

*TRAFFIC ANALYSIS REPORT*

Western Grove WG-1 Parcel  
Port St. Lucie, FL

*Prepared for:*  
Mattamy Homes

*Prepared by:*



Engineering & Planning, Inc.

1172 SW 30<sup>th</sup> Street, Suite 500  
Palm City, FL 34990  
(772) 286-8030

140009  
November 2020  
© MacKenzie Engineering and Planning, Inc.  
CA 29013

---

Shaun G. MacKenzie P.E.  
Florida License # 61751

City of Port St. Lucie Project No.

## ***EXECUTIVE SUMMARY***

MacKenzie Engineering and Planning, Inc. performed an analysis of the traffic impacts resulting from the proposed Western Grove WG-1 Parcel. The project is located at the northeast corner of Tradition Parkway & Fern Lake Drive, Port St. Lucie, Florida. The applicant proposes 131 single family dwelling units (DU).

The proposed project is expected to generate the following net new external trips and driveway trips:

- 1,333 daily, 98 AM peak hour (25 in/73 out), and 132 PM peak hour (83 in/49 out)

No turn-lanes into the projected are recommended.

## ***TABLE OF CONTENTS***

EXECUTIVE SUMMARY .....	i
TABLE OF CONTENTS.....	ii
LIST OF TABLES.....	iii
LIST OF FIGURES .....	iii
LIST OF EXHIBITS.....	iii
INTRODUCTION .....	4
INVENTORY AND PLANNING DATA .....	5
PROJECT TRAFFIC .....	5
Trip Generation.....	5
Internal Capture .....	5
Pass-by Trip Capture.....	5
ROADWAY ANALYSIS .....	6
TRAFFIC DISTRIBUTION .....	6
TRAFFIC ASSIGNMENT .....	6
DRIVEWAYS .....	8
Driveway Access .....	8
CONCLUSION.....	10
APPENDICES .....	11

***LIST OF TABLES***

Table 1. Trip Generation..... 6

***LIST OF FIGURES***

Figure 1. Site Location Map ..... 4  
Figure 2. Traffic Assignment..... 7  
Figure 3. Proposed Driveway Volumes ..... 9

***LIST OF EXHIBITS***

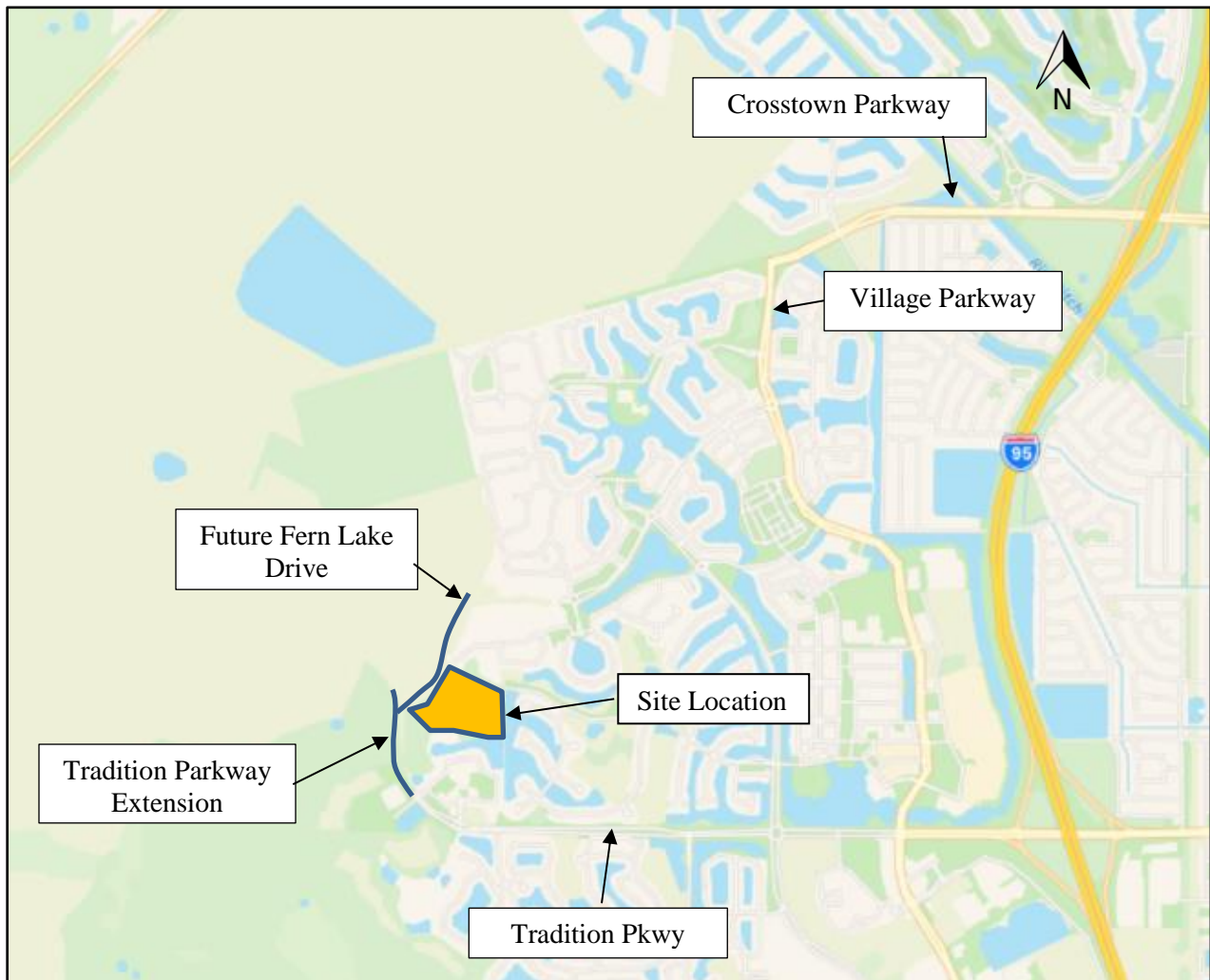
Exhibit 1. Trip Generation

## ***INTRODUCTION***

MacKenzie Engineering & Planning, Inc. was retained to prepare a traffic impact analysis for the Western Grove WG-1 Parcel. This document presents the methodology used and the findings of the traffic impact analysis. The analysis was conducted in accordance with the requirements of the City of Port St. Lucie.

This analysis has been prepared to evaluate traffic impacts resulting from 131 single family homes. The project is located at the northeast corner of Fern Lake Drive and Tradition Parkway in Port St. Lucie, Florida. Figure 1 illustrates the site location.

**Figure 1. Site Location Map**



## ***INVENTORY AND PLANNING DATA***

The traffic data used in this analysis includes:

- Roadway geometrics

Lucido & Associates provided site information.

## ***PROJECT TRAFFIC***

### ***Trip Generation***

The study uses trip generation rates for Single Family Detached (ITE Land Use 210) published in the Institute of Traffic Engineers' (ITE) report, *Trip Generation (10<sup>th</sup> Edition)*.

### ***Proposed Site***

The applicant proposes 131 single family DUs.

The proposed project is expected to generate the following net new external trips and driveway trips:

- 1,333 daily, 98 AM peak hour (25 in/73 out), and 132 PM peak hour (83 in/49 out)

### ***Internal Capture***

The site contains no internal capture.

### ***Pass-by Trip Capture***

The proposed pass-by capture is in accordance with ITE's report, *Trip Generation Handbook (3<sup>rd</sup> Edition)*, as shown in Exhibit 1.

Table 1. Trip Generation

Land Use	Intensity	Daily Trips	AM Peak Hour			PM Peak Hour		
			Total	In	Out	Total	In	Out
<b>Proposed Site Traffic</b>								
Single Family Detached	131 DU	1,333	98	25	73	132	83	49
Note: Trip generation was calculated using the following data:								
Land Use	ITE Code	Unit	Daily Rate	Pass-by Rate	AM Peak Hour		PM Peak Hour	
					in/out	Rate	in/out	Equation
Single Family Detached	210	DU	$\ln(T) = 0.92 \ln(X) + 2.71$	0%	25/75	$T = 0.71 (X) + 4.8$	63/37	$\ln(T) = 0.96 \ln(X) + 0.2$

\\win-6g6svlqi9ph\shared drive\data\jobs - share drive\140 - mattamy homes\009 - wg1\wg 1 trip gen - copy.xlsx]tgen

Copyright © 2020, MacKenzie Engineering and Planning, Inc.

## ***ROADWAY ANALYSIS***

Two roadways will need to be constructed/extended to provide service to this project. Tradition Parkway will need to be extend to Fern Lake Drive and Fern Lake Drive will need to be construction from Tradition Parkway the northern most access point.

## ***TRAFFIC DISTRIBUTION***

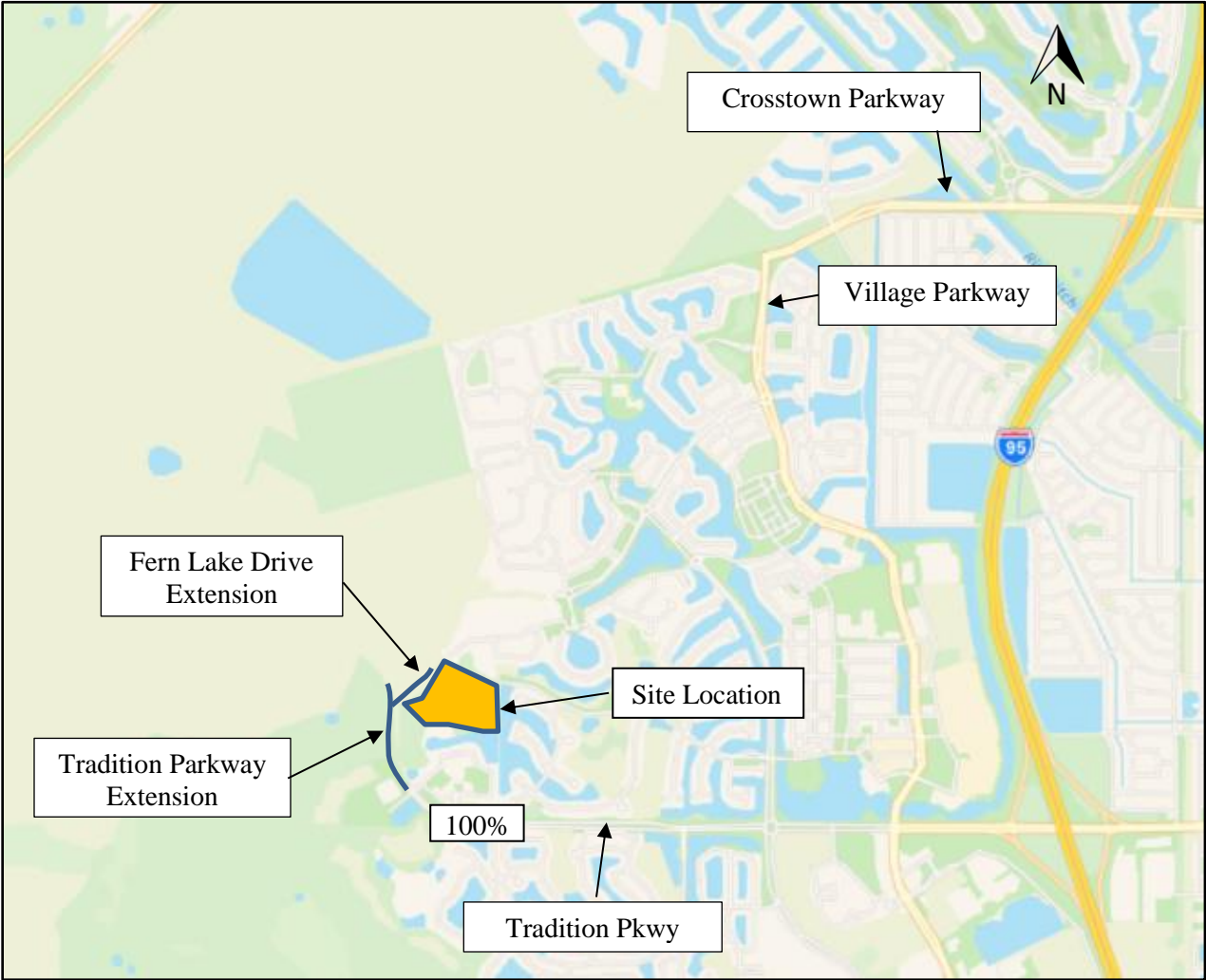
Traffic distribution and assignment was determined using engineering judgment, trip lengths, surrounding uses and review of the roadway network. The overall distribution is summarized by general directions and is depicted below:

EAST - 100 percent

## ***TRAFFIC ASSIGNMENT***

The distributed external trips for the project were assigned to the roadway network within the radius of influence. The project assignment is shown in Figure 2.

**Figure 2. Traffic Assignment**





## ***DRIVEWAYS***

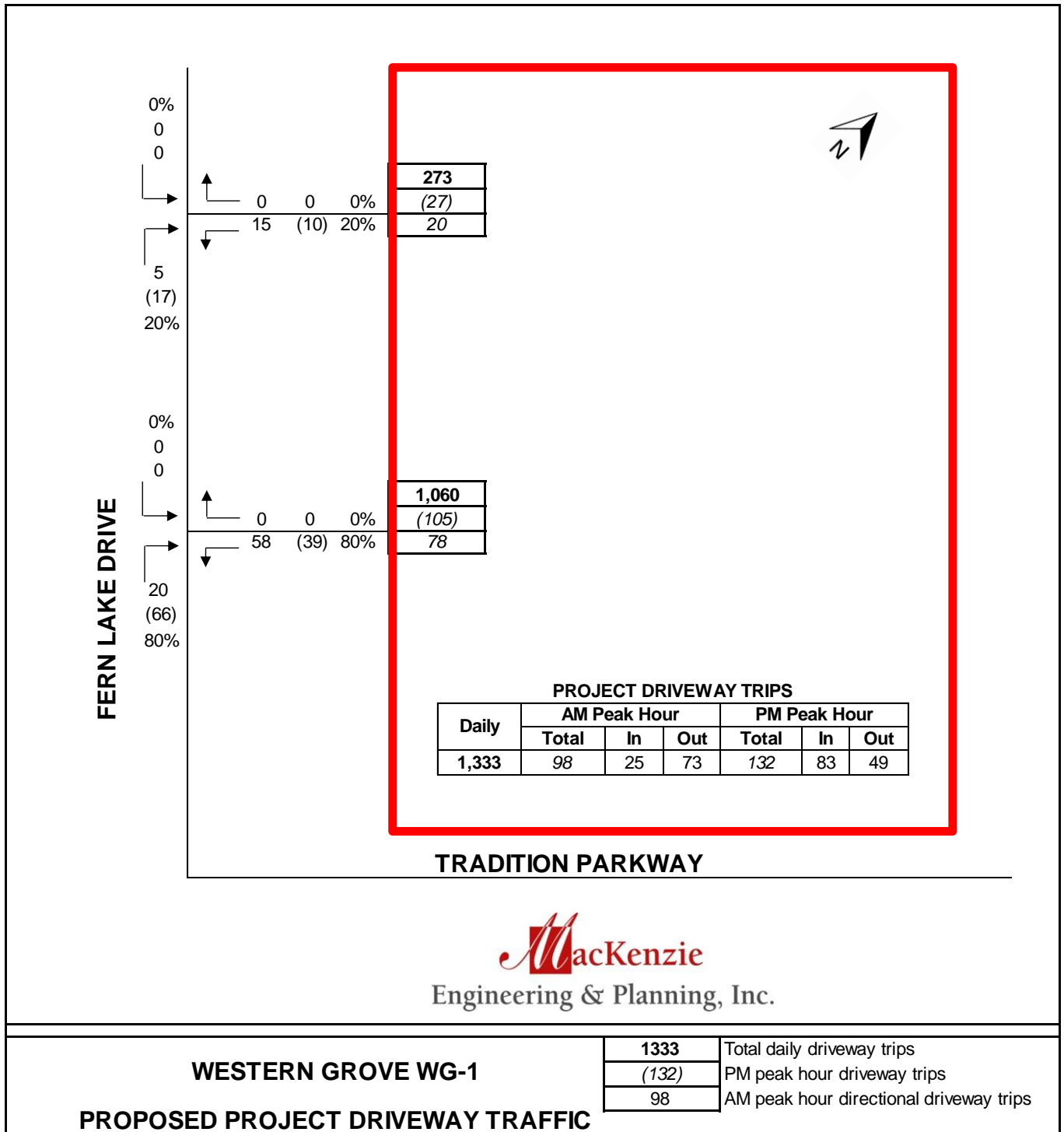
### ***Driveway Access***

The existing site has two points of access:

- D/W 1 – South Fern Lake Drive – Full opening
- D/W 2 – North Fern Lake Drive – Full opening

Left-turns into the project will remain at 0 until the northern leg of Fern Lake Drive is constructed. The southern driveway is projected to have 66 peak hour inbound right-turns. The 66 peak hour right-turns is less than FDOT's recommended right-turn threshold of 80 vehicles per hour. In addition, Fern Lake Drive is expected to be a minor collector roadway with limited through volumes.

**Figure 3. Proposed Driveway Volumes**



## ***CONCLUSION***

MacKenzie Engineering and Planning, Inc. performed an analysis of the traffic impacts resulting from the proposed Western Grove WG-1 Parcel. The project is located at the northeast corner of Fern Lake Drive and Tradition Parkway, Port St. Lucie, Florida. The applicant proposes 131 single family dwelling units (DU).

The proposed project is expected to generate the following net new external trips and driveway trips:

- 1,333 daily, 98 AM peak hour (25 in/73 out), and 132 PM peak hour (83 in/49 out)

No turn-lanes into the projected are recommended.

## ***APPENDICES***

A- ITE Trip Generation 10<sup>th</sup> Ed.: Single Family Detached (Land Use 210)

B- Site Plan

## Single-Family Detached Housing (210)

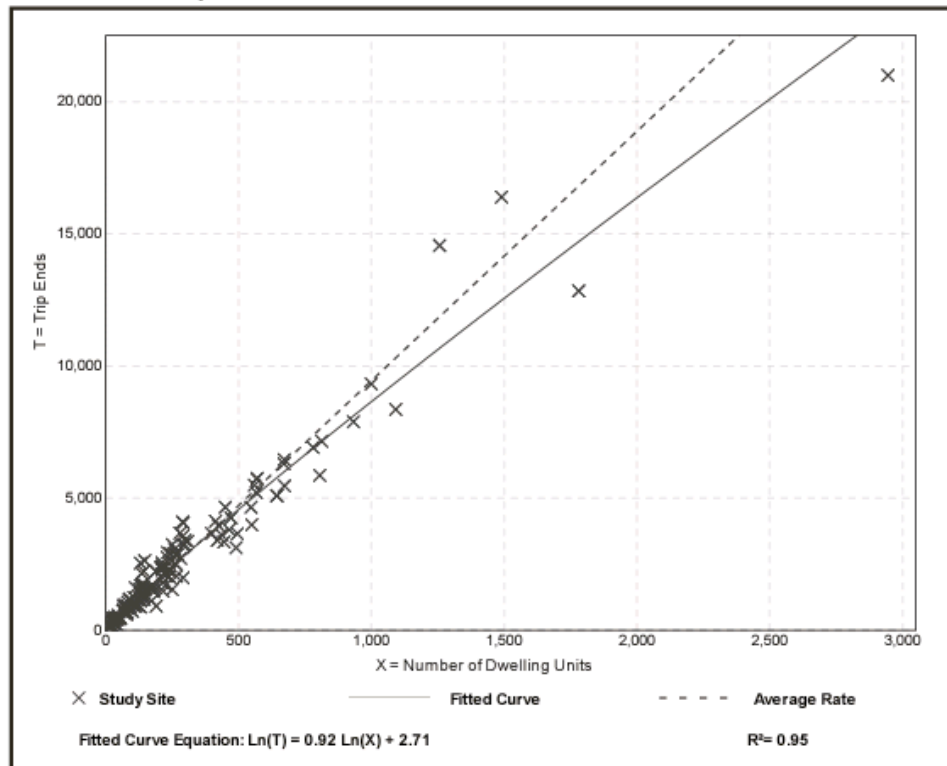
**Vehicle Trip Ends vs: Dwelling Units**  
**On a: Weekday**

**Setting/Location: General Urban/Suburban**  
Number of Studies: 159  
Avg. Num. of Dwelling Units: 264  
Directional Distribution: 50% entering, 50% exiting

### Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.44	4.81 - 19.39	2.10

### Data Plot and Equation



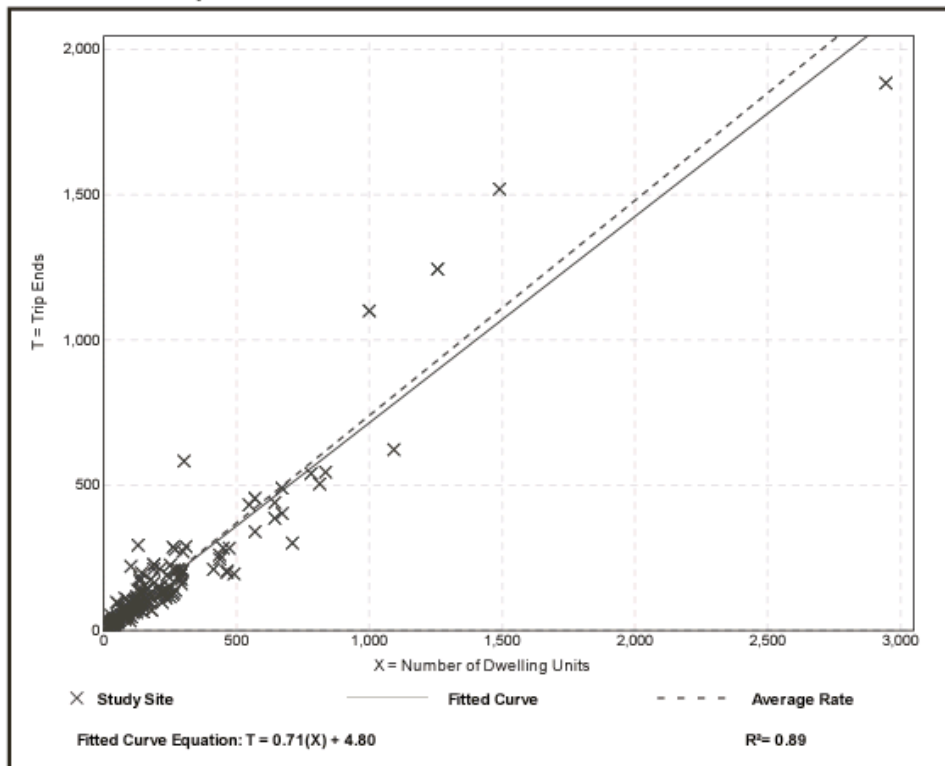
## Single-Family Detached Housing (210)

**Vehicle Trip Ends vs: Dwelling Units**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 7 and 9 a.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 173  
 Avg. Num. of Dwelling Units: 219  
 Directional Distribution: 25% entering, 75% exiting

### Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.74	0.33 - 2.27	0.27

### Data Plot and Equation



## Single-Family Detached Housing (210)

**Vehicle Trip Ends vs: Dwelling Units**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 190  
 Avg. Num. of Dwelling Units: 242  
 Directional Distribution: 63% entering, 37% exiting

### Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.99	0.44 - 2.98	0.31

### Data Plot and Equation

