



STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
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DOVER, DELAWARE 19903

JENNIFER COHAN
SECRETARY

April 18, 2018

Ms. Betty Tustin
The Traffic Group, Inc.
104 Kenwood Court
Berlin, Maryland 21811

Dear Ms. Tustin,

The Department has completed its review of the TIS for the proposed Pinnacle Processing Plant. The TIS was prepared by The Traffic Group, Inc. (TTG), and is dated January 23, 2018. TTG prepared the report in a manner generally consistent with DelDOT's *Development Coordination Manual*.

The analysis evaluates the traffic impacts of the proposed development, which would be located on the northwest corner of the intersection of Iron Branch Road (Sussex Road 331) and Pinnacle Way, approximately 200 feet southwest of the intersection of Iron Branch Road and Possum Point Road (Sussex Road 331A), just southeast of the Town of Millsboro, Delaware.

The proposed development would consist of a 203,800 square-foot portion of an existing, now-vacant, facility on an approximately 107.34-acre assemblage of parcels (Tax Parcels 233-5.00-14.00, 15.00 & 16.00). The 203,800 square-foot portion would be renovated to create a 200-employee packaging and processing plant. The proposed development would have a full access on Iron Branch Road by way of Pinnacle Way, which currently serves the existing facility. The renovation is anticipated to be complete in 2018.

The subject property is currently zoned as HI-1 (Heavy Industrial) in the Sussex County, and the developer, Allen Harim Foods, does not plan to rezone the land.

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

The review of the above-mentioned Pinnacle Processing Plant TIS shows that the unsignalized intersection of Iron Branch Road and Old Landing Road exhibits LOS deficiencies without the implementation of physical roadway and/or traffic control improvements during the morning peak hour period for the existing and both future scenarios: 2018 without Pinnacle Processing Plant and 2018 with Pinnacle Processing Plant.



<i>Intersection</i>	<i>Existing Traffic Control</i>	<i>Situation for which deficiencies occur</i>
Old Landing Road & Iron Branch Road	Two-way stop (four-way intersection)	2017 AM existing (Case 1); 2018 AM without Pinnacle Processing Plant (Case 2); and 2018 AM with Pinnacle Processing Plant (Case 3).

The LOS deficiencies exhibited at this intersection occur on the eastbound Old Landing Road approach and the westbound left-turn lane of the Merck Entrance approach. The worst-case queue length is 450 feet and occurs on the eastbound Old Landing Road approach during the AM peak hour with the Pinnacle Processing Plant. The eastbound Old Landing Road LOS deficiencies, driven by the heavy right-turn movement traffic, are mainly due to the East Millsboro Elementary school traffic which peaks between 7:15 a.m. and 7:45 a.m. The school is located approximately 1,000 feet southeast of the intersection of Old Landing Road and Iron Branch Road. There are no LOS deficiencies on any of the intersection’s approaches either after the AM peak hour, which is driven by the school traffic, or during the PM peak hour.

As shown in the table above, the intersection exhibits LOS deficiencies during both existing and future cases. In addition, our analysis shows that the LOS deficiencies are caused mainly by the high volume of school traffic between 7:15 a.m. and 7:45 a.m. While the Pinnacle Processing Plant traffic contributes to the morning peak hour LOS deficiencies at this intersection, its impact is relatively minor.

Adding a dedicated right-turn lane to the eastbound Old Landing Road approach would achieve an acceptable LOS D or better during the morning peak hour. However, the costs for the improvements would be disproportionately high for the developer given the development’s relatively minor impact on this intersection during the morning peak hour. Because the LOS deficiencies are driven by the 30-minute elementary school traffic peak and the development would have a relatively minor impact on the intersection, we do not recommend that the above-mentioned improvements be implemented by the developer at this intersection.

Should Sussex County choose to approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan by note or illustration. 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.

1. The developer should construct the site entrance on Iron Branch Road. As part of the entrance improvement, Pinnacle Way should be realigned with Colonial Estates Avenue to create a four-way intersection with Iron Branch Road. A four-way intersection instead of two offset three-way intersections would facilitate efficient traffic operation in the area and minimize the potential for crashes at or near the site entrance. The proposed configuration is shown in the table below.

Approach	Current Configuration	Proposed Configuration
Northbound Iron Branch Road	One shared left-turn / through lane / right-turn lane	One left-turn lane and one through / right-turn lane
Southbound Iron Branch Road	One shared left-turn / through lane	One left-turn lane, one through lane, and one right-turn lane
Eastbound Site Entrance	Approach does not exist	One shared left-turn / through / right-turn lane
Westbound Colonial Estates Avenue	One shared left-turn / right-turn lane	One shared left-turn / through / right-turn lane

Initial recommended minimum turn-lane lengths (excluding tapers) of the separate turn lanes are listed below. The developer should coordinate with DelDOT's Subdivision Section to determine final turn-lane lengths.

Approach	Left-Turn Lane(s)	Right-Turn Lane
Northbound Iron Branch Road	210 feet*	N/A
Southbound Iron Branch Road	100 feet**	145 feet*
Eastbound Site Entrance	N/A	N/A

* Proposed turn-lane length based on DelDOT's *Auxiliary Lane Worksheet*.

** While a southbound left-turn lane is not required per our analysis, adding one would better utilize the space created as a result of installing the northbound left-turn lane into the proposed development.

2. The developer should provide a bituminous concrete overlay to the existing travel lanes along the Iron Branch Road site frontage. Due to the length of the site frontage and the presence of a guardrail south of the site entrance, DelDOT will allow the developer to limit the frontage improvements to where the roadway is affected by the required entrance improvements, at DelDOT's discretion. DelDOT should analyze the existing lanes' pavement section and recommend an overlay thickness to the developer's engineer if necessary.
3. The following bicycle, pedestrian, and transit improvements should be included:
 - a. Adjacent to the right-turn lane added to southbound Iron Branch Road at the site entrance, a minimum of a five foot bicycle lane should be dedicated and striped with appropriate markings for bicyclists through the turn lane in order to facilitate safe and unimpeded bicycle travel.
 - b. A right-turn yield to bikes sign (MUTCD R4-4) should be added at the start of the right-turn lane added to southbound Iron Branch Road at the site entrance.

- c. Appropriate bicycle symbols, directional arrows, striping (including stop bars), and signing should be included along bicycle facilities and right-turn lanes within the project limits, and should be considered along Pinnacle Way within the site.
- d. Utility covers should be made flush with the pavement.
- e. A fifteen-foot wide easement from the edge of the right-of-way should be dedicated to DelDOT within the site frontage along Iron Branch Road. Within the easement along Iron Branch Road, a minimum of a ten-foot wide shared-use path that meets current AASHTO and ADA standards should be constructed along the side frontage. The shared-use path should have a minimum of a five-foot buffer from the roadway. The developer should coordinate with DelDOT's Subdivision Section to determine exact locations and details of the shared-use path connections to the shoulders.
- f. DelDOT recommends the construction of internal sidewalks for pedestrian safety and to promote walking as a viable transportation alternative within the development. These sidewalks should each be a minimum of five feet wide (with a minimum of a five-foot buffer from the roadway) and should meet current AASHTO and ADA standards.
- g. Where internal sidewalks are located alongside of parking spaces, DelDOT recommends that a buffer be added to eliminate vehicular overhang onto the sidewalk.
- h. ADA compliant curb ramps and crosswalks should be provided at all pedestrian crossings, including all site entrances. Type 3 curb ramps are discouraged.

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 http://www.deldot.gov/information/pubs_forms/manuals/de_mutcd/index.shtml. For any additional information regarding the work zone impact and mitigation procedures during construction please contact Mr. Mark Buckalew of DelDOT's Traffic Section. Mr. Buckalew can be reached at (302) 894-6353 or by email at Mark.Buckalew@state.de.us.

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

Ms. Betty Tustin, The Traffic Group, Inc.

April 18, 2018

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Additional details on our review of this TIS are attached. If you have any questions concerning this review, please contact me at (302) 760-2109 or Mr. Claudy Joinville at (302) 760-2124. My email is Thomas.Brockenbrough@state.de.us and Mr. Joinville's email is Claudy.Joinville@state.de.us.

Sincerely,



T. William Brockenbrough, Jr.
County Coordinator

TWB:cjm

Enclosures

cc with enclosures:

- Ms. Janelle Cornwell, Sussex County Planning & Zoning
- Mr. Kenny Niblett, Town of Millsboro
- Mr. Robert McCleary, Director, Transportation Solutions (DOTS)
- Mr. Drew Boyce, Director, Planning
- Mr. Mark Luszcz, Chief Traffic Engineer, Traffic, DOTS
- Mr. Don Weber, Assistant Director, Traffic, DOTS
- Mr. Michael Simmons, Assistant Director, Project Development South, DOTS
- Mr. Alastair Probert, South District Engineer, DOTS
- Mr. J. Marc Coté, Assistant Director, Development Coordination
- Mr. Peter Haag, Traffic Studies Manager, Traffic, DOTS
- Mr. Mark Buckalew, Traffic Safety Engineer, DelDOT Traffic, DOTS
- Mr. David Dooley, Service Development Planner, Delaware Transit Corporation
- Mr. Anthony Aglio, Planning Supervisor, Statewide & Regional Planning
- Mr. Todd Sammons, Subdivision Engineer, Development Coordination
- Mr. Steven Sisson, Sussex County Subdivision Coordinator, Development Coordination
- Mr. Brian Yates, Subdivision Manager, Development Coordination
- Mr. Troy Brestel, Project Engineer, Development Coordination
- Mr. Claudy Joinville, Project Engineer, Development Coordination

Ms. Betty Tustin, The Traffic Group, Inc.

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General Information

Report date: January 23, 2018

Prepared by: The Traffic Group, Inc. (TTG)

Prepared for: Pinnacle Processing Plant

Tax parcels: 233-5.00-14.00, 15.00 & 16.00

Generally consistent with DelDOT's *Development Coordination Manual*: Yes

Project Description and Background

Description: The proposed Pinnacle Processing Plant development would consist of 203,800 square-foot / 200-employee packaging and processing plant.

Location: Pinnacle Processing Plant would be located on the northwest corner of the intersection of Iron Branch Road (Sussex Road 331) and Pinnacle Way, approximately 200 feet southwest of the intersection of Iron Branch Road and Possum Point Road (Sussex Road 331A), just southeast of the Town of Millsboro, Delaware. A site location map is included on Page 7.

Amount of land to be developed: approximately 107.34-acre assemble of parcels of land

Land use approval(s) needed: DelDOT Subdivision approval and Sussex County land use approval. The land is currently zoned as HI-1 (Heavy Industrial) in Sussex County and the developer does not plan to rezone the land.

Proposed completion date: 2018

Proposed access location: One (1) full access is proposed along Iron Branch Road by way of Pinnacle Way, which currently serves the existing facility.

Daily Traffic Volumes (per DelDOT Traffic Summary 2016):

- 2016 Average Annual Daily Traffic on Iron Branch Road: 4,917 vpd

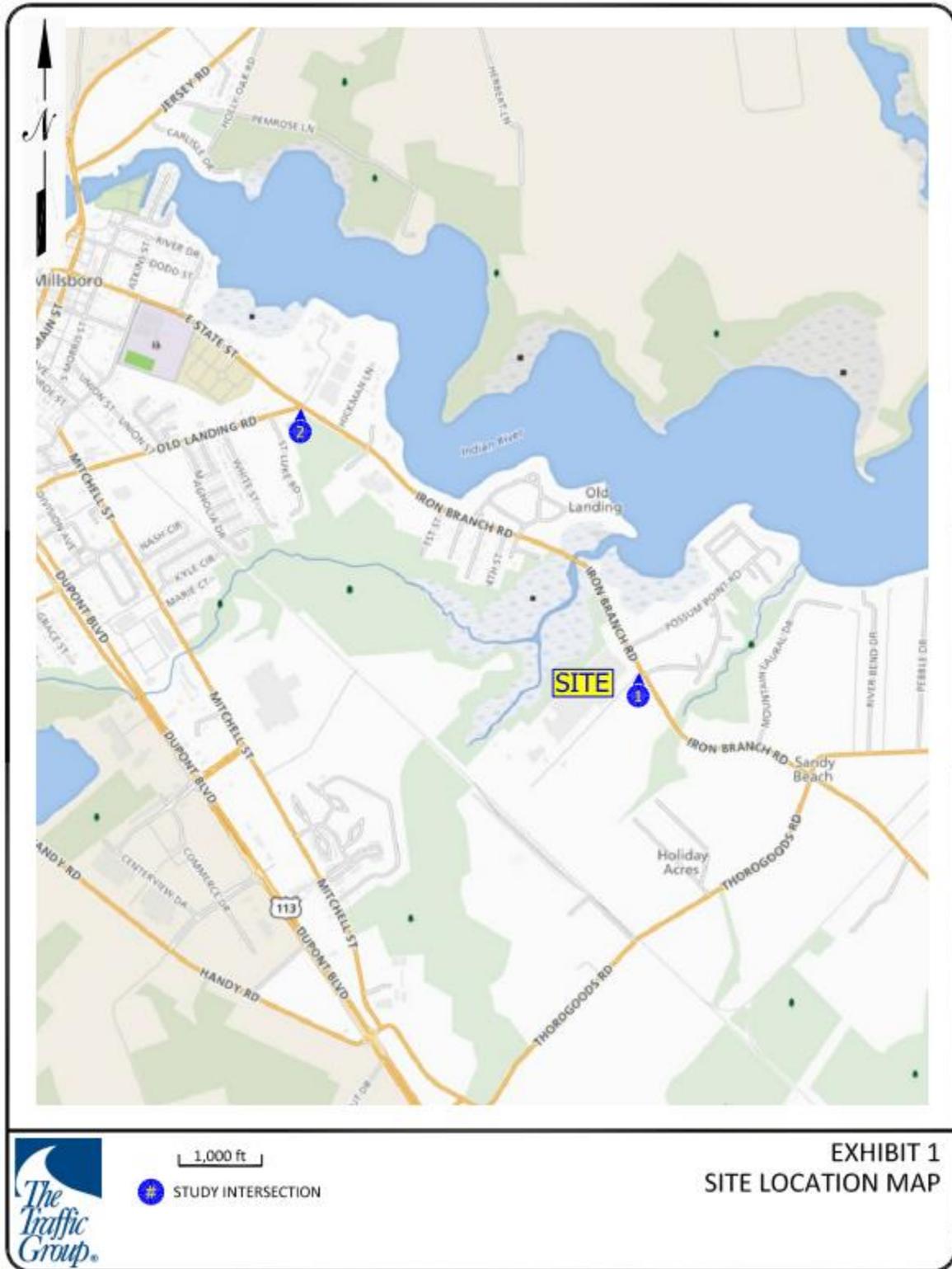


EXHIBIT 1
SITE LOCATION MAP

2015 Delaware Strategies for State Policies and Spending

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

The proposed Pinnacle Processing Plant development is located within Investment Level 2 area.

Investment Level 2

Investment Level 2 Areas are areas of the state that are the most active portion of Delaware's developed landscape. Investment Level 2 Areas consist of less developed areas within municipalities, rapidly growing areas in the counties that have or will have public water or wastewater services and utilities, areas that are generally adjacent to or near Investment Level 1 Areas, smaller towns and rural villages that should grow consistently with their historic character, and suburban areas with public water, wastewater, and utility services. These areas serve as a transition between Investment Level 1 Areas and the state's more open, less populated areas.

In Investment Level 2 Areas, like Investment Level 1 Areas, state investments and policies should support and encourage a wide range of uses and densities, promote other transportation options, foster efficient use of existing public and private investments, and enhance community identity and integrity. In addition, investments should encourage a departure from the typical single-family-dwelling developments and promote a broader mix of housing types and commercial sites encouraging compact, mixed-use development where applicable.

Overall, it is the State's intent to use its spending and management tools to promote well-designed development in Investment Level 2 Areas.

Proposed Development's Compatibility with Strategies for State Policies and Spending:

The proposed Pinnacle Processing Plant development is located within Investment Level 2 Area, and is to consist of a 203,800 square-foot / 200-employee packaging and processing plant. This type of development is consistent with the character of Investment Level 2 areas. As stated above, the proposed development would occupy a 203,800 square-foot portion of the existing facility without adding any new structure. The *Strategies for State Policies and Spending* document generally encourages efficient new growth and redevelopment in Investment Level 2 areas, and the proposed development is consistent with these goals. It is therefore concluded that the proposed development generally complies with the policies stated in the "2015 Strategies for State Policies and Spending."

Comprehensive Plan

Sussex County Comprehensive Plan:

(Source: Sussex County Comprehensive Plan Update, June 2008)

The Sussex County Comprehensive Plan Future Land Use Map indicates that the proposed Pinnacle Processing Plant development is located in Sussex County, within a "medium density area." Medium density areas are categorized as developing areas. In these areas, Sussex County expects developments to be adjacent to municipalities and within areas where future annexation into a municipality is probable.

Based on the Sussex County Comprehensive Plan, the following major guidelines should apply to future growth in the Developing Areas.

Permitted Uses – The permitted land uses within medium density areas include commercial uses as well as a variety of office uses, in addition to residential developments, business and industrial parks.

Densities – The densities allowed in these areas are 2 units per acre, with the option to increase to 4 units per acre if the developer uses the optional density bonuses.

Infrastructure – In these areas, central water and sewer facilities are strongly encouraged. Developing Areas largely depend upon areas where access to public sewage service is available or where the County plans to provide public sewage service with five years.

Proposed Development’s Compatibility with Comprehensive Plan: The proposed Pinnacle Processing Plant is planned as a heavy industrial use. The proposed development appears to comply with the Sussex County Comprehensive Plan, as one of the main goals of the plan is to allow for the development of commercial uses. In addition, due its location adjacent to a municipality, the Town of Millsboro, the proposed development will allow potential employees to work close to home, consistent with the plan.

The site is currently zoned as HI-1 (Heavy Industrial) in Sussex County, and no rezoning is needed to permit the proposed use. The County has already designated these three parcels as ‘planned industrial areas’; therefore, the proposed Pinnacle Processing Plant is consistent with the Sussex County Comprehensive Plan.

Relevant Projects in the DelDOT Capital Transportation Program

DelDOT currently has no relevant projects within the study area.

Trip Generation

Trip generation for the proposed development was determined based on site-specific information provided by the developer. Specifically, the trip generation was based on number of employees and the anticipated daily operation of the development. The following is the new traffic generated for this development:

- 203,800 Square-Foot / 200-Employee Packaging and Processing Plant (Land Use: site specific information)

Table 1
PINNACLE PROCESSING PLANT PEAK HOUR TRIP GENERATION

Land Use	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
203,800 S.F. / 200 Employees	53	5	58	0	84	84
TOTAL TRIPS	53	5	58	0	84	84

Table 2
PINNACLE PROCESSING PLANT DAILY TRIP GENERATION

Land Use	Weekday ADT		
	In	Out	Total
203,800 S.F. / 200 Employees	221	221	442
TOTAL TRIPS	221	221	442

Overview of TIS

Intersections examined:

- 1) Site Entrance / Pinnacle Way / Iron Branch Road (Sussex Road 331)
- 2) Iron Branch Road / Old Landing Road (Sussex Road 339)

Conditions examined:

- 1) 2018 existing conditions (Case 1)
- 2) 2018 without Pinnacle Processing Plant (Case 2)
- 3) 2018 with Pinnacle Processing Plant (Case 3)

Peak hours evaluated: Weekday morning and afternoon peak hours

Committed developments considered: None

Intersection Descriptions

- 1) **Site Entrance / Pinnacle Way / Iron Branch Road**
Type of Control: existing two-way stop-controlled (T-intersection)
Northbound approach: (Iron Branch Road) one shared left-turn / through lane
Southbound approach: (Iron Branch Road) one shared through / right-turn lane
Eastbound approach: (Pinnacle Way / Site Entrance) one shared left / right-turn lane, stop-controlled
- 2) **Iron Branch Road / Old Landing Road / Merck Entrance**
Type of Control: existing two-way stop-controlled (four-way intersection)
Northbound approach: (Iron Branch Road) one shared left / through / right-turn lane
Southbound approach: (Iron Branch Road) one shared left / through / right-turn lane
Eastbound approach: (Old Landing Road) one shared left-turn / right-turn lane, stop-controlled
Westbound Approach: (Merck Entrance) one shared left-turn / through lane, and one right-turn lane

Safety Evaluation

Crash Data: Crash data was obtained from January 10, 2016 to January 10, 2018 for each of the two study intersections for the proposed development. The crash data requests returned a total of six (6) reportable crashes, which include no personal injury crashes and no fatalities. None of the crashes were alcohol-related. The data indicate that the most common types of crashes were rear-end crashes and angle crashes, mostly caused by driver distraction / inattention, following too close, and failure to yield the right-of-way.

Four (4) of the six (6) crashes occurred during daylight hours, and the surface, lighting, or weather conditions were not primary contributing factors. The data do not indicate any major crash trends and no additional safety improvements are recommended at this time as a result of the crash data analysis.

- Iron Branch Road (Sussex Road 331) / Pinnacle Way
 - 1 crash reported (1 property damage, no personal injury)
- Iron Branch Road / Old Landing Road (Sussex Road 339)
 - 5 crashes report (5 property damage, 0 personal injury)

Sight Distance: The proposed entrance on Iron Branch Road would be located approximately 820 feet north on a horizontal curve, which presents potential sight distance and safety concerns especially for left-turning vehicles from the site. The entrance is also located a distance of ¼ mile south of a horizontal curve, which also presents potential sight distance and safety concerns for left-turning vehicles and trucks to and from the site. The proposed entrance as well as allowed movements at that intersection may require a closer evaluation from a safety perspective. The potential sight distance and safety concerns would be minimized if the proposed site entrance is realigned opposite Colonial Estates Avenue.

While we anticipate potential safety concerns due to sight distance, no problematic sight distance issues have been reported or indicated by crash data.

Transit, Pedestrian, and Bicycle Facilities

Existing transit service: The Delaware Transit Corporation (DTC) currently has no DART bus service within the project area. However, DART operates a new flex route - Route 902F (Georgetown - Milford), which travels from Railroad Avenue in Georgetown to downtown Millsboro with a stop at Mountaire Farms along Delaware Route 24. While Route 902F travels through the intersection Old Landing Road and Iron Branch Road / State Street, it would not serve the proposed development. The 902F route originates and ends in at Railroad Avenue in Georgetown.

Planned transit service: At the time of the Pinnacle Processing Plant TIS, The Traffic Group, Inc. contacted the DTC to determine requested transit facilities for the proposed development. It was determined that no transit service transit would be extended to the Pinnacle Processing Plant at this time.

Existing bicycle and pedestrian facilities: According to DelDOT's Sussex County Bicycle Map (dated 2012), Iron Branch Road is classified as a Road with Bikeway along the proposed site frontage. Iron Branch Road has 8-foot wide shoulders in both directions with no bicycle symbols, directional arrows or striping.

According to the bicycle level of service (BLOS) calculator developed by the *League of Illinois Bicyclists*, Iron Branch Road operates at BLOS C. While the annual speed limit is high on that road segment where the site entrance is located, which is from Power Plant Road (Sussex Road 332) to Old Landing Road, the adequate BLOS is largely due to the wide shoulders. There are currently no sidewalks or multi-use paths along the proposed site frontage.

Planned bicycle and pedestrian facilities: DelDOT's Statewide & Regional Planning Section provided comments regarding planned or requested bicycle and pedestrian facilities in the study area of this proposed development. The following comments were provided:

- Install a ten-foot wide shared-use path along the Iron Branch Road site frontage.

Previous Comments

All comments from DelDOT's Scoping Letter, Traffic Count Review, and Preliminary TIS (PTIS) Review were addressed in the Final TIS submission.

General HCS Analysis Comments

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

- 1) For unsignalized intersections, the TIS and DelDOT applied heavy vehicle (HV) percentages by movement. For future conditions, the TIS and DelDOT generally assumed future HV percentages to be the same as existing HV percentages.
- 2) For existing conditions at unsignalized intersections, the TIS and DelDOT determined and applied, for each intersection, the peak hour factor (PHF) for the entire intersection. For future conditions, the TIS assumed future PHF that were generally the same as the PHF DelDOT applied.

Table 3
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Pinnacle Processing Plant
Report dated January 23, 2018
 Prepared by The Traffic Group, Inc.

Unsignalized Intersection ¹ Two-Way Stop Control	LOS per TIS		LOS per DelDOT	
	Weekda y AM	Weekda y PM	Weekday AM	Weekday PM
Iron Branch Road & Pinnacle Way / Site Entrance				
2017 Existing (Case 1)				
Northbound Iron Branch Road – Left	A (8.6)	A (7.7)	A (8.4)	A (7.7)
Southbound Iron Branch Road - Left	A (7.9)	A (7.8)	A (7.9)	A (7.8)
Eastbound Pinnacle Way	C (15.0)	A (9.5)	C (15.0)	A (9.6)
Westbound Colonial Estates Avenue	B (11.1)	B (11.7)	B (11.0)	B (11.7)
2018 without Pinnacle Processing Plant (Case 2)				
Northbound Iron Branch Road – Left	A (8.6)	A (7.7)	A (8.4)	A (7.8)
Southbound Iron Branch Road - Left	A (7.9)	A (7.8)	A (7.9)	A (7.8)
Eastbound Pinnacle Way	B (15.0)	A (9.6)	C (15.0)	A (9.6)
Westbound Colonial Estates Avenue	B (11.1)	B (11.8)	B (11.0)	B (11.8)
2018 with Pinnacle Processing Plant (Case 3)				
Northbound Iron Branch Road – Left	A (8.8)	A (7.7)	A (8.6)	A (7.8)
Southbound Iron Branch Road - Left	A (7.9)	A (7.8)	A (7.9)	A (7.8)
Eastbound Pinnacle Way	B (13.7)	A (13.2)	B (14.1)	A (13.3)
Westbound Colonial Estates Avenue	B (11.4)	B (12.1)	B (11.2)	B (12.1)

¹ The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

Table 4
 PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Pinnacle Processing Plant
Report dated January 23, 2018
 Prepared by The Traffic Group, Inc.

Unsignalized Intersection ² Two-Way Stop Control	LOS per TIS		LOS per DelDOT	
	Weekday AM	Weekday PM	Weekday AM	Weekda y PM
Iron Branch & Old Landing Road / Merck Entrance				
2017 Existing (Case 1)				
Northbound Iron Branch Road – Left	A (8.9)	A (8.0)	A (8.9)	A (8.0)
Southbound Iron Branch Road - Left	A (8.2)	A (7.7)	A (8.2)	A (7.7)
Eastbound Old Landing Road	F (195.8)	B (13.7)	F (196.3)	B (13.7)
Westbound Merck Entrance	C (20.1)	B (13.6)	C (21.4)	B (13.6)
2018 without Pinnacle Processing Plant (Case 2)				
Northbound Iron Branch Road – Left	A (8.9)	A (8.0)	A (8.9)	A (8.0)
Southbound Iron Branch Road - Left	A (8.2)	A (7.7)	A (8.2)	A (7.7)
Eastbound Old Landing Road	F (200.7)	B (13.7)	F (200.4) ³	B (13.8)
Westbound Merck Entrance	C (20.3)	B (13.8)	C (21.5)	B (13.7)
2018 with Pinnacle Processing Plant (Case 3)				
Northbound Iron Branch Road – Left	A (9.0)	A (8.0)	A (9.0)	A (8.0)
Southbound Iron Branch Road - Left	A (8.2)	A (7.8)	A (8.2)	A (7.8)
Eastbound Old Landing Road	F (227.3)	B (14.9)	F (227.6) ⁴	B (14.8)
Westbound Merck Entrance	C (20.3)	B (14.9)	C (22.0)	B (14.9)
2018 with Pinnacle Processing Plant (Case 3) ⁵				
Northbound Iron Branch Road – Left	N/A	N/A	A (9.0)	A (8.0)
Southbound Iron Branch Road - Left	N/A	N/A	A (8.2)	A (7.8)
Eastbound Old Landing Road	N/A	N/A	F (60.1) ⁶	B (13.5)
Westbound Merck Entrance	N/A	N/A	C (22.0)	B (14.9)

² The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

³ The 95th percentile queue length for the eastbound Old Landing Road approach during the Case 2 AM peak hour is approximately 16 vehicles.

⁴ The 95th percentile queue length for the eastbound Old Landing Road approach during the Case 3 AM peak hour is approximately 18 vehicles.

⁵ The proposed improvements for this intersection include modifying the eastbound Old Landing Road approach from a shared left / through / right-turn lane to shared left-turn / through lane and an exclusive right-turn lane.

⁶ The 95th percentile queue length for the eastbound Old Landing Road left-turn / through lane movement during the Case 3 AM peak hour is approximately 6 vehicles with the right-turn movement being 2 vehicles.

Table 5
 PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Pinnacle Processing Plant
Report dated January 23, 2018
 Prepared by The Traffic Group, Inc.

Unsignalized Intersection ⁷ Two-Way Stop Control	LOS per TIS		LOS per DeIDOT ⁸	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Iron Branch & Old Landing Road / Merck Entrance				
2017 Existing (Case 1)				
Northbound Iron Branch Road – Left	N/A	N/A	A (8.6)	A (7.8)
Southbound Iron Branch Road - Left	N/A	N/A	A (8.0)	A (7.6)
Eastbound Old Landing Road	N/A	N/A	F (64.1) ⁹	B (12.5)
Westbound Merck Entrance	N/A	N/A	C (17.3)	B (12.5)
2018 without Pinnacle Processing Plant (Case 2)				
Northbound Iron Branch Road – Left	N/A	N/A	A (8.6)	A (7.8)
Southbound Iron Branch Road - Left	N/A	N/A	A (8.0)	A (7.6)
Eastbound Old Landing Road	N/A	N/A	F (66.0) ¹⁰	B (12.5)
Westbound Merck Entrance	N/A	N/A	C (17.4)	B (12.6)
2018 with Pinnacle Processing Plant (Case 3)				
Northbound Iron Branch Road – Left	N/A	N/A	A (8.6)	A (7.9)
Southbound Iron Branch Road - Left	N/A	N/A	A (8.0)	A (7.7)
Eastbound Old Landing Road	N/A	N/A	F (76.7) ¹¹	B (13.3)
Westbound Merck Entrance	N/A	N/A	C (17.7)	B (13.6)
2018 with Pinnacle Processing Plant (Case 3) ¹²				
Northbound Iron Branch Road – Left	N/A	N/A	A (8.6)	A (7.9)
Southbound Iron Branch Road - Left	N/A	N/A	A (8.0)	A (7.6)
Eastbound Old Landing Road	N/A	N/A	D (29.1) ¹³	B (12.4)
Westbound Merck Entrance	N/A	N/A	C (17.7)	B (13.6)

⁷ The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

⁸ DeIDOT analyzed this intersection using a Seasonal Adjustment Factor of 1.00 for all approaches.

⁹ The 95th percentile queue length for the eastbound Old Landing Road approach during the Case 1 AM peak hour is approximately 9 vehicles.

¹⁰ The 95th percentile queue length for the eastbound Old Landing Road approach during the Case 2 AM peak hour is approximately 9 vehicles.

¹¹ The 95th percentile queue length for the eastbound Old Landing Road approach during the Case 3 AM peak hour is approximately 10 vehicles.

¹² The proposed improvements for this intersection include modifying the eastbound Old Landing Road approach from a shared left / through / right-turn lane to a shared left-turn / through lane and an exclusive right-turn lane.

¹³ The 95th percentile queue length for the eastbound Old Landing Road left-turn / through lane movement during the Case 3 AM peak hour is approximately 4 vehicles with the right-turn movement having a queue of 1 vehicle.