NHS CORRIDOR
BETWEEN I-68 AND CORRIDOR H

US 220 TIER ONE DRAFT ENVIRONMENTAL IMPACT STATEMENT

JULY 2011

U.S. Department of Transportation
Federal Highway Administration

State Highway Administration
Maryland Department of Transportation

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FHWA-WV-EIS-_____

NHS Corridor (US 220) between I-68 and Corridor H

Tier One Draft Environmental Impact Statement

Submitted pursuant to *42 U.S.C. 4332 (2)(c)*
by the U.S. Department of Transportation: Federal Highway Administration (FHWA)
and the West Virginia Division of Highways (WVDOH)
and the Maryland State Highway Administration (MDSHA)

Cooperating Agencies

U.S. Army Corps of Engineers, U.S. Environmental Protection Agency,
U.S. Fish and Wildlife Service and the U.S. Department of the Interior, National Park Service

6/22/11
Date of Approval

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6/13/11
Date of Approval

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6/6/11
Date of Approval

Maryland State Highway Administration

Abstract

This document is a Tier One DEIS for the National Highway System (NHS) Corridor along US 220 between Interstate 68 (I-68) and Corridor H prepared by FHWA by WVDOH and MDSHA. WVDOH is the lead state agency. The project purpose is to develop an improved transportation corridor connecting I-68 and Corridor H. Project needs include: geometric deficiencies on US 220 and parallel roads; inadequate capacity; safety deficiencies; economic development; and system linkage. After the preliminary corridors were presented to state and federal resource agencies, local planning officials, and the public, they were refined and additional environmental analyses were conducted. All three transportation corridors carried into detailed analysis meet the project's purpose and need. No preferred corridor has been identified yet.

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NHS CORRIDOR
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US 220 TIER ONE DRAFT ENVIRONMENTAL IMPACT STATEMENT

Lead Agencies

United States Department of Transportation, Federal Highway Administration
West Virginia Department of Transportation, Division of Highways
Maryland Department of Transportation, State Highway Administration

Cooperating Agencies

United States Army Corps of Engineers
United States Environmental Protection Agency
United States Fish and Wildlife Service
United States Department of the Interior, National Park Service

Participating Agencies

Allegany County Planning Commission
Delaware Nation
Maryland Department of the Environment
Maryland Department of Natural Resources
Maryland Historical Trust
Maryland Department of Planning
Region 8 Planning and Development Commission
West Virginia Department of Environmental Protection
West Virginia Division of Culture and History
West Virginia Division of Natural Resources
U.S. Route 50 Association

July 15, 2011

1.0 BACKGROUND

A *Draft Environmental Impact Statement* (DEIS) for the National Highway System (NHS) Corridor along US 220 between Interstate 68 (I-68) and Corridor H was prepared for the Federal Highway Administration (FHWA) by the West Virginia Department of Transportation, Division of Highways (WVDOH) and the Maryland State Highway Administration (MDSHA). The DEIS will fulfill requirements set forth in the *National Environmental Policy Act of 1969 (NEPA),* the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), Section 4(f) of the Department of Transportation Act of 1966,* and the *Federal Aid Highway Act*. The WVDOH is the lead state agency on the project.

Through the preparation of a tiered DEIS separate *NEPA* and transportation planning processes are combined. Tiering for highway projects is governed by two federal laws, 40 Code of Regulations (CFR) Part 1500 and 23 CFR Part 771. The regulations define tiering as "the coverage of general matters in broader environmental impact statements." In Tier One, generalized corridors are evaluated and screened, leading to the refinement of purpose and need and the identification of alternatives to be carried forward for corridor selection. Tier One will conclude with an approved *Record of Decision* (ROD) that will identify a preferred corridor, or corridors, for Tier Two studies. A Tier Two ROD will be issued to select an alignment at the end of the Tier Two NEPA process.

2.0 AGENCIES INVITED TO PARTICIPATE IN THE ENVIRONMENTAL PROCESS

Environmental resource and transportation agencies with jurisdiction over, or having operating interests with, transportation projects within West Virginia and Maryland were invited to guide the project through the environmental process as either cooperating or participating agencies. In addition to FHWA, WVDOH, and MDSHA (the lead agencies for the project), representatives from the United States Environmental Protection Agency (USEPA), United States Army Corps of Engineers (USACE), United States Fish and Wildlife Service (USFWS), United States Department of the Interior, National Park Service (NPS), and United States Coast Guard (USCG) were invited to be cooperating agencies. Additionally, the Delaware Nation, West Virginia Department of Environmental Protection (WVDEP), West Virginia Division of Culture and History (WVDCH), West Virginia Division of Natural Resources (WVDNR), Maryland Department of the Environment (MDE), Maryland Department of Natural Resources (MDNR),

Maryland Historical Trust (MHT), Maryland Department of Planning (MDP), Allegany County Planning Commission, the Region 8 Planning and Development Commission, and the U.S. Route 50 Association were invited to assist with the planning and environmental process as participating agencies.

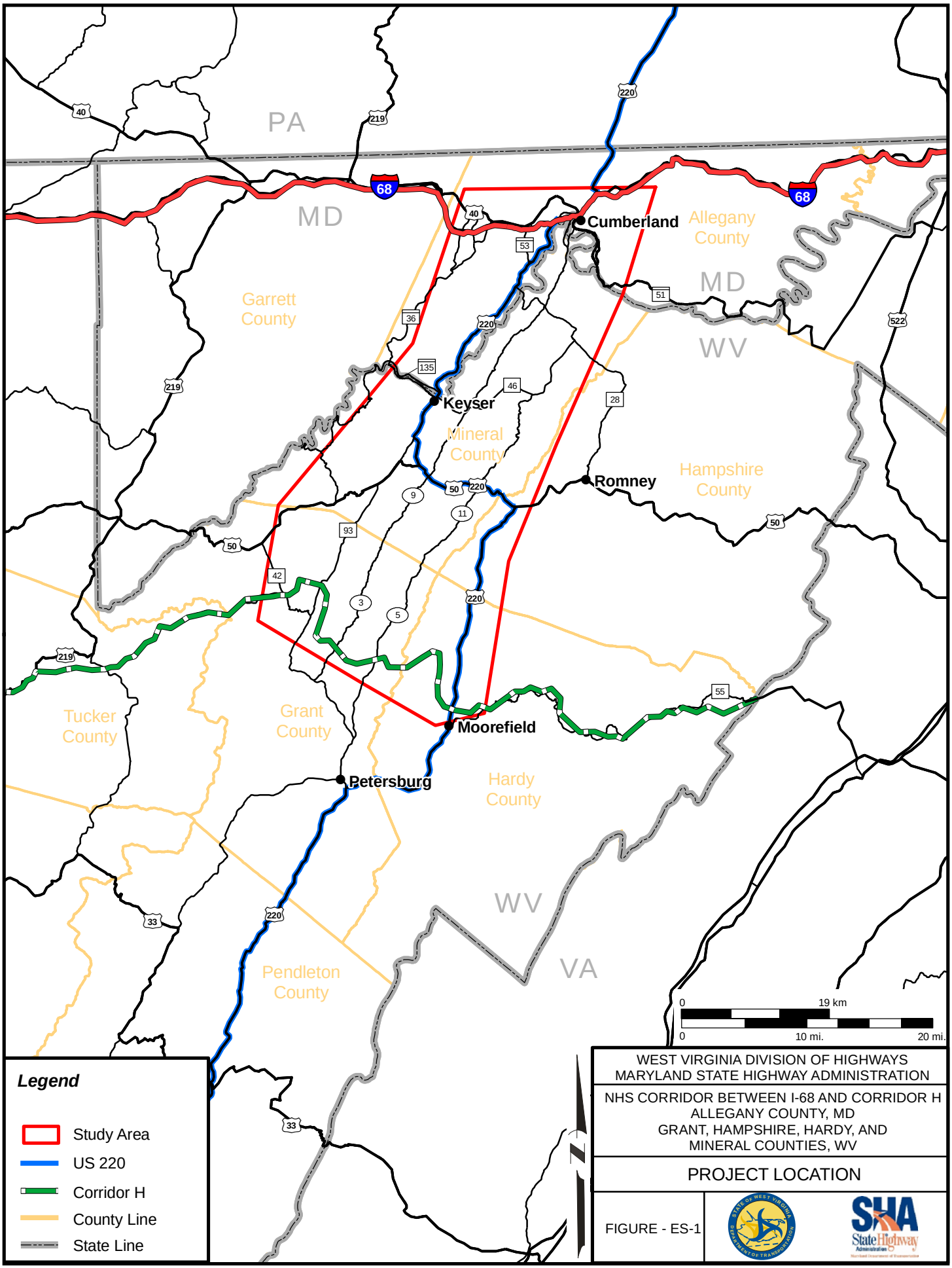
3.0 PURPOSE AND NEED

The project is located in Grant, Hardy, Hampshire, and Mineral counties in West Virginia, and Allegany County in Maryland. The project region stretches south from I-68 (or the National Freeway) near Cumberland, Maryland, to the proposed alignment of Corridor H. Corridor H is part of the Appalachian Development Highway System (ADHS). Figure ES-1 shows the project location in its regional context. At the northern end of the region, the project would terminate on I-68 at an existing interchange in or near the City of Cumberland. At the southern end, the project would terminate on Corridor H.

The current project is an outgrowth of the North South Appalachia Corridor Feasibility Study. Completed in July 2001, the North South Appalachia Corridor Feasibility Study was a multi-state transportation planning and economic development effort undertaken by MDSHA, WVDOH, the Pennsylvania Department of Transportation, and the Virginia Department of Transportation. The study analyzed the potential support for highway improvements for economic development in four north-south corridors bisecting the Appalachian regions of Maryland, Pennsylvania, West Virginia, and Virginia. The study concluded that US 220 south from I-68, via MD 53, to Corridor H and US 219 north from I-68 to the Pennsylvania Turnpike (I-76) would provide the greatest potential for benefiting Appalachian economic development.

The purpose of this project is to develop an improved transportation corridor connecting I-68 in western Maryland and Corridor H in West Virginia. Upgraded roadways resulting from this project will become part of the NHS. To some extent, this new corridor would parallel existing US 220 in western Maryland and West Virginia's Potomac Highlands area.

Project needs were examined in the early stages of the project through a collaborative process that included examination of past studies, a review of existing regional plans, consultation with citizens and local officials, consultation with the government agencies involved in the process,


PA
MD
WV
VA
Cumberland
Allegany County
Garrett County
Keyser
Mineral County
Romney
Hampshire County
Moorefield
Petersburg
Tucker County
Grant County
Hardy County
Pendleton County
68
40
219
220
53
51
36
135
46
28
522
50
9
11
93
42
3
5
55
33
0
19 km
0
10 mi.
20 mi.
Legend
Study Area
US 220
Corridor H
County Line
State Line
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
PROJECT LOCATION
FIGURE - ES-1

and an analysis of the environmental and socioeconomic conditions of the region. Through this process, the following needs were identified within the study corridor:

- Current geometric deficiencies on US 220 and parallel roadways limit regional mobility;
- The study area has inadequate roadway capacity;
- There are safety deficiencies on roadway sections within the area;
- There is a need to support economic development efforts in the area; and
- Additional system linkage is needed to complete the regional road network.

Highway improvements for the proposed NHS Corridor, between I-68 and Corridor H, are consistent with growth and development plans at all government levels. Although development is expected throughout the region, development patterns are expected to remain similar to present day.

4.0 ALTERNATIVES

As part of the planning effort culminating in the North South Appalachia Corridor Feasibility Study, generalized north-south corridors bisecting the Appalachian regions of Maryland, Pennsylvania, West Virginia, and Virginia were analyzed to determine how highway improvements could support economic development. The North South Appalachia Corridor Feasibility Study concluded that US 220 south from I-68 via MD 53 to Corridor H and US 219 north from I-68 to I-76 would provide the greatest potential for benefiting Appalachian economic development. Subsequent to the completion of the North South Appalachia Corridor Feasibility Study, MDSHA and WVDOH entered into a Memorandum of Understanding. The purposes of that agreement were to establish roles and responsibilities for investigating additional corridors, developing alternatives, and ultimately preparing a Tier One DEIS for a study area surrounding the US 220 corridor.

Development of project corridors began with an examination of both the MOU and the existing transportation system in the area. In an effort to best meet traffic demand, four of the corridors were developed to parallel existing roadways. A fifth corridor was developed further west of the other four to offer additional opportunities for regional economic development. A 4,000-foot buffer, which represented 2,000 feet to either side of a hypothetical centerline, was attached to

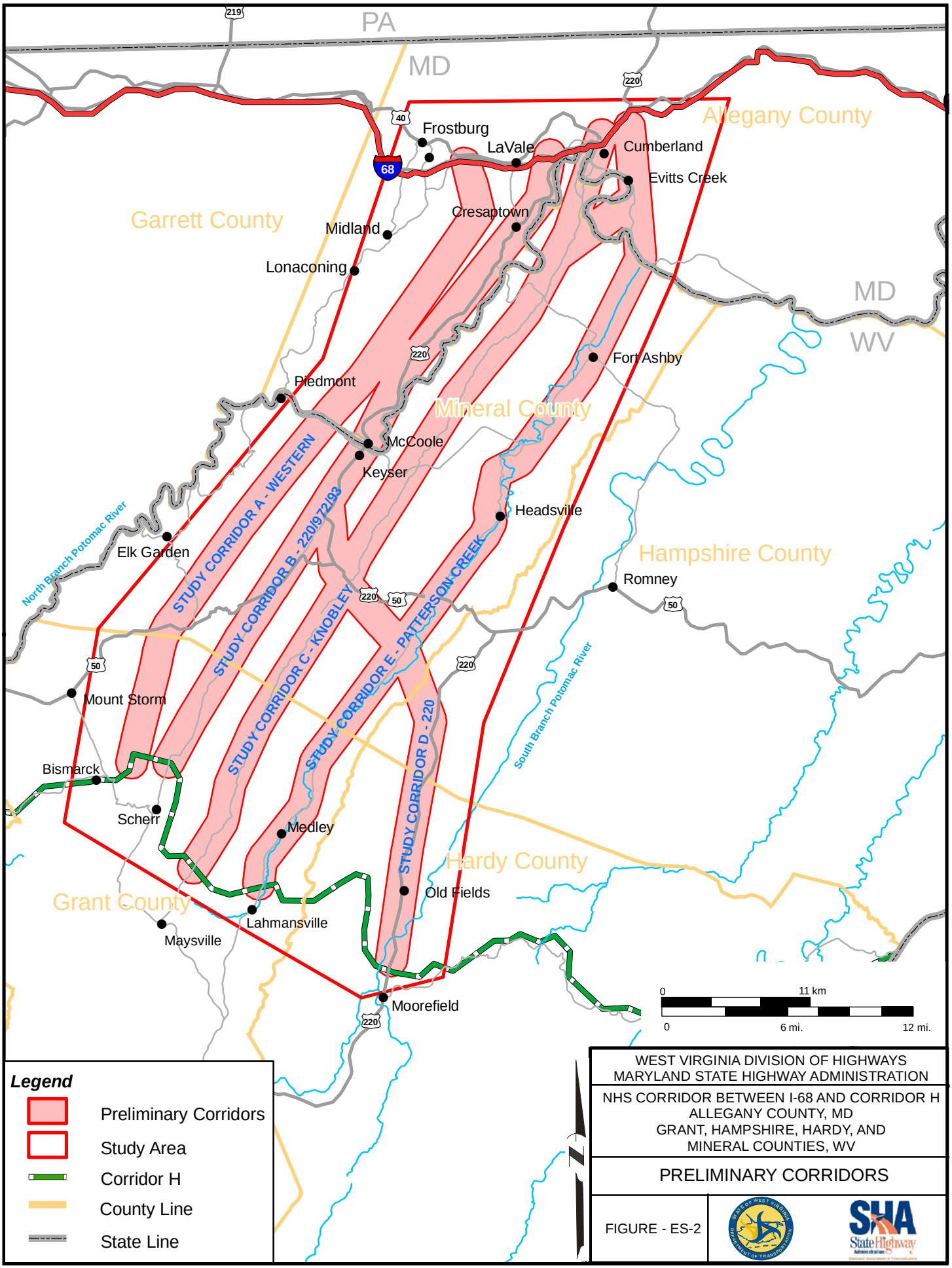
the corridors so that preliminary environmental information could be evaluated. These preliminary corridors are shown on Figure ES-2.

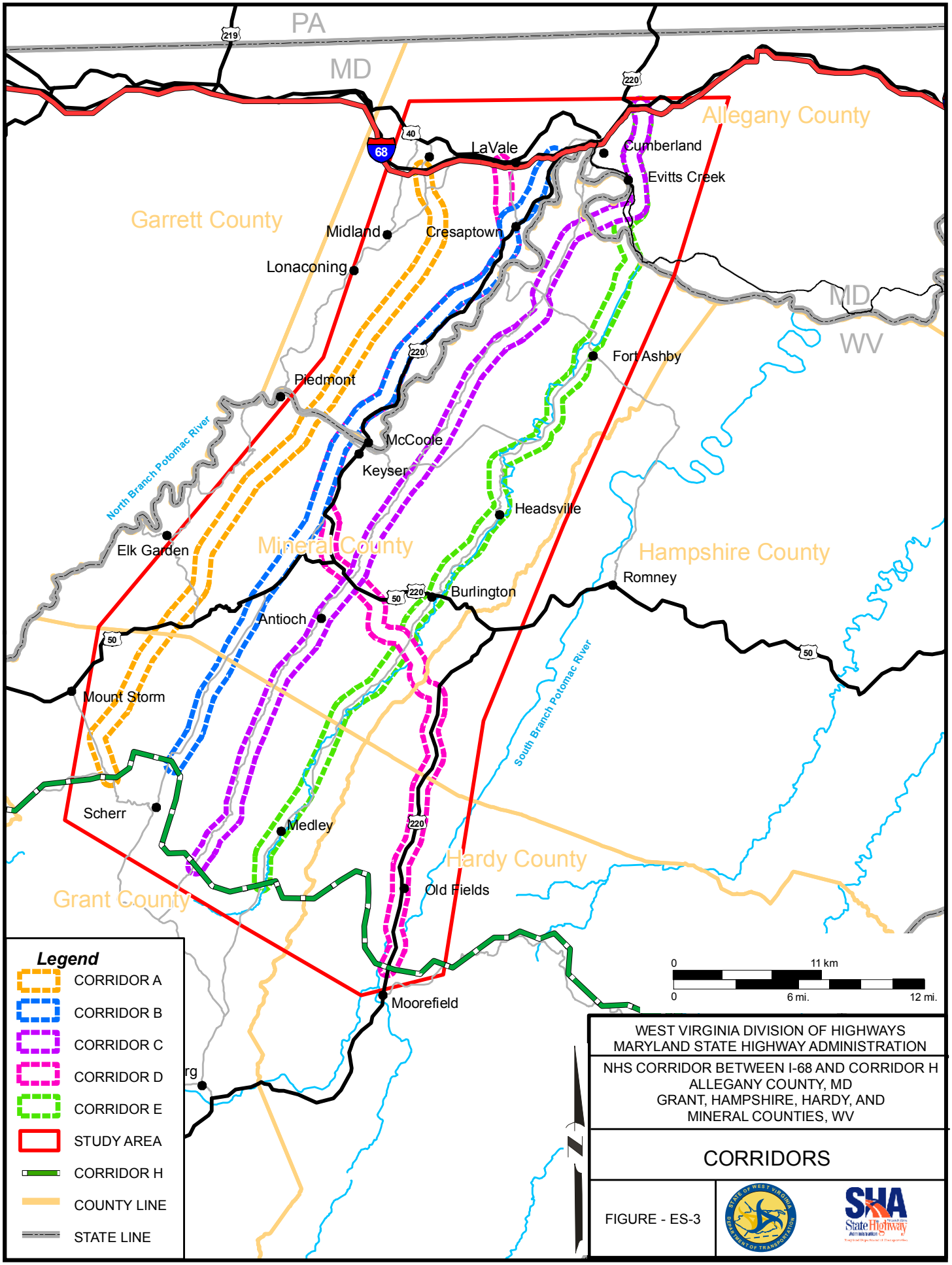
The first and westernmost of these corridors, Corridor A, originated at I-68 near Frostburg, MD, and extended southwest to Corridor H near Bismarck, WV. Corridor B originated at I-68 near LaVale, MD, and extended southwest to Corridor H near Scherr, WV. Corridor C originated at I-68 near Cumberland, MD, and extended southwest to Corridor H near Maysville, WV. Corridor D originated at I-68 near LaVale, MD, and extended south to Corridor H at Moorefield, WV. The final corridor, Corridor E, originated at I-68 near Cumberland, MD, and extended southwest to Corridor H near Lahmansville, WV.

After the five preliminary corridors were presented to several groups, including state and federal resource agencies, local planning officials, and the public, concurrent preliminary engineering studies and environmental analyses began. The primary purpose of the engineering studies was to determine if reasonable highway alignments could be developed within each of the preliminary corridors already shown to the public and resource agencies. A best fit alignment was developed for each corridor utilizing WVDOH and MDSHA engineering criteria and preliminary information about the region's major environmental features. The corridors are shown on Figure ES-3. Potential interchange configurations at I-68 and Corridor H were also evaluated as representative connection points and judged to be possible. Preliminary construction cost estimates were developed for the corridors using unit costs from similar type projects. The cost estimates are shown in Table ES-1. The construction cost estimates do not include utility relocation, right-of-way acquisition, engineering, or environmental study costs.

TABLE ES-1
Construction Cost Estimates

Corridor	Length	Construction Cost	Total Construction Cost Estimate
A	34.5 miles	$13,400,000/mile	$462,000,000
B	34.2 miles	$13,400,000/mile	$459,000,000
C	44.5 miles	$13,400,000/mile	$597,000,000
D	45.3 miles	$13,400,000/mile	$607,000,000
E	45.0 miles	$13,400,000/mile	$603,000,000


PA
MD
Allegany County
Garrett County
Mineral County
Hampshire County
Hardy County
Grant County
MD
WV
Frostburg
LaVale
Cumberland
Evitts Creek
Cresaptown
Midland
Lonaconing
Fort Ashby
Piedmont
McCoole
Keyser
Headsville
Elk Garden
Romney
Mount Storm
Bismarck
Scherr
Medley
Old Fields
Lahmansville
Maysville
Moorefield
North Branch Potomac River
South Branch Potomac River
STUDY CORRIDOR A - WESTERN
STUDY CORRIDOR B - 220/972/93
STUDY CORRIDOR C - KNOBLEY
STUDY CORRIDOR E - PATTERSON CREEK
STUDY CORRIDOR D - 220
68
219
220
40
50
0
11 km
0
6 mi.
12 mi.
Legend
Preliminary Corridors
Study Area
Corridor H
County Line
State Line
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
PRELIMINARY CORRIDORS
FIGURE - ES-2
SHA
State Highway


PA
MD
219
220
40
68
LaVale
Cumberland
Evitts Creek
Allegany County
Garrett County
Midland
Cresaptown
Lonaconing
MD
WV
Fort Ashby
Piedmont
North Branch Potomac River
McCoole
Keyser
Headsville
Elk Garden
Mineral County
Hampshire County
Romney
Burlington
50
Antioch
Mount Storm
South Branch Potomac River
Scherr
Medley
Hardy County
Old Fields
Grant County
Moorefield
Legend
CORRIDOR A
CORRIDOR B
CORRIDOR C
CORRIDOR D
CORRIDOR E
STUDY AREA
CORRIDOR H
COUNTY LINE
STATE LINE
0
11 km
0
6 mi.
12 mi.
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
CORRIDORS
FIGURE - ES-3

The costs of constructing interchanges at I-68 or on Corridor H are not included in Table ES-1. Preliminary estimates indicate that a new interchange on I-68 would cost between $9-40 million, depending on its location and configuration. An interchange on Corridor H would cost approximately $14 million.

As the development of the refined corridors and conceptual interchanges continued to progress, traffic issues were examined and a screening of potential environmental impacts from all five corridors was completed. Some additional alternatives were also investigated. As a result of the preliminary alternatives analysis, Corridors B, C, and D were recommended as corridors to be retained for further analysis.

5.0 AFFECTED ENVIRONMENT

The study area includes portions of southwestern Allegany County, all of Mineral County, and portions of Grant, Hampshire, and Hardy counties. Situated equidistant from Baltimore, Washington, DC, and Pittsburgh, the study area encompasses an area over 835 square miles with a population of approximately 146,000. The landscape of the study area is primarily rugged terrain, characterized by a series of roughly parallel ridges and valleys. Although there are wider river valleys in the northwest and southeast centered around the North Branch of the Potomac River and Patterson Creek, respectively, narrower stream valleys and hollows are found throughout the remainder of the study area.

Land utilization in this hilly study area can be divided into three major categories: urban and small town, agricultural, and forested. Primarily rural in nature, the area is also home to much residential, commercial, and industrial development, as well as many parks, recreation areas, and community facilities.

The predominant land cover is forested and agricultural land. The rural valleys of the study area are dotted with active farms and dense forests are found on the adjacent ridge tops. Many wetlands and streams are found throughout the area.

Wildlife habitat within the study area comes in numerous forms and is available to both local and migratory species. The higher elevation ridges in the western portion of the study area receive more annual precipitation, which allows for a mainly deciduous forest type, whereas the eastern

portions of the study area receive less precipitation. Habitats reflect this condition and a diverse array of wildlife is found in the area, including big and small game (black bear, whitetail deer, groundhogs, and squirrels), fur-bearing species (muskrat, mink), other small and large mammals, songbirds and raptors, and amphibians and reptiles.

Cultural resources include pre-contact and historic period archaeological sites and above-ground historic structures and districts. Pre-contact archaeological sites consist of areas where culturally modified objects or features can be found dating from the Paleoindian Period (12,000-18,000 BC) to approximately the Contact Period (*circa* 1550-1750). Historic period archaeological sites consist of subsurface historic period structures or artifacts that date from approximately the Contact Period up to 1955.

6.0 ENVIRONMENTAL CONSEQUENCES

The corridors carried forward for further analysis are shown in Figure ES-4. The predominant, social, cultural, and natural resources were identified within each corridor based on a best-fit alignment and a buffer of 2,000 feet to each side of the centerline. This allowed for a "worst-case" identification of possible impacts within Corridors B, C, and D. Although the entire corridor was used for the analysis, an actual build alternative would have a much smaller footprint and therefore less potential for impacts. Information used for screening the original five transportation corridors was refined and supplemented where possible to conduct additional analyses on the three corridors advanced to this stage. The potential impacts in each corridor are summarized in Table ES-2.

All three corridors carried into detailed analysis would meet the project's purpose and need. To varying degrees, each of the three corridors would correct current geometric deficiencies that limit regional mobility, add additional roadway capacity, support economic development efforts, and provide additional system linkage.

7.0 COMMENTS AND COORDINATION

Public and agency scoping for the project occurred with a combination of meetings and field views held in early May 2006. Public meetings were held in Keyser on May 1, 2006, in

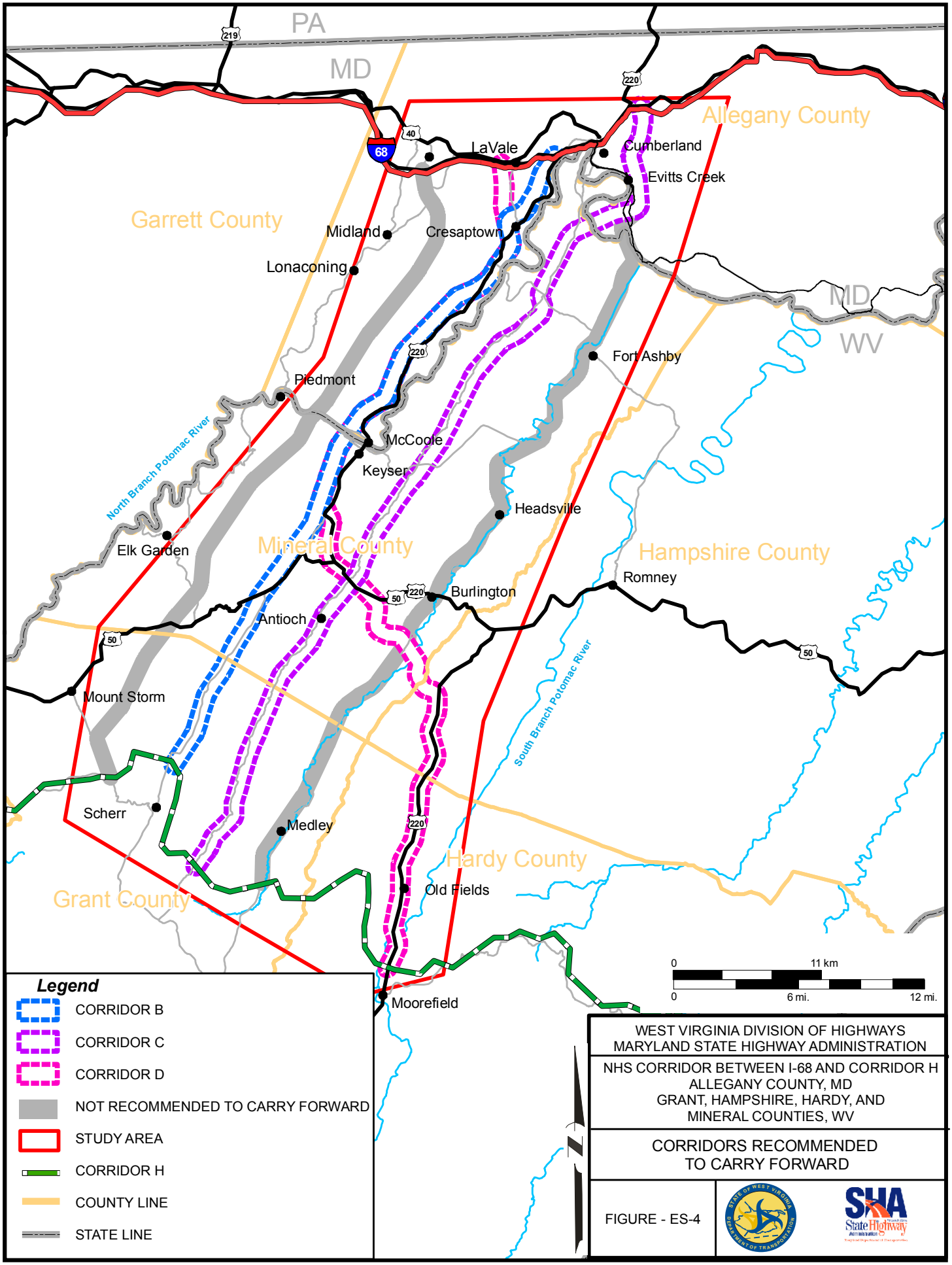

PA
MD
219
220
40
68
LaVale
Cumberland
Evitts Creek
Allegany County
Garrett County
Midland
Cresaptown
Lonaconing
MD
WV
Fort Ashby
Piedmont
North Branch Potomac River
McCoole
Keyser
Headsville
Elk Garden
Mineral County
Hampshire County
Romney
Burlington
50
Antioch
Mount Storm
South Branch Potomac River
Scherr
Medley
Hardy County
Old Fields
Grant County
Moorefield
0
11 km
0
6 mi.
12 mi.
Legend
CORRIDOR B
CORRIDOR C
CORRIDOR D
NOT RECOMMENDED TO CARRY FORWARD
STUDY AREA
CORRIDOR H
COUNTY LINE
STATE LINE
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
CORRIDORS RECOMMENDED
TO CARRY FORWARD
FIGURE - ES-4
SHA
State Highway

TABLE ES-2
Summary of Potential Effects

Resource/Element	Corridor B	Corridor C	Corridor D
Residential Land Use	2,590 acres	2,400 acres	2,620 acres
Mixed Use, Built-up Land Use	1,300 acres	90 acres	860 acres
Commercial and Industrial Land Use	170 acres	450 acres	340 acres
Economic Development (trade centers served)	3	2	4
Impacts to Community Cohesion	3	2	3
Environmental Justice Impacts (minority populations)	Possible within Allegany, Grant & Mineral Counties, & Keyser	Possible within Allegany, Grant & Mineral Counties	Possible within Allegany, Grant & Mineral Counties, & Keyser
Environmental Justice Impacts (low-income populations)	Possible within Grant County & Keyser	Possible within Grant County	Possible within Hampshire County & Keyser
Community Facilities	58	70	58
Parks and Recreation Areas	8	10	9
Very High/High Archaeological Potential	5,338 acres	6,974 acres	7,709 acres
NRHP-Listed & NRHP-Eligible Resources	4	9	21
Wetlands	118 acres	152 acres	143 acres
Streams	300,239 feet	330,834 feet	448,803 feet
Floodplains	775 acres	719 acres	2,244 acres
Flood Control Dams	8	4	6
Rangeland	127 acres	644 acres	720 acres
Forests	9,890 acres	11,130 acres	11,409 acres
Mixed Forests/Rangeland	0 acre	53 acres	91 acres
Prime Farmland Soil	2,146 acres	1,491 acres	3,335 acres
Farm Soils of State or Local Importance	2,276 acres	5,456 acres	3,728 acres
Agricultural Land Cover	2,953 acres	6,489 acres	5,487 acres
Preservation Districts/Easements	0	1 acre	67 acres
RTE Species	13	16	30
Potentially Contaminated Sites	43	42	55
Noise Sensitive Areas (residential)	2,590 acres	2,400 acres	2,620 acres
Potential Section 4(f) Resources	6	13	21
Residual US 220 Traffic (2025)	Local	6,100 AADT	Local
Estimated Cost of New Highway Facility	$482-$500 million	$651 million	$630-$648 million

Moorefield on May 2, 2006, and in Cumberland on May 10, 2006. About 120 people attended the public meetings. Specifically, at each meeting, comments were solicited on the project's purpose and need to meet requirements of *SAFETEA-LU*. In conjunction with the public meetings, two separate agency field views were held.

A second round of public informational workshops was held in May 2007. Meetings were again held in Moorefield, Keyser, and the Cumberland area. Excluding agency officials, over 260 people attended the meetings.

Agency coordination has been an ongoing process throughout the project. Formal requests for information have occurred throughout the project and a coordination plan was prepared in accordance with *SAFETEA-LU*. Interagency meetings were held with the Maryland resource agencies and federal agencies with jurisdiction in Maryland on February 15, 2006, January 17, 2007, June 20, 2007, and May 19, 2010. A meeting was also held with the West Virginia agencies and federal agencies with jurisdiction in West Virginia on February 27, 2007.

Several briefings were held with public officials and planners throughout the course of the project. Meetings were held with the governing boards of the Allegany County Planning Commission, the Region 8 Planning and Development Council, the U.S. Route 50 Association, and the Greater Cumberland Committee to present updates on the project at key points. Meetings were also held with staff members of the Allegany County Office of Planning Services, Mineral County Planning Commission, Hardy County Planning Department, the Grant County Development Authority, the City of Cumberland, and the National Park Service.

8.0 UNRESOLVED ISSUES

Several unresolved issues remain. In terms of cultural resources, the Section 106 process will continue into Tier Two and a Programmatic Agreement will be developed in consultation with the WVDOH, MDSHA, State Historic Preservation Offices, and Advisory Council on Historic Preservation to detail the steps to be used for complying with Section 106. A Memorandum of Agreement will also be developed in cooperation with the NPS to address adverse effects to all NRHP sites impacted by the project. The NPS has also indicated that the project could have serious impacts to resources under its jurisdiction, or nearby properties associated with those resources that may require special avoidance, minimization, or mitigation measures. Because of the widespread occurrence of cultural resources throughout the area, a Section 4(f) Evaluation will be necessary during Tier Two. Section 4(f) of the *U.S. Department of Transportation Act of 1966* requires that special efforts be made to protect publicly-owned parks, recreation areas, wildlife and waterfowl refuges, and significant historic sites.

In terms of natural resources, coordination with state and federal agencies will continue in Tier Two, especially related to rare, threatened, and endangered species and habitat. The development of actual alternatives in Tier Two may be able to avoid or minimize the extent of potential impacts to critical habitats and will be pursued as the project progresses into the next

phase. Additional field activities, studies, coordination, and consultation during Tier Two will be necessary pursuant to Section 7 of the *Endangered Species Act of 1973* and the *Nongame and Endangered Species Conservation Act* (in Maryland). Additionally, the Potomac River is a navigable waterway to the Cumberland area. As such, it is subject to the Section 10 of the *Rivers and Harbors Act* and Section 404 of the *Clean Water Act*. Additional coordination will be necessary with the USACE and, possibly, the USCG, as the project progresses.

In terms of permit requirements, other state and federal permits/actions will be required for implementation of the project. These permits/actions would include a Section 404 permit, a Section 401 Water Quality Certification, a National Pollutant Discharge Elimination System (NPDES) Water Pollution Control permit, an Erosion and Sedimentation Control Plan, and a Stormwater Management Plan. Specifically, in Maryland, a Joint Permit Application will be submitted to meet the combined federal/state requirements.

In terms of project funding, project costs were developed for this phase of the project utilizing unit costs from similar type projects recently completed in West Virginia. They do not include utility relocation, right-of-way acquisition, engineering, or future environmental study costs. Additional cost information for project alternatives will be developed during Tier Two. If breakout projects are identified, cost information for those projects will be developed within their respective environmental documents.

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PREFACE

This *Draft Environmental Impact Statement* (DEIS) for the National Highway System (NHS) Corridor along US 220 between Interstate 68 (I-68) and Corridor H is being prepared for the Federal Highway Administration (FHWA) by the West Virginia Department of Transportation, Division of Highways (WVDOH) and the Maryland State Highway Administration (MDSHA). The DEIS will fulfill requirements set forth in the *National Environmental Policy Act of 1969 (NEPA),* the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), Section 4(f) of the Department of Transportation Act of 1966,* and the *Federal Aid Highway Act*. The WVDOH is the lead state agency on the project.

Through the preparation of a tiered DEIS separate *NEPA* and transportation planning processes are combined with a consolidated approach. Tiering for highway projects, such as this one, is governed by two federal laws, 40 Code of Regulations (CFR) Part 1500 and 23 CFR Part 771. The latter set of regulations, 23 CFR Part 771, represents joint FHWA/Federal Transit Administration regulations, while the former represents regulations issued by the Council on Environmental Quality (CEQ). The regulations define tiering as “the coverage of general matters in broader environmental impact statements.”

In Tier One, corridors are evaluated at a planning level of detail. The screening of these corridors, in turn, leads to the refinement of purpose and need and the identification of alternatives to be carried forward. By following a tiered approach, consideration of major environmental factors can be incorporated into the planning process at a very early stage. In Tier Two, more detailed studies will be completed on those alternatives. Utilization of a tiered process for this project provides a systematic approach for advancing transportation improvements in a cost-effective manner.

Tier One will conclude with the preparation of a Final EIS (FEIS) and, subsequently, an approved *Record of Decision* (ROD) that will identify a preferred corridor for Tier Two studies. More than one corridor, however, could be advanced to Tier Two. A second ROD will also be required to establish a preferred alternative at the end of Tier Two. Breakout projects having independent utility and logical termini (that do not restrict consideration of alternatives for other reasonably foreseeable transportation improvements) could also result after a ROD is issued.

Breakout projects would require separate detailed engineering studies and environmental documents (i.e., Categorical Exclusion Evaluations or Environmental Assessments). Although it is a goal of the project that Tier One lead to the identification of one corridor with the potential to have the fewest environmental impacts, it is possible, and very likely, that more than one corridor may be advanced for additional study. Once potential highway alignments are developed during Tier Two, there will be considerable opportunity for project planners to develop avoidance, minimization, and mitigation strategies addressing potential impacts to cultural, environmental, and socioeconomic resources. With the development of actual highway alignments or other types of transportation improvements in Tier Two, the appropriate resource agencies, local planners, and citizens of the area can more easily assist in determining the appropriate avoidance, minimization, and mitigation strategies for each proposed alternative. Corridors not advanced to Tier Two, however, will not be revisited during the second tier studies. Any ROD will identify the selected alternative for that phase of the project, present the basis for the decision, and identify the alternatives considered (FHWA 2010). The second ROD will also specify the environmentally preferable alternative and provide information on ways to avoid, minimize, and compensate for environmental impacts (FHWA 2010). Any construction programmed as a result of this project will not occur until after the second ROD is issued.

The current project was initiated with a notice to the public published in the *Federal Register* on April 14, 2006. The notice was issued by the FHWA and informed the public that an EIS was being prepared. Following a preliminary interagency coordination meeting in Baltimore, Maryland, formal project scoping and interagency review meetings were held in early May 2006, in LaVale, Maryland, and Moorefield, West Virginia. Preliminary project information and the proposed methodologies planned to be used during Tier One were discussed at the agency scoping sessions. This was followed by a series of public meetings that same month in Cumberland, Keyser, and Moorefield. The primary purposes of these first meetings were to introduce the project to the public and begin gathering information on the purpose and need for the project and subsequent environmental analyses.

Prior to beginning preparation of the DEIS, the WVDOH had already taken a proactive stance by exploring future transportation needs through the development of “sketch-plans.” For potential highway projects, sketch-planning utilizes previous analytical studies, secondary source data, and intuitive design judgment as a means of evaluating community issues and any related transportation problems. It allows transportation planners to suggest reasonable study

parameters that could form the basis for more detailed future studies. At the initial level of investigation that preceded work on the DEIS, state planners had proposed five potential preliminary corridors to be carried into the full environmental process expected during the first tier.

AGENCIES INVITED TO PARTICIPATE IN THE ENVIRONMENTAL PROCESS

Environmental resource and transportation agencies with jurisdiction over, or having operating interests with, transportation projects within West Virginia and Maryland were invited to help guide the project through the environmental process as either cooperating or participating agencies. A cooperating agency is any public agency with jurisdiction by law over parts of the proposed project or with special expertise related to the project. Participating agencies are federal, state, tribal, regional, and local government agencies that may have an interest in the project. By definition, all cooperating agencies are also considered participating agencies, but participating agencies are not necessarily cooperating agencies.

In addition to FHWA, WVDOH, and MDSHA (the lead agencies for the project), representatives from the United States Environmental Protection Agency (USEPA), United States Army Corps of Engineers (USACE), United States Fish and Wildlife Service (USFWS), United States Department of the Interior, National Park Service (NPS), and United States Coast Guard (USCG) have been invited to be cooperating agencies. Additionally, the Delaware Nation, West Virginia Department of Environmental Protection (WVDEP), West Virginia Division of Culture and History (WVDCH), West Virginia Division of Natural Resources (WVDNR), Maryland Department of the Environment (MDE), Maryland Department of Natural Resources (MDNR), Maryland Historical Trust (MHT), Maryland Department of Planning (MDP), Allegany County Planning Commission, the Region 8 Planning and Development Commission, and the U.S. Route 50 Association were invited to participate in the planning and environmental process for this project as participating agencies. All of these agencies have participated in the project by providing information on resources under their jurisdiction, reviewing preliminary documents, and attending coordination meetings.

ROLES OF THE FEDERAL AGENCIES INVOLVED WITH THE PROJECT

The FHWA administers the highway transportation programs of the United States Department of Transportation in accordance with *The Department of Transportation Act* (49 U.S. Code §104 and USC §101 et. seq.). As such, it also coordinates the development of highway programs with other modes of transportation.

The USEPA serves as a clearinghouse for all EISs. It also has discretionary veto authority over the wetlands and waterways permit under Section 404 (c) of the *Clean Water Act*, as well as special expertise and authority with respect to the *Clean Water Act*, Section 404 (b)(1) guidelines. A Section 404 permit will not be sought for this project until Tier Two, however. The USEPA agreed to be a cooperating agency on June 14, 2006.

The USACE has jurisdiction over environmental impacts to wetlands and most surface waters within the study area. The USACE would likely be requested to issue a Section 404 permit (under the *Clean Water Act)* for the proposed project after preparation of a Tier Two EIS. Although this Tier One DEIS and its subsequent FEIS will provide background information for the USACE in support of a future Section 404 permit application, preparation of a permit application has been deferred until the Tier Two studies have been undertaken and impacts can more accurately be determined. Although the study area falls within two Corps districts, staff from the Pittsburgh District have agreed to take the lead on the project. The USACE agreed to be a cooperating agency on January 2, 2008.

The USFWS has special expertise with threatened and endangered species and their habitats. Throughout the process, the USFWS has provided considerable information on threatened and endangered species in the area. It will also review the Section 404 permit application during Tier Two. On March 21, 2007, the USFWS responded to a request for information concerning threatened and endangered species under its jurisdiction. It agreed to be a cooperating agency on December 8, 2010.

The NPS administers all National Parks, including the Chesapeake and Ohio Canal National Historical Park and the Western Maryland Railway Right-of-Way, within the study area. The NPS also has jurisdiction over properties and sites on the *National Register of Historic Places* (NRHP). It agreed to be a cooperating agency on May 7, 2007.

In conjunction with several different laws, the Commandant of the USCG must approve the locations and plans for any new bridges over the navigable waterways of the United States. The Potomac River is a navigable waterway to its confluence with Wills Creek near Cumberland. As the proposed project evolved, however, the USCG determined that the project would not cross the Potomac River in a navigable location. Consequently, on April 20, 2007, the USCG informed the FHWA that a Coast Guard permit would not be required because the project would not cross a waterway where it had jurisdiction for bridge administration. Consequently, it is no longer necessary for the USCG to be a cooperating agency for the project.

COMPARISON OF TIER ONE AND TIER TWO STUDIES

The following table lists the resources examined during Tier One, briefly describes the techniques used to examine them, and suggests a Tier Two methodology. The build-out, or design year, for Tier One is 2025. During Tier Two studies, the design year will be advanced to 2030, or later. Additional information on the Tier One methodologies is found in Chapter 4.0 of this DEIS.

Comparison of Tier One and Tier Two Study Methodologies

Resource/Issue	Tier One	Tier Two
Socioeconomics	• Analyzed socioeconomic data from a variety of sources to determine the potential impact of the project on man's built environment; analysis included preliminary review of settlement patterns, census data, aerial photography, county comprehensive plans, capital improvements programs, and locally developed regional and study area plans. • Conducted windshield surveys and interviewed local planning officials to verify and update secondary source data. • Identified potential disruptions to local communities, including residential and commercial displacements, and the disruption of existing transportation patterns and the creation of physical barriers to determine the impacts on community cohesion.	• Complete additional qualitative evaluations of potential to impact socioeconomic resources. • Quantify residential and business displacements. • Analyze potential impacts to community cohesion. • Update identification of community resources. • Continue coordination with local communities to identify socioeconomic resources/issues. • Identify potential impacts on travel patterns, public safety, and community vitality. • Begin preliminary coordination related to federal and state relocation requirements, policies, and programs. • Evaluate potential economic impacts to local communities. • Conduct continued coordination with local planning officials.

Comparison of Tier One and Tier Two Study Methodologies (continued)

Resource/Issue	Tier One	Tier Two
Parks and Recreation	• Conducted windshield surveys to identify public parks and private recreation areas. • Sent letters to parks and recreation officials requesting locations of any parks and recreation areas within the study area, their property boundaries, and a brief description of each. • Reviewed county parks and recreation plans and municipal comprehensive plans. • Examined West Virginia GIS Technical Center database, MD Dept. of Natural Resources database, Allegany County Planning Department's database, and the Nature Conservancy's database.	• Conduct additional parks and recreation coordination with local and state officials; evaluate school playgrounds as potential recreational facilities. • Identify future public parks and recreation sites/areas. • Identify potential for Section 4(f) involvement. • Complete Section 4(f) Evaluation. • Discuss potential for avoidance and minimization, including Dans Mountain. • Identify potential mitigation measures.
Environmental Justice	• Conducted preliminary screening to determine if disproportionate effects on environmental justice populations are possible.	• Specific clusters of environmental justice populations will be identified and mapped. • A community outreach program for environmental justice populations will be developed. • Analyze the potential for high/disproportionate impacts to environmental justice populations.
Land Use	• Categorized land cover according to the *Anderson Level II Classification System* (Anderson, *et al.* 1976); digitized and mapped land cover using aerial photography. • Conducted windshield surveys to verify actual land use. • Reviewed county comprehensive plans, evaluated data on business locations, and conducted broad property analysis of each refined corridor.	• Refine land use analyses. • Reevaluate consistency with land use plans. • Evaluate whether proposed alternatives could affect changes in land use. • Evaluate consistency with Maryland's *Priority Funding Area* laws, policies, and related regulations. • Coordinate with both states and local jurisdictions to address positive transportation and land use strategies in support of planned development and Smart Growth policies.

Comparison of Tier One and Tier Two Study Methodologies (continued)

Resource/Issue	Tier One	Tier Two
Cultural Resources	• Completed background research. • Developed pre-contact and historic period archaeological resource sensitivity maps. • Developed and analyzed archaeological predictive surface model. • Identified historic properties that are listed in, eligible for, or potentially eligible for listing in the NRHP. • Completed agency field views of study area. • Prepared *Historic Resources Abbreviated Report.*	• Continue *Section 106* coordination. • Develop Programmatic Agreement in consultation with the WVDOH, MDSHA, the State Historic Preservation Offices (SHPOs), and the Advisory Council on Historic Preservation, detailing the steps to be used for complying with *Section 106* as part of the Tier Two approach. • Conduct Phase I archaeological survey for pre-contact and historic period archaeological resources. • Determine eligibility for listing of archaeological sites in the NRHP. • Prepare eligibility report for listing of historic resources in the NRHP. • Coordinate with SHPO on effects determination. • Prepare Memorandum of Agreement (MOA) addressing adverse effects to NRHP sites and specific National Park Service concerns. • Identify potential Section 4(f) involvement. • Complete Section 4(f) Evaluation. (See Tier Two information on Parks and Recreation for additional information.)
Aquatic Resources	• Potential wetlands were identified through the use of existing information and preliminary field investigations. • Streams were identified through the use of existing information and limited field views. • Water samples were taken at randomly selected locations to gain background data on streams and water quality.	• Identify and delineate sensitive aquatic habitat; assess eastern slope of Dans Mountain for brook trout populations. • Identify watershed boundaries. • Identify impacts in each watershed. • Conduct more detailed analysis of potential impacts to water quality and study area wetlands. • Develop strategies to avoid, minimize, or mitigate impacts to aquatic resources.
Floodplains	• Analyzed National Flood Insurance Program maps to evaluate potential impacts on 100-year floodplains and identify the risk of future flooding. • Identified the number of potential transverse crossings that may occur as a result of the proposed project. • Identified flood control dams operated and maintained by the Potomac Valley Soil Conservation District.	• Identify natural and beneficial floodplain values. • Develop strategies to avoid, minimize, restore, and/or preserve floodplain values. • Conduct hydrology/hydraulic studies to determine potential effects to floodplains.

Comparison of Tier One and Tier Two Study Methodologies (continued)

Resource/Issue	Tier One	Tier Two
Vegetation and Wildlife	• Conducted coordination with state and federal agencies concerning rare, threatened, and endangered (RTE) species. • Identified land cover and habitat types from United States Geological Survey (USGS) topographic maps and through field investigation.	• Continue coordination with state and federal agencies concerning RTE species; conduct Section 7 coordination, if required. • Identify locations of RTE species and critical habitat; evaluate potential impacts to RTE habitat. • Develop strategies to avoid, minimize, or mitigate impacts to RTE species. • Develop specific Dans Mountain avoidance alternatives.
Farmlands	• Determined if soils listed in the *Farmland Protection Policy Act* (FPPA) would be impacted; identified soil types in each of the study area counties that are listed as prime, unique, statewide important, and locally important. • Identified agricultural land cover. • Identified farmland preservation areas.	• Identify internal operations of potentially impacted farms to avoid or minimize agricultural impacts. • Initiate and complete FPPA coordination requirements, including preparation of FPPA forms, where applicable.
Soils and Geology	• Performed literature review of available geologic information to evaluate the impacts of the project on the area's geologic formations. • Identified soil types through a review of county soil surveys, United States Department of Agriculture-Natural Resources Conservation Service digital soil data, and USGS topographic maps.	• Identify unique geologic resources. • Identify high potential geologic hazard areas. • Identify highly erodible soils. • Conduct more detailed analysis of the study area's geologic structure and soils. • Identify potential stormwater management/environmental site design locations.
Potentially Contaminated Sites	• Conducted windshield reconnaissance to assess the possibility of future project involvement with potentially contaminated sites. • Mapped and categorized each potentially contaminated site. • Performed a cursory review of state and federal hazardous waste site databases.	• Conduct detailed review of state and federal hazardous waste site databases. • Identify underground storage tanks. • Conduct Phase I Environmental Assessment for alternatives under consideration.
Air Quality	• Analyzed regional emissions through an evaluation of State Implementation Plans to determine general attainment designation.	• Reevaluate air conformity attainment. • Conduct a localized, micro-scale analysis for carbon monoxide at worst-case locations. • Reevaluate mobile source air toxics and PM 2.5.

Comparison of Tier One and Tier Two Study Methodologies (continued)

Resource/Issue	Tier One	Tier Two
Noise	• Completed field reconnaissance and review of study area mapping to identify potential noise sensitive areas.	• Develop noise level prediction model based on typical sections and future traffic volumes. • Identify noise receptors. • Conduct noise analyses, including evaluation of pre-construction, construction, and post-construction noise volumes. • Analyze/recommend abatement measures.
Indirect Impacts	• Examined development trends and redevelopment efforts. • Completed field views and interviews with planning, development, and other public representatives. • Analyzed representative interchanges for each refined corridor under consideration and calculated impacts for areas near the interchanges.	• Refine potential impact area for indirect effects. • Identify potential land use changes and indirect impacts for non-growth areas within the study area. • Complete additional analyses on potential impacts related to Tier Two alternatives.
Cumulative Impacts	• Past and planned actions through the year 2025 were reviewed to complete a preliminary assessment of cumulative impacts; reviewed comprehensive plans and related programming documents; interviewed local planners and economic development officials; and conducted study area field views.	• Update identification of all reasonably foreseeable future actions within the study area. • Complete cumulative effects assessment per CEQ guidelines; will analyze magnitude and extent of potential cumulative effects within context of the appropriate resource, ecosystem, and human community.
Public and Agency Involvement	• Distributed project information through direct mailings and local libraries. • Conducted preliminary agency field views. • Presented information to local, state, and federal agencies at several coordination meetings. • Conducted public meetings.	• Continue to distribute project information through direct mailings and local libraries. • Conduct resource-specific agency field views. • Continue to present information to local, state, and federal agencies. • Conduct public meetings/hearings.

As noted earlier, it is possible that the development of breakout projects with their own logical termini and independent utility may result from this Tier One study. Any other possible projects that may be an outgrowth of Tier One will require separate environmental documentation.

DOCUMENT ORGANIZATION

This DEIS is comprised of 11 chapters as well as several appendices, figures, and the Plates. Each of these chapters is described below:

Chapter 1, Purpose and Need Statement – Provides background information on the study area, discusses the purpose of the proposed project, and identifies the project needs. This chapter also establishes why public funds will be spent on a project that could have significant environmental impacts.

Chapter 2, Alternatives Development – Provides background on the process to develop a broad range of reasonable corridor alternatives to meet the project's purpose and needs; describes five preliminary corridors; establishes the engineering design criteria used for the project, and develops five "refined" corridors and their costs. Also this chapter provides a traffic assessment of the alternatives and presents an initial screening that narrows the project alternatives to three of the corridors and a No-Build Alternative.

Chapter 3, Affected Environment – Provides information on important resources within the study area and the condition of the existing environment. Recognizing that the study area for the project is over 835 square miles, this chapter (out of necessity) paints a broad picture of the area's socioeconomic, natural, and cultural resources.

Chapter 4, Environmental Consequences – Provides additional detail on the resources within the three corridors that were carried forward and describes the impacts of project alternatives on the environment and the methodologies used in evaluating impacts.

Chapter 5, Potential Section 4(f) Resources – Provides an effects analysis and preliminary alternatives analysis for the Section 4(f) resources that could potentially be impacted once detailed alternatives are developed during Tier Two studies.

Chapter 6, Findings and Conclusions – Summarizes each of the three corridors carried through impact evaluation and presents conclusions related to future Tier Two studies.

Chapter 7, Comments and Coordination – Currently, summarizes public and agency involvement in the project. When a FEIS is prepared, it will also address substantive comments received on the DEIS.

Chapter 8, List of Preparers and Reviewers – Identifies the principal people working on the project, lists their educational background and experience, and identifies the primary functional or thematic areas they prepared or reviewed.

Chapter 9, Distribution List – Identifies the federal, state, and local agencies that were provided with a copy of this DEIS for review during the official comment period.

Chapter 10, References – Provides bibliographic information on technical information reviewed or cited as part of this DEIS.

Chapter 11, Acronyms – Defines the acronyms found within this DEIS.

UNRESOLVED ISSUES

Cultural Resources

The *Section 106* process will continue into Tier Two. Early in the Tier Two process, a PA will be developed in consultation with the WVDOH, MDSHA, SHPOs, and Advisory Council on Historic Preservation to detail the steps to be used for complying with *Section 106*. During Tier Two, a Memorandum of Agreement will also be developed in cooperation with the NPS to address adverse effects to all NRHP sites impacted by the project. The NPS had originally requested that a MOA be developed during the current phase of the project. As the project proceeded, however, it seemed more appropriate to defer the MOA until the next tier because the extent of potential impacts on NRHP sites will be better known then.

The NPS offered comments on two preliminary reports for this project, *Purpose and Need Statement* and *Corridors Retained for Further Analysis*, but did not officially concur with either report. (All other cooperating and participating agencies, except the MDE and Allegany County, have concurred with these two reports.) The NPS has indicated that the project could have serious impacts to resources under its jurisdiction, or nearby properties associated with those resources. To proceed the project may require special avoidance, minimization, or mitigation measures.

Because of the widespread occurrence of cultural resources throughout the area, especially existing and potential historic districts and farmsteads, a *Section 4(f) Evaluation* will be necessary during Tier Two. *Section 4(f)* of the *U.S. Department of Transportation Act of 1966* requires that special efforts be made to protect publicly-owned parks, recreation areas, wildlife and waterfowl refuges, and significant historic sites. Section 4(f) applies to projects that require approval by the FHWA or any other United States Department of Transportation agency. It requires that such projects avoid the acquisition, or "use," of any of the previously defined Section 4(f) resources unless there is no prudent and feasible alternative to that use. If a use must occur, all possible planning measures must be included to minimize harm to that resource.

Natural Resources

Coordination with state and federal agencies is ongoing and will continue in Tier Two. The federally-listed endangered Indiana bat, the federally-listed endangered Virginia big-eared bat, and the federally-protected bald eagle may be present in the study area. Habitat suitable for the federally-listed endangered shale barrens rock cress may also be present, as well as flora and fauna of state concern. The Maryland Department of Natural Resources is especially concerned about potential impacts to the Dans Mountain Wildlife Management Area and habitat suitable for forest interior dwelling species (FIDS). The development of actual alternatives in Tier Two may be able to avoid or minimize the extent of these potential impacts. Dans Mountain is one of the largest contiguous tracts of forestland in the state of Maryland; a considerable amount of coordination with the USFWS, MDNR, and MDE will be necessary during Tier Two to analyze actual alternatives that could impact it. The best options in this area are those that may avoid it altogether. However, if Dans Mountain cannot be avoided, alternatives that minimize impacts and restrict them to edge area of the resource may be advanced. Mitigation will be proposed for any loss of forestland or function. Additional field activities, studies, coordination, and consultation during Tier Two will be necessary pursuant to *Section 7 of the Endangered Species Act of 1973* and the *Nongame and Endangered Species Conservation Act* (in Maryland) to address these concerns.

Additional studies will be conducted during Tier Two in Mill Run, a brook trout stream located near Rawlings, Maryland. This and other streams on the eastern slope of Dans Mountains will be assessed for brook trout through aquatic sampling as the project progresses. The purpose

of this sampling will be to more precisely identify the locations of brook trout populations as Tier Two alternatives are developed.

The Potomac River is a navigable waterway to the Cumberland area. As such, it is subject to Section 10 of the *Rivers and Harbors Act* and Section 404 of the *Clean Water Act*. Additional coordination will be necessary with the USACE and, possibly, the USCG, as the project progresses into Tier Two.

On March 31, 2008, the USEPA and USACE issued revised regulations governing compensatory mitigation for authorized impacts to wetlands, streams, and other waters of the United States under Section 404 of the *Clean Water Act* (known as the 2008 Final Compensatory Mitigation Rule). These regulations are designed to improve the effectiveness of compensatory mitigation to replace lost aquatic resource functions and areas, expand public participation in compensatory mitigation decision making, and increase the efficiency and predictability of the mitigation project review process. The project is subject to these requirements; they will be addressed during Tier Two.

Some minor comments from the resource agencies also remain unresolved because they appear to be more appropriate to the more detailed studies to be undertaken during Tier Two. Coordination will continue through Tier Two to further define these comments and resolve them.

Permits

In addition to the Tier Two studies, other state and federal permits/actions will be required for implementation of the project. These permits/actions would include a Section 404 permit, a *Section 401 Water Quality Certification*, a *National Pollutant Discharge Elimination System (NPDES) Water Pollution Control* permit, an *Erosion and Sedimentation Control Plan*, and a *Stormwater Management Plan*. Specifically, in Maryland, a Joint Permit Application will be submitted to meet the combined federal/state requirements.

Costs

Project costs were developed for this phase of the project utilizing unit costs from similar type projects recently completed in West Virginia. They do not include utility relocation, right-of-way

acquisition, engineering, or future environmental study costs. Additional cost information for project alternatives will be developed during Tier Two. If breakout projects are identified, cost information for those projects will be developed within their respective environmental documents.

Other

Local officials, jurisdictional agencies, and members of the public will have the opportunity to review this DEIS and submit comments at a public hearing or public meeting. Written comments may also be submitted during the official comment period. The comment period will last 60 days, including 30 days before the first public meeting and 30 days after the last public hearing/meeting. After comments are evaluated, a FEIS will be prepared identifying those corridors that will be carried into Tier Two. A Transportation Systems Alternative (TSM) will also be evaluated during Tier Two. The use of bicycle and pedestrian facilities as parts of future alternatives will also be addressed during Tier Two.

The FEIS will also include comments and responses received during the DEIS comment period. A second review period will be established for the FEIS. Any additional comments will be summarized and any further unresolved issues will be identified. At the conclusion of the Tier Two FEIS process, a ROD will be prepared and approved by the FHWA, allowing the project to move to final design.

CHAPTER 1.0

PURPOSE AND NEED STATEMENT

1.0 PURPOSE AND NEED STATEMENT

1.1 Introduction

This *Draft Environmental Impact Statement* (DEIS) for the National Highway System (NHS) Corridor along US 220 between Interstate 68 (I-68) and Corridor H is being prepared for the Federal Highway Administration (FHWA) by the West Virginia Department of Transportation, Division of Highways (WVDOH) and the Maryland State Highway Administration (MDSHA). The DEIS will fulfill requirements set forth in the *National Environmental Policy Act of 1969 (NEPA),* the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), Section 4(f) of the Department of Transportation Act of 1966,* and the *Federal Aid Highway Act*.

NEPA requires that the potential for environmental impacts be assessed for every federal action that could "significantly affect the quality of the human environment." Thus, a DEIS is being prepared for this project because there could be significant impacts as a result of the action. *NEPA* also applies to any project where there is major federal involvement, including federal financial assistance, the issuance of a permit, or a requirement for federal approval. The construction activities that may result for this project will likely be funded through a combination of federal and state programs.

Following the enactment of *NEPA*, regulations issued by the Council on Environmental Quality (CEQ) noted that Environmental Impact Statements shall "provide full and fair discussion of significant environmental impacts and shall inform decision-makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment" (40 Code of Federal Regulations [CFR] Parts 1500-1508). An Environmental Impact Statement is required when it is apparent from the beginning of the project, or through subsequent analysis, that the proposed project is likely to have a major effect on the human environment. For this Tier One DEIS, potential impacts will be evaluated to a proposed "build-out" year of 2025.

With the signature of the President on August 10, 2005, *SAFETEA-LU* established a new environmental review process for highway development and other transportation projects. Of primary importance were new provisions and revised procedures for public and interagency

involvement, development of a project's purpose and need, and identification of a range of alternatives to be considered for a project.

The process used for the completion of this DEIS also complied with regulations established by the President's Council on Environmental Quality and the FHWA Technical Advisory 6640.8A, *Guidelines for Preparing and Processing Environmental and Section 4(f) Documents* (October 30, 1987).

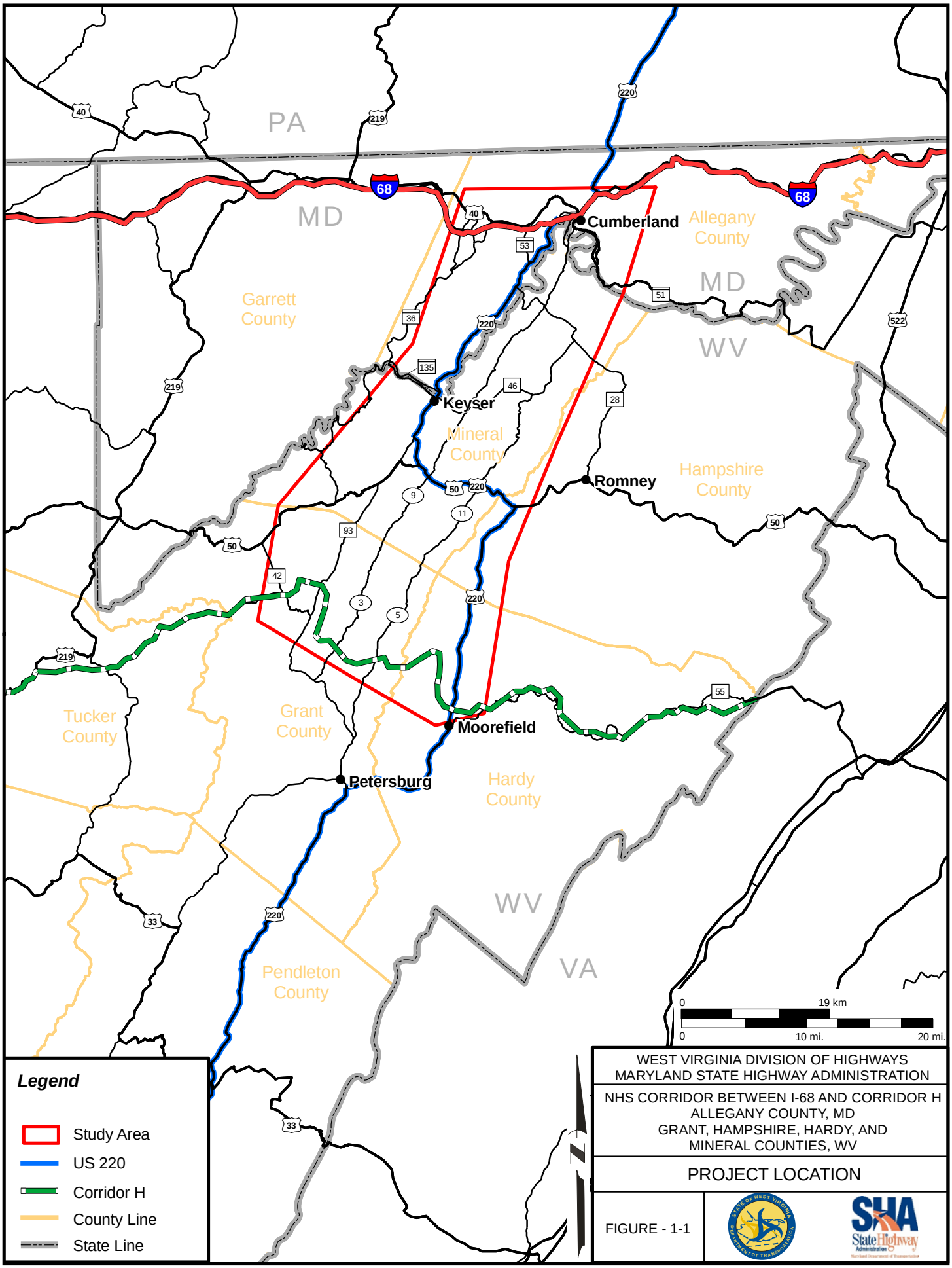
1.2 Project Location and Description

The project is located in Grant, Hardy, Hampshire, and Mineral counties in West Virginia, and Allegany County in Maryland. The project region stretches south from I-68 (or the National Freeway) near Cumberland, Maryland, to the proposed alignment of Corridor H. Corridor H is part of the Appalachian Development Highway System (ADHS). Figure 1-1 shows the project location in its regional context.

The major routes in the area are I-68, US 220, US 50, MD 51, MD 53, MD 135, WV 972, WV 46, and WV 93. These routes connect the major population and employment areas of the region located at Cresaptown, Cumberland, Frostburg, and McCoole (all in Maryland) and Keyser, Romney, Moorefield, and Petersburg (all in West Virginia). Besides being among the largest communities in the region in terms of residents and employment opportunities, Cumberland, Keyser, Romney, Moorefield, and Petersburg are also the county seats of their respective counties (Allegany, Mineral, Hampshire, Hardy, and Grant).

Logical termini for the project are proposed on I-68 and Corridor H. At the northern end of the region, the project would terminate on I-68 at an existing interchange in or near the City of Cumberland. At the southern end, the project would terminate on Corridor H at one of its proposed interchanges. Interstate 68 is the principal east-west route through the northern part of the region. When completely constructed, Corridor H will be the principal east-west travelway through the southern part of the region. Termini for the proposed project on each of these major highways will allow for a similar transportation connection between them.

The distance between Cumberland and Corridor H is approximately 40 miles. The current travel time between Cumberland and the West Virginia communities near the planned alignment of Corridor H is approximately one hour.


PA
MD
WV
VA
Cumberland
Allegany County
Garrett County
Keyser
Mineral County
Romney
Hampshire County
Moorefield
Petersburg
Tucker County
Grant County
Hardy County
Pendleton County
68
40
219
220
53
51
36
135
46
28
522
50
9
11
93
42
3
5
55
33
0
19 km
0
10 mi.
20 mi.
Legend
Study Area
US 220
Corridor H
County Line
State Line
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
PROJECT LOCATION
FIGURE - 1-1

1.3 Project Overview and Background

The current project is an outgrowth of the *North South Appalachia Corridor Feasibility Report* (MDSHA *et al.* 2001). Completed in July 2001, the North South Appalachia Corridor Feasibility Study was a multi-state transportation planning and economic development effort undertaken by MDSHA, WVDOH, the Pennsylvania Department of Transportation (PENNDOT), and the Virginia Department of Transportation. The purposes of North South Appalachia Corridor Feasibility Study were twofold:

- To determine the relative costs and social, economic, and environmental benefits of transportation improvements in several north-south transportation corridors in Appalachian Maryland, West Virginia, Virginia, and Pennsylvania.

- To encourage economic development and improve quality of life while protecting and enhancing the environment in the study area via north-south transportation corridor improvements.

The North South Appalachia Corridor Feasibility Study analyzed the potential support for highway improvements for economic development in four north-south corridors bisecting the Appalachian regions of Maryland, Pennsylvania, West Virginia, and Virginia. The study also evaluated the potential environmental impacts that would be associated with a major transportation improvement in the region. The study concluded that US 220 south from I-68, via MD 53, to Corridor H and US 219 north from I-68 to the Pennsylvania Turnpike (I-76) would provide the greatest potential for benefiting Appalachian economic development. The report also concluded that the proposed NHS Corridor (being studied through the DEIS process herewith) should be given a high priority for future highway upgrades and other transportation improvements.

The North South Appalachia Corridor Feasibility Study further recommended that future improvements within the US 220 corridor should be consistent with Maryland's Smart Growth initiatives and that improvements associated with US 220 should not detract from planned or programmed improvements in other major corridors. The study went on to specifically note that the Smart Growth initiatives highly suggested the following:

- Highway access points should be provided only in *Priority Funding Areas* (PFAs) to limit sprawl;

- Access points should encourage redevelopment in PFAs;
- Not only should highway improvements meet all environmental requirements, they should emphasize environmental protection and enhancement;
- Improvements should complement scenic qualities of the region; and
- Improvements should be developed with active and continuous citizen participation.

Additional information on Smart Growth initiatives, PFAs, and project need is found later in this chapter.

1.4 Purpose of the Project

The purpose of this project is to develop an improved transportation corridor connecting I-68 in western Maryland and Corridor H in West Virginia. Upgraded roadways resulting from this project will become part of the NHS. The new NHS Corridor, paralleling to some extent existing US 220 in western Maryland and West Virginia's Potomac Highlands area, would improve the existing transportation system by providing an upgraded north-south road through a program of transportation projects.

The new corridor could be comprised of roadways on new alignment, an upgrade of existing roadways, or some combination of upgrading existing roads and building new roads. The use of existing right-of-way can potentially reduce the environmental impact of the proposed project. The development of a new corridor through the region will support efforts to increase mobility and regional commerce for residents, businesses, and visitors, especially within the region's built-up areas and existing commercial centers. It will also serve north-south interstate travel movements and support economic development throughout the Appalachian regions of Maryland, West Virginia, Pennsylvania, and Virginia.

1.5 Need for the Project

Project needs were examined in the early stages of the project through a collaborative process that included additional examination of past studies, a further review of existing regional plans, consultation with citizens and local officials within the study area, consultation with the government agencies involved in the process, and an analysis of the environmental and

socioeconomic conditions of the region. Through this process, the following needs were identified within the study corridor:

- Current geometric deficiencies on US 220 and parallel roadways limit regional mobility;
- The study area has inadequate roadway capacity;
- There are safety deficiencies on roadway sections within the area;
- There is a need to support economic development efforts in the area; and
- Additional system linkage is needed to complete the regional road network.

Although the major roads serving the area are well-maintained, they are primarily two-lane roads with grades as steep as nine percent and deficient roadway geometry in some locations. The capacity of the existing roadway network is inadequate to accommodate future economic development and commerce. In many areas throughout the region, unrestricted access creates traffic conflicts on the roads. The lack of multi-lane transportation facilities, beyond I-68 and very small sections of US 220 and MD 53, has limited economic development in the region. Additionally, the high percentage of trucks on these two-lane roads, together with limited passing zones, creates conflicts with automobile traffic. Table 1.5-1 provides the existing characteristics and percentage of truck traffic on selected routes.

TABLE 1.5-1
Existing Characteristics and Truck Traffic on Selected Routes

Location	Functional Classification	Average Annual Daily Traffic (AADT)	Lane Width	Shoulder Width	Speed Limit	Truck Traffic
MD 53	Principal Arterial	14,475	12 feet	2-10 feet	30-40 mph	5%
US 220 (MD)	Principal Arterial	14,125	12 feet	0-12 feet	25-50 mph	9%
US 220 (WV)	Principal Arterial	4,700	12 feet	0-12 feet	25-50 mph	4-5%
WV 93	Principal Arterial	2,000	12 feet	<2 feet	55 mph	9-10%
WV 972	Principal Arterial	5,000	12 feet	<2 feet	35-50 mph	9-10%

1.6 Existing Transportation Network

Speed limits for the through routes within the study area vary between 25 and 55 miles per hour (mph). Except for small sections of four-lane travelways on US 220 and MD 53 near Cumberland, the through-routes in the area are all generally two-lane facilities with 12-foot travel lanes and shoulder widths varying from zero to 12 feet.

Turning lanes are found at many, but not all, of the major intersections. Several important intersections, however, are currently too narrow to allow for additional lanes.

1.6.1 Major Maryland Roadways in the Study Area

US 220

US 220 in Maryland is classified as an urban principal arterial. Urban principal arterials serve the major centers of activity of a metropolitan area, the highest traffic volume corridors, and the through movements to bypass the central city. Urban principal arterials also carry intra-urban and inter-city bus travel, travel between major inner city communities, and travel between central business districts. They are almost all fully and partially-controlled access facilities and are stratified into three subsystems: Interstates, freeways and expressways, and other principal arterials.

US 220 begins at I-68 and extends southward to the North Branch of the Potomac River at MD 135 in McCoole. The speed limit ranges from 40 to 50 mph on this roadway with a reduced speed of 30 mph through Cresaptown and suggested speeds of 35 mph on numerous curves. Trucks are advised at 25 mph approaching McCoole because of the steep grade. The existing roadway section is comprised of two undivided, 12-foot travel lanes with two to eight-foot paved shoulders. Truck climbing lanes exist at the northbound approach to I-68, northbound at Dawson, and on the northbound ascent from McCoole.

There are numerous turning lanes along this stretch of US 220, specifically at the Western Correctional Institute and throughout Cresaptown. Three traffic signals exist, one each at Barton Boulevard, Warrior Drive, and Winchester Road. There is a flashing yellow signal in

McCoole at the intersection with MD 135. Traffic becomes congested through Cresaptown and at Bowling Green where there is on-street parking.

Of the 18.7 miles of US 220 roadway from I-68 to the West Virginia state line, approximately 2,200 feet (2.2 percent of the entire segment) exhibits substandard horizontal alignment and approximately 29,100 feet (29.5 percent) exhibits substandard vertical alignment. Substandard horizontal and vertical alignments do not meet the current engineering criteria of the WVDOH and MDSHA. These conditions create difficulties for the traveling public anticipating modern highway facilities. Additionally, 14.1 percent of the segment is steeper than the maximum design criteria of 9 percent for this type of roadway facility.

Interstate 68

Interstate 68 is the principal east-west route through the northern part of the project region. On the western fringe, the route begins at Midlothian Road (Exit 33) in Frostburg and continues 16.7 miles east to MD 144, National Pike (Exit 47), in Wolfe Mill. Built in the 1960s, the elevated section of I-68 through Cumberland is substandard for its urban freeway classification because of a speed limit of 40 mph, narrow lane widths, and exit ramp speed limits of 15 mph.

The maximum speed limit on I-68 is 65 mph, with reductions to 50 mph when approaching Cumberland, and 40 mph through the Cumberland city limits. There are four 12-foot travel lanes, two eastbound and two westbound, separated by a wide, grassy median with guard rail. Certain sections have five 12-foot lanes where there are truck-climbing lanes, specifically on the 6 percent grades between Exits 33 and 34 and Exits 42 and 47. Through Cumberland, there are four 10- to 11-foot lanes with very narrow shoulders separated by a concrete barrier. Trucks and buses are not permitted in the left lane or on Exit 42 eastbound because of the steep grades.

Of the 16.7 miles of I-68 roadway from Exit 33 to Exit 47, approximately 8,900 feet (10.1 percent of the entire segment) exhibits substandard horizontal alignment and approximately 19,700 feet (22.3 percent) exhibits substandard vertical alignment. Additionally, 29.1 percent of the segment is steeper than the maximum design criteria of 6 percent for this type of roadway facility.

MD 36

MD 36 begins at the northern end of the project near I-68 and continues southward to MD 135 in Westernport. The speed limit ranges from 35 to 50 mph with reductions to 25 mph in Midland and Lonaconing. There are two 12-foot travel lanes with the exception of a four-lane divided highway over I-68. The shoulder is paved and ranges in width from eight to 12 feet. There are four railroad crossings and three traffic signals along this stretch of MD 36.

Of the 15 miles of MD 36 roadway, approximately 17,000 feet (21.5 percent of the entire segment) exhibits substandard horizontal alignment.

MD 51/Industrial Boulevard

MD 51 begins at the northern end of the project near I-68 and continues southward through South Cumberland to Spring Gap. The speed limit ranges from 45 to 55 mph with a reduction to 30 mph through Cumberland. There are two 12-foot travel lanes with a paved two to eight-foot shoulder. Through Cumberland, MD 51 has three lanes southbound. The road splits through Virginia Avenue to become a one-way couple with two lanes on each side. The median is grass or raised concrete and varies in width from 16 to 20 feet. There are three traffic signals, one at the access ramp to I-68 and two at Virginia Avenue on each side of the couple.

Of the 7.2 miles of MD 51 roadway from I-68 to Spring Gap, approximately 4,100 feet (11 percent of the entire segment) exhibits substandard horizontal alignment and approximately 16,300 feet (42.3 percent) exhibits substandard vertical alignment. Additionally, 11 percent of the segment is steeper than the maximum design criteria of 9 percent for this type of roadway.

MD 53

MD 53 begins at LaVale near I-68 and US 40 Alternate and runs southward to Cresaptown at US 220. The speed limit ranges from 30 to 40 mph on this roadway. Four traffic signals are located in LaVale. There is one traffic signal in Cresaptown at the junction with US 220. There are two 12-foot travel lanes with a paved eight-foot shoulder, except in LaVale where MD 53 is a four-lane divided roadway with concrete curbs.

Of the 3.1 miles of MD 53 roadway, approximately 800 feet (4.9 percent of the entire segment) exhibits substandard horizontal alignment and approximately 2,400 feet (14.4 percent) exhibits substandard vertical alignment.

MD 55

MD 55 is a small segment of roadway that begins in Clarysville at US 40 Alternate and runs to MD 36 near Vale Summit. The speed limit ranges from 45 to 50 mph with two 12-foot travel lanes and an eight to 10-foot paved shoulder. There are no traffic signals along this stretch of road. Of the 2.6 miles of this route, 1,600 feet (11.8 percent) exhibits substandard vertical alignment.

MD 135

MD 135 begins in Westernport at MD 36. From Westernport, MD 135 runs eastward to McCoole, terminating at US 220. The speed limit ranges from 30 to 50 mph with a reduction to 25 mph through Westernport. There are two 12-foot lanes with an eight-foot paved shoulder. In Westernport, there are concrete curbs with sidewalks and a center island. There is one traffic signal at MD 36 and one railroad crossing near the same intersection. The Keyser-McCoole Bridge has a restricted underpass clearance of 12 feet; however, the bridge will be improved in the near future. Construction on a new bridge began in 2010 and it will open in 2012. (More information on the Keyser-McCoole Bridge is found in the next section.) For over-height vehicles, MD 135 provides an alternative connection to US 220 in McCoole.

Of the 5.3 miles of MD 135 roadway from US 220 to WV 46, approximately 1,100 feet (3.8 percent of the entire segment) exhibits substandard horizontal alignment. Additionally, 10 percent of the segment is steeper than the maximum design criteria of 6 percent for this type of roadway facility.

MD 658 (Vocke Road)

MD 658 is a small segment, approximately two miles long, that runs through LaVale from US 40 Alternate to MD 53. The speed limit is 40 mph and there are four 12-foot lanes separated by a raised concrete median. The shoulders are paved with a concrete curb. There are numerous

left and center turning lanes. There are three traffic signals along this stretch of roadway. Only eastbound access to I-68 is available.

MD 936

MD 936 begins at US 40 Alternate in Frostburg and runs southward to MD 36 in Midland. The speed limit is 50 mph with a reduced speed to 25 mph in Borden/Shaft. There are two 11-foot travel lanes with little or no shoulder and numerous clear zone restrictions. There is one traffic signal at US 40 Alternate in Frostburg. Advisory signs suggest 35 mph on some curves. Of the five miles of MD 936 roadway, approximately 600 feet (2.3 percent of the entire segment) exhibits substandard horizontal alignment.

1.6.2 Major West Virginia Roadways in the Study Area

US 220

Beginning at Keyser, the West Virginia portion of US 220, classified as a rural principal arterial, continues southward to Corridor H at Moorefield and beyond. Rural principal arterials form a connected network of continuous routes that serve corridor movements having trip length and travel density characteristics indicative of substantial intrastate or interstate travel. Rural principal arterials are stratified into two subsystems: Interstates and other principal arterials.

The speed limit on US 220 in this part of the study area ranges from 40 to 55 mph, with reductions to 25 mph through Keyser and 35 mph approaching Moorefield. Many curves have reduced speeds ranging from 20 to 45 mph.

There are two 12-foot travel lanes, separated by road markings, with two 12-foot paved shoulders. In a few instances, the shoulder is gravel. At Keyser, there is a concrete curb with sidewalks. There are left turning lanes throughout Keyser, as well as a broad center turning lane and median.

The Keyser-McCoole Bridge presents a narrower width than the approaching roadway. The bridge exhibits major structural deficiencies and the two most recent inspection reports gave the bridge an overall rating of “poor.” The concrete deck, steel superstructure members, concrete

substructure elements, and existing bridge drainage system are in varying states of decay. The concrete deck has many delaminated areas, as well as areas of full-depth contamination, particularly on the approach spans in Keyser. There is also rust packing and corrosion on the outside girders, corrosion and measurable section loss at the bottom flanges of the approach spans over the railroad tracks, cracked welds, severe concrete spalling with corroded rebar exposure, and vertical cracks. An Environmental Assessment for that project was prepared and a public meeting held on March 6, 2007, at the Keyser High School. The FHWA approved a *Finding of No Significant Impact* in October 2007. Construction activities have begun and the new bridge is expected to be open in 2012.

There are two posted bridge weight restrictions along US 220 in the West Virginia portion of the project; both are located at the southern end of the corridor in Hardy County. The first is near the northern leg of County Route 2 and the second is just north of WV 923; both limits are 18 tons and the bridges have narrower widths than the approaching roadway. There is a 9 percent grade for approximately one mile where US 220 couples with US 50. A truck-climbing lane is in place at this location.

Of the 36.8 miles of US 220 roadway from the Maryland state line to Moorefield, approximately 18,200 feet (9.4 percent of the entire segment) exhibits substandard horizontal alignment and approximately 14,000 feet (7.1 percent) exhibits substandard vertical alignment. Additionally, 4.8 percent of the segment is steeper than the maximum design criteria of 7 percent for this type of roadway facility.

US 50

Within the study area, US 50 begins at Mount Storm and extends eastward to Romney. The speed limit ranges from 40 to 55 mph, except on approach to Romney, where it is reduced to 25 mph. There are two 12-foot travel lanes separated by road markings. The shoulder varies from zero to six feet in width and is either gravel or paved. There are numerous clear zone restrictions along this curvy portion of US 50.

There are three bridge weight restrictions along this stretch of US 50: the first is 20 tons at the WV 972 junction; the second is 20 tons just east of there; and the third is 18 tons over the South Branch of the Potomac River near Romney. The second location also has a bridge width less

than the approaching roadway. There is also a 9 percent grade for four miles between Mount Storm and WV 93, as well as another 9 percent grade near the US 220 split. Truck climbing lanes exist at both locations.

Of the 27.3 miles of US 50 roadway from WV 42 to WV 28, approximately 17,600 feet (13.7 percent of the entire segment) exhibits substandard horizontal alignment and approximately 13,300 feet (10.4 percent) exhibits substandard vertical alignment. Additionally, 13.7 percent of the segment is steeper than the maximum design criteria of 7 percent for this type of roadway facility.

WV 28

WV 28 begins in Cumberland at MD 51 and extends southward into West Virginia at the Hampshire County line. The speed limit ranges from 35 to 55 mph with two 12-foot travel lanes. The shoulder type varies from less than two feet gravel to eight feet paved. There is one traffic signal at WV 46 and one railroad crossing near MD 51. There are numerous advisories for reduced speeds of 30-50 mph on curves.

Of the 15.5 miles of this roadway, approximately 9,600 feet (11.7 percent of the entire segment) exhibits substandard horizontal alignment and approximately 11,700 feet (14.3 percent) exhibits substandard vertical alignment. Additionally, 5.8 percent of the segment is steeper than the maximum design criteria of 7 percent for this type of roadway facility.

WV 28 Alternate

WV 28 Alternate begins in Cumberland at the Potomac River and runs southward to WV 28 near the Greater Cumberland Regional Airport. The speed limit is 50 mph except in Ridgeley where it is reduced to 25 mph. There are two 11-foot lanes with no roadway shoulder. There is one traffic signal on WV 28 Alternate near Cumberland. In Ridgeley, there is a railroad underpass with an 11-foot, 11-inch height restriction. The underpass and bridge over the Potomac River both have narrow widths.

Of the 2.7 miles of this roadway, 5,900 feet (38.3 percent) exhibits substandard vertical alignment. Additionally, 63.9 percent of the segment is steeper than the maximum design criteria of 7 percent for this type of roadway facility.

WV 42

WV 42 begins near Kitzmiller and travels southward to WV 93 near Bismarck. The speed limit ranges from 30-55 mph and, generally, the travel lane widths vary from 10 to 11 feet. The shoulder is gravel and in some places becomes very narrow, but in other places ranges up to six feet in width. There is a railroad crossing at the North Branch of the Potomac River, suggested speeds of 20-35 mph on some curves, and a 9 percent steep grade for approximately three miles. There are also clear zone restrictions along this roadway.

Of the 16.1 miles of WV 42, approximately 20,700 feet (24.4 percent of the entire segment) exhibits substandard horizontal alignment and 11,050 feet (13 percent) exhibits substandard vertical alignment. Additionally, 28 percent of the segment is steeper than the maximum design criteria of 7 percent for this type of roadway facility.

WV 46

WV 46 begins in Elk Garden then runs northward and eastward to WV 28 in Fort Ashby. The speed limit ranges from 35 to 55 mph with reductions to 25 mph through Piedmont, Keyser, and Fort Ashby. There are two travel lanes ranging in width from eight to 12 feet. In many instances along this roadway there is no shoulder. There are four railroad crossings, four traffic signals, and one weight restriction on WV 46. Just southeast of Piedmont, the road contains severe clear zone restrictions as well as cautioned speeds reduced to 15 mph on some horizontal and vertical curves and a narrow width bridge.

Of the 34.7 miles of this roadway, approximately 20,000 feet (11 percent of the entire segment) exhibits substandard horizontal alignment and approximately 30,200 feet (16.5 percent) exhibits substandard vertical alignment. Additionally, 22.4 percent of the segment is steeper than the maximum design criteria of 7 percent for this type of roadway facility.

WV 93

WV 93 begins at US 50 and extends southward to WV 42 in Scherr. The speed limit is 55 mph with two 10-foot lanes and a paved shoulder less than two feet in width. There is a 7 percent grade for approximately two miles.

Of the 12.2 miles of WV 93 roadway, approximately 10,400 feet (16.1 percent of the entire segment) exhibits substandard vertical alignment. Additionally, 10.7 percent of the segment is steeper than the maximum design criteria of 7 percent for this type of roadway.

WV 956

WV 956 begins at US 220 near the Allegany Ballistics Laboratory and extends eastward for a short distance to WV 28. The speed limit ranges from 35 to 45 mph with two 11-foot lanes and a narrow gravel shoulder. Reduced speed advisories from 30 to 35 mph are posted around some curves. The Potomac River Bridge has a width that is less than the approaching roadway.

Of the 7.4 miles of this roadway, approximately 6,100 feet (15.6 percent) exhibits substandard vertical alignment. Additionally, 18.8 percent of the segment is steeper than the maximum design criteria of 10 percent for this type of roadway facility.

WV 972

WV 972 starts at US 220 south of Keyser and extends for a short distance to US 50. The speed limit ranges from 40 to 50 mph with two 12-foot travel lanes and a narrow gravel or paved shoulder. There are clear zone restrictions as well as reduced speed advisories to 30 mph around some curves. Of the 2.1 miles of this roadway, approximately 900 feet (7.8 percent of the entire segment) exhibits substandard horizontal alignment and approximately 400 feet (3.7 percent) exhibits substandard vertical alignment.

Grant County Route 3

Grant County Route 3 begins at the Mineral County line and runs southward to WV 42. The speed limit is 35 mph. There are two travel lanes ranging between eight and 10 feet and a

narrow shoulder. Suggested speeds on curves range from 20 to 30 mph. The majority of the roadway has no centerline markings.

Of the 10.2 miles of this roadway from the county line to Oak Hill, approximately 1,700 feet (3.3 percent of the entire segment) exhibits substandard horizontal alignment and approximately 7,000 feet (12.9 percent) exhibits substandard vertical alignment. Additionally, 3.7 percent of the segment is steeper than the maximum design criteria of 10 percent for this type of roadway.

Grant County Route 5

Grant County Route 5 begins at the Mineral County line and extends southward to Lahmansville. The speed limit is 55 mph with two 11-foot lanes and a narrow shoulder. Suggested speed on some curves is 35 mph and there are also some clear zone restrictions along this roadway. Of the 9.8 miles of this roadway from the Mineral County line, 1,825 feet (3.5 percent) exhibits substandard vertical alignment.

Mineral County Route 9

Mineral County Route 9 begins at WV 28 and runs southward to the county line. The speed limit ranges from 35 to 45 mph. There are two travel lanes ranging from eight to 11 feet and a narrow shoulder. Suggested speed on some curves is as low as 15 mph, but generally ranges from 20 to 35 mph. There are also some clear zone restrictions.

Of the 13.5 miles of this roadway, approximately 3,500 feet (4.9 percent of the entire segment) exhibits substandard horizontal alignment and approximately 15,000 feet (21.1 percent) exhibits substandard vertical alignment. Additionally, 9.9 percent of the segment is steeper than the maximum design criteria of 10 percent for this type of roadway facility.

Mineral County Route 11

Mineral County Route 11 begins at WV 46 and runs southward to the county line. The speed limit ranges from 30 to 55 mph with a reduction to 25 mph through Burlington. There are two 8- to 11-foot lanes with little to no shoulder. Advisories posted along this roadway include horse crossings, slippery when wet, and 30 mph on curves. There is also a 20-ton bridge weight

restriction in Burlington near the intersection with US 50/US 220. The majority of roadway has no centerline markings and also contains severe clear zone restrictions.

Of the 18.3 miles of this roadway, approximately 3,100 feet (3.2 percent of the entire segment) exhibits substandard horizontal alignment and approximately 6,400 feet (6.6 percent) exhibits substandard vertical alignment. Additionally, 0.4 percent of the segment is steeper than the maximum design criteria of 10 percent for this type of roadway facility.

1.6.3 Geometric Deficiencies

Engineering deficiencies of various types exist on most of the area's roadways. The geometric deficiencies discussed in the previous roadway descriptions are summarized in Table 1.6-1.

TABLE 1.6-1
Summary of Geometric Deficiencies on Major Roads

Roadway	Length of Substandard Horizontal Alignment	Length of Substandard Vertical Alignment	Length of Steep Grades	Number of Height or Weight Restrictions	Number of At-Grade RR Crossings
US 220 (MD)	2,200 feet	29,100 feet	13,900 feet	0	0
MD 36	17,000 feet	0	0	0	0
MD 51	4,100 feet	16,300 feet	4,200 feet	0	0
MD 53	800 feet	2,400 feet	0	0	0
MD 135	1,100 feet	0	2,800 feet	1	1
MD 658	0	0	0	0	0
U.S. 220 (WV)	18,200 feet	14,000 feet	9,300 feet	2	0
US 50	17,600 feet	13,300 feet	19,700 feet	3	0
WV 28	9,600 feet	11,700 feet	4,700 feet	0	1
WV 42	20,700 feet	11,050 feet	17,200 feet	0	1
WV 46	20,00 feet	30,200 feet	41,000 feet	1	4

TABLE 1.6-1 (continued)
Summary of Geometric Deficiencies on Major Roads

Roadway	Length of Substandard Horizontal Alignment	Length of Substandard Vertical Alignment	Length of Steep Grades	Number of Height or Weight Restrictions	Number of At-Grade RR Crossings
WV 93	0	10,400 feet	6,900 feet	0	0
WV 956	0	6,100 feet	7,300 feet	0	0
WV 972	900 feet	400 feet	0	0	0

The locations where these engineering deficiencies occur in both the Maryland and West Virginia portions of the study area are shown on Figures 1-2 and 1-3.

1.6.4 System Linkage in the Study Area

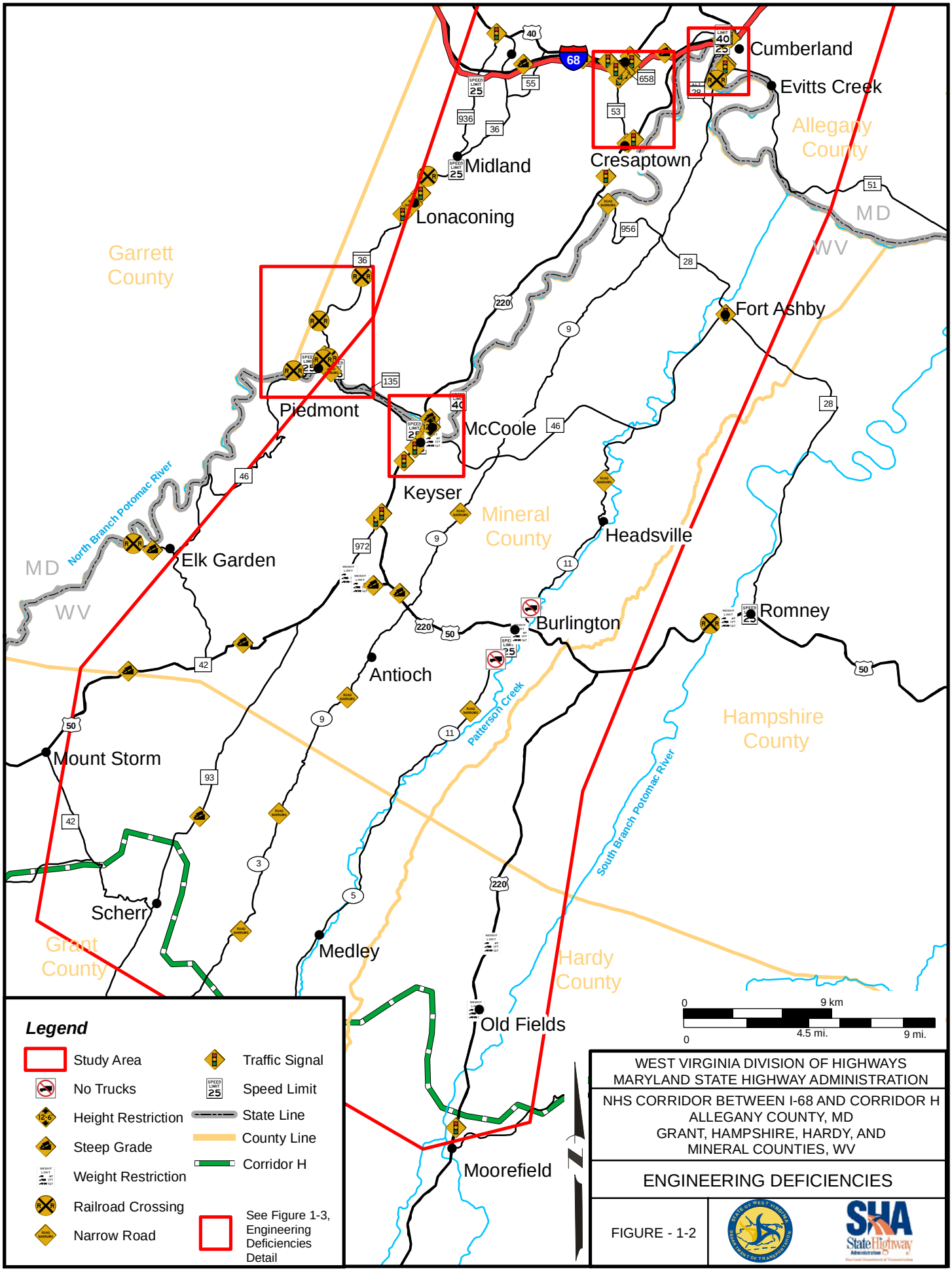
Airports

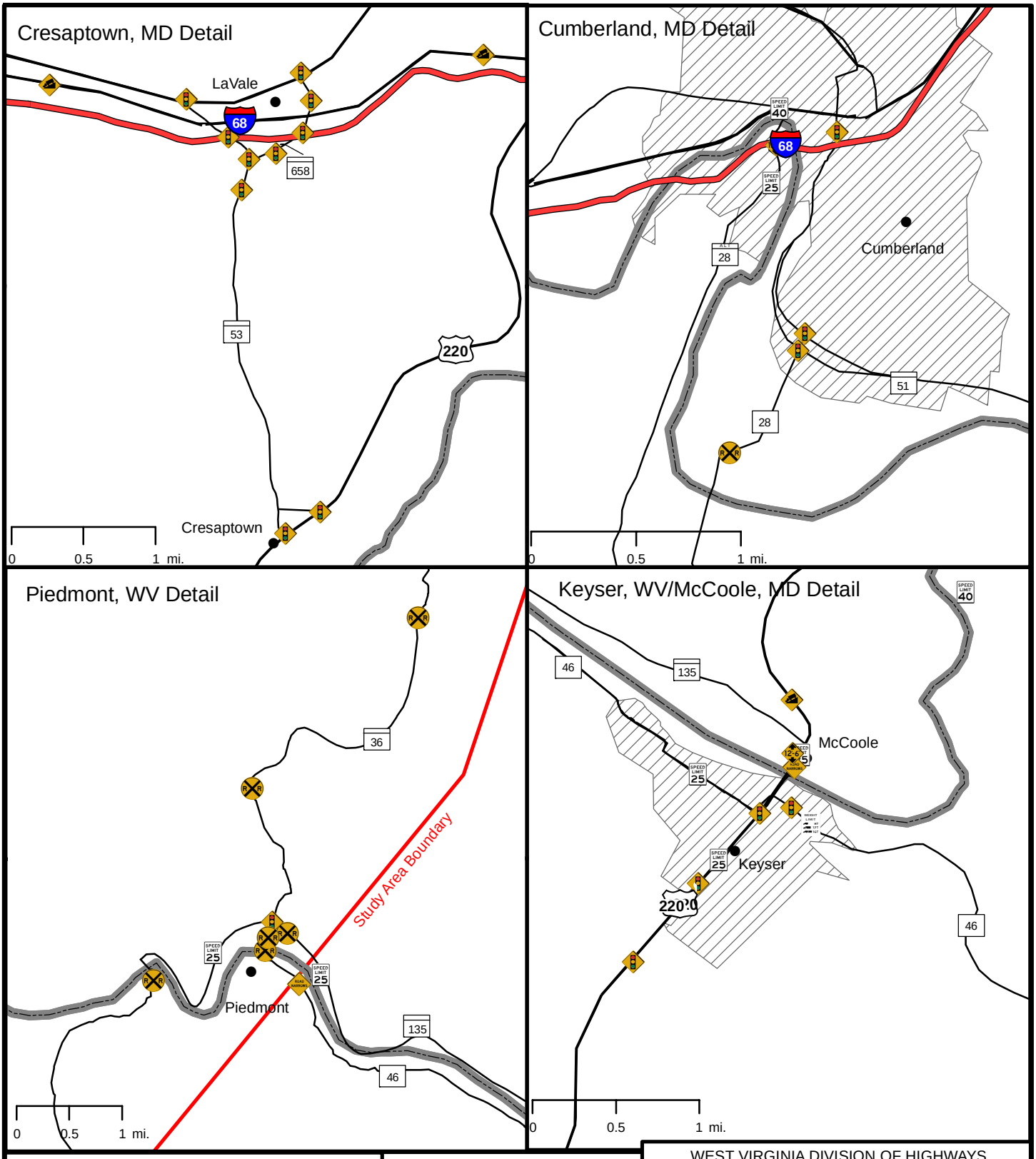
The Greater Cumberland Regional Airport is located near Cumberland, off of Canal Parkway and Airport Drive, via MD 51. The airport is owned by the Potomac Highlands Airport Authority and serves the general aviation community. Commuter air service was provided between the airport and Hagerstown Regional Airport and Baltimore-Washington International Airport until January 2006 when Independence Air, the airport's last remaining commercial carrier, ceased operations.

The Grant County Airport, which is near Petersburg, is the only other publicly owned air facility in the area. The airport is owned by the Grant County Airport Authority and serves as a general aviation facility.

Public Transit

Fixed-route bus service is provided in Cumberland and the surrounding Maryland communities of LaVale, Cresaptown, and Frostburg by Allegany County Transit. This public agency operates nine fixed-routes and a related demand-responsive service for its member communities. The demand-responsive service is targeted for non-emergency medical assistance transportation, senior citizens, persons with disabilities, and special job access programs.


Cumberland
Evitts Creek
Allegany County
Cresaptown
Midland
Lonaconing
Garrett County
MD
WV
Fort Ashby
Piedmont
McCoole
Keyser
Mineral County
Headsville
North Branch Potomac River
Elk Garden
Burlington
Romney
Antioch
Patterson Creek
Hampshire County
Mount Storm
South Branch Potomac River
Scherr
Grant County
Medley
Hardy County
Old Fields
Moorefield
Legend
Study Area
No Trucks
Height Restriction
Steep Grade
Weight Restriction
Railroad Crossing
Narrow Road
Traffic Signal
Speed Limit
State Line
County Line
Corridor H
See Figure 1-3, Engineering Deficiencies Detail
0
9 km
4.5 mi.
9 mi.
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
ENGINEERING DEFICIENCIES
FIGURE - 1-2



Legend

- Height Restriction
- Steep Grade
- Weight Restriction
- Railroad Crossing
- Narrow Road
- Traffic Signal
- Speed Limit
- City Limits
- State Line

WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION

NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV

ENGINEERING DEFICIENCIES DETAIL

FIGURE - 1-3

Bus service is provided in Grant, Hampshire, Hardy, and Mineral counties via the Potomac Valley Transit Authority. The authority also provides a special demand-responsive service for the non-emergency medical assistance transportation program and allows route deviation of up to three-fourths of a mile on all of its regular bus routes.

Various social service agencies also provide demand-responsive transit service throughout the entire study area. Generally, an individual must be a service client of the specific agency to utilize this form of transportation.

Railroads

Amtrak provides passenger service in the area with stations at Cumberland, Martinsburg, and Harper's Ferry. All lines have connecting service to Washington, D.C., to the east, and Pittsburgh, PA, to the west.

Intermodal Facilities

There are no inter-modal facilities in the vicinity of the study area.

1.7 Traffic Analysis

The effectiveness of a roadway system to provide adequate traffic service is typically measured in terms of Level of Service (LOS). LOS describes the operation of a given highway by establishing a range of "A" to "F." LOS "A" represents the best operation of a roadway and LOS "F" represents the worst. Although the four-lane roadways in the northern portions of the study area exhibit sufficient levels of service through the corridor, several two-lane traffic segments in the area do not. Data collected in the year 2000 during the North South Appalachia Corridor Feasibility Study showed LOS D occurring on MD 53 and major segments of US 220. Under LOS D, speed and traffic maneuverability are severely restricted and driver comfort declines.

Though considered acceptable in urban places, LOS D is generally assumed to be an unacceptable level of operation in rural areas. In the latest version of the American Association of State Highway and Transportation Officials (AASHTO) publication, *A Policy on the Geometric Design of Highways and Streets* (2004), LOS B is recommended for level and rolling freeways

and level and rolling arterials in rural areas. LOS D is recommended only for rural local roads and rural mountainous collectors. Other categories in rural areas (level and rolling collectors and mountainous freeways and arterials) have a recommendation of LOS C. Much of the study area falls within rural areas.

Based on updated highway capacity modeling completed specifically for the development of this DEIS, all of the locations examined in the North South Appalachia Corridor Feasibility Study, as well as several other locations in the current study area, were found to be functioning at LOS E during the peak hour. Figure 1-4 shows areas where conditions now exhibit peak-hour LOS E. This is typical of what is generally predicted on two-way, two-lane highways of a similar nature. Even at volumes that are far from the actual physical capacity of the roadway (which the area's rural roads are), lower speeds prevail because of their design and the time spent following another vehicle tends to be high. The result is poor LOS.

As expected, traffic volumes reported in the North South Appalachia Corridor Feasibility Study were highest in the vicinity of Cumberland and on West Virginia's rural routes. On some segments of the principal roadways, truck traffic accounted for up to 10 percent. The high percentage of truck traffic, though necessary for local and regional commerce, creates safety conflicts with automobile users, especially on narrow-lane roadways in mountainous terrain.

Recent data collected by the WVDOH and MDSHA (*Traffic Flow Maps for Grant, Hampshire, Hardy, and Mineral Counties* [2005a] and *Traffic Volume Map for Allegany County* [2004]) show that traffic has remained consistent in some parts of the study area and increased in others. Traffic volumes on US 220 south of Cumberland remain consistent at 14,125 AADT. South of Keyser, traffic volumes have also remained consistent from the previous study, hovering around 10,000 AADT. Traffic on the more rural roads of the study area, especially WV 93 and WV 972, has seen minimum AADT growth from 1,200 to 2,200. Many residents of the area, however, perceive that there is even more traffic on these two roadways because traffic has grown at such a high percentage. Heavy truck traffic is still found throughout the study area, ranging from 5 to 10 percent in several locations. Current and projected future traffic and LOS information for the area's roadways are shown in Table 1.7-1.

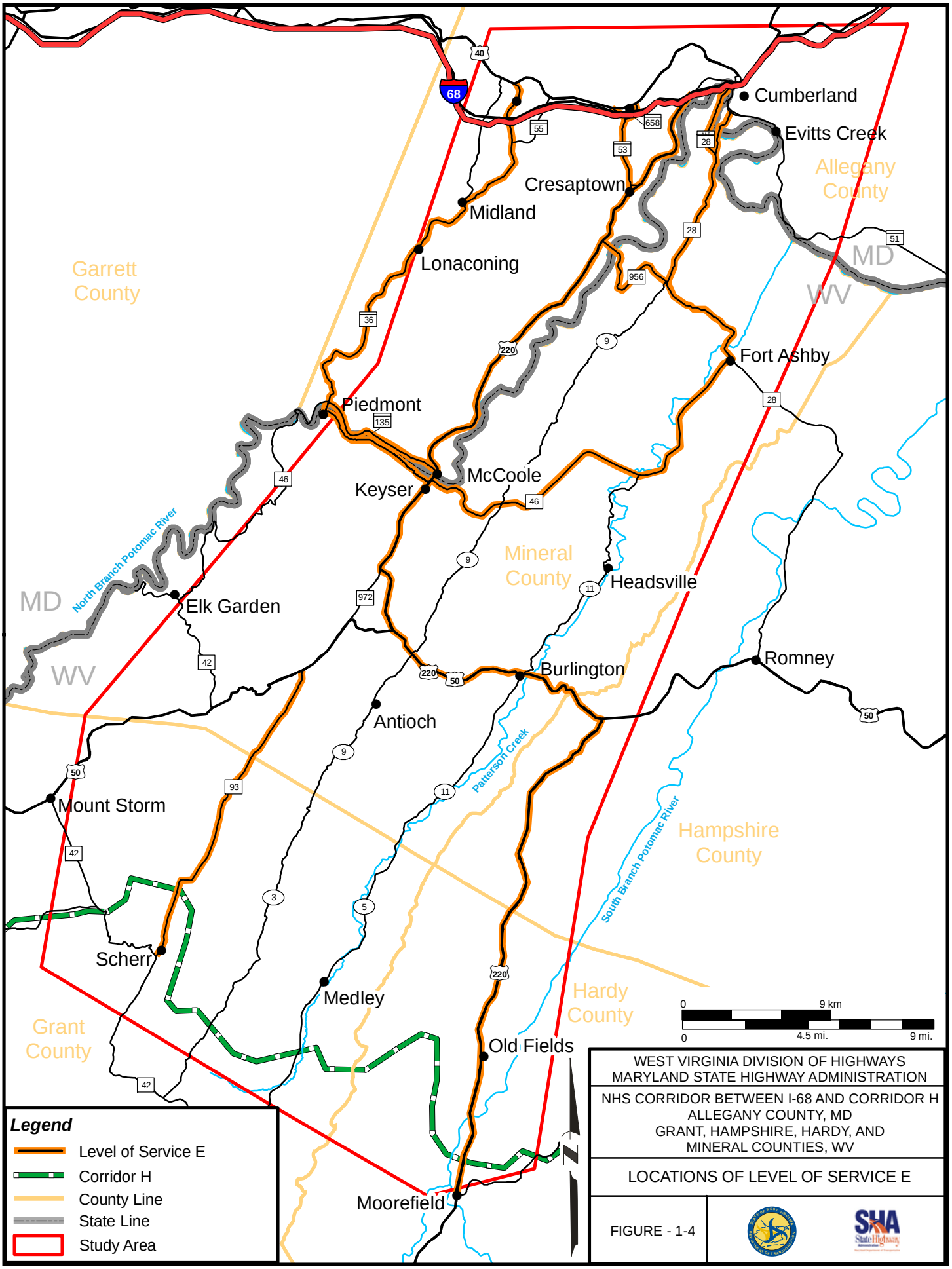

Cumberland
Evitts Creek
Allegany County
Cresaptown
Midland
Lonaconing
Garrett County
MD
WV
Fort Ashby
Piedmont
McCoole
Keyser
North Branch Potomac River
Mineral County
Headsville
Elk Garden
Romney
Burlington
Antioch
Patterson Creek
Mount Storm
South Branch Potomac River
Hampshire County
Scherr
Medley
Hardy County
Grant County
Old Fields
Moorefield
0
9 km
0
4.5 mi.
9 mi.
Legend
Level of Service E
Corridor H
County Line
State Line
Study Area
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
LOCATIONS OF LEVEL OF SERVICE E
FIGURE - 1-4

TABLE 1.7-1
Current and Future Traffic and Levels of Service

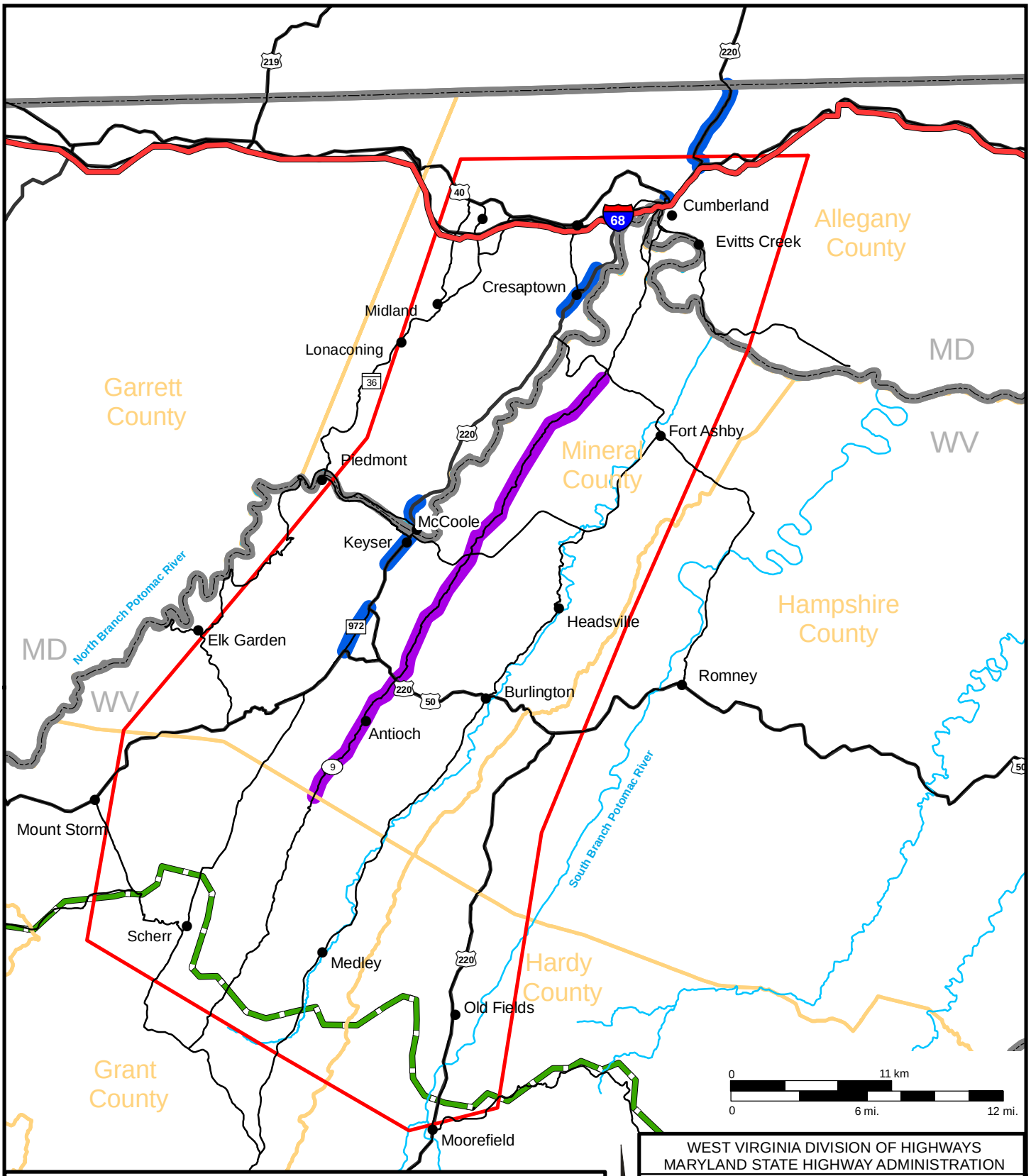
Route	Segment	Current AADT	Current LOS	Year 2025 AADT	Year 2025 LOS
US 220	Moorefield to Junction	3,800	E	5,600	E
	Junction to New Creek	4,700	E	7,000	E
	New Creek to State Line	4,400	E	6,500	E
	State Line to MD 53	10,125	E	12,400	**F**
	MD 53 to I-68	14,125	E	20,200	**F**
MD 36	Westernport to Frostburg	8,150	E	11,650	**F**
MD 53	US 220 to I-68	14,575	E	20,800	E
MD 135	Westernport to Keyser	6,975	E	9,950	E
WV 28	Ft. Ashby to WV 956	9,300	E	14,700	E
	WV 956 to Cumberland	9,900	E	15,700	E
WV 46	Westernport to Keyser	2,000	E	3,300	E
	Keyser to Ft. Ashby	3,200	E	5,300	E
WV 93	Scherr to New Creek	2,200	E	3,400	E
WV 956	WV 28 to US 220	5,200	E	8,000	E

Traffic volumes are expected to increase by the year 2025 for all parts of the study area. As traffic volumes increase, roadway capacity will remain the same or decrease. As a result, roadways will continue to experience LOS E and three are expected to drop to LOS F.

1.8 Safety Analysis

Accident data collected as part of the North South Appalachia Corridor Feasibility Study showed that several travel segments throughout the area exhibited accident rates higher than the statewide average for similar types of roadways. Roadway sections along US 220 and WV 972 exceeded the statewide averages. These segments are shown on Figure 1-5. Some roadway improvements in the area, especially on US 220 in Maryland, have already corrected conditions contributing to these high accident rates.

Updated crash rates on each of the major roadways in the study area highway network are shown in Table 1.8-1 and on Figure 1-5. Because of different reporting procedures in each



Legend

- Roadway Segments with Crash Rates Higher than the Statewide Average (N/S Appalachia Corridor Study)
- Roadway Segments with Crash Rates Higher than the Statewide Average (updated data)
- Corridor H
- County Line
- State Line
- Study Area

WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION

NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV

ROADWAY SEGMENTS WITH CRASH RATES
HIGHER THAN THE STATEWIDE AVERAGE

FIGURE - 1-5

state, crash rates were analyzed for different lengths of time. For the Maryland roadways, the crash rates are based on data from January 2001 through December 2005. For the West Virginia roadways, they are based on data from July 2002 through June 2005. The timeframes are consistent with typical study parameters in support of other projects in Maryland and West Virginia and are sufficient samples of data from steady state conditions. Additionally, there were no major changes to study area roadways during the period that could affect the crash data analysis by shifting potential problems to other roads. Only one of the segments, Mineral County Route 9, had a crash rate per million vehicle miles traveled (VMT) higher than the statewide average for similar highways.

TABLE 1.8-1
Crash Rates for Study Area Roadways

Route	Segment	State	Crash Rate per Million VMT	Statewide Average
I-68	Exit 34 to Exit 47	MD	0.23	0.54
MD 135	Westernport to Keyser	MD	0.60	1.49
MD 36	Westernport to Frostburg	MD	0.63	1.32
US 220	MD/WV State Line to I-68	MD	0.66	1.59
MD 53	US 220 to I-68	MD	1.15	1.99
WV 28A	WV 28 to MD/WV State Line	WV	0.62	3.06
WV 42	Mt. Storm to WV 93	WV	1.01	3.06
Grant CR 5	County Line to Lahmansville	WV	1.14	3.80
WV 42	US 50 to MD/WV State Line	WV	1.36	3.06
WV 93	Scherr to New Creek	WV	1.39	3.06
WV 972	US 220 to US 50	WV	1.59	3.06
Grant CR 3	County Line to Oak Hill	WV	1.92	3.80
WV 28	Romney to MD/WV State Line	WV	2.11	3.80
WV 956	WV 28 to MD/WV State Line	WV	2.14	3.80
US 220	Moorefield to MD/WV State Line	WV	2.34	3.80
WV 46	Elk Garden to WV 28	WV	2.45	3.80
US 50	Mt. Storm to Romney	WV	2.50	3.80
Mineral CR 11	WV 28 to Grant County Line	WV	3.67	3.80
Mineral CR 9	**WV 28 to Grant County Line**	**WV**	**3.98**	**3.80**

1.9 Growth and Development

The existing transportation system is a critical factor hindering economic development in the study area. The Appalachian regions of Maryland and West Virginia have been hampered by a surface transportation system adapted to mountainous terrain and an inadequate system of regional highways. Although there have been tremendous improvements in other parts of both states, the region has been unable to meet the demands of all roadway users.

The number of jobs located within the region is approximately 43,000. Past studies have shown that with specific transportation investments in north-south access, the area could support additional jobs. The North South Appalachia Corridor Feasibility Study noted that there would be a 19 percent growth in job opportunities with such transportation improvements, representing the highest rate of job growth found in the region. Expected job growth by industrial sector is shown in Table 1.9-1.

TABLE 1.9-1
Expected Job Growth by Industrial Sector

Industrial Sector	Expected New Jobs	Percentage of Total New Growth
Agriculture	90	1.1
Construction	660	8.1
Manufacturing	690	8.4
Transportation & Utilities	580	7.0
Trade, Wholesale & Retail	1,880	22.8
FIRE (fire, insurance, and real estate) & Service	4,330	52.6
Total	8,230	100

The U.S. Congress authorized construction of the Appalachian Development Highway System in the *Appalachian Development Act of 1965*. The ADHS was designed to generate economic development in previously isolated areas, supplement the interstate system, connect Appalachia to the interstate system, and provide access to areas within the region as well as to markets in the rest of the nation. The ADHS is currently authorized at 3,090 miles. By the end of Fiscal Year (FY) 2005, approximately 85 percent of the authorized system was complete or under construction. Corridor H, the southern terminus of the proposed project, is a part of the ADHS. Although its entire length has not been completely designed yet, parts of Corridor H are

already open. When fully opened, Corridor H will provide an additional east-west travel choice for the public and commerce. Currently, I-68 is the principal east-west highway in the region. Figure 1-6 shows the status of the ADHS as of September 2005.

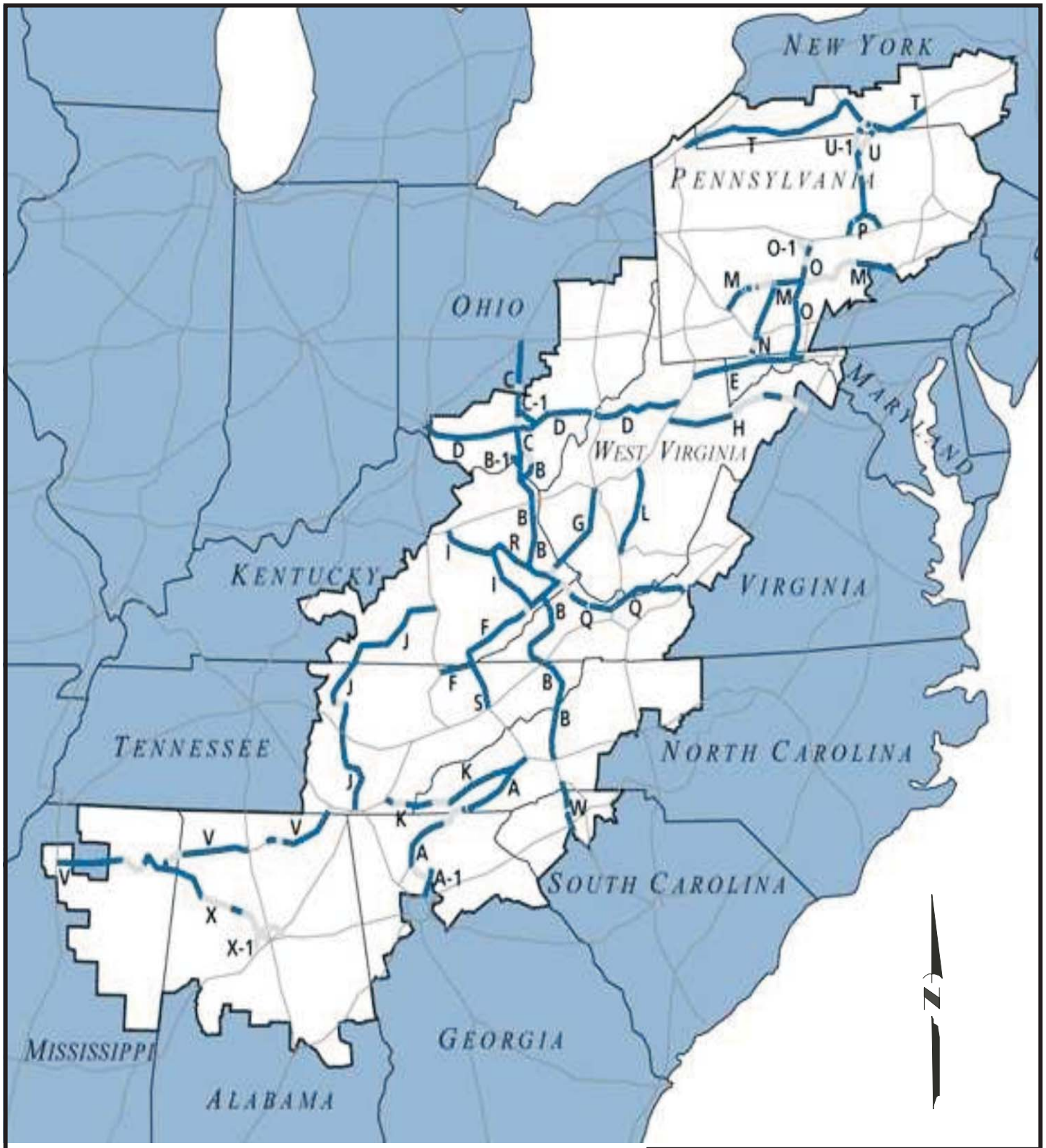
Congress approved the NHS in 1995 to include roadways important to the nation's economy, defense, and mobility. Although the NHS includes only 4 percent of the nation's roads, it carries more than 40 percent of all highway traffic, 75 percent of heavy truck traffic, and 90 percent of tourist traffic. An improved US 220 will be part of the NHS and link I-68 in the north to Corridor H in the south. The Interstate Highway System comprises about 30 percent of the NHS roadways. The linkage of these two nationally important highway systems in the region will bring economic and transportation benefits to the area.

In Maryland, the closest NHS roadways providing north-south connections between I-68 and points to the south are US 219 (approximately 32 miles to the west) and I-81 (approximately 65 miles to the east). In West Virginia, the closest NHS roadways providing similar connections are also US 219 (approximately 30 miles to the west) and US 522 (approximately 42 miles to the east). Because there are so few NHS roadways providing suitable connections, north-south travel in the study area is often circuitous and time consuming.

1.10 Master Plan

Highway improvements for the proposed NHS Corridor, between I-68 and Corridor H, are consistent with growth and development plans at all government levels. At the federal level, the U.S. Congress has established both the Appalachian Development Highway System and the National Highway System – two key components of the proposed project. Additionally, the FHWA has undertaken the preparation of this DEIS and provided funds for its related preliminary studies. The project is also consistent with the Continental 1 initiative, a proposed 1,500-mile international trade route stretching through nine states and the Canadian province of Ontario. Other studies have suggested that US 220 or US 219 could be used as part of the Continental 1 corridor as it traverses Allegany and Mineral counties.

At the state level, the proposed project is listed on the *West Virginia Statewide Transportation Improvement Program*. Additionally, construction of a new US 220 is listed in the *Maryland*



Legend

Open to Traffic

Not Open to Traffic

Interstate System

Source: Appalachian Regional Commission, September 30, 2005

WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION

NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV

APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM

FIGURE - 1-6
NOT TO SCALE

Highway Needs Inventory. To further advance the project, the WVDOH and MDSHA entered into a Memorandum of Understanding (MOU) on May 21, 2004, which established specific parameters and coordination activities associated with studying the corridor. Both state transportation agencies had previously participated in the development of the *North South Appalachia Corridor Feasibility Report* (2001), the precursor to the DEIS. Subsequent to preparing the MOU, a project-specific coordination plan was developed, in cooperation with FHWA and other interested state and federal agencies, between WVDOH and MDSHA to guide the preparation of this Tier One DEIS.

At the regional level in West Virginia, the *Regional Development Plan Update* (FY 2006), prepared by the Region 8 Planning and Development Council, identified US 220 as a roadway critical to the region's economic development. The Region 8 Planning and Development Council was established on May 3, 1972, through the *West Virginia Planning and Development Act of 1972*. As such, the Council is the primary agency for planning and economic development for Grant, Hampshire, Hardy, Mineral, and Pendleton counties. Specifically, the *Regional Development Plan Update* called for a renewed highway program "to focus on a highway's impact on long term growth." The *Update* went on to identify not only US 220, but also US 50, WV 28, and WV 93 as roadways vital to the area's economy. All of these roadways fall within the study area developed for this DEIS. During public meetings on the project, officials at Region 8 emphasized that economic growth in the area hinges upon an improved north-south transportation corridor.

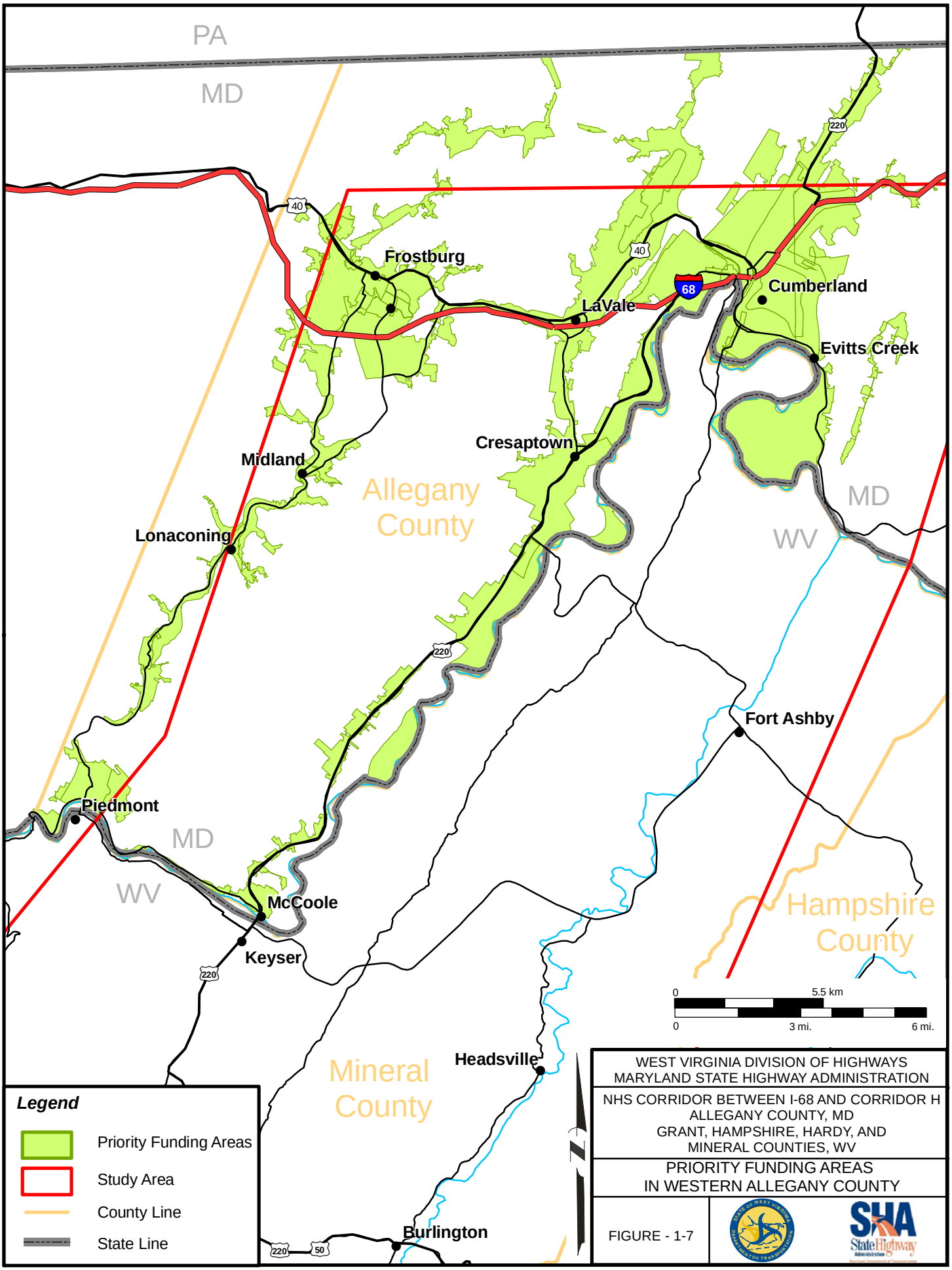
At the regional level in Maryland, the Cumberland Metropolitan Planning Organization (MPO) has identified upgrades to existing US 220 as a proposed major highway improvement. The MPO is the Cumberland area's officially designated agency for carrying out a federally mandated metropolitan planning process. Geographically, the MPO includes most of Allegany County and a small portion of northern Mineral County. One of the MPO's major responsibilities is the annual development of a long-range transportation plan (LRTP) for Cumberland and the surrounding area. In a major update to that transportation plan, the *Cumberland Area Long Range Transportation Plan, Final Report* (Cumberland MPO 2005), the MPO called for construction of "a new US 220 that will eventually connect Cumberland with Appalachian Development Highway System Corridor H south of Keyser." Furthermore, the LRTP identified the proposed new transportation corridor as "one of the most significant potential regional highway improvement projects in both Allegany and Mineral counties."

At the local level, four of the five counties within the study area, as well as the City of Cumberland, have developed comprehensive plans. Major transportation improvements in the area are recommended within the *Allegany County Comprehensive Plan, 2002 Update* (Allegheny County Planning Commission 2002), the *Hampshire County Comprehensive Plan* (Hampshire County Planning Department 2003), the *Hardy County Comprehensive Plan* (Hardy County Planning Commission 1999), and the *Mineral County Comprehensive Plan: A Vision for the Future Growth and Preservation of Mineral County* (Mineral County Planning Commission 1996).

The *Allegany County Comprehensive Plan* contains considerable discussion on the role of US 220 as one of the area's major roadways. The plan identifies the need for a transportation network that allows the movement of people and goods with maximum efficiency. It also encourages construction of "a new Route 220 as a four-lane limited access highway that will connect Cumberland with Corridor H."

Recognizing the strong relationship between transportation and land use, comprehensive planning is currently receiving a renewed emphasis in many Maryland communities. In support of these local planning efforts, the Maryland General Assembly passed legislation and budget initiatives in 1997 known collectively as the *Smart Growth Priority Funding Areas Act*. Smart Growth targets programs and funding to support established communities and locally designated growth areas as well as protecting rural areas. Smart Growth initiatives also encourage more efficient design for residential, commercial, and industrial development, and emphasize a compatible mix of land uses. They enable local citizens and government officials to develop future plans and growth management strategies in a coordinated and responsible manner. The Smart Growth initiatives provide a geographic focus for investment in growth-related infrastructure. They capitalize on the influence state-sponsored initiatives can have on economic growth and development. Growth-related projects identified in the legislation include highways, sewer and water facilities construction, economic development assistance, and new office facilities. Figure 1-7 shows the Priority Funding Areas (PFAs) located within Allegany County.

Although an upgrade of US 50 is the top transportation priority identified in the *Hampshire County Comprehensive Plan*, US 220 is an important roadway for north-south connectivity to


PA
MD
Frostburg
LaVale
Cumberland
Evitts Creek
Cresaptown
Midland
Allegany County
Lonaconing
MD
WV
Fort Ashby
Piedmont
MD
WV
McCoole
Keyser
Hampshire County
Mineral County
Headsville
Burlington
0
5.5 km
0
3 mi.
6 mi.
Legend
Priority Funding Areas
Study Area
County Line
State Line
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
PRIORITY FUNDING AREAS
IN WESTERN ALLEGANY COUNTY
FIGURE - 1-7

both I-68 and Corridor H. Access management issues are of "particular concern" as they relate to roadways falling within the "Corridor H Areas of Influence" (i.e., US 220 and WV 28, among other roads within Hampshire County). While not specifically identifying a north-south corridor project by name, the *Hardy County Comprehensive Plan* notes that "transportation is the most urgent problem to be addressed within the (comprehensive) plan." The plan did, however, identify completion of Corridor H for its whole length as the most significant road project for Hardy County.

On the other hand, the *Mineral County Comprehensive Plan* contains a considerable amount of specific discussion about US 220 and other north-south routes through the county, recognizing their important role in the continued vitality of Mineral County. An update of that plan is currently under review by the Mineral County Planning Commission and is expected to be endorsed in 2011. Discussions with staff from the Mineral County Planning Commission indicated that an upgraded US 220 continues to be of the utmost importance to the vitality of the county and will be a key element of the updated plan's transportation component. A related study to the 1996 *Comprehensive Plan*, the *Economic Adjustment Strategy for Mineral County* (Mineral County Planning Commission 1993), suggested that "U.S. Route 220 be upgraded its entire length to provide competitive access for future industrial sites in the county."

1.11 Land Use

Existing land use in the study area can be characterized as a distinct mixture of urban and rural. Densely populated residential, commercial, and industrial developments are found in three core areas around Cumberland, Keyser, and Moorefield. Heavy development in and around Cumberland extends from LaVale through the City of Cumberland to the east and along MD 53 and US 220 to the south through Cresaptown. Of importance in the Cumberland area are its commercial centers in downtown and along US 220 and MD 53, as well as the large industrial and transportation complexes emanating from the center of Cumberland to the southeast along MD 51 (Industrial Boulevard). In Keyser, there are two primary commercial centers: the Keyser central business district and the suburban-type development along US 220 extending from Keyser to WV 972. In Moorefield, commercial development is centered along US 220. Further south in Moorefield are large processing plants associated with the poultry industry.

Although there are a few small communities in the area, including Burlington, Fort Ashby, McCoole, and New Creek, the remainder of the study area is rural in nature, primarily used for agricultural purposes or as forested land. Important farmlands are found in the Patterson Creek Valley on the project's eastern edge, on the lower slopes of Knobley Ridge, and along US 220 in Allegany County south of Cresaptown. Vast tracts of forested land are found along the ridge tops. An area of special importance within this large forested area is Dans Mountain, located immediately to the west of US 220 on the Maryland side of the project. The Dans Mountain Wildlife Management Area (WMA) is one of the largest contiguous tracts of public land in Maryland.

Based on a review of the existing land use plans in the area, supplemented by discussions with planning officials at all five counties, the proposed project appears to be consistent with future land use plans. Although development is expected throughout the region, development patterns are expected to remain similar to present day. In Allegany County, land use policies place primary emphasis on in-fill development within existing communities. Where that is not possible, development is encouraged to locate adjacent to existing built-up areas. Between 2000 and 2020, moderate population growth is expected between Cumberland and the West Virginia state line, but new development will be restricted to the existing suburban areas surrounding Cumberland and LaVale. Nonetheless, the *Allegany County Comprehensive Plan* indicates that some additional development could extend south of Cresaptown and north of McCoole, within the existing US 220 corridor, if sewer and water lines are extended from these areas. Redevelopment of the traditional urban areas is highly preferred, however, rather than expansion into open space.

Similarly, future infrastructure needs limit the intensity of potential development in the project's West Virginia counties. Population growth is stagnant in the area and employment is not expected to grow more than 1 percent in the near future. Like Allegany County, some development will occur, but it is expected to be in areas that have traditionally seen settlement: US 220 south from Keyser, the WV Alt. 28/WV 28 corridor between the Maryland state line and Fort Ashby, and US 220 north of Moorefield. One exception to this settlement pattern will be communities with easy access to Corridor H. As noted in the Mineral County Comprehensive Plan update, if water and sewer needs can be met, additional development is likely to occur along the southern tier of Mineral County and westward out of Hardy County from Moorefield.

1.12 Conclusions

The purpose of this project is to develop an improved transportation corridor as part of the NHS. The improved corridor will connect I-68 in Maryland and Corridor H in West Virginia. Upgraded roadways resulting from this project will provide a better north-south road than what currently exists. Several preliminary needs for the region were identified in the North South Appalachia Corridor Feasibility Study, a multi-state planning effort completed in 2001. Those needs were further expanded under the current effort to address regional mobility, inadequate roadway capacity, safety deficiencies, economic development, and additional system linkage.

Engineering deficiencies exist on most of the study area's major routes. Among the transportation deficiencies found in the study area are numerous curves, reduced speeds, steep grades, few truck climbing lanes, inadequate shoulders, and substandard geometry. The engineering deficiencies contribute to additional concerns about capacity and safety. Inadequate roadway capacity restricts traffic maneuverability and driver comfort. Although traffic volumes are below actual physical capacity on many of the area's roadways, lower speeds prevail. This results in both poor LOS and safety concerns at some locations.

Growth and economic development have been hindered by the area's transportation system. Past studies have shown that there could be an increase of 19 percent in jobs with improved north-south connections. Improvements in north-south travel would also serve to link the area's two most important east-west transportation facilities: I-68 and Corridor H.

Issues of concern were evaluated further as the project progressed. The consequences of taking no action, however, would result in a continuation of inadequate conditions on the existing transportation facilities in the study area. Future transportation demand, especially north-south travel through the region, would not be accommodated and existing levels of service on the transportation facilities could worsen. Safety concerns would also still remain. This could impede the future economic growth of the area and limit its attractiveness for residents and businesses. The efficient movement of people and goods is a priority of comprehensive land use planning efforts and Smart Growth initiatives. This project will support the goals of such planning initiatives within the study area's counties and throughout the region. Although the proposed project will incur environmental impacts, taking no action would also likely incur other impacts to varying degrees.

CHAPTER 2.0

ALTERNATIVES DEVELOPMENT

2.0 ALTERNATIVES DEVELOPMENT

An alternatives evaluation process was developed early in the project to define a broad range of reasonable, potential corridors. Under the Tier One investigations utilized during the preparation of this DEIS, elements of advanced transportation planning and environmental analysis were combined. Corridors were developed, analyzed, and advanced based on their ability to meet the project's purpose and need; potential environmental impacts; and comments received by the public, resource agencies, and local elected, planning, and economic development officials.

2.1 Introduction

Corridors were analyzed in two stages. In the first stage, as part of the planning effort culminating in the North South Appalachia Corridor Feasibility Study, four generalized north-south corridors bisecting the Appalachian regions of Maryland, Pennsylvania, West Virginia, and Virginia were analyzed to determine how highway improvements could support economic development. The North South Appalachia Corridor Feasibility Study concluded that two of those corridors, US 220 south from I-68 via MD 53 to Corridor H and US 219 north from I-68 to I-76, would provide the greatest potential for benefiting Appalachian economic development. The report concluded that the proposed NHS Corridor, generally paralleling existing US 220, should be given a high priority for future highway upgrades and other transportation improvements.

One representative corridor was developed during the North South Appalachia Corridor Feasibility Study to determine the relative social, economic, and environmental impacts between major, broad-brush corridors that bisected the multi-state region under investigation. For most of the environmental analyses associated with the North South Appalachia Corridor Feasibility Study, the representative corridor was set at a 300-foot width to approximate the right-of-way needed for a major transportation improvement. When necessary, to assess more far reaching impacts such as noise and visual impacts on historic resources, the 300-foot width was expanded to 1 mile.

Subsequent to the completion of the North South Appalachia Corridor Feasibility Study, MDSHA and WVDOH entered into a *Memorandum of Understanding* on May 21, 2004. The purpose of

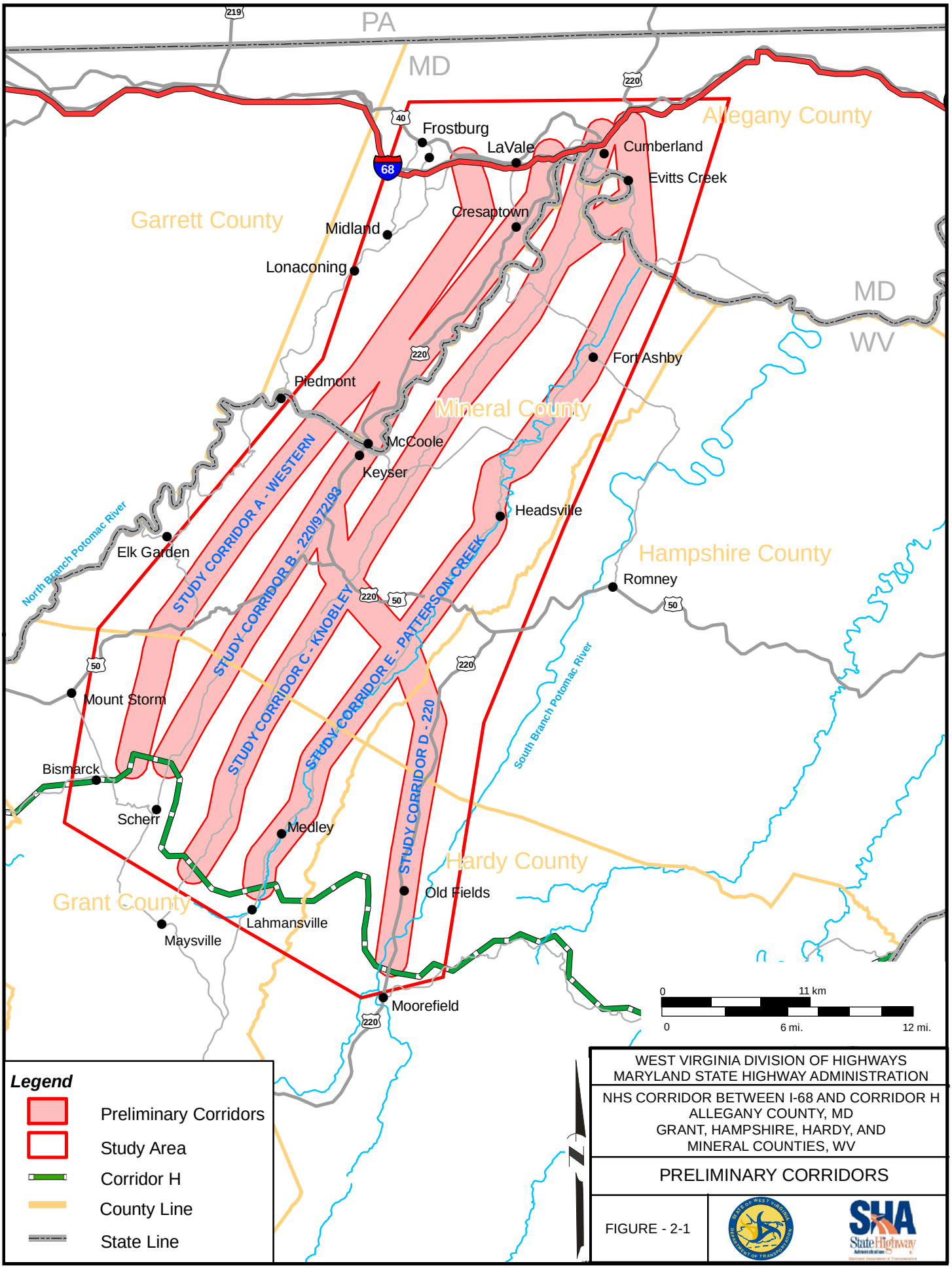
that agreement was to establish roles and responsibilities for investigating additional corridors, developing other alternatives, and ultimately preparing a Tier One DEIS for a study area surrounding the US 220 corridor. Upon signing the MOU, the second stage of corridor development for the current project was initiated.

A full range of preliminary alternatives was developed during Tier One and several relevant environmental and engineering studies completed. At the conclusion of Tier One, the corridors retained for further analysis will be evaluated in more detail during subsequent Tier Two studies. Tier One studies may also lead to the development of a program of projects to be carried into Tier Two.

2.2 Preliminary Corridors

Five preliminary corridors were identified in the MOU prepared by the MDSHA and WVDOH. The preliminary corridors were developed by the WVDOH utilizing sketch-planning techniques as a means of identifying the general locations of future study corridors. Specific potential corridor widths were not developed as part of the MOU. The process of determining how wide the study corridors should be was deferred until work on the Tier One DEIS began. As such, the development of preliminary corridors for the MOU was highly dependent on previous analytical studies, secondary source data, and intuitive design judgment. A major concern at the time these corridors were developed, however, was that a full range of alternatives would be investigated, especially during the early stages of the project.

The development of project corridors began with an examination of both the MOU and the existing transportation system in the area. In an effort to best meet traffic demand, four of the corridors were developed to parallel existing roadways to some extent. A fifth corridor was developed further west of the other four to offer additional opportunities for regional economic development. This fifth corridor also provided potential alternatives in a less densely populated area than would be serviced by the other four corridors. At this point, a 4,000-foot buffer, which represented 2,000 feet to either side of a hypothetical centerline, was attached to the corridors so that preliminary environmental information could be evaluated. This buffer will not be part of any future construction area; rather, it represents a potential study area for each corridor. Future right-of-way width needed for the project would likely not exceed 300 feet. The preliminary study corridors for the Tier One DEIS are shown on Figure 2-1.


PA
MD
Allegany County
Garrett County
Mineral County
Hampshire County
Hardy County
Grant County
MD
WV
Frostburg
LaVale
Cumberland
Evitts Creek
Cresaptown
Midland
Lonaconing
Fort Ashby
Piedmont
McCoole
Keyser
Headsville
Elk Garden
Romney
Mount Storm
Bismarck
Scherr
Medley
Old Fields
Lahmansville
Maysville
Moorefield
North Branch Potomac River
South Branch Potomac River
STUDY CORRIDOR A - WESTERN
STUDY CORRIDOR B - 220/972/93
STUDY CORRIDOR C - KNOBLEY
STUDY CORRIDOR E - PATTERSON CREEK
STUDY CORRIDOR D - 220
68
219
220
40
50
0
11 km
0
6 mi.
12 mi.
Legend
Preliminary Corridors
Study Area
Corridor H
County Line
State Line
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
PRELIMINARY CORRIDORS
FIGURE - 2-1

2.2.1 Description of Preliminary Corridors

Corridor A

The first and westernmost of these corridors, called Corridor A, originated at I-68 near Frostburg, MD, and extended southwest to Corridor H near Bismarck, WV. The corridor would traverse parts of Allegany, Mineral, and Grant counties. It could provide direct connections to MD 36, 55, and 135; WV 42, 46, and 93; and US 50. By doing so, it would provide increased transportation opportunities to the communities of Frostburg, Midland, Lonaconing, and Westernport in Maryland, and Piedmont, Elk Garden, and Mount Storm in West Virginia. Traveling south from I-68, to the West Virginia–Maryland state line, the corridor roughly paralleled existing MD 36 and Dans Mountain. After crossing the state line, the corridor was centered on County Route 4 and WV 42 in Mineral County and to the east of WV 42 in Grant County. As with all of the corridors, it terminated at Appalachian Development Highway System Corridor H. When first shown at a series of public meetings held in May 2006, Corridor A was labeled as “the Western Corridor.”

Corridor B

The second corridor, called Corridor B, originated at I-68 near LaVale, MD, and extended southwest to Corridor H near Scherr, WV. The corridor would traverse parts of Allegany, Mineral, and Grant counties. Corridor B could provide direct connections to MD 53 and 135; WV 46, 93, and 972; and US 50 and 220. It would provide a major new transportation facility for the communities of LaVale, Cresaptown, and McCoole in Maryland, and Keyser and New Creek in West Virginia. Traveling south from I-68 to Keyser, the corridor was centered on existing US 220. Just south of Keyser, the corridor continued to be centered on US 220 and WV 972 and 93 to its termination at Corridor H. When first shown at public meetings held in May 2006, Corridor B was labeled as “the 220/972/93 Corridor.”

Corridor C

The third corridor, Corridor C, originated at I-68 near Cumberland, MD, and extended southwest to Corridor H near Maysville, WV. The corridor would traverse parts of Allegany, Mineral, and Grant counties. It could provide direct connections to MD 51, WV 28 and 46, Mineral County

Route 9 and Grant County Route 3, as well as US 50 and 220. It would provide improved transportation opportunities to the central part of Cumberland and its eastern side in Maryland, and the communities of Ridgely, Carpendale, Short Gap, the eastern side of Keyser, and Antioch in West Virginia. Paralleling the eastern face of Knobley Ridge, most of the corridor lies in West Virginia. It is centered on County Route 9 in Mineral County and County Route 3 in Grant County. When first shown at public meetings held in May 2006, Corridor C was labeled as "the Knobley Corridor."

Corridor D

The fourth corridor, Corridor D, originated at I-68 near LaVale, MD, and extended south to Corridor H at Moorefield, WV. It would traverse parts of Allegany, Mineral, Hampshire, and Hardy counties. It could provide direct connections to MD 53 and 135, WV 46, County Routes 9 and 11 (Mineral County), and US 50 and 220. It would provide an improved transportation corridor to Cumberland, Cresaptown, and McCoole, Maryland. In West Virginia, it would service the communities of Keyser, New Creek, Old Fields, and Moorefield. For the most part, the corridor is centered on existing US 220. When first shown at public meetings held in May 2006, Corridor D was labeled as "the 220 Corridor."

Corridor E

The final corridor, Corridor E, originated at I-68 near Cumberland, MD, and extended southwest to Corridor H near Lahmansville, WV. It would traverse parts of Allegany, Mineral, and Grant counties. It could provide direct connections to MD 51, WV 28 and 46, Mineral County Route 11, Grant County Route 5, and US 50 and 220. It would provide an improved transportation facility for the eastern side of Cumberland and the West Virginia communities of Patterson Creek, Fort Ashby, Burlington, and Medley. The corridor parallels the Patterson Creek Valley for most of its length. When first shown at public meetings held in May 2006, Corridor E was labeled as "the Patterson Creek Corridor."

2.2.2 Initial Public and Agency Coordination

As required by *SAFETEA-LU*, public and agency coordination was an important component in the development of the preliminary corridors. As the initial stages of the project progressed, an

agency coordination plan was developed and circulated among the cooperating and participating agencies. By establishing the appropriate roles among the participants and reaching several milestones early in the process, sufficient agency coordination and public involvement in the development of potential corridors was assured. The initial public and agency milestones are shown in Table 2.2-1, but information on the continuing public and agency involvement as the project evolved is found in Chapter 7.0, *Comments and Coordination*.

TABLE 2.2-1
Public and Agency Involvement in the Initial Development of Study Corridors

Agency/Group	Date	Activity
Interagency Project Review Meeting (Maryland)	February 15, 2006	Introduced project, presented background data, defined study area issues, identified broad study corridors
Region 8 Planning and Development Council	April 20, 2006	Introduced project, defined study area issues, identified broad study corridors
Public Scoping (Keyser)	May 1, 2006	Introduced project, presented background data, defined study area issues, identified preliminary study corridors, identified preliminary purpose and need, surveyed public opinion
Public Scoping (Moorefield)	May 2, 2006	Introduced project, presented background data, defined study area issues, identified preliminary study corridors, identified preliminary purpose and need, surveyed public opinion
Field View/Scoping (West Virginia Resource Agencies)	May 3, 2006	Presented background data and study methodologies, identified preliminary study corridors and environmental issues, identified preliminary purpose and need
Field View/Scoping (Maryland Resource Agencies)	May 10, 2006	Presented background data and study methodologies, identified preliminary study corridors and environmental issues, identified preliminary purpose and need
Public Scoping (Cumberland)	May 10, 2006	Introduced project, presented background data, defined study area issues, identified preliminary study corridors, identified preliminary purpose and need, surveyed public opinion
Planning Updates (Grant, Hardy, and Mineral counties)	August 2006	Presented study methodologies, identified refinements to preliminary study corridors, presented refined purpose and need statement
Planning Update (Allegany County)	September 20, 2006	Presented study methodologies, identified refinements to preliminary study corridors, presented refined purpose and need statement

Most importantly, the preliminary corridors were shown at each of the public and agency meetings along with information on the project's purpose and need. Through each of these

activities, information was collected that would eventually lead to the refinement of the preliminary study corridors into workable transportation solutions for the area.

Overwhelmingly, the public and local officials endorsed the need for the project. Although there was not agreement on any one corridor, the public and local officials agreed that a full range of alternatives had been presented to them as possible transportation solutions. Based on follow-up information received from the resource agencies, the results of the public surveys conducted during the scoping meetings, and comments provided by local planning and economic development officials, it was determined at this point that the study corridors represented a logical starting point to begin engineering studies and environmental analyses. Having secured a consensus on purpose and need and the locations of the five broad study corridors, it became necessary to begin project refinement.

2.3 Engineering Design Criteria Utilized for the Project

Although the project could result in a program of individual transportation improvements throughout the US 220 corridor – with several projects having independent utility and serving different logical termini – design criteria for a four-lane, partially controlled roadway were used for the preliminary engineering studies through the entire length of the project. This allowed environmental and engineering studies to proceed in unison while assuming the maximum "project footprint" realistically possible. By analyzing the impact of a four-lane facility spanning the entire study area, a conservative, or worst-case, estimate of the potential impacts was able to be calculated.

Because the proposed project will be located in two different states, slightly different design criteria were used for the ultimate development of transportation improvements in Maryland and West Virginia. The design criteria and typical sections for the Maryland portion of the study area were developed from information in the AASHTO publication, *A Policy on the Geometric Design of Highways and Streets* (2004). The design criteria and typical sections for the West Virginia portion of the study area were developed from the same AASHTO publication as well as the *Design Manual and Directives, DD-601, Geometric Design Criteria for Rural Highways* (WVDOH 2006a). The design criteria are shown in Table 2.3-1. In West Virginia, a typical section requires 136 feet, in Maryland, 140.5 feet. Typical sections for West Virginia and Maryland, illustrating the proposed roadway, if constructed, are shown on Figures 2-2 and 2-3,

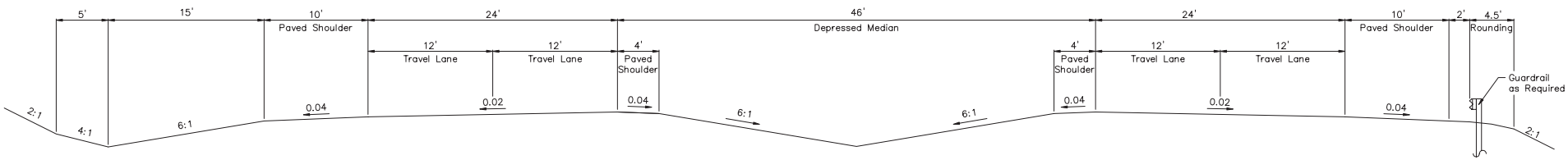
respectively. With the addition of more right-of-way for construction cuts or fill, the actual roadway width and associated right-of-way could generally be about 300 feet. The actual width of land needed to construct the project, however, will not be known until detailed alternatives are developed in Tier Two.

TABLE 2.3-1
Design Criteria

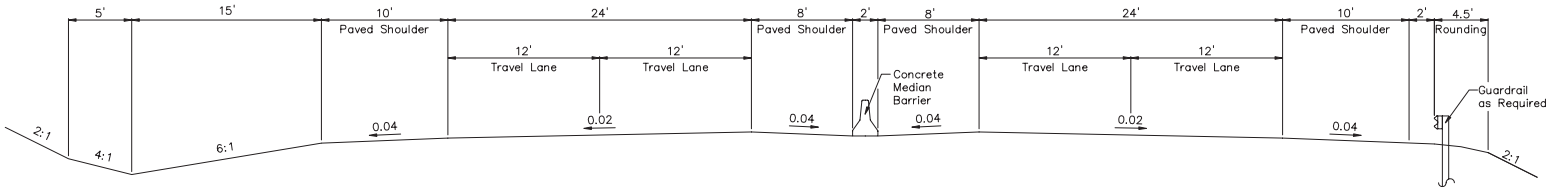
Criteria	West Virginia	Maryland
Functional Classification	Rural Divided Arterial	Rural Divided Arterial
Design Speed	65 mph	65 mph
Maximum Grade	6% (limited 7% permitted)	5% (mountainous terrain)
Minimum Grade	0.5%	0.5%
Access Control	At-grade intersections with public roads	At-grade intersections with public roads
Number of Lanes	4 (12' through lanes in each direction)	4 (12' through lanes in each direction)
Horizontal Radius	1,480 LF (min.) D =3°52'17"	1,485 LF (min.) D =3°51'30"
Cross Slope	2% minimum, 8% maximum	2% minimum, 8% maximum
Clear Width of Bridge	Clear roadway width of approach	Outside edge of paved shoulder to outside edge of paved shoulder

Almost immediately after the scoping meeting and field view with the Maryland resource agencies, concerns were raised about the potential amount of environmental impacts that could occur if a new transportation facility were located within Corridor A and the consequences of impacting Dans Mountain. The Dans Mountain Wildlife Management Area is the largest tract of contiguous state owned forestland in Maryland. Located in the northwestern corner of the study area, it is one of the most important ecological and regional resources in western Maryland. Because of the concern about potential impacts to Dans Mountain, a shift was considered for Corridor A to avoid Dans Mountain. Although only considered conceptually, it was determined that such a shift would not be practical because further shifts east would convert Corridor A into Corridor B while shifts to the west would be unpractical for a number of reasons and likely not meet the goals of the project. A more complete analysis of Corridor A shifts to the west is found later in this chapter.

It is important to note that even though the studies in this DEIS may lead to the development of a program of transportation projects rather than construction of one facility, the project was initially perceived by the public as a divided rural arterial with a high design speed. Nearby projects closely similar to it are represented by Corridor H, and parts of US 219 and US 220 in neighboring states.



NORMAL SECTION



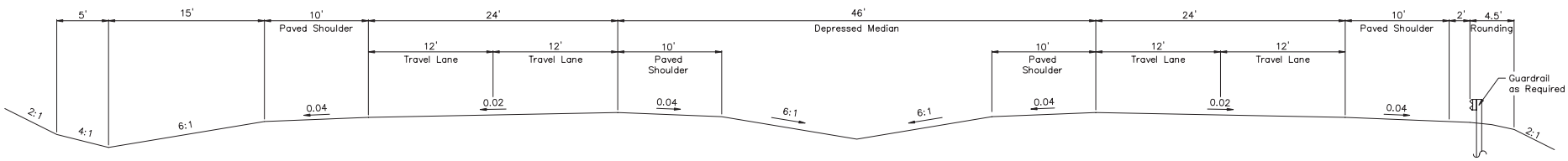
ALTERNATE SECTION

WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION

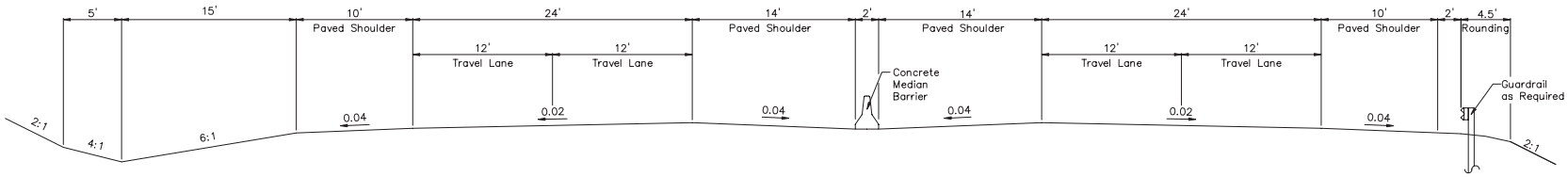
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV

WEST VIRGINIA DIVISION
OF HIGHWAYS TYPICAL SECTION

FIGURE - 2-2



NORMAL SECTION



ALTERNATE SECTION

WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION

NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV

MARYLAND STATE HIGHWAY
ADMINISTRATION TYPICAL SECTION

FIGURE - 2-3

2.4 Refinement of Preliminary Corridors

After the five preliminary corridors were presented to several groups, including state and federal resource agencies, local planning officials, and the public, between February and September 2006, concurrent preliminary engineering studies and environmental analyses began. The primary purpose of the engineering studies was to determine if reasonable highway alignments could be developed within each of the preliminary corridors already shown to the public and resource agencies. If the reasonable alignments within the corridors were shown to be feasible, the related environmental analyses could commence.

Although the preliminary corridors were 4,000 feet wide, only about 300 feet will be needed for a highway alignment. Consequently, a best fit alignment (BFA) was developed for each corridor utilizing the engineering criteria of WVDOH and MDSHA and, to a limited degree, information about the region's major environmental features. Thus, the BFAs within each of the preliminary corridors represented only one possible line and grade for a new highway among many possible future roadway alignments.

Although in theory many alignments and other possible transportation alternatives could be developed within the corridors that differ from the BFAs, the BFAs were developed to assure that at least one alignment was possible within each corridor. Other possible transportation alternatives within a program of projects could also include widening, turning lanes, signalization, transportation systems management, and spot improvements at a limited number of locations rather than a completely new highway stretching from I-68 to Corridor H. Utilizing each BFA as a potential centerline, a 2,000-foot buffer was attached to each side to provide a refined 4,000-foot corridor. The refined corridors were very similar to the preliminary ones but there were some modifications in their appearance as a result of the buffers being developed on a conceptual engineered centerline.

2.4.1 No-Build Alternative

The No-Build Alternative serves as the baseline or benchmark against which the build alternatives are evaluated. Typically, a No-Build Alternative is defined as an alternative that incorporates "planned" improvements that are included in the fiscally constrained long-range

plan or, more conservatively, only "committed" improvements such as those in a state or metropolitan transportation improvement program.

The No-Build Alternative would consist of taking no action to develop a new NHS Corridor between I-68 and Corridor H. Currently programmed projects included as part of the No-Build Alternative all have independent utility and their own logical termini. They include, to varying degrees, improvements such as widening of existing roadways, the addition of turning lanes or signalized intersections, transportation systems management, and new facilities on new alignment. (To achieve independent utility a project must be able to function on its own without further construction of an adjoining segment. Logical termini are rational end points for a transportation improvement, typically major traffic generators.)

While the No-Build Alternative would not meet the identified purpose and need for the project, it could meet other transportation needs in the area. The No-Build Alternative is included for comparison with the build alternatives. It will also be carried into Tier Two as more detailed studies establish a baseline for the environmental consequences of future build alternatives.

2.4.2 Corridor A

Corridor A and all four of the other corridors are four-lane, rural divided arterials. Corridor A begins with an interchange near existing Exit 34 along I-68 in Allegany County south of Frostburg and ends with a connection to Corridor H in Grant County east of Bismarck. Generally, Corridor A's limits exist in sparsely populated, low-density areas. Corridor A briefly parallels MD 36 (George's Creek Road) on the western side, after which it crosses and then parallels the western slope of Dans Mountain in the vicinity of the Mountainview landfill. Moving southwest and paralleling MD 36 on the eastern side, Corridor A follows along the western extent of Dans Mountain. Corridor A is well east of Midland, Lonaconing, Piedmont, Elk Garden, and Mount Storm.

Corridor A enters Mineral County east of Piedmont as it crosses over MD 135 (Westernport Road) and WV 46. It crosses the North Branch of the Potomac River at this same location. Corridor A continues southwest, passing Jennings Randolph Lake and Elk Garden to the east. Corridor A crosses US 50/WV 42 at Hartmansville before entering Grant County. From there,

Corridor A continues east of Mount Storm to WV 42 where it turns southeast and parallels the existing road, terminating at the junction with WV 93 and Corridor H.

All of the refined corridors are shown on Figure 2-4.

2.4.3 Corridor B

Corridor B begins with an interchange near existing Exits 41 and 42 along I-68 between LaVale and Cumberland and ends with a connection to Corridor H in Grant County north of Scherr. Generally, Corridor B's limits in the north exist in congested areas, particularly in the vicinity of Cresaptown and Keyser while in the south Corridor B services mostly low-density rural areas.

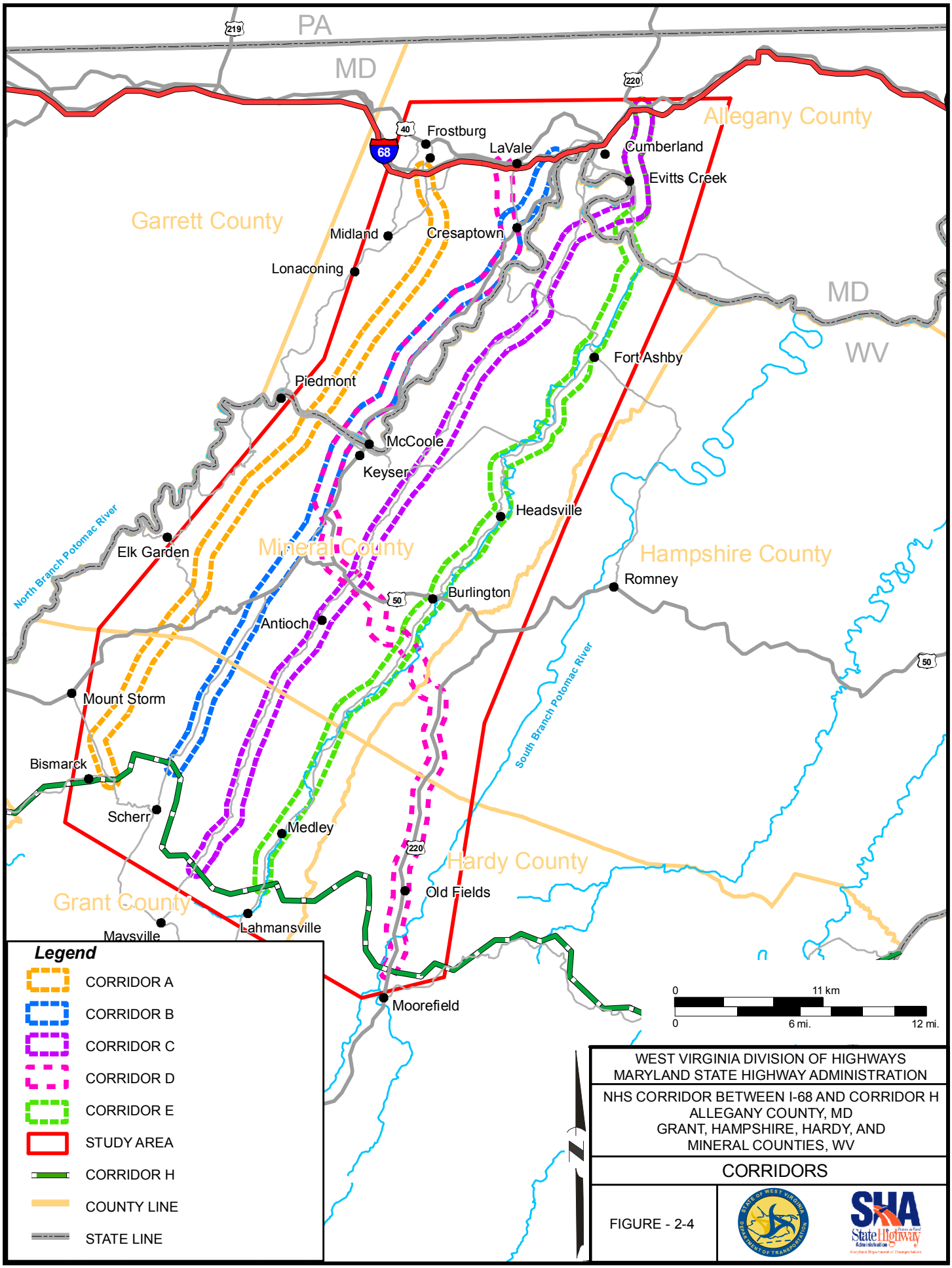
Corridor B originates along Haystack Mountain at I-68 and extends southwest to Cresaptown crossing MD 53 (Winchester Road). At this point, it parallels US 220 to the west and Dans Mountain to the east. West of McCoole, Corridor B crosses MD 135, the North Branch of the Potomac River, and WV 46.

Entering Mineral County, Corridor B is west of Keyser and continues to parallel US 220 on the western side. At the junction with WV 972, Corridor B continues southwest along US 50. Near Claysville, Corridor B begins to parallel WV 93, entering Grant County and extending to a terminus at Corridor H.

2.4.4 Corridor C

Corridor C begins with an interchange near existing Exit 46 along I-68 east of Cumberland and ends with a connection to Corridor H in Grant County north of Maysville. Generally, Corridor C's limits in the north exist in congested areas, particularly in the vicinity of Cumberland, while in the south they are in mostly low-density rural areas.

Originating near Nave's Crossroads, Corridor C extends south through the Willowbrook Road area near the Allegany College of Maryland to Evitts Creek and briefly parallels MD 51. Corridor C then turns west through Mexico Farms and crosses the North Branch of the Potomac River into Mineral County where it parallels WV 28.



WEST VIRGINIA DIVISION OF HIGHWAYS
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NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
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CORRIDORS

FIGURE - 2-4

Continuing southwest, Corridor C parallels County Route 9 (Knobley Road) west of Short Gap, well east of Keyser. Crossing US 50/220 at Ridgeville and continuing southwest, Corridor C enters Grant County paralleling County Route 3 (Knobley Road). It connects with Corridor H just north of Maysville.

2.4.5 Corridor D

Corridor D begins with an interchange near existing Exit 39 along I-68 near LaVale and ends with a connection to Corridor H in Hardy County north of Moorefield. Corridor D closely follows Corridor B between Cresaptown and the US 50/220 coupling just south of Keyser. Generally, Corridor D's limits in the north exist in congested areas, particularly in the vicinity of LaVale, Cresaptown, and Keyser, while within the south Corridor D falls mostly within low-density rural areas.

Corridor D originates on the eastern slope of Dans Mountain and extends south for a short distance on the western side of MD 53. From Cresaptown, Corridor D runs southwest paralleling US 220 to the west and Dans Mountain to the east. West of McCoole, Corridor D crosses MD 135, the North Branch of the Potomac River, and WV 46.

Entering Mineral County, Corridor D runs west of Keyser and continues to parallel US 220 on the western side. At the junction with WV 972, Corridor D turns southeast along US 220. Corridor D continues along US 50/220, County Route 50/4 (Shirley Lane), and County Route 13 crossing into Hampshire County. Rejoining US 220/WV 28, Corridor D turns southward and crosses into Hardy County. Corridor D parallels US 220 until its connection with Corridor H just north of Moorefield.

2.4.6 Corridor E

Corridor E begins with an interchange near existing Exit 46 along I-68 east of Cumberland and ends with a connection to Corridor H in Grant County near Lahmansville. Generally, Corridor E's limits in the north exist in congested areas, particularly in the vicinity of Cumberland, while in the south they fall mostly within low-density rural areas.

Corridor E originates in the vicinity of Corridor C near Nave's Crossroads. Corridor E extends south through the Willowbrook Road area near the Allegany College of Maryland to Evitts Creek

and briefly parallels MD 51. Corridor E then crosses the North Branch of the Potomac River into Mineral County near the town of Patterson Creek and parallels Patterson Creek itself to the west.

Continuing southwest, Corridor E crosses WV 28 west of Fort Ashby and follows WV 46 to County Route 11 (Patterson Creek Road). It then parallels County Route 11 and Patterson Creek passing near Reese's Mill and Headsville. Corridor E crosses Patterson Creek at numerous points along its projected path. Corridor E intersects US 50/220 near Burlington and continues southwest into Grant County. It then parallels County Route 5 (Patterson Creek Road) to its terminus with Corridor H near Lahmansville.

2.4.7 Related Projects

Specific major projects currently listed on the *Cumberland Area Long Range Transportation Plan* (Cumberland MPO 2005), the *Cumberland Area Long Range Transportation Plan Addendum* (Cumberland MPO 2007), *Cumberland Urbanized Area Transportation Improvement Program* (Cumberland MPO FY 2006-FY 2008), and other Maryland and West Virginia state highway programming plans that could be considered part of the No-Build Alternative include the following:

- I-68 – Freeway reconstruction from MD 53 to US 220 North
- Corridor H – Construction between Forman and Moorefield
- US 40 Alternate – Reconstruction from Vocke Road to Cumberland
- US 50 – Resurfacing and bridge improvements
- US 220 – Geometric improvements and roadway rehabilitation at various locations in Maryland and West Virginia
- US 220 – Replacement of the Keyser-McCoole Bridge
- MD 53 – Highway reconstruction with access control improvements from I-68 to US 220
- MD 51 – Resurfacing from Cumberland to Evitts Creek
- WV 28 – Roadway renovation
- WV 46 – Resurfacing between Keyser and Ft. Ashby

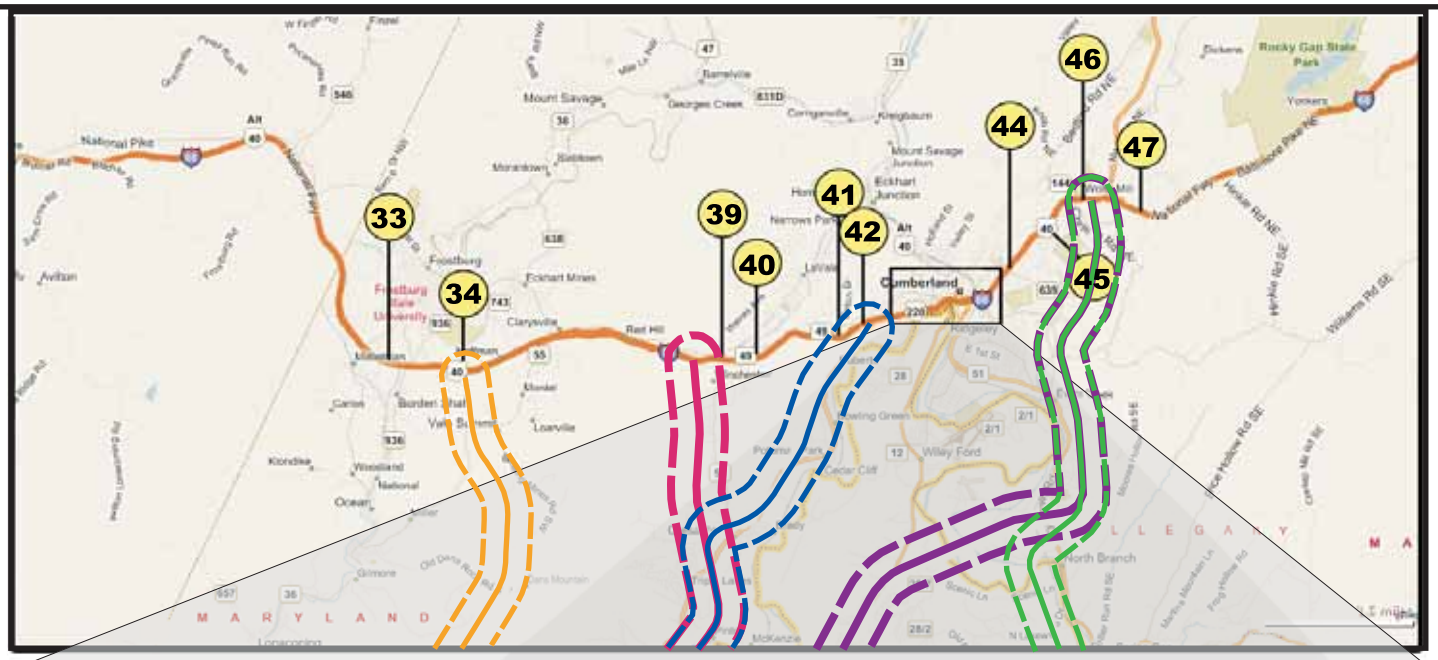
Separate environmental documentation has been or will be required for each of these projects. It is likely that environmental impacts would occur as a result of each of these projects as well. The indirect and cumulative impacts from these projects will be analyzed in detail as they pertain to the US 220 project as the project is carried forward into Tier Two.

The projects currently programmed as part of the No-Build Alternative may not completely address future regional transportation needs in a timely manner. Additionally, they may not sufficiently enhance development efforts and economic growth throughout the Appalachian regions of Maryland, West Virginia, Pennsylvania, and Virginia. The result of taking no action would likely be a continuation of conditions on the existing transportation facilities in the study area. As a consequence, the No-Build Alternative may not enjoy the satisfaction of local officials and the public in the area.

2.5 Potential Interchange Configurations

Early in the process, concern was raised that a possible highway alignment could be found to have minimal environmental impacts, but might fail to connect properly with either of the termini points. To alleviate that concern, interchange configurations at I-68 and Corridor H were evaluated utilizing the line and grade of the BFAs as a representative connection point. Potential interchange locations and configurations were examined at the northern terminus with I-68. As conceptualized, these configurations are not necessarily project alternatives, merely illustrations that suitable engineering design is possible at the logical termini. They predominantly represent full interchange connections depicting the largest footprint reasonably possible. If the project progresses to Tier Two, additional refinements and true interchange alternatives will be developed. More comprehensive interchange studies in Tier Two will depend on additional traffic studies, environmental analysis, and public involvement.

Proper interchange placement will continue to be a challenge. I-68 has a series of eight closely spaced full and partial interchanges between mileposts 39 and 47 that pose specific problems for the motoring public and limit, to some degree, the types of future improvements possible. The roadway section consists of steep terrain and a number of physical barriers such as the Potomac River, CSX Railroad, and downtown Cumberland, all of which constrain efforts to improve the current conditions along this heavily traveled Interstate. Existing interchange locations are shown on Figure 2-5.



Legend

- CORRIDOR A
- CORRIDOR B
- CORRIDOR C
- CORRIDOR D
- CORRIDOR E
- 33 INTERCHANGE NUMBER

N

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INTERCHANGE LOCATIONS ON I-68

FIGURE - 2-5
NOT TO SCALE

2.5.1 Potential I-68 Interchange Configurations

Conceptual interchange alternatives were examined for each terminus location to ensure that a new roadway could be physically tied to I-68 while maintaining entrance and exit ramp spacing as per the AASHTO publication, *A Policy on Geometric Design of Highways and Streets* (2004) design criteria. All were found to have the ability to connect with the termini as described below.

Potential Corridor A Interchange

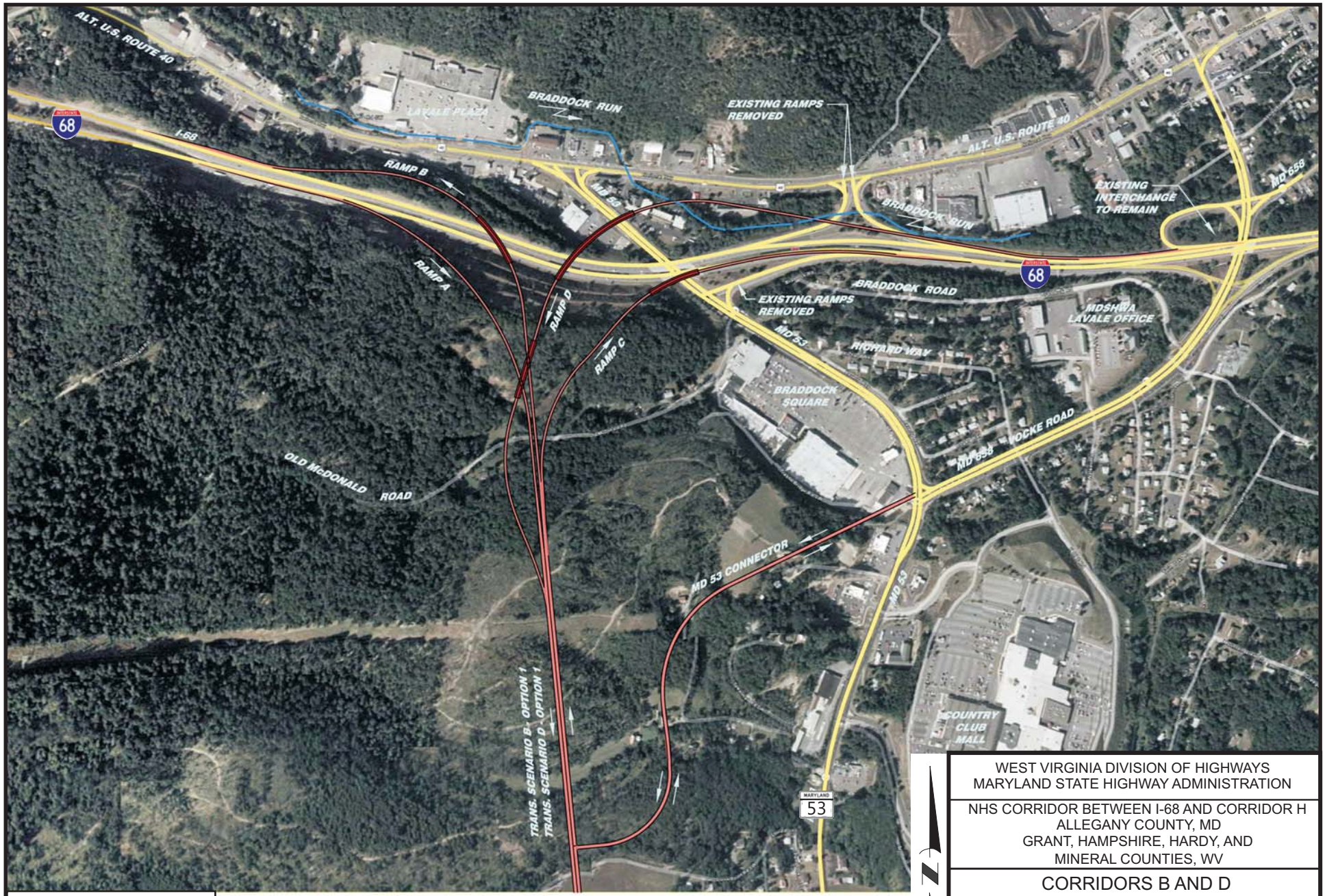
Corridor A follows the existing MD 36 alignment and grade south of I-68 and ties into I-68 at Exit 34. The most practical option at this location would be to use the existing diamond interchange with some roadway widening and lane additions as needed. Preliminary traffic projections for the Corridor A interchange, however, indicated that a full interchange may be necessary in place of the existing diamond interchange (French Engineering 2006).

Potential Corridors B and D Interchanges

There are three possible interchange locations for Corridors B and D at I-68. Those options are as follows:

- Option 1 parallels MD 53 between Cresaptown and Lavale and ties into I-68 west of Exit 39. The full interchange between Corridor B or Corridor D and I-68 would provide access between the two roadways in all directions. A service connector road to MD 53 and MD 658 northwest of the Country Club Mall is required to provide direct access to the corridor and indirect access to I-68. The service connector road has an at-grade intersection at each terminus. The western interchange from Alternate US 40 and MD 53 to I-68 may require relocation or partial or full removal with this option. Option 1 is shown on Figure 2-6.

- Option 2 parallels US 220 between Cresaptown and Cumberland and provides a partial interchange with I-68 between Exits 41 and 42. The partial interchange provides access from Corridor B or Corridor D to I-68 eastbound and from I-68 westbound to Corridor B or Corridor D. Traffic traveling to and from the corridor to I-68 to the west would use existing MD 53 between Lavale and Cresaptown with access near the existing US 220/MD 53 intersection. The partial interchange design could leave intact the single westbound exit ramp from I-68 to MD 49. Partial interchanges may be avoided if the demand for a specific movement is light and that movement can be accommodated at the adjacent interchange. Construction of a full interchange will have substantial



LEGEND

- Existing Roadway
- Proposed
- Bridge

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CORRIDORS B AND D
OPTION 1 INTERCHANGE

FIGURE - 2-6

impacts and displacements given the existing grades and terrain at this location. This option may also present weaving problems and signing overlaps. Additional engineering analysis during Tier Two will be necessary to alleviate these concerns. Option 2 is shown on Figure 2-7.

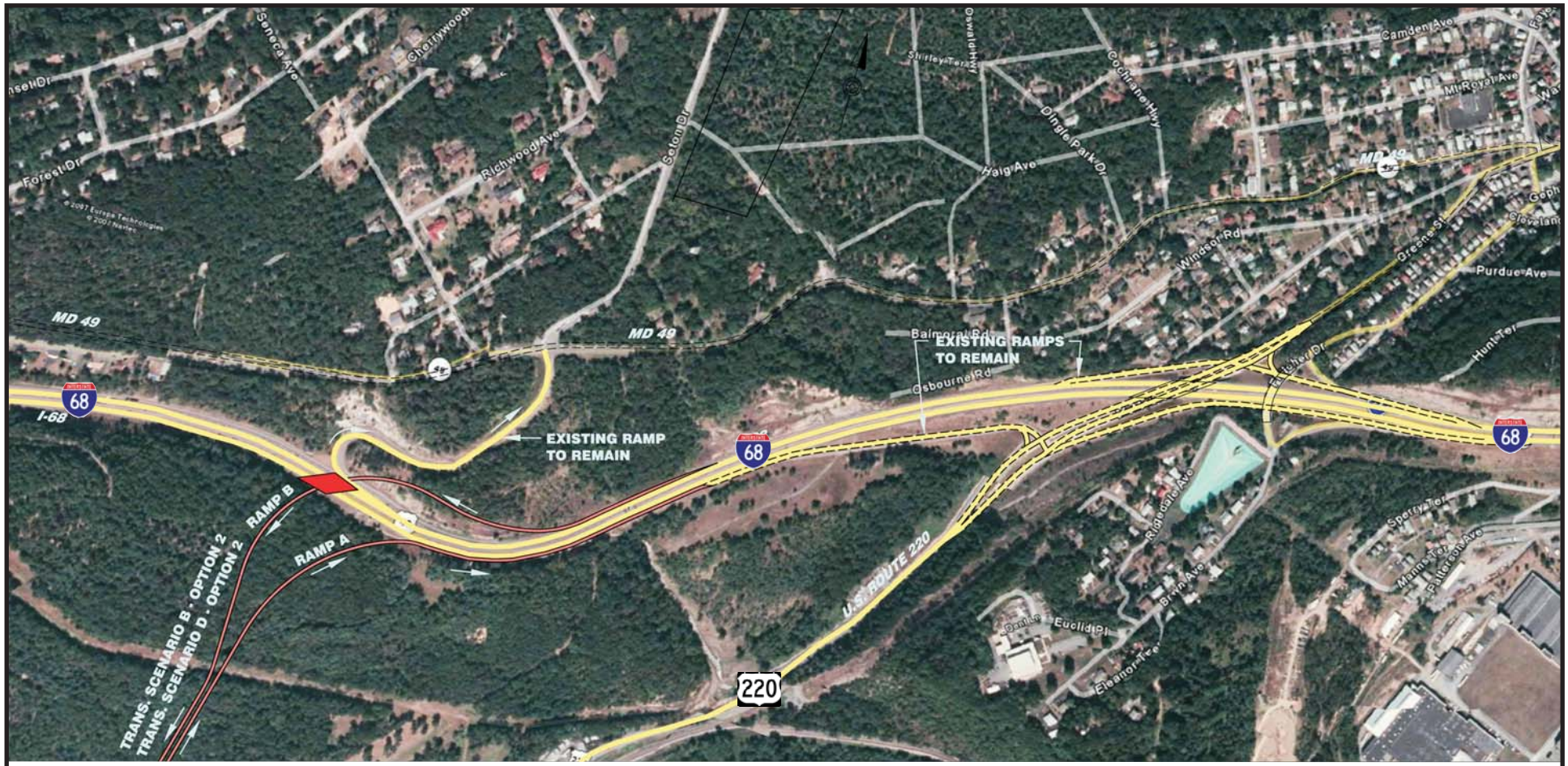
- Option 3 requires the construction of both Option 1 and Option 2 with partial interchanges at each connection to I-68. The western interchange west of Exit 39 connects eastbound I-68 to Option 1 and Option 1 to westbound I-68 via ramps A and B of Option 1. A service connector road between MD 53/MD 658 and Corridor B is needed. The eastern interchange between Exits 41 and 42 connects westbound I-68 to Option 2 and Option 2 to eastbound I-68. The *Cumberland Area Long Range Transportation Plan* (Cumberland MPO 2005) projects severe congestion on both MD 53 and US 220 in the Cresaptown area with moderate improvements closer to I-68. Option 3 may help alleviate congestion in both corridors by providing added capacity and traffic management options. Half interchange options will provide smaller, less intrusive interchange footprints. The existing I-68 ramps will remain in place. Option 3 will match general traffic flow patterns, with Option 1 accommodating traffic to the LaVale commercial area and I-68 west and Option 2 handling traffic to Cumberland and I-68 east. Option 3 will have a higher overall cost with increased right-of-way and environmental impacts. Additionally, if the ramps are too close to one another, Option 3 could create signing overlaps.

Potential Corridors C and E Interchanges

Corridors C and E tie into the same location on I-68 at the interchange with US 220 (North), MD 144, and Naves Cross Road (Exits 46 and 47) east of Cumberland. A complex, full interchange between Corridor C or Corridor E and I-68 could be constructed at that location while maintaining access from US 220 (North) and MD 144 to both the new facility and I-68. The conceptual interchange requires the relocation of three existing ramps and the construction of at least ten structures. An identical conceptual interchange for both Corridor C and Corridor E is shown on Figure 2-8.

2.5.2 Potential Corridor H Interchange

Construction is currently underway for Corridor H in the vicinity if the US 220 project's southern termini. The WVDOH anticipates completion in late 2013. When completed, Corridor H will be opened to traffic from Bismarck (west of the project area) to Wardensville (east of Moorefield). Outside Moorefield, the alignment of Corridor H within the study area traverses a predominantly rural landscape with almost no commercial establishments nearby and few built-up residential



LEGEND

- Existing Roadway
- Proposed
- Bridge

0 252m

0 700' 1400'

N

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CORRIDORS B AND D
OPTION 2 INTERCHANGE

FIGURE - 2-7

LEGEND

- Existing Roadway
- Proposed
- Bridge

0 252m

0 700' 1400'

N

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CORRIDORS C AND E
INTERCHANGE

FIGURE - 2-8

areas. Corridor H is being built to similar design and capacity standards as the planned US 220 project discussed in this EIS.

The termini with Corridor H were examined to determine if traffic signals are warranted. As suggested by current WVDOH guidelines, if traffic signal warrants are met at the Corridor H termini (with construction of intersections), then an interchange will be utilized instead. Although Corridor H is access-controlled, the WVDOH has made allowances for intersection construction and traffic signalization at specific locations where necessary. More study will be necessary during Tier Two to determine if the potential US 220/Corridor H terminus would be a candidate for construction of a signalized intersection.

The design hour volume for each corridor was calculated to be between 730 vehicles per hour (vph) and 1,430 vph depending on the corridor examined. It is also anticipated that the majority of traffic will be traveling to and from the east on Corridor H because of the attractiveness of this route between I-68 and I-81. This will result in a higher left-turn volume from each corridor. Consequently, a traffic signal will be warranted with these volumes and a basic diamond interchange is assumed. Based on the projected traffic volumes and the general terrain of the area, a diamond interchange appears to be sufficient. Although additional analysis will be required to confirm this during the next phase of the project, a diamond interchange was assumed in order to develop preliminary cost estimates.

2.6 Cost Estimates

Preliminary construction cost estimates were developed for the corridors using a new build, arterial, controlled access alternative for the BFAs. The construction cost estimates were developed using unit costs from similar type projects based on the typical sections. Alternatives developed later in Tier Two may be less than a full build alternative.

The construction cost estimates do not include utility relocation, right-of-way acquisition, engineering, or environmental study costs. Nor do they include future maintenance costs. At this level of preliminary detail, maintenance costs would be applied based on a “per mile” basis. Thus, longer corridors could be expected to have higher maintenance costs than shorter ones. More refined costs will be calculated during Tier Two. Factors that may affect future costs include the type(s) and location(s) of the build alternative(s) selected, types and locations of the

interchanges, earthwork balance and geotechnical issues, typical section modifications, the locations and number of bridges, and inflation. A summary of the construction cost estimates for each corridor and for the I-68 and Corridor H interchanges are shown in Tables 2.6-1 and 2.6-2.

TABLE 2.6-1
Corridor Construction Cost Estimates

Corridor	Length	Construction Cost	Total Construction Cost Estimate
A	34.5 miles	$13,400,000/mile	$462,000,000
B	34.2 miles	$13,400,000/mile	$459,000,000
C	44.5 miles	$13,400,000/mile	$597,000,000
D	45.3 miles	$13,400,000/mile	$607,000,000
E	45.0 miles	$13,400,000/mile	$603,000,000

TABLE 2.6-2
Interchange Construction Cost Estimates

Interchange	Length Roadway (Ramps)	Roadway Construction Cost	Deck Area Structures (Bridges)	Roadway Construction Cost	Total Construction Cost Estimate
Corridor A	12,000 feet	$660/foot	26,400 square feet	$225/square foot	$14,000,000
Corridors B/D Option 1 (Full Interchange)	20,960 feet	$660/foot	57,000 square feet	$225/square foot	$27,000,000
Corridors B/D Option 2 (Partial Interchange)	7,370 feet	$660/foot	New I-68 Bridge 18,000 square feet	$225/square foot	$9,000,000
Corridors C/E (Full Interchange)	24,000 feet	$660/foot	106,000 square feet	$225/square foot	$40,000,000
Corridor H (Full Diamond)	12,000 feet	$660/foot	26,400 square feet	$225/square foot	$14,000,000

2.7 Alternatives Analysis

As the development of the transportation corridors and conceptual interchanges continued to progress, traffic issues were examined and a screening of potential environmental impacts from

all five corridors was completed. The assessment of existing and future traffic, together with the environmental impact overview, allowed for the number of corridors to be narrowed from five to three.

2.7.1 Traffic Assessment

Concurrent with the refinement of the preliminary corridors, potential issues with traffic were evaluated for the area. Future traffic was projected using a traffic assignment model and estimates of long-distance through traffic from intercity locations to the east and west of Cumberland on I-68. The traffic assignment model consisted of four components: trip generation productions, trip generation attractions, trip distribution, and traffic assignment.

Because long-distance traffic through Cumberland could use the combination of Corridor H and an improved US 220 corridor, a thousand vehicles per day were added to the forecasts. This represented travelers that would shift from other long-distance through routes in the area to a new facility in one of the corridors if a highway were ultimately constructed. In addition to the projections, the amount of regional residual traffic expected on US 220 was calculated. Residual traffic would be those trips remaining on existing US 220 if a new highway corridor were developed and traffic shifted to it. In effect, the less residual traffic on US 220, the more successful a new roadway would be. The amount of traffic each corridor would carry, together with the residual traffic on US 220, is shown in Table 2.7-1.

TABLE 2.7-1
Projected Residual Traffic on US 220

Corridor	Traffic Projection for Each TS		Residual Traffic on US 220	
	Year 2005	Year 2025	Year 2005	Year 2025
A	6,100-9,000	9,100-12,900	3,600-7,000	6,100-8,500
B	8,000-15,500	11,900-21,100	Primarily Local	Primarily Local
C	5,600-12,000	8,300-18,500	2,400-4,500	6,100-6,300
D	9,200-15,500	13,700-21,100	Primarily Local	Primarily Local
E	5,200-11,200	7,700-17,600	3,900-5,200	6,100-6,300

Across all five corridors, the lower range of traffic would occur between Corridor H and US 50. Future traffic volumes would range from a low of 7,700 on the more rural parts of Corridor E to a high of 21,100 on Corridor B and Corridor D in the vicinity of Cumberland and Cresaptown.

Of the five proposed corridors, B and D were shown to divert the most traffic from existing US 220, leaving primarily local traffic on the roadway. Corridor A would divert the least traffic,

leaving the most traffic on US 220 in the year 2025. Though faring slightly better, Corridor C and Corridor E would leave about a third of the traffic on US 220 that is expected there in the year 2025. Table 2.7-2 shows the upper limits of the five corridors ranked in order of their ability to divert future US 220 traffic.

TABLE 2.7-2
Future Traffic on US 220

Corridor	Maximum US 220/MD 53 Traffic (AADT) Year 2025	Traffic (AADT) on each TS Year 2025	Residual Traffic (AADT) on US 220 Year 2025
B & D	20,200	21,100	Primarily Local
C	20,200	18,500	6,300
E	20,200	17,600	6,300
A	20,200	12,900	8,500

In terms of meeting future traffic demand, Corridors B and D offer the greatest promise, followed in order by Corridors C, E, and A. Besides being diverted to a proposed corridor (if built), some of the growth in US 220 traffic could shift to other roadways, possibly compounding congestion and safety problems in the area. This shifting to other through routes would be greatest in the corridors that divert lesser amounts of future US 220 traffic and lowest for Corridor B and Corridor D. Although additional traffic analysis in Tier Two would be necessary to determine how much traffic is actually diverted to the other north-south routes, they all have less capacity than US 220 for bearing increases in traffic.

2.7.2 Impacts Screenings

The natural resources and important manmade features of the area were identified as part of the screening process of alternatives. The resources and features found within the study area were identified by reviewing secondary data (e.g., National Wetland Inventory data, county soil surveys, digital Flood Insurance Rate Maps, comprehensive plans, and other resource inventories) provided by local, state, and federal agencies. This data collection was followed by extensive field investigations to provide further insight into specific resources and environmental conditions.

The natural resources inventoried as part of the screening process included soils and geologic features, land cover, wetlands, streams, water quality, floodplains, threatened and endangered

species, terrestrial habitat, and farmlands. Secondary source information on all of the resources was collected by contacting local and state agencies with jurisdiction over, or interest in, the various landscape features. All information was incorporated into the project's geographic information system (GIS) and field verified. Updated data, based on the field verifications, were then incorporated into the GIS datasets and appropriate maps.

The manmade features included community facilities, urban/built-up areas, businesses, cultural resources (archaeological sites, historic structures, and historic districts), potential Section 4(f) resources, and potentially contaminated sites. Locations with archaeological potential were assessed through a predictive model developed specifically for the project. Additionally, information on local planning initiatives, programs, and projects was gathered by contacting planning officials in the area. Similar to the natural resources, this information was field verified and mapped in GIS.

The results of the screening for potential impacts for each corridor are shown in Table 2.7-3. Additional qualitative information was also incorporated into the screenings. That information is not easily portrayed on a table and is therefore not included here.

TABLE 2.7-3
Preliminary Impacts Screening

Feature	Corridor				
	A	B	C	D	E
Aquatic Resources					
Wetlands					
Acreage	147	118	152	143	306
Number	123	117	255	211	277
Streams					
Perennial					
--feet	198292	246322	269902	326380	564359
--number	74	150	199	198	362
Intermittent					
--feet	24065	53917	60932	122423	70793
--number	19	33	55	84	55
Floodplains					
Acreage	44	775	719	2244	5395
Potential Transverse Encroachments	1	3	3	9	9

TABLE 2.7-3 (continued)
Preliminary Impacts Screening

Feature	Corridor				
	A	B	C	D	E
Land Cover *(Acreage)*					
Built-Up Land	823	4427	3483	4439	2082
Agricultural Lands	1403	2953	6489	5487	8667
Forests	13016	9890	11130	11409	9921
Rangeland	1291	127	644	720	586
Mixed Forests and Rangeland	193	0	53	91	154
Potentially Contaminated Sites *(Number)*	17	43	42	55	28
Community Facilities *(Number)*					
Parks & Recreation					
Public Ownership	2	2	3	2	7
Private Ownership	0	4	4	2	4
Government Buildings	1	3	3	4	3
Cemeteries	1	9	18	14	12
Schools	0	8	2	7	4
Churches	2	18	19	20	13
Emergency Management	0	4	2	0	1
Major Health Care Facility	0	0	1	0	2
Prisons	0	2	1	0	0
Other Public Facilities	2	4	3	1	8
Agricultural Resources					
Farmlands *(Acreage)*	1403	2953	6489	5486	8667
Agricultural Preservation Districts *(Number)*	0	0	1	0	0
Agricultural Preservation Easements *(Number)*	0	0	0	67	0
Cultural Resources					
Historic Resources *(Number)*					
NRHP Sites	0	0	5	9	10
NRHP-Eligible Sites	0	4	5	14	16
Potential NRHP-Eligible Sites	4	29	29	31	51

TABLE 2.7-3 (continued)
Preliminary Impacts Screening

Feature	Corridor				
	A	B	C	D	E
Archaeological Resources *(Acreage)*					
Post-Contact Features					
- -Low Potential	2033	3812	4791	5443	5609
- -Moderate Potential	1018	679	1114	1029	1080
- - High Potential	19	213	441	618	582
Prehistoric Features					
- - Low Potential	12834	8368	13961	13895	12820
- - Moderate Potential	3118	3968	1353	1229	417
- - High Potential	1139	5125	6533	7091	8594
Potential Section 4(f) Resources *(Number)*					
Parks & Recreation	2	2	3	2	7
Wildlife Refuges	0	0	0	0	0
NRHP Sites	0	0	5	9	10
NRHP-Eligible Sites	0	4	5	14	16
Socioeconomic Resources					
Residential *(Acreage)*	253	2591	2369	2623	1002
Mixed Built-Up Land *(Acreage)*	243	1253	86	858	115
Commercial/Industrial *(Acreage)*	58	172	456	343	440
Industrial Parks *(Number)*	0	1	0	0	1
Business Locations *(Number)*	4	153	101	163	42
Employees *(Number)*	25	1215	1258	1813	355
Cost					
Estimated Construction Cost (in millions)	$488.3	$500.0	$651.0	$648.0	$657.0

Although there would be impacts within any of the potential corridors, Corridors B, C, and D were judged to have the fewest impacts overall when each corridor was analyzed as a whole. Additional details on the environmental screening are found in the project report, *Corridors Retained for Further Analysis* (Skelly and Loy, Inc. 2007a).

2.8 Identification of Other Possible Corridors

As the project progressed and the refined corridors were shown to local officials and the public, suggestions were made to examine four other potential corridors. Originating primarily through the public involvement process, each suggested new corridor was reviewed and a determination made to advance or eliminate it from further consideration. The additional corridors were identified as Modifications to Corridor B, Connections to US 219, Crossover Corridors, and Shifts of Corridor A to the West.

2.8.1 Modifications to Corridor B

Following a presentation to the Allegany County Planning Commission in September 2006 and a second round of public meetings where the refined corridors were shown, the Planning Commission voiced concern about the potential socioeconomic impacts of Corridor B and Corridor D through LaVale and Cresaptown. LaVale and Cresaptown provide a dense mixture of commercial, institutional, and residential development. LaVale and Cresaptown are communities where many jobs and single-family homes are located. Their neighborhoods are considered by many people in the area to be a good place to live, work, and shop.

This posed a dilemma, however. Because of the heavy development throughout LaVale and Cresaptown, the Planning Commission felt these two corridors offered the best solutions to roadway deficiencies in the area. On the other hand, with either of these two corridors, there would be a high potential for incurring impacts – precisely because there is so much development already in place. Consequently, the Planning Commission suggested that possibly the easiest way to minimize potential impacts would be to simply push the termini further west for Corridor B and Corridor D. Instead of tying-in a new roadway along I-68 between exits 39 and 42, the Planning Commission proposed that Corridor B and Corridor D tie-in at Exit 34, the proposed termini for Corridor A.

At first glance, this modification to Corridor B and Corridor D appeared to be a good environmental compromise for solving the transportation issues associated with US 220. To accomplish a tie-in at Exit 34 from points east, however, would require future alternatives to cross the steep terrain of Dans Mountain. Theoretically, it might be possible to skirt those parts of Dans Mountain with this type of corridor modification, but potential alignments would have to

begin well south of Cresaptown to meet grade at I-68. This would lessen the possibility of avoiding Dans Mountain and result in a roadway profile with major earthwork balancing. Under this type of modification, very high construction costs (similar to Corridor A) would be likely. Additionally, to alleviate existing and future traffic conditions, a roadway in this modified corridor would require more access roads to US 220. Not only would additional access roads increase costs, the potential to increase the environmental consequences of the project would exist. As a result, the modified corridor was judged unreasonable and eliminated from further consideration.

As the project moves into Tier Two, it may be possible to merge the termini of Corridors B and D into the same project alternatives if either or both of these corridors are carried forward. In effect at this stage of the process, the northern parts of each corridor are interchangeable and would serve either corridor as a connection to I-68.

2.8.2 Connections to US 219

After the corridors were shown at the second round of public meetings, some people in the community expressed disappointment that no corridors were developed that would link directly with US 219. Although US 219 is an important regional roadway providing a north-south connection in neighboring Garrett County (Maryland's westernmost county), it is over 30 miles west of US 220.

The existing roadway is two-lane for all sections in Maryland, although several sections in Pennsylvania have been upgraded to four-lane, interstate conditions. MDSHA and the Pennsylvania Department of Transportation, however, are currently conducting environmental and engineering studies in support of a future upgrade of US 219 to four-lanes from I-68 north to Meyersdale, Pennsylvania.

Connections to US 220 with an upgraded US 219 would be possible via I-68, but because of the distance between the two routes, efforts to upgrade both routes are clearly separate projects. Each project has different needs, independent utility, and their own logical termini. As a result, the suggestion to link these two projects directly was judged unreasonable and eliminated from further consideration.

2.8.3 Crossover Corridors

One other recurring suggestion was raised by some members of the public during the study process – that perhaps some combination of corridors would be an appropriate transportation solution for roadway deficiencies in the area. It was hoped that a combination corridor, or crossover corridor, could avoid important environmental features and have limited socioeconomic impacts, especially a crossover utilizing Corridor C in the north and Corridor B or Corridor D in the south.

The City of Cumberland suggested a transportation systems management alternative that would function as a crossover corridor. "TSM is the application of construction, operational, and institutional actions to make the most productive and cost effective use of existing transportation facilities and services" (Institute of Transportation Engineers 1992). The City's proposal would utilize some combination of WV 956, WV 28, MD 51, and MD 51 to connect project corridors to I-68 on the east side of Cumberland. TSM-type alternatives have been deferred until Tier Two, however, so that possible connections with future highway alignments could be better analyzed.

Upon examination, however, it was realized that crossover corridors would require additional earthwork to cross the steep terrain, require additional access roads to serve travelers, and create additional environmental impacts through heavily forested areas. Additionally, the crossover corridors were not shown to offer any improvement over the five corridors as they were originally developed (in terms of meeting the project's purpose and need). Thus, this suggestion would likely increase both costs and the environmental consequences of the project.

Still, crossover connections could offer a safety valve, of sorts, to existing bottlenecks in the transportation system. As it currently stands, I-68 is the only practical east-west route through the project region for truck traffic and heavy volumes of passenger cars. Additionally, I-68 would serve as the major route from Washington, D.C., during a national emergency or evacuation of our nation's capital. In the past, however, weather-related and local emergency incidents have caused a shutdown of I-68 on occasion, forcing all traffic onto local roads. In each event, the resulting traffic congestion created serious operational problems for the local transportation system. Potential crossover connections from the US 220 project could serve as an I-68 bypass and relieve some future safety concerns.

2.8.4 Shifts of Corridor A to the West

As noted earlier, Corridor A has the potential to impact the Dans Mountain Wildlife Management Area, one of western Maryland's most important natural resources. In an effort to avoid impacting it, conceptual shifts to the corridor were investigated. It was determined, however, that a shift of Corridor A would not be practical for the following reasons:

- Constructability – Although Corridor A falls mainly in steep terrain with poor accessibility, shifting only a short distance farther west would do little to alleviate future construction in these conditions. A shorter construction season would be likely and most of the excavation could be into rock. The roadway profile would require major earthwork balancing and increase the costs of any proposed project. Any Potomac River crossings from the vicinity of Dans Mountain into West Virginia would be approximately 2,500 feet long and 500-600 feet high. Other major structures would also be required to cross streams and local roads.

- Traffic Diversion – A shift farther west to avoid Dans Mountain completely would be too far from US 220 and not attract sufficient traffic volumes to meet the project's purpose and need. Nor would a westward shift improve conditions within the existing US 220 corridor. Limited access locations and potentially longer travel times from more populated areas would prevail. Although a more westward shift could improve accessibility to areas along MD 36, it would not reduce travel times and accessibility from the US 220 corridor.

- Economic Development and Smart Growth – Any far western corridor, including the one through Dans Mountain, would become a true bypass of the most populated areas in the study area, including Cumberland, LaVale, and Keyser. Although new areas would become open for future development as a result of a western alternative, they would not be in Maryland's PFAs, nor would they enhance existing economic development efforts in the study area's older, more established communities. This could limit future growth and result in sprawl by providing a major transportation improvement in an area without other public infrastructure.

- Access – Except for MD 36, existing roads immediately west of Dans Mountian are mostly narrow, local roads, often located in steep terrain. Local roads would require considerable improvement to handle the additional traffic and truck volumes expected from a major new north-south route through the area. Additionally, access would be from the western side of Dans Mountain with no direct access from US 220.

- Impacts to Historic Resources – The area on the western side of Dans Mountain is rich in cultural resources associated with the coal and iron industries. Several existing resources in the area are already on the National Register of Historic Places, including the Lonaconing Historic District, the Lonaconing Furnace, and the Waverly Street Bridge in Westernport. A new transportation corridor through this area would require more detailed investigations to identify potential historic resources and identify the potential impacts of the proposed transportation improvements. Any additional studies

in an area with so many historic sites are likely to reveal more buildings and properties as potentially eligible for the NRHP.

- Maintenance – Shifts further west could have future maintenance problems. A new roadway in the vicinity of Dans Mountain would be exposed to year-round high winds, heavy snow in winter, and seasonal fog typical of Appalachian mountaintop areas. The roadway here would be located in a micro-climate more typical of western Allegany County and Garrett County than the immediate Cumberland area. Maintaining the proposed mainline and access roads in this area would be especially difficult in the winter months. Severe weather conditions could also lead to accelerated wear on the roadway surface and require more frequent patching and resurfacing.

- Safety – Weather conditions on the exposed mountaintop or western face could result in safety concerns pertaining to poor visibility and vehicle traction. Any mountaintop alternative will have frequent snow, snow drift, fog, and high winds, creating hazards for traffic.

As a result of this conceptual analysis, shifts to the west were judged both unreasonable and unable to meet the project's purpose and need. Consequently, shifts farther west of Corridor A were eliminated from further consideration.

2.9 Corridors Recommended to be Carried Forward

As a result of the preliminary alternatives analysis, Corridors B, C, and D were recommended as corridors to be retained for further analysis. A special report prepared for the project, *Corridors Retained for Further Analysis* (Skelly and Loy, Inc. 2007a), recommended that these three corridors be advanced. That report was sent to all of the cooperating and participating agencies shortly after it was prepared. The report was also available for review at public meetings held in May 2007. Copies of the report were also sent to local municipal governments, local planning agencies, and any citizens or community groups requesting a copy. The information in that report is included in this DEIS.

Each corridor was evaluated on its ability to meet the project's purpose and need. For the most part, any of the proposed corridors could meet the purpose and need, but to varying degrees. Each corridor would address the current transportation deficiencies that limit regional mobility by providing an improved north-south roadway through the region. Each would provide additional capacity while addressing safety deficiencies on existing roads. Corridor B and Corridor D, however, would divert the most traffic from US 220, the area's busiest north-south road, and, as a result, correct current transportation deficiencies best.

Each corridor would also add additional system linkage to the regional road network and support economic development efforts in the area. Corridor B and Corridor D would provide the greatest access to Cumberland, LaVale, Cresaptown, and Keyser, the major populated areas of the region and locations where economic development efforts are strongest. Corridor D would also provide additional access to Moorefield, a growing community with many jobs and economic infrastructure currently in place. Corridor C would provide access to Mexico Farms (a major employment location in Cumberland), the WV 28 area (a densely developed residential corridor in Mineral County that includes the Greater Cumberland Regional Airport), and the east side of Keyser via WV 46 (an area that includes Keyser Industrial Park, a 211-acre facility with nearly 60 acres available for future use).

The corridors recommended to be retained for further analysis are shown on Figure 2-9. Each analytical feature used in developing this recommendation is shown in ranked order in Table 2.9-1. Rank is ordered from one to five, with one being the least impact and five being the greatest.

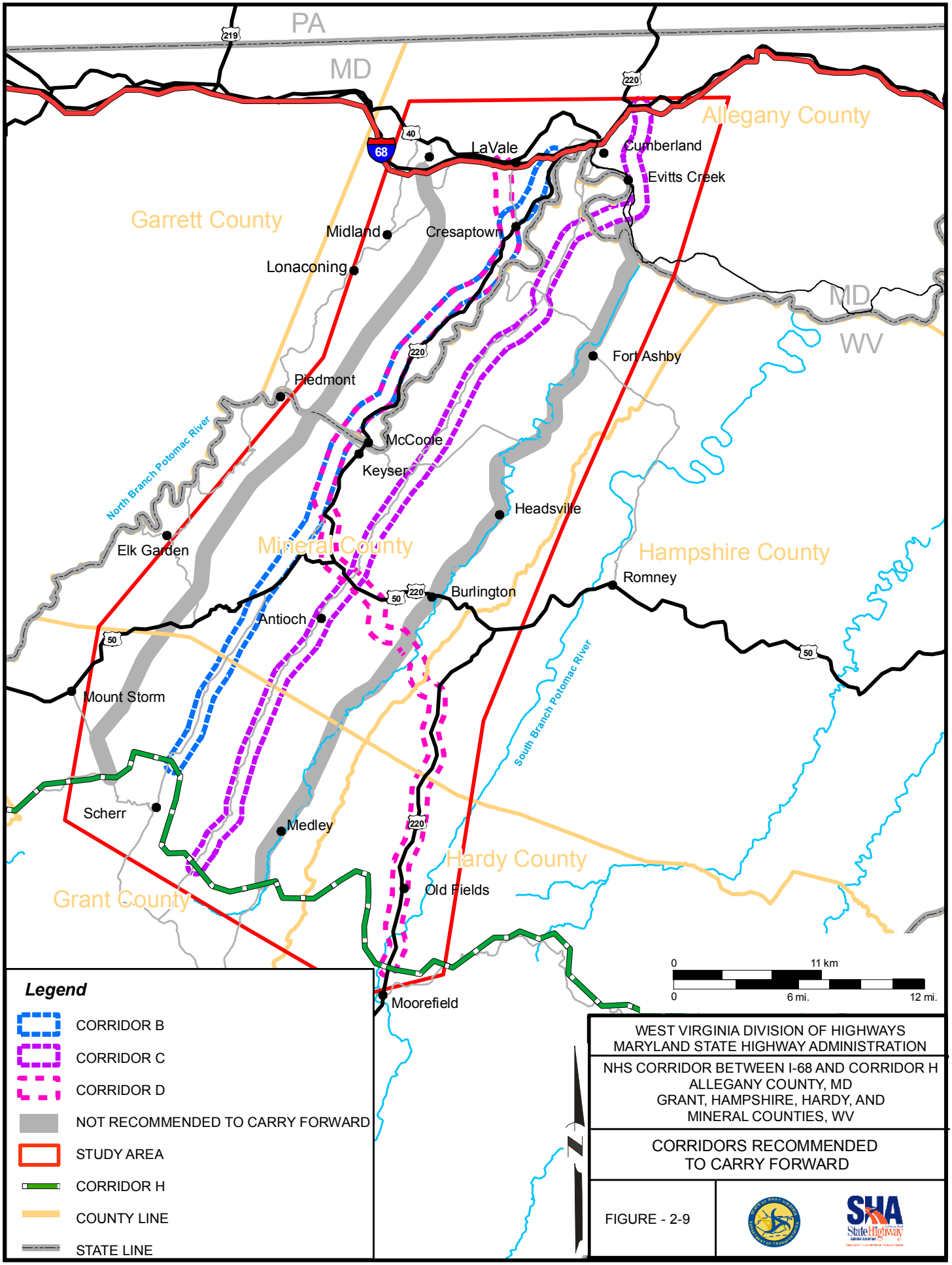
It is important to note, however, that at this juncture, rank was based on the number of impacts not the magnitude.

TABLE 2.9-1
Potential Impact of Analytical Features in Ranked Order

Corridor	Traffic Relief	Wet-lands	Streams	Flood-plains	Pot. Haz. Waste	Comm. Facilities	Agric. Resources	Cultural and Sec. 4(f)
A	5	2	1	1	1	1	1	1
B	1	1	2	2	4	3	2	2
C	3	4	3	2	3	5	4	3
D	1	3	4	4	5	2	3	4
E	4	5	5	4	2	3	5	5

Order: 1 = Least Impact; 5 = Greatest Impact.

Socioeconomic resources are not included in the table because it is difficult to differentiate between negative and positive socioeconomic impacts at a Tier One level of detail. For example, Corridors B, C, and D generally traverse areas with a higher level of development than Corridors A or E. Consequently, they could have the greatest impacts, positive and negative, to residential land, commercial land, business locations, and jobs. Also, because Corridors B, C, and D traverse the most densely developed settlement corridors in the study area, in some


PA
MD
219
220
40
68
LaVale
Cumberland
Evitts Creek
Allegany County
Garrett County
Midland
Cresaptown
Lonaconing
MD
WV
Fort Ashby
Piedmont
North Branch Potomac River
McCoole
Keyser
Headsville
Elk Garden
Mineral County
Hampshire County
Romney
Burlington
50
Antioch
Mount Storm
South Branch Potomac River
Scherr
Medley
Hardy County
Old Fields
Grant County
Moorefield
0
11 km
0
6 mi.
12 mi.
Legend
CORRIDOR B
CORRIDOR C
CORRIDOR D
NOT RECOMMENDED TO CARRY FORWARD
STUDY AREA
CORRIDOR H
COUNTY LINE
STATE LINE
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
CORRIDORS RECOMMENDED
TO CARRY FORWARD
FIGURE - 2-9

respects they also address the greatest need for transportation improvements. While the taking of homes or businesses would be a negative impact, the additional access and highway safety afforded to the homes and businesses that remained would be positive. Additionally, in analyzing socioeconomic resources, the Tier One studies looked at “built-up” land rather than individual residences and businesses. To determine the actual amount of potential impact to homes and businesses, it will be necessary to map individual buildings within each corridor. Although impacts to socioeconomic resources are very important and will be one of the major study components of Tier Two, a more detailed analysis now is beyond the scope of the initial screening offered by Tier One investigations.

There will also be additional impacts with all of the corridors as potential historic resources are determined eligible for the NRHP. Until the *Section 106* review process is completed, it is impossible to predict how many potential historic resources will be determined eligible for the NRHP. That process is currently ongoing and is not expected to be completed until the project enters Tier Two.

As the project progresses, potential historic districts found at the northern end of Corridor B and Corridor D will require additional analysis to determine the level of potential impact. Two potential historic districts are located in Bowling Green along US 220 in a heavily developed residential area north of Cresaptown. Another potential district is just south of Cresaptown at Pinto, east of US 220. A fourth potential district is also located along US 220 slightly farther south. This resource, a potential rural historic district centered around the Barton Dairy, spans the entire width of Corridor B and could prove difficult to cross with future alternative alignments.

There are also large historic districts at the southern end of Corridor D that could be affected by the project. One potentially eligible district, the Middle South Branch Rural Historic District just north of Moorefield, spans the entire width of Corridor D. Another is located in Purgitsville, centered on US 220 in Hampshire County near its southwestern corner boundary with Hardy County.

Nonetheless, the value of Corridors B and D in meeting the project’s purpose and need is high and therefore it is suggested that they be retained for further study. Options for avoidance and minimization may be developed as the project progresses.

The need to cross the Chesapeake and Ohio Canal National Historical Park by Corridor C could also be a fatal flaw. This resource spans the entire width of Corridor C as it crosses the Potomac River and could not be crossed without impacting it. Another historic site, the Western Maryland Railway (WMRR) right-of-way, is located nearby and offers challenges similar to the Canal Park. The NPS owns the WMRR and is currently developing a rail trail to connect it with the Chesapeake and Ohio Canal towpath.

Still, the value of Corridor C in meeting the project's purpose and need was moderate and suggested that it be retained for further analysis. Options for avoidance and minimization may be developed as the project progresses.

2.10 Corridors Not Carried Forward

There will likely be significant impacts as the project progresses, but Corridors B, C, and D appear to meet the project's purpose and need better than either Corridor A and Corridor E. Although there would be fewer impacts to most resources within Corridor A, it was not carried forward because of the potential impact to Dans Mountain. Dans Mountain contains the largest amount of state-owned contiguous forest in western Maryland and was identified by the MDNR as having high habitat values associated with forest interior, wildlife corridors, and green infrastructure. Corridor A was also not carried forward because it would divert the least amount of traffic from US 220. A new highway alignment within Corridor A would still leave as much as 8,500 AADT, or approximately 42 percent of the expected traffic in the year 2025, on existing US 220. Corridor A was also not carried forward because it would likely have the least economic development benefits without other major public infrastructure improvements. With the fewest residential units and commercial facilities found in any of the corridors, the handful of communities located within the area of Corridor A would require substantial investment in land development, utility extensions, and water and sewer improvements to attract economic growth.

Corridor E was not carried forward because it would have the greatest impact on all natural resources. When the potential environmental impacts of each corridor were compared against one another, Corridor E consistently ranked at or near the bottom in terms of the number of impacts. Corridor E was also not carried forward because it would divert the second least amount of traffic from US 220. A new highway alignment within Corridor E would still leave as much as 6,300 AADT, or approximately 31 percent of the expected traffic in the year 2025, on

existing US 220. Corridor E was also not carried forward because it would likely create the most public controversy. About 120 people attended the first public meetings and, although they were generally supportive of the project, potential impacts to the Patterson Creek Valley located within Corridor E were considered a major concern.

CHAPTER 3.0

AFFECTED ENVIRONMENT

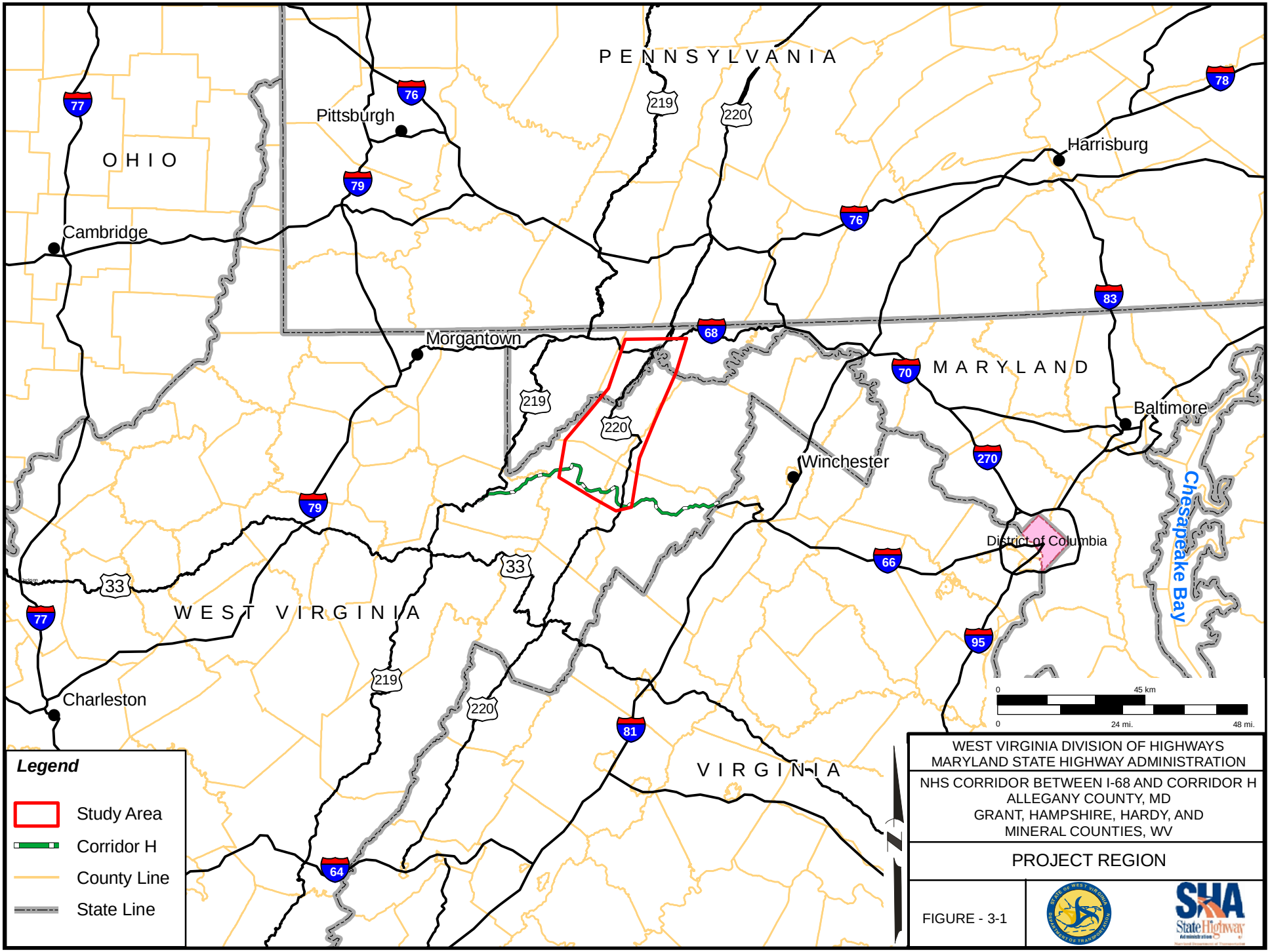
3.0 AFFECTED ENVIRONMENT

This chapter describes the affected socioeconomic, cultural, and natural environment of the study area. It is intended to provide a regional overview of the features present in and around the study area. With some minor deviations dependent on the environmental resource being described, the discussions in this chapter attempt to keep the level of detail consistent. In some cases, however, more information is provided to give a deeper understanding of the current health or regulatory background associated with specific resources. In other cases, readily obtainable existing background information was less detailed than expected. Chapter 4.0 builds on the information contained herein and provides more information on the resources found within each corridor carried forward. Hence, while the data presented within Chapter 3.0 are regional, the analysis of resource impacts presented in Chapter 4.0 is described at a corridor level.

The proposed project would extend from I-68 in the north, near Cumberland, to Corridor H in the south, for a distance of approximately 40 miles. Five preliminary study corridors were established for the environmental investigations. Through a process of environmental screening, these corridors were narrowed to three.

Located in West Virginia's Potomac Highlands region and one of Maryland's westernmost counties, the overall study area generally includes southwestern Allegany County in Maryland and all of Mineral County and portions of Grant, Hampshire, and Hardy counties in West Virginia. Situated equidistant from Baltimore, Washington, D.C., and Pittsburgh, the study area encompasses an area over 835 square miles with a population of approximately 146,000. The larger region in which the study area is set includes all land area of the five counties. Figure 3-1 shows the study area in its regional context. (Please note that because of their scale, the figures shown in this chapter are general in nature. More specific information on geographic features, including community, natural, and cultural resources, are shown on the Plates.)

The landscape of the study area is primarily rugged terrain, characterized by a series of roughly parallel ridges and valleys. Although there are wider river valleys in the northwest and southeast centered around the North Branch of the Potomac River and Patterson Creek, respectively, narrower stream valleys and hollows are found throughout the remainder of the study area. Land utilization in this hilly study area can be divided into three major categories:


PENNSYLVANIA
OHIO
MARYLAND
WEST VIRGINIA
VIRGINIA
Pittsburgh
Harrisburg
Cambridge
Morgantown
Winchester
Baltimore
District of Columbia
Chesapeake Bay
Charleston
77
76
79
78
83
68
70
270
66
95
81
64
219
220
33
Legend
Study Area
Corridor H
County Line
State Line
0
45 km
0
24 mi.
48 mi.
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
PROJECT REGION
FIGURE - 3-1
SHA
State Highway

urban and small town, agricultural, and forested. There are many pockets throughout the area, however, where other uses are found.

The predominant land cover is forested and agricultural land. The rural valleys of the study area are dotted with many active farms while dense forests are found on the adjacent ridge tops. Environmental resources that do not exist in the study area include coastal zones, wild and scenic rivers, national natural landmarks, and wildlife sanctuaries.

The climate of the study area is a temperate, continental type that ranges from humid to sub-humid; however, the varied topography creates diversified local climates. The divide of the Allegheny Mountains, the main topographic barrier through the western portion of the study area, forms a “rain shadow” that shelters most of the study area from prevailing storm systems that move from west to east. Because of this condition, climatic data from the western portion of the study area show lower average temperatures and higher average precipitation than data from the central and eastern portions do. The western portion of Allegany County receives approximately 25 percent more annual precipitation than the eastern portion does and has a lower average temperature (USDA 1977, 1978, and 1989). The study area has four distinct seasons with high, moderate, and low variations in temperature and precipitation.

3.1 Land Use

3.1.1 Land Use Patterns

Overall, the land uses in the study area are primarily forestland, agricultural, mixed-use/other developed land, and residential with concentrations of commercial and industrial scattered uses located throughout the region. Densely populated residential, commercial, and industrial development, however, is found in four core areas around the City of Frostburg, the City of Cumberland, the City of Keyser, and the City of Moorefield; the latter three being their respective county seats. Although there are also several small communities scattered throughout the area, including Burlington, McCoole, and Cresaptown, among others, the remainder of the study area is rural in nature, primarily used for agricultural purposes or as forested land. Important farmland areas are found in the Patterson Creek Valley, on the project’s eastern edge, on the lower slopes of Knobley Ridge, and along US 220 in Allegany County south of Cresaptown. Vast tracts of forested land are found along the ridge tops,

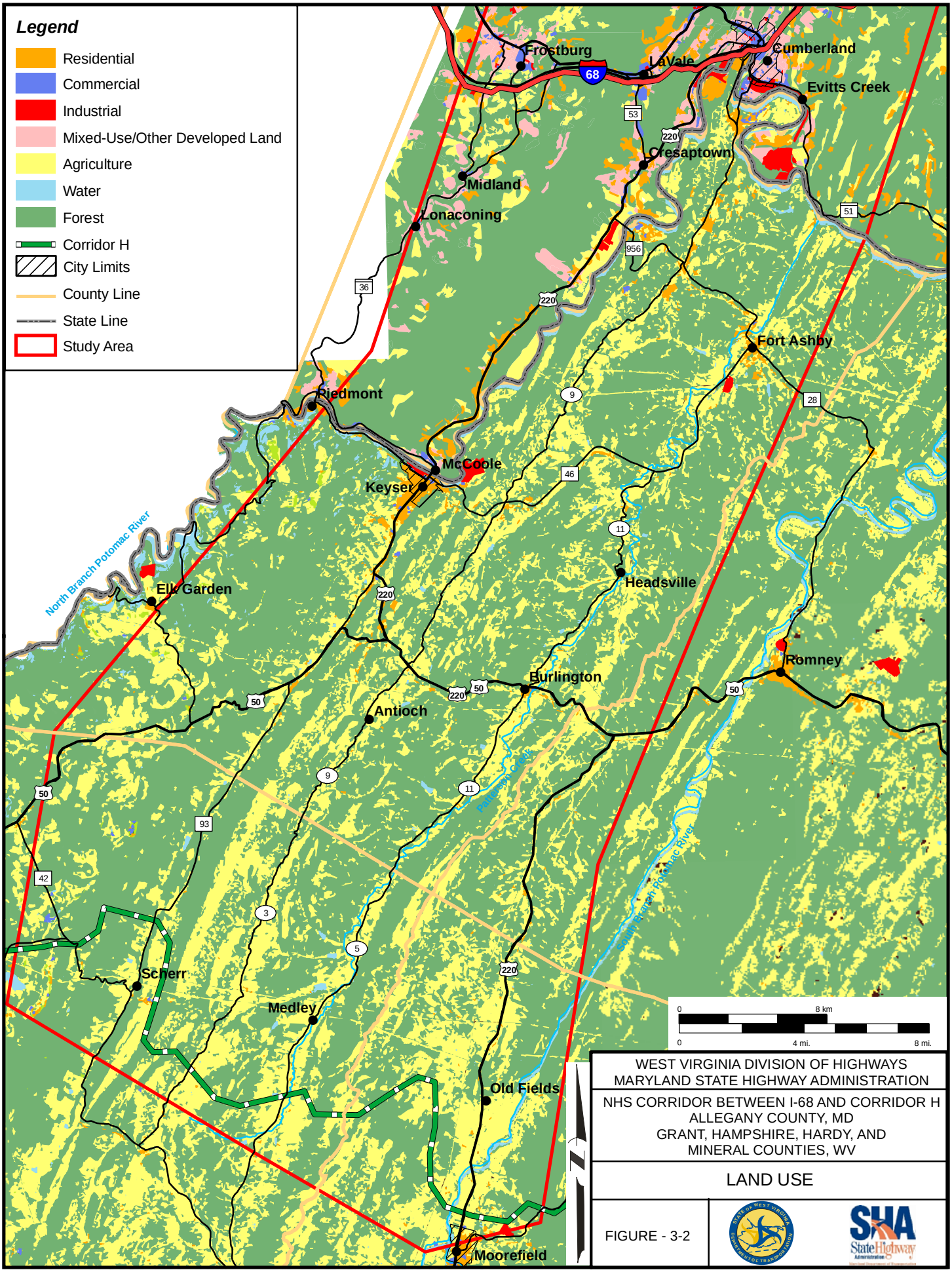
including an area of special importance, Dans Mountain Wildlife Management Area, located immediately to the west of US 220 on the Maryland side of the project. The Dans Mountain WMA is one of the largest contiguous tracts of public land in the State of Maryland.

A generalized land use map is shown on Figure 3-2. The land use map was assembled from a variety of sources, including county comprehensive plans, state databases, aerial photography, and windshield surveys. Although it does not present land use information exactly as found in the various countywide comprehensive plans, it provides updated project information that is consistent with those plans.

3.1.1.1 Existing Land Use

Typically, the residential areas are low density and usually set on large parcels on rural land. In places like Cumberland, LaVale, Cresaptown, Keyser, and Moorefield, however, denser residential parcels exist. The major commercial centers are located in downtown Frostburg, Cumberland, LaVale, Keyser, and Moorefield. Commercial strip development is common along Vocke Road, Winchester Road, and National Highway in LaVale and along the US 220 corridor through Cresaptown and Keyser. Industrial parks are interspersed throughout the five-county region. Mexico Farms is a fairly large industrial/business park found in Corridor C. As is common across the project region, the industrial areas are normally in or near the cities and towns. Forestland and agriculture account for the remaining land utilization and encompass a large percentage of the area. Prime farming lands can be found along the Middle South Branch of the Potomac River Valley, and the southern portion of the Knobley Road corridor. Residential areas here are mostly single family homes on large acres of land. Small towns consist of clusters of single family homes on smaller lots like those found at Williamsport, Medley, Purgitsville, Burlington, and Patterson Creek.

In Allegany County, agricultural land use is limited to areas south of Frostburg, the Evitts Creek Valley, the Potomac Valley south of Cresaptown, Flintstone, Oldtown, and Orleans. Most of the undeveloped slope areas of the county are covered by forests. Commercial and institutional centers are found in or around the City of Cumberland with smaller clusters at LaVale, Frostburg, Lonaconing, and Westernport. Some of the most popular shopping centers are the Country Club Mall in LaVale, Queen City Center in Cumberland, and Frostburg's Main Street.


Legend
Residential
Commercial
Industrial
Mixed-Use/Other Developed Land
Agriculture
Water
Forest
Corridor H
City Limits
County Line
State Line
Study Area
Frostburg
LaVale
Cumberland
Evitts Creek
Cresaptown
Midland
Lonaconing
Fort Ashby
Piedmont
McCoole
Keyser
Headsville
Elk Garden
Romney
Burlington
Antioch
Scherr
Medley
Old Fields
Moorefield
North Branch Potomac River
South Branch Potomac River
Patterson Creek
68
53
220
51
956
36
9
28
46
11
50
93
42
3
5
0
8 km
4 mi.
8 mi.
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
LAND USE
FIGURE - 3-2

Heavy development in and around Cumberland extends from LaVale through Cumberland to the east and along MD 53 and US 220 to the south through Cresaptown. Of importance to Allegany County are the residential neighborhoods from Cumberland through Cresaptown and nearby Bel Air that have seen several generations create strong, cohesive neighborhoods. Also of importance to Allegany County are the commercial centers in downtown Cumberland and along US 220 and MD 53, as well as the large industrial and transportation complexes emanating from the center of Cumberland to the southeast along MD 51 (Industrial Boulevard). There are five identified industrial parks in Allegany County: Barton Business Park, North Branch Industrial Park, Upper Potomac Industrial Park, Riverside Industrial Park, and the Cumberland Commerce Center.

Similar to the surrounding counties, Grant County exhibits a rural character typical of other counties in this part of West Virginia with widespread farming, particularly through the eastern and southern areas of the county, and forestland covers the majority of the land. Mining is prominent in the mountainous northwestern part of the county along US 50 and WV 42 and 93. Mount Storm Lake is a popular recreation area where the public can fish and boat. Petersburg, the county seat, is the commerce and population center. Other small residential clusters include Bayard and Mount Storm with limited commercial activity.

Hampshire County is vastly covered by forests and grasslands. Almost 80 percent of the county is forestland and about 19 percent is farmland according to the *Hampshire County Comprehensive Plan* (Hampshire County Planning Department 2003). There are few urban areas in the county, with Romney and Capon Bridge being the only two incorporated places. Less than one percent of the land is of urban character. The few urban areas that do exist are dispersed along the US 50 and WV 28 corridors. Agriculture, orchards, and waterways occupy the remainder of the land. Among the forested lands are the preserved areas of Nathaniel Mountain, Short Mountain, and the Springfield and Edwards Run WMAs. There are two business parks in Hampshire County: the County Industrial Park in Romney and the Capon Bridge Industrial and Technology Park. Together they total less than 150 acres.

In Hardy County, agriculture comprises a primary use of the land. The industrial areas in the county are situated around Moorefield and Wardensville. There are three industrial parks: Moorefield Industrial Park along US 220 just south of Moorefield, the Robert C. Byrd Industrial

Park, and the Wardensville Industrial Park along WV 55. The three together comprise about 160 acres of land.

In Hardy County, commercial and industrial development within the study area is found in and around Moorefield along the length of US 220, including large processing plants at Moorefield's southern end associated with the poultry industry. Residential development is concentrated within the Moorefield city limits.

As with the surrounding counties, much of the land development in Mineral County occurs adjacent to existing roads and away from the mountain slopes. There are four distinct mountain chains that extend north-south through the county: Patterson Creek Mountain, Knobley Mountain, New Creek Mountain, and the Allegheny Front. They limit development to the valleys nestled between each of them.

In Mineral County, there are two primary commercial centers, the Keyser central business district and the suburban-type development along US 220 extending from Keyser to WV 972, and one secondary commercial area in Fort Ashby. The major commercial district in Mineral County is found in Keyser, specifically adjacent to US 220, and spreading south to New Creek. There are large industrial areas scattered about Mineral County. Some of the largest are the Westvaco complex in Luke and the Allegany Ballistics Laboratory near Pinto. Smaller industrial parks include the Keyser-Mineral Industrial Park and the Fort Ashby Business Park. The Greater Cumberland Regional Airport is also in Mineral County, but no longer provides commuter service. Major public lands in Mineral County include Jennings Randolph Lake, Larenim Park, and Camp Minco. Tertiary commercial development is scattered throughout the county. Outside the vicinity of Keyser, residential development is concentrated along WV 28 from the state line south to Fort Ashby and along Mineral County Route 9 from Short Gap to WV 46 just east of Keyser.

3.1.1.2 Future Land Use

Future land use in the area is expected to remain relatively consistent with existing patterns of development with a few exceptions. New subdivisions and commercial growth are occurring along US 220 from LaVale through Cresaptown and south of Keyser through the New Creek Valley. Newer subdivisions are also being developed along WV 28 around Wiley Ford and Fort

Ashby, on WV 46 between Keyser and Fort Ashby, and along Mineral County Route 9 from Short Gap to WV 46 just east of Keyser. Hampshire County is also expecting a spillover of residents from Virginia and the Baltimore/Washington Metro Area, especially as a result of Corridor H construction.

3.1.2 Social Characteristics

The socioeconomic characteristics of the region include existing and projected population, age composition, race and ethnicity, household income, housing, employment, and travel time to work. Each characteristic is discussed in the following sections.

3.1.2.1 Population

During the last U.S. Census in the year 2000, the population of the five-county region was 146,179. As shown in Table 3.1-1, current estimates suggest that the population in 2005 had grown slightly to 146,375. Population is expected to reach 152,515 by the year 2025. This will represent an approximately 4.3 percent growth in population from the year 2000.

TABLE 3.1-1
Population in the Region

County	Year 2000 Population	Year 2005 Population Estimate	Year 2025 Population Projection	Percent Change from 2000 to 2025
Allegany	74,930	73,750	73,750	-1.6%
Grant	11,299	11,551	12,614	11.6%
Hampshire	20,203	21,126	24,481	21.2%
Hardy	12,669	13,162	15,006	18.4%
Mineral	27,078	26,786	26,664	-1.5%
Total	146,179	146,375	152,515	4.3%

Source: United States Census Bureau (USCB) 2000a-e

Of the region's five counties, Allegany and Mineral are expected to lose population by 2025. The losses are expected due to an aging population, loss of jobs in the area that attract in-migration, and limitations in the public sewer and water infrastructure. These losses should be minimal, however, and should be offset by growth in the other three counties. Increased economic development and a continuing program to upgrade infrastructure may reverse these trends, as well.

Within an overall state context, population varies considerably for communities within the study area. In Maryland, the estimated population in 2005 was 5,600,563 while West Virginia's population was estimated at 1,818,887 (USCB 2005). Although West Virginia's land area (24,078 square miles) is more than double that of Maryland's (9,773 square miles), West Virginia has a third of Maryland's population. Maryland's higher population is a result of its dense urban areas around the state, but especially in the Baltimore metropolitan area. On the other hand, even though there are large urban areas in some parts of West Virginia, the state is generally characterized by a more rural, small-town setting. The most populated city in Maryland is Baltimore with 651,154. The most populated city in West Virginia is the state capital of Charleston with a year 2000 population of 53,421 (USCB 2000f and 2000g). Baltimore is approximately 140 miles to the east of the study area and Charleston is approximately 220 miles to the south.

Growth estimations by the U.S. Census Bureau showed an increase of almost 6.0 percent for Maryland from 5,296,486 in 2000 to 5,600,563 in 2005. Less than a 0.6 percent increase was estimated for West Virginia from 1,808,344 to 1,818,887. Projections through the year 2030 indicate that Maryland could see a dramatic increase in population from the year 2000 by 32.6 percent to 7,022,251. During the same period, West Virginia's population could decrease by 4.9 percent to 1,719,959 (USCB 2005).

As shown in Table 3.1-2, the most populated counties of Maryland are projected to see large increases through 2030, while those in West Virginia are expected to decrease moderately from the year 2000. The neighboring counties of Montgomery and Prince George's in Maryland individually have over 800,000 people and each are projected to see increases in population by over 23 percent through the year 2030 (MDP 2006). The two counties border Washington and are attractive communities to people who work in the Baltimore/Washington Metropolitan Area because of their suburban proximity to the workplace and the numerous cultural and entertainment venues located there.

TABLE 3.1-2
Population by States and Largest Counties in the States

Locality	Year 2000 Population	Year 2005 Estimated Population	Year 2030 Projected Population
Maryland	**5,296,486**	**5,600,563**	**7,022,251**
Montgomery County	873,341	932,050	1,145,000
Prince George's County	801,515	845,000	985,200
Baltimore County	754,292	784,900	848,300
West Virginia	**1,808,344**	**1,818,887**	**1,719,959**
Kanawha County	200,073	192,360	179,742
Cabell County	96,784	94,504	96,308
Wood County	87,986	85,751	83,094

Sources: USCB 2000f and 2000g, 2005; MDP 2006; West Virginia University Regional Research Institute (WVURRI) 2005

West Virginia's most populated counties are Kanawha and Cabell with 200,073 and 96,784 people, respectively, for the year 2000. They are expected to decrease in population by 10.2 percent and 0.5 percent, respectively, through the year 2030 (WVURRI 2005). Generally, West Virginia's rural mountain character has led to sparse development residentially and commercially.

Focusing on the counties in the study area, Allegany has the most people with 74,930 and Mineral has the second most with 27,078. Hampshire County has 20,203 people; Hardy County has 12,669; and Grant County has the least with 11,299. The most populated city in the study area is Cumberland with a year 2000 population of 21,518; the second most populated city is Frostburg with a population of 7,873; the third most populated city is Keyser with 5,303 people; and, the fourth most populated is Moorefield with 2,375 people (USCB 2000a, 2000b, 2000c, 2000d, and 2000e). These four are the centers of most commercial activity in the study area, particularly along the US 220 corridor from Cresaptown to Cumberland and further south along the same corridor from McCoole through Keyser. Dense commercial and industrial strips as well as residential city-lots are common along this corridor.

According to the U.S. Census, the only urban population in the area is found in Allegany and Mineral counties. The total urban population of the study area is 19,205, fourteen thousand of whom reside in Allegany County. Population information for the region is found in Table 3.1-3.

TABLE 3.1-3
Population by States and Counties in the Region

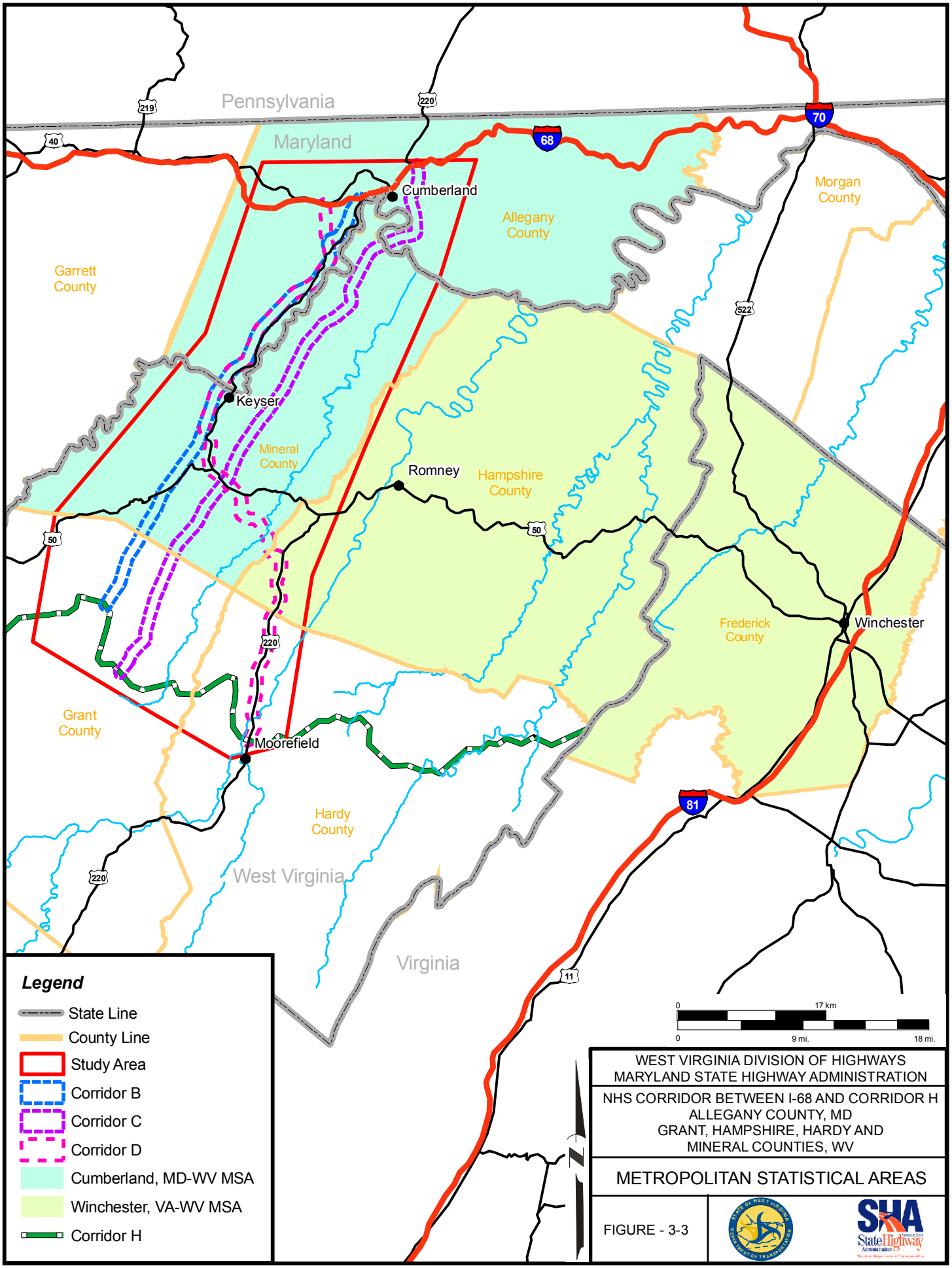
Locality	Year 2000 Population	Year 2005 Estimated Population
Maryland	**5,296,486**	**5,600,563**
Allegany County	74,930	73,750
West Virginia	**1,808,344**	**1,818,887**
Grant County	11,299	11,555
Hampshire County	20,203	21,126
Hardy County	12,669	13,162
Mineral County	27,078	26,786

Sources: USCB 2000f and 2000g; MDP 2006; WVURRI 2005

There are two Metropolitan Statistical Areas (MSAs) in the region as shown in Figure 3-3. The Cumberland, MD-WV MSA includes Allegany County and Mineral County. The Winchester, VA-WV MSA includes Frederick County and the City of Winchester in Virginia and Hampshire County. MSAs are typically delineated using an entire county boundary and usually do not include just parts of counties. A MSA is defined by the federal Office of Management and Budget (OMB) as, "a core area containing a substantial population nucleus, together with adjacent communities having a high degree of economic and social integration with that core" (OMB 2008). For example, many people who reside in Hampshire County travel to Winchester for employment and commerce. Likewise, many residents of Mineral County travel to Cumberland on a daily basis for similar reasons. The creation of MSAs lends an awareness of community trends and population statistics on a regional scale.

Relative to the average population of other Maryland counties, Allegany County is medium in size. Besides being the only Maryland county in the study area, it is the most populated of the five counties within the region. According to projections outlined in the *Allegany County Comprehensive Plan 2002 Update*, between the years 2000 and 2020, moderate population growth within the county might be concentrated in Cumberland, Ellerslie, Frostburg, and LaVale because of existing or planned infrastructure and services (Allegany County Planning Commission 2002). Estimates made by MDP, however, suggest that Allegany County as a whole will see a decline in population between 2000 and 2030 down to around 73,250 people (MDP 2006).

Mineral is the largest of the four West Virginia counties in terms of population and is comparable to other medium sized West Virginia counties. Its population is expected to remain stable through 2025, with little growth but little decline.


Pennsylvania
Maryland
Cumberland
Allegany County
Morgan County
Garrett County
Keyser
Mineral County
Romney
Hampshire County
Frederick County
Winchester
Grant County
Moorefield
Hardy County
West Virginia
Virginia
219
220
40
68
70
522
50
81
11
Legend
State Line
County Line
Study Area
Corridor B
Corridor C
Corridor D
Cumberland, MD-WV MSA
Winchester, VA-WV MSA
Corridor H
0
17 km
0
9 mi.
18 mi.
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY AND
MINERAL COUNTIES, WV
METROPOLITAN STATISTICAL AREAS
FIGURE - 3-3

Grant County has the smallest population relative to the rest of the counties in the study area. However, the population has continued to grow since the early 1900s, with some fluctuation to lower numbers in 1930 and 1960. It was not until 1980 that the population exceeded 10,000. The most recent decade from 1990 to 2000 showed an 8.4 percent increase in population, which was considerably higher than the rate of growth for the State of West Virginia, but still under the national growth rate. According to the West Virginia University's Regional Research Institute projections, Grant County should see a steady increase in population through the year 2025 to around 12,600 people (WVURRI 2005). Petersburg, the County Seat, has experienced steady population growth since the 1970s. In 2003, the population estimate was 2,585, a 6.7 percent increase from 1970.

Hardy County, not unlike its surrounding counties, is relatively small. Since 1960, the population of the county has steadily increased with a slight loss in 1970. According to the WVURRI, the population of Hardy County should rise to over 15,000 by the year 2025 (WVURRI 2005).

Hampshire County should steadily increase in population to just fewer than 24,500 people by the year 2025 (WVURRI 2005). Compared to other West Virginia counties, Hampshire is comparable in size with a small to medium sized population. Since 1950, Hampshire County has experienced a 60 percent increase in the size of its population from 12,577 to 20,203 people. Population is expected to grow steadily but minimally through 2025. Hampshire County is becoming an attractive location for residents of the Baltimore/Washington Metro Area as a vacation and seasonal home buying spot (WVURRI 2005).

Only the southwestern corner of Hampshire County is within the study area. Hampshire County tends to follow population and commuting trends of adjacent Allegany County and Frederick County, Virginia, as opposed to its neighboring West Virginia counties of Mineral and Hardy. Similar to the counties that surround it, and except for US 50, there is a lack of a major east-west road system across Hampshire County, and many residents travel to Winchester or Cumberland for employment opportunities, shopping, and higher education needs.

Table 3.1-4 summarizes the socioeconomic characteristics of Maryland, West Virginia, and the counties within the study area. The largest minority populations within the project area are comprised of African Americans or persons of Latino or Hispanic origin. Other minorities may

include Asian persons, American Indian or Alaska Native persons, and Native Hawaiian and Other Pacific Islanders.

TABLE 3.1-4
Characteristics of the Population by States and Counties in the Study Area

Population Characteristic	MARYLAND	Allegany County	WEST VIRGINIA	Grant County	Hampshire County	Hardy County	Mineral County
Total Population (year 2000)	5,296,486	74,930	1,808,344	11,299	20,203	12,669	27,078
Estimated Population (year 2005)	5,600,563	73,750	1,818,887	11,555	21,126	13,162	26,786
Under Age 18 (year 2000)	1,355,900	15,436	403,261	2,565	5,071	2,952	6,336
Under Age 18 (year 2005)	1,405,741	14,160	383,785	2,437	4,901	2,922	5,920
Over Age 65 (year 2000)	598,503	13,412	276,677	1,728	2,940	1,884	4,082
Over Age 65 (year 2005)	644,065	13,275	278,290	2,010	2,979	1,961	4,018
White (year 2000)	3,391,308	69,685	1,717,927	11,110	19,807	12,273	26,037
White (year 2005)	3,584,360	68,366	1,731,580	11,378	20,661	12,833	25,741
African American (year 2000)	1,477,411	3,971	57,867	76	167	244	690
African American (year 2005)	1,640,965	4,425	58,204	92	232	250	777
Hispanic or Latino (year 2000)	227,749	599	12,658	56	121	89	162
Hispanic or Latino (year 2005)	319,232	738	16,370	69	190	171	161
Other Minority (year 2000)	324,180	1,274	32,550	113	229	152	351
Other Minority (year 2005)	375,238	959	29,102	81	232	79	268
Median Household Income (year 1999)	$52,868	$30,821	$29,696	$28,916	$31,666	$31,846	$31,149
Median Household Income (year 2004)	$57,019	$33,554	$33,993	$32,346	$36,008	$35,361	$35,537
Number of Housing Units (year 2002)	2,197,126	32,660	852,165	6,167	11,365	7,281	12,485

TABLE 3.1-4 (continued)
Characteristics of the Population by States and Counties in the Study Area

Population Characteristic	MARYLAND	Allegany County	WEST VIRGINIA	Grant County	Hampshire County	Hardy County	Mineral County
Number of Housing Units (year 2005)	2,273,793	33,083	872,203	6,508	11,938	7,671	12,819
Homeownership Rate (year 2000 only)	67.7%	70.2%	75.2%	80.9%	81.1%	80.5%	78.0%
Mean Travel Time to Work (minutes) (year 2000 only)	31.2	22.6	26.2	26.9	39.7	26.0	29.2

Sources: USCB 2000f and 2000g, 2005; MDP 2006; WVURRI 2005.

3.1.2.2 Age Composition

Age trends among the counties in the study area are closely related. Roughly 19.2 to 23.2 percent are under age 18; 4.6 to 5.5 percent are under the age of five; and 14.0 to 18.0 percent are over the age of 65. This is comparable to the age trends of Maryland, in which 25.1 percent of people are under age 18; 6.8 percent are under age five; and 11.5 percent are age 65 or older. The trends are also comparable to the State of West Virginia, with 21.1 percent under the age of 18, 5.6 percent under the age of five, and 15.3 percent over the age of 65.

According to the 2005 population estimates for Allegany County, 19.2 percent of the population is under the age of 18 and 4.6 percent of those are under the age of five; 80.8 percent are over the age of 18 with 18.0 percent of those 65 years of age or older. In the study area, over 3,100 people are age 65 or older in Allegany County.

By 2005 estimates for Grant County, 21.1 percent of the population is under the age of 18 with 5.5 percent of those under the age of five; 78.9 percent are over the age of 18 with 17.4 percent of those over age 65. About 263 people are over age 65 in Grant County within the study area. Generally, the population is middle-aged with a median age of about 42 years, which is higher than the median age of the state or nation.

The majority of the age group in Hampshire County is in the 35 to 44 range. According to 2005 estimates, 23.2 percent of the people are under the age of 18 with 5.3 percent of those under age five; 76.8 percent are age 18 or older with 14.1 percent of those over age 65. In the study

area of the county, the median age is about 40 and only 142 people are over age 65. Hampshire County relates closely to the age trends of the state.

For Hardy County, 22.2 percent of the people are under 18 years of age and 5.4 percent of those are under age five; 77.8 percent are over age 18 with 14.9 percent of those age 65 and older. In the study area, about 447 people are 65 and older in the county.

According to 2005 estimates in Mineral County, 22.1 percent of the population is under the age of 18 with 5.4 percent of those under the age of five; 77.9 percent are over the age of 18 with 15.0 percent of those over age 65. There are about 2,609 people in the county who are over age 65 within the study area.

3.1.2.3 Race and Ethnicity

Race and ethnicity trends are also very similar among the counties in the study area. There is a great disparity in numbers between Whites and African Americans. Based on year 2005 estimates, in Allegany County, the White, non-Hispanic population stands at approximately 93.0 percent; approximately 6.0 percent are African American; and approximately 2.0 percent are other minorities. The county has a much higher percentage of White, non-Hispanic people compared to Maryland's 64.0 percent and a much lower percentage of African American people compared to the state's 29.3 percent. However, the percentage of Whites and African Americans in Allegany County is generally consistent with the other counties in the region.

According to year 2005 estimates, 98.5 percent of the people in Grant County, 97.8 percent of the people in Hampshire County, 97.5 percent of the people in Hardy County, and 96.1 percent of the people in Mineral County are White, non-Hispanic. Of the remaining minority population in each of these four counties, the majority are African American. This is consistent with West Virginia's trend of 95.5 percent White, non-Hispanic people, 3.3 percent African American, and 1.2 percent other minority.

3.1.2.4 Household Income

Median household income within the region is relatively consistent within each of the five counties. In 2004, median household income was $33,554 in Allegany County, $32,346 in

Grant County, $36,008 in Hampshire County, $35,361 in Hardy County, and $35,537 in Mineral County. Statewide, median household income was $57,019 in Maryland (considerably higher than in Allegany County) and $33,993 in West Virginia (less than all of the region's counties except Grant).

3.1.2.5 Housing

Home ownership is high within the region, with a considerable number of the area's residents living in owner-occupied housing units. Homeownership ranges from approximately 70 to 81 percent throughout the region. The median value of the owner-occupied housing units ranges from a low of $71,100 in Allegany County to a high of $78,400 in Grant County. Information on the region's housing is found in Table 3.1-5.

TABLE 3.1-5
Housing and Households in the Region

County	Housing Units	Home Ownership Rate	Median Value of Owner-Occupied Housing Units	Number of Households	Persons per Household
	Year 2005			Year 2000	
Allegany	33,083	70.2%	$71,100	29,322	2.35
Grant	6,508	80.9%	$78,400	4,591	2.43
Hampshire	11,938	81.1%	$78,300	7,995	2.49
Hardy	7,671	80.5%	$74,700	5,204	2.42
Mineral	12,819	78.0%	$73,500	10,784	2.46
Total	72,019	--	--	57,896	--

Source: USCB 2000f and 2000g

The total number of households in the region is 57,896. As with the region's population, over half of the households are found in Allegany County. Population density, as defined by persons per household is also high, hovering between 2.35 and 2.49. Persons per household is expected to drop as new housing is created and family size shrinks, a common occurrence throughout the country.

In Allegany County, there are approximately 6,880 housing units in the study area. Of those, 4,920 are considered urban and 1,960 are rural; 6,413 of the housing units are occupied and 467 are vacant. Homeownership in the county is 70.2 percent, slightly higher than the statewide average of 67.7 percent, but the lowest of the five counties in the region.

In Grant County there are 1,078 housing units in the study area; none of the housing is considered urban. The number of occupied housing units stands at 761 and 317 are vacant. Homeownership in the county is 80.9 percent, which is higher than the statewide average of 75.2 percent.

There are 548 housing units in the study area of Hampshire County. None of the housing units are considered urban. Of all housing units, 372 are occupied and 176 are vacant. Hampshire County has the highest homeownership rate of any of the counties in the region at 81.1 percent.

In Mineral County there are 7,669 housing units in the study area. Of all housing units, 2,392 are considered urban and 5,277 are considered rural. Of those units, 6,888 are occupied and 781 are vacant. Mineral County has a 78.0 percent homeownership rate.

There are 1,711 housing units in the study area of Hardy County; all of the units are considered rural. About 1,368 of the units are occupied and 343 are vacant. There is an 80.5 percent homeownership rate in the county.

3.1.3 Environmental Justice

In accordance with *Executive Order 12898*, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (Office of the President of the United States of America 1994), federal agencies are required to identify and address disproportionately high and adverse human health or environmental effects on minority and low-income populations. Demographic information from the 2000 U.S. Census was collected for each county and their respective municipalities within the study area for total, minority, and low-income populations. Year 2000 block group data were used to establish a preliminary screening threshold for environmental justice populations. Although more recent population estimates are available, it is necessary to use actual counts from the 2000 U.S. Census to examine aggregated data at the block group level. The results of the environmental justice screening are discussed in Chapter 4.0 *Environmental Consequences* of this DEIS. Additional analysis will also be necessary as the project progresses forward.

Information provided in the previous section that summarizes the social characteristics of the study area provides an overall context for understanding potential environmental justice effects.

Approximately 5.0 percent of the region's population is considered a minority and approximately 14.2 percent have incomes below the poverty level. Table 3.1-6 provides a summary of this information. Additional information on potential environmental justice populations in the study area is found in Chapter 4.0. Included in Chapter 4.0 is block group information from the 2000 U.S. Census.

TABLE 3.1-6
Minority and Low-Income Populations in the Region

County	Year 2000 Population	Minority Population	Minority Population as % of Total Population	Persons with Incomes below the Poverty Level	Low-Income Population as % of Total Population
Allegany	74,930	5,245	7.0%	10,149	13.5%
Grant	11,299	189	1.7%	1,820	16.1%
Hampshire	20,203	396	2.0%	3,221	15.9%
Hardy	12,669	396	3.1%	1,640	12.9%
Mineral	27,078	1,041	3.8%	3,892	14.4%
Total	146,179	7,267	5.0%	20,722	14.2%

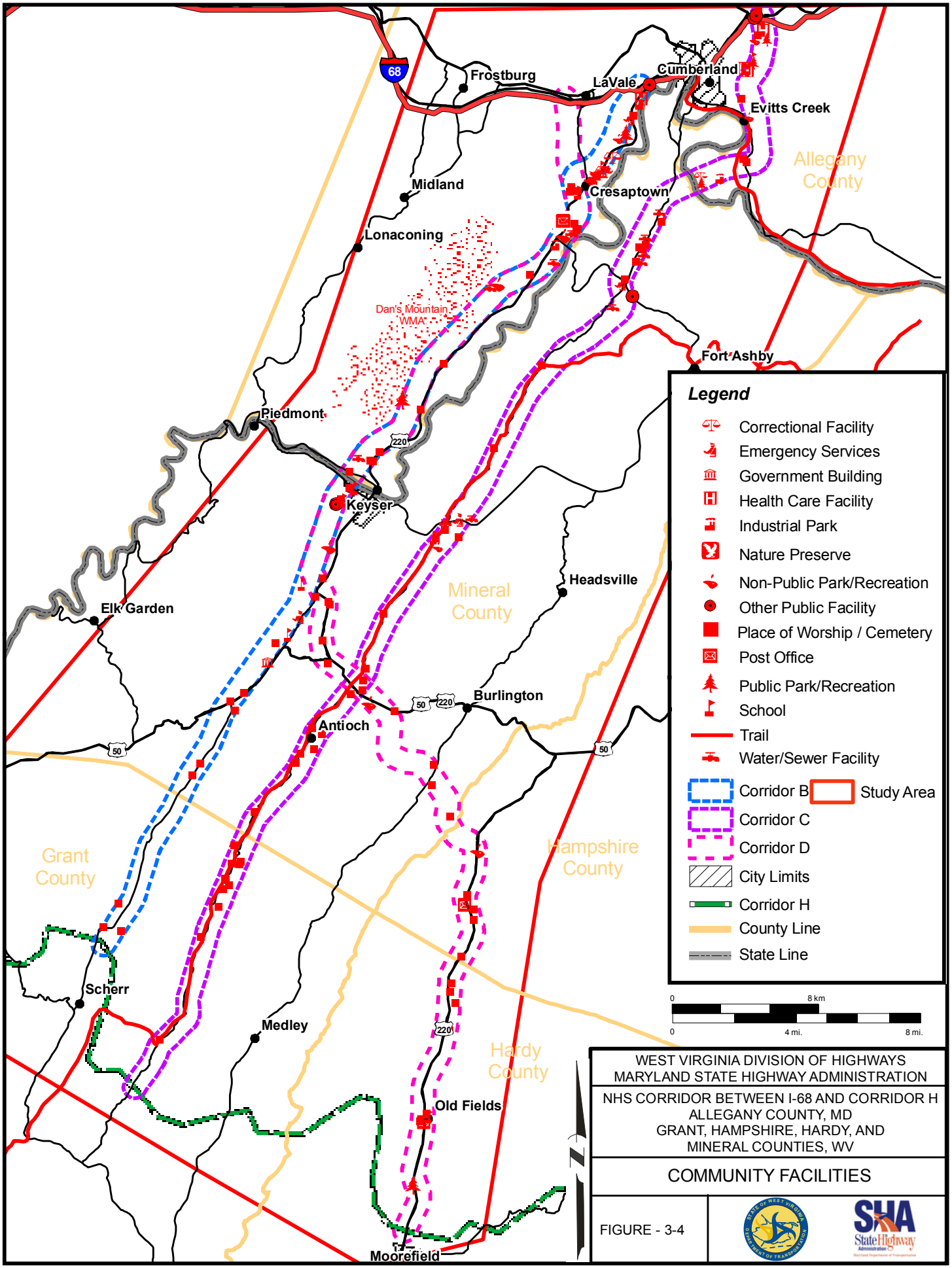
Source: USCB 2000 a-e
Note: For this table, the minority population was calculated by subtracting the number of whites from the total population. Considerable more analysis specific to the study area is found in Chapter 4.0.

3.1.4 Community Facilities and Services

Typical community facilities found in the study area include government buildings, post offices, emergency service buildings, healthcare facilities, parks and recreation areas, water and sewage treatment plants, public schools and colleges, libraries, correctional facilities, cemeteries, and places of worship. More than half of the community facilities in the study area are either places of worship or cemeteries scattered throughout the project region. The community facilities are shown on Figure 3-4.

Maryland

On the county-wide basis, Allegany County is served by 22 public schools: 14 elementary schools, four middle schools, and four high schools. There is one technical school, the Center for Career and Technical Education. There are two private schools in the county recognized by the Maryland Department of Education: Bishop Walsh High School and Calvary Christian Academy. There are also a number of private schools being operated by religious


68
Frostburg
LaVale
Cumberland
Evitts Creek
Allegany County
Midland
Cresaptown
Lonaconing
Dan's Mountain WMA
Fort Ashby
Piedmont
220
Keyser
Mineral County
Headsville
Elk Garden
Burlington
50
220
Antioch
50
50
Grant County
Hampshire County
Scherr
Medley
220
Hardy County
Old Fields
Moorefield
Legend
Correctional Facility
Emergency Services
Government Building
Health Care Facility
Industrial Park
Nature Preserve
Non-Public Park/Recreation
Other Public Facility
Place of Worship / Cemetery
Post Office
Public Park/Recreation
School
Trail
Water/Sewer Facility
Corridor B
Study Area
Corridor C
Corridor D
City Limits
Corridor H
County Line
State Line
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8 mi.
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
COMMUNITY FACILITIES
FIGURE - 3-4
SHA
State Highway
Administration

establishments. Allegany College of Maryland, a two-year school, and Frostburg State University, a four-year school, serve the higher education needs of the region.

There are six, full-service libraries in the Allegany County Library System. There are two in Cumberland, with the main branch on Washington Street, and there is one each in Frostburg, LaVale, Lonaconing, and Westernport. Since 1960, the library system has had a bookmobile with scheduled stops to schools and daycares, nursing homes, and neighborhoods throughout the county. The bookmobile is headquartered at the LaVale branch library along Alternate US 40. The library facilities at Allegany College of Maryland and Frostburg State University are also available to the public.

There are two hospital facilities in Allegany County: Sacred Heart Hospital and Memorial Hospital of Cumberland. Both are part of the Western Maryland Health System and are planned for consolidation to one large facility at a site along Willowbrook Road. The Willowbrook Road corridor is home to educational, health, and recreational facilities and is the potential site of a major commercial development called the Willowbrook Market Place that would provide large-scale shopping, dining, and entertainment for the region.

With an approximate size of 9,200 acres, Dans Mountain Wildlife Management Area is the largest tract of contiguous state owned forestland in Maryland. A state park with a swimming pool, playing courts, and an overlook called Dan's Rock are located within the WMA. The Chesapeake and Ohio Canal National Historical Park is a facility of regional and national importance operated by the National Park Service. Large areas of the park are located in Allegany County and extend eastward. Other public parks and recreational areas in the county include Rocky Gap State Park, New Germany Park, the Green Ridge State Forest, and Constitution Park. There are a number of hiking trails located throughout the county. Some of the trails follow the Chesapeake and Ohio Canal Towpath and abandoned railroad beds.

There is one state police barracks in Allegany County, a county sheriff's department, City of Cumberland and City of Frostburg Police departments, as well as Lonaconing and Westernport local police departments. There are 14 fire companies, some volunteer, which provide emergency medical and fire rescue services. There are three large prisons: Western Correctional Institute at Potomac Park, the Federal Correctional Institution at Mexico Farms, and a county detention center at Cresaptown.

Many of the populated areas in Allegany County are provided with water service and sewage service via public (i.e., Allegany County Public Works) and private systems. Water service areas use a common source for obtaining a water supply. Sewer service areas discharge to a common treatment plant. Water systems are found in the cities of Cumberland, Frostburg, and Westernport as well as throughout the George's Creek Valley, Barton, LaVale, McCoole, Mexico Farms, and Rawlings Heights. Sewer systems are also found in these areas. Figure 3-5 shows the generalized limits of public water and sewer service in the study area.

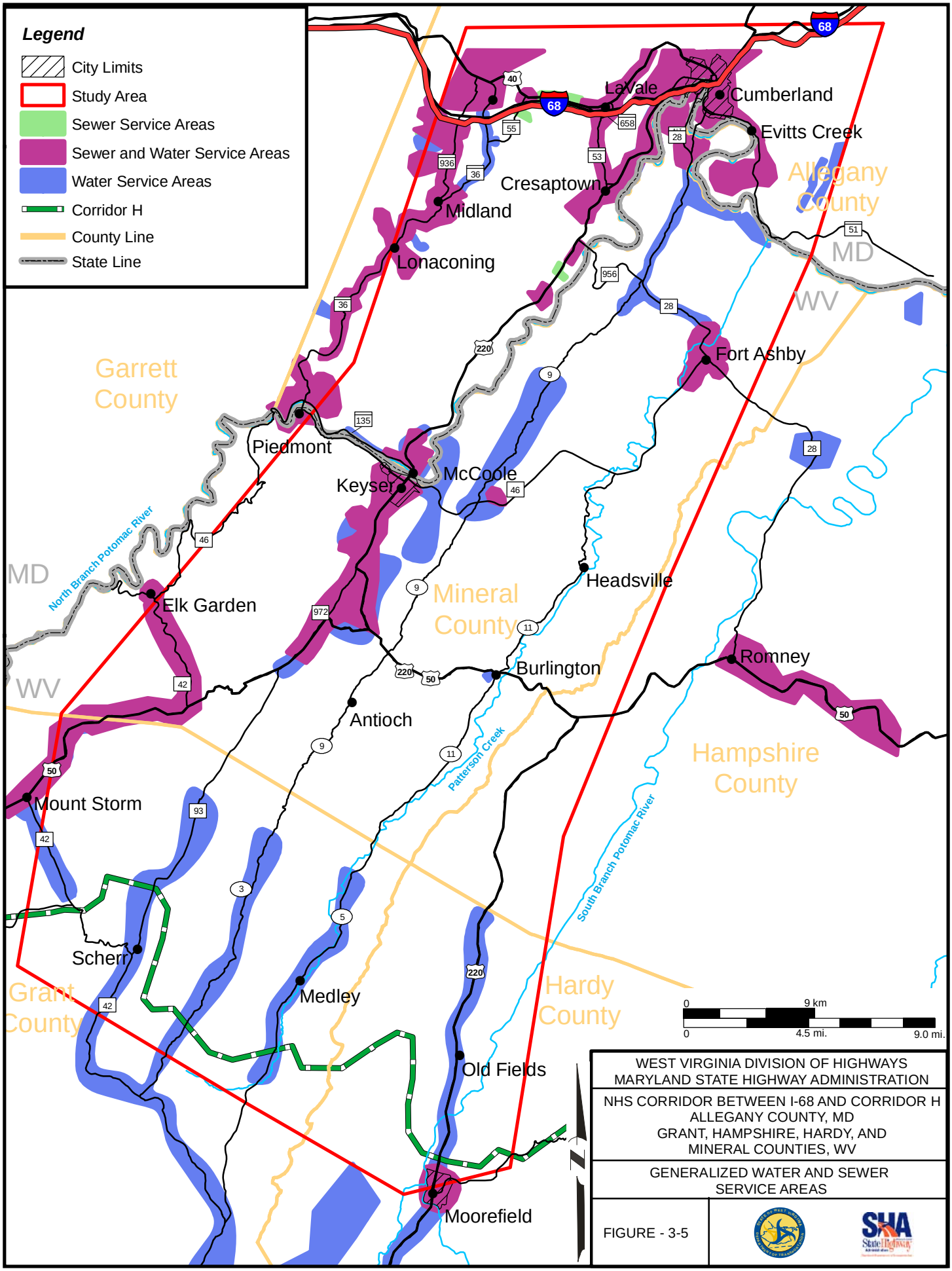
West Virginia

Located in Mineral County, Greater Cumberland is a regional airport that serves the general aviation community and once provided regularly scheduled commuter service. There is some private and corporate use still ongoing at the airport. A private airfield is located in Mexico Farms and there is a county airport near Petersburg in Grant County that does not have scheduled commuter service.

There are six public schools in Grant County: three elementary schools, one high school, one combined high school/elementary school, and one technical school. There is at least one private school as well as the South Branch Center in Petersburg. The center offers associates degrees from Shepherd College. There are two public libraries in Grant County: the Allegheny Mountaintop Public Library in Mount Storm and the Moomau-Grant County Public Library in Petersburg.

One of three hospitals in the West Virginia part of the study area, Grant Memorial Hospital, is located in Petersburg. Grant County has a shared West Virginia State Police detachment in Moorefield and a county sheriff's office in Petersburg. There is one municipal police force in Petersburg. Grant County also has four fire departments and one emergency medical service unit.

There are no state forests or state parks in Grant County. There is the Potomac Wildlife Management Area in part of the county, which includes the Dolly Sods Wilderness Area, owned by the U.S. Forest Service. The Monongahela National Forest is in the southern part of the county and offers camping sites and hiking trails. There are three public fishing and boating



WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION

NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV

GENERALIZED WATER AND SEWER
SERVICE AREAS

FIGURE - 3-5

lakes, the largest being Mount Storm Lake in the western part of the county. The South Branch of the Potomac River is used for recreational boating and rafting.

Parts of Grant County are served by two public service districts (PSDs). The Mountain Top PSD provides water and sewer service to Bayard, Gormania, Sulphur City, and Mount Storm, as well as to Elk Garden and Hartmansville in Mineral County. The Grant County PSD provides water service to Dorcas, Maysville, North Fork, Hedrick Hill, and Johnson Run. The City of Petersburg provides water and sewer service within its limits.

There are ten public schools in Hampshire County: six elementary schools, two middle schools, one high school, and one technical school. There are at least three private schools. There are two public libraries in Hampshire County: the Capon Bridge Public Library in Capon Bridge and the Hampshire County Public Library in Romney. There is also the West Virginia School for the Deaf and Blind Library in Romney. One of three hospitals in the West Virginia study area, Hampshire Memorial Hospital, is located in Romney.

There are six Wildlife Management Areas in Hampshire County. They provide outdoor recreation for residents of the county, but attract other residents of the region for hunting, fishing, boating, and other activities. The areas are Edwards Run WMA, Fort Mill Ride WMA, Nathaniel Mountain WMA, Short Mountain WMA, Springfield WMA, and Wardensville WMA. None of the WMAs are in the study area. Together, they comprise over 82,000 acres of land with Wardensville being the largest at an individual size of 55,327 acres.

Hampshire County has one West Virginia State Police detachment located in Romney, a county sheriff's department, and the Romney and Capon Bridge police departments. There are eight fire companies that provide emergency medical and fire rescue services. They are found in Romney, Augusta, Springfield, Slanesville, Levels, North River, Capon Springs, and Capon Bridge. The Potomac Highlands Regional Jail is located in Augusta. It is the only correctional facility in the study area in West Virginia.

Hampshire County is served by two PSDs. They are the Green Spring and Central Hampshire PSDs. The Green Spring PSD provides water service to the Green Spring Valley, the town of Greenspring, and the town of Springfield. The Central Hampshire PSD provides water and sewer service to the outskirts of Romney, Shanks, Frenchburg, and Augusta. According to the

Hampshire County Comprehensive Plan (Hampshire County Planning Department 2003), the Green Spring PSD is to undergo a $3 million extension that will combine it with the Greenspring/Springfield facility. Eventually, water service will be extended along Goldsboro Road off of WV 28 and sewer service will be extended to Springfield. Plans for the Central Hampshire PSD include extending water service to Pleasantdale Acres along US 50 and three miles along Heidi Cooper Road. The PSD could also serve the new Capon Bridge Tech Park. The cities of Romney and Capon Bridge provide water and sewer service to their municipal areas.

There are six public schools in Hardy County: four elementary/middle schools and two high schools. There is at least one private school. Eastern West Virginia Community and Technical College offers associates degrees and a nursing program degree. Hardy County has two public libraries. The East Hardy County Public Library is located in Baker and the Hardy County Public Library is in Moorefield. Bookmobile service is provided with pickup and delivery to area schools and churches.

There are two community parks in Hardy County located in Moorefield and Wardensville. In addition, Lost River State Park is located near Mathias, the Trout Pond Recreation Area between Lost River and Wardensville, and the Kimsey Run Dam near Lost River. All locations provide outdoor recreation for local, county, and regional residents. The eastern part of the county contains part of the George Washington National Forest, and small parts of Nathaniel Mountain and Short Mountain public hunting areas. A relatively new community area is Welton Park, south of Moorefield. There are also numerous community centers throughout the county.

Hardy County has a shared West Virginia State Police detachment with Grant County, located near Moorefield, as well as its own county sheriff's office. There are two municipal police departments in Hardy County: Moorefield and Wardensville. There are four fire companies in Hardy County, fully volunteer, and they are located in Moorefield, Mathias, Baker, and Wardensville. They also provide ambulance service. There is no hospital in the county.

Parts of Hardy County are served by the Hardy County PSD. Moorefield and Wardensville each have their own water and sewer systems. Other water systems include the Rig Water Association, Critestown Water Association, and Caledonia Heights. On April 1, 2006, the Hardy County PSD was given control of Caledonia Heights' sewer lines.

There are 13 public schools in Mineral County: nine elementary/intermediate and middle schools, two high schools, and two technical/alternative schools. There is at least one private school. Mineral County is also home to Potomac State College of the West Virginia State University system, located in Keyser.

Mineral County has four public libraries. The Mineral County Library Association consists of the main library in Keyser and branches at Burlington and Fort Ashby. There is also a public library in Piedmont.

Potomac Valley Hospital is located in Keyser along US 220, one of three hospitals in the West Virginia study area.

Public recreation areas in the county include Jennings Randolph Lake, Larenim Park, Camp Minco, Barnum Whitewater Area, Mill Meadow, and Dam Site 21. Many of the smaller towns in the county provide local parks and playgrounds such as Keyser's North End, South End, East End, and West End parks, Ridgeley's playing fields, and public pools owned by Keyser and Piedmont.

The Allegany Wildlife Management Area exists as two separate tracts totaling over 6,000 acres. One is a large tract (5,034 acres) of public land approximately four miles southwest of Keyser and the other is a smaller tract (1,168 acres) 6 miles north of Elk Garden.

A West Virginia State Police detachment is located east of Keyser. The Mineral County Sheriff's Department is located in downtown Keyser. Keyser, Ridgeley, and Piedmont each have a local police force. Potomac State College has a campus police department. There are at least 13 fire and rescue departments, some volunteer, that provide emergency medical and fire rescue services.

Mineral County has five PSDs: Fort Ashby, Fountain, Frankfort, New Creek, and Mountain Top. The Fort Ashby PSD provides water and sewer service to Fort Ashby; the Fountain PSD provides water service to Fountain; and the Frankfort PSD provides water and sewer service to Short Gap and Patterson Creek. The New Creek PSD provides sewer service for the areas along Old New Creek Drive, Mount View, Stony Run Road, and Limestone. The Mountain Top PSD, which originates from Grant County, provides water and sewer service to Elk Garden and

Hartmansville. The areas of Carpendale, Keyser, Mountainaire Village, Piedmont, and Ridgeley each have their own municipal water and sewer service. Knobley Estates has its own sewer service and the Pinnacle and Applewood subdivisions have their own water system. The New Creek Water Association and the Wiley Ford Water Company are providers of water service to their respective localities. The Burlington Children's Home and the Lakewood Estates each have their own small water system.

3.1.5 Economic Characteristics

3.1.5.1 Employment – Regional/Study Area

Although jobs can be located anywhere people are, major employment centers in the region are located in and around Cumberland, Frostburg, Cresaptown, Keyser, McCoole, Fort Ashby, Moorefield, and Westernport. Because the settlement patterns of the area followed specific paths, employment is unevenly distributed and the major employers are concentrated in certain communities. Information from 2006 was examined to gain a perspective on employment at the initiation of this study. Figure 3-6 shows the business locations in the area and the top employers in each county within the study area are listed in Table 3.1-7.

The labor force of Allegany County totals approximately 32,500 with an unemployment rate of 6.4 percent (2006). Major employers in the county include Western Maryland Health System, New Page (a paper and pulp production company), ATK Tactical Systems, CSX Transportation, and Frostburg State University. The major employment occupations are management, professional and related services; sales and office; and service.

Allegany County has seen a 50 percent decline in manufacturing and transportation jobs and an identical 50 percent increase in professional and business services since 1950. Much of the employment is centered in the City of Cumberland with smaller employment clusters found in Frostburg and LaVale. Almost 8,000 people work in the educational, health, and social services sector (Dun & Bradstreet, Inc. 2006). Tourism is also becoming more prevalent in Allegany County with historic sites like the Chesapeake and Ohio Canal, National Highway (US 40), and the Western Maryland Railroad Station in Cumberland. The area's location on regional and national hiking/biking networks also contributes to the tourism industry. In the western part of the county, it is still possible to find mining operations.

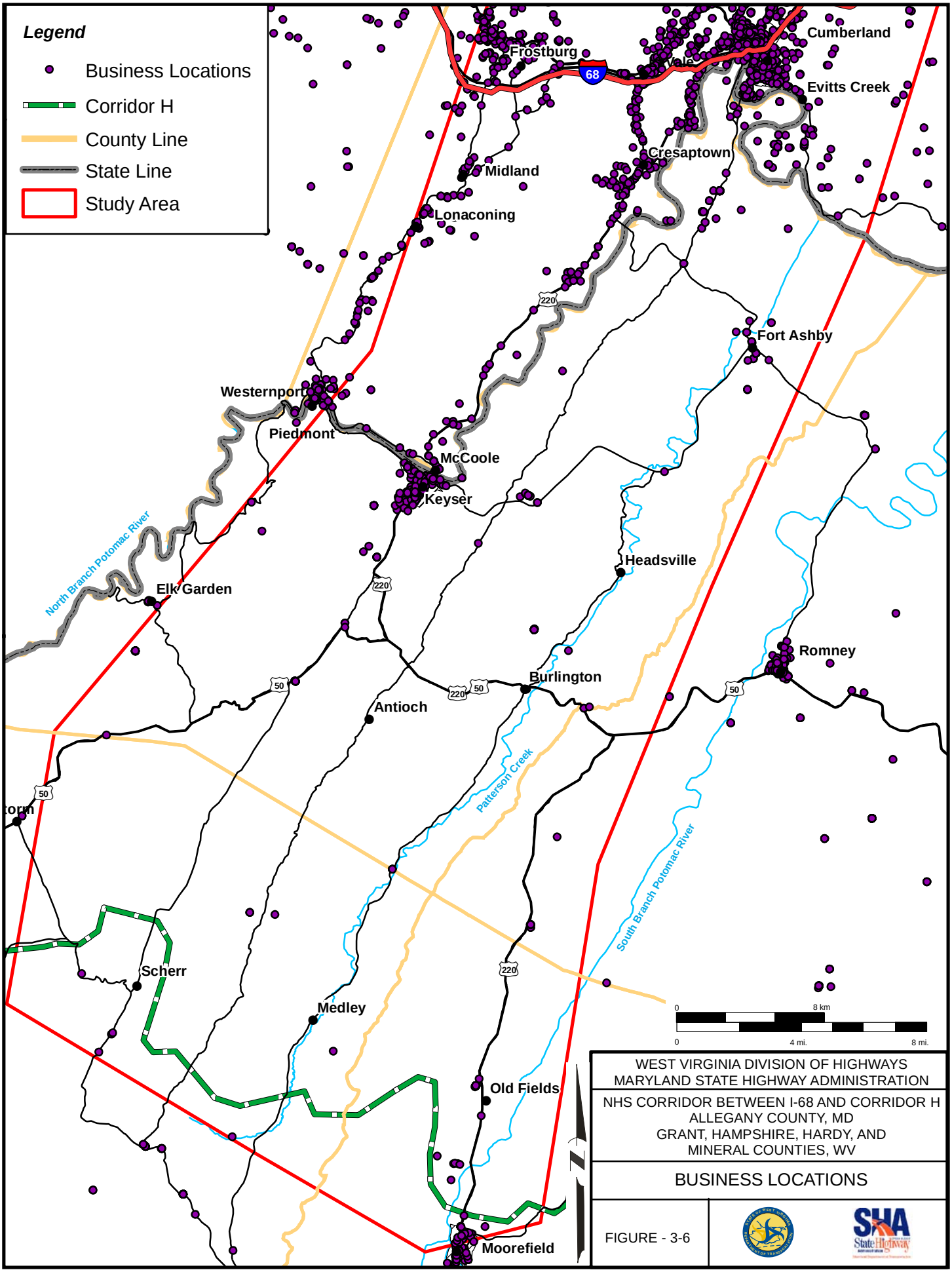

Legend
Business Locations
Corridor H
County Line
State Line
Study Area
Cumberland
Frostburg
Vale
68
Evitts Creek
Cresaptown
Midland
Lonaconing
220
Fort Ashby
Westernport
Piedmont
McCoole
Keyser
North Branch Potomac River
Headsville
Elk Garden
Romney
Burlington
50
Antioch
Patterson Creek
South Branch Potomac River
Scherr
Medley
Old Fields
Moorefield
0
8 km
4 mi.
8 mi.
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
BUSINESS LOCATIONS
FIGURE - 3-6
SHA
State Highway

TABLE 3.1-7
Top 5 Employers by County in 2006

County	Largest Employers	Numbers of Employees
Allegany County	1. Western Maryland Health System	2300
	2. New Page	1200
	3. ATK Tactical Systems Company, LLC	1100*
	4. CSX Transportation	1000
	5. Frostburg State University	825
Grant County	1. Allegheny Dimension	580
	2. Grant Memorial Hospital	300
	3. Virginia Electric and Power Company	300
	4. Grant County Board of Education	175
	5. Allegheny Wood Products, Inc.	165
Hampshire County	1. Hampshire County Board of Education	390
	2. Hampshire Memorial Hospital, Inc.	150
	3. West Virginia Schools for the Deaf and Blind	125
	4. Potomac Comprehensive Diagnostic Guidance Center	75
	5. Genesis Eldercare Network Services	75
Hardy County	1. Wal-Mart Associates, Inc.	250
	2. American Woodmark Corporation	210
	3. Pilgrim's Pride Corporation of West Virginia	190
	4. Hardy County Board of Education	125
	5. CPBEC, Inc.	n/a
Mineral County	1. ATK Tactical Systems Company, LLC	1100*
	2. Mineral County Board of Education	545
	3. Wal-Mart Stores, Inc.	540
	4. Potomac Valley Hospital of West Virginia	200
	5. West Virginia University's Potomac State College	170

Source: Dun & Bradstreet, Inc. 2006
* Indicates total number of employees in both Allegany and Mineral counties

Allegany County has eight modern industrial parks. The county participates in the HUBZones Empowerment Contracting Program. The program provides federal contracting preferences to small businesses that obtain HUBZone certification. There are also two HUBZones in the county, one each in South Cumberland and Frostburg. Three Maryland Enterprise Zones have also been designated in the county. Businesses locating in these zones may be eligible for income tax credits and real property tax credits in return for job creation and investments made in the zones.

Though not the county's largest employer, the Allegany Ballistics Laboratory (ABL), located just east of US 220 along MD 956 near Pinto, is a major employer for both Allegany and Mineral

counties. It is approximately 1,600 acres in size, although no current corridor will directly impact the property. The facility is owned by the U.S. Navy and ATK Tactical Systems Company, LLC. ATK manufactures products for the U.S. Department of Defense, but has been expanding into the commercial market. A spokesperson for ATK has stated that the vast majority of raw materials, explosive ingredients, and finished products are shipped to and from ABL via US 220. This amounts to approximately 30 shipments per day. The U.S. Navy is also in the process of adding government and non-government space to the office complex. It is expected that almost 1,600 jobs could be added by the end of 2010.

Specific to economic development in Maryland, *Priority Funding Areas* can act as a catalyst for economic development and redevelopment by supporting Smart Growth in existing communities. Smart Growth supports established communities and locally designated growth areas while protecting rural areas and limiting sprawl. In 1997, the Maryland General Assembly passed amendments to the *Economic Growth, Resource Protection, and Planning Act of 1992*. Each county is required to pinpoint locations, through use of a comprehensive plan, that are eligible for state funding. In Allegany County, the PFAs consist of areas served by public water and sewer, and industrial, municipal, and enterprise zones. They are found generally in the western half of the county along the US 220 and MD 36 corridors and around the cities of Cumberland and Frostburg. The PFAs are the focus for growth related infrastructure, state investment, economic development, and future growth. The PFAs were discussed in more detail in Chapter 1.0 *Purpose and Need Statement*. Geographic boundaries of the PFAs in Allegany County are shown in Figure 1-7.

Major employers in Grant County include Allegheny Dimension, Grant Memorial Hospital, and Virginia Electric and Power Company. The labor force totals 5,300. The unemployment rate was 5.3 percent in 2006.

The major employment occupations are production, transportation, and material moving; and management, sales, and service. From 2001 to 2004, Grant County lost over 1,000 jobs, an 8.0 percent decrease. Construction, manufacturing, and professional and business services saw the sharpest declines. The decline is partly due to the closing of a Perdue Farms poultry processing plant in Petersburg in 2002 and the completion of a large utility construction project at Mount Storm. The sectors seeing the highest job growth were information, natural resources and mining, repair and maintenance, personal services, and non-profits. Agriculture still

accounts for 9.0 percent of total employment, with poultry as the dominant farming livestock in the county (West Virginia University Research Corporation [WVURC] 2006a).

In Grant County, approximately 100 acres of land have been developed as modern industrial parks by the Grant County Development Authority. The Airport Industrial Park is a 60-acre facility adjacent to both the Grant County Airport and the South Branch Valley Railroad. The second, the Johnson Run Industrial Park, is adjacent to the Airport Industrial Park and has almost 40 acres of usable land. Together, the two properties are being marketed as the Grant County Industrial Park. Two other properties, the Mountain Top Industrial Park at Mount Storm in the northwestern part of the county and the Borrow Site in Petersburg, are also being developed for future use. They comprise about 250 acres. Although neither facility has any tenants yet, both properties have water and sewer service already in place.

Major employers in Hampshire County include the Hampshire County Board of Education, Hampshire Memorial Hospital, and the West Virginia Schools for the Deaf and Blind. The labor force totals 9,100. The unemployment rate was 3.3 percent in 2006. The major employment occupations are production, transportation, and material moving; and management, professional, and related services.

Hampshire County has two modern industrial parks. Hampshire County Industrial Park, located in Romney adjacent to WV 28, is approximately 58 acres, half of which are occupied. Capon Bridge Industrial and Technology Park, located about one mile from Capon Bridge in the southeastern portion of the county, is a 90-acre facility adjacent to US 50.

Hampshire County added 281 jobs from 2001 to 2005 with a 1.8 percent growth rate. Like the other counties (with the exception of Grant), this exceeds the region's growth rate of 0.3 percent and the State of West Virginia's. Construction sector jobs showed a rate of increase of more than 10.0 percent, and professional and business services, over 8.0 percent. Job losses occurred in natural resources and mining and in manufacturing. Agriculture accounts for 9.7 percent of the county's total employment. Similar to Grant and Hardy counties, poultry farming dominates (WVURC 2006b).

Major employers in Hardy County include Wal-Mart, American Woodmark Corporation, and Pilgrim's Pride. The labor force totals 6,400. The unemployment rate was 4.3 percent in 2006.

Nearly a third of the labor force is employed in production, transportation, and material moving. Hardy County has three modern industrial parks, Wardensville Industrial Park, Robert C. Byrd Industrial Park, and Moorefield Industrial Park. The Wardensville Industrial Park is a 29-acre parcel north of Wardensville on WV 55 and 259. The Robert C. Byrd Industrial Park is a 160-acre facility located on WV 55 one mile from Moorefield. The Moorefield Industrial Park is a 50-acre facility on US 220 just south of Moorefield.

Hardy County added 238 non-farm jobs from 2004 to 2005. Since 2001, Hardy County has had an average annual job growth rate of 2.4 percent, greater than the surrounding counties and the State of West Virginia (0.3 percent). It has the largest growth rate in the Potomac Highlands Region. Manufacturing is dominated by the poultry processing industry, with Pilgrim's Pride Corporation of West Virginia, located in Moorefield, as one of the largest employers in 2006. Agriculture accounts for 9.1 percent of employment in Hardy County (WVURC 2006c).

Major employers in Mineral County include ATK Tactical Systems, the Mineral County Board of Education, and Wal-Mart. The labor force totaled 13,600 with an unemployment rate of 4.6 percent in 2006. The major employment occupations are management, professional, and related services; sales and office; and service.

Mineral County has three modern industrial parks and three sites under development. The existing industrial parks include Fort Ashby Business and Technology Park, Keyser Industrial Park, and the Robert C. Byrd Hilltop Complex. The sites under development are Cumberland Regional Airport Business Park, the Keyser CSX site, and the Maryland CSX Yard site. The existing industrial parks provide over 300 acres of industrial land for the business community.

Mineral County has added 236 jobs since 2001, a growth rate of about 0.9 percent, which is greater than the surrounding counties and the State of West Virginia. Professional and business services experienced a decline of over 10 percent and other services (repair and maintenance, personal services, and non-profits) over 5 percent losses. Growth was found in construction, education and health services, financial activities, and manufacturing (WVURC 2006d).

The sharpest job growth in the study area was found in Hampshire and Hardy counties and the least job growth in the study area occurred in Grant County. Professional and business

services as well as construction jobs declined more than 10 percent in the Potomac Highlands Region from 2001 to 2004 (WVURC 2005a and b). Manufacturing and information services also showed a noticeable loss. Job growth could be found in the financial activities; education and health services; and trade, transportation, and utilities sectors. Agriculture still accounts for 9.4 percent of the Potomac Highlands employment.

3.1.5.2 Travel Times

Because most daily automobile travel is work related, travel times are often thought to be a function of economic conditions in the area. Trends in travel times vary among the counties in the region. In Allegany County, travel time to work is less than 20 minutes for 4,154 people in the study area of the county and more than 20 minutes for 2,403 people. Compared to the Maryland statewide average of 31.2 minutes, the travel time is somewhat less for the study area commuters. Because public transportation is limited throughout Allegany County, most people use a personal vehicle as means of transport to work.

Travel time to work is greater than 20 minutes for 551 people living in the study area of Grant County and less than 20 minutes for 212 people. Travel time in the county is similar to the statewide average of 26.2 minutes. In Hampshire County, 254 people in the study area of the county travel more than 20 minutes to work and only 73 have less than 20-minute travel times, making for the longest average travel time for study area commuters. About 922 people travel less than 20 minutes to work in the study area of Hardy County and about 598 people travel more than 20 minutes. The majority of the people in the study area of Mineral County travel longer than 20 minutes to work at 4,196 people and about 3,292 people travel less than 20 minutes to work. In all of these counties, the majority is using a personal vehicle as means of transportation to work because of a combination of limited public transportation and the distance traveled to work.

3.2 Cultural Resources Setting

Cultural resources include pre-contact and historic period archaeological sites and above-ground historic structures and districts. Pre-contact archaeological sites consist of areas where culturally modified objects or features can be found dating from the Paleoindian Period (12,000-18,000 BC) to approximately the Contact Period (*circa* 1550-1750). Historic period

archaeological sites consist of subsurface historic period structures or artifacts that date from approximately the Contact Period up to 1955. Potential above-ground historic resources are considered to be any standing structure, object, or above-ground cultural feature that is 50 years of age or older. Through the continuation of the *Section 106* process, cultural resources will be studied in more detail during Tier Two of the project.

3.2.1 Archaeological Resources

In order to evaluate the potential for archaeological resources within the study area, a staged methodology was developed. The initial archaeological research undertaken during Tier One of the project included the development of pre-contact and historic period archaeological resource sensitivity maps within a GIS. The sensitivity maps were based on the concept that the spatial distributions of cultural remains represented by archaeological sites are the result of human decision-making activities within environmental conditions. Background research of historic maps, atlases, and records; literature, environmental documentation, and archaeological site reviews; and windshield surveys were used to develop the sensitivity maps. The sensitivity maps were developed during the alternatives selection process in order to provide preliminary information about archaeological resources that might be expected in the study area. Subsequently, this allows for an assessment of the relative potential for impacts within each corridor.

3.2.1.1 Pre-Contact Period Archaeological Resources

Previously recorded information about pre-contact period archaeological sites in the region was utilized for the development of site distribution patterning during the development of the archaeological resource sensitivity mapping and Phase I archaeological survey methodology. The project region is characterized mainly by rolling rural agricultural land punctuated by population centers located at Cresaptown, Cumberland, and McCoole in Maryland and Keyser, Romney, Moorefield, and Petersburg in West Virginia. The types of pre-contact period archaeological resources expected in the study area might include lithic scatters, habitation sites (e.g., short-term camps, villages, base camps), quarries, procurement sites/workshops, earthworks/mounds, burials, petroglyphs, caves/rockshetlers, and isolated artifacts.

Based on the presence of numerous previously identified archaeological sites that are associated with all periods of the pre-contact period, it is clear that the region was used continuously throughout the pre-contact period and that there is potential for additional archaeological sites to be present. The study area exhibits rugged topography with parallel, steep-sided, and high ridges running southwest to northeast. Terraces, floodplains, and, to a lesser degree, gently sloping hillsides have the highest potential to contain pre-contact period archaeological sites because these are the topographic landforms that comprise nearly level, well-drained land proximal to water sources.

3.2.1.2 Historic Period Archaeological Resources

Previously recorded information about historic period archaeological sites in the region, and historic maps and atlases were utilized for the development of site distribution patterning during the development of the archaeological resource sensitivity mapping. Data were collected for historic archaeological resource types that had been identified as regionally important by previous surveys and by the newly collected data. The study area contains potential historic resources associated with residential, commercial, industrial, and agricultural activities. Most of the historic commercial/residential development in the region was situated near transportation corridors and their crossings and the population centers. Historic agricultural sites in the area include a number of farmsteads and early settlements. Of particular importance are locations where historic maps indicate that buildings, features, or events once occurred but are no longer extant.

The types of historic period archaeological resources expected in the study area might include artifact scatters; house, farmstead, church and other building ruins and features; cemeteries and graves; military-related, especially Civil War era, ruins and features; industrial ruins and features related to mills, tanneries, mining, lumbering, brick and iron production; and transportation-related ruins related to canals, roads, and railroads. Due to the geographic, topographic, and soil constraints in the study area, agriculture has played much less of a role in the historic period land use of the area than in adjoining regions; therefore, the potential for agricultural-related historic period archaeological resources is less than that of industrial- and transportation-related resources. Based on the late settlement of the study area, there is better potential for the identification of historic period archaeological resources related to the later periods of historic land use when transportation-related advancement into the area made industrial ventures such

as mining and logging economically lucrative, and population and land use in the study area increased.

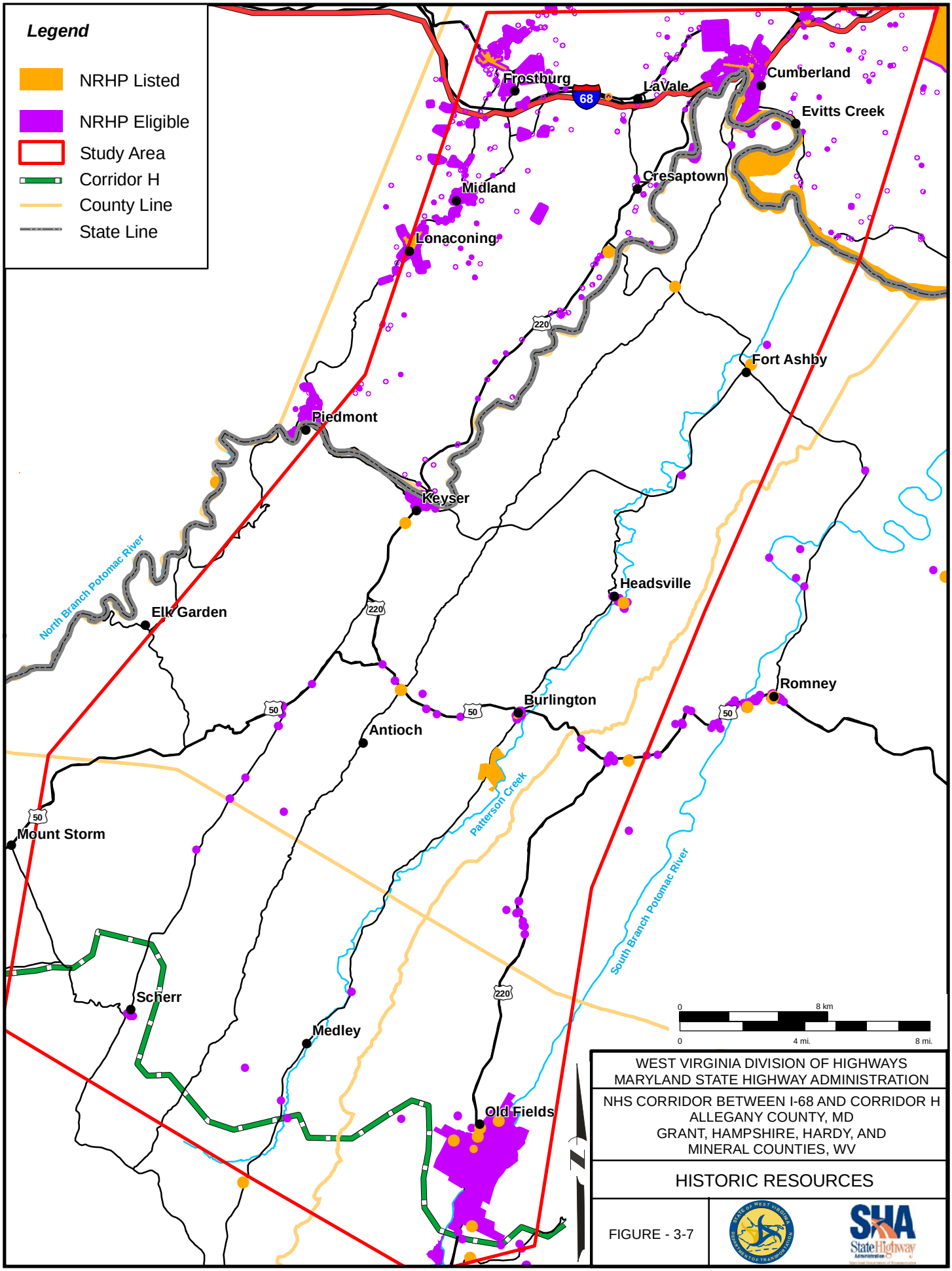
3.2.2 Historic Resources

The area contains a wide range of historic resource types, including farmsteads, residential, commercial, and industrial structures. The resources are of national, state, and local importance. The locations of resources listed and eligible for inclusion on the National Register of Historic Places within the area, over 260 of them, are summarized in Table 3.2-1 and shown on Figure 3-7.

TABLE 3.2-1
Historic Resources in the Area

County	Listed on the National Register of Historic Places	Determined Eligible for the National Register of Historic Places	Total Historic Resources	Representative Types of Resources
Allegany	41	29	70	Railway R-O-W, canal-related, Mexico Farms landing field, toll house, farmsteads, farmhouses, other residences, houses of worship, commercial and civic buildings, log houses, cemeteries, schools, and historic districts
Grant	2	7	9	Farmsteads and residences
Hampshire	5	98	103	Farmsteads, residences, and commercial buildings
Hardy	21	7	28	Farmsteads, residences, commercial and civic buildings, battlefield grounds, cemeteries, and historic districts
Mineral	10	43	53	Farmsteads, residences, log houses, commercial and civic buildings, schools, cemeteries, churches, and historic districts
Total	79	184	263	

As evidenced by the number of NHRP properties identified in the area, the area is rich in historic resources. In addition to properties already listed or determined eligible for the NRHP, there are many others that may be determined eligible as studies progress.


Legend
NRHP Listed
NRHP Eligible
Study Area
Corridor H
County Line
State Line
Frostburg
LaVale
Cumberland
Evitts Creek
Cresaptown
Midland
Lonaconing
Fort Ashby
Piedmont
Keyser
Headsville
Elk Garden
North Branch Potomac River
Romney
Burlington
Antioch
Patterson Creek
Mount Storm
South Branch Potomac River
Scherr
Medley
Old Fields
68
220
50
0
8 km
0
4 mi.
8 mi.
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
HISTORIC RESOURCES
FIGURE - 3-7

3.2.2.1 Early Agricultural Development (1615-1815)

The early history of the area reflects the struggles among early land grant holders to justify their claims and settle the colonies. Most of the area was included within Virginia's Northern Neck, a 1664 land grant from England's Charles II to Thomas, Lord Culpepper, totaling 2,800 square miles (or approximately 6,000,000 acres). The grant encompassed all land between the Rappahannock and Potomac rivers as far as their headwaters. Culpepper and his grandson, Thomas, Lord Fairfax (who would inherit the land grant), interpreted the grant to mean all land to the source of the North Branch of the Potomac River (Wolfe 1974). Maryland's proprietor, Lord Baltimore, also claimed a portion of the same land from an earlier grant. In 1632, Charles I granted Lord Baltimore all land south of the Pennsylvania border to the Potomac River. Lord Baltimore considered his territory to include all lands north of the Potomac River's South Branch, putting him at odds with Fairfax (Ware 1991).

Despite the competing claims, settlement began in the South Branch Valley about 1725, making it the oldest site of Euro-American settlement in what is now West Virginia. By 1740, families were firmly established along the valley's rich bottom land (North 1998). Permanent Euro-American settlers came to western Maryland at about the same time (Ware 1991). The initial settlers constructed primarily one or two room hall-and-parlor log houses out of the readily available timber resources. They cleared surrounding land and planted fields to grow subsistence crops like corn (Weaver 1989). Tobacco was also grown as a medium of exchange in this early period (Maxwell and Swisher 1897).

A greater impetus for settlement occurred in 1748, when the Ohio Company of Virginia was formed with Lord Fairfax as a major investor. The company was organized to compete with the French for the potentially lucrative Ohio Valley frontier trade. The Ohio Company sent a party, including 16 year old George Washington, to survey Fairfax's lands (Ware 1991). Between 1748 and 1751, the best lands were laid out in two large manors – Wappacoma, containing 55,000 acres and the Patterson Creek Manor of nearly 10,000 acres (now in Mineral County, West Virginia) – along with 300 additional lots (Mineral County Heritage Society 1980:2). In 1750, the Ohio Company constructed a storehouse on the west side of Wills Creek north of the Potomac River at the present site of Cumberland; a second storehouse was built on the Virginia side of the river at the present site of Ridgeley in 1752 (Ware 1991).

In his journal, George Washington noted that most of the squatters living on Fairfax's land were of Dutch or German descent (Maxwell and Swisher 1897). Other early settlers were Scott-Irish, English, and Welsh (Wolfe 1974). Many settlers moved down the Appalachian Valley from Pennsylvania (Stegmaier, Jr. *et al.* 1976). The area's first county, Hampshire, Virginia, was founded in 1754 and included all of what is now Hampshire, Hardy, Grant, Mineral, and parts of Morgan counties, West Virginia. Moorefield (now in Hardy County), a town in the county, was chartered as early as 1744. Romney, the county seat, was established in 1762 (North 1998).

Fort Ashby is the lone survivor of a series of forts built in the area in 1755 under the direction of George Washington (Works Progress Administration [WPA] 1941). Hostilities associated first with the French and Indian War and later with the American Revolution hindered further settlement in the region, despite the construction of Fort Cumberland in 1775 (Maxwell and Swisher 1897; Ware 1991). As an inducement for service in the latter war, the Maryland General Assembly offered soldiers land in western Maryland. Following the revolution, both Fairfax's and Baltimore's lands were seized and opened to settlement. Although much of the property was snapped up by speculators, the end of the Revolutionary War brought a fresh round of settlement to the region (Ware 1991; Maxwell and Swisher 1897). Hardy County, Virginia was established in 1786, and Allegany County, Maryland was established three years later (North 1998; Stegmaier, Jr. *et al.* 1976).

At the beginning of the nineteenth century, the area was predominantly agricultural in nature. Most housing continued to be built of log, although a few stone houses were also built. Brick homes were rarer and were only built by wealthy landowners, as in the Middle South Branch Valley near Moorefield (Weaver 1989). The farmers in Allegany County grew corn, wheat, rye, and orchard products, particularly apples (Stegmaier, Jr. *et al.* 1976). Those settling along Virginia's Patterson and New creeks grew similar crops and raised livestock (Maxwell and Swisher 1897). Gristmills and sawmills processed agricultural products. Because of the difficulty of moving bulk crops like corn, wheat, and rye to market, distilleries that processed grains into whiskey were also important and common in the area (Maxwell and Swisher 1897). In the late eighteenth century, towns began to form in the region. Cumberland was founded in 1787 and, within ten years, it had a post office, blacksmith's shop, hatter, butcher, cooper, brickmason, tannery, and gristmill (Stegmaier, Jr. *et al.* 1976). To the southwest, Paddytown (present day Keyser) was established *ca*. 1811 around a general store, several mills, and an iron foundry owned by Patrick McCarthy (North 1998).

Settlement in the area was aided by a growing transportation system. In 1786, the government of Virginia authorized the construction of an all-Virginia trade route between Winchester and the Ohio River. A road was in place to Cumberland by 1786 (WPA 1941). In 1810, Cumberland was also made the eastern terminus of the National Road, the nation's first federally funded interstate highway, which made the town a gateway to the west. The route was used by migrants from the east; people and goods moving up the Cumberland, Wills Creek, and Georges Creek valleys; and drovers bringing animals from the upper Midwest (Stegmaier, Jr. *et al.* 1976).

3.2.2.2 Agricultural-Industrial Transition (1815-1865)

The period between 1815 and 1865 was a time of transition in the study area. Aided by transportation improvements, agriculture advanced beyond the subsistence stage, and industry began to play an increasingly prominent role in the economy. Coal mining, iron-making, and railroading became prominent local industries. At the end of the period, political differences associated with the American Civil War resulted in the formation of the new State of West Virginia.

Roads were the first transportation system to be improved. The National Road, which was constructed from Cumberland to Wheeling, (West) Virginia, between 1811 and 1820, became a major corridor for western migration and east-west commerce. Several state and local roads from northern Virginia, eastern Maryland, and eastern Pennsylvania converged at Cumberland to connect with the National Road (Stegmaier, Jr. *et al.* 1976). In Virginia, the North-Western Road Company was incorporated to upgrade the existing road between Winchester and Parkersburg on the Ohio River as a turnpike. The effort struggled to succeed until 1831, when engineer Cladius Crozet was put in charge of construction. Under his direction, the turnpike, which roughly followed the present day path of US 50, reached Parkersburg via Romney by 1838 (WPA 1941). Called "the finest mountain road in the country," the turnpike encouraged the development of stage coach routes as early as 1830 (Ware 1991). Connecting roads were built or improved through the Patterson, New, and Georges Creek valleys (Ware 1991). Burlington, for example, developed at the junction of the Northwestern Turnpike and the Patterson Creek Turnpike (Chambers 2004).

The new routes were useful in transporting livestock, which could be easily driven along the roads, and other agricultural products, but bulkier items were still difficult to haul over the roads. Most bulk grains and timber still had to be transported on boats and barges on the Potomac River during times of high water. Taverns, wagon stands, inns, feed lots, and wagon repair shops were built every few miles to service travelers along the road (Maxwell and Swisher 1897; WPA 1941). The most substantial inns were constructed of brick or stone and built in a loose Georgian style. Most, however, were modestly proportioned and constructed of logs or sawn lumber (Weaver 1989).

Plans to improve navigation on the Potomac River had been discussed since the late eighteenth century. Some engineering features were added, but calls for a canal along the Potomac River intensified during the first part of the nineteenth century. Ground was broken for the Chesapeake and Ohio Canal on July 4, 1828. Its planned route connected the nation's capital and the Ohio River by way of Cumberland.

On the same day, construction also began on the Baltimore & Ohio (B&O) Railroad. The City of Baltimore, concerned about losing trade with the Midwest to the canal, responded by staking its future on a newer and less tested technology – the railroad. Engineering problems, financial difficulties, and litigation over routes (both operations sought to use the Potomac River's south bank as their artery) plagued the ventures. The railroad reached Cumberland in 1842, followed by the canal in 1850.

Both the Chesapeake and Ohio Canal and the B&O Railroad had profound impacts on the economy and settlement patterns of the study area.The impact was perhaps most dramatic in Cumberland and in Maryland's Georges Creek Valley. It had long been known that the valley possessed significant deposits of coal (Howe 1845). Allegany County included portions of both the Pittsburgh (also known as the "Big Vein" seam) and Upper Potomac coal fields. In addition to coal, ancillary industries were founded or expanded in the Georges Creek Valley, including the iron-making and fire clay businesses (Ware 1991). Iron-making facilities in the valley included a furnace in Lonaconing, where in 1839 the first American iron was produced using coke and hot blast (Ware 1991). Railroad and canal construction attracted a wave of settlement to the region, producing a building boom (Weaver 1989). Entire towns in the Georges Creek and Wills Creek valleys were founded in the mid-nineteenth century as company towns, including Pinto, Lonaconing, Vale Summit, Midland, and Barton (Weaver 1989).

The arrival of the canal and railroad had a less dramatic but nevertheless important impact on the Patterson and New Creek valleys. West Virginia's coal resources, although extensive, were located predominantly to the west and south of the study area, and they were not fully exploited until after the Civil War. Patterson Creek Valley remained predominantly agricultural in nature, as an area of prosperous farms and with numerous farm buildings (WPA 1941; Chambers 2004). Market crops, including bulk grains, were now easier to ship due to the transportation improvements.

The railroad's biggest impact in this era occurred at the junction of the North Branch of the Potomac River and New Creek. The village then known as Paddytown had a measure of prosperity in the 1810s, when it included a general store, flour mill, sawmill, lime kiln, and a forge and foundry. However, economic downturns in the 1820s and 1830s forced many families to leave the area. The 1835 *Itinerary of Virginia* recorded only six dwelling houses in the village. The arrival of the B&O Railroad in 1852 revived the town. It was renamed New Creek (which is present day Keyser) and given a passenger railroad station.

The Civil War tested the resolve of New Creek's residents. The town was strategically important to the Union forces. New Creek was positioned at the base of the Allegheny Mountains on roads leading to Franklin, Petersburg, Moorefield, and Winchester. It was located on the B&O Railroad's main line, a key transportation and communication link among the Midwestern states, pro-Union sympathizers in western Virginia, and Washington, D.C. The railroad was also an important transporter of local coal, a major source of power for northern factories, ships, and homes. New Creek served as an important military base for the dispatch of Union troops (Shawkey 1928). Fort Fuller was built in 1861 and occupied by a permanent Union garrison charged with protecting the town and the railroad line. It was located on the high ground now occupied by Potomac State College. Nearby Fort William and Fort Piano played similar roles (Maxwell and Swisher 1897).

For Confederate forces, disrupting the B&O Railroad's main line was a major objective during the war. Thus, it was in Confederate interest to drive Union forces out of New Creek. Despite the presence of Union troops and garrisons, New Creek changed hands 14 times during the war. Consequently, "what buildings of importance had been built . . . were razed to the ground or reduced to ashes, by the relentless flames of the military incendiary" (Industrial Publishing

Company 1906). However, the Union secured a larger victory when West Virginia was created as the nation's 35th state from Virginia's western counties in 1863.

3.2.2.3 Post Civil War Era (1865-1930)

Following the Civil War, mineral exploitation and industrial development dominated the economy immediately to the west of the project region. In the fertile valleys of the Wills, New, and Patterson creeks and along the North and South branches of the Potomac River, agriculture remained the primary industry. Cattle, dairy and poultry farms; orchards; and fields of corn, wheat, rye, and other crops dotted the lengths of the valleys.

In the new State of West Virginia, political and economic changes were dramatic and far-reaching. In 1866, Mineral County was formed from the northwestern portion of Hampshire County, and New Creek was named the county seat. In the same year, Grant County was created from Hardy County (North 1998). Mineral County benefited markedly from the presence of the B&O Railroad. The volume of traffic on the B&O's mainline rose so dramatically after the war that a new yard had to be built in order to accommodate the demand. Geographic constraints precluded expanding the existing rail yard at Piedmont. As a consequence, a great yard for B&O lines west of Cumberland was created at New Creek. In appreciation, the citizens had the town's name changed to Keyser, in honor of William Keyser, Second Vice-President of the railroad, when the town was incorporated in 1874 (Industrial Publishing Company 1906).

In the late nineteenth century, the Keyser railroad yards expanded dramatically. By 1904, a 24-stall roundhouse was completed, along with machine shops, a coal trestle, and a multitude of yard tracks (Baltimore & Ohio Railroad Company 1907). The strain that the mountain passage placed on railroad cars also made Keyser an ideal location for a major repair center. In 1897, a 40,000-square foot car repair shop was completed. Another was built in 1907 (Baltimore and Ohio Railroad Company 1907; Roberts 1991).

The B&O also expanded its facilities in Cumberland. It constructed a large shop complex in 1867, and in 1906, the railroad purchased nine acres and constructed a terminus for three divisions. The complex included a huge roundhouse and yard to accommodate 3,000 cars. By 1906, the B&O complex in Cumberland employed more than 2,000 workers (Stegmaier, Jr. *et al.* 1976).

In order for the increased traffic to reach the B&O mainline, connecting railroads were built or expanded. The Cumberland & Pennsylvania Railroad ran between Cumberland and Piedmont via Frostburg. Founded in 1845, it came under the control of Consolidation Coal in 1864 and the B&O Railroad in 1877 (Stegmaier, Jr. *et al.* 1976; Ware 1991). Competitors of Consolidation Coal built the Georges Creek & Cumberland Railroad linking Lonaconing and Cumberland between 1879 and 1881 (Ware 1991). The West Virginia Central & Pittsburg Railway, founded in 1881, opened the massive coal and timber reserves of central West Virginia. It followed the north bank of the North Branch Potomac River. In the early twentieth century, the Georges Creek & Cumberland and the West Virginia Central & Pittsburg Railway became part of the newly created Western Maryland Railway (Cook and Zimmerman 1987).

Industrial expansion extended beyond coal and railroads. By 1900, Cumberland was Maryland's third largest city and home to 250 manufacturing operations. Important industries included glassmaking and brewing. In the 1920s, the Kelly-Springfield tire company erected a plant that operated into the early 1980s. The Celanese Corporation, a pioneer in synthetic fabrics, also established a large plant in Cumberland (Stegmaier, Jr. *et al.* 1976). In the Georges Creek Valley, a silk mill was established in Lonaconing in 1906 and enlarged in 1918. It employed the wives and daughters of area miners (Ware 1991). In Keyser and the surrounding region, the timber industry and its off-shoots provided employment for many. The largest single employer in the region was the West Virginia Pulp and Paper Company, founded in 1888 and headquartered in West Piedmont (present day Luke), Maryland (Shawkey 1928).

The booming industrial growth of the period fostered residential expansion in Cumberland, Keyser, Moorefield, and, to a lesser extent, throughout the project region. The building stock in the project region reflects the boom period of the mid-nineteenth century to about 1930 (Weaver 1989). Between the 1880s and 1910s, Cumberland expanded to the north and south (Stegmaier, Jr. *et al.* 1976). Keyser expanded in all directions. Home to no more than 200 citizens at the start of the Civil War, it had grown to some 1,700 by 1880 (Wolfe 1974). By the first decade of the twentieth century, Keyser's population had quadrupled to nearly 6,700 (Industrial Publishing Company 1906). In 1888, the village of McCoole was founded across the North Branch of the Potomac River from Keyser (Steiding 1966). In the 1920s, the advent of large-scale automobile ownership further expanded the boundaries of the cities and villages in the area and facilitated the creation of "strip towns" (Weaver 1989).

Much of the West Virginia portion of the study area outside of Keyser remained agricultural during this period. Livestock raising and fruit cultivation, notably apples and peaches, were particularly important (Maxwell and Swisher 1897; Industrial Publishing Company 1906). A guidebook written in the early 1940s noted that along US 220 between Cumberland and Moorefield by way of Keyser:

> *Except for small, locally owned plants, the countryside is untouched by industry; farming is the chief occupation. Many old houses, their high-porticoes half-hidden from the road by groves of maples and elms, are occupied by descendants of families who settled holdings of Lord Thomas Fairfax* (WPA 1941).

Between Keyser and US 50 there were “broad and fertile fields” extending west to the foothills of the Allegheny Front (WPA 1941). The trip from the New Creek Valley across Knobley and Patterson mountains and into the South Branch Valley at Moorefield is described as having “high forested hills and pleasant valley farms,” with “numerous fort sites” and “rambling brick houses” (WPA 1941).

In Maryland’s Wills Creek and Georges Creek valleys, half the land was listed in censuses between 1870 and 1930 as being in agricultural production. The bottom lands supported corn and oats; buckwheat and rye were common in the mountainous areas. The valley also supported orchard crops (Ware 1991).

Houses and other buildings built in the study area during this period reflected the architectural styles of the day. Queen Anne, Georgian (Colonial) Revival, Craftsman style bungalows, and American Foursquares were popular. Utilitarian, practical, and inexpensive vernacular houses were also constructed, such as I-houses, L-houses, and front gable houses. Some of the vernacular houses contained modest elements or simplified ornament of the high style examples being built at the time. Business districts in the industrial towns and villages were also expanded during this era, primarily through the construction of utilitarian commercial buildings (Weaver 1989).

3.2.2.4 Modern Period (1930-Present)

Coal mining in Allegany County peaked in 1907 and then declined. It rebounded during the World War I years and then slumped precipitously beginning in the 1920s and into the Great

Depression of the 1930s (Ware 1991). Energy demands associated with World War II again caused a spike upwards, but coal ceased being a driving force in the Georges Creek Valley after World War II. Some surface mining remained, but automation had reduced the number of workers employed (Stegmaier, Jr. *et al.* 1976).

Industrial decline affected other sectors of the economy. Between 1945 and 1975, some of the area's oldest industries completely disappeared or greatly reduced operations. Glass-making and brewing in the Cumberland area became extinct. The Celanese plant which had once employed 13,000 workers was down to 1,006 by 1975. Skyrocketing inflation in the 1970s made the price of raw materials prohibitive and brought disaster to several local companies, including Kelly-Springfield Tires and Pittsburgh Plate Glass (Stegmaier, Jr. *et al.* 1976).

The decline of the railroad industry was particularly dramatic, with dire consequences for the Keyser-McCoole area. Deferred maintenance during the Depression and World War II, plus increased competition from other forms of transportation, took a heavy toll on the B&O and Western Maryland railroads. With the construction of the Interstate Highway System beginning in the 1950s, considerable freight traffic was diverted from the railroads to trucks. Passenger traffic was diverted to buses, private automobiles, and later to airplanes. The change from steam to diesel locomotives and the switch from coal heating to oil and natural gas accelerated the decline in coal consumption and further reduced train traffic in Keyser. Diesel locomotive engines required less maintenance and repair than steam engines and increased the length of haul; consequently, shop and road crews were cut as trains grew longer and fewer in number. Technological improvements in signal systems and yard operations and consolidation of facilities eliminated other jobs. In 1963, the financially ailing B&O merged with the Chesapeake & Ohio Railroad to form the Chessie System. In the mid-1970s, the Western Maryland Railway was absorbed into the Chessie System as well. Although some activity remained at the Keyser yard until the early 1980s, Keyser was virtually abandoned as a major rail center by the late 1960s, resulting in many employee furloughs (Stegmaier, Jr. *et al.* 1976). As the local economy declined, many people abandoned the region and moved to more prosperous areas for jobs.

The economic decline had a profound impact on the area's built environment. Compared to the boom period of the preceding era, little new home or commercial construction occurred in the project region after 1930. Consequently, post-World War II building designs are not greatly represented in the area (Weaver 1989). Timber remained an important industry during this

period. Much of the economic growth during the 1970s and 1980s relied heavily on suburbanization. The construction of shopping malls and strip developments provided much employment. In the 1980s, I-68 was completed through the western Maryland counties of Allegany and Garrett to Morgantown (Weaver 1989). Despite the close proximity of the Interstate, the Keyser-McCoole area remained semi-isolated. Industrial parks have been developed on the east and south sides of Keyser, but the attraction and retention of industries remains a problem. In both Mineral County and Allegany County, facilities of higher education – Potomac State College, Allegany College of Maryland, and Frostburg State University – are now major employers (Stegmaier Jr. *et al.* 1976). Agriculture still plays an important role in portions of the study area, especially in the South Branch Valley, which continues to support orchards, pastureland, and poultry farms. Hardy County is known as the "Poultry Capital of West Virginia" (North 1998).

3.3 Natural Environment Setting

Because of its location on the cusp of two physiographic provinces, the region is blessed with the splendor of steep mountain terrain and broadly sweeping valleys. It is an area of contrasts, falling partially in the Allegheny Plateau and partially in the Ridge and Valley section of the country. The rugged land of the Allegheny Plateau is characterized by steep-sided ridges that have been thoroughly dissected by small streams and water courses, giving the appearance of an endless formation of low hills and contrasting valleys. Midway through the region, the Allegheny Plateau gives way to the Ridge and Valley physiographic province characterized by broad valleys and parallel ridges. Most of the valleys are narrow and flat, but several widen out to form larger, attractive settlement areas. Consequently, the dominant natural features of the region are its steep, hilly topography and narrow stream valleys.

3.3.1 Aquatic Resources

3.3.1.1 Wetlands

Soils associated with wetlands generally consist of silty clays that reduce soil permeability and result in poor drainage, causing wetland areas to remain inundated or saturated for long periods after storm events. Flooding events or shallow water tables mostly provide wetland hydrology. Herbaceous wetland vegetation typically found in western Maryland and eastern West Virginia

consists of a mixture of grasses, sedges, and rushes. Scrub-shrub wetlands occur along stream and river systems, often providing a transition zone between herbaceous and forested wetlands. Forested wetlands are located mainly in the floodplains of the larger stream and river valleys. The majority of forested wetlands has been logged and they now primarily consist of second- or third-growth trees.

A variety of plant and animal species utilize wetlands, which are essential for feeding, breeding, nesting, and refuge. Waterfowl and wading birds are the most recognized group of animals that occupy wetlands. Reptiles and amphibians that require wetland habitat for survival include toads and frogs, salamanders, water snakes, and turtles.

All wetland types (open-water, emergent, scrub-shrub, and forested), sizes, and conditions were encountered throughout the study area. Wetlands in the study area listed on the National Wetlands Inventory (NWI) are shown on Figure 3-8.

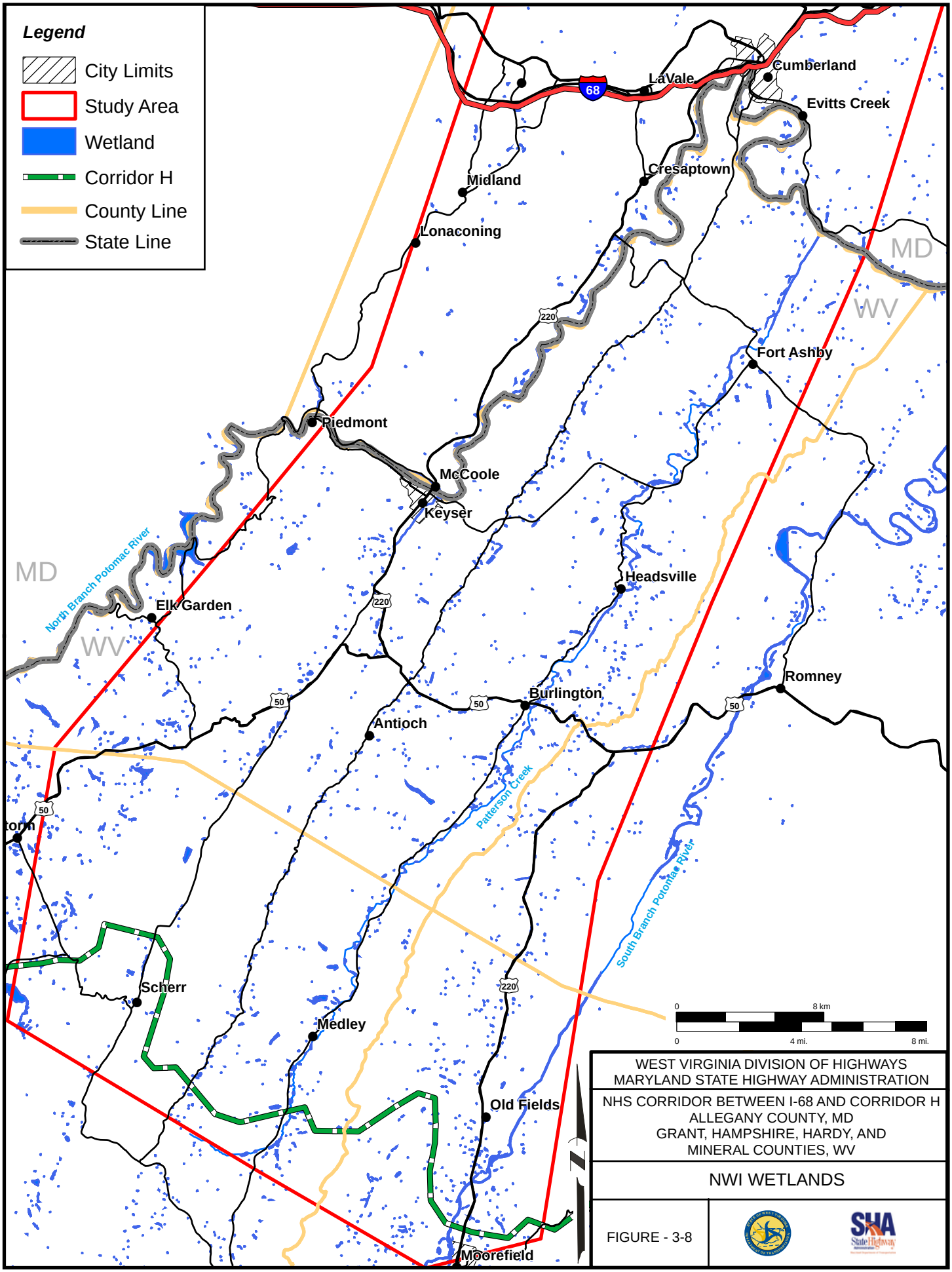
3.3.1.2 Streams

The study area is located within the Potomac River watershed and the following major sub-basins: North Branch Potomac River in MD and WV and South Branch Potomac River in WV. Other, smaller watersheds are recognized within each sub-basin, including Georges, Wills, Evitts, Patterson, and New Creek. There are no *Wild and Scenic Rivers* in the project area.

The North Branch Potomac River is considered a Section 10 navigable water by the USACE; however, this designation extends upstream on the North Branch Potomac River only to Cumberland. Upstream of this point, the North Branch Potomac River is no longer considered a navigable river (under Section 10 authority) by the USACE (USACE 2005).

West Virginia – Water Quality

The streams and waterbodies of the study area in West Virginia are identified in the *Title 46 Legislative Rule, Environmental Quality Board, Series 1, Requirements Governing Water Quality Standards (46 CSR 1)* (West Virginia Secretary of State [WVSOS] 2007), along with their designated use. In West Virginia, a stream can support one or multiple designated uses, depending upon its quality and its users (as delineated by the category listed below). The



WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION

NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV

NWI WETLANDS

FIGURE - 3-8

following are the designated uses of study area streams and waterbodies by county identified in this document:

- Category A (Public Water Supply) – Hampshire County (Mill Creek) and Mineral County (North Fork Patterson Creek, New Creek, and New Creek Dam #14).
- Category B (Propagation and Maintenance of Fish and Other Aquatic Organisms [B1 – Warm Water Fisheries, B2 - Trout Waters, & B4 - Wetlands]) – Hardy County (South Branch Potomac River), Grant County (Mill Creek Impoundment), and Mineral County (New Creek).
- Category C (Water Contact Recreation) – Hampshire County (South Branch Potomac River), Hardy County (South Branch Potomac River), Grant County (North Fork Patterson Creek), and Mineral County (North Branch Potomac River).
- Category D (Agriculture and Wildlife Uses [D1 – Irrigation, D2 – Livestock Watering, & D3 – Wildlife]) – All stream segments (and wetlands) used for irrigation, and by livestock and wildlife.
- Category E (Industrial Water Supply [E1 - Transport, E2 – Cooling, E3 – Power Production, & E4 – Industrial) - No streams listed within study area.

The WVDEP's Section 303(d) list (WVDEP 2006) was reviewed for the project. This report contains information related to WVDEP's 2006 Section 303(d) list and total maximum daily loads (TMDLs) (Supplemental Tables A through F) for the study area as described below.

- 2006 Section 303(d) List
  - South Branch Potomac Watershed – Notes South Branch Potomac River fecal coliform and polychlorinated biphenyls (PCB) criteria affected. Other tributaries listed include Anderson Run (CNA-biological criteria affected), Mudlick Run (CNA-biological criteria affected), Dumpling Run (CNA-biological criteria affected), and Mill Creek (CNA-biological criteria affected).
  - North Branch Potomac Watershed – Notes tributaries to the North Branch Potomac River listed, which include Patterson Creek (CNA-biological criteria affected), Pargut Run (CNA-biological criteria affected), unnamed tributary (UNT) to Patterson Creek river mile (RM) 16.0 (CNA-biological criteria affected), Mill Creek (CNA-biological criteria affected), and UNT to UNT RM 0.5 to New Creek RM 4.3 (CNA-biological criteria affected).
- Supplemental Table A – Previously Listed Waters/No TMDL Developed
  - South Branch Potomac Watershed – Notes South Branch Potomac River (Mouth to RM 79.0 to HW) metals criteria affected (with aluminum being the impairing substance).

- North Branch Potomac Watershed – No study area streams noted.

- Supplemental Table B – Waters with TMDLs Developed
  - South Branch Potomac Watershed – Notes South Branch Potomac River, Anderson Run, and Mill Creek (fecal coliform criteria affected – 1998 TMDL date).
  - North Branch Potomac Watershed – No study area streams noted.
- Supplemental Table B1 – 2005 TMDLs
  - South Branch Potomac Watershed – No study area streams noted.
  - North Branch Potomac Watershed – No study area streams noted.
- Supplemental Table C – Water Quality Improvements
  - South Branch Potomac Watershed – No study area streams noted.
  - North Branch Potomac Watershed – No study area streams noted.
- Supplemental Table D – Impaired Waters/No TMDL Development Needed
  - South Branch Potomac Watershed – No study area streams noted.
  - North Branch Potomac Watershed – No study area streams noted.
- Supplemental Table E – Total Aluminum TMDLs Developed
  - South Branch Potomac Watershed – No study area streams noted.
  - North Branch Potomac Watershed – No study area streams noted.
- Supplemental Table F – New Listings for 2006
  - South Branch Potomac Watershed – Notes South Branch Potomac River (PCB criteria affected).
  - North Branch Potomac Watershed – No study area streams noted.

No streams or rivers are designated within the West Virginia portion of the study area under the National Wild and Scenic Rivers System (NPS 2007).

Maryland – Water Quality

The streams of the study area in Maryland are identified in the Code of Maryland (COMAR), *Title 26 – Part 2, Subtitle 08, Chapter 2 Water Quality* (MDE 2007b), along with their designated use. The following are the designated uses of study area streams:

- Designated Use I-P (Water Contact Recreation, Protection of Aquatic Life, and Public Water Supply) - North Branch Potomac River mainstem and an unnamed tributary near Pinto.
- Designated Use III-P (Natural Trout Waters and Public Water Supply) - All Maryland tributaries to the North Branch Potomac River.
- Designated Use IV-P (Recreational Trout Waters and Public Water Supply) - The mainstem of Evitts Creek.

The MDE's *2006 Section 303(d) List and Integrated Assessment of Water Quality in Maryland* (MDE, 2007c) were reviewed. This report contains information related to MDE's 2006 *Section 303(d)* list and TMDLs (Categories 1 through 5) as described below.

- Category 1 – Fully supporting all designated uses
  - Streams not listed in Maryland if in this category.
- Category 2 – Fully supporting some designated uses
  - Lower North Branch Potomac River (mainstem) – Notes metals impairment (with cadmium being the impairing substance) and pH impairment (with pH as the impairing substance).
  - Evitts Creek (mainstem) – Notes pH impairment (with pH as the impairing substance).
  - Wills Creek (mainstem) – Notes biological impairment (no impairing substance noted), pH impairment (with low pH/pH as the impairing substance), and toxics impairment (with cyanide as the impairing substance).
- Category 3 – Insufficient or no information exists to determine if uses are being met
  - Lower North Branch Potomac River (mainstem) – Notes biological impairment (with no impairing substance noted).

- Evitts Creek (mainstem) – Notes biological impairment (with no impairing substance noted).

- Evitts Creek (tributaries) – Notes pH impairment to Elk Lick Run (with no impairing substance noted).

- Wills Creek (mainstem) – Notes biological impairment (no impairing substance noted), pH impairment (with low pH/pH as the impairing substance), and toxics impairment (with cyanide as the impairing substance).

➢ Category 4a – Waters with an existing approved TMDL, but not meeting standards

- Evitts Creek (mainstem) – Notes sediment impairment (sediments noted as impairing substance).

- Wills Creek (mainstem) – Notes sediment impairment (sediments noted as impairing substance).

- Wills Creek (tributaries) – Notes bacteria impairment to Braddock Run (with fecal coliform as the impairing substance).

➢ Category 4b – Waters with other control mechanisms in place, which are reasonably expected to return water to meeting designated use

- No Category 4b waters were listed within the corridors.

➢ Category 5 – Waters assessed as impaired and expected to need a TMDL

- Lower North Branch Potomac River (mainstem) – Notes bacteria impairment (with fecal coliform being the impairing substance), biological impairment (no impairing substance noted), metal impairment (methylmercury), nutrients (nutrients noted as impairing substance), and sediments (sediments noted as impairing substance).

- Lower North Branch Potomac River (tributaries) – Notes biological impairment to numerous unnamed tributaries and Warrior Run.

- Evitts Creek (mainstem) – Notes biological impairment (no impairing substance noted).

- Wills Creek (tributaries) – Notes biological impairment to Braddock Run (biological noted as impairing substance).

Presently numerous TMDLs have been developed by MDE for the study area streams, which include TMDLs for Evitts Creek (low pH [2005] and sediments [2006]) and the Lower North Branch Potomac River (sediments [2006], pH [2005], and cadmium [2006]). Also, as discussed in Chapter 4.0 of this DEIS, Pinto Marsh, near Cresaptown, is designated by MDNR as a non-tidal wetlands of special state concern. Finally, no streams or rivers are designated within the Maryland portion of the study area as scenic and/or wild under Maryland's state Scenic and Wild Rivers Program (MDNR 2005) or the federal National Wild and Scenic Rivers System (NPS 2007).

3.3.2 Floodplains

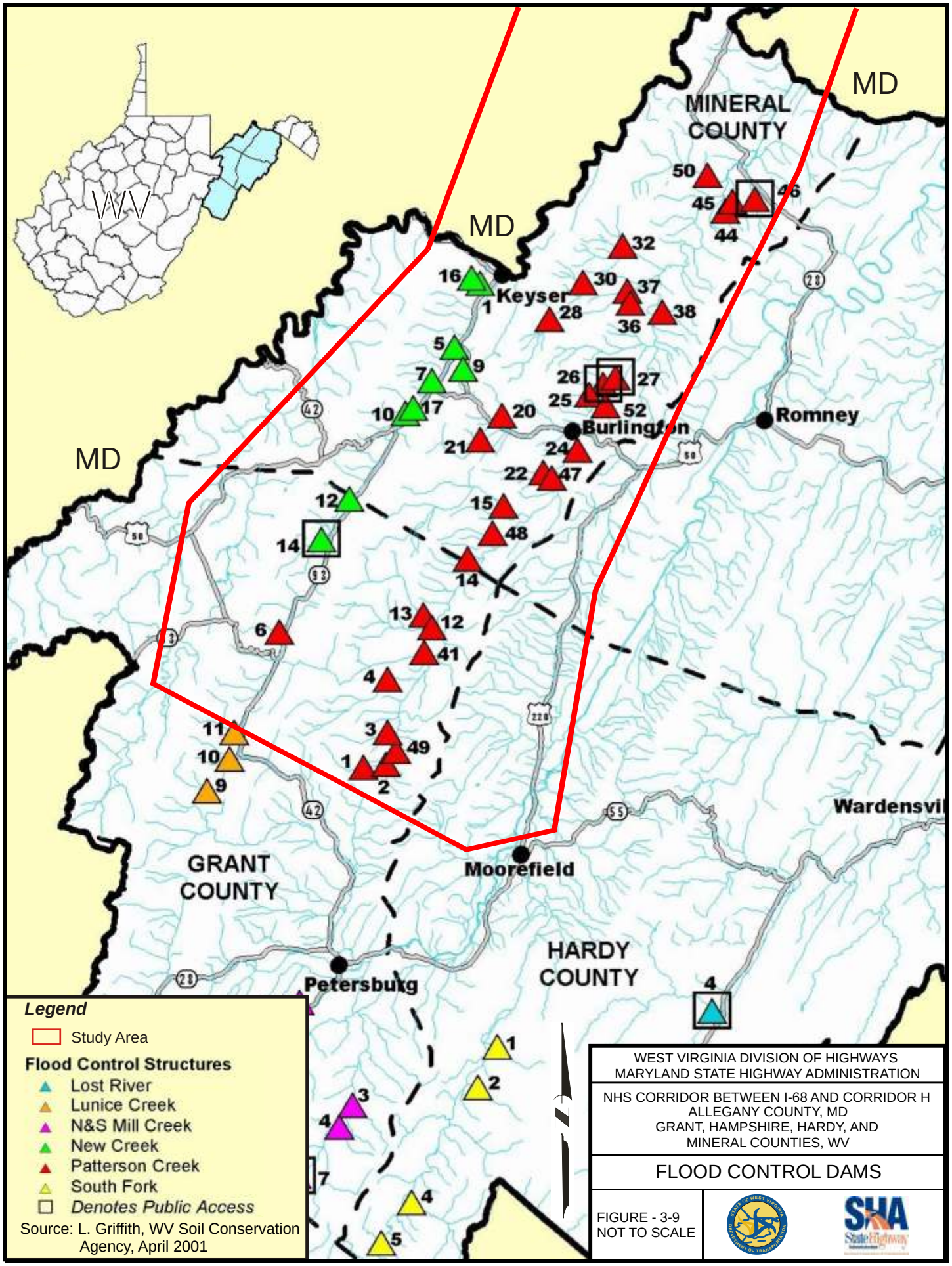
Within the study area, the Federal Emergency Management Agency (FEMA) has identified the 100-year floodplains for three major streams – North Branch Potomac River, South Branch Potomac River, and Patterson Creek – and many tributaries to these streams. In West Virginia, FEMA has delineated regulatory floodways for New Creek, Cabin Run, and sections of the North Branch Potomac River and Patterson Creek. No regulatory floodways have been defined within the study area in Maryland.

The Potomac Valley Soil Conservation District operates and maintains many dams throughout the area as part of a regional flood control project funded from federal, state, and local sources. The dams were constructed under authority of the *Flood Control Act of 1944* and provide protection in Grant, Hampshire, Hardy, Mineral, and Pendleton counties. The locations of the dams are shown on Figure 3-9.

3.3.3 Vegetation and Wildlife

3.3.3.1 Vegetation

Throughout the study area, approximately 30-40 percent of the area is generally suited for crop cultivation. The remaining area is utilized for grazing, tree production, wildlife habitat, and urban-suburban development (i.e., commercial, industrial, and residential) (USDA 1977, 1978, and 1989). The dominant land cover identified within the study area includes forests (46-78 percent), agricultural lands (8-40 percent), built-up land (5-25 percent), rangeland (1-8 percent), and mixed forests and rangelands (0-1 percent).


WV
MD
MD
MD
MINERAL COUNTY
GRANT COUNTY
HARDY COUNTY
Keyser
Burlington
Romney
Moorefield
Petersburg
Wardensvil
Legend
Study Area
Flood Control Structures
Lost River
Lunice Creek
N&S Mill Creek
New Creek
Patterson Creek
South Fork
Denotes Public Access
Source: L. Griffith, WV Soil Conservation Agency, April 2001
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
FLOOD CONTROL DAMS
FIGURE - 3-9
NOT TO SCALE

Study area forests consist of a mixture of second growth oaks, maples, shagbark hickory, tulip poplar, American beech, black locust, eastern red cedar, eastern white pine, red pine, red spruce, and Virginia pine. In the valleys, the primary tree species observed included American sycamore, slippery elm, ashes, quaking aspen, and black willow. On the ridge tops, the primary tree species include oak, maple, and pine species. Older growth timber may exist in steeper side ravines or valleys.

Though historically the study area was forested, rangeland (meadows/grasslands/fields) has become more dominant in many of the valley floors as agriculture expanded. The study area rangeland and wetlands in general consist of a variety of shrub and herbaceous plant species. The shrub species generally consist of dogwood, honeysuckle, autumn-olive, elderberry, arrowwood, and willow species. The herbaceous species generally consist of numerous types of grass, sedge, and rush species, along with cattail, lily, raspberry, jewelweed, and fern species.

Unique to portions of the study area is the existence of the eastern prickly-pear cactus. Its habitat is located in the more drought-prone areas of the Berks and Weikert soils (USDA 1989) of the study area and is found on east-facing slopes within the Patterson Creek Valley.

3.3.3.2 Wildlife Habitat

Wildlife habitat within the study area comes in numerous forms and is available to both local as well as migratory species. The higher elevation ridges in the western portion of the study area located in the Allegheny Mountain Section of the Appalachian Plateau province receives more annual precipitation, which allows for a mainly deciduous forest type, whereas the eastern portions of the study area that lie within the Fold Appalachian Mountains Section of the Ridge and Valley province receive less precipitation and habitats tend to reflect this condition (i.e., mixed coniferous-deciduous forest) (MDNR 2007). The mountain ridges within the study area do not permit extensive agriculture or development activity; therefore, habitat for wildlife along the mountain ridges appears to have been mainly affected by timbering and mining operations. The lower slopes of the mountain ridges and valley floors are where most development activities occur and, thus, most habitat modifications have taken place in these locations.

Most of the development/habitat modification activities in the study area involve agriculture, silvaculture, mining, and commercial/residential development. The wildlife species inhabiting the various habitats are adapted to these areas whether they are generalists or specialists. The wildlife species inhabiting the more developed areas that incorporate edge environments tend to be more widespread (e.g., whitetail deer), whereas wildlife species that are specifically adapted to special sets of conditions will be found in localized habitats (e.g., beaver).

3.3.3.3 Wildlife

Wildlife communities are important ecologically, economically, and recreationally. A diverse array of wildlife is found in the area, including big and small game (black bear, whitetail deer, groundhogs, and squirrels), fur-bearing species (muskrat, mink), other small and large mammals, songbirds and raptors, and amphibians and reptiles. Forest-floor litter, such as decayed logs, flat rocks, fallen limbs, and leaf material, is an important habitat component, providing foraging cover and daytime refuge for many species. The use of agricultural land by wildlife is largely dependent on the crop, season, and agricultural practices. Crops such as ear corn, soybeans, and sunflowers provide cover and food for a number of birds and small mammals. After harvest, residual waste materials attract many migrating and wintering waterfowl species.

3.3.3.4 Rare, Threatened, and Endangered Species

Coordination with state and federal agencies concerning rare, threatened, or endangered (RTE) species revealed a number of records of known occurrences of RTE species within the region. The USFWS noted that the federally-listed endangered Indiana bat (*Myotis sodalis*) and Virginia big-eared bat (*Corynorhinus townsendii virginianus*) may be present throughout the region. The federally-protected bald eagle (*Haliaeetus leucocephalus*) may also be present. Additionally, the USFWS noted that federally-listed endangered species found in the study area include the shale barrens rock cress (*Arabis serotina*) and sensitive mussel fauna. Both the MDNR and WVDNR noted that several RTE animal and plant species may be present in the project area. Those findings are germane to specific corridors and are discussed in detail in Chapter 4.0 of this EIS.

3.3.4 Farmlands

The study area is overwhelmingly rural and agriculture is a central feature of the landscape, character, and, to a lesser extent, the economy. Due to the topographic and soil constraints of the area, agricultural land is largely situated in clusters concentrated in the major stream valleys of the study area (e.g., Patterson Creek Valley, New Creek Valley, Mill Creek, and the North Branch Potomac River).

A large portion of the study area falls within Allegany and Mineral counties. Beef cattle farming is the leading type of agricultural operation in these two counties (42 percent of the farms in Allegany County and 41 percent of the farms in Mineral County) followed by crop farming (26 percent of farms in both counties). Dairy farming is nearly nonexistent in the two counties (1.7 percent of all farms) and poultry farming is more prevalent in Mineral County (6.2 percent of all farms in Mineral County). There are more farms located in Mineral County than Allegany County and the average farm size in Mineral County (174 acres) is greater than in Allegany County (142 acres). Of all the study area counties, Mineral County has the highest percentage of total area in agricultural use (35 percent). As would be expected for a predominately beef farming area, the major crops of the counties are corn and hay.

Of the other counties within the study area, Grant and Hampshire counties are comparable to Mineral and Allegany counties in terms of their agricultural characteristics. Grant County has the highest percentage of beef cattle farms (54 percent of all farms) of the study area counties. Hardy County is unique as compared to the other counties in terms of the distribution of various types of agricultural operations. Hardy County has a much greater percentage of farms in poultry and egg production than any of the other four counties. Hardy County accounts for 30 percent of the entire State of West Virginia's poultry production, selling 41.6 million broilers and other meat-type chickens in 2002.

Agriculture remains an important part of the local environment and economy. Farm income accounts for about 2 percent of the region's total, as compared to less than 1 percent nationally. Together with a few other counties, the region accounts for about 52 percent of the sales of agricultural products in West Virginia. As evidenced by the many poultry farms and processing plants found in the southern reaches of the study area, it is an important part of the local economy for its role in the food distribution industry.

3.3.5 Soils

Soils in general form over a period of time as a result of climate and living organisms acting upon the parent material. In portions of the study area (Hampshire and Mineral counties), soils were formed in materials weathered from sedimentary rocks. Some of the soils were weathered in place (~79 percent – residual/upland soils) while others were transported by water (~9 percent – alluvial/terrace and floodplain soils) and gravity (~12 percent – colluvial soils). Soil associations in the study area include: Dekalb-Laidig-Opequo, Potomac-Tioga-Melvin, Berks-Lehew-Dekalb, Monongahela-Clarksburg-Ernest, Shouns-Belmont-Calvin High Base Substratum, Gilpin-Wharton-Ernest, Dekalb-Lehew-Calvin, Berks-Weikert, Elliber-Dekalb-Opequon, Pope-Monongahela-Tygart, Gilpin-Dekalb-Cookport, Stone land-Dekalb, Weikert-Calvin-Lehew, and Weikert-Gilpin associations (USDA 1977, 1978, and 1989). The stream drainage patterns in the study area are both dendritic (treelike) and trellis patterns.

Tables 3.3-1 and 3.3-2 describe each of the soil associations found in the area.

TABLE 3.3-1
Soil Associations in the Study Area (Maryland)

Soil Associations	Description
Allegheny	The Allegheny series consists of very deep, well-drained, moderately permeable soils formed in alluvium on stream terraces, foot slopes, and alluvial fans. Slopes range from 0 to 25 percent.
Atkins	The Atkins series consists of very deep, poorly drained soils formed in acid alluvium washed from upland soils that formed in shale and sandstone. Permeability is slow to moderate. Slope ranges from 0 to 3 percent.
Berks	The Berks series consists of moderately deep, well drained soils formed in residuum weathered from shale, siltstone, and fine grained sandstone on rounded and dissected uplands. Slope ranges from 0 to 80 percent. Permeability is moderate or moderately rapid.
Buchanan	Soils of the Buchanan series are very deep, somewhat poorly and moderately well drained, and slowly permeable. They formed in colluvium on mountain footslopes, sideslopes and in valleys that are derived from acid sandstone, quartzite, siltstone, and shale. Slope ranges from 0 to 45 percent.
Cookport	The Cookport series consists of deep and very deep, moderately well drained soils formed in residuum weathered primarily from sandstone, but includes some materials from shale and siltstone. Permeability is moderate above the fragipan and slow in the fragipan. Slope ranges from 0 to 25 percent.
Dekalb	The Dekalb series consists of moderately deep, excessively drained soils formed in material weathered from gray and brown acid sandstone in places interbedded with shale and graywacke. Slope ranges from 0 to 80 percent. Permeability is rapid.

TABLE 3.3-1 (continued)
Soil Associations in the Study Area (Maryland)

Soil Associations	Description
Elliber	The Elliber series consists of very deep, well drained soils formed in residuum weathered from calcareous shale, siliceous siltstone, silty chert, and cherty limestone. Slopes range from 3 to 50 percent. Permeability is moderate or moderately rapid.
Frankstown	The Frankstown series consists of deep and very deep, well drained soils formed in residual materials derived from siliceous limestone and interbedded limy shale and siltstone on uplands. Permeability is moderate. Slope ranges from 2 to 35 percent.
Gilpin	The Gilpin series consists of moderately deep, well drained soils formed in residuum of nearly horizontal interbedded shale, siltstone, and some sandstone of the Allegheny Plateau. They are on gently sloping to steep, convex, dissected uplands. Slope ranges from 0 to 70 percent. Permeability is moderate.
Laidig	The Laidig series consists of very deep, well drained soils formed in colluvium from sandstone, siltstone, and some shale. They are gently sloping to very steep soils on benches and foot slopes. Permeability is moderate or moderately rapid above the fragipan and moderately slow or slow in the fragipan. Slope ranges from 0 to 55 percent.
Lehew	The Lehew series consists of moderately deep, well drained to excessively drained soils formed in material weathered from reddish sandstone, siltstone, and shale. They are nearly level to very steep soils on uplands. Slopes range from 0 to 80 percent. Permeability is moderately rapid to rapid.
Opequon	The Opequon series consists of well drained soils on limestone uplands. Slopes range from 0 to 100 percent.
Philo	The Philo series consists of very deep, moderately well drained soils on floodplains. They formed in recent alluvium derived mainly from sandstone and shale. Permeability is moderate to moderately rapid. Slope ranges from 0 to 6 percent.
Pope	The Pope series consists of very deep, well drained soils formed in alluvium on floodplains. Permeability is moderate or moderately rapid. Slopes range from 0 to 4 percent.
Weikert	The Weikert series consist of shallow, well drained soils formed in material that weathered from interbedded gray and brown acid shale, siltstone, and fine-grained sandstone on gently sloping to very steep areas on uplands. Slope ranges from 0 to 100 percent. Permeability is moderately rapid.

Sources: USDA 1977, 1978, and 1989

TABLE 3.3-2
Soil Associations in the Study Area (West Virginia)

Soil Associations	Description
Allegheny	The Allegheny series consists of very deep, well-drained, moderately permeable soils formed in alluvium on stream terraces, foot slopes, and alluvial fans. Slopes range from 0 to 25 percent.
Atkins	The Atkins series consists of very deep, poorly drained soils formed in acid alluvium washed from upland soils that formed in shale and sandstone. Permeability is slow to moderate. Slope ranges from 0 to 3 percent.
Berks	The Berks series consists of moderately deep, well drained soils formed in residuum weathered from shale, siltstone, and fine grained sandstone on rounded and dissected uplands. Slope ranges from 0 to 80 percent. Permeability is moderate or moderately rapid.

TABLE 3.3-2 (continued)
Soil Associations in the Study Area (West Virginia)

Soil Associations	Description
Clarksburg	The Clarksburg series consists of very deep, moderately well drained soils formed in colluvium, glacial till, or residuum from limestone, calcareous and noncalcareous shale, and sandstone. They are on uplands. Slope ranges from 0 to 25 percent. Saturated hydraulic conductivity is moderately low to moderately high.
Dekalb	The Dekalb series consists of moderately deep, excessively drained soils formed in material weathered from gray and brown acid sandstone in places interbedded with shale and graywacke. Slope ranges from 0 to 80 percent. Permeability is rapid.
Ernest	The Ernest series consists of very deep, moderately well drained soils with moderately slow to slow permeability. These soils formed in colluvium from shale, siltstone, and sandstone. They are on foot slopes and colluvial fans. Slopes ranges from 0 to 50 percent.
Hazelton	No description
Laidig	The Laidig series consists of very deep, well drained soils formed in colluvium from sandstone, siltstone, and some shale. They are gently sloping to very steep soils on benches and foot slopes. Permeability is moderate or moderately rapid above the fragipan and moderately slow or slow in the fragipan. Slope ranges from 0 to 55 percent.
Lehew	The Lehew series consists of moderately deep, well drained to excessively drained soils formed in material weathered from reddish sandstone, siltstone, and shale. They are nearly level to very steep soils on uplands. Slopes range from 0 to 80 percent. Permeability is moderately rapid to rapid.
Monongahela	The Monongahela series consists of very deep, moderately well drained soils formed in old alluvium derived largely from acid sandstone and shale on terraces. Permeability in the fragipan is moderately slow or slow. Slope ranges from 0 to 25 percent.
Murrill	The Murrill series consists of very deep, well drained soils formed in colluvial materials derived from acid sandstones and shales and the underlying limestone residuum, on lower backslopes, footslopes, fans, and benches. Saturated hydraulic conductivity is moderately high to high in the colluvial material and in the residual material. Slopes range from 0 to 55 percent.
Opequon	The Opequon series consists of well drained soils on limestone uplands. Slopes range from 0 to 100 percent
Philo	The Philo series consists of very deep, moderately well drained soils on floodplains. They formed in recent alluvium derived mainly from sandstone and shale. Permeability is moderate to moderately rapid. Slope ranges from 0 to 6 percent.
Pope	The Pope series consists of very deep, well drained soils formed in alluvium on floodplains. Permeability is moderate or moderately rapid. Slopes range from 0 to 4 percent.
Potomac	The Potomac series consists of very deep, somewhat excessively drained soils formed in coarse-textured alluvial material on floodplains. Slopes range from 0 to 8 percent.
Tioga	The Tioga series consists of very deep, well drained soils formed in alluvium on higher positions in floodplains. Permeability is moderate or moderately rapid in the solum and moderate to rapid in the underlying material. Slope ranges from 0 to 3 percent.

TABLE 3.3-2 (continued)
Soil Associations in the Study Area (West Virginia)

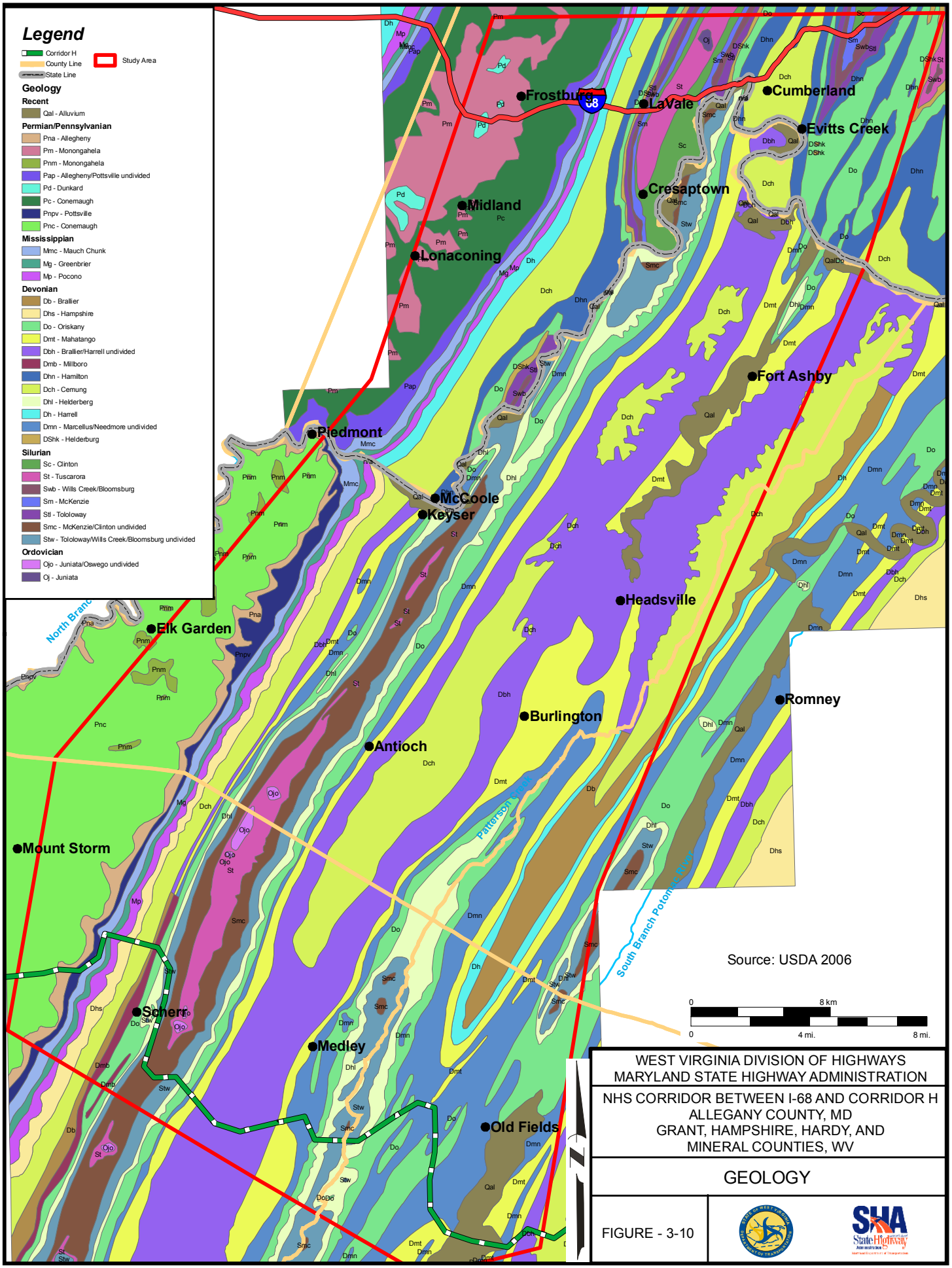
Soil Associations	Description
Tygart	The Tygart series consists of very deep, somewhat poorly drained soils formed in slackwater alluvium washed from soils on uplands. These soils are found on stream terraces in the central Appalachian Highlands. Permeability is slow. Slope ranges from 0 to 8 percent.
Weikert	The Weikert series consist of shallow, well drained soils formed in material that weathered from interbedded gray and brown acid shale, siltstone, and fine-grained sandstone on gently sloping to very steep areas on uplands. Slope ranges from 0 to 100 percent. Permeability is moderately rapid.

Sources: USDA 1977, 1978, and 1989

3.3.6 Geology

The ridges that form the western portion of the study area are the easternmost extent of the Allegheny Mountain section of the Appalachian Plateau physiographic province. The abrupt east-facing escarpment known as the Allegheny Front forms the western limit of the Valley and Ridge physiographic province. The lands west of the Allegheny Front are slightly to moderately deformed sedimentary rocks of Pennsylvanian and Mississippian age, 300 to 345 million years before present (MYBP). The Appalachian High Plateau Province is characterized by rolling, hilly terrain that forms a broad upland area with surface elevations between 2,000 and 3,000 feet above mean sea level. The plateau is dissected by streams and rivers in a mature stage of erosion, with the majority of the land surface occurring as valley slope. The strata of the Appalachian Plateau consist of cyclical sequences of limestone, silt- and clay-stone, shale, sandstone, and coal. The coal units within the study area are of minor economic significance and are exploited only locally, and at the extreme western limits of the study area, within the Pennsylvanian Allegheny Group. The geology of the area is shown on Figure 3-10.

The lands east of the Allegheny Front are within the Valley and Ridge physiographic province. The Valley and Ridge is characterized by highly deformed sedimentary strata folded and faulted into parallel north-northeast trending ridges and valleys. The rock strata within the study area limits are Mississippian to upper Silurian age (345 to 423 MYBP) that are exposed in a series of anticlines and synclines. The temperate climate resulted in the erosion of the less resistant shale and limestone formations into elongated valleys, with surface elevations between 900 and 1,400 feet above mean sea level. The more highly resistant sandstone and quartzite units stand up as ridges. The ridge top elevations occur at generally concordant heights, with



WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION

NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV

GEOLOGY

FIGURE - 3-10

elevations exceeding 3,000 feet mean sea level and local surface grades of over 28 percent. Surface drainage is highly controlled by the underlying geology, resulting in a high degree of stream linearity oriented parallel to the overall structure, with minor tributaries formed perpendicular to the structure conveying runoff down the slopes of the ridges. Precedent rivers, such as the Potomac, cut across the geologic structure. The ridges tend to be heavily forested due to their steep grades, rugged topography, and rocky slopes. The Silurian-aged Tuscarora Quartzite and the Mississippian-aged Pocono Sandstone are the principal ridge-formers in the area.

3.4 Potentially Contaminated Sites

Numerous sites with recognized environmental conditions (RECs) are located throughout the landscape, including operating and abandoned gasoline stations, industrial sites, utilities, landfills, and other waste areas. The MDE, WVDEP, and USEPA regulate these types of properties. During future Tier Two studies additional coordination will be conducted with the MDE, WVDEP, USEPA, and municipal officials to determine potential additional sites with recognized environmental conditions. Table 3.4-1 provides information on the sites.

TABLE 3.4-1
Potentially Contaminated Sites in the Area

Site Name	Street Address	County	Environmental Concerns
Wilson Oil Company West of Creek (Exxon Fuels)	Ali Ghan Rd	Allegany	Petroleum fuels stored in above ground storage tanks (ASTs), and underground storage tanks (USTs) (diesel, fuel oil, kerosene)
Wilson Oil Company East of Creek (Exxon Fuels)	Ali Ghan Rd	Allegany	Petroleum fuels stored in ASTs and USTs (diesel, fuel oil, kerosene)
CHP Truck Parts	12800 Nave's Cross Rd	Allegany	Truck parts sales and service
Trucking Co. Inc.	Eastman Rd.	Allegany	Truck service center, two unknown ASTs (1,500 and 3,000-gal), scrap metal storage, old tires, and scrap truck parts
Allegheny Power Sub-Station	Messick Rd	Allegany	Electric power substation, possible PCB transformer
Salvage Yard	Limestone Rd	Allegany	Salvage yard (vehicles, scrap metals, appliances, trailers)

TABLE 3.4-1 (continued)
Potentially Contaminated Sites in the Area

Site Name	Street Address	County	Environmental Concerns
Leonard's Transmissions	Ft. Cumberland Drive	Allegany	Automotive repair shop
Former Gasoline Station	14003 UHL Hwy	Allegany	Automotive repair shop/former gasoline station (concrete former pump island visible)
Standard Equipment Co.	14901 UHL Hwy	Allegany	Heavy equipment sales and service
Potomac Metal and Supply Inc.	Siebert Rd	Allegany	Design and custom metal fabrication
Industrial Site (FEMA distribution Center)	Plant Rd	Allegany	Former PPG facility
Patterson Creek VFC	28/3	Mineral	One 550-gal diesel AST and one 550-gal gasoline AST
Poland's Furniture and Carpet	RT 28	Mineral	Trailer storage, 20 tires, 1000-gal diesel AST, unknown UST adjacent to building
FNB Bank	RT 28	Mineral	Six MWs onsite, possible former gasoline station
Former Gasoline Station/Garage	RT 28	Mineral	Former gasoline station (former pump island present)
Citgo Seven Eleven Gasoline Station	RT 28	Mineral	Gasoline station with two unleaded gasoline USTs
Citgo Gasoline Station	RT 28	Mineral	Gasoline station with one unleaded UST and one diesel UST, three MWs on the property
Fort Ashby VFC	RT 28	Mineral	1,000-gal AST
Evans Sales and Service	RT 28	Mineral	Automobile service station
Allegheny Power Maintenance Facility	RT46	Mineral	1,500 gallon unknown AST for fueling, two unknown drums
Former Gasoline Station/Automobile Repair Shop	Paterson Creek Rd	Mineral	Potential former gasoline station/automotive repair facility
WVDOH Facility No. 5	RT 50	Mineral	Gasoline and diesel UST, ASTs, drums, maintenance facility

TABLE 3.4-1 (continued)
Potentially Contaminated Sites in the Area

Site Name	Street Address	County	Environmental Concerns
Pearl's Towing Service	RT 50	Mineral	Drums, six garage bays, junked automobiles, automotive repair shop
Bright Cycle	RT 50	Mineral	Cycle, ATV sales and service/former automotive repair shop; batteries stored outside
Former Gasoline Station	RT 50	Mineral	Former gasoline station (former pump island present)
Burlington Elementary School	Paterson Creek Rd	Mineral	3,000-gal diesel AST
Mulch/Topsoil Yard	129E Paterson Creek Rd	Mineral	mulch/top soil yard with maintenance building, USTs for fueling, scrap tires, trailers, very large property
Salvage Yard	Russeldale Rd	Mineral	Junked automobiles, appliances, scrap metal
Truck Repair Facility	RT 220	Mineral	One 550-gal diesel AST and one 550-gal gasoline AST, six unknown drums
Salvage Yard	RT 220 and Mtn. View Rd	Hardy	Junked vehicles, trailers, scrap metals
Former gasoline station	RT 220	Hardy	Potential former gasoline station (concrete filling area present in front of building)
D & C Towing and Recovery	RT 220	Hardy	Automotive repair shop, drum storage adjacent to trailer w/unknown contents
Old Fields Grocery Outfitters Gasoline Station	RT 220	Hardy	Gasoline station (unleaded and diesel USTs) (two 1,500-gal unleaded diesel fuel and diesel fuel ASTs)
JMJ Garage	RT 220	Hardy	Various types of mechanical work, six trailers of unknown contents, eight ASTs (500 to 1,500-gal) of unknown contents
Wal-Mart Fuel Center	RT 220	Hardy	Gasoline station with unleaded USTS
AAA Equipment Rental and Sales	RT 220	Hardy	Two 550-gal ASTs (gasoline and diesel)
Markwood Auto Sales	RT 220	Hardy	Automobile sales and service
Knobley Farm Convenience Store	RT 50	Mineral	Former gasoline station (former pump island present)

TABLE 3.4-1 (continued)
Potentially Contaminated Sites in the Area

Site Name	Street Address	County	Environmental Concerns
John Nesslerodt Trucking	Hersey Hollow Rd	Mineral	Truck and automobile repair shop
Sisler Lumber	RT 50	Mineral	Lumber company, 3,000-gal diesel AST, six unknown drums
Petroleum Storage Area	RT 50/220	Mineral	Twelve ASTs (10,000 to 30,000-gal), pump islands, three USTs
Wal-Mart Fuel Center	RT50/220	Mineral	Gasoline station with unleaded USTS
Fountain Primary School	Knobley Rd and Fountain Rd	Mineral	1500-gal diesel UST
Whetzell Automotive	Knobley Rd	Mineral	Automotive repair shop, drums and scrap metal, junked automobile parts
Hilltop Sports Shop	RT 46	Mineral	Former gasoline station (former pump island present)
Amtowers Hilltop Automotive	RT 46	Mineral	Automotive repair shop
J & J Truck Service Center	RT 46	Mineral	Truck service center with six trailers with unknown contents, junk parts, 30+ tires, five monitoring wells
D J Spencer Sales and Truck Service	RT 46	Mineral	Truck sales and service center
Buster's Autobody Shop	RT 46	Mineral	Automotive repair shop with two used oil drums
East Coast Custom Cycles	Knobley Road	Mineral	Automobile and cycle repair shop, trailer with unknown contents, junk parts, several drums of unknown content
Ridgely Dist.	Inland and Dixie Lee Drive	Mineral	Commercial/industrial property, six bay garage building with pallets stacked outside
WVDOH Maintenance Facility/Short Gap	RT 28	Mineral	Maintenance yard, diesel and unleaded gasoline USTs
Former Matt's Motors	RT 28	Mineral	Former automotive repair shop and possible former gasoline station
Former Family Pantry and Lou's Pub	RT 28	Mineral	Former gasoline station (former pump island present)

TABLE 3.4-1 (continued)
Potentially Contaminated Sites in the Area

Site Name	Street Address	County	Environmental Concerns
Ace's Used Auto Sales and Service	RT 28	Mineral	Used automobile sales and service
Love's Country Store	RT 28	Mineral	Potential former gasoline station
Mountaineer Mart Gas Station	RT 28	Mineral	Gasoline station with unleaded and diesel USTs
Peers Automotive (salvage yard)	RT 28	Mineral	Automobile service station and salvage yard
Bradshaw's Auto Repair Shop	RT 28	Mineral	Automotive repair shop, former gasoline station (pump island present)
Turnaround Auto Sales	RT 28	Mineral	Former gasoline station (former pump island present) (former Texaco)
Judy's Radiator Repair	RT 28	Mineral	Automotive repair shop
Wertz Auto Repair	RT 28	Mineral	Automotive repair shop
Lambert's Auto Repair Shop	RT 28	Mineral	Automotive repair shop
Carp's Auto Repair	Rt. 28	Mineral	Automotive repair shop
Former Automobile Repair	Beirman Dr.	Allegany	Former automotive repair shop
Davis Automotive	14115 Rowley St	Allegany	Automobile repair shop, junked cars and parts
Howell Trucking and Knight Sanitation	Canal St.	Allegany	Trucking company, truck repairs, truck fueling at two 2,000-gal AST with diesel, several unknown drums
Pitt Ohio Express Inc.	--	Allegany	Several USTs for fueling trucks
Fibered Inc.	--	Allegany	Industrial property
Bayliner, Inc.	--	Allegany	Industrial boat making, fiberglass, engine building

TABLE 3.4-1 (continued)
Potentially Contaminated Sites in the Area

Site Name	Street Address	County	Environmental Concerns
Brunswick Family Boat Company	--	Allegany	Industrial boat making, fiberglass, engine building
Hunter Douglas Fabrication	--	Allegany	Industrial, fabrication company
Superfos	--	Allegany	Industrial facility
Schroeder Industries	--	Allegany	Industrial facility, six flammable drums, dumpster with scrap metal
AES Warrior Run	11600 Mexico Farms Road	Allegany	Industrial facility (power generation)
S. Schwab Co. Distribution Center	11700 Mexico Farms Rd	Allegany	Industrial distribution center
Valley Medical Transport	11700 Mexico Farms Rd	Allegany	Former Kelly-Springfield Tire Company
Hawk Brothers Logging	--	Grant	Two 3000-gal diesel USTs
Former gasoline station	RT 50	Mineral	Potential former gasoline station (old Esso sign on building)
Former gasoline station	RT 50	Mineral	Former gasoline station (old pump island present)
WVDOH Mineral County Headquarters	RT 50	Mineral	Two USTs (diesel and unleaded gas), unknown AST, vehicle maintenance
Junkin's Auto Shop	RT 50	Mineral	Automobile repair shop/former gasoline station

3.5 Air Quality

Attainment status of the study area with respect to the National Ambient Air Quality Standards (NAAQS) and parallel state ambient standards as of September 2006 is as follows:

- The USEPA designated Allegany, Grant, Hardy, Hampshire, and Mineral counties as Unclassified/Attainment for 8-hour ozone (O_3) NAAQS (69 CFR, April 30, 2004).

- The USEPA designated Allegany, Grant, Hardy, Hampshire, and Mineral counties as Unclassified/Attainment for fine particulate matter ($PM_{2.5}$) NAAQS (70 CFR, January 5, 2005).

3.6 Noise

Numerous sensitive noise receptors exist throughout the area. Some land on which serenity and quiet are of extraordinary significance and serve an important public need is found within the area. The preservation of those qualities is essential if the area is to continue to serve its intended purpose. Specific noise receptors within the area include picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, hospitals, public meeting rooms, and auditoriums.

CHAPTER 4.0

ENVIRONMENTAL CONSEQUENCES

4.0 ENVIRONMENTAL CONSEQUENCES

The information provided in Chapter 3.0, *Affected Environment,* describes the affected socioeconomic, cultural, and natural environment of the study area at a regional level. This chapter builds on that information and provides more detail on the resources found within each of the corridors that were carried forward. Thus, the information in this chapter provides the analytical basis for a comparison of the alternatives carried into detailed study at a Tier One level. Those alternatives are the No-Build Alternative and three build alternatives. The No-Build Alternative is carried into detailed study as a baseline for establishing the environmental consequences of the build alternatives. Through the screening process discussed in Chapter 2.0, *Alternatives Development*, the build alternatives were narrowed from five to three. The build alternatives carried into detailed study are Corridors B, C, and D.

Once corridors were developed for this study, the predominant, social, cultural, and natural resources were identified within each corridor based on a best-fit alignment and a buffer of 2,000 feet to each side of the centerline. The corridor was also analyzed for how well a transportation project would support Smart Growth and priority funding initiatives. This allowed for a “worst-case” identification of possible impacts with each proposed corridor. Although the entire corridor was used for the analysis, an actual build alternative would have a much smaller footprint and therefore less potential for impacts. Information used for screening the original five transportation corridors was refined and supplemented where possible to conduct additional analyses on the three corridors advanced to this stage. As the project advances to Tier Two, actual alternatives will be developed within one or more of the corridors and more detailed studies will occur. When those actual alternatives are developed in Tier Two as the project progresses, they will be analyzed to determine the level of potential impact and gauge how well Smart Growth will be supported. Future and possible mitigation efforts are presented here for the most critical resources, but other options for avoidance, minimization, and mitigation will also be developed during Tier Two. With the development of actual highway alignments or other types of transportation improvements in Tier Two, the appropriate resource agencies, local planners, and citizens of the area will assist in determining the appropriate avoidance, minimization, and mitigation strategies for each proposed alternative. Avoidance and minimization efforts can take many forms, but they may include compressed medians, reduced safety grading widths, bridging of resources, and other similar design features.

4.1 Socioeconomics and Land Use

4.1.1 Socioeconomics

The socioeconomic environment was identified through a coordinated effort between local planning officials and team members. Socioeconomic data were collected from a variety of sources and analyzed to determine the potential impact of the project on man's built environment. Information analyzed included settlement patterns, census data, aerial photography, county comprehensive plans, capital improvements programs, and other locally developed regional and study area plans.

4.1.1.1 Regional and Local Economy

4.1.1.1.1 Methodology

Information on the regional and local economy was collected from a variety of sources, including windshield surveys, Dun & Bradstreet, West Virginia University Research Corporation, county comprehensive plans, state and local agencies, and respectable local government and agency websites. GIS data and a gravity model of the economy's trade centers were utilized to analyze economic activity throughout the project region. For the specific model used, the size of individual trade centers were proportional to the size of the other trade centers based on the number of jobs there and the distance between trade centers (Kulkarni 1976).

The gravity model was used to identify the relative size of adjacent trade centers potentially impacted by each corridor. By comparing the number of jobs in each trade center and the distance between the trade centers, it was possible to determine the relative economic influence each corridor would have on local employment. The limits of each trade center were determined by dividing the distance between two centers by a ratio based on the number of jobs in each center. The trade centers analyzed in this section of the DEIS are consistent with growth-related infrastructure found in the study area. Specifically, in Allegany County, the trade centers are consistent with Maryland's *Priority Funding Areas*. The boundaries for the PFAs are shown in Figure 1-7.

4.1.1.1.2 Effects Analysis – Regional and Local Economy

No-Build Alternative

The No-Build Alternative would have a direct impact on the regional and local economy as it currently exists. Existing transportation patterns would continue to influence the economy, but because of continuing congestion problems and roadway deficiencies may not encourage increased job development and business growth in the area.

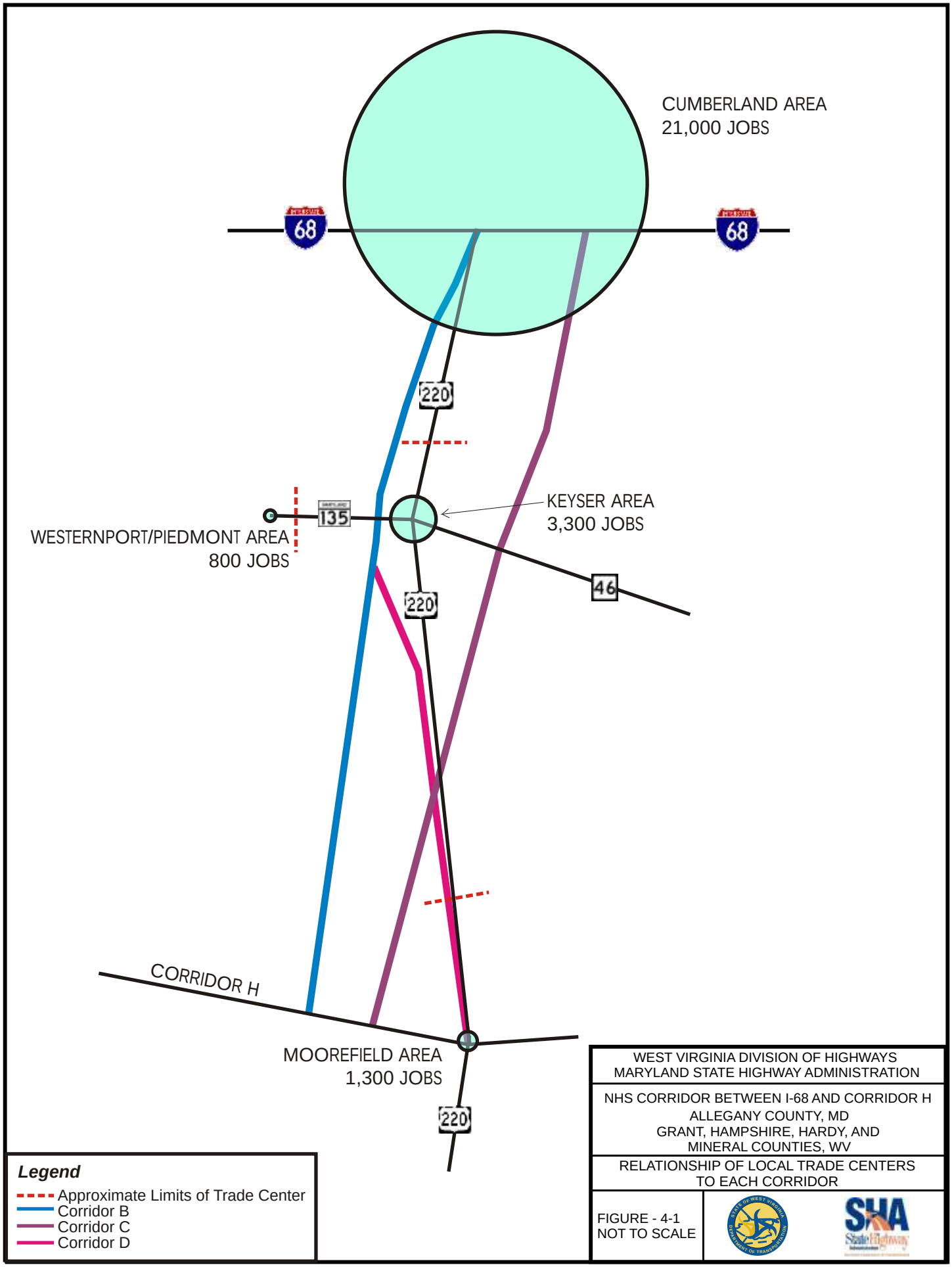
Build Alternatives

Construction of a new highway within any of the corridors would have a positive effect on the regional and local economy. Access to existing jobs would be improved and offer opportunities for job growth.

The relationship of the trade centers to one another and the three corridors is shown in Figure 4-1. Based on the economic gravity model, utilizing the number of existing jobs in each trade center as the basis for calculating the relative size of each trade center, the Cumberland trade center extends about 14 miles along US 220 toward Keyser. The Keyser trade center extends about 20 miles toward Moorefield along US 220 and about five miles toward Westernport/Piedmont. Although there is always a wide variation in the travel habits of people, the trade center boundaries approximate the distance most people travel on a regular basis for employment and to purchase goods and services within the study area.

Construction of the proposed project would result in short-term economic benefits in the study area through the creation of a large number of construction jobs. A portion of these wages would be spent on goods and services provided by local businesses. Other local businesses may also provide construction-related services such as surveying and drilling, as well as materials such as gravel, concrete, and steel.

Detours and road closures during construction would create temporary inconveniences for residents, business owners, and the traveling public. Maintenance and protection of traffic plans would be developed during final design to mitigate access impacts and minimize delays throughout the project. These plans would include appropriate signs, pavement markings, and


CUMBERLAND AREA
21,000 JOBS
68
68
220
KEYSER AREA
3,300 JOBS
135
WESTERNPORT/PIEDMONT AREA
800 JOBS
46
220
CORRIDOR H
MOOREFIELD AREA
1,300 JOBS
220
Legend
Approximate Limits of Trade Center
Corridor B
Corridor C
Corridor D
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
RELATIONSHIP OF LOCAL TRADE CENTERS
TO EACH CORRIDOR
FIGURE - 4-1
NOT TO SCALE

media announcements. Access to all businesses and residences would be maintained through construction scheduling.

Emergency service providers and school transportation may be impacted by temporary road closures and reduced speeds in work zones required during construction. Temporary road closures or detours may impact access within localized areas as a result of construction activities.

Corridor B

Corridor B would provide additional transportation service to three of four trade centers. All but the Moorefield trade center would be serviced by Corridor B. Approximately 25,100 jobs are located within the three trade centers: 21,000 in Cumberland, 3,300 in Keyser, and 800 in Westernport/Piedmont.

Corridor C

Corridor C would provide additional transportation service to two of four trade centers, Cumberland and Keyser. Approximately 24,300 jobs are located within the two trade centers: 21,000 in Cumberland and 3,300 in Keyser. If a four-lane highway facility were built within Corridor C, it would also serve the Moorefield area via a connection with Corridor H. If both facilities were open, Corridor C would provide relatively easy access to another 1,300 jobs in Moorefield. It would also provide better access to and from jobs in Hampshire County than Corridor B and the same access to Hampshire County as Corridor D.

Corridor D

Corridor D would provide additional transportation service to all four trade centers, and, consequently, offers the best opportunities for economic development of all three corridors. Approximately 26,400 jobs are located within the four trade centers: 21,000 in Cumberland, 3,300 in Keyser, 800 in Westernport/Piedmont, and 1,300 in Moorefield. Like Corridor C, it would also provide improved access to and from jobs in Hampshire County.

4.1.1.2 Community Cohesion

A community is part of a larger region, having a special characteristic or group of characteristics that makes it different from the surrounding area. In its simplest form, it is a group of individuals having common ties and a common identity. Communities can have clear boundaries delineated by existing municipal or physical limits, or less distinct boundaries defined by socioeconomic factors, demographic characteristics, or social and psychological attitudes. For the transportation development process, a community is generally assumed to be a geographic area where local residents have made a commitment to both the physical environment where they live or work and the accompanying social system functioning within that environment.

Community cohesion is commonly defined as the interaction among individuals, groups, and institutions. Community cohesion manifests itself as the perception of belonging to a group or having a close bond to a particular area. This perception of a strong community bond is commonly referred to as a "sense of place," allowing cohesion to be expressed through the patterns of "daily social interaction, the use of local facilities, participation in local organizations, and involvement in activities that satisfy the population's economic and social needs" (FHWA 1996).

4.1.1.2.1 Methodology

To determine if the proposed project would impact community cohesion, several socioeconomic research activities were undertaken, including an analysis of the 1990 and 2000 U.S. Census reports, an analysis of potential residential and commercial displacements, windshield surveys, examination of maps and aerial photography for the study area, identification of community facilities, local planning officials interviews, comprehensive plans reviews, and public meeting information. All of this information was consolidated to identify potential disruptions to local communities, including residential and commercial displacements, the disruption of existing transportation patterns, and the creation of physical barriers. This consolidated information was analyzed to determine the impacts on community cohesion.

4.1.1.2.2 Effects Analysis – Community Cohesion

Although no direct measurement of community cohesion is possible, any impacts potentially caused by a transportation project could interfere with or diminish the social cohesion of the surrounding community, including accessibility of facilities and services. Impacts that cause the displacement of residents and businesses could also result in permanent disruption to community cohesion.

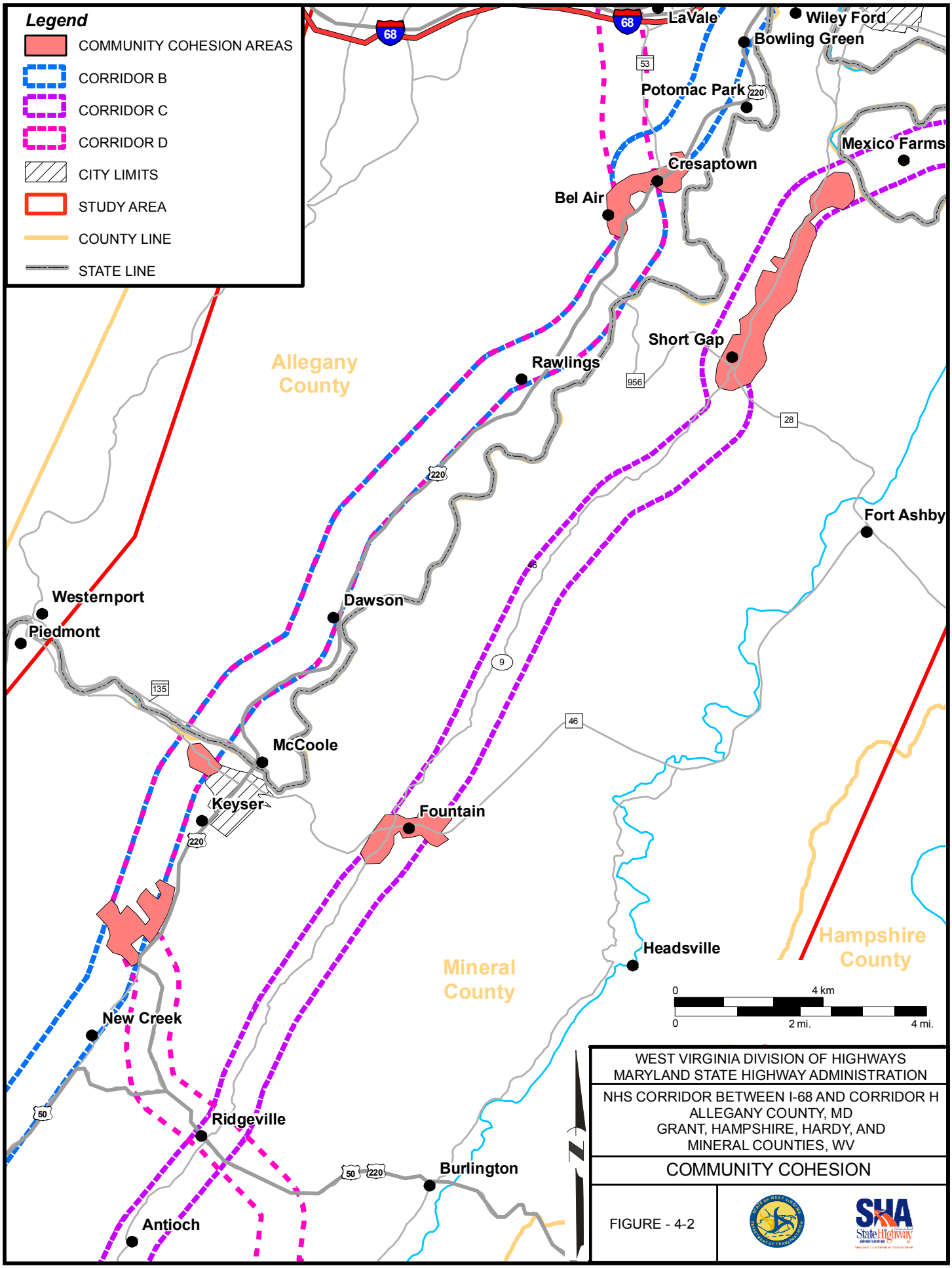
No-Build Alternative

The No-Build Alternative would not impact community cohesion. Local patterns of travel and human interaction would continue as they currently exist. However, future transportation projects would be needed to help alleviate the existing and future traffic congestion on the existing roads. These projects could impact community cohesion.

Build Alternatives

Impacts to community cohesion would likely occur around new interchanges and major side road connections if located too close to the residential areas. Although the interchanges would make the communities where they are located regional travel destinations, which could attract additional attention to the area and provide an enhanced sense of place for residents, they could also diminish the quality of life by introducing elevated ramps and lighting adjacent to residential areas. In rural areas, the transportation access provided by the project could strengthen community cohesion, however, by enhancing the connectivity of people and places. There is often a sense of isolation in rural areas caused by an inability to travel easily, a lack of public and community services, and the great distances between homes and services.

Depending on the eventual design of any transportation improvements, however, there could also be negative impacts to community cohesion. These are discussed individually as impacts within each corridor. The locations of areas where impacts to community cohesion could occur are shown in Figure 4-2.


Legend
COMMUNITY COHESION AREAS
CORRIDOR B
CORRIDOR C
CORRIDOR D
CITY LIMITS
STUDY AREA
COUNTY LINE
STATE LINE
LaVale
Wiley Ford
Bowling Green
Potomac Park
Mexico Farms
Cresaptown
Bel Air
Short Gap
Rawlings
Allegany County
Fort Ashby
Westernport
Piedmont
Dawson
McCoole
Keyser
Fountain
Headsville
Hampshire County
Mineral County
New Creek
Ridgeville
Burlington
Antioch
68
53
220
956
28
9
46
135
50
0
4 km
2 mi.
4 mi.
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
COMMUNITY COHESION
FIGURE - 4-2

Corridor B

Impacts to community cohesion could occur in three locations within Corridor B. The first would occur as the corridor traverses Cresaptown and Bel Air shortly after originating at I-68. Cresaptown and Bel Air are two densely developed communities with thriving businesses, strong residential neighborhoods, local schools, and many places of worship. Home ownership is high with approximately 94 percent of residences owner-occupied. Many of the residents have lived in the community most of their lives. Although both communities are unincorporated, their residents identify strongly with being from Cresaptown or Bel Air. Future highway alignments falling within Corridor B could cause major displacements in these two neighboring communities.

Similar impacts could occur in Keyser on the west end of town where Corridor B enters Mineral County. The west end is a tightly compact neighborhood of mixed use, but with a predominance of older, single-family homes. Although the percentage of owner-occupied homes is less in Keyser than further north in Cresaptown and Bel Air, about 70 percent, there is still a strong sense of community cohesion among its residents. Half the width of the corridor falls within the built-up sections of Keyser and future highway alignments could create residential or business displacements and sever the west end from other parts of the community.

Impacts to community cohesion could also occur just south of Keyser approximately from the Polish Pines Golf Club to the vicinity of Keyser High School. Primarily a residential community along Trenum Drive, this area is a mixture of newer single-family homes and manufactured housing. It is bounded by a growing strip commercial district to the east along US 220. If impacts to community cohesion occur here, they would likely be less than at the other two locations in Corridor B.

Corridor C

Impacts to community cohesion could occur in two locations within Corridor C. The first could occur in a linear fashion along WV 28 from Wiley Ford to Short Gap. Moderately dense suburban residential development has been occurring in this area over the past 40 years. Although the residential development has been mostly single-family homes, there are also

several small, low-rise, garden-type apartments and manufactured homes located within the area as well. Approximately 200-300 residences are found in this area. Besides being located directly on WV 28, they are also clustered in residential developments adjacent to the thoroughfare. Many businesses and places of worship are also scattered throughout the area giving it the feel of a longstanding suburban neighborhood. The Frankfort Middle School and High School are also located nearby on a large campus.

Impacts to community cohesion could also occur in the vicinity of Fountain, a small rural community located along WV 46 and County Route 9. Fountain is a hamlet of about 200 homes, an elementary school, a post office, and several businesses and places of worship. As a rural hamlet, there is a great sense of belonging to a unique group associated with living there.

Corridor D

Impacts to community cohesion could occur within Corridor D at the same three locations as Corridor B. Those locations are the Cresaptown - Bel Air area, the west end of Keyser, and south of Keyser between the Polish Pines Golf Club and Keyser High School. Since the orientation of Corridor D where it converges from its common alignment with Corridor B, impacts south of Keyser could be greater with Corridor D than Corridor B, however.

4.1.1.3 Displacements

Regardless of which corridor is recommended as the preferred transportation corridor, future construction would likely cause residential and commercial displacements. As a first step in identifying displacements that could occur later in the process, potential residential and commercial impacts were identified as part of the land cover analysis.

4.1.1.3.1 Methodology

Land cover in the study area was categorized according to the *Anderson Level II Classification System* (Anderson, *et al.* 1976), digitized (in GIS format), and mapped using aerial photography. Once the mapping was completed, field crews conducted a windshield survey for the entire

study area to verify actual land use. After field investigations were completed, all appropriate changes were made to the project mapping and land use was analyzed.

Since each of the corridors is over 35 miles long and 4,000 feet wide, an analysis of built-up land was judged as the most efficient method to identify the magnitude of potential displacements. Built-up land is characterized as being intensively developed with much of the land covered with buildings. Included in this land cover category are cities, towns, villages, highway strip development, and industrial and commercial complexes. Residential land development within built-up areas can range from high density, multiple-unit apartment buildings to single-family houses on one-acre lots. Commercial areas within built-up land primarily include business facilities selling products or services. Industrial uses within built-up land range from light to heavy manufacturing, mining facilities, and warehouse operations.

The land cover analysis was supplemented by a review of the area's countywide comprehensive plans, evaluation of data on business locations (Dun & Bradstreet, Inc. 2006), and a broad property analysis of each corridor. Included in the property analysis was a review of current real estate activity, average value of housing, and discussions with local realtors.

Although the entire corridor was used for the analysis, an actual build alternative would have a much smaller footprint and therefore less potential for displacements. During Tier Two, actual commercial and residential displacements of alternatives will be analyzed. Potential displacements will be mapped and presented to the public.

4.1.1.3.2 Effects Analysis – Displacements

No-Build Alternative

The No-Build Alternative would not result in any displacements to commercial or residential properties. In an effort to address growing congestion and other transportation problems in the area, however, future projects could require the loss of commercial and residential properties.

Build Alternatives

Corridor B would impact 4,060 acres of built-up land (residential, commercial, industrial, and mixed-use of a similar nature); Corridor C would impact 2,940 acres of built-up land; and Corridor D would impact 3,820 acres of built-up land. Of the three corridors advanced for further analysis, Corridor C would have the least impact to built-up land. Thus, future alternatives developed within this corridor would likely have fewer displacements.

4.1.1.3.3 Future Mitigation Efforts

Any property to be acquired after the Tier Two studies are completed will be purchased in accordance with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970*, as amended, *Title VI of the Civil Rights Act*, and the appropriate WVDOH or MDSHA real property acquisition procedures. Specifically, the following Title VI statement is offered:

> It is the policy of the WVDOH and MDSHA to ensure compliance with the provisions of Title VI of the Civil Rights Act of 1964 and related civil rights laws and regulations which prohibit discrimination on the grounds of race, color, sex, national origin, age, or physical or mental handicap in all of their program projects funded in whole or in part by the FHWA. The WVDOH and the MDSHA will not discriminate in highway planning, highway design, highway construction, right-of-way acquisitions, or the provision of relocation advisory assistance. This policy has been incorporated in all levels of the highway planning process to ensure that proper consideration may be given to the social, economic, and environmental effects of all highway projects. Alleged discriminatory actions should be addressed to the appropriate state Title VI Program Coordinators. In West Virginia the address is EEO Division, 1900 Kanawha Boulevard East, Building 5, Room 948A, Charleston, WV 25305; and in Maryland the address is Chief, Office of Equal Opportunity, 707 North Calvert Street, Baltimore, MD 21202.

As such, individuals and families displaced by the project will be offered the full extent of benefits and payments provided by these laws and regulations. Additionally, provisions will be made to assure that any person with a disability who is displaced is offered replacement housing that has been fitted to meet any special needs.

A review of real estate multi-lists for the project area indicated that the number of properties available in the vicinity of the proposed project is adequate. There are no known factors influencing market trends that would adversely affect the availability of replacement housing.

While it is likely that current listings would not be available at the time of acquisition for this project, there is a reasonable expectation that a sufficient number of units would continue to be available at the time property acquisitions occur. In the event that housing is insufficient for the needs of the persons displaced, *Housing of Last Resort* (FHWA 2001) will be used.

During most transportation projects, there is adequate replacement housing available. However, when a housing shortage does occur, the *Housing of Last Resort* provides several options to create a suitable replacement property, including:

- Purchasing an existing comparable residential property and making it available to the displaced person in exchange for the displacement property;
- The relocation and rehabilitation (if necessary) of a dwelling purchased from the project area by the Agency (i.e., WVDOH or MDSHA) and making it available to the displaced person in exchange for the displacement property;
- The purchase, rehabilitation, and/or construction of additions to an existing dwelling to make it comparable to a particular displacement property;
- The purchase of land for the construction of a new replacement dwelling comparable to a particular displacement property when comparables are not available;
- The purchase of an existing dwelling, removal of barriers, and/or rehabilitation of the structure to accommodate a handicapped displaced person when suitable comparable replacement dwellings are not available;
- A replacement housing payment in excess of the maximum payment limits; and
- A direct loan which will enable the displaced person to construct or contract for the construction of a decent, safe, and sanitary replacement dwelling (FHWA 2001).

Each business being displaced will be offered the relocation benefits provided by the *Uniform Relocation and Real Property Acquisition Policies Act*. There appears to be ample commercial land and buildings in the project area to accommodate the relocation of businesses. Assistance will be provided to the businesses to reestablish within the vicinity of the project area.

4.1.2 Land Use

Land use was evaluated to determine the potential effects on the socioeconomic landscape. The emphasis on the land use analysis was on the potential effects to more intensively developed land. As noted in the discussion on possible displacements, each of the corridors is

over 35 miles long and 4,000 feet wide. Therefore, an analysis of built-up land was judged as the most efficient method to identify the magnitude of potential impacts related to land use.

4.1.2.1 Methodology

Land use data were gathered from several different sources. Geographic Information System data were downloaded from state GIS clearinghouse and state agency websites. After the GIS data were collected, windshield surveys were performed throughout the study area to verify actual land use. Existing aerial maps were analyzed in order to research and understand the basic land utilization. Any necessary updates were adapted to the project mapping. All of this information was combined and used to identify potential impacts to existing land use, including the identification of acreages of each type of land use within the corridors.

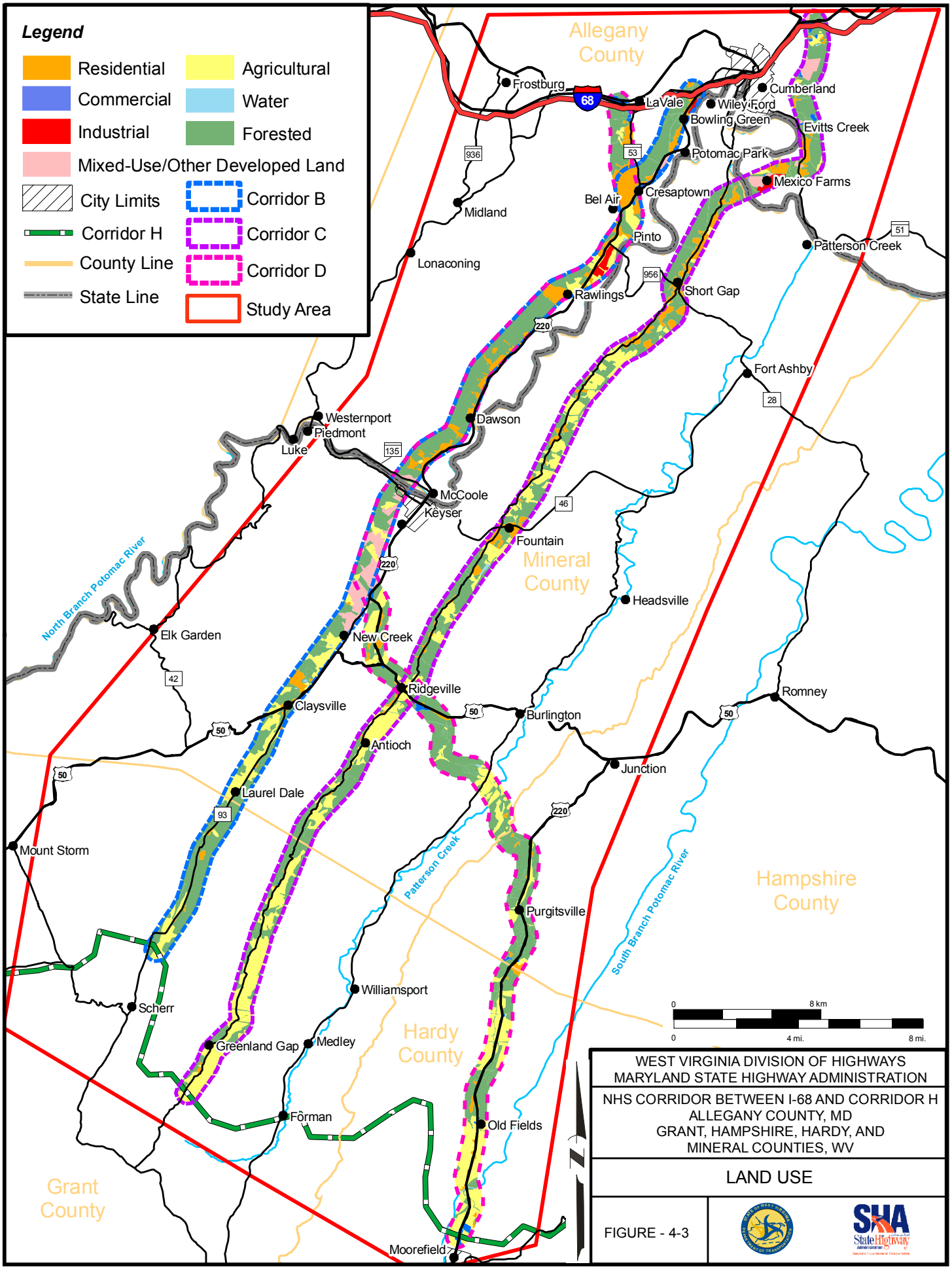
4.1.2.2 Effects Analysis – Land Use

No-Build Alternative

The No-Build Alternative would not have a direct impact on land use as it currently exists. Patterns of land utilization would continue to be influenced as they are. The No-Build Alternative would not encourage development in the areas of commercial, industrial, and residential land utilization. Commercial development would likely continue on a small scale within the clusters of Moorefield, Keyser, and Cumberland. Any future development that might affect land use would occur along existing transportation systems.

Build Alternatives

Land utilization could be affected negatively by the build alternatives through the conversion of farmland and forestland or by adjacent development. Positive impacts could occur, however, if commercial and industrial areas expand and spur economic development after better access to a transportation system is made possible. Commercial areas that are isolated could be made easier to access via a new transportation system. This would further encourage economic development through increasing the attractiveness of sites to developers by allowing for efficient access to certain areas. Land use within each corridor is shown on Figure 4-3.


Legend
Residential
Commercial
Industrial
Mixed-Use/Other Developed Land
City Limits
Corridor H
County Line
State Line
Agricultural
Water
Forested
Corridor B
Corridor C
Corridor D
Study Area
Allegany County
Mineral County
Hardy County
Grant County
Hampshire County
Frostburg
LaVale
Cumberland
Wiley Ford
Bowling Green
Evitts Creek
Potomac Park
Mexico Farms
Cresaptown
Bel Air
Midland
Pinto
Patterson Creek
Lonaconing
Rawlings
Short Gap
Fort Ashby
Westernport
Piedmont
Luke
Dawson
McCoole
Keyser
Fountain
Headsville
Elk Garden
New Creek
Ridgeville
Claysville
Burlington
Romney
Antioch
Junction
Laurel Dale
Mount Storm
Purgitsville
Williamsport
Scherr
Greenland Gap
Medley
Forman
Old Fields
Moorefield
North Branch Potomac River
Patterson Creek
South Branch Potomac River
68
936
53
51
956
220
28
135
46
50
42
93
0
8 km
4 mi.
8 mi.
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
LAND USE
FIGURE - 4-3
SHA
State Highway Administration

Corridor B

Corridor B encompasses approximately 2,590 acres of residential land use and traverses some of the most populated settlements in the study area. Most of the residential land use is occurring at the northern end of Corridor B between Rawlings and I-68 along US 220. More residential land use exists through the west side of Keyser and along WV 972 through New Creek. Throughout the remainder of Corridor B, residential land use is rural and scattered.

Corridor B encompasses approximately 1,300 acres of mixed use, built-up land. This would include institutional land use and mixed use residential and commercial. Much of this type of land use is occurring along US 220 from Keyser to New Creek. Another concentrated area of institutional land use is along US 220 from Cresaptown to I-68.

Corridor B encompasses approximately 170 acres of commercial and industrial land. This occurs primarily through Keyser and Cresaptown along US 220. Little to no commercial land use can be found south of Keyser within Corridor B and between McCoole and Bel Air. There are two industrial parks within Corridor B, both near Cresaptown.

Corridor B encompasses approximately 9,890 acres of forested land. This is the least amount of forested land in any of the three corridors but, as noted earlier, any proposed alternative has the potential to impact a considerable amount of forested land. Potential impacts to forested land occur primarily from Rawlings south to Keyser and in Grant County.

Corridor C

Corridor C encompasses approximately 2,400 acres of residential land use and traverses some of the lesser populated areas of the project region. Most of the residential land use in Corridor C is occurring through Fountain along WV 46 and from Short Gap along WV 28 northward through Mexico Farms and South Cumberland. Throughout the remainder of Corridor C, the residential land use is rural and scattered.

Corridor C encompasses approximately 90 acres of mixed use, built-up land. This would include institutional land use and mixed use residential and commercial. This type of land use is

isolated in Corridor C and is mostly constrained to the northern end between Mexico Farms and through the Willowbrook Road corridor to I-68.

Corridor C encompasses approximately 450 acres of commercial and industrial land use. Again, this occurs mostly at the northern end with a small concentration around Short Gap and more widespread commercial and industrial from the North Branch Industrial Park at Mexico Farms to I-68.

Corridor D

Corridor D encompasses approximately 2,620 acres of residential land and also traverses some of the most populated areas of the project region. Most of the residential land use is occurring at the northern end of Corridor D between Rawlings and Lavale along US 220. More residential land use exists through the west side of Keyser and southward along US 220. Throughout the remainder of the corridor, the residential land use is sparse and rural.

Corridor D encompasses approximately 860 acres of mixed use, built-up land. This would include institutional land use and mixed use residential and commercial. This type of land use is isolated in Corridor D and is mostly constrained to the Keyser area, along US 220. More mixed-use exists along US 220 from Bel Air to Cresaptown and northward to LaVale and I-68.

Corridor D encompasses approximately 340 acres of commercial and industrial land use. Again, this occurs mostly along the US 220 corridor through Keyser and from Bel Air to Cresaptown and northward to LaVale and I-68. There are only two industrial parks within Corridor D, both near Cresaptown along US 220.

Table 4.1-1 shows the generalized potential land use impacts for all three corridors. Additional discussions of land use impacts are found later in this chapter in the Cumulative and Indirect Impacts section.

TABLE 4.1-1
Generalized Potential Land Use Impacts

Land Use	Corridor B	Corridor C	Corridor D
Residential	2,590 acres	2,400 acres	2,620 acres
Mixed Use/Built-up	1,300 acres	90 acres	860 acres
Commercial/Industrial	170 acres	450 acres	340 acres
Agricultural	2,953 acres	6,489 acres	7,709 acres
Rangeland	127 acres	644 acres	720 acres
Forests	9,890 acres	11,130 acres	11,409 acres
Mixed Forest/Rangeland	0 acres	53 acres	91 acres

4.1.3 Environmental Justice

Title VI of the Civil Rights Act of 1964 requires that no person in the United States shall on the ground of race, color, or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance. In addition, Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations* (Office of the President of the United States of America 1994), requires that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations" (59 Fed. Reg. 7629).

There are three fundamental principles at the core of environmental justice:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- To prevent the denial of, reduction in, or significant delay in, the receipt of benefits by minority and low-income populations.

Following the guidelines of Executive Order 12898, an assessment was made concerning potential project impacts on minority and/or low-income populations. The objective of the

assessment was to determine if a high percentage of minority and/or low-income persons would be disproportionately affected by the project.

4.1.3.1 Methodology

An environmental justice disproportionate effects analysis was conducted for the No-Build Alternative and three corridors under detailed study. Demographic information used for this study was obtained from the 2000 U.S. Census. Although 2005 population estimates have been developed by the United States Census Bureau, updated data for block groups are not available. Consequently, all information for the environmental justice analysis is from the year 2000.

While some 2010 data from the U.S. Census is available now, block group information (a key component of this analysis) has not been released yet. Recognizing that the data used for this environmental justice analysis was based on the 2000 U.S. Census and is now ten years old, additional environmental screenings and analysis will be conducted during Tier Two with data from the 2010 U.S. Census.

The methodology employs a “quick-technique” comparative screening analysis measuring the potentially impacted populations of each corridor to determine if an environmental justice population would see a disproportionate impact when compared to the non-environmental justice populations. In theory, this methodology identifies a threshold for each county in the study area and compares block group data to that threshold. Additional thresholds were established for the cities of Cumberland and Keyser because they are the largest densely populated communities in the study area that could be directly impacted by the three corridors carried forward. If block group data exceed the threshold, the potential for disproportionate effects to occur on that block group is judged to be present.

It is important to note that block groups outside Cumberland and Keyser are still geographically quite large and it is difficult to identify specific clusters of environmental justice populations using this screening method. Also, the intent of this analysis was not to determine if the effects would be positive or negative, but rather to determine if a disproportionately high percentage of minority and/or low-income persons could be impacted by the corridors under study. The results will determine if further actions are necessary to address environmental justice issues for

the project. Those actions would include closer analysis of the Census data, coordination with local organizations and places of worship serving minority populations, coordination with local planners and public officials familiar with specific neighborhood composition, and community outreach. A broader analysis will also be conducted during Tier Two to assure that not only communities directly impacted by the project are included in outreach efforts, but also others. This method of screening and subsequent analysis has been used successfully on many other West Virginia projects for the initial determination of potential impacts to environmental justice populations.

Individual municipalities potentially affected by Corridors B, C or D include Cumberland and Keyser. Although Moorefield is a potential southern terminus for the project, its municipal boundary is south of Corridor H and was not considered separately in the environmental justice analysis because it will not be physically impacted as a result of future construction activities. Demographic information has been gathered for each of these communities as well as the five counties that are part of the study area. The following information has been collected for each county and municipality:

- Total population;
- African American population (having origins in any of the black racial groups of Africa);
- Hispanic population (Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race);
- Asian population (having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands);
- American Indian, Eskimo, or Aleut population (having origins in any of the original people of North America and who maintain cultural identification through tribal affiliation or community recognition); and
- Low-income population (household income below the Department of Health and Human Services poverty guidelines, as defined by the Office of Management and Budget).

Minority percentages were calculated for each population to determine their representation within the five counties, and the cities of Cumberland and Keyser. The resultant percentages signify the threshold value for the minority populations and were used to determine if the

corridors would have a disproportionate effect on any minority population and/or low-income population within the study area. If a local area has an average occurrence above the threshold, there could be future disproportionate effects and additional analysis is warranted. If, on the other hand, the local occurrence is less than the threshold, no further analysis is necessary. Table 4.1-2 shows the thresholds that were calculated for minority populations.

TABLE 4.1-2
Minority Thresholds as a Percentage of Total Population

County or Municipality	Total Population	Total Minority Population	African American		Hispanic or Latino		Asian and Pacific Islander		American Indian, Eskimo, or Aleut	
Allegany	74,930	5,161	3,971	5.3%	599	0.8%	531	0.7%	60	0.1%
Grant	11,299	179	76	0.7%	56	0.5%	18	0.2%	29	0.3%
Hampshire	20,203	373	167	0.8%	121	0.6%	37	0.2%	48	0.2%
Hardy	12,669	371	244	1.9%	89	0.7%	18	0.1%	20	0.2%
Mineral	27,078	938	690	2.5%	161	0.6%	56	0.2%	31	0.1%
Cumberland	21,518	1,431	1,088	5.1%	150	0.7%	136	0.6%	57	0.3%
Keyser	5,303	446	375	7.1%	38	0.7%	21	0.4%	12	0.2%
County Totals	146,179	7,022	5,148	3.5%	1,026	0.7%	660	0.5%	188	0.1%

Sources: USCB 2000f and 2000g

Thresholds for low-income populations are shown in Table 4.1-3. As with all other thresholds, 2000 data were used.

TABLE 4.1-3
Low-Income Thresholds as a Percentage of Total Population

County or Municipality	Total Population	Persons with Incomes Below Poverty Level	
		Pop.	Per.
Allegany	74,930	10,149	13.5%
Grant	11,299	1,820	16.1%
Hampshire	20,203	3,221	15.9%
Hardy	12,669	1,640	12.9%
Mineral	27,078	3,892	14.4%
Cumberland	21,518	4,176	19.4%
Keyser	5,303	894	16.9%

Sources: USCB 2000f and 2000g

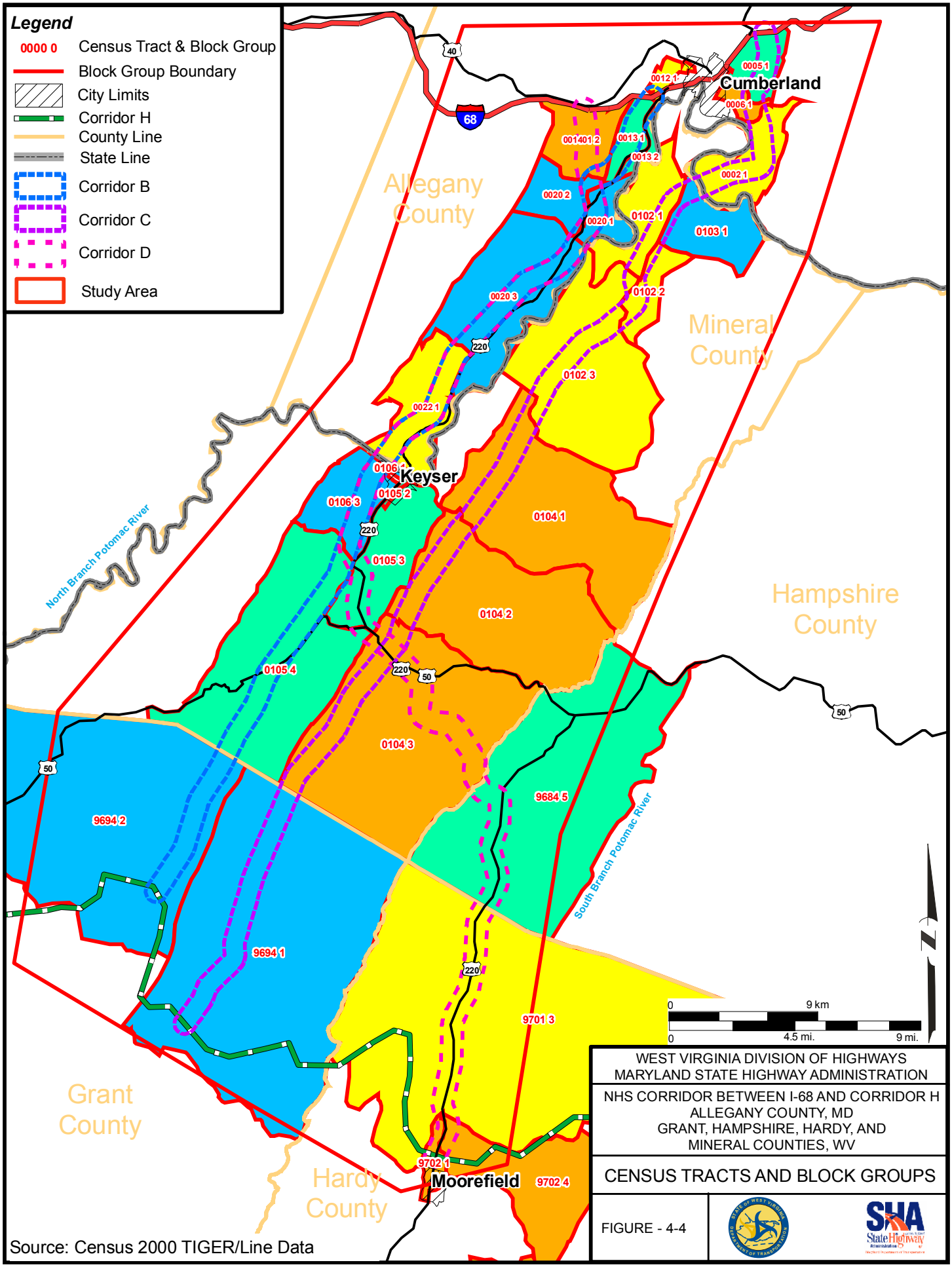
Once thresholds were set for each county and municipality (under investigation), block group information was compiled for the study area. The study area can be described roughly as having a trapezoid-like shape bisected through its approximate center by US 220. The study area is shown on Figure 1-1.

Much of the study area is rural in nature. Consequently, census block groups were used as the best available analysis units to determine potential environmental justice communities and impacts. The block groups represented a sound geographical unit to characterize the rural, urban, and suburban communities within the study area. These units aided in establishing the locations of the populations affected by the corridors. The demographic characteristics of the block groups were compared against the threshold values to determine if the corridors would have a disproportionate effect on minority or low-income populations. Figure 4-4 shows the block groups used in this analysis.

Each block group within the study area was aggregated in a municipal cluster and compared with its respective county or municipal threshold. Clusters are aggregate block groups having a logical spatial relationship in common. Table 4.1-4 provides a list of those clusters and their composite block groups.

TABLE 4.1-4
Block Group Clusters Used in Environmental Justice Screening

County or Municipality	Analysis Clusters	
	Census Tracts Impacted	Block Groups within Study Area
Allegany	2	1
	5	1
	6	1
	12	1
	13	1 & 2
	14.01	2
	20	1, 2 & 3
	22	1
Grant	9694	1 & 2
Hampshire	9684	5
Hardy	9701	3
	9702	1 & 4
Mineral	102	1, 2 & 3
	103	1
	104	1, 2 & 3
	105	2, 3 & 4
	106	1 & 3
Cumberland	5	1
	6	1
	12	1
Keyser	106	1 & 3


Legend
0000 0 Census Tract & Block Group
Block Group Boundary
City Limits
Corridor H
County Line
State Line
Corridor B
Corridor C
Corridor D
Study Area
Cumberland
Keyser
Moorefield
Allegany County
Mineral County
Hampshire County
Grant County
Hardy County
North Branch Potomac River
South Branch Potomac River
0005 1
0012 1
0006 1
001401 2
0013 1
0013 2
0002 1
0020 2
0020 1
0102 1
0103 1
0020 3
0102 2
0102 3
0022 1
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0105 2
0106 3
0104 1
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0105 4
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9694 2
9694 1
9701 3
9702 1
9702 4
68
40
220
50
0 9 km
0 4.5 mi. 9 mi.
N
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
CENSUS TRACTS AND BLOCK GROUPS
FIGURE - 4-4
Source: Census 2000 TIGER/Line Data

The results of this analysis determined if the corridors would have a disproportionate effect on minority and/or low-income populations. If the calculations within a cluster exceeded the threshold, then further analysis, or special community outreach efforts, would be required as the project advances into Tier Two.

4.1.3.2 Effects Analysis – Environmental Justice

The results of the aggregate cluster analysis for minority populations indicated the thresholds were exceeded in several areas. This could indicate potentially disproportionate effects on minority communities. Additional confirmation of potentially disproportionate effects will require a complete public outreach program in Tier Two. The results of the initial screening for the five counties and two largest municipalities that could be directly impacted by the corridors, as well as those areas that exceeded the thresholds, are shown in bold italics in Table 4.1-5.

TABLE 4.1-5
Screenings of Minority Thresholds

County or Municipality	Population within Cluster	African American		Hispanic or Latino		Asian and Pacific Islander		American Indian, Eskimo, or Aleut	
		Pop.	Per.	Pop.	Per.	Pop.	Per.	Pop.	Per.
Allegany	18,762	2,305	***12.3%***	252	***1.3%***	143	***0.8%***	7	<0.1%
Grant	1,841	7	0.4%	9	0.4%	1	<0.1%	2	0.1%
Hampshire	931	1	0.1%	1	0.1%	3	***0.3%***	2	0.2%
Hardy	3,221	104	***3.2%***	29	***0.9%***	5	***0.2%***	7	0.2%
Mineral	17,466	379	2.2%	90	0.5%	43	0.2%	17	<0.1%
Cumberland	4,534	110	2.4%	33	0.7%	103	***2.3%***	8	0.2%
Keyser	4,180	245	5.9%	29	0.7%	16	0.4%	5	0.1%

Sources: USCB 2000f and 2000g

The thresholds for African American populations were exceeded within the study area in Allegany and Hardy counties. The thresholds for Hispanic or Latino populations were also exceeded in Allegany and Hardy counties. The thresholds for Asian or Pacific Islander populations were exceeded in all but Grant and Mineral counties and Keyser. Finally, the thresholds for American Indian, Eskimo, and Aleut populations were not exceeded in any of the counties or municipalities. Allegany County and Mineral County would be impacted by Corridors B, C, and D. Grant County would be impacted by Corridors B and D. Hardy County would be impacted by Corridor D. As may be gleaned from even a cursory examination of the screening results, the absolute numbers of some minority populations are very low and it may

be argued that an impact to those groups may not, in effect, be an environmental justice impact. Those results will be addressed in the Tier Two public outreach program.

The results of the aggregate cluster analysis for low-income populations indicated the thresholds were exceeded in three areas. The thresholds were exceeded in Grant County, Hampshire County, and Keyser. Grant County would be impacted by Corridors B and C, Hampshire County by Corridor D, and Keyser by Corridors B and D. The results of the screening for potential impacts on low-income thresholds are shown in Table 4.1-6.

TABLE 4.1-6
Screenings of Low-Income Thresholds

County or Municipality	Population within Cluster	Persons with Incomes Below Poverty Level	
		Pop.	Per.
Allegany	18,762	1,233	6.6%
Grant	1,841	403	***21.9%***
Hampshire	931	154	***16.5%***
Hardy	3,221	43	1.3%
Mineral	17,466	2,320	13.3%
Cumberland	4,534	433	9.6%
Keyser	4,180	799	***19.1%***

Sources: USCB 2000f and 2000g

No-Build Alternative

There would be no immediate impacts to environmental justice populations with the No-Build Alternative. The No-Build Alternative, however, may not accommodate future travel needs and allow current traffic congestion and transportation deficiencies to continue. This could have a negative impact on environmental justice populations by limiting travel opportunities to these communities.

Build Alternatives

At this level of the analysis, any of the corridors could have a disproportionate effect on minority or low-income populations. Through an initial screening process, environmental justice populations were found in Cumberland and other parts of Allegany County and parts of Grant, Hampshire, and Hardy counties. Additional analysis and consultation with community leaders, churches, and nonprofit organizations will be necessary to determine the exact locations of environmental justice populations and the extent of impacts to these populations as the project

advances to Tier Two and alternatives are developed. Specific areas that could be identified later include Cresaptown, Bel Air, Barton, Rawlings, Dawson, and McCoole in Allegany County; the Knobley Road area in Grant County; Purgitsville in Hampshire County; and Old Fields in Hardy County. Although positive benefits, including new employment opportunities and improved transportation and connectivity, could offset impacts to minority and low-income populations, additional environmental justice analyses will be undertaken during Tier Two. Additionally, because the Tier One effort has shown that there is the potential for disproportionate impacts on environmental justice populations within any of the corridors, an extensive outreach program will be developed early during the Tier Two process.

4.1.4 Community Facilities/Parks and Recreation

4.1.4.1 Community Facilities

4.1.4.1.1 Methodology

Information on community facilities was collected from a variety of sources, including windshield surveys, comprehensive plans, state and local agencies, and respectable local government and agency websites. GIS data were utilized to create the boundaries of the community facilities on project mapping.

West Virginia data were downloaded largely from the West Virginia GIS Technical Center website. This is a clearinghouse for various government agencies such as the WV Office of Emergency Medical Services, WV Development Office, WVDNR, WVDEP, NPS, USACE, and the United States Geological Survey. Information retrieved from this website and its agencies was then field verified. Aerial base mapping and topographical maps were used as a supplement to the GIS data and also for verification purposes.

Maryland data were derived from the Maryland Spatial Data Infrastructure, the Allegany County Planning Department's GIS service, MDP, MDNR, and the MDSHA Highway Information Services GIS Download Center. The Nature Conservancy also provided specific GIS data for the project. Aerial base mapping and topographical maps were used as a supplement to the GIS data and for verification purposes as well.

4.1.4.1.2 Effects Analysis – Community Facilities

No-Build Alternative

The No-Build Alternative would not directly impact any community facilities. The community facilities would continue to be influenced by existing patterns of development and transportation systems.

Build Alternatives

Positive effects to community facilities could occur around a new transportation route. A new transportation system would allow easier and quicker access by the public to facilities and better access for emergency service providers to the communities, especially in rural areas. In rural areas, the transportation access provided by the project would enhance the connectivity of the community to its people. There is often a sense of isolation in rural areas caused by an inability to travel easily due to the great distance between homes and community facilities.

Negative impacts could occur to community facilities, as well, especially if community facilities are displaced and not replaced. Negative impacts could also occur if replacements disrupt the use of those facilities, make it difficult for people to use them, or alter community cohesion.

Community facilities in all three corridors are shown on the plates.

Corridor B

Ten of the community facilities within Corridor B are cemeteries, with more than half being family cemeteries. There are at least 17 places of worship within Corridor B. Three of the identified community facilities within Corridor B are emergency service related. In all cases, they are volunteer fire departments with rescue ambulance service. They are the Bowling Green Volunteer Fire Department (VFD), Cresaptown VFD, and New Creek VFD.

There are at least two government buildings within Corridor B. One is the WVDOH Mineral County office in New Creek and the other is a United States Army Reserve Center in Cresaptown. The latter also includes the Allegany County Soldier's Memorial.

There is one privately owned healthcare clinic within Corridor B, the Progressive Physical Therapy and Sports Medicine Clinic. It is located in the Upper Potomac Industrial Park adjacent to US 220. The Potomac Valley Hospital in Keyser is also very near to Corridor B, adjacent to US 220, but not within the corridor boundary.

There are two industrial/business parks within Corridor B. The Barton Business Park is located seven miles south of Cumberland along US 220 and is owned by the Maryland Economic Development Corporation. Its targeted uses are industrial and manufacturing. There are seven total parcels, with only one being currently occupied by American Woodmark. There are approximately 140 acres of land that make up the business park, with 43 acres being occupied by American Woodmark. The park has its own sewage treatment plant and water service is provided by the Allegany County Department of Public Works. The sewer treatment plant is located within Corridor B. The Upper Potomac Industrial Park is also located within Corridor B adjacent to US 220 in Bowling Green, just south of I-68. The park has water and sewer service that is provided by the City of Cumberland.

There is one post office located within Corridor B at Pinto. There are two correctional facilities; the Western Correctional Institute is located on the east side of and adjacent to US 220 near Potomac Park and the Allegany County Juvenile Detention Center is located next to it near Cresaptown.

There are eight schools within Corridor B. Two of the eight are public schools. They are Keyser High School and New Creek Elementary School. One of them is a vocational-technical school, the Center for Career and Technical Education located in Cresaptown. There is one alternative school, the Mineral County Alternative School in Keyser, and three private schools in Cresaptown, Calvary Christian Academy, Wesleyan Christian Academy, and Christian Fellowship Academy. The remaining school is West Virginia University's Potomac State College, which also includes an agricultural center.

There are four water/sewer facilities within Corridor B. The Barton Industrial Park Sewer Treatment Plant and the McCoole Water Storage Tower are operated by the Allegany County Department of Public Works. The Bel Air Sewer Treatment Plant is operated by the Maryland-American Water Company and primarily services Bel Air and Pinto. The Rawlings Heights

Water Treatment Plant is privately owned, but services the residents of Rawlings and Rawlings Heights.

There are two publicly-owned parks and recreation areas within Corridor B and six privately owned recreation areas. These will be discussed in the following section. Other community facilities include the Mineral County Dog Pound in Keyser and a park-and-ride lot along US 220, just south of I-68.

There are no airports or libraries within Corridor B.

Corridor C

Nineteen of the identified community facilities within Corridor C are cemeteries, with more than half being family cemeteries. There are at least 20 places of worship within Corridor C.

Two community facilities within Corridor C are emergency service related. They are the Fountain VFD and the Short Gap VFD. Both provide rescue ambulance service.

There are two healthcare-related facilities in Corridor C. The Allegany County Health Department is located along Willowbrook Road south of I-68. Opposite the health department is the future site of the Western Maryland Regional Medical Center, a result of consolidating Sacred Heart Hospital and Cumberland Memorial Hospital. The new facility is slated for completion in the fall of 2009. A private nursing center, Devlin Manor Health Care Center, is also located near I-68.

There is one industrial park within Corridor C. The North Branch Industrial Park is located at Mexico Farms along PPG Road, approximately five miles south of Cumberland and just off of MD 51. The park has its own sewage treatment plant and water service is maintained by the Allegany County Department of Public Works.

There is one correctional facility within Corridor C; the Federal Correctional Institute is located at Mexico Farms, adjacent to the North Branch Industrial Park. The property is owned by the federal government.

There are four schools within Corridor C. Three of the four are public schools. They are Fountain Primary School, Frankfort Middle School, and Frankfort High School. The fourth is the Allegany College of Maryland, a community college. The college also contains a large regional park that is open to the public during specified hours.

There are seven water/sewer facilities throughout Corridor C. Many of them are privately owned, but service public subdivisions. The Fountain Public Service District is the only one that is publicly funded. The Fountain PSD includes the Fountain Sewerage Treatment Plant along WV 46.

There are four publicly-owned parks and recreation areas within Corridor C and four privately-owned recreation areas. There are also two recreation trails (one publicly and one privately funded) that exist within Corridor C. These will be discussed in the following section. Other community facilities include two park-and-ride lots owned by the MDSHA and a WVDOH maintenance shed located along WV 28 in Short Gap.

There are no airports or libraries within Corridor C.

Corridor D

Eighteen of the community facilities within Corridor D are cemeteries, with more than half being family cemeteries. There are at least 22 places of worship within Corridor D.

There are no emergency service-related facilities within Corridor D. There are no major healthcare-related facilities within Corridor D, although the Potomac Valley Hospital in Keyser is very near Corridor D, adjacent to US 220, but not within its boundary.

There is one industrial park within Corridor D. The Barton Business Park is located seven miles south of Cumberland along US 220 and is owned by the Maryland Economic Development Corporation. Its targeted uses are industrial and manufacturing. There are seven total parcels, with only one being currently occupied by American Woodmark. There are approximately 140 acres of land that make up the entire business park, with 43 acres occupied by American Woodmark. The park has its own sewage treatment plant and water service is provided by the

Allegany County Department of Public Works. The sewer treatment plant is located within Corridor D.

There are no major correctional facilities located within Corridor D.

There are four schools within Corridor D. The Wesleyan Christian Academy is a private school located along US 220 in Cresaptown. The Moorefield Head Start Center is located in Old Fields. There is one alternative school, the Mineral County Alternative School in Keyser. The West Virginia University's Potomac State College in Keyser also is located in Corridor D. It includes an agricultural education center.

There are four water/sewer facilities throughout Corridor D. The Barton Industrial Park Sewer Treatment Plant and the McCoole Water Storage Tower are operated by the Allegany County Department of Public Works. The Bel Air Sewer Treatment Plant is operated by the Maryland-American Water Company and primarily services Bel Air and Pinto. The Rawlings Heights Water Treatment Plant is privately owned, but services the residents of Rawlings and Rawlings Heights. The Mineral County Dog Pound is located in Keyser. There are no airports or libraries within Corridor D.

There are two publicly owned parks and recreation areas within Corridor D and five privately owned recreation areas. There is one nature preserve, the Fort Hill Nature Preserve, and the American Discovery Trail, a nationally designated public trail. These will be discussed in the following section.

4.1.4.2 Parks and Recreation

4.1.4.2.1 Methodology

Parks and recreation areas were identified using a multi-phased approach. In the initial phase, windshield surveys were performed to identify potential park and recreation areas; boundaries of these resources were also estimated at that time on field maps. Because privately-owned recreational facilities are prevalent throughout West Virginia and serve important community and public health functions, especially where publicly-owned facilities are limited, privately-

owned recreation facilities were included in the analysis. Also, publicly-owned recreation facilities are afforded an additional level of protection through *Section 4(f)* of the *U.S. Department of Transportation Act of 1966*. The publicly-owned recreation facilities in the study area are further analyzed as potential Section 4(f) resources in Chapter 5.0, *Potential Section 4(f) Resources*.

In the second phase, letters were sent to local and county officials and parks and recreation department representatives requesting the locations of any parks and recreation areas located within the study corridors, their property boundaries, and a brief description of each. In addition, county parks and recreation plans and municipal comprehensive plans were consulted during this phase. Any verified park and recreation resources were then mapped in GIS. The final phase of this study consisted of utilizing several existing GIS databases to verify the property boundaries of all remaining parks and recreation areas located within the study corridors. These databases consisted of the West Virginia GIS Technical Center database; MDNR's database; the Allegany County Planning Department's GIS database; and the Nature Conservancy's database.

4.1.4.2.2 Effects Analysis – Parks and Recreation

No-Build Alternative

The No-Build Alternative would not result in any immediate impacts to parks and recreation areas. Any future transportation projects necessary to address the transportation needs of the region would consider/minimize impacts to parklands.

Build Alternatives

Corridor B

Polish Pines Golf Club is located within Corridor B just south of Keyser to the west of US 220 (see Plate B, Sheet 4). It is a nine-hole golf course that is open to the public and owned by a non-profit organization. A driving range, pro shop, and snack bar are also located on this property.

Traveling northeast through the corridor, portions of the Dans Mountain WMA would be impacted (see Plate B, Sheets 6 and 7). This area is the largest contiguous state-owned forest in Maryland, occupying approximately 9,200 acres in western Allegany County. Recreational activities that take place in the Dans Mountain WMA include: swimming; hiking; bird watching; turkey, white-tailed deer, ruffed grouse, and gray squirrel hunting; trapping; camping; and mountain biking.

Encompassing approximately 175 acres, the Fort Hill Nature Preserve is located to the east of the Dans Mountain WMA, along the southern boundary of Corridor B (see Plate B, Sheet 6). The preserve is one of Maryland's best remaining examples of limestone forest and is home to several rare plant and animal species. This property is owned and managed by The Nature Conservancy.

After entering Rawlings, Corridor B would impact Fore Sisters Golf Course (see Plate B, Sheet 7). Fore Sisters is an 18-hole public golf course located on over 300 acres of hardwood and evergreen forests. The property also contains a driving range and a clubhouse.

Continuing northeast, the Barton Golf Driving Range is located in the center of Corridor B, just to the south of the community of Bel Air. In Cresaptown, the Christian Fellowship Academy camp and recreation fields are situated at the southern boundary of Corridor B. The Potomac Park Ballfield is located in the center of Corridor B and consists of approximately seven acres. The property is owned by a non-profit organization and contains a baseball field, basketball court, tennis court, and concession stand. To the northeast of the Potomac Park Ballfield lies the Bowling Green Community Park. Encompassing approximately 18 acres, this park is owned by Allegany County and is used for passive recreation. See Plate B, Sheet 8 for the locations of these resources.

Additionally, there is a proposed rail-trail from Thomas, WV to Cumberland that would cross through Corridor B just west of Keyser. A group of West Virginia and Maryland trail enthusiasts formed a coalition in 2005 to work on joining trails of both states. The coalition is called the Allegheny Highlands Trail Partners, which is a non-profit organization with section 501c(3) status. If constructed, this segment would be a part of the approximately 100-mile long Allegheny Highlands Trail. Since this trail would result in a perpendicular crossing of Corridor B,

any alternative built within the corridor would impact it. See Figure 4-5 for all proposed and existing trails.

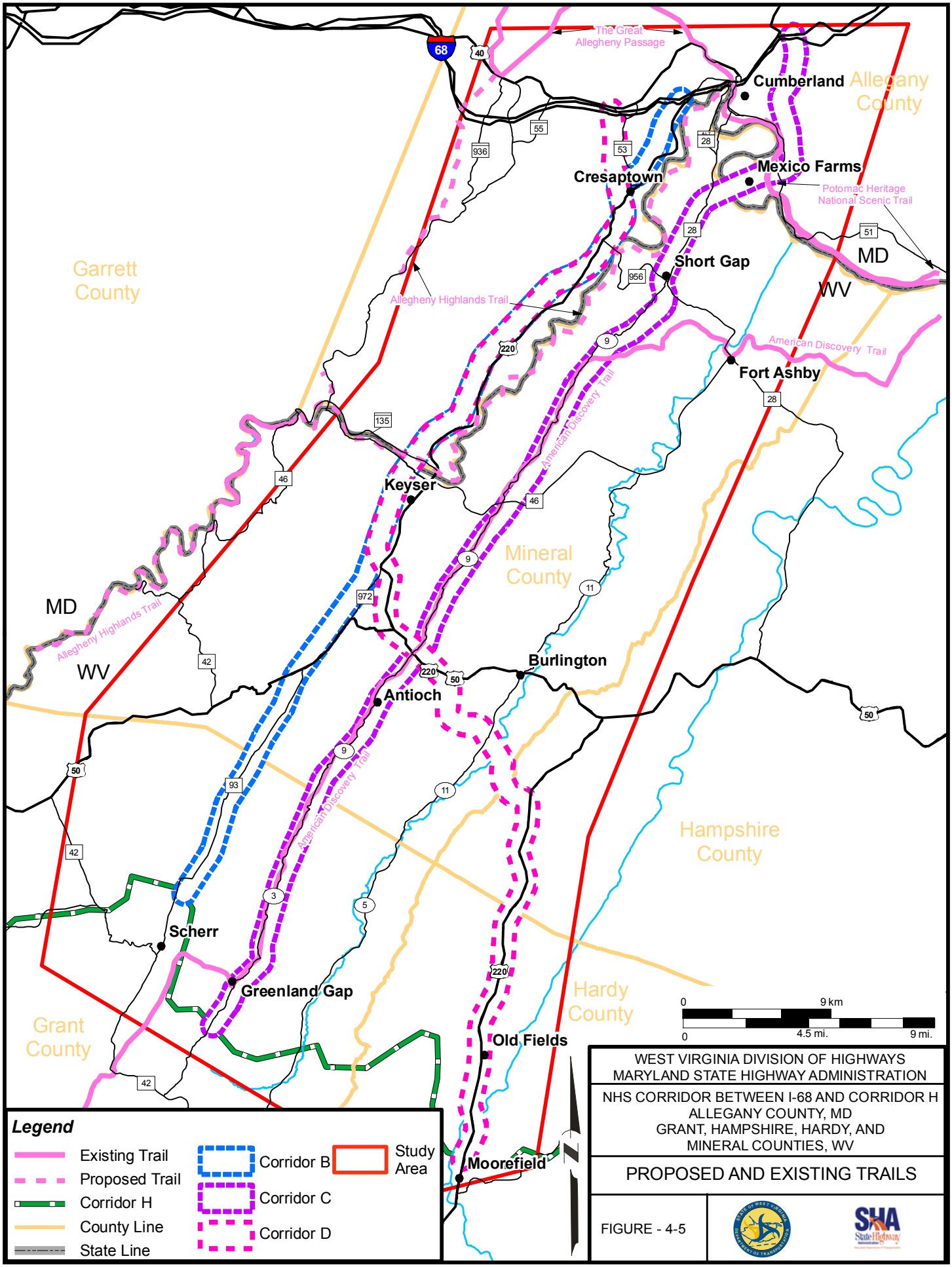
Corridor C

A portion of the American Discovery Trail falls within Corridor C. The trail enters the corridor in the Greenland Gap area of West Virginia and follows County Route 3 in Grant County and County Route 9 through Mineral County before exiting in the vicinity of Short Gap (see Figure 4-5 and Plate C, Sheets 1 through 7). The American Discovery Trail is the nation's first coast-to-coast, non-motorized recreation trail, stretching more than 6,800 miles from Delaware to California. In West Virginia, the trail is approximately 263 miles long, with four segments: Maryland State Line to Streby, Streby to Nestorville, Nestorville to Wilsonburg, and Wilsonburg to Ohio State Line. The Maryland State Line to Streby segment is within Corridor C. The American Discovery Trail is a multi-use trail, providing for hiking, bicycle, and equestrian use. It is managed and administered by the American Discovery Trail (ADT) Society, a nationwide non-profit organization. Funding for the development of the trail was provided by the ADT Society, the American Hiking Society, and corporate financial and promotional support.

Just to the south of the US 50 and Antioch Road intersection at Ridgeville lies Dam Site #21. A wooded portion of the dam site is located within the southern boundary of Corridor C (see Plate C, Sheet 4). The property consists of approximately 174 acres of woodland and flood control structures, and is used for fishing and passive recreation. The Mineral County Commission owns the property, but the Potomac Valley Conservation District operates and maintains the dam.

The Fountain Ruritan Club facility is located in the center of Corridor C (see Plate C, Sheet 6). It contains baseball fields and a picnic pavilion. The Ruritan National Foundation has non-profit, section 501c(3) status.

Just southeast of Cumberland, the Potomac Heritage National Scenic Trail, one of eleven national scenic trails within the National Trails System, crosses through Corridor C (see Figure 4-5 and Plate C, Sheets 9 through 11). This section of the trail is known as the Chesapeake and Ohio Canal Towpath and is part of the Chesapeake and Ohio Canal National Historical



WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION

NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV

PROPOSED AND EXISTING TRAILS

FIGURE - 4-5

Park. It extends approximately 185 miles along the Potomac River to Georgetown in Washington, D.C. Recreational opportunities along the trail include hiking, biking, boating, fishing, camping, and bird watching. Since this facility would result in a perpendicular crossing of Corridor C, any alternative built within the corridor would impact it. The Chesapeake and Ohio Canal National Historical Park receives three million visitors annually. Designated as a National Historical Park in 1971, the NPS operates six different visitor centers along the canal including one at Cumberland. The visitor centers have displays and interpretive exhibits on the history of the Chesapeake and Ohio Canal. Two mule-powered canal boats also operate during the summer months out of Great Falls and Georgetown, allowing visitors to experience the canal.

To the east of the park lies the VFW Ballfield (see Plate C, Sheet 11). The VFW Foundation was established in 1996 as a 501c(3) nonprofit organization. Continuing north along Corriodr C, the Allegany College of Maryland's athletic fields are situated in the western portion of the corridor (see Plate C, Sheet 11). Encompassing approximately 50 acres, there are five basketball courts, seven tennis courts, five baseball fields, an archery range, and a multi-purpose field. An indoor recreation area, restrooms, and parking lot are also located in this portion of the property. This facility is owned by Allegany County.

Directly to the north of the college is the Cumberland Country Club. A privately-owned facility, the country club property is approximately 95 acres and contains an 18-hole golf course, a clubhouse, two tennis courts, and a pool. East of the country club, in the center of Corridor C, is the Evitts Creek Greenway. This seven-acre property consists of fishing ponds and open space, and is owned by Allegany County. To the north of the greenway is the Ali Ghan Country Club. Encompassing approximately 12 acres, the country club is privately owned and includes a multi-purpose field, three picnic pavilions, restrooms, and parking lot. See Plate C, Sheet 11 for the locations of these resources.

Corridor D

There is a public stream access point near the US 220 bridge over the South Branch Potomac River between Moorefield and Old Fields (see Plate D, Sheet 1). Fishing and boating opportunities are provided at this stream access point.

The Mill Creek Ruritan Club ball fields are situated between US 220 and Mill Creek (see Plate D, Sheet 4). The Ruritan National Foundation has non-profit, section 501c(3) status. The Mill Creek Country Club is located off of US 50 in Burlington (see Plate D, Sheet 5) within Corridor D. A privately-owned facility, the country club includes a nine-hole regulation golf course that is open to the public.

Where Corridor D crosses over Corridor C, it would impact the American Discovery Trail (see Plate D, Sheet 5). Just south of Keyser, after Corridor D joins Corridor B, the Polish Pines Golf Club is situated to the west of US 220 (see Plate D, Sheet 7). Continuing to the northeast, the Dans Mountain WMA (see Plate D, Sheets 8 and 9) and the Fort Hill Nature Preserve (see Plate D, Sheet 8) are located within Corridor D. After entering Rawlings, the Fore Sisters Golf Course would be impacted by this corridor (see Plate D, Sheet 9). Moving northeast, the Barton Golf Driving Range is located in the center of the Corridor D corridor, just to the south of the community of Bel Air (see Plate D, Sheet 10). Descriptions of these resources can be found under Corridors B and C.

As shown in Table 4.1-7, eight parks and recreation areas are located within Corridor B, 10 are located within Corridor C, and nine are located within Corridor D.

TABLE 4.1-7
Potential Parks and Recreation Impacts

Corridor	Park or Recreation Area	Recreation Type	Ownership	Public Access?
B	Polish Pines Golf Club	Active	Private, Non-Profit	Yes
B	Dans Mountain WMA	Passive	Public, State	Yes
B	Fort Hill Nature Preserve	Passive	Private, Non-Profit	Yes
B	Fore Sisters Golf Course	Active	Private, For Profit	No
B	Barton Golf Driving Range	Active	Private, For Profit	Yes
B	Christian Fellowship Academy Camp and Recreation Fields	Passive/Active	Private, Non-Profit	Yes
B	Potomac Park Ballfield	Active	Private, Non-Profit	Yes
B	Bowling Green Community Park	Active	Public, County	Yes
C	American Discovery Trail	Passive	Private, Non-Profit	Yes
C	Dam Site #21	Passive	Public, County	Yes
C	Fountain Ruritan Club Ball Fields	Active	Private, Non-Profit	Yes
C	Potomac Heritage National Scenic Trail	Passive	Public, Federal	Yes

TABLE 4.1-7 (continued)
Potential Parks and Recreation Impacts

Corridor	Park or Recreation Area	Recreation Type	Ownership	Public Access?
C	Chesapeake and Ohio Canal National Historical Park	Passive	Public, Federal	Yes
C	VFW Ballfield	Active	Private, Non-Profit	Yes
C	Allegany College of Maryland Athletic Fields	Active	Public, County	Yes
C	Cumberland Country Club	Active	Private, For-Profit	No
C	Evitts Creek Greenway	Passive	Public, County	Yes
C	Ali Ghan Country Club	Active	Private, Non-Profit	No
D	Old Fields Bridge Public Stream Access	Passive	Public, State	Yes
D	Mill Creek Ruritan Club Ball Fields	Active	Private, Non-Profit	Yes
D	Mill Creek Country Club	Active	Private, For Profit	No
D	American Discovery Trail	Passive	Private, Non-Profit	Yes
D	Polish Pines Golf Club	Active	Private, Non-Profit	Yes
D	Dans Mountain WMA	Passive	Public, State	Yes
D	Fort Hill Nature Preserve	Passive	Private, Non-Profit	Yes
D	Fore Sisters Golf Course	Active	Private, For Profit	No
D	Barton Golf Driving Range	Active	Private, For Profit	Yes

There are also several schools that own parks and other recreation areas within the corridors (see 4.1.4.1.2). Additional coordination with these schools will take place during Tier Two. Impacts to parks and recreation areas will be analyzed during Tier Two when actual alternatives are developed. Avoidance and minimization measures to avoid/minimize impacts to parks and recreation areas will also be considered at that time. See Chapter 5.0 for additional information regarding public parks and recreation areas.

4.1.4.2.3 Possible Mitigation Efforts

Additional parks and recreation coordination will need to take place during Tier Two. The owner of each park and recreation area that would be impacted by any of the alternatives developed during Tier Two will be consulted to determine appropriate mitigation. This could involve identifying and purchasing replacement park property; improving other parts of the park facility; trail relocation, if necessary; or financial compensation.

4.2 Cultural Resources

Cultural resources include pre-contact and historic period archaeological sites and above-ground historic structures and locations. Potential above-ground historic resources are considered to be any standing structure, object, or above-ground cultural feature that is 50 years of age or older.

4.2.1 Archaeological Resources

Pre-contact archaeological sites consist of areas where culturally modified objects or features can be found dating from the Paleoindian Period (12,000-18,000 BC) to approximately the Contact Period (c. 1550-1750). Historic period archaeological sites consist of subsurface historic period structures or artifacts that date from approximately the Contact Period up to 1955.

4.2.1.1 Methodology

Archaeological research undertaken during Tier One of the project included the development of pre-contact and historic period archaeological resource sensitivity maps within a GIS (Gundy *et al.* 2007). The basis for the construction of these predictive surfaces is that people preferentially choose habitation and use locations from the array of choices made available by the natural environment (e.g., Paleoindian site locations associated with locations of high quality cryptocrystalline lithic raw materials; historic period mill locations associated with stream locations that provide sufficient fall for water power). If these environmental variables are considered in concert with what is known about previously identified archaeological resources and historic period features within a particular geographic area, mapping representative of the potential for the geographic area to contain additional archaeological resources can be constructed.

The US 220 predictive surfaces were constructed using easily available or created digital layers within the GIS. The GIS is a computer-based set of tools developed to acquire, compile, manage, analyze, manipulate, retrieve, and present geo-referenced spatial data sets traditionally represented on maps. Employing the GIS, these data sets can be compared, analyzed, and integrated in order to produce new information. The coded and digitized GIS

data sets were utilized to assess the potential for the occurrence and preservation of pre-contact and historic period archaeological resources within the US 220 predictive surfaces study area.

Pre-contact Period Archaeological Resources

The US 220 predictive surface construction process utilizes both intuitive and empirical approaches within the selection and weighting of the environmental variables incorporated into the predictive surface. The defined study area for the US 220 project was gridded, within the GIS, into 98 x 98-foot cells. The size of the cells was limited by the resolution of the digital elevational data available. Cells of this size are sufficiently small for a predictive surface of above-average resolution.

The process used to construct the pre-contact period predictive archaeological surface included multiple steps. The first step was the collection and digitization of primary data sets, including the environmental background data and archaeological site data for the study area. The environmental background data were collected from multiple sources. Due to the geographically large size of the US 220 predictive surfaces study area and its relative heterogeneity with regard to environmental and topographic settings, many of the environmental factors demonstrated direct, as well as cost distance effects on the predictive surface results. The following variables were those used in the pre-contact period predictive surface process: slope, aspect, landform, geology, soil, water, wetlands, land cover, and surface mines.

Information about archaeological site distributions and settlement patterns in the region was collected from a number of sources. These included pertinent regional cultural resources reports; the WVDCH and MHT archaeological site databases; and previously completed archaeological modeling. The previously recorded archaeological site information was converted into a database file and GIS layers, and analyzed in order to determine the general types and location patterns of pre-contact period archaeological sites previously discovered within the predictive surfaces study area. Approximately 469 previously recorded pre-contact period archaeological sites are located within the boundaries of the US 220 predictive surfaces study area. In addition to the site locations, the cultural affiliation and temporal components of the previously recorded sites were considered; however, due to the limited number of sites with specific assigned cultural affiliation/temporal components, no predictive value was assigned

based on cultural affiliation or temporal period (i.e., an Archaic site ranks equally with an unassigned pre-contact period site).

The second step in the construction of the pre-contact period predictive surface was the syntheses of and incorporation into the GIS of all of the relevant primary archaeological site data and environmental variables so that secondary data sets, comprised of more complex determinations, could be derived. Multiple secondary data sets were calculated using various combinations of variables. Secondary data sets used in the predictive surface process included chert cost distance, major stream cost distance, perennial stream cost distance, intermittent stream cost distance, major/perennial stream confluence cost distance, major/perennial or intermittent stream confluence cost distance, and perennial stream confluence cost distance. The derivation of these more complex and potentially more relevant secondary variables contributes to the power of a GIS-created predictive surface. The power of the GIS also allows changes to the derived secondary data on a variable-by-variable basis to determine if and how much individual variables are affecting the secondary data and ultimately the predictive surface values.

The site data were explored for possible site/environmental correlations and trends in order to determine the general types and location patterns of pre-contact period sites discovered within the predictive surfaces study area. Key variables were then identified. The combination of these variables, as well as general archaeological knowledge; the pattern of site distribution indicated by the previously recorded pre-contact period archaeological site locations within the predictive surfaces study area; the results of other pertinent regional site distribution studies; and information gained from informant interviews, was used to identify probable locations of pre-contact period archaeological resources.

Also included in the assessment of resource potential within the predictive surfaces study area were disturbance factors (e.g., development, paved areas, utilities, mines, and quarries). These factors relate more to the potential for preservation of archaeological deposits within a given location, rather than to the original attractiveness of the locale for pre-contact period occupation or use. The lack of preservation is an important consideration for assessing the resource potential, as areas where the deposits have been substantially disturbed have much less promise of containing *in situ* archaeological remains. These disturbance factors were used to create a layer through which the predictive surface values could be filtered.

The potential for the presence of pre-contact period archaeological site locations is represented in the GIS predictive surface by a cumulative score, produced from the weighted sum of all attractiveness factors (i.e., primary and secondary environmental and archaeological data), and modified by the relative potential for preservation of the deposits (i.e., disturbances). In this way, each 98 x 98-foot cell within the study area was assigned a resource potential score. This range of scores was then divided into five ranks of archaeological site potential, including very low, low, moderate, high, and very high. The resulting mapping of ranked cells constitutes the GIS pre-contact period predictive archaeological surface (Gundy *et al.* 2007).

Historic Period Archaeological Resources

In order to assess the potential for encountering historic period archaeological resources within the study area, a historic period archaeological predictive surface was produced via a GIS. This predictive surface incorporates the results of background research, including available local histories, historic records and mapping, previously recorded historic sites, and the results of a historic structures windshield survey. The historic archaeological sensitivities were related to historically mapped or documented features and assessed within the historic context of the area. Features incorporated into the GIS historic period archaeological predictive surface included historic districts; eligible or contributing historic properties; extant residential, commercial, and industrial structures (greater than 50 years old); cemeteries; Civil War-related resources; schools; churches; mills; railroads; roads; bridges; and intersections of linear features (i.e., crossroads).

The construction of the historic period archaeological predictive surface incorporated the results of a US 220 historic structures windshield survey and evaluation of the above-ground historic period resources with other archival and historic documentary research. In order to identify extant historic structures (greater than 50 years old), previously surveyed historic period resources, and historic districts, the historic structures survey commenced with a review of the NRHP files, and the WVSHPO and MHT archaeological site databases. Following this background research, a windshield survey was conducted. This level of study was implemented as part of the preparatory data gathering in order to expediently identify notable above-ground historic resources with archaeological potential located within the study area. The identified historic period resource locations were then used within the GIS as sets of variables for the development of the historic period predictive surface. Cemeteries; Civil War-related resources;

schools; churches; residential, commercial, and industrial structures; the routes of railroads and roads; and bridges were identified through the review of historic and current mapping, the windshield survey, and informant interviews.

Subsequent to the identification of the historic feature locations, but prior to their inclusion in the predictive surface, each identified feature was assigned a resource sensitivity rank (ranging from one [very low] to five [very high]) and a buffer distance (around each of the individual historic features) based on the type and age of the feature. The resource sensitivity ranks assigned to the identified features reflect the probable occurrence and research potential of the anticipated historic period resources. In this way, a historic period roadway appearing repeatedly on historic mapping beginning in the early nineteenth century would have a greater potential for significant historic remains than a later roadway appearing in the early twentieth century. Conversely, both roadway features would generally have less potential than the immediate surface area surrounding a historically mapped or extant historic structure because the research potential of roads is typically less than that of a historic site with longer term use or habitation (i.e., numbers and types of associated artifacts, numbers and types of associated features). The historic features used in the compilation of the historic period archaeological predictive surface included: historic districts; eligible or contributing properties; cemeteries; Civil War-related features; schools; churches; mills; mapped residential, commercial or industrial structures; railroads; roads; intersections of linear features; and bridges.

The distances assigned to the buffers around various historic features were derived from visual analysis of the historic period mapping and the apparent relevant distances based on the type of resource to various mapped roadways, railroads, or water. Buffering was also applied judgmentally, given general archaeological knowledge of the typical distribution patterns for archaeological remains found in association with various types of historic period features. The overlay of the ranked and buffered layers of historic features within the GIS resulted in a cumulative but relational potential for encountering historic period archaeological resources within the study area.

4.2.1.2 Effects Analysis – Archaeological Resources

No-Build Alternative

The No-Build Alternative would not result in any immediate impacts to archaeological resources; however, it would not meet the purpose and need of the project.

Build Alternatives

Corridors B, C, and D were assessed for impacts to both existing pre-contact and historic period archaeological resources as well as potential archaeological resources using the existing archaeological record and predictive archaeological surfaces. Based on this research, it is apparent that when considering pre-contact period archaeological resources, Corridor B would have the least overall potential to impact these types of archaeological resources with Corridors C and D following with increasing potential. When considering historic period archaeological resources Corridor D would have the least overall potential to impact these types of archaeological resources with Corridors C and B following with increasing potential. Table 4.2-1 and Table 4.2-2 provide a summary of the potential impacts to predicted pre-contact and historic period archaeological resources within each corridor.

TABLE 4.2-1
Predicted Pre-contact Period Archaeological Impacts

Type of Impact	Corridor B		Corridor C		Corridor D	
Number of Recorded Archaeological Sites with Pre-contact Component	26		11		47	
Very Low	7,000 acres	40.1%	7,194 acres	32.9%	8,727 acres	39.3%
Low	1,368 acres	7.8%	6,767 acres	31.0%	5,168 acres	23.3%
Moderate	3,969 acres	22.7%	1,353 acres	6.2%	1,230 acres	5.5%
High	4,210 acres	24.1%	5,490 acres	25.1%	4,785 acres	21.5%
Very High	915 acres	5.3%	1,043 acres	4.8%	2,306 acres	10.4%
Total	17,462 acres	100.0%	21,847 acres	100.0%	22,216 acres	100.0%

Note: The previously identified site totals in this table do not include sites of unknown temporal affiliation or sites that exhibit both pre-contact and historic period components.

TABLE 4.2-2
Predicted Historic Period Archaeological Impacts

Type of Impact	Corridor B		Corridor C		Corridor D	
Number of Recorded Archaeological Sites with Historic Component	10		6		12	
Very Low	1,799 acres	10.3%	2,675 acres	12.2%	2,486 acres	11.2%
Low	2,013 acres	11.5%	2,116 acres	9.7%	2,956 acres	13.3%
Moderate	679 acres	3.9%	1,114 acres	5.1%	1,029 acres	4.6%
High	115 acres	0.7%	141 acres	0.6%	302 acres	1.4%
Very High	98 acres	0.6%	300 acres	1.4%	316 acres	1.4%
No Historic Data	12,757 acres	73.0%	15,500 acres	71.0%	15,133 acres	68.1%
Total	17,461 acres	100.0%	21,846 acres	100.0%	22,222 acres	100.0%

Note: The previously identified site totals in this table do not include sites of unknown temporal affiliation or sites that exhibit both pre-contact and historic period components.

Corridor B

Corridor B would potentially impact the locations of approximately 38 previously recorded archaeological sites including pre-contact period lithic scatters; an Archaic and Woodland rockshelter; Early and Late Archaic, and Early and Late Woodland short-term resource procurement camps; Late Archaic and Middle Archaic short-term camps; and pre-contact period sites of unknown type as well as historic period artifact scatters; a nineteenth and twentieth century town; a late nineteenth and twentieth century church building debris, a nineteenth century canal towage company; a nineteenth and early twentieth century canal tunnel and canal lockhouse; a mid nineteenth and early twentieth century foundry, housing, lumberyard, millrace, and canal boat building and repair yard; a nineteenth and twentieth century cemetery; late nineteenth and early twentieth century field scatters; and an early twentieth century quarry/mine. (The previously identified site totals for this corridor include all site types dating to the pre-contact period, the historic period, the pre-contact and historic periods, and those of unknown temporal affiliation.)

The pre-contact period archaeological predictive surface indicates that Corridor B, as currently designed, contains 7,000 acres of very low; 1,368 acres of low; 3,969 acres of moderate; 4,210 acres of high; and 915 acres of very high pre-contact period archaeological potential. Approximately 47.9 percent of Corridor B is designated as very low and low potential for pre-contact period archaeological resources, while only 29.4 percent is designated as high or very

high. The higher pre-contact period archaeological potential areas cluster near the northern end of Corridor B south of Cresaptown, and along the central portion of the corridor.

The historic period archaeological predictive surface indicates that Corridor B, as currently designed, contains 1,799 acres of very low; 2,013 acres of low; 679 acres of moderate; 115 acres of high; and 98 acres of very high historic period archaeological potential. No historic information was found for approximately 12,757 acres of Corridor B. This occurred within all three corridors when historic maps, narratives, photographs, or reports did not identify and features within broad tracts of the landscape. Therefore, these areas were not included in an overall potential category. Despite the inability of the predictive surface process to place this 12,757 acres of land into a historic period archaeological predictive potential category, these areas should not be excluded out-of-hand from future archaeological research. Approximately 21.8 percent of Corridor B is designated as very low and low potential for historic period archaeological resources, while only 1.3 percent is designated as high or very high. With the exception of a few isolated high potential areas along the length of Corridor B, the lone high historic period archaeological potential area within Corridor B is located just south of Cresaptown.

Corridor C

Corridor C would potentially impact the locations of approximately 21 previously recorded archaeological sites including pre-contact period lithic isolates; pre-contact period lithic scatters; a pre-contact period camp; a pre-contact period quarry; pre-contact period short-term resource procurement sites; a Late Woodland lithic scatter; a Late Woodland base camp; and pre-contact period sites of unknown type as well as historic period artifact scatters; an eighteenth century military road; an early nineteenth and twentieth century farmstead and cemetery; a nineteenth century grist mill with related buildings and ruins; an early twentieth century family cemetery; and nineteenth and early twentieth century brick kilns. (The previously identified site totals for this corridor include all site types dating to the pre-contact period, the historic period, the pre-contact and historic periods, and those of unknown temporal affiliation.)

The pre-contact period archaeological predictive surface indicates that Corridor C, as currently designed, contains 7,194 acres of very low; 6,767 acres of low; 1,353 acres of moderate; 5,490

acres of high; and 1,043 acres of very high pre-contact period archaeological potential. Approximately 63.9 percent of Corridor C is designated as very low and low potential for pre-contact period archaeological resources, while only 29.9 percent is designated as high or very high. The higher pre-contact period archaeological potential areas cluster near the northern end of Corridor C both north and south of Evitts Creek, within the north-central portion of the corridor surrounding the North Branch of the Potomac River, and near the southern terminus.

The historic period archaeological predictive surface indicates that Corridor C, as currently designed, contains 2,675 acres of very low; 2,116 acres of low; 1,114 acres of moderate; 141 acres of high; and 300 acres of very high historic period archaeological potential. No historic information was found for approximately 15,500 acres of Corridor C; therefore, these areas were not included in an overall potential category. Despite the inability of the predictive surface process to place this 15,500 acres of land into a historic period archaeological predictive potential category, these areas should not be excluded out-of-hand from future archaeological research. Approximately 21.9 percent of the Corridor C area is designated as very low and low potential for historic period archaeological resources, while only 2.0 percent is designated as high or very high. With the exception of a few isolated high potential areas along the length of Corridor C, the lone high historic period archaeological potential area within Corridor C is located just south of Evitts Creek in a meander of the North Branch of the Potomac River.

Corridor D

Corridor D would potentially impact the locations of approximately 79 previously recorded pre-contact and historic period archaeological sites including pre-contact period lithic isolates; pre-contact period lithic scatters; pre-contact period short-term camps; pre-contact period rockshelters; pre-contact period villages and mounds; a pre-contact lithic workshop; an Early Archaic camp; an Early and Late Archaic and Early and Late Woodland short-term resource procurement camp; a Middle Archaic short-term camp; a Late Archaic base camp; a Late Archaic short-term camp; a Late/Terminal Archaic tool manufacturing site; a Late Archaic short-term camp; a Woodland rockshelter; and pre-contact period sites of unknown type as well as historic period artifact scatters; a Civil War isolate; a nineteenth century canal; a mid-nineteenth century and early twentieth century canal tunnel and lock house; mid nineteenth and early twentieth century foundry, housing, lumberyard, millrace, and canal boat building and repair

yard; a nineteenth and twentieth century town; late nineteenth and twentieth century building debris; late nineteenth and early twentieth century field scatter; and an early twentieth century quarry/mine. (The previously identified site totals for this corridor include all site types dating to the pre-contact period, the historic period, the pre-contact and historic periods, and those of unknown temporal affiliation.)

The pre-contact period archaeological predictive surface indicates that Corridor D, as currently designed, contains 8,727 acres of very low; 5,168 acres of low; 1,230 acres of moderate; 4,785 acres of high; and 2,306 acres of very high pre-contact period archaeological potential. Approximately 62.6 percent of Corridor D is designated as very low and low potential for pre-contact period archaeological resources, while 31.9 percent is designated as high or very high. Higher pre-contact period archaeological potential areas cluster near the northern end of Corridor C just to the south of Cresaptown, and at the southern terminus.

The historic period archaeological predictive surface indicates that Corridor D, as currently designed, contains 2,486 acres of very low; 2,956 acres of low; 1,029 acres of moderate; 302 acres of high; and 316 acres of very high historic period archaeological potential. No historic information was found for approximately 15,133 acres of Corridor D; therefore, these areas were not included in an overall potential category. Despite the inability of the predictive surface process to place these 15,133 acres of land into a historic period archaeological predictive potential category, these areas should not be excluded out-of-hand from future archaeological research. Approximately 24.5 percent of the Corridor D area is designated as very low and low potential for historic period archaeological resources, while only 2.8 percent is designated as high or very high. With the exception of a few isolated high potential areas along the length of Corridor D, two higher historic period archaeological potential areas within Corridor D are located just south of Cresaptown and just south of Burlington.

Based on the archaeological evidence and predictive surface, it is recommended that once one or more corridors are advanced to Tier Two, a complete Phase I archaeological survey for pre-contact and historic period archaeological resources be performed on the preferred alternative in order to identify archaeological sites and their potential eligibility for listing in the NRHP. The US 220 predictive surface should help guide the Phase I survey field methodologies, and the

results of that survey should be used to critically assess the effectiveness of the predictive surface.

4.2.2 Historic Resources

Historic resource studies were performed using a tiered approach, in accordance with *Section 106*. The tiered approach was developed in consultation with the WVDOH, MDSHA, WVDCH, and MHT. The WCDCH and MHT are the State Historic Preservation Offices for West Virginia and Maryland, respectively.

Section 106 of 36 CFR 800.4(b)(2) states that phased identification and evaluation can be used "where alternatives under consideration consist of corridors or large land areas." That is the case with the US 220 project. The regulations further state that, "The agency official may also defer final identification and evaluation of historic properties if it is specifically provided for in… the documents used by an agency official to comply with the *National Environmental Policy Act* pursuant to *Section 800.8*." *Section 800.8* encourages federal agencies to "consider their *Section 106* responsibilities as early as possible in the NEPA process, and plan their public participation, analysis, and review in such a way that they can meet the purposes and requirements of both statutes in a timely and efficient manner" (36 CFR 800.8(a)(1)).

4.2.2.1 Methodology

The Tier One investigations for historic resources identified historic properties in the built environment of the study area that are listed in, eligible for, or potentially eligible for listing in the NRHP. There are no National Historic Landmarks within the study area. Analysis based on information gathered from secondary sources and field investigations was used to assist in determining which corridor or corridors should be advanced to more detailed study.

The study area, known as the historic resource survey buffer, extends 0.5 mile from the centerline of each corridor. This 1.0-mile wide area was larger than the study area used in related natural resources investigations to account for possible visual impacts and large properties such as farms where the land may lie within the boundary but the structures are outside. The project mapping was based on aerial photographs of the study area that have been overlaid with feature indicators.

The first step in the analysis of historic structures was to collect information on previously surveyed resources. The WVDCH and the MHT provided GIS databases of previously surveyed resources. These were then located on aerial base mapping. The historic resource survey files and *Section 106* files at MVDCH and MHT were reviewed, checked for errors against the GIS database, and photocopied for reference in the field. Previously surveyed resources were rated in four possible categories by the state agencies: NRHP-listed, NRHP-eligible, not eligible, or undetermined.

Additional background research was carried out at several institutions including the West Virginia and Maryland State Archives, the West Virginia Regional History Collection at West Virginia University, the library at Frostburg State University, and county historical societies. Several histories, reference books, and historic maps and atlases were reviewed. The purpose of gathering the material was to assist in identifying historic resources within the corridors and to gather background for a historic context covering the study area. Information gathered at public meetings was also incorporated into the historic structures survey.

The second step in the process was to conduct a windshield survey of every structure within the expanded 1.0-mile wide study area of each corridor. Each corridor was surveyed by a team that met the Secretary of the Interior's Standards for Professional Qualifications (36 CFR 61) for historian and/or architectural historian. During the windshield survey, every accessible structure was visually assessed for age and eligibility (integrity and possible significance). Structures which were deemed potentially eligible or worthy of further consideration were documented with digital photographs, Universal Transverse Mercator (UTM) coordinates, and notes. For newly surveyed resources assessed as potentially eligible under the NRHP Criteria for Evaluation, basic characteristics were noted, such as historic and present function, style, approximate age, structural system, and exterior materials. The initial assessment of the study area was purposefully conservative and included some resources that were later considered not eligible. Previously surveyed resources were also assessed in the field. If the resource was eligible or listed with no significant changes, it was photographed. If its eligibility was undetermined, notes and a recommendation were added to the photographs. Resources that were already determined not eligible were simply photographed, and resources that had been demolished were marked as such. The locations of previously surveyed resources which were mapped immediately outside the study area were confirmed. When a property was inaccessible

because of a gated or aggressively posted private property sign, the omission was marked on the aerial map.

The collected information was sorted, mapped, analyzed, and evaluated. Two large databases were created to organize the findings. One database updated information for all previously surveyed resources including undetermined resources with new eligibility recommendations. The other database detailed the newly identified potentially eligible resources. The resulting databases and a historic context covering the entire study area were sent to WVDOH, MDSHA, WVDCH, and MHT in advance of agency field views.

The third step was to conduct field views of the corridors with representatives from WVDOH, MDSHA, WVDCH, MHT, and FHWA. The field views enabled the project team to present preliminary findings and recommendations of the historic resource survey, to solicit agency comments on resources with questionable eligibility, to invite agency feedback, and to seek consensus for the Tier One phase of the project.

The Maryland agency field view was held on February 26, 2007, and the West Virginia agency field view was held on March 22 and 23, 2007. Field view participants were provided with aerial maps showing the historic resources and photograph information sheets for reference. A driving tour provided a review of the resources and facilitated discussion of the properties. Changes were made to the resource list based on agency comments. At the end of the field views, all participants were in agreement with the findings of the survey. The representatives of WVDCH and MHT also asserted that with the further investigation required during Tier Two it may be determined that some of the resources originally identified as potentially eligible would be considered not eligible; however, they agreed that those resources should remain identified as potentially eligible until further research is completed.

Following the field views, the databases and mapping were updated to provide clearer indication of resource boundaries and a *Historic Resources Abbreviated Report* (Ricketts *et al.* 2008) was prepared. Properties of less than one acre were indicated by a point on the project mapping. Large resources, like the farms prevalent in the study area, needed a preliminary indication of a NRHP boundary to aid designers in understanding where potential impacts to historic properties might occur. The current tax parcels for larger properties were identified and, where deemed necessary, that information was modified by reliance on historic mapping, landscape features,

and oral interviews with the property owners. Although these boundaries will be reconsidered in Tier Two investigations, for this phase they offer a reasonable indication of the potential limits of the eligible properties.

4.2.2.2 Effects Analysis – Historic Resources

No-Build Alternative

Under the No-Build Alternative, projects in the region's long-range transportation plans would be advanced to address existing and future conditions of congestion and traffic safety. These future transportation improvements and the development they encourage could have an impact on historic resources.

Build Alternatives

Each of the three build alternatives would have the potential to impact historic resources. Corridor D contains the most historic resources and Corridor B contains the least. Corridor B would potentially impact 24 historic resources; Corridor C would potentially impact 40 historic resources; and Corridor D would potentially impact 44 historic resources.

Corridor B

In total, 24 NRHP-eligible or potentially eligible resources could be impacted by Corridor B. There are no NRHP-listed resources within Corridor B or its extended study buffer. Four resources within Corridor B, however, have already been determined eligible for listing in the NRHP and could be impacted. Table 4.2-3 shows the NRHP-eligible properties within Corridor B and its study buffer.

TABLE 4.2-3
NRHP-Eligible Resources in Corridor B

Resource	NRHP Status	Year Built	Location	Resource Description
Log House with Stone Chimneys	eligible	c. 1800	WV 93 south of Laurel Dale, Mineral County	Double pen enclosed dog trot log house
Luten Bridge/Boseley Bridge	eligible	c. 1915	Pancake Road and WV 93, Mineral County	Abandoned reinforced concrete arch bridge with parapets
Log House	eligible	c. 1850	Pancake Road south of Claysville, Mineral County	Two-story log house and former stagecoach stop with log outbuildings
Claysville United Methodist Church	eligible	c. 1850	US 50, Mineral County	Vernacular front gable church, school, and community building

In addition to the previously surveyed resources, 20 historic resources that have been identified as potentially eligible for listing in the NRHP could be impacted by Corridor B. Of the 20 potentially eligible historic resources that could be impacted by Corridor B, four are potential historic districts, including the large US 220 Maryland Rural Historic District, which spans the entire width of the corridor. Table 4.2-4 shows the potentially eligible properties within Corridor B and its associated study buffer.

TABLE 4.2-4
Potentially NRHP-Eligible Resources in Corridor B

Resource	Year Built	Location	Resource Description
Laurel Dale Gristmill and House	c. 1867	Burgess Hollow Road near WV 93 at Laurel Dale, Mineral County	Two and a half-story frame mill with stone foundation, extant wheel and millstone
Quality Dairy Farm	c. 1910	US 50 south of New Creek, Mineral County	Dutch Colonial Revival farmhouse, large barn, and outbuildings
House with Elongated Windows	c. 1880	US 50 north of Claysville, Mineral County	Double pile frame house with hipped roof
Farm	c. 1910	US 50 south of New Creek, Mineral County	Brick foursquare farmhouse with wrap-around porch and farm outbuildings
Colonial Revival House	c. 1910	WV 972 between US Routes 220 and 50, Mineral County	Large Colonial Revival House with wrap-around porch
Italianate Farm	c. 1870	US 220 south of Keyser, Mineral County	Brick farmhouse with decorative wood trim and outbuildings
Stone Farm	c. 1820	US 220 south of Keyser, Mineral County	Old stone farmhouse with large frame barn

TABLE 4.2-4 (continued)
Potentially NRHP-Eligible Resources in Corridor B

Resource	Year Built	Location	Resource Description
Potomac State College Farm	1919	Parkview Drive southwest of Keyser, Mineral County	129-acre experimental farm with specialized barns and outbuildings
Baltimore & Ohio (B&O) Railroad Mainline	c. 1840-c. 1850	South of the North Branch Potomac River at Keyser, Mineral County and west of river in Allegany County	First American Trunk Line railroad
Purinton Log House	1864	US 220 at Danville, Allegany County	Double pen two-story log house
18329 Machin Lane	c. 1880	US 220 near Danville, Allegany County	Vernacular two-story house with stone foundation
US 220 Maryland Rural Historic District	c. 1800-c. 1950	US 220 at Rawlings, Allegany County	Large district with multiple cattle and dairy farms
Pinto Historic District	c. 1880-c. 1920	Pinto Road SW, Allegany County	Small community with workers' housing, farm, and furnace ruins
Gunning's Delight Farm	c. 1850	Winchester Road SW south of Cresaptown, Allegany County	Altered house once part of an experimental farm, a distillery, and a saloon
Bowling Green 1920s Historic District	c. 1920	US 220 and April Avenue, Allegany County	Bungalows, foursquares, and a Tudor Revival store complex
Bowling Green Veterans Addition Historic District	c. 1947	East of US 220 between Robinette and Olive avenues, Allegany County	Post war planned subdivision with modest brick houses
Dorsey Log House	early 19thc	US 220 at Roberts, Allegany County	Two-story gable and wing log mansion with frame additions
Hammond Log House	early 19thc	US 220 at Roberts, Allegany County	Modest two-story log house
Brick House	c. 1940	Longwood Avenue southwest of Cumberland, Allegany County	Georgian Revival house in a suburban development
Stone House	c. 1940	Longwood Avenue southwest of Cumberland, Allegany County	Colonial Revival house in a suburban development

Corridor C

In total, 40 NRHP-listed, NRHP-eligible, or potentially eligible resources could be impacted by Corridor C. There are four NRHP-listed resources and five NHRP-eligible resources within Corridor C and its associated study buffer. Additionally, the NRHP-listed Chesapeake and Ohio Canal spans the full width of the corridor. The listed and eligible historic resources are shown on Table 4.2-5.

TABLE 4.2-5
NRHP-Listed and -Eligible Resources in Corridor C

Resource	NRHP Status	Year Built	Location	Resource Description
Vandiver-Trout-Clausen House (tavern)	listed	c. 1830	US 220 at Ridgeville, Mineral County	Former tavern on the Winchester to Parkersburg Turnpike
Frame House with Brick Chimney	eligible	c. 1870	US 220 at Ridgeville, Mineral County	Vernacular I-House with L-shaped plan
Stewart's Tavern	listed	c. 1790	Short Gap, Mineral County	Two-story log tavern building
Chesapeake and Ohio Canal	listed	1850-1924	South of Cumberland along North Branch Potomac River, Allegany County	Former 184-mile canal with two surviving locks and lockhouses
Colonial Manor National Road Inn	listed	c. 1840	Ali Ghan Road NE Cumberland, Allegany County	Federal Style building part of Inns of the National Road thematic listing
Concrete Block House	eligible	c. 1915	Ali Ghan Road NE Cumberland, Allegany County	Two and a half-story rock-faced concrete block foursquare house
Carleton Farm	eligible	c. 1890	Ali Ghan Road NE Cumberland, Allegany County	Altered gable and wing farmhouse
Hillcrest Memorial Park Funeral Chapel	eligible	c. 1885	Naves Road NE Cumberland, Allegany County	Three-story Gothic Revival style octagonal brick "singing tower"
Hillcrest Memorial Park	eligible	c. 1885	Naves Road NE Cumberland, Allegany County	Large cemetery with curvilinear roads

In addition to the previously surveyed resources, 31 historic resources have been identified as potentially eligible for listing in the NRHP. Potentially eligible resources within Corridor C include two Civil War sites, a historic air field, and an abandoned railroad tunnel. Table 4.2-6 shows the potentially eligible historic resources that could be impacted by Corridor C.

TABLE 4.2-6
Potentially NRHP-Eligible Resources in Corridor C

Resource	Year Built	Location	Resource Description
Keplinger Farm	c. 1890	Knobley Road, Grant County	Free Classic Queen Anne farmhouse with decorative wood trim and outbuildings
Greenland Gap Civil War Trenches	c. 1863	Greenland Gap Road west of Knobley Road, Grant County	Historic trench fortifications and earthworks
Farm	c. 1880	Knobley Road, Grant County	Old barns and former slave quarters with newer houses

TABLE 4.2-6 (continued)
Potentially NRHP-Eligible Resources in Corridor C

Resource	Year Built	Location	Resource Description
Thorn Run Inn Farm	c. 1871	Knobley Road, Grant County	Greek Revival brick farmhouse with outbuildings
Knobley Road Farm	c. 1830	Knobley Road, Grant County	Old log farmhouse with broad stone chimneys and outbuildings
Former Knobley School	c. 1890	Knobley Road, Grant County	Front gable one-room schoolhouse
Farm	c. 1890	Knobley Road at Penneroil Road, Mineral County	Queen Anne Style farmhouse with outbuildings
Antioch Woolen Mill and Miller's House	c. 1787	County Route 9 at Grayson Gap Road, Mineral County	Two and a half-story grist/woolen mill with miller's house
Frame House with Outbuildings (farm)	c. 1840	North of US 220 at Ridgeville, Mineral County	Side gable frame house with broad stone chimney and outbuildings
Rexrode Rocky Acres Farm	c. 1900	Knobley Road, Mineral County	Vernacular I-House with barn and chicken coops
House	c. 1860	Fountain-Headsville Road, Mineral County	Vernacular I-House with historic additions and small outbuildings
Former Mead Chapel M.E.	1921	Knobley Road south of Reeves Road, Mineral County	Front gable Carpenter Gothic church with stone foundation and cupola
Farm	c. 1840	Knobley Road, Mineral County	Log farmhouse with broad stone chimney and log barn
Fairview Valley Farm	c. 1890	Georges Run Road, Mineral County	Queen Anne farmhouse with large ensemble of farm buildings
Patterson Creek Cut-Off of the B&O Main Line	c. 1903	McKenzie, MD to Patterson Creek, WV, Mineral County	Abandoned B&O rail line with Knobley Mountain Tunnel, which allowed coal trains to bypass Cumberland, MD
Old Vulcan Furnace	c. 1840	Old Furnace Road east of WV 28, Mineral County	Truncated iron furnace made of roughly coursed stone
Mexico Farm Landing Field	c. 1923-c. 1940	Mexico Farm Road SE Cumberland, Allegany County	Army Air Corps installation then community airport
Baltimore & Ohio Railroad Main Line	c. 1840-c. 1850	South of MD 51, Allegany County	First American Trunk Line railroad
Taschenberger Farmhouse	c. 1875	Uhl Highway SE Cumberland, Allegany County	Gable and wing frame farmhouse with barn and outbuildings

TABLE 4.2-6 (continued)
Potentially NRHP-Eligible Resources in Corridor C

Resource	Year Built	Location	Resource Description
Davis Memorial United Methodist Church and Cemetery	1929	14300 Uhl Highway, Allegany County	Gothic Revival brick front gable church with square plan bell tower at front left
Bungalow Farm	1929	12615 Knippenberg Road, Allegany County	Craftsman Bungalow farmhouse with late 19th century barn
Stick Style Bungalow	c. 1920	Uhl Highway, Allegany County	Stick Style Bungalow with decorative porch gable and columns
Log Cabin	c. 1870	Williams Road between Brashier Hollow and Christie roads, Allegany County	Log cabin with dovetail corner notching and fieldstone chimney
Farm	1928	12220 Williams Road, Allegany County	Brick foursquare farmhouse with matching garage and frame barn
Log Barn and Outbuildings (farm)	c. 1850	Christie Road NE at Jeffries Road NE Cumberland, Allegany County	Large log barn with stone foundation and early 20th century bungalow farmhouse
Lakewood Farm	c. 1900	10205 Christie Road, Cumberland, Allegany County	Colonial Revival farmhouse with outbuildings
Cabin Camp	c. 1950	Christie Road and Woodbridge Lane, Allegany County	Four vernacular vacation cabins with screened porches
Ali Ghan Shrine Club	1938	13100 Ali Ghan Road, Cumberland, Allegany County	Tudor Revival clubhouse with 29-acre property and multiple outbuildings
Cumberland Motel	c. 1955	10900 Mason Road NE, Cumberland, Allegany County	Mid-20th century motel and office near the National Road (US 40)
Foursquare House	c. 1915	12700 Ali Ghan Road NE, Cumberland, Allegany County	Stucco-covered foursquare with decorative trim
Folck's Mill (foundation ruins)	c. 1820-c. 1864	North of I-68 Cumberland, Allegany County	Stone gristmill damaged in August 1864 in daylong Civil War skirmish

It is important to note here that the Western Maryland Railway or Railroad (WMRR) lies just outside Corridor C. On July 23, 1981, the 34-mile long section of the WMRR Right-of-Way (milepost 126 to milepost 160) was listed on the NRHP. The rail line was abandoned after the railroad was purchased by the newly-formed Chessie System in 1972 because of redundancies with other system routes and in 1975 the tracks were removed. The close proximity of this section of the railway to the Chesapeake and Ohio Canal National Historical Park has raised concerns about possible adverse future development of the former rail land, and the historic significance of the rail line itself. The NPS acquired the property in 1980. The resource is significant as a "remnant of one of the last major phases of trans-Allegheny railroad expansion in the early 20th century" and for its engineering sophistication (Mackintosh 1981).

This section of the railroad was constructed from 1903 to 1906 in an attempt to compete with the B&O Railroad and to provide a route for hauling freight, primarily coal, to Baltimore. The NRHP boundary for the resource is described as the railway right-of-way between milepost 126 at the intersection of the Chesapeake and Ohio Canal and Long Ridge Road, Woodmont, and milepost 160 just west of MD 51, North Branch. Its path roughly follows the Potomac River and the Chesapeake and Ohio Canal on the Maryland side with the exception of six river crossings downstream from Paw Paw resulting in about seven miles of the rail line located in West Virginia and three tunnels in Maryland

The NRHP boundary seems to have been determined by the NPS purchase of this section of the abandoned rail line and its proximity to the Chesapeake and Ohio Canal National Historical Park. West of milepost 160, the abandoned former railroad bed continues to the northwest through a recently-developed industrial park that has encroached on the former railroad right-of-way, crosses the North Branch Potomac River, runs through a tunnel by the Mexico Farm Landing Field, crosses the river a second time, passes under the Cumberland Municipal Airport through the Welton Tunnel, and crosses the North Branch Potomac River a third time. The former railroad is barely discernable as it runs through the southern edge of Cumberland, where development has occurred within the right-of-way since the abandonment of the line. As it heads west, the former railroad bed crosses the river again and enters the Knobly Tunnel before splitting into the Connellsville Branch (to the northwest, 1910-1912) and the Elkins (Bloomington) Branch (to the southwest, 1905) at the rail yard in Carpendale.

Corridor D

Corridor D has the greatest number of historic resources of the three corridors. In total, 44 NRHP-listed, NRHP-eligible, or potentially eligible resources could be impacted by Corridor D. The WVDCH also singled out Corridor D as having the highest quality of historic resources. Nine NRHP-listed resources fall within Corridor D and its associated study buffer. They include five early nineteenth century mansions within the NRHP-eligible Middle South Branch Valley Rural Historic District, two large farms near Burlington, a historic tavern, and a former toll house on the National Road. Additionally, 12 Corridor D resources have already been determined eligible for listing in the NRHP including the Middle South Branch Valley Rural Historic District. Table 4.2-7 shows the NRHP-listed and -eligible historic resources that could be impacted by Corridor D.

TABLE 4.2-7
NRHP-Listed and –Eligible Resources in Corridor D

Resource	NRHP Status	Year Built	Location	Resource Description
Abraham Inskeep House	eligible	Unknown	Northwest of Moorefield, Hardy County	House and farm
Middle South Branch Valley Rural Historic District	eligible	c. 1800-c. 1870	US 220 between Old Fields and Moorefield, Hardy County	Rural Historic District with large farms, brick mansions, and historic frame barns
The Meadows	listed	c. 1830	US 220 north of Moorefield, Hardy County	Greek Revival brick mansion in Middle South Branch Valley Rural Historic District
Moorefield Battlefield	eligible	1864	US 220 between Old Fields and Moorefield, Hardy County	Battle site of Civil War victory for Union forces against McCausland's Confederate troops
Willow Wall House and Farm	listed	c. 1810	US 220 south of Old Fields, Hardy County	Georgian Style brick mansion in Middle South Branch Valley Rural Historic District
Buena Vista Farms	listed	c. 1836	US 220 south of Old Fields, Hardy County	Brick mansion and large multi-gabled barn in Middle South Branch Valley Rural Historic District
Fort Pleasant Farm	listed	c. 1832	US 220 at Old Fields, Hardy County	Greek Revival brick mansion in Middle South Branch Valley Rural Historic District
Garrett VanMeter House	listed	c. 1830	Old Fields Road east of Old Fields, Hardy County	Federal Style brick mansion in Middle South Branch Valley Rural Historic District

TABLE 4.2-7 (continued)
NRHP-Listed and –Eligible Resources in Corridor D

Resource	NRHP Status	Year Built	Location	Resource Description
Old Fields Church and Cemetery	eligible	c. 1812	US 220 at Old Fields, Hardy County	Vernacular front gable brick church and meetinghouse
I-House (farm)	eligible	c. 1900	US 220 south of Purgitsville, Hampshire County	Vernacular I-House with farm
I-House (George Purgitt's house and farm)	eligible	c. 1880	US 220, Hampshire County	Vernacular I-House with farm buildings in potentially eligible Purgitsville Historic District
Former Commercial Structure	eligible	c. 1910	US 220, Hampshire County	Two-story frame building in potentially eligible Purgitsville Historic District
Former Commercial Structure	eligible	c. 1890	US 220, Hampshire County	Altered store/tavern building in potentially eligible Purgitsville Historic District
Fairview/Peerce Home Place	listed	c. 1860	Russeldale Road east of Patterson Creek Road, Mineral County	Classical Revival brick house by builder John T. Peerce with square cupola and outbuildings
Fort Hill Farm	listed	c. 1853	Shirley Lane and Patterson Creek roads, Mineral County	Cattle farm with brick farmhouse, c. 1875 barn, and many specialized outbuildings
Stone House Inn	eligible	c. 1810	US 220 east of Ridgeville, Mineral County	Two-story 8-bay stone inn formerly on the Winchester to Parkersburg Turnpike
Vandiver-Trout-Clausen House (tavern)	listed	c. 1830	US 220 at Ridgeville, Mineral County	Former tavern on the Winchester to Parkersburg Turnpike
Frame House with Brick Chimney	eligible	c. 1870	US 220 at Ridgeville, Mineral County	Vernacular I-House with L-shaped plan
Julius Grabenstein Farmhouse	eligible	c. 1915	Spealman Road at LaVale, Allegany County	Foursquare farmhouse with Doric porch columns
Grabenstein Bungalow	eligible	c. 1920	Spealman Road at LaVale, Allegany County	Craftsman style brick bungalow farmhouse and barn
LaVale Toll Gate House	listed	1836	US 40 National Highway SW, Allegany County	First toll gate completed on Maryland portion of National Road

In addition to the previously surveyed resources, 23 historic resources have been identified as potentially eligible for listing in the NRHP and could be impacted by Corridor D. Three potential historic districts are located within Corridor D including the large US 220 Maryland Rural Historic District, which spans the entire width of the corridor. The potentially eligible resources include

11 other farms as well as houses, churches, and a historic railroad line. Table 4.2-8 shows the potentially eligible historic resources that could be impacted by Corridor D.

TABLE 4.2-8
Potentially NRHP-Eligible Resources in Corridor D

Resource Name	Year Built	Location/ County	Resource Description
Taylor Farm	c. 1890	US 220 north of Old Fields, Hardy County	Vernacular I-House with more than a dozen farm buildings
Former Otterdin Church	c. 1870	Church Road south of Purgitsville, Hampshire County	Vernacular front gable church with pointed arch gable window
Farm	c. 1860	US 220 opposite Church Road, Hampshire County	Vernacular I-House with stone and brick chimneys and barn
Old Pine Church	c. 1830	Old Pine Church Road south of Purgitsville, Hampshire County	Front gable church with churchyard graves dating back to 1792
Old Pine Church Road Farm	c. 1860	Old Pine Church Road south of Purgitsville, Hampshire County	Vernacular I-House with several farm outbuildings
Huffman Road Farmstead	c. 1870	Huffman Road west of Purgitsville, Hampshire County	Vernacular frame farmhouse with stone and brick chimneys
Purgitsville Historic District	c. 1880-c. 1910	US 220, Hampshire County	Several farms, houses, a former post office and a church
Stringtown Road Farmstead	c. 1900	Stringtown Road east of US 220 north of Purgitsville, Hampshire County	Vernacular I-House with decorative cross gable and four outbuildings
Former Markwood School	c. 1890	US 220 west of Shirley Lane Road, Mineral County	Front gable one-room schoolhouse with stone foundation
Markwood United Methodist Church	c. 1890	US 220 west of Shirley Lane Road, Mineral County	Front gable frame church with square cupola
L-shaped Frame House	c. 1863	South of US 220 at Markwood, Mineral County	Side gable frame house with rear wing
Frame House with Outbuildings (farm)	c. 1840	North of US 220 at Ridgeville, Mineral County	Side gable frame house with broad stone chimney and outbuildings
Colonial Revival House	c. 1910	WV 972 between US Routes 220 and 50, Mineral County	Large Colonial Revival House with wrap-around porch
Italianate Farm	c. 1870	US 220 south of Keyser, Mineral County	Brick farmhouse with decorative wood trim and outbuildings
Stone Farm	c. 1820	US 220 south of Keyser, Mineral County	Old stone farmhouse with large frame barn
Potomac State College Farm	1919	Parkview Drive southwest of Keyser, Mineral County	129-acre experimental farm with specialized barns and outbuildings

TABLE 4.2-8 (continued)
Potentially NRHP-Eligible Resources in Corridor D

Resource Name	Year Built	Location/ County	Resource Description
Baltimore & Ohio Railroad Main Line	c. 1840-c. 1850	South of the North Branch Potomac River at Keyser, Mineral County and west of river in Allegany County	First American Trunk Line railroad
Purinton Log House	1864	US 220 at Danville, Allegany County	Double pen two-story log house
18329 Machin Lane	c. 1880	US 220 near Danville, Allegany County	Vernacular two-story house with stone foundation
US 220 Maryland Rural Historic District	c. 1800-c. 1950	US 220 at Rawlings, Allegany County	Large district with multiple cattle and dairy farms
Pinto Historic District	c. 1880-c. 1920	Pinto Road SW, Allegany County	Small community with workers housing, farm, and furnace ruins
Gunning's Delight Farm	c. 1850	Winchester Road SW south of Cresaptown, Allegany County	Altered house once part of an experimental farm, a distillery, and a saloon
McKenzie Log Farmhouse	c. 1830	Marshall Porter Road SW at LaVale, Allegany County	Two and a half-story double pile log and frame house with two-level porch and outbuildings

Additional cultural resource investigations will be necessary during Tier Two. The investigations will follow the procedures for *Section 106* as outlined in 36 CFR 800.3 through 36 CFR 800.6 and the procedures of each SHPO. The investigations will include identification and analysis of cultural resources, establishment of boundaries for NRHP-eligible resources, preliminary analysis of effects at the draft environmental document stage, full analysis of the effects of the Preferred Alternative, and complete resolution of adverse effects, if any, caused by the Preferred Alternative. The resources that have been identified as potentially eligible will be researched further and eligibility forms will be prepared to evaluate them.

Early in the Tier Two process, a Programmatic Agreement (PA) or procedural outline will be developed in consultation with the WVDOH, MDSHA, the SHPOs, and the Advisory Council on Historic Preservation, detailing the steps to be used for complying with *Section 106* as part of the Tier Two approach. During Tier Two, a Memorandum of Agreement (MOA) will also be developed addressing adverse effects to historic structures and detailing the necessary avoidance/mitigation measures required.

4.2.3 Future Mitigation Efforts

Given the results of the preliminary archaeological research at the Tier One level, the pre-contact and historic period archaeological resources predictive surfaces will be utilized as a relative method of assessing the potential impacts to archaeological resources. Based on the archaeological evidence and predictive surfaces, once one corridor has been selected as the preferred corridor, a complete Phase I archaeological survey for pre-contact and historic period archaeological resources will be performed to identify archaeological sites and their potential eligibility for listing in the NRHP. The predictive surfaces should help guide the Phase I survey field methodologies, and the results of that survey will be used to assess the effectiveness of the predictive surfaces.

Additional historic resource investigations will also be necessary during Tier Two. The investigations will follow the procedures for *Section 106* as outlined in 36 CFR 800.3 through 36 CFR 800.6 and the procedures of each SHPO. The investigations will include identification and analysis of cultural resources, establishment of boundaries for NRHP-eligible resources, preliminary analysis of effects at the draft environmental document stage, full analysis of the effects of a preferred alternative, and complete resolution of adverse effects, if any, caused by a preferred alternative. The resources that have been identified as potentially eligible will be researched further and eligibility forms will be prepared to evaluate them.

If necessary, a PA or procedural outline will be developed in consultation with the WVDOH, MDSHA, the SHPOs, and the Advisory Council on Historic Preservation, detailing the steps to be used for complying with *Section 106* as part of the Tier Two approach. Prior to FHWA approval of the Tier Two NEPA document(s), a MOA will be developed addressing adverse effects to historic structures and detailing the necessary avoidance/mitigation measures required.

4.3 Natural Resources

The natural resources analyzed for the project included wetlands, streams, floodplains, vegetation/habitat, threatened and endangered species, farmlands, and soils and geological features. Secondary source information on all resources was collected through research and by contacting local and state agencies with jurisdiction over, or interest in, the various landscape

features. All information was incorporated into the project's GIS and field verified. Updated data, based on the field verifications, were subsequently incorporated into the GIS.

4.3.1 Aquatic Resources

Aquatic resources include wetlands and streams. The potential impacts to these resources were evaluated to determine how they could be affected by the proposed corridors.

4.3.1.1 Wetlands

Each of the three corridors would require the crossing of wetlands, resulting in potential impacts to wetland resources.

4.3.1.1.1 Methodology

Potential wetlands within the three corridors were identified through the use of existing information and preliminary field investigations. Field investigations were conducted during August 2006 and September 2007. The natural resource agencies did not field view potential wetland resources but will do so during Tier Two.

The sources for the information used in the investigation included the USDA's Allegany County soil survey (1977); Hampshire, Mineral, and Morgan counties soil survey (1978); Grant and Hardy counties soil survey (1989); and the USFWS's National Wetland Inventory mapping (WVU 2000 and USFWS 2007). Potential wetland habitats were identified based on visual changes in vegetation and signs of hydrology. All potential wetlands within the study area were classified in accordance with the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin, *et al*. 1979).

Palustrine scrub-shrub (PSS), PSS/Palustrine Emergent (PEM), Palustrine Forested (PFO), and PFO/PSS were considered higher quality wetland types because they all contain woody plants as a component. It takes more time for these wetland types to develop and become established. Generally, they provide a greater number of beneficial values and functions than other wetland types. These wetland types are often located in unique positions within the landscape, which aid in their ability to provide enhanced benefits through flood flow alteration,

sediment trapping, nutrient filtering, and wildlife or aquatic habitat. They also provide a structural diversity (e.g., herbs to shrubs to trees to snags/deadfalls) not provided by emergent or open water wetlands. Usually, the regulatory replacement mitigation ratios are weighted heavier for these wetland types because of their higher quality.

None of the wetlands identified were delineated. Field delineations will occur during Tier Two.

4.3.1.1.2 Effects Analysis – Wetlands

No Build Alternative

The No-Build Alternative would not result in any immediate impacts to wetlands; however, it would not meet the purpose and need of the project.

Build Alternatives

Potential impacts to wetlands with all three corridors are illustrated on the Plates. The information in Table 4.3-1 summarizes the potential impacts to wetlands.

TABLE 4.3-1
Potential Wetland Impacts

Wetland Type	Corridor B		Corridor C		Corridor D	
	Number	Acres	Number	Acres	Number	Acres
PEM	34	41.9	113	65.6	73	52.6
PEM/POW	0	0.0	0	0.0	1	0.2
PSS	2	1.5	0	0.0	2	0.4
PSS/PEM	2	1.7	2	4.4	1	0.2
PFO	8	11.6	5	14.4	9	15.8
PFO/PSS	2	0.1	0	0.0	2	0.2
POW	65	56.5	86	34.8	39	31.6
POW/PEM	1	0.3	0	0.0	0	0.0
PUS	3	4.5	49	32.5	84	42.0
Total	117	118.1	255	151.7	211	143.0

Palustrine Emergent (PEM), Palustrine Scrub-Shrub (PSS), Palustrine Forested (PFO), Palustrine Open Water (POW), and Palustrine Unconsolidated Shore (PUS)

Corridor B

Corridor B would impact the least amount of wetlands of all three corridors. Up to 117 wetlands and 118.1 acres could be impacted. This is both the fewest number of wetlands and least amount of wetland acreage that could be impacted. Potential impacts to wetlands within this corridor would be considerably less in both number and acreage than any of the other corridors. Additionally, Corridor B would impact the least acreage (14.9 acres) of any Build Alternative when comparing the higher quality wetland types.

MDNR indicated, however, that Pinto Marsh, a two to three acre marshy pond near Cresaptown, is designated as a non-tidal wetland of special state concern and falls within Corridor B. Wetlands like Pinto Marsh receive special state attention because of their value as known habitat for rare, threatened, or endangered species. A breeding record of the state-listed rare sora (*Porzana Carolina*) was previously observed in Pinto Marsh. (The sora is a marsh bird, six to eight inches in length with a wingspan of 12 inches. It is sometimes called the Carolina crake or the sora rail.) Wetlands of special state concern are regulated by the *Code of Maryland Regulations* and afforded certain protections, including a 100-foot buffer from development. As potential habitat for rare, threatened, or endangered species, Pinto Marsh is also one of Allegany County's *Sensitive Areas Elements* and is afforded a level of local protection in the County's land development regulations.

Corridor B may also allow for the most avoidance possibilities of wetland systems during Tier Two due to its greater potential for utilizing portions of existing roadways.

Corridor C

Corridor C could result in impacts to 255 wetlands, or 151.7 acres of wetlands. Corridor C contains the highest number of wetlands and the largest amount of wetland acreage that could be impacted by any of the corridors. Although Corridor C has fewer number of higher quality wetlands (seven), the acreage is higher (18.8 acres), which indicates that individual high quality wetlands are larger and possibly part of more established systems. Often these larger, high quality systems also have more wetland values and functions such as flood water storage or nutrient retention.

Corridor D

Corridor D could result in 211 wetlands, or 143.0 acres of wetlands, being impacted. Corridor D contains the second largest number of wetlands and the second largest amount of wetland acreage that could be impacted of the three corridors. This corridor contains the second highest number of high quality wetland systems. MDNR indicated that a two to three acre marshy pond (Pinto Marsh) is designated/regulated as a non-tidal wetland of special state concern along with a 100-foot upland buffer within Corridor D.

4.3.1.1.3 Future Mitigation Efforts

During Tier Two, measures will be identified that will minimize any temporary and permanent impacts to wetland resources due to the construction of the Preferred Alternative. Additionally, a jurisdictional determination of wetland boundaries will be completed with the USACE prior to construction and a USACE Section 404 permit(s) will be obtained.

4.3.1.2 Streams and Water Quality

Each of the three corridors would require the crossing of streams, resulting in potential impacts to stream (and water quality) resources. Streams were identified through the use of existing information and limited field investigations.

4.3.1.2.1 Methodology

The MDNR and the *West Virginia Surface Mining Rules* define streams as follows:

- *Perennial Stream* – A stream that flows continuously throughout the year.
- *Intermittent Stream* – A stream that does not have a continuous flow throughout the year.
- *Ephemeral (or Wet Weather) Stream* – A stream that flows only in direct response to precipitation or whose channels are at all times above the water table.

Existing information utilized in the investigation included the USDA's Allegany County soil survey (1977); Hampshire, Mineral, and Morgan counties soil survey (1978); Grant and Hardy

counties soil survey (1989); and study area mapping. In August 2006 and September 2007, field investigations revealed numerous perennial and intermittent streams and a few ephemeral streams within the three corridors. During the September 2007 field investigation, samples along randomly selected points were collected to gain background data on study area streams and water quality. Data collected included information on each stream's physical parameters, adjacent land use, watershed characteristics, macroinvertebrates observed, pH, temperature, sample site location (latitude/longitude), and photograph(s). Corridor B had 20 sample sites, Corridor C had 22 sample sites, and Corridor D had 25 sample sites. On average, the stream sample locations were approximately 1.8 miles apart for Corridor B, approximately 2.0 miles apart for Corridor C, and approximately 1.8 miles apart for Corridor D.

West Virginia Regulations and Permitting

West Virginia *Title 46 Legislative Rule, Environmental Quality Board, Series 1, Requirements Governing Water Quality Standards (46 Code of State Regulations* [CSR] *1)* were reviewed concerning potential impacts to West Virginia waters (WVSOS 2007). The North Branch Potomac River is a jurisdictional waterbody of Maryland; MDE regulates all discharges that occur directly to it except for tributaries coming from West Virginia.

WVDEP will have *Clean Water Act* (CWA), *Section 401 Water Quality Certification* jurisdiction concerning this project within West Virginia. Additionally, the WVDEP Division of Water Resources will be responsible for reviewing the General WV/National Pollutant Discharge Elimination System Water Pollution Control Permit associated with construction activities. This general permit is for any proposed construction activity with three acres or greater of land disturbance. For projects that will disturb between one acre and less than three acres of land, the responsible party must submit a Notice of Intent (NOI) at least 10 days prior to starting earth-disturbing activities (WVDEP 2007).

Maryland Regulations and Permitting

Maryland has jurisdiction over the North Branch Potomac River. Thus, the primary permitting activities for any major crossings of the river for this project would occur through the MDE. The MDE requires authorization for the construction of bridge projects in a waterway or a 100-year

floodplain (*Environment Article Title 5, Subtitle 5-501 through 5-514; Annotated COMAR; COMAR 26.17.04)*. Prior to construction, a Joint Federal/State Application (*Environment Article Title 5, Subtitle 5-901 through 5-911; COMAR 26.23 and CWA Section 404 Permit*) for the alteration of the floodplain and non-tidal wetlands through the MDE and the USACE will be prepared. The permit application will also entail MDE's State Water Quality Certification (*CWA Section 401*). Finally, the MDE requires the approval of an Erosion and Sedimentation Control Plan and Stormwater Management Plan before construction that disturbs 5,000 square feet or more of land can occur (*Environment Article Title 4, Subtitle 1 [Erosion and Sediment Control] and Subtitle 2 [Stormwater Management]; COMAR 26.17.01 and 26.17.02)*.

4.3.1.2.2 Effects Analysis – Streams and Water Quality

The following potential stream impacts are preliminary and provide a liberal estimate of potential impacts. However, the generated impact estimates indicate that Corridor B would have the least amount of impacts on streams and water quality. There could also be temporary impacts to streams and water quality during construction of any build alternative. Earthwork and removal of vegetation for construction would increase the potential for soil erosion and sedimentation to streams within the construction area.

No Build Alternative

The No-Build Alternative would not result in any immediate impacts to streams or water quality; however, it would not meet the purpose and need of the project.

Build Alternatives

Potential impacts to the study area's perennial and intermittent streams are summarized in Table 4.3-2.

TABLE 4.3-2
Potential Stream Impacts

Stream Type	Corridor B		Corridor C		Corridor D	
	Number	Feet	Number	Feet	Number	Feet
Perennial	150	246,322	199	269,902	198	326,380
Intermittent	33	53,917	55	60,932	84	122,423
Total	183	300,239	254	330,834	282	448,803

Corridor B

Corridor B may result in an impact to 150 perennial streams and 33 intermittent streams. The approximate length of stream impact associated with this corridor to perennial and intermittent watercourses is 246,322 feet and 53,917 feet, respectively. Of the potential streams that could be impacted by Corridor B, 19 streams (perennial or intermittent) were sampled during field investigations (Figure 4-6). The results of the sampling can be found on Table 4.3-3.

Corridor C

Corridor C may result in an impact to 199 perennial streams and 55 intermittent streams. The approximate length of stream impact associated with this corridor to perennial and intermittent watercourses is 269,902 feet and 60,932 feet, respectively. Of the potential streams that could be impacted by Corridor C, 21 streams (perennial or intermittent) were sampled during field investigations (Figure 4-6). The results of the sampling can be found on Table 4.3-4. This corridor may result in an impact to the greatest number of perennial streams, but not the greatest impact length.

Corridor D

Corridor D may result in an impact to 198 perennial streams and 84 intermittent streams. The approximate length of stream impact associated with this corridor to perennial and intermittent watercourses is 326,380 feet and 122,423 feet, respectively. Of the potential streams that could be impacted by Corridor D, another 13 streams (perennial or intermittent) were sampled beyond the area where Corridors B and D are coterminous (Figure 4-6). The results of the sampling can be found on Table 4.3-5. Corridor D may result in an impact to the greatest linear feet of perennial streams as well as the greatest number of linear feet impact of intermittent streams of all three corridors.

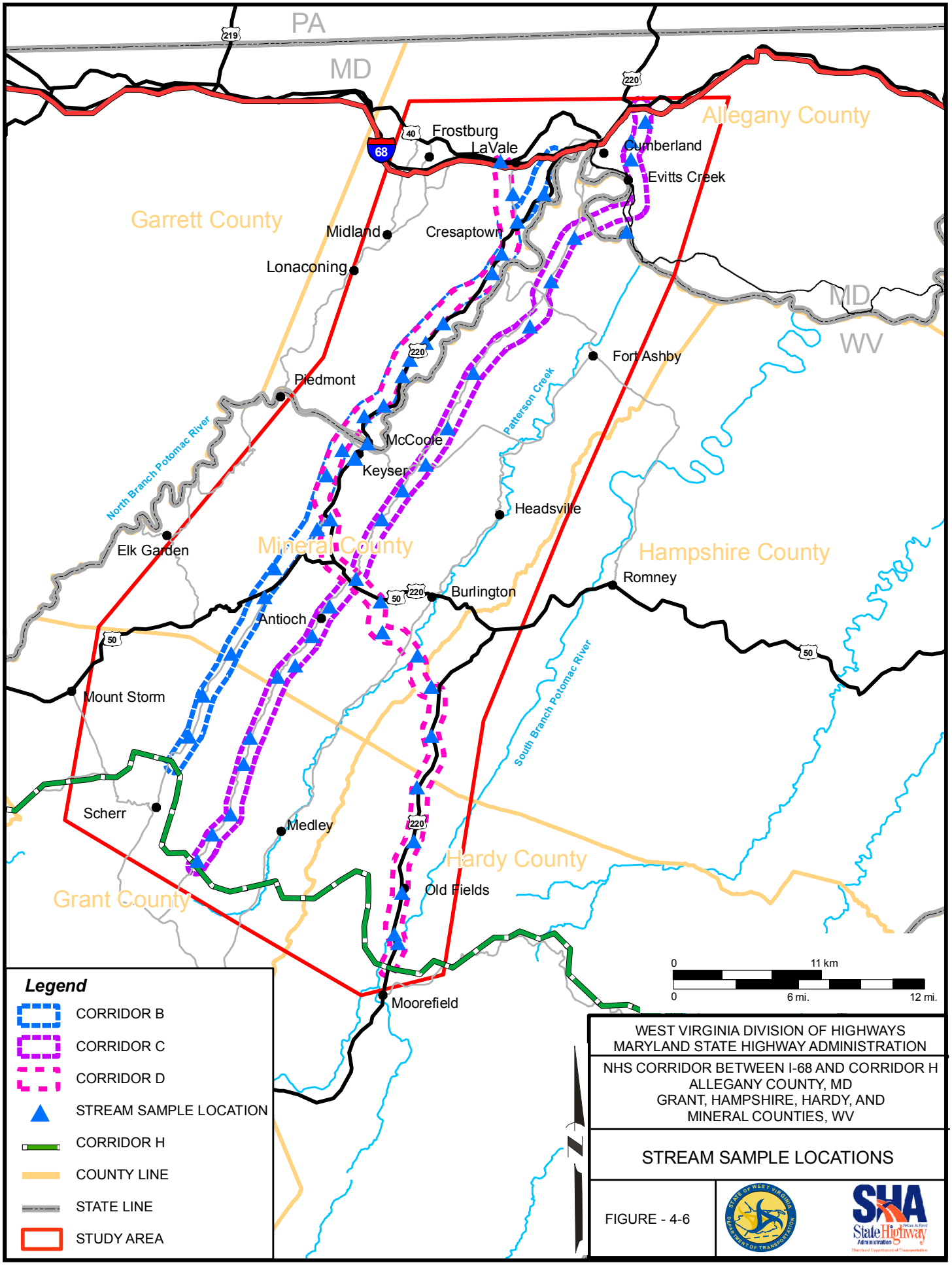

PA
MD
219
220
40
68
Frostburg
LaVale
Cumberland
Evitts Creek
Allegany County
Garrett County
Midland
Cresaptown
Lonaconing
MD
WV
Fort Ashby
Piedmont
Patterson Creek
North Branch Potomac River
McCoole
Keyser
Headsville
Elk Garden
Mineral County
Hampshire County
Romney
Burlington
50
Antioch
Mount Storm
South Branch Potomac River
Scherr
Medley
Hardy County
Old Fields
Grant County
Moorefield
0
11 km
0
6 mi.
12 mi.
Legend
CORRIDOR B
CORRIDOR C
CORRIDOR D
STREAM SAMPLE LOCATION
CORRIDOR H
COUNTY LINE
STATE LINE
STUDY AREA
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
STREAM SAMPLE LOCATIONS
FIGURE - 4-6
SHA
State Highway
Administration

TABLE 4.3-3
Summary of Stream Surveys for Corridor B

Stream Name	Perennial or Intermittent	Flow Condition	Average Depth (in)	Average Width (ft)	Watershed Characteristics	Macroinvertebrates	pH	Temperature (°F)
UNT to North Branch Potomac River	Perennial	Normal	3	3	Mountains Wooded Open	Snail – Common Isopod – Present Midge – Present Caddisfly – Present Mayfly - Present	6.5	65
UNT to North Branch Potomac River	Perennial	Low	4	5	Rolling Wooded Open	Waterpenny - Abundant Snail – Abundant	N/A	N/A
UNT to North Branch Potomac River	Perennial	Normal	3	10	Mountains Wooded	Caddisfly – Present Isopod - Present	6	65
UNT to North Branch Potomac River	Perennial	Normal	2	3	Mountains Wooded Open	Caddisfly – Present Snail - Present	6.5	66
UNT to North Branch Potomac River	Perennial	Normal	2	3	Mountains Wooded Open	Snail – Common Mayfly – Present Water Penny - Present	6.5	66
UNT to North Branch Potomac River	Perennial	Normal	3	6	Mountains Wooded Open	Mayfly – Common Water Penny – Common Caddisfly - Present	6.5	65
UNT to North Branch Potomac River	Perennial	Low	2	2	Mountains Wooded Open	Flatworm – Common Snail - Present	6.5	66
UNT to North Branch Potomac River	Intermittent	Low	1	3	Mountains Wooded	None observed.	N/A	67
North Branch Potomac River at Keyser	Perennial	Normal	24	100	Mountains Wooded Open	Crayfish – Abundant Mayfly – Abundant Caddisfly - Present	6.5	67
Thunderhill Run	Perennial	Normal	2	4	Mountains Wooded Pasture	Flatworm - Abundant Water Penny – Common Caddisfly – Abundant Mayfly - Present	6.5	71

TABLE 4.3-3 (continued)
Summary of Stream Surveys for Corridor B

Stream Name	Perennial or Intermittent	Flow Condition	Average Depth (in)	Average Width (ft)	Watershed Characteristics	Macroinvertebrates	pH	Temperature (°F)
Stony Run	Perennial	Normal	4	3	Mountians Wooded	Stonefly – Present Water Penny - Abundant Caddisfly - Abundant Isopod - Present	6.5	68
Newcreek	Perennial	Normal	4	25	Mountains Wooded Open Pasture	Midge – Abundant Mayfly – Common Caddisfly – Common Aquatic beatle - Present	6.5	71
Ash Spring Run	Perennial	Low	3	3	Mountains Wooded	Caddisfly – Common Water Penny - Common	6.5	66
Newcreek at Route 93 Bridge/Pancake Road	Perennial	Normal	8	15	Mountains Wooded Open	Mayfly – Abundant Caddisfly – Abundant Midge – Abundant Water Penny – Present Cranefly - Present	6.5	69
UNT to New Creek at Mineral/Grant	Perennial	Normal	2	3	Mountains Wooded Pasture	Caddisfly – Abundant Stonefly – Present Crayfish – Present Water Strider – Present Scud - Abundant	6.5	54
Newcreek at Fishing Access Road	Intermittent	None	Dry	6	Mountains Wooded Cultivated	None observed.	NA	NA
UNT to Newcreek	Perennial	Low	1/2	3	Mountains Wooded	Caddisfly - Abundant Mayfly - Abundant Crayfish - Present	6.5	67
Warrior Run in Cresaptown, MD	Perennial	Normal	4	6	Mountains Wooded Open	Caddisfly - Abundant Mayfly - Present	6.5	69
UNT to North Branch Potomac River	Intermittent	Low	1/2	1	Mountains Wooded	Isopod - Present	6.5	68

NA: Not able to take measurement.

TABLE 4.3-4
Summary of Stream Surveys for Corridor C

Stream Name	Perennial or Intermittent	Flow Condition	Average Depth (in)	Average Width (ft)	Watershed Characteristics	Macroinvertebrates	pH	Temperature (°F)
UNT to Middle Fork	Perennial	Normal	2	8	Mountains Wooded Pasture	Water Penny – Common Caddisfly – Common Mayfly – Common Stonefly - Present Helgermite - Present	6.5	67
North Fork near Greenland Gap	Perennial	Normal	6	12	Mountains Wooded Open Pasture	Crayfish – Present Caddisfly – Abundant Mayfly – Present Stonefly – Present Water Penny - Common	6.5	69
UNT to North Fork	Intermittent	Low	3	3	Rolling Open Pasture	Midge – Abundant Limited habitat features.	N/A	75
Thorn Run at Martin, WV	Perennial	Normal	3	6	Rolling Wooded Open Cultivated	Mayfly – Abundant Caddisfly - Abundant	6.5	68
Rosser Run on WV 5	Perennial	Normal	2	4	Rolling Wooded Open Pasture	Caddisfly – Abundant Mayfly – Common Stonefly – Present Water Penny - Present	6.5	65
UNT to Whip Gap Run	Perennial	Normal	5	4	Mountains Wooded Pasture	Stonefly – Common Mayfly – Common Caddisfly – Common Water Penny – Present Crayfish - Present	6.5	57
Hilkey Run	Perennial	Normal	2	6	Mountains Wooded Pasture	Mayfly – Common Water Penny – Present Caddisfly - Present	6.5	66

TABLE 4.3-4 (continued)
Summary of Stream Surveys for Corridor C

Stream Name	Perennial or Intermittent	Flow Condition	Average Depth (in)	Average Width (ft)	Watershed Characteristics	Macroinvertebrates	pH	Temperature (°F)
Mill Run/Creek along WV 6 in Antioch, WV	Perennial	Normal	2	10	Rolling Open Pasture	Caddisfly – Abundant Stonefly – Common Mayfly – Common Scud – Present Aquatic beatle - Present	6.5	57
UNT to Mill Run/Creek along WV 9, Ridgeville, WV	Perennial	Low	1	1	Rolling Open Pasture	None observed.	6.5	67
UNT to Litter Run adjacent to WV 9	Intermittent	None	Dry	1	Hilly Wooded Pasture	None observed.	NA	NA
UNT to Cabin Run	Perennial	Normal	2	2	Hilly Wooded Pasture	N/A - Poor substrate for habitat.	6.5	64
Cabin Run on Cabin Run Road	Perennial	Normal	8	7	Rolling Pasture	Access to stream unavailable.	N/A	N/A
UNT to Ouhre Run	Perennial	Normal	2	2	Hilly Wooded Pasture	Stonefly – Abundant Mayfly – Common Caddisfly – Present Aquatic Beetle - Present	6.5	66
UNT to Ouhre Run	Perennial	Normal	2	3	Hilly Open Pasture	Stonefly – Common Sowbug – Present Aquatic beetle - Present	6.5	71
UNT to Horseshoe Creek	Intermittent	Low	Less than 1/2	1	Hilly Wooded Pasture	Caddisfly - Present	6.5	74
UNT to Rocky Run-south/adjacent to Graceland Baptist Church	Intermittent	Normal	Less than 1/2	1	Mountains Open	Isopod - Present	6.5	77

TABLE 4.3-4 (continued)
Summary of Stream Surveys for Corridor C

Stream Name	Perennial or Intermittent	Flow Condition	Average Depth (in)	Average Width (ft)	Watershed Characteristics	Macroinvertebrates	pH	Temperature (°F)
UNT to North Branch Potomac River	Perennial	Normal	2	4	Mountains Wooded Open	Isopod – Present Caddisfly - Present	6.5	70
North Branch Potomac River	Perennial	Normal	Unknown	110	Hilly Wooded Open Cultivated	Isopod – Present Amphipod – Abundant Aquatic beetles - Present	6.5	76
UNT to Evitts Creek	Perennial	Normal	2	4	Hilly Wooded	Mayfly – Present Water Penny – Present Amphipods – Present Flatworm - Present	6.5	69
Willow Brook	Perennial	Normal	3	1	Hilly Open	Flatworm – Present Mayfly – Present Caddisfly - Abundant	6.5	74
Evitts Creek at MDNR Fissing Access	Perennial	Normal	24	30	Hilly Wooded Pasture	Mayfly – Abundant Stonefly – Present Caddisfly - Present	6.5	73

NA: Not able to take measurement.

TABLES 4.3-5
Summary of Stream Surveys for Corridor D

Stream Name	Perennial or Intermittent	Flow Condition	Average Depth (in)	Average Width (ft)	Watershed Characteristics	Macroinvertebrates	pH	Temperature (°F)
UNT to Fort Run	Perennial	Normal	8	10	Flat Wooded Open Cultivated	None observed, most likey due to poor habitat. Mussel relics present.	6.5	73
South Branch Potomac River	Perennial	Normal	48	200	Flat Wooded Open Cultivated	Mayfly – Abundant Caddisfly – Present Crayfish – Present Snail – Abundant Mussel relics.	6.5	75

TABLES 4.3-5 (continued)
Summary of Stream Surveys for Corridor D

Stream Name	Perennial or Intermittent	Flow Condition	Average Depth (in)	Average Width (ft)	Watershed Characteristics	Macroinvertebrates	pH	Temperature (°F)
Anderson Run	Perennial	Normal	6	10	Flat Wooded Open Cultivated Pasture	Unable to sample due to agricultural fencing.	N/A	N/A
Mud Lick or Anderson Run	Perennial	Normal	12	15	Rolling Wooded Open Cultivated	None observed, most likey due to limited habitat features.	N/A	73
Mud Lick Run	Intermittent	Dry	Dry	5	Rolling Wooded Open Cultivated	None - dry stream.	N/A	N/A
Elmlick Run	Perennial	Normal	3	10	Rolling Wooded Open Cultivated	Mayfly – Abundant Caddisfly - Abundant	6.5	70
UNT to Mill Creek	Perennial	Low	1-2	3	Hilly Wooded Open	None observed - limited habitat features.	6.5	77
Patterson Creek	Perennial	Normal	36	60	Hilly Wooded Open Cultivated	Depth prohibited macroinvertebrate search.	N/A	71
Wild Meadow Run	Perennial	Normal	6	4	Hilly Wooded Open	Mayfly – Abundant Water Strider - Present	N/A	70
Mill Run	Perennial	Normal	2	20	Hilly Wooded Open	Mayfly – Abundant Snail – Abundant Water Penny – Present Caddisfly - Abundant	6.5	72

TABLES 4.3-5 (continued)
Summary of Stream Surveys for Corridor D

Stream Name	Perennial or Intermittent	Flow Condition	Average Depth (in)	Average Width (ft)	Watershed Characteristics	Macroinvertebrates	pH	Temperature (°F)
UNT to New Creek	Perennial	Normal	2	5	Hilly Wooded Open	Stonefly – Abundant Mayfly – Abundant Snail – Abundant Sowbug - Abundant	6.5	62
Braddock Run	Perennial	Normal	8	20	Mountains Wooded Open	None observed - most likely due to acid mine drainage pollution.	6	55
UNT to Warrior Run	Perennial	Normal	4	12	Mountains Wooded Open	Flatworm – Abundant Caddisfly – Abundant Scud – Present Aquatic Spider - Present	6.5	58

NA: Not able to take measurement.

4.3.1.2.3 Future Mitigation Efforts

Both temporary and permanent stream impacts are anticipated as a result of the project. The specific nature of the impacts is not known due to the preliminary nature of the project. During final design, impacts to streams will be determined for construction activities. Measures to minimize temporary impacts to streams during construction and demolition activities will be identified at that time. Prior to construction, a USACE Section 404 permit, along with the associated state permits and certifications from MDE and WVDEP, will be acquired.

In order to avoid and/or minimize potential impacts to water quality/streams, the following best management practices (BMPs) and recommendations will be considered and undertaken, where appropriate, during final design and construction:

- Reduce the amount of aquatic habitat (and riparian vegetation) that would be disturbed by minimizing the linear distance of stream being impacted.
- Design and construct culvert structures that promote the reestablishment of benthic habitat within the culvert.
- Design and implement an approved Erosion and Sedimentation Control Plan to prevent sediment deposition to aquatic habitats.
- Promptly revegetate all disturbed areas to prevent accelerated erosion.
- Construct all cofferdams, causeways, and temporary crossings with large, clean, rock fill material and filter fabric on the downstream side to trap sediments.
- Minimize the need for in-stream work by heavy equipment.
- Develop project sequencing to facilitate in-stream work during periods of seasonal low flow.
- Designate any equipment fueling and service areas away from aquatic habitats to minimize the potential for accidental spillage of petrochemicals.
- Designate and construct all stormwater management facilities to prevent or minimize runoff resulting in erosion and sedimentation.
- Minimize the amount of vegetative clearing and impervious surface within the right-of-way to reduce volume and thermal increases.
- Consider the use of vegetated stormwater management basins and wide, flat drainage ditches to reduce sediment and toxicant loading in highway runoff.

- Minimize the diversion of surface water flow within the cleared portion of the right-of-way to reduce thermal increase.
- Coordinate stream mitigation activities with the natural resource agencies.
- If required, develop bridge demolition sequencing that avoids and/or minimizes impacts to stream resources prior to any bridge demolition activities.

4.3.2 Floodplains

The floodplain analysis was conducted in accordance with the requirements of Executive Order 11988, *Floodplain Management*; FHPM 6-7-3-2, *Location and Hydraulic Design of Encroachments on Floodplains;* and U.S. Department of Transportation 5650.2, *Floodplain Management and Protection*.

4.3.2.1 Methodology

Federal guidelines require the use of available National Flood Insurance Program (NFIP) maps to determine and evaluate the effect the proposed action may have on 100-year floodplains and the risk of flooding.

Three sets of data developed by FEMA for the NFIP were utilized to determine the project's potential impacts to 100-year floodplains and floodways: Flood Insurance Rate Maps (FIRMs), digital Q3 Flood Data, and the Digital Flood Insurance Rate Map (DFIRM) database. Depending on the level of study conducted for a stream, the FIRMs may include limits of 100-year floodplains, floodways, and elevations of the base (100-year) flood. The digital Q3 Flood database, which FEMA developed by electronically scanning the paper FIRMs and vectorizing an overlay of the flood risks, includes special flood hazard areas; no floodways or elevations of the base flood are defined. The digital Q3 Flood database was utilized to determine potential impacts to special flood hazard areas within Allegany County. The DFIRM database includes the GIS information used to create new FIRMs. This database was utilized to determine potential impacts to 100-year floodplains and floodways for the four counties in West Virginia.

4.3.2.2 Effects Analysis – Floodplains

No-Build Alternative

The No-Build Alternative would not result in any immediate impacts to floodplains; however, it would not meet the purpose and need of the project.

Build Alternatives

Floodplains were identified in each corridor and worst-case impacts evaluated. The actual extent of floodplain impacts will be considerably less than identified in Tier One.

Corridor B

Corridor B would require transverse crossings of New Creek in Mineral County, the North Branch Potomac River, and Warrior Run in Allegany County. In addition, Corridor B could potentially result in longitudinal encroachments on New Creek and the North Branch Potomac River. Corridor B could result in up to 775 acres of floodplain encroachment. Additionally, flood control dams operated and maintained by the Potomac Valley Soil Conservation District within Corridor B include New Creek Dam Sites 1, 5, 7, 10, 12, 14, 16, and 17 (Figure 3-9).

Corridor C

Corridor C would require transverse crossings of Mikes Run in Mineral County, the North Branch Potomac River, and Evitts Creek in Allegany County. In addition, Corridor C could potentially result in transverse crossings of several streams at the upper reaches of their identified floodplains and in a longitudinal encroachment of the North Branch Potomac River. Corridor C could result in up to 719 acres of floodplain encroachment. Additionally, flood control dams operated and maintained by the Potomac Valley Soil Conservation District within Corridor C include Patterson Creek Dam Sites 20, 21, 28, and 30 (Figure 3-9).

Corridor D

Corridor D would require nine transverse crossings, including the South Branch Potomac River in Hardy County, Patterson Creek in Mineral County, and the North Branch Potomac River. In addition, Corridor D could potentially result in a longitudinal encroachment on the North Branch Potomac River. Corridor D could result in up to 2,244 acres of floodplain encroachment. Additionally, flood control dams operated and maintained by the Potomac Valley Soil Conservation District within Corridor D include New Creek Dam Sites 1, 9, and 16, and Patterson Creek Dam Sites 20, 22, and 47 (Figure 3-9).

4.3.2.3 Future Mitigation Efforts

The preferred approach to mitigation of floodplain impacts is avoidance. If encroachment cannot be practicably avoided and would result in an increase of the 100-year flood elevation, an appropriate corrective measure should be provided. Detailed hydrologic and hydraulic analyses will be conducted during final design to further analyze the magnitude of floodplain encroachments. This information will be used to finalize the design in accordance with 23 CFR, Parts 115, 117, and 650, to ensure that design features will be of sufficient capacity to accommodate the design year storm.

All construction within floodplains will be in compliance with Executive Order 11988, *Floodplain Management*, dated May 24, 1977; FEMA regulations; and all federal, state, and local regulations. Additionally, hydraulic calculations will be conducted during final design and if any changes to the 100-year floodplain result, coordination with FEMA will be conducted to revise the floodplain maps in accordance with their requirements.

All regulatory floodplain encroachments would be in accordance with *Sections 60.3(c), 65.3, 65.6, and 65.12* of FEMA's NFIP and related regulations, revised October 1, 1993, which state, for streams with 100-year floodplain delineations, but with no regulatory floodways, the cumulative effect of the proposed development, when combined with all other existing and anticipated development in the area, will not increase the water surface elevation of the base flood (100 year) more than one foot at any point within the community.

During Tier One, locations of the flood control dams operated and maintained by the Potomac Valley Soil Conservation District were identified. Coordination with the conservation district will continue during Tier Two to assure avoidance of the dams as the project progresses.

4.3.3 Vegetation and Wildlife

Each of the corridors would require the crossing of varied vegetation and habitat types, resulting in potential impacts to these resources. Although all components of vegetative land cover were evaluated, early coordination efforts with state resource agencies and the public indicated that impacts to forests and agricultural land could generate the most public controversy. As the project progresses, potential impacts to residential land are likely to rise to equal, if not greater, importance.

4.3.3.1 Vegetation/Habitat

4.3.3.1.1 Methodology

Vegetative land cover and habitat types within the study area were identified by reviewing USGS topographic maps and through field investigation. The field investigation was performed in July 2006. Upland habitat types as well as land use/cover types were classified to Level II in accordance with the *Anderson Land Use/Land Cover Classification System* (Anderson *et al.* 1976). Wetlands within the habitats were classified in accordance with the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin *et al.* 1979). Habitat for forest interior dwelling species is especially important in Allegany County, where much of the land is forested. The reproduction and survival of FIDS require interior forest space. For this level of the EIS, all forestland was considered as potentially providing habitat for FIDS.

Field observations of wildlife included actual observations and evidence indicating the presence of an animal (i.e., scat, tracks, etc.). Vegetation and wildlife observed included various species from numerous habitat types. Most of the unobserved species would be expected to be either native species tolerant of manmade changes in the environment or non-native invasive species.

4.3.3.1.2 Effects Analysis – Vegetation/Habitat

Vegetative impacts in the study area could range from being substantial in some locations (where large forested tracts and agricultural areas are present) to being minimal in other locations (primarily herbaceous vegetation [lawns] and shrubs and trees [roadside vegetation]). Land cover types are tabulated in Table 4.3-6 and shown on Figure 4-7. The percentages for each land cover category in the corridors are provided in subsequent tables.

TABLE 4.3-6
Land Cover in Study Area

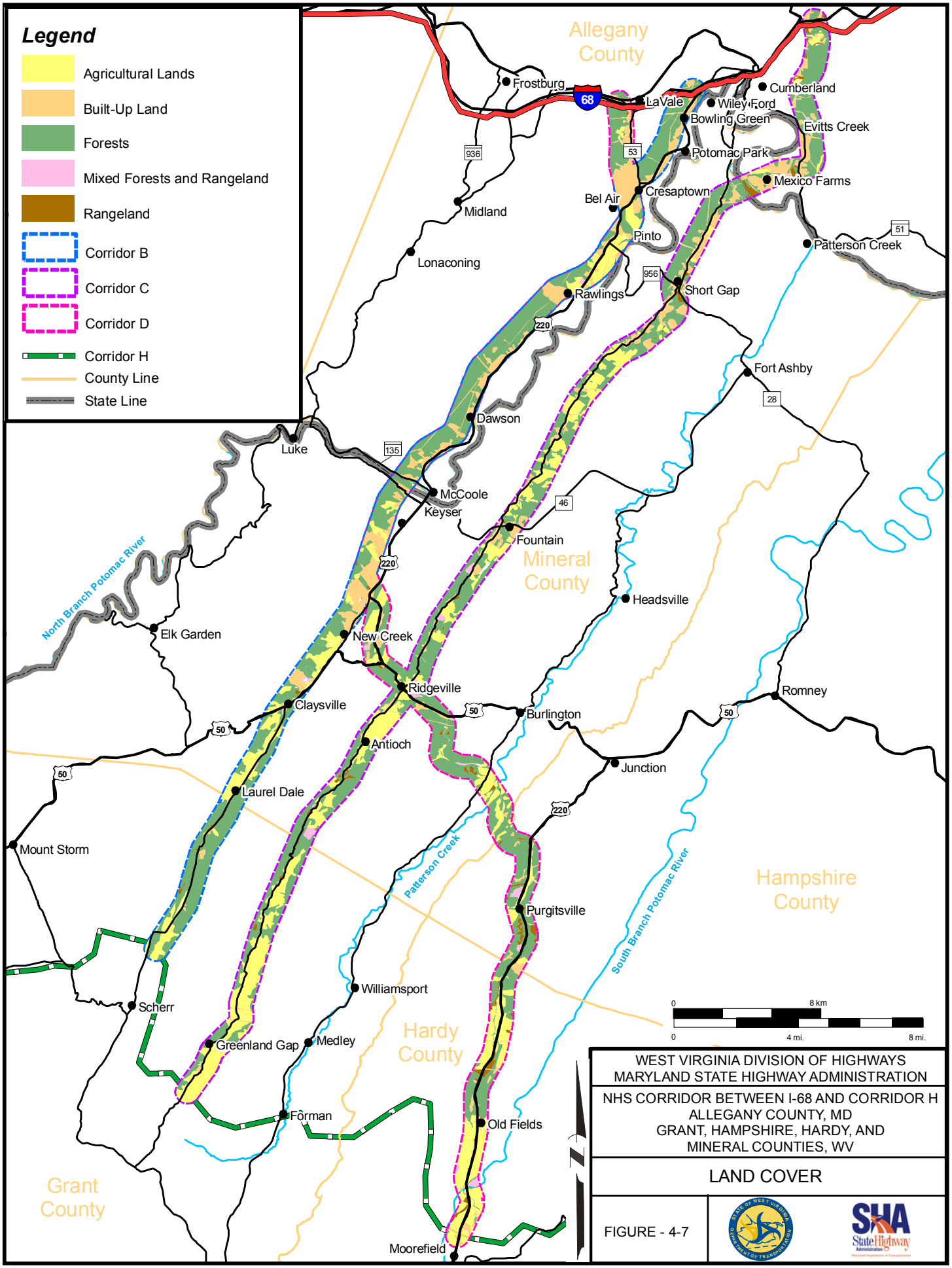
Anderson Level II Land Cover Category	Corridor B	Corridor C	Corridor D
Built-Up Land (11-17)	4,427 acres	3,483 acres	4,439 acres
Agricultural Lands (21-24)	2,953 acres	6,489 acres	5,487 acres
Rangeland (31-33)	127 acres	644 acres	720 acres
Forests (41-43)	9,890 acres	11,130 acres	11,409 acres
Mixed Forests and Rangeland (Mixed Level II Components)	0 acre	53 acres	91 acres
Total	17,397 acres	21,799 acres	22,146 acres

Corridor B

Corridor B could result in the lowest amount of land disturbance of any corridor. Corridor B could impact 2,953 acres of agricultural land and 9,890 acres of forestland, the lowest amount of impact to these land cover types. However, Corridor B has approximately the same impact to built-up land as Corridor D. Table 4.3-7 shows the potential impacts to each land cover category as a percentage of the total impact for Corridor B.

TABLE 4.3-7
Potential Land Cover Impacts in Corridor B

Anderson Level II Land Cover Category	Acres	Percentage
Built-Up Land (11-17)	4,427	25%
Agricultural Lands (21-24)	2,953	17%
Rangeland (31-33)	127	<1%
Forests (41-43)	9,890	57%
Mixed Forests and Rangeland (Mixed Level II Components)	0	0%
Total	17,397	100%


Legend
Agricultural Lands
Built-Up Land
Forests
Mixed Forests and Rangeland
Rangeland
Corridor B
Corridor C
Corridor D
Corridor H
County Line
State Line
Allegany County
Mineral County
Hardy County
Grant County
Hampshire County
Frostburg
LaVale
Cumberland
Wiley Ford
Bowling Green
Evitts Creek
Potomac Park
Mexico Farms
Cresaptown
Bel Air
Midland
Pinto
Patterson Creek
Lonaconing
Rawlings
Short Gap
Fort Ashby
Dawson
Luke
McCoole
Keyser
Fountain
Headsville
Elk Garden
New Creek
Ridgeville
Romney
Claysville
Burlington
Antioch
Junction
Laurel Dale
Mount Storm
Purgitsville
Williamsport
Scherr
Greenland Gap
Medley
Forman
Old Fields
Moorefield
North Branch Potomac River
Patterson Creek
South Branch Potomac River
68
936
53
51
956
220
28
135
46
50
0
8 km
4 mi.
8 mi.
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
LAND COVER
FIGURE - 4-7
SHA
State Highway Administration

Corridor C

Corridor C could result in the second highest amount of land disturbance of any corridor. This amount is considerably higher than Corridor B, but relatively close to Corridor D. Corridor C could impact 6,489 acres of agricultural land and 11,130 acres of forestland. The impact to agricultural land with Corridor C is the highest impact to this land cover type, but the impact to forestland is comparable to Corridor D. Table 4.3-8 shows the potential impacts to each land cover category as a percentage of the total impact for Corridor C.

TABLE 4.3-8
Potential Land Cover Impacts in Corridor C

Anderson Level II Land Cover Category	Acres	Percentage
Built-Up Land (11-17)	3,483	16%
Agricultural Lands (21-24)	6,489	30%
Rangeland (31-33)	644	3%
Forests (41-43)	11,130	51%
Mixed Forests and Rangeland (Mixed Level II Components)	53	<1%
Total	21,799	100%

Corridor D

Overall Corridor D could result in the largest amount of land disturbance of any corridor. Corridor D could impact 5,487 acres of agricultural land and 11,409 acres of forestland. However, the impact to agricultural land is 5.0 percent lower when compared to Corridor C, and the impact to forestland is comparable to Corridor C. Table 4.3-9 shows the potential impacts to each land cover category as a percentage of the total impact for Corridor D.

TABLE 4.3-9
Potential Land Cover Impacts in Corridor D

Anderson Level II Land Cover Category	Acres	Percentage
Built-Up Land (11-17)	4,439	20%
Agricultural Lands (21-24)	5,487	25%
Rangeland (31-33)	720	3%
Forests (41-43)	11,409	52%
Mixed Forests and Rangeland (Mixed Level II Components)	91	<1%
Total	22,146	100%

4.3.3.2 Rare, Threatened, and Endangered Species

Coordination with state and federal agencies concerning rare, threatened, and endangered species revealed a number of records of known occurrences of RTE species within each corridor. Threatened and endangered wildlife and plant species are protected under *Section 7* of the federal *Endangered Species Act of 1973* (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq*.). In Maryland, the primary state law that governs the listing of endangered species is the *Nongame and Endangered Species Conservation Act* (Annotated COMAR 10-2A-01). This act is supported by the *Code of Maryland Regulations 08.03.08*. In West Virginia, there is no state threatened and endangered species legislation. Therefore, the species listed as either threatened or endangered in West Virginia are those listed by the USFWS as federally threatened and endangered species.

4.3.3.2.1 Methodology

Initial public announcement of the project was in published in the *Federal Register* on April 14, 2006 in the form of a NOI for the preparation of a Tier One EIS for transportation improvements between I-68 in western Maryland and Appalachian Corridor H in West Virginia. Responses to the NOI were made in the form of a comment letter from the USFWS (2006).

In May 2006, an interagency field view of the study area was performed to allow the state and federal agencies from both states an opportunity to review the project's five preliminary corridors and to discuss their concerns (among other issues) as related to rare, threatened, and endangered species issues. Formal requests for information concerning RTE species within the study area were made to the WVDNR, MDNR, and the USFWS a year later in May 2007. (Comment letters from the cooperating and participating agencies are included in the Appendix.)

Separate interagency meetings were also held in Maryland and West Virginia on February 15, 2006; January 17, 2007; February 27, 2007; and June 20, 2007, to allow the agencies additional opportunities to review and comment as the project evolved. During the June 2007 meeting, two reports, *Purpose and Need Statement* (Skelly and Loy, Inc. 2007b) and *Corridors Retained for Further Analysis* (Skelly and Loy, Inc. 2007a), were presented.

To date, no formal field activities, investigations, and/or studies have been completed for this project pursuant to *Section 7* of the ESA. As the environmental studies progress, formal biological assessments may be necessary if RTE species may be potentially encountered.

4.3.3.2.2 Effects Analysis – Rare, Threatened, and Endangered Species

Project correspondence (containing comments and background information) regarding RTE species was received from the USFWS after the public announcement involving the NOI. In a letter from the USFWS (2006), it was noted the federally listed endangered Indiana bat (*Myotis sodalis*) and Virginia big-eared bat (*Corynorhinus townsendii virginianus*) and the federally protected bald eagle (*Haliaeetus leucocephalus*) may be present throughout the study area. On July 9, 2007, the bald eagle was removed from the federal list of threatened and endangered species. The bald eagle remains protected, however, under the federal *Bald and Golden Eagle Protection Act* and the *Migratory Bird Treaty Act* and related state laws in West Virginia and Maryland. Also subsequent to receiving correspondence from the USFWS in 2006, the NPS reported that the Indiana bat has been confirmed as utilizing the Chesapeake and Ohio Canal National Historical Park as habitat. Surveys for this species are ongoing.

Additionally, where Corridor D crosses Patterson Creek, habitats suitable for the federally listed endangered shale barrens rock cress (*Arabis serotina*), and sensitive mussels fauna may be present. The USFWS noted that these organisms would need to be considered for any proposed alternatives. This letter also discussed wetlands, riparian areas, streams, and the Dans Mountain Wildlife Management Area.

Coordination in May 2007 with state and federal agencies concerning RTE species revealed a number of records of known occurrences of RTE species within the study area. In a letter from the WVDNR (2007), the following organisms were documented as RTE species within the corridors. The list of RTE species found in each corridor in West Virginia is as follows:

Corridor B

Nuttall waterweed (*Elodea nuttallii*), glaucous willow (*Salix discolor*), canby's mountain-lover (*Paxistima canbyi*), Allegheny woodrat (*Neotoma magister*), American harebell (*Campanula*

rotundifolia), troublesome sedge (*Carex molesta*), Kates Mountain clover (*Trifolium virginicum*), jefferson salamander (*Ambystona jeffersonianum*), Franz's Cave amphipod (*Stygobromus franzi*), and Franz's Cave isopod (*Caecidotea franzi*).

Corridor C

Allegheny plum (*Prunus alleghaniensis var. alleghaniensis*), canby's mountain-lover, white cedar (*Thuja occidentalis*), shale barren bindweed (*Calystegia spithamaea ssp. purshiana*), mountain pimpernel (*Taenidia montana*), Allegheny woodrat, American harebell, side-oats grama (*Bouteloua curtipendula var. curtipendula*), loggerhead shrike (*Lanius ludovicianus migrans*), bent milkvetch (*Astragalus distortus var. distortus*), snow trillium (*Trillium nivale*), balsam squaw-weed (*Packera paupercula*), and shale barren evening primrose (*Oenothera argillicola*).

Additionally, the NPS noted in a letter on September 24, 2010, that the Maryland Natural Heritage Program considers the Chesapeake and Ohio Canal National Historical Park to have the most significant biodiversity resources of the Mid-Atlantic States and that the park represents one of the largest acreage holdings of unfragmented floodplain (riverine) forests within the east. The NPS went on to note that land within the Western Maryland Railway right-of-way is part of the management plan to protect the biodiversity of the area.

Corridor D

Shale barren bindweed, wood turtle (*Glyptemys insculpta*), Allegheny plum, brook floater (*Alasmidonta varicose*), bald eagle, triangle floater (*Alasmidonta undulata*), yellow lampmussel (*Lampsilis cariosa*), grizzled skipper (*Pyrgus wyandot*), olympia marble (*Euchloe olympia*), upland chorus frog (*Pseudacris feriarum feriarum*), false pimpernel (*Lindernia dubia var. anagallidea*), marsh speedwell (*Veronica scutellata*), mountain pimpernel, downy arrow-wood (*Viburnum rafinesquianum*), downy milkpea (*Galactia volubilis*), bent milkvetch, narrow-leaved blue curls (*Trichostema setaceum*), Northern metalmark (*Calephelis borealis*), Kates Mountain clover, meadow jumping mouse (*Zapus hudsonius*), a noctuid moth (*Zale calycanthata*), American harebell, shale barren evening primrose, shale barren goldenrod (*Solidago arguta var. harrisii*), loggerhead shrike, and lesser snakeroot (*Ageratina aromatica var. aromatica*).

In a letter from the MDNR (2007), RTE species were documented within each corridor. The list of RTE species found in each corridor in Maryland is as follows:

Corridor B

American harebell.

Corridor C

Kates Mountain clover, three-flowered melicgrass (*Melica nitens*), olympia marble, and side-oats grama.

Corridor D

No records of RTE species occur within this corridor.

Corridor B/D

MDNR indicated that a two to three acre marshy pond (Pinto Marsh) is designated/regulated as a nontidal wetland of special state concern along with a 100-foot upland buffer. The sora (*Porzana Carolina*), a state rare listed bird, is known to have bred in Pinto Marsh. Also in this area, Pinto Mine supports the state-listed endangered Franz's Cave amphipod, Franz's Cave isopod, and the Eastern small-footed myotis (*Myotis leibii*). Impacts caused by the degradation of water quality or changes to hydrology could affect the groundwater of the Pinto Mine cave system. Finally, the cliffs on the north side of the railroad tracks in the Pinto area are known to support a population of the state-listed endangered cliff stonecrop (*Sedium glaucophyllum*).

Overall Study Area

The MDNR is also concerned about potential impacts to the state and federally listed endangered Indiana bat and to many FIDS. The conservation of FIDS habitat is strongly encouraged by MDNR.

In a letter from the USFWS (2007), the following organisms are documented as RTE species in the area. USFWS indicated that the Indiana bat and shale barrens rock cress may be present in one or more of the corridors. Additionally, the bald eagle may be present throughout the area. Effective August 8, 2007, the bald eagle is no longer protected by the ESA. However, the bald eagle is protected by the *Bald and Golden Eagle Protection Act* (16 U.S.C. 668-668c, as amended) and the *Migratory Bird Treaty Act* (16 U.S.C. 703-712).

4.3.3.2.3 Future Mitigation Efforts

As project planning activities continue and interagency meetings are held to assist in providing direction for the project, the level of Section 7 (of the ESA) consultation with each agency will evolve. This will aid in determining what Section 7 activities, investigations, and/or studies that may be required.

4.3.4 Farmlands

The federal *Farmland Protection Policy Act of 1981* (FPPA) requires an analysis of farmlands for any project receiving federal funding. The purpose of the FPPA is to "minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to non-agricultural use."

4.3.4.1 Methodology

FPPA farmland is determined by the NRCS based upon the underlying soil types as represented in each county's soil survey. The NRCS defines FPPA farmland as the soil types determined to be prime farmland, statewide important farmland, unique farmland, or locally important farmland. The definitions of these categories are as follows:

- Prime Farmland – Land which has the best physical and chemical characteristics for the cultivation of agricultural products with a minimum of labor, fertilizer, and pesticides. It does not include land in urban development or land used for water storage.
- Unique Farmland – Land other than prime farmland that is used for the production of a specific high-value food or fiber crop.
- Farmland of Statewide Importance – Land other than prime or unique farmland, which has been designated as being of importance for the production of agricultural crops.

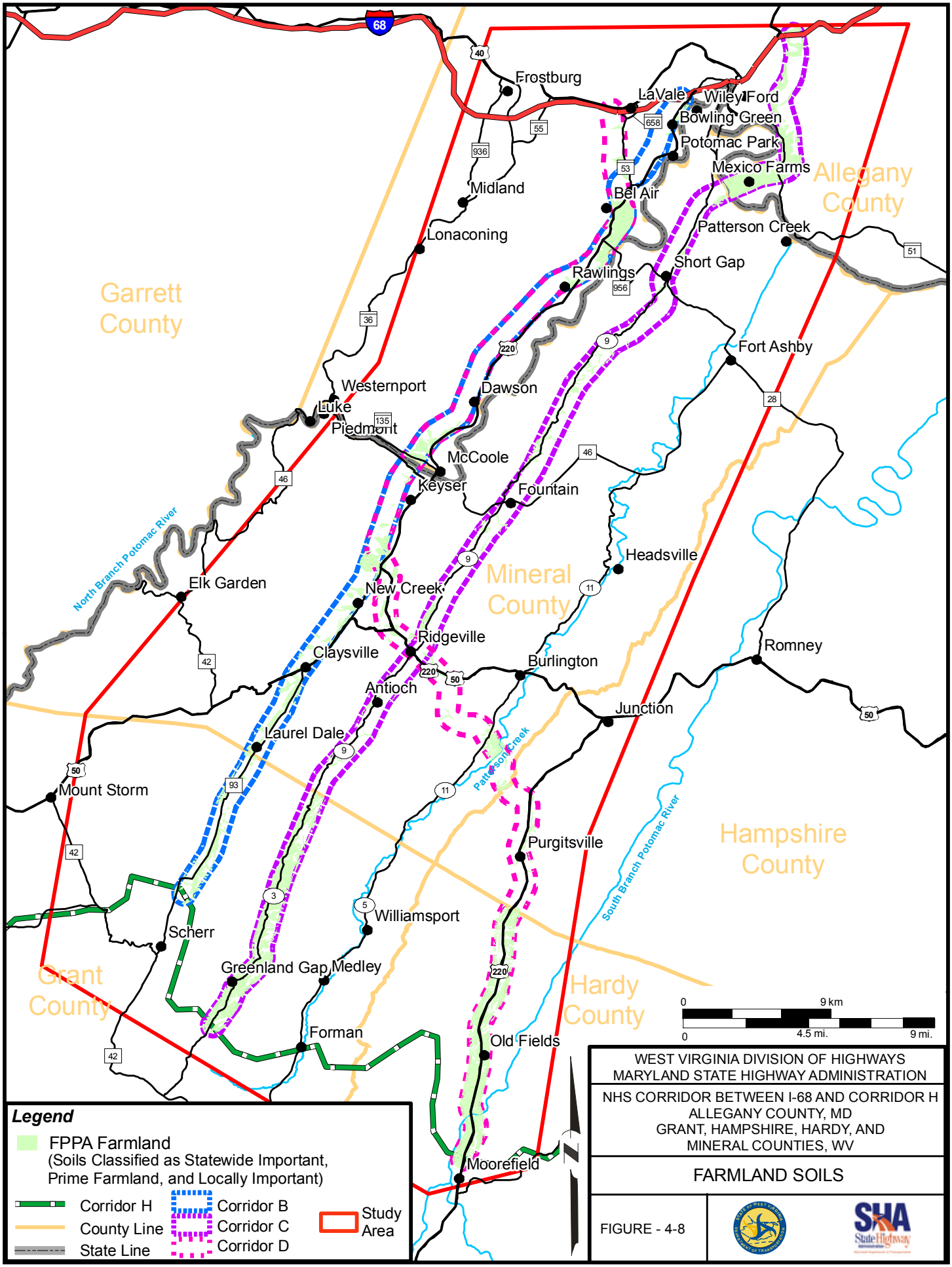
- Farmland of Local Importance – Land other than prime, unique, or of statewide importance, which has been designated by local agencies as containing the best characteristics for the production of agricultural crops.

If FPPA soils are determined to be impacted by a federally funded project, the Farmland Conversion Impact Rating Form (NRCS Form CPA-106) is to be completed in order to comply with the FPPA. The rating form is designed by the USDA to evaluate different options for a project, assessing points for various site characteristics that pertain to agriculture. The option that is evaluated with the fewest points is considered to be the option that best minimizes the negative impacts of the project on agricultural lands. This form will be completed during Tier Two.

To determine if FPPA soils would be impacted, the soil types in each of the study area counties that are listed as prime, unique, statewide important, and locally important were obtained from the NRCS Soil Data Mart website (USDA 2007). The soil coverages for each of the study area counties were obtained in GIS format, and data in which soil types are designated as prime, unique, statewide important, and locally important were entered into the database. This allowed for the ability to query the soil database for the FPPA farmland and calculate the impacts of each corridor. Figure 4-8 shows the locations of the FPPA farmland in relation to the corridors.

In addition to FPPA farmland, data were collected on the agricultural land within the corridors based on existing land cover. In order to classify the existing agricultural land cover, the *Anderson Land Use/Land Cover Classification System* (Anderson *et al.* 1976) was utilized. There are three hierarchical levels of classifying land cover and land use. Level I provides the most general characterization of land cover and land use while Level III provides the most detailed (representing over 100 land use types). Level II provides the most useful middle ground, offering sufficient detail without overburdening data collection and analysis. Level II was used in order to delineate agricultural land cover.

Land cover classification was completed through site reconnaissance of all three corridors conducted in the summer of 2006. Existing information, such as aerial photographs, study area mapping, and USGS topographic quadrangle maps, was incorporated into field mapping and utilized during the site reconnaissance. During the site reconnaissance, all land was identified and classified with a land cover code on the field mapping. The information contained on the


Frostburg
LaVale
Wiley Ford
Bowling Green
Potomac Park
Mexico Farms
Allegany County
Midland
Bel Air
Lonaconing
Patterson Creek
Short Gap
Rawlings
Garrett County
Fort Ashby
Westernport
Dawson
Luke
Piedmont
McCoole
Keyser
Fountain
North Branch Potomac River
Headsville
Elk Garden
New Creek
Mineral County
Ridgeville
Romney
Claysville
Burlington
Antioch
Junction
Laurel Dale
Patterson Creek
Mount Storm
Purgitsville
South Branch Potomac River
Hampshire County
Williamsport
Scherr
Greenland Gap
Medley
Grant County
Hardy County
Forman
Old Fields
Moorefield
0
9 km
0
4.5 mi.
9 mi.
Legend
FPPA Farmland
(Soils Classified as Statewide Important, Prime Farmland, and Locally Important)
Corridor H
County Line
State Line
Corridor B
Corridor C
Corridor D
Study Area
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
FARMLAND SOILS
FIGURE - 4-8

field mapping was then digitized and integrated into the GIS for the project. This information was the basis for determining the impacts on farmlands.

Information was also collected on farmland preservation areas to supplement the information on FPPA farmland and the existing agricultural land cover. With the continued encroachment of suburban areas into long-established rural areas throughout the nation, many states, including Maryland and West Virginia, have enacted legislation and programs that provide the opportunity to preserve farmland.

The *Maryland Agricultural Land Preservation Program* was enacted in 1977 and has established farmland preservation areas throughout the state. The program consists of two types of preservation areas: agricultural preservation districts and agricultural conservation easements. Allegany County contains both types of preservation areas. Property owners within an agricultural district commit to keeping the land in agricultural use for at least five years, restricting subdivision of the land and preventing commercial, industrial, or residential development during the term. In exchange, farm and forestry production is recognized as the preferred use of the property. A conservation easement is used to protect prime productive farmland from development by selling its development rights and restricting the use of the land to agricultural use now and in the future. The locations of these preservation areas were obtained from MDNR and confirmed by the county administrator.

In West Virginia, the *Voluntary Farmland Protection Act* was passed in 2000. The act authorized the creation of county farmland protection boards and detailed the criteria for the acquisition of conservation easements. In 2002, the *Voluntary Farmland Protection Act* was modified to allow each county with a farmland protection board to provide funding to the farmland protection program through a real estate transfer tax. Each of the study area counties in West Virginia has established county boards; however, the acquisition of conservation easements is only in its infancy. Information regarding the presence or absence of conservation easements enrolled in this program was obtained through correspondence with county administrators.

Farmland conservation easements that may be held by non-profit conservation groups or land trusts were also identified. In Maryland, locations of known easements held by conservation groups were obtained from MDNR. In West Virginia, the locations of known conservation

easements were obtained through contact with the county farmland preservation administrators in January and February of 2007. Additional statistics and information about agricultural land in the study area and within the corridors was obtained from the *Census of Agriculture* (USDA 2002) and from correspondence with county NRCS personnel.

4.3.4.2 Effects Analysis – Farmlands

Productive farmland is scattered throughout the area and there are many small and large farming operations. Though more prevalent in the south of the region where the land transitions to gradual slopes and open valleys, large tracts of farmland are also found in central Allegany County near Rawlings, in Mineral County on the east face of Knobley Ridge and up and down the entire length of the Patterson Creek Valley, in the valley areas of Grant County, and north of Moorefield in Hardy County.

No-Build Alternative

The No-Build Alternative would not result in any immediate impacts to farmlands; however, it would not meet the purpose and need of the project.

Build Alternatives

Table 4.3-10 summarizes the impacts to each type of FPPA farmland.

TABLE 4.3-10
Potential FPPA Impacts

FPPA Farmland Category	Corridor B	Corridor C	Corridor D
Prime Farmland	2,146 acres	1,491 acres	3,335 acres
Unique Farmland Soils	0 acre	0 acre	0 acre
Farmland of Statewide Importance	1,580 acres	2,465 acres	2,566 acres
Farmland of Local Importance	696 acres	2,991 acres	1,162 acres

Each of the three corridors contains agricultural land based on the land cover identified during the study area reconnaissance. Table 4.3-11 shows the potential agricultural land impacts.

Figure 4-9 shows the areas identified as agricultural within each corridor based on the land cover as well as the areas of farmland preservation.

TABLE 4.3-11
Potential Agricultural Land Impacts

Category	Corridor B	Corridor C	Corridor D
Agricultural land based on land cover	2,953 acres	6,489 acres	5,487 acres
MD Agricultural Land Preservation Districts	0 acre	1 acre	0 acre
MD Agricultural Land Preservation Easements	0 acre	0 acre	0 acre
WV Preserved Farmland Easements	0 acre	0 acre	67 acres
Known Private Farmland Conservation Easements	0 acre	0 acre	0 acre

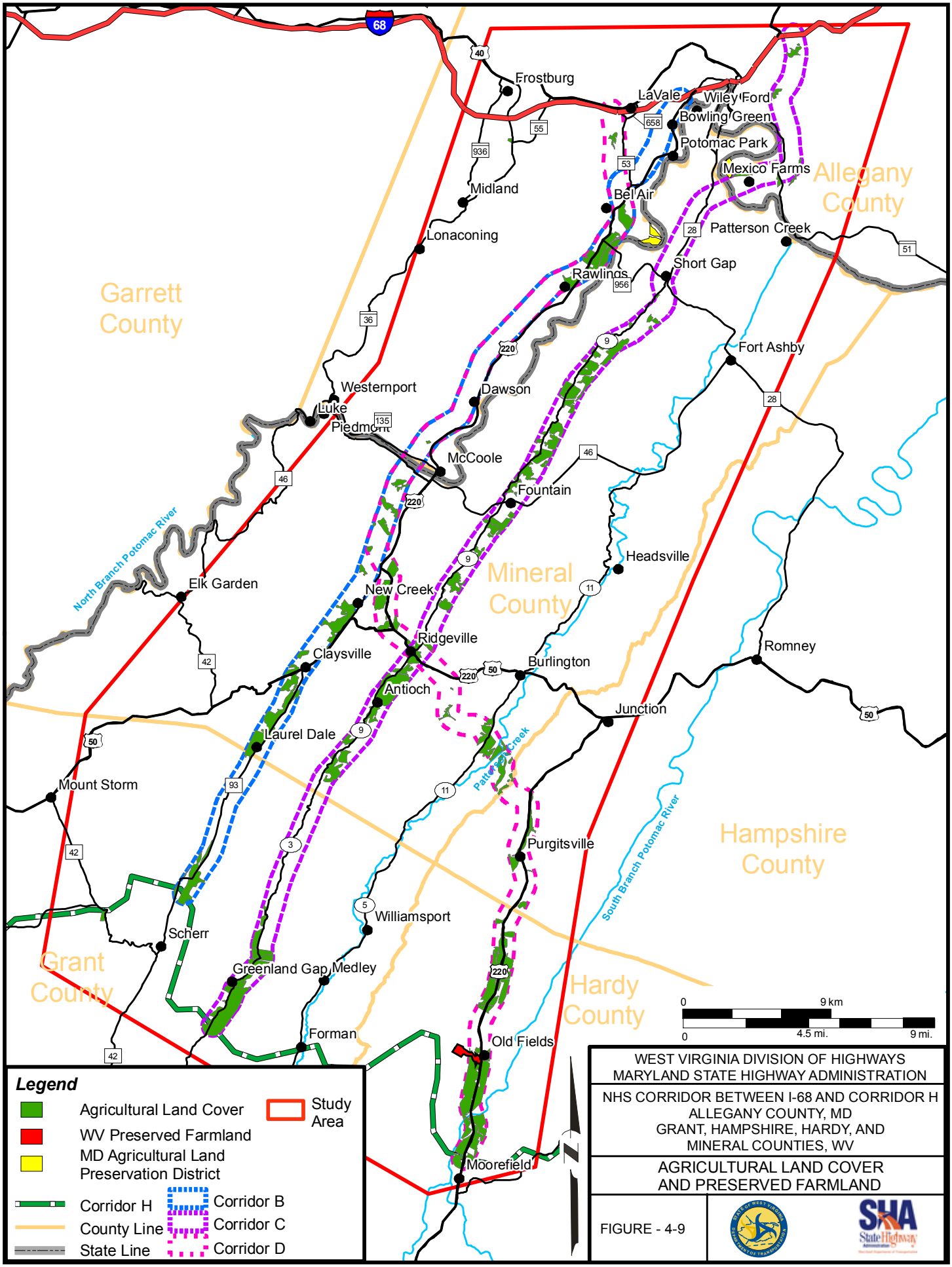
Corridor B

Corridor B contains the fewest acres of agricultural land (2,953 acres) compared to the other corridors. Corridor B also contains the fewest acres of statewide important farmland (1,580 acres) and locally important farmland (696 acres).

A cluster of farmland soils and agricultural land exists within Corridor B along US 220 between Cresaptown and Rawlings. This area includes hay fields and pasture on both sides of Winchester Road just north of the village of Pinto. Further south between Pinto and Rawlings, several large crop and hay fields exist; they are especially concentrated between the railroad tracks and the North Branch Potomac River. The presence of agricultural areas through the remainder of the Allegany County portion of the corridor is minimized due to the fact that it traverses the wooded eastern slopes of Dans Mountain.

In Mineral County, just west of Keyser, Corridor B includes agricultural land that is part of the Potomac State College Farm. Referred to as the “Upper Farm,” it contains 386 acres, a large portion of which is located within Corridor B. The Upper Farm is located approximately 0.5 mile from the main campus of Potomac State College and includes a 20,000 square foot livestock education center.

Also within Corridor B, scattered farmland exists between Keyser and the WV 93/US 50 junction. Pasture land and hay fields exist west of US 220 along Linden Drive and Great Oak


Frostburg
LaVale
Wiley Ford
Bowling Green
Potomac Park
Mexico Farms
Allegany County
Midland
Bel Air
Lonaconing
Patterson Creek
Short Gap
Rawlings
Garrett County
Fort Ashby
Westernport
Dawson
Luke
Piedmont
McCoole
Fountain
North Branch Potomac River
Headsville
Elk Garden
New Creek
Mineral County
Ridgeville
Claysville
Romney
Burlington
Antioch
Junction
Laurel Dale
Patterson Creek
Mount Storm
Purgitsville
South Branch Potomac River
Hampshire County
Williamsport
Scherr
Grant County
Greenland Gap
Medley
Hardy County
Forman
Old Fields
Moorefield
0
9 km
0
4.5 mi.
9 mi.
Legend
Agricultural Land Cover
WV Preserved Farmland
MD Agricultural Land Preservation District
Study Area
Corridor H
County Line
State Line
Corridor B
Corridor C
Corridor D
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
AGRICULTURAL LAND COVER
AND PRESERVED FARMLAND
FIGURE - 4-9

Valley Farm Road. In the vicinity of the intersection of US 50 and WV 972, a patch of agricultural land includes a sheep farm.

A cluster of agricultural land exists between the WV 93/US 50 junction and the county line. This area, predominately west of WV 93, is situated in New Creek Valley and contains numerous beef cattle farms with large crop fields. The agricultural land in this area constitutes approximately 800 acres.

Agricultural land is scarcer within Corridor B in Grant County due to the fact that the topography becomes much steeper with Walker's Ridge to the west and New Creek Mountain to the east. A cluster of agricultural land near the proposed terminus with Corridor H contains several chicken houses, beef cattle pastures, and hay fields.

Compared with the other corridors, Corridor B offers the best opportunity for minimizing agricultural land impacts. Agricultural resources of note are the agricultural land between Cresaptown and Rawlings in Allegany County, the Potomac State College Farm outside of Keyser, and the agricultural land within New Creek Valley.

Corridor C

Compared with the other corridors, Corridor C contains the greatest amount of agricultural land (6,489 acres). Corridor C also has the greatest potential impact to the soils of local importance (2,991 acres). In addition, Corridor C contains 1,491 acres of prime farmland soils and 2,465 acres of statewide important farmland soils.

In Maryland, along the western shore of the North Branch Potomac River, Corridor C includes the southern tip of a 47-acre property that is part of a 98-acre Maryland Agricultural Land Preservation District. Only one acre of that property falls within Corridor C. In northern West Virginia, Corridor C follows existing WV 28. In this area, the WV 28 corridor is well developed and only a few isolated agricultural fields exist.

Approximately two miles south of Short Gap, Corridor C includes a concentrated area of farmland that extends to WV 46. Through this area there are several poultry houses and beef cattle farms. The agricultural land includes predominately hay fields and beef cattle pasture.

South of WV 46, a large farmland tract consisting of mostly hay fields and pasture land surrounds the Mineral County Route 9 and Staggs Run Road intersection. From this point south to the intersection of Mineral County Route 9 and US 220 in Ridgeville, scattered pasture land and hay fields exist east of Mineral County Route 9. South of US 220 to the village of Antioch, the area within Corridor C is nearly all agricultural land. This area includes a large farm with pasture, hay fields, orchards, and several poultry houses.

Agricultural land dominates the landscape of Corridor C within Grant County. Approximately 42 percent of the agricultural land within the entire corridor is located in Grant County, a distance of only nine miles. This is an area of very intensive agricultural activity including several 200- to 300-acre beef farms and several poultry houses where the predominant use of farmland is for pasture and hay fields.

Compared with the other corridors, Corridor C contains the greatest area of agricultural land based on land cover. Corridor C also contains much more agricultural land (6,489 acres) than Corridor B. Corridor C also has the greatest potential impact to farmland of local importance soils (2,991 acres). Additionally, Corridor C includes an area of very intensive agricultural activity in northern Grant County.

Corridor D

Corridor D contains the greatest area of soil types classified as prime farmland (3,335 acres) and farmland of statewide importance (2,566 acres). Corridor D also contains 67 acres of a 115-acre preserved farm. The farm is enrolled in a farmland preservation easement with the Hardy County Farmland Protection Board in cooperation with USDA-NRCS. Conservation or preservation easements are legitimate land use tools for protecting high-quality farmland from development pressure. The easement stipulates that the land under agreement cannot be used for any purpose other than agriculture.

Approximately one mile south of its northern terminus with I-68, Corridor D includes a small isolated patch of farmland that is mainly horse pasture and hay fields. Just west of Cresaptown to approximately three miles south of Keyser, Corridors D and B are identical. Most notable within this area are farmlands (several large crop and hay fields) between Pinto and Rawlings,

agricultural land that is part of the Potomac State College Farm, and scattered pasture land southwest of Keyser.

Where US 220 diverges from WV 972, Corridor D follows US 220 east through New Creek Mountain. Farmland, consisting predominately of pasture land, exists in this area at the base of the eastern slopes of New Creek Mountain west of US 220. Corridor D includes a large farm complex of approximately 200 acres surrounding the intersection of US 220 and US 50. As Corridor D swings eastward, it includes farmland consisting of pasture land surrounding the town of Ridgeville.

South of US 220, Corridor D crosses Patterson Creek Road near its intersection with Russeldale Road. Within the corridor, a large cluster of farmland is prevalent from the Patterson Creek Valley to the point where Corridor D reconnects with US 220 heading south. This area includes large tracts of hay fields and pasture land. The land within Corridor D between US 220 and Patterson Creek (approximately 360 acres) is almost entirely comprised of soils classified as prime farmland or farmland of statewide importance.

Corridor D crosses into Hampshire County and generally follows the path of US 220. Through this area hay and crop fields occupy the plain areas surrounding Mill Creek and Elmlick Run.

Agricultural land also dominates the landscape of Corridor D within Hardy County; approximately 50 percent of the agricultural land within the corridor is located in Hardy County, in a distance of approximately 10 miles. From the county line to Reynolds Gap, the concentration of farmland is centered around Mudlick Run and includes numerous large crop fields. Corridor D includes several large crop and hay fields surrounding Old Fields. Just southwest of Old Fields, west of US 220, is a 115-acre preserved farm. A total of 67 acres of preserved farmland falls within Corridor D.

The land area within Corridor D from Old Fields south to the Corridor H terminus is primarily in agricultural use. Agriculture dominates the landscape with nearly 90 percent of the land committed to active agricultural production. The flat topography and alluvial soils found here create the largest cluster of prime farmland and farmland of statewide importance in the entire corridor.

Compared with the other corridors, Corridor D is only slightly better in terms of agricultural land cover. Agricultural resources of note include clusters of high-quality farmland between Pinto and Rawlings, the productive Patterson Creek Valley, and the large area of farmland in Hardy County north of Moorefield. Corridor D contains the greatest area of soil types classified as prime farmland (3,335 acres) and farmland of statewide importance (2,566 acres). In addition, Corridor D contains 67 acres of a 115-acre preserved farm.

4.3.5 Soils

4.3.5.1 Methodology

The soil types found within the study area were identified through a review of the Allegany County soil survey (1977); the Hampshire, Mineral, and Morgan counties soil survey (USDA 1978); the Grant and Hardy counties soil survey (USDA 1989); USDA-NRCS digital soil data (2007); and USGS topographic maps. Each corridor would require the crossing of various soil types, resulting in potential impacts to these soils.

Although all soils are an important part of the landscape, and all components of soils were evaluated, early coordination efforts with state resource agencies and the public indicated that impacts to forests and agricultural land (along with the impacts to the associated soils) could generate the most public controversy.

4.3.5.2 Effects Analysis – Soils

No-Build Alternative

The No-Build Alternative would not result in any immediate impacts to soils; however, it would not meet the purpose and need of the project.

Build Alternatives

Soils have been evaluated for potential impacts at the soil association level. Potential soil impacts were calculated based on the area of each corridor. Corridor B could result in the lowest amount of soil disturbance of any of the corridors; Corridor C could result in the second

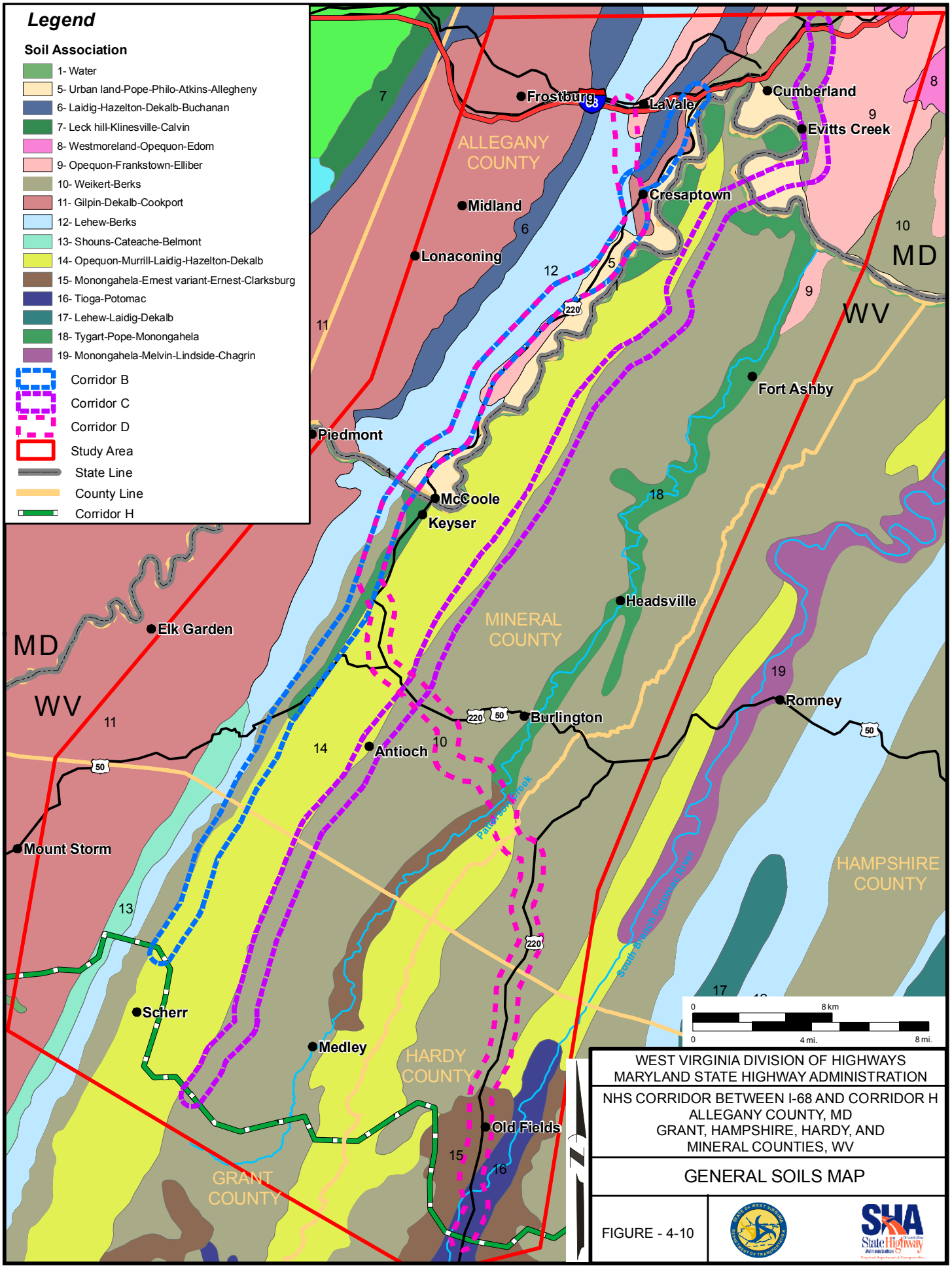
highest amount of soil disturbance; and Corridor D could result in the largest amount of soil disturbance. The soil associations are summarized in Table 4.3-12 and shown on Figure 4-10.

TABLE 4.3-12
Potential Soil Impacts

Soil Association (ID#)	Corridor B	Corridor C	Corridor D
West Virginia			
Urban land-Pope-Philo-Atkins-Allegheny Association (5)	52 acres	1 acre	39 acres
Weikert-Berks Association (10)	3,539 acres	13,493 acres	7,877 acres
Lehew-Berks Association (12)	497 acres	0 acre	438 acres
Opequon-Murrill-Laidig-Dekalb Association (14)	3,391 acres	4,499 acres	2,331 acres
Monongahela-Ernest variant-Ernest-Clarksburg Association (15)	0 acre	0 acre	1,772 acres
Tioga-Potomac Association (16)	0 acre	0 acre	1,201 acres
Tygart-Pope-Monongahela Association (18)	1,422 acres	12 acres	591 acres
Maryland			
Urban land-Pope-Philo-Atkins-Allegheny Association (5)	1,719 acres	948 acres	1,441 acres
Laidig-Hazelton-Dekalb-Buchanan Association (6)	766 acres	0 acre	38 acres
Opequon-Frankstown-Elliber Association (9)	358 acres	510 acres	530 acres
Weikert-Berks Association (10)	118 acres	2,336 acres	0 acre
Gilpin-Dekalb-Cookport Association (11)	1,257 acres	0 acre	504 acres
Lehew-Berks Association (12)	4,270 acres	0 acre	5,382 acres
Total	17,389 acres	21,799 acres	22,144 acres

4.3.6 Geology

The proposed corridors are located within the Ridge and Valley Physiographic Province of West Virginia. The region consists of a series of long folded mountains and valleys of Devonian- and Silurian-aged bedrock. From east to west, the major folded mountains and valleys in the study area are the Clearville syncline, Patterson Creek Mountain anticline, Bedford syncline, and Wills Mountain anticline. The Devonian-aged bedrock is comprised of layered red beds, shale, sandstone, limestone, and chert. Minerals associated with Devonian-aged bedrock include gas, silica sand, and limestone. The Silurian-aged bedrock is comprised of layered sandstone, shale, limestone, rock salt, and ferruginous beds. Minerals associated with Silurian-aged bedrock include gas, limestone, and artificial brine.


Legend
Soil Association
1- Water
5- Urban land-Pope-Philo-Atkins-Allegheny
6- Laidig-Hazelton-Dekalb-Buchanan
7- Leck hill-Klinesville-Calvin
8- Westmoreland-Opequon-Edom
9- Opequon-Frankstown-Elliber
10- Weikert-Berks
11- Gilpin-Dekalb-Cookport
12- Lehew-Berks
13- Shouns-Cateache-Belmont
14- Opequon-Murrill-Laidig-Hazelton-Dekalb
15- Monongahela-Ernest variant-Ernest-Clarksburg
16- Tioga-Potomac
17- Lehew-Laidig-Dekalb
18- Tygart-Pope-Monongahela
19- Monongahela-Melvin-Lindside-Chagrin
Corridor B
Corridor C
Corridor D
Study Area
State Line
County Line
Corridor H
Frostburg
LaVale
Cumberland
Evitts Creek
Cresaptown
Midland
Lonaconing
ALLEGANY COUNTY
MD
WV
Fort Ashby
Piedmont
McCoole
Keyser
Headsville
MINERAL COUNTY
Elk Garden
Burlington
Romney
Antioch
Mount Storm
HAMPSHIRE COUNTY
Scherr
Medley
HARDY COUNTY
Old Fields
GRANT COUNTY
0 8 km
0 4 mi. 8 mi.
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
GENERAL SOILS MAP
FIGURE - 4-10

4.3.6.1 Methodology

A literature review of available geologic information was performed to evaluate the impacts of the project on the geologic formations of the area. Impacts on geology were defined primarily through a literature review of information sources from the USGS, the Maryland Geological Survey, and the West Virginia Geological and Economic Survey and subsequent analysis. Information regarding the engineering characteristics and properties affected by the project, specifically for drilling and excavating, was also examined.

4.3.6.2 Effects Analysis – Geology

No-Build Alternative

The No-Build Alternative would not result in any immediate impacts to geological resources; however, it would not meet the purpose and need of the project.

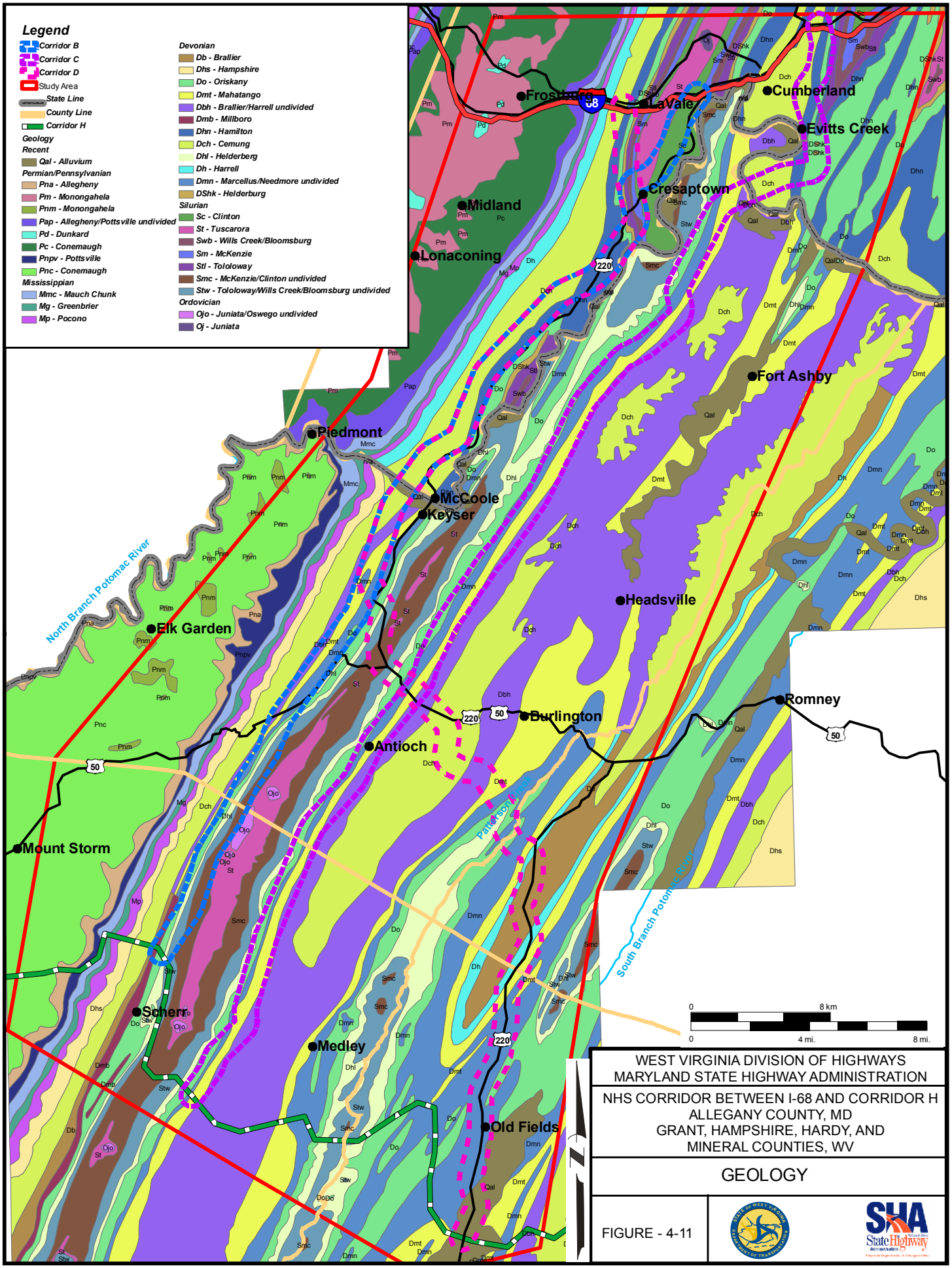
Build Alternatives

The build alternatives would impact the geology of the study area. Figure 4-11 shows the three corridors in relationship to the geology of the study area.

Corridor B

A variety of different types of Devonian- and Silurian-aged geologic formations occur within Corridor B. The Devonian- and Silurian-aged geologic formations located within the corridor are identified and described in Table 4.3-13.

The Clinton Group and Tuscarora formations are located in the northernmost portion of Corridor B between I-68 and Cresaptown. These rock types are moderately to highly resistant to weathering, with naturally steep but stable slopes. Both cut-slope stability and foundation stability are good. Excavation activities are moderately difficult to difficult, with moderate to slow drilling rates. These rock types are good sources of roadway material and fill.



WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION

NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV

GEOLOGY

FIGURE - 4-11

TABLE 4.3-13
Geologic Formations in Corridor B

Map Symbol	Formation Name	Description
Dmt	Mahantango Formation	Medium gray, olive-weathering, fine to course grained sandstone and numerous dark-gray to brown shale interbeds
Dmn	Marcellus/Needmore Formation	Black carbonaceous shale; limestone occurs locally; may contain abundant pyrite and siderite concretions and nodules
Do	Oriskany Sandstone Formation	Light gray, fossiliferous, fine to very course grained sandstone
Dshk	Helderburg Formation	Mostly cherty limestone, with some sandstone and shale. Contains several named stratigraphic units, including the Keyser Formation, which is partly Silurian and includes the Clifton Forge Sandstone and Big Mountain Shale members.
Stl	Tonoloway Formation	Medium gray laminated limestone containing interbedded zones of medium-dark-gray to light-olive-gray shale and siltstone
Swb	Wills Creek/Bloomsburg Formation	Greenish-gray shale containing local limestone and sandstone zones; red shale and siltstone occur in lower part of formation
Sm	McKenzie Formation	Greenish-gray shale interbedded with medium-gray, fossiliferous limestone; shale is predominant at base
Qal	Alluvium	Alluvial deposits of sand, gravel, silt, and clay
Dbh	Brallier/Harrell Formation	Interbedded light-gray siliceous siltstone and light-gray hard silty shale; contains fossiliferous lenses
Dhl	Helderburg Formation	Mostly cherty limestone, with some sandstone and shale. Contains several named stratigraphic units, including the Keyser Formation, which is partly Silurian and includes the Clifton Forge Sandstone and Big Mountain Shale members.
Stw	Tonoloway/Wills Creek/Bloomsburg Formation	Includes the thin-bedded platy argillaceous limestone of the Tonoloway, the thin-bedded shale with fossiliferous limestones of the Willis Creek, the Bloomsburg red clastic facies, and the greenish-brown to white Williamsport Sandstone. The Willis Creek contains anhydrite and rock salt, the latter supplying brine from deep wells along the Ohio River.
Dmb	Millboro Formation	Dark gray to black shale facies of eastern West Virginia.
Smc	McKenzie/Clinton Formation	Greenish-gray shale interbedded with medium-gray, fossiliferous limestone; shale is predominant at base
St	Tuscarora Formation	Sandstone and quartzite; fine to course grained; white sometimes red and green; tough; firmly cemented; cross bedded; conglomeratic in part

TABLE 4.3-13 (continued)
Geologic Formations in Corridor B

Map Symbol	Formation Name	Description
Dch	Chemung Formation	Medium-gray shale, light-gray to brownish siltstone, fine-grained sandstone, and conglomerate; marine fossils are common
Dhn	Hamilton Group	Uppermost part consists of olive-gray to medium-olive-gray fossiliferous siltstone and shale interbedded with fine-grained medium-dark-gray sandstone; middle part consists of light to medium-gray medium to coarse grained sandstone and several thin conglomerate beds; the base is characterized by medium to dark-gray fine-grained sandstone and dark-gray to black fissile shale
Sc	Clinton Group	Light to dark-gray fossiliferous sandstone; hematitic, oolitic sandstone and shale; light-olive-gray to brownish-gray fossiliferous shale with some limestone and iron sandstone

Sources: USDA, 1977, 1978, and 1989

The McKenzie, Wills Creek/Bloomsburg, Tonoloway, and Helderburg formations stretch for approximately two miles south of Cresaptown. These rock types are slightly resistant to weathering, with gentle to steep sloping naturally stable slopes. Cut-slope stability is fair to good and foundation stability is good. Excavation activities are moderately easy to difficult with fast drilling rates. These rock types are good sources of roadway material, riprap, and fill.

South of the McKenzie, Wills Creek/Bloomsburg, Tonoloway, and Helderburg formations to the Maryland/West Virginia state line, Corridor B consists of the Chemung and Hamilton formations. These rock types are moderately to poorly resistant to weathering, with shale that disintegrates rapidly when exposed to moisture. Sandstones and siltstones are moderately resistant to weathering. Cut-slope stability is fair to good and foundation stability is good. The rocks of the Chemung Formation are moderately difficult to excavate and drilling rates are medium. The rock types of the Hamilton Formation are moderately easy to excavate and have a moderate to fast drilling rate. These rock types are good sources of roadway material and fill.

South of the state line, Corridor B consists of the Brallier/Harrell, Mahantango, and the Marcellus/Needmore formations. The rock types of these formations are poorly to moderately resistant to weathering, with naturally fairly steep to stable slopes. Cut-slope stability is fair to good and foundation stability is good. The Mahantango Formation is moderately easy to moderately difficult to excavate with fast to moderate drilling rates. The Marcellus/Needmore

and Brallier/Harrell formations are easy to moderately easy to excavate with fast drilling rates. These rock types are good sources of roadway material and fill.

The remaining portion of Corridor B consists of the Oriskany Sandstone, Helderburg, Tonoloway/Wills Creek/Bloomsburg, McKenzie/Clinton, and Millboro formations. These rock types are slightly to moderately resistant to weathering with naturally stable slopes. Cut-slope stability is fair to good and foundation stability is good. Excavation is difficult in the Tonoloway Formation but easy in the others. All formations have fast drilling rates. These rock types are good sources of roadway material and fill.

Corridor C

Corridor C would impact a variety of different types of Devonian- and Silurian-aged geologic formations. The Devonian- and Silurian-aged geologic formations located within Corridor C are identified and described in Table 4.3-14.

TABLE 4.3-14
Geologic Formations in Corridor C

Map Symbol	Formation Name	Description
Do	Oriskany Sandstone	Light gray, fossiliferous, fine to very course grained sandstone
Dshk	Helderburg Formation	Mostly cherty limestone, with some sandstone and shale. Contains several named stratigraphic units, including the Keyser Formation, which is partly Silurian, and includes the Clifton Forge Sandstone and Big Mountain Shale members.
Stl	Tonoloway Formation	Medium gray laminated limestone containing interbedded zones of medium-dark-gray to light-olive-gray shale and siltstone
Qal	Alluvium	Alluvial deposits of sand, gravel, silt, and clay
Dbh	Brallier/Harrell Formation	Interbedded light-gray siliceous siltstone and light-gray hard silty shale, contains fossiliferous lenses
Dhl	Helderburg Formation	Mostly cherty limestone, with some sandstone and shale. Contains several named stratigraphic units, including the Keyser Formation, which is partly Silurian, and includes the Clifton Forge Sandstone and Big Mountain Shale members.
Dch	Chemung Formation	Medium-gray shale, light-gray to brownish siltstone, fine-grained sandstone, and conglomerate; marine fossils are common
Dhs	Hampshire Formation	Non-marine shales and fine micaceous sandstones, mostly red to brownish gray, including siltstone, sandstone and conglomerate. Generally distinguishable from the underlying Chemung by non-marine character and red color.

TABLE 4.3-14 (continued)
Geologic Formations in Corridor C

Map Symbol	Formation Name	Description
Dhn	Hamilton Group	Uppermost part consists of olive-gray to medium-olive-gray fossiliferous siltstone and shale interbedded with fine-grained medium-dark-gray sandstone; middle part consists of light to medium-gray medium to coarse grained sandstone and several thin conglomerate beds; the base is characterized by medium to dark-gray fine-grained sandstone and dark-gray to black fissile shale
Dmt	Mahantango Formation	Medium gray, olive-weathering, fine to course grained sandstone and numerous dark-gray to brown shale interbeds
Dmn	Marcellus/Needmore Formation	Black carbonaceous shale; limestone occurs locally; may contain abundant pyrite and siderite concretions and nodules

Sources: USDA, 1977, 1978, and 1989

The Hamilton Group, Chemung Formation, and Oriskany Sandstone are located in the northernmost portion of Corridor C between I-68 and the Maryland/West Virginia boundary. Weathering of the Oriskany Sandstone is highly variable depending on the presence of siliceous cement; the Chemung Formation is moderately resistant to weathering with shale that disintegrates rapidly when exposed to moisture; and the Hamilton Group is moderately to poorly resistant to weathering. All formations have steep to fairly steep stable natural slopes. Cut-slope stability is fair to good and foundation stability is good, with the exception of weathered rock from the Oriskany Formation having poor stability. The Chemung Formation and Oriskany Sandstone are both moderately difficult to excavate with slow to medium drilling rates. The Hamilton Group is moderately easy to excavate with fast to moderate drilling rates. These rock types are good sources of roadway material and fill.

The remainder of Corridor C south of the Maryland/West Virginia state line consists of the Oriskany Sandstone, Mahantango, Brallier/Harrell, and Marcellus/Needmore formations. Weathering of the Oriskany Sandstone is highly variable depending on the presence of siliceous cement; the others are moderately to poorly resistant to weathering. All formations have steep to fairly steep stable natural slopes. Cut-slope stability is fair to good and foundation stability is good, with the exception of weathered rock from the Oriskany Sandstone having poor stability. The Oriskany Sandstone is moderately difficult to excavate with slow to medium drilling rates. The Mahantango, Brallier/Harrell, and Marcellus/Needmore formations are moderately easy to excavate with fast to moderate drilling rates. These rock types are good sources of roadway material and fill.

Corridor D

Corridor D would impact a variety of different types of Devonian- and Silurian-aged geologic formations. The Devonian- and Silurian-aged geologic formations located within Corridor D are identified and described in Table 4.3-15.

TABLE 4.3-15
Geologic Formations in Corridor D

Map Symbol	Formation Name	Description
Dmt	Mahantango Formation	Medium gray, olive-weathering, fine to course grained sandstone and numerous dark-gray to brown shale interbeds
Dmn	Marcellus/Needmore Formation	Black carbonaceous shale; limestone occurs locally; may contain abundant pyrite and siderite concretions and nodules
Do	Oriskany Sandstone	Light gray, fossiliferous, fine to very course grained sandstone
Dshk	Helderburg Formation	Mostly cherty limestone, with some sandstone and shale. Contains several named stratigraphic units, including the Keyser Formation, which is partly Silurian, and includes the Clifton Forge Sandstone and Big Mountain Shale members.
Stl	Tonoloway Formation	Medium gray laminated limestone containing interbedded zones of medium-dark-gray to light-olive-gray shale and siltstone
Swb	Wills Creek/Bloomsburg Formation	Greenish-gray shale containing local limestone and sandstone zones; red shale and siltstone occur in lower part of formation
Sm	McKenzie Formation	Greenish-gray shale interbedded with medium-gray, fossiliferous limestone; shale is predominant at base
Qal	Alluvium	Alluvial deposits of sand, gravel, silt, and clay
Dbh	Brallier/Harrell Formation	Interbedded light-gray siliceous siltstone and light-gray hard silty shale; contains fossiliferous lenses
Dhl	Helderburg Formation	Mostly cherty limestone, with some sandstone and shale. Contains several named stratigraphic units, including the Keyser Formation, which is partly Silurian and includes the Clifton Forge Sandstone and Big Mountain Shale members.
Stw	Tonoloway/Wills Creek/Bloomsburg Formation	Includes the thin-bedded platy argillaceous limestone of the Tonoloway, the thin-bedded shale with fossiliferous limestones of the Willis Creek, the Bloomsburg red clastic facies, and the greenish-brown to white Williamsport Sandstone. The Willis Creek contains anhydrite and rock salt, the latter supplying brine from deep wells along the Ohio River.
Smc	McKenzie/Clinton Formation	Greenish-gray shale interbedded with medium-gray, fossiliferous limestone; shale is predominant at base
Dch	Chemung Formation	Medium-gray shale, light-gray to brownish siltstone, fine-grained sandstone, and conglomerate; marine fossils are common

TABLE 4.3-15 (continued)
Geologic Formations in Corridor D

Map Symbol	Formation Name	Description
Dh	Harrell Formation	Gray to black silty shale with thin argillaceous limestone, calcareous shale, and limestone nodules at base
Db	Brallier Formation	Interbedded light-gray siliceous siltstone and light-gray hard silty shales; contains fossiliferous lenses

Sources: USDA, 1977, 1978, and 1989

The Chemung, McKenzie, Wills Creek/Bloomsburg, Tonoloway, and Helderberg formations are located in the northernmost portion of Corridor D from I-68 to approximately two miles south of Cresaptown. These rock types are slightly resistant to weathering with gentle to steep sloping naturally stable slopes, with exception of the shale of the Chemung formations, which disintegrate rapidly when exposed to moisture. Cut-slope stability is fair to good and foundation stability is good. Excavation activities are moderately easy to difficult with fast drilling rates. These rock types are good sources of roadway material, riprap, and fill.

South of the McKenzie, Wills Creek/Bloomsburg, Tonoloway, and Helderberg formations to the Maryland/West Virginia state line, Corridor D consists of the Chemung and Hamilton formations. These rock types are moderately to poorly resistant to weathering with shale that disintegrates rapidly when exposed to moisture. Sandstones and siltstones are moderately resistant to weathering. Cut-slope stability is fair to good and foundation stability is good. The rocks of the Chemung Formation are moderately difficult to excavate and drilling rates are medium. The rock types of the Hamilton Formation are moderately easy to excavate and have a moderate to fast drilling rate. These rock types are good sources of roadway material and fill.

For the next eight miles south of the Maryland/West Virginia state line, Corridor D consists of the Brallier/Harrell, Mahantango, and the Marcellus/Needmore formations. The rock types of these formations are poorly to moderately resistant to weathering, with naturally fairly steep to stable slopes. Cut-slope stability is fair to good and foundation stability is good. The Mahantango Formation is moderately easy to moderately difficult to excavate with fast to moderate drilling rates. The Marcellus/Needmore and Brallier/Harrell formations are easy to moderately easy to excavate with fast drilling rates. These rock types are good sources of roadway material and fill.

The next two miles of Corridor D to the Mineral-Hampshire county line consists of the Oriskany Sandstone, Mahantango, Brallier/Harrell, and Marcellus/Needmore formations. Weathering of the Oriskany Sandstone is highly variable depending on the presence of siliceous cement; the others are moderately to poorly resistant to weathering. All formations have steep to fairly steep stable natural slopes. Cut-slope stability is fair to good and foundation stability is good, with the exception of weathered rock from the Oriskany Sandstone having poor stability. The Chemung Formation is moderately difficult to excavate with slow to medium drilling rates. The Mahantango, Brallier/Harrell, and Marcellus/Needmore formations are moderately easy to excavate with fast to moderate drilling rates. These rock types are good sources of roadway material and fill.

The next two to three miles consist of the Oriskany Sandstone, Marcellus/Needmore, and Helderburg formations. Weathering of the Oriskany Sandstone is highly variable depending on the presence of siliceous cement; the others are moderately to poorly resistant to weathering. All formations have steep to fairly steep stable natural slopes. Cut-slope stability is fair to good and foundation stability is good, with the exception of weathered rock from the Oriskany Sandstone having poor stability. The Oriskany Sandstone is moderately difficult to excavate with slow to medium drilling rates. The Helderburg and Marcellus/Needmore formations are moderately easy to excavate with fast to moderate drilling rates. These rock types are good sources of roadway material and fill.

The remainder of Corridor D to the south consists of the Oriskany Sandstone, Mahantango, Harrell, Brallier, Marcellus/Needmore formations. Weathering of the Oriskany Sandstone is highly variable depending on the presence of siliceous cement; the others are moderately to poorly resistant to weathering. All formations have steep to fairly steep stable natural slopes. Cut-slope stability is fair to good and foundation stability is good, with the exception of weathered rock from the Oriskany Sandstone having poor stability. Excavation is moderately easy to moderately difficult with fast to moderately slow drilling rates. These rock types are good sources of roadway material and fill.

4.4 Potentially Contaminated Sites

A preliminary assessment of potentially contaminated waste sites was completed in the study area in August 2006. The assessment identified numerous sites with recognized environmental

conditions. Additionally, various federal and state environmental databases were reviewed in December 2009 to identify other potentially contaminated waste sites.

4.4.1 Methodology

Two staff members trained in hazardous waste investigations conducted a windshield reconnaissance of each corridor to assess the possibility of future project involvement with potentially contaminated sites. Potentially contaminated locations were mapped and input into a project database. The database included assignment of a site identification number, corridor within which it was located, name, photograph(s), and list of environmental concerns. Sites with REC were identified and categorized into one of the three following levels of concern:

- Level One REC – These sites are classified as low risk. These sites include, but are not limited to, automotive and truck repair facilities, small quantity *Resource Conservation and Recovery Act* (RCRA) generator facilities, facilities with ASTs containing less than 10,000 gallons of product with no visible signs of contamination, electric power substations, and automobile sales and service facilities.

- Level Two REC – These sites are classified as moderate risk and have potential to become high risk based on more detailed examination. These sites include, but are not limited to, facilities with ASTs containing greater than 10,000 gallons of product or ASTs with visible contamination, gasoline fueling facilities, potential former gasoline fueling facilities, metal fabrication facilities, facilities with USTs, facilities with junk automotive and truck parts storage, and storage trailers with unknown contents.

- Level Three REC – These sites are classified as high risk, with the likelihood of soil and/or groundwater contamination. These sites include, but are not limited to, bulk petroleum storage facilities, properties with groundwater monitoring wells, properties with visible soil staining, industrial properties, surface mining facilities, landfills, and salvage yards.

The hazardous waste investigations were primarily completed through windshield surveys with limited records review. Some preliminary research on superfund sites and underground storage tanks was conducted to supplement the windshield surveys, however. That research revealed two superfund sites in Mineral County (Allegany Ballistics Lab and Kessel Lumber Supply), one superfund site in Hampshire County (Tordon Herbicide Chemicals), and one superfund site in Allegany County (Limestone Road).

Interviews with agencies or knowledgeable persons were deferred until Tier Two due to the size of the corridors. Additional sites may exist within each corridor, but due to the modified nature of this investigation, they were not identified. Some sites with REC may exist on private property that was inaccessible to the investigators. A more detailed review of databases and subsequent research will also be conducted during Tier Two studies.

4.4.2 Effects Analysis – Potentially Contaminated Sites

No-Build Alternative

The No-Build Alternative would not result in any immediate impacts to potentially contaminated sites; however, it would not meet the purpose and need of the project.

Build Alternatives

In addition to existing conditions, the build alternatives could generate waste from construction. Disposal of the excavation waste material would be the responsibility of the contractors. The project sponsor will perform environmental due diligence for any excess soil/waste material leaving the project site. It will be important to reduce the amount of excavation waste material that must be removed off-site to limit the potential for impacts to other sites and reduce the costs for appropriate disposal of the material. Steepening cut slopes will reduce the overall width of the proposed cuts and reduce the volume of excavation waste material. Slope stability will be evaluated with regard to the proposed cut slope ratio and the appropriate use of walls, slope benches, and other geotechnical treatments. Excavation waste material may be used to build modest fill areas without encroaching on sensitive features or affecting the operating characteristics of the system.

Throughout the project area, there are several areas that provide the potential to dispose of the excavation waste material. Former surface mined areas, slag dumps, razed industrial sites, and permitted landfills are numerous and located throughout the study area. These sites would provide an accessible opportunity for the appropriate and beneficial re-use of excavation waste material. Other opportunities may exist for the beneficial re-use of this material where site developments are planned but the existing terrain is unsuitable.

Corridor B

As shown in Table 4.4-1, Corridor B could potentially impact 43 sites with REC. Ten sites with Level One REC, 30 sites with Level Two REC, and three sites with Level Three REC were identified. Corridor B would have the second highest amount of impacts to sites with REC, but the least amount of impacts to sites with Level Three REC.

Corridor C

As shown in Table 4.4-1, Corridor C could potentially impact 42 sites with REC. Thirteen sites with Level One REC, 18 sites with Level Two REC, and 11 sites with Level Three REC were identified. Corridor C would have the least amount of impacts to sites with REC, but the most impacts to sites with Level Three REC.

Corridor D

As shown in Table 4.4-1, Corridor D could potentially impact 55 sites with REC. Fourteen sites with Level One REC, 36 sites with Level Two REC, and five sites with Level Three REC were identified. Corridor D would have the most impacts to sites with REC, and the second most impacts to sites with Level Three REC.

TABLE 4.4-1
Potentially Contaminated Sites

REC Level	Corridor B	Corridor C	Corridor D
Level One	10	13	14
Level Two	30	18	36
Level Three	3	11	5
Total	43	42	55

4.5 Traffic

Concurrent with the refinement of the corridors, potential issues with traffic were evaluated.

4.5.1 Methodology

Potential future traffic for each corridor was projected using a traffic assignment model and estimates of long-distance, through traffic from intercity locations east and west of Cumberland on I-68. The sources of average annual daily traffic information for the regional highway network were the 2005 statewide traffic flow map in West Virginia (WVDOH 2005a) and the Allegany County 2004 traffic volume map in Maryland (MDSHA 2004). Other traffic data and traffic growth rates were provided by WVDOH and MDSHA. Generally, all roadway segments under study had one lane in each direction for through traffic, with left-turn lanes and center left-turn lanes in some instances. While there were some locations in Maryland with more than two lanes in each direction, these tended to be short relative to the two-lane highway sections. To represent the average condition of all of these highways, these roads were assumed to have free flow speeds of 45 mph, 90 percent no-passing zones, rolling terrain, and 10 percent truck traffic.

The traffic assignment model consisted of the following components:

- Trip Generation Productions – The number of households in the area was queried from the available census data at the block group level. There were 31,583 households in the immediate area. It was estimated that each household produced 0.77 daily trips on the highway network.
- Trip Generation Attractions – Attractions were estimated using employment data queried at the place of work from the available census data. Data were queried and assigned to one of the eight major employment centers in the region: Cumberland, LaVale, Cresaptown, Frostburg, Westernport, Moorefield, Keyser, and Romney. Employment was grouped into retail and non-retail. Trip attraction rates were applied to each type of employment and the total number of attractions was balanced to match the trip productions.
- Trip Distribution – A gravity model was developed to perform the trip distribution. All of the attractions converged to within eight percent.
- Traffic Assignment – For each of the segments, a matrix was prepared to estimate the percentage of trips between each origin and destination pair that would use each available route.

Some long-distance traffic flows through Cumberland on I-68 from I-79 and I-81. In the future, some of those trips could use the combination of Corridor H and an improved US 220 corridor, if it provides a shorter and quicker route. After a detailed analysis of alternate travel paths

through the area, a thousand vehicles per day (VPD) were added to the forecasts, representing travelers that would shift from other long-distance through routes in the area to a new facility if ultimately constructed.

Once the traffic model was completed, corridor level traffic was projected and a preliminary capacity analysis conducted. Existing and future levels of service were projected for roadway segments along US 220; MD 36, 53, and 135; and WV 28, 46, 93, and 956.

In addition to the traffic and LOS projections, the amount of regional residual traffic expected on US 220 was calculated. Residual traffic would be those trips remaining on existing US 220 if a new highway corridor were developed and traffic shifted to it. In effect, the less residual traffic on US 220, the more successful the corridor would be.

4.5.2 Effects Analysis – Traffic

No-Build Alternative

The No-Build Alternative does not adequately address traffic congestion in the area. As traffic increases, high rates of congestion would continue and level of service would worsen.

Build Alternatives

Although traffic would increase annually, traffic conditions on the area roadways would improve with construction within any of the three corridors. The rationale for that determination is discussed in the next four subsections.

4.5.2.1 Long Distance Traffic Projections

Traffic volumes to the east and west of Cumberland that are not near population centers were queried in order to arrive at an order of magnitude estimate of traffic that might be diverted to the new route. Currently, many motorists use US 522 through Berkeley Springs to shorten their trip between I-81 to the south and I-68 to the west. The lowest volumes on US 522 in West Virginia were approximately 6,000 vehicles per day. For traffic between I-79 and I-68, the lowest volumes on I-68 (near the WV/MD state line) were approximately 11,000 VPD. The

through traffic that might be attracted to this new route should only be a fraction of these volumes. As an estimate, a through volume of 1,000 vehicles per day was applied for each movement (I-79 south to I-68 east and I-81 south to I-68 west) in which the new route was found to be more attractive than the existing route. If the existing route was found to be more attractive, then nothing was to be added for through traffic.

It is approximately 120 miles from the LaVale interchange on I-68 to the Weston interchange on I-79. Although a new route could shorten the trip by 10 miles, it is likely to still take about the same time. If there is no real times-savings, a new route may not attract significant traffic since driver/trucker services are located along I-68 and I-79.

Similarly, it is approximately 112 miles from the LaVale interchange on I-68 to the Middletown, Virginia, interchange on I-81 (which is near where the Corridor H traffic will access I-81). This trip is approximately 95 miles long using US 522 from Winchester to Hancock and is a relatively attractive alternate route to driving on the interstates. Thus, the route to the southeast between Cumberland and Middletown is likely to be more attractive because trucks and through traffic already divert from I-70/I-81. As such, a through-traffic volume of 1,000 VPD (2005 volumes) was added to the regional traffic forecast to formulate the final traffic forecast.

4.5.2.2 Design Year Forecast

Traffic volume projections for area roadways and for the residual traffic on US 220 were factored forward 20 years consistent with the growth rates provided by WVDOH and MDSHA. The results are shown on Table 4.5-1.

TABLE 4.5-1
Current and Projected Traffic for the Highway Network

Roadway	Segment	Current AADT	20-year Growth Rate	Approximate 2025 AADT
US 220	Moorefield to Junction	3,800	1.4844	5,600
	Junction to New Creek	4,700	1.4844	7,000
	New Creek to MD/WV	4,400	1.4844	6,500
	MD/WV to MD 53	10,125	1.2202	12,400
	MD 53 to I-68	14,125	1.2202	17,200

TABLE 4.5-1 (continued)
Current and Projected Traffic for the Highway Network

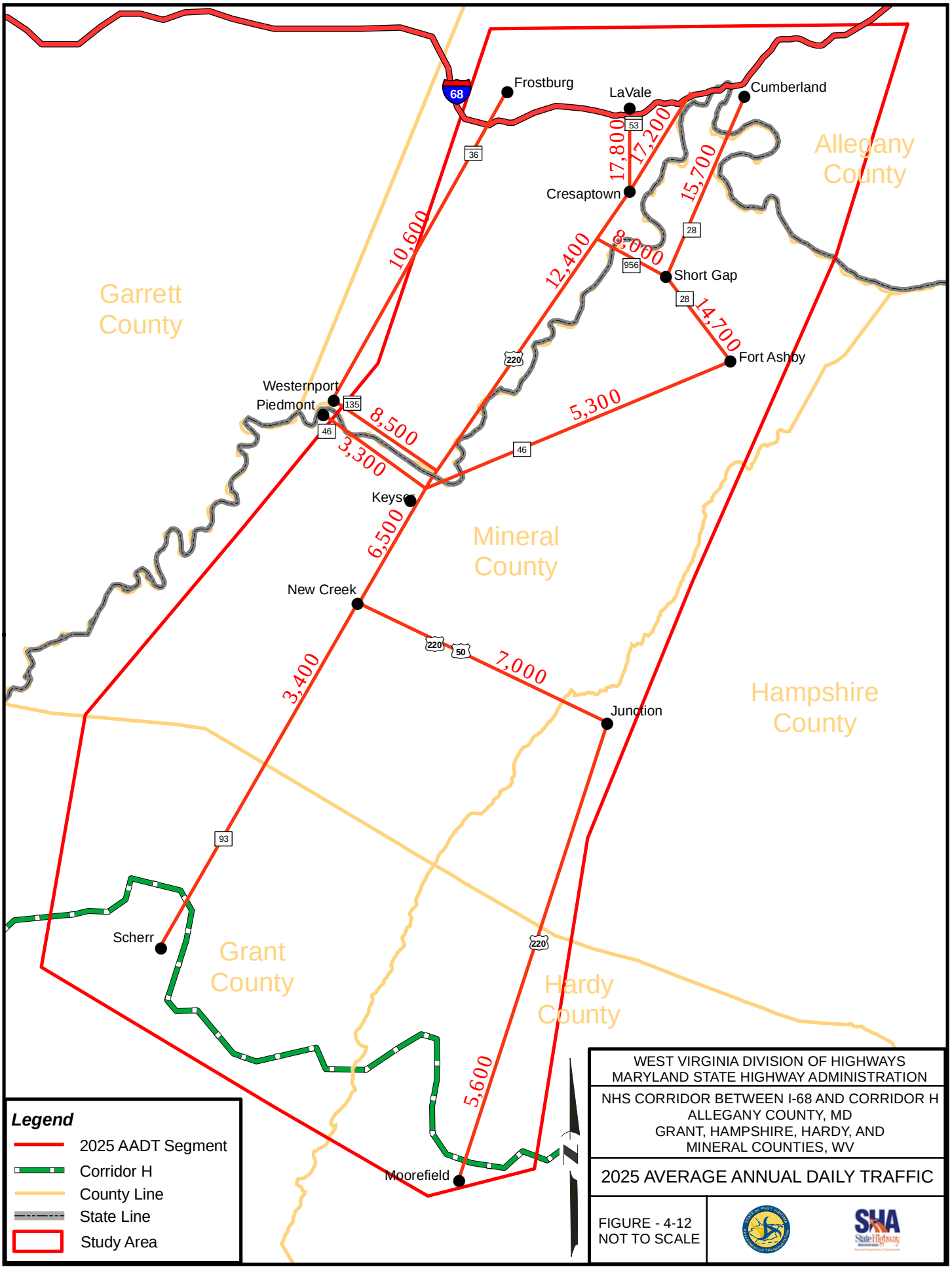
Roadway	Segment	Current AADT	20-year Growth Rate	Approximate 2025 AADT
MD 36	Westernport to Frostburg	8,150	1.3052	10,600
MD 135	Westernport to Keyser	6,975	1.2202	8,500
WV 46	Westernport to Keyser	2,000	1.6447	3,300
	Keyser to Fort Ashby	3,200	1.6447	5,300
WV 93	Scherr to New Creek	2,200	1.5405	3,400
WV 28	Fort Ashby to WV 956	9,300	1.5813	14,700
	WV 956 to Cumberland	9,900	1.5813	15,700
WV 956	WV 28 to US 220	5,200	1.5405	8,000
MD 53	US 220 to I-68	14,575	1.2202	17,800

Roadways with the highest future traffic include MD 53, WV 28, and US 220. Future traffic is also shown on Figure 4-12. As expected, future traffic would be highest in the more populated communities around Cumberland and generally drops toward the south.

4.5.2.3 Residual Traffic

Residual traffic defines how many vehicles will use the proposed corridor and how much residual regional and long distance traffic will remain on existing US 220. Regional and long distance drivers will have a choice of using the Build Alternative or continuing to use US 220. The decision will be based on the trip origin-destination (O-D), travel time and distance, and economics. All local trips are assumed to remain on existing US 220 because of their shorter length and local origin and destination. In effect, the less residual traffic on US 220, the more successful the Build Alternative would be.

Residual traffic on US 220 was estimated for each of the corridors. Because of its potential alignment as a true replacement for US 220 between Cumberland and Moorefield, Corridor D was assumed to draw all of the regional traffic off of US 220, leaving only local access traffic. Therefore, for each segment of the other proposed corridors, each origin-destination pair was


Frostburg
LaVale
Cumberland
Cresaptown
Short Gap
Fort Ashby
Westernport
Piedmont
Keyser
New Creek
Junction
Scherr
Moorefield
Garrett County
Allegany County
Mineral County
Hampshire County
Grant County
Hardy County
68
36
53
28
956
220
135
46
50
93
17,800
17,200
15,700
10,600
12,400
8,000
14,700
5,300
8,500
3,300
6,500
7,000
3,400
5,600
Legend
2025 AADT Segment
Corridor H
County Line
State Line
Study Area
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
2025 AVERAGE ANNUAL DAILY TRAFFIC
FIGURE - 4-12
NOT TO SCALE

compared to the respective entry for the US 220 corridor. If the new transportation corridor was found not to attract the traffic between an O-D pair that US 220 carried, that was considered residual traffic. These results were summed over all O-D pairs for each segment to develop the total residual traffic volume on US 220 for each of the corridors. The amount of traffic each corridor would carry, together with the maximum residual traffic on US 220, is shown in Table 4.5-2.

TABLE 4.5-2
Projected Residual Traffic on US 220

Corridor/Highway Segment		Traffic Projection for Each Corridor		Maximum Residual Traffic on US 220	
		Year 2005	Year 2025	Year 2005	Year 2025
Corridor B	Corridor H to Keyser	8,000	11,900	Primarily Local	Primarily Local
	Keyser to Rawlings	11,800	16,100		
	Rawlings to LaVale	15,500	21,100		
Corridor C	Corridor H to US 50	5,600	8,300	4,500 AADT	6,100 AADT
	US 50 to WV 956	9,500	14,500		
	WV 956 to Cumberland	12,000	18,500		
Corridor D	Corridor H to Keyser	9,200	13,700	Primarily Local	Primarily Local
	Keyser to Rawlings	11,800	16,100		
	Rawlings to LaVale	15,500	21,100		

Across all three corridors, the lower range of traffic would occur between Corridor H and either Keyser or US 50. Future traffic volumes would range from a low of 8,300 on the more rural parts of Corridor C to a high of 21,100 on Corridors B and D in the vicinity of Cumberland.

Of the three proposed corridors carried into more detailed analysis, Corridors B and D would divert the most traffic from existing US 220, leaving primarily local traffic on the roadway. Though faring slightly better, Corridor C would leave about a third of the traffic on US 220 that is expected there in the year 2025.

In terms of meeting future traffic demand, Corridors B and D offer the greatest promise. Table 4.5-3 shows the upper limits of the three corridors ranked in order of their ability to divert future US 220 traffic.

TABLE 4.5-3
Future Traffic on US 220

Corridor	Maximum US 220/MD 53 Traffic (No-Build)	Traffic on Each Corridor Year 2025	Residual Traffic on US 220 Year 2025
B	17,800 AADT	21,100 AADT	Primarily Local
D	17,800 AADT	21,100 AADT	Primarily Local
C	17,800 AADT	18,500 AADT	6,100 AADT

Besides being diverted to the new corridor (if built), some of the growth in US 220 traffic would shift to other roadways, compounding congestion and safety problems in the area. This shifting to other through routes would be greatest for the corridors that divert lesser amounts of future US 220 traffic and lowest for Corridors B and D. All of the other north-south routes, however, have less capacity than US 220 for bearing increases in traffic.

4.5.2.4 Capacity Analysis

Current and future level of service was calculated for the principal highway network in the area. LOS describes the operation of a given highway by establishing a range of values from “A” to “F.” LOS “A” represents the best operation of a roadway and LOS “F” represents the worst. The concept of LOS is illustrated on Figure 4-13.

Peak-hour levels of service for the area’s roadways are shown in Table 4.5-4. As shown in the table, none of the highway network roadways operate at a good level of service now. This is typical of what is generally predicted for similar roadways because even at volumes that are far from the capacity of the roadway, lower speeds prevail and the time spent following another vehicle tends to be high.

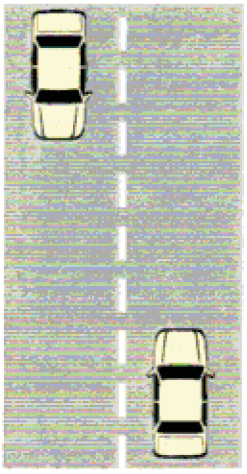
Subsequent to the calculation of LOS, a capacity analysis was performed for the typical section of the proposed corridor using the Multi-Lane Highway Module HCS. The following assumptions were used for the analysis:

- Two 12-foot lanes in each direction
- Lateral clearance > 6 feet each side
- Free flow speed = 60 mph
- Percent trucks = 12 percent
- Rolling terrain/passenger car equivalents (Et) = 2.5

LOS “A”

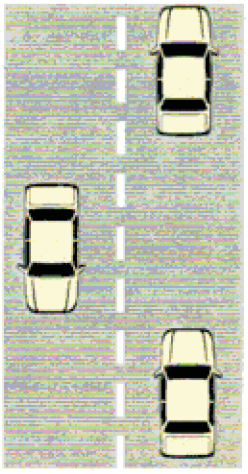
LOS “A” is defined as free flowing. Individual users are virtually unaffected by the presence of others in the traffic stream.

LOS “B”



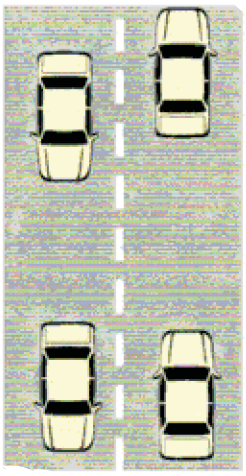
LOS “B” is in the range of stable flow, but the presence of others in the traffic stream begins to be noticeable.

LOS “C”



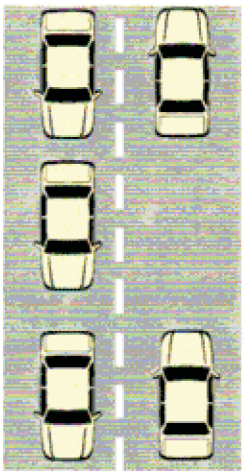
LOS “C” is in the range of stable flow, but marks the beginning of the range of flow in which the operations of individual users becomes significantly affected by the interactions of others in the traffic stream.

LOS “D”



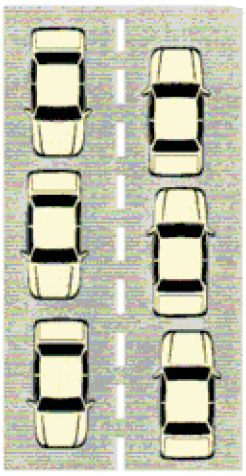
LOS “D” represents high density but stable flow. Speed and freedom to maneuver are severely restricted and the driver experiences a poor level of comfort and convenience.

LOS “E”



LOS “E” represents operating conditions at or near capacity level. Comfort and convenience levels are extremely poor and driver frustration is generally high.

LOS “F”



LOS “F” is used to define forced or breakdown flow. This condition exists whenever the amount of traffic approaching a point exceeds the amount which can travel through a point.

Based on actual photographs from the *Highway Capacity Manual, Special Report 209* (Transportation Research Board, 1994).

WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION

NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV

LEVEL OF SERVICE

FIGURE - 4-13
NOT TO SCALE

TABLE 4.5-4
Current and Projected Level of Service for the Highway Network

Roadway	Highway Segment	Current LOS	20-year Traffic Growth Rate	2025 LOS (No-Build Alternative)
US 220	Moorefield to Junction	E	1.4844	E
	Junction to New Creek	E	1.4844	E
	New Creek to MD/WV	E	1.4844	E
	MD/WV to MD 53	E	1.2202	F
	MD 53 to I-68	E	1.2202	F
MD 36	Westernport to Frostburg	E	1.3052	F
MD 135	Westernport to Keyser	E	1.2202	E
WV 46	Westernport to Keyser	E	1.6447	E
	Keyser to Fort Ashby	E	1.6447	E
WV 93	Scherr to New Creek	E	1.5405	E
WV 28	Fort Ashby to WV 956	E	1.5813	E
	WV 956 to Cumberland	E	1.5813	E
WV 956	WV 28 to US 220	E	1.5405	E
MD 53	US 220 to I-68	E	1.2202	E

- K (AADT occurring during the design hour volume) = 0.10
- D (directional split) = 0.55
- Peak hour factor (PHF) = 0.9
- Driver population factor = 0.9

This analysis yielded a maximum peak hour volume that can be serviced at each LOS on a new transportation facility. The results of the capacity analysis are provided in Table 4.5-5.

TABLE 4.5-5
Maximum AADT at Each Level of Service

LOS	Maximum Density (pc/mi/ln)	Maximum Hourly Volume (pc/hr)	Maximum Hourly Volume (veh/hr)	Maximum AADT (veh/day)
A	11	1,069	906	16,470
B	18	1,750	1,482	26,940
C	26	2,527	2,141	38,920
D	35	3,402	2,881	52,390
E	40	3,888	3,293	59,880
F	---	---	---	---

pc/mi/ln = passenger cars per mile per lane
pc/hr = passenger cars per hour
veh/hr = vehicles per hour
veh/day = vehicles per day

As traffic increases, high rates of congestion would continue and level of service would worsen. Although traffic would increase annually, traffic conditions on the area roadways would improve with construction within any of the three corridors. All of the corridors would function well below capacity and are projected to operate at a high level of service. With the anticipated traffic volumes, the proposed roadway should function at LOS B regardless of which corridor is advanced to Tier Two. If signalization is added in the northern areas of the corridors, however, capacity would be dictated by the traffic signals and may change. Also, additional lanes may be warranted in this area depending on the access.

4.6 Air Quality

4.6.1 Methodology

Transportation air quality evaluation requirements as stipulated in the *National Environmental Policy Act of 1969* and the federal *Clean Air Act* involve micro-scale computer modeling on the project level to determine localized air quality impacts related to the National Ambient Air Quality Standards, as well as regional modeling to determine conformity. Regional emissions, namely O_3, for this project were analyzed through an evaluation of State Implementation Plans (SIPs). At this stage in the project, the air quality analysis relates to general attainment designation and

future requirements. When this project enters Tier Two, a localized, micro-scale evaluation at worst-case locations throughout the study area will be conducted.

Carbon monoxide (CO) concentrations are often thought to be a good indicator of vehicular-induced pollution on the micro-scale (PENNDOT 2008). If no CO impacts to the NAAQS are evident using the "worst-case" model inputs, then further analysis of other pollutants is not necessary. The methodology described in EPA-454/R-92-005 suggests conducting modeling at the top three signalized intersections based upon LOS and total volumes. The proposed transportation corridors will connect to I-68 with unsignalized interchanges. The analysis of the existing and future roadway segments along US 220 determined that all roadway segments currently operate at a LOS E will operate at a LOS E or F with the 2025 No-Build Alternative. For the three corridors under consideration, a lower range of traffic would occur between Corridor H and US 50, resulting in an anticipated improvement to the LOS. The proposed roadway should function at LOS B and traffic conditions on the area roadways would improve.

The final rule for $PM_{2.5}$ and PM_{10} by the USEPA, effective April 5, 2006, and published in 40 CFR Part 93, defines $PM_{2.5}$ and PM_{10} as particles with an aerodynamic diameter less than or equal to a nominal 2.5 and 10 micrometers, respectively. The final rule does not require any $PM_{2.5}$ hot-spot analysis (qualitative or quantitative) for projects that are not listed as an air quality concern in *Sec. 93.123(b)(1)*. The USEPA specifies in *Sec. 93.123(b)(1)* that projects of air quality concern are new highway, expressway, and transit projects that serve a significant level of diesel vehicle traffic, or any other project that is identified in the $PM_{2.5}$ SIP as a localized concern. A facility with a significant volume of diesel truck vehicle traffic would have at least 125,000 AADT, with more than 8 percent of the AADT occurring as diesel truck traffic. This project is presumed to meet *CAA* and 40 CFR 93.116 requirements without any explicit hot-spot analysis since Allegany County is an attainment area for $PM_{2.5}$.

4.6.2 Effects Analysis – Air Quality

No-Build Alternative

Air quality degradation would likely occur with the No-Build Alternative unless other transportation projects are developed to reduce existing and projected increases in traffic congestion.

Build Alternatives

The design year (2025) AADT for US 220 was projected to be a maximum of 21,100 vehicles, with 12 percent, or approximately 2,520 vehicles, being buses and heavy trucks (i.e., diesel traffic). Local truck traffic is slightly higher than regionally. US 220 through the project corridor currently operates at LOS E. By the year 2025, it will deteriorate in segments to LOS F. This project is expected to improve the LOS for the highway network through the study area. Therefore, based on the low diesel vehicle AADT and the improved LOS, this project does not require any qualitative or quantitative $PM_{2.5}$ hot-spot analysis at this time.

In West Virginia, Mineral County, Grant County, Hampshire County, and Hardy County are in an air quality attainment status for O_3, CO, $PM_{2.5}$ and PM_{10} (the principal vehicular-related pollutants) and other pollutants, such as sulfur dioxide (SO_2), lead, and air toxics (WVDEP 2008). Allegany County, in Maryland, is also in an air quality attainment status for O_3, CO, $PM_{2.5}$ and $PM_{10,}$ and other pollutants (USEPA 2010).

Mobile source air toxics (MSATs) are also emitted from highway vehicles. MSATs are a subset of air toxics defined by the *CAA*. Some MSATs are present in fuel and emitted when the fuel evaporates or passes through engines unburned. Others are emitted from the incomplete combustion of fuel, as secondary combustion, or from impurities in oil and gasoline. Additional MSATs could be emitted in the area as a result of traffic increases. The FHWA has indicated that a significant reduction in MSATs will occur by the year of 2020 (FHWA 2006) as a result of national mobile source control programs, reformulated gasoline, low emission vehicle standards, and revised sulfur control standards. Additional analysis will be necessary during Tier Two, however, to determine if this is actually the case locally. Currently, the effect of the proposed project on MSAT reduction is unclear, but the level of potential MSAT emissions will be assessed either quantitatively or qualitatively in Tier Two along with complete micro and regional scale analyses.

Air quality within the construction area may be temporarily impacted by construction activities. Fugitive dust from earth-moving equipment is the activity that most likely could impact the surrounding environment.

4.7. Noise

4.7.1 Methodology

During the planning phase of a transportation improvement project, consideration should be given to potential highway traffic noise impacts for the entire project limits. A general noise impact assessment has been conducted for the study area. Field reconnaissance and a review of the study area mapping were conducted to identify potential noise sensitive areas (NSAs) that could be impacted by any of the proposed corridors. FHWA Noise Abatement Criteria (NAC) Activity Category B, representative of residences, schools, churches, parks, picnic areas, recreation areas, playgrounds, active sports areas, motels, hotels, libraries, and hospitals, was used as the primary criterion for sensitive receptors identified in the study area. Section 4(f) properties were also included in the noise impact assessment.

According to FHWA guidance documents, a project is defined as having a traffic noise impact if either of the following conditions occurs:

- Predicted noise levels approach or exceed the FHWA NAC. Approach levels are considered to be one dB(A) less than the noise abatement criteria. The one dB(A) level was interpreted from the FHWA directive of December 1993 in an effort to standardize the approach criteria. For Category B receptors (residences, hospitals, schools, etc.), FHWA has established the absolute NAC at 67 dB(A), and the approach level has been set at 66 dB(A).
- A substantial increase in predicted noise levels over the existing noise levels occurs even though the NAC have not been reached, typically an increase of 10 dB(A) or greater over the existing level.

4.7.2 Effects Analysis – Noise

No-Build Alternative

Capacity improvements warranted with the No-Build Alternative could cause site-specific noise impacts. Noise impacts could also occur with normal traffic growth in some areas.

Build Alternatives

Table 4.7-1 identifies the potential for traffic related noise impacts in each corridor. Based on land use, Corridor D would have the potential to have the highest amount of noise impacts and Corridor C the lowest potential.

TABLE 4.7-1
Potential Noise Sensitive Areas

Noise Sensitive Feature	Corridor B	Corridor C	Corridor D
Residential Land Use	2,590 acres	2,400 acres	2,620 acres
Schools	7	4	4
Churches	17	20	22
Major Health Care Facilities	1	2	0
Parks & Recreation Areas	8	10	9
NRHP-Listed Sites	0	4	9
NRHP-Eligible Sites	4	5	12
Total	37	45	56

With any build alternative, temporary noise impacts would occur in construction areas generated by excavators, scrapers, graders, tractors, dozers, cranes, trucks, and compressors.

4.8 Indirect and Cumulative Impacts

Guidelines prepared by the Council on Environmental Quality for carrying out *NEPA* studies or requirements broadly define indirect impacts as those that are “caused by an action and are later in time or further removed in distance, but are still foreseeable” (40 CFR 1508.8). Additional guidance from the MDSHA (*Secondary and Cumulative Effects Analysis Guidelines*, June 2000) has also been prepared.

Indirect impacts may be associated with development that may result from the construction of a facility, such as a transportation improvement project, but differ from those impacts directly associated with the construction and operation of the facility itself. Generally, these impacts are stimulated by an initial action and comprise a wide variety of indirect effects, such as changes in land use, development patterns, economic activity, population density, and related impacts on

air, water, and other natural systems, including ecosystems. Indirect impacts may result in increased development pressure on open space, farmlands, and other natural resources.

Cumulative impacts, on the other hand, "result from the incremental consequences of an action when added to other past, present, and reasonably foreseeable future actions" (40 CFR 1508.7), regardless of what agency (federal or non-federal) or person or organization undertakes such actions. Thus, cumulative impacts are past, present, and future impacts which, when considered as a whole and in concert with other foreseeable developments and projects, result in a combined effect greater than considering these separate elements independently.

4.8.1 Indirect Impacts

Factors that typically induce indirect development are new access to potential development areas, increased roadway capacity, existing development plans, suitable terrain, and economic incentives. In effect, the potential for indirect development to occur in any particular area is determined in great part by individual municipal planning objectives.

Three factors were considered in the identification of potential indirect impacts. First, known development trends and redevelopment efforts in the study area were examined. Second, it was assumed that areas that have been developing or are subject to redevelopment are more likely to experience induced effects as a result of the improved access provided by the project. This qualitative assessment included field views; interviews with planning, development, and other public representatives; and a review of other secondary sources. Finally, representative interchanges were established for each corridor under detailed consideration and impacts calculated for the areas near the interchanges.

4.8.1.1 Methodology

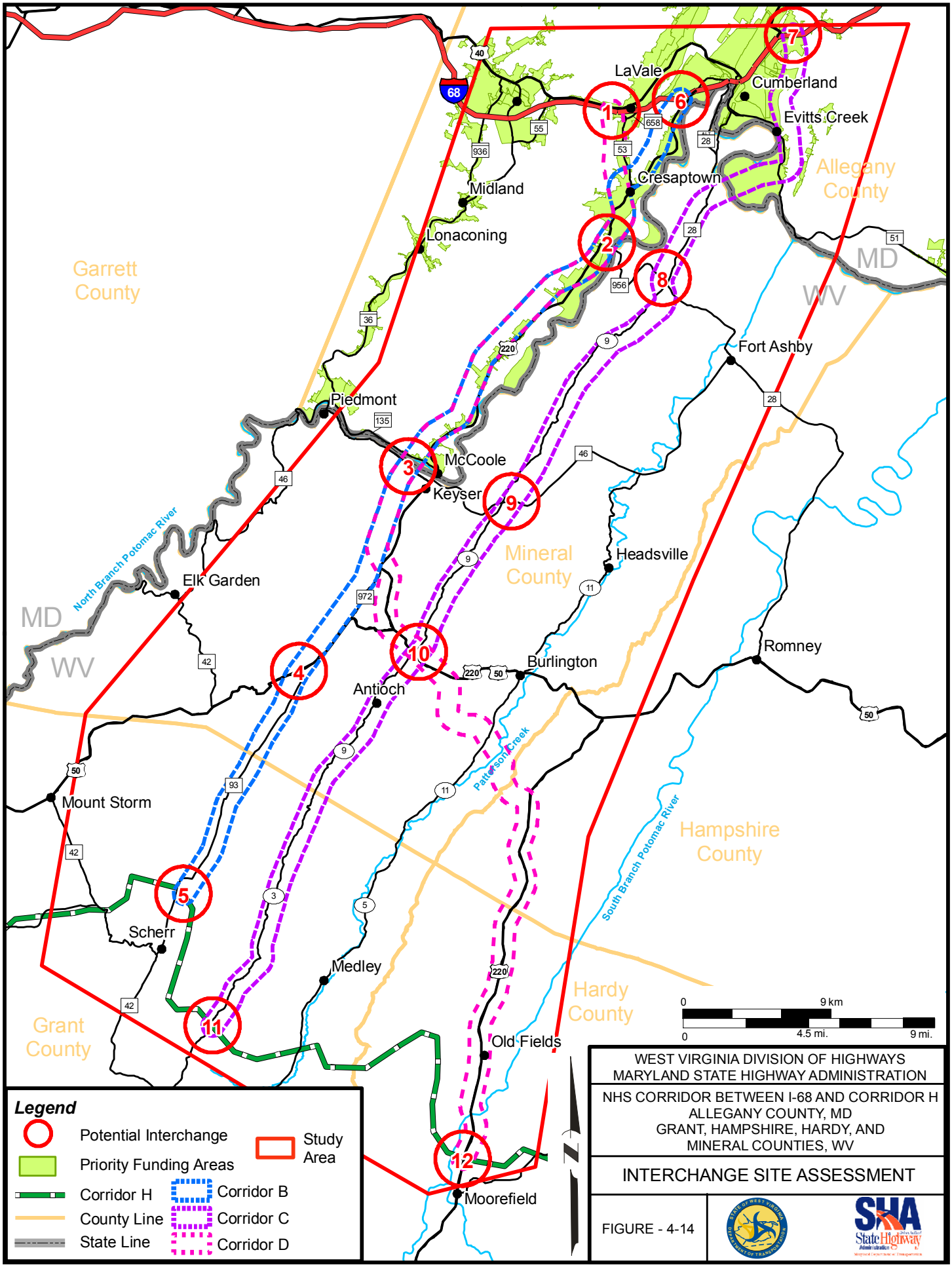
Each county planner in the study area was contacted to discuss the project and gather information on other projects or trends in the area. Planning directors in Allegany, Mineral, Hampshire, and Hardy counties were interviewed individually. In Grant County, where there is no planning department, the director of the county economic development authority and the coordinator for the county commission were interviewed. Additionally, the executive director of

the Region 8 Planning and Development Council was interviewed. Region 8 is a multi-county planning and economic development agency that encompasses all four of the West Virginia counties in the study area. Specific questions directed to these individuals during the interviews included the status of comprehensive plans, consistency of the project with county plans and programs for economic growth, the extent of public water and sewer systems, proposed development in the area, and other relevant planning and economic development information. During subsequent interviews and follow-up conversations, information was gathered on other major projects in the area.

As the project progressed and the five initial corridors were narrowed to three, representative interchange locations were identified. As determined from existing trends, commercial or industrial growth was most likely to occur in clusters around future interchanges, as infill in existing economic centers, or as the redevelopment of older brownfields sites. On the other hand, local planners suggested that residential growth could occur almost anywhere, but it would be constrained by the limits of existing public water and sewer systems.

Line and grade engineering studies have been completed for the three corridors carried forward. Because the proposed roadway facility is likely to have access controls, sprawl would be limited and development may concentrate closer to the interchanges. Interchanges and future development are likely where the proposed project bisects existing and future transportation facilities that serve major traffic movements. Consequently, for Corridor B, the representative interchanges are at I-68, US 220 west of WV 956, WV 46 west of Keyser, US 50/WV 93, and Corridor H near Scherr. For Corridor C, the representative interchanges are at I-68, WV 956 near Mineral County Route 9, WV 46 east of Keyser, US 220/US 50 between Burlington and Keyser, and Corridor H west of Scherr. For Corridor D, the representative interchanges are at I-68, US 220 west of WV 956, WV 46 west of Keyser, US 220/US 50 between Burlington and Keyser, and Corridor H north of Moorefield.

After the representative interchanges were identified, indirect impact analysis zones were established around each one. The area of indirect impact was identified as all land falling within a one-mile radius of the interchanges. Figure 4-14 shows the locations of the representative interchanges and the potential areas of indirect impacts. The area around Interchange 7 (I-68 at Cumberland) falls within a *Priority Funding Area* while the other locations within Maryland fall partially inside a PFA.


LaVale
Cumberland
Evitts Creek
Cresaptown
Allegany County
Midland
Lonaconing
Garrett County
MD
WV
Fort Ashby
Piedmont
McCoole
Keyser
Mineral County
Headsville
Elk Garden
North Branch Potomac River
Romney
Burlington
Antioch
Patterson Creek
Mount Storm
Hampshire County
South Branch Potomac River
Scherr
Medley
Hardy County
Grant County
Old Fields
Moorefield
0 9 km
0 4.5 mi. 9 mi.
Legend
Potential Interchange
Priority Funding Areas
Corridor H
County Line
State Line
Study Area
Corridor B
Corridor C
Corridor D
WEST VIRGINIA DIVISION OF HIGHWAYS
MARYLAND STATE HIGHWAY ADMINISTRATION
NHS CORRIDOR BETWEEN I-68 AND CORRIDOR H
ALLEGANY COUNTY, MD
GRANT, HAMPSHIRE, HARDY, AND
MINERAL COUNTIES, WV
INTERCHANGE SITE ASSESSMENT
FIGURE - 4-14

Using the existence of public and water service as a major predictor of growth, along with improved transportation access, 20-year build-out scenarios were developed for each interchange location. Approximately 2,010 acres surround each interchange; however, some of this land is in steep slope. Because widespread failure is highly probable on slopes over 25 percent when disturbed by construction or with forest removal (Marsh 1978), land with this characteristic is likely to remain undeveloped. Very little land within the interchange locations actually fell into this category (approximately 600 acres, or 3.0 percent, total in all 12 interchange locations). Consequently, it was assumed that steepness of slope would have minimal impact to development.

Additionally, it was assumed if the location had both public and water service available (currently or with the assurance from local planners in the near future) that there would be a 100 percent build-out through the year 2026. If only one of these public services were available, then a 75 percent build-out was assumed through 2026. If neither of these public services were available, but the interchange was within a reasonable distance (one where you could expect sewer and water extensions to occur within the next 20 years), a 50 percent build-out was assumed. Of the 12 interchange locations, half of them are expected to see a 100 percent build-out; five will see a 75 percent build-out; and only one will see a 50 percent build-out. Table 4.8-1 shows the build-out rates for each of the interchange locations.

TABLE 4.8-1
Build-out Scenarios for the Representative Interchange Locations

Inter-change	Location	Public Services Available	County	Priority Funding Area	Build-Out Rate
1	I-68 at LaVale	Water and Sewer	Allegany	Partially	100%
2	US 220 west of WV 956	Water and Sewer	Allegany	Partially	100%
3	WV 46 west of Keyser	Water and Sewer	Mineral	Partially	100%
4	US 50/WV 93	Water	Mineral	N/A	75%
5	Corridor H near Scherr	Water	Grant	N/A	75%
6	I-68 at Cumberland	Water and Sewer	Allegany	Partially	100%
7	I-68 at Cumberland	Water and Sewer	Allegany	Yes	100%
8	WV 956 near County Route 9	Water	Mineral	N/A	75%
9	WV 46 east of Keyser	Water	Mineral	N/A	75%
10	US 220/US 50 between Burlington and Keyser	None	Mineral	N/A	50%

TABLE 4.8-1 (continued)
Build-out Scenarios for the Representative Interchange Locations

Inter-change	Location	Public Services Available	County	Priority Funding Area	Build-Out Rate
11	Corridor H	Water	Grant	N/A	75%
12	Corridor H at Moorefield	Water and Sewer	Hardy	N/A	100%

Following identification of build-out rates for each interchange location, the extent of possible impacts on wetlands, streams, floodplains, forests, farmlands, and historic resources were calculated. The build-out rates were then applied to each resource to determine the potential for indirect impacts at each location. In terms of historic resources, NRHP-listed and -eligible resources were identified. Additional potentially eligible resources may exist within the interchange areas, but these resources have not been reviewed by SHPO.

4.8.1.2 Effects Analysis – Indirect Impacts

The interchange site assessments are quantitative analyses of existing resources at each of the proposed interchange locations. Actual impacts would be dependent on the manner in which each site is developed, if such development actually occurs. Table 4.8-2 summarizes the resources examined at each location, as well as identifying which corridor the interchange would serve (all impact numbers were rounded). Although other resources could be included in the evaluation (e.g., parks and wildlife, among others), these environmental features seemed to provide sufficient information for a Tier One analysis to make a reasonable decision on potential indirect effects. Also, some of the interchanges would potentially serve more than one corridor. At this level of the analysis, those interchanges would have similar impacts and no effort was made to separate them here.

TABLE 4.8-2
Resources Located Near Interchanges

Inter-change	Corridor	Wetlands (acres)	Streams (feet)	Flood-plains (acres)	Forests (acres)	Farm-lands (acres)	Historic Resources (sites)
1	B and/or D	0	21,190	50	1,422	20	3
2	B and D	22	84,584	239	868	595	0
3	B and D	30	51,075	225	1,226	126	7
4	B	15	70,875	93	1,505	309	3
5	B	8	66,025	0	1,202	794	0
6	B and/or D	0	24,726	151	1,156	0	0

TABLE 4.8-2 (continued)
Resources Located Near Interchanges

Inter-change	Corridor	Wetlands (acres)	Streams (feet)	Flood-plains (acres)	Forests (acres)	Farm-lands (acres)	Historic Resources (sites)
7	C	3	88,812	218	180	123	6
8	C	2	54,552	0	1,352	11	1
9	C	12	96,613	60	1,208	343	0
10	C and D	14	115,622	0	1,426	294	3
11	C	15	104,477	0	959	1,028	0
12	D	22	112,256	882	290	1,015	5

Once the resources within the interchange locations were known, the build-out rates were applied to each one. This enabled an estimate of likely indirect impacts to be developed for the area surrounding each potential interchange location.

No-Build Alternative

The No-Build Alternative would not result in any indirect impacts. In an effort to address other transportation problems in the area, however, future projects could induce development and create indirect impacts. Economic pressures on the local community coupled with national trends are also likely to induce development throughout the region. Additional analysis of the potential indirect impacts of the No-Build Alternative will be necessary as the project proceeds to Tier Two.

Build Alternatives

As shown in Table 4.8-3, indirect impacts could occur at any of the interchanges. Locations showing the highest level for potential indirect impacts to wetlands include Interchanges 2, 3, and 12. Locations showing the highest level for potential indirect impacts to streams include Interchanges 2, 7, and 12. Locations showing the highest level for potential indirect impacts to floodplains include Interchanges 2, 3, and 12. Locations showing the highest level for potential indirect impacts to forestland include Interchanges 1, 3, and 6. Locations showing the highest level for potential indirect impacts to farmland include Interchanges 5, 11, and 12. Locations showing the highest level for potential indirect impacts to historic resources include Interchanges 3, 7, and 12.

TABLE 4.8-3
Potential Indirect Impacts for Interchange Locations

Inter-change	Corridor	Build-Out Rate	Wetlands (acres)	Streams (feet)	Flood-plains (acres)	Forests (acres)	Farm-lands (acres)	Historic Resources (sites)
1	B and/or D	100%	0	21,190	50	1,422	20	3
2	B and D	100%	22	84,584	239	868	595	0
3	B and D	100%	30	51,075	225	1,226	126	7
4	B	75%	11	53,156	70	1,129	232	2
5	B	75%	6	49,519	0	902	596	0
6	B and/or D	100%	0	24,726	151	1,156	0	0
7	C	100%	3	88,812	218	180	123	6
8	C	75%	2	40,914	0	1,014	8	1
9	C	75%	9	72,460	45	906	257	0
10	C and D	50%	7	57,811	0	713	147	2
11	C	75%	11	78,358	0	719	771	0
12	D	100%	22	112,256	882	290	1015	5

Potential indirect impacts in each corridor are shown in Table 4.8-4. The impacts are based on the build-out scenarios expected at each interchange.

TABLE 4.8-4
Indirect Impacts for Each Corridor

Corridor	Wetlands (acres)	Streams (feet)	Flood-plains (acres)	Forests (acres)	Farm-lands (acres)	Historic Resources (sites)
B	69	284,250	735	6,703	1,569	12
C	32	338,355	263	3,532	1,306	9
D	81	351,642	1,547	4,699	1,903	17

The comparison of each corridor shows that indirect impacts would be greatest for Corridor D, followed generally by Corridor B and then Corridor C. Although the impacts to all individual resources do not fall in this order, most do.

4.8.1.3 Non-Growth Areas

During Tier One, the analysis of indirect impacts was limited to potential growth areas around possible new highway interchanges. Although these areas are likely to be the first areas where induced development will occur if a new transportation facility were built, resources in other areas could also be impacted. As time passes and new travel patterns are created, development will move further away from the interchange areas. If no land use controls are in

place currently, development could occur further away from the interchanges almost immediately.

Developmental pressures are expected to remain lower in non-growth areas. This in turn is likely to allow population densities and economic activity in rural areas to remain relatively constant with the present. Thus, the likelihood of indirect impacts further away from future interchanges will remain stable. Nonetheless, as the project moves into Tier Two, additional analysis will be necessary to qualify potential indirect impacts in non-growth areas.

4.8.1.4 Future Mitigation Efforts

Overall, additional development would be an economic benefit to the community and support some of the project's needs. Avoidance and minimization of the adverse impacts related to induced development could be accomplished through comprehensive planning. In the Maryland communities, mitigation efforts will be enhanced through the use of other available land use controls and guidelines established in the *Priority Funding Act*, including existing regulations and protective measures already in place. As the project moves into Tier Two, the MDSHA will implement mitigation for direct impacts and identify possible mitigation strategies for indirect impacts to be considered by other agencies and local governments. Strict land use controls are not currently present in the West Virginia communities that may be impacted by secondary development, but with the adoption of a new comprehensive plan in Mineral County and more awareness of the value of land use planning in Hardy County, they are likely to be instituted in the future as developmental pressures grow.

Mitigation strategies or future developmental controls in any of the communities (in Maryland or West Virginia) could include access management, additional comprehensive planning, zoning, transfer of development rights, growth management regulations, resource management, resource preservation, conservation easements, and incentives for infill development, among others.

4.8.2 Cumulative Impacts

Taken individually, the impacts from an action may have little effect on the environment. When viewed as a sequence of events, however, different actions may add up to, or cause, additional

effects over time. Thus, the cumulative impact may be of more consequence than isolated, individual impacts.

4.8.2.1 Methodology

Past projects since 1970 and planned actions through the year 2025 (the project's design year) were reviewed to complete a qualitative assessment of cumulative impacts. Impact areas for each of the representative interchange locations were also used in evaluating cumulative impacts. Primary data sources included a review of comprehensive plans and related programming documents, interviews with local planners and economic development officials, study area field views, and secondary data sources. Consequently, a qualitative analysis rather than a quantitative trends analysis emerged.

As already noted direct impacts are caused by an action and occur at the same time and place as that action. Indirect impacts are induced by the action and generally occur later in time or are farther removed in distance. Cumulative impacts, or effects, however, are a result of the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions (RFFAs). Thus, the analysis of RFFAs is crucial in determining cumulative effects. Cumulative effects can be difficult to understand because they are not clear cut. They can accrue from similar impacts, from multiple actions, or be the product of unrelated impacts from a variety of actions. In addition, some actions may offset the effects of other actions, lessening the overall impact. Cumulative effects can also arise from actions which may only be connected by their common impacts on similar resources, ecosystems, or human communities.

The identification and analysis of RFFAs present many challenges. Proponents of future actions may be reluctant to reveal information for a number of reasons. Plans may be uncertain and project sponsors, both private and public, may not see a benefit in disclosing them. Furthermore, project sponsors may not completely understand the importance of their plans on other projects, or understand the potential impact inherent in those plans on others. Detailed design and operational information is generally not available for proposed projects. At the preliminary stage of project development, locations may not be set. Project size and magnitude may not have been determined. Usage estimates or projections may not be sufficiently rigorous. Many factors also affect the timing, location, and design of future actions. If programming and funding requirements have not been finalized, future actions may be delayed,

downsized, or modified significantly over time. If definitions of future actions are too liberal, future impacts may be predicted as being too high. If definitions are too conservative, future impacts may be underestimated.

4.8.2.2 Effects Analysis – Cumulative Impacts

No-Build Alternative

The No-Build Alternative would consist of taking no action toward the development of an improved north-south corridor through the area. As a consequence, existing highway deficiencies, limited new employment opportunities, and a lack of system continuity would remain. Additional analysis of the potential cumulative impact of the No-Build Alternative, however, will be necessary as the project proceeds to Tier Two.

Build Alternatives

A concerted effort by government and the private sector has occurred over the past 20-30 years to bring about economic redevelopment in the area. Several initiatives have contributed in this effort to revitalize the area, including improvements to the transportation system, extensions of public water and sewer systems, construction of new commercial centers, enhancement of tourist-related and outdoor recreational facilities, and new residential development. In total, these efforts have achieved a high quality of life for the area's citizens and businesses without imposing an inordinate cumulative impact on the natural, cultural, or socioeconomic environment. The other major actions that have occurred over the past 20 years and are likely to occur in the near future in the study area are shown in Table 4.8-5. None of them have been, or are, dependent on construction of the US 220 project as described within this DEIS. During Tier One, broad brush techniques were applied to identify major RFFAs and their locations, identify potential cumulative environmental issues, and associate the RFFAs with a specific corridor. The above table offers an initial screening of potential cumulative effects based on that effort. Included in the table are major transportation projects currently listed on the *Cumberland Area Long Range Transportation Plan* (Cumberland Metropolitan Planning Organization 2005), the *Draft Cumberland Area Long-Range Transportation Plan Addendum* (Cumberland Metropolitan Planning Organization 2007), *Cumberland Urbanized Area Transportation Improvement Program FY 2006-FY 2008* (Cumberland Metropolitan Planning Organization

TABLE 4.8-5
Major Actions in the Study Area

County	Activity	Approximate Location	Environmental Issues that Could be Cumulative
Allegany	Public water service improvements	Along the existing US 220 corridor between Cresaptown and McCoole	Land use, terrestrial habitat, water quality, wetlands
	Increased employment at ATK Tactical Systems Company, LLC (an additional 950 jobs)	Vicinity of US 220 and WV 956	Land use, terrestrial habitat, traffic, air quality
	Increased employment by the U.S. Navy at the Hilltop Office Complex adjacent to ATK Tactical Systems Company, LLC (an additional 550 jobs)	Vicinity of US 220 and WV 956	Land use, terrestrial habitat, traffic, air quality
	Construction of new housing	US 220 near Bel Air and Rawlings	Land use, terrestrial habitat, water quality, wetlands, traffic, air quality
	I-68 freeway reconstruction	From MD 53 to US 220	Land use, terrestrial habitat, water quality, wetlands, traffic, air quality
	US 40 Alternate reconstruction	From Vocke Road to Cumberland	Land use, terrestrial habitat, water quality, wetlands, traffic, air quality, cultural resources
	MD 53 reconstruction with access control improvements	From I-68 to US Route 220	Land use, terrestrial habitat, water quality, wetlands, traffic, air quality, cultural resources
	Transportation improvements to US 220	From Cumberland to Pinto	Land use, terrestrial habitat, water quality, wetlands, traffic, air quality, cultural resources
Grant	Completion of Corridor H	Along the northern tier of the county	Land use, terrestrial habitat, water quality, wetlands, traffic, air quality, cultural resources
Hampshire	Transportation improvements to US 220	West of Romney	Land use, terrestrial habitat, water quality, wetlands, traffic, air quality, cultural resources
	Transportation improvements to US 50	Along the width of the county	Land use, terrestrial habitat, water quality, wetlands, traffic, air quality, cultural resources

TABLE 4.8-5 (continued)
Major Actions in the Study Area

County	Activity	Approximate Location	Environmental Issues that Could be Cumulative
Hardy	Completion of Corridor H	Vicinity of Moorefield	Land use, terrestrial habitat, water quality, wetlands, traffic, air quality, cultural resources
	Public water and sewer service improvements	Moorefield	Land use, terrestrial habitat, water quality, wetlands
	Increased commercial development	Moorefield	Land use, terrestrial habitat, water quality, wetlands, traffic, air quality
	Transportation improvements to US 220	From Mineral County line to Moorefield	Land use, terrestrial habitat, water quality, wetlands, traffic, air quality, cultural resources
Mineral	Increased commercial development	US 220 between Keyser and WV 972	Land use, terrestrial habitat, water quality, wetlands, traffic, air quality
	Increased employment at ATK Tactical Systems Company, LLC (an additional 950 jobs)	Vicinity of US 220 and WV 956	Land use, terrestrial habitat, traffic, air quality
	Increased employment by the U.S. Navy at the Hilltop Office Complex adjacent to ATK Tactical Systems Company, LLC (550 jobs)	Vicinity of US 220 and WV 956	Land use, terrestrial habitat, traffic, air quality
	Completion of Corridor H	Across southern tier of county	Land use, terrestrial habitat, water quality, wetlands, traffic, air quality, cultural resources
	WV 28 roadway renovation	Vicinity of Ft. Ashby	Land use, wetlands
	Transportation improvements to US 50	Along the width of the county	Land use, terrestrial habitat, water quality, wetlands, traffic, air quality, cultural resources
	Transportation improvements to US 220	From Keyser to Purgitsville	Land use, terrestrial habitat, water quality, wetlands, traffic, air quality, cultural resources

2006), the *West Virginia Statewide Transportation Improvement Plan for 2010-2015* (West Virginia Division of Highways 2010), and other Maryland and West Virginia state highway programming plans.

Specific impacts due to past transportation projects are shown in Table 4.8-6. The impacts include environmental, cultural, and socioeconomic.

TABLE 4.8.6
Specific Impacts Due to Major Transportation Projects

County	Project	Document	Date	Impacts
Alleghany	Canal Parkway	FEIS/Section 4(f) Evaluation	1995	7 residential displacements, 4.8 acres woodland, 1.3 acres wetlands, 1,900 feet of streams, 1.9 acres of floodplains
	MD 36	FEIS	1987	22 residential displacements, 1 business displacement, adverse effect to 4 historic resources, 90.2 acres woodland, 114.3 acres wetlands, 1,900 feet of streams, 5.1 acres of floodplains
	MD 51	FEIS	1977	Information not available
	US 220	FONSI	1994	13 residential displacements, 58 acres forested land, 2.9 acres of wetlands, 6.8 acres of wetlands, 525 feet of streams, 6.8 acres of floodplains
	US 48	FEIS/Section 4(f) Evaluation	1986	37 residential displacements, 5 business displacements, adverse effect to 1 historic district, 1 Section 4(f) impact, 407 acres of woodland, 67 acres of farmland, 0.6 acres of wetlands, 37.5 acres of floodplains
Grant	Corridor H	FEIS	1996	52 residential displacements, 4 business displacements, effects on 122 historic resources, 2,598 acres of forested land, 37 acres of wetlands, 37,175 feet of streams
Hardy				
Mineral	Keyser-McCoole Bridge	FONSI	2007	15 residential displacements, 11 business displacements, adverse effect to 1 historic resource, 2 Section 4(f) impacts, 280 feet of streams

During Tier Two, this information will be updated and a complete Cumulative Effects Assessment (CEA) undertaken per CEQ guidelines. That assessment will analyze the magnitude and extent of potential cumulative effects within the context of the appropriate resource, ecosystem, and human community thresholds capable of maintaining environmental sustainability.

Table 4.8-7 lists the RFFAs and identifies how the corridors may be associated with them. Expansions of the public water systems and construction of new housing in conjunction with these highway improvements will likely stimulate additional economic growth. Transportation improvements would help alleviate the future congestion that could slow the positive aspects of development. Consequently, the projects most likely to have a cumulative effect with US 220 improvements are a combination of public and private efforts.

TABLE 4.8-7
Reasonable Foreseeable Future Actions in the Corridors

County	Activity	Approximate Location	Associated Corridor
Allegany	Public water service improvements	Along the existing US 220 corridor between Cresaptown and McCoole	B, D
	Increased employment at ATK Tactical Systems Company, LLC (an additional 950 jobs)	Vicinity of US 220 and WV 956	B, C
	Increased employment by the U.S. Navy at the Hilltop Office Complex adjacent to ATK Tactical Systems Company, LLC (an additional 550 jobs)	Vicinity of US 220 and WV 956	B, C
	Construction of new housing	US 220 near Bel Air and Rawlings	B, C, D
	I-68 freeway reconstruction	From MD 53 to US 220	B, C, D
	US 40 Alternate reconstruction	From Vocke Road to Cumberland	B
	MD 53 reconstruction with access control improvements	From I-68 to US Route 220	B, D
	Transportation improvements to US 220	From Cumberland to Pinto	B, D
Grant	Completion of Corridor H	Along the northern tier of the county	B, C, D
Hampshire	Transportation improvements to US 220	West of Romney	D
	Transportation improvements to US 50	Along the width of the county	B, C, D
	Completion of Corridor H	Vicinity of Moorefield	C, D
	Public water and sewer service improvements	Moorefield	D
	Increased commercial development	Moorefield	D
	Transportation improvements to US 220	From Mineral County line to Moorefield	D
Mineral	Increased commercial development	US 220 between Keyser and WV 972	B, C, D
	Increased employment at ATK Tactical Systems Company, LLC (an additional 950 jobs)	Vicinity of US 220 and WV 956	B, C
	Increased employment by the U.S. Navy at the Hilltop Office Complex adjacent to ATK Tactical Systems Company, LLC (550 jobs)	Vicinity of US 220 and WV 956	B, C
	Completion of Corridor H	Across southern tier of county	B, C, D
	WV 28 roadway renovation	Vicinity of Ft. Ashby	C
	Transportation improvements to US 50	Along the width of the county	B, C, D
	Transportation improvements to US 220	From Keyser to Purgitsville	B, C, D

Once RFFAs were identified, a matrix of probability and potential impact was developed. The matrix connects RFFAs and their anticipated effects on resources so that judgments can be made on the likelihood they will occur. This method was originally developed by the USACE for projects along the Ohio River, but it can serve as a method for analyzing any linear project,

especially long projects. The use of matrices to analyze cumulative effects is one of the recognized techniques identified by the CEQ for measuring cumulative impacts (CEQ 1997a). Matrices provide two-dimensional checklists that quantify interactions between human activities and resources and assess both magnitude and importance.

RFFAs for this project were divided into four primary categories: community development; infrastructure improvements; transportation improvements; and regulatory environment. Resources analyzed included water quality, wetlands, terrestrial habitat, RTE species, air quality, recreation resources, socioeconomics, and cultural resources.

Analysis of the matrix was based on several things, best illustrated by a series of questions. During what time period will the action occur or how frequently will the RFFA take place? Two time periods were used, including within 10 years, and between 10 and 20 years from now. What is the importance, or impact, of the action on the resource? Three rankings were used to determine importance, including high, medium, and low. What is the probability of occurrence of the RFFA? Three rankings were used for occurrence probability, including high, medium, and low. And finally, what are the anticipated effects of the RFFA on the resource? Four rankings were used, including positive, negative, mixed effects (whereby both positive and negative effects could occur), and none.

Although the analysis was qualitative in nature, the use of a matrix seemed appropriate for a Tier One study, such as this EIS, where broad corridors are being analyzed rather than specific alignments. The results of the analysis are shown in Table 4.8-8.

A general discussion of the impacts to the resources by category is provided below:

Community Development and Infrastructure Projects

Community development and infrastructure projects would have mixed impacts to most resources. Properly functioning water and waste water treatment systems, regardless of type, can encourage economic growth. When public water is available and a community has adequate sewer facilities in place, public health improves and the community becomes more attractive as a place to live or work. When such systems are not in place, however, or not

TABLE 4.8-8
Potential Impact of RFFAs on Resources

RFFA	County	Time Period	Importance	Occurrence Probability	Water Quality	Wetlands	Terrestrial Habitat	RTE Species	Air Quality	Recreation Resources	Socioeconomics	Cultural Resources
Community Development												
Employment at ATK Tactical Systems Company, LLC	Allegany, Mineral	1	H	M	0	0	0	0	-	0	+	0
Employment by U.S. Navy Hilltop Office Complex	Allegany, Mineral	1	H	M	0	0	0	0	-	0	+	0
Increased housing (Laurelhurst Blvd.)	Allegany	1	M	H	+/-	-	-	+/-	-	+	+	+/-
Commercial development	Hardy, Mineral	1	M	M	+/-	-	-	+/-	-	+	+	+/-
Infrastructure Improvements												
Public water service improvements	Allegany, Hardy	1,2	H	H	+	+		+	+/-	+	+	+/-
Public sewer improvements	Hardy	1,2	H	H	+	+		+	+/-	+	+	+/-
Transportation Improvements												
I-68	Allegany	1	H	M	+/-	+/-	+/-	+/-	+	+	+	+/-
US 40 Alternate	Allegany	1	L	L	+/-	+/-	+/-	+/-	+	+	+	+/-
MD 53	Allegany	1	M	M	+/-	+/-	+/-	+/-	+	+	+	+/-
US 220	All but Grant	1,2	H	H	+/-	+/-	+/-	+/-	+	+	+	+/-
Corridor H	Grant, Hardy	1.2	H	H	+/-	+/-	+/-	+/-	+	+	+	+/-
US 50	Hamp., Mineral	1	L	M	+/-	+/-	+/-	+/-	+	+	+	+/-
WV 28	Mineral	1	M	+/-	+/-	+/-	+/-	+	+	+	+/-	+/-
Regulatory Environment												
Federal	All	1	H	+	+	+	+	+	+	+	+	+
State	All	1	M	+	+	+	+	+	+	+	+	+
Local	Allegany, Hardy, Mineral	1,2	L	+	+	+	+	+	+	+	+	+

Time period: 1 = within 10 years, 2 = between 10 and 20 years from now
Importance/Occurrence probability: H = high, M = medium, L = low.
Impacts: + = positive. - = negative, +/- = mixed effects, 0 = none.

functioning properly, pollution can result. If not replaced or improved, older systems may not be able to accommodate growth and can result in negative impacts to environmental resources.

Development also can affect wetlands, terrestrial habitat, and RTE species by consuming land and infringing on natural ecosystems. Properly designed development can offset negative impacts, however, and assist in preserving valued elements of the landscape.

Additional development could also increase traffic and subsequently add to existing air quality problems or require future transportation improvements. The potential effects could be mitigated by the design of future developments and the regulatory environment. Positive effects to recreation and socioeconomic resources would be expected, primarily through improved facilities or better access.

Because many actions associated with community development are performed by the private sector, the potential for negative affects on cultural resources exists. Most actions likely to occur, however, will have some public sector involvement and consideration of cultural resources will be an integral part of those projects.

Transportation Improvements

Increased safety, efficiency, and congestion management are the principal justification for surface transportation projects. Short-term local income and revenues would increase as a result of future transportation projects, including bridge renovations, highway rehabilitations and upgrades, and new roadways. Significant changes to population, property values, local taxes, and existing land use patterns could occur, however, if roadway locations are changed or shifted.

There could be mixed impacts to water quality, wetlands, terrestrial habitat, and RTE species, as a result of converting land to highway use. Effects would be mitigated in various ways, including avoidance, minimization, and replacement.

Effects to air quality, recreation resources, and socioeconomics would be expected to be generally positive. Additionally, although the affects of transportation projects on cultural resources are mixed, these projects are tied to federal funding or permitting and, therefore, are subject to *Section 106* and *Section 4(f)* compliance. These regulatory processes ensure that the significance of individual cultural resources is considered during project development.

Regulatory Environment

Long-term positive impacts would be associated with improved environmental conditions guaranteed through the regulatory environment. These regulations are especially important where there are numerous development opportunities and the potential for threats to the natural environment occur. All three levels of government (federal, state, and local) have created laws or programs to address negative effects.

4.8.2.3 Future Mitigation Efforts

Existing trends and growth projections associated with other planned projects in the area indicate that there could be cumulative impacts associated with the further development of transportation improvements in any one of the corridors. While these improvements, when taken as a whole, will be absorbed through the normal course of development, they could create unforeseen impacts. Laws, regulations, and programs are in place at the local, state, and federal level, however, to help mitigate the effect of these actions. With the development of more environmentally sensitive projects and programs, conditions could also improve. Changing socioeconomic conditions, positive and negative, will have an effect on the environment, as well, but cumulative effects cannot be ignored.

Further analysis will be undertaken during Tier Two. Concurrent with development of a Tier Two EIS, a complete CEA will be conducted. The CEA will identify issues associated with the proposed project, establish the geographic scope for investigations, establish the past and future timeframe, identify other actions affecting resources, ecosystems, and communities of human concern, identify the magnitude and significance of cumulative effects, and develop mitigation strategies.

4.9 Major Utilities

4.9.1 Methodology

Utility companies and municipal services were identified throughout the study area in an attempt to locate major utility facilities within each corridor. Major facilities include, but are not limited to:

- Electric generation power plants;
- High voltage electric transmission lines;
- Electric power substations;
- Natural gas transmission lines and pump stations;
- Sewer treatment plants and pump stations;
- Water treatment plants and pump stations;
- Reservoirs and water intakes; and
- Cellular telephone towers.

Local service lines, manholes, or other localized distribution and service facilities were not included with the major facilities.

Initial coordination efforts identified 22 utility companies and municipal agencies with facilities in the study area. USGS maps with the corridors drawn on them were sent to each of these organizations in October 2006 with a request to map the locations of their major facilities within each corridor. Twelve responded with marked plans indicating they had facilities that could potentially be affected or with information that they would not be affected. The utility companies and organizations that responded also provided information on their major facilities in the corridor areas.

4.9.2 Effects Analysis – Major Utilities

No Build Alternative

The No-Build Alternative would have no immediate impact on major utilities. Future projects included within the No-Build Alternative could have an impact, however.

Build Alternatives

There appears to be no stand-alone facilities that would indicate a fatal flaw in selection of a preferred transportation corridor. No major electric generation plants were identified in the utility responses or through supplemental field views. Three of the five electric companies contacted, however, did not respond. The Mt. Storm electric generation power plant owned by Dominion Resources is west of the western project alternatives. One high voltage electric transmission

line was identified running west-to-east between Scherr to north of Moorefield. The transmission line crosses Corridors C and D.

No cellular telephone towers were identified by the utility responses, but field views identified a number of communication towers along the Dans Mountain summit. Additional communication towers are located throughout the study area mainly along the ridges and higher elevations.

A natural gas transmission line crosses Corridors B and D south of I-68 and north of Bowling Green running east to west. Another transmission line runs parallel to US 220 and the Potomac River in Maryland crossing in and out of Corridors B and D at several locations. The line crosses the Potomac River in Keyser before turning west over Dans Mountain and crossing into West Virginia.

Two water supply tanks, four sewer plants, and one water pump station were identified within Corridor C between the Potomac River and Short Gap.

A water supply source is located within Corridor B at the New Creek Dam Site #14 reservoir. This reservoir is Keyser's primary water source. Another water supply source is located north of Fountain School and east of Limestone near WV 46. This water source falls within Corridor C. Two additional water facilities were identified between Ridgeville and Antioch within Corridor C. A water main is located between Keyser and the town of New Creek, running parallel to New Creek before turning to cross Abrams Ridge along US 220. The water main is located within Corridor D over Abrams Ridge. Two-foot and four-foot diameter water mains were identified in Hardy County within Corridor C between Falls Gap and Corridor H and within Corridor D between Williamsport and Corridor H.

A new sewer plant is proposed for construction in 2010 in the Old Fields area north of Moorefield. This plant may fall within Corridor D.

Coordination with the utility owners would continue through final design and any impacts associated with utility relocation would be accounted for through mitigation commitments.

4.10 Energy

Highway design and traffic conditions are directly associated with vehicular energy efficiency. Features that affect energy efficiency include profile, alignment, pavement surface, roadway width, traffic density, access points, at-grade intersections, and length. There would also be an energy expenditure to construct a new roadway.

There would be a decrease in energy usage, however, with the development of a new roadway, because the roadway would relieve existing traffic congestion and reduce travel delays. This would allow for free-flowing traffic conditions and subsequently reduce energy consumption.

4.11 Construction Impacts

Construction activities would have temporary impacts to resources, residents, and the traveling public within the immediate vicinity of the proposed project. Potential impacts may affect the economy and employment, access and traffic detours, air emissions and noise, water quality, utilities, and excavation waste.

4.11.1 Methodology

Based on past projects, construction activities were analyzed to determine the extent in which they may impact the environment.

4.11.2 Effects Analysis – Construction Impacts

The project will take at least two construction seasons to complete. With an expected length of approximately 34 to 45 miles, several construction contracts will be let. Design phase partnering will be conducted during final design and construction.

No-Build Alternative

The No-Build Alternative would have no immediate construction impacts. Future projects included as part of the No-Build Alternative could have impacts, however.

Build Alternatives

Construction of the proposed project would result in short-term economic benefits in the study area through the creation of a large number of construction jobs. A portion of these wages would be spent on goods and services provided by local businesses. Other local businesses may also provide construction-related services such as surveying and drilling, as well as materials such as gravel, concrete, and steel.

Detours and road closures during construction would create temporary inconveniences for residents, business owners, and the traveling public. Maintenance and protection of traffic plans would be developed during final design to mitigate access impacts and minimize delays throughout the project. These plans would include appropriate signs, pavement markings, and media announcements. Access to all businesses and residences would be maintained through construction scheduling.

Emergency service providers and school transportation may be impacted by temporary road closures and reduced speeds in work zones required during construction. Temporary road closures or detours may impact access within localized areas as a result of construction activities.

Air quality within the construction area may be temporarily impacted by construction activities. Fugitive dust from earth-moving equipment is the activity that most likely could impact the surrounding environment. Temporary noise impacts would occur in construction areas generated by excavators, scrapers, graders, tractors, dozers, cranes, trucks, and compressors.

Temporary impacts to water resources may occur due to construction activities. Earthwork and removal of vegetation for construction would increase the potential for soil erosion and sedimentation to streams within the construction area.

There would be numerous cuts along the proposed project, which would generate excavation waste. Excavation waste is material that cannot be utilized within the proposed project right-of-way and must be transported away from the construction site to an area identified for disposal.

4.11.3 Future Mitigation Efforts

Emergency service providers and schools that would be impacted by the construction would be informed of the proposed construction sequence and any required detours before construction begins. The emergency providers, schools, and general public could be informed of the schedule on a construction website or other media. Detours should be posted at least two weeks prior to putting them into effect.

Coordination with railroad companies would be conducted to minimize the effect of construction adjacent to or over rail facilities.

Air quality mitigation measures would include the use of approved dust palliatives, and emissions would be controlled in accordance with state and local ordinances. Any burning would be conducted, when permitted, in accordance with state and local ordinances.

Noise mitigation measures would include the use of proper mufflers and adjustments to construction equipment. Construction operation times would be coordinated with the local communities to minimize noise impacts, especially near noise-sensitive areas.

Prior to construction activities, all appropriate permits pertaining to waterway crossings and encroachments would be obtained. Mitigation for potential impacts to water quality would be addressed through the implementation of proper soil erosion and sedimentation control measures. Prior to the initiation of construction activities, an Erosion and Sedimentation Control Plan and an NPDES earth disturbance permit would be prepared in accordance with state guidelines.

Coordination with the utility owners would continue through final design and any impacts associated with utility relocation would be accounted for through mitigation commitments.

Disposal of the excavation waste material would be the responsibility of the contractors. The project sponsor will perform environmental due diligence for any excess soil/waste material leaving the project site. It will be important to reduce the amount of excavation waste material that must be removed off-site to limit the potential for impacts to other sites and reduce the costs for appropriate disposal of the material. Steepening cut slopes will reduce the overall

width of the proposed cuts and reduce the volume of excavation waste material. Slope stability will be evaluated with regard to the proposed cut slope ratio and the appropriate use of walls, slope benches, and other geotechnical treatments. Excavation waste material may be used to build modest fill areas without encroaching on sensitive features or affecting the operating characteristics of the system.

Throughout the project area, there are several areas that provide the potential to dispose of the excavation waste material. Former surface mined areas, slag dumps, razed industrial sites, and permitted landfills are numerous and located throughout the study area. These sites would provide an accessible opportunity for the appropriate and beneficial re-use of excavation waste material. Other opportunities may exist for the beneficial re-use of this material where site developments are planned but the existing terrain is unsuitable.

4.12 Irreversible and Irretrievable Commitment of Resources

Irreversible commitments are those that cannot be reversed or are lost forever. Irretrievable commitments, on the other hand, are those that are lost for a period of time, usually for 20 years or longer, but are exchanged for the benefit of the community.

No-Build Alternative

There would be no irreversible or irretrievable commitment of resources associated with the No-Build Alternative. Resources could, however, be committed to other projects as a result of taking no action. Rather than investing resources to modify the transportation system, as described in this DEIS, federal, state, and local officials could seek other ways to meet the transportation needs of the area. Depending on their magnitude, these other projects could result in an irreversible or irretrievable commitment of resources beyond that required for improving conditions along US 220.

Build Alternatives

Construction of the proposed project would require a commitment of natural, human, and fiscal resources for planning, designing, constructing, and operating the system. The use of land for construction would be the most visible irretrievable commitment of resources. Construction of

the project could involve the irretrievable use of wetlands, floodplains, sources of minerals, cultural resource areas, and other natural resource areas. While the commitment of these types of resources would be irretrievable, they are not unusual in the development of large-scale transportation projects that benefit many people. These types of losses would be minimized or mitigated in an appropriate manner to lessen the overall impact to the socioeconomic, cultural, and natural environment.

Considerable amounts of construction materials, including steel, concrete, and aggregate, would be expended to build the project. Upon initiating the project, these materials, as well as the labor and fossil fuels used in their fabrication and preparation, would be lost for future use. Although the use of these materials would not be retrievable, these materials are not in short supply. Consequently, there would not be an adverse effect on future projects because they were expended now instead of later.

The construction of the proposed project would also require a one time expenditure of federal and state funds as well as funds for future maintenance of the roadway. The use of these funds would be irreversible, but construction of the project could result in the short- and long-term stimulation of the economy.

On the other hand, some of the funds expended for the proposed project could be used for other projects if they are not used for this project. These other projects could also result in the short- and long-term stimulation of the economy, but to a different degree.

4.13 Relationship between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

Construction of the proposed project would result in economic and environmental benefits consistent with regional strategic goals and local development programs. The project would create jobs in engineering design, fabrication, related manufacturing, and construction. Short-term gains to local economies would occur due to the creation of these jobs and the purchase of services and supplies associated with both the initial construction effort and the continuing operation of the roadway.

Construction of any project, however, would result in both short-term and long-term losses. Short-term losses would arise during construction as the result of temporary inconveniences caused by traffic detours, construction easements, and reduced speed zones near construction activities. Long-term losses would arise from the irreversible and irretrievable use of land, fossil fuels, construction materials, and funding needed for the proposed project.

CHAPTER 5.0

POTENTIAL SECTION 4(f) RESOURCES

5.0 POTENTIAL SECTION 4(f) RESOURCES

Section 4(f) of the *U.S. Department of Transportation Act of 1966* requires that special efforts be made to protect publicly-owned parks, recreation areas, wildlife and waterfowl refuges, and significant historic sites. Section 4(f) applies to projects that require approval by the FHWA or any other USDOT agency. It requires that such projects avoid the acquisition, or "use," of any Section 4(f) resources unless there is no prudent and feasible alternative to that use. If a use must occur, all possible planning and measures must be included to minimize harm to that resource.

Pursuant to *23 CFR 774.7(e)*, "a Section 4(f) evaluation shall include sufficient supporting documentation to demonstrate why there is no feasible and prudent avoidance alternative and shall summarize the results of all possible planning to minimize harm to the Section 4(f) property." Guidance provided by FHWA in its most recent *Section 4(f) Policy Paper* notes that even though Tier one studies move from a "broad scale examination" of resources to more site-specific evaluation during Tier Two, feasible and prudent avoidance alternatives to the use of Section 4(f) resources should still be considered during Tier One. This section summarizes the Section 4(f) resources that are located within each corridor. In effect, it assumes that each of these resources could be potentially impacted by the alternatives developed during Tier Two of this project. As such, it assumes a worst-case scenario, even though a detailed Section 4(f) evaluation will be conducted during the continuing NEPA studies required under Tier Two. Although entire corridors were used for the analysis, an actual build alternative would have a much smaller footprint and therefore less potential for impacts to Section 4(f) resources. Additionally, logical avoidance alternatives could be more easily and legitimately evaluated for site-specific alternatives that may occur within the corridors.

5.1 Methodology

According to *23 CFR 774.7(e),* even though detailed information necessary to complete Section 4(f) approval may not be available during a Tier One EIS, the documentation should still address the potential impacts that a proposed action will have on Section 4(f) properties. This is particularly difficult in corridor studies where little preliminary design has been completed, such as in this DEIS, because a highway alignment could fall anywhere within the corridor.

Nonetheless, a qualitative analysis was undertaken to identify the probability of a Section 4(f) impact and opportunities for avoidance alternatives.

5.2 Effects Analysis – Potential Section 4(f) Resources

No-Build Alternative

The No-Build Alternative would not result in any immediate impacts to Section 4(f) resources. However, future projects would be advanced to address the transportation needs of the region. These future transportation improvements would likely have an impact on Section 4(f) resources.

Build Alternatives

The impacts of each corridor on Section 4(f) resources were previously described in Chapter 4.0, Sections 4.1.4.2 and 4.2.2 of this DEIS, and are summarized in the following tables. As shown in Tables 5.2-1, 5.2-2, and 5.3-3, six Section 4(f) resources are located within Corridor B, 13 are located within Corridor C, and 21 are located within Corridor D. It is important to note that only publicly-owned parks and recreation areas are considered to be Section 4(f) resources in accordance with the *U.S. Department of Transportation Act of 1966*. There are several public schools that include public recreation areas. Some of these recreation areas may be impacted by the future alternatives to be developed in Tier Two (see Chapter 4.0, Section 4.1.4.1.2). Additional coordination with these schools will take place during Tier Two. In addition, only NRHP-eligible and NRHP-listed historic resources are considered to be Section 4(f) resources. No potentially eligible historic resources were considered to be Section 4(f) resources at this time; nor were resources in proximity to the analyzed corridors but located outside them. Additional cultural resources investigations will be necessary during Tier Two to determine whether these resources are eligible for listing in the NRHP, which would, in turn, make them Section 4(f) resources.

TABLE 5.2-1
Potential Section 4(f) Resources Impacts in Corridor B

Resource	Resource Type	County
Log House with Stone Chimneys	Historic Resource	Mineral
Luten Bridge/Boseley Bridge	Historic Resource	Mineral
Log House	Historic Resource	Mineral
Claysville United Methodist Church	Historic Resource	Mineral
Dans Mountain WMA	Public Recreation Area	Allegany
Bowling Green Community Park	Public Park	Allegany

TABLE 5.2-2
Potential Section 4(f) Resources Impacts in Corridor C

Resource	Resource Type	County
Dam Site #21	Public Recreation Area	Mineral
Vandiver-Trout-Clause House	Historic Resource	Mineral
Stewart's Tavern	Historic Resource	Mineral
Chesapeake and Ohio Canal	Historic Resource	Allegany
Potomac Heritage National Scenic Trail	Public Recreation Area	Allegany
Chesapeake and Ohio Canal National Historical Park (and the related park property of the Western Maryland RR)	Public Park	Allegany
Allegany College of Maryland Athletic Fields	Public Recreation Area	Allegany
Evitts Creek Greenway	Public Recreation Area	Allegany
Colonial Manor National Road Inn	Historic Resource	Allegany
Concrete Block House	Historic Resource	Allegany
Carleton Farm	Historic Resource	Allegany
Hillcrest Memorial Park	Historic Resource	Allegany
Hillcrest Memorial Park Funeral Chapel	Historic Resource	Allegany

TABLE 5.2-3
Potential Section 4(f) Resources Impacts in Corridor D

Resource	Resource Type	County
Middle South Branch Valley Rural Historic District	Historic Resource	Hardy
The Meadows	Historic Resource	Hardy
Old Fields Bridge Public Stream Access	Public Recreation Area	Hardy
Moorefield Battlefield	Historic Resource	Hardy
Willow Wall House and Farm	Historic Resource	Hardy
Buena Vista Farms	Historic Resource	Hardy
Fort Pleasant Farm	Historic Resource	Hardy
Old Fields Church and Cemetery	Historic Resource	Hardy
I-House (farm)	Historic Resource	Hampshire
I-House (George Purgitt's house and farm)	Historic Resource	Hampshire
Former Commercial Structure	Historic Resource	Hampshire
Former Commercial Structure	Historic Resource	Hampshire
Fort Hill Farm	Historic Resource	Mineral

TABLE 5.2-3 (continued)
Potential Section 4(f) Resources Impacts in Corridor D

Resource	Resource Type	County
Fairview/Peerce Home Place	Historic Resource	Mineral
Frame House with Brick Chimney	Historic Resource	Mineral
Vandiver-Trout-Clause House	Historic Resource	Mineral
Stone House Inn	Historic Resource	Mineral
Dans Mountain WMA	Public Recreation Area	Allegany
Julius Grabenstein Farmhouse	Historic Resource	Allegany
Grabenstein Bungalow	Historic Resource	Allegany
LaVale Toll Gate House	Historic Resource	Allegany

Within Corridor B, six potential Section 4(f) resources were identified. Of these, only one, the Bowling Green Community Park, has a high probability to be avoided. Four of the resources, an unnamed log house with stone chimneys, the Luten Bridge/Bosley Bridge, a second unnamed log house, and the Claysville United Methodist Church, have a moderate probability for avoidance opportunities. One resource, Dans Mountain, spans the entire width of the corridor in two locations south of Rawlins, and offers no opportunity for avoidance.

Within Corridor C, 13 potential Section 4(f) resources were identified. Three of these resources have a high probability for avoidance alternatives, Dam Site #21, Hillcrest Memorial Park, and Hillcrest Memorial Park Funeral Chapel. Three of these resources have a moderate probability for avoidance opportunities, the Vandiver-Trout-Clause House, Stewart's Tavern, and the Allegany College of Maryland Athletic Fields. Four of these resources have a low probability for avoidance alternatives, Evitts Creek Greenway, Colonial Manor National Road Inn, a concrete block house, and Carleton Farm. Three resources, the Chesapeake and Ohio Canal, the Potomac Heritage National Scenic Trail, and the Chesapeake and Ohio Canal National Historical Park, span the entire width of the corridor and offer no opportunities for avoidance.

Within Corridor D, there are 21 potential Section 4(f) resources. Two of these resources have a high probability for avoidance alternatives, the Meadows and the LaValle Toll Gate House. Thirteen of these resources have a moderate probability for avoidance opportunities, the Old Fields Bridge Public Stream Access, Willow Wall House and Farm, Buena Vista Farms, Fort Pleasant Farm, Old Fields Church and Cemetery, I-House, Fairview/Peerce Home Place, Fort Hill Farm, an unnamed frame house with brick chimney, Vandiver-Trout-Clause House, Stone House Inn, the Julius Grabenstein Farmhouse, and the Grabenstein Bungalow. Three resources have a low probability for avoidance alternatives, George Purgitts's House and Farm

and two former commercial structures. Three resources, the Middle South Branch Valley Rural Historic District, Moorefield Battlefield, and Dans Mountain, span the entire width of the corridor and offer no opportunities for avoidance.

Finally, because no Section 4(f) resource can be taken for transportation purposes until the FHWA has determined, after rigorous exploration and objective evaluation, that alternative actions avoid the use of those properties, or that there is no feasible or prudent alternative to the use of those properties, and that all possible planning has been done to minimize harm to Section 4(f) properties, a considerable amount of work remains to be done in Tier Two.

CHAPTER 6.0

FINDINGS AND CONCLUSIONS

6.0 FINDINGS AND CONCLUSIONS

This DEIS evaluated the proposed NHS Corridor between I-68 and Corridor H. As a result of the alternatives evaluation process, five preliminary corridors in the study area were narrowed to three. Each of the three corridors were carried into detailed analysis and evaluated. This information – together with comments from the public and appropriate public agencies – will form the basis for future project recommendations. Although preliminary findings are being presented here, no decision on a preferred alternative has been made to date. That will not occur until after the public has had an opportunity to review and comment on this report.

Several presentations have been made to the agencies and two public meetings have been held. Overall, there has been support for the proposed project by both the public and the federal and state resource agencies involved in the planning process. A public hearing or public meeting will be held within the study area. Following receipt of public input, a recommendation for future studies will be developed for inclusion in the Final Environmental Impact Statement. Substantive comments raised during public and agency review of the DEIS will be addressed prior to preparation of the FEIS.

Once a *Record of Decision* is issued for Tier One by FHWA, a preferred corridor or corridors, will be carried into Tier Two, the next stage of the project. During Tier Two, specific transportation alternatives and potential roadway alignments will be developed and evaluated within the preferred corridor(s). Additional environmental analyses will also be undertaken if breakout projects are identified that have logical termini and independent utility. A ROD will also be required at the close of the Tier Two process.

6.1 Ability to Meet Purpose and Need

All three corridors carried into detailed analysis would meet the project's purpose and need. Each of the corridors would correct current geometric deficiencies that limit regional mobility, add additional roadway capacity, support economic development efforts, and provide the additional system linkage needed to complete the regional road network. By taking no action, however, the identified needs would not be addressed.

6.2 Summary of Effects

Throughout the project, information was gathered and analyzed to assist with the development of a preferred alternative. The analytical results were presented in detail in Chapter 4.0. The potential effects of each corridor are summarized on Table 6.2-1.

TABLE 6.2-1
Summary of Potential Effects

Resource/Element	Corridor B	Corridor C	Corridor D
Residential Land Use	2,590 acres	2,400 acres	2,620 acres
Mixed Use, Built-up Land Use	1,300 acres	90 acres	860 acres
Commercial and Industrial Land Use	170 acres	450 acres	340 acres
Economic Development (trade centers served)	3	2	4
Impacts to Community Cohesion	3	2	3
Environmental Justice Impacts	Yes	Yes	Yes
Community Facilities	58	70	58
Parks and Recreation Areas	8	10	9
Very High/High Archaeological Potential	5,338 acres	6,974 acres	7,709 acres
NRHP-Listed & NRHP-Eligible Resources	4	9	21
Wetlands	118 acres	152 acres	143 acres
Streams	300,239 feet	330,834 feet	448,803 feet
Floodplains	775 acres	719 acres	2,244 acres
Flood Control Dams	8	4	6
Rangeland	127 acres	644 acres	720 acres
Forests	9,890 acres	11,130 acres	11,409 acres
Mixed Forests/Rangeland	0 acre	53 acres	91 acres
Prime Farmland Soil	2,146 acres	1,491 acres	3,335 acres
Farm Soils of State or Local Importance	2,276 acres	5,456 acres	3,728 acres
Agricultural Land Cover	2,953 acres	6,489 acres	5,487 acres
Preservation Districts/Easements	0	1 acre	67 acres
RTE Species	13	16	30
Potentially Contaminated Sites	43	42	55
Noise Sensitive Areas (residential)	2,590 acres	2,400 acres	2,620 acres
Potential Section 4(f) Resources	6	13	21
Residual US 220 Traffic (2025)	Local	6,100 AADT	Local
Estimated Cost of New Highway Facility	$482-$500 million	$651 million	$630-$648 million

During Tier Two, there will be considerable opportunity for project planners to develop avoidance, minimization, and mitigation strategies addressing potential impacts to cultural, environmental, and socioeconomic resources. With the development of actual highway alignments or other types of transportation improvements in Tier Two, the appropriate resource agencies, local planners, and citizens of the area can more easily assist in determining the appropriate avoidance, minimization, and mitigation strategies for each proposed alternative.

6.3 Corridor B

Of all three corridors, Corridor B would impact the second-most residential land (and noise sensitive areas), the most mixed-use built up land, and the least commercial and industrial land. Impacts to community cohesion and environmental justice populations could also be expected. Along with Corridor D it would have the fewest impacts to community facilities at 58. It would also have the fewest impacts to parks and recreation areas at eight.

In terms of the built-environment, Corridor B could have a considerable impact on residential neighborhoods in Cresaptown and Keyser. It would provide a new highway facility within the heavily traveled US 220 corridor through LaVale and Cresaptown and in Keyser farther south, and would have a greater effect on reducing traffic congestion and improving safety than Corridor C and an effect equal to Corridor D. Because it is located in the study area's most densely developed commercial area, Corridor B supports existing economic development efforts better than Corridor C and equal to Corridor D. Additionally, because the area it traverses in Allegany County is within a *Priority Funding Area* and the area it traverses near Keyser has all municipal infrastructure in place, it would support Smart Growth initiatives and related comprehensive planning efforts better than Corridor C and equal to Corridor D.

In terms of cultural resources, Corridor B has the least land with very high and high archaeological potential and the fewest NRHP-listed and NRHP-eligible resources. A potentially NRHP-eligible historic district, the US 220 Maryland Rural Historic District, spans the entire width of Corridor B. Additionally, two large potentially eligible historic farmsteads are found in Corridor B, the Potomac State College Farm east of Keyser and the Quality Dairy Farm south of Keyser. Additional studies in Tier Two may reduce their boundaries or determine that they are not eligible for NRHP designation. Corridor B also has the fewest potential Section 4(f) resources (public parks and recreation facilities and NHRP-listed or eligible properties/sites).

In terms of the natural environment, Corridor B has the least amount of wetland acreage, the fewest linear feet of streams, the least terrestrial habitat, and the lowest potential to encounter RTE species. It also has less agricultural-related land than either Corridors C or D. However, Corridor B contains eight flood control dams and the second highest amount of floodplains. Of primary concern in terms of the natural environment, Corridor B would impact the eastern edge of Dans Mountain (a major ecosystem and recreational resource in the area) and the Pinto

Marsh (a non-tidal wetland of special state concern). Additional engineering studies and the development of actual alternatives in Tier Two may be able to minimize the extent of these potential impacts. Dans Mountain is one of the largest contiguous tracts of forestland in the state of Maryland; a considerable amount of coordination with the USFWS, MDNR, and MDE will be necessary during Tier Two to analyze actual alternatives that could impact it. The best options in this area are those that may avoid it altogether. However, if Dans Mountain cannot be avoided, alternatives that minimize impacts and restrict them to edge area of the resource may be advanced. Of course, mitigation will be proposed for any loss of forestland or function.

Preliminary cost estimates indicate that alternatives developed within Corridor B could be less than alternatives developed for either Corridors C or D. Cost estimates could increase, however, within any corridor as the project progresses.

There are three possible interchange locations for Corridor B at I-68. Option 1 parallels MD 53 between Cresaptown and Lavale and ties into I-68 west of Exit 39. The full interchange between Corridor B and I-68 would provide access between the two roadways in all directions. Option 2 parallels US 220 between Cresaptown and Cumberland and provides a partial interchange with I-68 between Exits 41 and 42. The partial interchange provides access from Corridor B to I-68 eastbound and from I-68 westbound. Construction of a full interchange will have substantial impacts and displacements given the existing grades and terrain at this location. This option may also present weaving problems and signing overlaps. Option 3 requires the construction of both Option 1 and Option 2 with partial interchanges at each connection to I-68. The western interchange west of Exit 39 connects eastbound I-68 to Option 1 and Option 1 to westbound I-68 via ramps from Option 1.

Depending on future studies, the termini with Corridor H and any of the corridors currently under study for the US 220 project could be signalized or unsignalized. Although Corridor H is access-controlled, the WVDOH has made allowances for intersection construction and traffic signalization at specific locations where necessary. More study will be necessary during Tier Two to determine if the potential US 220/Corridor H terminus would be a candidate for construction of a signalized intersection.

6.4 Corridor C

Of all three corridors, Corridor C would impact the least residential land (and noise sensitive areas), the least mixed-use built up land, and the most commercial and industrial land. Impacts to community cohesion and environmental justice populations could also be expected. It would also have the most impacts to community facilities at 70 and to parks and recreation areas at 10.

Construction of a new transportation facility within Corridor C would help alleviate traffic congestion on US 220, but Corridors B and D would divert more traffic from US 220. Corridor C would provide new access to the WV 28/WV Alternate 28 corridor and the WV 46 corridor east of Keyser. The WV 28/WV Alternate 28 corridor has been identified as a high growth corridor (in terms of both residential and business development) in the draft *Mineral County Comprehensive Plan 2010.* East of Keyser, the WV 46 corridor is the setting for older industrial development adjacent to the city limits and considerable residential development as the corridor extends toward Ft. Ashby. Corridor C could also provide more access to businesses and residential areas east of Cumberland than either Corridors B or D.

In terms of cultural resources, Corridor C has the second-most land with very high and high archaeological potential and the second-most NRHP-listed and NRHP-eligible resources. In addition, the Chesapeake and Ohio Canal National Historical Park, a NRHP-listed site, spans the entire width of Corridor C in the vicinity of is northern terminus. No environmentally sensitive manner to cross the park, a Section 4(f) resource, has been identified through early coordination efforts with the NPS. In fact, the NPS has indicted that future alignments within Corridor C are incompatible with the Park's General Plan. Thus, it may be impossible to construct a new transportation facility of this nature within the park.

Property of the Chesapeake and Ohio Canal Company was placed under federal jurisdiction as early as 1938. Later in 1953, *Public Law 184* created a parkway between Cumberland and Washington, DC, utilizing land originally used for the canal with the stipulation that none of the rights-of-way granted by the secretary of the Interior would sever the landscape continuity from Great Falls (at Potomac, VA) to Cumberland. Subsequently, in 1971, *Public Law 91-664* created the actual Chesapeake and Ohio Canal National Historical Park.

There are also several large potentially NRHP-eligible farmsteads located within Corridor C. These potential historic resources could be difficult to avoid with future highway designs. Additional cultural resource studies in Tier Two could determine that they are not NRHP eligible or that the boundaries are less than currently identified. Corridor C also has the second-most potential Section 4(f) resources (public parks and recreation facilities and NHRP-listed or eligible properties/sites).

In terms of the natural environment, Corridor C has the highest amount of wetland acreage, the second-most linear feet of streams, the second-most terrestrial habitat, and the second-most potential to encounter RTE species. However, Corridor C contains four flood control dams (the lowest of all three corridors) and the lowest amount of floodplains. While it has more agricultural-related land than Corridor B, it has a similar amount of agricultural-related land to Corridor D. (The amount of agricultural land cover found in Corridor C is higher than Corridor D, but the amount of farmland soil is less.)

Preliminary cost estimates indicate that alternatives developed within Corridor C could be higher than alternatives developed for either Corridors B or D. Cost estimates could increase, however, within any corridor as the project progresses.

Corridor C ties into I-68 at the interchange with US 220 (North), MD 144, and Naves Cross Road (Exits 46 and 47) east of Cumberland. A complex, full interchange between Corridor C and I-68 could be constructed at that location while maintaining access from US 220 (North) and MD 144 to both the new facility and I-68.

6.5 Corridor D

Of all three corridors, Corridor D would impact the most residential land (and noise sensitive areas), the second-most mixed-use built up land, and the second-most commercial and industrial land. Impacts to community cohesion and environmental justice populations could also be expected. Along with Corridor B it would have the fewest impacts to community facilities at 58. However, it would have the second-most impacts to parks and recreation areas at nine.

In terms of the built-environment, Corridor D could have a considerable impact on residential neighborhoods in Cresaptown and Keyser. However, by providing a new highway facility within the heavily traveled US 220 corridor through LaVale and Cresaptown and in Keyser farther south, it would have a greater effect on reducing traffic congestion and improving safety than Corridor C and an effect equal to Corridor B. Because it is located in the study area's most densely developed commercial area, Corridor D supports existing economic development efforts better than Corridor C and equal to Corridor B. Additionally, because the area it traverses in Allegany County is within a *Priority Funding Area* and the area it traverses near Keyser has all municipal infrastructure in place, it would support Smart Growth initiatives and related comprehensive planning efforts better than Corridor C and equal to Corridor B. It would also provide additional north-south access in Moorefield and support that area's economic development efforts.

In terms of cultural resources, Corridor D would impact the most land with archaeological potential and the most NRHP-listed and NRHP-eligible resources. Corridor D contains a dense cluster of historic resources at its southern terminus. This cluster of resources spans the entire width of the corridor. In addition to NRHP-listed and NRHP-eligible resources, there are also several large potentially historic farmsteads located within Corridor D that could be difficult to avoid with specific highway designs. A potentially NRHP-eligible historic district, the US 220 Maryland Rural Historic District, spans the entire width of Corridor D. Additional cultural resource studies could determine that some resources are not NRHP eligible or that the boundaries are less than currently identified. Corridor D contains the most potential Section 4(f) resources of all three corridors (public parks and recreation facilities and NHRP-listed or eligible properties/sites).

In terms of the natural environment, Corridor D has the second-most amount of wetland acreage, the most linear feet of streams, the most terrestrial habitat, and the greatest potential to encounter RTE species. Corridor D also contains six flood control dams and the highest amount of floodplains. While it has more agricultural-related land than Corridor B, it has a similar amount of agricultural-related land to Corridor C. (The amount of agricultural land cover found in Corridor C is higher than Corridor D, but the amount of farmland soil is less.) Like Corridor B, Corridor D would impact the eastern edge of Dans Mountain and the Pinto Marsh (a non-tidal wetland of special state concern). Additional engineering studies and the development of actual alternatives in Tier Two may be able to minimize the extent of these potential impacts.

Dans Mountain is one of the largest contiguous tracts of forestland in the state of Maryland; a considerable amount of coordination with the USFWS, MDNR, and MDE will be necessary during Tier Two to analyze actual alternatives that could impact it. The best options in this area are those that may avoid it altogether. However, if Dans Mountain cannot be avoided, alternatives that minimize impacts and restrict them to edge area of the resource may be advanced. Of course, mitigation will be proposed for any loss of forestland or function.

Preliminary cost estimates indicate that alternatives developed within Corridor D could be less than alternatives developed for either Corridor C but more than Corridor B. Cost estimates could increase, however, within any corridor as the project progresses.

There are three possible interchange locations for Corridor D at I-68. Option 1 parallels MD 53 between Cresaptown and Lavale and ties into I-68 west of Exit 39. The full interchange between Corridor D and I-68 would provide access between the two roadways in all directions. Option 2 parallels US 220 between Cresaptown and Cumberland and provides a partial interchange with I-68 between Exits 41 and 42. The partial interchange provides access from Corridor D to I-68 eastbound and from I-68 westbound. Construction of a full interchange will have substantial impacts and displacements given the existing grades and terrain at this location. This option may also present weaving problems and signing overlaps. Option 3 requires the construction of both Option 1 and Option 2 with partial interchanges at each connection to I-68. The western interchange west of Exit 39 connects eastbound I-68 to Option 1 and Option 1 to westbound I-68 via ramps from Option 1.

6.6 Cumberland Bypass

Though originally considered outside the scope of the initial project developed for this DEIS, a recurring theme raised throughout the process has been the potential need for a Cumberland bypass. As noted in Chapter 2.0, the only practical east-west route through the project region for truck traffic or heavy automobile volumes is I-68, especially during weather-related or local emergency incidents. Additionally, I-68 would serve as the major route from Washington, DC, during a national emergency or evacuation of our nation's capital. Regardless of which corridors are carried into Tier Two, a Cumberland bypass will be investigated further.

CHAPTER 7.0

COMMENTS AND COORDINATION

7.0 COMMENTS AND COORDINATION

In accordance with federal and state regulations, the WVDOH and MDSHA followed a proactive public and agency involvement process for the project. Public and agency involvement has been achieved to date through three mechanisms: public meetings and the distribution of related informational materials (mailings, news releases, meeting announcements); agency meetings; and public officials meetings.

Notice of Intent to prepare a *Tier One Environmental Impact Statement* appeared in the *Federal Register* on April 14, 2006. Three agencies, the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, and the National Park Service, responded to the *Federal Register* notice. A copy of the notice is found in Appendix A. Subsequent to the notice appearing in the *Federal Register*, other federal, state, and local agencies agreed to be either a cooperating or participating agency for the project. Those agencies have already been discussed in Chapter 1.0 of this DEIS.

7.1 Public and Agency Scoping

Public and agency scoping for the project occurred through a combination of meetings and field views held in early May 2006. Public meetings were held in Keyser on May 1, 2006, in Moorefield on May 2, 2006, and in Cumberland on May 10, 2006. About 120 people attended the public meetings.

Although the public attending the meetings were generally supportive of the project, the potential for creating harm to Patterson Creek Valley was voiced as a major concern by many of those in attendance. Areas of concern within the Patterson Creek Valley included potential impacts to farmlands, historic resources, water quality, and the overall environment. Other locales mentioned as areas of special concern included New Creek; the Burlington Historic District; rural areas east of Keyser, Knobley Mountain, Greenland Gap, Old Fields; and Dans Mountain. As with the Patterson Creek Valley, concern for these other areas included the potential impacts the project could have on historic resources, farmlands, and the overall environment.

As part of the scoping process, two separate agency field views were held in conjunction with the public meetings. The first field view was held on May 3, 2006, and began with a project briefing in Moorefield before traveling into the field. Included in the project briefing was a discussion of the methodologies planned to be used for the socioeconomic and environmental studies associated with preparation of the DEIS. Besides FHWA, WVDOH, and MDSHA staff members, agencies represented that day included USFWS, WVDNR, WVDCH, and the WV Department of Forestry.

Concerns voiced during the field view included bald eagle habitat, the Indiana bat, the Virginia big-eared bat, mussels, threatened and endangered plant species associated with shale barrens, wetlands and streams, and the relationship of this project to Corridor H and US 50. Discussion about cultural resources was directed toward the need to identify historic districts, archaeological sites, and individual historic properties in the vicinity of the study area.

The second agency field view, with similar informational content as the first, was held a week later on May 10, 2006, in LaVale. Besides FHWA, WVDOH, and MDSHA staff members, agencies represented at the second field view included USACE, MDNR, MDE, and MDP. Although there was much discussion on several topics, initial concerns expressed at the field view were centered on the potential impact the project could have to the Dans Mountain Wildlife Management Area. Specific concerns related to Dans Mountain, an important natural resource, included:

- The amount of contiguous forestland (including a very large tract of contiguous state-owned forest) it represents.
- Habitat values associated with forest interior, wildlife corridors, and Green Infrastructure.
- Its value as public land for recreation as well as habitat. Hunting and other wildlife-related recreation is closely related to the significant size and nature of the tract.
- Federal funds were used for the resource. Replacement of such a large contiguous tract of public land and its associated values could pose a major difficulty in both the region and Maryland.
- Any taking of state land for transportation use from Dans Mountain will trigger a Section 4(f) consideration. The MDNR may be unable to agree to consistency unless every effort has been made to avoid impacts. Additionally, conversion of existing public land to a transportation use may require conformance with other federal regulations associated with federal fund sources used at Dans Mountain over the years.

Additional concerns included restoration activities in the North Branch Potomac River watershed, wild trout and long-term resident stocked trout, historic resources, the numerous North Branch Potomac River tributaries flowing east from Dans Mountain, and additional habitats of significance in the vicinity of Fort Hill and along the riparian corridor of the North Branch Potomac River.

Following the field views and public meetings, written correspondence was received from the USFWS. A copy of this letter (May 17, 2006) is found in the Appendix. The USFWS discussed many issues, including potential impacts to several federally listed animal and plant species (Indiana bat, Virginia big-eared bat, bald eagle, shale barrens rock cress, and sensitive mussel fauna). It also expressed concern for wetlands, riparian areas, and streams in the proposed study area, and reiterated concern over potential impacts to Dans Mountain.

7.2 Continuing Public Involvement

In continuing the efforts of the public involvement process, a second round of informational workshops was held in May 2007. Meetings were again held in Moorefield, Keyser, and the Cumberland area. The first meeting was held at Moorefield High School on May 7, the second at Keyser Primary-Middle School on May 8, and the third on May 10 at the Bel Air Elementary School. The locations of the first two meetings were the same as they were for the first round of public meetings, but the Cumberland area meeting was shifted to the school from the Allegany County Government Office Complex to accommodate the anticipated larger attendance.

Copies of the two preliminary reports, the *Purpose and Need Statement* (Skelly and Loy, Inc. 2007b) and *Corridors Retained for Further Analysis* (Skelly and Loy, Inc. 2007a), were placed on file at area libraries, municipal buildings, and county courthouses 30 days prior to the meetings. The latter report suggested that only Corridors B, C, and D be analyzed further. Each meeting was also advertised 30 days ahead of time noting where the public could review the project reports. Additionally, MDSHA distributed an informational mailer on the project to all Maryland zip codes within the study area.

Excluding agency officials, over 260 people attended one of the meetings. Approximately 15 people were in attendance at Moorefield, 57 at Keyser, and 189 at Bel Air.

A survey was conducted during the public meetings to solicit public comments on the project's purpose and need, per *SAFETEA-LU 6002*, and the corridors to be potentially advanced. Six questionnaires were received on-site in Moorefield, 14 in Keyser, and 81 in Bel Air with some additional correspondence submitted at each. About 30 questionnaires were returned via mail or email from agencies with additional comments as well. The Greater Cumberland Committee, the Allegany and Garrett Sportsman's Association, Allegany Ballistics Laboratory, Friends of the Folck's Mill site, and Mineral County Commissioners also submitted information in writing.

Turnout for the second round of meetings was considerably higher than those held a year earlier. While the majority of respondents at the first round of meetings were from Mineral County (54 percent), Allegany County turned out more people for the second round (70 percent). The majority of people favored Corridors B and C and agreed that Corridors A and E should not be considered any further. Some people, however, still wished to have Corridors A and E considered because of their minimal impacts to the built environment and their distance east of the congested routes through Cumberland and LaVale.

Many people at the Bel Air meeting asked that no corridor impact Dans Mountain or be located near it. Other people asked that no corridor impact the Folck's Mill and Civil War Battle Site, located at the northern termini of Corridors C and E. Numerous comments were also made about the condition and capacity of the Crosstown Bridge on I-68 through Cumberland.

Generally, the consensus was that the chosen corridor should act as an alternate route away from Cumberland or serve as a direct bypass. Another consensus point was that congestion of existing US 220 is a problem, especially through Keyser and Cresaptown.

7.3 Continuing Agency Coordination

Agency coordination has been an ongoing process throughout the project. Formal requests for information have occurred throughout the project and a coordination plan (WVDOH 2011) was prepared in accordance with *SAFETEA-LU*. A copy of this plan is found in the appendix. As noted previously in this DEIS, formal coordination began with interagency field views in May 2006. Field views with the Maryland and West Virginia SHPOs also occurred in February-March 2007.

Interagency meetings were also held with the Maryland resource agencies and federal agencies with jurisdiction in Maryland on February 15, 2006, January 17, 2007, June 20, 2007, and May 19, 2010, to provide additional opportunities to review and comment on the project as it evolved. During the June 2007 meeting, two reports, *Purpose and Need Statement* (Skelly and Loy, Inc. 2007b) and *Corridors Retained for Further Analysis* (Skelly and Loy, Inc. 2007a), were presented. Concurrence from most of the resource agencies was secured on those two reports over the next several months. The current status of agency concurrence is found in the Coordination Plan.

A meeting was also held with the West Virginia agencies and federal agencies with jurisdiction in West Virginia on February 27, 2007. The agencies were updated on the status of the project at that meeting.

A presentation on the project was also made to the NPS at its Hagerstown headquarters for the Chesapeake and Ohio Canal National Historical Park on April 16, 2007. Following a complete presentation on the project, the NPS expressed its concern regarding the potential impact to the park from Corridors C and E. The NPS also asked to become a cooperating agency on the project. The NPS became a cooperating agency on May 7, 2007.

Formal letters for coordination on rare, threatened, and endangered species were sent to the resource agencies in early 2007. A complete discussion on that specific coordination is found in Chapter 4.0 of this DEIS.

As part of the Section 106 *National Historic Preservation Act* process, concurrence was also secured from the West Virginia Division of Culture and History and the Maryland Historic Trust, the respective State Historic Preservation Offices for West Virginia and Maryland, on the *Historic Resources Abbreviated Report Revised* (Ricketts *et al.* 2008). Both agencies also concurred with the *Archaeological Predictive Surfaces Report* (Gundy *et al.* 2007). This does not conclude the Section 106 process and additional coordination, reporting, and concurrences will continue throughout the project.

A preliminary DEIS was circulated among federal, state, and local resource/planning agencies in mid and late 2010. Formal and informal comments were received from FHWA, NPS, USACE, USEPA, and MDP. Those comments were addressed throughout this DEIS and an

errata/addendum provided to commenters to assure their concerns were taken into consideration. One unresolved issue from the NPS remains, however. In a letter dated September 24, 2010, the NPS stated that "The project is not compatible with the C&O Canal NHP General Plan," because future alignments within Corridor C intrude on the natural setting of the canal towpath and jeopardize the natural and human history within the park.

Comments were also received from the USACE, Baltimore District. In a letter dated March 28, 2011, the USACE concurred with the project's purpose and need and offered comments on an earlier draft of the DEIS. A copy of that letter is found in Appendix D.

7.4 Public Officials Briefings

Several briefings were held with public officials and planners throughout the course of the project. Meetings were held with the governing boards of the Allegany County Planning Commission, the Region 8 Planning and Development Council, the Route 50 Association, and the Greater Cumberland Committee to present updates on the project at key points. Meetings were also held with staff members of the Allegany County Office of Planning Services, Mineral County Planning Commission, Hardy County Planning Department, the Grant County Development Authority, and the City of Cumberland. The purposes of these briefings were twofold: to obtain background data and information on the study area and to brief local planners on the status of the project.

7.5 Future Activities

Agency coordination will continue as the project progresses to Tier Two. Additional field views will occur as specific alternatives are developed and potential impacts on resources are identified.

Public hearings and/or public meetings will be scheduled at the conclusion of Tier One in accordance with federal regulations and state policies and a ROD will be sought. (A second ROD will be necessary at the conclusion of Tier Two.) Copies of the DEIS will be available for review throughout the local community prior to the public hearing. During the public hearing and comment period, oral and written testimonies will be collected on the project and the DEIS. All substantial comments and questions will be addressed in the FEIS.

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8.0 LIST OF PREPARERS AND REVIEWERS

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CHAPTER 10.0

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CHAPTER 11.0

ACRONYMS

11.0 ACRONYMS

AADT Average Annual Daily Traffic

AASHTO American Association of State Highway and Transportation Officials

ABL Allegheny Ballistics Laboratory

ADHS Appalachian Development Highway System

ADT American Discovery Trail

AMD Abandoned Mine Drainage

AST Above Ground Storage Tank

BFA Best Fit Alignment

BMP Best Management Practice

B&O Baltimore and Ohio

c. Circa

CAA Clean Air Act

CBD Central Business District

CEA Cumulative Effects Assessment

CEQ Council on Environmental Quality

CFR Code of Federal Regulations

CO Carbon Monoxide

COMAR Code of Maryland

CSR Code of State Regulations

CWA Clean Water Act

DEIS Draft Environmental Impact Statement

DFIRM Digital Flood Insurance Rate Map

EIS Environmental Impact Statement

ESA Endangered Species Act

FEIS Final Environmental Impact Statement

FEMA Federal Emergency Management Agency

FHWA Federal Highway Administration

FIDS Forest Interior Dwelling Species

FIRM Flood Insurance Rate Map

FPPA Farmlands Protection Policy Act of 1981

FY Fiscal Year

GIS Geographic Information System

LOS Level of Service

LRTP Long-Range Transportation Plan

MD Maryland

MDE Maryland Department of the Environment

MDNR Maryland Department of Natural Resources

MDP Maryland Department of Planning

MDSHA Maryland State Highway Administration

MGS Maryland Geological Survey

MHT Maryland Historical Trust

MOA Memorandum of Agreement

MOU Memorandum of Understanding

mph Miles Per Hour

MPO Metropolitan Planning Organization

MSA Metropolitan Statistical Area

MSAT Mobile Source Air Toxic

MYBP Million Years Before Present

NAAQS National Ambient Air Quality Standards

NAC Noise Abatement Criteria

NEPA National Environmental Policy Act of 1969

NFIP National Flood Insurance Program

NHS National Highway System

NOI Notice of Intent

NPDES National Pollutant Discharge Elimination System

NPS National Park Service/Non-Point Source

NRCS Natural Resources Conservation Service

NRHP National Register of Historic Places

NSA Noise Sensitive Area

NWI National Wetlands Inventory

O_3 Ozone

O-D Origin – Destination

OMB Office of Management and Budget

PA Programmatic Agreement

PCB Polychlorinated Biphenyls

PEM Palustrine Emergent

PENNDOT Pennsylvania Department of Transportation

PFA Priority Funding Area

PFO Palustrine Forested

PHF Peak Hour Factor

POW Palustrine Open Water

PSD Public Service District

PSS Palustrine Scrub-Shrub

PUS Palustrine Unconsolidated Shore

RCRA Resource Conservation and Recovery Act

REC Recognized Environmental Condition

RFFA Reasonably Foreseeable Future Action

RM River Mile

ROD Record of Decision

RTE Rare, Threatened, and Endangered

SAFETEA-LU Safe, Accountable, Flexible, Efficient Transportation Act: A Legacy for Users

SHPO State Historic Preservation Office

SIP State Implementation Plan

TEA-21 Transportation Equity Act for the 21st Century

TMDL Total Maximum Daily Load

UNT Unnamed Tributary

U.S. United States

USACE United States Army Corp of Engineers

USC United States Code

USCB United States Census Bureau

USCG United States Coast Guard

USDA United States Department of Agriculture

USDOT United States Department of Transportation

USEPA United States Environmental Protection Agency

USFWS United States Fish and Wildlife Service

USGS United States Geological Survey

UST Underground Storage Tank

UTM Universal Transverse Mercator

VFD Volunteer Fire Department

VMT Vehicle Miles Traveled

VPD Vehicles per Day

VPH Vehicles per Hour

WMA Wildlife Management Area

WMRR Western Maryland Railway or Railroad

WPA Works Progress Administration

WV West Virginia

WVDCH West Virginia Division of Culture and History

WVDEP West Virginia Department of Environmental Protection

WVDNR West Virginia Division of Natural Resources

WVDOH West Virginia Division of Highways

WVURC West Virginia University Research Corporation

WVURRI West Virginia University Regional Research Institute

WVSOS West Virginia Secretary of State