



December 13, 2006

Keith Rudy
McCrone, Inc.
111 S. West Street #6
Dover, DE 19904

RE: PLUS review – PLUS 2006-11-03; Millville by the Sea – Phase 3A and 3B

Dear Mr. Rudy:

Thank you for meeting with State agency planners on November 21, 2006 to discuss the proposed plans for the Millville by the Sea phases 3A and 3B project to be located south of Peppers Corner Road and Powell Farm Road.

According to the information received, you are seeking annexation into the Town of Millville for 708 residential units on 166.50 acres.

Please note that changes to the plan, other than those suggested in this letter, could result in additional comments from the State. Additionally, these comments reflect only issues that are the responsibility of the agencies represented at the meeting. The developers will also need to comply with any Federal, State and local regulations regarding this property. We also note that once it is annexed, the Town of Millville is the governing authority over this land. If this property is not annexed Sussex County will be the governing authority over this land. The developers will need to comply with any and all regulations/restrictions set forth by the governing authority.

Executive Summary

The following section includes some site specific highlights from the agency comments found in this letter. This summary is provided for your convenience and reference. The

full text of this letter represents the official state response to this project. *Our office notes that the applicants are responsible for reading and responding to this letter and all comments contained within it in their entirety.*

State Strategies/Project Location

- This project is located in Investment Level 4 according to the Strategies for State Policies and Spending. According to the application you intend to seek annexation into the Town of Millville. If this annexation is approved, the State would consider this project part of the Town of Millville growth zone and therefore not object to this project moving forward. If it is not annexed it will remain in an Investment Level 4 area and the State would object to any development planned on this site.

Street Design and Transportation

- Route 17 is a collector road and Powell Farm Road, Burton Farm Road and Peppers Corner Road are local roads. DelDOT's policy is to require dedication of sufficient land to provide a minimum right-of-way width of 40 feet from the centerline on collector roads and 30 feet from the centerline on local roads. Therefore DelDOT will require right-of-way dedication along the frontage to provide any additional width needed from this project.
- The proposed entrances on Burton Farm Road, the north entrance on Powell Farm Road, and the south entrance on Beaver Dam Road are close to curves and may not have adequate sight distance. This will need to be checked as plans are developed further.
- It is recommended that the developer include stub streets in their plan for connections to developments that could occur there in the future.

Natural and Cultural Resources

- As mentioned previously, a significant portion of the mapped soils on the subject parcel(s) are mapped as hydric (estimated 80-90%). Hydric soils typically have a seasonal high water table at or near the soil surface (within one-foot of soil surface or less). Building in such soils is likely to leave prospective residents of this and adjoining properties susceptible to future flooding problems from groundwater-driven surface water ponding, especially during extended periods of high-intensity rainfall events such as tropical storms/hurricanes or "nor'easters." This is in addition to increased flooding likely from surface water runoff

- emanating from future created forms of structural imperviousness (roof tops, roads, and sidewalks). It is strongly advised that the applicant avoid such soils.
- DNREC recommends that vegetated buffers of no less than 100 feet be employed around wetlands and water bodies. There should not be any buildings or associated infrastructure within the buffer. To minimize potential homeowner activities within wetlands, no lot lines should contain wetlands, their buffers or other resources of conservation concern.
 - The engineer is encouraged to meet with downstream landowners to obtain their concerns of current drainage as well as the additional drainage impact this project will have on the area. Please notify downstream landowners if there will be a change in the volume of water released on them.
 - The Drainage Program does not support the removal of trees for the creation of stormwater management areas. However, the Drainage Program recognizes that tree removal is unavoidable in some cases. Where practical, plant native trees and shrubs to compensate for the loss of nutrient uptake and stormwater absorption the removed trees provided.
 - The Drainage Program requests a 15-foot side yard setback on all lots with a drainage easement on the side unless otherwise specified. A 15-foot side yard setback will allow room for equipment to utilize the entire drainage easement and maneuver free of obstructions if the drainage conveyance requires periodic maintenance or future re-construction.
 - The Drainage Program requests a 10-foot drainage easement around all catch basins located on private property to ensure adequate room for maintenance. The Drainage Program recommends restrictions on fences, sheds, and other structures within the easement to prevent obstructions from being placed within 10 feet of the catch basin.

The following are a complete list of comments received by State agencies:

Office of State Planning Coordination – Contact: Bryan Hall 739-3090

This project is located in Investment Level 4 according to the Strategies for State Policies and Spending. According to the application you intend to seek annexation into the Town of Millville. If this annexation is approved, the State would consider this project part of the Town of Millville growth zone and therefore not object to this project moving

forward. If it is not annexed it will remain in an Investment Level 4 area and the State would object to any development planned on this site.

Division of Historical and Cultural Affairs – Contact: Alice Guerrant 739-5685

Nothing is known within this parcel. However, there are a number of houses shown on the Beers Atlas of 1868, including the J. Bennett House in the northern corner, the Wm. D. Layton House on Burton Farm Rd, and the K. Hickard on Powell Farm Rd towards the southern end. By the 1918 USGS 15' Rehoboth map, 2 other buildings had been added. There is some medium prehistoric potential in the northern corner as well.

The developer expects to apply for an Army Corps of Engineers permit for several stream crossings within the development. They will have to consult with the DHCA then on their project's effect on historic properties. The developer told us that there is an archaeological investigation going on now, because there is a high possibility of finding one or more unmarked family cemeteries in this area. Faye Stocum of this office is the contact person for any Unmarked Human Remains cases; she can be reached at 302-736-7400. The DHCA will need a copy of that report. It may or may not meet the needs of the federal permit, depending on the area of jurisdiction that the Corps determines. They will be happy to help the developers through this process.

Department of Transportation – Contact: Bill Brockenbrough 760-2109

- 1) A traffic impact study (TIS) has been completed for the Millville by the Sea development. In a June 2006 letter, the DelDOT consultant, McCormick Taylor, commented on that study and provided recommendations as to how the Town should require the developer to address the transportation impacts of their project. A copy is enclosed. Since that time DelDOT has been negotiating with the developer as to what improvements need to be done when and what their participation in the cost of those improvements should be. Those discussions are continuing.
- 2) In July 2006, DelDOT received a phasing plan from the developer and they prepared a table relating the road improvements recommended by McCormick Taylor to that plan. That plan consisted of three phases, with 197 dwelling in the first phase, 2,242 dwellings and the commercial development in the second phase and 460 dwellings in the third phase. DelDOT now sees that Phase 3 would have at least 717 dwellings, so apparently the phasing plan has changed. Please provide DelDOT with the revised plan and your best forecast, based on current market conditions, as to how and how much it is likely to change as plans are developed further.

- 3) Route 17 is a collector road and Powell Farm Road, Burton Farm Road and Peppers Corner Road are local roads. DelDOT's policy is to require dedication of sufficient land to provide a minimum right-of-way width of 40 feet from the centerline on collector roads and 30 feet from the centerline on local roads. Therefore DelDOT will require right-of-way dedication along the frontage to provide any additional width needed from this project.
- 4) The proposed entrances on Burton Farm Road, the north entrance on Powell Farm Road, and the south entrance on Beaver Dam Road are close to curves and may not have adequate sight distance. This will need to be checked as plans are developed further.
- 5) It is recommended that the developer include stub streets in their plan for connections to developments that could occur there in the future. Those future developments, and indeed the subject Phases of Millville by the Sea, would be in areas designated as Level 4 in the Strategies for State Policies and Spending. Accordingly, development in these areas is discouraged presently. DelDOT recognizes, however, that the map component of the Strategies is subject to periodic updates and that these areas could be redesignated in a future version of the Strategies as comprehensive plans are updated. Further, they do not see overriding environmental constraints that would prevent most of the adjoining lands from being developed. Therefore it is recommended that these stub streets be provided.
- 6) The developer's site engineer should contact the DelDOT Subdivision Manager for Sussex County, Mr. John Fiori, regarding specific requirements for road improvements and access. Mr. Fiori may be reached at (302) 760-2157.

**The Department of Natural Resources and Environmental Control – Contact:
Kevin Coyle 739-9071**

Soils

According to the Sussex County soil survey mapping update, Hammonton, Pepperbox, Klej, Hurlock, and Mullica complex were mapped on the subject parcel. Hammonton and Pepperbox are moderately well-drained soils of low-lying uplands have moderate limitations for development. Klej is a somewhat poorly-drained transitional soil that is likely to contain both wetland (hydric) and upland soil components. Hurlock and Mullica are poorly-drained to very poorly-drained wetland associated (hydric) soils that

have severe limitations for development Most of the soils mapped on this parcel are Mullica or Hurlock (estimated 80-90%) soils.

As mentioned previously, a significant portion of the mapped soils on the subject parcel(s) are mapped as hydric (estimated 80-90%). Hydric soils typically have a seasonal high water table at or near the soil surface (within one-foot of soil surface or less). Building in such soils is likely to leave prospective residents of this and adjoining properties susceptible to future flooding problems from groundwater-driven surface water ponding, especially during extended periods of high-intensity rainfall events such as tropical storms/hurricanes or “nor’easters.” This is in addition to increased flooding likely from surface water runoff emanating from future created forms of structural imperviousness (roof tops, roads, and sidewalks). It is strongly advised that the applicant avoid such soils.

Wetlands

According to the Statewide Wetland Mapping Project Mapping (SWMP), palustrine forested wetland were mapped on subject parcel(s). Impacts to wetlands and other water bodies should be minimized. Streets and lots should be laid out so as to not cross or intersect wetland areas or forested areas. DNREC recommends that vegetated buffers of no less than 100 feet be employed around wetlands and water bodies. There should not be any buildings or associated infrastructure within the buffer. To minimize potential homeowner activities within wetlands, no lot lines should contain wetlands, their buffers or other resources of conservation concern.

PLUS application materials indicate that wetlands have been delineated (presumably a field delineation). This delineation should be verified by the Army Corps of Engineers through the Jurisdictional Determination process. Please note that impacts to palustrine wetlands are regulated by the Army Corps of Engineers through Section 404 of the Clean Water Act. In situations where the applicant believes that the delineated wetlands on their parcel are nonjurisdictional isolated wetlands, the Corps must be contacted to make the final jurisdictional assessment. They can be reached by phone at 736-9763. Certain drainage ditches may also be jurisdictional either under the U.S. Army Corps of Engineers Program or through the DNREC Wetland and Subaqueous Lands program.

In addition, individual 404 permits and certain Nationwide Permits from the Army Corps of Engineers also require 401 Water Quality Certification from the DNREC Wetland and Subaqueous Land Section and Coastal Zone Federal Consistency Certification from the DNREC Division of Soil and Water Conservation, Delaware Coastal Programs Section. Each of these certifications represents a separate permitting process.

To find out more about permitting requirements, the applicant is encouraged to attend a Joint Permit Process Meeting. These meetings are held monthly and are attended by federal and state resource agencies responsible for wetland permitting. Contact Denise Rawding at (302) 739-9943 to schedule a meeting.

Impervious Cover

Based on a review of the PLUS application, post-development surface imperviousness was calculated by the applicant to be about 35 percent. However, given the scope and density of this project, this estimate is likely a **significant underestimate**. Use of natural areas (forests, wetlands or buffers) and stormwater management acreage for the calculation of recreational open space significantly underestimates this project's actual amount of created surface imperviousness, resulting in a significant understatement of this project's actual environmental impacts. It is strongly recommended that the finalized open space calculation omit all land acreage including the above-mentioned areas. Furthermore, the applicant should also realize that all forms of constructed surface imperviousness (i.e., rooftops, sidewalks, and roads) should be accounted for when calculating impervious cover. It was not clear from the information submitted whether all forms of surface imperviousness were accurately assessed or accounted for in their calculation.

Studies have shown a strong relationship between increases in impervious cover to decreases in a watershed's overall water quality. It is strongly recommended that the applicant implement best management practices (BMPs) that reduce or mitigate some of its most likely adverse impacts. Reducing the amount of surface imperviousness through the use of pervious paving materials ("pervious pavers") in lieu of asphalt or concrete in conjunction with an increase in forest cover preservation or additional tree plantings are some examples of practical BMPs that could easily be implemented to help reduce surface imperviousness.

ERES Waters

This project is located adjacent to receiving waters of Little Assawoman Bay designated as waters having Exceptional Recreational or Ecological Significance (ERES). ERES waters are recognized as special assets of the State, and shall be protected and/ or restored, to the maximum extent practicable, to their natural condition. Provisions in Section 5.6 of Delaware's "Surface Water Quality Standards" (as amended July 11, 2004) specify that all designated ERES waters and receiving tributaries develop a "pollution control strategy" to reduce non-point sources of pollutants through implementation of Best Management Practices (BMPs). Moreover, provisions defined in subsection 5.6.3.5 of same section, specially authorize the Department to mandate BMPs

to meet standards for controlling the addition of pollutants and reducing them to the greatest degree achievable and, where practicable, implementation of a standard requiring no discharge of pollutants.

TMDLs

Total Maximum Daily Loads (TMDLs) for nitrogen and phosphorus have been promulgated through regulation for the Little Assawoman Watershed. A TMDL is the maximum level of pollution allowed for a given pollutant below which a “water quality limited water body” can assimilate and still meet water quality standards to the extent necessary to support use goals such as, swimming, fishing, drinking water and shell fish harvesting. Although TMDLs are required by federal law, states are charged with developing and implementing standards to support these desired use goals. In the Little Assawoman watershed, the watershed in which this project is located, nutrient reductions” of 40 percent will be required for nitrogen and phosphorus.

Compliance with TMDLs through the PCS

As stated above Total Maximum Daily loads (TMDLs) for nitrogen and phosphorus have been promulgated through regulation for the Inland Bays Watershed. The TMDL calls for a 40% reduction in nitrogen and phosphorus from baseline conditions. A Pollution Control Strategy (PCS) will provide the regulatory framework for achieving them. The Department developed an assessment tool to evaluate how your proposed development may reduce nutrients to meet the TMDL requirements. Additional reductions may be possible through the implementation of Best Management Practices such as wider vegetated buffers along watercourses, increasing passive, wooded open space, reducing forest cover removal, and the use of innovative stormwater management treatment trains. Contact Lyle Jones at 302-739-9939 for more information on the assessment tool.

Water Supply

The project information sheets state water will be provided to the project by Tidewater Utilities via an existing water system. DNREC records indicate that the project is located within the public water service area granted to Tidewater Utilities under Certificate of Public Convenience and Necessity 05-CPCN-39.

Should dewatering points be needed during any phase of construction, a dewatering well construction permit must be obtained from the Water Supply Section prior to construction of the well points. In addition, a water allocation permit will be needed if the pumping rate will exceed 50,000 gallons per day at any time during operation.

All well permit applications must be prepared and signed by licensed water well contractors, and only licensed well drillers may construct the wells. Please factor in the necessary time for processing the well permit applications into the construction schedule. Dewatering well permit applications typically take approximately four weeks to process, which allows the necessary time for technical review and advertising.

Should you have any questions concerning these comments, please contact Rick Rios at 302-739-9944.

Sediment and Erosion Control/Stormwater Management

A detailed sediment and stormwater plan will be required prior to any land disturbing activity taking place on the site. The plan review and approval as well as construction inspection will be coordinated through the Sussex Conservation District. Contact the Sussex Conservation District at (302) 856-7219 for details regarding submittal requirements and fees.

A Notice of Intent (NOI) for Stormwater Discharges Associated with Construction Activity must be submitted to the Division of Soil and Water Conservation along with the \$195 NOI fee prior to plan approval.

Applying practices to mimic the pre-development hydrology on the site, promote recharge, maximize the use of existing natural features on the site, and limit the reliance on structural stormwater components, such as maintaining open spaces, should be considered in the overall design of the project as a stormwater management technique. Green Technology BMPs must be given first consideration for stormwater quality management.

Each stormwater management facility should have an adequate outlet for release of stormwater. The site contains the Beaver Dam Branch Tax Ditch. Contact Brooks Cahall with the DNREC Drainage Program at (302) 855-1930 regarding requirements for discharge into the tax ditch.

It is strongly recommended that you contact the Sussex Conservation District to schedule a preliminary meeting to discuss the sediment and erosion control and stormwater management components of the plan. The site topography, soils mapping, pre- and post-development runoff, and proposed method(s) and location(s) of stormwater management should be brought to the meeting for discussion.

Drainage

This project is located within the Beaverdam Canal Tax Ditch that has existing tax ditch rights-of-way. The applicant is encouraged to continue to work with the Drainage Program and the Beaverdam Canal Tax Ditch to resolve any issues of tax ditch right-of-way. Contact Brooks Cahall with the Drainage Program at (302) 855-1930.

The Drainage Program requests that the engineer take precautions to ensure that the project does not hinder any off site drainage upstream of the project or create any off site drainage problems downstream by the release of on site storm water. The Drainage Program requests that the engineer check existing downstream ditches and pipes for function and blockages prior to the construction. The engineer is encouraged to meet with downstream landowners to obtain their concerns of current drainage as well as the additional drainage impact this project will have on the area. Please notify downstream landowners if there will be a change in the volume of water released on them.

The Drainage Program does not support the removal of trees for the creation of stormwater management areas. However, the Drainage Program recognizes that tree removal is unavoidable in some cases. Where practical, plant native trees and shrubs to compensate for the loss of nutrient uptake and stormwater absorption the removed trees provided.

The Drainage Program does not have a clear understanding how stormwater will convey to the stormwater management areas. The Drainage Program requests that the routing of major stormwater pipes through yards be prohibited.

The Drainage Program encourages the elevation of rear yards to direct water towards the streets where storm drains are accessible for maintenance. However, the Drainage Program recognizes the need for catch basins in rear yards in certain cases. Therefore, catch basins placed in rear yards will need to be clear of obstructions and be accessible for maintenance. Decks, sheds, fences, kennels, and other structures placed along the storm drains, or within 10 feet of the catch basins, can hinder drainage patterns as well as future maintenance to the storm drains or catch basins. Deed restrictions, along with drainage easements recorded on deeds, should ensure adequate future maintenance access.

The Drainage Program requests a 15-foot side yard setback on all lots with a drainage easement on the side unless otherwise specified. A 15-foot side yard setback will allow room for equipment to utilize the entire drainage easement and maneuver free of obstructions if the drainage conveyance requires periodic maintenance or future reconstruction.

The Drainage Program requests a 10-foot drainage easement around all catch basins located on private property to ensure adequate room for maintenance. The Drainage Program recommends restrictions on fences, sheds, and other structures within the easement to prevent obstructions from being placed within 10 feet of the catch basin.

Record all drainage easements on deeds and place restrictions on obstructions within the easements to ensure access for periodic maintenance or future re-construction.

Stream Restoration

Please contact Steve Williams, Ecological Restoration Coordinator, at (302) 739-9921 regarding technical assistance for stream restoration activities.

Forest Preservation

It is estimated that 20,000 acres of forested land has been converted by development since 2002, and DNREC highly recommends that the applicant remove lots and infrastructure from the wooded portion of tax parcel 1-34-15-109 (South of Roxanna Rd). This wooded area is part of a larger forest block and forest fragmentation separates wildlife populations, increases road mortality, and increases “edge effects” that leave many forest dwelling species vulnerable to predation. For migratory birds, it is extremely important to conserve large tracts of forests in the State of Delaware due to its position within the Atlantic flyway. In addition, when forested areas are cleared or converted into a ‘residential woods’, wildlife must either co-exist with the new residents or disperse into surrounding areas. Either scenario often results in human/animal conflicts, including interactions on the roadways.

In addition to wildlife value, forested wetlands also provide environmental services that benefit humans directly such as water quality protection (erosion control and sediment, nutrient, biological and toxics removal), climate moderation, aesthetic value and recreational opportunities.

If trees are cleared despite our strong objection, clearing should not occur April 1st to July 31st to reduce impacts to birds and other wildlife species that utilize trees for breeding. This recommendation would only protect those species during one breeding season, as once trees are cleared the result is an overall loss of habitat.

Nuisance Geese

There seems to be an excessive number of stormwater management ponds being proposed. These ponds may attract waterfowl like resident Canada geese and mute swans. High concentrations of waterfowl in ponds create water-quality problems, leave droppings on lawn and paved areas and can become aggressive during the nesting season.

Short manicured lawns around ponds provide an attractive habitat for these species. DNREC recommends native plantings of tall grasses, wildflowers, shrubs, and trees at the edge and within a buffer area (50 feet) around the perimeter. Waterfowl do not feel safe when they can not see the surrounding area for possible predators. These plantings should be completed as soon as possible as it is easier to deter geese when there are only a few than it is to remove them once they become plentiful. The Division of Fish and Wildlife does not provide goose control services, and if problems arise, residents or the home-owners association will have to accept the burden of dealing with these species (e.g., permit applications, costs, securing services of certified wildlife professionals). Solutions can be costly and labor intensive; however, with a reduction in the number of ponds, proper landscaping, monitoring, and other techniques, geese problems can be minimized.

Solid Waste

Each Delaware household generates approximately 3,600 pounds of solid waste per year. On average, each new house constructed generates an additional 10,000 pounds of construction waste. Due to Delaware's present rate of growth and the impact that growth will have on the state's existing landfill capacity, the applicant is requested to be aware of the impact this project will have on the State's limited landfill resources and, to the extent possible, take steps to minimize the amount of construction waste associated with this development.

Air Quality

Once complete, vehicle emissions associated with this project are estimated to be 54.3 tons (108,670.6 pounds) per year of VOC (volatile organic compounds), 45.0 tons (89,971.9 pounds) per year of NO_x (nitrogen oxides), 33.2 tons (66,382.9 pounds) per year of SO₂ (sulfur dioxide), 3.0 ton (5,909.2 pounds) per year of fine particulates and 4,545.1 tons (9,090,158.2 pounds) per year of CO₂ (carbon dioxide).

Emissions from area sources associated with this project are estimated to be 21.9 tons

(43,831.8 pounds) per year of VOC (volatile organic compounds), 2.4 ton (4,822.8 pounds) per year of NOx (nitrogen oxides), 2.0 ton (4,002.3 pounds) per year of SO2 (sulfur dioxide), 2.6 ton (5,164.7 pounds) per year of fine particulates and 88.8 tons (177,684.3 pounds) per year of CO2 (carbon dioxide).

Emissions from electrical power generation associated with this project are estimated to be 8.7 tons (17,371.8 pounds) per year of NOx (nitrogen oxides), 30.2 tons (60,423.6 pounds) per year of SO2 (sulfur dioxide) and 4,456.2 tons (8,912,473.9 pounds) per year of CO2 (carbon dioxide).

	VOC	NOx	SO ₂	PM _{2.5}	CO ₂
Mobile	54.3	45.0	33.2	3.0	4545.1
Residential	21.9	2.4	2.0	2.6	88.8
Electrical Power		8.7	30.2		4456.2
TOTAL	76.2	56.1	65.4	5.6	9090.1

For this project the electrical usage via electric power plant generation alone totaled to produce an additional 8.7 tons of nitrogen oxides per year and 30.2 tons of sulfur dioxide per year.

A significant method to mitigate this impact would be to require the builder to construct Energy Star qualified homes. Every percentage of increased energy efficiency translates into a percent reduction in pollution. Quoting from their webpage, <http://www.energystar.gov/>:

“ENERGY STAR qualified homes are independently verified to be at least 30% more energy efficient than homes built to the 1993 national Model Energy Code or 15% more efficient than state energy code, whichever is more rigorous. These savings are based on heating, cooling, and hot water energy use and are typically achieved through a combination of:

- building envelope upgrades,
- high performance windows,
- controlled air infiltration,
- upgraded heating and air conditioning systems,
- tight duct systems and
- upgraded water-heating equipment.”

The Energy office in DNREC is in the process of training builders in making their structures more energy efficient. The Energy Star Program is excellent way to save on

energy costs and reduce air pollution. They highly recommend this project development and other residential proposals increase the energy efficiency of their homes.

They also recommend that the home builders offer geothermal and photo voltaic energy options. Applicable vehicles should use retrofitted diesel engines during construction. The development should provide tie-ins to the nearest bike paths, links to mass transit, and fund a lawnmower exchange program for their new occupants.

State Fire Marshal's Office – Contact: Duane Fox 856-5298

These comments are intended for informational use only and do not constitute any type of approval from the Delaware State Fire Marshal's Office. At the time of formal submittal, the applicant shall provide; completed application, fee, and three sets of plans depicting the following in accordance with the Delaware State Fire Prevention Regulation (DSFPR):

- a. **Fire Protection Water Requirements:**
 - Water distribution system capable of delivering at least 1000 gpm for 1-hour duration, at 20-psi residual pressure is required. Fire hydrants with 800 feet spacing on centers. (Apartment and Townhouses)
 - Where a water distribution system is proposed for single-family dwellings it shall be capable of delivering at least 500 gpm for 1-hour duration, at 20-psi residual pressure. Fire hydrants with 1000 feet spacing on centers are required. (One & Two- Family Dwelling)
 - Where a water distribution system is proposed for the site, the infrastructure for fire protection water shall be provided, including the size of water mains for fire hydrants and sprinkler systems.

- b. **Fire Protection Features:**
 - All structures over 10,000 sq.ft. aggregate will require automatic sprinkler protection installed.
 - Buildings greater than 10,000 sq.ft., 3-stories or more, over 35 feet, or classified as High Hazard, are required to meet fire lane marking requirements
 - Show Fire Department Connection location (Must be within 300 feet of fire hydrant), and detail as shown in the DSFPR.
 - Show Fire Lanes and Sign Detail as shown in DSFPR
 - For townhouse buildings, provide a section / detail and the UL design number of the 2-hour fire rated separation wall on the Site plan.

c. **Accessibility**

- All premises, which the fire department may be called upon to protect in case of fire, and which are not readily accessible from public roads, shall be provided with suitable gates and access roads, and fire lanes so that all buildings on the premises are accessible to fire apparatus. This means that the access road to the subdivision from Roxana Road, Burton Farm Road, and Powell Farm Road must be constructed so fire department apparatus may negotiate it.
- Fire department access shall be provided in such a manner so that fire apparatus will be able to locate within 100 ft. of the front door.
- Any dead end road more than 300 feet in length shall be provided with a turn-around or cul-de-sac arranged such that fire apparatus will be able to turn around by making not more than one backing maneuver. The minimum paved radius of the cul-de-sac shall be 38 feet. The dimensions of the cul-de-sac or turn-around shall be shown on the final plans. Also, please be advised that parking is prohibited in the cul-de-sac or turn around.
- The use of speed bumps or other methods of traffic speed reduction must be in accordance with Department of Transportation requirements.
- The local Fire Chief, prior to any submission to our Agency, shall approve in writing the use of gates that limit fire department access into and out of the development or property.

d. **Gas Piping and System Information:**

- Provide type of fuel proposed, and show locations of bulk containers on plan.

e. **Required Notes:**

- Provide a note on the final plans submitted for review to read “ All fire lanes, fire hydrants, and fire department connections shall be marked in accordance with the Delaware State Fire Prevention Regulations”
- Proposed Use
- Alpha or Numerical Labels for each building/unit for sites with multiple buildings/units
- Square footage of each structure (Total of all Floors)
- National Fire Protection Association (NFPA) Construction Type
- Maximum Height of Buildings (including number of stories)
- Townhouse 2-hr separation wall details shall be shown on site plans
- Note indicating if building is to be sprinklered
- Name of Water Provider

- Letter from Water Provider approving the system layout
- Provide Lock Box Note (as detailed in DSFPR) if Building is to be sprinklered
- Provide Road Names, even for County Roads

Preliminary meetings with fire protection specialists are encouraged prior to formal submittal. Please call for appointment. Applications and brochures can be downloaded from our website: www.delawarestatefiremarshal.com, technical services link, plan review, applications or brochures.

Department of Agriculture - Contact: Scott Blaier 698-4500

The Delaware Department of Agriculture has no objections to the proposed application for rezoning. The parcels have been annexed into the Town of Millville, and the *Strategies for State Policies and Spending* encourages environmentally responsible development in Investment Level 2 areas.

Section 1, Chapter 99, Code of Sussex Section 99-6 may apply to this subdivision. The applicant should verify the applicability of this provision with Sussex County. This Section of the Code states:

G. Agricultural Use Protections.

- (1) Normal agricultural uses and activities conducted in a lawful manner are preferred. In order to establish and maintain a preference and priority for such normal agricultural uses and activities and avert and negate complaints arising from normal noise, dust, manure and other odors, the use of agricultural chemicals and nighttime farm operations, land uses adjacent to land used primarily for agricultural purposes shall be subject to the following restrictions:
 - (a) For any new subdivision development located in whole or in part within three hundred (300) feet of the boundary of land used primarily for agricultural purposes, the owner of the development shall provide in the deed restrictions and any leases or agreements of sale for any residential lot or dwelling unit the following notice:

“This property is located in the vicinity of land used primarily for agricultural purposes on which normal agricultural uses and activities have been afforded the highest priority use status. It can be anticipated that such agricultural uses and activities may now or

in the future involve noise, dust, manure and other odors, the use of agricultural chemicals and nighttime farm operations. The use and enjoyment of this property is expressly conditioned on acceptance of any annoyance or inconvenience which may result from such normal agricultural uses and activities.”

(b) For any new subdivision development located in whole or in part within fifty (50) feet of the boundary of land used primarily for agricultural purposes no improvement requiring and occupancy approval for a residential type use shall be constructed within fifty (50) feet of the boundary of land used primarily for agricultural purposes.

This site overlaps with the State’s Green Infrastructure Investment Strategy Plan. The Crop Lands and Forest layers are present on the site. This designation identifies areas of the state that have viable and valuable agricultural crop and forest land, as discussed in Governor Minner’s Executive Order Number 61. Areas such as these should be preserved entirely, or to the extent possible, and not developed for residential or other use.

Right Tree for the Right Place

The Delaware Department of Agriculture Forest Service encourages the developer to use the “Right Tree for the Right Place” for any design considerations. This concept allows for the proper placement of trees to increase property values in upwards of 25% of appraised value and will reduce heating and cooling costs on average by 20 to 35 dollars per month. In addition, a landscape design that encompasses this approach will avoid future maintenance cost to the property owner and ensure a lasting forest resource.

Native Landscapes

The Delaware Department of Agriculture and the Delaware Forest Service encourages the developer to use native trees and shrubs to buffer the property from the adjacent land-use activities near this site. A properly designed forested buffer can create wildlife habitat corridors and improve air quality to the area by removing six to eight tons of carbon dioxide annually and will clean our rivers and creeks of storm-water run-off pollutants. To learn more about acceptable native trees and how to avoid plants considered invasive to our local landscapes, please contact the Delaware Department of Agriculture Plant Industry Section at (302) 698-4500.

Tree Mitigation

The Delaware Forest Service encourages the developer to implement a tree mitigation program to replace trees at a 1:1 ratio within the site and throughout the community. This will help to meet the community's forestry goals and objectives and reduce the environmental impacts to the surrounding natural resources. To learn more, please contact our offices at (302) 349-5754.

Public Service Commission - Contact: Andrea Maucher 739-4247

Any expansion of natural gas or installation of a closed propane system must fall within Pipeline Safety guidelines. Contact: Malak Michael at (302) 739-4247.

Delaware State Housing Authority – Contact Vicki Walsh 739-4263

The proposal is for a site plan review for 708 residential units on 166 acres located on the south corner of the intersection of Peppers Corner Road and Powell Farm Road near Millville. According to the State Strategies Map, the proposal is located in an Investment Level 2 area. As a general planning practice, DSHA encourages residential development in areas where residents will have proximity to services, markets, and employment opportunities such as Investment Level 1 and 2 areas outlined in the State Strategies Map. Furthermore, DSHA encourages residential development in Level 1 and 2 areas that are affordable to first time homebuyers. DSHA supports the fact that this proposal targets the full range of incomes including first time homebuyers. According to the most recent real estate data collected by DSHA, the average home price in Sussex County is \$236,000. However, families earning respectively 100% of Sussex County's median income only qualify for mortgages of \$171,216, thus creating an affordability gap of \$64,784. The provision of units within reach of families earning at least 100% of Sussex County's median income will ensure housing that is affordable for first time homebuyers.

Department of Education – Contact: John Marinucci 739-4658

DOE offers the following comments on behalf of the Indian River School District.

1. Using the DOE standard formula, this development will generate an estimated 354 students.
2. DOE records indicate that the Indian River School Districts' *elementary schools are at or beyond 100% of current capacity* based on September 30, 2005 elementary enrollment.
3. DOE records indicate that the Indian River School Districts' *secondary schools are not at or beyond 100% of current capacity* based on September 30, 2005

- secondary enrollment. In multiple correspondences from the Indian River School District administration, the district asserts that while the Indian River High School has capacity, the Indian River Middle Schools' student population exceeds student capacity.
4. This development will create additional elementary school and middle school student population growth which will further compound the existing shortage of space. The developer is strongly encouraged to contact the Indian River School District Administration to address the issue of elementary school over-crowding that this development will exacerbate.
 5. DOE requests developer work with the Indian River School District transportation department to establish developer supplied bus stop shelter ROW and shelter structures, interspersed throughout the development as determined and recommended by the local school district.

Sussex County – Contact: Richard Kautz 855-7878

The County will be completing its Comprehensive Plan Update next year and requests that all town Plan amendments be completed ASAP and sent to the County for inclusion in the Plan.

The Sussex County Engineer Comments:

A portion of the project is within the boundary of the North Millville Expansion of the Bethany Beach Sanitary Sewer District. There is currently no sewer service to the parcels. The Sussex County Engineering Department requires a connection to the County operated wastewater system. The proposed development will require a developer installed collection system in accordance with Sussex County's standard requirements and procedures.

A major portion of the project is not within a sewer district boundary and a sewer district expansion is required before the portion outside of the sewer district can receive sewer service. Attached is a list of steps to be completed for sewer district expansion. The total EDUs shall not exceed the Sussex County allocation to Millville by the Sea. Inclusion of the additional area shall not increase the total EDUs previously approved by Sussex County for the Millville by the Sea project. In addition, the area must be annexed into the Town of Millville.

There is no gravity collection line adjacent to the parcels. Extension of sewer lines to serve the parcels will be at the developer's expense. The Sussex County Engineer must approve the connection point. A sewer concept plan must be submitted to the Sussex County Engineering Department for review and approval prior to extending the sewer

district boundaries to include the area and prior to construction plan submittal. A checklist for preparing sewer concept plans was handed to the developer at the meeting.

One-time System Connection charges will apply. Please contact Ms. Denise Burns at 302 855-7719 for additional information on charges.

Following receipt of this letter and upon filing of an application with the local jurisdiction, the applicant shall provide to the local jurisdiction and the Office of State Planning Coordination a written response to comments received as a result of the pre-application process, noting whether comments were incorporated into the project design or not and the reason therefore.

Thank you for the opportunity to review this project. If you have any questions, please contact me at 302-739-3090.

Sincerely,

A handwritten signature in cursive script that reads "Constance C. Holland".

Constance C. Holland, AICP
Director

CC: Town of Millville
Sussex County

June 20, 2006

Mr. Todd J. Sammons
Project Engineer
DelDOT Division of Planning
P.O. Box 778
Dover, DE 19903

RE: Agreement No. 1294
Traffic Impact Study Review Services
Task No. 76 – Millville by the Sea

Dear Mr. Sammons,

McCormick Taylor has completed its review of the Traffic Impact Study (TIS) for the development of the Millville by the Sea and Barrington Park subdivisions prepared by The Traffic Group, received by DelDOT on October 25, 2005. This review was assigned as Task Number 76.

Traffic Group prepared the report in a manner generally consistent with DelDOT's *Rules and Regulations for Subdivision Streets*. However, there were numerous errors and omissions, some of them significant, throughout the report. These errors and omissions are discussed in more detail within the attached detailed TIS review.

The TIS evaluates the impacts of the development of the Millville by the Sea and Barrington Park subdivisions, both of which are located in the Town of Millville, Sussex County, Delaware. This review letter focuses on the portions of the TIS and the anticipated traffic impacts of the Millville by the Sea subdivision. McCormick Taylor has prepared a separate review letter for the Barrington Park subdivision. Both subdivisions are owned and are being developed by the same entities, Millville Town Center LLC and Gulfstream Homes.

The proposed Millville by the Sea development includes 1,565 single-family detached houses; 1,435 townhouse units; 130,000 square feet of general office space; and 130,000 square feet of retail center. This development is located on approximately 815 acres in the southwest section of the Town of Millville, on both sides of Delaware Route 17 (Sussex Road 52, Roxana Road). It is located generally east of Burton Farm Road (Sussex Road 373), west of Substation Road (Sussex Road 366), south of Burbage Road (Sussex Road 353), and north of Peppers Corner Road (Sussex Road 365) and Beaver Dam Road (Sussex Road 368). Construction of this development is anticipated to be complete by 2020.

DelDOT currently has four relevant projects within the study area. The first project is the intersection improvement project at Vines Creek Road (Sussex Road 26) and Main Street (north and east approaches are Delaware Route 20/26). This intersection will be re-aligned to allow Delaware Route 20/Delaware Route 26 to operate as the major street approaches and northbound Main Street as the stop-controlled minor street approach. DelDOT has indicated that the Semi-

Final plans for this project have recently been submitted. Construction was previously scheduled to begin in 2006; however, funding has not yet been allocated for right-of-way acquisition or construction of this project. This project is State Contract No. 24-112-07.

The second DelDOT project in the study area is the *SR 26 Local Roadway Improvement Project, from Delaware Route 17 to Muddy Neck Road* (State Contract No. 21-112-04). Improvements include pavement widening to include eleven-foot wide lanes and five-foot wide shoulders, and the addition of turn lanes at various intersections. Design plans are essentially complete for this project, and funding for right-of-way acquisition is available. There is currently no state funding for construction available. Should funding become available, construction is anticipated to begin in 2008 and be completed by 2010. These improvements are assumed to be in place for all future cases of our analysis.

The third project is *SR 26, Atlantic Avenue, from Clarksville to Assawoman Canal* (State Contract 24-112-10). A concept plan exists for this project, and DelDOT is currently working on the design. Improvements include a continuous center left-turn lane the length of the corridor, plus additional turn lanes at certain intersections. There is currently no state funding for right-of-way acquisition or construction. Should funding become available, construction is anticipated to begin in 2010 and be completed by 2012. These improvements are assumed to be in place for all future cases of our analysis.

The last DelDOT project in the study area is the US Route 113 North-South Study. This planning study is being conducted by DelDOT to consider capacity improvements for the US Route 113 corridor from north of Milford to the Delaware/Maryland state line. The project will continue to study viable alternatives for north/south capacity improvements throughout Sussex County. Many alternatives are being studied, both on and off existing alignments. In October 2005, DelDOT narrowed the range of alternatives under study. These alternatives will be studied in more detail over the next year. Although none of the alternatives currently under consideration directly impact the proposed development, the ultimate impact on the traffic flow in the area is not yet known. It is expected that DelDOT will select a preferred alternative in early 2007. For more information, please see the project web site at <http://www.deldot.gov/static/projects/us113/>.

Based on our review, we have the following comments and recommendations.

The following intersections exhibit level of service deficiencies without the implementation of physical roadway and/or traffic control improvements:

Table 1. Deficient Intersections

<i>Intersection</i>		<i>Situation For Which Deficiency Occurs</i>			
<i>No.</i>	<i>Location</i>	<i>Case 1: 2004 Existing</i>	<i>Case 5: 2020 w/o Millville by the Sea or Barrington Park</i>	<i>Case 6: 2020 with Millville by the Sea but not Barrington Park</i>	<i>Case 7: 2020 with Millville by the Sea and Barrington Park</i>
5	Powell Farm Road/Peppers Corner Road (Sussex Road 365) and Delaware Route 17		PM	AM, PM, Sat.	AM, PM, Sat.
6	Burbage Road (Sussex Road 353) and Delaware Route 17		AM, PM, Sat.	AM, PM, Sat.	AM, PM, Sat.
7	Delaware Route 26 and Delaware Route 17		Sat.	PM, Sat.	PM, Sat.
9	Powell Farm Road and Burbage Road			PM	PM, Sat.
10	Delaware Route 26, Powell Farm Road, and Omar Road (Sussex Road 54)			Sat.	Sat.
11	Delaware Route 20 (Armory Road) and Omar Road		Sat.	PM, Sat.	AM, PM, Sat.
14	Burbage Road and Substation Road (Sussex Road 366)			AM, PM, Sat.	AM, PM, Sat.
15	Burbage Road and Windmill Drive		Sat.	AM, PM, Sat.	AM, PM, Sat.
17	Beaver Dam Road (Sussex Road 368) and Substation Road			AM, PM, Sat.	AM, PM, Sat.
18	Beaver Dam Road and Central Avenue (Sussex Road 84)		AM, PM, Sat.	AM, PM, Sat.	AM, PM, Sat.
20	Beaver Dam Road and Muddy Neck Road (Sussex Road 361)		Sat.	PM, Sat.	PM, Sat.
21	Bayard Road (Sussex Road 84) and Double Bridges Road (Sussex Road 363)			PM	PM, Sat.
24	Windmill Drive and Central Avenue		PM, Sat.	AM, PM, Sat.	AM, PM, Sat.
25	Delaware Route 26 and Central Avenue	Sat.	PM, Sat.	AM, PM, Sat.	AM, PM, Sat.
26	Delaware Route 26 and Windmill Drive	Sat.	Sat.	AM, PM, Sat.	AM, PM, Sat.
27	Delaware Route 26 and Delaware Route 1 (Coastal Highway)		PM, Sat.	PM, Sat.	PM, Sat.
28	Main Street and Vines Creek Road (both roads are Delaware Route 20/Delaware Route 26)	Sat.	AM, PM, Sat.	AM, PM, Sat.	AM, PM, Sat.
29	Delaware Route 26 and Delaware Route 20 (Armory Road)		Sat.	Sat.	Sat.
30	Delaware Route 20, Handy Road (Sussex Road 337A) and US Route 113 (DuPont Boulevard)	Sat.	Sat.	AM, PM, Sat.	AM, PM, Sat.

Note: AM = morning peak hour
 PM = afternoon peak hour
 Sat. = Saturday peak hour

This area has significant levels of seasonal traffic, particularly along the main roads. If this development is approved as currently proposed, the improvements required to achieve acceptable Levels of Service for Saturday peak hour conditions (and in some cases, afternoon peak hour conditions as well), at most of the intersections along Delaware Route 26 are beyond what is already planned for the *SR 26, Atlantic Avenue, from Clarksville to Assawoman Canal* project. These additional capacity improvements will likely be infeasible based on physical limitations, right-of-way constraints, and public opposition.

The following intersections require additional improvements that are beyond the existing DelDOT projects described previously, are most likely infeasible due to physical limitations and right-of-way constraints, and would therefore not be implemented. If no additional improvements are made, the following intersections and time periods are expected to operate at LOS F.

**Table 2. Deficient Intersections within Planned DelDOT Projects
(With No Viable Solutions)**

Name of State Contract	State Contract No.	Intersection	2020 Time Periods Expected to Operate at LOS F
Vines Creek Road and Main Street Intersection Improvement Project	24-112-07	Vines Creek Road (Delaware Route 20/Delaware Route 26) and Main Street	PM and Saturday
SR 26, Atlantic Avenue, from Clarksville to Assawoman Canal	24-112-10	Delaware Route 26 and Delaware Route 17	PM and Saturday
		Delaware Route 26 and Central Avenue	AM, PM and Saturday
		Delaware Route 26 and Windmill Drive	AM, PM and Saturday
		Delaware Route 26 and Powell Farm Road	Saturday

The following intersections require additional improvements that vary from the existing DelDOT projects described above; however, it is expected that the improvements recommended below (and defined in more detail on the following pages) may be feasible.

**Table 3. Deficient Intersections within Planned DelDOT Projects
(With Potentially Viable Solutions)**

Name of State Contract	State Contract No.	Intersection	2020 Time Periods Expected to Operate at LOS F (with Additional Improvements)
SR 26 Local Roadway Improvement Project	21-112-04	Burbage Road and Delaware Route 17 – signal and lane improvements (Items 4 and 5)	None
		Burbage Road and Windmill Drive – signal with southbound right turn lane (Items 11 and 12)	None
		Windmill Drive and Central Avenue – signal and lane improvements (Items 14 and 15)	None

Even with the planned DelDOT projects and improvements noted in this review letter, there are several intersections that are still projected to have level of service deficiencies during one or more time periods examined. Some of these intersections were noted in Table 2; others are not within any current DelDOT project. These intersections are as follows:

- Vines Creek Road and Main Street
- Delaware Route 26 (Vines Creek Road) and Delaware Route 20 (Armory Road)
- Delaware Route 26 and Powell Farm Road
- Delaware Route 26 and Delaware Route 17
- Delaware Route 26 and Windmill Drive
- Delaware Route 26 and Central Avenue
- Delaware Route 26 and Delaware Route 1

Deficiencies in the vicinity of the towns of Millville and Ocean View are projected to be particularly severe by 2020, with volume-to-capacity ratios at signalized intersections in the range of 3.0 to 6.0 during certain peak periods (see LOS tables for details). Given the level of traffic congestion expected on Delaware Route 26, significant improvements are recommended throughout the roadway network off of Delaware Route 26.

Given the size of the proposed development (approximately 815 acres), the amount of traffic expected to be generated (approximately 33,000 trips per day), and the contribution of this development to traffic congestion and safety problems in the area, we strongly recommend that the Town of Millville meet with DelDOT to discuss the implications of the approval of this development, and to discuss possible mitigation measures which could somewhat reduce the traffic impacts of the proposed development. These mitigation measures could include the construction of highway improvements to the extent possible given right-of-way constraints,

additional intersection signalization, and/or entering into a Traffic Mitigation Agreement with the developers. The Traffic Mitigation Agreement could include other nearby developers to work together to study alternate ways to alleviate traffic congestion at these intersections to preserve the integrity of the Delaware Route 26 corridor as a major east-west arterial. These improvements may include things such as alternate parallel roadway networks to divert traffic, mass transit/shuttle bus services to reduce traffic, ITS enhancements to maximize the existing capacity of the corridor, and trip reduction measures (such as ride sharing, variable work hours, etc.) that the developer would agree to implement, and penalties if the measures were not implemented. It should be emphasized that these measures, combined with roadway improvements listed within this review letter, are not expected to improve traffic conditions to an acceptable level.

Should the Town choose to approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan. All applicable agreements (i.e. letter agreements for off-site improvements and traffic signal agreements) should be executed prior to the first entrance plan approval for the proposed development. Further discussions will be necessary between DelDOT, the developer, and the Town to determine which improvements should be completed in what time frame. Note that due to the size and complexity of this TIS, all intersections are described both by name and the letter or number used in the TIS (a map is included on page 26 for reference).

1. The developer should enter into an agreement with DelDOT to fund an equitable portion of the local matching funds for right-of-way acquisition and construction required for the project *SR 26, Atlantic Avenue, from Clarksville to Assawoman Canal* (State Contract 24-112-10). At this time, it is expected that this agreement will be required of at least three other developments in this area. DelDOT expects to determine the cost sharing based on each development's projected daily traffic volume, compared to the total new development projected daily traffic volume.
2. The developer should enter into an agreement with DelDOT to fund an equitable portion of the local matching funds for construction required for the project *SR 26 Local Roadway Improvement Project, from Delaware Route 17 to Muddy Neck Road* (State Contract No. 21-112-04). At this time, it is expected that this agreement will be required of at least three other developments in this area. DelDOT expects to determine the cost sharing based on each development's projected daily traffic volume, compared to the total new development projected daily traffic volume.
3. (Intersection #5) The developer should install a single lane roundabout at the intersection of Powell Farm Road/Peppers Corner Road and Delaware Route 17.

4. (Intersection #6) The developer should improve the intersection of Burbage Road and Delaware Route 17 (Roxana Road), beyond those improvements currently planned by DelDOT as part of Contract 21-112-04. These improvements should include a separate northbound right-turn lane. The developer should coordinate with the DelDOT Subdivision Engineer with regards to the when the additional northbound right-turn lane will need to be installed. The timing of the improvement will be based on the issuance of building permits in the section of Millville by the Sea in close proximity to this intersection, but should tentatively be completed no later than 2015.
5. (Intersection #6) The developer should enter into a signal agreement with DelDOT for the intersection of Burbage Road and Delaware Route 17. The agreement should include pedestrian signals, crosswalks, and interconnection at DelDOT's discretion.
6. (Intersection #8) The developer should install a single lane roundabout at the intersection of Burton Farm Road, Blackwater Road (Sussex Road 374), and Powell Farm Road. Because this intersection is currently an unusually-shaped intersection it will likely be necessary to realign some of the approaches to this intersection to achieve desirable vehicle deflection paths as per FHWA guidelines.
7. (Intersection #9) The developer should improve the intersection of Burbage Road and Powell Farm Road to include an exclusive left-turn lane on the westbound Burbage Road approach.
8. (Intersection #10) The developer should enter into a traffic signal agreement with DelDOT for the realigned intersection of Delaware Route 26, Omar Road, and Powell Farm Road. The agreement should include pedestrian signals, crosswalks, interconnection, and Intelligent Transportation System (ITS) equipment such as Closed Circuit Television (CCTV) cameras at DelDOT's discretion. This agreement could be applicable either for the intersection's existing configuration, or for the realigned configuration proposed for State Contract No. 24-112-10.
9. (Intersection #11) The developer should install a single lane roundabout at the intersection of Omar Road and Delaware Route 20. A preliminary concept will need to be designed in order to determine if this improvement is feasible. Should a roundabout be determined to be infeasible at this location, the developer should enter into a traffic signal agreement with DelDOT for this intersection. The traffic signal agreement should include pedestrian signals, crosswalks, and interconnection at DelDOT's discretion. If a roundabout is determined to be infeasible at this intersection, the developer should improve westbound Omar Road to include an exclusive westbound right-turn lane.

10. (Intersection #14) The developer should install a single-lane roundabout at the intersection of Burbage Road and Substation Road. A preliminary concept will need to be designed in order to determine if this improvement is feasible. Should a roundabout be determined to be infeasible at this location, the developer should enter into a traffic signal agreement with DelDOT for this intersection. The traffic signal agreement should include pedestrian signals, crosswalks, and interconnection at DelDOT's discretion.
11. (Intersection #15) The developer should improve the intersection of Burbage Road and Windmill Drive to include an exclusive southbound right-turn lane along Windmill Drive. This is beyond those improvements currently planned by DelDOT as part of Contract 21-112-04. The developer should coordinate with the DelDOT Subdivision Engineer with regards to the when the additional southbound right-turn lane will need to be installed. The timing of the improvement will be based on the issuance of building permits in the section of Millville by the Sea in close proximity to this intersection, but should tentatively be completed no later than 2015.
12. (Intersection #15) The developer should enter into a traffic signal agreement for the intersection of Burbage Road and Windmill Drive. The agreement should include pedestrian signals, crosswalks, and interconnection at DelDOT's discretion.
13. (Intersection #20) The developer should improve the intersection of Muddy Neck Road and Beaver Dam Road. These improvements should include exclusive left and right-turn lanes on Beaver Dam Road, and an exclusive northbound left-turn lane on Muddy Neck Road (to replace the existing northbound bypass lane). These are beyond those improvements currently planned by DelDOT as part of Contract 21-112-04. The developer should coordinate with the DelDOT Subdivision Engineer with regards to the when the additional lanes will need to be installed. The timing of the improvement will be based on the issuance of building permits in the section of Millville by the Sea in close proximity to this intersection, but should tentatively be completed no later than 2015.
14. (Intersection #24) The developer should improve the intersection of Windmill Drive and Central Avenue. These improvements should include an exclusive southbound right-turn lane on Central Avenue. This is beyond those improvements currently planned by DelDOT as part of Contract 21-112-04. The developer should coordinate with the DelDOT Subdivision Engineer with regards to the when the additional southbound right-turn lane will need to be installed. The timing of the improvement will be based on the issuance of building permits in the section of Millville by the Sea in close proximity to this intersection, but should tentatively be completed no later than 2020.
15. (Intersection #24) The developer should enter into a traffic signal agreement with DelDOT for the intersection of Windmill Drive and Central Avenue. The signal agreement should include pedestrian signals, crosswalks, and interconnection at DelDOT's discretion.

16. (Intersection #26) The developer should enter into a traffic signal agreement with DelDOT for the intersection of Delaware Route 26 and Windmill Drive. The agreement should include pedestrian signals, crosswalks, interconnection, and Intelligent Transportation System (ITS) equipment such as Closed Circuit Television (CCTV) cameras at DelDOT's discretion.
17. (Intersection #29) The developer should enter into an agreement with DelDOT to fund an equitable portion of improvements to the intersection of Delaware Route 26 (Vines Creek Road) and Delaware Route 20 (Armory Road). These improvements should include an exclusive westbound left-turn lane.
18. (Intersection #29) The developer should enter into a traffic signal agreement with DelDOT for the intersection of Delaware Route 26 (Vines Creek Road) and Delaware Route 20 (Armory Road). The agreement should cover pedestrian signals, crosswalks, interconnection, and ITS improvements such as CCTV cameras at DelDOT's discretion.
19. (Intersection #30) The developer should enter into an agreement with DelDOT to fund an equitable portion of improvements to the intersection of US Route 113 and Delaware Route 20 (Handy Road/Sussex Road 337) by installing a second southbound left-turn lane on US Route 113. The eastbound receiving lane on Delaware Route 20 will also require widening to two lanes. The eastbound receiving lane on Delaware Route 20 will likely need to be maintained through the sharp horizontal curve approximately 200 feet east of the intersection before merging back to one lane. This intersection should also be improved to lengthen the acceleration lane on northbound US Route 113 to as long of a distance as practical, up to a distance of 1140 feet (from DelDOT's Road Design Manual, assuming yield conditions and 60 mph on US Route 113). It appears that this last improvement would require lane striping modifications only (no roadway widening would be necessary).
20. (Intersection #30) The developer should enter into a signal agreement with DelDOT for the intersection of US Route 113 and Delaware Route 20. This agreement should cover the equipment adjustments required by the physical and line striping improvements noted in Item No. 19. The agreement should include pedestrian signals, crosswalks, and interconnection at DelDOT's discretion.
21. The developer has proposed an unusually high number of site entrance intersections (twenty) for the proposed Millville By The Sea and Barrington Park developments. This may be appropriate given that this development also has an unusually large size, and given the desire to create a Town Center style development. However, the developer should review the subdivision plan with DelDOT's Subdivision Engineer and the Town to determine whether it would be feasible and desirable to eliminate some of these access points. If access changes are made, then the developer should submit an addendum to the TIS that reevaluates the site access and internal intersections.

22. (Intersections f, g, m, n) The developer should construct a single-lane roundabout at each of the following intersections: Delaware Route 17 and Site Access F, Delaware Route 17 and Site Access G, Substation Road and Site Access M, and Substation Road and Site Access N.
23. For each site entrance on Delaware Route 17 not mentioned above in Item No. 22, the developer should install an exclusive left-turn lane on the state-maintained road to serve traffic entering the site.
24. The developer should improve the following roadways to meet DelDOT's standards as nearly as possible, as noted below. Local road standards include two eleven-foot travel lanes and two five-foot shoulders. Collector road standards include two twelve-foot travel lanes and two eight-foot shoulders. The developer should provide a bituminous concrete overlay to the existing travel lanes, at DelDOT's discretion. DelDOT should analyze the existing travel lanes' pavement section and recommend an overlay thickness to the developer's engineer if necessary.
 - A. Blackwater Road, from Omar Road to Powell Farm Road (local road)
 - B. Substation Road, from Burbage Road to Central Avenue (local road)
 - C. Beaver Dam Road, from Peppers Corner Road to Central Avenue (local road)
 - D. Powell Farm Road, from Delaware Route 26 to Delaware Route 17 (local road)
 - E. Peppers Corner Road, from Delaware Route 17 to Central Avenue (local road)
 - F. Bayard Road, from Central Avenue to Double Bridges Road (collector road)
 - G. Burbage Road, from Omar Road to Delaware Route 17 (collector road)
 - H. Omar Road, from Burbage Road to Delaware Route 20 (collector road)
 - I. Central Avenue, from Peppers Corner Road to Beaver Dam Road (collector road)
25. Along Delaware Route 17, a boulevard concept with two twelve-foot travel lanes, a sixteen-foot landscaped median, two nine-foot parking lanes, and two five-foot bicycle lanes should be pursued with consideration to the following additional amenities: landscaped center median island, destination signage along Delaware Route 17, and community gateway entrance landscaping and signage.
26. The following bicycle and pedestrian improvements should be included:
 - a. A five-foot bicycle lane should be striped through each of the development's entrances (in addition to any required turn lanes) in order to facilitate safe and unimpeded bicycle travel.
 - b. Utility covers should be moved outside of any potential bicycle lane or be flush with the pavement.
 - c. Regulatory/warning signage should be added to any forthcoming plans to this project in order to alert motorists to the presence of bicycle traffic.
 - d. ADA compliant sidewalks six-feet or greater along road frontages connecting to any existing sidewalks on adjoining properties set back a minimum of three-feet from the curb with ADA compliant crosswalks and curb ramps across entrances.

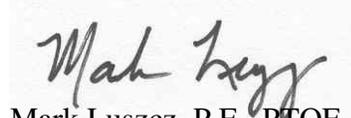
- e. Internal sidewalks to promote walking as a viable transportation alternative should be installed, including sidewalks connecting this development to adjacent residential developments.

Please note that this review generally focuses on capacity and level of service issues; additional safety and operational issues will be further addressed through DeIDOT's subdivision review process.

Additional details on our review of the TIS are attached. Please contact me at (302) 738-0203 or through e-mail at mluszcz@mtmail.biz if you have any questions concerning this review.

Sincerely,

McCormick Taylor, Inc.



Mark Luszcz, P.E., PTOE, AICP
Associate

Enclosures

General Information

Report date: October 25, 2005

Prepared by: The Traffic Group

Prepared for: Millville Town Center, LLC/Gulfstream Homes

Tax parcels:

- 1-34-012.00-380.00
- 1-34-15.00-
 - 120.00
 - 119.00
 - 093.00
 - 091.00
 - 092.00
 - 115.00
 - 117.02
 - 116.01
 - 122.00
 - 121.00
- 1-34-16.00-
 - 017.00
 - 019.00
 - 019.01
 - 002.00
 - 019.02
 - 020.00
 - 021.00
 - 003.00

Generally consistent with DelDOT's Rules and Regulations for Subdivision Streets: Rules and Regulations for Subdivision Streets: Yes. Although the TIS was generally in accordance with DelDOT's standard setup and format, there were numerous errors and omissions, some of them significant, throughout the report. These included the following:

- Highway capacity coding errors such as incorrect volumes, improper lane assumptions, and improper signal timings, indicating a lack of necessary QA/QC measures.
- The TIS failed to recommend and/or analyze improvements at locations that have a LOS E or F for one or more scenarios. Several intersections were shown to warrant signals, but no attempt was made to analyze if those traffic signals would work, whether additional improvements would be needed, or if other feasible improvements were possible. In other instances, their analyses indicated level of service deficiencies but no attempt was made to identify potential improvements.

Project Description and Background

Description: Development includes 1,565 single-family homes, 1435 townhouse units, 130,000 square feet of general office space, 130,000 square foot retail center

Location: This development extends from just west of Route 17 (Roxana Road), south side of Burbage Road (Sussex Road 353), and just east of Windmill Drive (Sussex Road 352), and north of Beaver Dam Road (Sussex Road 366).

Amount of land to be developed: 815 acres

Land use approval(s) needed: Subdivision review

Proposed completion date: 2020

Proposed access locations (19 total):

Nine locations along Route 17 from south to north:

- Intersection a - South of Peppers Corner Road/Powell Farm Road
- Intersection b - North of Peppers Corner Road/Powell Farm Road
- Intersection c - Roundabout at the proposed collector road
- Intersection d - South of the existing 15 foot utility easement
- Intersection e - North of existing 15 foot utility easement
- Intersection f - Roundabout at the proposed Town Center
- Intersection g - Roundabout at the proposed collector road at the NE corner of the proposed Town Center
- Intersection h - North of access point g.
- Intersection i - South of Burbage Road

Five locations along Substation Road from south to north:

- Intersection o - North of Beaver Dam Road
- Intersection n - Roundabout south of the existing 15 foot utility easement
- Intersection m - Roundabout north of the existing 15 foot utility easement
- Intersection l - Just north of access point m) at the NE corner of proposed park
- Intersection k - South of Burbage Road (identical to access point for Barrington Park)

Four locations along Powell Farm Road from south to north:

- Intersection p - Southeast of Delaware Route 17
- Intersection q - Northwest of Delaware Route 17
- Intersection r - South of the existing 15 foot utility easement
- Intersection s - North of the proposed roundabout at Powell Farm Road & Blackwater Road/Burton Farm Road

Additional location:

- Intersection t - Burton Farm Road west of Powell Farm Road

Livable Delaware

(Source: Delaware Strategies for State Policies and Spending, July 2004)

Location with respect to the Strategies for State Policies and Spending Map of Delaware:

Millville by the Sea is located within a Level 3 investment, environmentally sensitive developing area. It should be noted, however, that the land for this development was recently annexed by the Town of Millville. Developments within municipal boundaries generally fall under investment levels 1 or 2. As of now, however, land will be considered under Investment Level 3.

Investment Level 3:

These areas are portions of the county designated for growth, development districts, or long-term annexation. Areas classified as an Investment Level 3 will be considered for state investing after the Level 1 and 2 areas are substantially built out or when the facilities are logical extensions of existing systems and deemed appropriate to serve a particular area. Many of the areas within the Investment Level 3 designation include important farmland and natural resources along with portions of roadways that are designated for corridor capacity protection. Therefore, the character pattern and timing of growth along with federally mandated air and water quality goals should be considered on a case-by-case basis for areas within this designation.

In Investment Level 3 Areas, the state will continue to invest in the regional roadway network and roadway safety while continuing to protect the capacity of major transportation corridors, such as Route 113. Roadway improvements to support new development are not encouraged in Investment Level 3 and funds will not be allocated for these types of improvements until they have been allocated to Level 1 and 2 areas.

Proposed Development's Compatibility with Livable Delaware:

Millville by the Sea falls in Investment Level 3, environmentally sensitive developing area. As described above, investment in these areas will be considered after areas 1 and 2 are substantially built out, or when the facilities are logical extensions of existing systems and deemed appropriate to serve a particular area. The State's policies encourage well-planned, phased development that is sensitive to the natural resource issues in and around the site. Master planning for this large area that includes both Barrington Park and Millville by the Sea, when considering the development pressures in this area of coastal Delaware, will help facilitate more efficient flow of vehicular, bicycle and pedestrian traffic, provide a more cohesive system of open space, and protect vital cultural and natural resources.

The site plan shown in the TIS has a number of interconnected internal roadways, access to existing county roads, and several stub roads into adjacent development areas. This system of roadways will help promote the use of local roads for local trips. While this development is not directly adjacent to major transportation corridors, it is between US Route 113 and Route 1 (Coastal Highway) and will affect the amount of traffic, so investments may be necessary to help preserve the capacity of these corridors. In general, this development is an example of sound master planning and is in adherence with the Livable Delaware's "Strategies for State Policies and Spending."

Comprehensive Plans

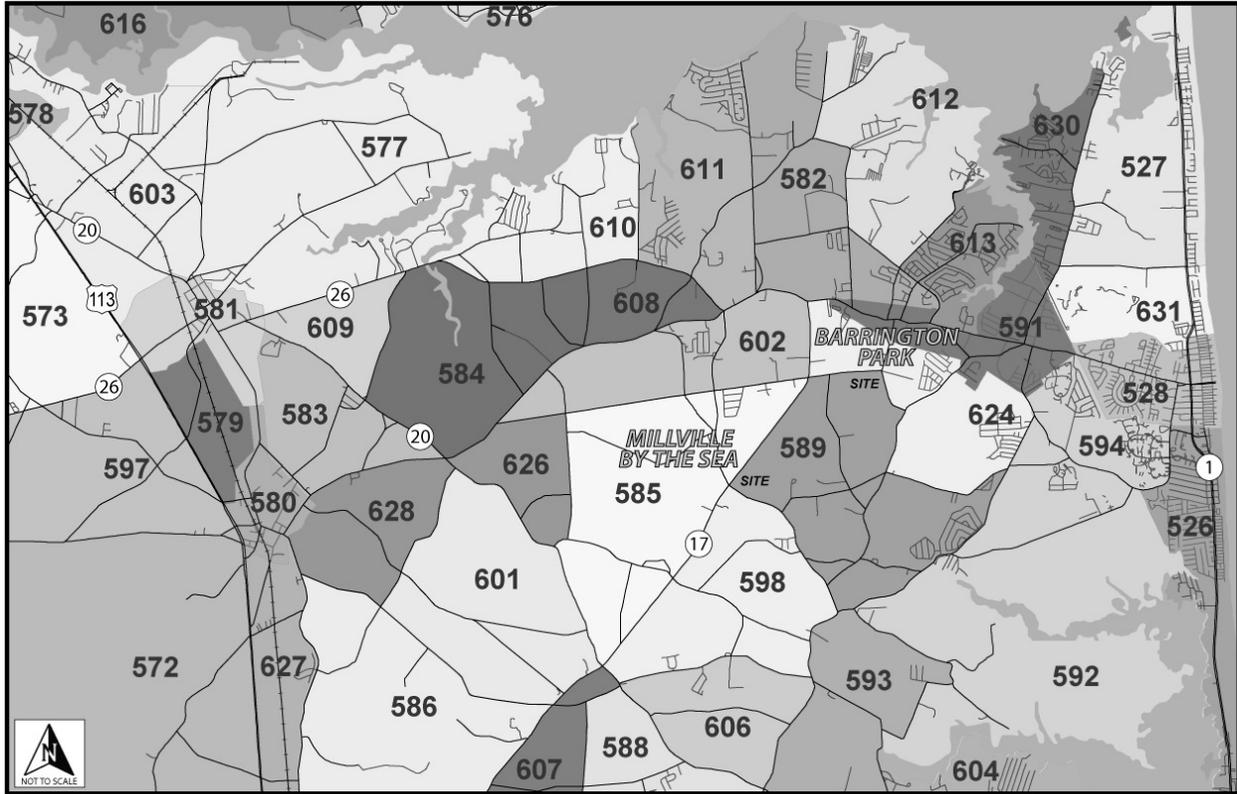
Sussex County Comprehensive Plan: *(Source: 2003 Sussex County Comprehensive Plan Update)* The parcels of land for this development are located largely within an Environmentally Sensitive Developing Area. Residential Planned Communities and Village Style development should be encouraged in this area to provide open space and protect habitat. The site is currently zoned as MR-RPC (medium density residential). The maximum permitted density for residential areas is 4 dwelling units/acre. In Environmentally Sensitive Developing Areas, non-residential uses should be limited to neighborhood shopping and businesses to serve the rapidly expanding population. The Town Center in the proposed development is a good example of village scale shopping centers, which are the preferred location for retail services.

City of Millville Comprehensive Plan: *(Source: 2003 Town of Millville Comprehensive Plan Update)* The parcels of land for this development have been recently annexed by the Town of Millville. The Millville by the Sea development, and some of the details of the number of additional housing units, and the proposed Town Center is specifically mentioned in this plan. The developer has been working with the Town to plan this development, since it will be vital in shaping the future of Millville. The plan calls for a well phased development that will be comprised of a large amount of residential development and a Town Center.

Proposed Development's Compatibility with Comprehensive Plan: This development is a Master Planned Community that includes a Village Style town center, which is indicated as highly desirable for this area. The development is proposed to have a residential density of 3.5 dwelling units/acre, which is under the maximum permitted density for MR-RPC zoning. The developer has been working closely with the Town to help determine the shape and size of the development. In general, this development is compatible with both the Sussex County and Town of Millville Comprehensive Plans.

**Transportation Analysis Zones (TAZ) where development would be located:
585 and 589 (Peninsula TAZ Code)**

TAZ Boundaries:



Current employment estimate for TAZs: 123 in 2005

Future employment estimate for TAZ: 152 in 2020

Current population employment estimate for TAZ: 1478 in 2005

Future population employment estimate for TAZ: 2289 in 2020

Current household estimate for TAZ: 659 in 2005

Future household estimate for TAZ: 1065 in 2005

Relevant committed developments in TAZ: Silver Woods, Bear Trap Dunes, Forest Landing, Fairway Village

Would the addition of committed developments to current estimates exceed future projections: Yes

Would the addition of committed developments and the proposed development to current estimates exceed future projections: Yes

Relevant Projects in the DelDOT Capital Transportation Program

DelDOT currently has four relevant projects within the study area. The first relevant project is an intersection improvement project at Vines Creek Road and Main Street (north and east approaches are Delaware Route 20/26). This intersection will be re-aligned to allow Delaware Route 20 and Delaware Route 26 to operate as the major street approaches and northbound Main Street will be stop-controlled. DelDOT has indicated that the Semi-Final plans for this project have just been submitted. The PS&E date is scheduled for Spring 2006, however funding has not yet been allocated for right of way or construction of this project. This project is State Contract No. 24-112-07.

The second relevant DelDOT project is *SR 26, Atlantic Avenue, from Clarksville to Assawoman Canal* (State Contract 24-112-10). Although there are currently no funds for right-of-way acquisition or construction, a concept plan exists and DelDOT is currently working on the design. Improvements generally include a continuous center left-turn lane the length of the corridor, plus additional turning lanes at certain intersections. This project affects the following intersections:

Table 4. SR 26 Mainline Project Description

<i>No.</i>	<i>Intersection</i>	<i>Appr.</i>	<i>Existing Lane Configuration</i>	<i>Proposed Lane Configuration</i>
7	Route 17 and Route 26	EB	Shared through/right turn lane	Through lane and separate right turn lane
		WB	Separate left-turn lane and through lane	[no change]
		NB	Separate left-turn and right-turn lanes	[no change]
10	Route 26, Omar Road, and Powell Farm Road	Existing intersection will be realigned to make Route 26 the through roadway. Powell Farm will form a signalized T intersection with Route 26 (Intersection 10a), and Omar Road will form an unsignalized T intersection with Powell Farm Road (Intersection 10b). Intersection 10a will have separate left-turn and right-turn lanes for the NB Powell Farm Road approach and a separate left-turn lane for the WB Route 26 approach.		
25	Route 26 and Central Ave	EB	Separate left-turn lane and through lane**	Separate left-turn lane and shared through/right-turn lane
		WB	Separate left-turn lane and shared through/right-turn lane	Separate left-turn lane, through lane, and separate right-turn lane
		NB	Shared left-turn/through/right turn lane	Separate left-turn lane, through lane, and separate right-turn lane
		SB	Shared left-turn/through/right turn lane	Separate left-turn lane, through lane, and separate right-turn lane
26	Route 26 and Windmill Drive	EB	Shared through/right-turn lane	Through lane and separate right-turn lane
		WB	Shared left-turn/through lane	Separate left-turn lane and through lane
		NB	Shared left-turn/right-turn lane	Separate left-turn and right-turn lanes

** right turns are restricted on this approach

McCormick Taylor used this updated configuration for all future year analyses. Construction is not anticipated to begin until 2010 and will be completed by 2012. These improvements are assumed to be in place for all future cases of our analysis.

The third relevant DeIDOT project in the study area is the *SR 26 Local Roadway Improvement Project, from Delaware Route 17 (Roxana Road) to Muddy Neck Road* (State Contract No. 21-112-04). This project affects the following intersections:

Table 5. SR 26 Local Roadway Improvements Project Description

No.	Intersection	Appr.	Existing Lane Configuration	Proposed Lane Configuration
6	Route 17 and Burbage Road	EB	Shared left-turn/through/right turn lane	Separate left-turn lane and shared through/right-turn lane
		WB	Shared left-turn/through/right turn lane	Separate left-turn lane, through lane, and separate right-turn lane**
		NB	Shared left-turn/through/right turn lane	Separate left-turn lane and shared through/right-turn lane
		SB	Shared left-turn/through/right turn lane	Separate left-turn lane and shared through/right-turn lane
15	Burbage Road and Windmill Drive	EB	Shared left-turn/through/right turn lane	Separate left-turn lane and shared through/right-turn lane
		WB	Shared left-turn/through/right turn lane	[no change]
		NB	Shared left-turn/through/right turn lane	Separate left-turn lane and shared through/right-turn lane
		SB	Shared left-turn/through/right turn lane	Separate left-turn lane and shared through/right-turn lane
18	Beaver Dam Road and Central Ave	EB	Shared left-turn/through/right turn lane	Shared left-turn/through lane and separate right-turn lane
		WB	Shared left-turn/through/right turn lane	Shared left-turn/through lane and separate right-turn lane
		NB	Shared left-turn/through/right turn lane	Separate left-turn lane and shared through/right-turn lane
		SB	Shared left-turn/through/right turn lane	Separate left-turn lane and shared through/right-turn lane
19a	Beaver Dam Road and Parker House Road [North]	WB	Shared left-turn/right-turn lane	Separate left-turn lane and right-turn lane
		NB	Shared through/right-turn lane	Through lane and separate right-turn lane
		SB	Shared left-turn/through lane	[no change]
19b	Beaver Dam Road and Parker House Road [South]	EB	Shared left-turn/right-turn lane	[no change]
		NB	Shared left-turn/through lane	[no change]
		SB	Shared through/right-turn lane	Through lane and separate right-turn lane
24	Windmill Drive and Central Ave	EB	Shared left-turn/right-turn lane	Separate left-turn lane and right-turn lane
		NB	Shared left-turn/through lane	Separate left-turn lane and through lane
		SB	Shared through/right-turn lane	[no change]

**Exhibit 9 of the TIS incorrectly depicts the proposed lane configuration for this approach. McCormick Taylor's description is based on DeIDOT's latest available preliminary design plans for this project.

McCormick Taylor used this updated configuration for all future year analyses. There are currently no construction funds available for this project. Should funding become available, construction could begin as early as 2008.

The last relevant DeIDOT project is the US 113 North-South Study, a planning study that considers capacity improvements for the US Route 113 corridor from north of Milford to the Delaware/Maryland state line. The project will continue to study viable alternatives for north/south capacity improvements throughout Sussex County. The extent and scope of this potential project are not yet known. Many alternatives are being studied, both on and off existing alignments. DeIDOT is currently in the process of narrowing down the range of options being considered, and will recommend a few for a more detailed study. Improvements needed at specific locations along the corridor will be identified as DeIDOT moves forward with the project development process.

Trip Generation

Trip generation for the proposed development was computed using comparable land uses and equations contained in Trip Generation, Seventh Edition, published by the Institute of Transportation Engineers (ITE). The following land uses were utilized to estimate the amount of new traffic generated for this development:

- 1565 Single-Family Detached Housing (ITE land use code 210)
- 1435 Townhouses (ITE land use code 230)
- 130,000 square feet General Office (ITE land use code 710)
- 130,000 square feet Retail Center (ITE land use code 820)

Table 6. Trip Generation – Millville by the Sea

Land Use	AM Peak Hour			PM Peak Hour			Saturday Mid-Day		
	In	Out	Total	In	Out	Total	In	Out	Total
1,565 Single-Family Detached Housing	276	829	1105	803	471	1274	758	646	1404
1,435 Townhouses	74	361	435	358	176	534	248	211	459
130,000 Square Feet General Office	203	28	231	38	186	224	25	21	46
130,000 Square Feet Retail Center	112	71	183	357	387	744	534	492	1026
TOTAL TRIPS	665	1289	1954	1556	1220	2776	1565	1370	2935

Overview of TIS

(Note: it is unclear from the TIS how the developers are designating many of these Site Access points. For the purposes of clarity, McCormick Taylor is designating each site access driveway with a letter that corresponds to the intersection number used in the TIS.)

Internal intersections examined:

- a) Delaware Route 17 (Roxana Road) and Site Access A
- b) Delaware Route 17 (Roxana Road) and Site Access B
- c) Delaware Route 17 (Roxana Road) and Site Access C
- d) Delaware Route 17 (Roxana Road) and Site Access D
- e) Delaware Route 17 (Roxana Road) and Site Access E
- f) Delaware Route 17 (Roxana Road) and Site Access F
- g) Delaware Route 17 (Roxana Road) and Site Access G
- h) Delaware Route 17 (Roxana Road) and Site Access H
- i) Delaware Route 17 (Roxana Road) and Site Access I*
- j) Windmill Drive (Sussex Road 353) and Barrington Site Access*
- k) Substation Road (Sussex Road 366) and Barrington Site Access/Millville By The Sea Site Access K*
- l) Substation Road (Sussex Road 366) and Site Access L
- m) Substation Road (Sussex Road 366) and Site Access M
- n) Substation Road (Sussex Road 366) and Site Access N
- o) Substation Road (Sussex Road 366) and Site Access O
- p) Peppers Corner Road (Sussex Road 365) and Site Access P
- q) Powell Farm Road (Sussex Road 365) and Site Access Q
- r) Powell Farm Road (Sussex Road 365) and Site Access R
- s) Powell Farm Road (Sussex Road 365) and Site Access S
- t) Burton Farm Road (Sussex Road 365) and Site Access T

External intersections examined:

- 1) Substation Road (Sussex Road 366) and Barrington Park Site Entrance*
- 2) Windmill Drive (Sussex Road 353) and Barrington Park Site Entrance*
- 3) Millville By The Sea Entrances (see Millville By The Sea TIS Review letter for details)
- 4) Delaware Route 17 and Delaware Route 20
- 5) Delaware Route 17 and Powell Farm Road (Sussex Road 365) and Peppers Corners Road (Sussex Road 365)
- 6) Delaware Route 17 and Burbage Road (Sussex Road 353)*
- 7) Delaware Route 17 and Delaware Route 26*
- 8) Powell Farm Road (Sussex Road 365), Burton Farm Road (Sussex Road 373) and Blackwater Road (Sussex Road 374)
- 9) Powell Farm Road (Sussex Road 365) and Burbage Road (Sussex Road 353)
- 10) Powell Farm Road/Route 26 (Vines Creek Road) and Delaware Route 26 (Atlantic Ave)/Omar Road (Sussex Road 54)
- 11) Delaware Route 20 and Omar Road (Sussex Road 54)
- 12) Burbage Road (Sussex Road 353) and Omar Road (Sussex Road 54)
- 13) Burbage Road (Sussex Road 353) and Blackwater Road (Sussex Road 374)*
- 14) Burbage Road (Sussex Road 353) and Substation Road (Sussex Road 366)*
- 15) Burbage Road (Sussex Road 353) and Windmill Drive (Sussex Road 353)*
- 16) Beaver Dam Road (Sussex 368) and Peppers Corner Road (Sussex Road 365)
- 17) Beaver Dam Road (Sussex 368) and Substation Road (Sussex Road 366)*
- 18) Beaver Dam Road (Sussex 368) and Central Avenue (Sussex Road 84)*

- 19) Beaver Dam Road (Sussex 368) and Parker House Road (Sussex Road 362)
- 20) Beaver Dam Road (Sussex 368) and Muddy Neck Road (Sussex Road 361)
- 21) Bayard Road (Sussex Road 384) and Double Bridges Road (Sussex Road 363)
- 22) Central Avenue (Sussex Road 84) and Bayard Road/Peppers Corner Road (Sussex Road 365)
- 23) Central Avenue (Sussex Road 84) and Substation Road (Sussex Road 366)*
- 24) Central Avenue (Sussex Road 84) and Windmill Drive (Sussex Road 353)*
- 25) Central Avenue (Sussex Road 84) and Delaware Route 26
- 26) Delaware Route 26 and Windmill Drive (Sussex Road 353)*
- 27) Delaware Route 1 and Delaware Route 26
- 28) Main Street and Vines Creek Road (both roads are Delaware Route 20 & 26)
- 29) Delaware Route 26 and Delaware Route 20
- 30) US Route 113 and Delaware Route 20/Handy Road (Sussex Road 337)

*Intersections with asterisks were also analyzed in the Barrington Park review letter.

Conditions examined:

(Note that Case numbers correspond to the Case numbers used in the combined Millville By The Sea/Barrington Park TIS)

Case 1: 2004 Existing Conditions

Case 5: 2020 Background Traffic*

Case 6: 2020 Total Traffic With Millville By The Sea*

Case 7: 2020 Total Traffic With Millville By The Sea + Barrington Park + Doves Landing

* After submission of the FTIS, it was learned that the Doves Landing development had been approved and was considered a “committed development.” Therefore, trips generated by Doves Landing were included in Cases 5 and 6.

Peak hours evaluated: Weekday morning and evening peak hours, Saturday mid-day

Committed developments considered:

- Silver Woods (360 single-family detached houses)
- Bethany Meadows (232 single-family detached houses and 188 condominiums)-**Built Out****
- Water Side (103 apartments, 4,000 square feet general office space, and 6,000 square feet retail commercial space)
- Southampton-**Built Out****
- Hunter’s Run-**Built Out****
- Bear Trap Dunes (75 single-family detached houses)
- Korotki Property (179 single-family detached houses)
- Wedgefield/Avon Park (90 single-family detached houses, 90 duplex units)
- Bay Forest Club (475 single-family detached houses, 326 townhouses)
- Bay Forest Club West (244 single-family detached houses)
- Forest Landing/Banks Property (244 single-family detached houses)

- Fairway Village/Skiber-Chandler Property (312 single-family detached houses)
- Windmill Property (106 townhouses)
- Doves Landing (140 single-family detached houses, 262 townhouses, and a 147,500 square foot retail shopping center)

** Subsequent to submission of the FTIS, McCormick Taylor learned that these developments had already been constructed at the time the traffic counts were conducted by The Traffic Group. Therefore, volumes from these developments were not added to the future scenarios.

Intersection Descriptions

For simplicity, the intersections will have the same numbering system as the TIS.

Internal Intersections

a) Delaware Route 17 & Site Access A

Type of Control: proposed stop-controlled T-intersection

Northbound approach: (Route 17) shared right/through lane

Southbound approach: (Route 17) shared left/through lane

Westbound approach: (Site Access H1) stop-controlled shared left/right lane

b) Delaware Route 17 & Site Access B

Type of Control: proposed stop-controlled intersection

Northbound approach: (Route 17) separate left-turn lane, shared right/through lane

Southbound approach: (Route 17) separate left-turn lane, shared right/through lane

Eastbound approach: (Site Access B) stop-controlled shared right/through/left-turn lane

Westbound approach: (Site Access B) stop-controlled shared right/through/left-turn lane

c) Delaware Route 17 & Site Access C

Type of Control: proposed stop-controlled intersection

Northbound approach: (Route 17) separate left-turn lane, shared right/through lane

Southbound approach: (Route 17) separate left-turn lane, shared right/through lane

Eastbound approach: (Site Access C) stop-controlled shared right/through/left-turn lane

Westbound approach: (Site Access C) stop-controlled shared right/through/left-turn lane

d) Delaware Route 17 & Site Access D

Type of Control: proposed stop-controlled T-intersection

Northbound approach: (Route 17) separate left-turn lane, through lane

Southbound approach: (Route 17) shared right/through lane

Eastbound approach: (Site Access D) stop-controlled shared right/left-turn lane

e) Delaware Route 17 & Site Access E

Type of Control: proposed stop-controlled T-intersection
Northbound approach: (Route 17) separate left-turn lane, through lane
Southbound approach: (Route 17) shared right/through lane
Eastbound approach: (Site Access E) stop-controlled shared right/left-turn lane

f) Delaware Route 17 & Site Access F

Type of Control: proposed roundabout
Northbound approach: (Route 17) single lane approach
Southbound approach: (Route 17) single lane approach
Westbound approach: (Site Access F) stop-controlled single lane approach

g) Delaware Route 17 & Site Access G

Type of Control: proposed roundabout
Northbound approach: (Route 17) single lane approach
Southbound approach: (Route 17) single lane approach
Westbound approach: (Site Access G) stop-controlled single lane approach

h) Delaware Route 17 & Site Access H

Type of Control: proposed stop-controlled T-intersection
Northbound approach: (Route 17) shared left/through lane
Southbound approach: (Route 17) separate left-turn lane, through lane
Westbound approach: (Site Access H) stop-controlled shared left/right lane

i) Delaware Route 17 & Site Access I

Type of Control: proposed stop-controlled T-intersection
Northbound approach: (Route 17) shared left/through lane
Southbound approach: (Route 17) separate left-turn lane, through lane
Westbound approach: (Site Access I) stop-controlled shared left/right lane

j) Barrington Park Access & Windmill Drive (External Int. #2)

Type of Control: proposed stop-controlled T-intersection
Northbound approach: (Windmill Drive) separate left-turn lane and through lane
Southbound approach: (Windmill Drive) shared right/through lane
Eastbound approach: (Barrington Park Access) stop-controlled shared left/right turn lane

k) Barrington Park Site Access/Millville By The Sea Site Access K & Substation Road (External Int. #1)

Type of Control: proposed roundabout
Northbound approach: (Substation Road) single lane approach
Southbound approach: (Substation Road) single lane approach
Eastbound approach: (Millville By The Sea Site Access K) single lane approach
Westbound approach: (Barrington Park Site Access) single lane approach

l) Substation Road & Site Access L

Type of Control: proposed stop-controlled intersection

Northbound approach: (Substation Road) separate left-turn lane, shared right/through lane

Southbound approach: (Substation Road) separate left-turn lane, shared right/through lane

Eastbound approach: (Site Access L) stop-controlled separate left-turn lane, shared right/through lane

Westbound approach: (Site Access L) stop-controlled separate left-turn lane, shared right/through lane

m) Substation Road & Site Access M

Type of Control: proposed roundabout

Northbound approach: (Substation Road) single lane approach

Southbound approach: (Substation Road) single lane approach

Westbound approach: (Site Access M) single lane approach

Eastbound approach: (Site Access M) single lane approach

n) Substation Road & Site Access N

Type of Control: proposed roundabout

Northbound approach: (Substation Road) single lane approach

Southbound approach: (Substation Road) single lane approach

Westbound approach: (Site Access N) single lane approach

Eastbound approach: (Site Access N) single lane approach

o) Substation Road & Site Access O

Type of Control: proposed stop-controlled intersection

Northbound approach: (Substation Road) separate left-turn lane, shared right/through lane

Southbound approach: (Substation Road) separate left-turn lane, shared right/through lane

Eastbound approach: (Site Access O) stop-controlled separate left-turn lane, shared right/through lane

Westbound approach: (Site Access O) stop-controlled separate left-turn lane, shared right/through lane

p) Peppers Corner Road & Site Access P

Type of Control: proposed stop-controlled intersection

Northbound approach: (Site Access P) shared right/through/left-turn lane

Southbound approach: (Site Access P) shared right/through/left-turn lane

Eastbound approach: (Peppers Corner Road) stop-controlled separate left-turn lane, shared right/through lane

Westbound approach: (Peppers Corner Road) stop-controlled shared right/through/left-turn lane

q) Powell Farm Road & Site Access Q

Type of Control: proposed stop-controlled intersection

Northbound approach: (Powell Farm Road) separate left-turn lane, shared right/through lane

Southbound approach: (Powell Farm Road) separate left-turn lane, shared right/through lane

Eastbound approach: (Site Access Q) stop-controlled shared right/through/left-turn lane

Westbound approach: (Site Access Q) stop-controlled shared right/through/left-turn lane

r) Powell Farm Road & Site Access R

Type of Control: proposed stop-controlled T-intersection

Northbound approach: (Powell Farm Road) shared left/through lane

Southbound approach: (Powell Farm Road) shared right/through lane

Eastbound approach: (Site Access R) stop-controlled shared right/left-turn lane

s) Powell Farm Road & Site Access S

Type of Control: proposed stop-controlled T-intersection

Northbound approach: (Powell Farm Road) shared left/through lane

Southbound approach: (Powell Farm Road) shared right/through lane

Westbound approach: (Site Access) stop-controlled shared left/right lane

t) Burton Farm Road & Site Access T

Type of Control: proposed stop-controlled intersection

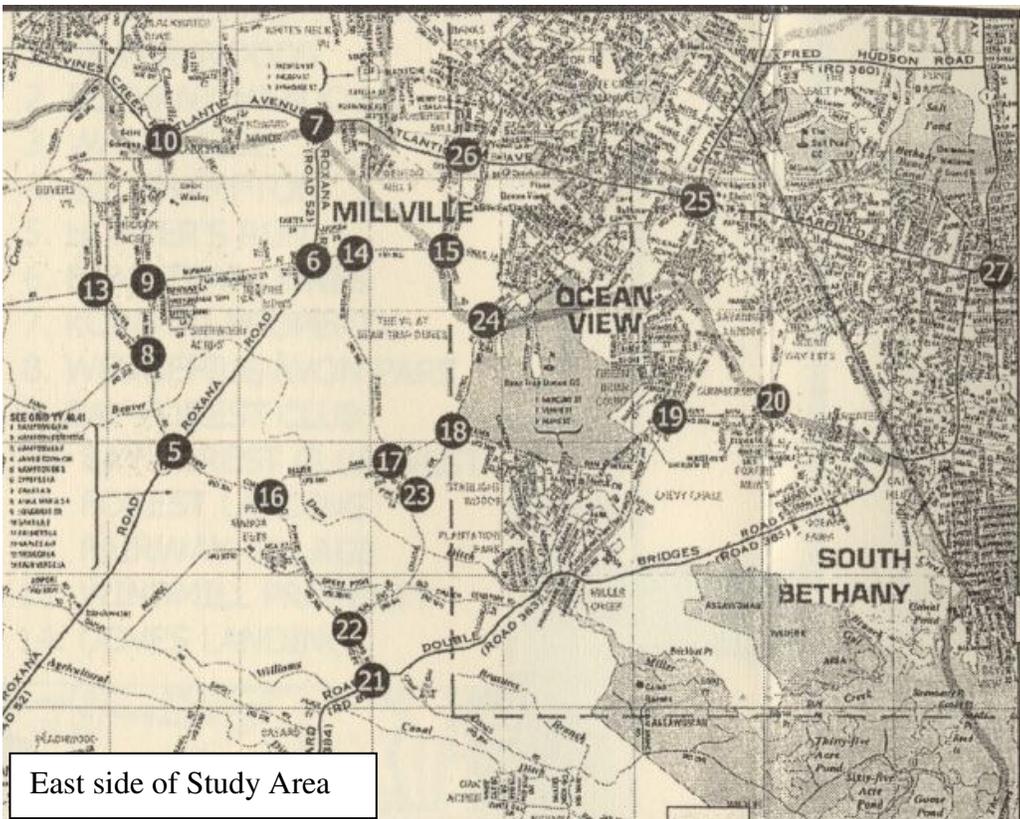
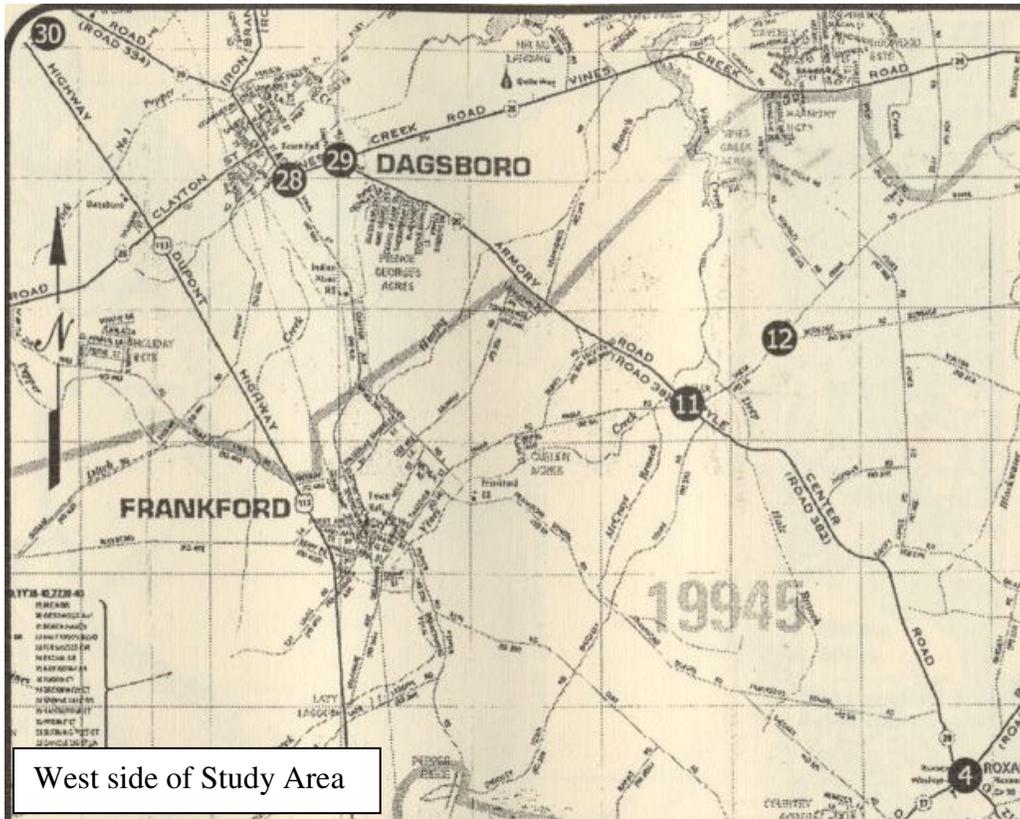
Northbound approach: (Powell Farm Road) shared left/right/through lane

Southbound approach: (Powell Farm Road) shared left/right/through lane

Eastbound approach: (Site Access T) stop-controlled shared right/through/left-turn lane

Westbound approach: (Site Access T) stop-controlled shared right/through/left-turn lane

External intersections



4) Delaware Route 17& Delaware Route 20:

Type of Control: semi-actuated uncoordinated signalized intersection

Northbound approach: (Route 17) separate right-turn lane and shared through/left-turn lane

Southbound approach: (Route 17) shared right/through/left-turn lane

Eastbound approach: (Route 20) shared right/through/left-turn lane

Westbound approach: (Route 20) shared right/through/left-turn lane

5) Delaware Route 17& Powell Farm Road:

Type of Control: two-way stop-controlled intersection

Northbound approach: (Route 17) shared right/through/left-turn lane

Southbound approach: (Route 17) shared right/through/left-turn lane

Eastbound approach: (Powell Farm Road) stop-controlled shared right/through/left-turn lane

Westbound approach: (Powell Farm Road) stop-controlled shared right/through/left-turn lane

6) Delaware Route 17& Burbage Road:

Type of Control: stop-controlled T-intersection

Northbound approach: (Route 17) shared right/through/left-turn lane

Southbound approach: (Route 17) shared right/through/left-turn lane

Eastbound approach: (Burbage Road) stop-controlled shared right/through/left-turn lane

Westbound approach: (Burbage Road) stop-controlled shared right/through/left-turn lane

7) Delaware Route 17 & Delaware Route 26

Type of Control: fully actuated, uncoordinated signalized T-intersection

Northbound approach: (Route 17) separate left-turn lane and right-turn lane

Eastbound approach: (Route 26) shared through/right-turn lane

Westbound approach: (Route 26) separate left-turn lane and through lane

8) Powell Farm Road & Blackwater Road/Burton Farm Road

Type of Control: two-way stop-controlled intersection

Northbound approach: (Powell Farm Road) shared right/through/left-turn lane

Southbound approach: (Powell Farm Road) shared right/through/left-turn lane

Southeast approach: (Blackwater Road) stop-controlled shared right/through/left-turn lane

Northeast approach: (Burton Farm Road) stop-controlled shared right/through/left-turn lane

9) Powell Farm Road & Burbage Road:

Type of Control: stop-controlled T-intersection

Northbound approach: (Powell Farm Road) shared right/through/left-turn lane

Southbound approach: (Powell Farm Road) shared right/through/left-turn lane

Eastbound approach: (Burbage Road) stop-controlled shared right/through/left-turn lane

Westbound approach: (Burbage Road) stop-controlled shared right/through/left-turn lane

10a) Delaware Route 26, Omar Road, and Powell Farm Road:

Type of Control: signalized intersection with split phasing for the northbound and southbound approaches

Northbound approach: (Powell Farm Road) shared right/through/left-turn lane

Southbound approach: (Route 26 East) shared right/through/left-turn lane

Eastbound approach: (Omar Road) shared right/through/left-turn lane

Westbound approach: (Omar Road) shared through/left-turn lane

10b) Delaware Route 26, Omar Road, and Powell Farm Road:

Type of Control: stop-controlled T-intersection

Northbound approach: (Powell Farm Road) stop-controlled left-turn lane

Eastbound approach: (Route 26 East) free-flowing right-turn lane

Westbound approach: (Route 26 West) through lane

11) Delaware Route 20 & Omar Road:

Type of Control: all-way stop controlled intersection w/overhead flasher

Northbound approach: (Route 20) stop-controlled shared right/through/left-turn lane

Southbound approach: (Route 20) stop-controlled shared right/through/left-turn lane

Eastbound approach: (Omar Road) stop-controlled shared right/through/left-turn lane

Westbound approach: (Omar Road) stop-controlled shared right/through/left-turn lane

12) Burbage Road & Omar Road:

Type of Control: two-way stop-controlled intersection

Northbound approach: (Omar Road) shared through/right-turn lane

Southbound approach: (Omar Road) shared through/left-turn lane

Westbound approach: (Burbage Road) stop-controlled shared through/right/left-turn lane

13) Burbage Road & Blackwater Road:

Type of Control: two-way stop-controlled intersection

Northbound approach: (Blackwater Road) shared through/right/left-turn lane

Southbound approach: (Blackwater Road) shared through/right/left-turn lane

Eastbound approach: (Burbage Road) stop-controlled shared through/right/left-turn lane

Westbound approach: (Burbage Road) stop-controlled shared through/right/left-turn lane

14) Burbage Road & Substation Road:

Type of Control: stop-controlled T-intersection

Northbound approach: (Substation Road) stop-controlled shared left/right-turn lane

Eastbound approach: (Burbage Road) shared through/right-turn lane

Westbound approach: (Burbage Road) shared through/left-turn lane

15) Burbage Road/Pine Grove Lane & Windmill Drive:

Type of Control: two-way stop-controlled intersection

Northbound approach: (Windmill Drive) shared through/right/left-turn lane

Southbound approach: (Windmill Drive) shared through/right/left-turn lane

Eastbound approach: (Burbage Road) stop-controlled shared through/right/left-turn lane

Westbound approach: (Pine Grove Lane) stop-controlled shared through/right/left-turn lane

16) Peppers Corner Road & Beaver Dam Road:

Type of Control: stop-controlled T-intersection

Northbound approach: (Peppers Corner Road) shared through/right-turn lane

Southbound approach: (Peppers Corner Road) shared through/left-turn lane

Westbound approach: (Beaver Dam Road) stop-controlled shared right/left-turn lane

17) Beaver Dam Road & Substation Road:

Type of Control: two-way stop controlled intersection

Northbound approach: (Substation Road) shared through/right/left-turn lane

Southbound approach: (Substation Road) shared through/right/left-turn lane

Eastbound approach: (Beaver Dam Road) stop-controlled shared through/right/left-turn lane

Westbound approach: (Beaver Dam Road) stop-controlled shared through/right/left-turn lane

18) Beaver Dam Road & Central Avenue:

Type of Control: two-way stop controlled intersection

Northbound approach: (Central Avenue) shared through/right/left-turn lane

Southbound approach: (Central Avenue) shared through/right/left-turn lane

Eastbound approach: (Beaver Dam Road) stop-controlled shared through/right/left-turn lane

Westbound approach: (Beaver Dam Road) stop-controlled shared through/right/left-turn lane

19a) Parker House Road & Beaver Dam Road (north):

Type of Control: stop-controlled T-intersection

Northbound approach: (Parker House Road) shared through/right-turn lane

Southbound approach: (Parker House Road) shared through/left-turn lane

Westbound approach: (Beaver Dam Road) stop-controlled shared right/left-turn lane

19b) Parker House Road & Beaver Dam Road (south):

Type of Control: stop-controlled T-intersection

Northbound approach: (Parker House Road) shared through/left-turn lane

Southbound approach: (Parker House Road) shared through/right-turn lane

Eastbound approach: (Beaver Dam Road) stop-controlled shared right/left-turn lane

20) Muddy Neck Road & Beaver Dam Road:

Type of Control: stop-controlled T-intersection

Northbound approach: (Muddy Neck Road) shared through/left-turn approach with a bypass lane (treat as separated lanes)

Southbound approach: (Muddy Neck Road) separate right-turn lane and through lane

Eastbound approach: (Beaver Dam Road) stop-controlled shared left/right-turn lane

21) Bayard Road & Double Bridges Road:

Type of Control: stop-controlled T-intersection

Northbound approach: (Bayard Road) shared through/right-turn lane

Southbound approach: (Bayard Road) shared through/left-turn lane

Westbound approach: (Double Bridges Road) stop-controlled shared right/left-turn lane

22) Bayard Road/Peppers Corner Road & Central Avenue:

Type of Control: stop-controlled T-intersection

Northbound approach: (Bayard Road) shared through/right-turn lane

Southbound approach: (Peppers Corner Road) shared through/left-turn lane

Westbound approach: (Central Avenue) stop-controlled separate right-turn lane and left-turn lane

23) Central Avenue & Substation Road:

Type of Control: stop-controlled T-intersection

Northbound approach: (Central Avenue) shared through/right-turn lane

Southbound approach: (Central Avenue) shared through/left-turn lane

Eastbound approach: (Substation Road) stop-controlled shared left/right-turn lane

24) Central Avenue & Windmill Drive:

Type of Control: stop-controlled T-intersection

Northbound approach: (Central Avenue) shared through/left-turn lane

Southbound approach: (Central Avenue) shared through/left-turn lane

Eastbound approach: (Windmill Drive) stop-controlled shared left/right-turn lane

25) Delaware Route 26 & Central Avenue:

Type of Control: fully-actuated uncoordinated signalized intersection

Northbound approach: (Central Avenue) shared left/through/right-turn lane

Southbound approach: (Central Avenue) separate right-turn lane and shared through/left-turn lane

Eastbound approach: (Route 26) separate left-turn lane and through lane. Right turns are banned on this approach.

Westbound approach: (Route 26) separate left-turn lane and shared right/through lane

26) Delaware Route 26 & Windmill Drive:

Type of Control: two-way stop-controlled intersection

Northbound approach: (Windmill Drive) stop-controlled shared left/right-turn lane

Eastbound approach: (Route 26) shared right/through lane

Westbound approach: (Route 26) shared left/through lane

27) Delaware Route 26 & Delaware Route 1 (Coastal Highway):

Type of Control: fully actuated, uncoordinated signalized intersection

Northbound approach: (Route 1) separate left-turn lane, two through lanes, and separate right-turn lane

Southbound approach: (Route 1) separate left-turn lane, two through lanes, and separate right-turn lane

Eastbound approach: (Route 26) separate left-turn lane, through lane, and separate right-turn lane

Westbound approach: (Route 26) separate left-turn lane, through lane, and separate right-turn lane

Note: DelTRAC maintains a CCTV camera at this location.

28) Delaware Route 20/26 & Main Street:

Type of Control: two-way stop-controlled intersection with overhead flasher

Northbound approach: (Main Street) shared through/right-turn lane

Southbound approach: (Main Street/Route 20/26) shared through/left-turn lane

Westbound approach: (Route 26) stop-controlled shared through/right-turn lane

29) Delaware Route 26 & Delaware Route 20/Chapel Road:

Type of Control: semi-actuated uncoordinated signalized intersection

Northbound approach: (Route 20) separate right-turn lane and shared through/left-turn lane

Southbound approach: (Chapel Road) shared right/through/left-turn lane

Eastbound approach: (Route 26) separate right-turn lane, shared through/left-turn lane

Westbound approach: (Route 26) shared left/through/right-turn lane

30) Delaware Route 20/Handy Road & US Route 113:

Type of Control: fully actuated, uncoordinated signalized intersection

Northbound approach: (US Route 113) separate left-turn lane, two through lanes, and separate right-turn lane

Southbound approach: (US Route 113) separate left-turn lane, two through lanes, and separate right-turn lane

Eastbound approach: (Handy Road) separate right-turn lane and through/left-turn lane

Westbound approach: (Route 20) separate right-turn lane and through/left-turn lane

Note: DelTRAC maintains a CCTV camera at this location.

At-Grade Railroad Crossing Description

Location: Delaware Route 20 approximately 1.7 miles east of US Route 113:

Rail Line: This north-south active rail line is a Class I line called the Delmarva Secondary line. It is owned by Norfolk Southern and extends through the entire state.

Eastbound approach: (Delaware Route 20) one through lane with appropriate pavement markings

Westbound approach: (Delaware Route 20) one through lane with appropriate pavement markings

Description: This is an at-grade crossing of an active rail line. The crossing is currently equipped with pavement markings along Delaware Route 20, signing, and warning flashers, but no gates. Traffic volumes on Delaware Route 20 are expected to increase substantially due to the large number of proposed developments in the area. Therefore, it is suggested that DelDOT consider the installation of two-quadrant or four-quadrant gates at this location.

Transit, Pedestrian, and Bicycle Facilities

Existing transit service: There is no transit service within the immediate vicinity of the proposed development. There are existing transit services within the study area along US Route 113 and Delaware Route 1; however, these transit lines are too far away to serve as practical alternatives to car travel for residents and customers of the proposed development.

Planned transit service: None.

Existing bicycle and pedestrian facilities: (Note: due to the large study area for this development, the following description focuses only on the area generally adjacent to the proposed development) According to the *Delaware Kent and Sussex Counties Bicycle Touring Map*, the Come Ride Around the Bay, or C.R.A.B. ride extends through the study area. It travels near the proposed developments in two areas. On the western side of the project area, it travels south along Blackwater Road and continues south through Millville by the Sea along Powell Farm Road/Peppers Corner Road to Central Avenue. On the eastern side of the project area, it travels to the south from Route 26 along Windmill Drive, passing by the eastern edge of Barrington Park, and then turns left at Beaver Dam Road and continues east.

The following table lists the characteristics of each road:

Table 6. Bicycle Characteristics

<i>Road</i>	<i>Location</i>	<i>Cycling Conditions</i>	<i>Traffic Volumes</i>	<i>Bicycle Route</i>
Delaware Route 26	Delaware Route 20 to Central Ave	Above Average	Moderate	None
Delaware Route 26	Central Ave to Delaware Route 1	Above Average	High	None
Delaware Route 17	Delaware Route 20 to Daisy Road	Above Average	Moderate	None
Delaware Route 17	Daisy Road to Delaware Route 26	Average	Moderate	None
Burbage Road	Omar Road to Delaware Route 17	Above Average	Low	None
Burbage Road	Delaware Route 17 to east of Substation Road	Average	Low	None
Burbage Road	East of Substation Road to Windmill Drive	Above Average	Low	None
Peppers Corner Road	Central Avenue/Bayard Road to Beaver Dam Road	Average	Low	C.R.A.B.
Powell Farm Road/ Peppers Corner Road	Beaver Dam Road to Route 26	Above Average	Low	C.R.A.B.
Windmill Drive	Central Ave to Delaware Route 26	Average	Low	C.R.A.B.
Central Avenue	Bayard Road to Beaver Dam Road	Above Average	Low	None
Central Avenue	Beaver Dam Road to Windmill Drive	Above Average	Low	C.R.A.B.
Substation Road	Central Avenue to Burbage Road	Above Average	Low	None
Beaver Dam Road	Peppers Corner Road to Central Avenue	Above Average	Low	None
Blackwater Road	Powell Farm Road to Route 26	Average	Low	C.R.A.B.
Burton Farm Road	Jones Road to Powell Farm Road	Average	Low	None

Planned bicycle and pedestrian facilities: The following bicycle, pedestrian, and transit improvements should be made.

- a. Shoulders with bike lanes five-feet or greater along the site frontage, with five-feet reserved for cyclists through the turn lane, striped appropriately.
- b. Utility covers should be moved outside of any potential bicycle lane or be flush with the pavement.
- c. Regulatory/warning signage should be added to any forthcoming plans to this project in order to alert motorists to the presence of bicycle traffic.

- d. ADA compliant sidewalks six-feet or greater along road frontages connecting to any existing sidewalks on adjoining properties set back a minimum of three-feet from the curb with ADA compliant crosswalks and curb ramps across entrances.
- e. Internal sidewalks to promote walking as a viable transportation alternative should be installed, including sidewalks connecting this development to adjacent residential developments.

In addition, along Delaware Route 17, a boulevard concept will be pursued with the following additional amenities:

- f. Landscaped Center Median Island
- g. Crosswalks across Route 17 to align with entrances
- h. Destination signage along Route 17
- i. Community Gateway Entrance landscaping and signage

Previous Comments

All comments from DelDOT's Scoping Letter and Preliminary Traffic Impact Service (PTIS) Review Letter were addressed.

General HCS Analysis Comments

(see table footnotes on the following pages for specific comments)

- 1) The TIS analyzed all unsignalized and signalized intersections using HCS+. McCormick Taylor used HCS version 4.1f. According to the software developer, McTrans, the results should be identical.
- 2) The TIS analyzed all roundabout intersections using aaSIDRA analysis software. To be consistent with the TIS, McCormick Taylor also utilized aaSIDRA in our roundabout analysis.
- 3) McCormick Taylor used 15 minute analysis period for the roundabout analyses in the aaSIDRA while the TIS used 30 minute analysis time period.
- 4) For analysis of future year conditions, the TIS assumed a PHF of either existing PHF or 0.88, whichever was greater, for all intersections. McCormick Taylor made a similar assumption, except that we assumed that the PHF would be at least 0.92 on the major arterial in the study area (Delaware Route 26).
- 5) There were some differences between the PHF factors used by the TIS compared to the numbers used by McCormick Taylor. The TIS was inconsistent in its use of PHFs for existing and future conditions. McCormick Taylor used the calculated lane-group existing PHFs for existing analyses and the methodology discussed previously for future conditions.
- 6) McCormick Taylor calculated existing truck percents per lane group and for future conditions assumed 2% trucks or higher, if calculated from the existing count data, except where noted.
- 7) After submission of the FTIS, it was learned that the Doves Landing development had been approved and was considered a "committed development." Therefore, trips generated by Doves Landing were included in the Case 5: 2020 Background Traffic

scenario and Case 6: 2020 With Millville By The Sea scenario. For this reason, there are substantial differences between TIS and McCormick Taylor analyses for Cases 5 and 6.

- 8) For signalized intersections, the TIS did not include Y+AR time for all lead and left-turn phases. McCormick Taylor included Y+AR time for all of these phases.
- 9) One of the improvement options for the intersection of Route 26 and Windmill Drive (Intersection #26) includes restricting left-turns from the northbound approach to this intersection. If this improvement were implemented, traffic would be rerouted, affecting the traffic volumes at intersections 6, 7, 14, and 15. Therefore, McCormick Taylor analyses for those intersections also included analyses which verify that the rerouted traffic will not significantly affect the calculated levels of service or recommended improvements at those intersections.
- 10) McCormick Taylor used 13 foot entry lane widths at roundabouts while the TIS used various entry lane widths.

Table 7
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Signalized Intersection ^{1,2}	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 4: Delaware Route 20 & Delaware Route 17						
Case 1: 2004 Existing	B (0.21)	B (0.28)	B (0.44)	B (0.21)	B (0.28)	B (0.42)
Case 5: 2020 without Barrington Park or Millville By The Sea	B (0.41)	B (0.47)	B (0.72)	B (0.43)	B (0.49)	B (0.72)
Case 6: 2020 with Millville By The Sea	C (0.62)	C (0.75)	D (0.92)	B (0.65)	B (0.80)	D (0.94)
Case 7: 2020 with Barrington Park and Millville By The Sea	C (0.66)	C (0.80)	D (0.95)	B (0.70)	C (0.85)	D (0.95)

¹ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

² The TIS and McCormick Taylor used different cycle lengths for some analyses.

Table 8a
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ³ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 5: Delaware Route 17 & Powell Farm Road/Peppers Corner Road						
Case 1: 2004 Existing ⁴						
Eastbound Powell Farm Rd	B (10.1)	B (12.3)	B (11.8)	B (11.2)	B (12.3)	B (11.7)
Westbound Peppers Corner Rd	B (10.7)	B (14.0)	B (12.2)	B (12.2)	B (13.9)	B (12.2)
Northbound Delaware Route 17 – Left	A (7.2)	A (7.6)	A (7.6)	A (7.4)	A (7.6)	A (7.6)
Southbound Delaware Route 17 – Left	A (7.5)	A (7.5)	A (7.5)	A (7.6)	A (7.5)	A (7.5)
Case 5: 2020 without Barrington Park or Millville By The Sea						
Eastbound Powell Farm Rd	B (14.3)	C (18.7)	C (17.7)	B (14.8)	C (20.5)	C (19.8)
Westbound Peppers Corner Rd	C (20.4)	E (36.2)	C (23.9)	C (22.7)	E (46.7)	D (29.0)
Northbound Delaware Route 17 – Left	A (7.7)	A (7.8)	A (7.9)	A (7.7)	A (7.9)	A (8.0)
Southbound Delaware Route 17 – Left	A (7.7)	A (8.0)	A (7.9)	A (7.8)	A (8.1)	A (8.1)

³ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

⁴ The TIS had no volume for the SB through movement for the AM peak hour. McCormick Taylor used the correct volume of 76 vehicles for this move in the AM peak hour.

Table 8b
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ⁵ Roundabout	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 5: Delaware Route 17 & Powell Farm/Peppers Corner Road						
Case 6: 2020 with Millville By The Sea						
Eastbound Powell Farm Road	A (8.7)	B (11.2)	B (12.7)	B (10.0)	B (13.3)	B (14.3)
Westbound Peppers Corner Rd	A (8.9)	B (11.8)	B (10.9)	B (10.3)	B (13.2)	B (13.3)
Northbound Delaware Route 17	A (6.2)	A (9.2)	A (8.9)	A (7.5)	B (10.5)	B (10.4)
Southbound Delaware Route 17	A (6.7)	A (9.4)	A (8.6)	A (8.0)	B (11.2)	B (10.0)
Overall Intersection	A (7.5)	B (10.1)	A (9.8)	A (8.8)	B (11.7)	B (11.4)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Eastbound Powell Farm Road	A (9.2)	B (12.4)	B (14.8)	B (10.4)	B (13.9)	B (15.1)
Westbound Peppers Corner Rd	A (9.4)	B (14.0)	B (13.2)	B (10.7)	B (14.3)	B (14.5)
Northbound Delaware Route 17	A (6.2)	B (10.5)	B (10.2)	A (7.5)	B (11.2)	B (11.0)
Southbound Delaware Route 17	A (6.9)	B (10.4)	A (10.0)	A (8.2)	B (11.7)	B (10.7)
Overall Intersection	A (7.7)	B (11.5)	B (11.4)	A (9.0)	B (12.4)	B (12.2)

⁵ For roundabouts, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. These results were calculated using the aaSIDRA roundabout analysis software program.

Table 9a
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ⁶ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 6: Burbage Road & Delaware Route 17						
Case 1: 2004 Existing						
Eastbound Burbage Road	B (12.6)	B (14.5)	C (15.2)	B (13.0)	B (14.5)	C (15.0)
Westbound Burbage Road	B (11.0)	B (12.4)	B (11.7)	B (11.3)	B (12.4)	B (11.7)
Northbound Delaware Route 17 – Left	A (7.4)	A (7.6)	A (7.6)	A (7.4)	A (7.6)	A (7.6)
Southbound Delaware Route 17 – Left	A (7.6)	A (7.6)	A (7.6)	A (7.6)	A (7.6)	A (7.6)
Case 5: 2020 without Barrington Park or Millville By The Sea						
Eastbound Burbage Road	D (28.0)	F (89.9)	F (83.2)	E (36.0)	F (288.8)	F (350.1)
Westbound Burbage Road	B (13.5)	C (23.0)	C (19.9)	B (14.4)	D (34.0)	D (33.4)
Northbound Delaware Route 17 – Left	A (7.6)	A (7.9)	A (7.9)	A (7.6)	A (7.9)	A (8.0)
Southbound Delaware Route 17 – Left	A (7.9)	A (8.6)	A (8.4)	A (8.0)	A (8.9)	A (8.8)

⁶ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 9b
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ⁷ Roundabout	LOS per TIS ⁸			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 6: Burbage Road & Delaware Route 17						
Case 6: 2020 with Millville By The Sea						
Eastbound Burbage Road	A (7.9)	A (8.8)	A (9.3)	B (10.2)	C (27.6)	D (40.8)
Westbound Burbage Road	A (7.8)	A (9.7)	A (9.7)	B (11.9)	D (37.1)	E (64.7)
Northbound Delaware Route 17	A (6.8)	A (7.9)	A (8.1)	A (8.9)	C (27.0)	C (25.2)
Southbound Delaware Route 17	A (8.2)	B (10.2)	B (10.8)	B (10.5)	C (33.6)	D (48.2)
Overall Intersection	A (7.6)	A (9.2)	A (9.5)	B (10.6)	C (32.1)	D (47.2)
Case 6: 2020 with Millville By The Sea (with redistribution) ⁹						
Eastbound Burbage Road	--	--	--	B (10.2)	C (27.2)	D (41.6)
Westbound Burbage Road	--	--	--	B (12.2)	D (44.1)	E (73.5)
Northbound Delaware Route 17	--	--	--	A (8.9)	C (27.0)	C (25.7)
Southbound Delaware Route 17	--	--	--	B (10.5)	C (32.2)	D (44.0)
Overall Intersection	--	--	--	B (10.7)	C (34.0)	D (49.5)

⁷ For roundabouts, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. These results were calculated using the aaSIDRA roundabout analysis software program.

⁸ The TIS analyzed this intersection as a two-lane roundabout. This would require two approach and two exit lanes along each roundabout leg (a four-lane roadway cross-section). Therefore, McCormick Taylor analyzed this improvement option as a one-lane roundabout.

⁹ One of the Improvement Options for the intersection of Route 26 & Windmill Drive consists of banning northbound left turns at that intersection. That traffic would be redistributed to other adjacent intersections, including this one. McCormick Taylor therefore analyzed the effects of this redistribution.

Table 9c
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁰ Roundabout	LOS per TIS ¹¹			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 6: Burbage Road & Delaware Route 17						
Case 7: 2020 with Barrington Park and Millville By The Sea						
Eastbound Burbage Road	A (7.7)	A (9.3)	A (9.0)	B (10.2)	D (39.5)	D (48.4)
Westbound Burbage Road	A (7.8)	B (10.2)	A (9.7)	B (12.9)	D (48.0)	F (84.6)
Northbound Delaware Route 17	A (7.1)	A (9.7)	A (9.0)	A (9.1)	D (41.7)	C (32.1)
Southbound Delaware Route 17	A (8.8)	B (11.2)	B (11.4)	B (10.9)	D(43.9)	E (57.7)
Overall Intersection	A (7.8)	B (10.2)	A (9.9)	B (11.2)	D (44.1)	E (59.7)
Case 7: 2020 with Millville By The Sea (with redistribution) ¹²						
Eastbound Burbage Road	--	--	--	B (10.2)	D (37.2)	D (52.3)
Westbound Burbage Road	--	--	--	B (14.1)	E (62.6)	F (102.2)
Northbound Delaware Route 17	--	--	--	A (9.1)	D (41.7)	C (34.1)
Southbound Delaware Route 17	--	--	--	B (10.9)	D (36.6)	D (49.1)
Overall Intersection	--	--	--	B (11.7)	D (46.7)	E (65.1)

¹⁰ For roundabouts, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. These results were calculated using the aaSIDRA roundabout analysis software program.

¹¹ The TIS analyzed this intersection as a two-lane roundabout. This would require two approach and two exit lanes along each roundabout leg (a four-lane roadway cross-section). Therefore, McCormick Taylor analyzed this improvement option as a one-lane roundabout.

¹² One of the Improvement Options for the intersection of Route 26 & Windmill Drive consists of banning northbound left turns at that intersection. That traffic would be redistributed to other adjacent intersections, including this one. McCormick Taylor therefore analyzed the effects of this redistribution.

Table 9d
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Signalized Intersection ¹³	LOS per TIS			LOS per McCormick Taylor Review ¹⁴		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 6: Burbage Road & Delaware Route 17						
Case 6: 2020 with Millville By The Sea	--	--	--	B (0.66)	C (0.91)	C (0.82)
Case 6: 2020 with Millville By The Sea (with Redistribution)	--	--	--	B (0.68)	C (0.85)	C (0.92)
Case 7: 2020 with Barrington Park and Millville By The Sea	--	--	--	B (0.67)	D (0.95)	C (0.84)
Case 7: 2020 with Barrington Park and Millville By The Sea (with Redistribution)	--	--	--	B (0.72)	D (0.90)	D (0.94)

¹³ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

¹⁴ Because a two-lane roundabout would be required to achieve an acceptable LOS at this intersection under Case 6 and Case 7 conditions, McCormick Taylor analyzed an additional improvement which consists of adding a northbound right-turn lane (in addition to the improvements already proposed as part of the Route 26 Local Roads Project which include a left-turn lane on all approaches and a westbound right-turn lane) and signaling this intersection with protected/permitted phasing for the southbound and westbound approaches.

Table 10a
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Signalized Intersection ^{15, 16, 17}	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 7: Delaware Route 26 & Delaware Route 17						
Case 1: 2004 Existing	B (0.49)	B (0.52)	B (0.79)	B (0.40)	B (0.50)	B (0.86)
Case 5: 2020 without Barrington Park or Millville By The Sea	B (0.71)	C (0.75)	F (1.14)	B (0.84)	C (0.94)	F (2.88)
Case 6: 2020 with Millville By The Sea	B (0.74)	C (0.79)	F (1.23)	C (0.91)	F (1.00)	F (2.90)
Case 6: 2020 with Millville By The Sea (with redistributed volumes) ¹⁸	--	--	--	C (0.91)	E (0.96)	F (2.91)
Case 7: 2020 with Barrington Park and Millville By The Sea ¹⁹	B (0.73)	C (0.82)	F (1.59)	C (0.90)	F (1.12)	F (2.94)
Case 7: 2020 with Barrington Park and Millville By The Sea (with redistributed volumes)	--	--	--	C (0.88)	F (1.02)	F (2.51)

¹⁵ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

¹⁶ The TIS and McCormick Taylor used different cycle lengths for both existing and future scenarios.

¹⁷ The TIS used a Yellow + All Red time of 5 seconds for the northbound approach. McCormick Taylor used a Yellow + All Red time of 6 seconds for this approach, consistent with the latest available DelDOT signal timing charts for this intersection.

¹⁸ One of the Improvement Options for the intersection of Route 26 & Windmill Drive consists of banning northbound left-turns at that intersection. That traffic would be redistributed to other adjacent intersections, including this one. McCormick Taylor therefore analyzed the effects of this redistribution.

¹⁹ The TIS used incorrect volumes for this scenario. This discrepancy resulted in a substantial difference between TIS and McCormick Taylor analyses.

Table 10b
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Signalized Intersection ²⁰	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 7: Delaware Route 26 & Delaware Route 17						
Case 6: 2020 with Millville By The Sea plus Improvements ²¹	--	--	--	C (0.82)	D (0.92)	F (2.55)
Case 6: 2020 with Millville By The Sea plus Improvements (with redistributed volumes) ^{21, 22}	--	--	--	C (0.75)	D (0.95)	F (2.54)
Case 7: 2020 with Barrington Park and Millville By The Sea plus Improvements ²¹	--	--	--	C (0.84)	D (0.94)	F (2.54)
Case 7: 2020 with Barrington Park and Millville By The Sea plus Improvements (with redistributed volumes) ^{21, 22}	--	--	--	C (0.79)	E (0.95)	F (2.17)

²⁰ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

²¹ The TIS did not analyze any improvements to this intersection. McCormick Taylor analyzed improvements to this intersection which consist of converting the right-turn lane on eastbound Route 26 to a shared through/right-turn lane.

²² One of the Improvement Options for the intersection of Route 26 & Windmill Drive consists of banning northbound left-turns at that intersection. That traffic would be redistributed to other adjacent intersections, including this one. McCormick Taylor therefore analyzed the effects of this redistribution.

Table 11a
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ²³ Two-Way Stop Control	LOS per TIS ²⁴			LOS per McCormick Taylor Review ²⁵		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 8: Powell Farm Road, Blackwater Road & Burton Farm Road						
Case 1: 2004 Existing						
Southeastbound Blackwater Road	B (11.5)	B (10.8)	B (10.2)	A (8.9)	A (8.7)	A (8.2)
Northeastbound Burton Farm Road	A (10.0)	A (9.5)	A (9.6)	A (9.4)	A (9.3)	A (9.3)
Northbound Powell Farm - Left	A (7.2)	A (7.2)	A (7.2)	A (7.5)	A (7.4)	A (7.4)
Case 5: 2020 without Barrington Park or Millville By The Sea						
Southeastbound Blackwater Road	B (12.4)	B (11.9)	B (11.1)	A (9.1)	A (8.9)	A (9.1)
Northeastbound Burton Farm Road	B (10.6)	A (10.0)	A (10.0)	A (9.9)	A (9.8)	A (9.7)
Northbound Powell Farm - Left	A (7.2)	A (7.2)	A (7.2)	A (7.5)	A (7.5)	A (7.5)

²³ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

²⁴ This intersection has an unusual shape, like a backwards “K” instead of a more typical crossroads shape. The TIS analyzed this intersection by treating the northeastbound Burton Farm Road approach as the westbound approach of a standard four-leg TWSC intersection. Their approach considered the through movement along southbound Powell Farm Road (the “spine” of the backwards “K”) as a left-turn movement, resulting in unrealistically high delays.

²⁵ McCormick Taylor analyzed this intersection by running two separate HCS analyses, one analysis treating this as an unsignalized T intersection with Blackwater Road and the second analysis treating this as an unsignalized T intersection with Burton Farm Road.

Table 11b
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ²⁶ Roundabout	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 8: Powell Farm Road, Blackwater Road & Burton Farm Road						
Case 6: 2020 with Millville By The Sea plus Improvements						
Southeastbound Blackwater Road	A (4.8)	A (5.4)	A (5.5)	A (6.3)	A (6.8)	A (6.9)
Northeastbound Burton Farm	A (8.1)	A (9.0)	A (8.2)	A (9.5)	B (10.3)	A (9.6)
Northbound Powell Farm Road	A (4.4)	A (4.3)	A (4.5)	A (5.9)	A (5.9)	A (6.0)
Southbound Powell Farm Road	B (10.8)	B (10.7)	B (10.6)	B (12.5)	B (12.3)	B (12.1)
Overall Intersection	A (6.3)	A (6.5)	A (6.5)	A (7.9)	A (8.0)	A (8.0)
Case 7: 2020 with Barrington Park and Millville By The Sea plus Improvements						
Southeastbound Blackwater Road	A (4.8)	A (5.4)	A (5.5)	A (6.3)	A (6.8)	A (6.9)
Northeastbound Burton Farm	A (8.1)	A (9.0)	A (8.2)	A (9.5)	B (10.3)	A (9.6)
Northbound Powell Farm Road	A (4.4)	A (4.3)	A (4.5)	A (5.9)	A (5.9)	A (6.0)
Southbound Powell Farm Road	B (10.8)	B (10.7)	B (10.6)	B (12.5)	B (12.3)	B (12.1)
Overall Intersection	A (6.3)	A (6.5)	A (6.5)	A (7.9)	A (8.0)	A (8.0)

²⁶ For roundabouts, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. These results were calculated using the aaSIDRA roundabout analysis software program.

Table 12a
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ²⁷ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 9: Powell Farm Road & Burbage Road						
Case 1: 2004 Existing- Powell Farm Road and Burbage Road						
Eastbound Burbage Road	B (10.4)	A (9.9)	B (10.1)	B (10.4)	B (10.1)	B (10.4)
Westbound Burbage Road	A (10.0)	A (9.9)	A (9.9)	A (10.0)	B (10.0)	B (10.2)
Northbound Powell Farm - Left	A (7.4)	A (7.3)	A (7.3)	A (7.4)	A (7.3)	A (7.3)
Southbound Powell Farm - Left	A (7.3)	A (7.4)	A (7.3)	A (7.3)	A (7.4)	A (7.4)
Case 5: 2020 without Barrington Park or Millville By The Sea						
Eastbound Burbage Road	B (10.5)	B (11.0)	B (10.8)	B (10.7)	B (11.0)	B (10.9)
Westbound Burbage Road	B (10.5)	B (11.0)	B (10.9)	B (10.5)	B (11.0)	B (10.8)
Northbound Powell Farm - Left	A (7.4)	A (7.4)	A (7.3)	A (7.4)	A (7.4)	A (7.4)
Southbound Powell Farm - Left	A (7.3)	A (7.5)	A (7.4)	A (7.4)	A (7.5)	A (7.4)
Case 6: 2020 with Millville By The Sea ²⁸						
Eastbound Burbage Road	B (12.9)	B (14.9)	C (18.3)	B (14.2)	C (19.3)	C (19.1)
Westbound Burbage Road	B (14.9)	C (22.0)	D (32.0)	C (16.9)	E (39.6)	D (34.0)
Northbound Powell Farm - Left	A (7.4)	A (7.6)	A (7.5)	A (7.4)	A (7.6)	A (7.5)
Southbound Powell Farm - Left	A (7.7)	A (7.7)	A (7.8)	A (7.8)	A (7.8)	A (7.8)
Case 6: 2020 with Millville By The Sea plus Improvements ²⁹						
Eastbound Burbage Road	--	--	--	B (14.2)	C (19.3)	C (19.1)
Westbound Burbage Road	--	--	--	B (14.3)	C (20.1)	C (18.7)
Northbound Powell Farm - Left	--	--	--	A (7.4)	A (7.6)	A (7.5)
Southbound Powell Farm - Left	--	--	--	A (7.8)	A (7.8)	A (7.8)

²⁷ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

²⁸ The TIS had no volume for the SB left turn for the AM peak hour. McCormick Taylor used the correct volume of 30 vph for this movement in the AM peak hour.

²⁹ The TIS did not analyze any improvements to this intersection. McCormick Taylor analyzed improvements to this intersection which consist of widening the westbound approach to include an exclusive left turn lane.

Table 12b
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ³⁰ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 9: Powell Farm Road & Burbage Road						
Case 7: 2020 with Barrington Park and Millville By The Sea ³¹						
Eastbound Burbage Road	B (14.5)	C (22.2)	C (20.3)	B (14.0)	C (22.4)	C (21.4)
Westbound Burbage Road	C (18.9)	F (60.0)	E (40.0)	C (19.3)	F (60.5)	E (48.3)
Northbound Powell Farm - Left	A (7.4)	A (7.6)	A (7.5)	A (7.4)	A (7.6)	A (7.5)
Southbound Powell Farm - Left	A (7.8)	A (7.8)	A (7.8)	A (7.8)	A (7.8)	A (7.8)
Case 7: 2020 with Barrington Park and Millville By The Sea plus Improvements ³²						
Eastbound Burbage Road	--	--	--	B (14.6)	C (22.4)	C (21.4)
Westbound Burbage Road	--	--	--	B (15.7)	C (23.1)	C (20.8)
Northbound Powell Farm - Left	--	--	--	A (7.4)	A (7.6)	A (7.5)
Southbound Powell Farm - Left	--	--	--	A (7.8)	A (7.8)	A (7.8)

³⁰ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

³¹ The TIS had no volume for the SB right turn for the AM peak hour. McCormick Taylor used the correct volume of 3 vph for this movement in the AM peak hour.

³² The TIS did not analyze any improvements to this intersection. McCormick Taylor analyzed improvements to this intersection which consist of widening the westbound approach to include an exclusive left-turn lane.

Table 13a
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Signalized Intersection ^{33, 34, 35}	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 10a: Delaware Route 26, Omar Road & Powell Farm Road						
Case 1: 2004 Existing ³⁶	B (0.43)	B (0.65)	B (0.79)	B (0.40)	B (0.46)	C (0.70)
Case 5: 2020 without Barrington Park or Millville By The Sea	A (0.51)	A (0.70)	C (0.89)	B (0.49)	B (0.76)	C (0.92)
Case 6: 2020 with Millville By The Sea	B (0.64)	B (0.85)	F (0.98)	B (0.67)	B (0.86)	F (1.07)
Case 7: 2020 with Barrington Park and Millville By The Sea	B (0.64)	C (0.92)	F (1.16)	B (0.69)	C (0.85)	F (1.11)

³³ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

³⁴ The TIS and McCormick Taylor used different cycle lengths for both existing and future scenarios.

³⁵ In all future scenarios, this intersection is anticipated to be re-aligned as part of the Route 26 Corridor Project. This lane configuration includes 1 through, 1 right lane along eastbound Route 26; 1 left, 1 through along westbound Route 26 and exclusive left and right lanes along the northbound approach of Powell Road.

³⁶ The TIS had a volume of 32 for the WB left-turn movement for the PM peak hour. McCormick Taylor used the correct volume of 23 vehicles for this move in the PM peak hour.

Table 13b
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ^{37, 38} Two-Way Stop Control	LOS per TIS ³⁹			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 10b (existing): Powell Farm Road & Delaware Route 26						
Case 1: 2004 Existing						
Northbound Powell Farm - Left	--	--	--	A (9.9)	B (11.2)	B (14.5)
Intersection 10b (future): Powell Farm Road and Omar Road						
Case 5: 2020 without Barrington Park or Millville By The Sea						
Eastbound Omar Road	--	--	--	B (10.6)	B (11.8)	B (11.1)
Northbound Powell Farm - Left	--	--	--	A (7.5)	A (7.7)	A (7.6)
Case 6: 2020 with Millville By The Sea						
Eastbound Omar Road	--	--	--	B (13.8)	C (17.2)	C (15.8)
Northbound Powell Farm - Left	--	--	--	A (7.6)	A (8.2)	A (8.1)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Eastbound Omar Road	--	--	--	B (13.8)	C (17.2)	C (15.8)
Northbound Powell Farm - Left	--	--	--	A (7.6)	A (8.2)	A (8.1)

³⁷ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

³⁸ In all future scenarios, this intersection is proposed to be re-aligned, which includes 1 left, 1 right for eastbound Omar Road; 1 shared left/through for northbound Powell Road, and 1 shared through/right for southbound Powell Road.

³⁹ The TIS did not analyze the unsignalized intersections at this location for any scenario.

Table 14a
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ⁴⁰ All-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 11: Delaware Route 20 & Omar Road						
Case 1: 2004 Existing						
Eastbound Omar Road	A (9.5)	A (8.7)	B (10.0)	A (9.5)	A (8.7)	B (10.0)
Westbound Omar Road	A (8.9)	A (9.1)	B (10.3)	A (8.9)	A (9.1)	B (10.3)
Northbound Delaware Route 20	A (9.6)	A (9.4)	C (15.3)	A (9.6)	A (9.4)	C (15.3)
Southbound Delaware Route 20	A (9.6)	A (9.9)	B (11.7)	A (9.6)	A (9.9)	B (11.7)
Overall Intersection	A (9.5)	A (9.4)	B (13.0)	A (9.5)	A (9.4)	B (13.0)
Case 5: 2020 without Barrington Park or Millville By The Sea						
Eastbound Omar Road	B (11.2)	B (12.1)	C (15.5)	B (11.5)	B (12.8)	C (17.1)
Westbound Omar Road	B (11.3)	B (13.2)	C (18.1)	B (11.6)	B (14.1)	C (20.2)
Northbound Delaware Route 20	B (11.9)	B (13.7)	F (112.5)	B (12.1)	B (14.3)	F (135.0)
Southbound Delaware Route 20	B (12.4)	C (17.0)	D (33.4)	B (12.6)	B (18.0)	E (38.4)
Overall Intersection	B (11.8)	B (14.5)	F (63.1)	B (12.0)	C (15.2)	F (73.4)
Case 6: 2020 with Millville By The Sea						
Eastbound Omar Road	C (15.9)	D (26.6)	D (31.0)	C (16.6)	D (29.6)	E (36.0)
Westbound Omar Road	D (27.0)	F (69.5)	F (110.6)	D (29.5)	F (84.5)	F (121.4)
Northbound Delaware Route 20	C (16.7)	D (27.4)	F (289.5)	C (17.1)	D (28.4)	F (302.8)
Southbound Delaware Route 20	C (21.9)	F (150.3)	F (268.5)	C (22.5)	F (158.8)	F (281.2)
Overall Intersection	C (21.5)	F (83.4)	F (207.2)	C (22.8)	F (90.8)	F (216.4)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Eastbound Omar Road	C (18.2)	D (32.4)	E (39.2)	C (18.1)	D (32.4)	E (39.2)
Westbound Omar Road	E (43.2)	F (105.9)	F (167.3)	E (42.8)	F (106.6)	F (153.0)
Northbound Delaware Route 20	C (18.7)	D (29.1)	F (309.8)	C (18.6)	D (29.1)	F (309.8)
Southbound Delaware Route 20	C (26.2)	F (193.8)	F (316.1)	D (25.9)	F (193.7)	F (316.1)
Overall Intersection	D (29.6)	F (110.8)	F (238.8)	D (29.3)	F (111.0)	F (235.8)

⁴⁰ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 14b
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ⁴¹ Roundabout	LOS per TIS ⁴²			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 11: Delaware Route 20 & Omar Road						
Case 6: 2020 with Millville By The Sea						
Eastbound Omar Road	--	--	--	A (7.5)	A (8.5)	A (8.7)
Westbound Omar Road	--	--	--	A (7.3)	A (7.3)	B (11.5)
Northbound Delaware Route 20	--	--	--	A (7.5)	A (8.5)	B (11.3)
Southbound Delaware Route 20	--	--	--	A (9.3)	B (10.0)	A (10.0)
Overall Intersection				A (7.9)	A (8.7)	B (10.6)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Eastbound Omar Road	--	--	--	A (7.6)	A (8.7)	A (8.9)
Westbound Omar Road	--	--	--	A (7.3)	A (7.4)	B (12.1)
Northbound Delaware Route 20	--	--	--	A (7.6)	A (8.8)	B (12.2)
Southbound Delaware Route 20	--	--	--	A (9.5)	B (10.3)	B (10.3)
Overall Intersection	--	--	--	A (8.0)	A (8.9)	B (11.1)

Signalized Intersection ⁴³	LOS per TIS ⁴²			LOS per McCormick Taylor Review ⁴⁴		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 11: Delaware Route 20 & Omar Road						
Case 6: 2020 with Millville By The Sea	--	--	--	B (0.48)	B (0.70)	C (0.86)
Case 7: 2020 with Millville By The Sea and Barrington Park	--	--	--	B (0.49)	C (0.74)	C (0.91)

⁴¹ For roundabouts, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. These results were calculated using the aaSIDRA roundabout analysis software program.

⁴² The TIS noted that this intersection is expected to warrant signalization, but did not analyze it as a signalized intersection. McCormick Taylor analyzed this intersection as a roundabout and as a signalized intersection.

⁴³ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

⁴⁴ Lane additions corresponding to the signalized option include an exclusive westbound right-turn lane along Omar Road.

Table 15
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ⁴⁵ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 12: Burbage Road & Omar Road						
Case 1: 2004 Existing ⁴⁶						
Westbound Burbage Road	A (9.4)	A (9.3)	A (9.7)	A (10.0)	B (10.0)	A (9.7)
Southbound Omar Road - Left	A (7.6)	A (7.3)	A (7.4)	A (7.6)	A (7.5)	A (7.4)
Case 5: 2020 without Barrington Park or Millville By The Sea ⁴⁷						
Westbound Burbage Road	B (10.1)	B (10.5)	B (11.5)	B (11.2)	B (12.2)	B (11.6)
Southbound Omar Road - Left	A (7.4)	A (7.5)	A (7.7)	A (7.7)	A (7.9)	A (7.7)
Case 6: 2020 with Millville By The Sea						
Westbound Burbage Road	C (16.7)	C (21.1)	C (22.5)	C (16.4)	C (21.7)	C (21.9)
Southbound Omar Road - Left	A (7.9)	A (8.5)	A (8.4)	A (8.0)	A (8.6)	A (8.4)
Case 7: 2020 with Barrington Park and Millville By The Sea ⁴⁸						
Westbound Burbage Road	C (19.5)	D (26.4)	C (20.2)	C (18.4)	D (25.1)	D (25.9)
Southbound Omar Road - Left	A (8.0)	A (8.7)	A (8.1)	A (8.0)	A (8.7)	A (8.5)

⁴⁵ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

⁴⁶ The TIS had no volume for the SB through movement in the AM peak hour or the NB through movement in the PM peak hour. McCormick Taylor used the correct volumes of 71 for the SB through movement in the AM peak hour and 91 for the NB movement in the PM peak hour.

⁴⁷ The TIS had no volume for the NB through movement in the AM peak hour or the NB through movement in the PM peak hour. McCormick Taylor used the correct volumes of 127 for the NB through movement in the AM peak hour and 157 for the NB movement in the PM peak hour.

⁴⁸ The TIS had no volume for the NB through movement in the Saturday peak hour. McCormick Taylor used the correct volume of 129 for this movement in the Saturday peak hour.

Table 16
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ⁴⁹ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 13: Burbage Road & Blackwater Road						
Case 1: 2004 Existing						
Eastbound Burbage Road	A (9.4)	A (9.9)	A (9.5)	A (9.4)	A (9.9)	A (9.5)
Westbound Burbage Road	A (9.3)	A (9.7)	A (9.6)	A (9.3)	A (9.7)	A (9.6)
Northbound Blackwater - Left	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)
Southbound Blackwater - Left	A (7.2)	A (7.3)	A (7.3)	A (7.2)	A (7.3)	A (7.3)
Case 5: 2020 without Barrington Park or Millville By The Sea ⁵⁰						
Eastbound Burbage Road	A (9.7)	B (10.5)	A (9.8)	A (9.7)	B (10.5)	A (9.9)
Westbound Burbage Road	B (10.1)	B (10.5)	B (10.2)	A (10.0)	B (10.6)	B (10.3)
Northbound Blackwater - Left	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)
Southbound Blackwater - Left	A (7.2)	A (7.3)	A (7.3)	A (7.2)	A (7.3)	A (7.3)
Case 6: 2020 with Millville By The Sea						
Eastbound Burbage Road	B (12.6)	C (22.2)	C (20.0)	B (12.6)	C (22.5)	C (19.0)
Westbound Burbage Road	C (15.4)	C (18.6)	C (20.8)	A (19.4)	C (18.6)	C (19.4)
Northbound Blackwater - Left	A (7.5)	A (7.7)	A (7.6)	A (7.5)	A (7.7)	A (7.6)
Southbound Blackwater - Left	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)
Case 7: 2020 with Barrington Park and Millville By The Sea ⁵¹						
Eastbound Burbage Road	B (12.5)	D (29.7)	C (21.1)	B (13.1)	D (30.1)	C (23.3)
Westbound Burbage Road	C (15.8)	C (18.8)	C (20.6)	C (17.0)	C (20.2)	C (21.6)
Northbound Blackwater - Left	A (7.5)	A (7.7)	A (7.5)	A (7.5)	A (7.7)	A (7.6)
Southbound Blackwater - Left	A (7.2)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)

⁴⁹ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

⁵⁰ The TIS had no volume for the WB right-turn movement in the AM peak hour and the SB through movement in the Saturday peak hour. McCormick Taylor used the correct volumes of 7 for the WB right-turn movement and 12 for the SB through movement.

⁵¹ The TIS had no volume for the NB through movement in the AM peak hour, the WB left-turn movement in the PM peak hour, or the SB through movement in the Saturday peak hour. McCormick Taylor used the correct volumes of 50 for the NB through movement in the AM peak hour, 4 for the WB left-turn movement in the PM peak hour, and 50 for the SB through movement.

Table 17a
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ⁵² Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 14: Burbage Road & Substation Road						
Case 1: 2004 Existing ⁵³						
Northbound Substation Road	A (9.7)	B (10.1)	B (10.4)	A (9.7)	B (10.0)	B (10.4)
Westbound Burbage Road - Left	A (7.5)	A (7.5)	A (7.5)	A (7.5)	A (7.5)	A (7.5)
Case 5: 2020 without Barrington Park or Millville By The Sea ⁵⁴						
Northbound Substation Road	B (13.3)	C (15.3)	C (16.3)	B (13.8)	C (17.3)	C (20.0)
Westbound Burbage Road - Left	A (7.8)	A (8.1)	A (8.1)	A (7.9)	A (8.2)	A (8.3)
Case 6: 2020 with Millville By The Sea						
Northbound Substation Road	F (78.5)	F (307.8)	F (574.8)	F (98.4)	F (421.5)	F (743.5)
Westbound Burbage Road - Left	A (8.7)	B (10.0)	B (10.2)	A (8.8)	B (10.3)	B (10.4)
Case 7: 2020 with Barrington Park and Millville By The Sea ⁵⁵						
Northbound Substation Road	F (185.1)	F (438.7)	F (193.4)	F (237.1)	F (790.1)	F (1273)
Westbound Burbage Road - Left	A (8.9)	B (10.2)	B (11.2)	A (8.9)	B (10.9)	B (10.9)

⁵² For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

⁵³ The TIS had no volume for the NB right-turn movement in the PM peak hour. McCormick Taylor used the correct volume of 6 for this movement in the PM peak hour.

⁵⁴ The TIS had no volume for the NB right-turn movement in the AM peak hour or the NB right-turn movement in the PM peak hour. McCormick Taylor used the correct volume of 3 for the NB right-turn movement in the AM peak hour and a volume of 8 for the NB right-turn movement in the PM peak hour.

⁵⁵ The TIS had no volume for the NB right-turn movement in the AM peak, the WB left-turn movement in the PM peak hour, or the WB through movement in the Saturday peak. McCormick Taylor used the correct volumes of 70 for the NB right-turn movement in the AM peak hour, 79 for the WB left-turn movement in the PM peak hour, and 745 in the WB through movement in the Saturday peak hour.

Table 17b
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ^{56,57} Roundabout	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 14: Burbage Road & Substation Road						
Case 6: 2020 with Millville By The Sea						
Northbound Substation Road	--	--	--	B (13.2)	B (14.3)	B (14.9)
Eastbound Burbage Road	--	--	--	A (5.5)	A (5.8)	A (5.8)
Westbound Burbage Road	--	--	--	A (6.7)	A (6.9)	A (7.2)
Overall Intersection	--	--	--	A (7.5)	A (7.2)	A (7.5)
Case 6: 2020 with Millville By The Sea (with redistribution) ⁵⁸						
Northbound Substation Road	--	--	--	B (13.2)	B (14.3)	B (14.9)
Eastbound Burbage Road	--	--	--	A (5.5)	A (5.8)	A (5.8)
Westbound Burbage Road	--	--	--	A (6.7)	A (6.9)	A (7.3)
Overall Intersection	--	--	--	A (7.5)	A (7.2)	A (7.5)
Case 7: 2020 with Millville By The Sea						
Northbound Substation Road	--	--	--	B (13.2)	B (14.3)	B (15.0)
Eastbound Burbage Road	--	--	--	A (5.6)	A (6.2)	A (6.0)
Westbound Burbage Road	--	--	--	A (7.2)	A (7.5)	A (8.9)
Overall Intersection	--	--	--	A (8.0)	A (7.8)	A (8.5)
Case 7: 2020 with Millville By The Sea (with redistribution) ⁵⁸						
Northbound Substation Road	--	--	--	B (13.2)	B (14.3)	B (15.0)
Eastbound Burbage Road	--	--	--	A (5.6)	A (6.2)	A (6.0)
Westbound Burbage Road	--	--	--	A (7.3)	A (7.5)	A (9.5)
Overall Intersection	--	--	--	A (8.0)	A (7.8)	A (8.8)

⁵⁶ For roundabouts, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. These results were calculated using the aaSIDRA roundabout analysis software program.

⁵⁷ The TIS noted that this intersection is expected to warrant signalization, but did not analyze it as a signalized intersection. McCormick Taylor analyzed this intersection as a roundabout and as a signalized intersection.

⁵⁸ One of the Improvement Options for the intersection of Route 26 & Windmill Drive consists of restricting northbound left-turns at that intersection. That traffic would be redistributed to other adjacent intersections, including this one. McCormick Taylor therefore analyzed the effects of this redistribution.

Table 17c
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Signalized Intersection ^{59, 60}	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 14: Burbage Road & Substation Road						
Case 6: 2020 with Millville By The Sea	--	--	--	B (0.63)	B (0.83)	C (0.87)
Case 6: 2020 with Millville By The Sea (with redistribution) ⁶¹	--	--	--	B (0.63)	B (0.83)	C (0.87)
Case 7: 2020 with Barrington Park and Millville By The Sea	--	--	--	B (0.71)	C (0.92)	D (0.94)
Case 7: 2020 with Barrington Park and Millville By The Sea Plus Improvement Option B (with redistribution) ⁶¹	--	--	--	B (0.71)	C (0.93)	D (0.94)

⁵⁹ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

⁶⁰ The TIS noted that this intersection is expected to warrant signalization, but did not analyze it as a signalized intersection. McCormick Taylor analyzed this intersection as a roundabout (Improvement Option A) and as a standard two-phase signalized intersection (Improvement Option B).

⁶¹ One of the Improvement Options for the intersection of Route 26 & Windmill Drive consists of restricting northbound left-turns at that intersection. That traffic would be redistributed to other adjacent intersections, including this one. McCormick Taylor therefore analyzed the effects of this redistribution.

Table 18a
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ⁶² Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 15: Burbage Road & Windmill Drive						
Case 1: 2004 Existing ⁶³						
Eastbound Burbage Road	A (8.7)	A (8.8)	A (9.6)	A (9.2)	A (9.6)	A (9.6)
Westbound Burbage Road	A (9.3)	A (9.6)	B (11.2)	A (9.3)	A (9.1)	B (11.2)
Northbound Windmill Drive - Left	A (7.3)	A (7.4)	A (7.5)	A (7.3)	A (7.5)	A (7.5)
Southbound Windmill Drive - Left	A (7.2)	A (7.3)	A (7.2)	A (7.2)	A (7.3)	A (7.3)
Case 5: 2020 without Barrington Park or Millville By The Sea						
Eastbound Burbage Road	B (12.1)	B (11.9)	B (12.5)	B (13.4)	B (14.0)	C (15.4)
Westbound Burbage Road	B (14.7)	B (11.3)	C (23.2)	C (16.8)	B (13.1)	E (39.9)
Northbound Windmill Drive - Left	A (7.9)	A (7.4)	A (8.3)	A (8.0)	A (8.5)	A (8.7)
Southbound Windmill Drive - Left	A (7.4)	A (8.1)	A (7.4)	A (7.4)	A (7.4)	A (7.4)
Case 6: 2020 with Millville By The Sea						
Eastbound Burbage Road	F (199.9)	F (416.2)	F (683.1)	F (284.6)	F (760.8)	F (1233)
Westbound Burbage Road	C (18.0)	C (15.1)	E (45.9)	C (21.1)	C (19.8)	F (103.8)
Northbound Windmill Drive - Left	A (8.1)	B (10.0)	B (10.5)	A (8.7)	B (11.0)	B (11.7)
Southbound Windmill Drive - Left	A (7.4)	A (7.4)	A (7.4)	A (7.4)	A (7.4)	A (7.4)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Eastbound Burbage Road	F (431.2)	F (1045)	F (1723)	F (452.6)	F (1076)	F (1770)
Westbound Burbage Road	C (24.1)	C (22.7)	F (140.9)	C (24.2)	C (23.3)	F (150.1)
Northbound Windmill Drive - Left	A (8.9)	B (11.8)	B (12.9)	A (8.9)	B (11.9)	B (12.7)
Southbound Windmill Drive - Left	A (7.5)	A (7.5)	A (7.5)	A (7.5)	A (7.5)	A (7.5)

⁶² For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

⁶³ The TIS had no volumes for the EB left-turn lane in the AM peak hour or the EB left-turn lane in the PM peak hour. McCormick Taylor used the correct volumes of 30 for this movement in the AM peak hour and 18 for this movement in the PM peak hour.

Table 18b
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ⁶⁴ Roundabout	LOS per TIS ⁶⁵			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 15: Burbage Road & Windmill Drive						
Case 6: 2020 with Millville By The Sea						
Northbound Windmill Drive	--	--	--	B (12.9)	B (13.3)	B (14.0)
Southbound Windmill Drive	--	--	--	A (7.6)	A (8.8)	B (10.6)
Eastbound Burbage Road	--	--	--	B (10.4)	B (10.3)	B (10.5)
Westbound Burbage Road	--	--	--	B (12.2)	B (14.4)	B (15.5)
Overall Intersection	--	--	--	B (10.6)	B (10.7)	B (11.6)
Case 6: 2020 with Millville By The Sea (with redistribution) ⁶⁶						
Northbound Windmill Drive	--	--	--	B (13.3)	B (13.7)	B (14.3)
Southbound Windmill Drive	--	--	--	A (7.8)	A (9.5)	B (10.9)
Eastbound Burbage Road	--	--	--	B (10.4)	B (10.3)	B (10.5)
Westbound Burbage Road	--	--	--	B (12.2)	B (14.4)	B (15.5)
Overall Intersection	--	--	--	B (10.8)	B (11.0)	B (11.7)

⁶⁴ For roundabouts, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. These results were calculated using the aaSIDRA roundabout analysis software program.

⁶⁵ The TIS noted that this intersection is expected to warrant signalization, but did not analyze it as a signalized intersection. McCormick Taylor analyzed this intersection as a roundabout and as a signalized intersection. In addition to signalization, Improvement Option B would also include an exclusive SB right-turn lane.

⁶⁶ One of the Improvement Options for the intersection of Route 26 & Windmill Drive consists of restricting northbound left-turns at that intersection. That traffic would be redistributed to other adjacent intersections, including this one. McCormick Taylor therefore analyzed the effects of this redistribution.

Table 18c
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ⁶⁷ Roundabout	LOS per TIS ⁶⁸			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 15: Burbage Road & Windmill Drive						
Case 7: 2020 with Barrington Park and Millville By The Sea						
Northbound Windmill Drive	--	--	--	B (12.7)	B (13.2)	B (14.7)
Southbound Windmill Drive	--	--	--	A (7.7)	A (9.8)	B (12.2)
Eastbound Burbage Road	--	--	--	B (10.6)	B (10.7)	B (11.0)
Westbound Burbage Road	--	--	--	B (13.4)	B (15.2)	B (16.7)
Overall Intersection	--	--	--	B (10.7)	B (11.1)	B (12.5)
Case 7: 2020 with Barrington Park and Millville By The Sea (with redistribution) ⁶⁹						
Northbound Windmill Drive	--	--	--	B (13.5)	B (13.9)	B (15.2)
Southbound Windmill Drive	--	--	--	A (8.0)	B (11.2)	B (13.2)
Eastbound Burbage Road	--	--	--	B (10.6)	B (10.8)	B (10.9)
Westbound Burbage Road	--	--	--	B (13.4)	B (15.2)	B (16.7)
Overall Intersection	--	--	--	B (11.0)	B (11.8)	B (12.9)

⁶⁷ For roundabouts, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. These results were calculated using the aaSIDRA roundabout analysis software program.

⁶⁸ The TIS noted that this intersection is expected to warrant signalization, but did not analyze it as a signalized intersection. McCormick Taylor analyzed this intersection as a roundabout and as a signalized intersection. In addition to signalization, which would also include an exclusive SB right-turn lane.

⁶⁹ One of the Improvement Options for the intersection of Route 26 & Windmill Drive consists of restricting northbound left-turns at that intersection. That traffic would be redistributed to other adjacent intersections, including this one. McCormick Taylor therefore analyzed the effects of this redistribution.

Table 18d
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Signalized Intersection ⁷⁰	LOS per TIS ⁷¹			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 15: Burbage Road & Windmill Drive						
Case 6: 2020 with Millville By The Sea	--	--	--	B (0.59)	B (0.71)	B (0.74)
Case 6: 2020 with Millville By The Sea (with redistribution) ⁷²	--	--	--	B (0.61)	B (0.75)	C (0.77)
Case 7: 2020 with Barrington Park and Millville By The Sea P	--	--	--	B (0.56)	B (0.70)	C (0.73)
Case 7: 2020 with Barrington Park and Millville By The Sea (with redistribution) ⁷²	--	--	--	B (0.62)	C (0.76)	C (0.73)

⁷⁰ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

⁷¹ The TIS noted that this intersection is expected to warrant signalization, but did not analyze it as a signalized intersection. McCormick Taylor analyzed this intersection as a roundabout and as a signalized intersection. In addition to signalization, which would also include an exclusive SB right-turn lane.

⁷² One of the Improvement Options for the intersection of Route 26 & Windmill Drive consists of restricting northbound left-turns at that intersection. That traffic would be redistributed to other adjacent intersections, including this one. McCormick Taylor therefore analyzed the effects of this redistribution.

Table 19
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ⁷³ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 16: Beaver Dam Road & Peppers Corner Road						
Case 1: 2004 Existing ⁷⁴						
Westbound Beaver Dam Road	A (9.1)	A (9.4)	A (8.9)	A (9.2)	A (9.9)	A (8.9)
Southbound Peppers Corner Road - Left	A (7.5)	A (7.4)	A (7.4)	A (7.5)	A (7.5)	A (7.4)
Case 5: 2020 without Millville By The Sea or Barrington Park ⁷⁵						
Westbound Beaver Dam Road	A (9.6)	A (9.6)	A (9.3)	A (9.6)	B (10.4)	A (9.3)
Southbound Peppers Corner Road - Left	A (7.6)	A (7.5)	A (7.5)	A (7.6)	A (7.7)	A (7.5)
Case 6: 2020 with Millville By The Sea ⁷⁶						
Westbound Beaver Dam Road	B (10.7)	B (13.9)	B (11.2)	B (10.9)	B (13.9)	B (11.2)
Southbound Peppers Corner Road - Left	A (7.9)	A (8.3)	A (8.1)	A (7.9)	A (8.3)	A (8.1)
Case 7: 2020 with Barrington Park and Millville By The Sea ⁷⁷						
Westbound Beaver Dam Road	B (10.9)	B (13.7)	B (11.5)	B (11.1)	B (14.4)	B (11.5)
Southbound Peppers Corner Road - Left	A (7.9)	A (8.4)	A (8.2)	A (7.9)	A (8.4)	A (8.2)

⁷³ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

⁷⁴ The TIS had no volume for the SB through movement in the AM peak hour or the SB left-turn movement in the PM peak hour. McCormick Taylor used the correct volume of 44 for the SB through movement in the AM peak hour and a volume of 45 for the SB left-turn volume in the PM peak hour.

⁷⁵ The TIS had no volume for the SB through movement in the AM peak hour, the NB through movement in the PM peak hour, or the NB right-turn movement in the Saturday peak hour. McCormick Taylor used the correct volumes of 61 for the SB through movement in the AM peak hour, 84 for the NB through movement in the PM peak hour, and 5 for the NB right-turn movement in the Saturday peak hour.

⁷⁶ The TIS had no volume for the SB through movement in the AM peak hour. McCormick Taylor used the correct volume of 137 for this movement in the AM peak hour.

⁷⁷ The TIS had no volume for the SB through movement in the AM peak hour or the SB through movement in the PM peak hour. McCormick Taylor used the correct volumes of 137 for the SB through movement in the AM peak hour and 192 for the SB through movement in the PM peak hour.

Table 20a
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ⁷⁸ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 17: Beaver Dam Road & Substation Road						
Case 1: 2004 Existing						
Eastbound Beaver Dam Road	A (7.2)	A (7.3)	A (7.3)	A (7.2)	A (7.3)	A (7.3)
Westbound Beaver Dam Road	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)
Northbound Substation Road - Left	B (10.2)	B (10.2)	A (10.0)	B (10.2)	B (10.2)	A (10.0)
Southbound Substation Road - Left	B (10.4)	B (10.5)	B (10.4)	B (10.4)	B (10.5)	B (10.4)
Case 5: 2020 without Millville By The Sea or Barrington Park ⁷⁹						
Eastbound Beaver Dam Road	A (7.3)	A (7.4)	A (7.3)	A (7.3)	A (7.4)	A (7.3)
Westbound Beaver Dam Road	A (7.4)	A (7.5)	A (7.5)	A (7.4)	A (7.5)	A (7.5)
Northbound Substation Road - Left	B (12.2)	B (14.6)	B (13.1)	B (12.2)	B (14.4)	B (13.1)
Southbound Substation Road - Left	B (13.2)	C (16.1)	C (15.6)	B (13.2)	C (16.4)	C (15.6)
Case 6: 2020 with Millville By The Sea						
Eastbound Beaver Dam Road	A (7.5)	A (7.5)	A (7.4)	A (7.5)	A (7.9)	A (7.4)
Westbound Beaver Dam Road	A (7.8)	A (7.8)	A (7.8)	A (7.8)	A (7.8)	A (7.8)
Northbound Substation Road - Left	E (41.4)	F (105.7)	F (65.2)	E (41.1)	F (296.1)	F (62.1)
Southbound Substation Road - Left	F (58.6)	F (112.3)	F (153.3)	F (60.3)	F (145.0)	F (149.0)
Case 7: 2020 with Barrington Park and Millville By The Sea ⁸⁰						
Eastbound Beaver Dam Road	A (7.4)	A (7.4)	A (7.4)	A (7.6)	A (7.5)	A (7.5)
Westbound Beaver Dam Road	A (7.8)	A (7.8)	A (7.9)	A (7.8)	A (7.8)	A (7.9)
Northbound Substation Road - Left	E (48.3)	F (222.6)	F (143.5)	F (57.7)	F (296.1)	F (170.3)
Southbound Substation Road - Left	F (56.9)	F (112.3)	F (162.2)	F (77.3)	F (145.0)	F (186.6)

⁷⁸ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

⁷⁹ The TIS had no volume for the NB right-turn movement in the AM peak hour, the EB right-turn movement in the PM peak hour, or the WB left-turn movement in the PM peak hour. McCormick Taylor used the correct volumes of 3 for the NB right-turn volume in the AM peak hour, 17 for the EB right-turn movement in the PM peak hour, and 39 for the WB left-turn movement in the PM peak hour.

⁸⁰ The TIS had no volume for the SB right-turn movement in the AM peak hour, the SB right-turn movement in the PM peak hour, or the SB right-turn movement in the Saturday peak hour.

Table 20b
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ⁸¹ All-Way Stop Control	LOS per TIS ⁸²			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 17: Beaver Dam Road & Substation Road						
Case 6: 2020 with Millville By The Sea						
Eastbound Beaver Dam Road	--	--	--	B (11.2)	B (14.4)	B (12.7)
Westbound Beaver Dam Road	--	--	--	B (12.1)	C (21.6)	C (18.1)
Northbound Substation Road	--	--	--	A (9.7)	B (11.9)	B (11.2)
Southbound Substation Road	--	--	--	B (14.9)	C (17.5)	C (16.7)
Overall Intersection	--	--	--	B (12.8)	B (18.8)	C (15.9)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Eastbound Beaver Dam Road	--	--	--	A (11.8)	C (16.9)	B (14.3)
Westbound Beaver Dam Road	--	--	--	B (12.7)	D (25.1)	C (20.4)
Northbound Substation Road	--	--	--	A (10.0)	B (12.9)	B (12.0)
Southbound Substation Road	--	--	--	C (17.0)	C (20.5)	C (19.6)
Overall Intersection	--	--	--	B (14.1)	C (20.5)	C (17.9)

⁸¹ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

⁸² The TIS did not analyze any improvements to this intersection, other than indicating that a signal is not warranted. McCormick Taylor analyzed improving this intersection by adding stop signs to convert it to an All-Way Stop Controlled (AWSC) intersection.

Table 21a
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ⁸³ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 18: Beaver Dam Road & Central Avenue						
Case 1: 2004 Existing ⁸⁴						
Eastbound Beaver Dam Road	B (11.0)	B (10.9)	B (10.3)	B (11.3)	B (10.9)	B (10.4)
Westbound Beaver Dam Road	B (10.7)	B (11.4)	B (10.9)	B (10.9)	B (11.4)	B (11.0)
Northbound Central Avenue - Left	A (7.3)	A (7.4)	A (7.4)	A (7.3)	A (7.4)	A (7.4)
Southbound Central Avenue - Left	A (7.4)	A (7.4)	A (7.4)	A (7.5)	A (7.4)	A (7.4)
Case 5: 2020 without Millville By The Sea or Barrington Park ⁸⁵						
Eastbound Beaver Dam Road	C (23.5)	F (53.7)	D (29.1)	E (38.7)	F (198.7)	F (80.7)
Westbound Beaver Dam Road	B (14.6)	D (28.0)	C (15.3)	C (15.2)	F (58.7)	C (23.8)
Northbound Central Avenue - Left	A (7.5)	A (7.7)	A (7.6)	A (7.5)	A (7.8)	A (7.7)
Southbound Central Avenue - Left	A (7.7)	A (7.8)	A (7.8)	A (7.9)	A (8.0)	A (8.1)
Case 6: 2020 with Millville By The Sea						
Eastbound Beaver Dam Road	C (23.5)	F (286.0)	F (408.3)	F (405.7)	F (*)	F (3448)
Westbound Beaver Dam Road	B (14.6)	E (48.4)	F (90.4)	D (28.9)	F (*)	F (*)
Northbound Central Avenue - Left	A (7.5)	A (7.9)	A (7.8)	A (7.6)	A (8.0)	A (7.9)
Southbound Central Avenue - Left	A (7.7)	A (7.6)	A (7.8)	A (7.9)	A (8.0)	A (8.1)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Eastbound Beaver Dam Road	F (587.1)	F (*)	F (*)	F (561.2)	F (*)	F (*)
Westbound Beaver Dam Road	F (94.2)	F (*)	F (*)	F (87.7)	F (*)	F (*)
Northbound Central Avenue - Left	A (7.6)	A (8.0)	A (7.9)	A (7.6)	A (8.0)	A (7.9)
Southbound Central Avenue - Left	A (8.0)	A (8.1)	A (8.2)	A (7.9)	A (8.0)	A (8.2)

*Highway Capacity Software does not generate a result due to excessive delay

⁸³ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

⁸⁴ The TIS had no volume for the NB right-turn movement in the AM peak hour. McCormick Taylor used the correct volume of 27 for this movement in the AM peak hour. The TIS also used a volume of 21 for the WB through movement in the Saturday peak hour. McCormick Taylor used the correct volume of 29 for this movement in the Saturday peak hour, which was corrected after the submission of the TIS

⁸⁵ The TIS used a lane configuration of a shared left/through/right-turn lane on the WB approach. McCormick Taylor used the lane configuration proposed by the Route 26 Local Roads project of a shared left-turn/through lane and separate right-turn lane on the WB approach.

Table 21b
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ⁸⁶ All-Way Stop Control	LOS per TIS ⁸⁷			LOS per McCormick Taylor Review ⁸⁸		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 18: Beaver Dam Road & Central Avenue						
Case 6: 2020 with Millville By The Sea						
Eastbound Beaver Dam Road	--	--	--	C (17.6)	C (19.6)	D (25.3)
Westbound Beaver Dam Road	--	--	--	B (13.3)	D (27.3)	C (17.6)
Northbound Central Avenue	--	--	--	B (14.8)	C (17.6)	C (17.1)
Southbound Central Avenue	--	--	--	B (13.6)	D (25.4)	C (20.8)
Overall Intersection	--	--	--	C (15.0)	C (24.1)	C (20.7)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Eastbound Beaver Dam Road	--	--	--	C (18.5)	C (20.4)	D (27.1)
Westbound Beaver Dam Road	--	--	--	B (13.8)	D (29.1)	C (18.7)
Northbound Central Avenue	--	--	--	C (15.4)	C (19.0)	C (18.4)
Southbound Central Avenue	--	--	--	B (14.5)	D (27.9)	C (22.9)
Overall Intersection	--	--	--	C (15.7)	D (25.9)	C (22.3)

⁸⁶ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

⁸⁷ The TIS noted that this intersection is expected to warrant signalization, but did not analyze it as a signalized intersection.

⁸⁸ McCormick Taylor analyzed improving this intersection as an All-Way Stop Controlled (AWSC) intersection with geometric improvements. These improvements would include lane configurations different than those proposed in the Delaware Route 26 Local Roads Improvement Project. The lane configurations would include an exclusive left-turn lane and shared right/through lane on the eastbound approach. The proposed configuration in the Delaware Route 26 Local Roads Improvement Project would consist of an exclusive right-turn lane and shared left/through lane on the eastbound approach.

Table 22a
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ⁸⁹ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 19a [North]: Beaver Dam Road [North] & Parker House Road						
Case 1: 2004 Existing ⁹⁰						
Westbound Beaver Dam Road	B (10.0)	A (9.6)	B (10.6)	B (10.0)	B (10.3)	B (10.6)
Southbound Parker House Road - Left	A (7.6)	A (7.5)	A (7.6)	A (7.6)	A (7.5)	A (7.6)
Case 5: 2020 without Millville By The Sea or Barrington Park						
Westbound Beaver Dam Road	B (10.5)	B (13.2)	B (12.9)	B (10.7)	B (14.3)	B (14.0)
Southbound Parker House Road - Left	A (8.1)	A (7.9)	A (8.1)	A (8.2)	A (8.0)	A (8.2)
Case 6: 2020 with Millville By The Sea						
Westbound Beaver Dam Road	B (11.0)	C (17.4)	C (16.5)	B (11.3)	C (20.1)	C (18.8)
Southbound Parker House Road - Left	A (8.5)	A (8.1)	A (8.4)	A (8.6)	A (8.2)	A (8.6)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Westbound Beaver Dam Road	B (11.4)	C (22.0)	C (20.2)	B (11.4)	C (22.0)	C (20.2)
Southbound Parker House Road - Left	A (8.7)	A (8.3)	A (8.6)	A (8.7)	A (8.3)	A (8.6)

⁸⁹ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

⁹⁰ The TIS had no volume for the SB through movement in the PM peak hour. McCormick Taylor used the correct volume of 71 for this movement in the PM peak hour.

Table 22b
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ⁹¹ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 19b [South]: Beaver Dam Road [South] & Parker House Road						
Case 1: 2004 Existing ⁹²						
Eastbound Beaver Dam Road	B (10.5)	A (9.9)	B (10.5)	B (10.5)	B (10.4)	B (10.5)
Northbound Parker House Road - Left	A (7.5)	A (7.6)	A (7.6)	A (7.5)	A (7.6)	A (7.6)
Case 5: 2020 without Millville By The Sea or Barrington Park						
Eastbound Beaver Dam Road	B (12.4)	B (11.4)	B (12.0)	B (13.0)	B (11.9)	B (12.7)
Northbound Parker House Road - Left	A (7.7)	A (8.3)	A (8.2)	A (7.8)	A (8.4)	A (8.4)
Case 6: 2020 with Millville By The Sea ⁹³						
Eastbound Beaver Dam Road	C (15.2)	B (13.0)	B (14.2)	C (16.5)	B (13.8)	C (15.2)
Northbound Parker House Road - Left	A (7.4)	A (8.7)	A (8.6)	A (7.9)	A (8.9)	A (8.8)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Eastbound Beaver Dam Road	C (17.7)	B (14.1)	C (16.0)	C (17.7)	B (14.1)	A (15.8)
Northbound Parker House Road - Left	A (7.9)	A (9.0)	A (8.9)	A (7.9)	A (9.0)	A (8.9)

⁹¹ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

⁹² The TIS had no volume for the NB through movement in the AM peak hour. McCormick Taylor used the correct volume of 43 for this movement in the PM peak hour.

⁹³ The TIS had no volume for the SB right-turn movement in the AM peak hour. McCormick Taylor used the correct volume of 204 for this movement in the AM peak hour.

Table 23a
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ⁹⁴ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 20: Beaver Dam Road & Muddy Neck Road						
Case 1: 2004 Existing						
Eastbound Beaver Dam Road	A (10.0)	B (11.4)	B (12.4)	A (10.0)	B (11.8)	B (12.6)
Northbound Muddy Neck Road - Left	A (7.6)	A (7.9)	A (8.1)	A (7.6)	A (8.0)	A (8.1)
Case 5: 2020 without Millville By The Sea or Barrington Park ⁹⁵						
Eastbound Beaver Dam Road	B (11.3)	B (13.6)	D (27.0)	B (12.7)	C (22.1)	E (41.0)
Northbound Muddy Neck Road - Left	A (7.8)	A (8.5)	A (8.8)	A (7.8)	A (8.9)	A (9.1)
Case 6: 2020 with Millville By The Sea ⁹⁶						
Eastbound Beaver Dam Road	B (14.7)	E (41.5)	F (94.1)	C (15.7)	F (70.9)	F (164.6)
Northbound Muddy Neck Road - Left	A (7.9)	A (9.3)	A (9.5)	A (7.9)	A (9.6)	A (9.9)
Case 6: 2020 with Millville By The Sea plus Improvement Option ⁹⁷						
Eastbound Beaver Dam Road	--	--	--	B (13.9)	C (19.8)	D (27.7)
Northbound Muddy Neck Road - Left	--	--	--	A (7.9)	A (9.6)	A (9.9)

⁹⁴ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

⁹⁵ The TIS had no volume for the SB right-turn movement in the PM peak hour. McCormick Taylor used the correct volume of 32 for this movement in the PM peak hour.

⁹⁶ The TIS had no volume for the SB right-turn movement in the AM peak hour. McCormick Taylor used the correct volume of 10 for this movement in the AM peak hour.

⁹⁷ The TIS did not analyze any improvements to this intersection. They did note that a signal would likely be warranted at this intersection. However, McCormick Taylor analyses show that signalization is not necessary if this intersection is widened to provide exclusive left-turn lanes in the EB and NB approaches.

Table 23b
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ⁹⁸ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 20: Beaver Dam Road & Muddy Neck Road						
Case 7: 2020 with Barrington Park and Millville By The Sea						
Eastbound Beaver Dam Road	C (16.8)	F (98.1)	F (190.7)	C (16.7)	F (94.6)	F (202.1)
Northbound Muddy Neck Road – Left	A (8.0)	A (9.8)	A (10.0)	A (7.9)	A (9.8)	B (10.6)
Case 7: 2020 with Millville By The Sea and Barrington Park plus Improvement Option ⁹⁹						
Eastbound Beaver Dam Road	--	--	--	B (14.5)	C (21.3)	D (30.4)
Northbound Muddy Neck Road - Left	--	--	--	A (7.9)	A (9.8)	B (10.0)

Table 18c
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Signalized Intersection ⁹⁷	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 20: Beaver Dam Road & Muddy Neck Road						
Case 6: 2020 with Millville By The Sea	--	--	--	B (0.47)	B (0.52)	B (0.61)
Case 7: 2020 with Millville By The Sea and Barrington Park	--	--	--	B (0.49)	B (0.56)	B (0.61)

⁹⁸ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

⁹⁹ The TIS did not analyze any improvements to this intersection. They did note that a signal would likely be warranted at this intersection. However, McCormick Taylor analyses show that signalization is not necessary if this intersection is widened to provide exclusive left-turn lanes in the EB and NB approaches.

Table 24a
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Barrington Park and Millville By The Sea
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁰⁰ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 21: Double Bridges Road & Bayard Road						
Case 1: 2004 Existing ¹⁰¹						
Westbound Double Bridges Road	B (10.2)	A (9.0)	B (11.0)	B (10.8)	B (11.8)	B (11.2)
Southbound Bayard Road - Left	A (7.7)	A (7.6)	A (7.6)	A (7.7)	A (7.6)	A (7.7)
Case 5: 2020 without Millville By The Sea or Barrington Park ¹⁰²						
Westbound Double Bridges Road	B (11.4)	B (13.3)	B (11.8)	B (13.1)	C (20.4)	C (16.6)
Southbound Bayard Road - Left	A (7.5)	A (7.9)	A (7.9)	A (8.0)	A (8.0)	A (8.1)
Case 6: 2020 with Millville By The Sea ¹⁰³						
Westbound Double Bridges Road	C (15.7)	E (38.7)	B (14.5)	C (16.8)	F (53.9)	D (31.7)
Southbound Bayard Road - Left	A (8.1)	A (8.3)	A (8.4)	A (8.2)	A (8.5)	A (8.6)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Westbound Double Bridges Road	C (17.5)	F (66.2)	E (35.5)	C (17.6)	F (66.2)	E (36.0)
Southbound Bayard Road - Left	A (8.2)	A (8.6)	A (8.6)	A (8.2)	A (8.6)	A (8.6)

¹⁰⁰ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

¹⁰¹ The TIS had no volume for the SB through movement in the AM peak hour or the WB left-turn movement in the PM peak hour. McCormick Taylor used the correct volume of 66 for the SB through movement in the AM peak hour and a volume of 157 for the WB left-turn in the PM peak hour.

¹⁰² The TIS had no volume for the NB right-turn movement in the AM peak hour, the SB through movement in the PM peak hour, or the SB through movement in the Saturday peak hour. McCormick used the correct volumes of 166 for the NB right-turn movement in the AM peak hour, 195 for the SB through movement in the PM peak hour, and 195 for the SB through movement in the Saturday peak hour.

¹⁰³ The TIS had no volume for the SB through movement in the Saturday peak hour. McCormick Taylor used the correct volume of 300 for this movement in the Saturday peak hour.

Table 24b
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁰⁴ All-Way Stop Control	LOS per TIS ¹⁰⁵			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 21: Double Bridges Road & Bayard Road						
Case 6: 2020 with Millville By The Sea						
Westbound Double Bridges Road	--	--	--	B (10.1)	C (16.1)	B (12.8)
Northbound Bayard Road	--	--	--	B (12.2)	D (25.4)	C (21.3)
Southbound Bayard Road	--	--	--	B (12.0)	C (17.3)	C (16.0)
Overall Intersection	--	--	--	B (11.8)	C (20.6)	C (17.9)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Westbound Double Bridges Road	--	--	--	B (10.3)	C (16.7)	B (13.0)
Northbound Bayard Road	--	--	--	B (12.6)	D (30.8)	C (24.5)
Southbound Bayard Road	--	--	--	B (12.8)	C (18.9)	C (17.4)
Overall Intersection	--	--	--	B (12.4)	D (23.7)	C (20.0)

Signalized Intersection ¹⁰³	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 21: Double Bridges Road & Bayard Road						
Case 6: 2020 with Millville By The Sea	--	--	--	B (0.38)	B (0.57)	B (0.52)
Case 7: 2020 with Millville By The Sea and Barrington Park	--	--	--	B (0.39)	B (0.59)	B (0.53)

¹⁰⁴ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

¹⁰⁵ The TIS did not analyze any improvements to this intersection although they did note that a signal would likely be warranted at this intersection. However, converting this intersection to All-Way Stop Control is projected to be an adequate improvement that will provide for acceptable Level of Service conditions.

Table 25
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁰⁶ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 22: Central Avenue & Peppers Corner Road/Bayard Road						
Case 1: 2004 Existing ¹⁰⁷						
Westbound Central Avenue	A (8.8)	A (9.9)	A (9.6)	A (9.7)	A (9.9)	A (9.6)
Southbound Peppers Corner Road - Left	A (7.6)	A (7.5)	A (7.4)	A (7.6)	A (7.5)	A (7.4)
Case 5: 2020 without Millville By The Sea or Barrington Park ¹⁰⁸						
Westbound Central Avenue	A (9.5)	B (11.0)	A (9.8)	B (10.7)	B (11.6)	B (11.1)
Southbound Peppers Corner Road - Left	A (7.6)	A (7.7)	A (7.6)	A (7.6)	A (7.8)	A (7.7)
Case 6: 2020 with Millville By The Sea ¹⁰⁹						
Westbound Central Avenue	B (10.9)	B (15.3)	B (14.3)	B (13.3)	C (17.2)	C (15.9)
Southbound Peppers Corner Road - Left	A (7.7)	A (8.1)	A (8.0)	A (7.8)	A (8.2)	A (8.2)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Westbound Central Avenue	B (14.0)	C (18.5)	C (17.3)	B (14.0)	C (18.5)	C (16.9)
Southbound Peppers Corner Road - Left	A (7.8)	A (8.3)	A (8.2)	A (7.8)	A (8.3)	A (8.2)

¹⁰⁶ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

¹⁰⁷ The TIS had no volume for the WB left-turn movement in the AM peak hour. McCormick Taylor used the correct volume of 51 for this movement in the AM peak hour.

¹⁰⁸ The TIS had no volume for the SB through movement in the AM peak hour or the Saturday peak hour. McCormick Taylor used the correct volumes of 62 in the AM peak hour and 70 in the PM peak hour for this movement.

¹⁰⁹ The TIS had no volume for the SB through movement in the AM peak hour. McCormick Taylor used the correct volume of 138 for this movement in the AM peak hour.

Table 26
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹¹⁰ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 23: Substation Road & Central Avenue						
Case 1: 2004 Existing ¹¹¹						
Eastbound Substation Road	A (8.7)	A (9.1)	A (8.9)	A (8.9)	A (9.1)	A (8.8)
Northbound Central Avenue - Left	A (7.3)	A (7.4)	A (7.4)	A (7.3)	A (7.5)	A (7.4)
Case 5: 2020 without Millville By The Sea or Barrington Park ¹¹²						
Eastbound Substation Road	B (10.0)	B (11.7)	B (10.9)	B (10.4)	B (12.5)	B (11.7)
Westbound Forest Landing Access	B (10.8)	B (11.6)	B (11.2)	B (11.2)	B (12.3)	B (12.2)
Northbound Central Avenue - Left	A (7.5)	A (7.6)	A (7.6)	A (7.5)	A (7.7)	A (7.7)
Southbound Central Avenue - Left	A (7.5)	A (7.6)	A (7.5)	A (7.6)	A (7.7)	A (7.6)
Case 6: 2020 with Millville By The Sea						
Eastbound Substation Road	A (9.7)	B (12.3)	B (11.2)	B (10.0)	B (13.2)	B (11.9)
Westbound Forest Landing Access	B (11.1)	B (12.9)	B (12.3)	B (11.6)	B (13.9)	B (13.5)
Northbound Central Avenue - Left	A (7.5)	A (7.7)	A (7.7)	A (7.6)	A (7.8)	A (7.8)
Southbound Central Avenue - Left	A (7.5)	A (7.6)	A (7.5)	A (7.6)	A (7.7)	A (7.6)
Case 7: 2020 with Barrington Park and Millville By The Sea ¹¹³						
Eastbound Substation Road	B (10.2)	B (13.7)	B (12.2)	B (10.2)	B (13.7)	B (12.2)
Westbound Forest Landing Access	B (11.9)	B (14.7)	B (14.1)	B (11.9)	B (14.7)	B (14.2)
Northbound Central Avenue - Left	A (7.6)	A (7.8)	A (7.8)	A (7.6)	A (7.8)	A (7.8)
Southbound Central Avenue - Left	A (7.6)	A (7.7)	A (7.7)	A (7.6)	A (7.7)	A (7.7)

¹¹⁰ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

¹¹¹ The TIS had no volume for the NB through movement in the AM peak hour. McCormick Taylor used the correct volume of 83 for this movement in the AM peak hour.

¹¹² The TIS had no volume for the SB right-turn movement in the PM peak hour. McCormick Taylor used the correct volume of 3 for this movement in the PM peak hour.

¹¹³ The TIS had no volume for the SB right-turn movement in the PM peak hour. McCormick Taylor used the correct volume of 3 for this movement in the PM peak hour.

Table 27a
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹¹⁴ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 24: Windmill Drive & Central Avenue						
Case 1: 2004 Existing ¹¹⁵						
Eastbound Windmill Drive	A (9.4)	B (10.3)	B (12.0)	A (10.0)	B (10.6)	B (12.)
Northbound Central Avenue - Left	A (7.4)	A (7.5)	A (7.7)	A (7.4)	A (7.6)	A (7.7)
Case 5: 2020 without Millville By The Sea or Barrington Park						
Eastbound Windmill Drive	C (19.9)	D (34.1)	F (126.0)	C (20.5)	F (73.8)	F (265.0)
Northbound Central Avenue - Left	A (8.3)	A (9.1)	A (9.4)	A (8.4)	A (9.6)	B (10.1)
Case 6: 2020 with Millville By The Sea ¹¹⁶						
Eastbound Windmill Drive	E (45.5)	F (124.4)	F (372.2)	E (38.8)	F (250.8)	F (625.1)
Northbound Central Avenue - Left	A (8.4)	A (9.7)	B (10.2)	A (8.6)	B (10.5)	B (11.2)
Case 7: 2020 with Millville By The Sea and Barrington Park ¹¹⁷						
Eastbound Windmill Drive	E (41.4)	F (418.4)	F (928.8)	F (61.3)	F (424.2)	F (900.2)
Northbound Central Avenue - Left	A (8.1)	B (11.1)	B (11.9)	A (8.7)	B (11.1)	B (11.9)

¹¹⁴ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

¹¹⁵ The TIS had no volume for the NB through movement in the AM peak hour or the SB right-turn movement in the PM peak hour. McCormick Taylor used the correct volume of 80 for the NB through movement in the AM peak hour and a volume of 67 for the SB right-turn movement in the PM peak hour.

¹¹⁶ The TIS used incorrect lane configuration with a shared EB left/right lane and a shared NB left/through lane in the AM peak hour. McCormick Taylor used the correct lane configurations in the AM peak hour.

¹¹⁷ The TIS had no volume for the SB right-turn movement in the AM peak hour. McCormick Taylor used the correct volume of 148 for this movement in the AM peak hour.

Table 27b
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Signalized Intersection ¹¹⁸	LOS per TIS ¹¹⁹			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 24: Windmill Drive & Central Avenue						
Case 6: 2020 with Millville By The Sea and plus DelDOT Improvements	--	--	--	B (0.58)	C (0.87)	C (0.89)
Case 7: 2020 with Barrington Park and Millville By The Sea plus DelDOT Improvements	--	--	--	B (0.61)	C (0.92)	C (0.91)
Case 7: 2020 with Barrington Park and Millville By The Sea plus DelDOT Improvements and an Additional SB Right-Turn Lane	--	--	--	A (0.46)	B (0.66)	B (0.68)

¹¹⁸ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

¹¹⁹ The TIS noted that this intersection is expected to warrant signalization, but did not analyze any improvements to this intersection. McCormick Taylor analyzed this as a standard three-phase signal with protected/permitted phasing for the NB approach and used the lane improvements specified in the Route 26 Local Roadway Improvement project (exclusive eastbound and northbound left-turn lanes).

Table 28
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Signalized Intersection ^{120, 121}	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 25: Delaware Route 26 & Central Avenue ^{122, 123, 124}						
Case 1: 2004 Existing	B (0.52)	B (0.86)	C (0.90)	C (0.55)	C (0.65)	F (1.24)
Case 5: 2020 without Millville By The Sea or Barrington Park	C (0.87)	C (0.83)	F (1.43)	D (0.82)	F (1.10)	F (2.97)
Case 6: 2020 Millville By The Sea	D (0.89)	F (1.01)	F (2.64)	F (1.05)	F (1.59)	F (5.92)
Case 6: 2020 Millville By The Sea plus Improvements ¹²⁵	--	--	--	C (0.86)	D (0.89)	F (2.18)
Case 7: 2020 with Barrington Park and Millville By The Sea	D (0.95)	F (1.31)	F (3.18)	F (1.16)	F (1.77)	F (5.60)
Case 7: 2020 with Barrington Park and Millville By The Sea plus Improvements ¹²⁵	--	--	--	C (0.82)	D (0.85)	F (2.01)

¹²⁰ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

¹²¹ The TIS had no SB right-turn lane. Field visits conducted by McCormick Taylor indicated the existence of a right-turn lane. This turning lane was included in the analysis.

¹²² McCormick Taylor and the TIS used different cycle lengths for existing and future case analysis.

¹²³ In cases without improvements, McCormick Taylor used the existing split signal phasing for the NB and SB approaches. The TIS used permitted phasing for all cases.

¹²⁴ The TIS used incorrect lane widths for several analyses. McCormick Taylor used lane widths as measured in the field.

¹²⁵ The TIS did not analyze any improvements to this intersection. McCormick Taylor analyzed improvements which consisted of widening Route 26 eastbound and westbound to provide for a left-turn lane, through lane, and shared through/right-turn lane on both approaches.

Table 29a
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹²⁶ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 26: Delaware Route 26 & Windmill Drive						
Case 1: 2004 Existing ¹²⁷						
Northbound Windmill Drive	B (12.6)	B (11.7)	E (49.2)	B (13.3)	B (14.2)	E (49.2)
Westbound Delaware Route 26 - Left	A (8.7)	A (8.4)	B (11.4)	A (8.7)	A (8.4)	B (11.4)
Case 5: 2020 without Millville By The Sea or Barrington Park ¹²⁸						
Northbound Windmill Drive	C (24.0)	D (30.2)	F (649.2)	D (26.5)	C (23.7)	F (301.1)
Westbound Delaware Route 26 - Left	A (9.9)	A (9.8)	C (19.5)	B (10.3)	B (10.7)	C (24.2)
Case 6: 2020 with Millville By The Sea						
Northbound Windmill Drive	F (169.0)	F (174.3)	F (*)	F (221.8)	F (184.3)	F (2263)
Westbound Delaware Route 26 - Left	B (11.6)	B (14.4)	F (252.8)	B (12.0)	C (17.1)	F (376.2)
Case 6: 2020 with Millville By The Sea plus Improvement Option A ¹²⁹						
Westbound Delaware Route 26 - Left	--	--	--	B (12.0)	C (17.1)	F (376.2)

*Highway Capacity Software does not generate a result due to excessive delay

¹²⁶ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

¹²⁷ The TIS had no volume for the NB left-turn movement in the AM peak hour or the NB left-turn movement in the PM peak hour. McCormick Taylor used the correct volume of 4 for the NB left-turn movement in the AM peak hour and a volume of 10 for the NB left-turn movement in the PM peak hour.

¹²⁸ For all future cases, the TIS indicated the median type as "Undivided." McCormick Taylor used a two way left-turn lane (TWLTL), as specified in the Route 26 Improvement Project.

¹²⁹ The TIS did not analyze any improvements to this intersection. McCormick Taylor analyzed two improvement options. This Improvement Option consists of banning northbound left turns and providing an acceleration lane on eastbound Route 26 so that the northbound right turn movement is a free-flow movement. The northbound left turn volume would use alternate routes within the study area network, ultimately accessing Route 26 West via the traffic signal at Route 17 & Route 26.

Table 29b
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹³⁰ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 26: Delaware Route 26 & Windmill Drive						
Case 7: 2020 with Barrington Park and Millville By The Sea						
Northbound Windmill Drive	F (381.7)	F (703.9)	F (*)	F (271.4)	F (255.4)	F (*)
Westbound Delaware Route 26 - Left	B (12.5)	C (21.7)	F (259.4)	B (12.3)	C (20.5)	F (459.4)
Case 7: 2020 with Barrington Park and Millville By The Sea plus Improvement Option A ¹³¹						
Westbound Delaware Route 26 - Left	--	--	--	B (12.3)	C (20.5)	F (459.4)

*Highway Capacity Software does not generate a result due to excessive delay

¹³⁰ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

¹³¹ The TIS did not analyze any improvements to this intersection. McCormick Taylor analyzed two improvement options. This Improvement Option consists of banning northbound left turns and providing an acceleration lane on eastbound Route 26 so that the northbound right-turn movement is a free-flow movement. The northbound left turn volume would use alternate routes within the study area network, ultimately accessing Route 26 West via the traffic signal at Route 17 & Route 26.

Table 29c
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Signalized Intersection ¹³²	LOS per TIS			LOS per McCormick Taylor Review ¹³³		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 26: Delaware Route 26 & Windmill Drive						
Case 6: 2020 Millville By The Sea	--	--	--	C (0.87)	C (0.84)	F (3.90)
Case 7: 2020 with Barrington Park and Millville By The Sea	--	--	--	C (0.90)	C (0.86)	F (4.26)

¹³² For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

¹³³ This improvement option consists of signalizing this intersection with a standard 3-phase traffic signal, with protected/permitted phasing for the WB left-turn movement and a green right-turn arrow for the overlapping northbound right turn movement.

Table 30
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Signalized Intersection ¹³⁴	LOS per TIS			LOS per McCormick Taylor Review ^{135, 136}		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 27: Delaware Route 26 & Delaware Route 1						
Case 1: 2004 Existing	B (0.38)	C (0.69)	C(0.88)	C (0.39)	C (0.70)	D (0.89)
Case 5: 2020 without Millville By The Sea or Barrington Park	C (0.55)	E (0.98)	F (1.54)	D (0.69)	F (1.09)	F (1.39)
Case 6: 2020 Millville By The Sea	C (0.70)	E (0.97)	F (1.49)	D (0.78)	F (1.12)	F (1.51)
Case 6: 2020 Millville By The Sea plus TIS Improvements ^{137, 138}	C (0.58)	D (0.92)	F (1.26)	C (0.64)	F (0.98)	F (1.89)
Case 6: 2020 Millville By The Sea plus Improvement Option B ¹³⁹	--	--	--	C (0.51)	D (0.88)	F (1.03)
Case 7: 2020 with Barrington Park and Millville By The Sea	C (0.72)	F (1.03)	F (1.81)	D (0.77)	F (1.12)	F (1.51)
Case 7: 2020 with Barrington Park and Millville By The Sea plus TIS Improvements ¹³⁷	C (0.60)	D (0.88)	F (1.54)	C (0.69)	F (0.97)	F (2.01)
Case 7: 2020 with Barrington Park and Millville By The Sea plus Improvement Option B ¹³⁹	--	--	--	C (0.51)	D (0.90)	F (1.03)

¹³⁴ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

¹³⁵ The TIS used lane widths that varied slightly from those McCormick Taylor found in the field. McCormick Taylor used the field obtain lane widths.

¹³⁶ The TIS and McCormick Taylor used different cycle lengths for all peak hours in Case 1 and different cycle lengths for the AM and PM peak hours for all future cases.

¹³⁷ The TIS recommended an improvement option that consisted of an additional NB left-turn lane (Improvement Option A).

¹³⁸ The TIS inputted a Yellow + All Red (Y+AR) time of 0 seconds for the EB only and NB only phases. McCormick Taylor added yellow plus red to all phases due to HCS requirements. Yellow plus red needs to be added to all phases to produce a correct total lost time (l) which factors into the Xc value.

¹³⁹ Improvement Option B includes an additional NB left-turn lane and an additional EB left-turn lane.

Table 31a
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁴⁰ Two-Way Stop Control	LOS per TIS ¹⁴¹			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 28: Vines Creek Road & Main Street						
Case 1: 2004 Existing ¹⁴²						
Southbound Route 26/Main Street-Left	A (8.7)	A (9.4)	B (11.6)	A (8.9)	A (9.5)	B (11.4)
Westbound Delaware Route 26	B (11.7)	B (14.5)	E (41.6)	B (11.9)	B (14.9)	E (40.7)
Case 5: 2020 without Millville By The Sea or Barrington Park ¹⁴³						
Northbound Main Street	F (73.6)	F (414.6)	F (2489)	--	--	--
Westbound Delaware Route 26 - Left	A (9.9)	B (11.6)	B (14.0)	--	--	--
Case 6: 2020 with Millville By The Sea						
Northbound Main Street	F (295.3)	F (2007)	F (9974)	--	--	--
Westbound Delaware Route 26 - Left	B (10.7)	B (14.5)	C (18.0)	--	--	--
Case 7: 2020 with Barrington Park and Millville By The Sea						
Northbound Main Street	*	F (2799)	F (15,120)	--	--	--
Westbound Delaware Route 26 - Left	*	C (15.7)	C (19.6)	--	--	--

*Intersection analysis in the TIS was performed using incorrect north-south orientation for the AM peak hour. Therefore, analysis is not valid for the applicable movements and approaches.

¹⁴⁰ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

¹⁴¹ The TIS analyzed this intersection as a two-way stop-controlled intersection for future cases. A full signal is proposed to be installed when this intersection is re-aligned (expected to be complete by 2010). Therefore, McCormick Taylor analyzed this intersection as a signal and did not perform unsignalized intersection analysis.

¹⁴² The TIS had no volumes for the SB through movement in the AM or PM peak hours. McCormick Taylor used the correct volume of 26 for the SB through movement in the AM peak hour and 49 for the SB through movement in the PM peak hour.

¹⁴³ The TIS had no volume for the NB right-turn movement in the Saturday peak hour.

Table 31b
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Signalized Intersection ¹⁴⁴	LOS per TIS			LOS per McCormick Taylor Review ¹⁴⁵		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 28: Vines Creek Road & Main Street						
Case 5: 2020 without Millville By The Sea or Barrington Park	--	--	--	B (0.64)	B (0.83)	F (1.03)
Case 6: 2020 Millville By The Sea	--	--	--	B (0.80)	E (0.99)	F (1.23)
Case 6: 2020 Millville By The Sea plus Improvements ¹⁴⁶	--	--	--	B (0.84)	A (0.84)	F (1.23)
Case 7: 2020 with Barrington Park and Millville By The Sea	--	--	--	B (0.83)	F (1.03)	F (1.26)
Case 7: 2020 with Barrington Park and Millville By The Sea plus Improvements ¹⁴⁶	--	--	--	B (0.83)	A (0.87)	F (1.26)

¹⁴⁴ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

¹⁴⁵ The TIS analyzed this intersection as a two-way stop-controlled intersection for future cases. A full signal is proposed to be installed as part of the committed DeIDOT project to make Route 20/Route 26 the east/west approach and Main Street as the minor northbound approach.

¹⁴⁶ An improvement option that consists changing the EB right-turn lane to a shared through/right-turn lane was also analyzed.

Table 32
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Signalized Intersection ¹⁴⁷	LOS per TIS ^{148,}			LOS per McCormick Taylor Review ^{149,150}		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 29: Delaware Route 26 (Vines Creek Road) & Delaware Route 20 (Armory Road)						
Case 1: 2004 Existing	A (0.34)	A (0.45)	B (0.74)	C (0.34)	C (0.51)	C (0.71)
Case 5: 2020 without Millville By The Sea or Barrington Park	A (0.50)	B (0.77)	F (1.21)	B (0.63)	C (0.77)	F (1.27)
Case 6: 2020 Millville By The Sea	B (0.81)	C (0.92)	F (1.57)	C (0.85)	D (0.94)	F (1.50)
Case 6: 2020 Millville By The Sea plus Improvement Option ¹⁵¹	--	--	--	C (0.84)	D (0.94)	F (1.33)
Case 7: 2020 with Barrington Park and Millville By The Sea	B (0.88)	D (0.95)	F (1.69)	D (0.90)	D (0.93)	F (1.57)
Case 7: 2020 with Barrington Park and Millville By The Sea plus Improvement Option ¹⁵¹	--	--	--	D (0.89)	D (0.91)	F (1.36)

¹⁴⁷ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

¹⁴⁸ The TIS did not include a southbound leg to this intersection or volumes going north to this approach leg.

McCormick Taylor included this southbound leg for the AM and PM peak hours, although not for Saturday because there was no volume on this leg in the Saturday peak hour.

¹⁴⁹ The TIS used lane widths that varied slightly from those McCormick Taylor found in the field. McCormick Taylor used the field obtain lane widths.

¹⁵⁰ The TIS and McCormick Taylor used different cycle lengths for the AM and PM peak hours for the existing case and different cycle lengths for all peak hours for all future cases.

¹⁵¹ The TIS did not analyze improvements to this intersection. McCormick Taylor analyzed improvements to this intersection which consist of widening the westbound approach to accommodate a left-turn lane and shared through/right-turn lane.

Table 33a
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Signalized Intersection ¹⁵²	LOS per TIS ¹⁵³			LOS per McCormick Taylor Review ^{154, 155}		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 30: Delaware Route 20 & US Route 113						
Case 1: 2004 Existing	B (0.49)	C (0.60)	D (0.94)	D (0.65)	D (0.64)	F (1.06)
Case 5: 2020 without Millville By The Sea or Barrington Park	C (0.58)	C (0.79)	F (1.01)	D (0.92)	D (0.90)	F (1.45)
Case 6: 2020 Millville By The Sea	C (0.68)	D (0.94)	F (1.21)	F (1.14)	F (1.05)	F (1.66)
Case 6: 2020 Millville By The Sea plus TIS Improvements ¹⁵⁶	--	--	--	D (0.71)	D (0.95)	F (1.32)
Case 6: 2020 Millville By The Sea plus Improvement Option ¹⁵⁷	--	--	--	C (0.54)	D (0.71)	D (0.95)

¹⁵² For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

¹⁵³ The TIS did not incorporate a WB right-turn movement, as this is a channelized right-turn lane and has a receiving acceleration lane on US Route 113. McCormick Taylor included this movement in cases with no improvements since this is an exceptionally high volume move and because free-flow moves cannot be assumed with the existing short acceleration lane length.

¹⁵⁴ The TIS used lane widths that varied slightly from those McCormick Taylor found in the field. McCormick Taylor used the field obtain lane widths.

¹⁵⁵ The TIS and McCormick Taylor used different cycle lengths for the all peak hours for the existing case and different cycle lengths for the AM and PM peak hours for all future cases.

¹⁵⁶ The TIS recommended an improvement option that consisted of an exclusive WB left-turn lane.

¹⁵⁷ McCormick Taylor analyzed another improvement option that consisted of an additional SB left-turn lane in addition to the exclusive WB left-turn lane

Table 33b
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Signalized Intersection ¹⁵⁸	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Intersection 30: Delaware Route 20 & US Route 113						
Case 7: 2020 with Barrington Park and Millville By The Sea	C (0.70)	E (0.96)	F (3.48)	F (1.17)	F (1.12)	F (1.69)
Case 7: 2020 with Barrington Park and Millville By The Sea plus TIS Improvements ¹⁵⁹	C (0.69)	D (0.95)	F (3.47)	D (0.72)	F (1.00)	F (1.36)
Case 7: 2020 with Barrington Park and Millville By The Sea plus Improvements ¹⁶⁰	--	--	--	C (0.54)	C (0.71)	D (0.95)

¹⁵⁸ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

¹⁵⁹ The TIS recommended an improvement option that consisted of an exclusive WB left-turn lane.

¹⁶⁰ McCormick Taylor analyzed another improvement option that consisted of an additional SB left-turn lane in addition to the exclusive WB left-turn lane.

Table 34
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁶¹ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Internal Intersection a: Site Access A & Delaware Route 17						
Case 6: 2020 Millville By The Sea						
Site Access A Westbound	B (11.8)	B (14.1)	B (13.6)	B (11.9)	B (14.5)	B (14.2)
Delaware Route 17 Southbound - Left	A (8.1)	A (8.9)	A (8.7)	A (8.1)	A (9.0)	A (8.9)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Site Access A Westbound	B (12.2)	C (15.1)	B (14.7)	B (12.2)	C (15.1)	B (14.7)
Delaware Route 17 Southbound - Left	A (8.1)	A (9.1)	A (9.0)	A (8.1)	A (9.1)	A (9.0)

¹⁶¹ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 35
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁶² Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Internal Intersection b: Site Access B & Delaware Route 17						
Case 6: 2020 Millville By The Sea						
Site Access B Eastbound	B (13.3)	C (17.5)	C (17.7)	B (13.6)	C (18.1)	C (18.6)
Site Access B Westbound	B (14.7)	C (19.6)	C (20.7)	B (15.0)	C (20.5)	C (22.0)
Delaware Route 17 Northbound - Left	A (8.3)	A (9.1)	A (9.1)	A (8.4)	A (9.2)	A (9.3)
Delaware Route 17 Southbound - Left	A (8.3)	A (9.2)	A (9.2)	A (8.3)	A (9.3)	A (9.4)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Site Access B Westbound	C (15.2)	C (20.9)	C (22.4)	C (15.2)	C (20.9)	C (22.4)
Site Access B Eastbound	B (13.7)	C (18.3)	C (18.8)	B (13.7)	C (18.3)	C (18.8)
Delaware Route 17 Northbound - Left	A (8.4)	A (9.2)	A (9.3)	A (8.4)	A (9.2)	A (9.3)
Delaware Route 17 Southbound - Left	A (8.3)	A (9.4)	A (9.4)	A (8.3)	A (9.4)	A (9.4)

¹⁶² For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 36
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁶³ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Internal Intersection c: Site Access C & Delaware Route 17						
Case 6: 2020 Millville By The Sea						
Site Access C Eastbound	B (12.4)	C (17.3)	C (17.0)	B (12.6)	C (18.0)	C (17.9)
Site Access C Westbound	C (15.7)	C (22.1)	C (23.2)	C (16.1)	C (23.3)	D (25.2)
Delaware Route 17 Northbound - Left	A (8.0)	A (9.0)	A (8.9)	A (8.1)	A (9.1)	A (9.1)
Delaware Route 17 Southbound - Left	A (8.3)	A (9.2)	A (9.2)	A (8.3)	A (9.3)	A (9.4)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Site Access C Westbound	C (16.4)	C (23.8)	D (25.7)	C (16.4)	C (23.8)	D (25.7)
Site Access C Eastbound	B (12.8)	C (18.2)	C (18.2)	B (12.8)	C (18.2)	C (18.2)
Delaware Route 17 Northbound - Left	A (8.1)	A (9.1)	A (9.1)	A (8.1)	A (9.1)	A (9.1)
Delaware Route 17 Southbound - Left	A (8.4)	A (9.3)	A (9.4)	A (8.4)	A (9.3)	A (9.4)

¹⁶³ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 37
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁶⁴ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Internal Intersection d: Site Access D & Delaware Route 17						
Case 6: 2020 Millville By The Sea						
Site Access D Eastbound	B (12.1)	B (14.7)	C (15.5)	B (12.3)	C (15.7)	C (16.1)
Delaware Route 17 Northbound - Left	A (8.1)	A (9.1)	A (9.0)	A (8.1)	A (9.2)	A (9.2)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Site Access D Eastbound	B (12.4)	C (15.8)	C (16.3)	B (12.4)	C (15.8)	C (16.3)
Delaware Route 17 Northbound - Left	A (8.1)	A (9.2)	A (9.2)	A (8.1)	A (9.2)	A (9.2)

¹⁶⁴ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 38
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁶⁵ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Internal Intersection e: Site Access E & Delaware Route 17						
Case 6: 2020 Millville By The Sea						
Site Access E Eastbound	B (12.0)	C (15.6)	C (15.6)	B (12.2)	C (16.1)	C (16.4)
Delaware Route 17 Northbound - Left	A (8.0)	A (9.2)	A (9.1)	A (8.1)	A (9.3)	A (9.2)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Site Access E Eastbound	B (12.3)	C (16.3)	C (16.5)	B (12.3)	C (16.3)	C (16.5)
Delaware Route 17 Northbound - Left	A (8.1)	A (9.3)	A (9.3)	A (8.1)	A (9.3)	A (9.3)

¹⁶⁵ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 39
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁶⁶ Roundabout	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Internal Intersection f: Site Access F & Delaware Route 17						
Case 6: 2020 Millville By The Sea						
Delaware Route 17 Northbound	A (4.3)	A (4.5)	A (5.0)	A (5.9)	A (6.2)	A (6.7)
Delaware Route 17 Southbound	A (5.4)	A (6.3)	A (6.6)	A (7.0)	A (8.1)	A (8.4)
Site Access F Westbound	A (9.1)	B (10.1)	A (9.9)	B (11.0)	B (12.3)	B (12.2)
Overall Intersection	A (5.1)	A (6.6)	A (6.7)	A (6.8)	A (8.4)	A (8.5)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Delaware Route 17 Northbound	A (4.3)	A (4.5)	A (5.0)	A (5.9)	A (6.2)	A (6.7)
Delaware Route 17 Southbound	A (5.3)	A (6.2)	A (6.5)	A (7.0)	A (8.1)	A (8.4)
Site Access F Westbound	A (9.2)	B (10.4)	B (10.2)	B (11.1)	B (12.4)	B (12.3)
Overall Intersection	A (5.1)	A (6.6)	A (6.7)	A (6.8)	A (8.4)	A (8.6)

¹⁶⁶ For roundabouts, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. These results were calculated using the aaSIDRA roundabout analysis software program.

Table 40
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁶⁷ Roundabout	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Internal Intersection g: Site Access G & Delaware Route 17						
Case 6: 2020 Millville By The Sea						
Delaware Route 17 Northbound	A (4.1)	A (4.6)	A (4.8)	A (5.7)	A (6.3)	A (6.5)
Delaware Route 17 Southbound	A (5.0)	A (5.5)	A (5.6)	A (6.6)	A (7.2)	A (7.2)
Site Access G Westbound	A (7.2)	A (9.5)	A (9.0)	A (9.0)	B (11.3)	B (10.9)
Overall Intersection	A (4.9)	A (5.7)	A (5.8)	A (6.5)	A (7.5)	A (7.5)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Delaware Route 17 Northbound	A (4.1)	A (4.6)	A (4.9)	A (5.7)	A (6.3)	A (6.6)
Delaware Route 17 Southbound	A (4.9)	A (5.4)	A (5.5)	A (6.6)	A (7.1)	A (7.2)
Site Access G Westbound	A (7.3)	A (9.9)	A (9.4)	A (9.0)	B (11.4)	B (11.0)
Overall Intersection	A (4.8)	A (5.7)	A (5.8)	A (6.5)	A (7.5)	A (7.5)

¹⁶⁷ For roundabouts, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. These results were calculated using the aaSIDRA roundabout analysis software program.

Table 41
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁶⁸ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Internal Intersection h: Site Access H & Delaware Route 17						
Case 6: 2020 Millville By The Sea						
Site Access H Westbound	B (12.8)	C (16.9)	C (16.9)	C (13.0)	C (17.5)	C (17.7)
Delaware Route 17 Southbound - Left	A (8.3)	A (9.4)	A (9.1)	A (8.3)	A (9.5)	A (9.3)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Site Access H Westbound	B (13.1)	C (17.7)	C (17.9)	B (13.1)	C (17.7)	C (17.9)
Delaware Route 17 Southbound - Left	A (8.3)	A (9.6)	A (9.3)	A (8.3)	A (9.6)	A (9.3)

¹⁶⁸ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 42
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁶⁹ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Internal Intersection i: Site Access H & Delaware Route 17						
Case 6: 2020 Millville By The Sea						
Site Access I Westbound	B (12.2)	C (15.6)	C (15.2)	C (13.3)	C (17.5)	C (17.7)
Delaware Route 17 Southbound - Left	A (8.3)	A (9.4)	A (9.2)	A (8.3)	A (9.5)	A (9.3)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Site Access I Westbound	B (13.3)	C (17.9)	C (18.0)	B (13.1)	C (17.7)	C (17.9)
Delaware Route 17 Southbound - Left	A (8.4)	A (9.6)	A (9.4)	A (8.3)	A (9.6)	A (9.3)

¹⁶⁹ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 43
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁷⁰ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Internal Intersection j: Barrington Site Access & Windmill Road						
Case 6: 2020 Millville By The Sea						
Barrington Site Access Eastbound	A (9.2)	A (10.0)	A (8.0)	A (9.6)	B (10.5)	B (11.0)
Windmill Road Northbound - Left	A (7.5)	A (7.9)	A (8.0)	A (7.7)	A (8.1)	A (8.3)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Barrington Site Access Eastbound	B (13.9)	C (18.6)	A (8.7)	B (13.9)	C (18.6)	C (22.3)
Windmill Road Northbound - Left	A (7.8)	A (8.6)	C (22.3)	A (7.8)	A (8.6)	A (8.7)

¹⁷⁰ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 44
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁷¹ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Internal Intersection k: Site Access K & Substation Road						
Case 6: 2020 Millville By The Sea						
Site Access K Eastbound	B (11.1)	B (12.3)	B (12.3)	B (11.1)	B (12.3)	B (12.3)
Substation Road Northbound - Left	A (7.6)	A (8.0)	A (8.0)	A (7.6)	A (8.0)	A (8.0)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Site Access K Eastbound	B (13.1)	C (17.6)	C (16.9)	B (13.1)	C (17.3)	C (16.9)
Site Access K Westbound	B (11.3)	B (13.3)	B (13.1)	B (11.3)	B (13.3)	B (13.1)
Substation Road Northbound - Left	A (7.6)	A (8.0)	A (8.0)	A (7.6)	A (8.0)	A (8.0)
Substation Road Southbound - Left	A (7.7)	A (7.9)	A (7.9)	A (7.7)	A (7.9)	A (7.9)

¹⁷¹ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 45
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁷² Two-Way Stop Control	LOS per TIS ¹⁷³			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Internal Intersection I: Site Access L & Substation Road						
Case 6: 2020 Millville By The Sea						
Site Access L Eastbound	--	--	--	B (10.7)	B (12.5)	B (12.0)
Site Access L Westbound	--	--	--	B (10.0)	B (11.3)	B (11.0)
Substation Road Northbound - Left	--	--	--	A (7.5)	A (7.9)	A (7.8)
Substation Road Southbound - Left	--	--	--	A (7.5)	A (7.6)	A (7.5)
Site Access L Eastbound – Left	A (7.3)	A (7.3)	A (7.3)	--	--	--
Site Access L Westbound - Left	A (7.3)	A (7.3)	A (7.3)	--	--	--
Substation Road Northbound	B (11.3)	B (10.7)	B (10.9)	--	--	--
Substation Road Southbound	B (11.5)	B (11.9)	B (11.9)	--	--	--
Case 7: 2020 with Barrington Park and Millville By The Sea						
Site Access L Eastbound	--	--	--	B (11.2)	B (13.3)	B (12.7)
Site Access L Westbound	--	--	--	B (10.3)	B (12.0)	B (11.5)
Substation Road Northbound - Left	--	--	--	A (7.6)	A (7.9)	A (7.9)
Substation Road Southbound - Left	--	--	--	A (7.5)	A (7.7)	A (7.6)
Site Access L Eastbound – Left	A (7.3)	A (7.3)	A (7.3)	--	--	--
Site Access L Westbound - Left	A (7.3)	A (7.3)	A (7.3)	--	--	--
Substation Road Northbound	B (11.5)	B (11.2)	B (11.3)	--	--	--
Substation Road Southbound	B (12.1)	B (12.3)	B (12.4)	--	--	--

¹⁷² For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

¹⁷³ The TIS aligned this intersection incorrectly by labeling the Eastbound/Westbound directions as the major street. McCormick Taylor used the correct lane configurations and re-labeled the TIS analysis (although the major/minor streets are designated incorrectly). McCormick Taylor also performed the analysis using the correct major/minor street designations.

Table 46
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁷⁴ Roundabout	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Internal Intersection m: Site Access M & Substation Road						
Case 6: 2020 Millville By The Sea						
Substation Road Northbound	A (4.3)	A (5.3)	A (5.1)	A (5.9)	A (7.0)	A (6.8)
Substation Road Southbound	A (3.9)	A (4.3)	A (4.3)	A (5.6)	A (6.0)	A (5.9)
Site Access M Eastbound	A (5.4)	A (5.5)	A (5.5)	A (7.0)	A (7.2)	A (7.1)
Site Access M Westbound	A (7.7)	A (7.5)	A (7.6)	A (9.4)	A (9.3)	A (9.3)
Overall Intersection	A (4.8)	A (5.0)	A (5.0)	A (6.4)	A (6.7)	A (6.6)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Substation Road Northbound	A (4.3)	A (5.0)	A (4.9)	A (5.9)	A (6.7)	A (6.5)
Substation Road Southbound	A (3.9)	A (4.3)	A (4.2)	A (5.6)	A (5.9)	A (5.9)
Site Access M Eastbound	A (5.6)	A (5.6)	A (5.6)	A (7.2)	A (7.3)	A (7.3)
Site Access M Westbound	A (7.7)	A (7.7)	A (7.7)	A (9.4)	A (9.5)	A (9.5)
Overall Intersection	A (4.7)	A (4.9)	A (4.9)	A (6.3)	A (6.6)	A (6.5)

¹⁷⁴ For roundabouts, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. These results were calculated using the aaSIDRA roundabout analysis software program.

Table 47
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁷⁵ Roundabout	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Internal Intersection n: Site Access N & Substation Road						
Case 6: 2020 Millville By The Sea						
Substation Road Northbound	A (4.3)	A (4.9)	A (4.8)	A (5.9)	A (6.5)	A (6.5)
Substation Road Southbound	A (3.7)	A (4.0)	A (4.0)	A (5.4)	A (5.7)	A (5.6)
Site Access N Eastbound	A (6.2)	A (6.3)	A (6.3)	A (7.9)	A (8.0)	A (8.0)
Site Access N Westbound	A (8.4)	A (8.9)	A (8.7)	B (10.1)	B (10.7)	B (10.4)
Overall Intersection	A (4.5)	A (4.7)	A (4.6)	A (6.1)	A (6.3)	A (6.3)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Substation Road Northbound	A (4.2)	A (4.6)	A (4.7)	A (5.9)	A (6.4)	A (6.3)
Substation Road Southbound	A (3.7)	A (4.0)	A (3.9)	A (5.3)	A (5.7)	A (5.6)
Site Access N Eastbound	A (6.4)	A (6.6)	A (6.5)	A (8.1)	A (8.1)	A (8.2)
Site Access N Westbound	A (8.4)	A (9.3)	A (8.8)	B (10.2)	B (10.9)	B (10.6)
Overall Intersection	A (4.4)	A (4.5)	A (4.6)	A (6.0)	A (6.2)	A (6.2)

¹⁷⁵ For roundabouts, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. These results were calculated using the aaSIDRA roundabout analysis software program.

Table 48
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁷⁶ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Internal Intersection o: Site Access O & Substation Road						
Case 6: 2020 Millville By The Sea						
Site Access O Eastbound	B (11.3)	B (11.8)	B (11.6)	B (11.3)	B (11.8)	B (11.6)
Site Access O Westbound	B (11.3)	B (13.1)	B (12.6)	B (11.3)	B (13.1)	B (12.6)
Substation Road Northbound - Left	A (7.9)	A (7.9)	A (7.9)	A (8.0)	A (7.9)	A (7.9)
Substation Road Southbound - Left	A (7.5)	A (7.9)	A (7.7)	A (7.5)	A (7.9)	A (7.7)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Site Access O Eastbound	B (11.8)	B (12.3)	B (12.2)	B (11.8)	B (12.3)	B (12.2)
Site Access O Westbound	B (11.8)	B (14.0)	B (13.4)	B (11.8)	B (14.0)	B (13.4)
Substation Road Northbound - Left	A (8.1)	A (8.0)	A (8.0)	A (8.1)	A (8.0)	A (8.0)
Substation Road Southbound - Left	A (7.5)	A (8.0)	A (7.8)	A (7.5)	A (8.0)	A (7.8)

¹⁷⁶ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 49
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁷⁷ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Internal Intersection p: Peppers Corner Road & Site Access P						
Case 6: 2020 Millville By The Sea						
Site Access P Northbound	B (13.7)	C (17.7)	C (16.0)	B (13.7)	C (17.7)	C (16.0)
Site Access P Southbound	B (13.8)	C (16.6)	C (15.9)	B (13.8)	C (16.6)	C (15.9)
Peppers Corner Road Eastbound - Left	A (8.0)	A (8.3)	A (8.2)	A (8.0)	A (8.3)	A (8.2)
Pepper Corner Road Westbound	A (7.8)	A (8.2)	A (8.0)	A (7.8)	A (8.2)	A (8.0)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Site Access P Northbound	B (14.2)	C (18.6)	C (16.8)	B (14.2)	C (18.6)	C (16.8)
Site Access P Southbound	B (14.3)	C (17.5)	C (16.6)	B (14.3)	C (17.5)	C (16.6)
Peppers Corner Road Eastbound – Left	A (8.1)	A (8.4)	A (8.3)	A (8.1)	A (8.4)	A (8.3)
Pepper Corner Road Westbound	A (7.8)	A (8.2)	A (8.1)	A (7.8)	A (8.2)	A (8.1)

¹⁷⁷ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 50
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁷⁸ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Internal Intersection q: Site Access Q & Powell Farm Road						
Case 6: 2020 Millville By The Sea						
Site Access Q Eastbound	B (12.5)	B (14.9)	B (14.8)	B (12.5)	B (14.9)	B (14.8)
Site Access Q Westbound	B (10.8)	B (12.2)	B (11.8)	B (10.8)	B (12.2)	B (11.8)
Powell Farm Road Northbound - Left	A (7.8)	A (8.1)	A (8.0)	A (7.8)	A (8.1)	A (8.0)
Powell Farm Road Southbound - Left	A (7.7)	A (8.1)	A (8.0)	A (7.7)	A (8.1)	A (8.0)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Site Access Q Eastbound	B (12.5)	B (14.9)	B (14.8)	B (12.5)	B (14.9)	B (14.8)
Site Access Q Westbound	B (10.8)	B (12.2)	B (11.8)	B (10.8)	B (12.2)	B (11.8)
Powell Farm Road Northbound - Left	A (7.8)	A (1.0)	A (8.0)	A (7.8)	A (8.1)	A (8.0)
Powell Farm Road Southbound - Left	A (7.7)	A (8.1)	A (8.0)	A (7.7)	A (8.1)	A (8.0)

¹⁷⁸ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 51
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁷⁹ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Internal Intersection r: Site Access R & Powell Farm Road						
Case 6: 2020 Millville By The Sea						
Site Access R Eastbound	B (13.6)	B (15.0)	C (15.1)	B (13.6)	C (15.1)	C (15.1)
Powell Farm Road Northbound - Left	A (7.9)	A (8.2)	A (8.1)	A (7.9)	A (8.2)	A (8.1)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Site Access R Eastbound	B (13.6)	C (15.1)	C (15.1)	B (13.6)	C (15.1)	C (15.1)
Powell Farm Road Northbound - Left	A (7.9)	A (8.2)	A (8.1)	A (7.9)	A (8.2)	A (8.1)

¹⁷⁹ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 52
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁸⁰ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Internal Intersection s: Site Access S & Powell Farm Road						
Case 6: 2020 Millville By The Sea						
Site Access S Westbound	B (10.4)	B (10.5)	B (10.7)	B (10.4)	B (10.5)	B (10.7)
Powell Farm Road Southbound - Left	A (7.6)	A (7.6)	A (7.7)	A (7.6)	A (7.6)	A (7.7)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Site Access S Westbound	B (10.4)	B (10.5)	B (10.7)	B (10.4)	B (10.5)	B (10.7)
Powell Farm Road Southbound - Left	A (7.6)	A (7.6)	A (7.7)	A (7.6)	A (7.6)	A (7.7)

¹⁸⁰ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 53
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Millville By The Sea and Barrington Park
Report dated October 25, 2005
Prepared by The Traffic Group

Unsignalized Intersection ¹⁸¹ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor Review		
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Internal Intersection t: Burton Farm Road & Site Access T						
Case 6: 2020 Millville By The Sea						
Burton Farm Road Eastbound	A (9.4)	A (9.3)	A (9.3)	A (9.4)	A (9.3)	A (9.3)
Burton Farm Road Westbound	A (8.9)	A (9.0)	A (9.1)	A (8.9)	A (9.0)	A (9.1)
Site Access T Northbound - Left	A (7.2)	A (7.2)	A (7.2)	A (7.2)	A (7.2)	A (7.2)
Site Access T Southbound - Left	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)
Case 7: 2020 with Barrington Park and Millville By The Sea						
Burton Farm Road Eastbound	A (9.4)	A (9.3)	A (9.3)	A (9.4)	A (9.3)	A (9.3)
Burton Farm Road Westbound	A (8.9)	A (9.0)	A (9.1)	A (8.9)	A (9.0)	A (9.1)
Site Access T Northbound - Left	A (7.2)	A (7.2)	A (7.2)	A (7.2)	A (7.2)	A (7.2)
Site Access T Southbound - Left	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)

¹⁸¹ For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.