E. Traffic and Site Access

Sullivan Farms II, Inc. has proposed to construct an open space residential community located in the Village of Bloomingburg and the Town of Mamakating, Sullivan County, New York. The proposed development is bisected into east-west quadrants by Winterton Avenue comprising of approximately 198 acres. This summary was prepared by Reilly Associates Engineering. (RA) to describe the traffic impacts and improvements, if necessary, resultant from the aforementioned development.

A plan was prepared for the development by McGoey, Hauser & Edsall P.C. (MHE) proposing 396 townhouse units located on the east and west sides of Winterton Road. Traffic to the proposed development will utilize five (5) access roads located directly off Winterton Road.

The new community will be named *Villages of Chestnut Ridge*. The proposed development's clustered design utilized lands closest to the main road, leaving remaining lands as designated open space. Adjacent land uses include other residential properties and some commercial uses on and near the Main Street. A project location map is provided in Figure 1.

1. Study Area

The intersections located in close proximity to the proposed development were chosen to be included in the study. These intersections were included due to the potential impact of increased traffic and delay resulting from the proposed development. The study intersections are listed below:

- 6. Winterton Road (CR 62)/North Road and Main Street (Signalized)
- 7. Bloomingburg Road (CR 76) and Main Street/Route 17K (Unsignalized)
- 8. Route 17K and Goshen Turnpike/Route 17 Exit 116 WB Ramps (Unsignalized)
- 9. Route 17K and Route 17 Exit 116 EB Ramps (Unsignalized)
- 10. Winterton Road and Upper Road (CR 65) (Unsignalized)

There are several private roads located within the study area, however, due to the diminutive number of properties accessing these roads, they are not considered as significant contributors in this analysis. Traffic originating from these roads is only accounted for in the baseline count data if they entered onto Winterton Road in the project area. It is not anticipated that there will be increased traffic volumes on these ancillary roads as a result of the new development. Additionally, the increased through-traffic along the main road, resulting from the proposed development, is not significant enough to cause considerable delays at these intersections. It is further assumed that

intersections further away from the site, will not experience significant increases in volume due to relative distribution patterns of the site generated traffic.

The original traffic study was prepared early in the process when 394 units were anticipated. The effects of updating to the actual figure of 396 units are negligible and do not alter the conclusions presented.

In addition, though not accounted for at this time, a roadway will be constructed by the Developer on Winterton Road (aka South Road), approximately 760 feet south of the Winterton Road/Main Street intersection. The proposed road connects to Main Street approximately 750 feet east of the Winterton Road/Main Street intersection. Because of its configuration and proximity to the proposed site, it is anticipated that once completed, this road will act as a bypass to the Winterton Road/Main Street intersection. It would then be expected that there would be a reduction in the number of anticipated northbound right-turn movements and westbound left-turn movements experienced at that intersection, resulting in an improvement to the overall LOS The land uses in the vicinity of the proposed development include rural residential development, bank, retail shops, post office, a diner, a park. Intersections within the study are shown in Figure 2.

2. Existing Transportation System

The roadway system located within the study area is comprised of state, county, local and private roads. Identified roadways located in the study area include the following:

Winterton Road (CR 62)– Winterton Road in the project area is a two-lane, Sullivan County roadway, CR 62. It is oriented in a north/south direction, reaching from the Orange County line in New Vernon to the Bloomingburg Village line. It continues as Orange CR 18. The average daily traffic (ADT) is approximately 1200 vehicles per day in the vicinity of the project site, based on NYSDOT's Internet Traffic Monitoring System and automated traffic recorder (ATR) data collected by Reilly Associates in November 2007. Existing lane configurations along Winterton at the various study intersections are shown in Figure 3. The posted speed limit on Winterton Road is 40 MPH.

Main Street (CR 171) – Main Street. is a two-lane local road, Sullivan County road, CR 171, also known as Bloomingburg Mountain Road. It is oriented in an east/west direction and serves as a main transportation route through the village. Main Street is a signalized intersection where it meets Winterton Road. Existing lane configurations

along Main Street can be found in Figure 3. The posted speed limit is 30 MPH within the village limits.

Bloomingburg Road (**CR 76**) – Bloomingburg Road in the project area is a twolane, Orange County roadway, CR 76, and is oriented in a north/south direction. It is located in the town of Wallkill, beginning at NY 17M at NY17 (Exit 118A) and ending at the Sullivan County line in the village of Bloomingburg. Existing lane configurations along Bloomingburg Road are shown in Figure 3. The posted speed limit on Bloomingburg Road is 40 MPH.

Upper Road (CR 65) – Upper Road in the project area is a two-lane, Sullivan County roadway, CR 65. It is oriented in an east/west direction, reaching from the Orange County line to Winterton Road (CR62) north of New Vernon and continues as Orange CR 90. Upper Road creates a one-way stop condition where it meets Winterton Road. Existing lane configurations along Upper Road are shown in Figure 3. The posted speed limit on Upper Road is 40 MPH.

Route 17K – Route 17K in the project area is a two-lane, state highway, entirely within Orange County. The western terminus is at the intersection with old Route 17 (now designated as County Route 76) just short of the Orange-Sullivan county line, and the bridge over the Shawangunk Kill near the center of Bloomingburg. Existing lane configurations along Route 17K are shown in Figure 3. The posted speed limit is 55 MPH.

Route 17 West Bound Off-Ramp – Bifurcated ramp serves as an access off-ramp from Exit 116 of Route 17's westbound approach. The ramp is the west approach to the Route 17K and off-ramp intersection. Posted speed limit is 20 MPH. Goshen Turnpike completes the fourth leg of the intersection, creating a two-way stop controlled intersection. Existing lane configurations at the Route 17K/ Route 17 WB Ramp intersection are shown in Figure 3.

Route 17 East Bound Off-Ramp – Bifurcated ramp serves as an access off-ramp from Exit 116 of Route 17's eastbound approach. The ramp is the east approach to the Route 17K and off-ramp intersection. Posted speed limit is 20 MPH. Existing lane configurations at the Route 17K/ Route 17 EB Ramp intersection are shown in Figure 3.

3. Manual Traffic Counts and Volumes

Based on the traffic patterns in the study area and the proposed development land uses, residential and recreational components, the critical design periods were chosen to be as follows:

	Planning Period	Time Period
	-	
4.	AM Peak Hour	6:00 am to 9:00 am
5.	PM Peak Hour	3:00 pm to 6:00 pm
6.	Saturday Peak Hour	10:00 am to 2:00 pm

Manual peak hour turning movement counts were conducted on Thursday, November 29, 2007 and on Saturday, December 1, 2007. The peak hour is determined by the four highest consecutive 15-minute periods. The following AM Peak Hour, PM Peak hour and Saturday Peak Hour time periods were identified for the study:

Study Intersection Peak Hour Time Periods

Int	tersection	AM Peak Hour	PM Peak Hour	Sat Peak Hour			
1.	Winterton Road (CR 62)/ Main Street	8:00 am – 9:00 am	3:00 pm – 4:00 pm	12:15 pm – 1:15 pm			
2.	Bloomingburg Road (CR 76) / Route 17K.	8:00 am – 9:00 am	3:00 pm – 4:00 pm	12:45 am – 1:45 pm			
3.	Route 17K/Goshen Turnpike/ WB Ramps	8:00 am – 9:00 am	5:00 pm – 6:00 pm	11:15 am – 12:15 am			
4.	Route 17K and Route 17 EB Ramps	8:00 am – 9:00 am	4:15 pm – 5:15 pm	11:30 pm – 12:30 pm			
5.	Winterton Road and Upper Road	8:00 am – 9:00 am	4:15 pm – 5:15 pm	11:30 pm – 12:30 pm			
	Figures 4, 5 and 6 show the existing peak hour traffic volumes at the study intersections during the AM, PM and Saturday peak hours. Traffic count summaries						

Villages of Chestnut Ridge

February 20, 2009

DEIS Section III. E.

are included in the report. Build Year "Opening Day" Conditions <u>Without</u> Proposed Development

The intersections located in the study area were analyzed for opening day without development conditions. Construction of the project is expected to begin mid to late 2009 for a period estimated at approximately one year. Therefore, the opening day without development conditions were analyzed for the year 2009. Existing traffic volumes were increased at an annual growth rate of 1.7% based on NYSDOT growth projections for the study area. No other significant development has been identified. No physical improvements at any of the study intersections were considered. However, the signal timing at the existing signalized intersection was optimized for improved Levels of Service (LOS).

Build Year "Opening Day" Conditions <u>With</u> Proposed Development

The intersections located in the study area were also analyzed for opening day conditions with development.

The proposed site is planned for the development of townhome housing. The total parcel area is $198.5\pm$ acres. The residential development will include construction of 394* townhomes. The volume of traffic to be generated from the proposed land development was estimated using the Institute of Transportation Engineers (ITE), "Trip Generation Manual," 7th Edition, 2003 for *Land Use 230- Condo/Townhouse* (See Table ES-1).

TABLE ES-1

THE VILLAGE AT CHESTNUT RIDGE DEVELOPMENT

TRIP GENERATION

LAND USE CATEGORY		Entering AM	Exiting AM	Entering PM	Exiting PM	Entering SAT	Exiting SAT
Residential	Units						
Townhouse*	394	28	146	138	67	99	87

* The original traffic study was prepared early in the process when 394 units were anticipated. The effects of updating to the actual figure of 396 units are negligible and do not alter the conclusions presented.

With Development conditions were achieved by adding the site generated traffic to the Build Year without development volumes.

Future Conditions Without Proposed Development

The intersections located in the study area were analyzed for future conditions without development, considering a 10-year projection. Construction of the project is anticipated to begin in mid to late 2009 and the build out period for the project is estimated at 1 year. Therefore the future conditions were analyzed for the year 2019. Existing traffic volumes were increased at an annual growth rate of 1.7% based on NYSDOT growth projections for the study area. No other significant development has been identified. No physical improvements at any of the study intersections were considered. However, the signal timing at the existing signalized intersection was optimized for improved LOS for future traffic volumes.

Future Conditions With Proposed Development

The intersections located in the study area were analyzed for future conditions with development. Anticipated site generated traffic was added to the future without development conditions. Signal timings were optimized at existing signalized study intersections; however, no physical improvements are proposed since no intersection experienced notable LOS drops.

Distribution of Site Generated Traffic

The distribution of the traffic generated from the residential development was based upon approximate existing data for AM, PM and SAT peak hours. Manual traffic counts were performed demonstrating existing traffic flow patterns. Therefore, the distribution of the additional site generated traffic is expected to be similar to existing traffic flow patterns.

Mitigation Improvements

These are the improvements that are needed to maintain "no-build" overall LOS conditions at off-site intersections during the build and future years.

The proposed development does not substantially increase the overall delay experienced at any of the intersections in the study area. There are minor increases in overall delay, of less than 4.5 seconds, at intersections within the study area for both the build year of 2009 and 2019 after taking into account the additional trips generated by the proposed development.

Since the minor delay impact occurs in the 10 year projection and there are no apparent safety concerns, **no** mitigation is proposed at this time.

Required Improvements

Required Improvements are those improvements proposed at the site access road in order to maintain "no-build" LOS during the build and future years.

The required improvements proposed to be constructed on Winterton Road and private site roads shall include adequate road construction to serve the entire development, satisfying Town/Village standards. Roadway openings shall be wide enough to allow for simultaneous ingress and egress movements and provide adequate sight distance. Radii shall be large enough to accommodate a school bus and emergency vehicles. No signalization is proposed at any site intersections at this time.

Signal Warrants

A preliminary traffic signal warrant analysis was conducted in accordance with guidelines contained in the 2003 Federal Manual on Uniform Traffic Control Devices (MUTCD), Section 4, "Highway Traffic Signals". Applicable warrants were considered.

Traffic volumes were examined at study intersections with marginal LOS to determine if warrants are currently satisfied. Off-site intersections were evaluated for informational purposes only, as courtesy to the Village, to assess current performance levels. The analysis identifies that the intersection of Bloomingburg Road and 17K **does** meet peak-hour warrant for traffic signal in the year 2009, without the proposed development during the PM and SAT peak hours. The intersection of 17K and WB Ramp **does** meet peak-hour warrant for traffic signal in the year 2009, without the proposed development during the PM peak hour. Potential signalization and/or geometric changes, such as auxiliary turning lanes, may improve the LOS conditions at these intersection. No signalization is proposed as part of this project at this time.

Left-Turn Lane Analysis

RA performed analyses to determine if a left-turn lane is warranted for ingress movements to the site driveways, during the AM PM, and SAT Peak Hours, based upon AASHTO "Greenbook" guidance for a left-turn lane according to Exhibit 9-75: *Guide for Left-Turn Lanes on Two-Lane Highways (6)*. For the requirement to be met for a left-turn lane at an intersection, the advancing volume at the intersection has to be greater than the advancing volume given in the chart. If the chart value is exceeded, then a left-turn lane is required. This table can be found on page 685 of the *Policy of Geometric Design of Highways and Streets 2004, Fifth Edition* and is included in the report. It was determined that left-turn warrants **are not satisfied** during either the AM, PM or SAT Peak Hours in future conditions for any access.

Summary of Results

The results of this study can be summarized by viewing the LOS for the intersections. A summary of the LOS are provided in Tables ES-2, ES-3 and ES-4. Detailed analyses utilizing Synchro can be found in the study.

		Opening Day	Opening Day With	Future No	Future With With	Future With Required
Intersection	Existing	Development	Development	Development	Development	Improvements
Winterton	0			•		1
Road/North Road	В	В	В	В	В	В
and Main Street						
(Signalized)						
Bloomingburg						
Road/Main Street	А	А	А	А	А	А
and 17K						
(Unsignalized)						
WB						
ramps/Goshen						
Turnpike and	А	А	А	А	А	А
17K						
(Unsignalized)						
EB ramps and						
17K	А	А	А	А	А	А
(Unsignalized)						
Winterton Road						
and Upper Road	A	A	A	А	А	А
(Unsignalized)						
Private Road "A"			Δ			٨
(Unsignalized)			Л		Л	Л
Private Road "B"						
(Unsignalized)			A		A	A
Private Road "C-						
1"			А		А	А
(Unsignalized)						
Private Road "C-						
2"			А		А	А
(Unsignalized)						
Private Road "D"						
(Unsignalized)			A		A	A
Private Road "F"						
(Unsignalized)			A		A	A

TABLE ES-2Overall Levels of Service - AM

DEIS Section III. E.

TABLE ES-3Overall Levels of Service- PM*-ONLY 4.2 SEC DROP IN OVERALL LOS

		Opening Day	Opening Day	Future	Future With	Future With
Intersection	Existing	No Development	Development	NO Development	Development	Improvements
Winterton Road/North Road and Main Street (Signalized)	В	В	В	В	В	В
Bloomingburg Road/Main Street and 17K (Unsignalized)	А	А	А	А	B*	А
WB ramps/Goshen Turnpike and 17K (Unsignalized)	А	А	А	В	В	В
EB ramps and 17K (Unsignalized)	А	А	А	А	А	А
Winterton Road and Upper Road (Unsignalized)	А	А	А	А	А	А
Private Road "A" (Unsignalized)			А		А	А
Private Road "B" (Unsignalized)			А		А	А
Private Road "C-1" (Unsignalized)			А		А	А
Private Road "C-2" (Unsignalized)			А		А	А
Private Road "D" (Unsignalized)			А		А	А
Private Road "E" (Unsignalized)			A		А	А

Intersection	Existing	Opening Day No Development	Opening Day With Development	Future No Development	Future With With Development	Future With Required Improvements
Winterton Road/North Road and Main Street (Signalized)	В	В	В	В	В	В
Bloomingburg Road/Main Street and 17K (Unsignalized)	А	А	А	А	А	А
WB ramps/Goshen Turnpike and 17K (Unsignalized)	А	А	А	А	А	А
EB ramps and 17K (Unsignalized)	А	А	А	А	А	А
Winterton Road and Upper Road (Unsignalized)	А	А	А	А	А	А
Private Road "A" (Unsignalized)			А		А	А
Private Road "B" (Unsignalized)			А		А	А
Private Road "C-1" (Unsignalized)			А		А	А
Private Road "C-2" (Unsignalized)			А		А	А
Private Road "D" (Unsignalized)			А		А	А
Private Road "E" (Unsignalized)			А		А	А

TABLE ES-4Overall Levels of Service- SAT

4. Proposed Improvements

General Comments

- Signal Retiming at existing signalized intersection be performed.
- Proposed access roads should be designed to accommodate school buses and emergency response vehicles.
- It is recommended that stop signs and appropriate pavement markings be installed at all access points.

CHESTNUT RIDGE DEVELOPMENT

SUMMARY OF OPENING DAY IMPROVEMENTS

Main Street/North Road/Winterton Road

Traffic signal retiming

SUMMARY OF FUTURE WITH DEVELOPMENT IMPROVEMENTS

Main Street/North Road/Winterton Road

Traffic signal retiming

Conclusions

The Chestnut Ridge Development in the Village of Bloomingburg being proposed by Sullivan Farms II, Inc. has been examined in detail. This report investigated the effects of the new traffic and the proposed improvements to mitigate the effects as require by the policies of the New York State Department of Transportation. It is concluded that the project will not adversely affect the public heath, safety and welfare from a traffic perspective if the proposed improvements are implemented in conjunction with the development. These conclusions are specifically premised upon the information and analyses contained in this report.

Each townhouse unit will have driveway access to the internal road network. Each driveway will provide space for at least two off-street parking spaces. No on-street parking is proposed.

Within the site, sidewalks (5' wide) are proposed on one side of the street to facilitate pedestrian movements. These walkways extend to the public road (Winterton Road) right-of-way in anticipation of future public improvements, however, at this time, no public sidewalks are available off-site.

Villages of Chestnut Ridge

February 20, 2009









































