Kimley»Horn

MEMORANDUM

To: Clyde A. Cuffy, P.E.
City of Port St. Lucie – Public Works Department

From: Alex Memering, PE
Kimley-Horn and Associates, Inc.

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Date: April 11th, 2024

Subject: SG8 TIA Addendum

Introduction

Kimley-Horn and Associates, Inc. has been retained to review and analyze the anticipated traffic impacts for the proposed Southern Grove (SG8) development, which is generally located in the northwest quadrant of Village Parkway and Becker Road, in Port St Lucie, Florida. The proposed project would include a home improvement store and a convenience store/gas station along with several outparcels and a multifamily residential site designated for future development. The Traffic Impact Analysis (TIA) (dated April 2024) assumes uses for these outparcels although no end users have been identified. The proposed development will be served by six (6) driveways, however, only five (5) driveways will be included in the first stage of development.

The TIA (dated April 2024) shows that the roadway segment of Becker Road from I-95 to Savona Boulevard will operate with a volume-to-capacity (v/c) ratio greater than 1.0. Therefore, this memorandum will evaluate the need for widening of Becker Road from I-95 to Savona Boulevard from a 4-lane to a 6-lane roadway assuming only the proposed home improvement store and a convenience store/gas station. As noted previously, the outparcels currently do not end users identified, and the conditions along this roadway segment will be reevaluated in the future when end users are determined for the remaining outparcels.

Initial Phase Trip Generation

The initial phase of the proposed SG8 Commercial development will consist of the uses summarized below. Outparcel and the adjacent residential development to the north were not included in this analysis. Trip generation rates for the proposed development at buildout were calculated using the 11th Edition of the Institute of Transportation Engineers' (ITE) *Trip Generation Manual, 11th Edition*. The ITE Land Use Codes (LUCs) used to estimate the project trips are summarized below.

- ±136,789 SF home improvement store [ITE LUC 862 – Home Improvement Superstore]
- ±5,915 SF gas station with 16 fueling pumps [ITE LUC 945 – Convenience Store/Gas Station (16-24 vehicle fueling pumps)]

The latest industry standards were referenced to evaluate the new external trips to be generated by the site at buildout in 2026. The latest adopted regional travel demand model was used to forecast the distribution of trips throughout the study area. Pass-by reductions were taken using procedures published in the ITE Trip Generation Manual, 11th Edition.

The initial phase of the proposed SG8 Commercial development is anticipated to generate approximately 8,466 daily trips and 760 PM peak hour trips (389 inbound / 371 outbound). It should be noted that utilizing the square footage of the proposed convenience market as the independent variable generates more trips compared to vehicle fueling positions and therefore provides a more conservative analysis. **Table 1** provides the daily and PM peak hour trip generation summaries for the project.

Table 1: Trip Generation Summary

Land Use	Intensity	Daily Trips	AM Peak Hour of Adjacent Street			PM Peak Hour of Adjacent Street		
			Total	In	Out	Total	In	Out
Proposed Development								
Home Improvement Superstore	136,789 SF	4,205	364	189	175	439	228	211
Convenience Store/Gas Station	5,915 SF	7,591	536	268	268	494	247	247
	Subtotal	*11,796*	*900*	*457*	*443*	*933*	*475*	*458*
Pass-By Traffic[2]	Daily AM PM							
Home Improvement Superstore	42% 42% 42%	1,766	153	76	77	184	92	92
Convenience Store/Gas Station	75% 76% 75%	5,693	407	204	203	371	185	186
	Subtotal	*7,459*	*560*	*280*	*280*	*555*	*277*	*278*
	Daily AM PM							
10% of Adjacent Street Traffic	10% 10% 10%	3,330	174	87	87	173	87	86
	Maximum Pass-By	*3,330*	*174*	*87*	*87*	*173*	*86*	*87*
Driveway Volumes		11,796	900	457	443	933	475	458
TOTAL NET NEW TRIPS		8,466	726	370	356	760	389	371

Note 1: Trip Generation was calculated using the data from ITE's Trip Generation Manual, 11th Edition.

Note 2: Pass-By rates calculated using the data from the Appendices of the ITE's Trip Generation Manual. Pass-By rate was capped at 10% of adjacent street traffic based upon traffic volume information along Village Parkway and Becker Road within the latest St. Luce TPO Traffic Counts and Level of Service Report 2023.

Home Improvement Superstore [ITE 862]

Daily	T = 30.74*(X); (X is SF/1000)
AM Peak Hour of Adjacent Street	T = 2.66*(X); (X is SF/1000); (52% in/ 48% out)
PM Peak Hour of Adjacent Street	T = 3.21*(X); (X is SF/1000); (52% in/ 48% out)

Convenience Store/Gas Station - GFA (5.5-10k) [ITE 945]

Daily	T = 1283.38*(X); (X is SF/1000)
AM Peak Hour of Adjacent Street	T = 90.59*(X); (X is SF/1000); (50% in/ 50% out)
PM Peak Hour of Adjacent Street	T = 83.57*(X); (X is SF/1000); (50% in/ 50% out)

Trip Distribution and Trip Assignment

Projected traffic demand of project trips on study roadways was derived with the use of the latest adopted regional travel demand model, as detailed in the TIA (dated April 2024). Daily model project distribution was referenced to manually assign project distribution at study area intersections and driveways in general accordance with model output. The uses included in the initial phase of development include a convenience store/gas station and a home improvement store.

Buildout Conditions Analysis – Year 2026

A PM peak hour roadway segment capacity analysis was performed for segments where the project traffic exceeds 5% or more of the capacity for the minimum acceptable level of service to determine buildout (2026) conditions.

Existing peak hour volumes for all study roadway segments were obtained from field collected traffic counts, or, where field collected counts were not available, volumes were obtained from St Lucie TPO's Traffic Data Management System. Background (2026) peak hour volumes were derived by adding vested trips, however where vested trips do not equate to at least a 3.22% growth rate, a 3.22% annual growth was applied to existing (2023) volumes. It should be noted that existing and background traffic information is provided within the TIA (dated April 2024). Buildout (2026) peak hour volumes were determined by applying project traffic to background (2026) directional peak hour volumes. The projected traffic volumes on the study roadway segments were compared to the adopted peak hour, peak direction maximum service volume.

All study segments are anticipated to operate with acceptable level of service during the PM peak hour under buildout traffic conditions (see **Table 2**). It should be noted that the Savona Boulevard from Becker Road to Paar Drive which is anticipated to operate with a v/c ratio greater than 1.0 during PM background traffic conditions per the TIA (dated April 2024). Widening from a 2-lane to 4-lane roadway allows for acceptable operating conditions under the background and buildout scenarios. No further roadway capacity deficiencies were identified due to project traffic.

Table 2: Buildout Roadway Conditions Analysis

IN 389 OUT 371

Roadway		PHPD MSV [1]	Peak Hour Trips = 817			Buildout Conditions			
			% Assign [2]	Project Trips		Buildout Volumes		V/C Ratio	Deficient ?
From	To			NB/EB	SB/WB	NB/EB	SB/WB		
SW Becker Road									
Village Parkway	I-95	3,170	54%	200	210	732	686	0.23	No
I-95	Savona Boulevard	2,000	36%	134	140	1,914	982	0.96	No
Savona Boulevard	Port St Lucie Boulevard	2,100	21%	78	82	1,624	1,698	0.81	No
Port St Lucie Blvd	Albacore St	2,100	8%	30	31	863	726	0.41	No
Village Parkway									
Becker Road	Discovery Way	1,710	54%	200	210	636	696	0.41	No
Savona Boulevard									
Becker Road	Paar Drive	1,630	8%	30	31	891	322	0.55	No
Paar Dr									
Savona Blvd	Port St Lucie Blvd	700	3%	11	12	179	179	0.26	No
Port St Lucie Boulevard									
Martin C.L.	Becker Rd	920	4%	15	16	864	864	0.94	No
Becker Road	Paar Drive	920	5%	19	19	867	868	0.94	No
Paar Drive	Tulip Boulevard	1,630	4%	15	16	864	864	0.53	No

Notes:

1. Peak hour peak directional service volumes were obtained from the St Lucie TPO Traffic Counts and Level of Service Report (2023).
2. The percent project traffic is the maximum across the segment.
3. Buildout project traffic volumes are the summation of future non-project traffic and project traffic.

Conclusion

Kimley-Horn and Associates, Inc. has been retained to review and analyze the anticipated traffic impacts for the proposed SG8 development, which is generally located in the northwest quadrant of Village Parkway and Becker Road, in Port St Lucie, Florida. The proposed project will include a home improvement store and a convenience store/gas station along with several outparcels designated for future development. The TIA (dated April 2024) assumes uses for these outparcels although no end users have been identified. The purpose of this addendum is to determine whether the roadway segment of Becker Road from I-95 to Savona Boulevard operates with volume-to-capacity ratio (V/C) greater than 1.0 during buildout traffic conditions assuming the initial phase of development.

The analysis conducted herein indicates the initial phase of development is not anticipated to generate traffic volume exceeding the v/c ratio of Becker Road from I-95 to Savona Boulevard and therefore widening of the roadway segment from 4-lanes to 6-lanes is not recommended for the first phase of development. As end users for outparcels are identified, future traffic studies will be required to determine if the widening of Becker Road from I-95 to Savona Boulevard is warranted.