643) ▪ Route 50 (between Mays Landing and Corbin City)
Rear End Crashes	184	▪ Route 9 (Tuckerton to Ash Road and on Garden State Parkway) ▪ Route 47 (around Dennisville and at intersection with Route 670) ▪ Route 50 (around intersection with Route 49) ▪ In populated places: Mays Landing, Woodbine, Tuckerton
Right Angle Crashes	81	▪ Route 9 (around Tuckerton) ▪ Route 47 (at Bricksboro and near Dennisville) ▪ In populated places: Woodbine, Corbin City, Mays Landing

Stakeholder Interviews

Linda Costello, Deputy Clerk
Maurice River Township (SPNHT Committee)

While traffic does back up in the summer on Route 47, it is mostly confined to a 1- to 2-mile stretch from the intersection of Route 347 to the intersection with Route 55. The worst traffic back-ups occur on Route 347. The Township sought a traffic light in Port Elizabeth as mitigation but was denied funding. The state had offered to fund a "Florida T" intersection, but the plans stalled.

Speeding is a problem throughout the region, but not particularly for the byway route. There are a few points of interest that the Township would be interested in having signed as spur loops, including the East Point Lighthouse and Thompson Beach, Matt Landing WMA, the Maurice River Recreational Area along River Road, and the Morristown Bridge off Route 678.

In terms of large vehicle access, there is a bus stop at Mackey Lane and Route 47. That bus runs very infrequently and does not seem to have access issues. With regard to commercial trucking, trucks prefer to use Route 347 and do not impact Route 47.

There is a short bike path in Port Elizabeth that is fairly disconnected; the Township would be interested in expanding bike access. For now, bikers use the shoulder along Route 47. That corridor is the highest demand area for cycling activities. The area around Delmont might provide an opportunity for linking bikes to the water or other resources.

Phil Sartorio, Director of Community Planning & Economic Development
Hamilton Township (SPNHT Committee)

The greatest safety concern centers around problematic intersections; namely, the intersection of Old Harding Road (Route 559) and Mill Road. The configuration of the intersection is problematic and raises a safety concern. The Township and County are working with a developer of the Mill property who may assist with the intersection redesign. The redesign may include some widening. These plans are being discussed but have not been formalized.

The Route 40/50 interchange coming into Mays Landing is a primary locus for congestion. Peak periods vary but are often the result of summer traffic heading out to the shore. Mays Landing already discourages commercial truck traffic from coming through town. There is not great interest in increasing access for large vehicles, since they would harm the small-town character of the area.

Gaskill Park is severed from the community by heavy traffic on River Road. It is not pedestrian-friendly. The County's bike system ends before Mays Landing, but the Township has been trying to convince the County to extend the bike system to include Mays Landing. Since they are using a railroad right-of-way, making the connection should be feasible.

The Township is also working with the County to install sidewalks along Main Street through Mays Landing. There is interest in having sidewalks filled in other locations, but funding those projects has been difficult. The Township has gone out to bid with the County on a multi-use bike/pedestrian bridge.

The scenic turnouts on Weymouth Road could use better signage. Some are fine, others a little problematic; but, because that is all county land, there is little the Township can do. Off-street parking near scenic areas would be beneficial.

Elizabeth Moritz, Borough Councilmember
Tuckerton Borough (SPNHT Committee)

The number 1 priority for Tuckerton is getting vehicles to slow down as they come through town on Route 9. Pedestrians should have the right of way. One part of the solution would be to reduce sign clutter. For instance, one sign says "This way to Allentown," which is too far away to have its own sign. Part of the strategy for reducing sign clutter would be painting the pavement. Color-coded crosswalks or other techniques would help draw attention to pedestrians and pedestrian activity. Improving signage and slowing down traffic should be a priority of the Corridor Management Plan.

The roadway condition of Stage Road approaching town is a big problem. Stable maintenance is crucial. There has been dispute over whose responsibility that road is, but the County recently made some improvements. The management plan should address that kind of maintenance.

The Borough received a grant for a circulation plan, which will focus on the center of town, where the Natural Heritage Trail begins. The circulation plan will pay considerable attention to bicycles, pedestrians, and streetscape. The desire is for Main Street to be a "Main Street." Bike lanes or multi-use paths are desirable.

Route 9 is part of the New Jersey truck network, but trucks and heavy vehicle traffic are not a priority issue for the Borough. The level of truck traffic is not very high, and there are no big-box stores, just one supermarket.

Clarence Ryan, Council Member
Dennis Township Public Works/Woodbine Town

From a safety perspective, the 2 top priorities are reducing speeding on Route 610 and increasing shoulder width or adding shoulders where they are absent on Routes 610 and 550.

Route 47 is heavily traveled south of Route 347. That is where the largest number of accidents occur in the Township. Traffic is heavy throughout the area on weekends, particularly in summer. Heavy trucks and other large vehicles mostly stay on Route 47, since it is a designated part of the NJDOT truck network. There used to be a problem with trucks coming up Route 610; many were headed to the landfill. That has been largely remedied through establishment of an alternative route.

Speeding on Route 610 is a problem. The Township and the County both have a radar unit, but speeding persists. There are plans in the works for Route 610. Either in this year's or next year's fiscal plan, the roadway is slated to be repaved and/or reconstructed.

Signage is adequate—neither cluttered nor underrepresented. However, shoulders are inadequate on Routes 610 and 550. There is inadequate space for cyclists to ride in or for automobiles to pull over. The Township has fairly extensive bike and multi-use paths, but along those routes space is inadequate. In a general sense, the Township looks to expand the bike network; there was also a goal for all the bike paths in the County to be connected, but those plans are not solid.

The Town of Woodbine has secured a grant for streetscape improvements along Washington Avenue (CR 550). This is the second grant. The first dealt with curb, gutter, concrete, and sidewalk improvements, which have been made. This second grant deals mostly with aesthetic improvements—street furniture and the like.

Joe D'Abundo, County Engineer
Atlantic County

The County roads on the route are not heavily traveled roads, and there are no priority safety or capacity issues on those routes for the County. Seasonal capacity issues occur along some of the routes that provide access to the shore, such as Route 50, which does back up on weekends in summer. Route 561, coming off Route 9, also has some seasonal capacity issues. The Town of Smithville is a tourist destination and has Festivals in May and October. During those events, congestion occurs.

In regard to large vehicle access, Route 542 receives a fair amount of heavy traffic from the blueberry farms positioned along that route. Farming vehicles constitute the bulk of heavy or large vehicle use along County segments of the byway, and cause wear on the roads. The County has started repaving and plans to continue and finish next year.

The Atlantic County Bikeway does not coincide with the byway; the municipal bikeways in the area may not either. However, it has been the County's policy to implement 6-foot-wide shoulder on the County roads that it repaves. For example, on CR 542 the County is in the process of replacing the gravel shoulder with 6-foot paved shoulders as it repaves. Plans are in place to provide the same treatment on Routes 561 and 624. Though these shoulders are not officially designated bikeways, they do provide cyclists with safe space to travel.

Issues and Opportunities

Issues

Through inspection of video footage, review of NJDOT crash data, and interviews with local transportation and planning professionals, this study has identified a number of safety and general transportation issues that this plan must acknowledge and confront or mitigate.

- In some locations, fixed objects are an unsafe distance from the roadway.
- In many locations, signage is inappropriate. In some places (e.g., Tuckerton), there is too much signage and sign clutter. In other places (e.g., Route 47 south of Port Elizabeth), signage is inadequate. Both warning/regulatory signs and wayfinding signs to natural attractions would benefit visitors to the byway.
- Intersection design. Problematic intersections around the byway include the intersection of Routes 559 and 606 and the intersection of Routes 643 and 612.
- Shoulders are inadequate in some places, such as the western portion of Route 548.
- Traffic does not slow down or yield to pedestrians in populated places such as Route 9 in Tuckerton. Speeding is a general problem on Route 610 in Dennis Township.
- Scenic turnouts pose safety concerns, since they are generally unsigned and occasionally require re-entering the roadway with limited sightlines or even backing into the roadway.

Opportunities

Through interviews with local transportation and planning professionals, further investigation, and review of programming documents, the study team has identified a number of opportunities on which this plan may capitalize. The following relevant programmed projects around the byway are potential opportunities for this plan to improve access, capacity, and safety for all

- NJDOT has designated Route 47 as one of its “Safe Corridors.” Although it has determined that the corridor is not one of the highest priority corridors, the agency will examine the corridor in the next year, including performing some intersection studies.
- The City of Woodbine has received a grant for streetscape improvements along Washington Street (CR 550).
- Bridge Projects on NJ 49 and NJ 50 in Tuckahoe and Corbin City to rehab and replace aging infrastructure.
- The Borough of Tuckerton has secured a grant that aims to address circulation issues in town and improve bicycle and pedestrian access to Route 9.
- Cape May County has expressed interest in linking all the bike paths in the county.

Recommendations

Based on information culled from the safety study as well as review of planning and programming documents from around the region and interviews with local transportation and planning professionals, this report makes recommendations aimed at improving both safety and accessibility for byway users of all modes. Each recommendation cites both general guidelines and specific examples of byway segments that would benefit from guideline compliance or improvements.

Sidewalks and Multi-Use Paths

Photo 1. A recreational runner opts out of the unmarked shoulder and runs in traffic lane on Route 623.

Many segments of the byway have shoulders that can be used by cyclists and/or pedestrians (see **Photo 1**). Enhanced access for pedestrians and cyclists should be a priority of the Corridor Management Plan. Where applicable, the Natural Heritage Trail should incorporate and expand on local bicycle and multi-use trails or networks. Along some segments, including Route 47, the wide shoulder is used by many as a functional bicycle trail. These should be designated as such and marked with appropriate signage or pavement markings.

Photo 2. A cyclist uses an unmarked shoulder as a bike lane on Route 47.

Though the total number of vehicular/cyclist or pedestrian incidents is low, the byway can be made safer and more inviting to recreational cyclists (see **Photo 2**). Most conflicts have occurred at intersections. Where appropriate, the byway should seek to guide cyclists and pedestrians through intersections and alert oncoming motorists to their presence. This could be accomplished by striping bicycle lanes through problematic intersections or by improving signage. Dotted or colored bicycle lanes help guide cyclists through intersections and alert motorist to the potential presence of cyclists. This type of infrastructure is already present in some municipalities along the Byway; for instance, dotted cycle lanes guide cyclist through the intersection of CR 653 on CR 679. The dataset used in the crash analysis is not large enough to recommend specific intersections, although potential candidate locations for further investigation include along US 9 in Tuckerton and to the west, and on CR 542 and intersections along SR 47.

Roadway Edge Treatments

Photo 3. On this poorly maintained segment of Route 542, the edge has eroded.

The roadway edges within the scenic byway should remain natural. The use of curbs and gutters is typical in urban and suburban conditions. These types of roadway edges are appropriate where the byway passes through suburban settings such as Woodbine, Port Elizabeth, and Mays Landing. Elsewhere, the character of the byway should be maintained with natural edges. The edges of the byway may have paved or gravel shoulders and swales or guide rails where necessary.

Where natural road edges are utilized, it is essential that those edges be maintained and clearly delineated. In some locations on Routes 542 and 653, the road edge has badly degraded (see **Photo 3**), increasing the likelihood that automobiles will leave the roadway and presenting additional potential crash hazards.

Shoulder Widths

Byway shoulders serve several valuable functions:

- they provide safety clearance from encroaching vegetation and other fixed objects;
- they expand a motorist's sight distance to animals and other safety hazards;
- they allow for emergency turnouts and provide storage for other stopped vehicles; and
- in some cases, they are used functionally as a bicycle or multi-use path.

Photo 4. A narrow shoulder and clear zone poses a potential safety hazard on Route 623.

Shoulder widths should be as wide as practicable (see **Photo 4**). On some segments of the byway, including Route 47, the shoulder is used in practice as a bicycle/multi-use path. In these locations, it is essential that cyclists and other users be protected from the flow of traffic. In locations where functional wide shoulders cannot be achieved, the clear zone beyond the roadway should be expanded. Where continuous shoulders or extra-wide clear zones are impractical or otherwise not achievable, intermittent turnouts should be created to facilitate the storage of stopped or disabled vehicles. The western half of CR 548 in Maurice River Township and CR 623 in Hamilton and Mullica Townships are examples of such locations.

Clear Zones

Photo 5. This utility pole on the inside radius clear zone poses a safety hazard on Route 610.

Clear zones, the forgiving, traversable areas that provide safety from fixed objects, should be maintained on the byway. These areas should be kept clear of trees, utility poles, boulders, and other fixed objects (see **Photo 5**). Along the byway route, fixed object crashes are the most common form of crash. Clearing these zones could be an effective measure for reducing the overall number of crashes and making the byway safer.

Keeping these areas clear should be prioritized in locations with high numbers of fixed object crashes such as the length of Routes 47 and 559. Where possible, utility poles should be sited outside of clear zones or utilities should be buried. This will enhance both the safety and the aesthetic quality of the byway.

Guide rails

An improved and naturalized standard guide rail design for the corridor should be achieved. Guide rails should be consistent throughout the byway and more rustic in character versus the typical galvanized steel rails currently in place around the byway. Existing rails could be painted a more rustic color. The preferred design would be distinctive; it would indicate to travelers that they are on a special route and would blend with the natural setting.

Photo 6. A lengthy stretch of guide rail on a straight portion of Route 47.

Unnecessary guide rails should be removed. For several lengthy guide rails along straight road segments, the function of the guide rail is not immediately apparent. One considerable length of guide rail sits on the west side of the roadway along Route 623 as the route passes the Makepeace Wildlife Management Area (see **Photo 6**); other smaller sections occur along Route 47.

Speed Limits

Speed limits within the byway should be kept as low as practicable. The character of the byway is defined by curvilinear winding roads. On some segments, shoulders are minimal. Fixed object crashes and animal crashes, two of the most common types of crashes on the byway, could potentially be reduced with lower speed limits. Reducing speed limits could potentially allow for narrower lanes of traffic and increased space for shoulders.

Potential locations for further investigation of speed limits include areas with high numbers of animal and fixed object crashes, such as Route 50 between Mays Landing and Corbin City, and Route 47 from Port Elizabeth to Dennisville.

Signage

Signage is a critical issue for both safety and wayfinding on the byway. Signage must adequately warn of safety hazards and provide the byway user with useful information regarding attractions and destinations around the byway, but not become so cumbersome that signage degrades the visual aesthetic of the byway or becomes difficult to read.

On road segments such as Route 50 and the short northern loop created by Routes 542, 563, and 643, additional animal warning signs may help reduce the number of animal crashes. This signage should be designed so that it does not detract from the visual quality of the byway.

Appropriate signage should also be added along segments where motorized traffic will share the road with cyclists and other recreational non-motorized users. These areas include the length of Route 47, where ample shoulder lanes are used functionally as cycle lanes, and Route 542. Route 542 does not feature these wide shoulder lanes, but NJDOT has designated it a scenic bike route. In this case, motorists should be informed that they are sharing the lane with cyclists.

Because pedestrian activity is concentrated in denser, populated places such as Mays Landing, Woodbine, and Tuckerton, these are also the locus of pedestrian/vehicle conflicts. Motorists should be given warning of pedestrian crossings in locations such as these. Route 9 in Tuckerton is one such location where pedestrians should be protected. In these instances, alternative traffic calming measures may replace traditional signage; for instance, raised or color-coded crosswalks could be utilized to reduce the visual impact of additional signage.

The byway features a number of scenic turnouts where the user is invited to pull off the roadway and enjoy the scenic beauty of the area. Many of these turnouts lack signage. In some instances, these turnouts are informal pullovers where space restrictions force a driver to back out into the roadway or otherwise re-enter the roadway without proper sightlines. These turnouts should be inventoried and signed to protect byway users and to encourage their use.