FINAL ENVIRONMENTAL IMPACT STATEMENT

for

SPAULDING GREEN SUBDIVISION

for the

TOWN OF CLARENCE
ERIE COUNTY, NEW YORK

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1.0 TRANSPORTATION

In order to assess the potential traffic generated impacts that may be created by the proposed project on the surrounding transportation network, the Town of Clarence (Town) required the project applicant to prepare a traffic impact study to determine existing and future conditions of affected transportation facilities. Spaulding Green, LLC retained the firm Greenman-Pedersen, Inc. to prepare the Traffic Impact Study which was completed in February 2007 and revised in August 2007, as part of SEQR with the findings presented in the Spaulding Green Traffic Impact Study (TIS) that was prepared as part of the Supplemental Draft Environmental Impact Statement (SDEIS) Volume 3: Appendix E.. (More detailed information regarding traffic impacts and mitigation can be found in the Traffic Impact Study.) The Town retained the firm Nussbaumer and Clarke, Inc. (Nussbaumer) as a technical consultant in the review of traffic related impacts.

As proposed, the Spaulding Green Subdivision project would consists of three hundred (300) single family units and eighty (80) multiple family units located on property in the general area east of Goodrich Road, north of Greiner Road, west of Kraus Road and south of Clarence Center Road. This Section presents a discussion of potential impacts resulting from the proposed project, and proposed mitigation measures designed to minimize any adverse impacts.

1.1 Transportation/Traffic Impacts

Impacts as a result of this project include an increase in traffic on roads and intersections adjacent to the site, a change in roadway alignment, and a change in existing traffic patterns.

Traffic impacts as a result of this project are a major concern as some intersections currently are operating at an unacceptable Level of Service (LOS) or will be in the future with or without the project. The proposed project, as proposed, could generate an additional 262 AM and 350 PM Peak Hour trips on the transportation network.

The traffic impact analysis examined current 2007 Peak Hour existing traffic conditions, projected year 2032 background traffic, projected year 2032 background traffic conditions overlaid with development traffic generated by the proposed development, and projected year 2032 background traffic with mitigation measures. Comparing the latter scenario to the background base conditions provided for the identification of any traffic related impacts directly related to the project.

1.1.1 Study Area Intersections

The following intersections were included within the project study area within the study as they would serve immediate trips generated by the project:

- Main Street (NY 5) and Goodrich Road (CR 216)
- Goodrich Road and Greiner Road (CR 37)
- Goodrich Road and Roll Road (CR 277)
- Goodrich Road and Clarence Center Road (CR 217)
- Greiner Road and Thompson Road (CR 278)

These intersections have been identified by the TIS as having deficient approaches or overall intersection delays. The following describes the current configuration of these intersections:

Main Street and Goodrich Road: This intersection is a three (3) approach ('T') semi-actuated signalized intersection. The traffic signal is a four (4) phase system. Left turns from Main Street onto Goodrich Road are permitted and protected. On Main Street, both east- and westbound approaches consists of two (2) travel lanes – an exclusive left turn lane and a thru lane eastbound and a thru lane and exclusive right turn lane westbound. The southbound approach of Goodrich Road consists of two (2) travel lanes – exclusive left and right turn lanes. Right turns on red are permitted.

Goodrich Road and Greiner Road: This intersection is a four (4) approach semi-actuated signalized intersection. The traffic signal is a two (2) phase system. All four (4) approaches consist of one (1) travel lane each. Left turns are permitted and unprotected; right turns on red are permitted.

Greiner Road and Thompson Road: This intersection is a four (4) approach non-signalized intersection with stop control on both the north- and southbound approaches of Thompson Road and no control on both the east- and westbound approaches of Greiner Road. All four (4) approaches consist of one (1) travel lane each.

Goodrich Road and Roll Road: This intersection is a three (3) approach ('T') non-signalized intersection with stop control on the eastbound approach of Roll Road and no control on both the north- and southbound approaches of Goodrich Road. All three (3) approaches consist of one (1) travel lane each.

Goodrich Road and Clarence Center Road: This intersection is a four (4) approach non-signalized intersection with stop control on all four (4) approaches (4-way stop). All four (4) approaches consist of one (1) travel lane each.

The consultant conducted manual turning movement counts between the hours of 6:00 AM to 9:00 AM for the weekday AM Peak Hour, and between 3:00 PM to 6:00 PM for the weekday PM Peak Hour and were used as the base condition for the LOS analysis that was performed in the TIS. Traffic signal timing data was obtained from the New York State Department of Transportation Region 5 (NYSDOT) for the intersection of Main Street with Goodrich Road. Traffic signal data for the intersection of Goodrich Road and Greiner Road was requested from the Town of Clarence Highway Department, but had not yet been received prior to the completion of the TIS. Manual signal timing data for this installation was gathered between 11:00 AM and 11:15 AM on January 30, 2007 and is used in lieu of official data.

Future Year Projections

With a projected build-out year of 2032 (depending upon market conditions), no-build/background traffic for the existing adjacent streets was estimated using a linear growth rate of one point four percent (1.4%) annually. This growth rate is based on forecasts performed by the Greater Buffalo-Niagara Regional Transportation Council (GBNRTC) for the year 2025 for use in long range transportation planning; as used in Phase I of the Town of Clarence Comprehensive Traffic Study performed by Nussbaumer in the year 2000. This growth rate was then applied to the existing traffic volumes in 2007 and projected up to the anticipated full build-out year for this study in 2032. Additional information on the Growth Rate used is available in ***Appendix A*** of this report.

Projection of Site-Generated Traffic

In Section 4.15.4 of the DEIS (page 58) and Section VI of Appendix E (page 5), it is stated that vehicle trip projections for the proposed site were obtained from the Institute of Transportation Engineers (ITE) Trip Generation 5th Edition. It should be noted that the trip projections for the study were obtained using the 7th Edition as shown in Appendix B of the TIS. The ITE categories "Apartments" and "Single Family Detached Housing" were utilized to project the site generated traffic volume, using the amount of dwelling units as the parameter for projecting traffic generation. The proposed site will consist of a mix of these two (2) land uses as presented in the following table.

Trip Generation Rates

LAND USE	DWELLING UNITS	ENTERING		EXITING	
		AM	*PM*	*AM*	*PM*
Multiple Family Residential	80	8	32	33	18
Single Family Residential	300	57	192	168	111
TOTAL	**380**	**65**	**224**	**201**	**129**

The new trips were distributed to the surrounding highway system by considering the existing traffic patterns, concentration of non-residential areas, and logical routing. It is anticipated that the majority of the new traffic volume will be distributed predominantly to and from the south and west, with a lesser concentration oriented to and from the north and east. The projected traffic volumes generated by the proposed site were distributed onto the adjacent streets according to the estimated percentage distributions of the new trips. The site-generated traffic volumes were then added to the no-build/background traffic volumes to represent anticipated traffic volumes after the completion of the proposed site. These volumes were used to evaluate the potential impact that the site-generated traffic may have on the adjacent public street system. Through movements past the proposed site driveways have been estimated by balancing traffic volumes with the nearest intersection at which manual counts were performed. Manual traffic counts were not obtained at the existing intersection of Goodrich Road and Boxwood Drive. Because it is anticipated that a large portion of site-generated traffic will use this access, the no-build/background traffic volumes for this roadway were taken to be the trips generated by the portion of the full build-out of the existing subdivision which would logically use this roadway; then distributed according to the same directional distributions as those of the proposed site.

As the project site has multiple driveway connections to Goodrich Road that do not interconnect with existing intersections, a separate analysis was performed for the intersection of Goodrich Road and Roll Road that extended Roll Road through the project site to Greiner Road. Trips generated by the proposed project were redistributed based on the reconfiguration of proposed driveways and existing intersections. The Synchro 7 analysis is attached as ***Appendix B*** of this report , and a summary of the analysis is presented in Section 1.2.1.4 of this report.

Accident Rates

The consultant conducted an Accident Analysis of the impacted segments and intersections within the project study area in order to determine whether safety improvements were necessary.

Accident records from the period beginning in January 2004 and continuing through December 2006 were obtained from the Erie County Sheriff's Office. These records were investigated to help determine if a safety problem exists within the study area. A table showing the accident severity is provided below.

ACCIDENT SEVERITY			TOTAL
FATAL	*INJURY*	*PDO*	
0	3	10	13

Accident rates for both roadway segments and intersections within the study area were determined and compared with the mean rates for similar state-wide facilities. The following table summarizes the accident rates. Complete accident analysis reports available are in ***Appendix D*** of the TIS.

LOCATION	ACCIDENT RATE (ACC/MVM)	AVERAGE RATE FOR SIMILAR STATE FACILITY (ACC/MVM)*
Segments		
Goodrich Road		
Main to Greiner	0.00	2.19
Greiner to Roll	0.00	2.19
Roll to Clarence Center	0.26	2.19
Greiner Road		
Thompson to Goodrich	0.00	2.19
Goodrich to Kraus	0.28	2.19
LOCATION	**ACCIDENT RATE (ACC/MEV)**	**AVERAGE RATE FOR SIMILAR STATE FACILITY (ACC/MEV)***
Intersections		
Main & Goodrich	0.25	0.29
Goodrich & Greiner	0.00	0.60
Greiner & Old Goodrich	0.09	0.27
Greiner & Thompson	0.08	0.27
Goodrich & Roll	0.10	0.16
Goodrich & Clarence Center	0.18	0.22

* NYSDOT, Average Accident Rates for State Highways, revised March 2004.

Across the study area, there was no tendency for any particular variety of accident. A fair percentage of accidents are of the fixed object and/or run-off-the-road variety; however, no attributable causes for these accidents were reported. Accident rates for all study area roadway segments and intersections are below the statewide average for similar State facilities.

It should be noted that the average accident rates for similar statewide facilities factor in non-reportable accidents. For the purposes of this accident analysis, it was not possible to determine the actual number of non-reportable accidents, as no records are currently kept for these accidents. The result of this is that the accident rate determined for the roadway segment or intersection in this study may be slightly underrepresented.

The accident rates are not expected to increase significantly beyond the current level with the proposed site based on a projection of accident rates proportional to the relatively low traffic volumes generated by the proposed project site.

Level of Service Capacity Analysis

The capacity analyses were conducted for each of these intersections with procedures set forth in the Highway Capacity Manual (HCM) using the Synchro 7 Traffic Signal Coordination software developed by Trafficware Ltd. The purpose of the capacity analyses is to determine the LOS for movements which may be stopped or delayed during normal intersection operation. The intersection LOS is defined in terms of average control delay per vehicle, ranging from LOS 'A' for very short delays to LOS 'F' for longer than average delays. In addition, both HCM LOS and Intersection Capacity Utilization (ICU) LOS were analyzed on an intersection-wide basis. Note that there are no provisions for HCM LOS at two-way stop controlled intersections and that ICU LOS includes additional levels beyond LOS 'F' to further differentiate levels of congested operation.

The delays corresponding to each LOS are defined in the table below.

LOS	HCM 2000		ICU 2003
	CONTROL DELAY PER VEHICLE (SEC)		ICU (%)
	SIGNALIZED	*UNSIGNALIZED*	*UNSIGNALIZED*
A	≤ 10	≤ 10	≤ 55
B	> 10 and ≤ 20	> 10 and ≤ 15	> 55 and ≤ 64
C	> 20 and ≤ 35	> 15 and ≤ 25	> 64 and ≤ 73
D	> 35 and ≤ 55	> 25 and ≤ 35	> 73 and ≤ 82
E	< 55 and ≤ 80	> 35 and ≤ 50	> 82 and ≤ 91
F	> 80	> 50	> 91 and ≤ 100
G	-	-	> 100 and ≤ 109
H	-	-	> 109

Detailed LOS analysis of the studied intersections can be found in Appendix C of the Traffic Impact Study. In addition, all LOS analyses included within the TIS were reviewed by the Town of Clarence's Traffic Consultants using Synchro 7. A summary of these intersections is provided below.

Main Street at Goodrich Road:

APPROACH	MOVEMENT	EXISTING		NO-BUILD		BUILD-OUT	
		AM	*PM*	*AM*	*PM*	*AM*	*PM*
Main Street							
Eastbound	Left	B	C	F	E	F	F
	Thru	B	B	C	C	C	D
Westbound	Thru	F	F	F	F	F	F
	Right	B	B	B	B	B	B
Goodrich Road							
Southbound	Left	D	C	F	F	F	F
	Right	C	C	C	D	C	D
Intersection HCM LOS		E	D	F	E	F	E
Intersection ICU LOS		D	D	G	F	H	F

2007 Conditions

Under 2007 existing conditions, the AM Peak Hour westbound through movement experiences the worse delays (LOS F, 131.3 second delay per vehicle), and again this movement experiences the worse delays during the PM Peak Hour (LOS F, 112.6 second delay per vehicle). The southbound left turn movement experiences a 53.8 second delay per vehicle (LOS D) during the AM Peak Hour. The intersection overall had a LOS E (63.1 second delay) during the AM Peak Hour and a LOS D (50.1 second delay) during the PM Peak Hour.

2032 Background Conditions

Projected out to the Year 2032, during the AM Peak Hour the southbound left turn movement experiences the worse conditions with a 154.3 second delay per vehicle (LOS F), followed by the westbound through movement (LOS F, 122.9 second delay per vehicle) and the eastbound left turn movement (LOS F, 112.3 second delay per vehicle). During the PM Peak Hour, the southbound left turn movement experiences the worse conditions with a 159.3 second delay per vehicle (LOS F), followed by the westbound through movement (LOS F, 99 second delay per vehicle) and the eastbound left turn movement (LOS E, 68.6 second delay per vehicle). The intersection overall had a LOS F (85 second delay) during the AM Peak Hour and a LOS E (64.8 second delay) during the PM Peak Hour.

2032 Background with Development Conditions

With the proposed project during the AM Peak Hour, the southbound left turn movement experiences the worse conditions with a 173.7 second delay per vehicle (LOS F), followed by the westbound through movement (LOS F, 149.1 second delay per vehicle) and the eastbound left turn movement (LOS F, 142.2 second delay per vehicle). During the PM Peak Hour, the southbound left turn movement experiences the worse conditions with a 158.5 second delay per vehicle (LOS F), followed by the westbound through movement (LOS F, 116.6 second delay per vehicle) and the eastbound left turn movement (LOS F, 98.7 second delay per vehicle). The intersection overall had a LOS F (100.7 second delay) during the AM Peak Hour and a LOS E (76.4 second delay) during the PM Peak Hour.

Conclusion:

The worst intersection delays were determined to be during the weekday morning peak period where LOS E occurred under 2007 existing conditions. A comparison of the LOS for the 2007 existing conditions versus the 2032 background with development traffic shows that the LOS will

degrade to LOS F for the weekday morning peak period. It should be noted that without the development of the project the intersection would still degrade to a LOS F.

Goodrich Road at Greiner Road

APPROACH	MOVEMENT	EXISTING		NO-BUILD		BUILD-OUT	
		AM	*PM*	*AM*	*PM*	*AM*	*PM*
Greiner Road							
Eastbound	All	B	B	C	D	C	F
Westbound	All	B	B	E	D	F	F
Goodrich Road							
Northbound	All	B	C	B	E	C	F
Southbound	All	C	B	E	B	F	E
Intersection HCM LOS		B	B	D	D	F	F
Intersection ICU LOS		B	C	D	F	F	E

2007 Conditions

Under 2007 existing conditions the AM Peak Hour southbound approach experiences the worse delay (LOS C, 22.9 second delay per vehicle) while the northbound approach experiences the worse delay during the PM Peak Hour (LOS C, 22 second delay per vehicle). The intersection overall had a LOS B (19 second delay) during the AM Peak Hour and a LOS B (18.7 second delay) during the PM Peak Hour.

2032 Background Conditions

Projected out to the Year 2032, during the AM Peak Hour the westbound approach experiences the worst conditions with a 61.3 second delay per vehicle (LOS E), followed by the southbound approach (LOS E, 55.1 second delay per vehicle). During the PM Peak Hour the northbound approach experiences the worst conditions with a 57.7 second delay per vehicle (LOS E), followed by the westbound approach (LOS D, 46.8 second delay per vehicle). The intersection overall had a LOS D (44.4 second delay) during the AM Peak Hour and a LOS D (45.2 second delay) during the PM Peak Hour.

2032 Background with Development Conditions

With the proposed project during the AM Peak Hour westbound approach experiences the worst conditions with a 137.4 second delay per vehicle (LOS F), followed by the southbound approach (LOS F, 127.7 second delay per vehicle). During the PM Peak Hour the northbound approach experiences the worst conditions with a 122.4 second delay per vehicle (LOS F), followed by the westbound approach (LOS F, 120 second delay per vehicle), the eastbound approach (LOS F, 106.1 second delay per vehicle) and the southbound approach (LOS E, 73.2 second delay per vehicle). The intersection overall had a LOS F (93.6 second delay) during the AM Peak Hour and a LOS F (109.2 second delay) during the PM Peak Hour.

Conclusion:

The worst intersection delays were determined to be during the weekday afternoon peak period where LOS F occurred under 2032 build-out conditions. A comparison of the LOS for the 2032 background conditions versus the 2032 background with development traffic shows that the LOS will degrade from a LOS D to LOS F for the weekday afternoon peak period. The proposed project has an adverse impact on the intersection's LOS.

Greiner at Thompson Road

APPROACH	MOVEMENT	EXISTING		NO-BUILD		BUILD-OUT	
		AM	*PM*	*AM*	*PM*	*AM*	*PM*
Greiner Road							
Eastbound	All	A	A	A	A	A	A
Westbound	All	A	A	A	A	A	A
Thompson Road							
Northbound	All	F	F	F	F	F	F
Southbound	All	F	E	F	F	F	F
Intersection ICU LOS		B	B	E	D	E	D

2007 Conditions
Under 2007 existing conditions, the AM Peak Hour northbound approach experiences the worst delays (LOS F, 131 second delay per vehicle), and again this movement experiences the worst delays during the PM Peak Hour (LOS F, 97.6 second delay per vehicle). The southbound approach experiences a 88.5 second delay per vehicle (LOS F) during the AM Peak Hour. The intersection overall had a LOS B (24.4 second delay) during the AM Peak Hour and a LOS B (17.8 second delay) during the PM Peak Hour.

2032 Background Conditions
Projected out to the Year 2032, during the AM Peak Hour the northbound approach experiences the worse conditions (LOS F, no delay data available), followed by the southbound approach (LOS F, 878.8 second delay per vehicle). During the PM Peak Hour, both the northbound and southbound approaches experienced the worst conditions with a LOS F (no delay data available). The intersection overall had a LOS E (no delay data available) during the AM Peak Hour and a LOS D (no delay data available) during the PM Peak Hour.

2032 Background with Development Conditions
With the proposed project during the AM Peak Hour, the northbound approach experiences the worse conditions (LOS F, no delay data available), followed by the southbound approach (LOS F, 930.9 second delay per vehicle). During the PM Peak Hour, both the northbound and southbound approaches experienced the worst conditions with a LOS F (no delay data available). The intersection overall had a LOS E (no delay data available) during the AM Peak Hour and a LOS D (no delay data available) during the PM Peak Hour.

Conclusion:
The worst intersection delays occurred for north and southbound approaches under 2007 existing conditions. A comparison of the LOS for the 2007 existing conditions versus the 2032 background traffic shows that the overall intersection LOS will degrade from a LOS B to LOS E for the weekday morning peak period. East and westbound approaches remain at a LOS A due to the free movement. It should be noted that without the development of the project the overall intersection would still degrade to a LOS E.

Goodrich Road at Roll Road

APPROACH	MOVEMENT	EXISTING		NO-BUILD		BUILD-OUT	
		AM	*PM*	*AM*	*PM*	*AM*	*PM*
Roll Road							
Eastbound	All	C	C	F	F	F	F
Goodrich Road							
Northbound	All	A	A	A	A	A	A
Southbound	All	A	A	A	A	A	A
Intersection ICU LOS		B	B	D	D	E	E

2007 Conditions
Under 2007 existing conditions the AM Peak Hour, westbound approach experiences the worst delays (LOS C, 22.4 second delay per vehicle), and again this movement experiences the worse delays during the PM Peak Hour (LOS C, 24.5 second delay per vehicle). The intersection overall had a LOS B (4.9 second delay) during the AM Peak Hour and a LOS B (5.8 second delay) during the PM Peak Hour.

2032 Background Conditions
Projected out to the Year 2032, during the AM Peak Hour the westbound approach experiences the worst conditions with a 91.4 second delay per vehicle (LOS F). During the PM Peak Hour, the westbound approach experiences the worst conditions with a 130.3 second delay per vehicle (LOS F). The intersection overall had a LOS D (17.5 second delay) during the AM Peak Hour and a LOS D (26.9 second delay) during the PM Peak Hour.

2032 Background with Development Conditions
Projected out to the Year 2032, during the AM Peak Hour the westbound approach experiences the worst conditions with a 256.1 second delay per vehicle (LOS F). During the PM Peak Hour, the westbound approach experiences the worst conditions with a 438.7 second delay per vehicle (LOS F). The intersection overall had a LOS E (46.1 second delay) during the AM Peak Hour and a LOS E (96.6 second delay) during the PM Peak Hour.

Conclusion:
The worst intersection delays were determined to be during the weekday afternoon peak period where LOS E occurred under 2032 build-out conditions. A comparison of the LOS for the 2032 background conditions versus the 2032 background with development traffic shows that the LOS will degrade from a LOS D to LOS E for both peak periods. The proposed project has a significant impact on the intersection's LOS.

Goodrich Road at Clarence Center Road

APPROACH	MOVEMENT	EXISTING		NO-BUILD		BUILD-OUT	
		AM	*PM*	*AM*	*PM*	*AM*	*PM*
Clarence Center Road							
Eastbound	All	C	B	E	D	E	D
Westbound	All	D	C	F	E	F	E
Goodrich Road							
Northbound	All	D	E	F	F	F	F
Southbound	All	F	C	F	F	F	F
Intersection HCM LOS		E	D	F	F	F	F
Intersection ICU LOS		B	A	C	C	C	C

2007 Conditions
Under 2007 existing conditions the AM Peak Hour, southbound approach experiences the worst delays (LOS F, 68.9 second delay per vehicle) while the northbound approach experiences the worse delays during the PM Peak Hour (LOS E, 40.4 second delay per vehicle). The intersection overall had a LOS E (40.4 second delay) during the AM Peak Hour and a LOS D (26.7 second delay) during the PM Peak Hour.

2032 Background Conditions
Projected out to the Year 2032, during the AM Peak Hour the southbound approach experiences the worst conditions with a 353.7 second delay per vehicle (LOS F). During the PM Peak Hour, the northbound approach experiences the worst conditions with a 285.1 second delay per vehicle (LOS F). The intersection overall had a LOS F (185.1 second delay) during the AM Peak Hour and a LOS F (142.8 second delay) during the PM Peak Hour.

2032 Background with Development Conditions
Projected out to the Year 2032, during the AM Peak Hour, the southbound approach experiences the worst conditions with a 359.9 second delay per vehicle (LOS F). During the PM Peak Hour, the northbound approach experiences the worst conditions with a 306.5 second delay per vehicle (LOS F). The intersection overall had a LOS F (193.2 second delay) during the AM Peak Hour and a LOS F (156.3 second delay) during the PM Peak Hour.

Conclusion:
The worst intersection delays were determined to be during the weekday morning peak period where LOS F occurred under 2032 background conditions. A comparison of the LOS for the 2032 background conditions versus the 2032 background with development traffic shows that the LOS will degrade to LOS F for the weekday morning and afternoon peak periods regardless of the development of the project.

1.1.2 Traffic Mitigation Recommendations

The TIS included mitigation recommendations for five (5) intersections within the study area. A summary of the LOS Analyses for these intersections along with mitigation measures is provided below.

1.1.2.1 Main Street (NY) at Goodrich Road (CR 216)

Section 6.7 of the DEIS states that no mitigation is recommended at the intersection and that a more detailed study should be performed. Section XI (pages 24 and 25) of the revised TIS also recommends a more detailed study be performed, however, lists some mitigation measures that may be required.

Mitigation measures considered:
The following mitigation measures were identified for consideration by the TIS.

- Additional lanes along the east and westbound approaches of Main Street
- Add additional southbound left turn lane (200 feet) on Goodrich Road
- Make revisions to signal timing and phasing.

Based on these measures, the overall LOS for the AM Peak Hour would be LOS C (20.1 second delay) and LOS B (16.3 second delay) for the PM Peak Hour. Page 25 of the TIS summarizes the intersection LOS and Appendix C of the TIS provides the detailed Synchro analysis.

Alternative mitigation measures considered
An analysis was performed for the intersection of Main Street and Goodrich Road that considered the extension of Goodrich Road south of Main Street to Gunnville Road. While the extension would improve the current southbound approach LOS, east and west movements still experience extensive delays. Please see the Synchro files in ***Appendix B*** of this report for additional information.

Recommendations:
Extending Goodrich Road south of Main Street to Gunnville Road would require extensive ROW purchases and wetland mitigation. In addition, ROW is limited on the existing section of Goodrich Road at the intersection. As the east and west movements experience the highest volumes and delays, the only option that would improve the flow of traffic on this section of Main Street would be the construction of additional east and west through lanes from Sheridan Drive (NY 324) to Gunnville Road.

NYSDOT Region 5 issued a statement pertaining to the project on November 21, 2007 to the Town of Clarence that as proposed, the Spaulding Green Subdivision project would not have a significant impact on the State's highway system. Therefore, mitigation to this intersection is not recommended at this time.

1.1.2.2 Goodrich Road (CR 216) at Greiner Road (CR 37)

Section 6.7 of the DEIS (page 97) and Section XI (pages 25 and 26) of the TIS make several recommendations for the intersection.

Mitigation measures considered:
The following mitigation measures were identified for consideration by the TIS.

- Installation of left turn lanes (100 feet for Goodrich Road approaches and 75 feet for Greiner Road approaches)

- Add right turn lanes (75 feet) on east and west approaches of Greiner Road and north approach of Goodrich Road
- Modify existing traffic signal to an eight (8) phase semi-actuated installation, with separate protected left turn phases on all four (4) approaches and permit unprotected left turns on green and right turns on red

Based on these measures, the overall LOS for the AM Peak Hour would be LOS C (34.5 second delay) and LOS C (30.4 second delay) for the PM Peak Hour. Page 26 of the TIS summarizes the intersection LOS and Appendix C of the TIS provides the detailed Synchro analysis.

Recommendations:
Upon review of the existing analysis for this intersection, an additional analysis was performed to determine other mitigation alternatives. Left turn lanes were analyzed for all approaches and east and west movements were given a total split of 45 seconds for the PM Peak Hour (total splits for all directions in the AM Peak Hour, and north and south approaches in the PM Peak Hour remain at 40 seconds). Based on the Synchro analysis performed by the Town's consultant, the intersection operates at an acceptable LOS under this scenario with the AM Peak Hour at LOS C (27.9 second delay) and the PM Peak Hour at LOS C (29.8 second delay) if Roll Road is extended east past Goodrich Road to Greiner Road (See Section X. Goodrich Road and Roll Road). Without this extension, this intersection would operate at a LOS C (28.8 second delay) during the AM Peak Hour and a LOS F (84 second delay) during the PM Peak Hour. Please see Synchro analysis in ***Appendix B*** in this report for additional information.

Project generated traffic will have a significant impact on this intersection and therefore it is recommended that the developer be responsible for some of the mitigation improvements at this intersection.

1.1.2.3 Greiner Road (CR 37) and Thompson Road (CR 278)

Section 6.7 of the DEIS (page 98) and Section XI (page 27) of the TIS make several recommendations for the intersection.

Mitigation measures considered:
The following mitigation measures were identified for consideration by the TIS.

- Installation of 75 foot left turn lane on Greiner Road westbound approach.
- Installation of a two (2) phase semi-actuated installation, with permitted but not protected left turn movements. Right turns on red would be permitted.

Based on these measures, the overall LOS for the AM Peak Hour would be LOS A (9.5 second delay) and LOS B (10.4 second delay) for the PM Peak Hour. Page 27 of the TIS summarizes the intersection LOS and Appendix C of the TIS provides the detailed Synchro analysis.

Recommendations: Due to the two-way stop control device, north and southbound approaches operate a LOS F during both Peak Hour periods in the existing year 2007. A signal warrant analysis was performed indicating that the intersection would meet the warrants under 2032 background and build-out conditions. Page 22 of the TIS provides a summary of the warrant conditions.

Currently, the Erie County Department of Public Works (ECDPW) Highway Division is studying whether or not to install an all-way stop at the intersection prior to the installation of a signal. No mitigation is recommended at this time and any future improvements to the intersection should be coordinated with ECDPW.

1.1.2.4 Goodrich Road (CR 216) at Roll Road (CR 277)

Section 6.7 of the DEIS (page 98 and 99) and Section XI (pages 27 and 28) of the TIS make several recommendations for the intersection.

Mitigation measures considered:
The following mitigation measures were identified for consideration by the TIS.

- Installation of 50 foot left turn lane on Goodrich Road northbound approach and a 50 foot right turn lane on the southbound approach.
- Installation of a three (3) phase semi-actuated installation, with a separate protected left turn phase for northbound left turn movements. Unprotected left turns while green and right turns on red would be permitted.

Based on these measures, the overall LOS for the AM Peak Hour would be LOS B (17.3 second delay) and LOS B (13.5 second delay) for the PM Peak Hour. Page 28 of the TIS summarizes the intersection LOS and Appendix C of the TIS provides the detailed Synchro analysis. In addition a summary of the signal warrant analysis is provided on pages 22 and 23 of the TIS.

Roll Road Extension:
An analysis was performed to determine the impacts that the extension of Roll Road east of Goodrich Road would have on the distribution of the trips generated by the proposed project. Driveway 2 was removed and trips generated by the proposed project were either diverted to the Roll Road Extension or Driveway 3 based on estimated trip patterns. A two (2) phase semi-actuated signal was used at this intersection, with north and southbound movements given a total split of 40 seconds and east and west movements given a total split of 20 seconds. A minimum recall was used for north and southbound approaches. Overall the intersection operated at a LOS B (19.3 second delay) during the AM Peak Hour period and a LOS C (23.5 second delay) during the PM Peak Hour period. Please see the Synchro 7 analyses in ***Appendix B*** of this report for additional information.

With an extension of Roll Road through the project to Greiner Road, traffic patterns that normally traverse through the intersection (southbound and westbound approaches) of Goodrich Road and Greiner Road would be provided an alternative route that would slightly relieve the intersection from some traffic volume. In addition, traffic generated from the proposed development that accesses this road west of Goodrich Road would be provided a direct connection to and from Roll Road. As the Town of Clarence would assume ownership of the roads within the development, it is in the best interest of the Town to pursue the extension of Roll Road from the intersection of Goodrich Road to Greiner Road as it would provide the transportation network with additional connectivity.

Recommendations: Either mitigation option would improve the overall operation of the intersection. If the decision is made not to extend Roll Road, the intersection of Goodrich Road and Greiner Road may require the installation of the recommended right turn lanes to improve northbound and westbound through traffic movements. As project generated traffic will have a

significant impact on this intersection it is recommended that the developer be responsible for some of the mitigation improvements at this intersection.

1.1.2.5 Goodrich Road (CR 216) at Clarence Center Road (CR 217)

Section 6.7 of the DEIS (page 99 and 100) and Section XI (pages 28 and 29) of the TIS make several recommendations for the intersection.

Mitigation measures considered:
The following mitigation measures were identified for consideration by the TIS.

- Installation of a five (5) phase semi-actuated signal, with a leading protected green phase for the Clarence Center Road westbound left turn movement. Unprotected left turns on green and right turns on red should be permitted. Pedestrian phasing should be included, as existing crosswalks traverse all four (4) approaches.

Based on these measures, the overall LOS for the AM Peak Hour would be LOS E (62.4 second delay) and LOS C (27.1 second delay) for the PM Peak Hour. Page 28 of the TIS summarizes the intersection LOS and Appendix C of the TIS provides the detailed Synchro analysis. Page 23 of the TIS summarizes the signal warrant analysis.

Recommendations*:* The intersection meets warrants for the installation of a signal and would benefit from the installation of left turn lanes; however, the intersection has ROW constraints limiting the implementation of turn lane improvements. A signal should be eventually installed to improve overall capacity. Mitigation measures by the developer are not recommended since the problem exists under current conditions.

1.2 Preliminary Cost Estimates

Cost estimates were prepared for recommended improvements at the five (5) impacted intersections and for the extension of Roll Road from the intersection with Goodrich Road to Greiner Road. Prices used for the estimates were based NYSDOT Regional and Statewide Weighted Average Awarded Prices - Contracts Let 7/1/06 to 7/1/07. A brief summary of the type of improvement(s) and cost estimates are provided below (detailed sheets are provided in **Appendix C**):

Main Street at Goodrich Road
Cost estimates for the two (2) mitigation options presented in Section 1.2.1.1 were developed for this intersection.

The first mitigation option consisted of adding an additional southbound left turn lane on Goodrich Road and adding additional travel lanes on both approaches of Main Street from Good Rich Road to Gunnville Road. Signal modification would be required for this improvement. The total cost estimate for this improvement would be ***$3,945,474.40*** (not including ROW acquisition).

The second mitigation option examined the extension of Goodrich Road south of Main Street to Gunnville Road. The intersection would consist of the existing east and west approaches, with the exception of a new eastbound right turn lane and no westbound left turn lane as left turns would be prohibited. The southbound approach would have the existing right turn lane

configured for through and right turn movements while the new northbound approach would consist of a dedicated left turn lane and a through/right turn lane. Cost estimates for this option totaled ***$1,455,440.00*** (without ROW acquisition, road extension pavement and wetland mitigation costs). Currently the property needed to extend the road consists of 9435 Main Street - Parcel Id Number (PIN) *1432000710300005024000* (land assessed at $134,200.00 for 21.29999924 acres), 9455 Main Street - PIN *1432000710300005026000* (land assessed at $74,000.00 for 0.5 acres), 9465 Main Street – PIN *1432000711500002001000* (total property assessed at $200,00.00 for 1.20000005 acres) and a property located off of Gunnville Road under PIN *1432000830000002001200* (no assessment provided for 21.585 acres). While the preferred path for the extension has not been determined, a measurement was taken to get the estimated linear footage. The estimated length of the path is 0.61 miles or 3,220.8 feet which would cost $1,082,188.80 using a width of 12 feet for each lane. Assuming a 100 foot ROW width would be necessary for the road extension, ROW acquisition costs are estimated based on the following average parcel square footage cost of all affected parcels:

Price/Area

PIN *1432000710300005024000* - $0.14 per square foot (927,827.96 sq.ft/$134,200 total parcel)
PIN *1432000710300005026000* - $3.40 per square foot (21,780 sq.ft/$74,000 total parcel)
PIN *1432000711500002001000* - $3.83 per square foot (52,272 sq.ft/$200,000 total parcel)
PIN *1432000830000002001200* - $0.14 per square foot (940,242.60 sq.ft/$131,633.96 total parcel based on PIN *1432000710300005024000 cost per square footage*)

Average Cost per Square Foot = $1.88

Estimate Road Length 3,220.8 feet x 100 feet ROW width = 322,080 square feet

Estimated ROW Cost = 322,080 feet x 1.88 = $605,510.40

With the additional pavement and ROW costs, the total intersection and road extension cost is estimated at ***$8,373,718.40*** (extended road costs added to Road Reconstruction Cost estimate in order to estimate additional contingency costs) without wetland mitigation.

Goodrich Road at Greiner Road
Cost estimates for the left turn lane mitigation option presented in Section 1.2.1.2 was developed for this intersection.

Left turn lanes were added to all approaches and the existing signal was modified. The estimated cost for the intersection improvement is ***$1,566,220.00*** (ROW costs not included). If right turn lanes were added to the intersection for the east, west and northbound approaches the total intersection cost would be ***$1,613,470.00*** (roadway reconstruction only for right turn lanes, ROW costs not included).

Greiner Road at Thompson Road
Cost estimates for the signalization and construction of a left turn lanes for all approaches presented in Section 1.2.1.3 was developed for this intersection.

Left turn lanes were added to all approaches and a new signal was included. The estimated cost for the intersection improvement is ***$907,180.40*** (ROW costs not included).

Goodrich Road at Roll Road
Cost estimates for the two (2) mitigation options presented in Section 1.2.1.4 were developed for this intersection.

The first mitigation option consisted of adding a southbound right turn lane and adding a northbound left turn lane on Goodrich Road. Signalization would be required as part of the mitigation. The total cost estimate for this improvement would be ***$842,413.60*** (not including ROW acquisition).

The second mitigation option examined the extension of Roll Road east of Main Street to Greiner Road. The intersection would consist of the existing north, south and east approaches, with the addition of a new westbound approach. The northbound left turn lane and the southbound right turn lane proposed in the first mitigation option were also included in this estimate (can be removed if desired). A signal at this location would still be required. Cost estimates for this option totaled ***$933,545.20*** (without ROW acquisition, road extension pavement and wetland mitigation costs). With an estimated road extension length of 6,200 linear feet, the total construction cost of extending the road based on a width of 24 feet (148,800 square foot total) would be ***$2,083,200.00*** for a total cost of ***$3,016,745.20***.

Goodrich Road at Clarence Center Road
Cost estimates were developed for this intersection based on the signalization of this intersection as presented in Section 1.2.1.3.

A new signal was added to the intersection to improve existing conditions. The estimated cost for the intersection improvement is ***$207,508.00*** (ROW costs not included).

1.3 Funding Opportunities

There are several mechanisms for funding transportation infrastructure improvements necessary to support future growth within the Town of Clarence. While some seek funding sources through government agencies, other methods include private development funding to offset growth incurred impacts.

1.3.1 Capital Improvement Program

The Town may obtain funding for some of these improvements from the Town's Capital Improvement Program (CIP), Erie County's CIP or the GBNRTC's Transportation Improvement Program (TIP). As the Town and County have limited funding dedicated to improving congested transportation facilities, most improvements would have to be funding through the TIP. Currently, the intersection of Greiner Road and Shimmerville Road is included in the TIP and funded under CMAQ (Congestion Mitigation & Air Quality Improvement). The Town could submit additional projects for inclusion into the TIP for some of the presently deficient intersections, such as Goodrich Road and Clarence Center Road under the CMAQ program. Other programs may be pursued as well depending on the type of transportation project.

1.3.2 Proportionate Share Contribution/Adequate Public Facilities

Required mitigation for certain transportation facilities can be achieved through numerous methods. The developer of a project can pay for all of an improvement if the project is responsible for the deficiency or part of the cost of an improvement or if the project is added to an existing deficiency. Some municipalities prefer this method for the improvement to

transportation facilities as it collects funds from the development rather than the raising revenue from existing development that did not cause the deficiency. For the most part, however, this method is reactive rather than proactive as funds are usually collected once a facility becomes deficient.

One formula for calculating the share of costs is shown below.

Developer Cost = [(Development Trips) / (Service Volume Increase)] x Cost of Improvement

Development Trips = Number of project generated trips (usually the highest Peak Hour generation) assigned to a road segment or intersection approach lane, and have either caused a deficiency or contributed to an existing deficiency on that facility.

Service Volume Increase = Service volume increase provided by the proposed improvement (Ex. Existing Capacity 1100 and Proposed Improvement Capacity 2400 = Service Volume Increase of 1300).

Cost of Improvement = Adjusted cost of the improvement to deficient segment, approach lane or intersection. Cost shall include all improvements and associated costs, such as design, right-of-way acquisition, planning, engineering, inspection, and physical development costs directly associated with construction at the anticipated cost in the year it will be incurred.

After the project's cost for the improvement is estimated, it may be further broken down to spread the cost over the whole development. For example, a 700 unit single family subdivision is adding 100 new trips to a 1 mile two-lane road segment that is over capacity. The two-lane road has a two-way PM Peak Hour Volume capacity of 1000. In order to improve the capacity on the segment, it must be upgraded to a four-lane facility which would have a new volume capacity of 2100. The cost of this improvement would be $5,000,000.00. The calculation would be:

[100 (Developer Trips) / 1100 (Service Volume Increase)] x 5,000,000 (Improvement Cost) =

Developer Cost of $500,000.00

Cost per housing unit $714.29

The above method is based on the increase in vehicle capacity of a road segment. This method could also be applied to the addition of turn lanes at an intersection. In the event project generated traffic degrades an intersection below its adopted LOS standard the developer should be responsible for returning the intersection back to its previous level.

Funds gathered from the development would be deposited into an interest bearing account and would be included under the Town's CIP once enough funding is secured to implement the required improvement.

1.3.3 Tax Increment Financing

Under New York State General Municipal Law Article 18-C. Municipal Redevelopment Law, municipalities may establish Tax Increment Financing (TIF) districts in order to increase tax revenues for use on capital improvements such as transportation facilities. The establishment of a TIF district provides an economic development tool for municipalities for use in stimulating

private investment and development in designated areas by obtaining the increased tax revenue generated by the private development and using the tax revenues to pay for public improvements and infrastructure necessary to enable development.

When establishing a TIF district, the municipality would designate a specific geographical area with specified boundaries and duration period, dedicating the increase in specified taxes from the area from the establishment date forward (the "tax increment") to the support of one or more development and/or redevelopment projects within the specified TIF district. The municipality would have the option to issue bonds to obtain funds which would allow for the payment of certain initial costs of the designated projects in the designated district. Another option would allow the developer of a certain project to pay the initial cost for an improvement and be reimbursed by the municipality once funds were collected from the TIF district. Overall, once the improvement(s) is complete and until the TIF district expires, the municipality uses the revenue collected from the district to pay off the bond debt.

1.3.4 Impact Fees

Under New York State law, state legislation allowing impact fees is required (also see *Albany Area Builders Association v. Town of Guilderland*), although some municipalities within the state use different methods to collect funds similar to this method. Impact Fees can be used as a one time method of gathering revenue from developers for part of an infrastructure improvement and is a charge on new development to pay for the construction or expansion of off-site capital improvements that are necessitated by and benefit the new development. There are several areas of capital improvement funding that impact fees can benefit such as transportation, sewer/storm water and school facilities.

Transportation impact fees are generally calculated based on the trip ends generated by specific land uses and the cost of the improvements to specific transportation facilities based on increased capacity. Generally districts are established within a municipality to determine which areas should pay for geographic improvements. It is important to note that impact fees cannot be charged to pay for the cost of reducing or eliminating deficiencies in existing facilities, but can only be charged for the portion of the cost of public capital facilities that is attributable to new development.

The following method is an example of one way to calculate impact fees and contains seven (7) steps.

1. *Growth Formula*

   Existing Traffic Volume x Annual Growth Factor to Designated Year = Future Traffic Volumes

2. *Additional Capacity Needs*

   Future Traffic Volumes – Existing Traffic Capacity = Future Capacity Needs

3. *Additional Capacity of Improved Roads*

   Trip Capacity of New Road – Trip Capacity of Existing Road = Additional Trip Capacity of Road

4. *Determine Existing Road Deficiencies*

Current Year Capacity – Current Volumes = Current Reserve or Deficiency

5. *Cost of Capacity for Growth*

Cost of Improvement – Proportion caused by Existing Deficiency = Cost of Capacity for Growth

6. *Cost Per Trip*

Growth's Cost of Added Capacity / Additional Trip Capacity = Cost per Trip

7. *Impact Fee*

Cost per Trip x Trip Generation Rate of Land Use = Impact Fee per Unit of Land Use

1.4 Capital Improvements Timeline & Funding Sources

Based on the needs and estimated costs of the recommended infrastructure improvements, a timeline is provided for the affected intersections based on the project's immediate impacts associated with the full build-out.

1. Greiner Road at Thompson Road

Operational improvements to this intersection are likely to be made by the ECDPW although the timeframe for the improvement depends on the County's funding sources and priority rankings. If desired, the Town could collect a portion of the cost for this intersection improvement from the developer based on the number of trips impacting the intersection.

2. Goodrich Road at Roll Road:

Improvements to this intersection should be made concurrent with the development of this project. If the extension of Roll Road is required by the Town, the reconstruction of the intersection with the installation of a traffic signal should be a top priority. As the project generated traffic causes the intersection to degrade in the build-out year 2032, the developer should be responsible for all of the mitigation improvements required at this intersection. A left turn lane would be required for the northbound approach and a right turn lane would be required for the southbound approach under the t-intersection configuration, although these turn lanes would not be required with the extension of Roll Road. A traffic signal will be required at this intersection as well regardless of what improvements made. The developer should be responsible for all mitigation requirements at this intersection.

3. Goodrich Road at Greiner Road:

Improvements to this intersection will be necessary by the build-out 2032. The developer should be responsible for the full cost of construction of the westbound left turn lane and this approach's signal modifications. In addition, the developer should pay a portion of the cost for the additional left turn lanes on the remaining approaches along with signal modification costs. A combination of CIP/TIP funds and developer contributions should be used for infrastructure improvements at this intersection.

4. Goodrich Road at Clarence Center Road:

Improvements to this intersection should be made as soon as funding is available from eligible programs. Developer contributions from this project are not recommended..

5 . Main Street at Goodrich Road

Improvements to this intersection should be made under a larger reconstruction plan for the Main Street corridor which would include the construction of additional through lanes for the east and westbound approaches from Sheridan Drive to Gunnville Road. Funding would have to be secured from the TIP due to the size and cost of the project. If desired, the Town could collect a portion of the cost for improvements to the southbound approach on Goodrich Road from trips generated by developers in the area based on the number of trips that use the intersection.

1.5 Pedestrian/Bicycle Improvements

Section XII (pages 29 and 30) of the TIS discusses alternative transportation measures, including pedestrian and bicycle facilities within the project area. The proposed project site is located to the east of recreational facilities that are located on the west side of Goodrich Road which has sidewalk facilities that extend north to the intersection of Clarence Center Road. The DEIS states that it does not appear necessary to give special consideration to pedestrian related mitigation due to the minor pedestrian activity observed to field visits.

As the sidewalks will be constructed within the site, the project should provide connections to the sidewalk on the west side of Goodrich Road. Crosswalks and appropriate signage (MUTCD guidelines) should be provided from the project's proposed driveway connections to Goodrich Road. Sidewalks and crossings should be provided at Roll Road if a connection is made to this intersection. The SAFETEA-LU Transportation Enhancement Program should also be explored for future pedestrian and/bicyclist improvements within the study area.