

# Crash Data Collection & Analysis Using GIS



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Tony Harrison

SERUG Conference 2007  
Jacksonville, Florida

# **Seminole County's Experience**

## **Crash Data Collection**

**Linking Crash Maps and Traffic Studies  
Documents to GIS**

# Overview

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**Improve safety for motorists, cyclists, pedestrians and citizens by:**

- **Helping provide the tools to make our traffic engineers and technicians become more efficient when conducting analysis.**
- **Predicting and preventing future crashes.**
- **Improving overall efficiency and safety of the roadway network in Seminole County.**

# Seminole County, Florida

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- **Seminole County is located in Central Florida, north of Orlando.**
- **Population in 2006 was estimated at 403,335 with population expected to increase 9% by 2011.**
- **There are seven cities located within Seminole County boundaries.**
- **There are 350 traffic signals and 2,302 miles of roadway.**
- **There are 370 traffic count locations that we receive data from annually.**
- **Seminole County has 73 schools.**



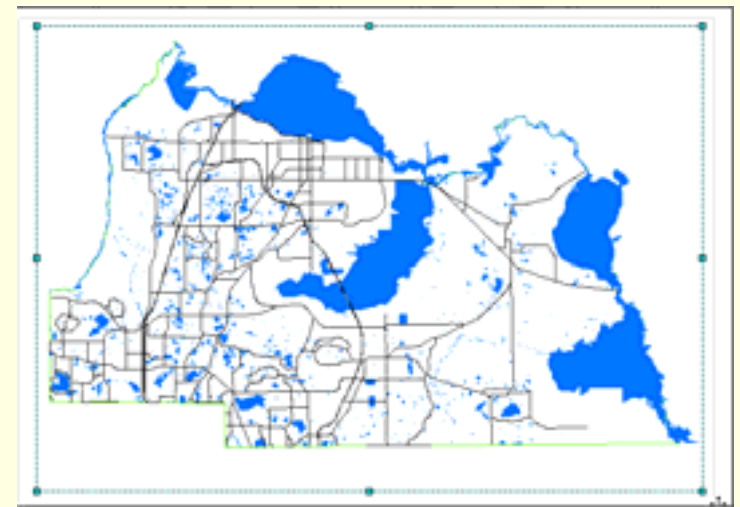
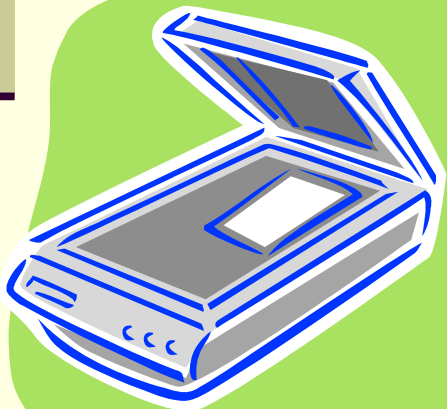
# Seminole County Crash Statistics 2006



- 19,362 drivers and pedestrians involved in crashes
- Seminole County law enforcement responded to 10,033 crashes, not including private property crashes.
- Estimated cost in vehicle damages was \$34,956,868.
- Total injuries estimated at 2,200
- Total fatalities 37



# Pulling It Together





# Seminole County Crash Database

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- **Microsoft Access**
- **Approximately 10,600 long and short-form crash reports from 7 city law enforcement agencies, Florida Highway Patrol, and the Sheriff's Office.**
- **5 sections:**
  - **Crash**
  - **Section**
  - **Passengers**
  - **Citations**
  - **Property Damage**



# Crash Reporting Problems

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- Missing crash reports
- Incorrect or missing data from the police officers in the field
- Data entry, filing errors by office staff
- Node number inconsistency





# Tables Needed for Crash Map

Attributes of crashes

FID	Shape *	CRASHNUM	Unknown
0	Point	05397222	
1	Point	05660230	
2	Point	08532593	
3	Point	08537853	
4	Point	75078441	
5	Point	75075656	
6	Point	07104596	
7	Point	07104698	
8	Point	07097319	
9	Point	07104597	
10	Point	73991502	
11	Point	094009791	
12	Point	75233911	
13	Point	03301076	
14	Point	03317407	
15	Point	03301083	

Attributes of TBL\_SECTION

CRASH_NUM	VEH_YEAR	VEH_MAKE	VEH_TYPE	D_P_DOB	INJURY
76533029	<Null>	<Null>	<Null>	2/2/1951	5
76906106	2006	SUZI	01	11/9/1983	5
76910701	2003	MAZD	01	8/10/1985	5
05565793	1998	SUZU	11	12/3/1954	5
76906107	<Null>	<Null>	<Null>	6/10/1963	5
76906109	1996	CHEV	01	7/7/1929	5
76908701	2006	BMW	01	12/6/1983	5
76910533	2006	AL	11	5/23/1957	5
71417764	1998	FORD	01	11/17/1920	5
75280875	2005	BMW	01	8/29/1964	5
73652552	1989	HARL	11	11/1/1958	5
76531118	<Null>	<Null>	<Null>	8/8/1971	5
76530694	1991	MERC	01	3/5/1957	5
76533043	<Null>	<Null>	<Null>	3/4/1969	5
76533062	2007	SUSK	11	9/8/1988	5
76906110	2007	SUZU	01	10/20/1970	5

Attributes of so\_nodes

FID	Shape *	NODE_NUM	ST1	ST2
7558	Point	2012	E SR 46	RICHMOND AVE
4912	Point	2013	RIDGE DR	W 25TH ST
4724	Point	2014	W LAKE MARY BLVD	W RIDGE DR
273	Point	2015	NURSERY RD	RIDGE ST
281	Point	2016	RIDGE ST	OAK LN
3677	Point	2017	TERRACE DR	RIDGEWOOD AVE
10257	Point	2018	S SWEETWATER COVE BL	RIDGEWOOD DR
10250	Point	2019	S SWEETWATER COVE BL	RIDGEWOOD DR
8646	Point	2020	RAYMOND AVE	E RIDGEWOOD ST
7646	Point	2021	JITWAY	RIGHTWAY AVE
7509	Point	2022	E SR 46	RIGHTWAY AVE
5237	Point	2023	RINEHART RD	ANDERSON LN
5253	Point	2024	W CLUB BLVD	RINEHART RD
5277	Point	2026	GREENWOOD BLVD	W LAKE MARY BLVD
5240	Point	2027	RINEHART RD	PINE CIRCLE CIR
5267	Point	2030	RINEHART RD	N SHIN DR

Attributes of TBL\_CRASH

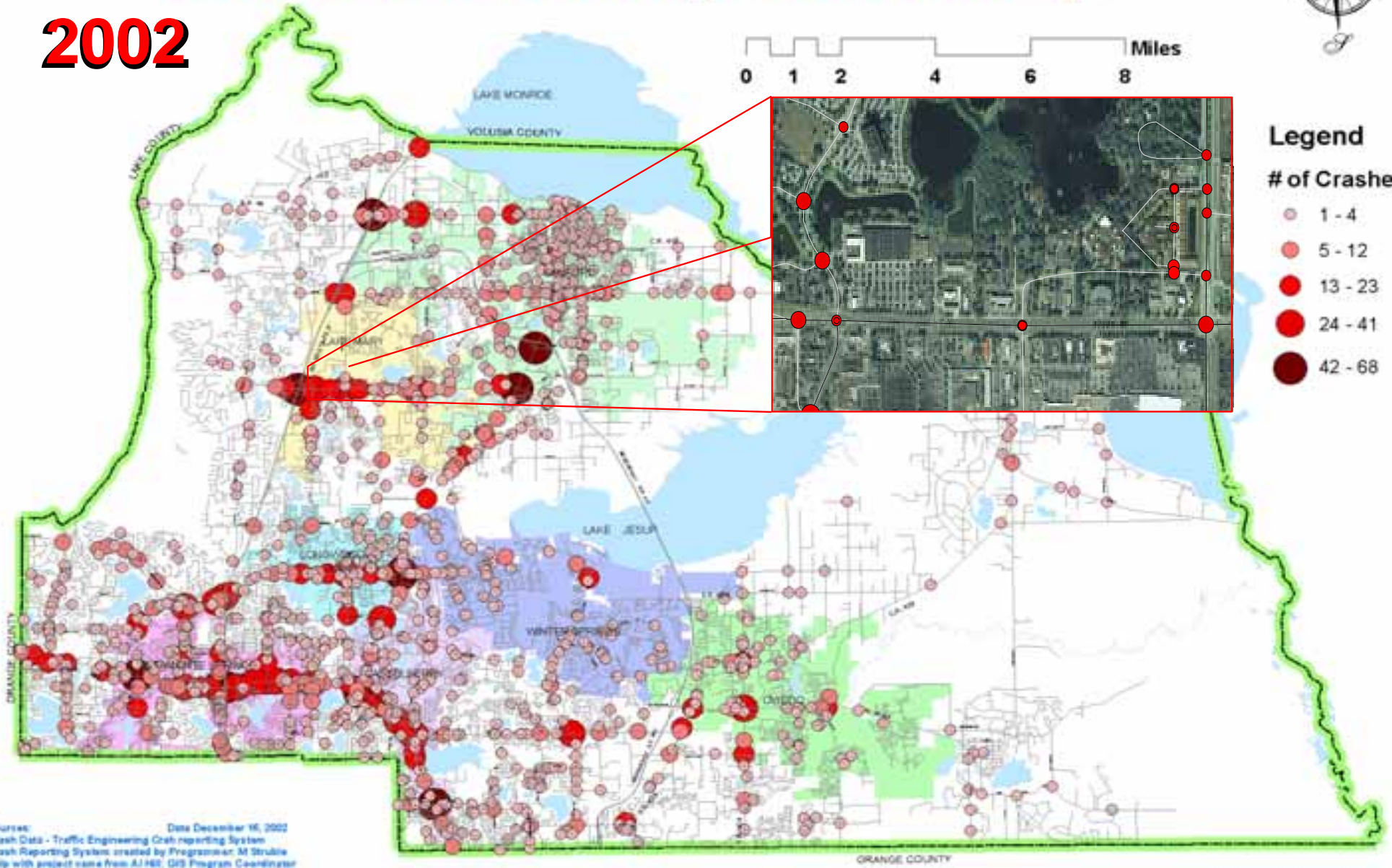
CRASH_NUM	CRASH DATE	CRASH HOUR	CRASH MIN	AM OR PM
01040744	9/20/2006	12	48	A
01432448	5/12/2008	04	34	P
01432519	5/1/2006	05	35	P
01432526	7/25/2006	06	01	P
01432647	1/21/2006	12	40	P
01432674	7/17/2008	12	20	P
01432676	1/3/2006	06	33	A
01468009	6/1/2006	04	00	P
01468011	7/21/2006	09	00	A
01468089	5/16/2006	06	05	P
01468092	7/13/2006	05	03	P
01468097	11/26/2006	07	25	P
01468101	2/27/2006	11	20	P
01468102	3/24/2006	03	05	A
01468103	3/27/2006	09	30	P
01468104	4/10/2006	05	08	P
01468105	8/1/2006	07	35	P
01468107	7/23/2006	09	10	P
01468109	11/29/2006	06	40	P

# Seminole County Crash Map

**2002**



0 1 2 4 6 8 Miles

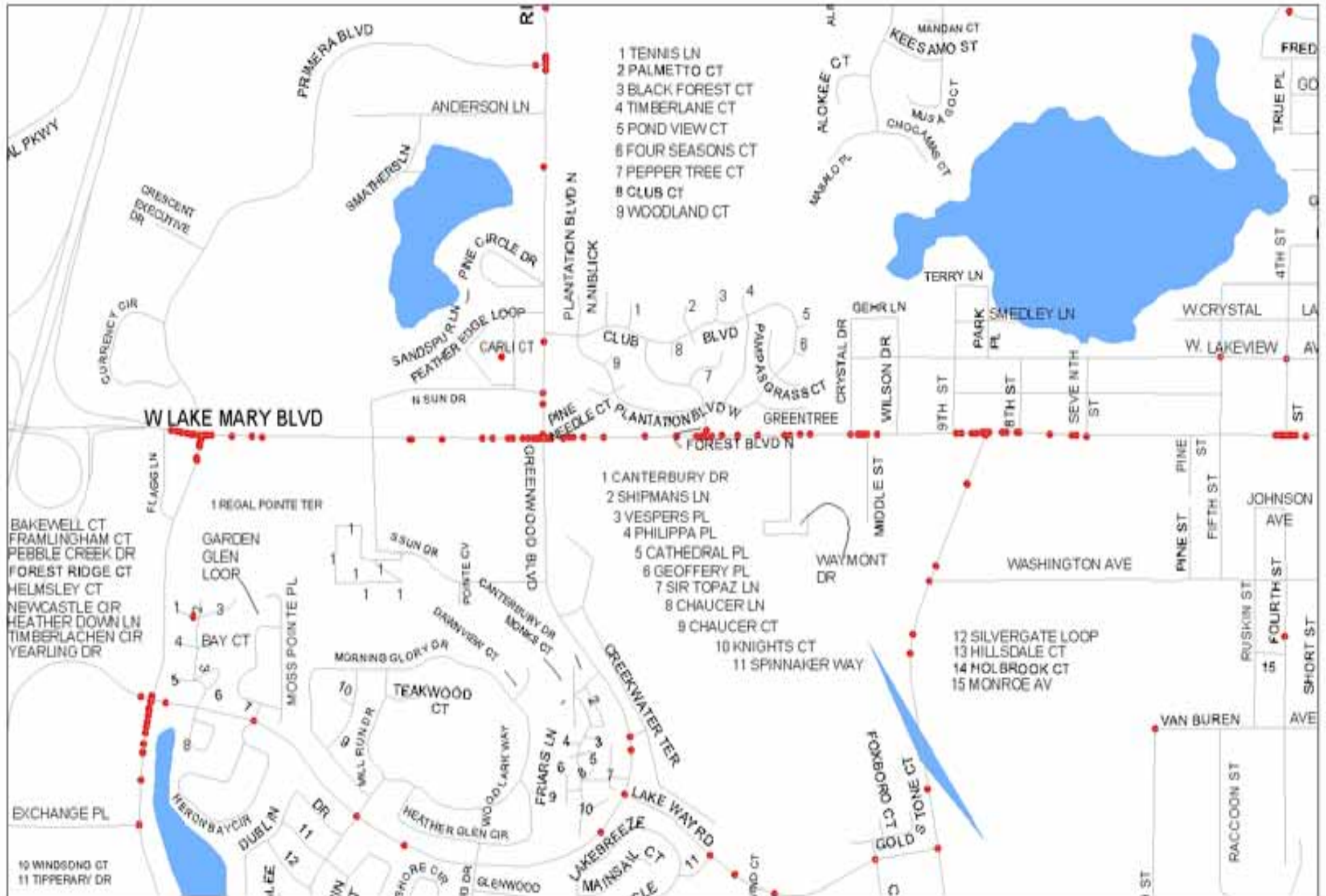


Source: Date December 16, 2002  
 Crash Data - Traffic Engineering Crash Reporting System  
 Crash Reporting System created by Program Manager M Strubbe  
 Help with project came from AJ HES, GIS Program Coordinator  
 All other data Layers from GIS data CD and GIS data library  
 Prepared By: Seminole County Traffic Engineering (Studies)  
 Drawing by: T. Harrison File name: Crash Map.mxd

**Dots represent All types of crashes near represented locations all over the county.**



# Lake Mary Boulevard Offset Map 2004



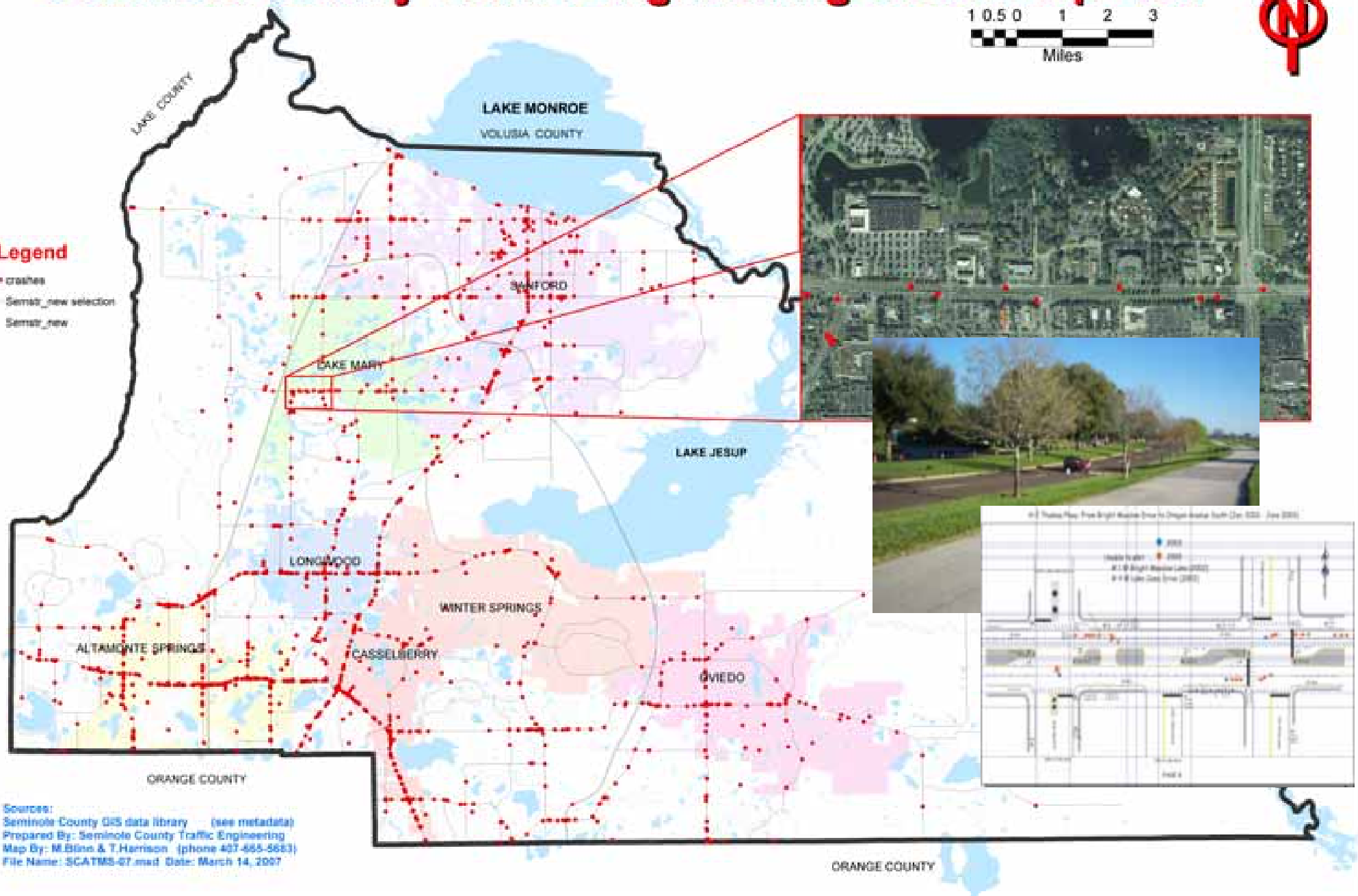
# Seminole County Traffic Engineering Crash Map 2007



1 0.5 0 1 2 3  
Miles

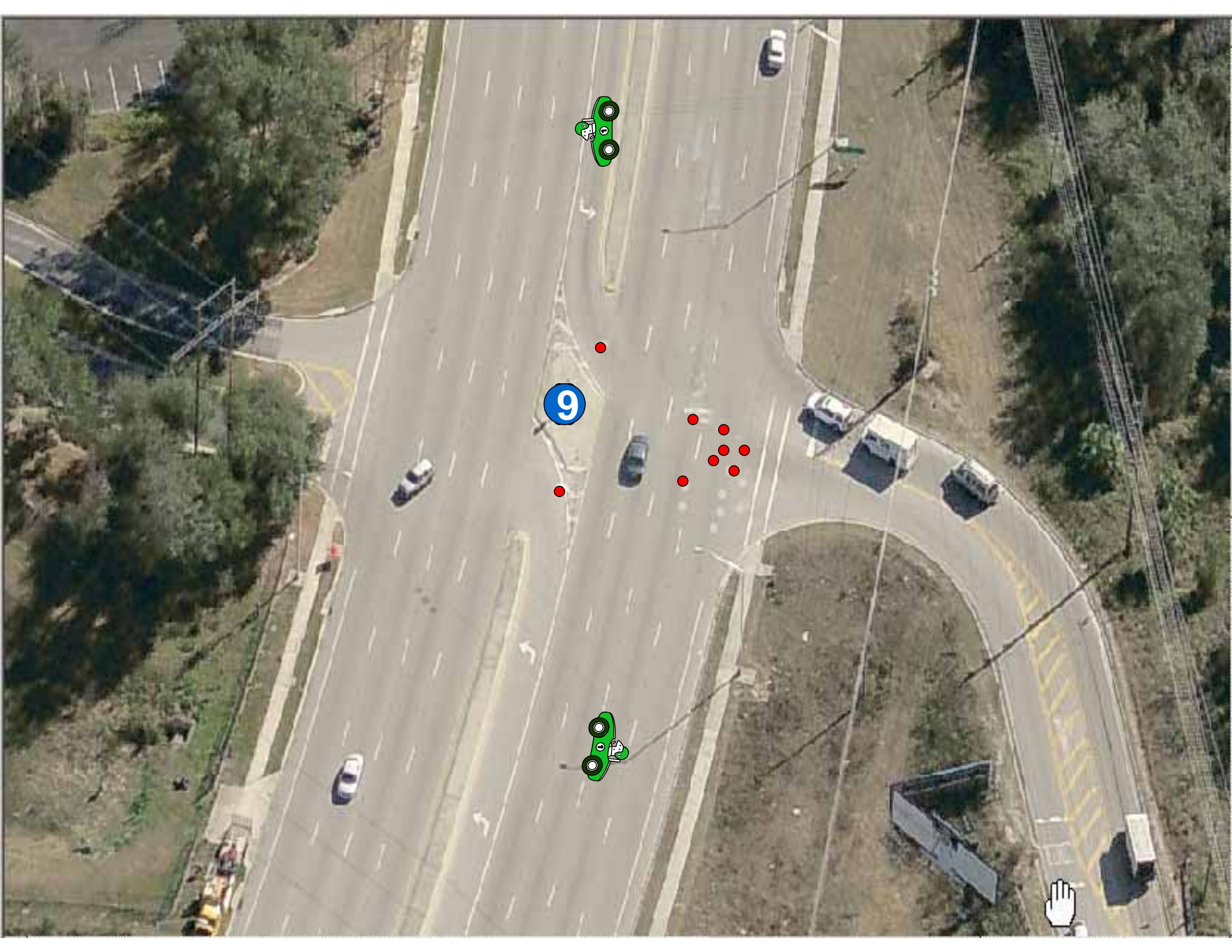
## Legend

- crashes
- Semco\_new selection
- Semco\_new



Sources:  
Seminole County GIS data library (see metadata)  
Prepared By: Seminole County Traffic Engineering  
Map By: M. Blinn & T. Harrison (phone 407-665-5683)  
File Name: SCATMS-07.mxd Date: March 14, 2007





# Seminole County Traffic Engineering Signal Network

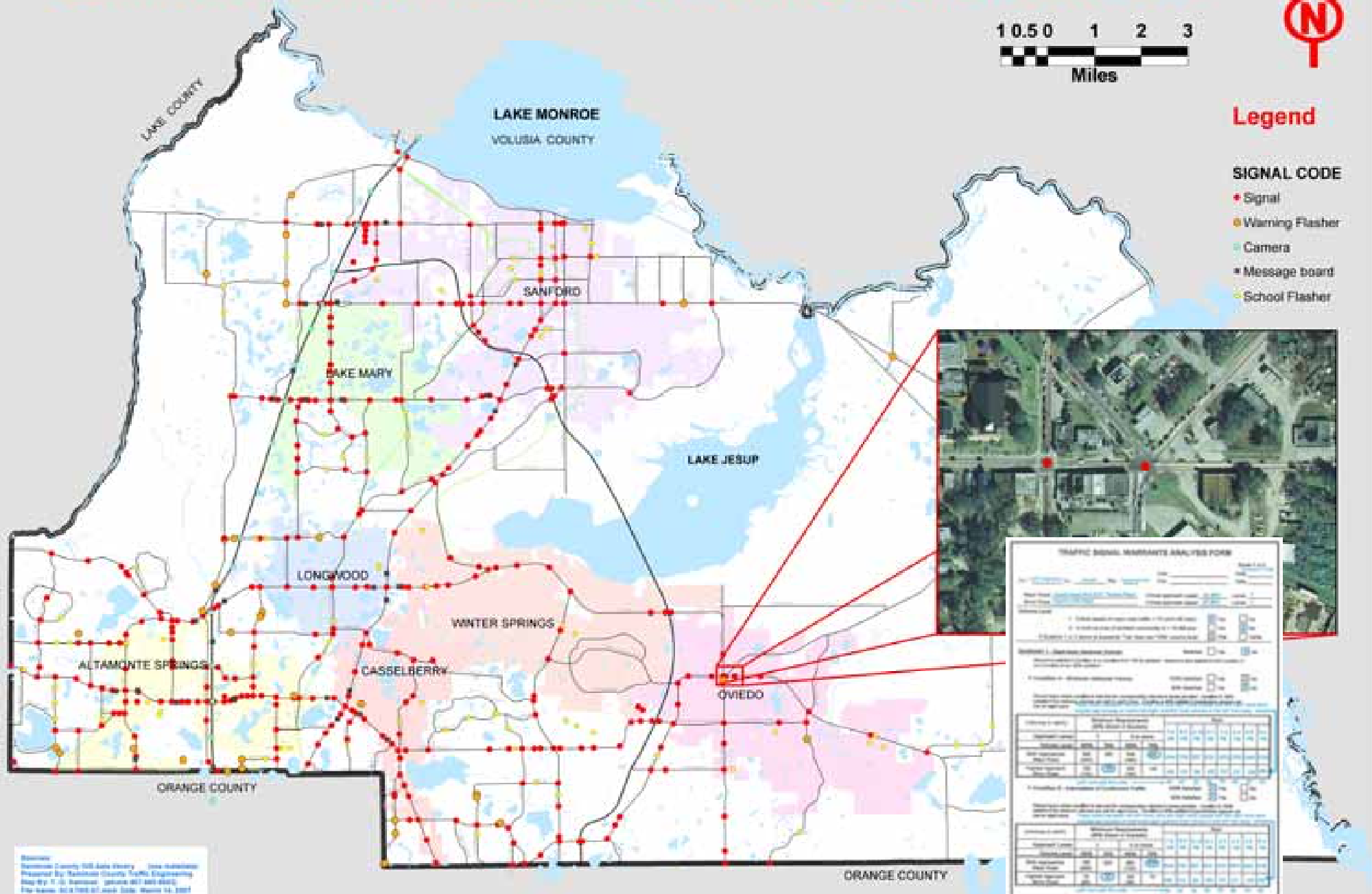
1 0.5 0 1 2 3  
Miles



## Legend

### SIGNAL CODE

- Signal
- Warning Flasher
- Camera
- Message board
- School Flasher



Seminole County Traffic Engineering  
Prepared By: Seminole County Traffic Engineering  
Map By: T. J. Semmes - Phone: 407-898-6600  
File Name: 1019 07-04-08 Date: March 14, 2007

TRAFFIC SIGNAL WARRANT ANALYSIS FORM

Project Name: \_\_\_\_\_ Date: \_\_\_\_\_

Signal Location: \_\_\_\_\_

Signal Type: \_\_\_\_\_

Signal Code: \_\_\_\_\_

Signal Description: \_\_\_\_\_

Signal Justification: \_\_\_\_\_

Signal Recommendation: \_\_\_\_\_

Signal Implementation: \_\_\_\_\_

Signal Maintenance: \_\_\_\_\_

Signal Funding: \_\_\_\_\_

Signal Impact: \_\_\_\_\_

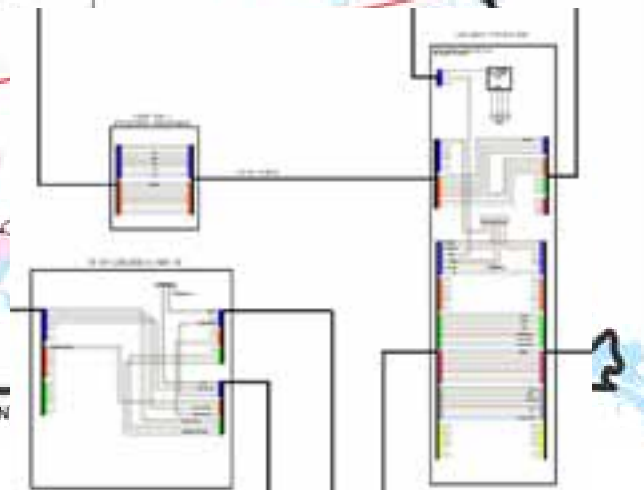
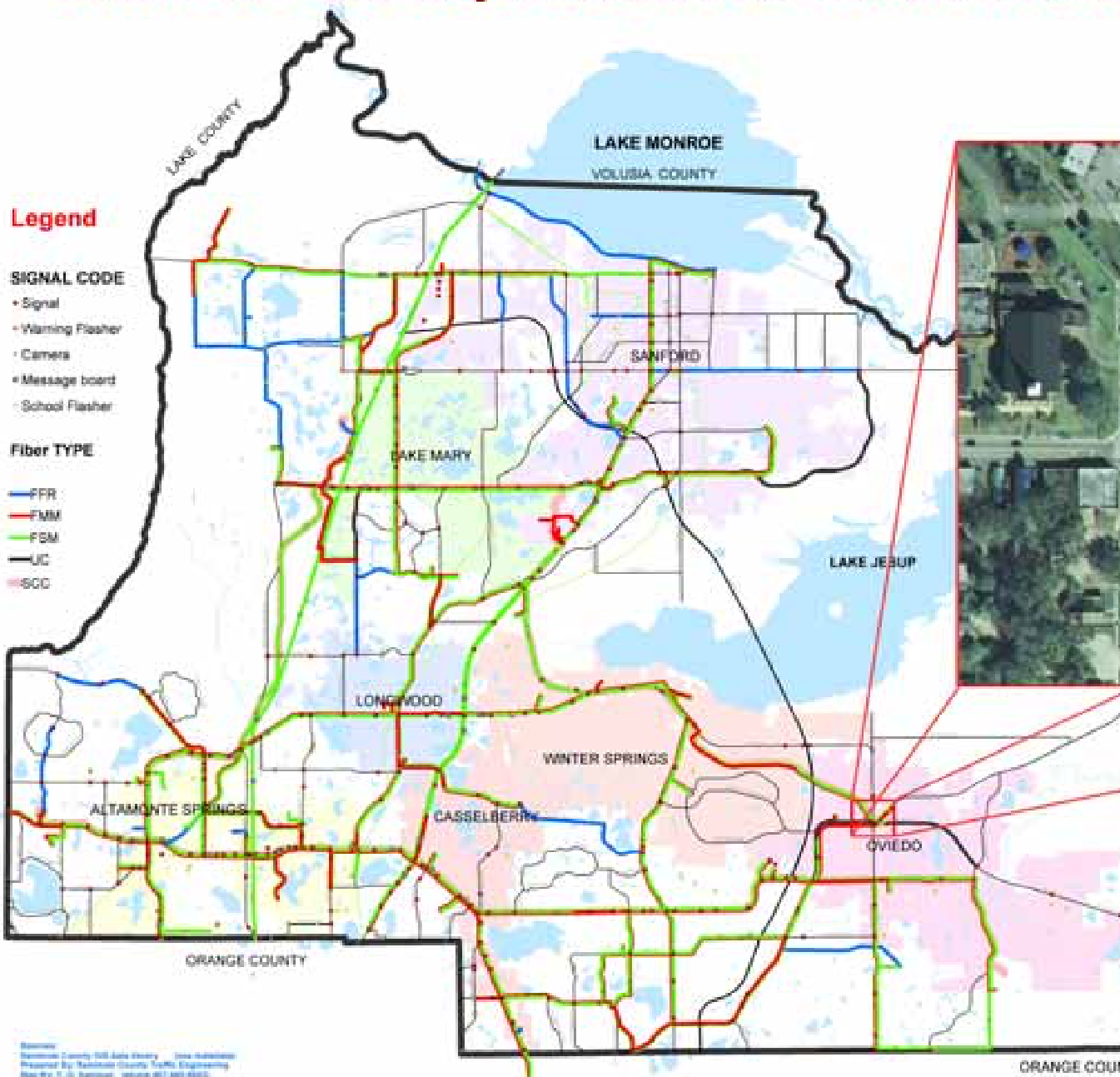
Signal Summary: \_\_\_\_\_



# Seminole County Advanced Traffic Management System



1 0.5 0 1 2 3  
Miles



Seminole County Traffic Engineering  
Seminole County Traffic Engineering  
Seminole County Traffic Engineering  
Seminole County Traffic Engineering  
Seminole County Traffic Engineering



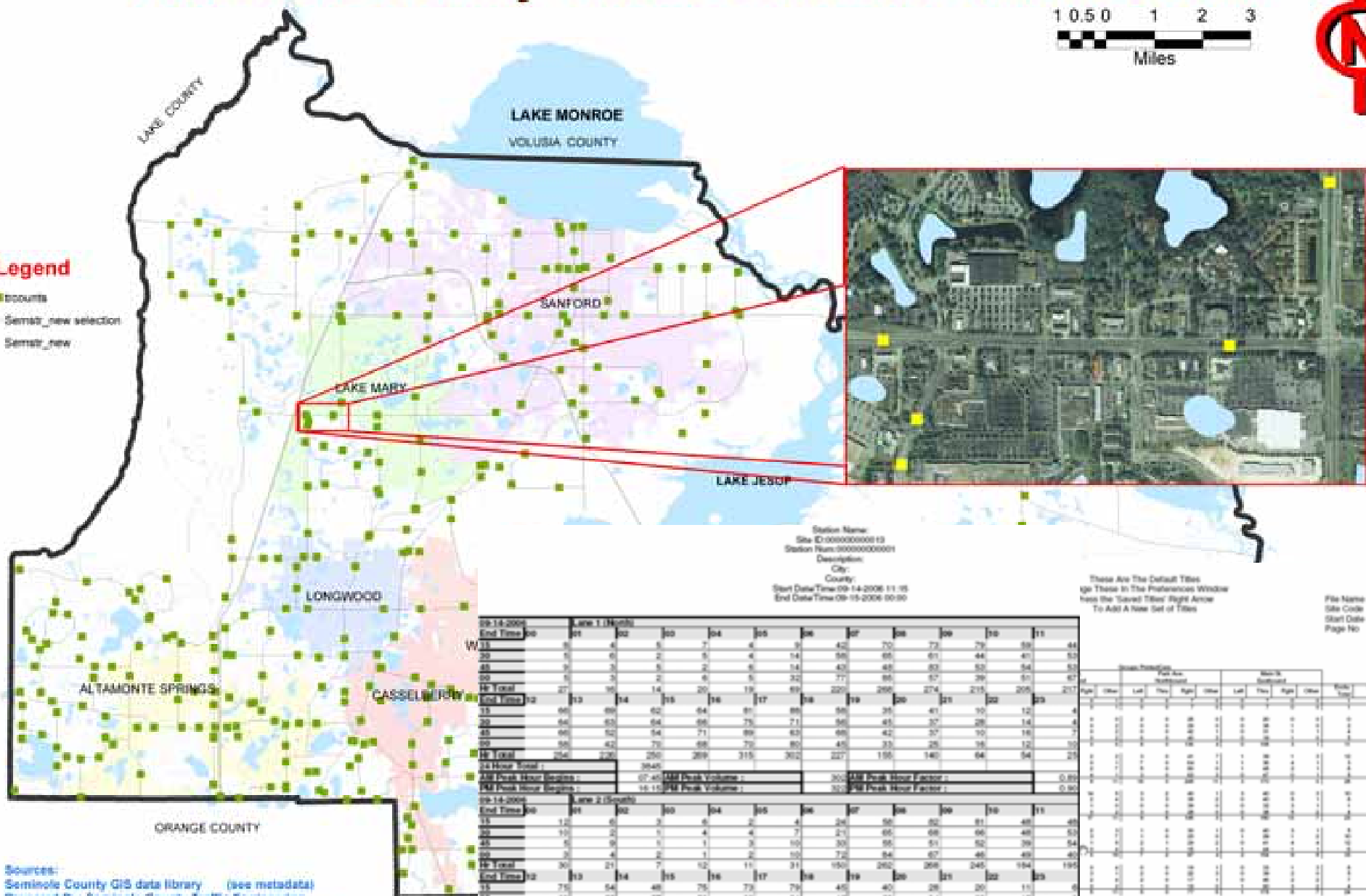
# Seminole County Traffic Count Station Location

1 0.5 0 1 2 3  
Miles



## Legend

- counts
- Semco\_new selection
- Semco\_new



Station Name:  
Site ID: 000000000013  
Station Num: 000000000001  
Description:  
City:  
County:  
Start Date/Time: 09-14-2006 11:15  
End Date/Time: 09-15-2006 00:00

These Are The Default Titles  
go There In The Preferences Window  
from the 'Saved Titles' Right Arrow  
To Add A New Set of Titles

File Name: sample.htm  
Site Code: 11111111  
Start Date: 12/07/1994  
Page No: 1

09-14-2006 Lake 1 (North)											
End Time	01	02	03	04	05	06	07	08	09	10	11
00	5	4	5	7	4	3	42	72	72	73	58
05	5	6	2	5	4	14	58	65	61	44	47
10	3	3	5	2	5	14	42	48	52	52	54
15	5	3	2	6	5	32	71	85	57	39	67
16 Total	27	16	14	20	19	69	220	266	274	215	215
End Time	01	02	03	04	05	06	07	08	09	10	11
12	66	69	62	64	81	88	96	35	41	10	12
17	64	62	64	66	73	71	96	45	37	28	14
22	66	62	64	71	89	63	88	42	37	10	16
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667	66	42	73	68	72	80	45	33	25	16	12
672	66	42									



## PUBLIC WORKS

## TRAFFIC ENGINEERING

## Crash Map



## RESOURCES

[Department Information](#)
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[Roads-Stormwater](#)
[Traffic Engineering](#)

- [Announcements](#)
- [Advanced Traffic Management System](#)
- [Decorative Sign Agreement](#)
- [Feedback](#)
- [Common Questions \(FAQ\)](#)
- [Maintenance of Traffic](#)
- [Permits](#)
- [Signal Locations](#)
- [Traffic Calming](#)
- [Traffic Counts](#)
- [Traffic Enforcement Agreement](#)
- [Traffic Safety](#)

[Trails](#)

## CONTACT INFORMATION

## Traffic Engineering

140 Bush Loop  
Sanford, FL 32773  
[View Map](#)  
Phone: (407) 665-6677

## Public Works

520 West Lake Mary Blvd  
Suite 200  
Sanford, FL 32773  
[View Map](#)  
Phone: (407) 665-6601

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Seminole County Government 1101 East First Street Sanford, FL 32771 407-665-0311

[Employee Access](#)





# Acknowledgements

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**I would like to thank the following for their help in this presentation:**

**Tina Robinson  
Anna Pelletier  
Lakshmi Sankaran  
Al Hill**

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# THE END



**Seminole County  
Traffic Engineering**