III. ENVIRONMENTAL RESOURCES & CONSEQUENCES

SR 26, Atlantic Avenue from Clarksville to Assawoman Canal
Environmental Assessment and Section 4(f) Evaluation

U.S. Department of Transportation
Federal Highway Administration

STATE OF DELAWARE
Department of Transportation

III. ENVIRONMENTAL RESOURCES AND CONSEQUENCES

This section provides a general description of the existing demographic, social, economic, and environmental setting for the area affected by the SR 26 Project. It also describes the probable beneficial and adverse social, economic, and environmental impacts of alternatives under consideration and describes the measures proposed to mitigate adverse impacts. Under the No-Build Alternative there would be no impacts. This section also briefly describes the scope and status of the planning processes for the local jurisdictions and the project area.

A. Demographics

The SR 26 Project is located in Sussex County, Delaware, between Clarksville and the Assawoman Canal. The 2000 Census divides the project area into three contiguous census tracts that are at least partially within the project area. The tracts included are: 513.01, 513.02 and 513.03. Because the project area is relatively limited for this project, the three census tracts are further divided into block groups to more adequately represent the project area population (**Figure III-1**).

The following census data was selected from state, county and block group levels. This data will allow for comparison from the state to the county to the census block group level. The census block groups provide the most comprehensive and representative census data for the project area.

1. Population

Table III-1 shows the population and housing statistics for Delaware, Sussex County, and the U.S. Census block groups that coincided with the SR 26 project area.

a. Delaware

According to the 2000 US Census, there are 783,600 individuals living within the State of Delaware. This population represents a 17.6% increase from 1990 to 2000. Of this total population, 74.6% (584,773 individuals) of the population residing are white. Nineteen percent (150,666 individuals) of the total population are African-American, 2.1% (16,542 individuals) are Asian or Pacific Islander, 2.4% of the population identifies themselves to be some other race and 4.8% are considered to be of Hispanic origin (**Table III-1**). Persons of Hispanic origin can be of any race.

b. Sussex County

According to the 2000 Census, the total population of Sussex County is 156,638. This population represents a 38.3% increase from 1990 to 2000 (the 1990 population of Sussex County was 113,229). According to the University of Delaware's Center for Applied Demography and Survey Research (CADSR), the county's projected population is expected to reach 258,924 individuals by the year 2030, an increase of 65.3%. An estimated 18.5% of the present population (14,801 individuals) is over the age of 65.

SR 26, Atlantic Avenue
from Clarksville to Assawoman Canal

Legend

TRACT 513.03	Census Tract Number
1503	Census Block Group
	Census Tract Boundary
	Census Block Group Boundary
	SR 26 Project Area

Figure III-1
2000 Census Boundaries

2,000 1,000 0 2,000 Feet

1 inch equals 2,000 feet

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Table III-1: Population and Housing Characteristics for Delaware, Sussex County and the Project Area

		Delaware (2000)	Sussex County (2000)	Census Block Groups within Project area (2000)
Total Population		783,600	156,638	7,975
***Projected total Population (2030)**		1,042,476	253,240	N/A
Housing Units		343,072	93,070	5351
% Male/ % Female		48.5% / 51.5%	48.9% / 51.1%	48.5% / 51.5%
% Population 65 Years and Older		13.0%	18.5%	23.9%
Median House Income		$47,381	$39,208	$43,222
Racial Distribution	White alone	74.6%	80.3%	95.3%
	African-American alone	19.2%	15%	2.9%
	American Indian/Alaskan Native alone	0.3%	0.6%	0.2%
	Asian alone	2.1%	0.7%	0.5%
	Native Hawaiian/Other Pacific Islander alone	0.0%	0.0%	0.0%
	Other Race alone	2.0%	2.0%	0.2%
	Two or More Races	1.7%	1.4%	0.9%
Ethnicity	Hispanic Origin	4.8%	4.4%	0.9%
Source: 2000 US Census and *Delaware Population Consortium				

According to the 2000 U.S. Census, 80.3% (123,857 individuals) of the population residing in Sussex County are white. Fifteen percent (23,319 individuals) of the Sussex County population are African-American, 0.8% (1,240 individuals) were Asian or Pacific Islander, 4.0% of the population identifies themselves to be some other race and 4.4% are of Hispanic origin. According to the 1990 U.S. Census, 81.5% (92,288 individuals) of the population residing in Sussex County were white. Approximately 18.5% (20, 941 individuals) of the Sussex County population were considered minority (16.8% were African American, 0.5% were Asian or Pacific Islander, 1.2% identified themselves as some other race, and 1.1% were of Hispanic origin).

c. Project Area

The population statistics for the four census block groups included in the project area are shown in **Table III-2**. This table also identifies the racial and ethnic make-up of the project area census block populations. In 2000, 95.3% of the population was white, 2.9% were African-American and 0.5% was Asian or Pacific Islander. Approximately 1.3% of the population identified themselves as some other race. Those persons of Hispanic origin, which can be of any race, comprised 0.9% of the population.

Table III-3 shows the demographics of the SR 26 project area in 1990. For this project area, data from 1990 Census Tract 513, Block Groups 1, 2, 3, 7, 8 and 9 was used (see **Table III-3** and **Figure III-2**). As shown in **Tables III-2** and **III-3**, the population within the project area increased substantially between 1990 and 2000 (approximately 81%), and the percentage of minority and low income population decreased.

SR 26, Atlantic Avenue from Clarksville to Assawoman Canal

Legend

TRACT 513.03	Census Tract Number
1503	Census Block Group
	Census Tract Boundary
	Census Block Group Boundary
	SR 26 Project Area

Figure III-2
1990 Census Boundaries

2,000 1,000 0 2,000 Feet

1 inch equals 2,000 feet

DelDOT

Table III-2: Racial and Ethnic Composition of Project area Census Block Groups– 2000

Race	Tract 513.01 Block Group 1	Tract 513.01 Block Group 2	Tract 513.02 Block Group 1	Tract 513.03 Block Group 1	2000 Project Area Block Group Total
White alone	2,572	1,220	1,099	2,710	7,601
Black or African American alone	14	27	165	29	235
American Indian/Alaska Native alone	6	0	4	8	18
Asian alone	9	9	10	10	38
Native Hawaiian/Other Pacific Islander alone	0	0	0	0	0
Some other race alone	3	0	3	7	13
Two or more Races	15	10	22	23	70
Hispanic or Latino	47	46	204	77	47
Block Group Population Total	**2619**	**1266**	**1303**	**2787**	**7975**
Block Group Minority Percentage	1.8%	3.6%	15.7%	2.8%	4.7%
Number of Persons Below Poverty Level	140	95	62	192	489
Block Group Low Income Percentage	5.4%	7.4%	4.9%	6.9%	6.2%

Notes: Race data does not sum to the total number of persons in each tract or to 100 percent due to the following:
- Hispanics can be of any race
- Some Census participants may identify themselves with more than one race

Source: 2000 US Census

Table III-3: Racial and Ethnic Composition of Project area Census Block Groups– 1990

Race	Tract 513 Block Group 1	Tract 513 Block Group 2	Tract 513 Block Group 3	Tract 513 Block Group 7	Tract 513 Block Group 8	Tract 513 Block Group 9	1990 Project area Block Group Total
White	1094	753	794	129	285	1110	4165
Black or African American	15	21	179	12	0	12	239
American Indian, Eskimo, Aleut	4	0	0	0	0	0	4
Asian or Pacific Islander	0	0	3	0	0	1	4
Some other race	0	0	0	0	0	0	0
Hispanic or Latino	1	1	6	0	1	6	15
Block Population Total	**1113**	**774**	**976**	**141**	**285**	**1123**	**4412**
Block Minority Percentage	1.8%	2.8%	19.3%	8.5%	0.4%	1.7%	5.9%
Number of Persons Below Poverty Level	76	95	70	8	34	77	360
Block Low Income Percentage	7.0%	11.7%	7.5%	5.7%	11.9%	6.9%	8.2%

Notes: Race data does not sum to the total number of persons in each tract or to 100 percent due to the following:
- Hispanics can be of any race
- Some Census participants may identify themselves with more than one race

Source: 1990 US Census

2. Racial and Ethnic Characteristics of the Project Area

a. Low Income Population

A low-income population is identified as persons whose median household income is at or below the Department of Health and Human Services (DHHS) poverty guidelines. This definition is consistent with the definition of low-income provided in Executive Order (EO) 12898. The poverty guidelines issued by the DHHS are abstracted from the original poverty thresholds updated each year by the United States Census Bureau. Examination of census block group data shows that the median household income for the project area ($43,222) is higher than the DHHS poverty guidelines for the year 1999 ($16,700 for a family of four). As shown in **Table III-2**, the percentage of low-income residents within the project area ranged from 4.9% to 7.4% for the block groups within the project area, and the average percentage of low-income population within the project area is 6.2%. The median household income for the project area is $43,222, which is higher than the Sussex County median Household income of $39,208 (U.S. Census Bureau - 2000 Census). The 1989 median household income for the project area was $25,791, which is slightly lower than the 1989 Sussex County median income of $26,904.

The project area is primarily comprised of middle income single-family houses, farms and commercial properties. A lower income mobile home park is located along this stretch of SR 26.

b. Minority Population

The project area population consists of 4.7% minority persons. The 2000 US Census shows the highest percentage of minority individuals in this project area (15.7%) residing within census tract 513.02, block group 1 (**Table III-2**). Consistent with EO 12898, minority persons are those who are of one of the following racial or ethnic groups:

- Black (a person having origins in any of the black racial groups of Africa)
- Hispanic (a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture origin, regardless of race)
- Asian American (a person having origins in any of the original peoples of the Far East, South East, the Indian subcontinent, or the Pacific Islands)
- American Indian and Alaskan Native (a person having origins in any of the original people of the North American and who maintains cultural identification through tribal affiliation or community recognition.

The percentage of the project area population comprised of minority populations is well below the county and state demographics.

c. Environmental Justice Communities

Executive Order (EO) 12898 "Federal Actions to Address Environmental Justice in Minority and Low-Income Populations" was signed on February 11, 1994. The EO requires the assessment of disproportionately high adverse human health and environmental impacts on minority and low income populations resulting from proposed federal actions. The EO reaffirms the provisions of Title VI of the Civil Rights Act of 1964 and related statutes. Title VI requires federal agencies to ensure that their programs, policies and activities do not have the effect of excluding populations from the benefits of the project, or subjecting persons or populations to discrimination based on race, color, or national origin. EO 12898 adds low income to the list of populations, which should be investigated to ensure that they are not excluded from the benefits of the project, or subject to discrimination caused by federal programs, policies and activities. Environmental Justice requires that minority and low-income communities are specifically included in public participation and outreach programs.

Executive Order 12898 requires that each study develop its own unique public outreach program that specifically addresses the individual community needs within that study area. All potentially affected communities, including minority and low-income communities, have been notified by mail regarding the ongoing status of the SR 26, Atlantic Avenue Improvement Project. Additional Environmental Justice outreach methods included involvement with the project's development and project advertisements in local newspapers.

The percentage of the study area population comprised of minority populations is well below the county and state demographics. The project area is primarily comprised of middle income single-family houses, farms and commercial properties. A lower income mobile home park is located along this segment of SR 26; however the community will not experience a loss of land significant enough to alter the current use or displace residents. As such, the proposed project will not impose a burden on any minority or low-income group.

(1) Impacts to Environmental Justice Communities

Based on the limited effect to local communities by the project, and the avoidance of identified minority and low-income communities, it is expected that there will be no disproportionately high or adverse impacts to any minority or low-income communities.

3. Public Participation

A Public Workshop for the SR 26 Project was held on November 19, 2004 at the Volunteer Fire Hall in Roxana. The information presented at the workshop included project history, purpose and need, environmental issues and alternatives mapping. The Minimization Alternative (combination of Alternatives A, B and C) was presented at the workshop. At that meeting, many attendees expressed concern that the proposed improvements did not fully address the need to alleviate traffic congestion caused by left-turning vehicles. They proposed extending the center left-turn lane to all mid-block areas in the corridor, similar to the three-lane configuration provided in the recently improved section of SR 26 from SR 1 to the Assawoman Canal. DelDOT reviewed the comments received at the public workshop and analyzed the projected traffic numbers and determined that Combination ABC Alternative did not sufficiently meet the goals of the project. The project design was reviewed and Alternative D, with the shared center left turn lane was developed. On May 9, 2005, a second public workshop for the SR 26 Project

was held at the Roxana Volunteer Fire Department. Alternative D was presented at the workshop, with large-scale plans showing the proposed improvements and potential impacts to properties within the project limits.

B. Economic Environment

1. Sussex County Economic Characteristics

Sussex County experienced an employment loss of 0.8% between the years 1990 (4.1% unemployed) and 2000 (4.9% unemployed). According to the Census, the per capita income for Sussex County in 2000 was $20,328, up 60% since 1990. Over fifty-eight percent of the population sixteen years of age or older are part of the labor force.

2. Project Area Economic Characteristics

The following is a summary of the project area economic characteristics.

a. Per Capita Income

The 1999 per capita income for the census block groups in the project area was $22,391, which is $2,063 above the per capita listed for Sussex County in 1999. The U.S. Census Bureau defines the labor force as employed, unemployed and people belonging to the Armed Forces. In 2000, the census block groups in the project area had an estimated 3,565 individuals over the age of sixteen eligible for the work force. Ninety-five percent of that population was employed as of 2000. The entire project area population (100%) belongs to the civilian work force; there are no members of the Armed Forces in this project area. These Figures are similar to those of Sussex County, which show a vast majority of citizens employed in the civilian work force (only 0.2% belong to the Armed Forces). Of the total 3,565 individuals within the project area over the age of sixteen and eligible to work, 94.8% are employed, 5.2% are unemployed and no one is employed in the armed forces.

b. Occupations

The total percentage of the employed population of Delaware, Sussex County and the Project Area Census Block Groups are shown in **Table III-4**. The majority of people employed in the project area worked in Management, Professional and Related Occupations, Sales and Office Occupations or Service Occupations. This is consistent with the occupations in which the majority of Delaware and Sussex County civilians were employed. The main difference between the project area and those jurisdictions is that the project area employs a smaller percentage of people in Production, Transportation and Material Moving occupations when compared to Sussex County and Delaware. Construction, Extraction and Maintenance Occupations are generally consistent with Sussex County and Delaware. The project area has a higher percentage of people employed in Farming, Fishing and Forestry Occupations compared to the State of Delaware, although it remains a small percentage of the total occupations.

Table III-4: Summary of Occupations for Delaware, Sussex County, and the Project area

Occupation (of the employed civilian population)	Delaware	Sussex County	Project area Block Groups
Management, Professional and Related Occupations	35.3%	27.2%	32.8%
Sales and Office Occupations	27.6%	25.3%	29.4%
Service Occupations	14.6%	16.7%	15.8%
Production, Transportation and Material Moving Occupations	12.5%	16.6%	8.4%
Construction, Extraction and Maintenance Occupations	9.5%	12.9%	11.9%
Farming, Fishing and Forestry Occupations	0.5%	1.3%	1.7%
Source: 2000 US Census			

c. Employers

Major employers in Sussex County were identified from the Sussex County Comprehensive Plan (2002). They include:

- Allen's Family Foods
- Allen's Hatchery, Inc
- Bayhealth Medical Center
- Beebe Medical Center
- Burris Foods, Inc
- Caulk Dental Supply
- Connectiv Power Delivery
- Craig Technologies
- Decrane Aircraft
- Delaware Electric Cooperative, Inc
- Delaware Technical and Community College
- Invista
- Eastern Shore Poultry
- Food Lion, Inc
- Grotto Pizza, Inc
- Indian River School District
- Intervet America, Inc
- M and T Bank
- Mountaire of Delmarva, Inc
- Nanticoke Health Services
- Perdue, Inc
- Rusty Rudder Restaurant
- Sea Watch International, Inc
- Universal Forest Products
- State of Delaware
- Sussex County
- Vlasic Foods, Inc.
- Wal-Mart
- Wilmington Trust Co.

(1) Impacts to Employers

Food Lion, Inc. and the Lord Baltimore Elementary School, which is part of the Indian River School District, are major employers located in the project study area. There are no right-of-way acquisitions to either of these properties. There is a permanent easement on the Food Lion property and a temporary construction easement on the Lord Baltimore Elementary School Property. Neither is expected to have any permanent adverse effect. The Lord Baltimore Elementary School is also an NRHP-eligible property. Additional discussion on this property is included in **Section III.5.a.** of this document.

The need for transportation improvements to SR 26, Atlantic Avenue, stems from persistent and fast-paced growth that contributes to existing and future traffic congestion on existing roadways and through local neighborhoods. The road is one of the main arteries for the Delaware Beach resort which caters to regional tourism. Improvements to SR 26 would have a positive economic effect on the tax base of Millville and Ocean View, as it would be more attractive to employers. The No-Build Alternative will cause the traffic congestion to increase within the project area to the point where employers may choose to locate outside of the project area for better accessibility and transportation of goods and services, which would negatively affect the local economy within the project area.

3. State of Delaware Land Preservation Programs

a. Livable Delaware

In 1999, the Cabinet Committee on State Planning Issues approved the first *Strategies for State Policies and Spending* document (a.k.a. *State Strategies*), which was intended to guide state investment decisions, to promote efficient development patterns, to protect agriculture and open space, to discourage sprawl, and to communicate with local governments on land use matters. On March 28, 2001, Governor Minner signed an Executive Order formalizing the *Livable Delaware* initiative as a means of enhancing implementation of the *State Strategies*. The *Livable Delaware* initiative is a strategy to direct growth to areas that are most prepared for it in terms of existing and planned infrastructure. A major goal of *Livable Delaware* is to curb sprawl and to continue to preserve agricultural lands and open space throughout the state. Development is to be contained in and around established communities.

In 2004, the *State Strategies* were updated, and a new set of geospatial map overlays was created. The map overlays were created by the Department of State Planning and Coordination in coordination with the University of Delaware's Institute for Pubic Administration. The methodology used for creating the overlays was a spatial data analysis that balanced state, county, and local policies that favor growth for different areas of the state with policies that argue against growth. The various overlays were combined in the *Strategies for State Policies and Spending Map* and presented in the *2004 State Strategies Update*.

The Livable Delaware Investment Level Areas 1, 2, 3 and Environmentally Sensitive Developing Areas are all present within the project area. A description of these investment levels is below.

Investment Level 1 Areas:

- are often municipalities, census designated places, etc.,
- may be an area with a density generally higher than in surrounding areas,
- may have a variety of transportation opportunities available,
- may have mixed building uses,
- may be characterized as having a sense of place, character and shared identity,
- may be considered as Transfer of Development Rights (TDR) receiving areas.

Investment Level 2 Areas:

- may be less developed areas within municipalities,
- may be rapidly growing areas in the counties that have or will have public water and wastewater services,
- may be considered as TDR receiving areas,
- may be generally adjacent to or near Investment Level 1 Areas.

Investment Level 3 Area:

- may be areas with leapfrog development which is not contiguous with existing infrastructure,
- may be high priority agricultural lands directly adjacent to natural areas,
- may be environmentally sensitive areas adjacent to areas which have some pro-development qualities,
- may be areas that are experiencing some development pressure,

- may be areas with existing but disconnected development,
- may be areas planned for growth in the long term, but not in the short term, and where development within the next five years may not represent proper and efficient phasing of development,
- may be considered as TDR sending or receiving areas.

Solid white areas on the map designate Investment Level 4 areas, where development is not currently preferred. In Investment Level 4 areas, the state will make investments that will help preserve a rural character, such as investments to promote open space and agriculture.

Solid gray areas are considered to be Out-of-Play lands, which are those that generally cannot be developed for reasons that might include:

- they are Federal-owned or State-owned protected parkland,
- their development rights have been purchased,
- State or local regulations prohibit development on them.

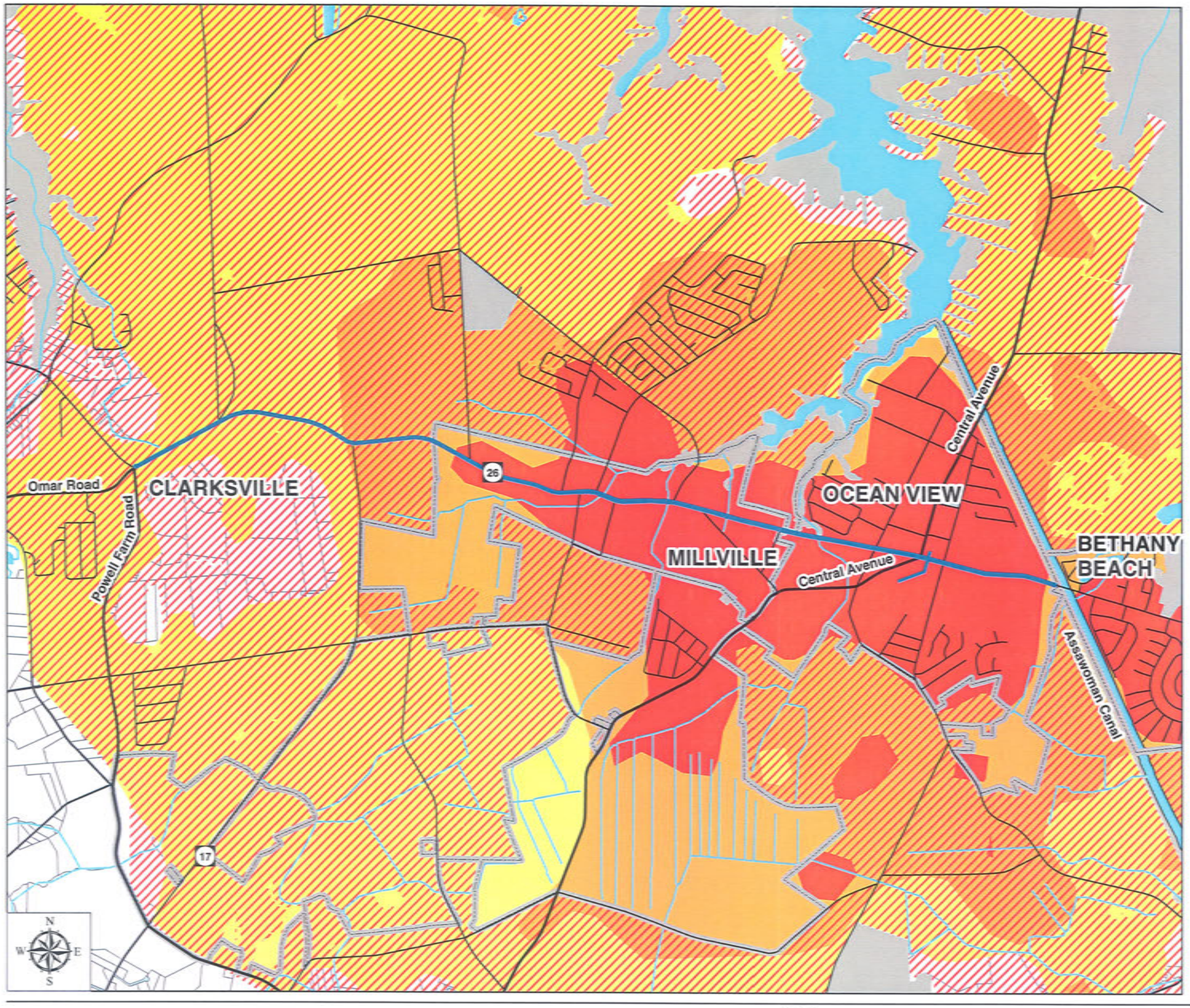
Overlaid on the solid colors are hatched areas that indicate:

1. Area of Dispute - an area under dispute and subject to legal action,
2. Area of Study - an area subject to further study,
3. Environmentally Sensitive Developing Area (Sussex County only) – This designation came out of the *2003 Sussex County Comprehensive Plan Update*, where it is described as a means of protecting the inland bays of the county. It is being accomplished by adopting an overlay ordinance, which gives special consideration to environmental issues for proposed developments within these areas. The intent is to promote quality development by clustering dwelling units and providing a high percentage of open space for buffers and habitat protection. Mixed-use and village style projects would be welcomed and innovative planning and design would be encouraged.

Figure III-3 shows that portion of the map pertinent to the project area. Areas shown on **Figure III-3** in red, orange, and yellow colors are designated as Investment Levels 1, 2, and 3, which are areas of the state that are most prepared for growth and where the state can make the most cost-effective infrastructure investments for schools, roads, public safety, etc. Lands are assigned to specific investment areas based on certain criteria, as briefly described below. Note that a parcel does not need to all of the criteria in order to fit into a particular category, but might only exhibit one or two qualifying characteristics.

(1) Livable Delaware Impacts

The proposed improvements to SR 26 are consistent with and complimentary to the strategies identified for the Livable Delaware Investment Level Areas 1, 2 and 3, which are present along the limits of the SR 26 Project. The improvements support existing developments in Investment Levels 1 and 2 through the promotion of safer accessibility to land adjacent to SR 26, through the promotion of more efficient traffic flow by the separation of turn movements into designated right turn and center left-turn lanes, and through the enhancement of multi-modal traffic flow by adding shoulders for bicycles and sidewalks for pedestrians. Since no additional travel lane capacity would be added, the improvements are not expected to induce sprawl development in areas where growth is not desired by the State, such as Investment Level 3 and areas identified as Environmentally Sensitive Developing Areas.



SR 26, Atlantic Avenue from Clarksville to Assawoman Canal

Legend

- Area of Dispute
- Area of Study
- Environmentally Sensitive Developing Area
- Out of Play Area
- Investment Level 1 Area
- Investment Level 2 Area
- Investment Level 3 Area
- Investment Level 4 Area
- Water
- SR 26 Project Area
- Municipal Boundaries

Source: Delaware Office of State Planning Coordination, 2002

Figure III-3
Livable Delaware:
State Strategies for Policies & Spending

2,000 1,000 0 2,000 Feet

1 inch equals 2,000 feet

DelDOT

b. Agricultural Preservation

Two State programs exist to protect agricultural lands in Delaware. The State's Department of Agriculture developed the Land Evaluation and Site Assessment (LESA) system to evaluate a site's soils for their agricultural value and to assess the site's long-term agricultural viability. The site assessment factors are based on local considerations with a separate set of factors developed for each county.

The Delaware Department of Agriculture has also implemented the Delaware Agricultural Lands Preservation Program. This program was created to stem the loss of valuable farmland by providing landowners with an incentive to maintain their land in agricultural use rather than redeveloping to residential or other more intensive land uses. As stated in the program's legislative intent, the program offers "economic incentives and benefits to agribusinesses, purchases development rights from landowners, encourages development in areas where adequate infrastructures exist, and promotes the agriculture industry and the concept of preserving viable land for the future."

The Delaware Agricultural Lands Preservation Act was enacted in 1991 with the goal to protect land best suited for agricultural purposes by encouraging development in areas with existing infrastructure. Participation in the program is voluntary; landowners join the program by creating an Agricultural Preservation District (APD). An APD contains at least 200 contiguous acres that are devoted to agricultural and related uses. Any lands containing less than 200 useable and contiguous acres within three miles of an established APD can be enrolled in the program as a District Expansion.

Landowners who place their lands into APDs agree to not develop their lands for as least ten years, devoting the land only to farming uses. In return, the owners receive tax benefits, right-to-farm protection and an opportunity to sell their preservation rights to the state that keeps the land free from development permanently through a process known as Purchase of Development Rights (PDR).

None of the agricultural land in the proposed project area is protected under either of the agricultural preservation programs.

(1) Agricultural Preservation Impacts

There are no agricultural preservation impacts that would result from implementing the proposed improvements due to the fact that none of the agricultural land in the proposed project area is protected under agricultural preservation programs.

4. Land Use in the Project Area

a. Current Land Use

There are three dominant current land uses present along the corridor: residential, agricultural and commercial (see **Figure III-4**). Historically, the area was predominantly a mix of agriculture and residential, both of which remain prevalent in the project area. Recently the project area has seen a large growth in commercial land use, with approximately 50 commercial properties present along SR 26. The density of these properties increases as one travels east along the roadway. Other land uses present within the project area include institutional (churches, cemeteries and a school), croplands, and woodlands.

In August 2005, the Ocean View Planning and Zoning Commission passed an ordinance to reclassify 21 properties along SR 26 in the project area. These properties, which will be reclassified from R-1 Residential to GB General Business, extend from east of West Avenue to west of Millville. The reclassification to commercial, which is expected to take eighteen months to adopt, will conform to the Comprehensive Land Use Plan designed for the Ocean View area. These 21 residences are not expected to be converted to commercial use immediately, however, as time goes on and properties change hands, commercial activities will eventually occupy all of these properties.

(1) Current Land Use Impacts

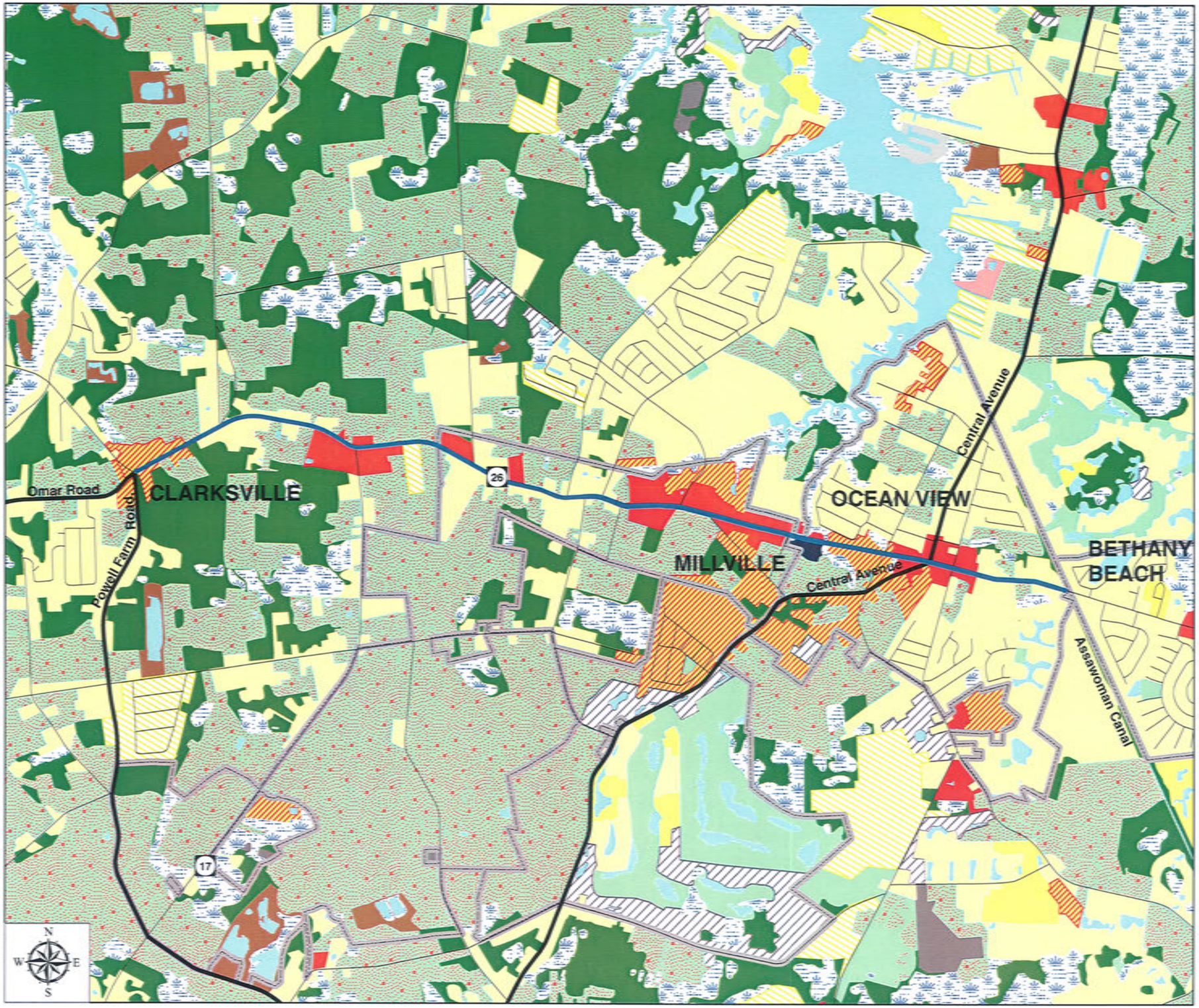
The proposed project should have little effect on the current land use in the project area with regard to changes in zoning. The project will primarily require strip right-of-way takes from residences and businesses. There are however, some residential and business properties that would be displaced because they could not be avoided. These impacts are discussed in detail under *Neighborhoods and Community Impacts* later in this section.

The right-of-way acquisition associated with the Combination Alternative ABC would result in the conversion of approximately 0.98 acre of active farmland. Alternative D would convert approximately 1.02 acres of active farmland, and Revised Alternative D would convert approximately 3.8 acres (see **Table II-5** in **Chapter II**).

The farmland losses would be spread among four farmed land parcels. None of the parcels would lose enough land to become impractical to farm, and losses should not be significant enough to noticeably reduce a farm operation's productivity.

There are forested areas scattered throughout the project area. Approximately 0.015 acre of forested land would be removed by the Combination Alternative ABC, and 0.29 acres of forested land would be removed under both Alternative D and Revised Alternative D. The forested land losses will occur along the existing roadway fringe only.

While the project is located within the Coastal Zone, it will not be associated with heavy industrial development. As such, the project will be consistent with permitted activities within the coastal zone.



SR 26, Atlantic Avenue from Clarksville to Assawoman Canal

Legend

- Single Family Residential
- Multi-Family Residential
- Mobile Home Parks
- Retail
- Other Commercial
- Industrial
- Transportation/Communication
- Utilities
- Urban/Built-up
- Institutional/Gov't
- Recreational
- Agricultural
- Forestland
- Clear Cut
- Water
- Wetlands
- Beach/River Bank/Sandy Areas
- Extraction
- Transition
- SR 26 Project Area
- Municipal Boundaries

Source: Delaware Office of State Planning Coordination, 2002

Figure III-4
Current Land Use

2,000 1,000 0 2,000
Feet

1 inch equals 2,000 feet

DelDOT

b. Planned Land Use

Planned land use within the project area will be primarily influenced by the recommendations of the 2002 Sussex County Comprehensive Plan and updates. A major emphasis of the Comprehensive Plan is to direct growth into the municipalities in accordance with their ability to accommodate growth and their desire to annex proposed new or existing development. The county divided areas into "Developing Areas" and "Secondary Developing Areas". The "Developing Areas" are the areas expected to be developed initially.

A small portion of the SR 26 Project falls within an "Environmentally Sensitive Developing Area" (see **Figure III-5**). The Environmentally Sensitive Developing Area comprises approximately 22,000 acres generally extending from Route 24 to Rehoboth Bay and Roads 384 and 369 to Little Assawoman Bay as shown on the Land Use plan. The area extends to the coast and surrounds the towns of Fenwick Island, South Bethany, Bethany Beach, Millville, Ocean View, Lewes, Rehoboth Beach and Henlopen Acres. The purpose of designating the Environmentally Sensitive Developing Area is to recognize that the Inland Bays of Sussex County are a major resource and must be protected from insensitive development of the surrounding area.

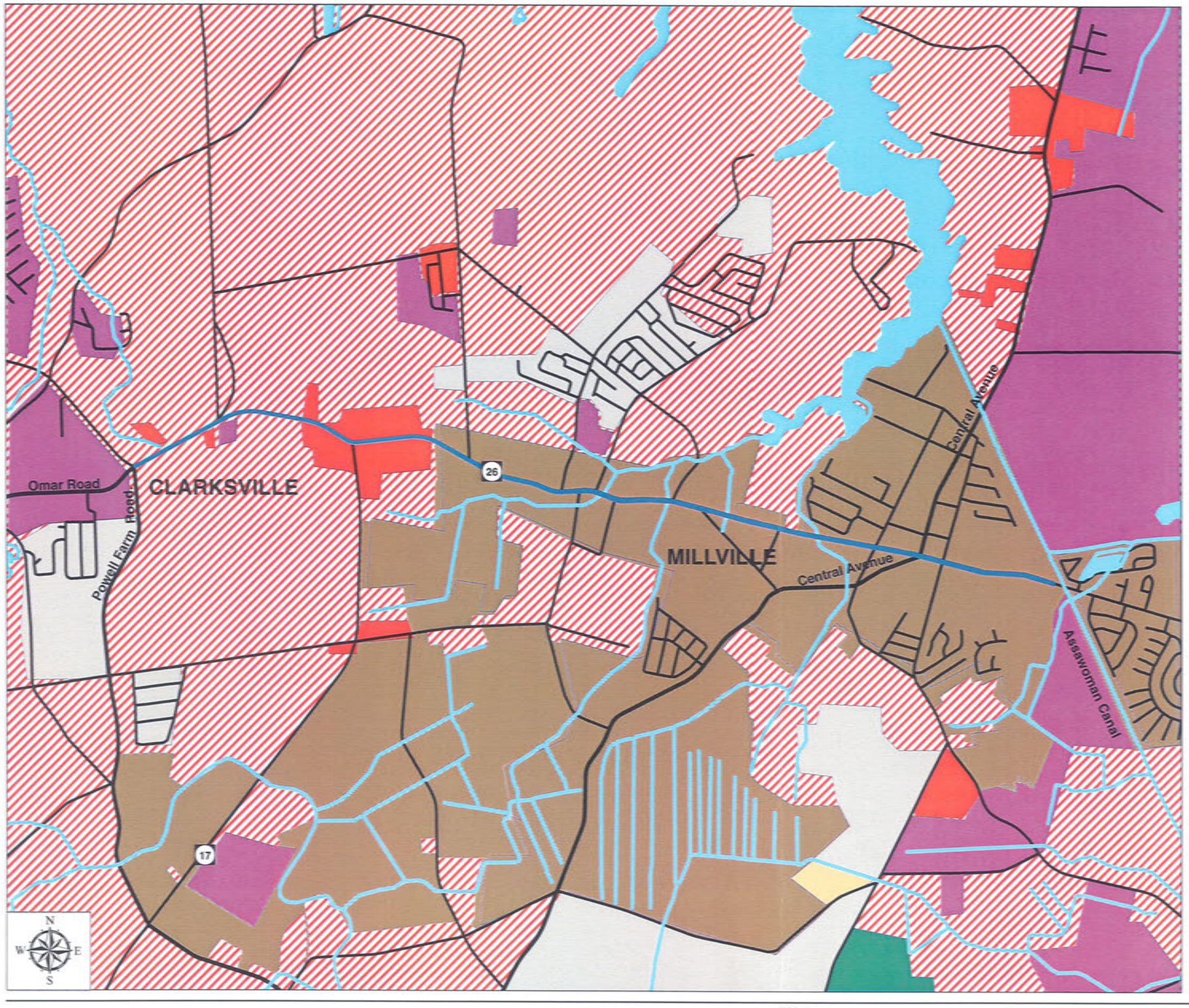
An Environmentally Sensitive Developing Area can be defined as a Developing District with special environmental design and protection requirements for new residential and commercial development. The Comprehensive Plan recognizes that transportation improvements will be required to accommodate future growth.

West of the SR 26/SR 17 intersection, the Comprehensive Plan calls for future land use to be primarily low and medium density residential. Future land use surrounding the SR 26/SR 17 intersection will be commercial, and the area bordering SR 26 east to the Assawoman Canal is designated as a "Municipality". The major emphasis of the Comprehensive Plan is to direct growth toward municipalities, in accordance with their ability to accommodate growth.

(1) Planned Land Use Impacts

The proposed project should have no adverse effect on the planned land use in the project area. According to the Sussex County Development Plan, the entire study area is within the County's district proposed for future development. Heavy development pressure within the project corridor exists, and the proposed build alternatives improvements would support this growth in a safer manner.

Since no additional travel lane capacity would be added, the improvements are not expected to induce sprawl development in areas where growth is not desired by the State, as previously discussed under the heading *Livable Delaware*.



SR 26, Atlantic Avenue from Clarksville to Assawoman Canal

Legend

- Water
- Environmental Sensitive Developing Area
- Commercial
- General
- Medium Density
- Municipality
- State Forests, Parks & Nature Areas
- Town Center
- SR 26 Project Area

Source: Sussex County Comprehensive Plan Update, 2003

Figure III-5
Planned Land Use

2,000 1,000 0 2,000
Feet

1 inch equals 2,000 feet

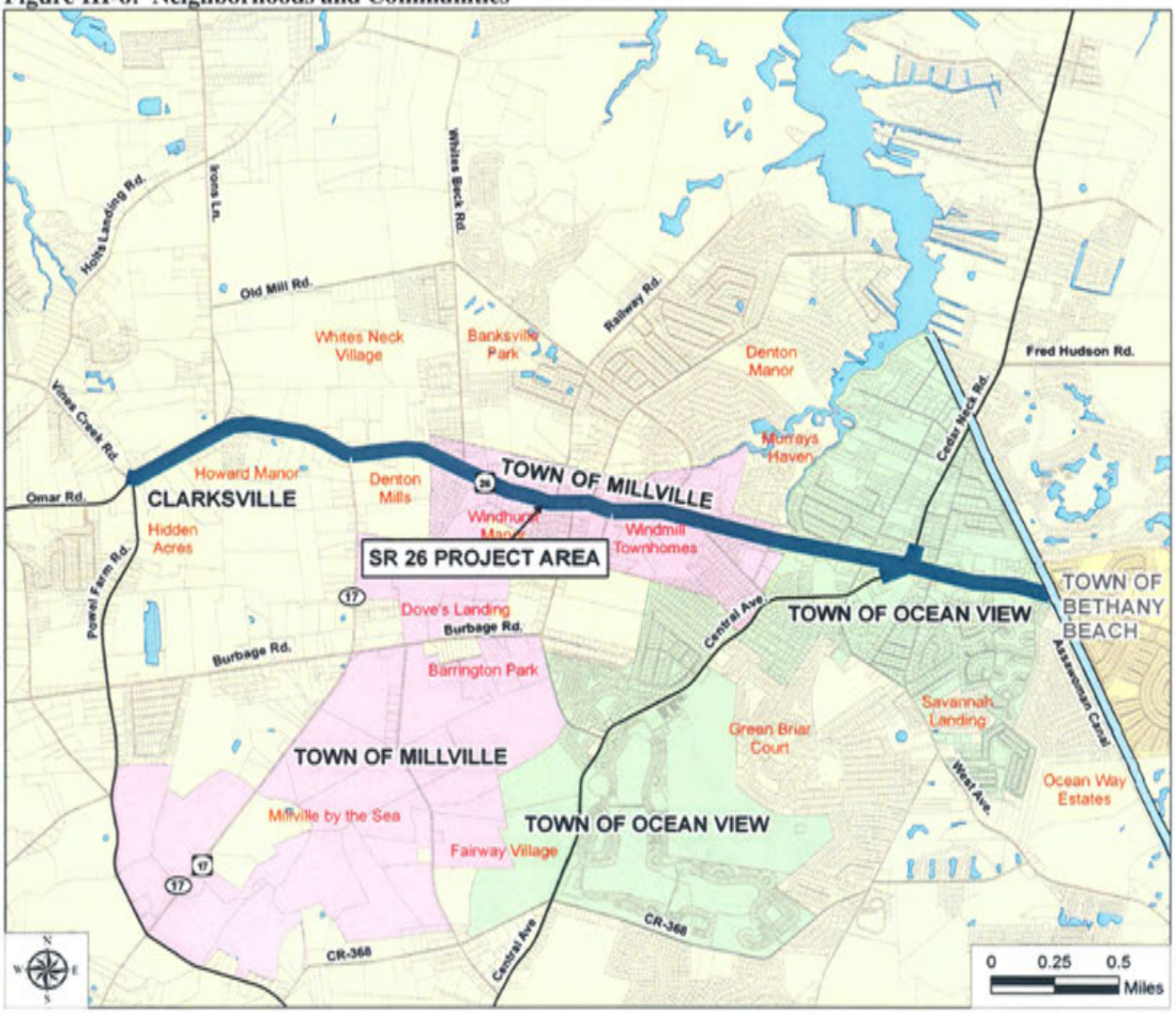
DelDOT

C. Social and Cultural Environment

1. Neighborhoods and Communities

There are numerous communities within the project area. The larger communities include Clarksville, Millville and Ocean View, while smaller communities include Hidden Acres, Howard Manor, Whites Neck Village, Denton Mills, Windhurst Manor, Windmill Townhomes, Banksville Park, Denton Manor, Murrays Haven, Green Briar Court, Savannah Landing, and Ocean Way Estates. Project area neighborhoods and communities are shown on **Figure III-6**.

Figure III-6: Neighborhoods and Communities



a. Impacts to Neighborhoods and Communities

Build alternatives were evaluated to determine their potential disruption to neighborhoods, communities and quality of life. Analyses of community disruptions included determining if an alternative would result in dividing or bypassing a neighborhood. In addition, preserving the quality and character of a neighborhood was examined by assessing the effect of each alternative on access and traffic within the communities. Based on these analyses, the build alternatives would generally improve quality of life in all communities and would not create disproportionate adverse effects on any community. Although some residences and businesses would be relocated, no communities would be divided or otherwise split by the project. The project would necessitate the acquisition of roadway frontage from four churches shown on **Figures II-4, II-10, II-14** and **II-15**. The impacts to these resources have been minimized throughout the design and should not impact any functions of these facilities.

The quality of life for the residents of the study area depends in part on safer traffic flow and travel patterns throughout the study area. As local roadway use increases, the No-Build Alternative would result in increased congestion and less safe travel conditions, and it would not serve to maintain or improve to the quality of life of the residents.

Once implemented the build alternatives would have a positive impact on the surrounding communities by improving traffic flow and safety within the project study area. There are few residential relocations and very little impact anticipated for local property owners.

The neighborhoods and communities adjacent to SR 26 will be affected temporarily during the construction of the roadway improvements. During construction, a portion of SR 26 will be closed to allow for two existing structures to be replaced. This road closure has been reviewed with both the Town of Millville and the Town of Ocean View, as well as with the emergency service personnel and the general public. This temporary roadway closure will allow for an overall time savings for the construction phase of the project. Additional construction impacts pertaining to noise is discussed under the *Noise Impacts* section of this document.

b. Personal Property Impacts

Residential and business relocations will be required under all of the build alternatives. The build alternatives will require right-of-way acquisition. The total right-of-way acquisition to implement improvements for Combination Alternative ABC would result in 9.33 acres of impacts to 177 properties, Alternative D would result in 12.04 acres of impacts to 196 properties and Revised Alternative D would result in 20.59 acres of impacts to 229 properties.

All required properties will be acquired in accordance with the requirements of the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970* and its amendments. Accordingly, persons displaced by federally funded projects are to be treated fairly, consistently, and equitably so that they will not suffer disproportionate impacts as a result of the project. In the event that comparable replacement housing is not available for relocated persons, or available replacement housing is beyond their financial means, replacement "housing as a last resort" will be utilized to accomplish re-housing. A Project Relocation Plan has been developed that addresses relocations.

(1) Impacts and Relocations to Local Residences

Combination Alternative ABC would require seven residential relocations, Alternative D would require thirteen residential relocations and Revised Alternative D would require five residential relocations, the least of all of the alternatives. Residential relocations for all alternatives are displayed on **Figures II-4, II-9, II-14** and **II-15** where they are color coded representative of which alternative(s) would require the need for relocation.

(2) Impacts and Relocations to Local Businesses

An assessment of impacts to study area businesses was considered in terms of effects to regional business activity, effects on existing businesses within the study area, access changes and traffic pattern changes, potential for new business, and effects on tax base and property values. A field inventory was conducted to support the aforementioned economic analyses.

The No-Build Alternative would do nothing to alleviate the traffic and safety concerns along SR 26. Traffic congestion would eventually hinder access to local businesses and thereby discourage economic development, as well as slow the provision of goods and services. The Combination Alternative ABC would require one business relocation, while Alternative D would require three and Revised Alternative D would require four business relocations. Business relocations for all alternatives are displayed on **Figures II-4, II-9, II-10, II-14** and **II-15** where they are color coded representative of which alternative(s) would require the need for relocation. All three Build Alternative will improve access existing businesses by providing safer driveway delineation through curbing or striping and or addition of right turn acceleration/deceleration lanes.

2. Community Facilities, Institutions and Services

A variety of community facilities and services support the residents of this project area. The following sections discuss the types and locations of these facilities and services.

In general, no schools, libraries, churches, cemeteries, publicly owned public parks, recreational facilities, or health care facilities would be adversely impacted by any of the build alternatives. The build alternatives would improve safety conditions, making access and travel to facilities and services safer and more efficient.

a. Educational Facilities (Schools and Libraries)

The project area is located within the Indian River School District, which serves the towns of Selbyville, Frankford, Dagsboro, Gumboro, Fenwick Island, Bethany Beach, Ocean View, Millsboro and Georgetown. The district consists of seven elementary schools, two middle schools, two high schools, two special schools, an arts magnet school and an outdoor education center, all serving over 7,700 students. Lord Baltimore Elementary School, in Ocean View; Selbyville Middle School, in Selbyville; and Indian River High School, in Frankford are the three main public schools serving the project area. There is one (1) local private school, the Lighthouse Christian School, which is located on Route 1 in Dagsboro.

There are many educational facilities located in Georgetown as well. The following is a list of those facilities:

- Sussex Academy of Arts and Sciences, Charter School, Grades 6-8
- Delmarva Christian High School, Grades 9-12
- The Jefferson School, Grades Pre-K-8
- Jesus is Lord Christian Academy, Grades Pre-K-12
- Delaware Technical and Community College, Jack F. Owens Campus
- University of Delaware, Georgetown
- Wilmington College, Georgetown
- Delaware State University, Georgetown

There are four public libraries nearby, but not within the project area. The closest is the South Coastal Public Library, in Bethany Beach. The other libraries include the Frankford Public Library, the Millsboro Public Library and the Selbyville Public Library.

(1) Impacts to Educational Facilities (Schools and Libraries)

There are no permanent right-of-way acquisitions to either of the school properties within the project area. There is a temporary construction easement to the Lord Baltimore School. It is not expected to have any permanent adverse effect. The Lord Baltimore Elementary School is also a NRHP-eligible property. Additional discussion on this property is included in **Section III.5.a**. of this document.

There are no impacts to libraries. There are no libraries located within the project area.

b. Churches and Cemeteries

There are five churches in the project area, including: Saint George's United Methodist Church, Union Wesley United Methodist Church, Ocean View Presbyterian Church, Ocean View Church of Christ, and Mariner's Bethel United Methodist Church (see **Figures II-4, II-10, II-14** and **II-15**). Of these five, Saint George's Church, Ocean View Presbyterian, and Mariner's Bethel United Methodist have adjacent cemeteries.

(1) Impacts to Churches and Cemeteries

The Build Alternatives would necessitate strip right-of-way acquisitions along the roadway frontage of four churches and two cemeteries. The impacts would not adversely impact any functions of these facilities.

c. Parklands and Recreational Facilities

There are no parks or recreational facilities located with the project area; however, the project area is served by several publicly owned public parks and other open public spaces. The closest is Holts Landing State Park, just north of the project area. Holts Landing covers approximately 203 acres and is used for fishing, crabbing, bird-watching, and other recreational activities. The John T. West Park is a small park owned by the Town of Ocean View and consists of a playground and picnic area. Both parks are outside of the project area.

(1) Impacts to Parklands and Recreational Facilities

No parklands or recreation facilities are impacted by any of the alternatives. These areas are located outside of the project area.

d. Emergency Services and Law Enforcement

The Sussex County Emergency Medical Service, headquartered in Georgetown, operates six stations throughout the county. The closest station to the project area is Medic 105 in Clarksville. This station serves Bethany Beach, Fenwick Island, Millville, Ocean View, Selbyville, Frankford, Dagsboro and Roxana. The Millville Volunteer Fire Department (see **Figure II-11**), Station 84, also provides emergency services within the project area. The Millville Volunteer Fire Department is located along eastbound SR 26 west of Old Mill Road. The Roxana and Bethany Beach Volunteer Fire Companies are located close to the project area.

The Ocean View Police Department, located on Central Avenue outside of the project area, has jurisdiction over 11.5 miles of roadway within the Town of Ocean View. The Sussex County Sheriff, based in Georgetown, patrols the project area as well. There are three Delaware State Police Troops in Sussex County: Troop 4 in Georgetown, Troop 5 in Bridgeville, and Troop 6 in Lewes.

(1) Impacts to Emergency Services and Law Enforcement

None of the build alternatives would have an adverse impact on any emergency service facilities. The build alternatives are designed to alleviate congestion and address safety by reducing accident potential. Accessibility for emergency services will improve with any of the build alternatives, resulting in improved response times within the study area. Revised Alternative D would provide the most improvement for emergency access, due to the continuous shared center left turn lane.

Emergency service providers will experience some delays during the construction of the project. Additional public outreach and coordination has been included in the preliminary design stage of this project. Continued communications and coordination will occur during the construction phase.

e. Health Care Facilities

The closest full service health care facility to the project area is the Beebe Medical Center, in Bethany Beach, approximately three miles from Millville. Emergency medical services are available 24 hours a day at this facility. Other nearby health care facilities include Nanticoke Health Services in Millsboro located approximately twelve miles from Millville, Nanticoke Memorial Hospital in Seaford located approximately thirty-four miles from Millville and the Bayhealth Medical Center at Milford Memorial Hospital located in Milford approximately forty miles from Millville. The Millville Emergency Room, a subsidiary of the Beebe Medical Center, is located on eastbound SR 26 in Millville approximately 200 feet west of Dukes Drive (see **Figure II-10**) adjacent to the Wolf House historic property. This facility provides emergency services twenty-four hours a day and is open from Memorial Day through Labor Day.

(1) Impacts to Health Care Facilities

The Millville Emergency Room, a subsidiary of the Beebe Medical Center, is located on SR 26 in Millville. The facility would benefit by congestion relief, which would improve emergency response times. There are no adverse impacts associated with any of the Build Alternatives.

f. Water and Sewer Service

Sussex County is responsible for the operation and maintenance of four wastewater treatment facilities, including the South Coastal Regional Wastewater Treatment Facility, which is located near the project area in Ocean View. Within the project area, sewer service is currently offered along SR 26 from the Assawoman Canal to Cedar Avenue. Sewer lines from Old Mill Road to just east of SR 17 are currently under construction (2008). There is the potential for the sewer system to be extended to the project limits, but Sussex County has no definitive plans or funding for this extension.

The Town of Ocean View constructed a water line from Assawoman Canal to just west of Woodland Avenue during 2007. Tidewater Utilities, Incorporated, a private water utility company, provides sewer service to customers in a portion of the project area.

(1) Impacts to Water and Sewer Service

There are no adverse impacts to water and sewer services. There will be temporary impacts to both the existing sewer and water lines during the construction of the project. DelDOT has coordinated with both the public and private utility companies during the design of Revised Alternative D. Any facility impacted by the project will be relocated either in advance of or during the construction of the project.

g. Electric and Communication Utilities

There are existing electric and communications utilities throughout the project limits. The majority of these facilities are located on poles along both the north and south sides of SR 26. Two private utility companies, Delmarva Power and Verizon Communications, own these poles. Additional communications companies, such as Mediacom and Cavalier Communications, also occupy these poles. The majority of these utility poles are located directly adjacent to the pavement along SR 26. The poles are located within the roadways' clear zone and therefore are a hazard to the traveling public.

In addition to the aerial utility lines, Verizon Communications owns a large duct bank within the Town of Ocean View. This duct bank contains all of Verizon Communication cables for customers in this area of the state.

(1) Impacts to Electric and Communication Utilities

There are no permanent impacts to these utilities due to the Build Alternatives. Rather, all of the utility poles within the project limits will be relocated to beyond the clear zone. In the open drainage section, the poles will be located on the back slope of the proposed ditches. In the closed drainage section, the poles will be located within the grass strip behind the proposed curbline. The underground ductbank owned by Verizon Communications will also be relocated during the construction phase of this project.

h. Mass Transit

Bus transit in Delaware is operated by the Delaware Transit Commission (DTC), operating as DART First State. DART First State provides a variety of transportation services throughout Sussex County. The fixed-route system serves most areas of the county with a transit hub centrally located in Georgetown.

DART First State inter-county bus routes provide connections to services in Kent and New Castle Counties. Resort bus service along SR 1 is provided by DART First State between Memorial Day and Labor Day in Lewes, Dewey Beach and Rehoboth Beach, Bethany Beach and South Bethany. It also connects with transit to Ocean City, Maryland. Specialized para-transit service supplements the fixed-route service for certified disabled riders. Fixed-route buses in Sussex County are wheelchair accessible and are equipped with bicycle racks.

In many areas of the county, the "Dial-A-Ride" service is available for riders who do not live within walking distance of a bus stop. By calling one day in advance, Dial-A-Ride can connect riders with the fixed-route bus system.

DART First State offers free travel training and access to a variety of transit programs, which have been designed to assist residents with their transportation needs. "Job Works!" provides free transit to and from job interviews; "Get A Job – Get A Ride" provides three weeks of free transportation to newly hired employees; and the Senior Citizens Affordable Taxi program provides a 50 percent discount on taxi fares for seniors and disabled riders. In addition, Rideshare Delaware provides free carpool assistance for commuters.

Delaware's network of public and private airports can readily accommodate commercial and corporate aircraft. Serving southern Delaware, the Baltimore-Washington and Philadelphia international airports are less than two hours away from most Sussex County locations.

In Sussex County, airports can be found in Laurel and Georgetown at approximately 27 and 21 miles from Millville, respectively. The Laurel airport has a 3,175-foot long turf runway. The Sussex County Airport in Georgetown is adjacent to the Sussex County Industrial Park and has a 5,500-foot long paved runway.

The Cape May-Lewes Ferry operates year-round to connect Lewes with Cape May, New Jersey. The average capacity of the ferries is about 1000 passengers and 100 vehicles. Ferries are handicapped accessible, and pets are allowed in designated exterior areas.

(1) Impacts to Mass Transit

The project area is not currently served by mass transit, except for the "Dial-A-Ride" service. It is not anticipated there would be any adverse impacts. The improvements could allow better transit service if additional transit to this area is added in the future.

3. Historic and Archeological Resources

a. National Register of Historic Places-Listed/Eligible Resources

Commonly referred to as the *Section 106 process,* Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470) (NHPA) requires projects which include federal participation to take into account the effects on any properties listed, or eligible for listing, on the NRHP. In addition, Section 106 requires that the Advisory Council on Historic Preservation (ACHP) must be provided with an opportunity to comment on the project. Historic properties may include districts, sites, buildings, structures, or objects.

In fulfilling the requirements of Section 106, agencies are required to 1) identify and evaluate any historic properties that might be impacted by the undertaking; 2) determine the effect of the undertaking on these properties; and 3) develop alternatives and measures to avoid or mitigate adverse effects. Please refer to **Appendix A**, the Section 106 Coordination for detailed meeting summaries.

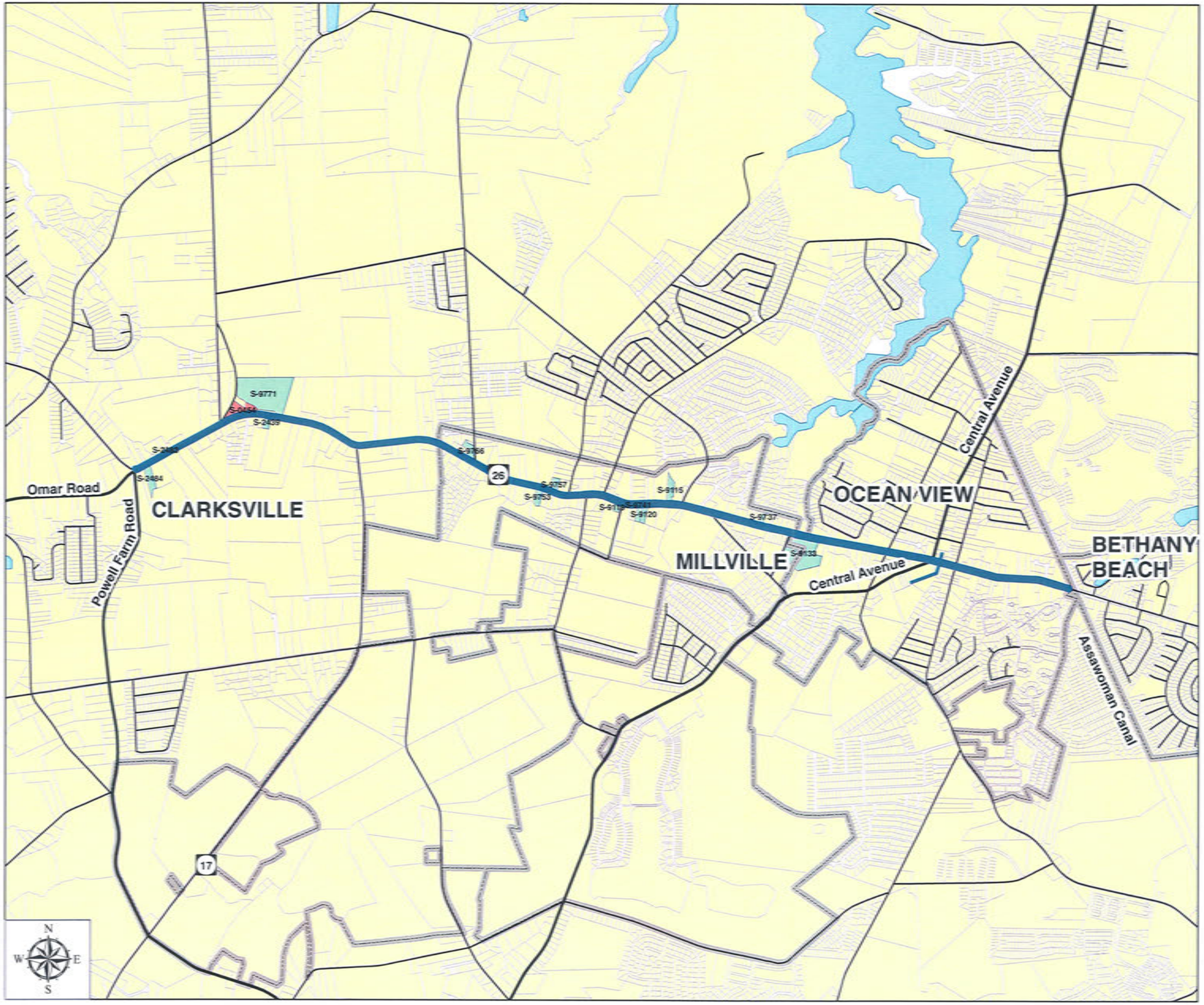
DelDOT conducted an initial Cultural Resources Survey for the project Area of Potential Effect (APE) in 2002. Field surveys in Spring 2002 resulted in the identification of eighty-two additional resources meeting the fifty year old or older requirement for historic evaluation within the APE. The NRHP Criteria for Evaluation were then applied to these eighty-two individual resources, and three potential linear village districts for Clarksville, Millville, and Ocean View. As a result of this evaluation, fourteen resources were recommended eligible for the National Register of Historic Places. This recommendation was submitted to the DESHPO and received their concurrence. These fourteen resources are listed in **Table III-5** and their locations are shown on **Figure III-7**.

Of the fourteen resources there is one NRHP-listed and thirteen are NRHP-eligible. They are distributed along both sides of SR 26 (seven sites are located on the north side and seven sites are located on the south side). Typically, it is the goal to widen SR 26 about the existing centerline, thus equally distributing the right-of-way impacts between both sides of the roadway. When sensitive resources (such as historic sites) are encountered, efforts are made to avoid and/or minimize impacts by shifting the widening to one side of the road or the other.

Table III-5: SR 26 National Register of Historic Places Listed/Eligible Resources

CRS#	Resource Name	Resource Address	Tax Parcel (Size)
S-2483	Edmund J. and Sadie E. Evans House	North side of Route 26, east of Omar and Powell Farm Roads	1-34-11-158.02 (.273 ac)
S-2484	M. C. Webb House	South side of 26, east of Omar and Powell Farm Roads	1-34-11-192.00 (2.02 ac)
S-454	Spring Banke (listed 1976)	Northeast corner of Route 26 and Irons Lane	1-34-11-172.00 (3.13 ac)
S-9771	The Campbell Farm	North side of Route 26, east of Irons Lane	1-34-11-171.00 (13.8 ac)
S-2439	Mark Hiestand House	South side of Route 26, east of Diane Road	1-34-11-182.00 (0.797 ac)
S-9766	Russell Banks Property	Northwest corner of Route 26 and Whites Neck Road	1-34-12-14.00 (0.275 ac)
S-9757	Howard Hickman Property	509 Atlantic Ave.	1-34-12-50.01 (0.968 ac)
S-9753	Paul and Margaret McGinn Property (small barn only)	518 Atlantic Ave. (Currently "For Sale")	1-34-12-354.00 (1.13 ac)
S-9115	Ralph H. and Geraldine B. West House	307 Atlantic Ave.	1-34-12-164.00 (2.095 ac)
S-9119	Grace D. Wolf House	338 Atlantic Ave.	1-34-12-400.00 (5.0 ac)
S-9741	Blaine T. Phillips Property	324 Atlantic Ave.	1-34-12-404.00 (0.88 ac)
S-9120	Townsend Store and Dwelling	318 and 320 Atlantic Ave.	1-34-12-405.00 (0.79 ac)
S-9133 .001 and .002	Lord Baltimore Elementary School	120 Atlantic Ave.	1-34-12-424.00 (10.15 ac)
S-9737	Mark and Paul Brown Property	404 Atlantic Ave.	1-34-12-287.00 (0.615 ac)

SR 26, Atlantic Avenue from Clarksville to Assawoman Canal



Legend

- National Register Listed Property
- National Register Eligible Property
- Water
- SR 26 Project Area
- Municipal Boundaries

Figure III-7
Historic Properties

2,000 1,000 0 2,000 Feet

1 inch equals 2,000 feet

DelDOT

(1) Impacts to National Register of Historic Places-Listed/Eligible Resources

Each of the proposed project build alternatives would require right-of-way from some National Register-eligible properties. Of the fourteen (14) NRHP-Listed/Eligible Resources identified within the project limits the Combination Alternative ABC would impact two (2) historic properties for a total of 0.10 acres, Alternative D would impact six (6) historic properties for a total of 0.20 acres of impacts and Revised Alternative D would impact five (5) historic properties for a total of 0.17 acres of impacts. The impacts were assessed and subsequently resulted in a Finding of No Adverse Effect on any of the historic properties as detailed in Section IV of this document the *Section 4(f) Evaluation* and **Appendix B**, the *Finding of No Adverse Effect,* prepared pursuant of Section 106 of the NHPA and the implementing regulations contained in 36 CFR Part 800 of the NHPA. This finding was reviewed and approved by the DESHPO.

Table III-6: Permanent Right-of-Way Impacts to NRHP–Listed/Eligible Properties for Each Alternative

Description of Resource			Impacts in Square Feet (sf)		
CRS#	**Resource Name**	**Tax Parcel**	**Combination Alternative ABC**	**Alternative D**	**Revised Alternative D**
S-2483	Edmund J. and Sadie E. Evans House	1-34-11-158.02 (.273 ac)	0	0	0
S-2484	M. C. Webb House	1-34-11-192.00 (2.02 ac)	0	914 sf	0
S-454	Spring Banke (listed 1976)	1-34-11-172.00 (3.13 ac)	0	0	0
S-9771	The Campbell Farm	1-34-11-171.00 (13.8 ac)	0	991 sf	991 sf
S-2439	Mark Hiestand House	1-34-11-182.00 (0.797 ac)	3,484 sf	3,354 sf	2,834 sf
S-9766	Russell Banks Property	1-34-12-14.00 (0.275 ac)	0	0	0
S-9757	Howard Hickman Property	1-34-12-50.01 (0.968 ac)	0	1,581 sf ac	1,581 sf ac
S-9753	Paul and Margaret McGinn Property (small barn only)	1-34-12-354.00 (1.13 ac)	0	1,487 sf	1,487 sf
S-9115	Ralph H. and Geraldine B. West House	1-34-12-164.00 (2.095 ac)	871 sf	579 sf	579 sf
S-9119	Grace D. Wolf House	1-34-12-400.00 (5.0 ac)	0	0	0
S-9741	Blaine T. Phillips Property	1-34-12-404.00 (0.88 ac)	0	0	0
S-9120	Townsend Store and Dwelling	1-34-12-405.00 (0.79 ac)	0	0	0
S-9133 .001 and .002	Lord Baltimore Elementary School	1-34-12-424.00 (10.15 ac)	0	0	0
S-9737	Mark and Paul Brown Property	1-34-12-287.00 (0.615 ac)	0	0	0
		Total (in Acres):	**0.10**	**0.20**	**0.17**

b. Archeological Resources

A Phase IA Archeological Assessment Survey was conducted for the SR 26 Mainline Improvements Project. The purpose of the survey was to ascertain the archeological sensitivity of the project APE. The Phase IA Survey included documentary research, generation of an inventory of known/previously documented archeological sites, a field inspection of the project APE, relevant data analysis, and report preparation. Results of the background research indicate that the project APE has the likelihood for containing Native American and historic archeological sites; however, much of the project APE has been subjected to extensive past subsurface disturbance associated with roadway construction/maintenance and twentieth century commercial/residential development.

Using information obtained from documentary research and field inspection, several archeological target areas have been identified within the project APE. These areas have been concluded to have potential for containing archeological deposits and have been recommended for subsurface testing. Basic testing strategies for the target areas were also developed as part of the survey.

The abstract from the completed Phase I Archaeology Report is as follows: A complete Phase I archeological survey including background research, geomorphology, and field investigations has been completed for the Delaware Department of Transportation's (DelDOT) proposed State Route 26 (SR 26) (Clarksville to Assawoman Canal) Improvements project located in the Baltimore Hundred, Sussex County, Delaware. The project APE is located on the Frankford and Bethany Beach, Delaware 7.5 minute United States Geological Survey (USGS) topographic quadrangles, in the Coastal Bay physiographic province of Delaware's Lower Coastal plain. The SR 26 Improvements Project APE for archeology consists of approximately 11.83 ha (29.22 ac) of roadway corridor and stormwater management areas. Background and geomorphological research identified 24 test areas within the project APE; however, by the time of the survey, two were no longer testable.

Three of the 22 test areas are located adjacent to existing historic cemeteries and were specially tested (stripped of the topsoil to expose the surface of the subsoil) for the presence of unmarked graves. The remaining test areas were surveyed via pedestrian reconnaissance and 93 hand excavated shovel test pits (STPs). The survey of the 22 test areas resulted in the identification of a historic period isolated artifact in Test Area 1, a few historic period artifacts in Test Area 3, and a historic period archeological site in Test Area 21.

The single non-diagnostic whiteware sherd found in Test Area 1 is not indicative of an archeological site and most likely represents roadside litter. It is not eligible for listing in the NRHP. The seven pieces of glass found in Test Area 3 were found within the NRHP boundaries of the Spring Banke property (S-454); however, based on the functionally and temporally non-diagnostic nature of the artifacts, they are not able to yield new or insightful information about the use of the NRHP-listed property.

The Parson's Store site (7S-K-143) was identified during mechanical stripping of Test Area 21. The middle to late twentieth century store remains are limited to the basal courses of concrete block or brick foundations, minimally displaced brick piers, and a cellar depression filled with 1950's and 1960's destruction debris. The site has been heavily impacted by the razing of the building *ca.* 1971, and by this survey, leaving no additional areas for excavation within the

project APE. While the store was in operation during part of the Urbanization and Early Suburbanization Period (1880-1940), the site no longer contains extant above ground structures and the below ground remains do not provide any information that was not readily available on historic documents or by speaking with family descendants. The Parson's Store site (7S-K-143) is recommended as not eligible for listing in the NRHP, and no further archeological investigations are recommended.

No previously recorded pre-contact or historic period archeological sites listed or eligible for listing in the NRHP are present in the SR 26 Improvements Project APE, and specialized testing for unmarked graves near three historic cemeteries proved negative. The Phase I survey did identify two historic period artifact isolates and one (1) historic period archeological site, none of which are eligible for listing in the NRHP due to their inability to contribute significant information about the land-use histories of the properties on which they were recovered.

(1) Impacts to Archeological Resources

None of the build alternatives would impact any known archeological resources.

D. Natural Environment

1. Topography, Geology and Soils

a. Topography

Information on local topography was obtained from the Bethany Beach and Frankford United States Geological Survey (USGS) 7.5 minute Quadrangle Maps. The entire project area is located in the Atlantic Coastal Plain Physiographic zone of Delaware's Lower Coastal Plain. The topography of the project area is level relatively flat.

(1) Impacts to Topography

Impacts from the build alternatives would vary depending upon the amount of cut and fill required to complete the project. The No-Build Alternative would not have an impact on the topography of the study area. Overall, changes in the topography can be expected to be minor and small scale; none of the alternatives under study are anticipated to result in significant changes to topography.

b. Geology

The SR 26 project area is located within the Atlantic Coastal Plain Province. The Atlantic Coastal Plain Province is a southeastwardly thickening sequence of unconsolidated and semi-consolidated sediments of fluvial or marine origin. The project area specifically overlies the Omar Formation, which dates to the Pleistocene epoch and consists of interbedded gray to dark gray quartz sand and silts.

(1) Impacts to Geology

It is anticipated that no significant excavation will be required to construct any of the build alternatives; therefore no effects to the underlying geology are expected.

c. Soils

Information on soils was obtained from the *Sussex County Soil Survey* (*Natural Resources Conservation Service*, 1974). Due to the large amount of local and regional landscape disturbance since the publication date, much of the soils data may no longer be accurate.

(1) General Characteristics

There are two soil associations and nine soil types (see **Table III-7**) located within the project area according to the 1974 soil survey. The Evesboro-Rumford Association encompasses nearly the entire project area; this association is characterized by excessively drained and somewhat excessively drained soils that have a rapidly permeable subsoil of sand to sandy loam. A small portion of the project area, located just west of the Assawoman Canal, is comprised of the Pocomoke-Fallsington-Evesboro Association. This association is characterized by very poorly drained and poorly drained soils that have a moderately permeable subsoil of sandy loam or sandy clay loam, and excessively drained soils that have a rapidly permeable sandy subsoil.

Table III-7: Soil Map Units and Properties

Map Symbol	Soil Mapping Unit	HEL[1]	PF[2]	SI[3]	Hydric
EvA	Evesboro loamy sand, loamy substratum, 0-2% slopes	No	No	Yes	No
EvB	Evesboro loamy sand, loamy substratum, 2-5% slopes	No	No	Yes	No
Fa	Fallsington sandy loam	No	Yes[4]	No	Yes
Jo	Johnston loam	No	No	No	Yes
Kl	Klej loamy sand	No	No	Yes	No
Pm	Pocomoke sandy loam	No	Yes[4]	No	Yes
RuA	Rumford loamy sand, 0-2% slopes	No	No	Yes	No
Sw	Swamp	No	No	No	Yes
Wo	Woodstown sandy loam	No	Yes	No	No

Notes: [1]Highly Erodible Land
[2]Prime Farmland
[3]Statewide Importance
[4]Prime Farmland if drained

(2) Highly Erodible Land

None of the nine soil types mapped for the project area are classified as highly erodible land. Highly erodible land is susceptible to the erosive forces of wind and water. If precautions are not taken during construction, these soils can be washed into nearby streams resulting in stream channel destabilization, increased flooding, and loss of aquatic habitat. Implementing sediment and erosion control measures such as vegetative stabilization, silt fences, and sediment traps can minimize soil erosion impacts.

(a) Impacts to Highly Erodible Land

None of the nine soil types mapped for the project area are classified as highly erodible land therefore there are no impacts.

(3) Prime Farmland Soils and Soils of Statewide Importance

The Farmland Protection Policy Act (FPPA), as amended in 1984 and 1994, is administered in accordance with state and local government policies, and private programs to protect farmland, in part through the protection of prime farmland soils.

Prime farmland soils comprise the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops and are available for these uses. Soils of statewide importance include land, in addition to prime farmlands, that is of statewide importance for the production of food, feed, fiber, forage and oilseed crops. Generally, additional farmlands of statewide importance include those that are nearly prime farmland and that produce high yields of cash crops or live stock feed when treated and managed according to conventional farming methods. Prime farmland soils and soils of statewide importance within the project area are listed in the soil map units and properties table above.

(a) Impacts to Prime Farmland Soils and Soils of Statewide Importance

There are no impacts to soils of statewide importance under any of the alternatives considered. Combination Alternative ABC would impact 0.98 acres of Prime Farmland, Alternative D would impact 1.02 acres of Prime Farmland, and Revised Alternative D would impact 3.8 acres of Prime Farmland. Information on prime farmland and soils of statewide importance was obtained from the Sussex County Soil Survey (Soil Conservation Service – 1974).

2. Wetlands and Open Waters: USACE and DNREC Jurisdictional Resources

The United States Army Corps of Engineers (USACE) has jurisdiction over waters of the United States including their adjacent wetlands. This includes tidal and non-tidal waters and wetland resources. DNREC has jurisdiction over tidal and non-tidal streams and tidal wetlands. The Wetlands and Waters investigation was conducted in June 2004, in accordance with the procedures outlined in the 1987 USACE Wetland Delineation Manual.

An inventory of existing conditions was conducted to determine potential waters/wetland areas as well as previously identified waters/wetlands within the project area. The desktop review involved the examination of existing literature and mapping, including two U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles (Frankford and Bethany Beach), National Wetlands Inventory (NWI) mapping, and the Soil Survey of Sussex County, Delaware (USDA May 1974).

The USACE jurisdictional Waters (including wetlands) as identified in the draft Environmental Assessment were determined by the USACE at an August 2004 field meeting utilizing an USACE internal guidance memorandum entitled: U.S. Army Corps of Engineers Philadelphia District's Technical Support Document Concerning Clean water Act Jurisdiction Over Streams and Ditches, dated July 3, 2003. The Technical Support Document (TSD) was subsequently invalidated by Court Order on July 26, 2006. On June 5, 2007, the USACE and the EPA issued Joint Guidance interpreting the US Supreme Court's 2006 Clean Water Act (CWA) Rapanos decision (Rapanos ET UX., ET AL. v. United States, 547 U.S. 04-1034 and 04-1384). The relevant guidance document is entitled: Clean Water Act Jurisdication following the US Supreme Court's Decision in Rapanos v. United States & Carabell v. United States.

Regarding CWA jurisdiction over drainage ditches, the guidance states:

> *"The agencies generally will not assert jurisdiction over the following features:*
> *-Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow);*
> *-Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water."*

Due to the remand of the TSD and implementation of the Rapanos Guidance, the USACE jurisdictional resources were re-evaluated by the USACE at a subsequent field meeting on July 16, 2008. The jurisdictional status of the streams and wetlands reported below are based on that July 16, 2008 agency field meeting which was attended by representatives of the USACE and DNREC.

A description of each wetland and water as well as the current USACE and DNREC jurisdictional status is provided below in the following sections. Their locations are displayed on **Figure III-8**.

SR 26, Atlantic Avenue from Clarksville to Assawoman Canal

Legend

- Water Bodies
- Delineated Wetlands
- Delineated Waters
- SR 26 Project Area
- Municipal Boundaries

Figure III-8
Delineated Wetlands and Waters

2,000 1,000 0 2,000
Feet

1 inch equals 2,000 feet

DelDOT

a. Wetlands

There are seven wetlands in the project area. They consist of three palustrine forested (PFO) and four palustrine emergent (PEM) wetlands. With the exception of W1, which is considered isolated, all of the wetland areas (W2- W7) are considered jurisdictional resources of the USACE. Wetland areas W3 and W4 are tidally influenced. As per the DNREC tidal wetland mapping (map DNR-042) the DNREC jurisdictional boundaries of both are located a further distance from the roadway than the USACE field delineated boundaries. Because DNREC wetland jurisdiction is determined solely by this mapping and not field conditions, only one of the tidal wetlands located within the project study limits is considered to be DNREC jurisdictional (W4).

A brief description of the wetlands within the project area is provided below. The location and extent of these areas are shown on **Figure III-8**. The SR 26 Mainline wetland boundaries were verified by the U.S. Army Corps of Engineers (USACE) through field meetings in August 2004 and April 2006.

Wetland 1 (W1) is a non-tidal PEM wetland located adjacent to EB SR 26 between Omar Road and Irons Lane. A pipe connects W1 to WA3, an agricultural drainage ditch, across SR 26. W1 is adjacent to a wooded area, but consists of grasses with no shrubs or trees. W1 is a maintained roadside ditch that appears to pond for long periods of time before outfalling to agricultural drainage ditch WA3, directly across SR 26. WA3 is not USACE or DNREC jurisdictional; therefore W1 is non-jurisdictional as it is not hydrologically connected to jurisdictional waters i.e., isolated.

A number of herbaceous species dominate W1: *Rhododendron sp.* (FAC), *Panicum virgatum* (FAC), *Cynosurus cristatus* (UPL), *Agropyron repens* (FACU-), *Carex leporina* (FAC), *Juncus effusus* (FACW+). Soils were saturated within the upper 12 inches of the test pit. Mottling was observed within the upper 12 inches of the soil as well. The top layer (O horizon) at 0-1 inches had a color of 10YR 3/2. Between 1-4 inches (A horizon), the soil had a color of 10YR 4/2. At 4 inches the B horizon had a color of 2.5Y 5/2 with mottling of 7.5YR 4/6 at 5-10% abundance. At a depth of 12 inches the mottles became more abundant, at 20-30%.

Wetland 2 (W2) is a non-tidal PFO wetland located adjacent to EB SR 26 between Cedar Drive and Grant's Avenue, next to First Shore Federal. W2 is adjacent to the drainage ditch identified as WA8; it is a depressed area with characteristics of long-standing water, including blackened and water-stained leaves. W2 is connected to a system that drains north toward White Creek via WA8. WA2 is USACE jurisdictional.

A number of plant species dominate W2. The canopy contains *Acer rubrum* (FAC), *Fraxinus americana* (FACU), and *Quercus alba* (FACU-). *Quercus alba* is also present as a shrub. Three species dominate the herbaceous stratum: *Smilax rotundifolia* (FAC), *Ptelea trifoliata* (FAC), and *Onoclea sensibilis* (FACW). Saturation was present within the upper 12 inches of the test pit, and free water was found at a depth of 12 inches. Soils were a low chroma loamy texture with a color of 10YR 3/2 in the upper 3 inches. Below 3 inches, and consistently to a depth of 18 inches, soils had a color of 10YR 3/1 with sand inclusions of 10YR 4/2.

Wetland 3 (W3) is a tidal PFO wetland located adjacent to WB SR 26 between Woodland Avenue and Old School Lane, across from the Lord Baltimore Elementary School. A pipe

(WA15) from the Lord Baltimore Elementary School inputs water to W3. W3 is in a wooded area adjacent to WB SR 26 and appears to follow the depressional contours in this area. W3 appears to flow north to an estuarine wetland associated with the Indian River Bay.

The DNREC tidal wetland mapping (DNR-042 map) locates the DNREC jurisdictional wetland boundary approximately 50 feet from the edge of the existing roadway pavement and subsequently beyond the project study limits. W3 is USACE jurisdictional.

A number of plant species dominated each vegetative stratum. Within the canopy, *Acer rubrum var. tribolum* (FAC) and *Fraxinus Americana* (FACU) were dominant. Two species dominated the shrub layer, and were also found in the herbaceous layer: *Phragmites australis* (FACW) and *Smilax rotundifolia* (FAC). Two more species dominated the herbaceous layer: *Rosa multiflora* (FACU) and *Parthenocissus quinquefolia* (FACU). Soils were saturated within the upper 12 inches of the test pit. Mottling was observed within the upper 12 inches of the soil as well. The top layer (A horizon) at 0-3 inches had a color or 2.5Y 3/1 with mottling or 5YR 4/6. Between 3-12 inches the soil got sandier, with a color of 5Y 5/1 and mottling of 5YR 4/4. At a depth of 12 inches the soil was almost completely sand, with a color of 5YR 3/1.

Wetland 4 (W4) is a tidal PEM wetland located adjacent to WB SR 26 between Woodland Avenue and Old School Lane. W4 occurs on either side of a stream channel that connects to an unnamed tributary of the East Branch of White Creek (WA10), under SR 26 and flows north to an estuarine wetland associated with the Indian River Bay. The west side of W4 is very narrow, and includes the stream bank above the mean high water mark. The east side of W4 is wider, generally following the vegetation in the area and stopping just west of the Art Gallery parking lot.

The DNREC tidal wetland mapping (DNR-042 map) locates the DNREC jurisdictional wetland boundary approximately 25 feet from the edge of the existing roadway pavement and subsequently within the project study limits. W4 is USACE and DNREC jurisdictional.

W4 is dominated by *Phragmites australis* (FACW), with small amount of *Lonicera japonica* (FAC-) growing interspersed. The primary hydrologic indicator for W4 was saturation within the upper 12 inches of the test pit. Soils were saturated within 6 inches of the surface, with standing water found at approximately 15 inches depth. Soils were low chroma sandy silts. The top layer (A horizon) at 0-3 inches had a color of 10YR 2/1; an intermediate layer (AB horizon) at 3 to 8 inches had a color of 10YR 3/1. At 8 inches depth, mottles were found at approximately 10% abundance, with a color of 7.5YR 3/4.

Wetland 5 (W5) is a non-tidal PFO wetland located adjacent to EB SR 26 between Old School Lane and Woodland Avenue, east of the State Farm Insurance building. W5 generally follows depressional contours, and drains south into a PFO wetland connected to an unnamed tributary of the East Branch of White Creek (WA10). W5 is USACE jurisdictional.

Plant species dominating W5 include *Quercus alba* (FACU-) in the canopy stratum, *Ilex opaca* (FACU+) in the canopy and shrub strata, *Smilax rotundifolia* (FAC) and *Onorlea sensibilis* (FACW) in the herbaceous stratum. Hydrologic indicators included water-stained leaves and saturation within the upper 12 inches of the test pit. Soils were generally low chroma sandy silt loam, with oxidized root channels present at a depth of 10 inches. The top layer (O horizon) at approximately 0-3 inches had a color of 10YR 2/2; from 3-8 inches the A horizon had a color of

10YR 3/2. From 8-16 inches a transitional AB horizon had a color of 10YR 3/1. At 16 inches, the soil abruptly changed to a matrix color of 2.5Y 6/2 with mottling of 10YR 5/6 at an abundance of approximately 30%.

Wetland 6 (W6) is a non-tidal PEM wetland located adjacent to eastbound SR 26 between Clubhouse Road and Dukes Drive next to stream channel (WA5), south of EB SR 26. W6 appears to be a floodplain for WA5, and follows the toe of slope. W6 is USACE jurisdictional.

Plant species dominating W6 include miscellaneous grasses and herbaceous plants. Hydrologic indicators include saturation within the upper 12 inches of the test pit and local soil survey data. Free water was found in the test pit at a depth of six inches, and saturated soil was found at the surface (0 inches depth). Soils were generally low chroma and sandy. The top layer (A horizon) at 0-6 inches depth had a color of 10YR 4/2; from 6-10 inches the AB horizon had a color of 10YR 5/2. At 10 inches (B horizon), the soil color was 10YR 2/1, and the soil texture became slightly more silty.

Wetland 7 (W7) is a non-tidal PEM wetland located adjacent to eastbound SR 26 between Windmill Road and Dukes Drive along the stream channel identified as WA5, southwest of W6. W7 is a finger-like wetland that drains directly into WA5. The boundary of W7 generally follows a depressional contour. W7 is USACE jurisdictional.

Plant species dominating W7 include *Juncus sp.* (OBL), *Carex sp.* (OBL), and *Typha latifolia* (OBL), all of which are found in the herbaceous stratum. Hydrologic indicators included saturation within the upper 12 inches, as well as local soil survey data. Saturated soil was reached at a depth of 10 inches in the test pit. Soils were generally low chroma silty loam. The top layer (A horizon) at 0-10 inches depth had a color of 10YR 3/2. At 10 inches (B horizon), the soil had a color of 2.5Y 6/1, and a much siltier texture.

b. Open Waters

There are four (4) Open Waters (WA2, WA5, WA8 & WA10) in the project area that are regulated by the USACE, under Section 404 of the Clean Water Act, and DNREC, under the Subaqueous Lands Act. Of the four, there is only one tidally-influenced water within the project limits which is identified as WA10. A description of each of the Open Waters (includes all crossings investigated i.e., jurisdictional and non-jurisditional) is provided below and their locations are displayed in **Figure III-8**.

WA1 is a non-tidal drainage ditch adjacent to a parking lot. It is located along SR 26 across from the St. George's Church, at the western end of the project area. WA1 is a defined channel with an ordinary high water mark. WA1 appears to drain north into a PFO wetland associated with Clarksville Branch. WA1 is not USACE or DNREC jurisdictional

WA2 is a non-tidal stream with a defined channel and an ordinary high water mark. It is located along EB SR 26 between Omar Road and Irons Lane, across from the Parts Plus store. It appears to drain south towards PFO wetland. WA2 is USACE and DNREC jurisdictional

WA3 is a non-tidal agricultural ditch with a defined channel and ordinary high water mark, located along WB SR 26 between Omar Road and Irons Lane, directly across the street from W1.

It drains north towards a PFO wetland associated with Clarksville Branch. WA3 is not USACE or DNREC jurisdictional

WA4 is a series of non-tidal roadside ditches located along EB SR 26 (between Roxana Road/SR17 and Irons Lane), Irons Lane and Murray Road. These ditches appear to be flowing towards SR 26 and ponding, with no obvious outlet. The ditches showed obvious signs of long-standing water, including blackened leaves and hydrophytic vegetation. Some of the ditches along SR 26 have been altered by property owners; many have been mowed, and one segment was completely brown as if subjected to massive amounts of chemical herbicide. WA4 is not USACE or DNREC jurisdictional

WA5 is located along SR 26 at Clubhouse Road. South of the SR 26 project area, WA5 changes to a defined stream channel with a mid-channel bar. WA5 is a non-tidal stream that flows north through a conduit under SR 26 to again become a defined stream channel adjacent to the new Millville Town Hall. WA5 flows north towards PFO wetland W7 and is associated with White Creek. WA5 is USACE and DNREC jurisdictional

WA6 existed at the time of the delineation, however due to a new development has been eliminated. WA6 was located along EB SR 26 between Windmill Road and Dukes Drive, across from Clubhouse Road. WA6 was a non-tidal ditch with an ordinary high water mark that served as a tributary to WA5. WA6 drained north towards a PFO wetland associated with an unnamed tributary of the West Branch of White Creek.

WA7 is considered to be part of Wetland 7 and is no longer an independent Water.

WA8 is located along SR 26 between Grant's Avenue and Cedar Drive, next to First Shore Federal. WA8 is a non-tidal intermittent stream with an adjacent wetland (W2). It flows north, under SR 26, where it becomes a small drainage ditch flowing north into White Creek. WA8 is USACE and DNREC jurisdictional

WA9 is located along the east side of Old School Road. WA9 is a mowed and maintained non-tidal roadside ditch adjacent to Old School Road. It appears to drain south then east into a PFO wetland. WA9 is not USACE or DNREC jurisdictional

WA10, an unnamed tributary of the East Branch of White Creek, is a tidal stream located along EB SR 26 between Old School Road and Woodland Avenue, next to the State Farm Insurance building. WA10 appears to be a channel connecting a PFO wetland to an estuarine wetland associated with the Indian River Bay. WA10 is USACE and DNREC jurisdictional

WA11 and **WA12** are non-tidal roadside ditches on either side of Woodland Avenue, south of SR 26. WA11 and WA12 appear to flow north, under SR 26 and then west to a PFO wetland associated with the Indian River Bay. WA11 and WA12 are not USACE or DNREC jurisdictional.

WA13 is a non-tidal roadside ditch that runs along Windmill Road, south of SR 26. WA13 appears to flow north, draining into the stream identified as WA5. WA13 is not USACE or DNREC jurisdictional.

WA14 is a non-tidal agricultural ditch that runs parallel to SR 26 approximately 100 feet to the north, beginning at SR 17 and continuing east to the Collins Barn NRHP-eligible property. WA14 is not USACE or DNREC jurisdictional.

WA15 is a non-tidal ditch located perpendicular to westbound SR 26 between Woodland Avenue and Old School Lane, across from the Lord Baltimore Elementary School. It forms a closed system from Lord Baltimore Elementary School and drains into W3. This ditch did not exist at the time of the original delineation. The ditch was constructed by new development on an existing parcel. WA15 is hydrologically connected to an existing NWI wetland that is associated with the Indian River Bay north of the project area. WA15 is not USACE or DNREC jurisdictional.

WA16 is a non-tidal drainage ditch located adjacent to southbound Woodland Avenue. It flows to the west and eventually drains in to White Creek. This ditch was originally outside the project limits and therefore not included in the original delineation report. WA16 is not USACE or DNREC jurisdictional.

c. Impacts to Wetlands

Figure III-8 shows locations of Wetlands and Waters within the project study area. Throughout the project development process, measures to avoid and/or minimize wetland impacts were pursued and additional measures to minimize impacts will continue through final design, including possibly the use of increased slopes or retaining walls, wherever practical.

As shown on **Table III-8**, implementation of the No-Build Alternative will have no effect on the wetlands in the project study area. Combination Alternative ABC would impact 0.0169 acre of wetlands; Alternative D would impact 0.0370 acres; and Revised Alternative D would impact 0.0637 acres of wetlands.

Table III-8: Individual USACE Wetland Impacts (Acres)

	W1*	W2	W3	W4**	W5	W6	W7	Total Impacts
	Direct Wetland Impacts							
Combination Alt. ABC	0	0	0.0013	0.0030	0.0028	0.0098	0	**0.0169**
Preliminary Alt. D	0	0	0.0105	0.0139	0.0028	0.0098	0	**0.0370**
Revised Alternative D	0	0	0	0.0416	0.0039	0.0117	0.0065	**0.0637**

*W1 is non-jurisdictional wetland
**W4 is a DNREC jurisdictional tidal wetland. Impacts to the DNREC jurisdictional tidal wetlands are as follows: Combined Alt. ABC = 0 ac.; Preliminary Alt. D = 0.0013 ac.; Revised Alt. D = 0.015 ac.

d. Impacts to Open Waters

Each of the build alternatives would impact some Waters, which fall under the jurisdictional authority of the USACE and DNREC. As shown in **Table III-9**, Combination Alternative ABC would impact 0.0192 acres of Waters, Alternative D would impact 0.0273 acre of Waters and Revised Alternative D would impact 0.0974 acres of Waters.

As a result of the July 16, 2008 field review meeting with the USACE and DNREC, Open Water areas WA2, WA5, WA8 and WA10 have been determined to be USACE and DNREC jurisdictional. As such, impacts are only reported for these waterways.

Table III-9: Impacts to Waters (Acres)

Waters Number	Type	Combination Alternative ABC	Preliminary Alternative D	Revised Alternative D
WA1	Non-jurisdictional	0	0	0
WA2	Stream	0.0044	0.0044	0.0485
WA3	Non-jurisdictional	0	0	0
WA4	Non-jurisdictional	0	0	0
WA5	Stream	0.0106	0.0106	0.0235
[1]WA6	No longer exists	0	0	0
[2]WA7	No longer exists	0	0	0
WA8	Stream	0	0.0018	0.0044
WA9	Non-jurisdictional	0	0	0
WA10	Stream	0.0042	0.0105	0.0210
WA11	Non-jurisdictional	0	0	0
WA12	Non-jurisdictional	0	0	0
WA13	Non-jurisdictional	0	0	0
[3]WA14	Non-jurisdictional	0	0	0
[4]WA15	Non-jurisdictional	0	0	0
[5]WA16	Non-jurisdictional	0	0	0
Total Acres:		**0.0192**	**0.0273**	**0.0974**

Notes:
1 - Deleted by new development (per wetland description).
2 – Based on field evaluation this is now included as part of Wetland # 7.
3 – Created by new development. Located near 158+50 LT
4 – Was outside of the original project limits. Under Revised Alternative D an outlet for Stormwater Management is being included. Located near 68+00 LT
5 – Was outside of the original project limits. Under Revised Alternative D a new SWM pond discharge pipe is being included. Located at Woodland Avenue, North of SR 26.

e. Wetland Permits

No permits will be required for the No-Build Alternative. Construction of any of the build alternatives, which will result in the wetland and water impacts described above, will require a Section 404 Nationwide Permit 14 from the USACE and a Subaqueous Lands Permit from DNREC. Construction of Preliminary Alternative D and Revised Alternative D would require a DNREC Wetlands Permit.

Measures to avoid, minimize, and mitigate wetland impacts were addressed during the design process and Mitigation measures will be included as appropriate. DelDOT coordinated with USACE and DNREC to determine jurisdictional boundaries of both agencies. Correspondence from both the USACOE and DNREC, found in **Appendix D**, reminds the Department to reconfirm jurisdictional areas when the project begins the permit coordination process.

The proposed project should not alter the drainage pattern of the project area watercourses. However, there is some potential for temporary localized water quality impacts to occur as a result of construction activities. With the implementation of proper erosion and sediment control measures these impacts should be limited and minor in nature.

The stormwater management facilities being constructed will alleviate most, if not all, of the water quality concerns associated with the project. The control measures will reduce the alteration of stormwater runoff volumes and catch many of the pollutants transported in the roadway runoff.

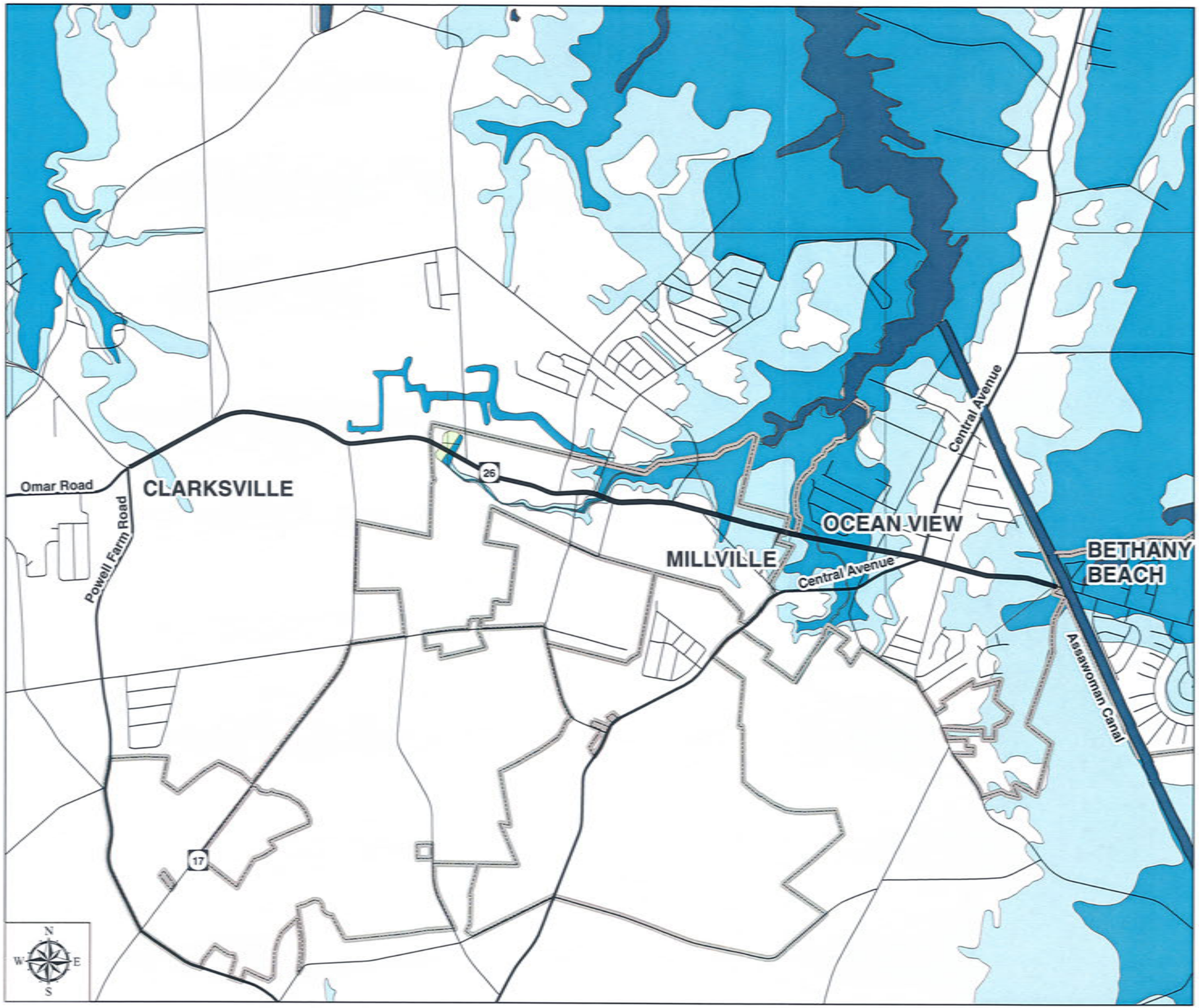
h. Floodplains

The Federal Emergency Management Agency (FEMA) designated 100-year floodplains intersect SR 26 at four locations within the project area. Three of these locations are associated with tributaries to White Creek: SR 26 at Clubhouse Road; SR 26 east of Cedar Drive; and SR 26 at the Lord Baltimore School, extending east to Woodland Avenue. The fourth location is associated with the Assawoman Canal, and extends north and south of SR 26. See **Figure III-9**.

(1) Impacts to Floodplains

Combination Alternative ABC would impact 3.43 acres of the 100-year floodplain. Both Alternative D and Revised Alternative D would impact 3.25 acres of the 100-year floodplain.

All construction resulting from the Preferred Alternative or other build alternatives that occurs within the FEMA-designated 100-year floodplains and Sussex County non-delineated floodplains will comply with FEMA-approved local floodplain construction requirements, including the prohibition on fill in the floodway and passage of the 100-year flood without increase water surface elevations. Any increases would require easement purchase. If required by Sussex County, compensatory storage may be excavated from floodplains to mitigate the effects of embankment fill. Affected ditches will be relocated along the toe of the highway embankment, or passed beneath the proposed highway in culverts, in order to maintain present ditch flow patterns.



SR 26, Atlantic Avenue from Clarksville to Assawoman Canal

Legend

- Zoned AE (100 Year Floodplain)
- Zoned X500 (500 Year Floodplain)
- Water Bodies(Non-Flood)
- Municipal Boundary

Figure III-9
Floodplains

2,000 1,000 0 2,000
Feet

1 inch equals 2,000 feet

DelDOT

3. Wildlife and Wildlife Habitat

a. Terrestrial Wildlife Habitat

Potential Impacts to terrestrial plant communities by the SR 26 Project include direct losses from tree clearing within rights-of way. Effects to terrestrial wildlife habitat would involve the conversion of natural habitat to impervious road or other associated facilities. Most of the project area is built-up or agricultural.

(1) Impacts to Terrestrial Wildlife Habitat

Because the build alternatives generally extend through large areas of agricultural land, impacts would primarily be to exposed ground and cropland. However, the forest impact would be minor fringe takings and is not expected to adversely impact terrestrial habitat. Habitat quality is low for built-up areas due to the lack of vegetation and food sources in such disturbed and developed areas.

A small stand of trees adjacent to SR 26 would be impacted by the build alternatives, but they are already disturbed to some extent because most of the area is comprised of built-up or agricultural land uses. The No-Build alternative would have no impacts. Combination Alternative ABC would impact 0.015 acres of forest and both Alternative D and Revised Alternative D would each impact 0.29 acres of forest.

b. Aquatic Wildlife Habitat

There are two streams, seven wetlands and numerous roadside ditches in the project area. These areas can serve as habitats for both plant and animals.

(1) Impacts to Aquatic Wildlife Habitat

Two bridges will be widened that may cause temporary disturbance during construction; however there will be no impacts to the stream. The No-Build Alternative would not impact any aquatic habitat and species. As there are no direct impacts to stream channels resulting from any of the build alternatives, no aquatic species would be permanently displaced by in-stream construction.

The potential impacts associated with construction activities will be managed with routine construction practices, such as sediment traps and silt fence, to prevent water quality problems. The implementation of Best Management Practices (BMPs) for both erosion and sediment control and stormwater management would reduce pollutant loads and control runoff that would otherwise increase during construction activities.

Stormwater runoff would be managed under DNREC's Stormwater Management Regulations. These regulations require the use of stormwater BMPs including on-site infiltration, flow attenuation by open vegetated swales and natural depressions, and stormwater retention and detention structures. At the completion of construction any water channels would be restored to its previous conditions. See previous section for detailed discussion on the wetlands and water impacts and mitigation within the project area. Prior to construction, project activities will obtain the necessary construction authorizations: erosion and sediment control, stormwater management, and water quality certification.

c. Rare, Threatened and Endangered Species

Rare, threatened or endangered species and unique or critical habitat is regulated at the federal level through Section 7 of the Endangered Species Act (1973; 50CFR17) and at the state level through Title 7 of the Delaware Code (7 Del.C. § 601 – 605).

Coordination with the Delaware Natural Heritage Program (DNHP) and the U.S. Fish and Wildlife Service (USFWS) was carried out to determine if any state rare or federally listed plants, animals or natural communities were known to be present within the proposed project area (See **Appendix C**).

Response letters were received from US Fish and Wildlife Service (USFWS), Delaware Department of Natural Resources and Environmental Control (DNREC), DNREC Natural Heritage and Endangered Species Program (DNHP). Inquiries with these agencies will be updated during the permit process.

The USFWS review of the project area concluded that no federally listed endangered or threatened species are known to exist in the project area. DNHP confirmed there was only one State of Delaware threatened and endangered species known to exist in the project area. This species is a State-listed *Apeltes quadracus* (fourspine stickleback) that can be found in White Creek. This species is dependent on calm, shallow, heavily vegetated waters for its habitat.

(1) Impacts to Rare, Threatened and Endangered Species

There would be no impacts to federally listed rare, threatened or endangered species under any of the alternatives due to the fact that there are no federally listed rare, threatened or endangered species known to exist in the project area.

Design measures will be taken to decrease sedimentation during construction in order to avoid impacts to the State-listed *Apeltes quadracus* (fourspine stickleback) found in White Creek.

4. Air Quality

The SR 26, Atlantic Avenue Improvement Project is contained within the US Environmental Protection Agency (USEPA) designated Sussex County, Delaware Nonattainment Area for Ozone. The Preferred Alternative will decrease traffic congestion through the introduction of a center turn lane thereby reducing mobile source air emissions. The proposed construction parameters of this project will not add any increased vehicle capacity nor increase vehicle miles traveled in the project area. This project is therefore deemed "Not Regionally significant" and therefore would not trigger a new regional analysis under the rules for transportation conformity. In concurrence with the USEPA and DNREC, FHWA and FTA have determined that the Air Quality Conformity Determination - Sussex County Portion of the 2006-2011 Delaware Capital Transportation Program for the Sussex County, Delaware Ozone Non-attainment Area adequately address and meet the requirements as specified in the November 1993 Federal Conformity Rule and it's subsequent amendments. The existing Air Quality Conformity determination for Sussex County, Delaware will stay in affect until January 9, 2010 or until such time as a new regional analysis is deemed necessary.

a. Air Quality Impacts

Due to the relatively small area the proposed project covers, it is unlikely the roadway improvements will have a stand-alone affect on statewide air quality. If an affect were to occur, it is expected that it would be an improvement in air quality conditions because of the reduced congestion.

The purpose of this project is to decrease traffic congestion and increase safety along SR 26 by providing a center left-turn lane. Because a center left-turn lane will eliminate traffic idling, vehicle emissions concentrations in the vicinity of the project study area will be decreased and therefore the overall air quality will be improved.

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

5. Noise

The SR 26 roadway improvements will extend through an area mainly comprised of residential, commercial and agricultural properties. Sensitive receptors, other than the numerous residences that line the corridor, include four churches (see **Figures II-4**, **II-9** and **II-10**) and a school (see **Figures II-12** and **II-13**) located along SR 26.

a. Noise Fundamentals and Data Collection

The descriptor selected for analysis of existing and potential noise impacts on the project area is the hourly equivalent sound level ($L_{eq}1h$). L_{eq} is defined as the equivalent steady state sound level, which in a designated time period (normally one hour) would contain the same acoustic energy as the time-varying sound level during the same period.

The unit of measure for L_{eq} is the decibel (dB) measured on the "A" scale, commonly referred to as dBA. The A-weighted decibel scale is generally used in assessing community noise exposure because this scale closely approximates the frequency level of the human ear.

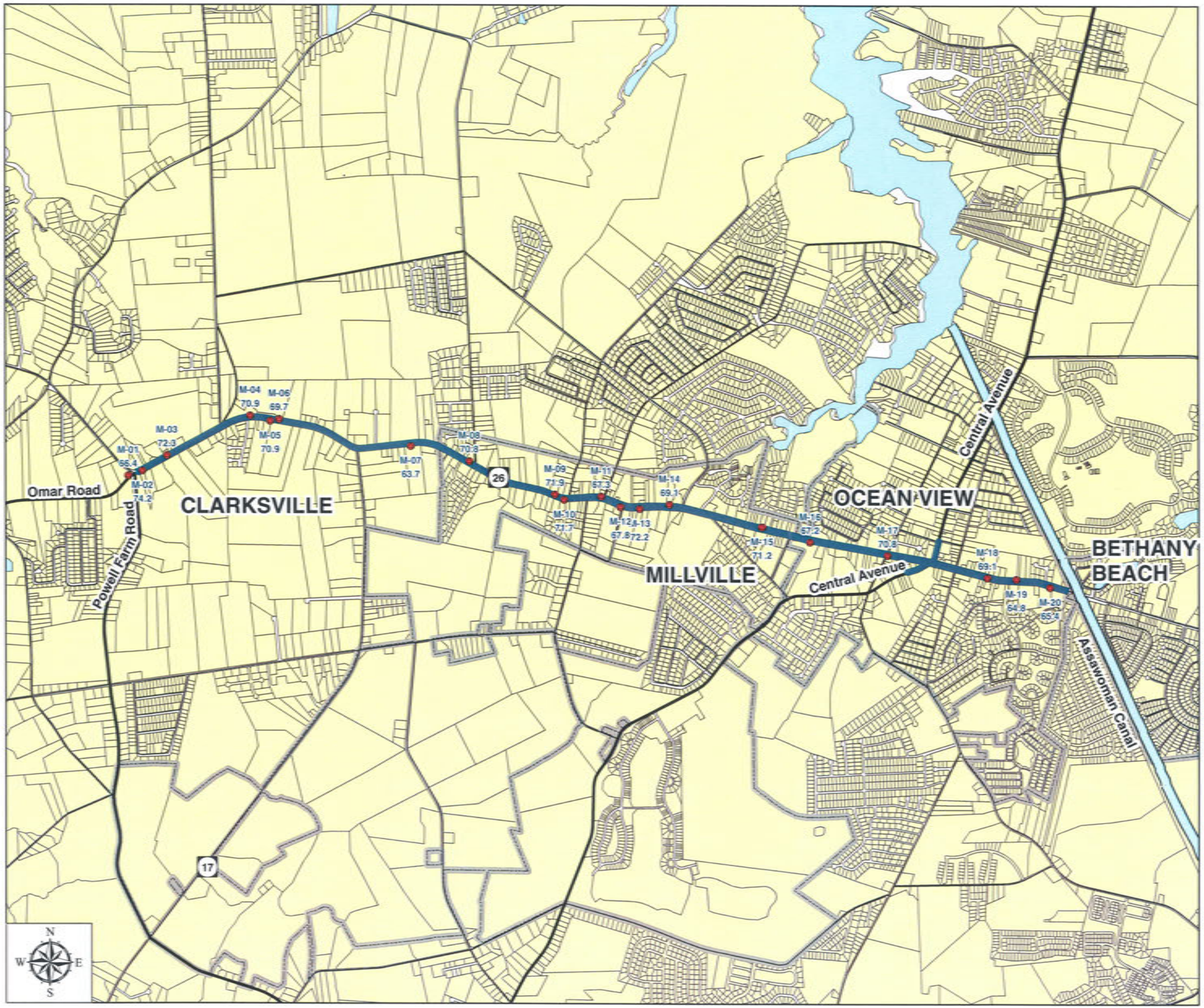
Noise monitoring for this study was conducted during four separate sessions on Tuesday, August 17, 2004. Noise measurements were performed using Metrosonics dB 308 and Metrosonics dB 3080 Noise Monitors, which recorded noise levels at one-minute intervals during a 20-minute session. Classified traffic counts, along with vehicle speeds, were recorded during the same monitoring periods. The averaged 20 minute L_{eq} obtained at these receptors is assumed to be equivalent to a one hour L_{eq}.

(1) Field Receptors

Twenty (20) field receptors were selected to represent the noise environment of the project area. The receptors are listed in **Table III-10** along with their corresponding locations and their 20 minute L_{eq} measurements. The receptor locations are displayed in **Figure III-10**.

Table III-10: Noise Monitoring Receptors and Locations

Session	Receptor Number	Residence Address or Property Description	Land Use Type	Date	Interval	$L_{eq(20)}$
1	M-01	St. George's United Methodist Church SR 26 and Omar Road	Institutional (church)	08-17-2004	1040-1100	64.9
1	M-02	M.C. Webb House SR 26 SE of Omar and Powell Farm Rds	Residential (historic)	08-17-2004	1040-1100	73.5
1	M-03	Edmund J. and Sadie E. Evans House SR 26 NE of Omar and Powell Farm Rds	Residential (historic)	08-17-2004	1040-1100	72.3
2	M-04	Spring Banke SR 26 E of Irons Lane	Residential (historic)	08-17-2004	1240-1300	70.9
2	M-05	Mark Hiestand House (Sabieware Pottery) SR 26 E of Diane Road	Residential/Commercial (historic)	08-17-2004	1240-1300	70.9
2	M-06	The Campbell Farm (Allen's Hatchery) SR 26 E of Diane Road	Residential (historic)	08-17-2004	1240-1300	69.7
2	M-07	Bethany Crest Mobile Home Park SR 26	Residential (mobile home)	08-17-2004	1240-1300	63.7
2	M-08	Russell Banks Property SR 26 @ White's Neck Road	Commercial (historic)	08-17-2004	1240-1300	70.8
3	M-09	Howard Hickman Property 509 Atlantic Avenue	Residential (historic)	08-17-2004	1500-1520	69.8
3	M-10	Martin and Rosemary Sullivan Property 504 Atlantic Avenue	Residential	08-17-2004	1500-1520	70.0
3	M-11	Millville United Methodist Church SR 26 and Club House Road	Institutional (church)	08-17-2004	1500-1520	67.3
3	M-12	Grace D. Wolf House 338 Atlantic Avenue	Residential (historic)	08-17-2004	1500-1520	67.8
3	M-13	Blaine T. Phillips Property 324 Atlantic Avenue	Residential (historic)	08-17-2004	1500-1520	70.0
3	M-14	Ralph H. and Geraldine B. West House 307 Atlantic Avenue	Residential (historic)	08-17-2004	1500-1520	67.9
4	M-15	Mark and Paul Brown Property 404 Atlantic Avenue	Residential (historic)	08-17-2004	1700-1720	71.2
4	M-16	Lord Baltimore Elementary School 120 Atlantic Avenue	Institutional (school; historic)	08-17-2004	1700-1720	67.2
4	M-17	Elizabeth J. Evans Property 80 Atlantic Avenue	Residential	08-17-2004	1700-1720	70.8
4	M-18	Michael and Susan Chadwick Property 36 Atlantic Avenue	Residential	08-17-2004	1700-1720	68.2
4	M-19	Gulfstream Development Corp. Property 25 Atlantic Avenue (Empty Lot)	Commercial	08-17-2004	1700-1720	64.8
4	M-20	Aeri Brunori LLC Property (Empty Lot) SR 26 W of Assawoman Canal	Open Space	08-17-2004	1700-1720	65.4



SR 26, Atlantic Avenue
from Clarksville to Assawoman Canal

Legend

- M-01 Noise Receptor Number
- 63.7 Noise Level (Leq)
- Noise Receptor Location
- Water Bodies
- SR 26 Project Area
- Municipal Boundaries

Figure III-10
Ambient Noise Measurements

2,000 1,000 0 2,000 Feet

1 inch equals 2,000 feet

DelDOT

(2) Traffic Data

Traffic was video-taped at separate locations along SR 26 during each monitoring session. The camera was stationed at St. George's Church for Session 1 (to capture traffic on SR 26 and turning movements relating to Vines Creek Road), at the Good Earth Food Market for Session 2, at the SR 26/Railway Road intersection for Session 3, and just west of the Assawoman Canal, along SR 26 for Session 4. Traffic speeds were measured using a radar gun. Traffic was counted per lane, and classified into one of five categories: cars (defined as vehicles with two axles and four wheels), medium trucks (defined as vehicles with two axles and six wheels), heavy trucks (defined as vehicles having three or more axles), buses and motorcycles. The 20-minute classified traffic counts, which were collected simultaneously with the 20-minute noise measurements, were adjusted to one hour volumes to yield vehicles per hour. Both the counted volumes and the one-hour volumes are shown in **Table III-11**.

Table III-11: Counted Traffic Volumes for Noise Monitoring

	Session 1: 1040-1100 08/17/04							
	SR 26 WB		**SR 26 EB**		**Vines Creek Road NB**		**Vines Creek Rd SB**	
	20-min	**1-Hour**	**20-min**	**1-Hour**	**20-min**	**1-Hour**	**20-min**	**1-Hour**
Cars	116	348	147	441	97	291	132	396
Medium Trucks	7	21	9	27	5	15	9	27
Heavy Trucks	6	18	9	27	5	15	8	24
Buses	0	0	1	3	0	0	1	3
Motorcycles	2	6	1	3	1	3	1	3
	Session 2: 1240-1300 08/17/04							
	SR 26 WB		**SR 26 EB**					
	20-min	**1-Hour**	**20-min**	**1-Hour**				
Cars	150	450	160	480				
Medium Trucks	2	6	5	15				
Heavy Trucks	4	12	2	6				
Buses	0	0	0	0				
Motorcycles	0	0	0	0				
	Session 3: 1500-1520 08/17/04							
	SR 26 WB		**SR 26 EB**					
	20-min	**1-Hour**	**20-min**	**1-Hour**				
Cars	193	579	174	522				
Medium Trucks	6	18	5	15				
Heavy Trucks	2	6	4	12				
Buses	0	0	0	0				
Motorcycles	1	3	3	9				
	Session 4: 1700-1720 08/17/04							
	SR 26 WB		**SR 26 EB**					
	20-min	**1-Hour**	**20-min**	**1-Hour**				
Cars	165	495	149	447				
Medium Trucks	1	3	5	15				
Heavy Trucks	1	3	0	0				
Buses	0	0	0	0				
Motorcycles	0	0	2	6				

b. Noise Abatement Criteria

Noise Abatement Criteria (NAC) for various land uses have been established by the FHWA in Title 23 of the Code of Federal Regulations, Part 772 (23 CFR, Part 772), Procedures for Abatement of Highway Traffic Noise and Construction Noise. These categories and criteria are presented in **Table III-12**. They are also consistent with DelDOT's Transportation Noise Policy. The noise abatement criteria for land uses occurring in the project are included within Activity Categories B and C. The majority of receptors were placed in locations which qualify as Activity Category B (residences and churches).

According to the procedures described in 23 CFR, Part 772, noise impacts occur when predicted traffic noise levels for the design year approach or exceed the NAC prescribed for a particular land use category, or when the predicted noise levels are substantially higher than the existing ambient noise levels. Under criteria adopted for the State Noise Abatement Policy, DelDOT considers noise levels to have approached the NAC when they are within 1 dBA, which would equate to a noise level of 66 dBA for Category B land use, and it considers a substantial increase to be at least 10 dBA.

Table III-12: Noise Abatement Criteria (23CFR, part 772) - Hourly A-Weighted Sound Level in Decibels*

Activity Category	$L_{eq}(h)$	$L_{10}(h)$	Description of Activity Category
A	57 (Exterior)	60 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	70 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	75 (Exterior)	Developed lands, properties or activities not included in Categories A or B above
D	--	--	Undeveloped lands
E	52 (Interior)	55 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

* Either $L_{eq}(h)$ or $L_{10}(h)$ (but not both) may be used on a project.
Note: These sound levels are only to be used to determine impact. These are the absolute levels where abatement must be considered. Noise abatement should be designed to achieve a substantial noise reduction - not the noise abatement criteria.

c. Modeling of Baseline Noise Levels

Field measurements of noise levels only reflect the noise environment at one point in time, under one limited set of traffic conditions, and only at the spots where noise meters are located. They cannot be used directly for establishing normal, peak hour conditions across a project area. Rather, computer modeling is used to determine project area noise environment for both current and future noise conditions using statistically derived peak traffic volumes obtained from archived traffic data. The noise measurements and traffic counts obtained during field monitoring are used solely for validating a noise prediction computer model. The computer software used for this purpose is FHWA's Transportation Noise Model (TNM), Version 2.5.

(1) Model Validation

The model was created by entering the locations of the roadways and field receptors into the TNM, along with the traffic volumes and traffic speeds measured concurrently with the noise measurements. Model runs were then conducted to see if the model could predict the actual noise levels measured in the field under the actual traffic conditions. A model is considered to be valid

when the predicted noise levels are within +/-3 dBA of field measured noise levels at most of the receptor sites. Since the field monitoring was conducted during four separate monitoring sessions, four modeling runs were conducted using the counted traffic volumes specific to each session.

For this study, all of the modeled noise levels met validation requirements except for M-15, M16, and M-17, which TNM predicted to be considerably lower than measured in the field. Since the modeled noise levels for all of the receptors in the other three monitoring sessions were predicted within the accepted limits, the model was considered valid based on their results alone, and therefore a repetition of Monitoring Session #4 was deemed unnecessary. Validation results are shown in **Table III-13**.

Table III-13: Validation Results for TNM Noise Model

Monitoring Session	Receptor Number	Residence Address or Property Description	TNM Predicted L_{eq}	Field Measured L_{eq}	TNM L_{eq} Minus Field L_{eq}
1	M-01	St. George's United Methodist Church SR 26 and Omar Road	62.2	64.9	-2.7
1	M-02	M.C. Webb House SR 26 SE of Omar and Powell Farm Rds	71.2	73.5	-2.3
1	M-03	Edmund J. and Sadie E. Evans House SR 26 NE of Omar and Powell Farm Rds	69.8	72.3	-2.5
2	M-04	Spring Banke SR 26 E of Irons Lane	68.4	70.9	-2.5
2	M-05	Mark Hiestand House (Sabieware Pottery) SR 26 E of Diane Road	68.0	70.9	-2.9
2	M-06	The Campbell Farm (Allen's Hatchery) SR 26 E of Diane Road	68.8	69.7	-0.9
2	M-07	Bethany Crest Mobile Home Park SR 26	65.6	63.7	1.9
2	M-08	Russell Banks Property SR 26 @ White's Neck Road	68.0	70.8	-2.8
3	M-09	Howard Hickman Property 509 Atlantic Avenue	67.7	69.8	-2.1
3	M-10	Martin and Rosemary Sullivan Property 504 Atlantic Avenue	67.2	70.0	-2.8
3	M-11	Millville United Methodist Church SR 26 and Club House Road	66.5	67.3	-0.8
3	M-12	Grace D. Wolf House 338 Atlantic Avenue	67.3	67.8	-0.5
3	M-13	Blaine T. Phillips Property 324 Atlantic Avenue	67.6	70.0	-2.4
3	M-14	Ralph H. and Geraldine B. West House 307 Atlantic Avenue	65.6	67.9	-2.3
4	M-15	Mark and Paul Brown Property 404 Atlantic Avenue	64.3	71.2	-6.9
4	M-16	Lord Baltimore Elementary School 120 Atlantic Avenue	61.7	67.2	-5.5
4	M-17	Elizabeth J. Evans Property 80 Atlantic Avenue	64.4	70.8	-6.4
4	M-18	Michael and Susan Chadwick Property 36 Atlantic Avenue	66.7	68.2	-1.5
4	M-19	Gulfstream Development Corp. Property 25 Atlantic Avenue (Empty Lot)	63.0	64.8	-1.8
4	M-20	Acri Brunori LLC Property (Empty Lot) SR 26 W of Assawoman Canal	62.2	65.4	-3.2

d. Current and Future Noise Levels

(1) Current Noise

Once a model has been validated, it is expected to produce reasonably accurate noise levels anywhere within the project area under whatever traffic conditions are input into it. For this study, the current or "baseline" Peak Hour Traffic Volume was derived from the Summer 2003 Average Daily Traffic, which was obtained from DelDOT. The composition of the traffic in terms of trucks versus cars was also provided by DelDOT, which estimated 5% total truck traffic. For modeling, the truck traffic assumed a split of 3% heavy trucks and 2% medium trucks. No attempt was made to estimate the percentage of bus or motorcycle traffic. Directional distribution was considered to be 50% for each direction.

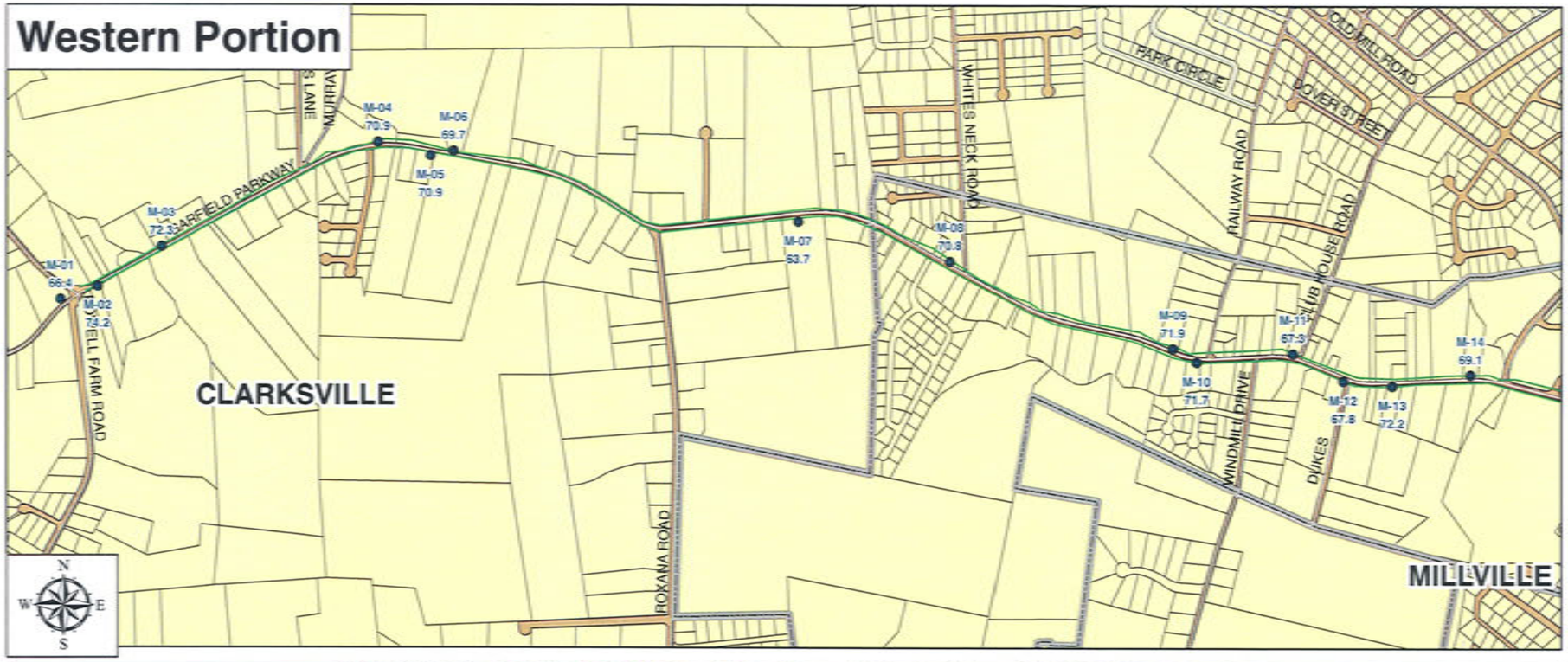
The statistical traffic indicates substantially heavier traffic occurs as one proceeds from west to east on SR 26. Therefore the modeled SR 26 was divided into road segments to allow this trend to be reflected in the model (see **Table III-14**). Omar Road and Powell Farm Road were each represented in the model as a double-wide single lane; therefore their traffic was not directionally distributed

These data were entered into the validated model, replacing the field-counted traffic data. Noise levels at 20 and 50 feet intervals within a grid extending the length of the project area were calculated by TNM. Using those calculated noise levels, the 66 dBA noise impact contours were derived by interpolation between grid points. Baseline year 2003 impact contours are shown in **Figure III-11**.

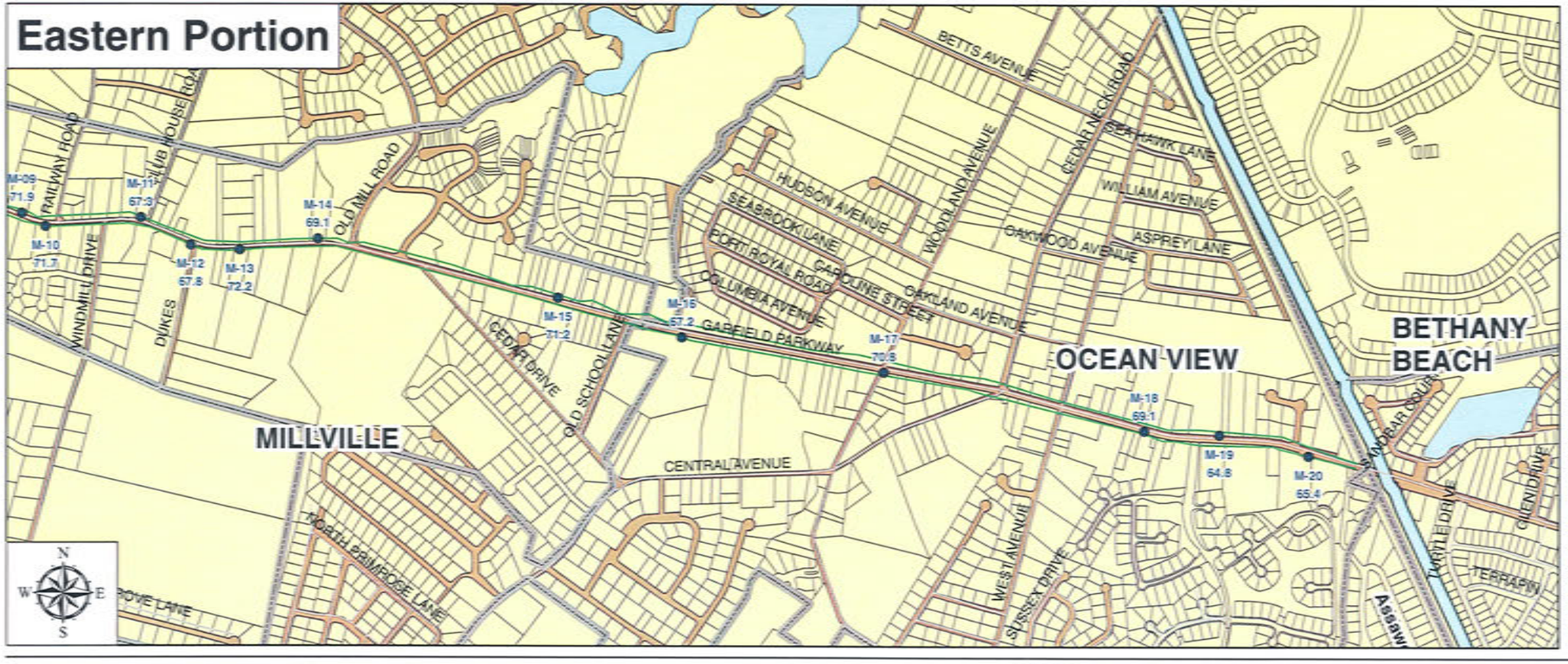
Table III-14: Current Year 2003 Statistical Traffic Volumes Used for Noise Modeling

Roadway	SR 26 Vine Creek Road	SR 26 Atlantic Avenue					S54 Omar Road	S365 Powell Farm Road
From Intersection	*West of Study Area*	*S54*	*SR17*	*S347*	*Old School Lane*	*S357*	*South of Study Area*	*South of Study Area*
To Intersection	*Omar Road*	*SR17*	*S347*	*Old School Lane*	*S357*	*Canal*	*SR 26*	*S54*
Annual ADT (total all lanes, both directions)	8172	8471	10166	11561	17075	14224	2472	1037
Peak Hr Traffic % (Design Hour Volume)	9.00%	9.00%	9.00%	9.00%	9.00%	9.00%	9.00%	9.00%
Actual Number of Lanes Both Directions	2	2	2	2	2	2	2	2
Number of Lanes Modeled (both directions)	2	2	2	2	2	2	1	1
VPH (total all lanes, both directions)	735	762	915	1040	1537	1280	222	93
% Heavy Trucks - Main Line	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
% Medium Trucks - Main Line	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
TNM Input (VPH for all lanes, both directions):								
Cars	699	724	869	988	1460	1216	211	89
Medium Trucks	15	15	18	21	31	26	4	2
Heavy Trucks	22	23	27	31	46	38	7	3
Total All Vehicles	735	762	915	1040	1537	1280	222	93
Directional Distribution in TNM:								
Eastbound	50%	50%	50%	50%	50%	50%		
Westbound	50%	50%	50%	50%	50%	50%		
Combined Northbound and Southbound							100%	100%

Western Portion



Eastern Portion



SR 26, Atlantic Avenue
from Clarksville to Assawoman Canal

Legend

66 dBA - Existing Condition, Peak Hour
from Year 2003 Annual Average Daily Traffic

Figure III-11
Current Noise Impacts

2,000 1,000 0
Feet

1 inch equals 1,000 feet

DelDOT

(2) Future Noise

The traffic data used for the analysis of Design Year 2030 noise impacts were the projected Summer Peak Hour Annual Average Daily Traffic (ADT) as provided by DelDOT. The composition of the traffic in terms of trucks versus cars was also provided by DelDOT, which estimated 5% total truck traffic. For modeling, the truck traffic assumed a split of 3% heavy trucks and 2% medium trucks. No attempt was made to estimate the percentage of bus or motorcycle traffic. Directional distribution was considered to be 50% for each direction.

The statistical traffic indicates substantially heavier traffic occurs as one proceeds from west to east on SR 26. Therefore the modeled SR 26 was divided into road segments to allow this trend to be reflected in the model (see **Table III-15**). Omar Road and Powell Farm Road were each represented in the model as a double-wide single lane; therefore their traffic was not directionally distributed.

Table III-15: Design Year 2030 Statistical Traffic Volumes Used for Noise Modeling

Roadway	SR 26 Vine Creek Road	SR 26 Atlantic Avenue					S54 Omar Road	S365 Powell Farm Road
From Intersection	*West of Study Area*	*S54*	*SR17*	*S347*	*Old School Lane*	*S357*	*South of Study Area*	*South of Study Area*
To Intersection	*Omar Road*	*SR17*	*S347*	*Old School Lane*	*S357*	*Canal*	*SR 26*	*S54*
Annual ADT (total all lanes, both directions)	11482	13045	17028	18428	27679	23441	4808	2157
Peak Hr Traffic % (Design Hour Volume)	9.00%	9.00%	9.00%	9.00%	9.00%	9.00%	9.00%	9.00%
Actual Number of Lanes Both Directions	2	2	2	2	2	2	2	2
Number of Lanes Modeled (both directions)	2	2	2	2	2	2	1	1
VPH (total all lanes, both directions)	1033	1174	1533	1659	2491	2110	433	194
% Heavy Trucks - Main Line	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
% Medium Trucks - Main Line	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
TNM Input (VPH for all lanes, both directions):								
Cars	982	1115	1456	1576	2367	2004	411	184
Medium Trucks	21	23	31	33	50	42	9	4
Heavy Trucks	31	35	46	50	75	63	13	6
Total All Vehicles	1033	1174	1533	1659	2491	2110	433	194
Directional Distribution in TNM:								
Eastbound	50%	50%	50%	50%	50%	50%		
Westbound	50%	50%	50%	50%	50%	50%		
Combined Northbound and Southbound							100%	100%

The 66 dBA noise impact contours for Design Year 2030 were predicted for the No Build condition by having the validated TNM model produce a new grid of noise levels using the 2030 traffic volumes described above and with all roadway line objects remaining unchanged. As with the 2003 contours, this new grid was then used to generate the 66 dBA contours north and south of SR 26 by interpolating noise levels between generated noise levels at grid points.

For the Build condition, the line objects in the model that represented the current SR 26 road alignment were replaced with line objects representing the lane alignments proposed for the

Combination Alternative ABC and Preliminary and Revised D Alternatives. No traffic was assigned to the proposed center turn lane. Rather, the 2030 projected traffic was only distributed across the two travel lanes. Again, a new grid of noise data was generated in TNM using a distance of 20 to 50 feet between grid points, and interpolation was again conducted to determine the 66 dBA contour north and south of SR 26.

Figure III-12 shows the 66 dBA impact contours for both the No Build condition and the preferred Build Alternative. The contours are shown overlaying the existing roadway and property lines.

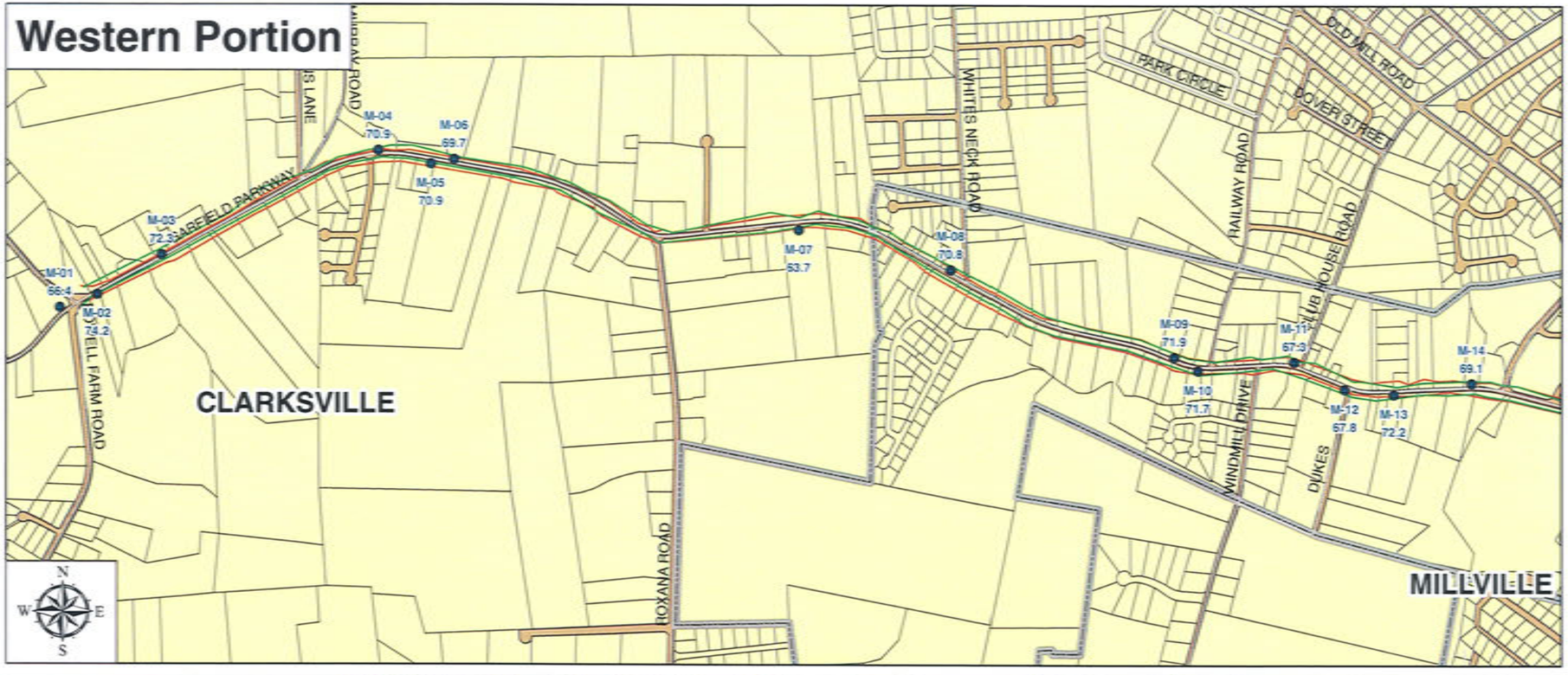
e. Noise Impacts

As discussed previously, the alignment of the Combination Alternative ABC is identical to the alignment of Alternative D except for the 12 foot wide continuous shared left-turn lane. This results in only a 6 foot difference between the noise contours for the three build alternatives. For this reason, the noise contours for the Build Alternatives are considered practically coterminous. Beginning at the western extreme of the study area and extending to Roxana Road, the TNM Model indicates that impacts from the Build Alternatives would primarily affect properties that adjoin the eastbound lane. This is due to Build Alternative's roadbed being in a more southerly alignment than the existing roadway, thus the impact contour would move a similar distance in the same direction. The impact contour moves southward approximately 30 feet in that portion of the study area. Toward the center of the study area, in the vicinity of Club House Road, the Build Alternatives takes a more northward trend and thus the impact contour moves in the northward direction by approximately 50 feet along approximately 500 feet of the proposed alignment. From there eastward, the noise contours for the Build and No Build Alternatives are nearly identical. **Figures II-4** through **II-16** provide more detailed mapping of the properties and show the noise receptor locations.

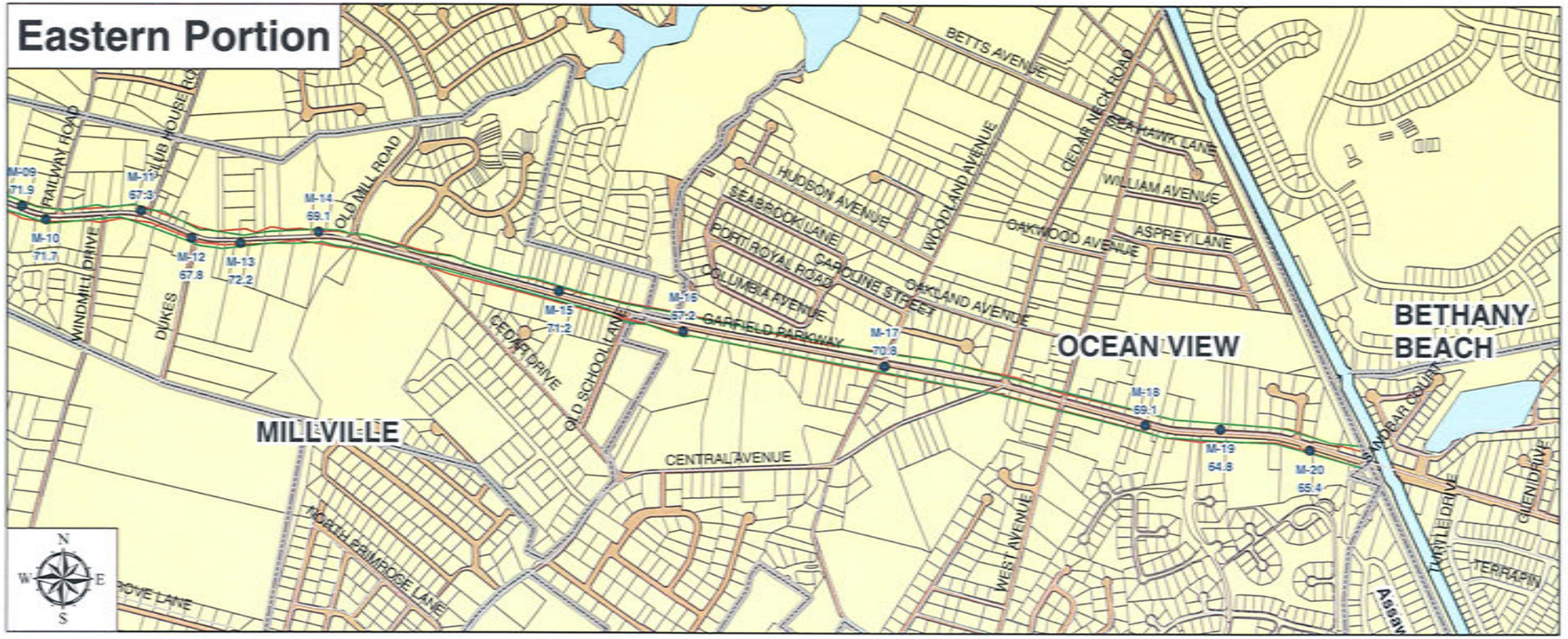
Currently, all residential properties adjacent to SR 26 within the project limits have front yards facing the existing roadways. Under existing conditions, all these properties are within the 66 dBA contour. Under future conditions, this will continue to be the case, only the contour will reach further into the properties. Approximately eighty-nine residences are impacted by existing and No-Build noise levels. This number will decrease under to eighty-one residences under the Combination Alternative ABC and Revised Alternative D due to the need to relocate eight residences under each. In addition, two churches and one school will have portions of their property within the 66 dBA contour under No Build and Build conditions.

It needs to be understood that, despite every attempt to accurately assess the existing and projected noise environment via modeling, the TNM software is intended to be used for free-flowing traffic, whereas SR 26 involves a substantial amount of stop and go traffic, a fact which substantially affects the actual noise levels of a given area. Therefore, the noise predictions cited in this document should not be considered as absolute values. Rather, they are intended to provide an assessment of relative noise impacts for considering the various road alternatives, and it is felt that this methodology should be adequate for that purpose.

Western Portion



Eastern Portion



SR 26, Atlantic Avenue from Clarksville to Assawoman Canal

Legend

66 dBA - No Build Alternative
Year 2030 Projected Peak Hour Traffic

66 dBA - Build Alternative, Revised Alternative D
Year 2030 Projected Peak Hour Traffic

Figure III-12
Design Year 2030
Noise Impact Contours

2,000 1,000 0 Feet

1 inch equals 1,000 feet

DelDOT

f. Noise Mitigation

Noise mitigation in the form of constructing structural walls or earthen berms would not be possible due to the numerous driveways entering SR 26 directly from adjacent properties, nor would they reduce noise effectively due to the number of breaks. Furthermore, the access provided by these driveways is essential for community mobility and, therefore, must be retained.

g. Construction Noise

Land uses that are sensitive to vehicular noise would also be sensitive to construction noise. Although highway construction is a short-term phenomenon, it can cause substantial noise impacts. Additionally, it is possible that some construction may occur at night to avoid traffic impacts. The extent and severity of the noise impact would depend upon the phase of construction and the noise characteristics of the construction equipment in use. Construction would have direct impact on receptors located near roadways where traffic flow characteristics are altered due to re-routing of vehicles from the construction area. As with any major construction project, the area around the construction site is likely to experience varied periods and degrees of noise impact.

(1) Construction Noise Impacts

Temporary noise impacts would occur in the project area during construction of the Preferred Alternative or other build alternative. Sources of noise would include earth-moving equipment, vibratory rollers, pavers, trucks, pile-drivers, jackhammers, and compressors. Land uses that are sensitive to vehicular noise would also be sensitive to construction noise. Although highway construction is a short-term phenomenon, it can cause substantial noise impacts. Additionally, it is possible that some construction may occur at night to avoid traffic impacts. The extent and severity of the noise impact would depend upon the phase of construction and the noise characteristics of the construction equipment in use. Construction would have direct impact on receptors located near roadways where traffic flow characteristics are altered due to re-routing of vehicles from the construction area. As with any major construction project, the area around the construction site is likely to experience varied periods and degrees of noise impact.

To limit the effects, construction activities would typically be limited to weekday daylight hours in accordance with local ordinances. Some mitigation measures that may be employed to minimize the temporary construction noise include adjustments to equipment, provision of temporary noise barriers, distribution of noise events, good communication with the public, and monetary incentives to contractors. Maintenance of construction equipment will be regular and thorough to minimize noise emissions due to inefficiently tuned engines, poorly lubricated moving parts, poor to ineffective muffling/exhaust systems, etc. These measures could be examined during final design to minimize annoyances from temporary noise impacts.

6. Hazardous Materials

A preliminary Phase I Environmental Site Assessment and field investigation has been conducted. The Phase I Environmental Assessment was completed in conformance with the scope and limitations of ASTM E-1527-00. Potentially hazardous materials were revealed at seven sites within the project area. The Millville Service Center, located at the intersection of Whites Neck Road and SR 26 was identified as a former retail gas station. Two underground storage tanks (UST), which are listed as actively leaking USTs, and the related pump island are located within 20 feet of the SR 26 right-of-way at the Millville Service Center site. Fuzzy's Tire Center, Hocker's Deli and Grocery site, Shore Stop #222, and Kellam Service Station also contain active leaking UST sites within the project limits. Two additional sites, J.S. Bennett and Sons Wrecker Service site and 511 Atlantic Avenue, were not identified as active leaking UST sites, but did however have petroleum and other chemical products stored on their premises during their past land use. **Figure III-13** shows the locations of all seven sites. The report concluded that "the potential exists that contaminated soil and groundwater could be encountered during subsurface excavation work adjacent to the project site."

a. Impacts to Hazardous Materials

The No-Build alternative would not have any potential to impact any hazardous material sites. Each of the build alternatives could impacts any of the seven sites identified during the Phase I Environmental Site Assessment. That report recommended that "DelDOT Construction Specifications 202530, 202531, and 202532 should be included in the project bid specification package to address any potential soil or groundwater contamination encountered during the SR 26 construction project." Along with this recommendation, reasonable consideration has been made during final design to avoid impacts to all identified hazardous material sites.

Western Portion

Eastern Portion

SR 26, Atlantic Avenue from Clarksville to Assawoman Canal

Legend

Potential Hazardous Material Sites

Figure III-13
Potential Hazardous Material Sites

0 1,000 2,000 Feet

1 inch equals 1,000 feet

DelDOT