STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. BOX 778
DOVER, DELAWARE 19903

SHANTÉ A. HASTINGS
SECRETARY

January 15, 2026

Mr. Drew Boyce, P.E.
Century Engineering, Inc.
550 Bay Road
Dover, Delaware 19901

Dear Mr. Boyce,

The enclosed Traffic Impact Study (TIS) review letter for the **Cool Spring – Cluster Development** (Tax Parcels: 235- 27.00-11.00, 235-27.00-12.00, 235-27.00-13.00, 235-27.00-14.00 and 334-4.00-34.00) residential development has been completed under the responsible charge of a registered professional engineer whose firm is authorized to work in the State of Delaware. They have found the TIS to conform to DelDOT's Development Coordination Manual and other accepted practices and procedures for such studies. DelDOT accepts this letter and concurs with the recommendations. If you have any questions concerning this letter or the enclosed review letter, please contact me at Annamaria.Furmato@delaware.gov.

Sincerely,

Annamaria Furmato
TIS Review Engineer

AF:lw
Enclosures
cc with enclosures: Smith Purdum, Carl M Freeman Companies
Steve Marsh, Carl M Freeman Companies
David L. Edgell, Office of State Planning Coordination
Jamie Whitehouse, Sussex County Planning & Zoning
Mir Wahed, Johnson, Mirmiran, & Thompson, Inc.
Joanne M. Arellano, Johnson, Mirmiran, & Thompson, Inc.
DelDOT Distribution

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Mark Luszcz, Chief Engineer, Transportation Solutions (DOTS)
Brad Eaby, Deputy Attorney General, DOTS
Michael Simmons, Chief Project Development South, DOTS
Peter Haag, Chief Traffic Engineer, DOTS
Wendy Carpenter, Traffic Calming & Subdivision Relations Manager, Traffic, DOTS
Sean Humphrey, Traffic Engineer, Traffic, DOTS
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Brian Yates, Process and Quality Control Engineer, Economic Development Coordination
Wendy Polasko, Subdivision Engineer, Economic Development Coordination
John Pietrobono, Acting Sussex Review Coordinator, Economic Development Coordination
Derek Sapp, Sussex Review Engineer, Economic Development Coordination
Sireen Muhtaseb, TIS Engineer, Economic Development Coordination
Ben Fisher, TIS Review Engineer, Economic Development Coordination
Tijah Jones, TIS Review Engineer, Economic Development Coordination

January 15, 2026

Ms. Sireen Muhtaseb, P.E.
TIS Group Manager
Delaware Department of Transportation
Development Coordination
800 Bay Road
P.O. Box 778
Dover, DE 19903

RE: Agreement No: 2138S
TIS Support Services – T202369005
Task Name: Task 1-11 Cool Spring – Cluster Development
JMT No.: 24-01365-111

Dear Ms. Muhtaseb:

Johnson, Mirmiran, and Thompson (JMT) has completed a review of the Traffic Impact Study (TIS) for the Cool Spring – Cluster Development project, which was prepared by Century Engineering, Inc. dated September 17, 2025. This review was assigned as Task Number 1-11. The report is prepared in a manner generally consistent with DelDOT's *Development Coordination Manual* and other Department standards.

The TIS evaluates the impacts of a proposed residential development located on the north side of US Route 9, east of Hudson Road (Sussex Road 258), and on both sides of Log Cabin Hill Road (Sussex Road 247), both sides of Cool Spring Road (Sussex Road 290), and west of Josephs Road (Sussex Road 281), in Sussex County, Delaware. The development would consist of 1,260 single-family detached houses on an approximately 637-acre assemblage of parcels (Tax Parcels 235-27.00-11.00, 235-27.00-12.00, 235-27.00-13.00, 235-27.00-14.00, and 334-4.00-34.00). The land is currently zoned as AR-1 (Agricultural Residential), and the developer does not plan to rezone.

Four access points are proposed: two on Log Cabin Hill Road and two on Cool Spring Road. Construction is anticipated to be completed in 2044.

Relevant and On-Going Projects and Studies

DelDOT has relevant and on-going improvement projects in the vicinity of the study area. The *Statewide Rail-to-Trail & Rail-with-Trail Facility Master Plan* includes the Georgetown – Lewes, Shared Use Path (SUP). Project segments for the Georgetown – Lewes SUP have been completed and the path will traverse along the property. The goal of this overall project is to utilize the recently abandoned, inactive, and public owned active rail corridor segments and develop off-road facilities for bicyclists and pedestrians for both transportation and recreation. When complete, the Georgetown-Lewes Running Track Rail-to-Trail & Rail-with-Trail project would run from the

Historic Georgetown Train Station to the entrance to the Cape Henlopen State Park in Lewes and would measure approximately 16.7 miles in length. Part of that effort is to also work with the development community and existing communities to have formalized connections, where appropriate. More details are available at the following link:
https://deldot.gov/Publications/plans/rails_to_trails/index.shtml.

The *Georgetown to Lewes Trail, Cool Spring to Fisher Road* project (DelDOT Contract No. T202030001) is the next phase of the Georgetown to Lewes Trail that is an extension of the Georgetown to Lewes Trail from Cool Spring Road to Fisher Road. This project aims to continue to extend the trail toward Georgetown connecting to a proposed developing area which includes a county park, medical facility, existing and future businesses and housing. The trail is going to be constructed along the railroad corridor as a Rail to Trail project and include a kiosk with informational panels near the Fisher Road crossing and also include a connection to the proposed Sussex County Park on the corner of US Route 9 and Cool Spring Road as well as a trail crossing at the US Route 9 and Fisher Road signal. Construction is substantially complete. More details, including concept plans for this project, are available at the following link:
https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T202030001#project-details1.

The *Georgetown to Lewes Trail, Fisher Road to Airport Road* project (DelDOT Contract No. T202230001) is the final phase of the Georgetown to Lewes Trail. This project includes the construction of a multi-use trail along and adjacent to the state-owned railroad as well as road intersection improvements where the rail line crosses a road. It aims to improve mobility, connectivity, and safety for bikes and pedestrians. Construction is underway and projected to be complete in Spring of 2026. More details, including concept plans for this project, are available at the following link:
https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T202230001#project-details1.

The *Cave Neck Road, Hudson and Sweetbriar Roads Intersection Improvement* project (DelDOT Contract No. T202104304) aims to incorporate geometric changes to the Cave Neck Road intersections at Sweetbriar Road and Hudson Road to help alleviate safety concerns. A substantial number of reported crashes have occurred at the Cave Neck Road/Hudson Road intersection and the Cave Neck Road/Sweetbriar Road intersection. The project will consolidate the intersections and implement a 5-legged roundabout. The project is in the design and planning phase with construction scheduled to start in Winter of 2026. More information about the project can be found at:
https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T202104304#project-details1.

The *Coastal Corridors Study* was completed in June of 2024 and assessed the current and anticipated transportation conditions along east-west routes in the northern part of Sussex County between the Maryland state line and SR 1 with a focus on Delaware Route 16 and Delaware Route 404 / US Route 9. The study also identified needs and opportunities to continue to provide a safe, multi-modal transportation system that meets existing and future travel demands. The study identified that the intersection of US Route 9 and Delaware Route 5 to be the most congested

within the planning area and recommended that a further study be conducted exploring the feasibility of widening to provide dualization along the US Route 9 corridor. More information on the study can be found at: https://deldot.gov/projects/Studies/coastalcorridors/.

DelDOT is undergoing a study that is evaluating Hudson Road from Delaware Route 1 to US Route 9 to identify potential short-term and long-term improvements for safety and traffic operations. Based on preliminary results, a potential improvement may involve realigning Carpenter Road and Log Cabin Hill Road to intersect with Hudson Road to eliminate the offset intersections and improve traffic operations.

The proposed development is located west of the boundary of the Henlopen Transportation Improvement District (TID). The TID is a planning concept that seeks to proactively align transportation infrastructure spending and improvements with land use projections and future development within the designated district. DelDOT and Sussex County developed the TID and the formal creation of the TID was unanimously approved by Sussex County on October 27, 2020. The TID limits generally extend from the Georgetown to Lewes Trail and Delaware Route 1 to the north, Burton Pond and Herring Creek to the south, Arnell Creek and Rehoboth Bay to the east, and Beaver Dam Road to the west. The Henlopen TID CTP Cost Development Report was prepared in December 2019 by JMT and contained a summary of the traffic analysis conducted and the associated roadway concept plans and cost estimates for the TID. An update of the analysis was completed in 2022. More information about the TID can be found in the following link: https://deldot.gov/Programs/transportation-improvement-districts/index.shtml?dc=tidsunderoperation

Summary of Analysis Results

Based on our review of the TIS, we have the following comments and recommendations:

The following intersections exhibit level of service (LOS) deficiencies without the implementation of physical roadway and/or traffic control improvements. The table below does not include any signalized intersections that exhibit LOS deficiencies that can be mitigated with signal timing optimization as optimization would not be the responsibility of the developer.

Intersection	LOS Deficiencies Occur			Case
	Weekday AM	Weekday PM	Summer Saturday	
1 – Site Entrance A/Cool Spring Road/ Log Cabin Hill Road	-	X	X	Case 3 – 2044 with Development
8 – US Route 9 / Josephs Road	-	-	X	Case 3 – 2044 with Development
10 – Sweetbriar Road / Cave Neck Road	-	X	X	Case 2 – 2044 without Development
	X	X	X	Case 3 – 2044 with Development
12 – US Route 9 / Cool Spring Road	X	X	X	Case 3 – 2044 with Development
16 – US Route 9 / Hunters Mill Road	X	X	X	Case 2 – 2044 without Development
	X	X	X	Case 3 – 2044 with Development
17 – US Route 9 / Beaver Creek Drive	X	X	X	Case 2 – 2044 without Development
	X	X	X	Case 3 – 2044 with Development
18 – US Route 9 / Delaware Route 5 (Harbeson Road)	-	-	X	Case 3 – 2044 with Development
20 – Log Cabin Hill Road / Hudson Road	-	X	X	Case 3 – 2044 with Development
24 – Hudson Road / Cave Neck Road	-	X	X	Case 2 – 2044 without Development
	X	X	X	Case 3 – 2044 with Development

<u>1 – Site Entrance A / Cool Spring Road / Log Cabin Hill Road (See Table 2, Page 32, Development Improvement #2)</u>

The proposed two-way stop-controlled intersection of Site Entrance A, Cool Spring Road (Sussex Road 290), and Log Cabin Hill Road (Sussex Road 247) would exhibit LOS deficiencies along the northbound minor street Cool Spring Road approach during the PM and Summer Saturday peak hours under future conditions with the proposed development (Case 3). Specifically, under Case 3 conditions during the PM peak hour, the northbound Cool Spring Road approach would operate at LOS F with a delay of approximately 240 seconds per vehicle and a projected 95th percentile queue length of approximately 335 feet.

To mitigate the LOS deficiencies and address potential speeding/aggressing driving along Cool Spring Road and Log Cabin Hill Road, it is recommended that the developer install a single-lane roundabout at the intersection. The implementation of a single-lane roundabout would have the

intersection operate at LOS A with a delay of approximately 7 seconds under Case 3 conditions during the PM and Summer Saturday peak hours.

8 – US Route 9 / Josephs Road (See Table 9, Page 40, Development Improvement #5)

The existing two-way stop-controlled intersection of US Route 9 and Josephs Road would exhibit LOS deficiencies along the northbound minor street Josephs Road approach during the Summer Saturday peak hour under future conditions with the proposed development (Case 3). Specifically, under Case 3 conditions during the Summer Saturday peak hour, the northbound Josephs Road approach would operate at LOS E with a delay of approximately 37 seconds per vehicle and a projected 95th percentile queue length of less than one vehicle.

JMT performed a Traffic Signal Justification Study (TSJS) at the intersection. Based on a review of the traffic signal warrants from the 2018 Edition of the Delaware Manual on Uniform Traffic Control Devices (DEMUTCD), the volume warrants are not met under future conditions with the proposed development (Case 3). In lieu of installing physical roadway and/or traffic control improvements, DelDOT is amenable to a Traffic Signal Revolving Fund (TSRF) contribution to a future signal at the intersection. It is recommended that the developer be responsible to make an equitable contribution to the Traffic Signal Revolving Fund (TSRF).

10, 11, 24 –Sweetbriar Road / Cave Neck Road / Hudson Road (See Tables 11, 12, and 25 on Pages 43, 45, and 62, Development Improvement #6)

The existing two-way stop-controlled intersection of Sweetbriar Road and Cave Neck Road (Sussex Road 88) would exhibit LOS deficiencies along the northbound minor street Sweetbriar Road approach during the PM and Summer Saturday peak hours under future conditions without the proposed development (Case 2), and during the AM, PM, and Summer Saturday peak hours under future conditions with the proposed development (Case 3). Specifically, under Case 3 conditions during the Summer Saturday peak hour, the northbound Sweetbriar Road approach would operate at LOS F with a delay of approximately 273 seconds per vehicle and a projected 95th percentile queue length of approximately 468 feet.

The existing all-way stop-controlled intersection of Hudson Road (Sussex Road 258) and Cave Neck Road would exhibit LOS deficiencies along the westbound Cave Neck Road approach during the PM and Summer Saturday peak hours under future conditions without the proposed development (Case 2), and along all approaches during the AM, PM, and Summer Saturday peak hours under future conditions with the proposed development (Case 3). Specifically, under Case 3 conditions during the Summer Saturday peak hour, the eastbound Cave Neck Road approach would operate at LOS F with a delay of approximately 144 seconds per vehicle and a projected 95th percentile queue length of approximately 468 feet.

These LOS deficiencies would be mitigated by the *Cave Neck Road, Hudson and Sweetbriar Roads Intersection Improvement* project (DelDOT Contract No. T202104304), which proposes to convert these intersections as well as the adjacent Sweetbriar Road intersection with Hudson Road to a 5-legged roundabout. It is recommended that the developer provide an equitable contribution to the *Cave Neck Road, Hudson and Sweetbriar Roads Intersection Improvement* project.

12 – US Route 9 / Cool Spring Road (See Table 13, Page 46, Development Improvement #7)

The existing two-way stop-controlled intersection of US Route 9 and Cool Spring Road would exhibit LOS deficiencies along the southbound minor Cool Spring Road approach during the AM, PM, and Summer Saturday peak hours under future conditions with the proposed development (Case 3) and along the northbound minor Cool Spring Road approach during the PM and Summer Saturday peak hours under Case 3 conditions. Specifically, under Case 3 conditions during the Summer Saturday peak hour, the southbound Cool Spring Road approach would operate at LOS F with a delay of over 1,000 seconds per vehicle and a projected 95th percentile queue length of approximately 685 feet. The deficiencies could be mitigated by the provision of a traffic signal or a single-lane roundabout.

JMT performed a Traffic Signal Justification Study (TSJS) at the intersection. Based on a review of the traffic signal warrants from the 2018 Edition of the Delaware Manual on Uniform Traffic Control Devices (DEMUTCD), the volume warrants are met under future conditions with the proposed development (Case 3). Based on the results of the TSJS, a traffic signal is recommended to be installed at the US Route 9 and Cool Spring Road intersection.

16 – US Route 9 / Hunters Mill Road (See Table 17, Page 51)

The existing two-way stop-controlled intersection of US Route 9 and Hunters Mill Road would exhibit LOS deficiencies along the northbound minor Breakwater Acres Lane and southbound minor Hunters Mill Road approaches during the PM and Summer Saturday peak hours under future conditions without the proposed development (Case 2) and with the proposed development (Case 3). Also, there would be LOS deficiencies along the Southbound Hunters Mill Road approach during the AM peak hour under Case 2 and Case 3 conditions. Specifically, under Case 3 conditions during the Summer Saturday peak hour, the southbound Hunters Mill Road approach would operate at LOS F with a delay of approximately 62 seconds per vehicle and a projected 95th percentile queue length of approximately 20 feet, while the northbound Breakwater Estates Lane approach would operate at LOS F with a delay of approximately 51 seconds per vehicle and a projected 95th percentile queue length of approximately 3 feet. The deficiencies could be mitigated by the provision of a traffic signal or a single-lane roundabout. However, due to the short queue lengths along the northbound and southbound Breakwater Acres Lane/Hunters Mill Road approaches, the nature of the roadway, and the extensive scope of the improvements, it is not recommended that the developer implement any improvements at the intersection.

17 – US Route 9 / Beaver Creek Drive (See Table 18, Page 53)

The existing two-way stop-controlled intersection of US Route 9 and Beaver Creek Drive would exhibit LOS deficiencies along the southbound minor Beaver Creek Drive approach during the AM, PM, and Summer Saturday peak hours under future conditions without the proposed development (Case 2) and with the proposed development (Case 3) Specifically, under Case 3 conditions during the PM peak hour, the southbound Beaver Creek Drive approach would operate at LOS F with a delay of approximately 78 seconds per vehicle and a projected 95th percentile queue length of approximately 33 feet. The deficiencies could be mitigated by the provision of a traffic signal or a single-lane roundabout. However, due to the short queue lengths along the northbound and southbound Private Driveway/Beaver Creek Drive approaches, the nature of the roadway, and the extensive scope of the improvements, it is not recommended that the developer implement any improvements at the intersection.

18 – US Route 9 / Delaware Route 5 (Harbeson Road) (See Table 19, Page 56, Development Improvement #8)

The signalized intersection of US Route 9 and Delaware Route 5 (Harbeson Road) would exhibit LOS deficiencies during the Summer Saturday peak hour under future conditions with the proposed development (Case 3). Specifically, under Case 3 conditions during the Summer Saturday peak hour, the intersection would operate at LOS E with a delay of approximately 59.4 seconds per vehicle The deficiencies could be mitigated by the provision of an additional through lane along all approaches at the intersection. Widening of US Route 9 at this location may be infeasible due to the proximity of utilities and a graveyard at the southwest corner of the intersection. As such, in lieu of constructing improvements, it is recommended that the developer make an equitable contribution to the Traffic Signal Revolving Fund (TSRF).

20 – Log Cabin Hill Road / Hudson Road (See Table 21, Page 58, Development Improvement #9)

The two-way stop-controlled intersection of Log Cabin Hill Road and Hudson Road would exhibit LOS deficiencies along the minor westbound Log Cabin Hill Road approach during the PM and Summer Saturday peak hours under future conditions with the proposed development (Case 3). Specifically, under Case 3 conditions during the PM peak hour, the westbound Log Cabin Hill Road approach would operate at LOS F with a delay of approximately 155 seconds per vehicle and a projected 95th percentile queue length of approximately 360 feet.

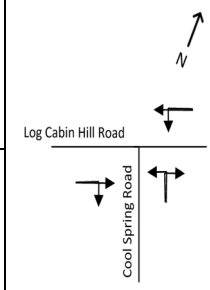
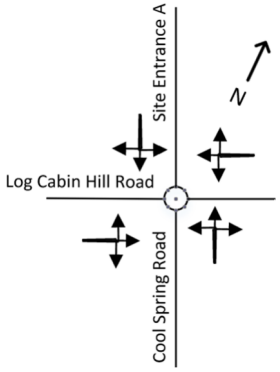
The deficiencies could be mitigated with the modification of the Log Cabin Hill Road and Hudson Road intersection to be all-way stop control with auxiliary turn lanes or a single-lane roundabout. Therefore, it is recommended that the developer coordinate with DelDOT on the implementation of a single lane roundabout at the intersection. To determine if all-way stop-control is justified as an interim improvement, the developer should conduct a justification study and receive approval from DelDOT Traffic.

Development Improvements

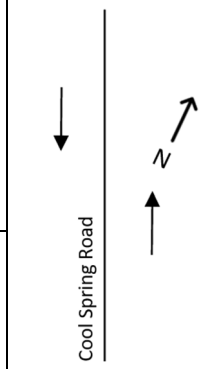
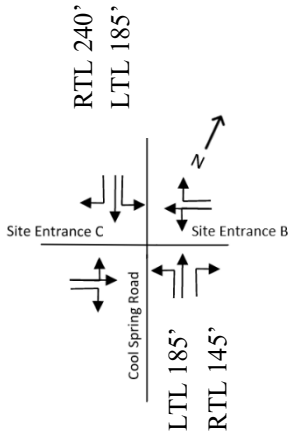
Should Sussex County approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan, entrance plans, or construction plans by note or illustration unless a Design Deviation is requested and approved by the Department. All applicable agreements (i.e., letter agreements for off-site improvements and traffic signal agreements) should be executed prior to entrance plan approval for the proposed development. The following items should be implemented at the same time as site construction once all agency approvals and permits are secured and completed in accordance with DelDOT's Standards and Specifications.

1. The developer shall improve the State-maintained roads on which they front (Hudson Road, Log Cabin Hill Road, US Route 9, Cool Spring Road, and Josephs Road) within the limits of their frontage. The improvements shall include both directions of travel, regardless of whether the developer's lands are on one or both sides of the road. "Frontage" means the length along the state right-of-way of a single property tract where an entrance is proposed or required. If a single property tract has frontage along multiple roadways, any segment of roadway including an entrance shall be improved to meet DelDOT's Functional Classification criteria as found in Section 1.1 of the Development Coordination Manual and elsewhere therein, and/or improvements established in the Traffic Operational Analysis and/or Traffic Impact Study. "Secondary Frontage" means the length along the state right-of-way of a single property tract where no entrance is proposed or required. The segment of roadway may be upgraded by improving the pavement condition of the existing roadway width. The Pavement Management Section and Subdivision Section will determine the requirements to improve the pavement condition.

2. The developer should construct a single-lane roundabout at the Site Entrance A access for the proposed Cool Spring – Cluster Development at the existing intersection of Cool Spring Road and Log Cabin Hill. The developer should coordinate with DelDOT's Development Coordination Section to determine details regarding design, schedule, and construction of the roundabout. The intersection should be consistent with the lane configurations shown in the table below:

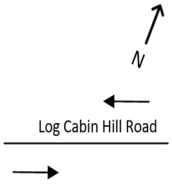
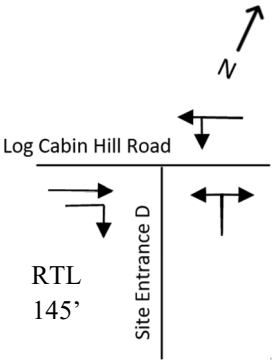
Approach	Current Configuration		Approach	Proposed Configuration	
Eastbound Log Cabin Hill Road	One shared through/right turn lane		Eastbound Log Cabin Hill Road	One shared left turn/through/ right turn lane	
Westbound Log Cabin Hill Road	One shared left turn/through lane		Westbound Log Cabin Hill Road	One shared left turn/through/ right turn lane	
Northbound Cool Spring Road	One shared left turn/ right turn lane		Northbound Cool Spring Road	One shared left turn/through/ right turn lane	
Southbound Site Entrance A	Approach Does Not Exist		Southbound Site Entrance A	One shared left turn/through/ right turn lane	

3. The developer should construct an unsignalized Site Entrance B and Site Entrance C full access for the Cool Spring – Cluster Development along Cool Spring Road, approximately 1,280 feet north of the intersection with US Route 9. The intersection should be consistent with the lane configurations shown in the table below:

Approach	Current Configuration		Approach	Proposed Configuration	
Eastbound Site Entrance C	Approach Does Not Exist		Eastbound Site Entrance C	One shared left turn/through lane and one right turn lane	
Westbound Site Entrance B	Approach Does Not Exist		Westbound Site Entrance B	One shared left turn/through/ lane and one right turn lane	
Northbound Cool Spring Road	One through lane		Northbound Cool Spring Road	One left turn lane, one through lane, and one right turn lane	
Southbound Cool Spring Road	One through lane		Southbound Cool Spring Road	One left turn lane, one through lane, and one right turn lane	

Based on DelDOT's Development Coordination Manual, the recommended minimum storage length (excluding taper) of the northbound Cool Spring Road left turn lane is 185 feet and the right turn lane is 145 feet. The recommended minimum storage length (excluding taper) of the southbound Cool Spring Road left turn lane is 185 feet and the right turn lane is 240 feet. The projected queues from the traffic analysis can be accommodated within the recommended storage lengths. Concrete median islands should be installed for unsignalized pedestrian crossings across Cool Spring Road.

4. The developer should construct an unsignalized Site Entrance D full access for the Cool Spring – Cluster Development along Log Cabin Hill Road, approximately 1,930 feet east of the intersection with Cool Spring Road. The intersection should be consistent with the lane configurations shown in the table below:

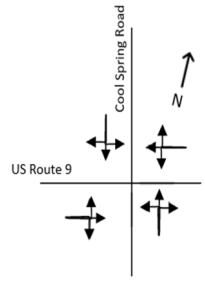
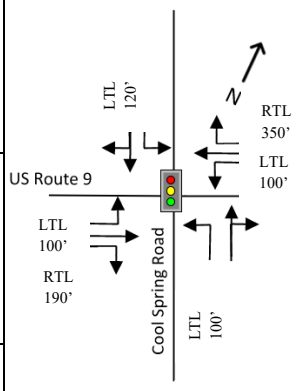
Approach	Current Configuration		Approach	Proposed Configuration	
Eastbound Log Cabin Hill Road	One through lane		Eastbound Log Cabin Hill Road	One through lane and one right turn lane	
Westbound Log Cabin Hill Road	One through lane		Westbound Log Cabin Hill Road	One shared left turn/through lane	
Northbound Site Entrance D	Approach does not exist		Northbound Site Entrance D	One shared left turn/right turn lane	

Based on DelDOT's Development Coordination Manual, the recommended minimum storage length (excluding taper) of the eastbound Log Cabin Hill Road right turn lane is 145 feet. The projected queues from the traffic analysis can be accommodated within the recommended storage lengths.

5. The developer should enter into an agreement with DelDOT to contribute to the Traffic Signal Revolving Fund (TSRF) for the intersection of US Route 9 and Josephs Road. The contribution amount is $39,095.

6. The developer should make an equitable share contribution to the improvements proposed as part of DelDOT's *Cave Neck Road, Hudson and Sweetbriar Roads Intersection Improvement* Project (DelDOT Contract No. T202104304). The cost of the contribution is $261,995. The developer should coordinate with DelDOT's Subdivision Section on the equitable cost payment terms.

7. The developer should enter into a signal agreement and install a traffic signal at the US Route 9 and Cool Spring Road intersection as well as add turn lanes, and be consistent with the lane configurations shown in the table below:

Approach	Current Configuration		Approach	Proposed Configuration	
Eastbound US Route 9	Existing one shared left turn/through/ right turn lane		Eastbound US Route 9	One left turn lane, one through lane, and one right turn lane	
Westbound US Route 9	Existing one shared left turn/through/ right turn lane		Westbound US Route 9	One left turn lane, one through lane, and one right turn lane	
Northbound Cool Spring Road	Existing one shared left turn/through/ right turn lane		Northbound Cool Spring Road	One left turn lane and one shared through/right turn lane	
Southbound Cool Spring Road	Existing one shared left turn/through/ right turn lane		Southbound Cool Spring Road	One left turn lane and one shared through/right turn lane	

Based on the HCS traffic analysis, the recommended minimum storage lengths (excluding taper) of the turn lanes are summarized in the table below. The projected queues from the traffic analysis can be accommodated within the recommended storage lengths.

Approach	Left Turn Lane	Right Turn Lane
Eastbound US Route 9	100’	190’
Westbound US Route 9	100’	350’
Northbound Cool Spring Road	100’	N/A
Southbound Cool Spring Road	120’	N/A

8. The developer should enter into an agreement with DelDOT to contribute to the Traffic Signal Revolving Fund (TSRF) for the intersection of US Route 9 and Delaware Route 5 (Harbeson Road). The contribution amount is $39,614.

9. The developer should convert the existing unsignalized Hudson Road intersection with Log Cabin Hill Road to a single lane roundabout. To determine if all-way stop-control with auxiliary turn lanes along each approach is justified as an interim improvement, the developer should conduct a justification study and receive approval from DelDOT Traffic.

The roundabout design should follow NCHRP: Report 672 2nd Edition – Roundabouts: An Information Guide, DelDOT's Road Design Manual, and DelDOT's Design Guidance Memorandum Number 1-26 for roundabouts. The roundabout should also be designed to accommodate pedestrians and bicyclists. Additionally, lighting at the roundabout should be evaluated per DelDOT's lighting guidelines. The developer should submit a plan to DelDOT's Development Coordination Section depicting the roundabout design. The final design of the roundabout should be determined during the Entrance Plan review process.

10. The developer should enter into an agreement with DelDOT for a right-of-way reservation along the US Route 9 site frontage to allow for potential future US Route 9 widening.

11. The following bicycle, pedestrian, and transit improvements should be included:

    a. A minimum fifteen-foot-wide permanent easement from the edge of the right-of-way should be dedicated to DelDOT along the Hudson Road, Log Cabin Hill Road, US Route 9, Cool Spring Road, and Josephs Road frontages. Along the frontages, the developer should construct a ten-foot-wide shared use path (SUP). The SUP should be designed to meet current AASHTO and ADA standards. A minimum five-foot setback should be maintained from the edge of the pavement to the SUP. The developer should coordinate with DelDOT's Development Coordination Section during the plan review process to identify the exact location of the SUP.

    b. Internal connections from the frontage SUP into the site should be provided.

    c. ADA-compliant curb ramps and marked crosswalks should be provided along the site entrances.

    d. Minimum five-foot wide bicycle lanes should be incorporated in the right turn lane and shoulder along the Hudson Road, Log Cabin Hill Road, US Route 9, Cool Spring Road, and Josephs Road site frontages.

    e. Where feasible, vehicle and non-motorized interconnection should be provided to the surrounding network. Specifically, a connection should be provided to the Lewes-Georgetown trail and Compass Point community.

    f. The pedestrian crossings along the Lewes-Georgetown trail that intersect with Josephs Road and Log Cabin Hill Road should be evaluated per NCHRP Report 562 methodology, and the proper treatment should be installed.

    g. Non-motorized access into the site should be provided per every 660 feet of residential frontage.

h. Two bus stops should be installed along US Route 9 at the intersection with Cool Spring Road. A Type 2 (17' x 8') shelter pad should be installed along westbound US Route 9. A Type 2 (17' x 8') shelter pad should be installed along eastbound US Route 9; however, if Right-of-Way constraints deem necessary, then a Type 2 (5'x8') shelter pad should be installed instead. The design and location of the bus stops should be determined during the Entrance Plan Review Process.

Please note that this review generally focuses on capacity and level of service issues; additional safety, operational, and constructability issues will be further addressed through DelDOT's Plan Review process.

Improvements in this TIS may be considered "significant" under DelDOT's Work Zone Safety and Mobility Procedures and Guidelines. These guidelines are available on DelDOT's website at https://www.deldot.gov/Publications/manuals/de_mutcd/index.shtml.

Additional details on our review of the TIS are attached. Please contact me at (302) 266-9600 if you have any questions concerning this review.

Sincerely,
Johnson, Mirmiran, and Thompson, Inc.

Joanne M. Arellano, P.E., PTOE

cc: Annamaria Furmato, EIT
Mir Wahed, P.E., PTOE
Tanner Chiamprasert, EIT
Enclosure

Recommendations Map

General Information

Report date: September 17, 2025
Prepared by: Century Engineering
Prepared for: Carl M. Freeman Companies
Tax parcels: 235-27.00-11.00, 235-27.00-12.00, 235-27.00-13.00, 235-27.00-14.00, and 334-4.00-34.00
Generally consistent with DelDOT's Development Coordination Manual (DCM): Yes

Project Description and Background

Description: The proposed development consists of 1,260 single-family detached houses.
Location: The land is located on the north side of US Route 9, east of Hudson Road (Sussex Road 258), and on both sides of Log Cabin Hill Road (Sussex Road 247), both sides of Cool Spring Road (Sussex Road 290), and west of Josephs Road (Sussex Road 281) in Sussex County.
Amount of land to be developed: An approximately 637-acre assemblage of parcels.
Land use approval(s) needed: Entrance Plan.
Proposed completion date: 2044.
Proposed access locations: Four full movement access points are proposed, two on Log Cabin Hill Road (Sussex Road 247) and two on Cool Spring Road (Sussex Road 290).

Daily traffic volumes:

- 2024 Average Annual Daily Traffic (AADT)
    - Log Cabin Road: 1,566 vehicles per day
    - Cool Spring Road: 630 vehicles per day

*AADT is sourced from 7 days of data from August 14, 2024 to August 20, 2024 from the TIS Report dated 9/17/2025.

Site Map

*Graphic is the Conceptual Land Use Plan from the Cool Spring - Cluster Final TIS dated 9/17/2025 prepared by Century Engineering.

Relevant and On-going Projects

DelDOT has relevant and on-going improvement projects in the vicinity of the study area. The *Statewide Rail-to-Trail & Rail-with-Trail Facility Master Plan* includes the Georgetown – Lewes, Shared Use Path (SUP). Project segments for the Georgetown – Lewes SUP have been completed and the path will traverse along the property. The goal of this overall project is to utilize the recently abandoned, inactive, and public owned active rail corridor segments and develop off-road facilities for bicyclists and pedestrians for both transportation and recreation. When complete, the Georgetown-Lewes Running Track Rail-to-Trail & Rail-with-Trail project would run from the Historic Georgetown Train Station to the entrance to the Cape Henlopen State Park in Lewes and would measure approximately 16.7 miles in length. Part of that effort is to also work with the development community and existing communities to have formalized connections, where appropriate. More details are available at the following link: https://deldot.gov/Publications/plans/rails_to_trails/index.shtml.

The *Georgetown to Lewes Trail, Cool Spring to Fisher Road* project (DelDOT Contract No. T202030001) is the next phase of the Georgetown to Lewes Trail that is an extension of the Georgetown to Lewes Trail from Cool Spring Road to Fisher Road. This project aims to continue to extend the trail toward Georgetown connecting to a proposed developing area which includes a county park, medical facility, existing and future businesses and housing. The trail is going to be constructed along the railroad corridor as a Rail to Trail project and include a kiosk with informational panels near the Fisher Road crossing and also include a connection to the proposed Sussex County Park on the corner of US Route 9 and Cool Spring Road as well as a trail crossing at the US Route 9 and Fisher Road signal. Construction is substantially complete. More details, including concept plans for this project, are available at the following link: https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T202030001#project-details1.

The *Georgetown to Lewes Trail, Fisher Road to Airport Road* project (DelDOT Contract No. T202230001) is the final phase of the Georgetown to Lewes Trail. This project includes the construction of a multi-use trail along and adjacent to the state-owned railroad as well as road intersection improvements where the rail line crosses a road. It aims to improve mobility, connectivity, and safety for bikes and pedestrians. Construction is underway and projected to be complete in Spring of 2026. More details, including concept plans for this project, are available at the following link: https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T202230001#project-details1.

The *Cave Neck Road, Hudson and Sweetbriar Roads Intersection Improvement* project (DelDOT Contract No. T202104304) aims to incorporate geometric changes to the Cave Neck Road intersections at Sweetbriar Road and Hudson Road to help alleviate safety concerns. A substantial number of reported crashes have occurred at the Cave Neck Road/Hudson Road intersection and the Cave Neck Road/Sweetbriar Road intersection. The project will consolidate the intersections and implement a 5-legged roundabout. The project is in the design and planning phase with construction scheduled to start in Winter of 2026. More information about the project can be found at: https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T202104304#project-details1.

The *Coastal Corridors Study* was completed in June of 2024 and assessed the current and anticipated transportation conditions along east-west routes in the northern part of Sussex County between the Maryland state line and SR 1 with a focus on Delaware Route 16 and Delaware Route 404 / US Route 9. The study also identified needs and opportunities to continue to provide a safe, multi-modal transportation system that meets existing and future travel demands. The study identified that the intersection of US Route 9 and Delaware Route 5 to be the most congested within the planning area and recommended that a further study be conducted exploring the feasibility of widening to provide dualization along the US Route 9 corridor. More information on the study can be found at: https://deldot.gov/projects/Studies/coastalcorridors/.

DelDOT is undergoing a study that is evaluating Hudson Road from Delaware Route 1 to US Route 9 to identify potential short-term and long-term improvements for safety and traffic operations. Based on preliminary results, a potential improvement may involve realigning Carpenter Road and Log Cabin Hill Road to intersect with Hudson Road to eliminate the offset intersections and improve traffic operations.

The proposed development is located west of the boundary of the Henlopen Transportation Improvement District (TID). The TID is a planning concept that seeks to proactively align transportation infrastructure spending and improvements with land use projections and future development within the designated district. DelDOT and Sussex County developed the TID and the formal creation of the TID was unanimously approved by Sussex County on October 27, 2020. The TID limits generally extend from the Georgetown to Lewes Trail and Delaware Route 1 to the north, Burton Pond and Herring Creek to the south, Arnell Creek and Rehoboth Bay to the east, and Beaver Dam Road to the west. The Henlopen TID CTP Cost Development Report was prepared in December 2019 by JMT and contained a summary of the traffic analysis conducted and the associated roadway concept plans and cost estimates for the TID. An update of the analysis was completed in 2022. More information about the TID can be found in the following link: https://deldot.gov/Programs/transportation-improvement-districts/index.shtml?dc=tidsunderoperation

Livable Delaware

(Source: Delaware Strategies for State Policies and Spending, 2020)

Location with respect to the Strategies for State Policies and Spending Map of Delaware:
The proposed development is located within Investment Level 4.

Investment Level 4

Delaware's Investment Level 4 Areas are rural in nature and are where the bulk of the state's open space/natural areas and agricultural industry is located. These areas contain agribusiness activities, farm complexes, and small settlements. They typically include historic crossroads or points of trade, often with rich cultural ties. Delaware's Investment Level 4 Areas are also the location of scattered residential uses, featuring almost entirely single-family detached residential structures. Delaware's Investment Level 4 Areas also include many unincorporated communities, typically with their own distinctive character and identity. Investment Level 4 Areas depend on a transportation system primarily of secondary roads linked to roadways used as regional thoroughfares for commuting and trucking.

It is the state's intent to discourage additional urban and suburban development in Investment Level 4 Areas unrelated to agriculture and to the areas' needs. In Investment Level 4 Areas, the state's investments and policies should retain the rural landscape and preserve open spaces and farmlands, support farmland-related industries, and establish defined edges to more concentrated development. The focus for the Level 4 Areas will be to preserve and maintain existing facilities in safe working order, corridor-capacity preservation, and the enhancement of transportation

facilities to support agricultural business. The lowest priority is given to transit system enhancements.

Proposed Development's Compatibility with Livable Delaware:
The proposed development is located within Investment Level 4. Investment level 4 areas consist almost entirely of single-family detached houses, and additional suburban development unrelated to agriculture and the area's needs are discouraged. Investment level 4 is the highest priority for open-space preservation. The proposed development consists of 1,260 single-family detached houses. Exceptions are typically limited to projects that have minimal impact on the existing landscape and directly support agricultural or cultural uses without requiring significant new infrastructure. Therefore, the proposed development is not consistent with the 2020 update of *Livable Delaware Strategies for State Policies and Spending.*

Comprehensive Plan

(Source: Sussex County Comprehensive Plan, 2019)

Sussex County Comprehensive Plan:
Per the *Sussex County Comprehensive Plan Existing Land Use Map,* the proposed development is currently zoned as Agricultural and Undeveloped Lands, and the developer does not plan to rezone the land. Per the *Sussex County 2045 Future Land Use Map,* the proposed development is in areas designated as Low-Density Rural Areas.

Proposed Development's Compatibility with the Sussex County Comprehensive Plan:
The *Sussex County Comprehensive Plan* states that in Low-Density Rural Areas, single family detached homes are permitted at two homes per acre on lots containing a minimum of half acre if the tract connects to central sewers. However, where on-site septic systems are used, single family detached homes are permitted on a minimum of 3/4-acre lots. AR-1 zoning regulations also permit an average of two homes per acre where a cluster-style site plan is used, and a portion of the tract is preserved in permanent open space. The County requires developers to plant landscaped buffers to physically separate new development from the surrounding countryside, and that a certain potion of a residential subdivision be permanently preserved in common open space. As such, the proposed development is generally consistent with the *Sussex County Comprehensive Plan*.

Trip Generation

The trip generation for the proposed development was determined by using the comparable land use and rates/equations contained in the *Trip Generation, 11th Edition: An ITE Informational Report*, published by the Institute of Transportation Engineers (ITE) for ITE Land Use Code 210 (Single-Family Detached Housing).

Table 1
Cool Spring Development Trip Generation

Land Use	ADT	Weekday AM Peak Hour			Weekday PM Peak Hour			Saturday Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Single-Family Detached Housing (1,260 Dwelling Units)	10,381	187	560	747	678	397	1,075	590	503	1,093

Trip generation was reviewed by DelDOT as part of the Preliminary TIS (PTIS) submission.

Overview of TIS

Intersections examined:

1) Site Entrance A / Cool Spring Road (Sussex Road 290) / Log Cabin Hill Road (Sussex Road 247)
2) Site Entrance B and Site Entrance C / Cool Spring Road (east and west)
3) Site Entrance D / Log Cabin Hill Road
4) Log Cabin Hill Road / Josephs Road (Sussex Road 281)
5) Log Cabin Hill Road / Persimmon Road
6) Log Cabin Hill Road / Sweetbriar Road (Sussex Road 261)
7) US Route 9 / Sweetbriar Road / Dairy Farm Road (Sussex Road 261)
8) US Route 9 / Josephs Road
9) US Route 9 / Arabian Acres Rd (Sussex Road 282)
10) Sweetbriar Road / Cave Neck Road (Sussex Road 88)*
11) Hudson Road (Sussex Road 258) / Sweetbriar Road*
12) US Route 9 / Cool Spring Road
13) Cool Spring Road / Fisher Road (Sussex Road 262)
14) Cool Spring Road / Forest Road (Sussex Road 292)
15) US Route 9 / Fisher Road / Hudson Road
16) US Route 9 / Hunters Mill Road
17) US Route 9 / Beaver Creek Drive
18) US Route 9 / SR5 Harbeson Road (Sussex Road 22)
19) Hudson Road / E. Lake Drive
20) Hudson Road / Log Cabin Hill Road
21) Hudson Road / Carpenter Road (Sussex Road 259)
22) Carpenter Road / Diamond Farm Road (Sussex Road 257)
23) Hudson Road / Walker Road (Sussex Road 260)
24) Hudson Road / Cave Neck Road (Sussex Road 88)*
25) Walker Road / Diamond Farm Road

*For Cases 2 and 3 intersection 24, 10 and 11 would be combined due to a future CTP project.

Conditions examined:

1. Case 1 – 2024 existing
2. Case 2 – 2044 without development
3. Case 3 – 2044 with development

Committed Developments considered:

1. **Monarch Glen (f.k.a. Fisher Road Properties):** 246 single-family detached houses
2. **Compass Point:** 277 single-family detached houses (142 built, 135 unbuilt)
3. **Chappell Farm:** 94 apartments, 37,000 square feet of commercial space, and a 5,068 square-foot convenience store with gas pumps
4. **Sussex Square:** 27 units mobile home park and 10,000 square feet of general office space
5. **Vineyards at Nassau:** 1,284 units of mid-rise multi-family houses (462 built, 376 unbuilt), 58 single-family detached houses (46 built, 12 unbuilt), 70 units of low-rise multi-family houses (35 built, 35 unbuilt) and 111,225 square-foot shopping center (99,075 square-foot built, 12,150 square-foot unbuilt)
6. **Majestic Meadows:** 26 units of single-family detached housing
7. **Lightship Cove:** 97 units of single-family detached housing (13 built, 84 unbuilt)
8. **Miralon:** 119 units of single-family detached housing (28 built, 91 unbuilt)
9. **Paradise Meadows:** 191 units of single-family detached housing *Include if it receives final approval prior to submission of the Final TIS*

*Note: Committed developments listed above were utilized in the TIS and supersede the list within the July 11, 2024 DelDOT Scoping Meeting Memorandum.

Peak hours evaluated: Weekday morning, weekday evening, and Saturday midday peak periods.

Intersection Descriptions

1. **Site Entrance A / Cool Spring Road / Log Cabin Hill Road**

   Type of Control: Existing two-way stop-controlled intersection (T-intersection), proposed roundabout (four-legged).

   Eastbound Approach: (Log Cabin Hill Road) Existing one shared through/right turn lane, proposed one shared left turn/through/right turn lane, yield-controlled.

   Westbound Approach: (Log Cabin Hill Road) Existing one shared left turn/through lane, proposed one shared left turn/through/right turn lane, yield-controlled.

   Northbound Approach: (Cool Spring Road) Existing one shared left turn/right turn lane, stop-controlled, proposed one shared left turn/through/right turn lane, yield-controlled.

   Southbound Approach: (Site Entrance A) Proposed one shared left turn/through/right turn lane, yield-controlled.

2. **Site Entrance B and Site Entrance C / Cool Spring Road**
   Type of Control: Proposed two-way stop-controlled full movement intersection (four-legged).
   Eastbound Approach: (Site Entrance B/C) Proposed one shared left turn/through/right turn lane, stop-controlled.
   Westbound Approach: (Site Entrance B/C) Proposed one shared left turn/through/right turn lane, stop-controlled.
   Northbound Approach: (Cool Spring Road) Existing one through lane. Proposed one shared left turn/through/right turn lane.
   Southbound Approach: (Cool Spring Road) Existing one through lane. Proposed one shared left turn/through/right turn lane.

3. **Site Entrance D / Log Cabin Hill Road**
   Type of Control: Proposed two-way stop-controlled full movement intersection (T-intersection).
   Eastbound Approach: (Log Cabin Hill Road) Existing one through lane. Proposed one shared through/right turn lane.
   Westbound Approach: (Log Cabin Hill Road) Existing one through lane. Proposed one shared left turn/through lane.
   Northbound Approach: (Site Entrance D) Proposed one shared left turn/right turn lane, stop controlled.

4. **Log Cabin Hill Road / Josephs Road**
   Type of Control: Existing two-way stop-controlled intersection (four-legged).
   Eastbound Approach: (Log Cabin Hill Road) Existing one shared left turn/through/right turn lane.
   Westbound Approach: (Log Cabin Hill Road) Existing one shared left turn/through/right turn lane.
   Northbound Approach: (Josephs Road) Existing one shared left turn/through/right turn lane, stop-controlled.
   Southbound Approach: (Church Entrance) Existing one shared left turn/through/right turn lane, stop-controlled.

5. **Log Cabin Hill Road / Persimmon Road (Backfill)**
   Type of Control: Existing two-way stop-controlled intersection (T-intersection).
   Eastbound Approach: (Log Cabin Hill Road) Existing one shared left turn/through lane.
   Westbound Approach: (Log Cabin Hill Road) Existing one shared through/right turn lane.

Southbound Approach: (Persimmon Road) Existing one shared left turn/right turn lane, stop-controlled.

6. **Log Cabin Hill Road / Sweetbriar Road**
   Type of Control: Existing two-way stop-controlled intersection (T-intersection).
   Eastbound Approach: (Log Cabin Hill Road) Existing one left turn lane and one right turn lane, stop-controlled.
   Northbound Approach: (Sweetbriar Road) Existing one left turn lane and one through lane.
   Southbound Approach: (Sweetbriar Road) Existing one shared right turn/through lane.

7. **US Route 9 / Sweetbriar Road / Dairy Farm Road**
   Type of Control: Existing signalized intersection (four-legged).
   Eastbound Approach: (US Route 9) Existing one left turn lane, one through lane, and one channelized right turn lane, yield controlled.
   Westbound Approach: (US Route 9) Existing one left turn lane, one through lane, and one channelized right turn lane, yield controlled.
   Northbound Approach: (Dairy Farm Road) Existing one left turn lane, one through lane, and one channelized right turn lane, yield controlled.
   Southbound Approach: (Sweetbriar Road) Existing one left turn lane, one through lane, and one channelized right turn lane, yield controlled.

8. **US Route 9 / Josephs Road**
   Type of Control: Existing two-way stop-controlled intersection (four-legged).
   Eastbound Approach: (US Route 9) Existing one shared left turn/through/right turn lane.
   Westbound Approach: (US Route 9) Existing one shared left turn/through/right turn lane.
   Northbound Approach: (Josephs Road) Existing one shared left turn/through/right turn lane, stop-controlled.
   Southbound Approach: (Josephs Road) Existing one shared left turn/through/right turn lane, stop-controlled.

9. **US Route 9 / Arabian Acres Rd**
   Type of Control: Existing two-way stop-controlled intersection (T-intersection).
   Eastbound Approach: (US Route 9) Existing one shared through/right turn lane.
   Westbound Approach: (US Route 9) Existing one shared left turn/through lane and one bypass lane.
   Northbound Approach: (Arabian Acres Road) Existing one shared left turn/right turn lane, stop-controlled.

10. **Sweetbriar Road / Cave Neck Road**
    Type of Control: Existing two-way stop-controlled intersection (four-legged).
    Eastbound Approach: (Cave Neck Road) Existing one shared left turn/through/right turn lane.
    Westbound Approach: (Cave Neck Road) Exiting one left turn lane and one shared through/right turn lane.
    Northbound Approach: (Sweetbriar Road) Existing one shared left turn/through/right turn lane, stop-controlled.

    *The northerly leg of the intersection is a one-way street going in the northbound direction.

    **The *Cave Neck Road, Hudson and Sweetbriar Roads Intersection Improvement* DelDOT project (DelDOT Contract No. T202104304) proposes to modify the Cave Neck Road intersections at Sweetbriar Road and Hudson Road to a 5-legged roundabout.

11. **Hudson Road / Sweetbriar Road**
    Type of Control: Existing two-way stop-controlled intersection (T-intersection).
    Westbound Approach: (Sweetbriar Road) Existing one shared left turn/right turn lane, stop-controlled.
    Northbound Approach: (Hudson Road) Existing one through lane.
    Southbound Approach: (Hudson Road) Existing one through lane.

    *The *Cave Neck Road, Hudson and Sweetbriar Roads Intersection Improvement* DelDOT project (DelDOT Contract No. T202104304) proposes to modify the Cave Neck Road intersections at Sweetbriar Road and Hudson Road to a 5-legged roundabout.

12. **US Route 9 / Cool Spring Road**
    Type of Control: Existing two-way stop-controlled intersection (four-legged).
    Eastbound Approach: (US Route 9) Existing one shared left turn/through/right turn lane.
    Westbound Approach: (US Route 9) Existing one shared left turn/through/right turn lane.
    Northbound Approach: (Cool Spring Road) Existing one shared left turn/through/right turn lane, stop-controlled.
    Southbound Approach: (Cool Spring Road) Existing one shared left turn/through/right turn lane, stop-controlled.

13. **Cool Spring Road / Fisher Road**
    Type of Control: Existing all-way stop-controlled intersection (four-legged).
    Eastbound Approach: (Fisher Road) Existing one shared left turn/through/right turn lane, stop-controlled.
    Westbound Approach: (Fisher Road) Existing one shared left turn/through/right turn lane, stop-controlled.
    Northbound Approach: (Cool Spring Road) Existing one shared left turn/through/right turn lane, stop-controlled.
    Southbound Approach: (Cool Spring Road) Existing one shared left turn/through/right turn lane, stop-controlled.

14. **Cool Spring Road / Forest Road**
    Type of Control: Existing two-way stop-controlled intersection (T-intersection).
    Eastbound Approach: (Forest Road) Existing one shared left turn/right turn lane, stop-controlled.
    Northbound Approach: (Cool Spring Road) Existing one shared left turn/through lane.
    Southbound Approach: (Cool Spring Road) Existing one shared through/right turn lane.

15. **US Route 9 / Fisher Road / Hudson Road**
    Type of Control: Existing signalized intersection (four-legged).
    Eastbound Approach: (US Route 9) Existing one left turn lane, one through lane, and one right turn lane.
    Westbound Approach: (US Route 9) Existing one left turn lane, one through lane, and one right turn lane.
    Northbound Approach: (Fisher Road) Existing one left turn lane, one through lane, and one channelized right turn lane, yield controlled.
    Southbound Approach: (Hudson Road) Existing one left turn lane, one through lane, and one channelized right turn lane, yield controlled.

16. **US Route 9 / Hunters Mill Road**
    Type of Control: Existing two-way stop-controlled intersection (four-legged).
    Eastbound Approach: (Route 9) Existing one shared left turn/through lane and one bypass/right turn lane.
    Westbound Approach: (Route 9) Existing one shared left turn/through lane and one right turn lane.
    Northbound Approach: (Breakwater Acres Lane) Existing one shared left turn/through/right turn lane, stop-controlled.
    Southbound Approach: (Hunters Mill Road) Existing one shared left turn/through/right turn lane, stop-controlled.

17. **US Route 9 / Beaver Creek Drive**
    Type of Control: Existing two-way stop-controlled intersection (T-intersection).
    Eastbound Approach: (Route 9) Existing one left turn lane and one through lane.
    Westbound Approach: (Route 9) Existing one through lane and one right turn lane.
    Southbound Approach: (Beaver Creek Drive) Existing one left turn lane and one right turn lane, stop-controlled.

    *A private driveway is located at the northbound leg of the intersection.

18. **US Route 9 / SR5 Harbeson Road**
    Type of Control: Existing signalized intersection (four-legged).
    Eastbound Approach: (US Route 9) Existing one left turn lane and one shared through/right turn lane.
    Westbound Approach: (US Route 9) Existing one left turn lane and one shared through/right turn lane.
    Northbound Approach: (Delaware Route 5) Existing one left turn lane and one shared through/right turn lane.
    Southbound Approach: (Delaware Route 5) Existing one left turn lane and one shared through/right turn lane.

19. **Hudson Road / E. Lake Drive**
    Type of Control: Existing two-way stop-controlled intersection (T-intersection).
    Eastbound Approach: (E. Lake Drive) Existing one shared left turn/right turn lane, stop-controlled.
    Northbound Approach: (Hudson Road) Existing one shared left turn/through lane.
    Southbound Approach: (Hudson Road) Existing one shared through/right turn lane.

20. **Hudson Road / Log Cabin Hill Road**
    Type of Control: Existing two-way stop-controlled intersection (T-intersection).
    Westbound Approach: (Log Cabin Hill Road) Existing one shared left turn/right turn lane, stop-controlled.
    Northbound Approach: (Hudson Road) Existing one shared through/right turn lane.
    Southbound Approach: (Hudson Road) Existing one shared left turn/through lane.

21. **Hudson Road / Carpenter Road**
    Type of Control: Existing two-way stop-controlled intersection (T-intersection).
    Eastbound Approach: (Carpenter Road) Existing one shared left turn/right turn lane, stop-controlled.
    Northbound Approach: (Hudson Road) Existing one shared left turn/through lane.
    Southbound Approach: (Hudson Road) Existing one shared through/right turn lane.

22. **Carpenter Road / Diamond Farm Road**
Type of Control: Two-way stop-controlled intersection (four-legged).
Westbound Approach: (Carpenter Road) Existing one shared left turn/through/right turn lane, stop-controlled.
Eastbound Approach: (Carpenter Road) Existing one shared left turn/through/right turn lane, stop-controlled.
Northbound Approach: (Diamond Farm Road) Existing one shared left turn/through/right turn lane.
Southbound Approach: (Diamond Farm Road) Existing one shared left turn/through/right turn lane.

23. **Hudson Road / Walker Road**
Type of Control: Existing two-way stop-controlled intersection (T-intersection)
Eastbound Approach: (Walker Road) Existing one shared left turn/right turn lane, stop-controlled.
Northbound Approach: (Hudson Road) Existing one shared left turn/through lane
Southbound Approach: (Hudson Road) Existing one shared through/right turn lane

24. **Hudson Road / Cave Neck Road***
Type of Control: Two-way stop-controlled intersection (four-legged).
Eastbound Approach: (Cave Neck Road) Existing one shared left turn/through/right turn lane.
Westbound Approach: (Cave Neck Road) Existing one shared left turn/through/right turn lane.
Northbound Approach: (Hudson Road) Existing one shared left turn/through/right turn lane, stop-controlled.
Southbound Approach: (Hudson Road) Existing one shared left turn/through/right turn lane, stop-controlled

*The *Cave Neck Road, Hudson and Sweetbriar Roads Intersection Improvement* DelDOT project (DelDOT Contract No. T202104304) proposes to modify the Cave Neck Road intersections at Sweetbriar Road and Hudson Road to a 5-legged roundabout.

25. **Walker Road / Diamond Farm Road**
Type of Control: Two-way stop-controlled intersection (T-intersection).
Westbound Approach: (Walker Road) Existing one shared left turn/right turn lane, stop-controlled.
Northbound Approach: (Diamond Farm Road) Existing one shared through/right turn lane.
Southbound Approach: (Diamond Farm Road) Existing one shared left turn/through lane.

Transit, Pedestrian, and Bicycle Facilities

Existing transit service: Per DelDOT Gateway, DART Routes 206, 303, and 307 exist within the study area. Sixteen stops exist within the study area along US Route 9.

Planned transit service: Per email correspondence from Jared Kauffman, DART Fixed-Route Planner, on October 13, 2025, the following comments were provided:

- A pair of companion stops are needed on US Route 9 at Cool Spring Road.
    - Westbound, a Type 2 (17x8) shelter pad placed far-side of Cool Spring Road.
    - Eastbound, a Type 2 (17x8) shelter pad is preferable, but if Right-of-Way constraints deem it necessary, then a Type 2 5'x8' is adequate. Whether this stop is placed far-side or near-side of Cool Spring Road depends upon a pedestrian crossing of Cool Spring Road.

Existing bicycle and pedestrian facilities: Per DelDOT's Sussex County Bicycle Map, several study roadways are considered bicycle routes. US Route 9 and Delaware Route 5 are considered regional bicycle routes, with US Route 9 having a bikeway. Cave Neck Road, Sweetbriar Road, Dairy Farm Road, and Beaver Dam Road are considered statewide bicycle routes, with Sweetbriar Road and Beaver Dam Roads having a bikeway. Diamond Farm Road, Hudson Road, Log Cabin Hill Road, and Carpenter Road are considered connector bicycle routes.

Planned bicycle and pedestrian facilities: DelDOT sent an email to Mr. Anthony Aglio on October 2, 2025. A response has not yet been received.

Bicycle Level of Traffic Stress in Delaware: Researchers with the Mineta Transportation Institute developed a framework to measure low-stress connectivity, which can be used to evaluate and guide bicycle network planning. Bicycle LTS analysis uses factors such as the speed of traffic, volume of traffic, and the number of lanes to rate each roadway segment on a scale of 1 to 4, where 1 is a low-stress place to ride and 4 is a high-stress place to ride. It analyzes the total connectivity of a network to evaluate how many destinations can be accessed using low-stress routes. Developed by planners at the Delaware Department of Transportation (DelDOT), the bicycle Level of Traffic Stress (LTS) model will be applied to bicycle system planning and evaluation throughout the state. The Bicycle LTS for the roadways under existing conditions along the site frontages are summarized below. The Bicycle LTS was determined utilizing DelDOT's Gateway.

- Log Cabin Road: 4
- Cool Spring Road: 2

Crash Evaluation

The TIS included crash data provided by the Delaware Department of Transportation (DelDOT) at the study intersections from November 26, 2021, to November 26, 2024.

Per the crash data, a total of 43 crashes were reported at the intersection of US Route 9 with Sweetbriar and Dairy Farm Road. Of the 43 reported accidents 8 crashes involved personal injury, and 35 crashes were property damage only.

21 crashes were reported at the intersection of US Route 9 at Cool Spring Road, 15 of which were property damage only, and the other 6 were personal injury. Two of the incidents involved a deer in the roadway.

49 crashes were reported at the intersection of US Route 9 at Fisher Road and Hudson Road, including 38 property damage only and 11 personal injury. One of the crashes was a collision with a pedestrian.

82 crashes were reported at the intersection of US Route 9 at SR 5, 71 property damage only, 10 personal injury, and one fatality. The fatality occurred with a single-vehicle collision with a utility pole; the vehicle crossed from the eastbound lane through the westbound lane and struck a utility pole off the roadway.

The remaining intersections each reported less than 20 incidents within the three-year study period.

Previous Comments

All comments made during the Preliminary TIS (PTIS) were addressed in the Final TIS (FTIS).

Sight Distance Evaluation

A potential site distance constraint is noted at Site Entrance D, due to the presence of trees and a horizontal curve to the West of the site entrance. No other site distance constraints were noted along the site entrances.

General HCS Analysis Comments

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

1) JMT and the TIS used HCS 2025 traffic analysis software to complete the analysis.

2) Per DelDOT's *Development Coordination Manual*, JMT utilized the future intersection PHF of 0.80 for roadways with less than 500 vph, 0.88 for roadways between 500 and 1,000 vph, and 0.92 for roadways with more than 1,000 vph, or used the existing PHF if higher, whereas the TIS utilized the existing PHF.

3) JMT and the TIS utilized the existing heavy vehicle percentage for each movement greater than 100 vph in the Case 1 - Existing analysis.

4) Per DelDOT's *Development Coordination Manual* and coordination with DelDOT, JMT used a heavy vehicle percentage of 5% for each movement less than 100 vph along roadways in the analyses, whereas the TIS utilized the existing heavy vehicle percentage.

5) Per DelDOT's *Development Coordination Manual*, JMT used a heavy vehicle percentage of 3% for each movement greater than 100 vph in Case 2 and Case 3 future scenario analysis, unless the existing heavy vehicle percentage was greater than 3% and there was no significant increase of vehicles along that movement, in which case the existing heavy vehicle percentage was used for the analysis of future scenarios, whereas the TIS utilized the existing heavy vehicle percentages in all cases.

6) The JMT utilized a saturation flow rate of 1,750 vphpl for the signalized intersections in Case 1. For Case 2 and 3, JMT utilized a saturation flow rate of 1,900 vphpl as a result of the anticipated increases in volume along US Route 9.

7) JMT and the TIS utilized the same PHF for every movement.

Table 2
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
1 – Site Entrance A / Cool Spring Road / Log Cabin Hill Road	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing						
Westbound Log Cabin Hill Road Left Turn	A (7.3)	A (8.1)	A (7.3)	A (7.4)	A (7.4)	A (7.3)
Northbound Cool Spring Road Approach	A (9.1)	A (9.5)	A (9.4)	A (9.1)	A (9.5)	A (9.4)
Case 2 – 2044 without Development						
Westbound Log Cabin Hill Road Left Turn	A (7.3)	A (8.1)	A (7.3)	A (7.4)	A (7.4)	A (7.3)
Northbound Cool Spring Road Approach	A (9.1)	A (9.6)	A (9.5)	A (9.1)	A (9.5)	A (9.5)
Case 3 – 2044 with Development[2]						
Eastbound Log Cabin Hill Road Left Turn	A (7.5)	A (8.0)	A (8.0)	A (7.5)	A (8.0)	A (8.0)
Westbound Log Cabin Hill Road Left Turn	A (7.5)	A (7.8)	A (7.7)	A (7.5)	A (7.8)	A (7.7)
Northbound Cool Spring Road Approach	D (29.2)	F (239.4)	F (285.0)	C (24.6)	F (240.4)	F (288.1)
Northbound Cool Spring Road Approach Queue Length	83’	335’	378’	65’	335’	378’
Southbound Site Entrance A Approach	B (14.5)	D (34.3)	D (34.4)	B (13.8)	D (34.8)	D (35.0)
All-Way Stop Control[3]						
Case 3 – 2044 with Development						
Eastbound Log Cabin Hill Road Approach	B (10.3)	C (21.8)	C (19.1)	-	-	-
Westbound Log Cabin Hill Road Approach	A (9.9)	B (13.2)	B (14.2)	-	-	-
Northbound Cool Spring Road Approach	B (10.4)	B (14.0)	B (14.7)	-	-	-
Southbound Site Entrance A Approach	B (11.9)	B (13.2)	C (15.2)	-	-	-
Overall	B (11.0)	C (16.9)	C (16.2)	-	-	-

[1] The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.
[2] Both the JMT and the TIS evaluated the intersection as a two-way stop-control with one shared left turn/through/right turn lane along each approach.
[3] The TIS conducted an all-way stop-control analysis with one shared left turn/through/right turn lane along all approaches.

Table 2 (Continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Roundabout[1,4]	**LOS per TIS**			**LOS per JMT**		
1 – Site Entrance A / Cool Spring Road / Log Cabin Hill Road	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 3 – 2044 with Development						
Eastbound Log Cabin Hill Road Approach	A (4.7)	A (7.0)	A (6.5)	A (4.6)	A (7.1)	A (6.5)
Westbound Log Cabin Hill Road Approach	A (4.2)	A (6.6)	A (6.7)	A (4.1)	A (6.8)	A (6.8)
Northbound Cool Spring Road Approach	A (4.6)	A (6.0)	A (5.9)	A (4.5)	A (6.0)	A (5.9)
Southbound Site Entrance A Approach	A (6.8)	A (5.5)	A (6.7)	A (6.5)	A (5.6)	A (6.8)
Overall	A (5.6)	A (6.4)	A (6.4)	A (5.4)	A (6.5)	A (6.5)

[4] Both JMT and the TIS analyzed the intersection as a single lane roundabout.

Table 3
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
2 – Site Entrance B / Site Entrance C / Cool Spring Road[5]	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 3 – 2044 with Development						
Eastbound Site Entrance C Approach	B (11.9)	C (15.2)	C (15.5)	B (12.3)	B (13.7)	B (14.0)
Eastbound Site Entrance C Approach Queue Length	33’	33’	43’	38’	28’	38’
Westbound Site Entrance B Approach	B (11.4)	C (15.2)	C (15.1)	B (11.9)	B (14.9)	B (14.9)
Westbound Site Entrance B Approach Queue Length	5’	8’	8’	8’	8’	8’
Northbound Cool Spring Road Left Turn	A (7.6)	A (8.0)	A (8.0)	A (7.7)	A (8.0)	A (8.0)
Northbound Cool Spring Road Left Turn Queue Length	3’	8’	8’	3’	8’	8’
Southbound Cool Spring Road Left Turn	A (7.4)	A (7.7)	A (7.6)	A (7.4)	A (7.7)	A (7.7)
Southbound Cool Spring Road Left Turn Queue Length	0’	3’	3’	0’	3’	3’
Roundabout						
Case 3 – 2044 with Development[6]						
Eastbound Site Entrance C Approach	-	-	-	A (5.4)	A (4.5)	A (4.9)
Westbound Site Entrance B Approach	-	-	-	A (3.9)	A (4.2)	A (4.3)
Northbound Cool Spring Road Approach	-	-	-	A (4.0)	A (5.2)	A (5.1)
Southbound Cool Spring Road Approach	-	-	-	A (4.3)	A (5.5)	A (5.2)
Overall	-	-	-	A (4.6)	A (5.1)	A (5.0)

[5] JMT modeled the intersection with both northbound and southbound left turn lanes as well as right turn lanes, whereas the TIS did not.

[6] JMT modeled the intersection as a single lane roundabout per a suggested scenario from DelDOT.

Table 4
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
3 – Log Cabin Hill Road / Site Entrance D	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 3 – 2044 with Development[7]						
Westbound Log Cabin Hill Road Left Turn	A (7.4)	A (7.4)	A (7.4)	A (7.4)	A (7.5)	A (7.4)
Northbound Site Entrance D Approach	A (9.3)	A (9.9)	A (9.9)	A (9.3)	A (9.9)	A (9.9)

[7] JMT modeled the intersection with one through lane and one right turn lane along the eastbound Log Cabin Hill Road approach per the Auxiliary Lane Worksheet, whereas the TIS modeled the approach as a shared through/right turn lane.

Table 5
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
4 – Log Cabin Hill Road / Josephs Road	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing						
Eastbound Log Cabin Hill Road Left Turn	A (7.2)	A (7.8)	A (7.9)	A (7.3)	A (7.3)	A (7.3)
Westbound Log Cabin Hill Road Left Turn	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)
Northbound Josephs Road Approach	A (8.7)	A (8.8)	A (9.7)	A (8.6)	A (8.8)	A (9.3)
Southbound Church Entrance Approach	A (9.1)	A (8.5)	B (10.5)	A (9.2)	A (8.6)	A (9.6)
Case 2 – 2044 without Development						
Eastbound Log Cabin Hill Road Left Turn	A (7.2)	A (7.8)	A (7.9)	A (7.3)	A (7.3)	A (7.3)
Westbound Log Cabin Hill Road Left Turn	A (7.3)	A (7.3)	A (7.3)	A (7.4)	A (7.3)	A (7.3)
Northbound Josephs Road Approach	A (8.7)	A (8.8)	A (9.8)	A (8.7)	A (8.8)	A (9.4)
Southbound Church Entrance Approach	A (9.2)	A (8.5)	B (10.6)	A (9.2)	A (8.6)	A (9.6)
Case 3 – 2044 with Development						
Eastbound Log Cabin Hill Road Left Turn	A (7.3)	A (8.1)	A (8.1)	A (7.4)	A (7.6)	A (7.5)
Westbound Log Cabin Hill Road Left Turn	A (7.4)	A (7.4)	A (7.4)	A (7.4)	A (7.4)	A (7.4)
Northbound Josephs Road Approach	A (9.1)	A (9.7)	B (10.8)	A (9.1)	A (9.7)	B (10.5)
Southbound Church Entrance Approach	A (9.5)	A (9.0)	B (11.9)	A (9.7)	A (9.1)	B (10.6)

Table 6
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection)[1]	**LOS per TIS**			**LOS per JMT**		
5 – Log Cabin Hill Road / Persimmon Road	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing						
Eastbound Log Cabin Hill Road Left Turn	A (7.3)	A (7.4)	A (7.3)	A (7.3)	A (7.5)	A (7.4)
Southbound Persimmon Road Approach	A (8.7)	A (9.3)	B (8.9)	A (8.8)	A (9.3)	A (9.0)
Case 2 – 2044 without Development						
Eastbound Log Cabin Hill Road Left Turn	A (7.3)	A (7.5)	A (7.3)	A (7.3)	A (7.5)	A (7.4)
Southbound Persimmon Road Approach	A (8.8)	A (9.4)	A (9.0)	A (8.8)	A (9.4)	A (9.0)
Case 3 – 2044 with Development						
Eastbound Log Cabin Hill Road Left Turn	A (7.3)	A (7.7)	A (7.5)	A (7.4)	A (7.7)	A (7.6)
Southbound Persimmon Road Approach	A (9.0)	B (10.2)	B (9.6)	A (9.1)	B (10.3)	A (9.7)

Table 7
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection)[1]	**LOS per TIS**			**LOS per JMT**		
6 – Log Cabin Hill Road / Sweetbriar Road	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing						
Eastbound Log Cabin Hill Road Left Turn	B (13.0)	B (14.3)	B (14.9)	B (12.7)	B (14.5)	C (15.2)
Eastbound Log Cabin Hill Road Right Turn	A (9.7)	A (9.7)	B (11.2)	A (9.8)	A (9.8)	B (11.4)
Northbound Sweetbriar Road Left Turn	A (7.7)	A (7.9)	A (8.2)	A (7.8)	A (7.9)	A (8.3)
Case 2 – 2044 without Development						
Eastbound Log Cabin Hill Road Left Turn	C (15.1)	C (17.3)	C (19.1)	B (14.0)	C (17.4)	C (18.7)
Eastbound Log Cabin Hill Road Right Turn	B (10.4)	B (10.3)	B (12.7)	B (10.2)	B (10.3)	B (12.6)
Northbound Sweetbriar Road Left Turn	A (8.0)	A (8.1)	A (8.6)	A (7.9)	A (8.1)	A (8.6)
Case 3 – 2044 with Development						
Eastbound Log Cabin Hill Road Left Turn	C (16.2)	C (22.5)	D (25.1)	B (14.9)	C (22.6)	C (24.1)
Eastbound Log Cabin Hill Road Right Turn	B (10.7)	B (10.5)	B (13.3)	B (10.5)	B (10.5)	B (13.1)
Northbound Sweetbriar Road Left Turn	A (8.0)	A (8.4)	B (9.0)	A (8.0)	A (8.4)	A (8.9)

Table 8
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Signalized Intersection[1]	**LOS per TIS**			**LOS per JMT**		
7 – US Route 9/ Dairy Farm Road/ Sweetbriar Road[8]	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing[9]	-	-	-	D (45.0)	D (41.8)	D (42.9)
Case 1 – 2024 Existing *with Optimization*[10,11]	B (19.5)	B (18.1)	B (18.1)	C (31.7)	C (29.8)	C (29.7)
Case 2 – 2044 without Development *with Optimization* [10,11]	C (24.9)	C (22.2)	C (22.7)	C (33.1)	C (31.0)	C (33.6)
Case 3 – 2044 with Development *with Optimization* [10,11]	C (30.8)	C (24.2)	C (25.5)	D (37.2)	C (32.1)	C (33.3)

[8] JMT analyzed the intersection with channelized right turns however taking into consideration there is no acceleration lane to channelize the right turn lane the right turns were not marked as unsignalized right turns, the TIS analyzed the intersection with unsignalized right turns with a control delay of 0.0 seconds.
[9] JMT analyzed the signal with an existing signal cycle length of 154 seconds.
[10] JMT included the signal as part of an uncoordinated corridor along US Route 9 with an optimized cycle length of 120 seconds as to not alter the existing red, yellow and passage clearance times.
[11] The TIS optimized signal timings with no set cycle length.

Table 9
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per TIS**			**LOS per JMT**		
8 – US Route 9 / Josephs Road	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing						
Eastbound US Route 9 Left Turn	A (8.2)	A (8.5)	A (8.4)	A (8.0)	A (8.5)	A (8.5)
Westbound US Route 9 Left Turn	A (8.5)	A (8.1)	A (8.6)	A (8.6)	A (8.2)	A (8.7)
Northbound Josephs Road Approach	C (16.5)	C (15.6)	C (18.5)	C (16.5)	C (15.6)	C (18.8)
Southbound Josephs Road Approach	B (12.8)	C (15.6)	C (15.7)	B (12.9)	C (15.8)	C (15.8)
Case 2 – 2044 without Development						
Eastbound US Route 9 Left Turn	A (8.6)	A (9.0)	A (8.9)	A (8.2)	A (9.0)	A (8.9)
Westbound US Route 9 Left Turn	A (9.1)	A (8.5)	A (9.1)	A (9.0)	A (8.5)	A (9.2)
Northbound Josephs Road Approach	C (21.8)	C (20.3)	C (24.9)	C (20.4)	C (20.2)	D (25.1)
Southbound Josephs Road Approach	C (15.0)	C (20.1)	C (19.9)	B (14.5)	C (20.2)	C (20.0)
Case 3 – 2044 with Development						
Eastbound US Route 9 Left Turn	A (8.6)	A (9.3)	A (9.1)	A (8.3)	A (9.3)	A (9.1)
Westbound US Route 9 Left Turn	A (9.5)	A (8.7)	A (9.5)	A (9.4)	A (8.8)	A (9.5)
Northbound Josephs Road Approach	D (27.3)	D (27.9)	E (36.9)	D (25.2)	D (28.0)	E (37.3)
Northbound Josephs Road Approach Queue Length	8’	15’	15’	8’	15’	15’
Southbound Josephs Road Approach	C (19.6)	D (27.0)	D (28.4)	C (18.6)	D (27.2)	D (28.6)
Case 3 – 2044 with Development *with Flared Northbound Approach*[12]						
Eastbound US Route 9 Left Turn	A (8.6)	A (9.3)	A (9.1)	-	-	-
Westbound US Route 9 Left Turn	A (9.5)	A (8.7)	A (9.5)	-	-	-
Northbound Josephs Road Approach	C (22.7)	C (24.0)	D (32.1)	-	-	-
Southbound Josephs Road Approach	C (19.6)	D (27.0)	D (28.4)	-	-	-

[12] The TIS analyzed the intersection with a flared northbound Josephs Road approach.

Table 9 (Continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
8 – US Route 9 / Josephs Road	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 3 – 2044 with Development *with auxiliary lanes*[13]						
Eastbound US Route 9 Left Turn	-	-	-	A (8.3)	A (9.3)	A (9.1)
Westbound US Route 9 Left Turn	-	-	-	A (9.4)	A (8.8)	A (9.5)
Northbound Josephs Road Approach	-	-	-	C (24.4)	D (26.6)	E (35.1)
Northbound Josephs Road Left Turn/Through Lane	-	-	-	D (32.1)	E (36.7)	E (48.7)
Northbound Josephs Road Left Turn/Through Lane Queue Length				10’	13’	13’
Northbound Josephs Road Right Turn Lane	-	-	-	B (14.4)	B (12.4)	B (14.8)
Southbound Josephs Road Approach	-	-	-	C (18.5)	D (26.7)	D (28.0)
Roundabout[14]						
Case 3 – 2044 with Development						
Eastbound US Route 9 Approach	-	-	-	B (11.1)	A (7.4)	B (10.5)
Westbound US Route 9 Approach	-	-	-	A (6.2)	A (9.6)	A (8.8)
Northbound Josephs Road Approach	-	-	-	A (7.0)	A (5.6)	A (7.0)
Southbound Josephs Road Approach	-	-	-	A (4.8)	A (6.4)	A (6.3)
Overall	-	-	-	A (9.2)	A (8.5)	A (9.6)
Signalized Intersection[15]						
Case 3 – 2044 with Development	-	-	-	A (9.8)	A (8.6)	A (9.2)

[13] JMT modeled the intersection with a both eastbound and westbound US Route 9 having one left turn, one through, and one right turn lane. Northbound Josephs Road was modeled with a shared left turn/through lane and one right turn lane.
[14] JMT modeled the intersection as a single lane roundabout.
[15] JMT modeled the intersection as a free signalized intersection with a cycle length of 120 seconds. JMT modeled the intersection with one left turn lane, one through lane and one right turn lane along the eastbound and westbound approaches and one shared left turn/through lane and one right turn lane along the northbound and southbound approaches.

Table 10
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
9 – US Route 9 / Arabian Acres Road	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing						
Westbound US Route 9 Left Turn	A (8.5)	A (8.2)	A (8.6)	A (8.6)	A (8.2)	A (8.7)
Northbound Arabian Acres Road Approach	B (13.6)	C (16.0)	C (15.8)	B (13.6)	C (15.7)	C (16.0)
Case 2 – 2044 without Development						
Westbound US 9 Route Left Turn	A (9.0)	A (8.6)	A (9.1)	A (9.0)	A (8.6)	A (9.2)
Northbound Arabian Acres Road Approach	C (16.3)	C (20.7)	C (20.0)	C (15.8)	C (20.2)	C (20.2)
Case 3 – 2044 with Development						
Westbound US 9 Route Left Turn	A (9.4)	A (8.8)	A (9.5)	A (9.4)	A (8.8)	A (9.5)
Northbound Arabian Acres Road Approach	C (18.6)	C (24.4)	C (23.5)	C (17.8)	C (23.7)	C (23.7)

Table 11
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
10 – Sweetbriar Road / Cave Neck Road	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing						
Eastbound Cave Neck Road Left Turn	A (7.5)	A (7.8)	A (7.6)	A (7.5)	A (7.8)	A (7.6)
Westbound Cave Neck Road Left Turn	A (8.3)	C (8.0)	C (8.5)	A (8.3)	A (7.9)	A (8.6)
Northbound Sweetbriar Road Approach	C (16.7)	C (17.6)	D (25.3)	C (16.7)	C (17.6)	D (25.8)
Case 2 – 2044 without Development						
Eastbound Cave Neck Road Left Turn	A (7.6)	A (8.1)	A (8.0)	A (7.7)	A (8.1)	A (7.9)
95th Percentile Queue Length	-	-	-	0’	0’	0’
Westbound Cave Neck Road Left Turn	A (8.8)	A (8.5)	A (9.8)	A (8.8)	A (8.4)	A (9.4)
95th Percentile Queue Length	-	-	-	3’	5’	8’
Northbound Sweetbriar Road Approach	D (30.1)	F (50.6)	F (313.9)	D (30.2)	E (47.2)	F (163.3)
95th Percentile Queue Length	-	-	-	100’	168’	368’
Case 3 – 2044 with Development						
Eastbound Cave Neck Road Left Turn	A (7.7)	A (8.2)	A (8.1)	A (7.7)	A (8.2)	A (8.0)
95th Percentile Queue Length	-	-	-	0’	0’	0’
Westbound Cave Neck Road Left Turn	A (9.2)	A (8.7)	B (10.3)	A (9.1)	A (8.7)	A (9.9)
95th Percentile Queue Length	-	-	-	5’	5’	10’
Northbound Sweetbriar Road Approach	E (44.3)	F (85.5)	F (488.6)	E (42.1)	F (78.1)	F (273.7)
95th Percentile Queue Length	-	-	-	133’	228’	468’

Table 11 (Continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Roundabout[1]	**LOS per TIS**			**LOS per JMT**		
10 – Sweetbriar Road / Cave Neck Road[16,17]	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 2 – 2044 without Development						
Eastbound Cave Neck Road Approach	A (8.6)	A (7.7)	B (12.1)	A (8.8)	A (7.8)	B (12.4)
Westbound Cave Neck Road Approach	A (6.4)	A (9.9)	A (8.9)	A (6.6)	B (10.2)	A (9.1)
Northbound Hudson Road Approach	A (8.7)	A (7.9)	B (10.6)	A (8.9)	A (8.1)	B (11.1)
Southbound Hudson Road Approach	A (6.5)	B (10.1)	A (9.6)	A (6.6)	B (10.3)	A (9.9)
Northwest Sweetbriar Road Approach	A (8.3)	A (7.9)	A (9.2)	A (8.6)	A (8.2)	A (9.5)
Overall	A (7.8)	A (8.9)	B (10.2)	A (8.0)	A (9.1)	B (10.5)
Case 3 – 2044 with Development						
Eastbound Cave Neck Road Approach	A (9.4)	B (10.3)	C (17.8)	A (9.7)	B (10.5)	C (18.1)
Westbound Cave Neck Road Approach	A (7.0)	B (11.5)	B (10.3)	A (7.2)	B (11.8)	B (10.4)
Northbound Hudson Road Approach	B (12.7)	B (10.0)	C (16.1)	B (12.9)	B (10.2)	C (16.4)
Southbound Hudson Road Approach	A (7.2)	C (15.7)	B (13.9)	A (7.4)	C (16.1)	B (14.4)
Northwest Sweetbriar Road Approach	B (10.5)	A (9.4)	B (11.6)	B (10.8)	A (9.7)	B (11.9)
Overall	A (9.6)	B (11.8)	B (14.1)	A (9.9)	B (12.0)	B (14.4)

[16] As part of the DelDOT *Cave Neck Road, Hudson and Sweetbriar Roads Intersection Improvements* project (T202104304), geometric upgrades are proposed to convert the intersection of Sweetbriar Road & Cave Neck Road, Hudson Road & Cave Neck Road, and Hudson Road & Sweetbriar Road to a 5-legged single lane roundabout. Due to the limitations of HCS software, a separate analysis conducted with Synchro 12 was performed to evaluate the roundabout analysis.

[17] JMT utilized 5% heavy vehicle percentage for movements with less than 100 vph, and 3% heavy vehicle percentage for movements greater than 100 vph for the roundabout analysis.

Table 12
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection)[1]	**LOS per TIS**			**LOS per JMT**		
11 – Hudson Road / Sweetbriar Road[16]	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing						
Westbound Sweetbriar Road Approach	A (9.2)	A (9.8)	A (9.4)	A (9.2)	A (9.8)	A (9.4)
Case 2 – 2044 without Development						
Westbound Sweetbriar Road Approach	A (9.6)	B (10.4)	B (10.2)	A (9.6)	B (10.1)	A (9.7)
Case 3 – 2044 with Development						
Westbound Sweetbriar Road Approach	A (9.9)	B (10.6)	B (10.5)	A (9.9)	B (10.3)	A (10.0)

Table 13
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
12 – US Route 9 / Cool Spring Road	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing						
Eastbound US Route 9 Left Turn	A (9.1)	A (8.4)	A (8.4)	A (8.0)	A (8.5)	A (8.4)
Westbound US Route 9 Left Turn	A (8.4)	A (8.2)	A (8.6)	A (8.4)	A (8.2)	A (8.6)
Northbound Cool Spring Road Approach	B (13.7)	B (14.9)	C (15.3)	B (13.6)	C (15.1)	C (15.5)
Southbound Cool Spring Road Approach	C (17.5)	C (15.4)	C (20.7)	C (17.2)	C (15.6)	C (19.5)
Case 2 – 2044 without Development						
Eastbound US Route 9 Left Turn	A (9.4)	A (8.8)	A (8.8)	A (8.2)	A (8.9)	A (8.8)
Westbound US Route 9 Left Turn	A (8.8)	A (8.6)	A (9.1)	A (8.8)	A (8.6)	A (9.1)
Northbound Cool Spring Road Approach	C (16.6)	C (19.2)	C (18.8)	C (16.5)	C (19.4)	C (19.0)
Southbound Cool Spring Road Approach	C (23.2)	C (19.3)	D (30.3)	C (22.6)	C (19.5)	D (27.3)
Case 3 – 2044 with Development						
Eastbound US 9 Route Left Turn	A (8.3)	A (9.6)	A (9.4)	A (8.3)	A (9.6)	A (9.5)
Westbound US 9 Route Left Turn	A (8.8)	A (8.6)	A (9.1)	A (8.8)	A (8.6)	A (9.1)
Northbound Cool Spring Road Approach	C (21.7)	F (170.1)	F (112.2)	C (22.0)	F (176.5)	F (115.8)
Northbound Cool Spring Road Approach Queue Length	43’	173’	135’	43’	175’	138’
Southbound Cool Spring Road Approach	F (310.0)	F (*)	F (*)	F (313.4)	F (*)	F (*)
Southbound Cool Spring Road Approach Queue Length	440’	540’	683’	443’	545’	685’
Case 3 – 2044 with Development *with auxiliary lanes*[18]						
Eastbound US 9 Route Left Turn	A (8.3)	A (9.6)	A (9.4)	A (8.3)	A (9.6)	A (9.5)
Westbound US 9 Route Left Turn	A (8.8)	A (8.6)	A (9.1)	A (8.8)	A (8.6)	A (9.1)
Northbound Cool Spring Road Left Turn/Through Lane	D (47.4)	F (118.6)	F (160.7)	D (31.5)	F (195.3)	F (135.9)
Northbound Cool Spring Road Left Turn/Through Lane Queue Length	3’	18’	3’	15’	135’	95’
Northbound Cool Spring Road Right Turn Lane	B (13.9)	B (11.8)	B (13.4)	B (14.0)	B (11.9)	B (13.5)
Northbound Cool Spring Road Approach	C (17.4)	F (68.3)	F (72.4)	C (18.1)	F (128.0)	F (81.1)
Southbound Cool Spring Road Left Turn/Through Lane	F (164.8)	F (*)	F (*)	F (274.5)	F (*)	F (*)

*Delay exceeds 1,000 seconds

[18] JMT modeled the intersection with a separate right turn lane along the northbound and southbound approaches. The TIS modeled the intersection with one left turn lane, one through lane and one right turn lane along the northbound and southbound approaches, a separate left turn lane along the eastbound approach, and a separate right turn lane along the westbound approach during the AM and PM peak hours, and a shared lane during the Saturday peak hour period.

Table 13 (Continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
12 – US Route 9 / Cool Spring Road	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 3 – 2044 with Development *with auxiliary lanes* [18]						
Southbound Cool Spring Road Left Turn/Through Lane Queue Length	165’	230’	310’	290’	358’	455’
Southbound Cool Spring Road Right Turn Lane	B (11.8)	B (14.4)	B (14.4)	B (11.9)	B (14.5)	B (14.5)
Southbound Cool Spring Road Approach	F (78.6)	F (476.6)	F (912.5)	F (179.4)	F (*)	F (*)
Roundabout[1]						
Case 3 – 2044 with Development[14]						
Eastbound US Route 9 Left Approach	B (10.4)	A (9.7)	B (13.0)	B (12.1)	A (9.9)	B (13.2)
Westbound US Route 9 Approach	A (6.3)	B (13.4)	B (11.7)	A (6.6)	B (14.0)	B (11.8)
Northbound Cool Spring Road Approach	A (8.4)	A (7.5)	A (8.8)	A (9.2)	A (7.7)	A (9.0)
Southbound Cool Spring Road Approach	A (7.9)	A (9.4)	B (10.1)	A (8.1)	A (9.8)	B (10.3)
Overall	A (8.5)	B (11.2)	B (11.8)	A (9.4)	B (11.6)	B (12.0)
Signalized Intersection [1, 19]						
Case 3 – 2044 with Development	B (19.7)	C (20.2)	C (21.5)	C (28.1)	C (23.5)	C (25.4)

*Delay exceeds 1,000 seconds.

[19] JMT modeled the intersection as a free signalized intersection with a cycle length of 120 seconds during all peak hours, whereas the TIS used various cycle lengths. The eastbound and westbound approaches were modeled with one left turn lane, one through lane, and one right turn lane. The northbound and southbound approaches were modeled with one shared left turn/through lane and one right turn lane. The TIS modeled the intersection with one left turn lane and a shared through/right turn lane along the eastbound and westbound approaches, one shared left turn/through/right turn lane along the northbound approach, and one shared left turn/through lane and one right turn lane along the southbound approach.

Table 14
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per TIS**			**LOS per JMT**		
13 – Cool Spring Road / Fisher Road	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing						
Eastbound Fisher Road Approach	A (8.7)	A (8.5)	A (8.5)	A (9.1)	A (8.5)	A (8.5)
Westbound Fisher Road Approach	A (8.5)	A (8.9)	A (8.2)	A (8.4)	A (8.9)	A (8.2)
Northbound Cool Spring Road Approach	A (9.3)	A (8.4)	A (8.2)	A (8.8)	A (8.4)	A (8.2)
Southbound Cool Spring Road Approach	A (8.0)	A (8.2)	A (7.9)	A (8.1)	A (8.2)	A (7.9)
Overall	A (8.8)	A (8.6)	A (8.3)	A (8.7)	A (8.6)	A (8.3)
Case 2 – 2044 without Development						
Eastbound Fisher Road Approach	B (10.1)	A (9.9)	B (10.0)	B (10.3)	A (9.9)	A (9.7)
Westbound Fisher Road Approach	A (9.6)	B (10.6)	A (9.1)	A (9.4)	B (10.5)	A (9.1)
Northbound Cool Spring Road Approach	B (10.8)	A (9.8)	A (9.4)	B (10.1)	A (9.8)	A (9.3)
Southbound Cool Spring Road Approach	A (8.7)	A (9.1)	A (8.7)	A (8.7)	A (9.1)	A (8.6)
Overall	B (10.1)	B (10.0)	A (9.5)	A (9.9)	B (10.0)	A (9.3)
Case 3 – 2044 with Development						
Eastbound Fisher Road Approach	B (11.0)	B (11.0)	B (10.9)	B (11.0)	B (11.0)	B (10.5)
Westbound Fisher Road Approach	B (10.1)	B (11.7)	A (9.8)	A (9.9)	B (11.6)	A (9.8)
Northbound Cool Spring Road Approach	B (11.7)	B (11.4)	B (10.5)	B (10.7)	B (11.4)	B (10.5)
Southbound Cool Spring Road Approach	A (9.5)	B (10.0)	A (9.5)	A (9.4)	B (10.0)	A (9.4)
Overall	B (10.8)	B (11.2)	B (10.3)	B (10.5)	B (11.2)	B (10.2)

Table 15
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
14 – Cool Spring Road / Forest Road	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing						
Eastbound Forest Road Approach	A (9.5)	A (9.3)	A (9.3)	A (9.5)	A (9.3)	A (9.2)
Northbound Cool Spring Road Left Turn	A (7.3)	A (7.4)	A (7.3)	A (7.4)	A (7.5)	A (7.4)
Case 2 – 2044 without Development						
Eastbound Forest Road Approach	B (10.4)	B (10.3)	B (10.2)	B (10.4)	B (10.3)	B (10.1)
Northbound Cool Spring Road Left Turn	A (7.5)	A (7.6)	A (7.5)	A (7.5)	A (7.6)	A (7.5)
Case 3 – 2044 with Development						
Eastbound Forest Road Approach	B (11.1)	B (11.4)	B (11.1)	B (11.1)	B (11.4)	B (11.1)
Northbound Cool Spring Road Left Turn	A (7.6)	A (7.7)	A (7.7)	A (7.7)	A (7.7)	A (7.7)

Table 16
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Signalized Intersection[1]	**LOS per TIS**			**LOS per JMT**		
15 – US Route 9 / Hudson Road / Fisher Road[20]	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing	B (18.2)	C (21.1)	B (18.2)	D (39.3)	D (39.0)	D (39.4)
Case 2 – 2044 without Development	C (23.9)	C (29.7)	C (25.5)	D (43.7)	D (41.6)	D (41.6)
Case 3 – 2044 with Development	C (27.8)	D (49.0)	D (36.5)	D (53.9)	D (53.3)	D (54.6)
Case 3 – 2044 with Development *with signal timing optimization*[21]	C (23.4)	C (31.2)	C (28.2)	C (32.7)	D (34.2)	C (33.4)

[20] JMT modeled the intersection as a free signalized intersection with a cycle length of 120 seconds during all peak hours.
[21] The signal optimization includes optimizing green split times while utilizing a 120 second cycle length, whereas the TIS altered minimum green time and maximum green time.

Table 17
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
16 – US Route 9 / Hunters Mill Road	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing[22]						
Eastbound US Route 9 Left Turn	A (8.6)	A (8.8)	A (8.7)	A (8.1)	A (8.7)	A (8.6)
Westbound US Route 9 Left Turn	A (8.5)	A (8.1)	A (8.9)	A (8.6)	A (8.2)	A (9.0)
Northbound Breakwater Acres Lane Approach	C (17.5)	C (21.9)	C (23.0)	C (17.8)	C (22.3)	C (21.6)
Southbound Hunters Mill Road Approach	C (18.1)	C (20.0)	C (23.0)	C (17.8)	C (20.2)	C (22.0)
Southbound Hunters Mill Road Left Turn/Through Lane	C (22.1)	C (22.7)	D (33.0)	C (21.7)	C (23.1)	D (31.1)
Southbound Hunters Mill Road Right Turn Lane	B (10.7)	B (12.6)	B (12.0)	B (10.6)	B (12.2)	B (11.8)
Case 2 – 2044 without Development[22]						
Eastbound US Route 9 Left Turn	A (9.3)	A (9.4)	A (9.4)	A (8.7)	A (9.4)	A (9.3)
Westbound US Route 9 Left Turn	A (9.0)	A (8.7)	A (9.9)	A (9.0)	A (8.8)	A (9.9)
Northbound Breakwater Acres Lane Approach	D (25.5)	E (36.9)	E (38.8)	D (25.7)	E (37.1)	E (36.4)
Southbound Hunters Mill Road Approach	D (28.1)	D (33.3)	E (42.6)	D (27.5)	D (33.4)	E (39.7)
Southbound Hunters Mill Road Left Turn/Through Lane	E (36.3)	E (39.9)	F (68.4)	E (35.4)	E (40.2)	F (62.8)
95th Percentile Queue Length	15’	10’	13’	13’	10’	13’
Southbound Hunters Mill Road Right Turn Lane	B (12.4)	B (14.6)	B (14.2)	B (12.3)	B (14.1)	B (14.0)
Case 3 – 2044 with Development[22]						
Eastbound US Route 9 Left Turn	A (9.9)	A (9.8)	A (10.0)	A (9.2)	A (9.8)	A (9.8)
Westbound US Route 9 Left Turn	A (9.1)	A (9.3)	B (10.5)	A (9.2)	A (9.4)	B (10.6)
Northbound Breakwater Acres Lane Approach	D (32.7)	F (55.1)	F (56.3)	D (32.9)	F (55.4)	F (53.0)
95th Percentile Queue Length	3’	3’	-	3’	3’	3’
Southbound Hunters Mill Road Approach	E (38.7)	F (51.0)	F (69.1)	E (37.5)	F (51.2)	F (62.6)

[22] JMT modeled the eastbound approach with a left turn lane and a shared through/right turn lane because of existing bypass lane, whereas the TIS modeled the eastbound approach with a shared left turn/through lane and a right turn lane. JMT and the TIS both modeled southbound approach with a shared left turn/through lane and a right turn lane.

Table 17 (continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
16 – US Route 9 / Hunters Mill Road	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 3 – 2044 with Development[22]						
Southbound Hunters Mill Road Left Turn/Through Lane	F (51.5)	F (63.5)	F (117.3)	E (49.9)	F (64.0)	F (105.3)
95th Percentile Queue Length	20’	15’	23’	20’	15’	20’
Southbound Hunters Mill Road Right Turn Lane	B (14.1)	C (16.0)	C (15.9)	B (14.0)	C (15.4)	C (15.7)
95th Percentile Queue Length	3’	0’	3’	3’	0’	3’
Roundabout[1]						
Case 2 – 2044 without Development[23]						
Eastbound US Route 9 Approach	-	-	-	A (10.0)	A (7.6)	B (12.5)
Westbound US Route 9 Approach	-	-	-	A (7.8)	A (9.8)	A (9.2)
Northbound Breakwater Acres Lane Approach	-	-	-	A (6.2)	A (5.4)	A (7.4)
Southbound Hunters Mill Road Approach	-	-	-	A (5.8)	A (6.5)	A (6.4)
Overall	-	-	-	A (8.9)	A (8.8)	B (11.0)
Case 3 – 2044 with Development[23]						
Eastbound US Route 9 Approach	-	-	-	B (10.9)	A (10.0)	C (17.8)
Westbound US Route 9 Approach	-	-	-	B (10.0)	B (11.7)	B (11.5)
Northbound Breakwater Acres Lane Approach	-	-	-	A (6.6)	A (6.5)	A (8.7)
Southbound Hunters Mill Road Approach	-	-	-	A (6.9)	A (7.3)	A (7.4)
Overall	-	-	-	B (10.4)	B (10.9)	B (14.9)
Signalized Intersection[1,24]						
Case 2 – 2044 without Development	-	-	-	B (12.5)	B (16.5)	B (14.4)
Case 3 – 2044 with Development	-	-	-	B (14.6)	B (19.9)	B (18.6)

[23] JMT modeled the intersection as a single-lane roundabout.
[24] JMT modeled the intersection as a free signalized intersection with a cycle length of 120 seconds during all peak hours. The intersection was modeled with one left turn lane and one through/right turn lane along the eastbound approach, one shared left turn/through and one right turn lane along westbound approach, and one left turn lane and one shared through/right turn lane along northbound and southbound approaches with protected-permitted left turns.

Table 18
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
17 – US Route 9 / Beaver Creek Drive	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing						
Eastbound US Route 9 Left Turn	A (8.4)	A (9.1)	A (8.7)	A (8.2)	A (9.1)	A (8.7)
Westbound US Route 9 Left Turn	A (8.4)	A (8.3)	A (8.9)	A (8.5)	A (8.4)	A (9.0)
Northbound Private Driveway Approach[25]	-	B (11.1)	C (18.6)	-	B (11.2)	C (18.9)
Southbound Beaver Creek Drive Approach	C (17.4)	C (24.6)	C (19.6)	C (17.6)	C (24.6)	C (19.9)
Southbound Beaver Creek Drive Left Turn/Through Lane	C (21.4)	D (30.0)	D (33.1)	C (21.8)	D (29.9)	D (33.8)
Southbound Beaver Creek Drive Right Turn	B (10.7)	B (13.0)	B (12.1)	B (10.8)	B (13.2)	B (12.0)
Case 2 – 2044 without Development						
Eastbound US Route 9 Left Turn	A (9.0)	A (9.9)	A (9.5)	A (8.8)	A (9.8)	A (9.4)
Westbound US Route 9 Left Turn	A (8.9)	A (9.1)	A (9.9)	A (8.9)	A (9.1)	A (9.9)
Northbound Private Driveway Approach[25]	-	B (13.4)	D (30.5)	-	B (13.3)	D (30.8)
Southbound Beaver Creek Drive Approach	D (26.9)	E (46.8)	D (34.6)	D (27.1)	E (45.1)	D (34.8)
Southbound Beaver Creek Drive Left Turn	E (35.6)	F (61.5)	F (70.4)	E (36.0)	F (59.0)	F (71.3)
95th Percentile Queue Length	15’	20’	13’	15’	20’	13’
Southbound Beaver Creek Drive Right Turn	B (12.6)	C (15.6)	B (14.4)	B (12.6)	C (15.6)	B (14.4)
Case 2 – 2044 without Development *with auxiliary lanes*[26]						
Eastbound US Route 9 Left Turn	-	-	-	A (8.8)	A (9.8)	A (9.4)
Westbound US Route 9 Left Turn	-	-	-	A (8.9)	A (9.1)	A (9.9)
Northbound Private Driveway Approach[25]	-	-	-	-	B (13.3)	D (29.9)
Northbound Private Driveway Left Turn	-	-	-	D (31.7)	E (48.7)	F (66.1)
95th Percentile Queue Length	-	-	-	0’	0’	5’
Northbound Private Driveway Right Turn	-	-	-	-	B (13.3)	C (16.3)
Southbound Beaver Creek Drive Approach	-	-	-	D (27.1)	E (45.1)	D (34.8)
Southbound Beaver Creek Drive Left Turn	-	-	-	E (36.0)	F (59.0)	F (71.3)
95th Percentile Queue Length	-	-	-	15’	20’	13’
Southbound Beaver Creek Drive Right Turn	-	-	-	B (12.6)	C (15.6)	B (14.4)

[25] LOS not reported for Weekday AM peak hour due to zero trips along the northbound approach.
[26] JMT modeled the intersection with a separate left turn lane along the northbound and southbound approaches.

Table 18 (continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
17 – US Route 9 / Beaver Creek Drive	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 3 – 2044 with Development						
Eastbound US Route 9 Left Turn	A (9.6)	B (10.4)	B (10.0)	A (9.3)	B (10.3)	A (10.0)
Westbound US Route 9 Left Turn	A (9.1)	A (9.8)	B (10.6)	A (9.1)	A (9.8)	B (10.7)
Northbound Private Driveway Approach[25]	-	C (15.7)	E (44.4)	-	C (15.7)	E (44.9)
95th Percentile Queue Length	-	0’	10’	-	0’	10’
Southbound Beaver Creek Drive Approach	E (37.1)	F (82.7)	F (54.0)	E (37.5)	F (78.2)	F (54.7)
Southbound Beaver Creek Drive Left Turn	F (50.9)	F (113.5)	F (121.1)	F (51.5)	F (106.9)	F (123.1)
95th Percentile Queue Length	23’	33’	20’	23’	33’	20’
Southbound Beaver Creek Drive Right Turn	B (14.3)	C (17.3)	C (16.3)	B (14.4)	C (17.2)	C (16.3)
Case 3 – 2044 with Development *with auxiliary lanes*[26]						
Eastbound US Route 9 Left Turn	-	-	-	A (9.3)	B (10.3)	A (10.0)
Westbound US Route 9 Left Turn	-	-	-	A (9.1)	A (9.8)	B (10.7)
Northbound Private Driveway Approach[25]	-	-	-	-	C (15.7)	E (43.0)
Northbound Private Driveway Left Turn	-	-	-	E (42.2)	F (75.8)	F (117.1)
95th Percentile Queue Length				0’	0’	8’
Northbound Private Driveway Right Turn	-	-	-	-	C (15.7)	C (19.0)
Southbound Beaver Creek Drive Approach	-	-	-	E (37.5)	F (78.2)	F (54.7)
Southbound Beaver Creek Drive Left Turn	-	-	-	F (51.5)	F (106.9)	F (123.1)
95th Percentile Queue Length	-	-	-	23’	33’	20’
Southbound Beaver Creek Drive Right Turn	-	-	-	B (14.4)	C (17.2)	C (16.3)

Table 18 (continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Roundabout[1]	**LOS per TIS**			**LOS per JMT**		
17 – US Route 9 / Beaver Creek Drive	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 2 – 2044 without Development[23]	-	-	-			
Eastbound US Route 9 Approach	-	-	-	B (10.0)	A (8.8)	B (13.0)
Westbound US Route 9 Approach	-	-	-	A (7.9)	B (11.6)	A (9.9)
Northbound Driveway[25]	-	-	-	-	A (6.0)	A (7.8)
Southbound Beaver Creek Drive Approach	-	-	-	A (6.0)	A (7.4)	A (6.7)
Overall	-	-	-	A (8.9)	B (10.3)	B (11.5)
Case 3 – 2044 with Development[23]						
Eastbound US Route 9 Approach	-	-	-	B (11.0)	B (12.1)	C (19.0)
Westbound US Route 9 Approach	-	-	-	B (10.2)	B (14.5)	B (12.5)
Northbound Driveway[25]	-	-	-	-	A (7.2)	A (9.2)
Southbound Beaver Creek Drive Approach	-	-	-	A (7.2)	A (8.4)	A (7.7)
Overall	-	-	-	B (10.5)	B (13.3)	C (15.9)
Signalized Intersection[27]						
Case 2 – 2044 without Development	-	-	-	A (5.3)	B (11.9)	C (19.8)
Case 3 – 2044 with Development	-	-	-	A (5.9)	B (14.4)	C (27.9)

[27] JMT modeled the intersection as a free signalized intersection along US Route 9 with a cycle length of 120 seconds. JMT modeled the intersection with one left turn lane and one shared through/right turn lane along northbound and southbound approaches with protected-permitted left turns, one left turn lane and one through/right turn lane along the eastbound approach, and one shared left turn/through lane and one right turn lane along westbound approach.

Table 19
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Signalized Intersection[1]	**LOS per TIS**			**LOS per JMT**		
18 – US Route 9 / Delaware Route 5 (Harbeson Road)	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing	C (32.0)	C (33.3)	D (36.9)	E (56.2)	E (59.4)	E (70.0)
Case 1 – 2024 Existing *with signal timing optimization*[28]	-	-	-	C (33.7)	C (34.0)	D (36.0)
Case 2 – 2044 without Development	D (40.8)	D (44.4)	D (54.7)	E (61.4)	E (66.5)	F (89.4)
Case 2 – 2044 without Development *with signal timing optimization*[28]	-	-	-	D (35.9)	D (37.9)	D (45.3)
Case 3 – 2044 with Development	D (45.2)	E (56.3)	E (71.4)	E (69.0)	F (86.8)	F (118.6)
Case 3 – 2044 with Development *with signal timing optimization*[28]	D (42.0)	D (49.7)	E (64.2)	D (38.2)	D (44.9)	E (59.4)
Case 3 – 2044 with Development *with improvement*[29]	-	-	-	C (26.5)	C (27.3)	C (28.2)

[28] The signal optimization scenario includes optimizing green split times with a cycle length of 120 seconds.

[29] The JMT improvement scenario includes an additional through lane along the eastbound and westbound US Route 9 approaches and the northbound and southbound Delaware Route 5 approaches. JMT modeled the intersection as free signal along US Route 9 with a cycle length of 120 seconds.

Table 20
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection)[1]	**LOS per TIS**			**LOS per JMT**		
19 – Hudson Road / E. Lake Drive	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing						
Eastbound E. Lake Drive Approach	B (10.3)	A (9.8)	A (9.4)	B (10.0)	A (9.7)	A (9.5)
Northbound Hudson Road Left Turn	A (8.3)	A (7.6)	A (7.6)	A (7.7)	A (7.7)	A (7.6)
Case 2 – 2044 without Development						
Eastbound E. Lake Drive Approach	B (11.6)	B (11.0)	B (10.8)	B (11.1)	B (11.0)	B (10.9)
Northbound Hudson Road Left Turn	A (8.7)	A (8.0)	A (8.0)	A (8.0)	A (8.0)	A (8.0)
Case 3 – 2044 with Development						
Eastbound E Lake Drive Approach	B (12.5)	B (11.6)	B (11.6)	B (11.8)	B (11.6)	B (11.6)
Northbound Hudson Road Left Turn	A (9.0)	A (8.1)	A (8.1)	A (8.2)	A (8.2)	A (8.1)

Table 21
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
20 – Log Cabin Hill Road / Hudson Road	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing						
Westbound Log Cabin Hill Road Approach	A (9.6)	B (11.5)	A (9.8)	A (9.6)	B (11.6)	A (9.8)
Southbound Hudson Road Left Turn	A (7.6)	A (7.7)	A (7.5)	A (7.6)	A (7.8)	A (7.5)
Case 2 – 2044 without Development						
Westbound Log Cabin Hill Road Approach	B (10.3)	B (14.7)	B (11.6)	B (10.3)	B (14.0)	B (11.6)
Southbound Hudson Road Left Turn	A (7.8)	A (8.1)	A (7.8)	A (7.7)	A (8.1)	A (7.9)
Case 3 – 2044 with Development						
Westbound Log Cabin Hill Road Approach	C (18.1)	F (375.2)	F (85.4)	C (17.8)	F (154.6)	F (71.0)
Westbound Log Cabin Hill Road Approach Queue Length	85’	598’	310’	85’	360’	278’
Southbound Hudson Road Left Turn	A (8.0)	A (9.9)	A (8.9)	A (8.0)	A (9.4)	A (8.9)
All-Way Stop-Control[1]						
Case 3 – 2044 with Development[30]						
Westbound Log Cabin Hill Road Approach	-	-	-	B (12.8)	C (17.4)	C (18.3)
Northbound Hudson Road Approach	-	-	-	B (11.3)	C (23.3)	C (17.6)
Southbound Hudson Road Approach	-	-	-	B (13.4)	E (47.4)	D (28.7)
Overall	-	-	-	B (12.6)	D (32.1)	C (22.2)
Case 3 – 2044 with Development[31]						
Westbound Log Cabin Hill Road Approach	B (12.9)	C (18.5)	C (17.1)	-	-	-
Northbound Hudson Road Through Lane	B (11.6)	C (19.7)	B (14.4)	-	-	-
Northbound Hudson Road Right Turn Lane	A (8.5)	B (11.6)	B (10.4)	-	-	-
Northbound Hudson Road Approach	B (10.9)	C (16.8)	B (12.9)	-	-	-
Southbound Hudson Road Left Turn	B (10.3)	C (20.9)	C (15.6)	-	-	-
Southbound Hudson Road Through Lane	B (12.3)	C (18.6)	B (14.1)	-	-	-
Southbound Hudson Road Approach	B (11.8)	C (19.7)	B (14.9)	-	-	-
Overall	B (12.0)	C (18.4)	B (14.9)	-	-	-

[30] JMT modeled the intersection as an all-way stop-controlled intersection with the existing lane configuration.
[31] The TIS modeled the intersection as an all-way stop-controlled intersection with turn lanes along the northbound and southbound approaches.

Table 21 (Continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc

All-Way Stop-Control[1]	**LOS per TIS**			**LOS per JMT**		
20 – Log Cabin Hill Road / Hudson Road	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 3 – 2044 with Development[32]						
Westbound Log Cabin Hill Road Approach	-	-	-	B (12.7)	C (16.1)	C (17.1)
Northbound Hudson Road Approach	-	-	-	B (11.6)	C (22.0)	C (17.3)
Southbound Hudson Road Left Turn Lane	-	-	-	B (10.3)	C (16.9)	C (15.1)
Southbound Hudson Road Through Lane	-	-	-	B (12.2)	C (15.2)	B (13.7)
Southbound Hudson Road Approach	-	-	-	B (11.7)	C (16.0)	B (14.4)
Overall	-	-	-	B (12.0)	D (32.1)	C (16.1)
Case 3 – 2044 with Development[33]						
Westbound Log Cabin Hill Road Left Turn Lane	-	-	-	B (10.8)	B (12.8)	B (12.2)
Westbound Log Cabin Hill Road Right Turn Lane	-	-	-	B (10.9)	B (12.3)	B (13.2)
Westbound Log Cabin Hill Road Approach	-	-	-	B (10.9)	B (12.5)	B (12.9)
Northbound Hudson Road Through Lane	-	-	-	B (11.5)	C (15.9)	B (13.9)
Northbound Hudson Road Right Turn Lane	-	-	-	A (8.5)	B (10.5)	B (10.2)
Northbound Hudson Road Approach	-	-	-	B (10.8)	B (13.9)	B (12.5)
Southbound Hudson Road Left Turn	-	-	-	B (10.3)	C (16.8)	C (15.0)
Southbound Hudson Road Through Lane	-	-	-	B (12.3)	C (15.1)	B (13.6)
Southbound Hudson Road Approach	-	-	-	B (11.7)	C (15.9)	B (14.3)
Overall	-	-	-	B (11.2)	B (14.4)	B (13.3)
Roundabout[1]						
Case 3 – 2044 with Development[34]						
Westbound Log Cabin Hill Road Approach	-	-	-	A (6.3)	A (7.0)	A (7.2)
Northbound Hudson Road Approach	-	-	-	A (4.8)	A (8.9)	A (7.3)
Southbound Hudson Road Approach	-	-	-	A (5.5)	A (8.3)	A (7.2)
Overall	-	-	-	A (5.6)	A (8.2)	A (7.2)
Case 3 – 2044 with Development[35]						
Eastbound Carpenter Road Approach	-	-	-	A (5.3)	A (7.1)	A (6.8)
Westbound Log Cabin Hill Road Approach	-	-	-	A (7.4)	A (7.7)	A (8.0)
Northbound Hudson Road Approach	-	-	-	A (5.4)	A (10.0)	A (8.0)
Southbound Hudson Road Approach	-	-	-	A (6.5)	A (8.9)	A (7.7)
Overall	-	-	-	A (6.4)	A (8.8)	A (7.8)

[32] JMT modeled the intersection as an all-way stop-controlled intersection with a southbound left turn lane.
[33] JMT modeled the intersection as an all-way stop-controlled intersection with turn lanes on all approaches.
[34] JMT modeled the intersection as a single lane roundabout.
[35] Due to the DelDOT Planning's Safety and Sufficiency Assessment, JMT modeled the intersection as a single lane roundabout with the eastbound leg of Carpenter Road being relocated to make the fourth length of the intersection.

Table 22
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
21 – Carpenter Road / Hudson Road	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing						
Eastbound Carpenter Road Approach	A (10.0)	A (10.0)	A (9.8)	B (10.0)	B (10.1)	A (9.9)
Northbound Hudson Road Left Turn	A (7.6)	A (7.7)	A (7.5)	A (7.7)	A (7.7)	A (7.6)
Case 2 – 2044 without Development						
Eastbound Carpenter Road Approach	B (11.4)	B (11.3)	B (11.8)	B (11.5)	B (11.4)	B (11.6)
Northbound Hudson Road Left Turn	A (7.9)	A (8.0)	A (8.0)	A (8.0)	A (8.0)	A (8.0)
Case 3 – 2044 with Development						
Eastbound Carpenter Road Approach	B (13.1)	C (15.3)	C (16.1)	B (13.1)	C (15.4)	C (15.3)
Northbound Hudson Road Left Turn	A (8.2)	A (8.2)	A (8.2)	A (8.2)	A (8.2)	A (8.2)

Table 23
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
22 – Carpenter Road / Diamond Farm Road	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing						
Eastbound Carpenter Road Approach	B (10.4)	A (9.8)	A (9.6)	A (9.9)	A (9.9)	A (9.6)
Westbound Carpenter Road Approach	A (9.8)	A (9.7)	A (9.5)	A (9.6)	A (9.8)	A (9.6)
Northbound Diamond Farm Road Left Turn	A (7.3)	A (7.3)	A (7.3)	A (7.4)	A (7.4)	A (7.4)
Southbound Diamond Farm Road Left Turn	A (7.5)	A (7.3)	A (7.3)	A (7.3)	A (7.4)	A (7.3)
Case 2 – 2044 without Development						
Eastbound Carpenter Road Approach	B (10.7)	B (10.4)	B (10.1)	B (10.2)	B (10.5)	B (10.1)
Westbound Carpenter Road Approach	B (10.4)	B (10.2)	B (10.1)	B (10.1)	B (10.3)	B (10.1)
Northbound Diamond Farm Road Left Turn	A (7.4)	A (7.4)	A (7.4)	A (7.4)	A (7.4)	A (7.4)
Southbound Diamond Farm Road Left Turn	A (7.5)	A (7.4)	A (7.4)	A (7.4)	A (7.4)	A (7.4)
Case 3 – 2044 with Development						
Eastbound Carpenter Road Approach	B (10.9)	B (10.9)	B (10.5)	B (10.3)	B (10.9)	B (10.5)
Westbound Carpenter Road Approach	B (10.9)	B (10.5)	B (10.5)	B (10.5)	B (10.6)	B (10.5)
Northbound Diamond Farm Road Left Turn	A (7.4)	A (7.4)	A (7.4)	A (7.4)	A (7.4)	A (7.4)
Southbound Diamond Farm Road Left Turn	A (7.5)	A (7.4)	A (7.4)	A (7.4)	A (7.4)	A (7.4)

Table 24
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection)[1]	**LOS per TIS**			**LOS per JMT**		
23 – Hudson Road / Walker Road	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing						
Eastbound Walker Road Approach	B (10.4)	B (10.6)	A (9.3)	B (10.2)	B (10.6)	A (9.4)
Northbound Hudson Road Left Turn	A (7.7)	A (7.6)	A (7.5)	A (7.5)	A (7.7)	A (7.5)
Case 2 – 2044 without Development						
Eastbound Walker Road Approach	B (12.2)	B (13.0)	B (11.3)	B (11.7)	B (13.0)	B (11.4)
Northbound Hudson Road Left Turn	A (8.0)	A (7.9)	A (7.9)	A (7.8)	A (8.0)	A (7.9)
Case 3 – 2044 with Development						
Eastbound Walker Road Approach	C (16.3)	C (16.0)	B (14.1)	B (13.8)	C (16.0)	B (14.1)
Northbound Hudson Road Left Turn	A (8.3)	A (8.6)	A (8.4)	A (8.0)	A (8.7)	A (8.5)

Table 25
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection All-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
24 – Hudson Road / Cave Neck Road[16]	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing						
Eastbound Cave Neck Road Left Turn	B (12.4)	B (11.4)	B (14.5)	B (12.0)	B (10.9)	B (14.6)
Westbound Cave Neck Road Left Turn	B (10.3)	B (13.3)	B (12.5)	B (10.4)	B (13.2)	B (12.7)
Northbound Hudson Road Left Turn	A (9.8)	B (11.2)	B (10.4)	B (10.1)	B (11.1)	B (10.5)
Southbound Hudson Road Left Turn	B (11.5)	B (12.1)	B (13.3)	B (11.7)	B (12.2)	B (13.3)
Overall	B (11.2)	B (12.2)	B (13.1)	B (11.2)	B (12.1)	B (13.2)
Case 2 – 2044 without Development						
Eastbound Cave Neck Road Left Turn	C (23.6)	D (25.3)	F (144.9)	C (22.2)	C (20.3)	F (51.3)
95th Percentile Queue Length	138’	110’	508’	130’	88’	265’
Westbound Cave Neck Road Left Turn	C (15.1)	E (47.9)	F (87.6)	B (15.2)	E (35.6)	E (37.2)
95th Percentile Queue Length	55’	245’	345’	55’	198’	190’
Northbound Hudson Road Left Turn	C (15.6)	D (27.4)	D (34.8)	C (16.0)	C (22.6)	C (21.9)
95th Percentile Queue Length	68’	130’	150’	68’	108’	90’
Southbound Hudson Road Left Turn	C (17.5)	D (33.1)	F (58.6)	C (17.8)	D (26.6)	D (30.1)
95th Percentile Queue Length	78’	168’	258’	80’	138’	145’
Overall	C (18.6)	D (34.8)	F (89.0)	C (18.3)	D (27.2)	E (37.2)
Case 3 – 2044 with Development						
Eastbound Cave Neck Road Left Turn	E (43.4)	E (43.3)	F (215.5)	E (40.8)	E (37.5)	F (144.1)
95th Percentile Queue Length	218’	175’	645’	208’	155’	468’
Westbound Cave Neck Road Left Turn	C (21.9)	F (126.8)	F (159.7)	C (22.1)	F (108.3)	F (103.0)
95th Percentile Queue Length	85’	440’	500’	85’	395’	360’
Northbound Hudson Road Left Turn	E (43.7)	F (94.4)	F (135.5)	E (46.6)	F (79.4)	F (85.0)
95th Percentile Queue Length	238’	358’	458’	248’	320’	325’
Southbound Hudson Road Left Turn	D (29.6)	F (153.9)	F (200.0)	D (30.4)	F (134.4)	F (132.2)
95th Percentile Queue Length	140’	515’	603’	143’	468’	435’
Overall	E (36.6)	F (111.6)	F (179.4)	E (37.0)	F (95.9)	F (117.3)

Table 26
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Cool Spring Cluster Development
Report Dated: September 17, 2025
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection)[1]	**LOS per TIS**			**LOS per JMT**		
25 – Walker Road / Diamond Farm Road	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Case 1 – 2024 Existing						
Westbound Walker Road Approach	A (9.1)	A (8.9)	A (8.7)	A (8.9)	A (8.9)	A (8.7)
Southbound Diamond Farm Road Left Turn	A (7.5)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)
Case 2 – 2044 without Development						
Westbound Walker Road Approach	A (9.2)	A (9.1)	A (8.9)	A (8.9)	A (9.0)	A (8.9)
Southbound Hudson Road Left Turn	A (7.5)	A (7.3)	A (7.3)	A (7.4)	A (7.4)	A (7.3)
Case 3 – 2044 with Development						
Westbound Walker Road Approach	A (9.2)	A (9.4)	A (9.2)	A (9.1)	A (9.4)	A (9.3)
Southbound Hudson Road Left Turn	A (7.6)	A (7.4)	A (7.4)	A (7.4)	A (7.5)	A (7.4)