

Federal Highway Administration Maryland Division Office

HO756B11

**MD 32 PLANNING STUDY FROM MD 108 TO I-70
FINAL ENVIRONMENTAL IMPACT STATEMENT
HOWARD COUNTY, MARYLAND**

RECORD OF DECISION

A. Decision

1. Project Location, Purpose and Need

The project study area is located in western Howard County. The study area extends nine miles from MD 108 to I-70, as shown on **Figure S-1** of the Final Environmental Impact Statement (FEIS). The Purpose and Need for the MD 32 Planning Study is to improve safety and capacity throughout the corridor while attempting to minimize right-of-way impacts; residential and business displacements; and environmental impacts. The need for improvements to MD 32, from MD 108 to I-70, as a capacity and safety project has been identified since 1989 by the State and Howard County.

MD 32 is on Maryland's primary highway system and is functionally classified by the State of Maryland as a Minor Arterial with a federal classification as a Rural - Other Principal Arterial. This portion of MD 32 is a two-lane roadway extending from MD 108 in the village/commercial center of Clarksville to I-70 in the West Friendship community area. MD 32 in this area traverses rolling terrain with low density residential and agricultural land uses.

The existing two-lane roadway, which consists of two 12-foot lanes and 10-foot shoulders, was built in the late 1950s and early 1960s. It was intended to be the future northbound roadway of a four-lane divided highway. From MD 108 to Burntwoods Road, MD 32 is access controlled, generally within an existing 300-foot right-of-way. From Burntwoods Road to I-70, MD 32 has no access controls and is within an existing 150-foot right-of-way.

2. Decision on the Selected Alternative

Based on information and analyses contained in the FEIS and input from the public and Federal, State, and Local Government Agencies, the Selected Alternative for MD 32 from MD 108 to I-70 is Build Alternative II Modified. Build Alternative II Modified was selected because it best meets the Purpose and Need for the project by improving safety and capacity throughout the corridor while minimizing right-of-way impacts; residential and business displacements; and environmental impacts.

a. Design Criteria of the Selected Alternative

The Selected Alternative will include construction of two, new 12-foot lanes generally on the west side of existing MD 32 resulting in a four-lane divided highway with a 34-foot median and

grade separated interchanges at six locations. The MD 32 mainline typical section is designed for 60 miles per hour (MPH) and is shown in on **Figure II-1 in the FEIS**. The outside shoulders are ten feet wide (all paved) and the inside shoulders are ten feet wide (four-foot paved and six-foot graded). Beyond the outside travel lane is a 30-foot wide clear zone, which includes the ten-foot shoulder and 20 feet of grading at a 6:1 slope. The clear zone provides a recovery area for an errant vehicle that is free of hazards such as trees, ditches, culverts, etc. The standard side slopes beyond the clear zone range from 4:1 to 2:1 depending on the height of the cut or fill. In some sensitive areas, the clear zone is reduced to a minimum width of six feet with traffic barrier W-beam two feet beyond the edge of the shoulder and a steeper side slope (3:1 or 2:1). The proposed right-of-way and limit of disturbance are set 25 feet beyond the toe of slope to accommodate drainage facilities, erosion and sediment control, and possible construction easements.

Upon completion of this project, the access points onto MD 32 will be controlled and limited to the interchanges. This project will complete MD 32 from I-97 in Anne Arundel County to I-70 in Howard County as a fully access controlled roadway. Access control on MD 32 from MD 108 to I-70 will be achieved through six grade-separated interchanges at Linden Church Road, Dayton Shop, Burntwoods Road, Rosemary Lane, MD 144, and I-70. The interchange ramps were developed with design speeds ranging from 50 MPH where they leave the mainline to 25 MPH near the local road connections to afford a gradual speed change for the drivers as they traverse the ramp. Ramps include one lane, which is 15 feet wide for curve radii greater than 260 feet and 16 feet wide for curve radii less than 260 feet. The shoulders have a ten-foot wide graded area; the right shoulder includes a six-foot wide paved area and the left shoulder includes a four-foot wide paved area. The clear zone is 16 feet wide including the ten-foot shoulder and six feet of grading at a 4:1 slope. The standard side slope criteria used on the mainline were also used on the ramps. The proposed right-of-way line and limit of disturbance are set 25 feet from the toe of slope, as shown on **Figure II-2 of the FEIS**.

Acceleration and deceleration lanes for the interchange ramps include one 12-foot lane followed by the same roadside grading as the MD 32 mainline: 10-foot paved shoulder, 30-foot clear zone which includes the shoulder, and standard side slope criteria. This typical section is reduced through sensitive areas, similar to the MD 32 mainline reductions, such as reducing the clear zone to a minimum width of six feet with traffic barrier W-beam and/or using a steeper side slope (3:1 or 2:1).

A 30 MPH design speed was used for the frontage roads and local roads unless otherwise noted in the interchange description. The typical section, shown on **Figure II-3 of the FEIS**, consists of two 11-foot lanes and two 10-foot wide graded shoulders with a four-foot paved area. The clear zone is 16 feet wide including the ten-foot shoulder, and six feet of grading at a 4:1 slope, followed by the standard side slope criteria.

Howard County defines access roads as publicly maintained roadways or driveways that provide access to two to fifteen houses. Access road design speeds range from 20 to 25 MPH. The typical section shown on **Figure II-3 of the FEIS**, is based on the Howard County standard for access roads with an average daily traffic (ADT) volume of less than 100 vehicles. It consists of a 14-foot roadway, two four-foot graded shoulders, two one-foot offsets at a 6:1 slope, and the

standard side slope criteria. The proposed right-of-way line and limit of disturbance have been set 25 feet from the toe of slope.

b. Interchange Options

The **Linden Church Interchange Option 2** will provide access to the local roadway network with a full diamond interchange at MD 32 and Linden Church Road. West of the proposed interchange, Linden Church Road begins at an existing T-intersection with Ten Oaks Road. Just east of Ten Oaks Road, Linden Church Road will be realigned to the south and will then cross over MD 32. On the east side of MD 32, the roadway will tie back into existing Linden Church Road just east of Broadwater Lane. In the northeast quadrant of the interchange, Greenberry Lane will be realigned to the east to create a four-leg intersection with Broadwater Lane and Linden Church Road. Greenberry Lane will be designed as an access road.

On the west side, the ramp terminals will form a four-leg intersection with Linden Church Road, and stop control is anticipated for the southbound ramp approach. A roundabout will be constructed at the intersection of Linden Church Road and the northbound ramp terminals on the east side of the interchange. Plans for this interchange are presented in **Appendix A, Sheet 2 of the FEIS**.

The **Dayton Shop Interchange Option 1 Modified** will provide access to the State and County Dayton Shop maintenance facilities with diamond ramps to and from MD 32 southbound and right-in/right-out access northbound. The southbound ramps will connect to a bridge spanning MD 32 just north of the existing entrance. The new bridge and entrance road is referred to as Dayton Shop Road. The northbound access point will be relocated approximately 500 feet south of the existing driveway and is referred to as Access Road 3. Within the Dayton Shop property, an additional road, Access Road 2, will be constructed to connect Access Road 3 to Dayton Shop Road in front of the State maintenance facilities. Access Road 1 will connect Dayton Shop Road with the back of the State facilities. Two retaining walls, approximately 1,100 feet long, will be required to support the fill between the southbound ramps and the MD 32 mainline. Plans for this interchange are presented in **Appendix A, Sheet 2 of the FEIS**.

The **Burntwoods Road Interchange Option 3** will consolidate the current access points at Ten Oaks Road, Burntwoods Road, and Pfefferkorn Road on the west and East Ivory Road on the east. Approximately 2,200 feet of the MD 32 mainline will be shifted to the east through the interchange. The southbound right-in/right-out ramps will connect to a realigned Pfefferkorn Road at a T-intersection. The northbound diamond ramps will connect to the extended Burntwoods Road at a roundabout, just east of MD 32.

West of the interchange, Burntwoods Road will be relocated north of its existing alignment and will continue in a northeasterly direction across MD 32 to connect with East Ivory Road in the northeast quadrant of the interchange. Pfefferkorn Road will be extended south, parallel to MD 32, to intersect with Burntwoods Road and an extended Ten Oaks Road at a roundabout. From this new roundabout, Ten Oaks Road will continue south and connect to its existing alignment slightly south of the existing terminus. Ivory Road will connect to Ten Oaks Road,

south of the roundabout. Plans for this interchange are presented in **Appendix A, Sheet 3 of the FEIS.**

The **Rosemary Lane Interchange Option 2A** will provide access to the local roadway system with right-in/right-out ramps to frontage roads on both sides of MD 32. Rosemary Lane will be extended over MD 32 to the west frontage road to provide east to west access. The Rosemary Lane bridge over MD 32 will be extended on the west side to span the unnamed tributary of the Middle Patuxent River and a retaining wall or other form of retained fill will be utilized along the southbound exit ramp to avoid the relocation of the tributary.

The MD 32 mainline will be constructed immediately west of the existing roadway for approximately one mile through the interchange to avoid impacts to the King's Grant community and improve the horizontal geometry. A portion of the existing roadway on the east side will be used as the east frontage road to connect Parliament Place with Rosemary Lane. A roundabout will be located at the intersection of the frontage road and Rosemary Lane. The northbound right-in/right-out ramps will create a T-intersection with this east frontage road. In the northeast quadrant, an access road will connect one driveway to the roundabout.

On the west side, the frontage road will connect River Valley Chase to Rosemary Lane extended over MD 32. The southbound right-in/right-out ramps will create a T-intersection with this west frontage road. In the southwest quadrant, the access driveway serving the River Valley Chase flag lots will remain in its current location. Plans for this interchange are presented in **Appendix A, Sheet 4 of the FEIS.**

The small community of properties in the northeast quadrant of the Rosemary Lane interchange will connect to the north to Wellworth Way and MD 144. The southern limit of existing Wellworth Way will be extended west to existing MD 32 and will then travel south parallel to MD 32 and cul-de-sac at an existing driveway. This extension of Wellworth Way will not allow access to MD 32. Plans for this access road are presented in **Appendix A, Sheet 5 of the FEIS.**

The **MD 144 Interchange Option 12M** will consolidate the current access points at MD 144, Fox Chase Road, and the dispersed driveways between these two roads. This option will provide a frontage road parallel to and west of southbound MD 32, which extends from Fox Chase Road to MD 144 and is designed to accommodate local traffic. Southbound access will be provided with right-in/right-out ramps located approximately 2,500 feet south of the existing MD 144 intersection that creates a T-intersection with this frontage road. At the request of the US Army Corps of Engineers (USACE), bridges will be used on the southbound ramps to provide stream protection where the ramps cross the Terrapin Branch.

Northbound access will be provided by a loop ramp and an outer directional ramp in the southeast quadrant. MD 144 will remain in its existing location, but it will be raised to span over MD 32. Roundabouts will be provided at the intersections of the ramps/access road with MD 144.

The mainline will be shifted 12 feet to the east to provide a greater buffer to the Terrapin Branch; this shift will require 12 feet of existing pavement be removed on the west side and be replaced

on the east side of the existing roadway. The shift will begin just north of the Terrapin Branch crossing of MD 32 and continue to the existing dualized section near MD 144. Plans for this interchange are presented in **Appendix A, Sheet 5 of the FEIS.**

The **I-70 Interchange Option 2** will provide a partial cloverleaf interchange with loop ramps and slip ramps in the northeast and southwest quadrants. The loop ramps will provide free flow access from MD 32 to I-70. The left turn movement from the I-70 off ramps to MD 32 will utilize slip ramps, which will be controlled by half signals. Northbound traffic on MD 32 will be controlled by the signal at the westbound I-70 exit ramp while the southbound traffic will be controlled by the signal at the eastbound I-70 exit ramp. Plans for this interchange are presented in **Appendix A, Sheet 5 of the FEIS.**

c. Stormwater Management and Access Management Plans

SHA's Selected Alternative includes a preliminary **stormwater management (SWM)** plan. The dualization of MD 32 and the addition or modification of six interchanges would result in approximately 81.3 acres of new impervious surface requiring treatment in the Middle Patuxent Watershed. Stormwater management requirements for the project would be designed to satisfy the requirements of the MDE's *Maryland Stormwater Management Guidelines for State and Federal Projects*, 2001, and based on design principles required by the *Maryland Stormwater Design Manual, Volumes I & II*, MDE, 2000. The stormwater management facilities have been located adjacent to the roadway to control runoff, treat for water quality, and provide quantity control. A total of 92 facilities located within the 35 points of study¹ would provide treatment for 88.2 acres of new and existing impervious surface; note that MDE requires treatment of 20% of the existing pavement when it is reconstructed. Consequently, there would be an overall surplus of 6.9 acres of treatment throughout the project area. Beyond providing the required treatment necessary under stormwater regulations, this conceptual design sought to minimize impacts to environmental and cultural resources, and to maintain, as much as possible, existing hydrologic conditions and connectivity.

Several **access management improvements** are also being considered as interim improvements prior to the construction of the Selected Alternative. The interim improvements will address the public concerns about the need for short-term safety improvements. The plan will provide improvements to remove existing driveways and access points from MD 32. These improvements will be designed to coordinate with the alignments in the Selected Alternative and will minimize the amount of wasted pavement and earthwork. The access management options are detailed below.

The **Wellworth Way Access** will provide access from parcels 76, 78, 97, 125, 126, 127, and 246 to Wellworth Way. This connection will eliminate direct access to MD 32 for five driveways

¹ Stormwater management requirements were organized on a subwatershed basis; however, within these subwatersheds, 35 points of study (POS) were identified and used to analyze the amount of area that would require SWM treatment. These points were identified at locations where runoff would leave the existing SHA right-of-way, at roadway low points where runoff would be concentrated, and at several stream crossings. In some cases, multiple points of study were located on the same stream segment to further analyze SWM requirements in localized areas. Points of study were also chosen to limit analysis to a particular proposed interchange. For more information on the POS and the SWM facilities refer to the MD 32 *Conceptual Stormwater Management Report*, April 2005.

and numerous residences. In addition, this access option will require the purchase of parcel 38. Wellworth Way will be extended west toward MD 32 and then parallel MD 32 across the Terrapin Branch bridge and cul-de-sac at the existing driveway for parcel 76. This is the ultimate configuration and will not require future modifications to be compatible with the Selected Alternative.

The **Rosemary Lane West Frontage Road** alignment will follow the alignment of the frontage road in the Selected Alternative from Fox Valley Estates to the driveway for parcel 35. It will provide access for two driveways and five homes to River Valley Chase, on the west side of MD 32 and remove their direct access to MD 32. This is the ultimate configuration and will require no future modifications to be compatible with the Selected Alternative. This improvement will require the purchase of parcels 93 and 79 before construction could begin. Both parcels are proposed displacements with the Selected Alternative for the West Frontage Road in the Rosemary Lane Interchange. Purchase of these properties will remove two residences/two driveways from MD 32.

The **Rosemary Lane East Frontage Road** alignment will follow the ultimate east frontage road horizontal alignment from the Rosemary Lane interchange configuration in the Selected Alternative. It will provide access from Parcel 17, Lots 1-12, A and B and parcel 119 to Rosemary Lane. Providing the frontage road connection to Rosemary Lane will remove the access point for Twin Pines development from MD 32 and redirect the twelve residences plus one existing residence to access MD 32 at Rosemary Lane. For the construction of the Selected Alternative, a portion of this interim frontage road will need to be reconstructed due to the vertical geometry of existing and proposed Rosemary Lane.

The **Rosemary Lane East Driveway** alignment will follow the ultimate east driveway horizontal alignment from the Rosemary Lane interchange configuration in the Selected Alternative. It will provide access from Parcel 36 to Rosemary Lane. Parcel 36 is a single-family lot with driveway access to MD 32. Providing the frontage road connection to Rosemary Lane will remove the driveway connection to MD 32 and require the property to access MD 32 at Rosemary Lane. For the construction of the Selected Alternative, a portion of this interim frontage road will need to be reconstructed due to the vertical geometry of existing and proposed Rosemary Lane.

The **MD 144 West Frontage Road** alignment will follow the ultimate west frontage road horizontal alignment from the MD 144 interchange configuration. The west frontage road will connect from Fox Chase Estates to Nixon's Farm driveway to MD 144. Providing the frontage road connection to MD 144 will remove the access point for Fox Chase Estates, three driveways (one south of Nixon's Farm and two north of Nixon's Farm), and Nixon's Farm Lane as well as 21 residences who will access MD 32 from MD 144. For the construction of the Selected Alternative, a portion of this interim frontage road will need to be reconstructed due to the vertical geometry of existing and proposed MD 144.

Parcel 8 is an open parcel near Burntwoods Road interchange, just north of Ivory Lane East on the east side of MD 32. It currently includes two driveways with access to MD 32. If this parcel

develops in the future, access will be provided to the south to Ivory Road East; however, it is possible that a developer could provide this access.

B. ALTERNATIVES CONSIDERED

A wide range of alternatives and interchange options were developed and refined to minimize environmental impacts while attempting to address the Purpose and Need for the project. A detailed description of the Alternatives Considered is presented in Chapter II of the FEIS.

1. Alternatives Considered

a. The **No-Build Alternative** (*Not Selected*) would provide no major improvements to the existing MD 32 roadway other than spot safety and maintenance improvements. The No-Build Alternative was not selected as the recommended alternative because it did not satisfy the Purpose and Need to improve safety conditions and traffic operations in the study area and did not complete MD 32 as a controlled access divided roadway.

b. **Build Alternative I** (*Not Selected*) proposed an access controlled, four-lane, divided highway with a 34-foot median. There would be seven interchanges proposed with Build Alternative I, including a separate interchange at Nixon's Farm Lane. Build Alternative I was not selected because an additional interchange was not needed at Nixon's Farm to accommodate traffic and there was concern over the close proximity of the three interchanges at I-70, MD 144, and Nixon's Farm and their consecutive ramps. Also, Build Alternative I would require additional new crossings of the Terrapin Branch.

c. **Build Alternative II** (*Not Selected*) originally proposed an access controlled, four-lane, divided highway with a 34-foot median. There would be six interchanges proposed with Build Alternative II. Under this alternative access to Nixon's Farm Lane and MD 144 would be provided via the MD 144 Interchange and access roads in lieu of the two separate interchanges proposed in Build Alternative I. Build Alternative II was modified to become the Selected Alternative (described below).

d. A **Two-Lane Build Alternative** (*Not Selected*) was considered in response to comments at the Public Hearing and on the Draft Environmental Impact Statement (DEIS). Two, two-lane build alternatives were considered, a two-lane roadway without and with a barrier in the median. The two-lane alternative without the barrier and with interchanges would result in higher travel speeds and potential safety concerns associated with these higher speeds on a non-separated roadway. If a barrier were placed in the median with either intersections or interchanges, it would eliminate head-on collisions; however, rear-end accidents are the most common accident type experienced and a barrier would not help eliminate these accidents because it would not increase capacity. In addition, barriers or interchanges for a two-lane roadway could make for more unsafe conditions by consolidating the locations where vehicles enter the roadway, while taking away the protected time to enter the roadway that the signals provide. It would be difficult to merge onto a roadway from an entrance ramp when that roadway is already congested.

In addition, a traffic analysis of the two-lane alternative was performed. The capacity of a two-lane roadway with access points, intersections, and interchanges is approximately 1,800 vehicles per hour (vph). Existing 2003 traffic data for MD 32 shows that there are approximately seven hours per day where the corridor is handling 1,300 to 1,800 vph. With signalized intersections, this causes back-ups at certain locations along MD 32 during these seven hours. The 2025 No-Build data indicates an increase in the daily traffic demand and includes projected volumes of around 1,800 to 2,500 vph for the same seven-hour period in the morning and evening where the corridor is over capacity. With the No-Build Alternative, this would cause delays along the entire length of the roadway for seven hours a day at a minimum as it will take time to get traffic moving as the demand on the roadway decreases. The two-lane alternative could address access control on MD 32, but it would not address the safety or capacity desires in the purpose and need for MD 32.

e. Build Alternative II Modified (*Selected*) is similar to the Build Alternative II in the DEIS. However, Build Alternative II Modified includes modified interchange designs at Burntwoods Road (Option 3), Rosemary Lane (Option 2A), and MD 144 (Option 12M). Build Alternative II Modified also includes a 12-foot mainline shift to the east to provide a greater buffer for the Terrapin Branch. The shift will begin just north of the Terrapin Branch crossing of MD 32 and continue to the existing dualized section, just south of MD 144. This shift will require that 12 feet of existing pavement be removed on the west side and be replaced on the east side of the existing roadway. This alternative is the Selected Alternative because it meets the Purpose and Need of the project by improving safety and capacity throughout the corridor while attempting to minimize right-of-way impacts; residential and business displacements; and environmental impacts.

It should be noted that the impacts in the DEIS were calculated using a ten-foot offset from the preliminary engineered toe of slope to the limit of disturbance to account for drainage ditches and impacts related to construction activities. Since the time of the DEIS, SHA's construction experience has shown that a ten-foot offset does not provide an adequate area to perform the construction activities. Consequently, a 25-foot offset from the preliminary engineered toe of slope to the limit of disturbance has been used for the Selected Alternative to ensure there is adequate distance to construct the roadside drainage ditch; include slope rounding; provide erosion and sediment control measures; install temporary and permanent diversion ditches for clean water as needed; and allow the contractor access to construct the side slopes. The purpose of providing the impacts with ten feet to the limit of disturbance is to allow the reader to compare the impacts of the Selected Alternative to the impacts presented for Alternative I and Alternative II in the DEIS. The impacts calculated using 25 feet to the limit of disturbance are also provided. These totals represent the proposed impacts of the Selected Alternative and are being used to develop appropriate mitigation for the project. Table S-1 (in the FEIS) presents a summary of the social, cultural, and natural environmental impacts of the project alternatives.

2. Interchange Options Considered

Interchange Options Retained for Consideration Subsequent to the Public Hearing

Many interchange options were considered for the six proposed interchange locations. Following the DEIS, the interchange options that were retained for further consideration are listed below. Refer to Chapter II of the FEIS for a detailed description and analysis of all the interchange options considered.

a. **Linden Church Road Interchange Option 2** *was selected* following the Public Hearing.

b. **Dayton Shop Interchange Option 1 Modified** *was selected* following the Public Hearing.

c. **Burntwoods Road Interchange Option 2** *was not selected* because of the close proximity of the northbound ramp to a number of residences. Option 3 offered an improved condition for these residences.

d. **Rosemary Lane Interchange Option 2** *was not selected* because of agency concerns about impacts to the unnamed tributary to the Middle Patuxent River.

e. **Nixon's Farm Interchange Option 2** *was not selected* following the 2004 Reevaluation with the selection of Build Alternative II Modified, eliminating the consideration of separate interchanges at Nixon's Farm Lane and MD 144. There were concerns about the close spacing of the three interchanges and their consecutive ramps, I-70, MD 144, and Nixon's Farm. Further, the interchange required additional new crossings of Terrapin Branch and the traffic could be accommodated in two interchanges.

f. **MD 144 Interchange Option 3M** *was not selected* following the 2004 Reevaluation, eliminating the consideration of separate interchanges at Nixon's Farm Lane and MD 144. Concerns were expressed regarding the close spacing (less than 700 feet apart) of the three interchanges and their consecutive ramps, I-70, MD 144, and Nixon's Farm. Further, the interchange required additional new crossings of Terrapin Branch and the traffic could be accommodated in two interchanges.

g. **MD 144 Interchange Option 4** *was not selected* because the west frontage road was not designated to accommodate the volume of local traffic that is now generated by the Fox Chase Estates development.

h. **I-70 Interchange Option 2** *was selected* following the Public Hearing.

Minimization Interchange Options

In response to public and agency comments received on the DEIS, one additional interchange option at Burntwoods Road, three additional interchange options at Rosemary Lane, and one

additional interchange option at MD 144 were considered in the three-year Environmental Reevaluation of the DEIS (approved in March 2004).

Subsequent to the three year Reevaluation, further minimization interchange options at Rosemary Lane and MD 144 were developed in response to new public and agency comments to reduce the amount of impacts. At the Informational Public Workshop on September 8, 2004, five additional, minimization interchange options were presented at Rosemary Lane and six additional, minimization interchange options were considered at MD 144. Following the Informational Public Workshop, six more minimization interchange options at MD 144 were developed at the request of the environmental resource agencies. Consequently, a second Environmental Reevaluation (approved in April 2005) was prepared to describe the additional, minimization interchange options and impacts. All of the interchange options considered are described in Chapter II of the FEIS. A rationale for selecting or not selecting each minimization interchange option is described below.

a. Burntwoods Road Interchange Option 3 *was selected* because it was preferred by the residents on the east side of MD 32 since it moved the ramps further away from their homes without additional environmental impacts.

b. Rosemary Lane Interchange Option 2A *was selected* because it balances the natural and socioeconomic impacts and addressed the agencies concerns about the length of stream impacts.

c. Rosemary Lane Interchange Option 4 *was not selected* because access was eliminated from southbound MD 32 to Rosemary Lane and River Valley Chase, which would change the existing response routes for Howard County emergency services.

d. Rosemary Lane Interchange Option 6 *was not selected* because access was eliminated from southbound MD 32 to Rosemary Lane and River Valley Chase, which would change the existing response routes for Howard County emergency services.

e. Rosemary Lane Interchange Option 7 *was not selected* because of an additional crossing of the unnamed tributary to the Middle Patuxent and increased residential impacts.

f. Rosemary Lane Interchange Option 8 *was not selected* because it would provide a small additional reduction to the stream impacts beyond that required by Option 2A, and it increases right-of-way impacts for the residents on the west side of MD 32.

g. Rosemary Lane Interchange Option 9 *was not selected* because it would provide a small additional reduction to the stream impacts beyond Option 2A, and it increases right-of-way impacts for residents on the west side of MD 32.

h. Rosemary Lane Interchange Option 10 *was not selected* because it would re-direct the additional traffic through the Burntwoods Road interchange and it would not provide access for emergency vehicles at Rosemary Lane and River Valley Chase.

i. **Rosemary Lane Interchange Option 11** *was not selected* due to increased residential impacts and lack of stream impact reduction.

j. **MD 144 Interchange Option 4M** *was not selected* because the west frontage road was not designed to accommodate the volume of local traffic that is now generated by the Fox Chase Estates development.

k. **MD 144 Interchange Option 5** *was not selected* because it would not provide the amount of buffer between MD 32 and the Terrapin Branch that was requested by the agencies.

l. **MD 144 Interchange Option 5A** *was not selected* because it would cross the Terrapin Branch at a meander in the stream, which could cause further erosion of the banks. In addition, it would impact contiguous woodlands surrounding the stream.

m. **MD 144 Interchange Option 5M** *was not selected* due to the reduced median width along MD 32 and the compromised geometry of the ramps.

n. **MD 144 Interchange Option 8** *was not selected* due to concerns that this option would not meet the project Purpose and Need. Regional traffic destined for Howard County Fairgrounds would have an increased travel distance of one mile to access MD 144 and would use the frontage road, which was designed to collect the local traffic.

o. **MD 144 Interchange Option 9** *was not selected* because it would impact the Terrapin Branch by adding four new crossings. In addition, it would add four ramp movements on MD 32, close to MD 144, similar to Build Alternative I, and there were concerns with the close proximity of these movements.

p. **MD 144 Interchange Option 9M** *was not selected* because it would impact the Terrapin Branch by adding four new crossings. In addition, it would require a potential residential displacement on the west side of MD 32 near Nixon's Farm.

q. **MD 144 Interchange Option 10** *was not selected* because it would have greater overall impacts even though it increased the buffer to the stream; consequently, it would not balance the natural and socioeconomic impacts because it included more impacts to both types of resources.

r. **MD 144 Interchange Option 12** *was not selected* because it had greater impacts to wetlands, streams, and right-of-way even though it reduced the impacts to the contiguous woodlands adjacent to the Terrapin Branch. Motorists would have a minimal increase in travel distance of 0.5 mile to access MD 144 and would pass in front of the residences along the access road. In addition, the environmental agencies did not support this option.

s. **MD 144 Interchange Option 12M** *was selected*. The option will have greater impacts to wetlands, streams and right-of-way than some other options considered. Motorists would have a minimal increase in travel distance of 0.5 mile to access MD 144 and would pass in front of the residences along the access road. This option was selected because it would

eliminate impacts to Wetland OO (medium quality) and it would reduce impacts to the contiguous woodlands adjacent to the Terrapin Branch. In addition, the environmental agencies supported this option.

t. **MD 144 Interchange Option 13** *was not selected* because it had greater impacts to wetlands, streams, and right-of-way even though it would reduce the impacts to contiguous woodlands adjacent to the Terrapin Branch. Also, motorists would have a minimal increase in travel distance of 0.4 mile to access MD 144 and would pass in front of the residences along the access road. The environmental resource agencies did not support this option.

u. **MD 144 Interchange Option 14** *was not selected* because it would have greater impacts to wetlands, streams, and right-of-way. In addition, motorists would pass in front of the residences along the access road. The environmental resource agencies did not support this option.

v. **MD 144 Interchange Option 15A** *was not selected* because it would have greater impacts to wetlands, streams, and right-of-way. The environmental resource agencies did not support this option.

w. **MD 144 Interchange Option 15B** *was not selected* because it had greater impacts to wetlands, streams, and right-of-way. In addition, the environmental resource agencies did not support this option.

C. SECTION 4(f)

The Selected Alternative will not require the use of any publicly owned land from a public park, recreation area, wildlife and waterfowl refuge, or historic site.

D. MEASURES TO MINIMIZE HARM

All practicable measures to minimize harm have been identified and will be incorporated into the design of the Selected Alternative. These measures include compensation for all residential and commercial property acquisition; sediment and erosion control measures; and stormwater management.

1. Residential Relocations and Business Displacements

The Selected Alternative will require 125.1 acres of right-of-way and nine residential relocations. There is adequate replacement housing for any displaced residents in the study area. None of the relocations affect minorities or low income residents. One business relocation will be required, a gas station/convenience store. There is opportunity to relocate the business adjacent to the existing property; therefore, the business and its employees will not be permanently, adversely impacted by the project.

2. Cultural Resources

The Selected Alternative will not impact any historic sites; however, one archeological site eligible for National Register of Historic Places will be impacted. (The SHPO concurred with this finding on May 12, 2005.) A Memorandum of Agreement (MOA) has been executed between the Federal Highway Administration, State Highway Administration, and the Maryland State Historic Preservation Officer. The MOA, dated July 11, 2005 (included in **Appendix C of the FEIS**) formalizes the commitment to complete the field identification, evaluation, and treatment of this site as appropriate.

3. Surface Water Resources

The Selected Alternative includes a preliminary SWM plan. Based on the preliminary plans, the dualization of MD 32 and the addition or modification of six interchanges will result in approximately 81.3 acres of new impervious surface requiring treatment in the Middle Patuxent Watershed. The stormwater management facilities have been located adjacent to the roadway to control runoff, provide treatment for water quality, and provide quantity control. Detailed design for the stormwater management facilities and the selection of the appropriate water quality measures will be completed during final design, as well as a detailed sediment and erosion control plan in accordance with State and local regulations.

4. Waters of the US and Wetland Mitigation

The Selected Alternative permanently impacts approximately 13,314 linear feet of streams and 4.0 acres of wetlands (1.72 PFO, 0.20 PSS, and 2.08 PEM). Both stream and wetland impacts will require mitigation. It was determined that 7,200 of the 13,314 linear feet of stream impacts are permanent perennial/intermittent streams and will require mitigation. The Selected Alternative would also impact 6,114 linear feet of ephemeral channels, which will be replaced in kind at a ratio of 1:1. The total wetland mitigation required for the MD 32 project is 5.88 acres of non-tidal wetlands.

A summary of the estimated mitigation potential for the sites is provided in **Table IV-7 of the FEIS**. Further detailed site analysis, including formal wetland delineations, will be needed to confirm the final acreages available for creation, enhancement/restoration, and preservation. Further detailed site analysis, including fluvial geomorphologic assessments, stream classification, and preliminary hydrologic analysis/modeling for the contributory watersheds will be needed to more precisely define the linear footage of mitigation available. Based on these estimates, the wetland and stream mitigation potential for these selected locations exceeds the estimated project impacts and required mitigation ratios for the project.

The following summarizes the preferred mitigation sites selected for further study. Agency recommendations were provided during this field review and four areas were selected for further mitigation investigations and preliminary concept plan development.

a. Proposed Wetland Mitigation Site

Site 4A – Nixon’s Farm Property

Wetland creation is proposed along the Middle Patuxent River on the southern portion of the Nixon Farm, an area approximately 32 acres in size. For the creation of approximately 12 acres, it is estimated that a typical excavation depth would range from 0 to 4 feet. The primary hydrologic source would be provided by groundwater, with secondary hydrologic sources provided by overland flow, an outfall of a future SWM facility for a proposed development upslope of the site, possible redirection of a small tributary stream, and flood flows from the Middle Patuxent River.

b. Proposed Stream Mitigation Sites

All of the streams and rivers in the study area are classified by the Maryland Department of the Environment as Use I-P. Uses of these streams include Water Contact Recreation, Protection of Aquatic Life, and Public Water Supply. In-stream construction within these streams and rivers is restricted between March 1 and June 15, inclusive of any year.

Terrapin Branch (3,300 feet at 1:1 credit)

Riparian Buffer Plantings - Buffer planting is proposed along the Terrapin Branch between reconstructed MD 32 and the access road from MD 144, from the southbound entrance ramp to where the Terrapin Branch crosses under MD 32.

Geomorphic work - Other stream restoration and enhancement opportunities to improve conditions throughout the entire stretch of channel could be possible. More detailed study will be done to determine what and how much opportunity exists. Particular areas of concern are the sinuous sections of the stream near both the Nixon Farm driveway and the entrance and exit ramps.

Rosemary Lane (1,000 feet of credit)

Fish Blockage Removal - The most significant stream mitigation opportunity at this site includes the extension of the culvert beneath MD 32, which may involve the introduction of in-stream grade, alignment controls, and nature-like fishways (i.e., rock ramps, riffle grade controls, step-pool structures, and vanes) or manmade fishways (fish ladders) to promote desirable hydraulic conditions conducive to fish passage.

Geomorphic work - Other stream restoration and enhancement opportunities to improve conditions throughout the entire stretch of channel could be possible. More detailed study will be done to determine what and how much opportunity exists after the design of the culvert extension and bridge are complete.

Terrapin Branch north of MD 144 (1,500 feet of credit)

Terrapin Branch north of MD 144 (1,500 feet of credit)

Stream relocation and Geomorphic work - Stream relocation is being recommended near the High's store, approximately station 530 to 534. Stream restoration and enhancement opportunities to improve conditions throughout the entire stretch of channel are possible from MD 144 to the I-70 interchange. More detailed study will be done to determine what and how much opportunity exists. Particular areas of concern are the relocation area near the High's and the concrete trapezoidal channel between the I-70 and MD 32 exit ramps.

Riparian Buffer Plantings - Buffer plantings are also proposed along Terrapin Branch north of MD 144 to the I-70 interchange.

Nixon Farm Middle Patuxent Stream work (1,500 feet of credit)

Riparian Buffer Plantings - 1,500 linear feet of 50-foot wide riparian buffer enhancement plantings are proposed along the Middle Patuxent River.

5. Terrestrial Ecosystems

The Selected Alternative will impact 87.4 acres of woodlands. In compliance with the Maryland Forest Conservation Act of 1991, reforestation for these project impacts will be provided at a one-to-one ratio. Reforestation will be provided within the study area where possible or off-site within the same sub-watershed. Potential woodland mitigation sites will be located during final design.

Forest Interior Dwelling Species (FIDS) habitat lies adjacent to the MD 32 corridor. Impacts associated with the Selected Alternative would affect the edges of this habitat. Of the 87.4 acres of woodland affected by the Selected Alternative, 16.1 acres lie within areas that meet the DNR criteria for FIDS habitat. The Selected Alternatives would result in a loss of FIDS habitat acreage, however, because the improvements occur along the existing MD 32 alignment, habitat loss due to fragmentation would be minimal.

6. Noise Impact Mitigation

The effects of noise from the Selected Alternative were evaluated in accordance with the FHWA's activity/criteria relationship published in 23 CFR, Part 772 and subsequent memorandum. Noise levels were evaluated at 52 receptors. The analysis determined that 12 noise receptors will be impacted by the Selected Alternative as the peak hour noise levels approached or exceeded the 67 dBA Federal Noise Abatement Criterion for residential areas. However, these 12 noise receptors do not meet the cost per residence criteria as set forth in SHA's Sound Barrier Policy (1998).

According to SHA Sound Barrier Policy (1998), SHA would consider installation of non-sound barrier options such as vegetative screening for areas that meet the criteria, but do not qualify for noise barriers. Screening (i.e. dense landscape plantings or other measures) will be considered in

the SHA right-of-way to provide screening for residential areas in close proximity to MD 32. The exact location, type, and amount of screening will be determined in final design.

7. Visual Quality

Construction activity and some materials stored for the project may be displeasing to residents in the immediate vicinity of the project. This visual impact will be temporary and should pose no substantial problem in the long term.

8. Air Emissions during Construction

The operation of heavy equipment would have minor, temporary impacts on air quality during construction of the Selected Alternative. The primary source of impact would be windblown soil and dust in active construction zones, and secondarily from increased levels of exhaust pollutants. Measures would be taken to reduce fugitive dust and other emissions generated during construction by wetting disturbed soils, staging soil disturbing activities, and prompt re-vegetation of disturbed areas. The contractors, in accordance with state and federal regulations, would control emissions from construction equipment.

9. Hazardous Materials

If underground storage tanks are discovered during construction of the Selected Alternative, then a preliminary site investigation, including subsurface soil and groundwater sampling, would be conducted to determine the potential impacts of contamination.

If oil contaminated soils or groundwater are discovered during excavation activities, the MDE Oil Control Program should be contacted immediately. The oil-contaminated soils must be managed and disposed of in accordance with MDE Requirements (COMAR 26.10.13). Oil-contaminated soils should be segregated from clean soils and the presence of petroleum contamination confirmed by laboratory analysis. Confirmed oil-contaminated soils should be disposed of at an off-site, oil-contamination treatment facility which has been approved by MDE.

E. MONITORING AND ENFORCEMENT

As a part of the commitment to continue efforts to minimize impacts from the project, several monitoring and coordination efforts are proposed as outlined in the FEIS, the MOA and the Conceptual Mitigation Plan. To ensure compliance with all appropriate federal and state regulations, necessary permits will be obtained prior to construction. A permit from the US Army Corps of Engineers for any work in waterways or wetland areas will satisfy the requirements of Section 401/404 of the Clean Water Act (33 USC 1344). Monitoring programs will consist primarily of the conditions of the Section 404 Permit with respect to wetlands and other aquatic resources.

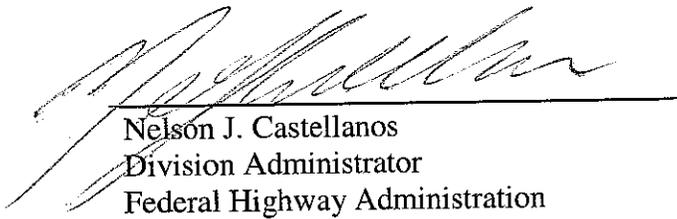
Coordination with appropriate agencies, including but not limited to, the US Army Corps of Engineers, the US Fish and Wildlife Service, and the US Environmental Protection Agency

during final design will ensure that commitments to develop and implement mitigation are carried out.

F. COMMENTS RECEIVED ON FINAL ENVIRONMENTAL IMPACT STATEMENT

The Notice of Availability of the FEIS was published in the *Federal Register* on September 9, 2005. Advertisements announcing the availability of the document were published locally in Carroll County Times, Howard County Times, and the Sun Paper. The notices announced the availability of the FEIS and the locations where copies of the document were available for public review. A list of specific agencies, organizations, and individuals to which copies of the FEIS were sent is contained in **Section VII** of the FEIS.

To date, no comments have been received on the Final EIS, and no agencies have requested an extension to the comment period.


Nelson J. Castellanos
Division Administrator
Federal Highway Administration


Date