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KENNETT PIKE CORRIDOR STUDY



Delaware Department
of Transportation

April 10, 2014
Centreville, Delaware

Project Overview

- ▣ Community Concerns and Requests
- ▣ Traffic Volumes
- ▣ Speeds
- ▣ Crash History
- ▣ Intersections
- ▣ Pedestrians
- ▣ Signage
- ▣ Potential Recommendations



History of the Study

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- The working group was formed in 2013 as a result of the 2013 CCA Annual Meeting.

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Lt. Sean Duffy

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Jeff Greene

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Rep. Deborah Hudson

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- Centreville is an “18th century village with 21st century traffic.”
- This was the first study since the streetscape project has been completed in late 2011.

Community Concerns and Requests

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- Issues raised during the August 22, 2013 meeting:
 - Sign Clutter
 - Bicycle and Parking signage
 - “Strictly Enforced” plaques
 - Speed Limit & Enforcement
 - Pedestrians and Jaywalking Enforcement
 - Crosswalks & Lighting
 - Intersection sight distance
 - Truck traffic

Community Concerns and Requests

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- **Requests included:**
 - ▣ Reduce sign clutter through Centreville
 - ▣ Increase speed enforcement
 - ▣ Reduce speed limit
 - ▣ Install crosswalks closer to Snuff Mill Road and Owls Nest Road/Twaddell Mill Road
 - ▣ Install in-pavement crosswalk lighting
 - ▣ Correct restricted visibility at intersections
 - ▣ Replace road stampings at gateway islands
 - ▣ Intersection of Owls Nest Road/Twaddell Mill Road
 - ▣ Eliminate truck traffic from Kennett Pike

Potential Recommendations

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- Remove unnecessary signage along the entire corridor
- Install speed reduction pavement markings in both directions of Kennett Pike at the gateway islands
- Reach out to Delaware State Police to provide additional speed enforcement when deemed necessary.
- Restrict parking and trim/remove shrubs to improve intersection sight distance at applicable locations
 - Owls Nest Road/Twaddell Mill Road
 - Center Avenue/Valley Way
 - Gregg Avenue

Potential Recommendations

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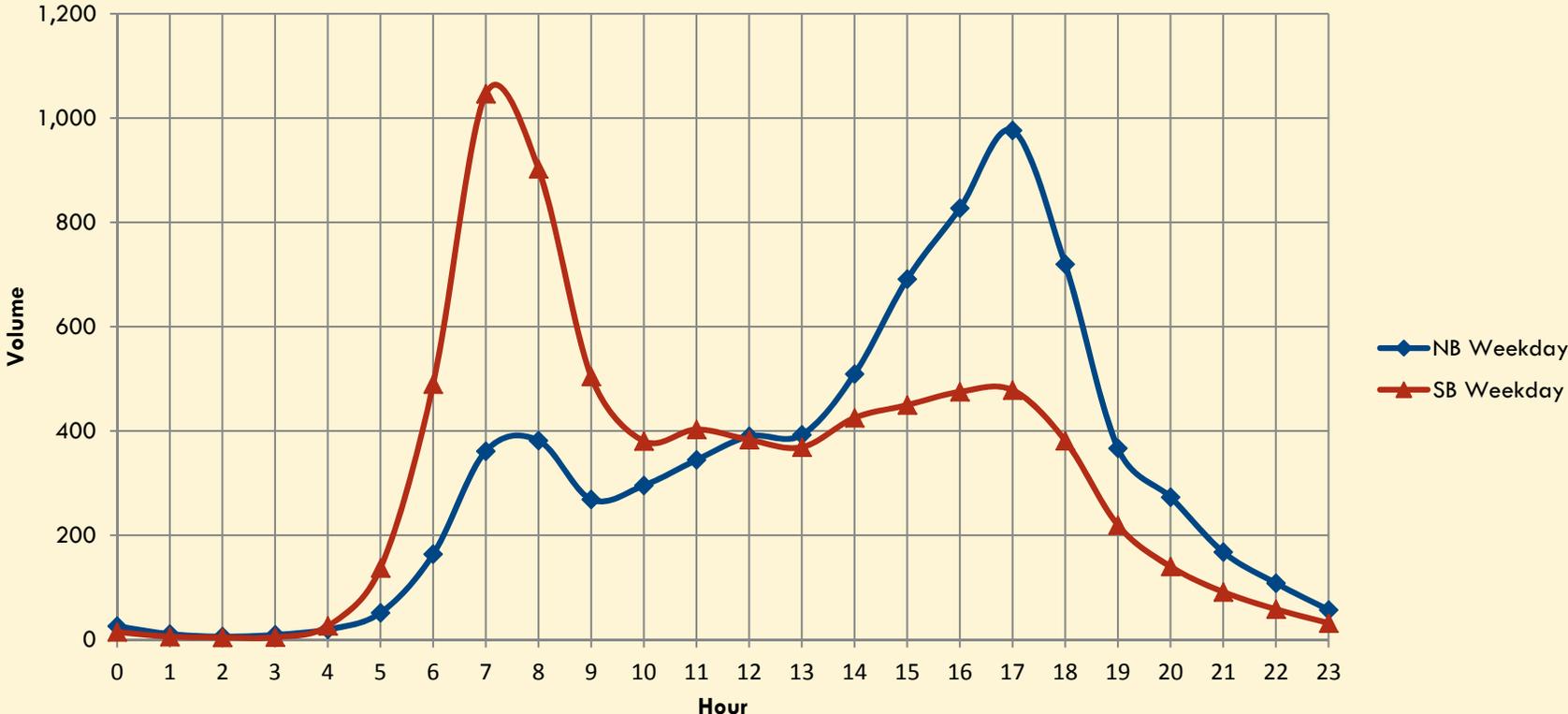
- Install a traffic signal at the intersection of Kennett Pike and Owls Nest Road/Twaddell Mill Road
 - ▣ Include pedestrian signals
 - ▣ Realign crosswalk across Kennett Pike
 - ▣ No additional turn lanes or left turn phases

- Install additional crosswalks at locations with higher mid-block pedestrian activity
 - ▣ Near 5710 Kennett Pike (south of Owls Nest Road/Twaddell Mill Road) toward southern end of sidewalk
 - ▣ At Center Avenue/Valley Way
 - ▣ At Gregg Avenue/Mount Airy Drive

Traffic Volumes

Functional Classification: Principal Arterial
Average Daily Traffic (ADT): 13,495 vehicles per day (both directions)

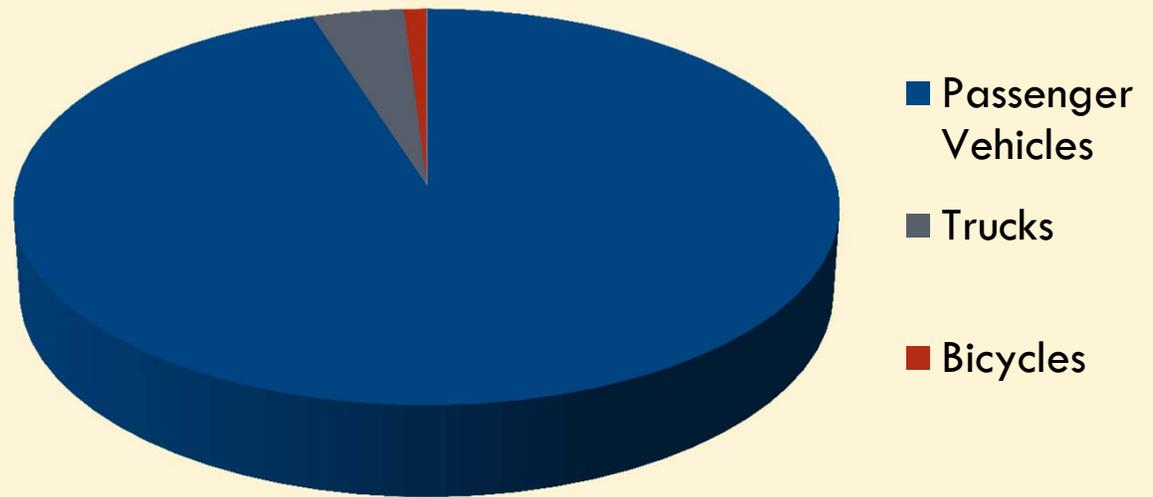
DE 52/Kennett Pike between Chandler Lane and Center Avenue



Traffic Volumes

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- Vehicle classification
 - 95% Passenger Vehicles
 - 4% Trucks
 - 1% Bicycles



Speed Study

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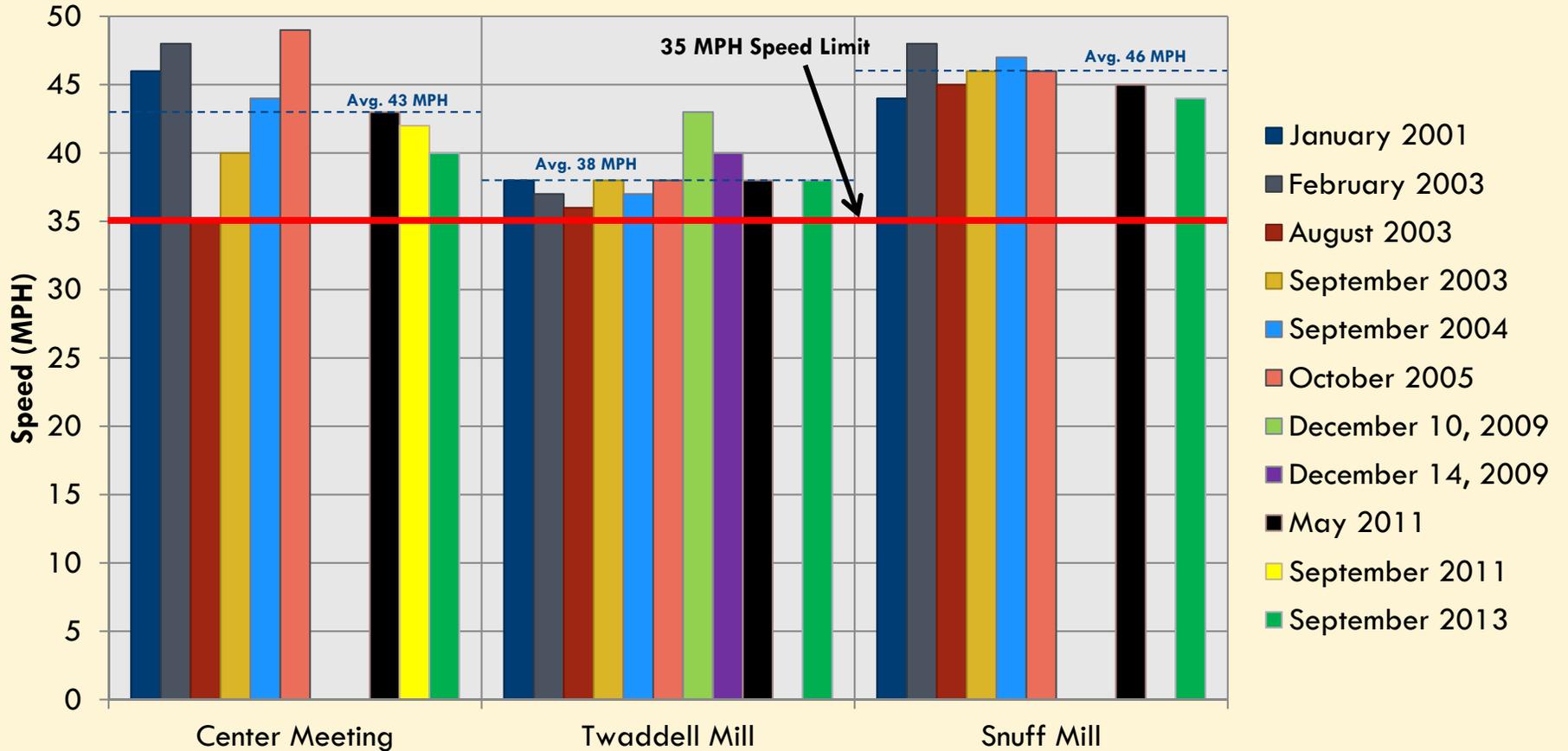
- **Center Meeting Road to Owls Nest Road/Twaddell Mill Road**
 - ▣ The 85th-percentile speeds were within 5 MPH of the posted speed limit.
 - ▣ Overall, motorists exhibited good compliance with the 35 MPH posted speed limit.

- **Owls Nest Road/Twaddell Mill Road to Center Avenue**
 - ▣ The 85th-percentile speeds were within 5 MPH of the posted speed limit.
 - ▣ Overall, motorists exhibited good compliance with the 35 MPH posted speed limit.

- **Mount Airy Drive to Snuff Mill Road**
 - ▣ The 85th-percentile speeds were 9 MPH above the posted speed limit.
 - ▣ Discussion: Possible countermeasures?

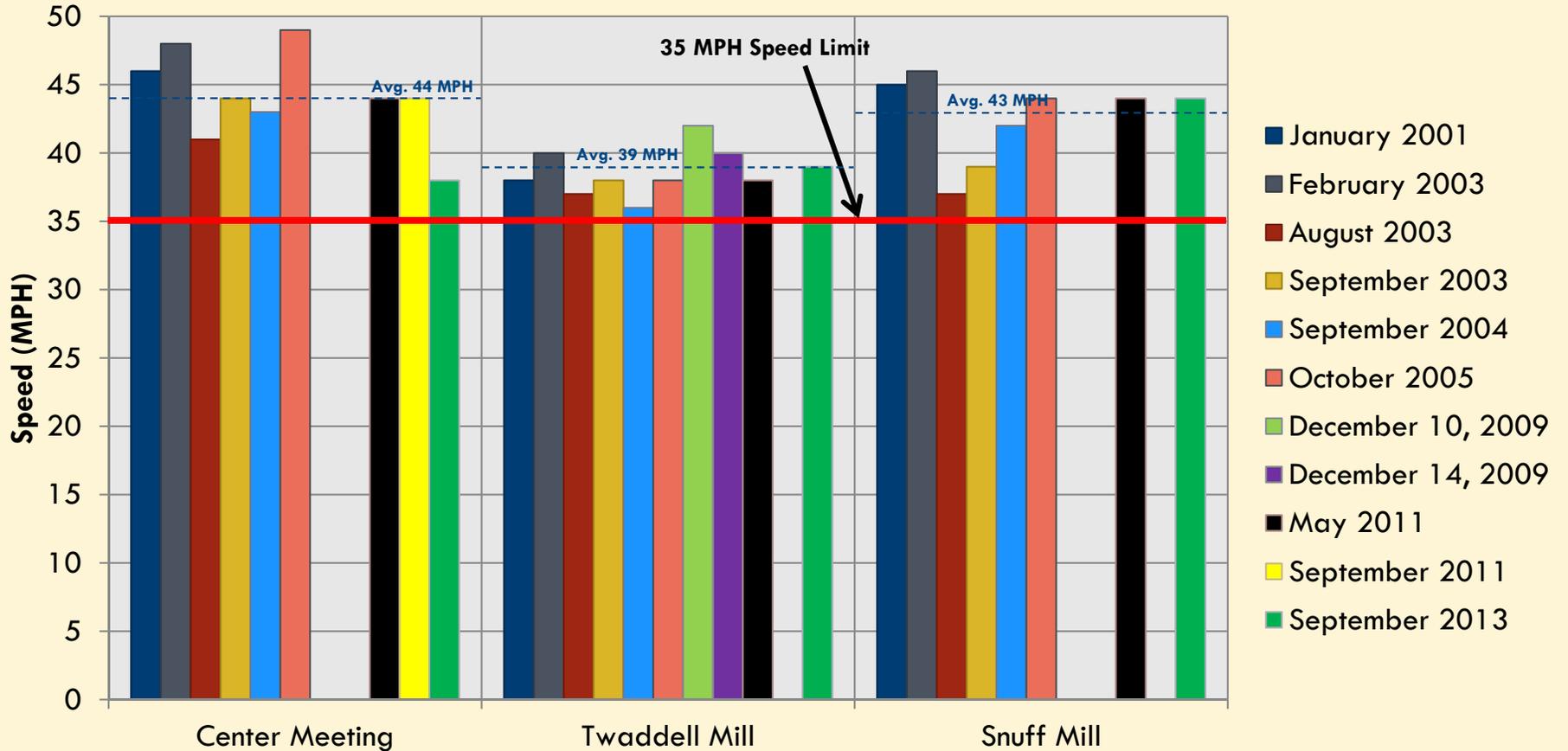
Speed Study

Northbound Kennett Pike Historical 85th Percentile Speeds



Speed Study

Southbound Kennett Pike Historical 85th Percentile Speeds



Speed Study

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□ Conclusions and Recommendations

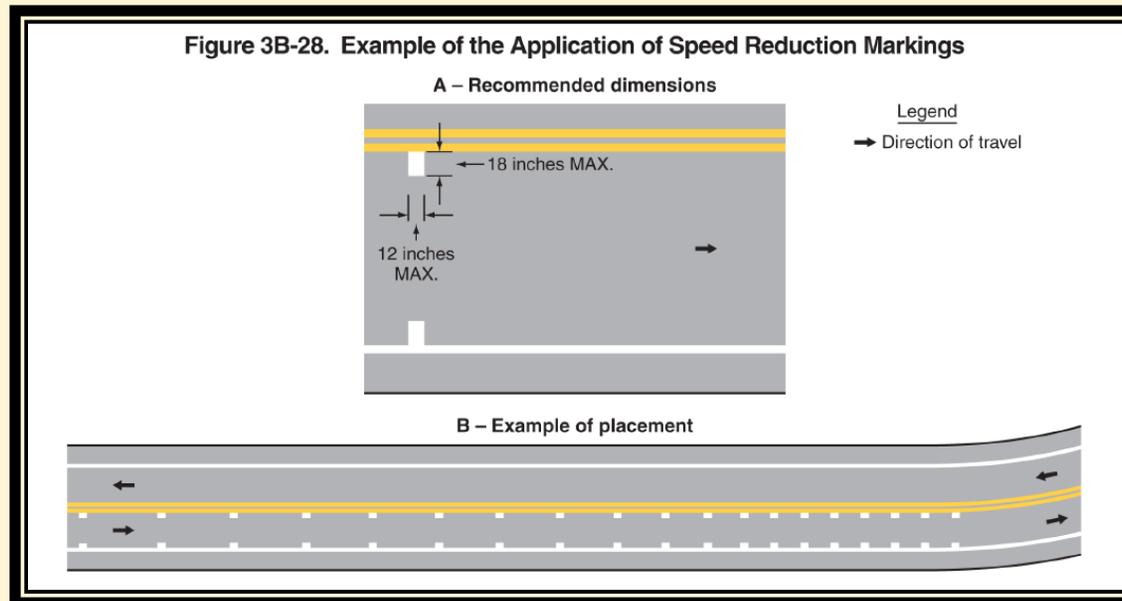
- The 35 MPH speed limit is to remain through Centreville
 - Lowering the speed limit to an artificially low value can lead to:
 - General disregard for the unreasonably set speed limit
 - Higher crash rates
 - Tailgating and Aggressive Driving
 - A greater speed differential between motorists, potentially exacerbating the rear-end crash problem
 - Several other options are available to help calm traffic

Speed Study

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□ Potential Traffic Calming Option

- Speed reduction pavement markings can be installed at the gateway islands in both directions in an effort to reduce speeds through Centreville.
- The decreasing distance between the lateral markings are designed to give the perception of traveling too fast.



Crash History

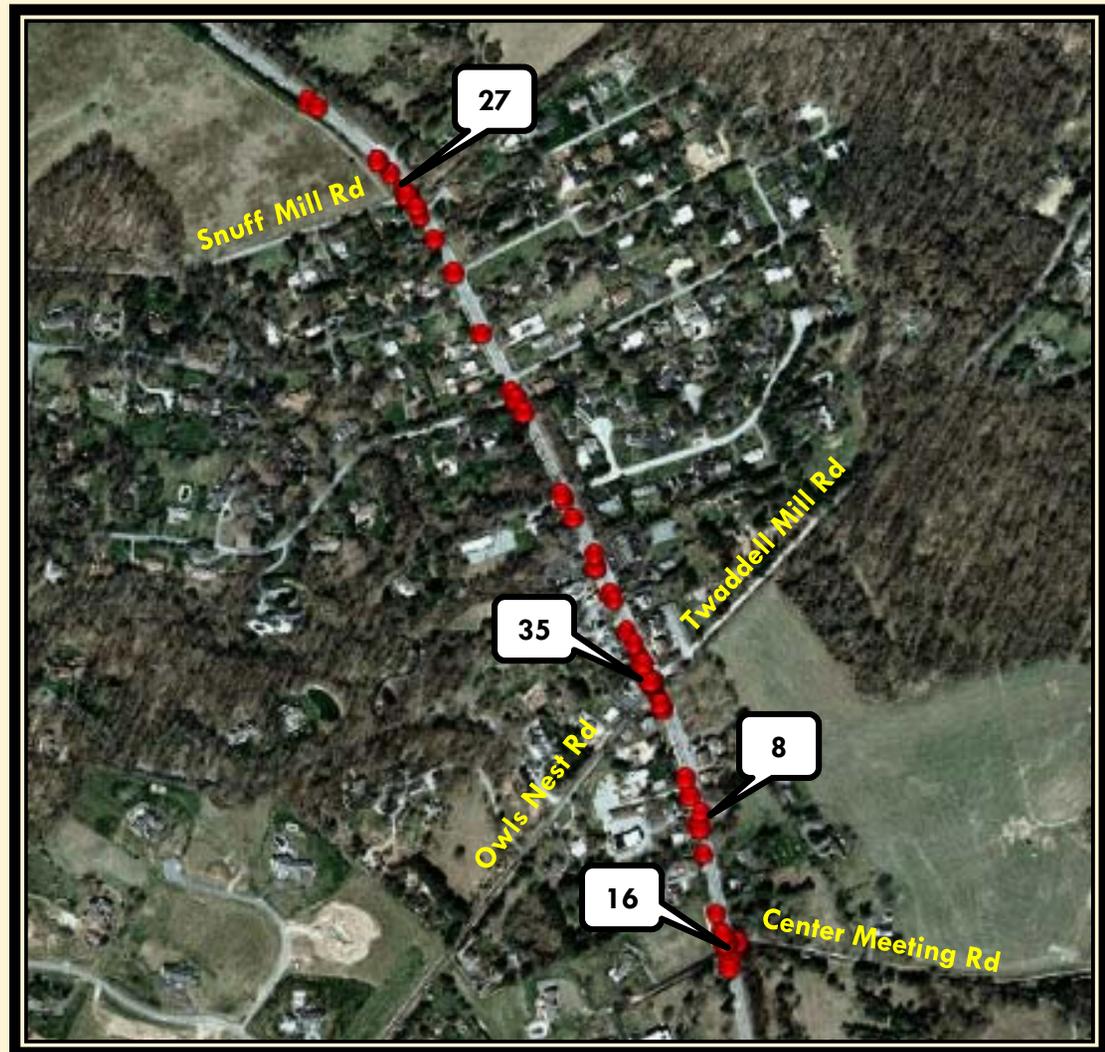
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Kennett Pike between Centreville gateway islands

1/1/2005 – 12/31/2013

Crash Clusters:

- Center Meeting Road
- Vicinity of 5710 Kennett Pike
- Owls Nest Road/Twaddell Mill Road
- Snuff Mill Road



Crash History

Kennett Pike between Centreville gateway islands

Summary	
	# of Crashes
Total Crashes	105
Fatal Crashes	1
Total Alcohol-Related Crashes	6
Total Non Alcohol-Related Crashes	99
Total Fatalities	1
Total Pedestrian Fatalities	1
Total Pedestrian Injuries	3
Total Pedestrian Crashes	2
Total Motorcycle Crashes	2
Total Pedalcyclist Crashes	0

Classification		
	# of Crashes	% of Total Crashes
Non-Reportable	0	0.00%
Reportable	79	75.24%
Personal Injury	25	23.81%
Fatality	1	0.95%
Total	105	

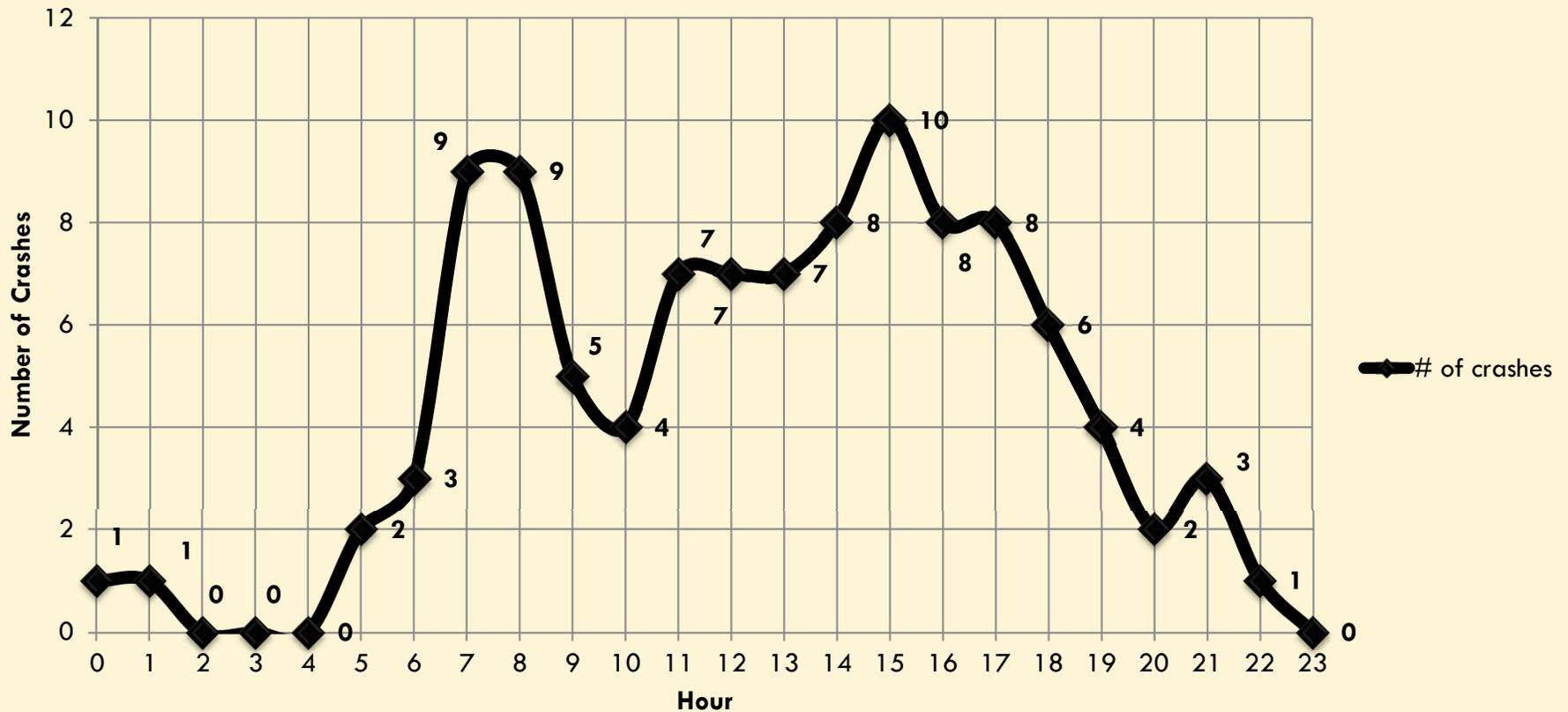
Lighting Conditions		
	# of Crashes	% of Total Crashes
Daylight	82	78.10%
Dawn	3	2.86%
Dusk	1	0.95%
Dark-Lighted	5	4.76%
Dark-Not Lighted	14	13.33%
Dark-Unknown Lighting	0	0.00%
Other	0	0.00%
Unknown	0	0.00%
Total	105	

1/1/2005 – 12/31/2013

Manner of Impact		
	# of Crashes	% of Total Crashes
Front to rear	38	36.19%
Front to front	3	2.86%
Angle	36	34.29%
Sideswipe, same direction	4	3.81%
Sideswipe, opposite direction	7	6.67%
Rear to side	1	0.95%
Rear to rear	0	0.00%
Other	1	0.95%
Unknown	0	0.00%
Not a collision between two vehicles	15	14.29%
Total	105	

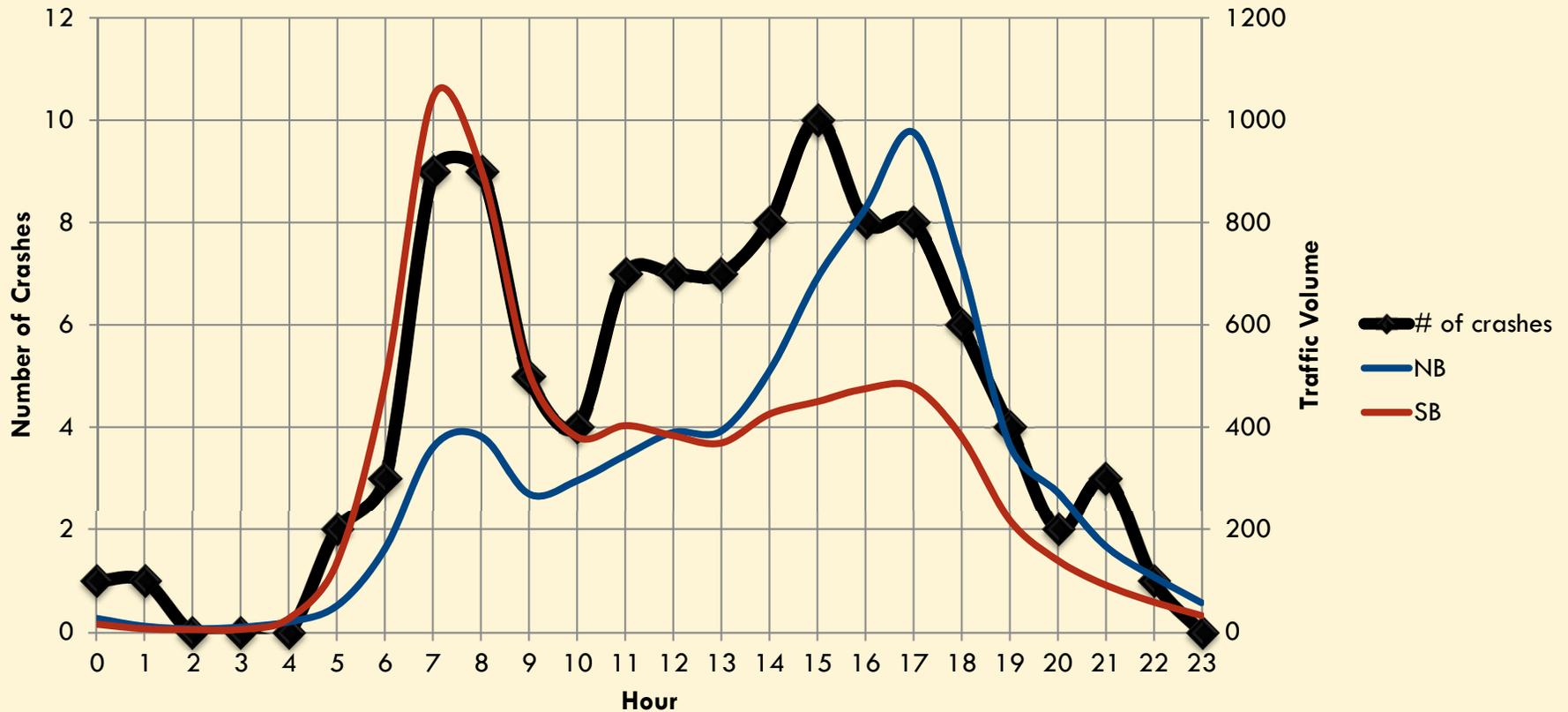
Crash History

Crashes by Time of Day
Kennett Pike between Centreville gateway islands
1/1/2005 – 12/31/2013



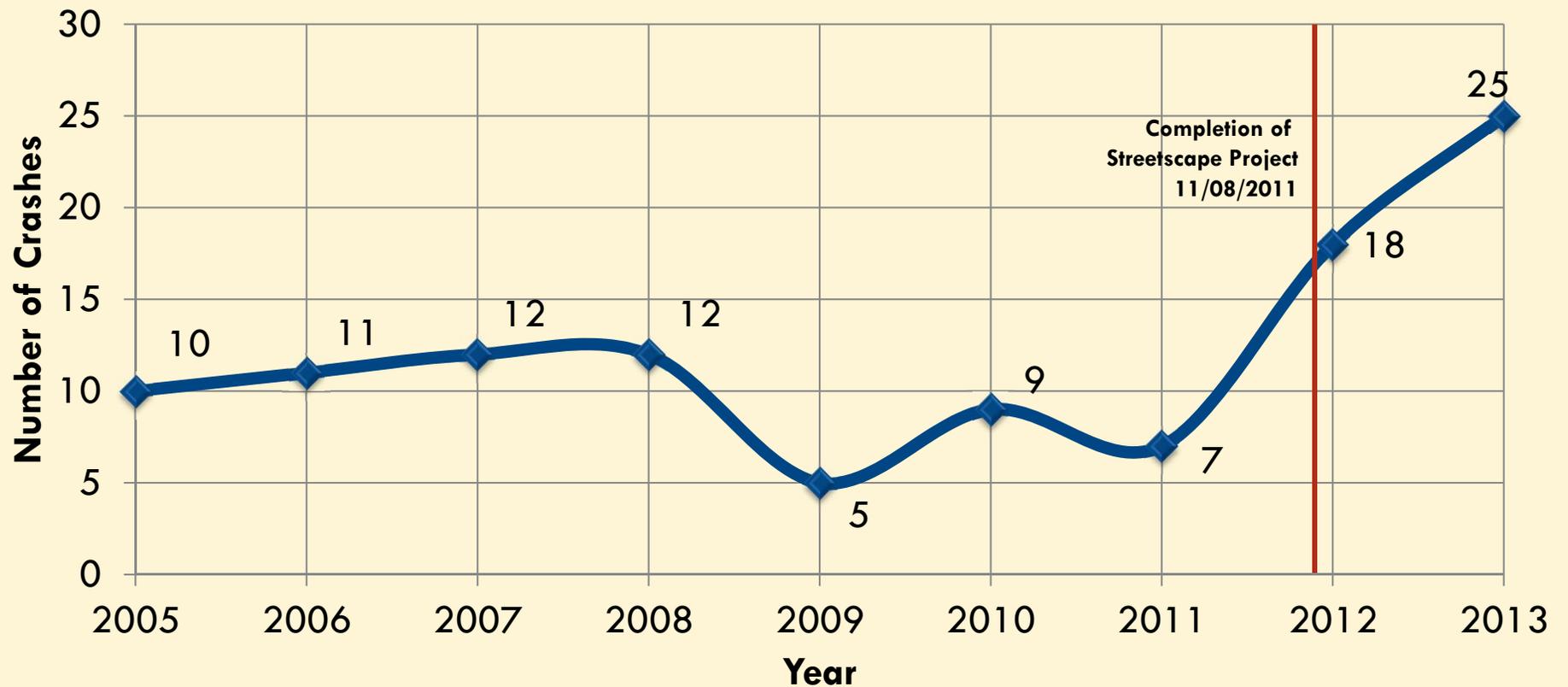
Crash History

Crashes by Time of Day vs. Traffic Volumes
Kennett Pike between Centreville gateway islands
1/1/2005 – 12/31/2013



Crash History

Annual Crashes
Kennett Pike between Centreville gateway islands
1/1/2005 – 12/31/2013



Intersections

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Intersections

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- Three-year crash history
 - ▣ Comparison of actual data to that calculated via the Highway Safety Manual (HSM)

- Turning Movement Counts collected mid-week in September 2013 from 6:00 AM to 6:00 PM.
 - ▣ Each intersection counted
 - ▣ Counts returned traffic volumes for each turning movement during the three daily peak hours (AM, Mid-day, PM)

- Potential traffic control device options
 - ▣ Traffic signal (if warrants met)
 - ▣ Roundabout

- Capacity & delay analyses of existing and potential options
 - ▣ Level of Service (LOS) – A “grade” given to a lane, approach or intersection based on the average delay experienced by motorists. LOS ranges from A to F, with A designating the least delay and F designating the most.
 - ▣ Any LOS F is accompanied by the anticipated queue length for that approach.

- Pros and Cons of each treatment

3-Year Crash History

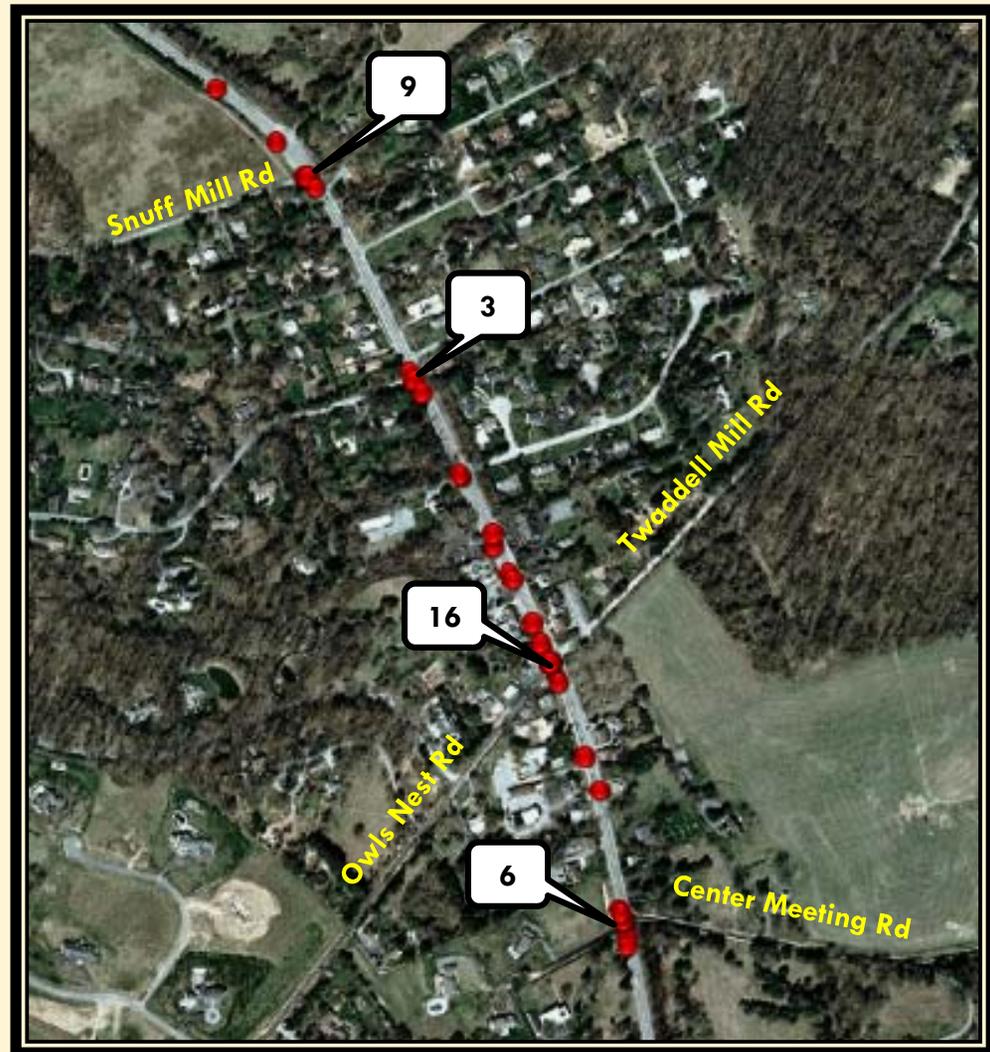
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Kennett Pike between Centreville gateway islands

1/1/2011 - 12/31/2013

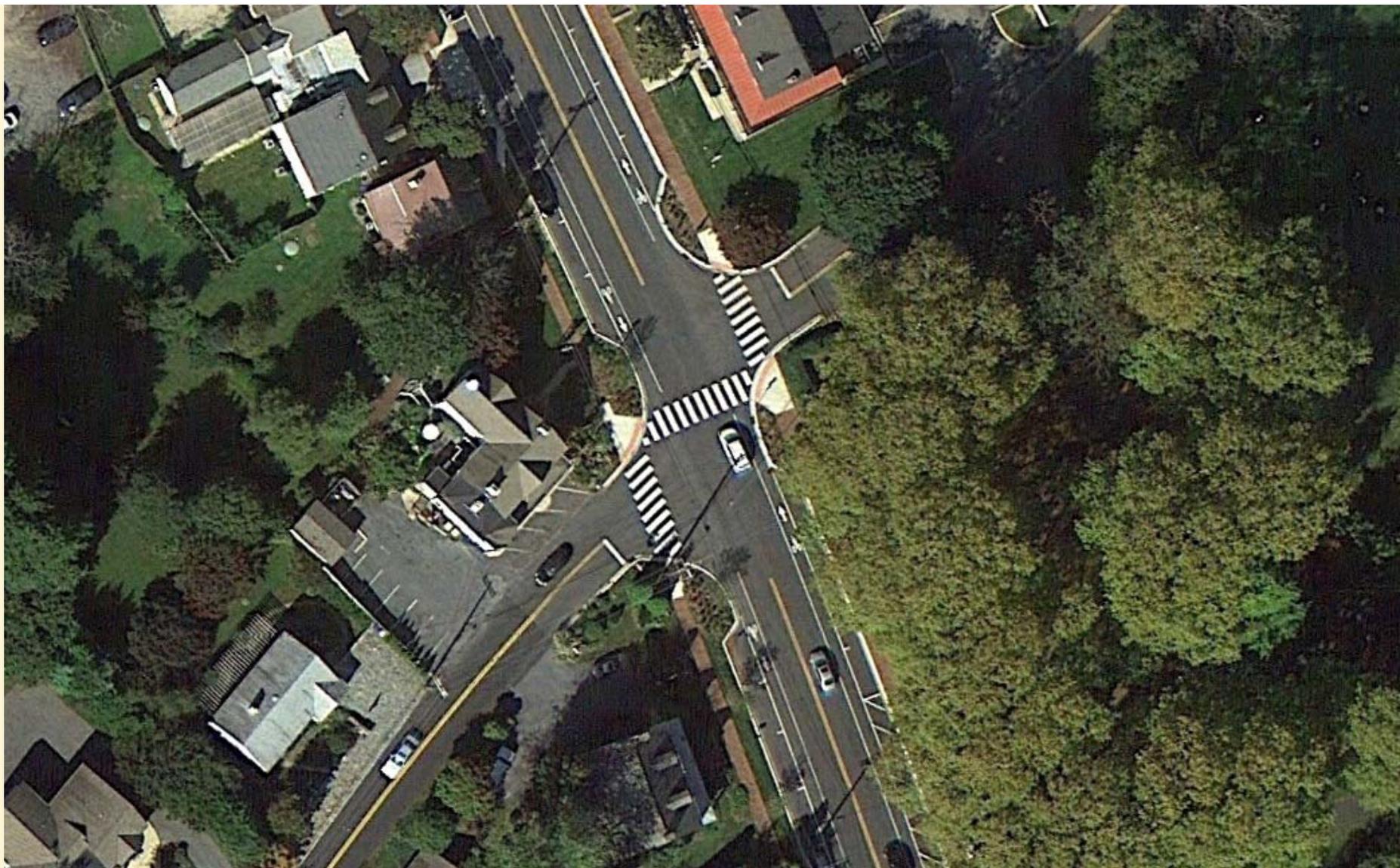
Crash Clusters:

- Center Meeting Road
- Owls Nest Road/Twaddell Mill Road
- Chandler Lane/Holly Lane
- Snuff Mill Road



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Kennett Pike & Owls Nest Road/ Twaddell Mill Road



Kennett Pike & Owls Nest Road/Twaddell Mill Road

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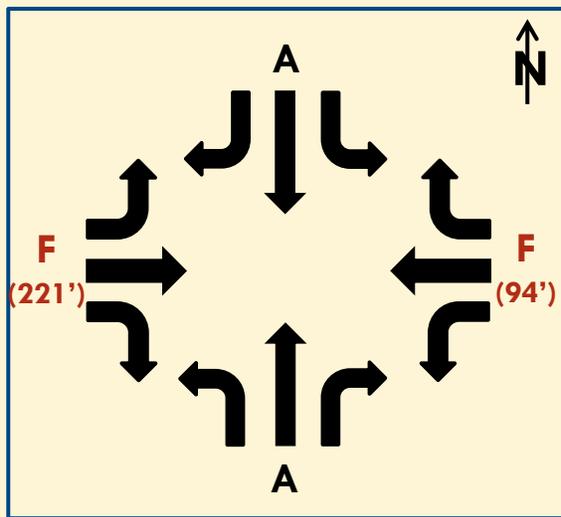
- Peak hours
 - ▣ 7:30 AM – 8:30 AM
 - ▣ 11:45 AM – 12:45 PM
 - ▣ 5:00 PM – 6:00 PM

- Observations
 - ▣ Vehicles “double stack” (a left/through vehicle stops adjacent to a right turning vehicle) on the eastbound Owls Nest Road approach.
 - ▣ School bus stops in the area.
 - ▣ This intersection meets warrants for the installation of a traffic signal, based on current DE-MUTCD criteria.

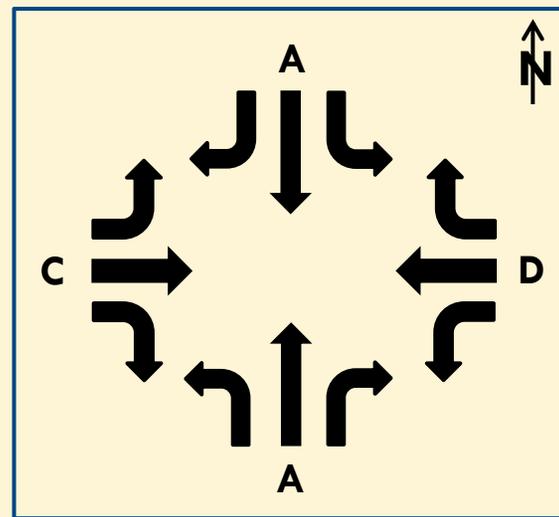
Kennett Pike & Owls Nest Road/Twaddell Mill Road

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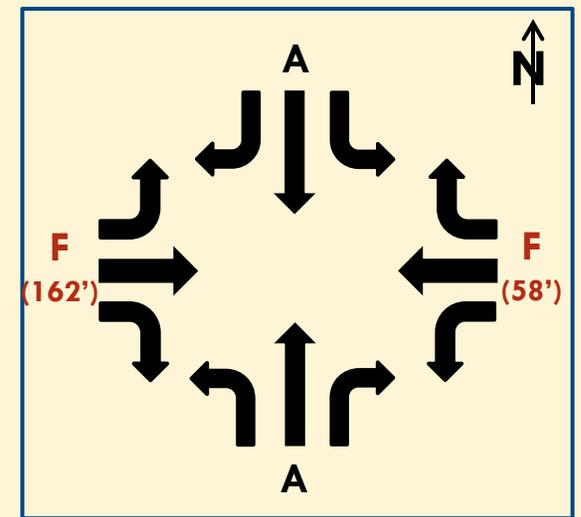
Existing Levels of Service



AM Peak
7:30-8:30 AM



Midday Peak
11:45 AM-12:45 PM



PM Peak
5:00-6:00 PM

Kennett Pike & Owls Nest Road/Twaddell Mill Road

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□ Potential Traffic Control Modifications

■ Signal

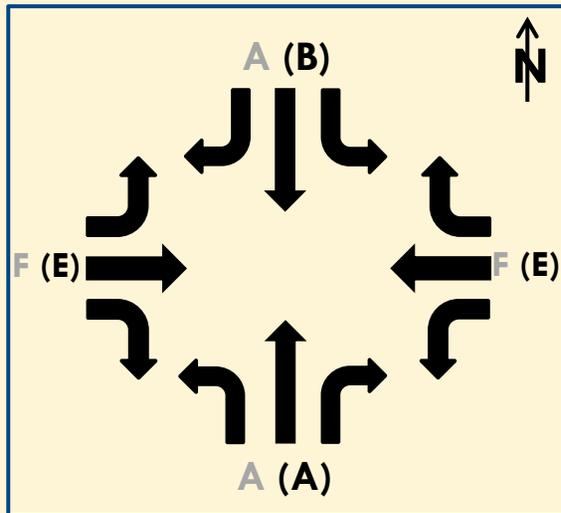
- This intersection meets warrants for the installation of a traffic signal, based on current DE-MUTCD criteria.
- Since northbound and southbound turning volumes are fairly low, and right-of-way is very restricted, the addition of turn lanes is not recommended.
- The traffic signal will rest in green for both approaches of Kennett Pike, and will not turn red unless a vehicle or pedestrian trips the signal.

Kennett Pike & Owls Nest Road/Twaddell Mill Road

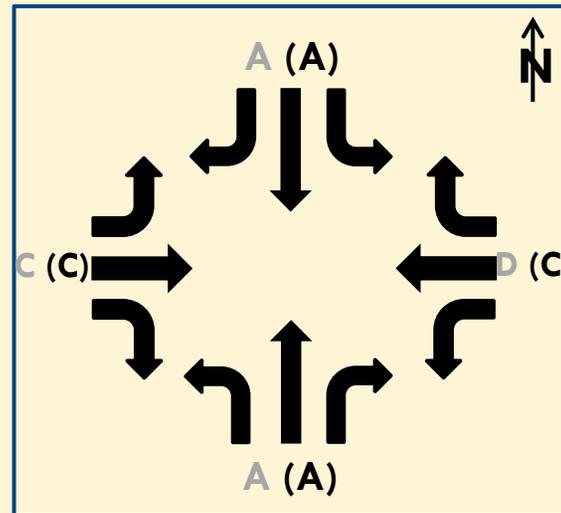
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Installation of a traffic signal Levels of Service

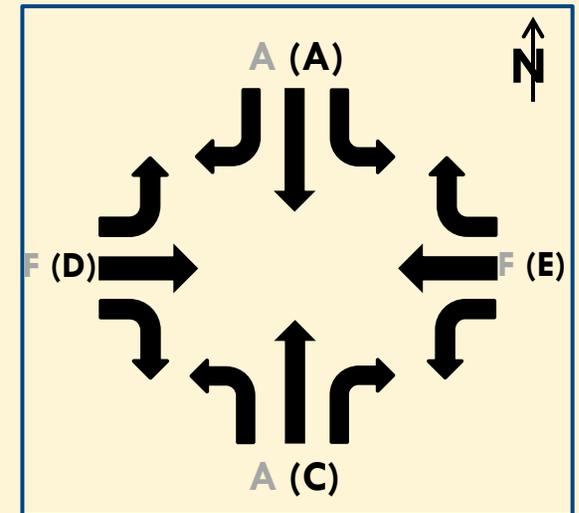
EXISTING (PROPOSED)



AM Peak
7:30-8:30 AM



Midday Peak
11:45AM-12:45 PM



PM Peak
5:00-6:00 PM

Kennett Pike & Owls Nest Road/Twaddell Mill Road

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Installation of a traffic signal

PROS	CONS
Levels of service on Owls Nest Road/Twaddell Mill Road improve during each peak period.	Offset side streets force the use of “split” phasing, potentially causing longer delays along Kennett Pike.
Signal control allows for a safer navigation of the intersection for all modes of transportation.	Levels of service in peak directions along Kennett Pike deteriorate to LOS B and C during AM and PM peak hours, respectively.
Speeds may be reduced through Centerville due to the presence of the signal.	A long signal cycle length to accommodate directional Kennett Pike traffic may encourage red-light running.
Pedestrians may be more likely to use crosswalks at a signalized intersection rather than at mid-block.	Construction of turn lanes (if needed) will be difficult due to constricted right-of-way.

Pedestrians

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- Pedestrian counts were collected at the same time as turning movement counts.
 - ▣ Center Meeting Road
 - ▣ Owls Nest Road/Twaddell Mill Road
 - ▣ Snuff Mill Road

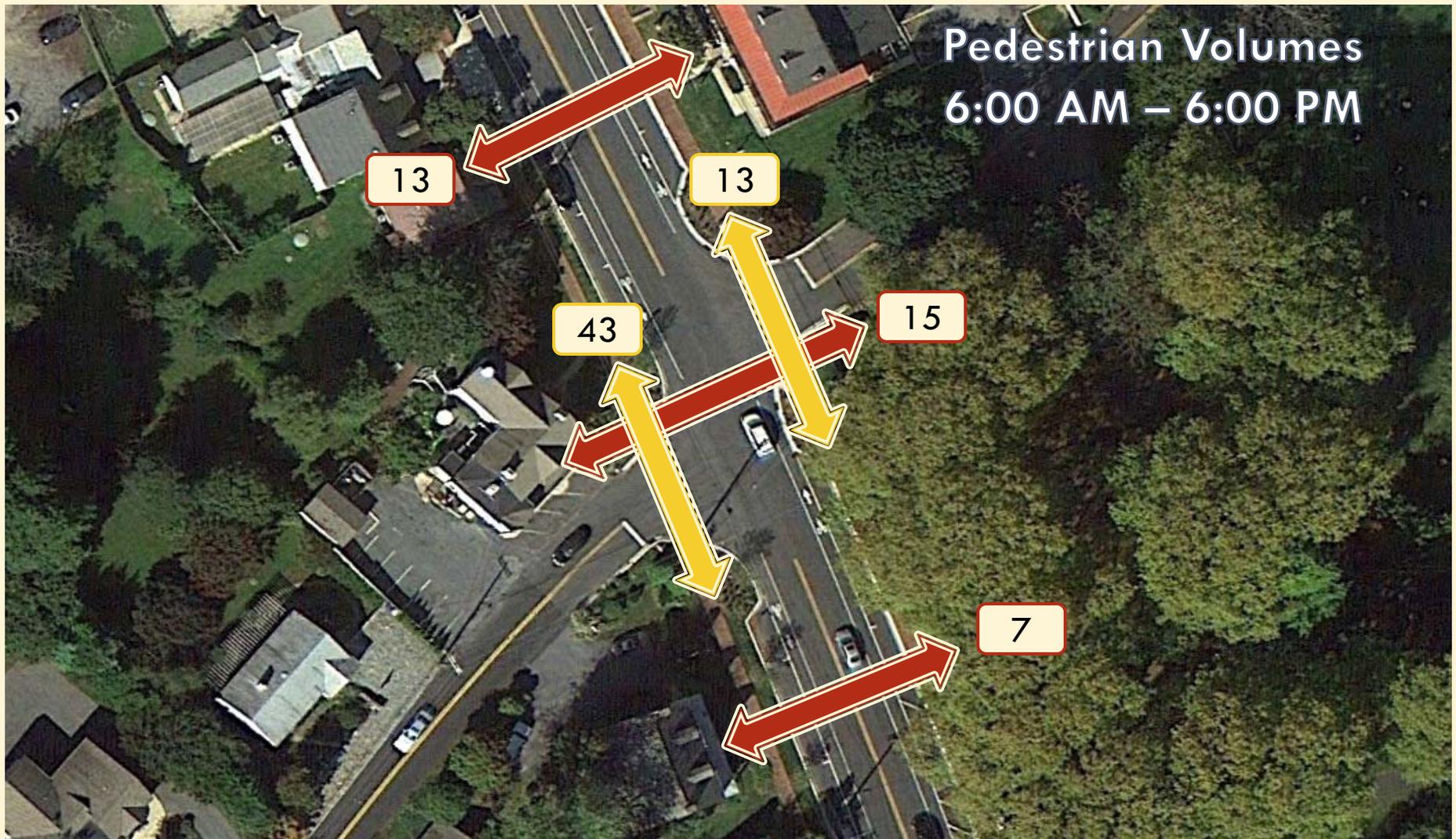
- Only pedestrians crossing a street were counted.

- Mid-block (not at a marked crosswalk) pedestrian crossings were also counted in the vicinities of the study intersections.

Pedestrians –

Kennett Pike & Owls Nest Road/Twaddell Mill Road

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Pedestrians

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□ Recommendations:

- Studies show that the presence of several crosswalks across a roadway tend to reduce vehicular speeds
- Install additional crosswalks with overhead roadway lighting at or near the following intersections:
 - Kennett Pike and Center Avenue/Valley Way
 - Kennett Pike and Gregg Avenue/Mount Airy Drive
 - Near 5710 Kennett Pike (south of Owls Nest Road/ Twaddell Mill Road) toward southern end of sidewalk

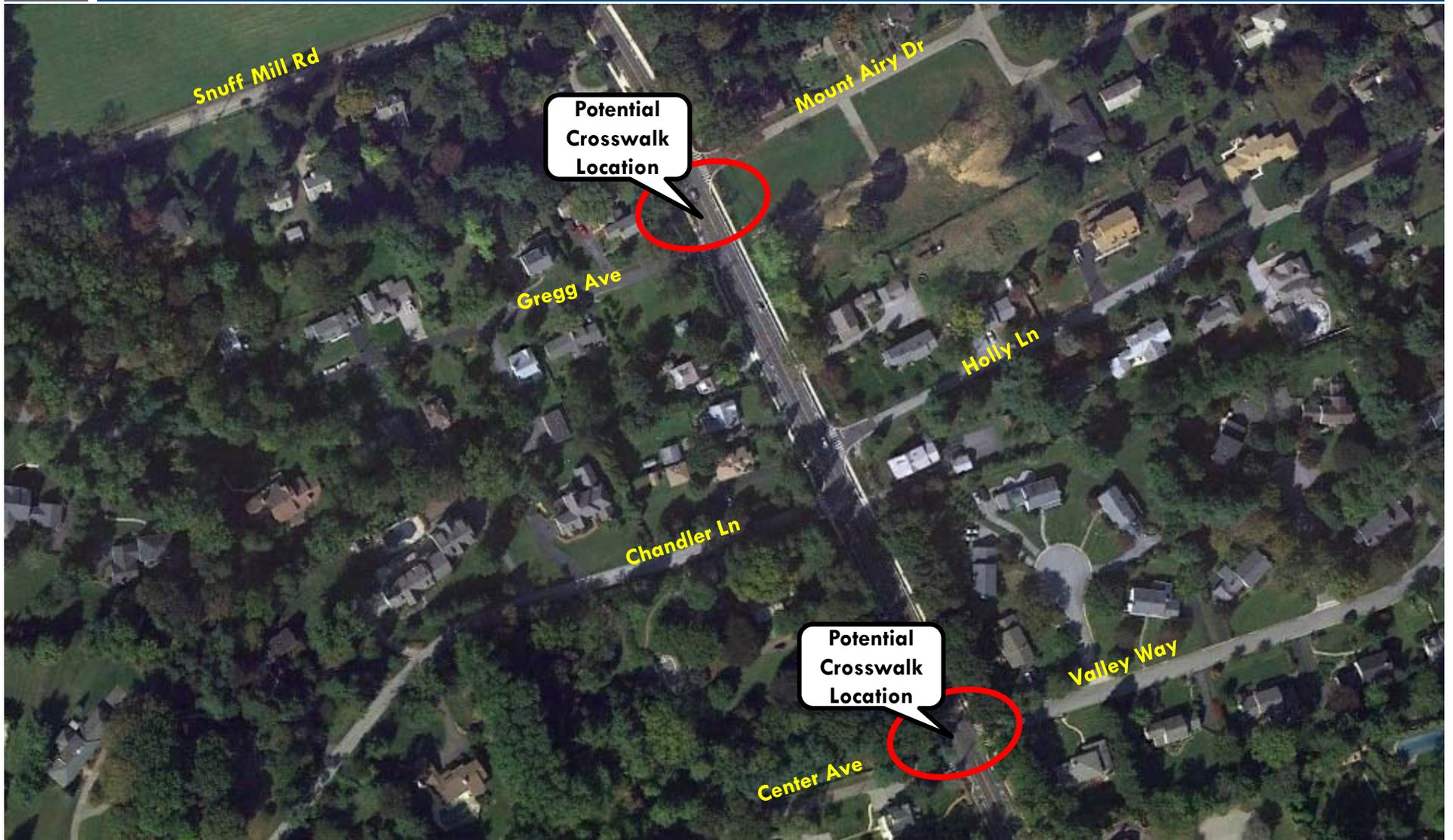
Pedestrians

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Pedestrians

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Signage

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- There are 145 individual signs posted on Kennett Pike between Old Kennett Road and the Pennsylvania state line, a distance of 2.1 miles.
 - 20 signs related to bicycles between Center Meeting Road and Snuff Mill Road (0.5 miles)

- Sign consolidation/modification/removal
 - Corridor-wide effort underway to reduce a large percentage of unnecessary, damaged or incorrectly placed signs along Kennett Pike.
 - DeIDOT has proposed to eliminate approximately 40 signs—the majority of which are located in Centreville between Owls Nest Road/Twaddell Mill Road and Snuff Mill Road.
 - Residents will be asked to provide comments prior to any modifications being made.

Conclusions

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- Crash cluster at the intersection of Kennett Pike and Owls Nest Road/Twaddell Mill Road
 - ▣ Queuing vehicles on side street approaches
 - ▣ Sight distance issues

- Increase in crashes since completion of streetscape project

- Speeding within the village has consistently been shown to not be a problem

- Pedestrians are crossing midblock at unmarked locations

- Sign clutter along Kennett Pike corridor

Potential Recommendations

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- Remove unnecessary signage along the entire corridor
- Install speed reduction pavement markings in both directions of Kennett Pike at the gateway islands
- Reach out to Delaware State Police to provide additional speed enforcement when deemed necessary.
- Restrict parking and trim/remove shrubs to improve intersection sight distance at applicable locations
 - Owls Nest Road/Twaddell Mill Road
 - Center Avenue/Valley Way
 - Gregg Avenue

Potential Recommendations

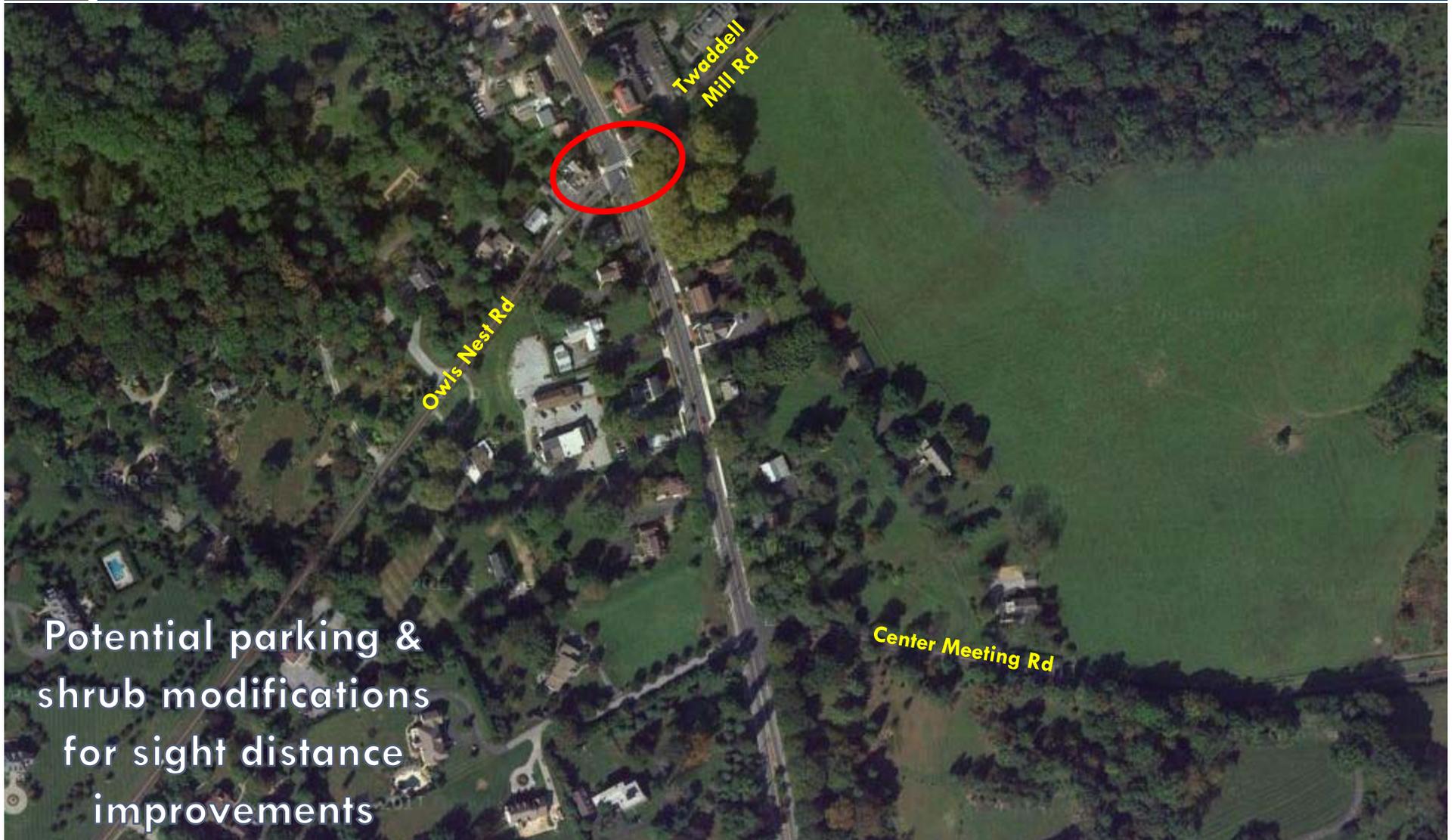
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- Install a traffic signal at the intersection of Kennett Pike and Owls Nest Road/Twaddell Mill Road
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Potential Recommendations

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Potential Recommendations

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Thank You

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