

Star-Spangled Banner National Historic Trail and Scenic Byway
Draft Comprehensive Management Plan and Corridor Management Plan
and Environmental Assessment

Appendix L
Roadway Management

Table of Contents

1. Introduction	L-1	8. Addressing Highway Safety Issues in Rural and Transition Areas	L-33
2. Maryland Land Route	L-1	8.1 Increasing Sight Distance.....	L-33
3. Existing Roadway Conditions	L-14	9. Design, Maintenance, and Management Guidelines.....	L-34
3.1 Roadway Capacity Issues	L-14	9.1 Application of Design Elements and Consistency with AASHTO and State Design Policy.....	L-34
3.2 Vehicular Accommodation.....	L-16	9.2 Roadway Alignment and Geometry.....	L-35
3.3 Highway Safety Analysis.....	L-16	9.3 Roundabouts	L-35
4. Future Roadway-Related Changes.....	L-27	9.4 Traffic Calming.....	L-37
4.1 Planned and Programmed Transportation Improvement Projects	L-27	9.5 Managing Access	L-37
4.2 Current and Recent Enhancement Projects	L-28	9.6 Alternative Treatments for Drainage and Stormwater Management	L-38
5. Roadway Management Practices	L-29	9.7 Maintaining the Character of Bridges.....	L-39
5.1 3-R Work and Routine Maintenance.....	L-29	9.8 Bicycling.....	L-40
6. Encouraging Use of Context Sensitive Design for Transportation Projects.....	L-29	9.9 Aging Commercial Corridors.....	L-49
6.1 Role of the Maryland Scenic Byway Program	L-30	10. Enhancing Multi-Modal Opportunities ..	L-49
6.2 Sidetracks in Prince George’s County.....	L-30	10.1 US Bike Route 1	L-49
6.3 Role of the Trail Comprehensive Management Plan.....	L-31	10.2 Priority Areas for Pedestrian and Bicycle Safety Projects	L-50
7. Addressing Congestion	L-32	10.3 Linking the Trail to Public Transportation.....	L-50
		11. Recommended Transportation-Related Enhancement Actions	L-61

List of Tables

Table L.1	Sequential Route Description and Mapped Bicycle Routes along the Trail.....L-2
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List of Figures

Figure L.1a	Proposed Nomination Route (Trailwide) ..L-9
Figure L.1b	Proposed Nomination Route (Area A)L-10
Figure L.1c	Proposed Nomination Route (Area B)L-11
Figure L.1d	Proposed Nomination Route (Area C)L-12
Figure L.1e	Proposed Nomination Route (Area D).....L-13
Figure L.2	Gateway LocationsL-15
Figure L.3a	Traffic Counts and Speed Limits (1 of 9)L- 18
Figure L.3b	Traffic Counts and Speed Limits (2 of 9)L-19
Figure L.3c	Traffic Counts and Speed Limits (3 of 9)L-20
Figure L.3d	Traffic Counts and Speed Limits (4 of 9)L-21
Figure L.3e	Traffic Counts and Speed Limits (5 of 9)L-22
Figure L.3f	Traffic Counts and Speed Limits (6 of 9)L-23
Figure L.3g	Traffic Counts and Speed Limits (7 of 9)L-24
Figure L.3h	Traffic Counts and Speed Limits (8 of 9)L-25
Figure L.3i	Traffic Counts and Speed Limits (9 of 9)L-26
Figure L.4a	Croom Road Bicycle Safety Enhancements – Context.....L-42
Figure L.4b	Croom Road Bicycle Safety Enhancements – Crash Density Analysis...L-43
Figure L.4c	Croom Road Bicycle Safety Enhancements – TechniquesL-44

Figure L.4d	Croom Road Bicycle Safety Enhancements – Thomas Road Intersection – View South L-45
Figure L.4e	Croom Road Bicycle Safety Enhancements – Just North of Old Rectory Lane – View North..... L-46
Figure L.4f	Croom Road Bicycle Safety Enhancements – Duley Station Road Intersection – View North L-47
Figure L.4g	Croom Road Bicycle Safety Enhancements – Croom Airport Road Intersection – View South L-48
Figure L.5	Solomons Island Circulation Concept..... L-51
Figure L.6a	Benedict Walking Trails and Destination Opportunities (map)..... L-52
Figure L. 6b	Benedict Walking Trails and Destination Opportunities (itinerary) L-53
Figure L.7a	Upper Marlboro Walking Trails and Destination Opportunities (map) L-54
Figure L.7b	Upper Marlboro Walking Trails and Destination Opportunities (itinerary)..... L-55
Figure L.8a	Bladensburg Circulation – Potential Safety Measures (1 of 2) L-56
Figure L.8b	Bladensburg Circulation – Potential Safety Measures (2 of 2) L-57
Figure L.9a	Aquila Randall Monument Concept (1 of 3)..... L-58
Figure L.9b	Aquila Randall Monument Concept (2 of 3) L-59
Figure L.9c	Aquila Randall Monument Concept (3 of 3) L-60

1. Introduction

The Maryland War of 1812 Bicentennial Commission, the Maryland Office of Tourism Development, the National Park Service (NPS), and the many partners that are involved in the planning, development, and management of the trail are interested in pursuing designation of the auto-travel portion of the route of the Star-Spangled Banner National Historic Trail as a National Scenic Byway or All-American Road. More than just a successful nomination, the Commission, the NPS, and their partners are interested in finding innovative ways to address specific management challenges facing a heritage-based travel route in a major metropolitan area.

Nomination of the route as a National Scenic Byway or All-American Road requires that the sponsoring organizations and partners develop more detailed measures designed to preserve, maintain, and enhance the qualities of the travel route (described in chapter 2 and appendix K of the CMP) and to position and market the route as a distinctive destination among a national and, for an All-American Road, an international audience (described in chapter 3 of the CMP).

The route's designation by Congress as a National Historic Trail provides the first step in increasing the awareness of its significance and attracting more visitors to its sites and attractions. Designation as a National Scenic Byway or All-American Road would further enhance its identity as part of the Americas Byways® brand of the best travel routes in America.

In order for the trail to be successful as a high-quality educational, recreational, and heritage travel experience, the route needs to be considered in its entirety as a trail corridor, not as a set of disconnected historic and recreational sites. The experience of getting from place to place along the travel route must be just as interesting and exciting as being in those places. In addition, in order to be considered for designation as an All-American Road, the communities along the corridor need to demonstrate their commitment to conserving those qualities over time.

CMP appendix M describes the existing and available programs for conserving and preserving the significant qualities found throughout the corridor. However, for those portions of the trail corridor that are not identified as conservation or preservation priorities, strategies are needed to demonstrate how new development and roadway projects and practices will be guided to maintain the character of the trail. The purpose of this appendix, in part, is to document the types of changes that are likely to occur within the corridor as guided by local comprehensive plans and other factors.

The success of the Star-Spangled Banner experience, then, is dependent upon how well local, state, and federal agencies responsible for its stewardship can manage those changes while respecting the rights and responsibilities of the individuals, businesses, corporations, and institutions that own or manage the lands associated with the significant resources.

The trail's success is also dependent upon both the perception and the reality of potential impacts of trail and byway visitors on the communities through which it passes. In urban areas, increased use of the trail and byway is perceived as a positive economic benefit. But in some rural areas along the trail and byway, concerns were raised about potential impacts of visitors on rural roads and farming areas. Sections M.3-M.8 address these concerns directly. Page I-17 specifically addresses farm vehicles and operations.

2. Maryland Land Route

The following tables and graphics provide detailed information on the Maryland portion of the trail's land route that is proposed for nomination as a National Scenic Byway or an All-American Road. Included are:

- a turn-by-turn description of the route (table L.1)
- route maps (figures L.1a through L.1e)

Section 4 below summarizes findings from the highway safety analysis for the Maryland portion of the land route, including maps describing existing travel conditions (figures L.3a through L.3i).

Table L.1

Maryland Star-Spangled Banner Scenic Byway

Sequential Route Description and Mapped Bicycle Routes along the Byway

EXISTING DESIGNATION	PROPOSED DESIGNATION	ROAD NAME	TURNING DIRECTION	TO	FEATURE/DESTINATION	BICYCLE DESIGNATION OR MAPPED ROUTE?
St. Mary's County						
none	branch	County line	continue on	MD 4	Patuxent River crossing	
	branch	MD 4	turn left onto	Three Notched Road		
	branch	Three Notched Road	bear right onto	Mervell Dean Road	old alignment of Three Notch Road	
	branch	Mervell Dean Road	turn right onto	Sotterly Road	terminate at Sotterley Plantation	
Calvert County						
spine	spine	Solomon's Island Road	bear left onto	Island Road Ramp	Calvert Marine Museum, Solomons Regional Information Center	yes ¹
spine	spine	MD 4/Island Road	continue on	Solomon's Island Road. S.		yes; Solomon's Island Road, S. to intersection with HG Trueman Road ¹
spine	spine	Solomon's Island Road S.	turn left onto	MD 264/Broome's Island Road	Cove Point St. Leonard Creek - Original Town Site St. Leonard Creek - Upper Battery St. Leonard Creek - Fort Hill Site Spout Farm Calvert Cliffs State Park	yes; from the intersection of Solomon's Island Road, S and Pardoe Road to Broome's Island Road ¹
branch	branch	Parran Road	turn left onto	Mackell Road		yes ¹
branch	branch	Mackall Road		to destination	St. Leonard Creek - Lower Battery Mackall House (Brew House) Jefferson Patterson Park and Museum	yes ¹
spine	spine	Broome's Island Road (MD 264)	turn right onto	Grays Road		yes ¹
spine	spine	Grays Road	turn left onto	MD 506/Sixes Road	Battle Creek Cypress Swamp Sheridan Point Taney Place Calverton	no
spine	spine	Sixes Road	turn left onto	MD 231/ Hallowing Point Road		yes ¹
connector	spine	MD 231/Hallowing Point Rd.		Patuxent River/County line	Hallowing Point Hallowing Point Park	yes ¹

EXISTING DESIGNATION	PROPOSED DESIGNATION	ROAD NAME	TURNING DIRECTION	TO	FEATURE/DESTINATION	BICYCLE DESIGNATION OR MAPPED ROUTE?
Charles County						
	no designation	Benedict Road			Significant War of 1812 Historical Sites - plan by Charles under development	
connector	Spine	MD 231/Prince Frederick Road	turn right onto	Brandywine Road (MD 381)	Benedict - British Landing Benedict - Maxwell Hall British Encampment	yes ¹
connector	Spine	MD 381/(Brandywine Road in Charles County)		County Line	Patuxent City Oldfields Chapel	no
Prince George's County						
spine	spine	MD 381/Aquasco Road (identified as Brandywine Road in Charles County)	turn right onto	MD 382/Croom Road	Aquasco Mills Site	yes; from the intersection of Brandywine and Dr. Bowen Road to Croom Road (Brandywine, Candy, and Mudd - 42 mi) ²
spine	spine	MD 382/Croom Road	turn right onto	Croom Station Road	Magruder Landing	yes; from the intersection with Brandywine Road to Candy Hill Road (Brandywine, Candy, and Mudd - 42 mi); from the intersection with Nelson Pierre Road to the intersection with Tanyard Road (Brandywine Firehouse-Merkle Meander - 27 mi); from the intersection with M ²
none	branch	Tanyard Road	turn left onto	Nottingham Road	side track to Nottingham	yes; (Brandywine Firehouse-Merkle Meander - 27 mi) ²
side track (portion)	branch	Nottingham Road	turn right onto	Fenno Road		yes; Brandywine Firehouse-Merkle Meander - 27 mi ²
none	Branch	Fenno Road	turn left onto	St. Thomas Church	Merkle WMA entrance	yes; Brandywine Firehouse-Merkle Meander - 27 mi; Merkle Meander from Gwynn Park High School - 44.5 mi; Brandywine Fire Station to Mount Calvert - 33 mi ²
side track	branch	St. Thomas Church	turn right or left onto	Croom Road		yes; from the intersection with Fenno Road to the intersection with Mattaponi Road (Brandywine Firehouse-Merkle Meander - 27 mi; Merkle Meander from Gwynn Park High School - 44.5 mi; Brandywine Fire Station to Mount Calvert - 33mi); from the intersection with M ²

EXISTING DESIGNATION	PROPOSED DESIGNATION	ROAD NAME	TURNING DIRECTION	TO	FEATURE/DESTINATION	BICYCLE DESIGNATION OR MAPPED ROUTE?
side track	Branch	Croom Airport Road	to destination		Patuxent River Park	yes; from the intersection with Croom Road to Duvall Road (Brandywine Fire Station to Mount Calvert - 33 mi) ²
side track	branch	Mt. Calvert Road	to destination		Mt. Calvert	yes; from the intersection with Croom Road to Mt. Calvert (Brandywine Fire Station to Mount Calvert - 33 mi) ²
none	spine	Croom Station Road	turn right onto	Old Crain Highway	Upper Marlboro historic sites	no
none	spine	Old Crain Highway	turn left onto	Old Marlboro Pike	Mount Carmel Catholic Cemetery	no
none	spine	Old Marlboro Pike	continue onto	MD 4/ Pennsylvania Avenue ramp		yes; from the intersection with Old Crain Highway to Woodyard Road ¹
none	spine	MD 4/ Pennsylvania Avenue ramp	continue onto	MD 4/ Pennsylvania Avenue		yes; from the intersection with Old Crain Highway to Woodyard Road ¹
<i>(return east to Old Marlboro Pike from MD 4/ Pennsylvania Avenue)</i>						
none	spine	MD 4/ Pennsylvania Avenue	continue onto	MD 223/Woodyard Road ramp to Clinton/Mellwood Road		
	spine	MD-223/Woodyard Road ramp to Clinton/Mellwood Road	turn left onto	MD 223 Woodyard Road		
none	spine	MD 223 Woodyard Road	continue onto	Mellwood Road		yes; from the intersection with MD-223/Woodyard Road ramp to Clinton/Mellwood Road and Mellwood Road ¹
none	spine	Mellwood Road	turn right onto	Old Marlboro Pike		yes; from where Woodyard Road becomes Mellwood to the intersection with Old Marlboro Pike ¹
<i>(continue on Pennsylvania Avenue)</i>						
none	spine	Pennsylvania Avenue	continue into	District of Columbia	Long Old Fields American Encampment	
none		MD 4/Pennsylvania Ave.	turn right onto	Forestville Rd.	could be side track to Addison Chapel connecting to Bladensburg	STSP National Historic Trail (section not qualified for Maryland or National Scenic Byway)
none		Forestville Road	turn left onto	Marlboro Pike	could be side track to Addison Chapel connecting to Bladensburg	STSP National Historic Trail (section not qualified for Maryland or National Scenic Byway)
none		Marlboro Pike	turn right onto	MD 458/Silver Hill Road	could be side track to Addison Chapel connecting to Bladensburg	STSP National Historic Trail (section not qualified for Maryland or National Scenic Byway)

EXISTING DESIGNATION	PROPOSED DESIGNATION	ROAD NAME	TURNING DIRECTION	TO	FEATURE/DESTINATION	BICYCLE DESIGNATION OR MAPPED ROUTE?
none		MD 458/Silver Hill Rd	bear right/ continue onto	Walker Mill Road	could be side track to Addison Chapel connecting to Bladensburg	STSP National Historic Trail (section not qualified for Maryland or National Scenic Byway)
none		Walker Mill Road	bear left onto	Addison Road	could be side track to Addison Chapel connecting to Bladensburg	STSP National Historic Trail (section not qualified for Maryland or National Scenic Byway)
none		Addison Road	turn left onto	MD 704/MLK Jr Highway	could be side track to Addison Chapel connecting to Bladensburg	STSP National Historic Trail (section not qualified for Maryland or National Scenic Byway)
none		MD 704/MLK Jr Hwy	turn right onto	Addison Road	could be side track to Addison Chapel connecting to Bladensburg	STSP National Historic Trail (section not qualified for Maryland or National Scenic Byway)
none		Addison Road	turn right onto	Eastern Avenue (DC)	could be side track to Addison Chapel connecting to Bladensburg	STSP National Historic Trail (section not qualified for Maryland or National Scenic Byway)
none		Eastern Avenue (DC)	turn right onto	Baltimore Washington Parkway	could be side track to Addison Chapel connecting to Bladensburg	STSP National Historic Trail (section not qualified for Maryland or National Scenic Byway)

(continue to the District of Columbia)

District of Columbia

none	connector	Pennsylvania Avenue	turn right/ merge onto	DC 295/Anacostia Freeway	Bowie House DC Southeast No. 2 Boundary Marker DC Southeast No. 3 Boundary Marker Fort DuPont Park (NPS)	
none	connector	DC 295/Anacostia Freeway	continue into MD	Maryland	Kenilworth Aquatic Gardens (NPS) Anacostia Park (NPS)	

Prince George's County

connector	spine	Baltimore-Washington Parkway	continue into	Anne Arundel County		no
none	branch	MD 450 Annapolis Road	continue to destination		Bladensburg War of 1812 sites Bladensburg Waterfront Park Lowndes Hill Bostwick House Parthenon Site Market Masters House Magruder House Ross House George Washington House	

EXISTING DESIGNATION	PROPOSED DESIGNATION	ROAD NAME	TURNING DIRECTION	TO	FEATURE/DESTINATION	BICYCLE DESIGNATION OR MAPPED ROUTE?
Anne Arundel County						
byway (Baltimore-Washington Parkway)	spine	Baltimore-Washington Parkway	continue into	Baltimore County		no
Baltimore County						
byway (Baltimore-Washington Parkway)	spine	Baltimore-Washington Parkway	continue into	Baltimore City		no
Baltimore City						
none	spine	Russell Street	turn right onto	W. Hamburg Street		no
none	spine	W. Hamburg Street	turn right onto	S. Charles Street		yes; about half-way between the intersection with Russell Street to S. Eutaw Street (sidepath); between the intersections with South Howard Street and Sharp Street (Gwynns Falls Trail) ³
Charles Street National Scenic Byway	Spine - Overlapping Segment	S. Charles Street	turn left onto	E. Fort Avenue		S. Hanover - one block west is bike friendly
portions spine (NHS)	spine	E. Fort Avenue	continue to		Fort McHenry Camp Lookout Spring Gardens Battery	yes; from the intersection with Riverside Avenue to Fort McHenry (on -street bike facilities) ³
<i>(continue to Fells Point)</i>						
byway (National Historic Seaport) (NHS)	spine	E. Fort Avenue	turn left onto	Lawrence Street		yes; from the intersection with Riverside Avenue to Fort McHenry (on-street bike facilities) ³
byway NHS	spine	Lawrence Street	turn left onto	Key Highway		no

EXISTING DESIGNATION	PROPOSED DESIGNATION	ROAD NAME	TURNING DIRECTION	TO	FEATURE/DESTINATION	BICYCLE DESIGNATION OR MAPPED ROUTE?
byway NHS	spine	Key Highway	continue onto	Light Street	Baltimore Visitor Center/Inner Harbor	yes; from the intersection with Lawrence Street to Anchor Street (route commonly used by cyclists); from the intersection with Covington Street to Light Street (Promenade) ³
byway NHS	spine	Light Street	turn right onto	Pratt Street	Inner Harbor	yes; from the intersection with Key Highway to Pratt Street (promenade) ³
byway NHS	spine	Pratt Street	turn right onto	President Street	Inner Harbor to Fells Point	yes; from the intersection with Light Street to President Street (promenade and on-street bike facilities) ³
byway NHS	spine	President Street	turn left onto	Fleet Street	Fells Point	yes; from the intersection with Pratt Street to Fleet Street (route commonly used by cyclists) ³
byway NHS	spine	Fleet Street	turn right onto	Broadway	Fells Point	no
byway NHS	spine	Broadway	turn left onto	Thames Street	Fells Point	yes; intersection with Fleet Street and intersection with Thames Street (route commonly used by cyclists) ³
byway NHS	spine	Thames Street	turn left onto	S. Wolfe Street	Fells Point	yes; intersection with Broadway and S. Wolf Street (promenade) ³
byway NHS	spine	S. Wolf Street	turn right onto	Aliceanna Street		no
none	spine	Aliceanna Street	turn left onto	S. Washington Street		yes; from the intersection with Wolfe Street to the intersection with S. Washington Street (on-street bike facilities) ³
none	spine	S. Washington Street	turn right onto	Eastern Avenue	Patterson Park	no
none	spine	Eastern Avenue	turn right onto	S. North Point Road	North Point Battlefields	yes; from the intersection with Haven Street to the intersection with Cassell Drive (includes sidepath and route commonly used by cyclists) ³
none	spine	Eastern Avenue	turn right onto	S. North Point Road	North Point Battlefields	entering Baltimore County heading eastbound to North Point Road ¹
<i>(head west on Eastern Avenue to return to Fells Point)</i>						
none	spine	Eastern Avenue	turn left onto	Wolfe St.	returning back toward Fells Point	no

EXISTING DESIGNATION	PROPOSED DESIGNATION	ROAD NAME	TURNING DIRECTION	TO	FEATURE/DESTINATION	BICYCLE DESIGNATION OR MAPPED ROUTE?
byway NHS	spine	Fleet Street	turn right onto	President Street	returning toward Fort McHenry	no
byway NHS	spine	President Street	turn left onto	Lombard Street	returning toward Fort McHenry	yes; from intersection with Fleet Street to intersection with Lombard Street (route commonly used by cyclists and on-street bike facilities) ³
byway NHS	spine	Lombard Street	turn left onto	Light Street	returning toward Fort McHenry	yes; from the intersection with President Street to the intersection with Light Street (on-street bike facilities) ³

Baltimore County

(continue from S. North Point Road southeast to North Point State Park)

none	spine	S. North Point Road	turn left onto	Cove Road		no
none	spine	Cove Road	turn right onto	North Point Boulevard		no
none	spine	North Point Boulevard	turn left onto	North Point Road	North Point State Battlefield	no
none	spine	North Point Road	turn left onto	North Point Boulevard	historic military route	no
none	spine	North Point Boulevard	turn left onto	Bethlehem Boulevard (MD 158)	historic military route	no
none	spine	Bethlehem Boulevard	turn right onto	North Point Road	historic military route	no
none	spine	North Point Road	continue to		North Point State Park	no

(returning west to Eastern Avenue from S. North Point Road)

none	spine	S. North Point Road	left onto	Avondale Avenue		no
none	spine	Avondale Avenue	right onto	Southern Avenue		no
none	spine	Southern Avenue	left onto	Eastern Avenue		no

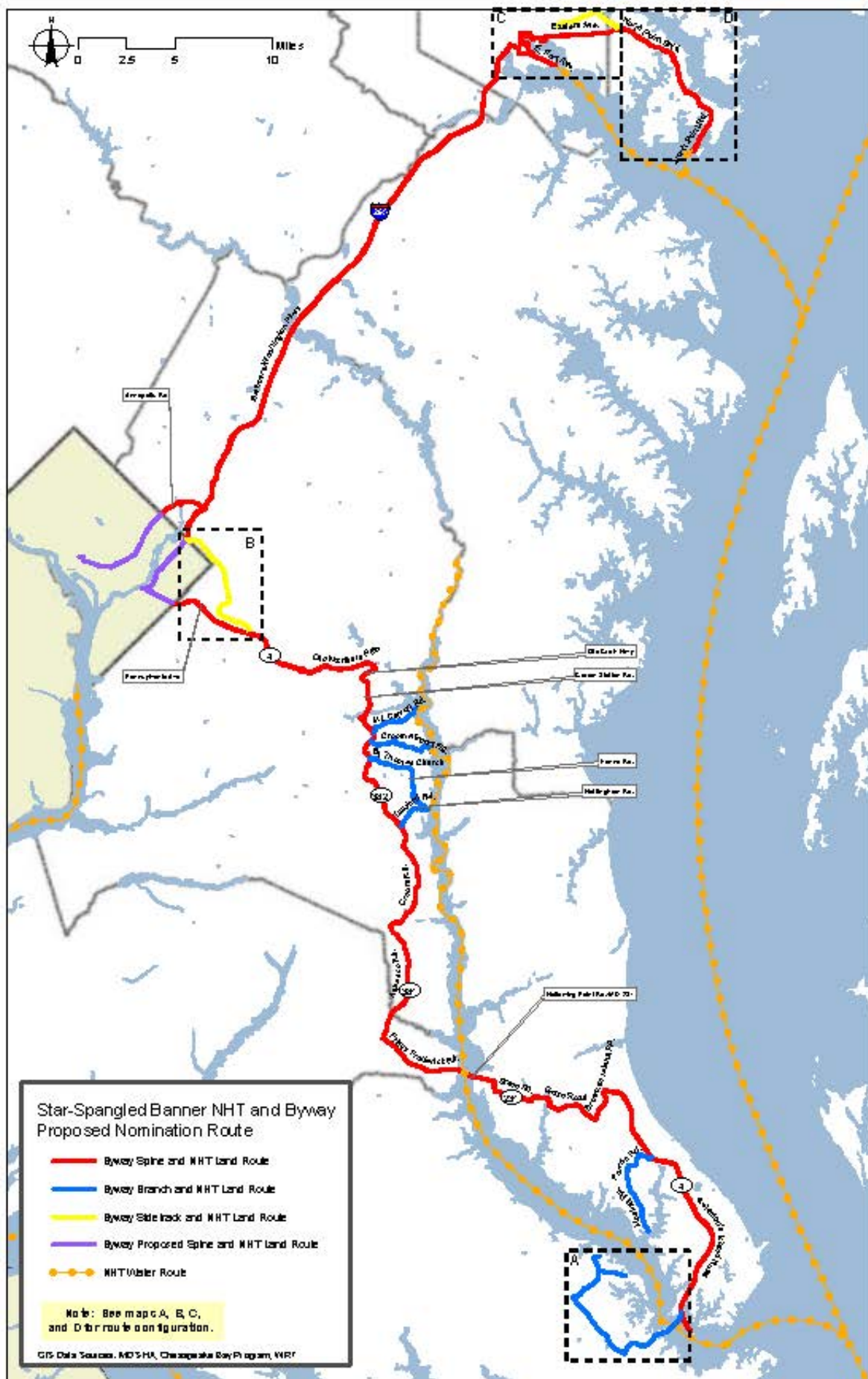
	change no designation or side track to branch
	change byway connector to spine
	change from no designation to spine
	side track (included as NHT land route segment only)
	change name of byway as noted

¹ *Maryland Bicycle Maps* (www.mdot.maryland.gov/Planning/Bicycle/Bicycle_Maps.html)

² *Oxon Hill Bicycle and Trail Club Routes*

³ *Bike Baltimore Map* (<http://www.baltimorecity.gov/LinkClick.aspx?fileticket=Yg8hcluG5n4%3d&tabid=1326&mid=3366>)

Fig. L.1 a



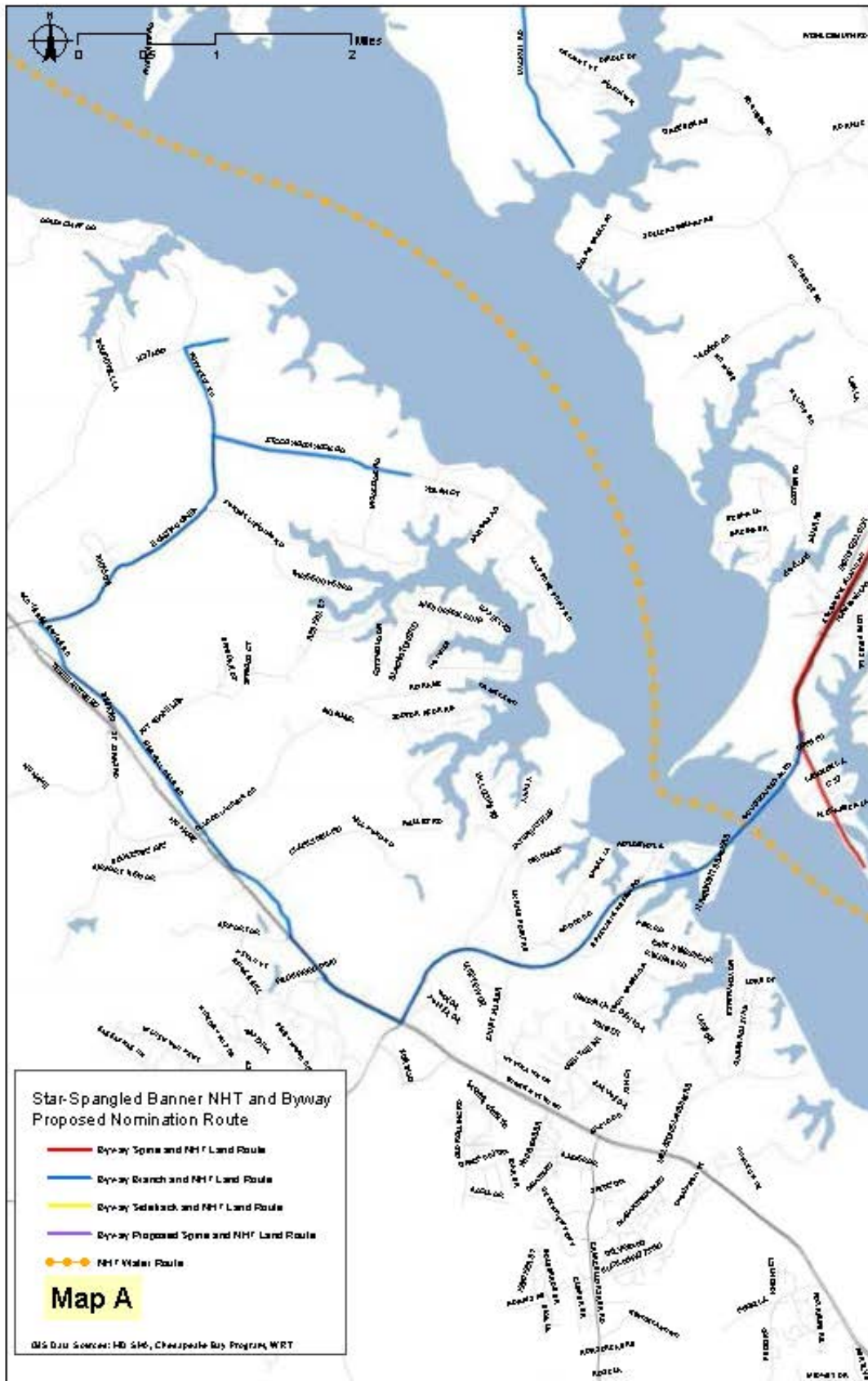


Fig. L1b

Fig. L.1c

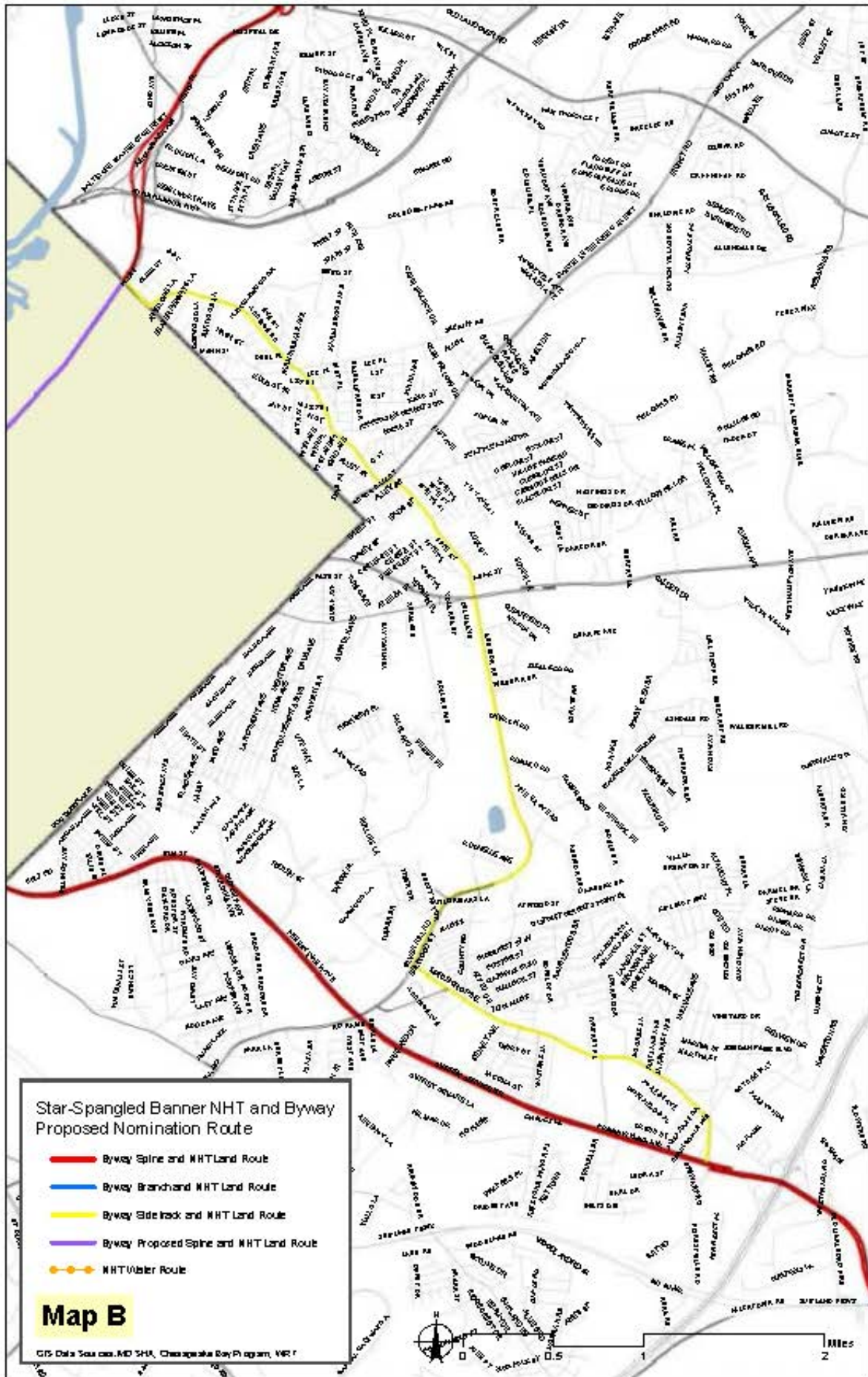


Fig. L.1d

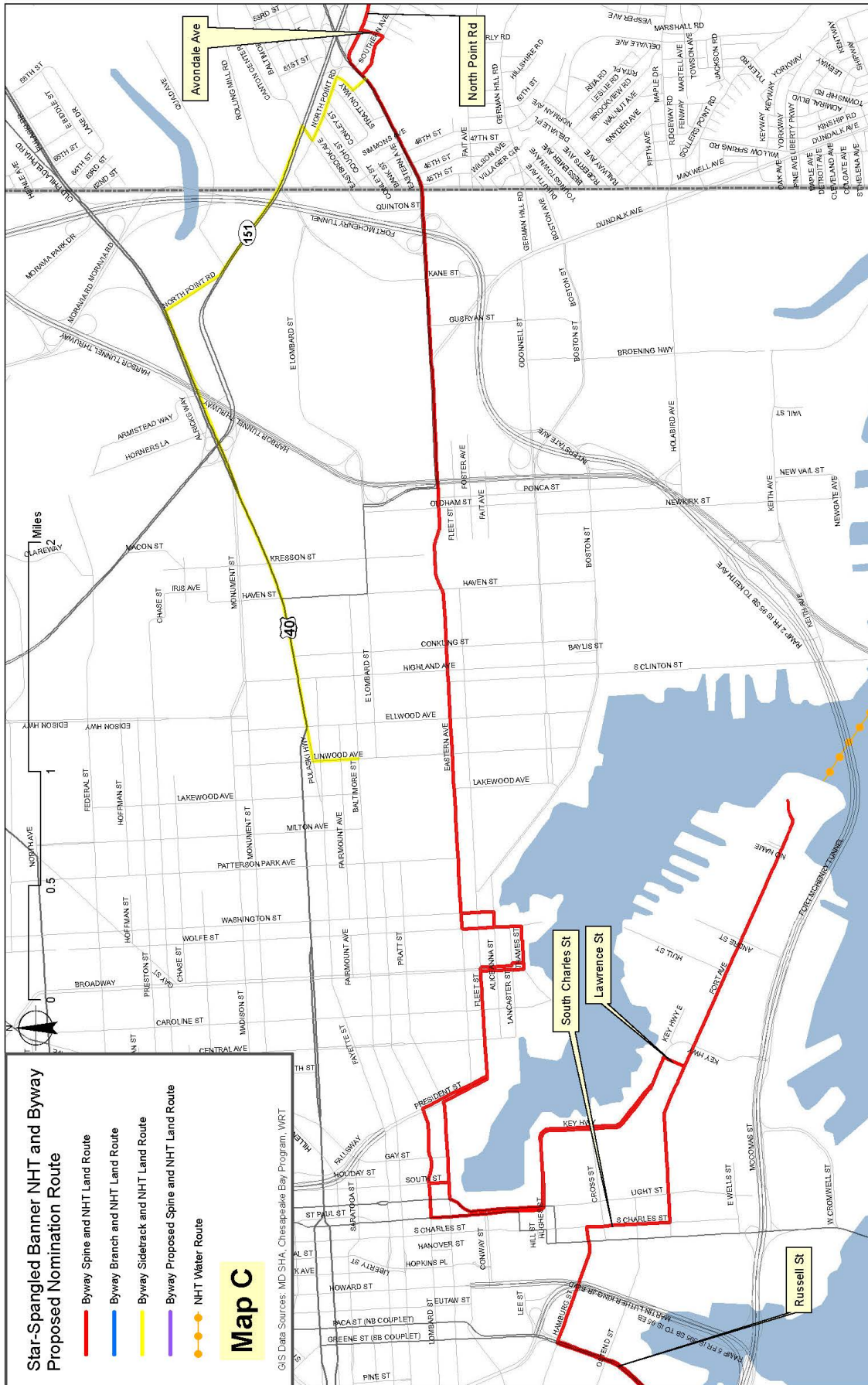
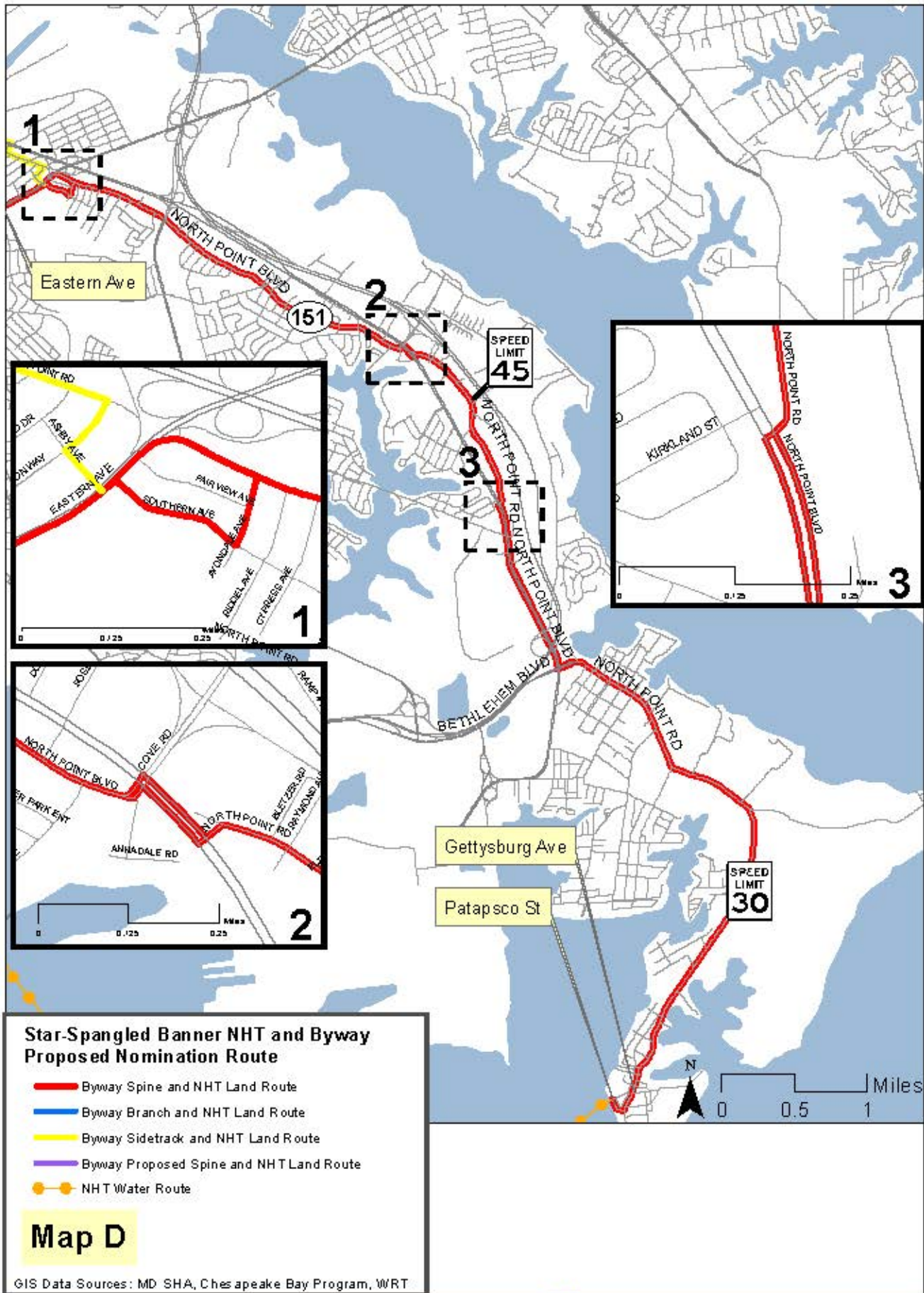


Fig. L.1e



3. Existing Roadway Conditions

Traveling along the land route of the trail through the Washington and Baltimore metropolitan region can be a challenge during rush hours as well as the more unpredictable Saturday traffic near commercial areas and recreational fields. Any visitor to the National Capital Region, however, arrives with the expectation that driving by personal automobile may be a challenge. Moreover, the complexity of making any kind of capital improvement to the transportation system is a difficult process and would have to be considered a long-range prospect at best.

The Washington and Baltimore metropolitan areas are fortunate to have abundant opportunities for bus, transit, and rail service among the major War of 1812 sites between Upper Marlboro and Baltimore. Visitors to the region, however, may not be aware of them; may be intimidated by them; and may not be able to directly access all of the War of 1812 sites south of Upper Marlboro by alternative transportation choices.

Therefore, the primary enhancements to the land route within the urban areas should focus more on navigational aids, and on making it easier to take advantage of the many multi-modal travel opportunities that are available. The water trail components of the trail also provide an alternative mode for travel. Enhancements to the land route should include providing better access to water trail components from the land side.



Congestion in Downtown Baltimore may make it difficult for visitors to follow and enjoy the trail

For those portions of the route in the rural areas south of Upper Marlboro, a different set of issues arises. As with any major metropolitan area, there is tremendous pressure for urbanization. Prince George’s County has identified an area, the Rural Tier, where agriculture, forestry and other rural land uses are emphasized. Similarly, Calvert and Charles counties have made efforts to retain the rural nature of the route. Therefore, transportation strategies in the rural southern section should focus more on ensuring that the characteristics of the rural roadway are maintained while providing for a safe travel experience.

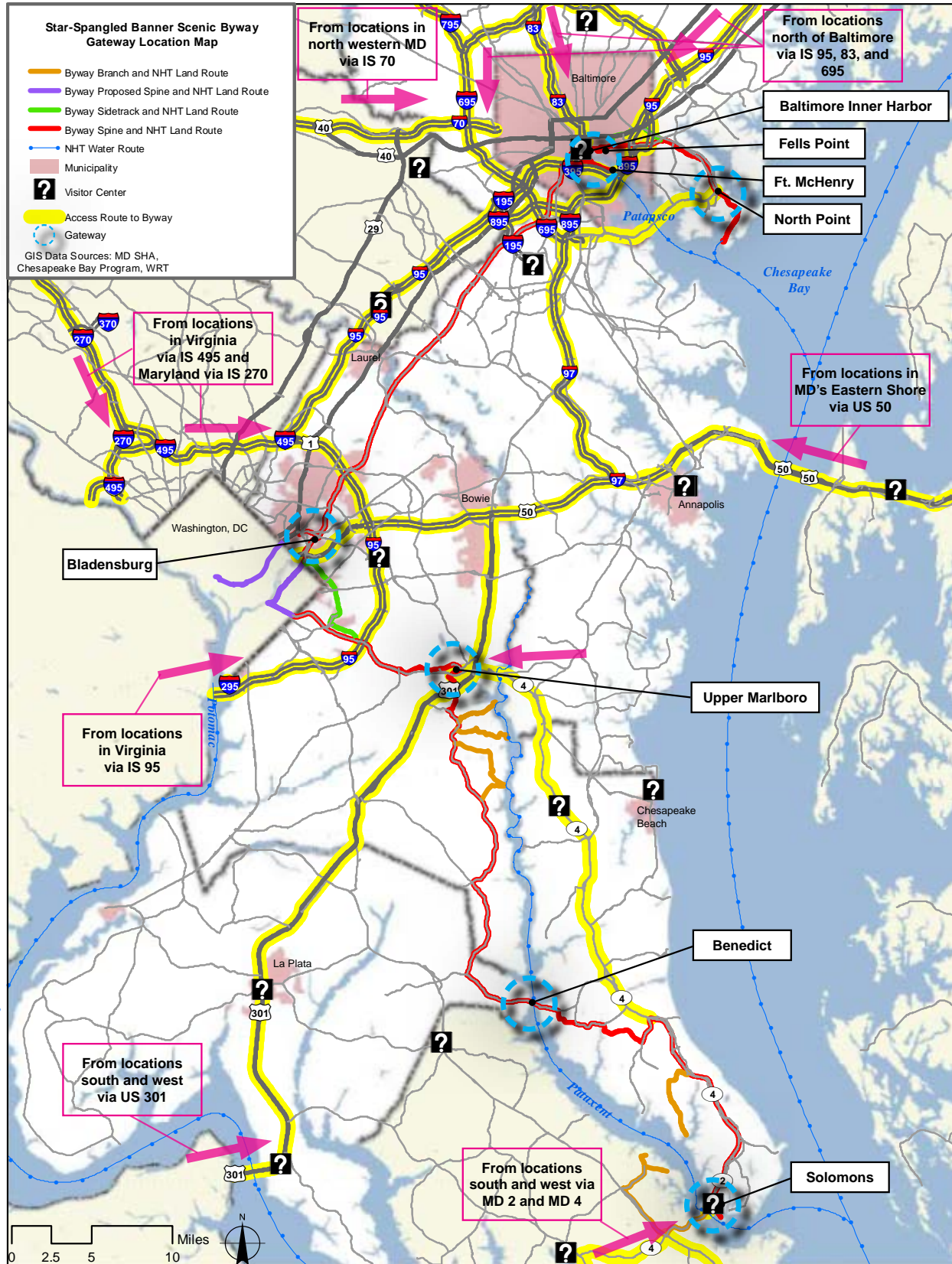
In addition, bicycle use is becoming more of an issue on these routes. Recreational bicyclists are attracted to the rural character of the area in increasing numbers. Yet many of these routes do not have adequate shoulder space to accommodate them without causing conflicts among automobile users sharing roadways, or impacting residents, if shoulders are widened to increase bicycle safety. Strategies are included below to address management and enhancements for bicycle use along the travel route.

3.1 Roadway Capacity Issues

Most of the urban and developed portions of the travel route will have some capacity issues during morning and afternoon peak travel periods, as well as during Saturday traffic around commercial areas. These include:

- regular commuter travel along the MD 4 corridor between Calvert County and the District of Columbia
- congestion in and around Andrews Air Force Base that is likely to be exacerbated by the addition of 500 more jobs as part of the military’s national Base Realignment and Closure (BRAC) process
- congestion associated with the use of the Baltimore-Washington Parkway as a north-south commuter route parallel to Interstate 95 and US Route 1, which is likely to be exacerbated by the addition of 4,272 employees at Fort Meade as part of growth of the Defense Information Systems Agency (DISA) and the addition of the potential slots/casino licensed for a site at Arundel Mills

Fig. L.2



- event-related congestion in Baltimore, which might occur in and around Camden Yards and M&T Bank Stadium along MD 295 and the route to the Inner Harbor

3.2 Vehicular Accommodation

Table L.1 above identifies specific segments where there are limitations for any specific type of vehicle. The route alignment has been developed in such a way that all types of vehicles can be accommodated on the primary spine of the travel route. The branches of the route that lead down to some of the Patuxent River sites are somewhat constrained by lane width and road surface condition for the use of tour buses. Tour bus operators should check with the sites to obtain information about any limitations prior to a visit. In addition, trail sponsors should package specific bus tour itineraries suitable for both large and small tour bus sizes.

The trail land route diverges from the primary travel route north of the Beltway at MD 4 to provide access to Addison Chapel, a significant War of 1812 resource. This particular route, although it follows the historic travel route, has multiple turns and travels through residential areas, and therefore will not be marketed or signed as a primary travel route. However, those with an interest in following the historic route or visiting Addison Chapel can find it with paper maps of the area, GPS devices, or mobile applications.

3.3 Highway Safety Analysis

In order to qualify portions of the Star-Spangled Banner Trail for designation as a National Scenic Byway or All-American Road, the CMP must provide “a general review of the road’s or highway’s safety and accident record to identify any correctable faults in highway design, maintenance, or operation” (Federal Register, 1995). As a first step in this effort, Daniel Consultants, Inc. (DCI) prepared a highway safety analysis identifying the existing roadway characteristics and traffic volumes for the travel route between Solomons and Baltimore (Fort McHenry and North Point State Park). In addition, the analysis identifies areas of concern and the planned and programmed projects designed to address those areas. The results of this analysis are illustrated in figures L.3a through L.3i and summarized below.



Intersecting roads along MD 382 are an issue, especially with some of the high rates of speed that travelers achieve on this 2-lane rural road

3.3.1 HIGHWAY SAFETY ISSUES AND CONCERNS

In general, vehicular travel along scenic and historic touring routes such as the Star-Spangled Banner Trail within major metropolitan areas has the following characteristics:

- The goal of a scenic byway or heritage touring route designation is often to promote appropriate heritage or nature-based forms of tourism-related economic development. Traffic associated with these uses is typically weekend and summer traffic, not peak rush hour traffic.
- Touring routes located near metro areas are likely to have other factors contributing to annual trip (traffic) growth that must be taken into account.
- A potential increase in traffic associated with such a route is usually related to efforts to increase visitation to its related sites and attractions. Increases in traffic for heritage touring routes or scenic byways are directly related to programming of events, marketing, and other factors. Without aggressive marketing there would be minimal growth in traffic volume as a result of a National Historic Trail or Scenic Byway designation. If there are areas where traffic growth cannot be accommodated, they should be identified and managed accordingly.
- Drivers along scenic or historic touring routes are more interested in the experience of driving from point A to point B, rather than getting from point A to B as quickly as possible.

- Driver inattention or distractions may be more from map reading, sight-seeing, or unfamiliarity with the roads (versus commuters that are distracted by things they do to pass the time such as using mobile devices, eating, listening to the radio or music, etc.).
- In areas where the leasing of agricultural lands is prevalent, slow moving farm vehicles often use the roadway during peak agricultural activities, typically coinciding with peak vacation or heritage travel periods and must be managed through warning signage or traveler information.
- Travelers along heritage touring routes and scenic byways are typically unfamiliar with the travel route and with its use patterns. This unfamiliarity needs to be addressed through the use of route marking and wayfinding systems that guide visitors along the best travel route and to the significant War of 1812 sites and attractions.
- Motorcyclists and bicyclists are frequent users of designated touring routes. Awareness campaigns of the rights of all types of vehicles to use the roadway need to be introduced and/or maintained to address specific traveler needs.
- development of pull-offs, for example, at historic markers or scenic views, to remove the casual driver from the stream of faster moving traffic
- management of events so that start and end times avoid peak hour travel or times when there is extensive use of the road by agricultural vehicles
- distribution of information regarding driving conditions (brochures, web-based information, GPS-based and mobile applications, etc.), providing alternate routes around congested areas, for example
- distribution of information to inform drivers of what to do when there is a slow moving farm vehicle in the roadway, or to inform bicyclists and motorized vehicles how to share the roadway
- increasing the visibility and drivers' awareness of roadway conditions through the use of warning signs and markings to address users who are unfamiliar with the conditions
- front-line hospitality training to enable staff in businesses frequented by visitors to provide them with both technology and local information about how to navigate between and among War of 1812 sites



Splitter islands along U.S. Route 50 in Virginia were installed approaching Upperville as part of a national demonstration project for rural traffic calming

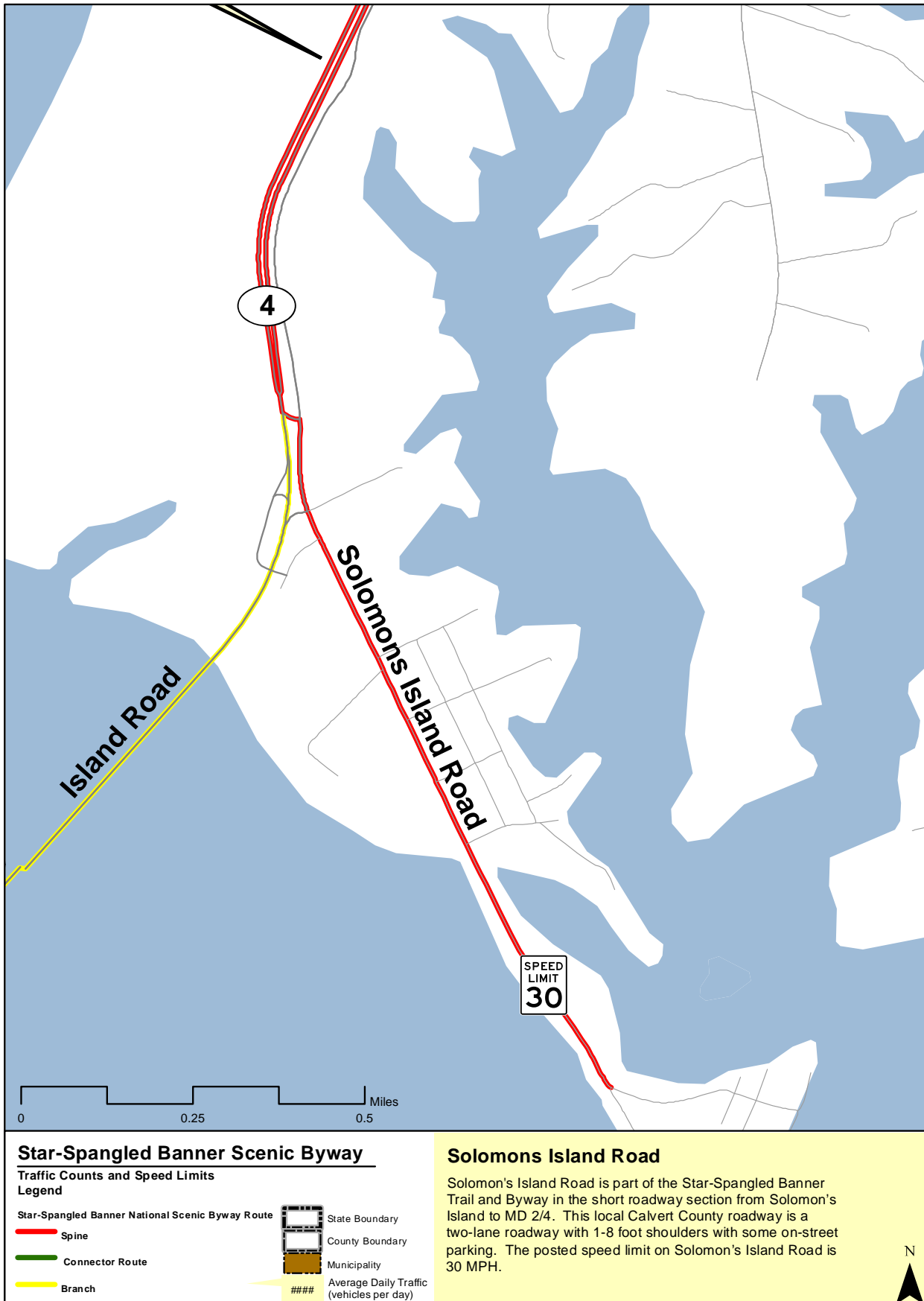
Potential management actions to minimize the effects of changing characteristics of travelers on designated touring routes include:

- traffic calming – to slow operating speeds, thereby giving more time for drivers to make decisions regarding unexpected conditions

3.3.2 ACCIDENT EVALUATION AREAS

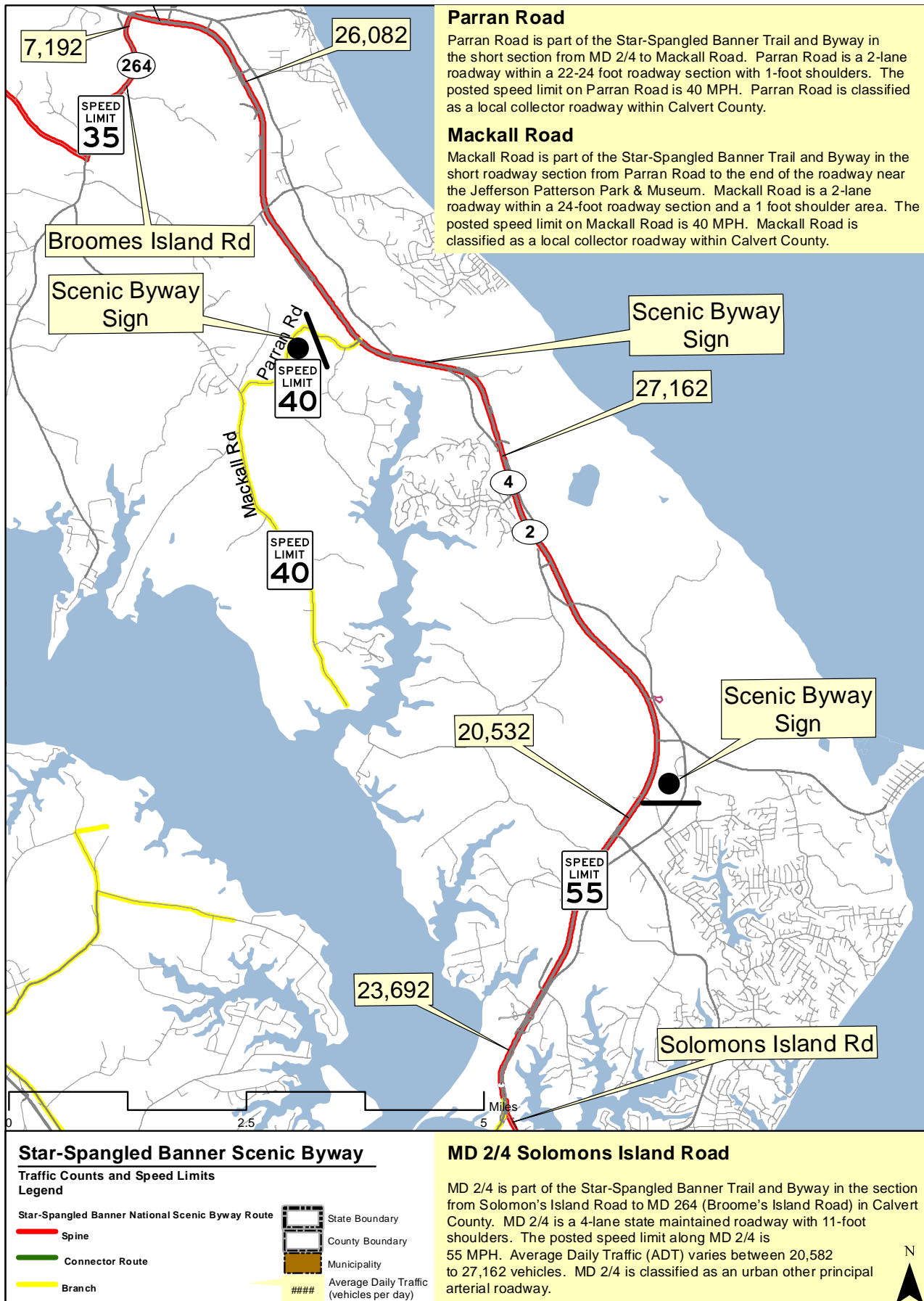
DCI researched data for the Maryland State Highway Administration (MD SHA) files for the last two complete years of data available (2008 and 2009). There were no intersections that were identified as potential candidates for safety improvement along the Star-Spangled Banner Trail route. However, there were some problematic roadway sections along MD 295 in Anne Arundel County and along MD 4 in Prince George's County. MD SHA has already programmed improvements along both MD 295 and MD 4 (see below) that will adequately address challenges at these sections.

Fig. L.3a



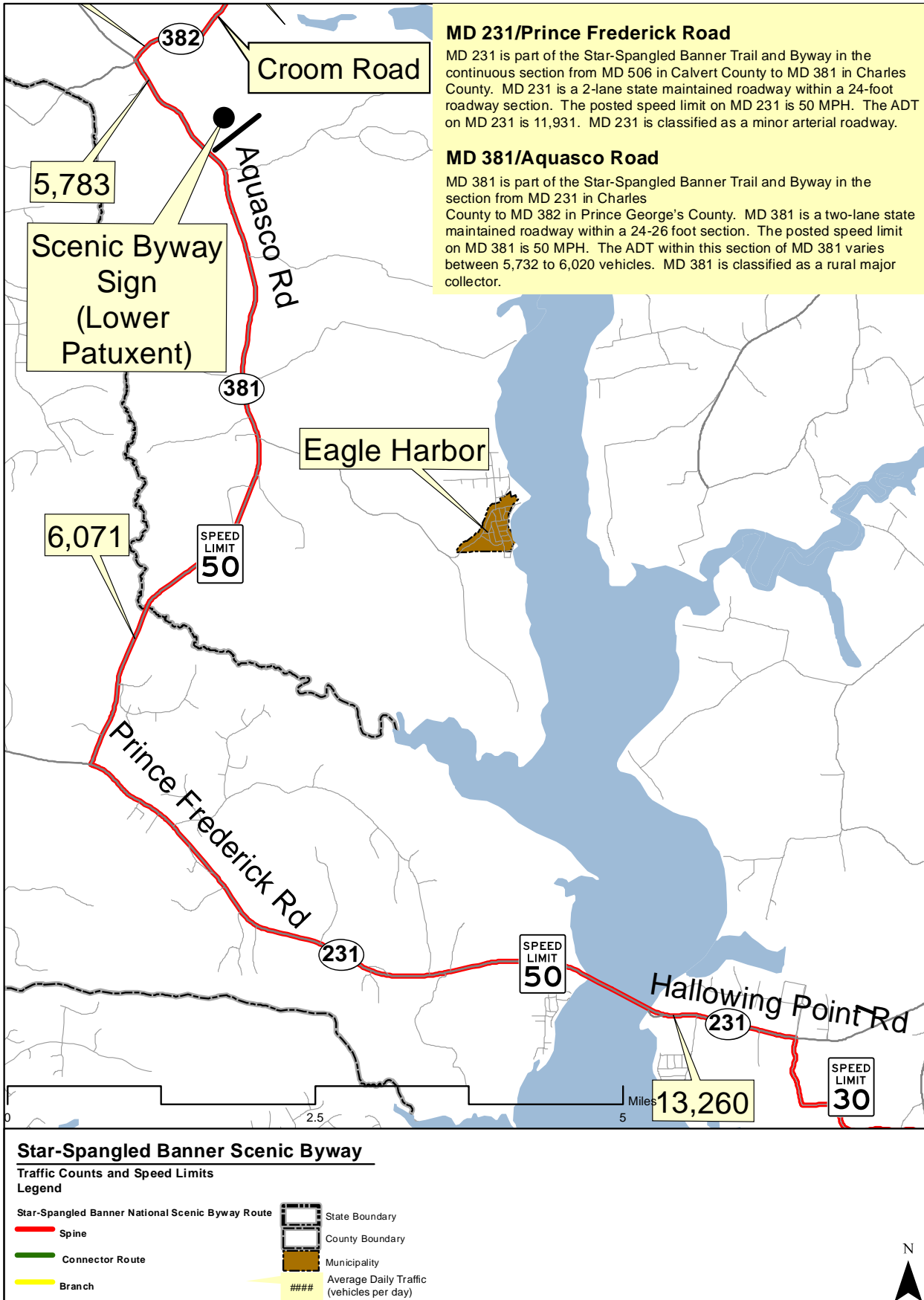
GIS Data Sources: MD SHA, WRT, MD DNR, MD Department of Planning, Daniel Consultants, Inc.

Fig. L.3b



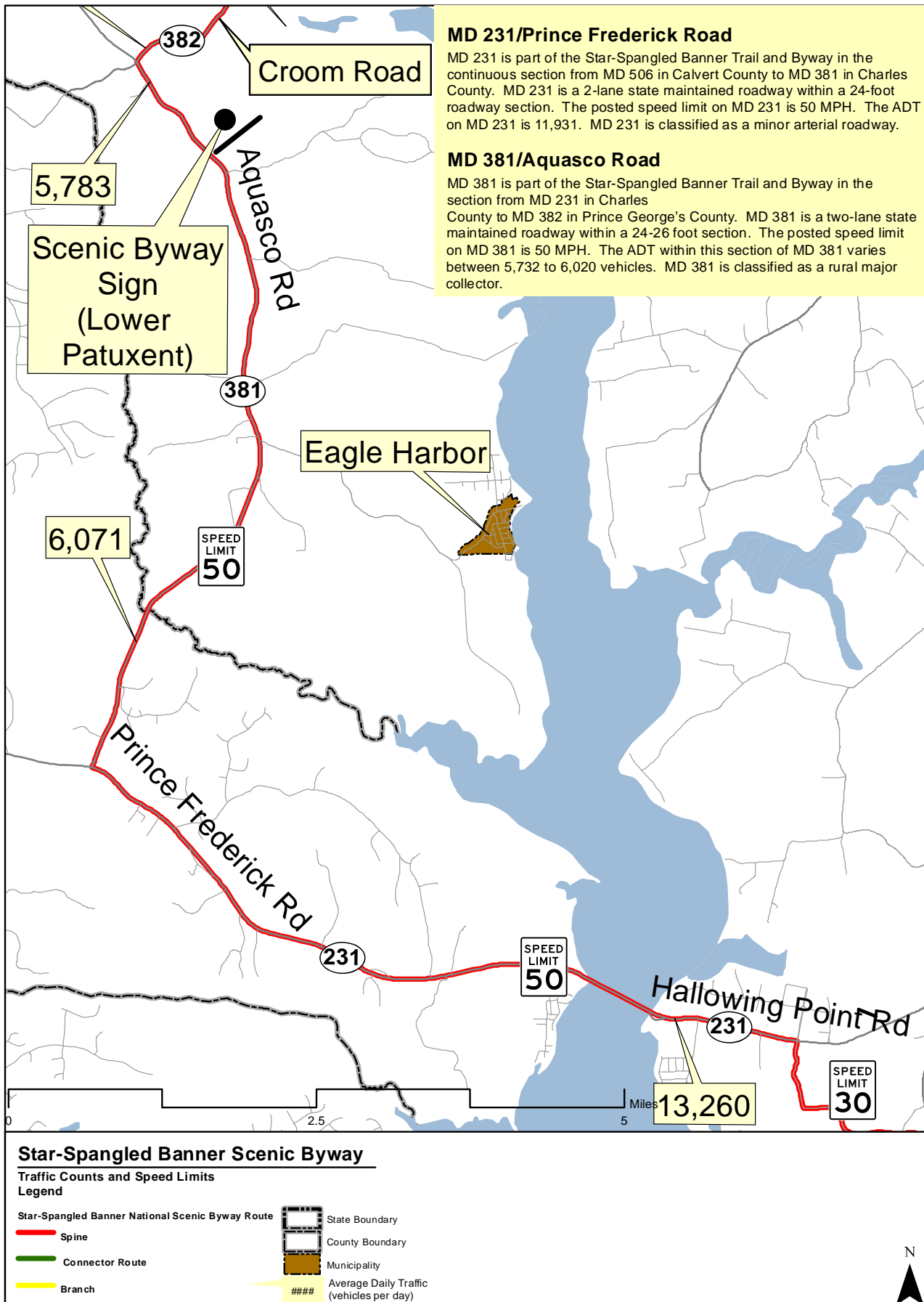
GIS Data Sources: MD SHA, WRT, MD DNR, MD Department of Planning, Daniel Consultants, Inc.

Fig. L.3c



GIS Data Sources: MD SHA, WRT, MD DNR, MD Department of Planning, Daniel Consultants, Inc.

Fig. L.3d



GIS Data Sources: MD SHA, WRT, MD DNR, MD Department of Planning, Daniel Consultants, Inc.

Fig. L.3e

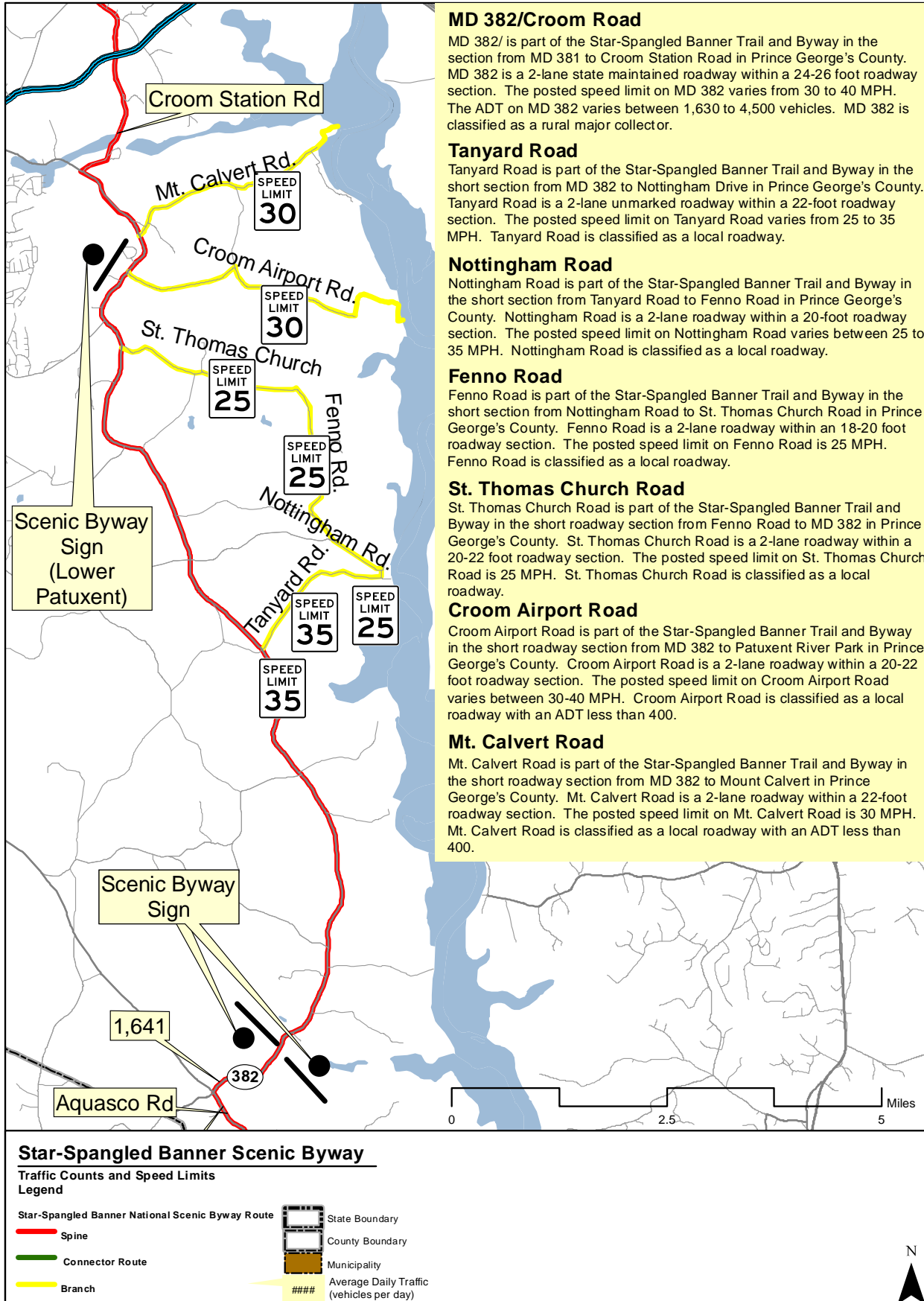


Fig. L.3f

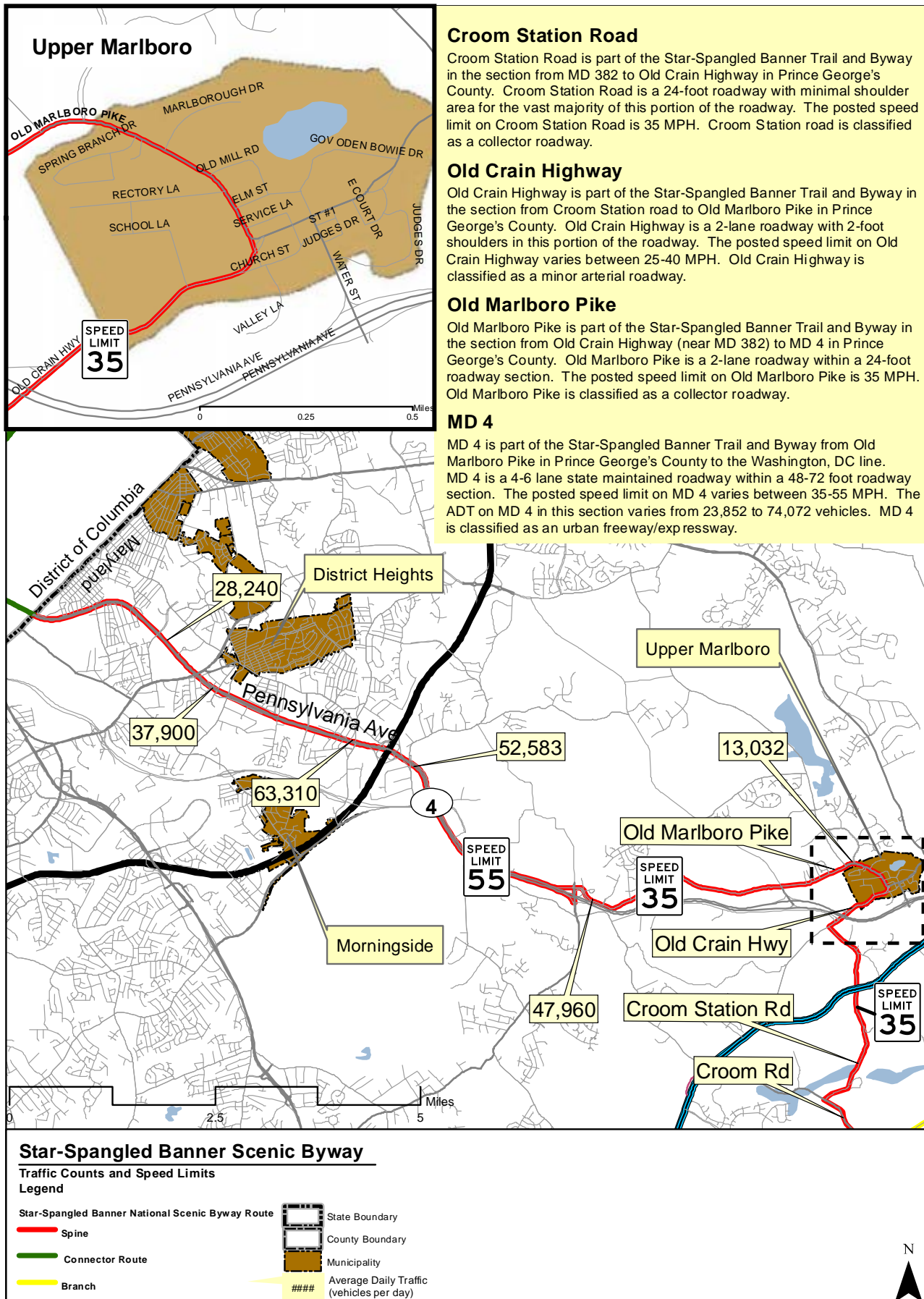
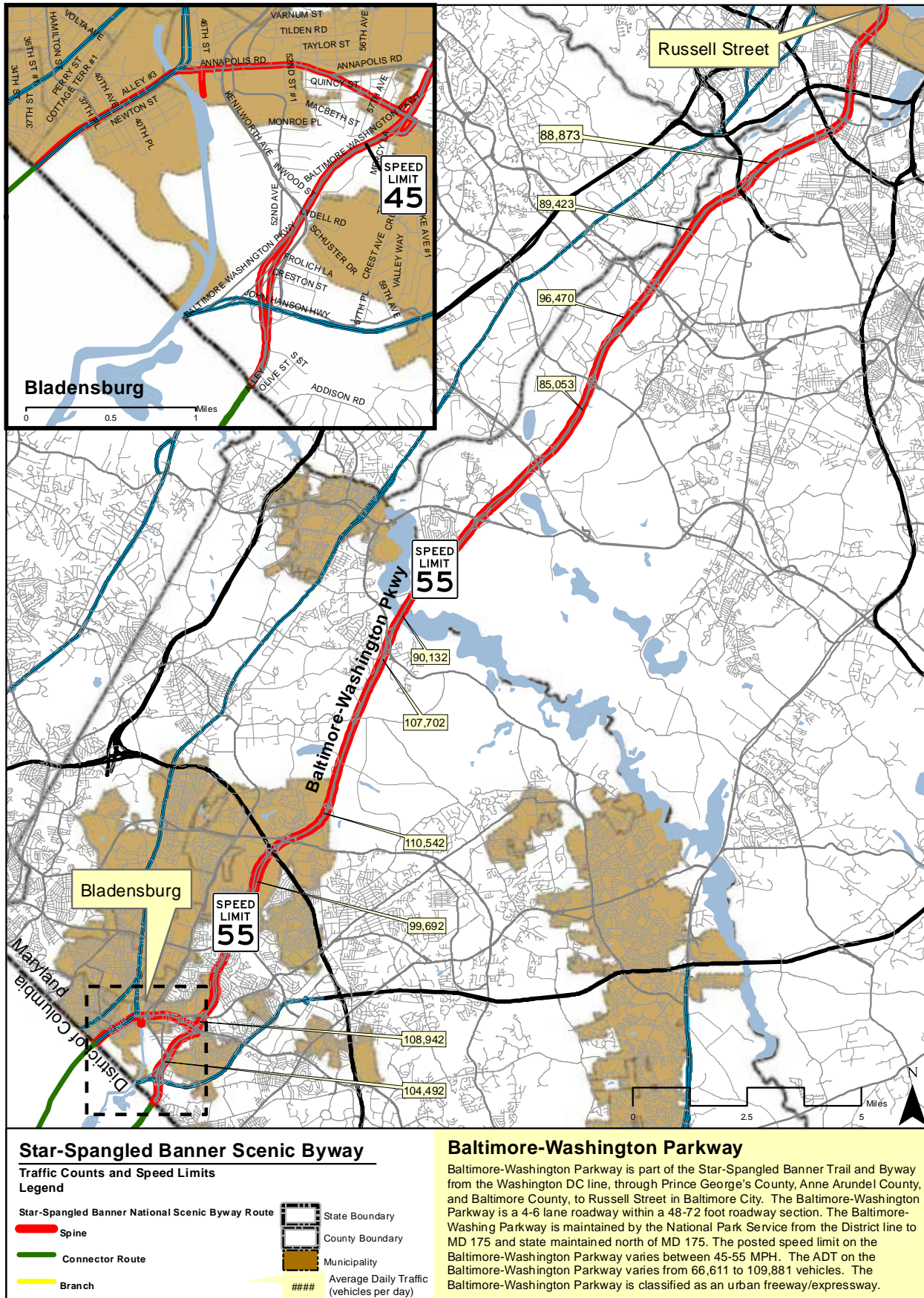
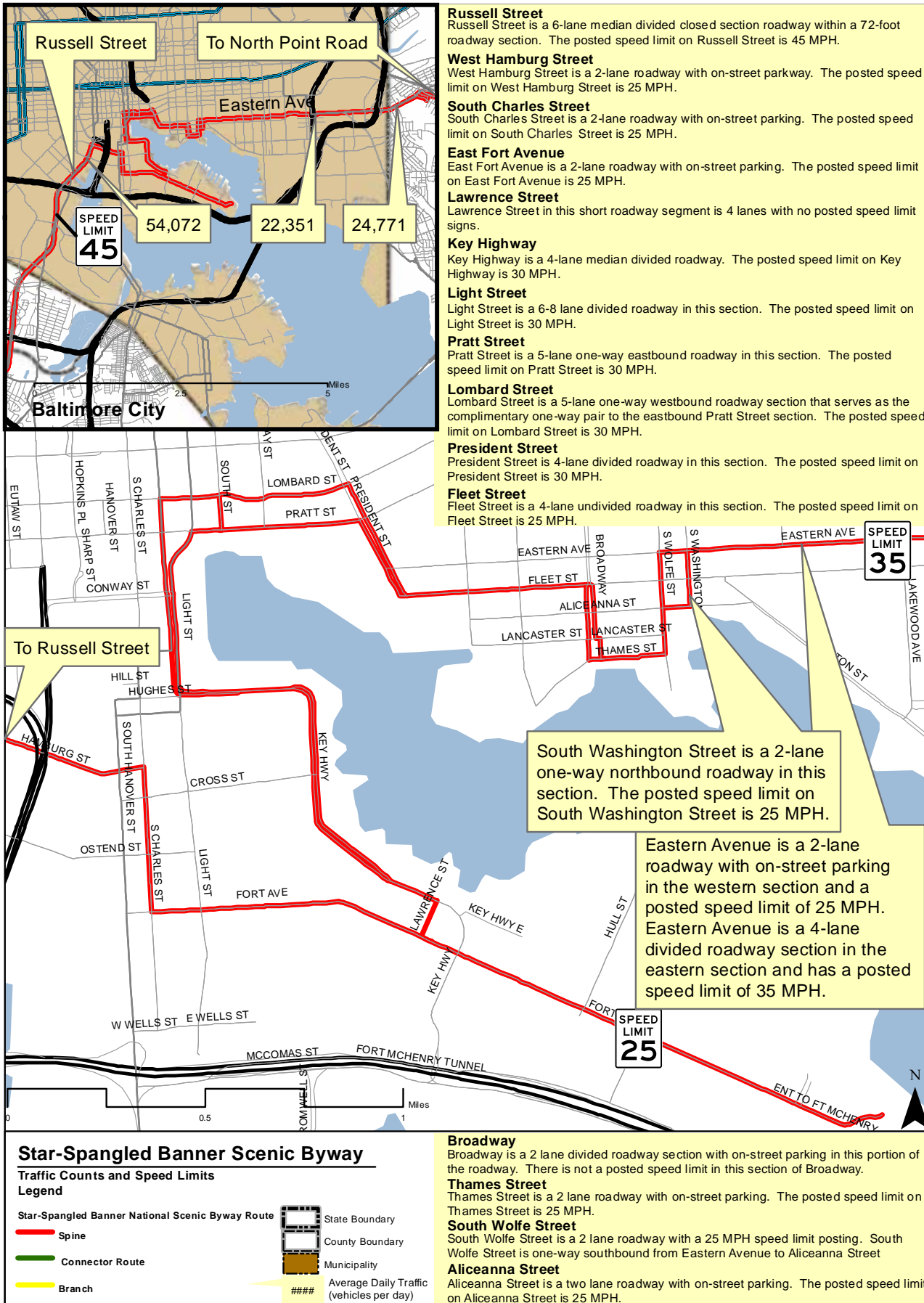


Fig. L.3g



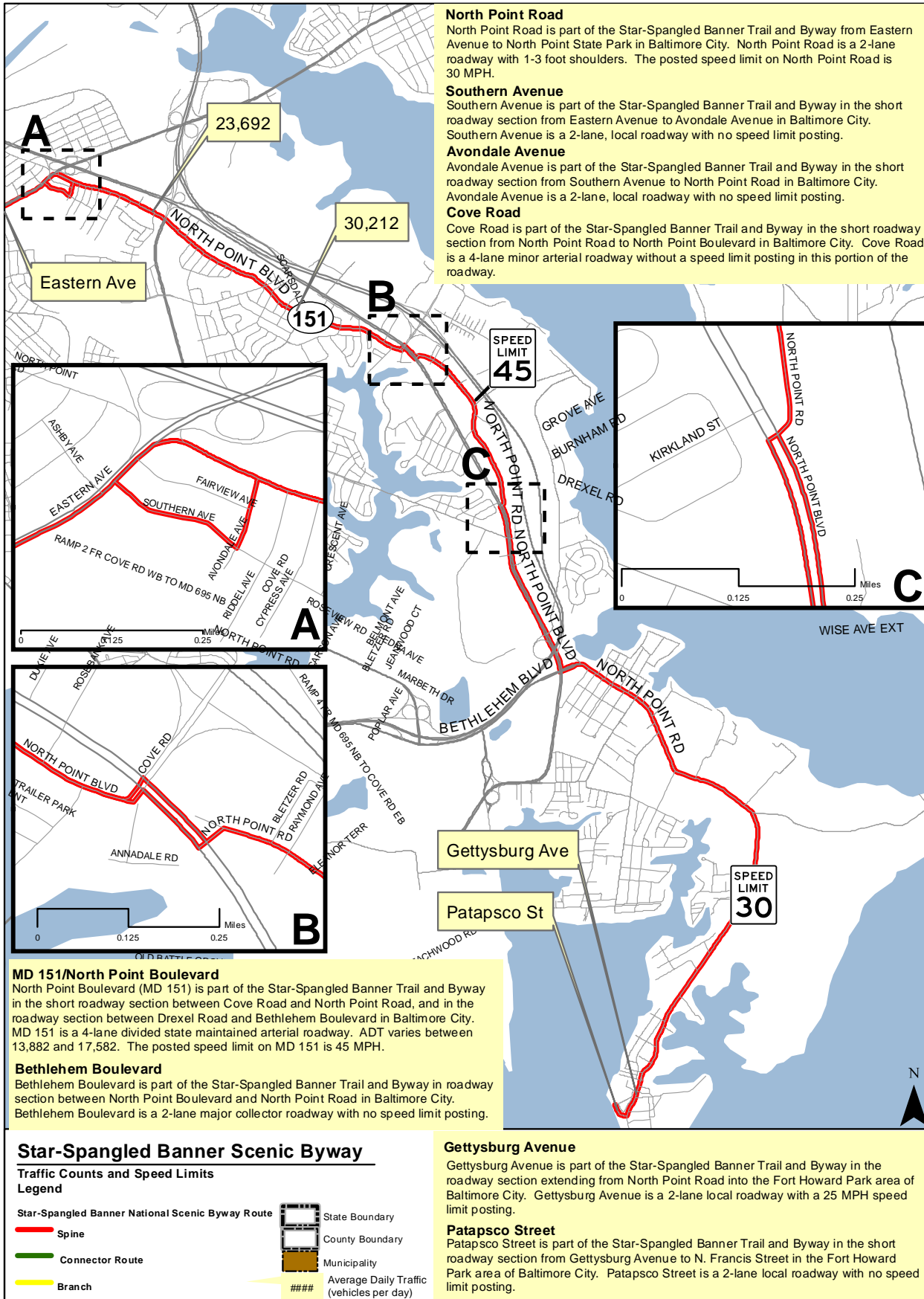
GIS Data Sources: MD SHA, WRT, MD DNR, MD Department of Planning, Daniel Consultants, Inc.

Fig. L.3h



GIS Data Sources: MD SHA, WRT, MD DNR, MD Department of Planning, Daniel Consultants, Inc.

Fig. L.3i



GIS Data Sources: MD SHA, WRT, MD DNR, MD Department of Planning, Daniel Consultants, Inc.

4. Future Roadway-Related Changes

In order to qualify portions of the National Historic Trail and Maryland Scenic Byway for designation as a National Scenic Byway or All-American Road, the CMP must also provide “a strategy describing how existing development might be enhanced and new development might be accommodated while still preserving the intrinsic qualities of the corridor.” In addition, a nomination must include “a plan to accommodate commerce while maintaining a safe and efficient level of highway service, including convenient user facilities” and “a demonstration that intrusions on the visitor experience have been minimized to the extent feasible.” A plan for making improvements to enhance that experience must also be included. As a first step in that analysis, the CMP has identified the following potential changes associated with transportation, land use, and enhancement projects that are planned and programmed, and therefore likely to occur within the planning period.

4.1 Planned and Programmed Transportation Improvement Projects

The following improvements have been identified in MD SHA’s Highway Needs Inventory (HNI) and/or the DRAFT 2010 – 2015 Consolidated Transportation Program (CTP). For each of the proposed improvements, DCI has identified the project as a likely Short-Term Project (likely to be constructed within 5 years), Mid-Term Project (5-10 years), or Long-Term Project (beyond 10 years).

4.1.1 CALVERT COUNTY

- **MD 2/4 at Future Lusby Southern Connector Road:** No. 1 in HNI Primary System – Reconstruct interchange – “Long-Term Project”
- **MD 2/4 at MD 497:** No. 2 HNI Primary System – Reconstruct interchange – “Long-Term Project”
- **MD 2/4 at Ball Road/Calvert Beach Road:** No. 3 HNI Primary System – Reconstruct interchange – “Long-Term Project”
- **MD 2/4 from south of MD 765 to north of Stoakley Road:** No. 4 in the HNI – Upgrade MD 2/4

to a 6-lane divided highway with auxiliary lanes – “Long-Term Project”

- **MD 231 – Charles County Line to Barstow Road:** No. 1 in the HNI Secondary System – Divided highway reconstruct – “Mid-Term Project”
- **MD 4, Solomons Island Road (pedestrian and bicycle plan):** Study to upgrade MD 4 between MD 2 and MD 235, including the Thomas Johnson Bridge and MD 235 intersection (2.91 miles); sidewalks will be provided where appropriate for pedestrians. Shoulders or wide curb lanes will accommodate bicycles.

4.1.2 CHARLES COUNTY

- MD 231 from MD 5 Relocated to Calvert County Line: No 8 in the HNI – Secondary System: Divided highway reconstruct – “Mid-Term Project”

4.1.3 PRINCE GEORGE’S COUNTY

- **MD 4 at Suitland Parkway:** Primary Development and Evaluation Program: Construct new interchange – “Long-Term Project”
- **MD 4 from MD 223 to I-95/I-495:** Primary Development and Evaluation Program: Upgrade existing MD 4 to a multi-lane freeway – “Long-Term Project”
- **MD 382 from MD 381 to Candy Hill Road:** Safety, Congestion Relief, Highway and Bridge Preservation Program: Resurface roadway – “Short-Term Project”
- **MD 450 in Town of Bladensburg – Bladensburg Green Streets Project –** “Short-Term Project”

4.1.4 ANNE ARUNDEL COUNTY

- **MD 295 from I-195 to I-695:** Primary Construction Program – Widen MD 295 from 4 to 6 lanes – “Short-Term Project”
- **MD 295 from MD 100 to I-195:** Primary Development and Evaluation Program: Widen MD 295 from MD 100 to I-195 from 4 to 6 lanes – “Long-Term Project”

- **MD 295 at MD 100:** No. 18 in the HNI – Primary System: Reconstruct interchange – “Long-Term Project”
- **MD 295 at West Nursery Road:** No. 19 of the HNI – Primary System: Reconstruct interchange – “Long-Term Project”

4.1.5 BALTIMORE COUNTY

- **MD 295 from Anne Arundel County Line to Baltimore City Line:** HNI No. 17 – Primary System: Reconstruct freeway
- **Bicycle Facilities (Item #78) North Point Road from Bethlehem Boulevard to Lodge Forest Drive:** 1.03 D C (Bike Lane Striping) State CIP Priority 2
- **Bicycle Facilities (Item #80) North Point Road from Old Bay Road to Fort Howard Park Drive:** 0.48 D (Share the Road/Bicycle Route Sign) State CIP Priority 1

4.1.6 BALTIMORE CITY

- **Key Highway from I-95 to Lawrence Street:** Construct a ten foot wide bicycle pedestrian path 554 FY 2010 (Baltimore City Project)
- **Boston/O'Donnell Street Connector:** New north/south connection of Boston Street to O'Donnell Street adjacent to Haven Street as well as the extension of Eaton Street from Boston Street to O'Donnell along abandoned railroad right-of-way (2010 - 2013 Transportation Improvement Program, Baltimore City Highway Capacity)

4.2 Current and Recent Enhancement Projects

The State of Maryland and the communities along the trail are currently involved in a number of related efforts that will enhance the quality of the Star-Spangled Banner experience. Governor O'Malley's Executive Order #01.01.2011.07 established the Maryland War of 1812 Commission to coordinate the bicentennial activities among agencies and jurisdictions in Maryland. A National Scenic Byway Program grant was awarded to the Maryland Office of Tourism Development (OTD) in 2009 to partially fund the preparation of this plan as a cooperative effort between the National

Park Service and the Commission. Current planning and implementation projects associated with the Star-Spangled Banner Trail are listed in Appendix J.

4.2.1 MARYLAND HERITAGE AREAS PROJECTS AND PROGRAMS

Additionally, the Maryland Heritage Areas Authority (MHAA) has provided matching grants for projects related to the War of 1812 bicentennial to the following organizations for planning, educational projects, and interpretive programming:

- Baltimore National Heritage Area, \$6,750
- Baltimore Heritage, \$3,500
- Friends of Concord Point Lighthouse, \$70,000
- Friends of Fort McHenry/Living Classrooms, \$23,300
- Friends of Jefferson Patterson Park & Museum, \$6,500
- Maryland Historical Society, \$18,000
- Pride of Baltimore II, \$15,500
- Society for the Preservation of Federal Hill and Fell's Point, \$13,000
- Sultana Projects, Inc., \$12,000

The Southern Maryland Heritage Area recently released a new War of 1812 travel map and guide funded through a matching-funds award from the Maryland Heritage Areas Authority.

The Anacostia Trails Heritage Area and Prince George's County are developing related enhancements to interpret Bladensburg's War of 1812 resources.

The Maryland War of 1812 Bicentennial Commission and its non-profit partner, Star Spangled 200, Inc., are offering grants for bicentennial activities and projects.

5. Roadway Management Practices

5.1 3-R Work and Routine Maintenance

Modifications to the roadway are often made as part of what is referred to as 3-R work (resurfacing, restoration, and rehabilitation), as well as routine maintenance. Short of the short-, mid-, and long-range potential for the portions of the travel route to be expanded or modified by the projects noted above, nearly all of the work that may be done to the roadway along the travel route will be either 3-R work or routine maintenance. These may include:

- changes to highway alignment to lengthen sight lines (the distance a driver can see) or address high accident areas
- changes to intersections to lengthen sight lines and accommodate turning movements (especially for new subdivisions)
- changes to roadway widths to accommodate volume
- streetscape or pedestrian safety related projects
- bridge reconstruction (widening, re-decking, etc.)
- addition of acceleration and deceleration lanes
- addition of left turn lanes
- changes to roadside drainage
- shoulder stabilization
- guardrails
- resurfacing (“mill and fill”)
- addition of bicycle lanes or paths
- utilities, signs, etc.



Narrow and tree lined route along Croom Road typical of the more rural portions of the trail



The impact on rural character of a new subdivision along Croom Road includes the widening of the road, the provision of turn lanes and access/egress lanes

The majority of the route follows state roads currently designated as a Maryland Scenic Byway. Where modifications to the roadway take place on state designated scenic byways, guidelines for modifications are provided by the MD SHA in the document Context Sensitive Solutions for Maryland’s Scenic Byways (MD SHA, 2006; often referred to as CSS Guidelines). However, the application of these guidelines is generally elaborated upon as part of the corridor management plan (included below).

Where modifications to the roadway are needed on the county roads of Prince George’s County (the sidetracks of the route), guidelines are provided in Prince George’s County’s Guidelines for the Design of Scenic and Historic Roadways.

6. Encouraging Use of Context Sensitive Design for Transportation Projects



Critical to the success of maintaining a high-quality travel experience along the Star-Spangled Banner Trail is to ensure that any work proposed along the travel route is conducted with a clear understanding of the roles and responsibilities of each of the parties involved with the action. To the maximum extent practicable, the use of Context Sensitive Design should result

from communications and procedures established by the parties.

For the most part, the travel route in Maryland is the responsibility of the MD SHA. For some of the route, primarily the branches leading down to the sites along the Patuxent River in Prince George's County, Grays and Sixes Roads in Calvert County, and the portion of the route through the City of Baltimore, the responsibility for the roadway lies with the respective jurisdictions. The following describes the general roles and responsibilities for the routes that are the responsibility of the MD SHA.

6.1 Role of the Maryland Scenic Byway Program

The State Scenic Byway Program is housed within MD SHA's Office of Environmental Design (OED), Landscape Architecture Division (LAD). Currently, the State Scenic Byway Coordinator monitors project activity on a scenic byway. If SHA projects are underway for more significant changes, LAD is usually included from the design process forward. Such projects include changes to highway alignment, intersections, or roadway widths to accommodate volume; streetscape or pedestrian safety-related projects; bridge reconstruction; addition of acceleration, deceleration, or left turn lanes; or bicycle lanes and paths.

Routine items such as changes to roadside drainage, shoulder stabilization, guardrails, resurfacing, and utilities, are usually handled by the MD SHA District Offices. Coordination often depends upon the district and personnel involved. The more communicative of these will involve LAD/OED at an early stage (usually project Initiation, known as PI). Given the opportunity, OED provides recommendations for ways to ensure that the various types of 3-R and maintenance work that takes place on a byway either preserves, maintains, or enhances the character of that byway in a manner that is consistent either with the corridor management plan (if available), or with the CSS Guidelines if no CMP has been completed.

When a developer modifies a roadway to accommodate development, LAD likely will not know of the work until a set

of plans for review arrive in the office, at about the 60 percent stage of construction. In the recent past, the State Scenic Byway Coordinator has begun automatically receiving sets of plans to review for requests for access to a state highway that is also designated as a scenic byway – a stage well before construction, at a point when it is possible to revise the developer's plans to ensure the CSS Guidelines can be employed successfully.

6.2 Sidetracks in Prince George's County

As noted above, several sidetracks have been identified as part of the original Lower Patuxent Scenic Byway, including Mt. Calvert Road, Croom Airport Road, St. Thomas Church Road, and Candy Hill Road. Each of these facilities are owned and maintained by Prince George's County and are therefore governed by its Specifications and Standards for Roadways and Bridges (DPW&T, 2007b). Prince George's County has developed and approved guidelines for scenic and historic roads that apply to the four sidetracks leading to historic sites that are part of the existing state-designated scenic byway. The Specifications and Standards allow for designation of Scenic or Historic Rural Roads, defined in that document as follows:

A through roadway which has been designated as possessing unique scenic or historic characteristics deemed worthy of preservation. Scenic or historic roadways may include among their identifying features: scenic views, distinctive topographical features, curving and/or rolling roadway alignments, leaf tunnels, views of historic buildings or sites, etc.

Designated scenic or historic roadways are subject to unique design considerations intended to balance preservation and safety goals. Some of the issues associated with planning and design for these roadways include:

- design speeds, sight distance, and grades
- roadway widths
- roadway elements (e.g., horizontal and vertical alignment, driveways, traffic control devices, clear zones and fences, bridges and stream crossings, and views)
- utilities
- roadway lighting
- raised pavement markers

- landscaping and plant material (in reference to Section 4.6 of the updated Prince George’s County Landscape Manual)

The Guidelines for the Design of Scenic and Historic Roadways in Prince George’s County, Maryland prescribes a process for designating scenic and historic roads in the county. As part of its Master Plan of Transportation and Subregion 6 Master Plan, Prince George’s County designated the following routes as Scenic and Historic Roads at the local level.

- Croom Road (between US 301 and Croom Station Road; and between Baden Naylor Road and Acquasco Road)
- Aquasco Road (between Croom Road and Charles County line)
- Mt. Calvert Road
- Croom Airport Road
- St. Thomas Church Road
- Candy Hill Road

6.3 Role of the Trail Comprehensive Management Plan

It is important that the CMP present the character of the trail, in a manner that can enable review of projects and activities. There are three basic steps for such review: understanding trail character, understanding the needs of the traveler, and determining the appropriate treatment. The following sections suggest questions to be asked for the first two, and a process to be followed for the third.

6.3.1 UNDERSTANDING TRAIL CHARACTER

To understand the trail character and how it might be affected, here are common questions to explore:

- What are the elements of the road and roadside design that establish the character of the road and the traveler’s experience in the specific project area?
- Does the road fit closely to the shape of a rolling pastoral landscape?

- Are the roadside details consistent with the rural nature of the area, rather than other transitional or urban areas?
- In a transitional area, do the design elements also change from rural to village (or city) as the driver approaches?

6.3.2 UNDERSTANDING THE NEEDS OF THE TRAVELER

In order to ensure a positive experience for all travelers, here are common questions that need to be addressed when a transportation project is proposed along the trail:

- Who are the users and what are their expectations?
- For a byway traveler, are there potential conflicts between the desired experiences of a visitor whose goal is the appreciation of the scenery or relaxation?
- For the commuter, are there potential conflicts between the desired experiences of wanting to get from point A to point B as quickly as possible?
- Does the route serve as a cut-through route for through travelers due to congestion on higher-order parallel routes?
- Is this the only way to get from one point to another, or are there choices?
- Is the travel experience itself one where the driver feels safe with adequate mobility, or is it congested with unpredictable turning movements?
- Who are the other users of the road and what are their expectations, such as a bicyclist out for a leisurely recreational experience, or a bicycle club looking for a demanding excursion?

6.3.3 DETERMINING APPROPRIATE TREATMENTS

Given the trail character and the range of user expectations, how should a given project proceed in ensuring a positive experience of users along the trail? A general approach to selecting appropriate treatments can be adapted from the U.S. Secretary of the Interior’s Standards for Treatment of Historic Sites. The same framework could help to structure decisions concerning the trail land route. In brief, here are the treatments as described in the Secretary of the Interior’s guidelines, adapted to consider the trail:

- **Preserve** – applies to portions of the roadway or immediately adjacent right-of-way that are nationally significant resources – some of the old historic road traces such as found near Nottingham would be an example of the need to preserve a roadway segment
- **Maintain** – applies to the majority of the land travel route where the goals are to retain the character of the travel experience, while addressing safety and capacity issues – for example along the Baltimore-Washington Parkway in Anne Arundel County
- **Enhance** – applies to sections of the route where the features defining trail character are no longer present or where interpretive opportunities exist – North Point Road near the Aquila Randall Monument would be an example of this type of treatment

7. Addressing Congestion

Visitors by automobile to the nation’s capital are usually quite aware that the Washington, DC metropolitan area is plagued by traffic jams along its major interstates as well as cross-county travel in each of its surrounding jurisdictions. Fortunately, it is possible to travel the route of the Star-Spangled Banner Trail in such a manner as to avoid areas where traffic capacity is a significant issue.

There are two sections of the trail that may be directly affected by transportation projects designed to increase capacity of the roadway. These include the potential for widening the Baltimore-Washington Parkway (currently under study by Eastern Federal Lands Highways), and issues of traffic capacity around Andrews Air Force Base just north of Upper Marlboro.

Capacity issues around Andrews Air Force Base are directly related to activities under BRAC. Current capacity problems at the MD 4/I-495 interchange and intersections of MD 4 with Dower House Road and with Suitland Parkway will be exacerbated by BRAC- related growth and change.

For the Baltimore-Washington Parkway, a study was requested by Congressman C.A. “Dutch” Ruppertsberger to examine the possibility of constructing a third lane in each direction as a way to combat the added traffic expected under BRAC at Fort Meade, expected to attract about 5,400 new workers plus thousands of additional families. The MD SHA is nearing completion on its project to widen the Baltimore County section of the parkway (a 1.5-mile section from I-695 (Baltimore Beltway) south to I-195. Maryland is also studying the potential for widening an additional 3-mile section from I-195 to MD 100. The remaining section in Anne Arundel and Prince George’s Counties is under the jurisdiction of the National Park Service while the road itself is the responsibility of the Federal Highway Administration’s Eastern Federal Lands Highway Division.

The Baltimore-Washington Parkway section of the trail primarily serves as the link between War of 1812 resources in Bladensburg and Baltimore. More than that, the parkway serves as an extension of the park system of the District of Columbia. It is the only automobile travel route between Baltimore and Washington that still retains its distinct character. In places where the parkway is being widened north of I-195 and in the interchanges at Arundel Mills, efforts have been and will be made to retain some of its characteristics, including the extensive use of stone parapet walls, landscaped median, and graded grass shoulders. However, the widening and removal of trees has resulted in the loss of much of the “parkway character,” exposing views of adjoining development. Further erosion of that character would have a negative impact on the Star-Spangled Banner experience.

In this case, to increase capacity, all modes of transportation carrying travelers between Baltimore and Washington should be examined as a comprehensive network. Mass transit in particular should be explored as a way to reduce pressure. Currently, the Penn Line of the MARC train service operates between Baltimore’s Penn Station, through the BWI Airport train station, to Union Station in Washington, DC. Stops include Baltimore City, Odenton, and Bowie State University. In addition, there are four stops north of Penn Station at Martins Airport, Edgewood, Aberdeen, and Perryville. The

Penn Line is the only line of the MARC train service to offer mid-day trips between Baltimore and Washington.

Although modifications are planned for congested intersections near Andrews Air Force Base, it is highly unlikely that the capacity demands will ever be satisfied. Instead, efforts should be directed toward providing front-line hospitality providers with access to route planners having up-to-the-minute traffic conditions to help visitors navigate around congested areas. This could be integrated with a mobile application as well.

There are also other ways to address capacity problems. Although each of the significant War of 1812 sites associated with the major battles are accessible by bus service (including those in Upper Marlboro, Bladensburg, and each of the Baltimore sites), it can be a challenge to travel between Bladensburg and Baltimore train, bus, or bicycle. An important strategy for marketing the trail is to develop itineraries specifically geared to traveling by train, bus, or bicycle as a means of providing visitors with more travel mode choices for the Star-Spangled Banner experience.

Bicycle and pedestrian strategies are specifically addressed in section 9.8 below.

8. Addressing Highway Safety Issues in Rural and Transition Areas

The highway safety analysis has identified several safety issues that are prevalent along the trail. While each of these issues has been addressed for the short term through warning signs, warning flashers, and physical modifications to the roadway and roadside, longer-term strategies and actions should be identified that will both solve the safety issue and maintain the trail character.

The primary issues include

- sight distance issues on certain intersections along rural, two-lane sections of the travel route

- speed related conflicts including transitions between speed zones approaching towns and populated places
- the need for pull-offs where visitor attractions or views may slow vehicles in travel lanes
- pedestrian and bicycle safety on rural roads
- pedestrian safety in urban areas

There are a number of mitigation strategies that are in use along the roadway that should continue to be utilized to reduce the potential safety risks associated with crashes on two lane rural and transitional roadways:

- centerline rumble strips – rumble strips along the centerline that divides opposing traffic
- reduced density of access points – reduce the number of driveways/access points per mile
- horizontal alignment/advisory speed signs – combination horizontal alignment/advisory speed signs are installed prior to a change in the horizontal alignment to indicate that drivers need to reduce speed
- changeable speed warning signs – individual changeable speed warning signs give individual drivers real-time feedback regarding their speed
- intersection lighting – intersection lighting includes conventional forms of installing luminaires to illuminate the intersection and approaches
- increased sight distance – provide increased sight distance for vehicles turning off minor streets

8.1 Increasing Sight Distance

Four of the six measures identified above can be installed with minimal impact on the character of the travel route. However, modifying intersections to increase sight distances and adding lighting to a rural intersection may need some special care. Figure L.5 illustrates the basic principles for increasing sight distances while maintaining trail character. Two alternatives are shown for the intersection of Duley Station and Croom Roads. The design principles as illustrated in the concept study for intersections include:

- make minor adjustments to the alignment to center the roadway along existing pavement and cleared areas



Concept Plan for Increasing Sight Distances at Duley Station Road and Croom Road

- maximize shoulder space by maintaining existing pavement free from debris
- lay back slopes to increase sight distances by utilizing either naturally shaped cut slopes or a low retaining wall constructed with local materials

For intersections with particularly high crash densities, consider installing a roundabout as a means of reducing speeds through the intersections and reducing the potential for right-angle crashes, which are typically the most severe.

9. Design, Maintenance, and Management Guidelines

The following pages describe the types of design elements in general terms that, if incorporated into the day-to-day practices of the MD SHA and each county, could help to achieve the desired regional design principles for rural, transition, and urban areas along the trail. Guidelines for these elements are intended to be conceptual only, as a way

to provide a framework for achieving the desired character of the trail. Actual use of these guidelines will require more detailed examination of the specific conditions.

9.1 Application of Design Elements and Consistency with AASHTO and State Design Policy

Any proposed design element selected for use along the trail should be consistent with Maryland or American Association of State Highway and Transportation Officials (AASHTO) design guidance and policy, or both. The design exception process can be used when professional engineering judgment indicates that design elements and values are needed that do not meet the minimums associated with those policies in order to avoid or minimize impacts to environmental, historic, cultural, and community values and to maintain the trail character.

The following pages describe the general concepts for the following design elements:

- alignment and geometry
- drainage
- roadside appurtenances (guardrail, traffic control and signs, utilities, and lighting)
- bridges
- landscape
- access management
- roadside maintenance

9.2 Roadway Alignment and Geometry

Geometric changes should be made with an eye to maintaining the character of the original road as much as possible within safety parameters. Where safety measures are needed to reduce crash risk due to existing obstacles in the clear area, the first step should be to remove obstacles if possible. If not possible due to financial or environmental considerations, then efforts should be made to make the obstacles more visible or place a suitable barrier in front of them.

Care should be taken to avoid inadvertently increasing the operating speeds of the road further downstream – transferring the risk from one location to another – by opening up the sight lines to accommodate vehicles that routinely exceed the posted speed limit. Where modifications to the roadway and roadside are needed for the purpose of reducing risk, increasing road capacity, or providing access or egress to the highway, efforts should be made to match the existing edge conditions prior to when the construction took place (e.g., replace stone walls with like kind).



Use of a thicker edge line brings driver attention to the curve as an alternative to modifying the alignment to increase safety (Maryland Historic National Road)

9.2.1 RURAL AREAS

Most of the roadway work along travel routes in rural areas will not be located on new alignment. Where an alignment shift is proposed to increase sight distance, then design speeds should be selected that match the capability of the terrain rather than significantly altering the terrain to accommodate a high-speed roadway.

9.2.2 TRANSITION AREAS

In transition areas an alignment shift should be considered as a means for slowing travel speeds. This can be accomplished with a splitter island, a chicane (a roadway feature deflecting traffic slightly), or a roundabout. Deliberate alignment shifts to reduce travel speeds are effective, self-enforcing methods of slowing traffic.

9.3 Roundabouts

MD SHA has adopted a policy that roundabouts will be considered at all intersections where improvements are under consideration. This policy has led to one of the highest number of roundabouts constructed on a state system in the country. According to the MD SHA's website, Maryland has 62 operating roundabouts. Roundabouts provide less dangerous approach angles and inducing lower operating speeds, thus reducing the rate and severity of crashes. Where roundabouts have replaced traffic signals in the state, crashes have decreased by more than 60 percent and injuries by more than 75 percent. There are roundabouts located at some Baltimore-Washington Parkway exits, including at Arundel Mills Boulevard.

9.3.1 DESIGN ELEMENTS OF A ROUNDABOUT (FHWA)

A roundabout is beneficial in terms of slowing the overall rate of speed as drivers approach a settled area, and can serve as a strong visual clue for transition areas where drivers adjust from rural to urban driving patterns. While modern roundabouts have been proven to increase the safety of intersections, however, modern roundabout design is sometimes difficult to fit within a historic road context.

Naturally a "modern" roundabout is not part of the traditional travel pattern of a historic community, and

therefore will introduce a new visual element to a traditional settlement pattern. When an intersection along the trail has reached the point where either its capacity has been exceeded or its crash rates have reached an unacceptable level, then MD SHA will typically initiate a study to determine the most appropriate measures for addressing the areas of concern.

Where roundabouts are considered, compared with other measures (stop control, signalization, road widening, etc.), and the analysis results in a decision to construct a roundabout, the following guidelines should be considered to establish a better fit within its historic context.

There are a number of visual design elements associated with a roundabout where changes to materials or design can result in a better fit with its surroundings:

- central island – the raised area around which traffic circulates (counter clockwise)
- circulator roadway – the curved vehicular path traveling counter clockwise around the center island
- apron – typically used to accommodate turning movements of larger vehicles using mountable surfaces circumscribing the center island.
- splitter (approach) islands – a raised or planted area on approach used to separate entering from existing traffic, deflect and slow entering traffic, and provide a pedestrian refuge
- accessible pedestrian crossings (at splitter islands) – typically cut through the splitter island
- landscape elements – used to control pedestrian circulation around the perimeter as well as direct sight lines to reinforce desired movement around the roundabout

9.3.2 ROUNDABOUT DESIGN ELEMENT: CURBS AND DRAINAGE

Typically, the central island, the circulatory roadway and splitter islands are formed with curbs, while the apron is contained with a mountable curb. Concrete can be tinted to take away its typical bright white color (although care should be taken to only tint enough to reduce brightness, not

visibility). Most color concrete tints can be matched with a particular aged concrete or rock sample taken from the area.

In rural areas, the amount of curbing can be reduced by removing the curbing on all of the approaches and the outside of the circulatory roadway. However, curbing provides an important visual clue on the approach areas and helps to maintain the pavement edges. Alternative approaches might include using a flush concrete curb. Thicker edged lines or rumble strips could be considered in lieu of curbing or striping to mark the circulatory roadway. The type of curb can also be modified to be more of a mountable or header curb that does not need a gutter pan.

In transition areas, the roundabouts should serve to shift driver perception from rural to urban. Therefore the approach to the roundabout from the rural side should remain to accommodate open drainage. Introduction of the curb and gutter should start with a flush curb and then shift to the barrier or mountable curb at the splitter island. On the urban side the curb should continue to form the edge as desirable for an urban street section with a sidewalk and street trees.

9.3.3 ROUNDABOUT DESIGN ELEMENT: LANDSCAPING

Landscape elements are often utilized to control pedestrian circulation and guide sight lines through a roundabout. Roundabouts can be confusing to drivers if they can see all the way through to the other side. Instead, landscaping should be utilized in the central island to block drivers' view through it, while maintaining the intersecting sight lines from approach roadways.

In rural areas, the landscape treatment should be informal, using a mass of high shrubs and small trees to form a thicket, in a manner that might be found on adjoining farm fields that have been spared by the plow. Perennial grasses should be considered with minimal mowing requirements (enough to maintain flowering periods and to self propagate the meadow while controlling woody growth).

In transition areas, the landscape treatment can be more formal through the use of hedges around the perimeter to control pedestrian circulation, and a central planting grove of

small flowering trees surrounded by an apron of mown grass or groundcovers.

9.3.4 ROUNDABOUT DESIGN ELEMENT: APRONS

The materials used for the apron can also establish a distinct identity at the roundabout. Aprons must be drivable, but they do not need to be smooth. The use of textured concrete or paving blocks can be utilized to create an aesthetically appealing look.

In rural areas, the pattern can pick up on the local soil color or texture by using an exposed aggregate concrete, where the aggregate is a local stone product.

In urban areas, brick patterns may be more appropriate, utilizing a placement pattern that reflects local patterns (e.g., running bond or basket weave).



Roundabouts as part of the US Route 50 Traffic Calming Project manage both congestion and safety issues. The level of service at the intersection (US Route 50 and US Route 15, a National Scenic Byway) improved from “F” to “A” at one-tenth of the cost of a traditionally engineered intersection that was originally planned for the site.

9.4 Traffic Calming

Traffic calming measures are also a modern design element inserted into a traditional roadway pattern. Traffic calming measures are needed in the transition areas approaching towns and villages along the trail as a means of slowing down drivers.

The typical design elements for traffic calming measures along rural highways are similar to those of roundabouts in that they involve altering the horizontal alignment of the roadway. (Vertical elements are only appropriate for

neighborhood traffic calming, where greater pedestrian protection is needed.)

The same principles for a roundabout would apply to any splitter islands constructed to slow traffic. In village or urban areas, the primary tool is the curb extension at intersections. In this case, the areas where parking is not allowed are replaced with a curb and gutter, sidewalk, and planting area.

9.5 Managing Access

Throughout the rural and transition areas of the trail a significant issue is the provision of access to a state highway. According to MD SHA’s web page on access management (<http://www.marylandroads.com/Index.aspx?PageId=402>):

Under Maryland law, a property owner is entitled to access to a State highway that abuts his or her property unless certain conditions identified in 8-625 apply or the State owns controls of access along the highway right-of-way. Access controls are real property rights owned by the State that legally deny access to abutting property. They are intended to preserve safety and traffic operating characteristics required of freeways, other important highway segments, and key intersection approaches.

Maryland statutes require “owners, or their duly authorized representatives (i.e., developers, constructors, tenants, lessees, etc.), of land newly being developed commercially, industrially, or as a subdivision, and/or part of an existing subdivision desiring access to a state highway, to apply for a MD SHA permit. In addition, residential entrances and any construction activities within state highway rights-of-way require a permit. It should also be noted that any work on a state highway that may be required by a local government to secure the permit to build a commercial, industrial, or subdivision project (such as adequate facilities ordinances, etc.) will also require a permit regardless of whether or not access is part of that work (adding a turn lane to an intersection to mitigate traffic impacts, for example).

It is in the process for application for a permit for access to a state highway, in this case to a designated scenic byway, where MD SHA staff and their county counterparts can take steps to support the byway designation and the vision, goals and strategies outlined in the CMP. Through such negotiation some of the issues associated with providing access are resolved, such as shortening or narrowing

acceleration and deceleration lanes to maintain trail character. Field observation may be the best method for achieving the desired results, such as for determining if narrowing or shortening lanes could result in avoiding an environmental or historic feature worth saving or reducing the amount of grading.

The potential for adverse effects to the visual quality of the traveling experience along the trail can be reduced through consideration of the following alternative approaches.

- Any modification to the horizontal and vertical alignment of the trail that may be needed to accommodate access should consider and be responsive to the existing topography, vegetation, and other historic features of the trail and its existing alignment.
- The length and width of acceleration, deceleration, and left turn lanes should be minimized,
- Curb and gutter use within the rural area should be minimized and eliminated, if possible.
- Drainage features should be designed to reduce all visual contrast with the rural landscape through the use of infiltration measures and related wetland vegetation rather than open ditches with grass and rip-rap.
- In order to reduce the potential impact of providing access, efforts should be made to reduce operating speeds approaching the intersection through the use of traffic calming techniques in advance of the intersecting roadway (such as advance warning measures, thickening edge line striping, narrowing travel lanes approaching the intersection, and increasing the amount of “visual friction” approaching the intersection utilizing roadside vegetation to narrow the look and feel of the roadway).
- All roadway lighting associated with the trail and the intersecting access road should use full cut-off optic luminaires (allowing no light at or above the horizontal plane of the luminaire – the lighting element – to minimize light pollution) and should be limited in number and height to the minimum necessary to provide safe vehicular, pedestrian, and bicycle travel.

9.6 Alternative Treatments for Drainage and Stormwater Management

Thanks to long-standing environmental programs to reduce pollution from effluent pipes (“points”), nonpoint source runoff is now the major cause of water pollution. Runoff enters water bodies from diffuse origins in the watershed. Maryland SHA routinely incorporates measures to control nonpoint source water pollution from roadways. It is possible, however, to increase the amount of nonpoint source pollution that is treated along the roadside before it joins other surface waters and is carried to the Chesapeake Bay.



Example of an infiltration area associated with a highway in lieu of traditional drainage

Roadside drainage should use best management practices and Low Impact Development (LID) to maintain the pre-development hydrology as much as possible, and retrofit existing roadside drainage and ditches. Bioretention, dry wells, filter strips, grassed swales, infiltration trenches, inlet pollution traps/removal devices, and permeable pavers and pavement are some of the common LID tools that can be considered for each particular project on a case by case basis.

While it is important for surface water to be removed from the driving surface and shoulders as quickly as possible, it is neither necessary nor desirable to deposit the water directly into the natural watercourse at a high rate of speed, even with dissipaters at outfalls commonly constructed as part of roadway drainage systems to slow the speed of the water. Instead, efforts should be made to allocate more space so that surface runoff can either infiltrate into groundwater

(using infiltration ditches, for example), or be retained and treated in a passive retention system using constructed wetlands to be released at the pre-development rate.

Along rural stretches of scenic roadway, drainage facilities can be designed to blend into the landscape without calling attention to their appearance. Soil bioengineering can be utilized as a means of controlling erosion and slowing down the erosive forces of stormwater. Soil bioengineering uses live plant materials to provide erosion control, slope and stream bank stabilization, landscape restoration, and wildlife habitat. Soil bioengineering systems are woven together to stabilize the banks, and they grow stronger as vegetation becomes established. Once established, this living material effectively controls water runoff and wind erosion; minimizes frost heaving effects by binding the soil with roots; filters soil from runoff; intercepts raindrops, reducing soil erosion; improves rainwater percolation into the ground; and moderates ground and water temperatures.

One of the most important advantages of soil bioengineering is that it saves money. Compared with the traditional drainage methods, soil bioengineering typically costs less for materials (native plants and seed only require harvesting, handling, and transporting plant materials from a local site to a local site) and heavy or specialized equipment is not necessary. Project areas do require periodic monitoring. On highly erosive sites, maintenance will be needed until plants are established. Maintenance may include additional hydro mulching and replacement of plant materials that did not take hold.



In urban areas, rain gardens using native plants are attractive and imaginative ways to provide drainage and improved landscaping, even improved wildlife habitat.

9.7 Maintaining the Character of Bridges

The crossing of rivers, streams and wetlands offers an important opportunity to highlight the trail's water resources, the importance of the tributaries to the Chesapeake Bay in maintaining water quality, and the aesthetic quality of the Chesapeake Bay's beautiful water resources.

There are a number of historic bridges along the trail that will need to be considered for either preservation or at least maintaining the character of the bridge structure. The following bridges are included within the MD SHA historic bridge inventory:

- Baltimore-Annapolis Road over Baltimore-Washington Parkway BC 5401 3 1919, 1949 B-4573
- Baltimore Fort Avenue over CSX Transportation BC 8022 3 1920 B-4584
- Bowens/Benedict MD 231 over Patuxent River: Benedict Bridge 400800 7 1950 CT-1214
- Croom MD 382 over Charles Branch 1606100 5 1933 PG-82B-39
- Croom MD 382 over Mataponi Creek 1606200 6 c. 1930 PG-86A-28

There are a number of bridges along the trail that will need to be replaced or reconstructed over the life of this plan. Using appropriate detailing to maintain a distinct visual identity on parapet walls and abutments can help to maintain the trail character. Intervention is possible by following some basic guidelines:

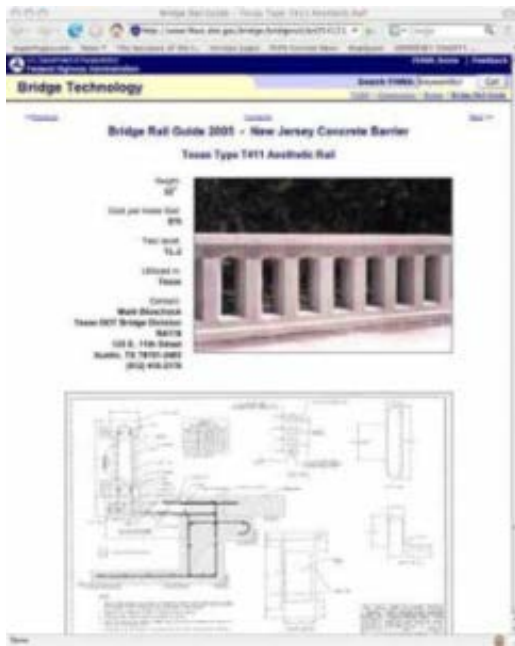
- maintain existing vertical and horizontal alignment
- utilize appropriate design speed – one that accepts the current posted design speed
- work within the existing bridge footprint and replace in kind
- use railings that are either similar to the existing bridge rail, or if that rail is no longer feasible, use railings that maintain open views to the landscape beyond
- consider using box beams as an alternative approach for the guide rail
- utilize color-galvanized or anodized steel (dark brown) to reduce visual contrast with the

surrounding landscape (and the roadway, in some cases)

- for bridge abutments, consider utilizing tinted or textured concrete to take away from the high contrast of bright white concrete; in replacing timber abutments, it may be possible to use concrete and texture or tint the concrete to give the appearance or texture of the timber abutments



Bicycle conditions along rural portions of the trail could be improved through better maintenance of existing pavement and minor adjustments to lane and shoulder widths



Example of Texas Type C41 railing for use on bridge abutments in transition and urban areas

9.8 Bicycling

Portions of the trail, especially in Southern Maryland and the North Point Peninsula, are a natural magnet for bicycle touring due to both the interesting countryside that it traverses, but also due to their relative proximity to population centers. The Rural Tier of Prince George’s County is the subject of numerous bicycle rides mapped and promoted by the Oxon Hill Bicycle Club. There is a need to manage this use over time to minimize future conflicts between the varying types of roadway users. The following techniques should be utilized prior to considering any modification to the roadway for bicycle facilities along the trail:

- start with the assumption that a state or nationally-designated byway is attractive to bicyclists because of the same characteristics that would be compromised if a road is widened to accommodate them – and therefore has a specific set of constraints that need to be considered prior to adding shoulder width or other bicycling accommodations
- focus on shared use of existing paved surface rather than striping a specific area as a bicycle lane
- remove encroaching vegetation and built up sedimentation on existing pavement
- utilize bicycle friendly drainage details
- provide “share the road signage”
- consider parallel and low volume routes when available, rather than widening the trail to increase shoulder width

Where feasible, provide additional width of paved surface on those routes with higher traffic volumes or in developing areas. The following steps offer a process aiming for changes that will not detract from the trail character:

- first, develop measures to slow travel speeds to reduce the need for additional pavement
- focus efforts to provide additional pavement in areas with greatest need (higher volumes, higher density of driveways or intersecting streets, long ascending grades)
- where additional pavement width is needed, carefully insert alterations to blend with existing topographic and drainage patterns
- in wooded areas, consider preservation of mature roadside trees by minimizing cut and fill sections in critical root zones, or consider alternatives to

adding pavement (e.g., share-the-road sections where space is limited)

- where additional pavement width is thought needed, consider the potential impact on operating speeds (higher operating speeds typically result from wider pavement)
- where insufficient roadway pavement width can be obtained due to right-of-way and/or trail-related constraints, utilize the “share the road” signage noted above or a pavement marking system

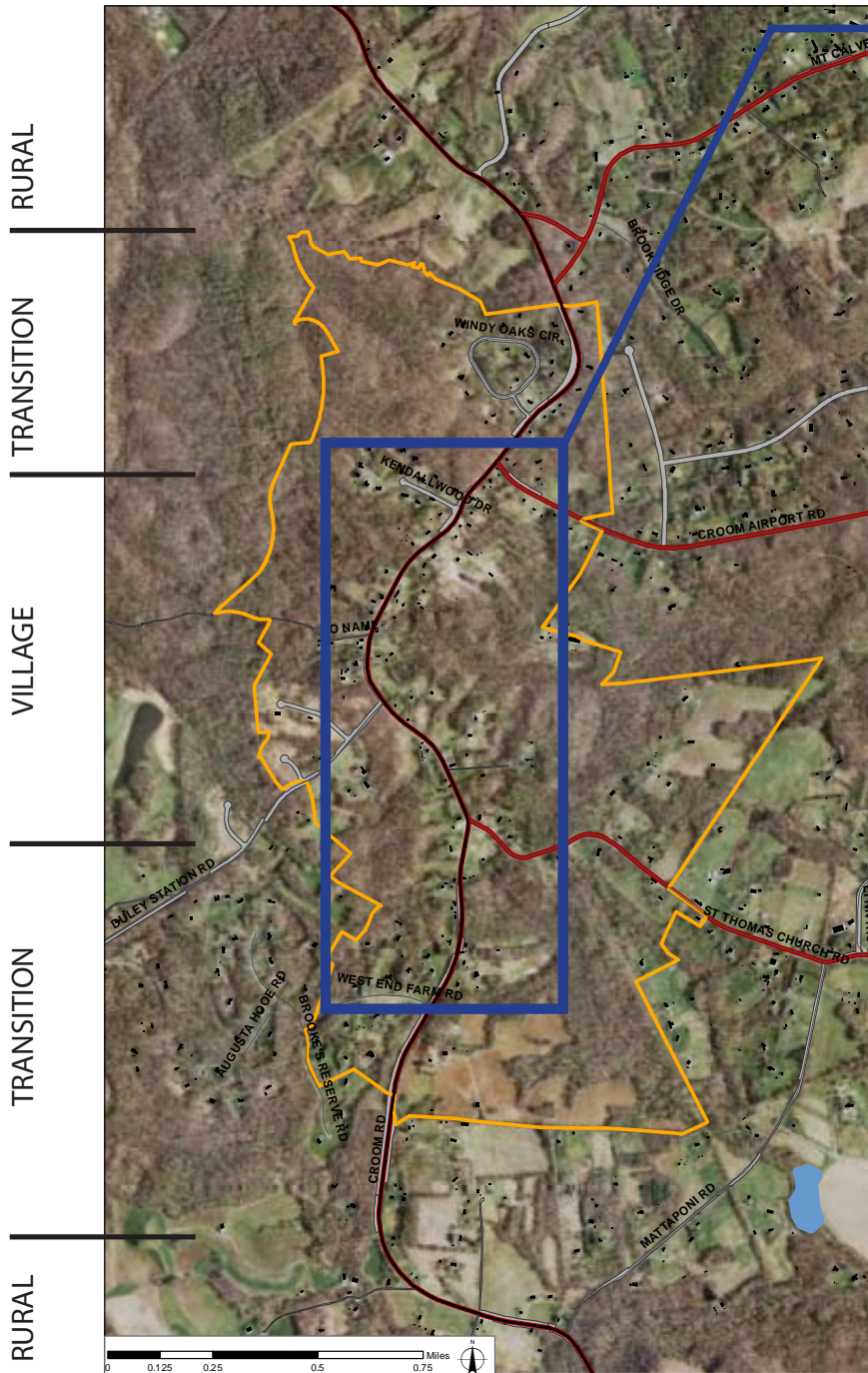
Figures L.4a through L.4g illustrate a number of enhancements in the Croom Road Corridor of Prince George’s County that would enhance bicycle safety.



Sediment collecting along roadways hinders bicycle safety

Prince George's County - Croom Road Bicycle Safety Enhancements

Fig. L.4a



Issues and Concerns

- High crash density
- Inadequate sight lines
- Debris on shoulders inhibit bike use
- Inadequate shoulder widths inhibit safe bicycle use
- Vegetation encroaches on sight lines
- Inadequate lighting at intersections

Possible Improvements

- Adjust centerlines to improve sight distances
- Provide adequate shoulders in high crash density areas

Prince George's County - Croom Road Bicycle Safety Enhancements

Fig. L.4b



View south towards Croom Airport Road



View south towards Kendalwood Drive



View north at Duley Station Road



View north at Old Rectory Lane



View north at St. Thomas Church Road



4 Lengthen sight lines and provide 4'-5' shoulders for bicyclists in high accident areas (Croom Airport Road intersection)

3 Accommodating bicyclists on shoulder in a cut situation (Duley Station Road)

2 Accommodating bicyclists on shoulder in a fill situation (Old Rectory Lane)

1 Lengthen sight lines and provide 4'-5' shoulders for bicyclists (St Thomas Church Road)

LEGEND

CRASH DENSITY

HIGH LOW

— STAR-SPANGLED BANNER SCENIC BYWAY

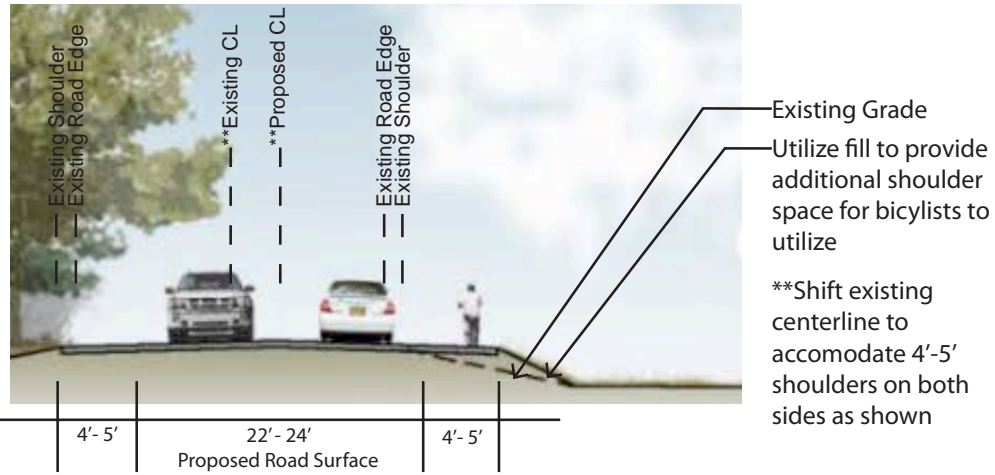
— SIDE TRACKS

Kittleson & Associates, Inc.
transportation engineering / planning

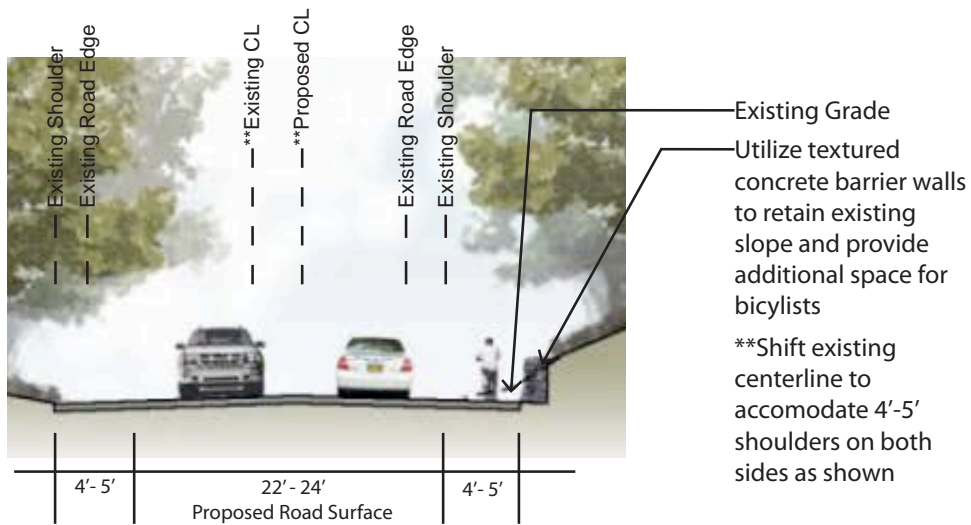
CRASH DENSITY ANALYSIS
prepared by: Kittleson & Associates, Inc.

Prince George's County - Croom Road Bicycle Safety Enhancements

Fig. L.4c



Typical Fill Section - Fill One Side and Change Alignment To Center



Typical Cut Section Using Textured Concrete Barrier Walls and Backfill

TECHNIQUES

Prince George's County - Croom Road Bicycle Safety Enhancements

Fig. L.4d



Existing Conditions

Issues and Concerns:

- Bicyclists are provided with limited or no space for use on existing shoulders
- Debris, guardrails and existing signage further inhibit bicyclists at this location



Proposed Conditions

Shift centerline of Croom Road approximately 2'-3' west to extend sight lines and allow for 4'-5' bike lane on both sides and move obstructions out of clear areas as necessary

Pave existing shoulder, remove vegetation and debris, mill and resurface uneven pavements to provide additional bicycle safety

Prince George's County - Croom Road Bicycle Safety Enhancements

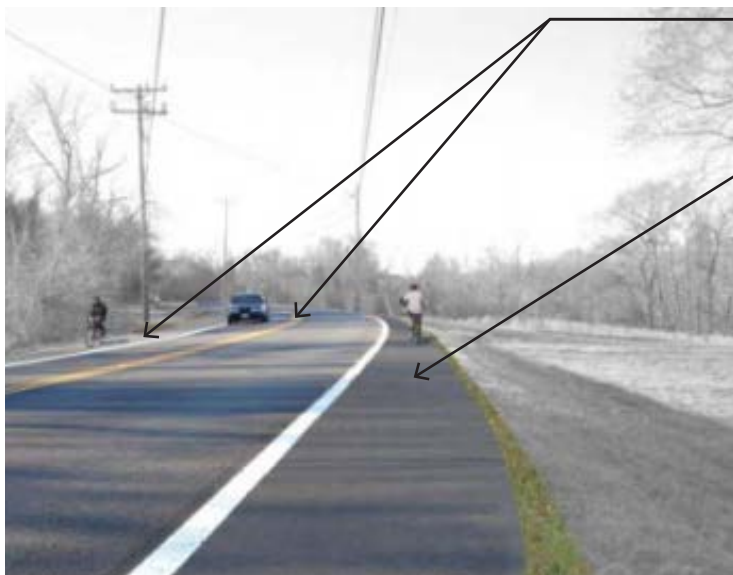
Fig. L.4e



Existing Conditions

Issues and Concerns:

- High crash densities in this area may be due to inadequate sight lines for conditions
- Bicyclists are provided with limited or no space for use on existing shoulders



Shift centerline of Croom Road approximately 2'-3' east to extend sight lines and allow for 4'-5' bike lane on south bound side

Fill as required to expand shoulder to approximately 4'-5' width to allow for safe bicycle use

Proposed Conditions

Prince George's County - Croom Road Bicycle Safety Enhancements

Fig. L.4f



Existing Conditions

Issues and Concerns:

- High crash densities in this area may be due to inadequate sight lines
- Bicyclists are provided with limited or no space for use on existing shoulders
- Existing topography inhibits sight lines to south bound vehicles
- Uneven shoulders at Duley Station Road create difficult condition for bicyclists



Proposed Conditions

- Replant all disturbed areas with native trees and shrubs
- Low, crashworthy stone walls create additional shoulder space for bicycle use and open up sight lines
- Relocate existing utility pole to accommodate new alignment
- Consolidate utility lines where possible to increase planting areas adjacent to roadway
- Add vegetation at location of the former alignment to increase buffer of existing homes
- Add pigment to shoulder paving to increase visibility of pedestrians and slow traffic

Prince George's County - Croom Road Bicycle Safety Enhancements

Fig. L.4g



Existing Conditions

Issues and Concerns:

- High crash densities in this area may be due to inadequate sight lines
- Bicyclists are provided with limited space for use on existing shoulders
- Debris and existing signage further inhibit bicyclists at this location



Proposed Conditions

- Shift Croom Road centerline approximately 2'-3' to the west
- Relocate existing signage to provide enough clear space for bicyclists using the shoulder and to open up sight lines
- Alignment shift allows for approximately 4'-5' shoulders on both sides
- Alignment shift allows for approximately 2'-3' additional space for vehicles to utilize when entering Croom Road, allowing additional sight distance to oncoming traffic

9.9 Aging Commercial Corridors

The trail traverses through the following aging commercial corridors in order to access significant War of 1812 resources:

- Pennsylvania Avenue, Prince George’s County and District of Columbia
- Bladensburg Road
- Russell Street approaching Baltimore
- Eastern Avenue
- North Point Road and portions of North Point Boulevard including the Aquila Randall Monument – see Figure L.9a for an illustration of ways to enhance the area around the Aquila Randall Monument or alternatively relocate it to another site



Portions of Bladensburg Road will be undergoing improvements as part of a “green highway” demonstration project

Guidelines are needed to reshape the appearance of these corridors over time and should focus on the following:

- greening programs – including LID guidelines for stormwater management as explained above, infiltration areas/rain gardens, street trees, and frontage area landscape guidelines (refer to example or sidebar of Prince George’s County Landscape Manual)
- commercial signage guidelines – demonstrate how signage can be better designed and integrated with the travel experience.

As these corridors are reshaped in appearance, long-range planning and guidelines should also anticipate opportunities for adding or enhancing pedestrian and bicycle facilities. Guidelines are needed to show how these commercial

corridors can be redesigned to better accommodate these needs, especially in the vicinity of the Aquila Randall Monument.



Before and after photographs of Lexington, Virginia’s Nelson Street Corridor where sign clutter was reduced over a ten year period (photos courtesy of City of Lexington, VA)

10. Enhancing Multi-Modal Opportunities

While it is feasible to access many of the sites along the trail by alternative means of transportation, it is not easy. There are several priority actions that could help enhance the experience of traveling along the trail and to its destinations by bicycle, on foot, and by water.

10.1 US Bike Route 1

The U.S. Bicycle Route System was established in 1982 by the American Association of State Highway and Transportation Officials (AASHTO) for facilitating long-distance bicycle travel on routes that are the most



suitable for that purpose. Delaware, Maryland and D.C. have routes for USBR 1 in mind and are preparing strategies and adjoining state coordination in order to get the implementation process started.

US Bike Route 1 provides an opportunity to provide long distance bicycle riding as part of the Star-Spangled Banner experience. There are several existing pieces of trail, as well as planned trails and bike routes along the trail corridor. Identifying the routes that would complement the purposes of the trail could influence both their priority among other bike projects and the design considerations.

Table L.1 provides the locations of these existing and planned bike routes that could be adopted as part of US Bike Route 1 in Maryland, as well as other bike routes that are currently used throughout the system. A Star-Spangled Bike Route would be an appropriate designation for a parallel system of connected bike routes along the entire trail. Making the bike route a part of the trail corridor would establish both safer and more enjoyable way to experience the trail without getting in your car.

10.2 Priority Areas for Pedestrian and Bicycle safety Projects

There are multiple areas along the trail where there are clusters of War of 1812 resources within walking distance of each other, of a transit station or bus stop, or near a water trail access point. These areas should receive the highest priority for enhancements designed to improve both the safety and quality of the pedestrian connections. Concept plans have been prepared for five of the priority sites that incorporate pedestrian facilities including:

- **Solomons** – An opportunity exists to connect the Solomons public boat ramp, the visitor center and the waterfront area with an interpretive walk along the riverfront (figure L.5). Additional opportunities would include a bicycle rental facility, and War of 1812 interpretive displays at the visitor center.
- **Benedict** – An opportunity exists to establish a trailhead at the entrance to Benedict that links together the Patuxent River and Benedict Waterfront, DNR managed lands surrounding

Benedict, Serenity Farms and Maxwell House (figures L.6a and L.6b).

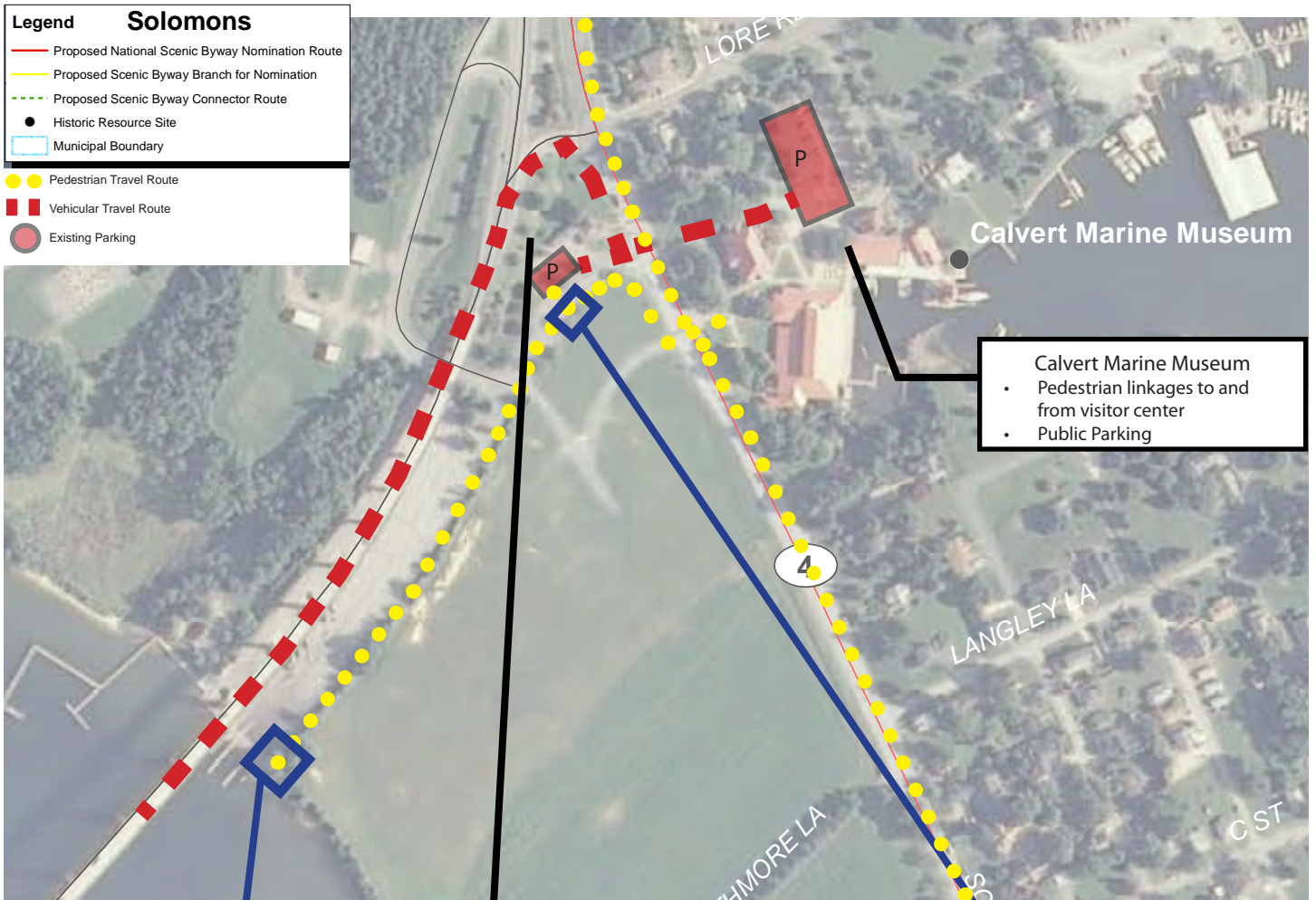
- **Upper Marlboro** – An opportunity exists to link together War of 1812 sites throughout Upper Marlboro with an interpreted walking trail (figures L.7a and L.7b).
- **Bladensburg** - A convergence of projects and programs in and around Bladensburg may lead to finally solving the problem of the lack of safe pedestrian crossing between historic sites north of MD 450 with Bladensburg Waterfront Park to the south. The town of Bladensburg along with their partners at US EPA, conducted a “green streets” design charrette that incorporated measures to reduce stormwater runoff, increase energy efficiency, reduce green house gases through the use of recycled materials, revitalize neighborhoods, reduce pollution into the Anacostia, and develop a more pedestrian friendly and aesthetically pleasing street. With preliminary engineering work underway, along with other modifications to the US Route 1 /Peace Cross intersection and MD 201 there is a high probability that at safe pedestrian crossings can be achieved as well as better pedestrian connections along MD 450 (figures 5.12, L.8a, and L.8b).
- **North Point Heritage Greenway** – Similarly there is a convergence of planning underway to develop a parallel multi-use trail along North Point Road to North Point State Park (figure 5.13). An opportunity also exists to enhance visitor safety at the Aquilla Randall Monument site (figure L.9a).

10.3 Linking the Trail to Public Transportation

Between Upper Marlboro and Baltimore there are a number of locations where sites along the trail are accessible by Alternative transportation. Linking together public transportation with walkable and bicycle friendly sections of the trail is an important strategy for ensuring that there is a wide range of modal choice for traveling along the trail as well as providing the means for meeting the recreational purposes of the trail. Table L.1 above identifies the locations for walkable and bicycle friendly clusters of sites along the trail.

Calvert County - Solomons Island Circulation Concept

Fig. L.5



Solomons Public Boat Ramp and Fishing Pier

- Consider walking path along Patuxent River
- Interpretive opportunity oriented towards watercraft users



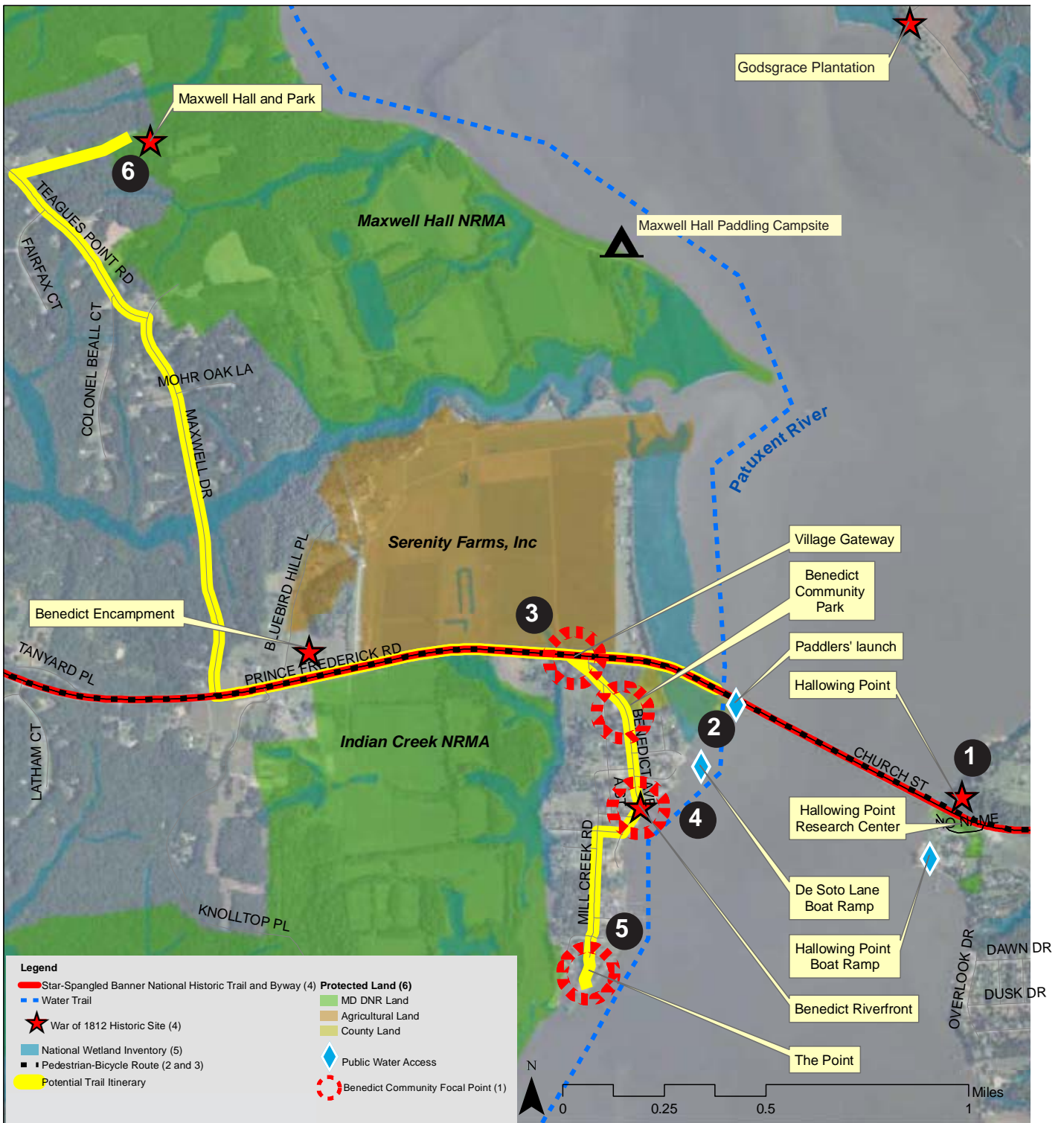
Solomons Visitors Center

- Incorporate War of 1812 orientation panel into outdoor covered displays
- Consider bike rental facility (vendor) as per Solomons Master Plan



Interpretive Pulloff Opportunity





Sources (The data layers listed in the legend above show corresponding source numbers in parenthesis) :

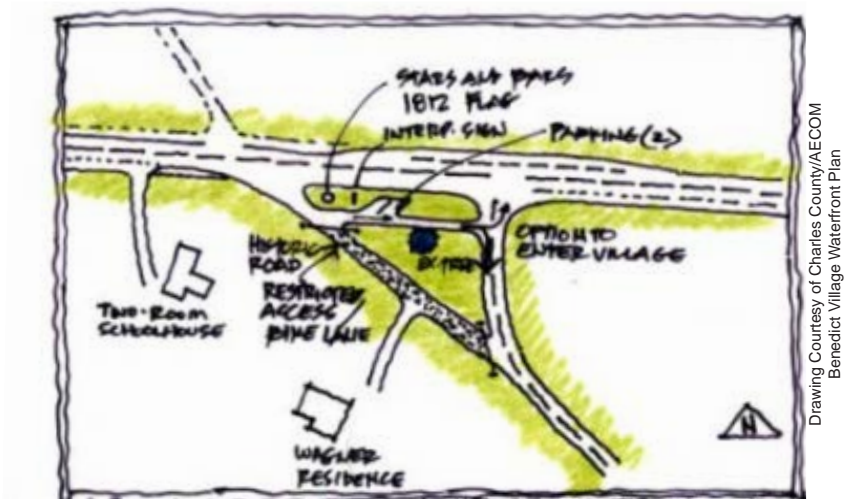
1. Benedict Waterfront Village Revitalization Plan. May 4, 2011
2. Charles County Comprehensive Plan 2006
3. Maryland Department of Transportation Bicycle Map 2011
4. Wallace Roberts & Todd, LLC
5. U.S. Fish & Wildlife Service -- National Wetlands Inventory
6. Maryland Department of Natural Resources

Charles County - Benedict Walking Trails & Destination Opportunities

Fig. L.6b

Potential Walking Itinerary

- 1 Travel the Byway from Hallowing Point, crossing the bridge into Benedict.
- 2 Parking opportunity and water access to the Patuxent Water Trail at Benedict Community Park pull-off on Prince Frederick Road (231) Bridge
- 3 Interpretive opportunity at the Village Gateway
- 4 Walk Benedict's Riverfront
- 5 Stop at the Point for scenic views
- 6 Return to Prince Frederick Road (231) and take Maxwell Drive to Teagues Point Road to visit Maxwell Hall and surrounding park grounds



Drawing Courtesy of Charles County/AECOM
Benedict Village Waterfront Plan

3 Benedict Village Gateway



Existing Conditions (view east)

Possible connection to Patuxent River Water Trail

Excessive paved areas could be reduced / replaced with pervious pavers / used for interpretive pulloff(s)

Site already used as informal pull-off / River Access



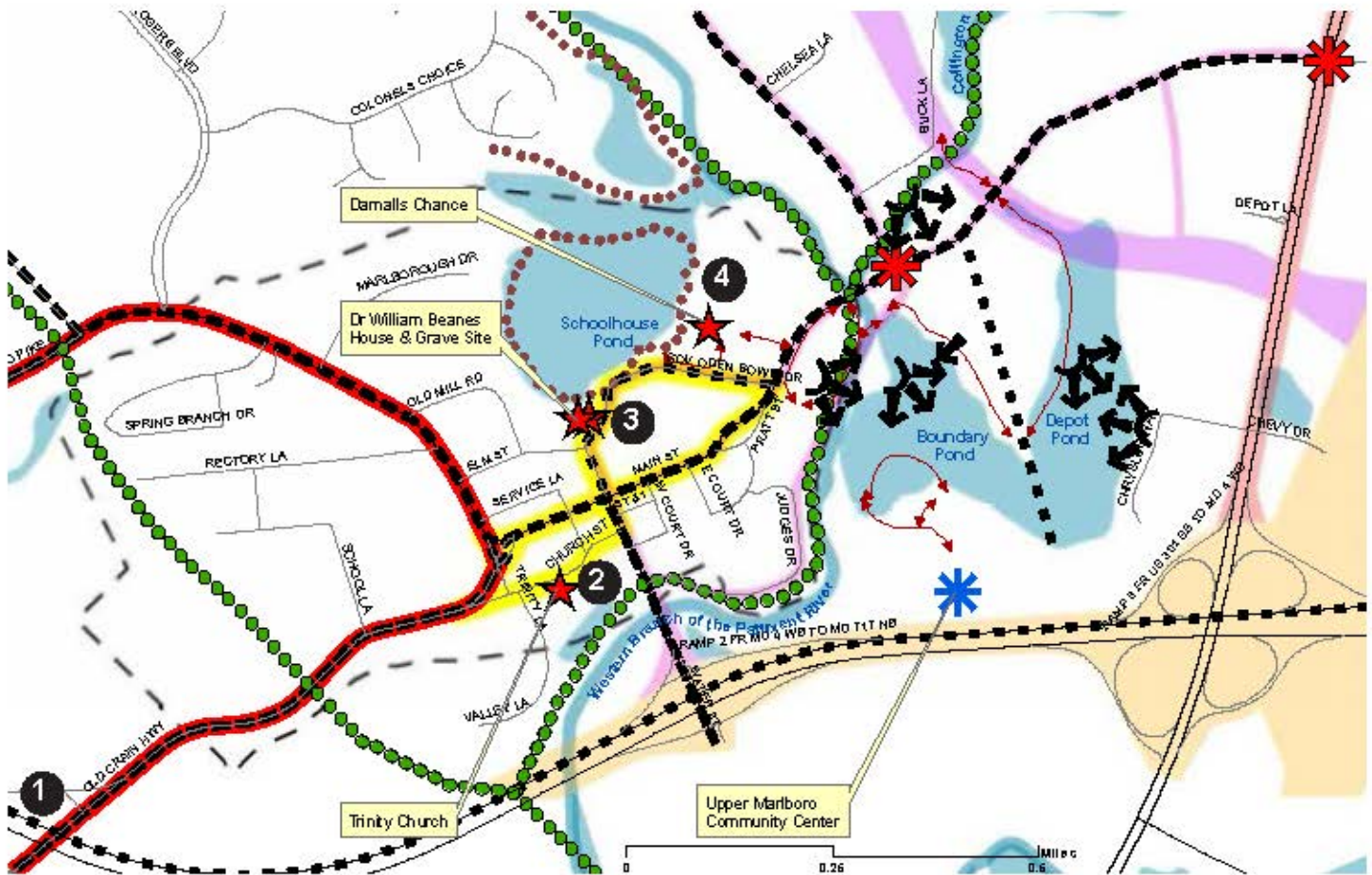
2 Pull-off at Prince Frederick Road (231) Bridge



Entrance Sign on Maxwell Drive.

Prince George's County - Upper Marlboro Walking Trails & Destination Opportunities

Fig. L.7a



Legend

- Star-Spangled Banner National Historic Trail and Byway (4)
- Upper Marlboro Municipal Boundary (5)
- Gateway (3)
- War of 1812 Historic Site (4)
- Arterial (Old Rt 301)
- Expressway (New 202)
- Freeway (New Rt 301)
- Primary
- National Wetland Inventory (6)
- Existing Trail (3)*
- Proposed Bikeway/Sidepath (1)
- Proposed Park Trail (1)*
- Trail Opportunity (3)
- Potential Walking Itinerary
- View Point (3)

*Diagrammatic only- not actual alignment

Sources (The data layers listed in the legend above show corresponding source numbers in parenthesis) :

- Prince George's Preliminary Countywide Master Plan of Transportation (December 2008)
- Prince George's County Subregion 6 Preliminary Master Plan and Proposed Sectional Map Amendment
- Upper Marlboro Maryland Revitalization and Development Strategy. Design Collective. 03/03/11 powerpoint presentation.
- Wallace Roberts & Todd, LLC
- Maryland Department of Planning
- U.S. Fish & Wildlife Service -- National Wetlands Inventory

Potential Walking Itinerary

- 1 Travel the Byway on Old Crain Highway into Upper Marlboro



View of the intersection of Old Crain Highway, Church Street, Trinity Lane, and Main Street approaching Upper Marlboro from the Byway on Old Crain Highway

- 2 Follow Church Street to find the trailhead at Old Trinity Church



Old Trinity Church on Church Street

- 3 From Church Street, take a left onto Water Street, and make a right onto Main Street for a stroll in downtown Upper Marlboro. Alternatively, continue on Water Street to Governor Oden Bowie Drive to visit Dr. William Beanes House & Grave Site



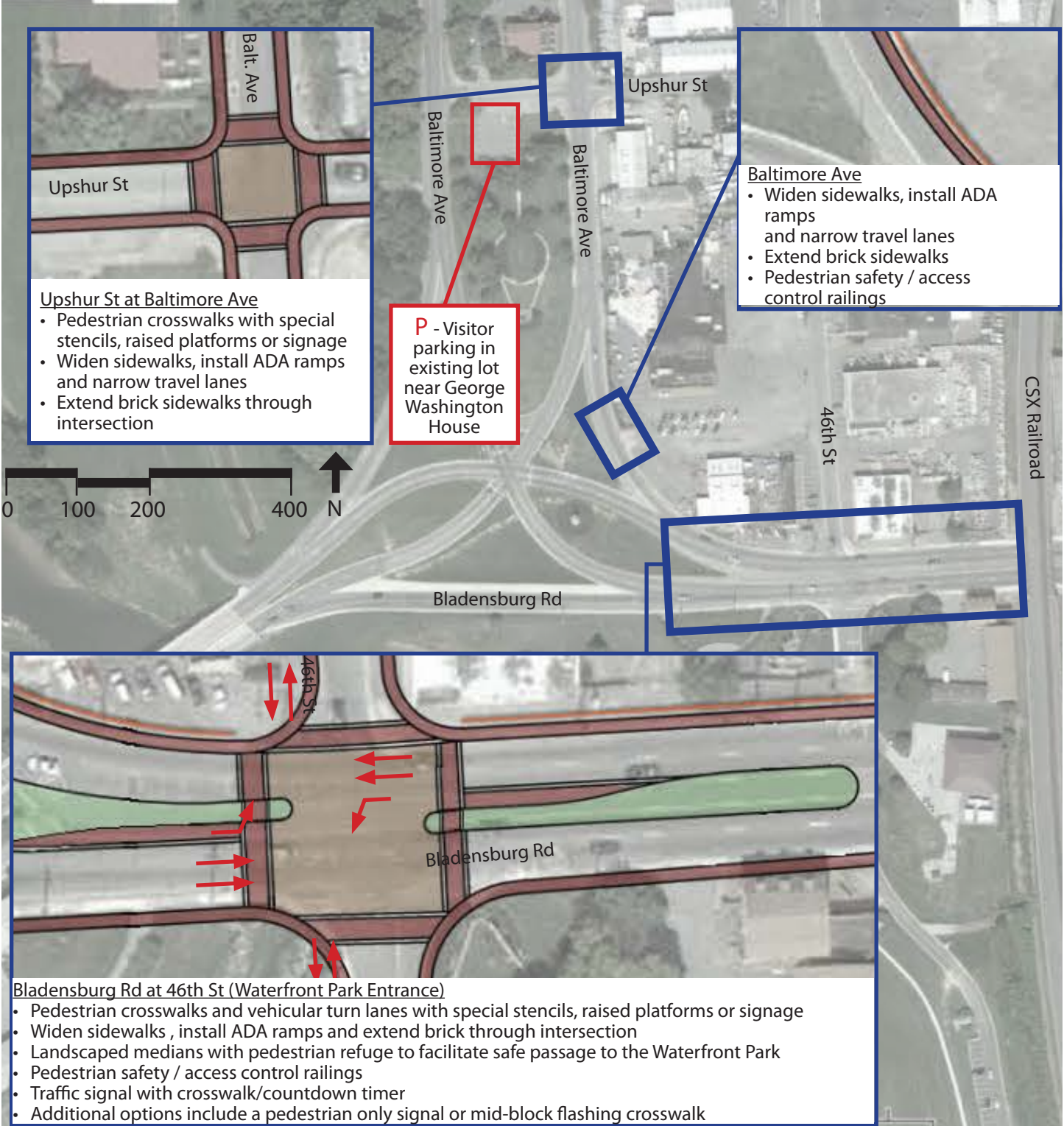
Street parking can be found on Main Street.

- 4 Walking from Main Street or Governor Oden Bowie Drive, continue on Governor Oden Bowie Drive to Darnalls Chance



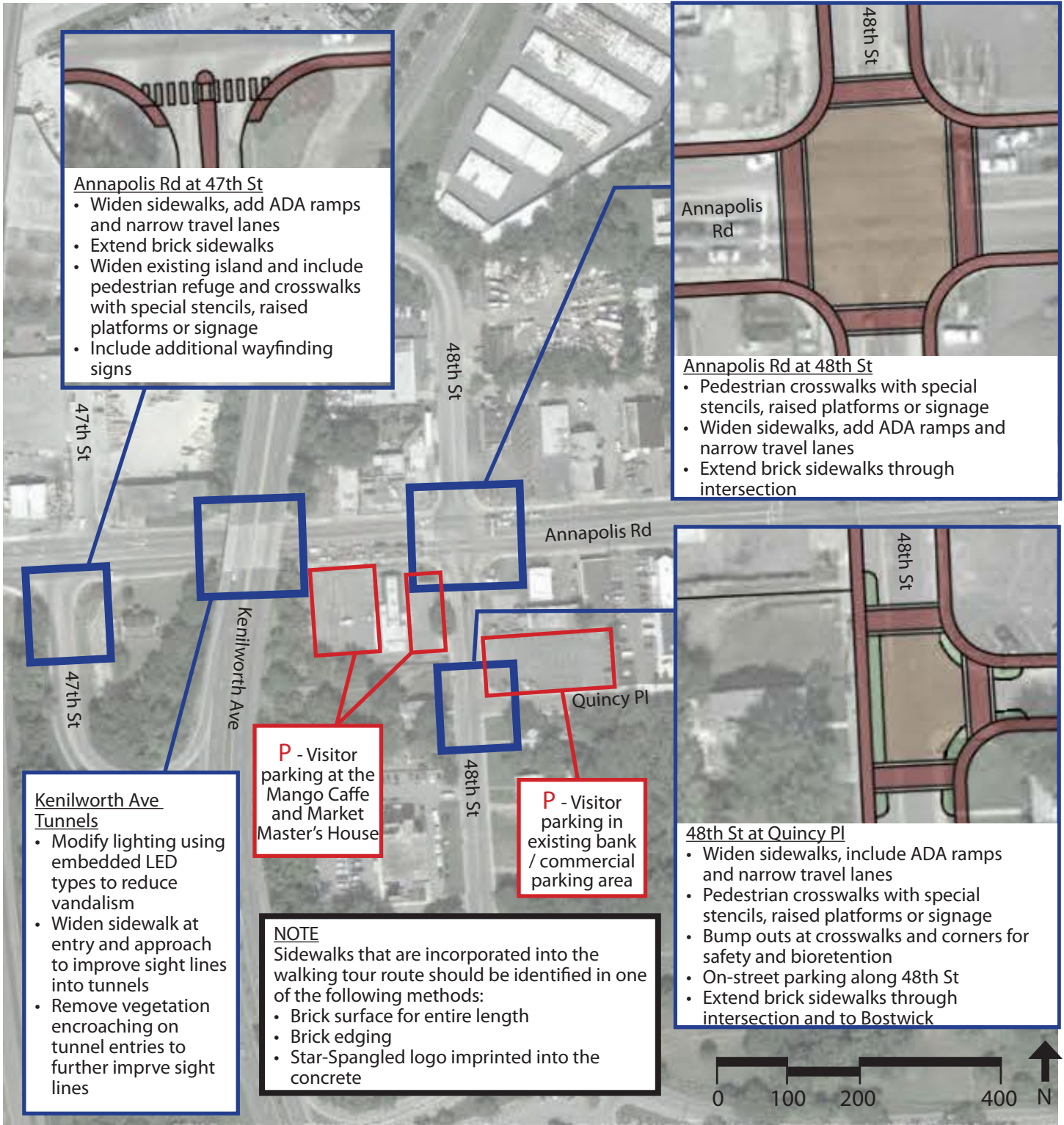
Darnalls Chance

Prince George's County - Bladensburg Circulation - Potential Safety Measures Fig. L.8a



Prince George's County - Bladensburg Circulation - Potential Safety Measures

Fig. L.8b

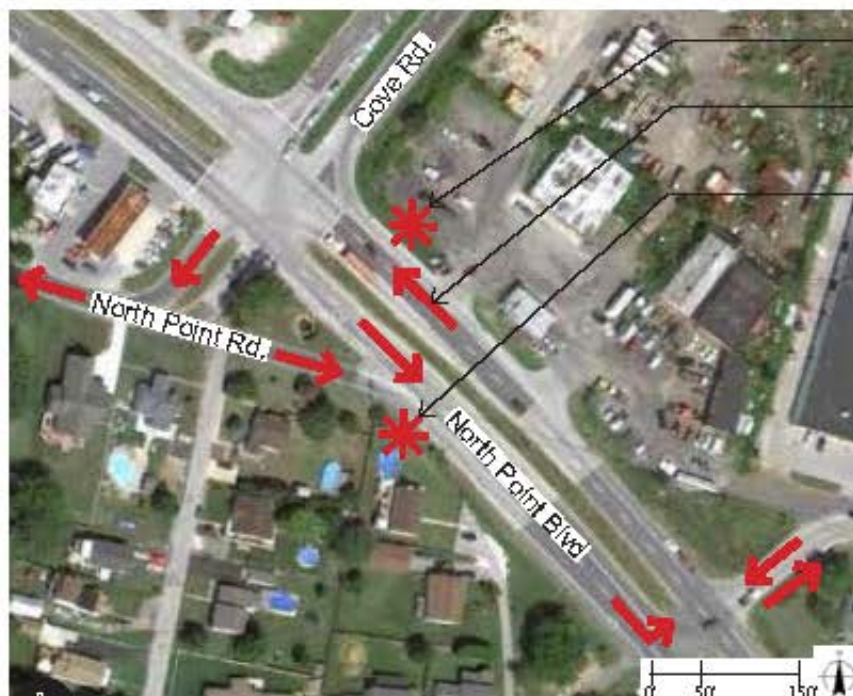


Baltimore County - Aquila Randall Monument Concept

Fig. L.9a



Key Map and Possible Alternate Locations for Monument



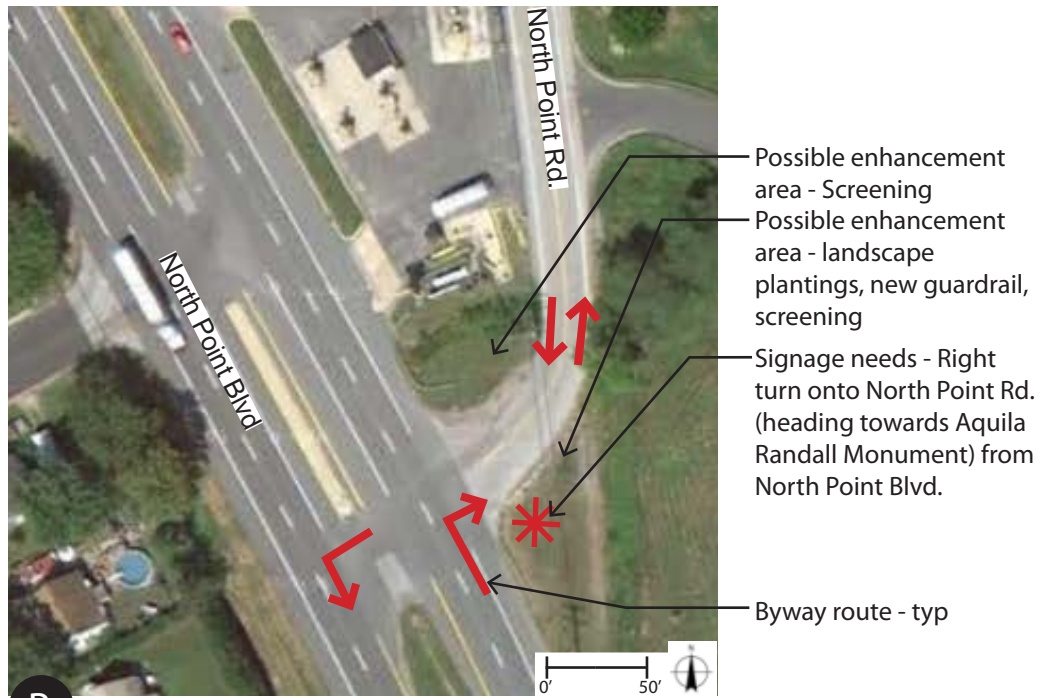
- Signage needs - Left turn onto Cove Road
- Byway route - typ
- Signage needs - Left turn from North Point Blvd. onto North Point Rd. (heading towards Aquila Randall Monument)

A

Directional Signage Needs

Baltimore County - Aquila Randall Monument Concept

Fig. L.9b



B

Directional Signage Needs



C

Existing Conditions at Monument

Baltimore County - Aquila Randall Monument Concept

Fig. L.9c



Option 1 - Proposed Pulloff at Monument



Option 2 - Proposed Pulloff at Monument

11. Recommended Transportation-Related Enhancement Actions

- Work with private concessionaires to develop guided and interpreted Star-Spangled Banner touring experiences for both land and water travel, to provide an alternative to congestion-causing use of individual vehicles and enable visitors to adapt to congested conditions in the Greater Baltimore-Washington Metropolitan Area.
- Develop modules for front-line hospitality training to enable workers in businesses frequented by visitors provide accurate travel advice including the use of trip routing software with up-to-the-minute traffic conditions, to help visitors avoid congested areas during rush hour, construction periods, and crash-related events.
- Incorporate up-to-the-minute traffic and custom routing software into mobile applications providing ways for travelers to avoid congested areas during rush hour, construction periods, and crash-related events.
- Develop a traffic calming program for the rural portions of the trail for installing self-enforcing measures to reduce travel speeds approaching communities and in areas where there is high bicycle and pedestrian usage.
- Work with MD SHA and county governments to adopt guidelines for context sensitive solutions (CSS guidelines) for making modifications to the road and right-of-way. Prince George's County has developed detailed guidelines for Croom Road that could be used as a model for the Star-Spangled Banner Trail's CSS guidelines for rural areas.
- Develop conceptual plans with enough detail to establish a budget and seek additional funding to enhance MD 4 (Pennsylvania Avenue), Russell Street to Inner Harbor, Fort Ave to Fort McHenry, Eastern Avenue and North Point Road (using the Bladensburg Green Streets project as a model).
- Develop conceptual plans with enough detail to establish a budget and seek additional funding to address bicycle safety concerns in the rural portions of the trail (using the Croom Road concept as a model for on-road facilities, and the North Point Greenway Trail as a model for separated multi-use pathways).
- Develop conceptual plans with enough detail to establish a budget and seek additional funding to address pedestrian safety concerns associated with potential walking tours and trails that link together nearby Star-Spangled Banner sites in Benedict, Upper Marlboro, Bladensburg, and Inner Harbor, using Baltimore National Heritage Area's Star Spangled Banner Trails system as a model.
- Replace existing state scenic byway directional signs with OOTS approved directional sign system (removing all state byway guide signs for remnant Lower Patuxent, Star-Spangled Banner, Baltimore-Washington Parkway, and Historic Seaport Scenic Byways and replacing them with Star-Spangled Banner Trail directional markers as per the signage plan).
- Work with Southern Maryland Heritage Area, St. Mary's, Charles, and Prince George's counties to adapt existing tourism area corridor signs to ensure that directional signs are provided through the TAC system to all full-service destination sites (minor modifications to existing TAC signs may be needed).
- Work with Prince George's, Anne Arundel, and Baltimore counties and Baltimore City to develop new TAC signing to full service destinations.

