



# **GIS to the Rescue: “Getting Emergency Responders to the Right Location”**

***Kurt Bickle***  
***Mapping Division Manager***



**INCOG** is a voluntary association of local governments in the Tulsa metropolitan area in northeast Oklahoma. Providing planning and coordination services in such areas as Land Use, Transportation, Community and Economic Development, Environmental Quality, Public Safety, Mapping/GIS and Services for Older Adults.

Serving Creek, Osage, Rogers, Tulsa, and Wagoner Counties and more than 50 cities and towns located in those counties, and the Creek and Osage Nations.





# **Tulsa Region E-911 Street Mapping and MSAG Maintenance**

**Why you should marry someone  
who can spell very well!**



# Calling 9-1-1



Regional Partners.  
Regional Solutions.



# Calling 9-1-1



- 1. Call Routed to the Correct 911 Center**
- 2. Caller's Address Appears on Dispatcher's Screen**
- 3. Caller's Location Appears on Dispatcher's Street Map**

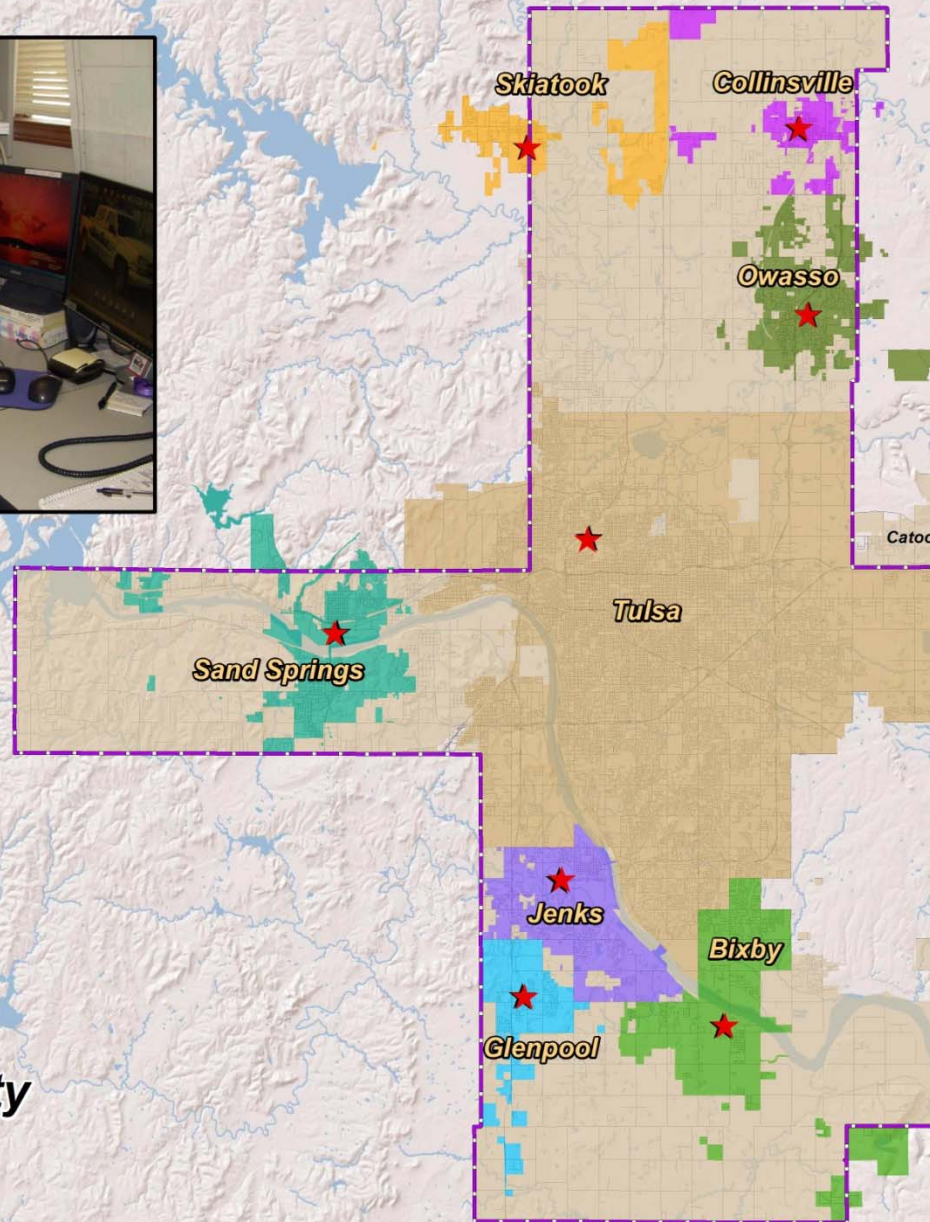


# E-911 Dispatch Centers



**Bixby**  
**Claremore**  
**Collinsville**  
**Glenpool**  
**Jenks**  
**Owasso**  
**Sand Springs**  
**Skiatook**  
**Tulsa City and County**

★ E-911 Dispatch Centers





- 1. Update and Maintain Emergency Service Zone Boundaries**
- 2. Update and Maintain E-911 Telephone Database**
- 3. Update and Maintain E-911 Street Layer**

# Necessary Information:

- **Annexation Ordinances**
- **De-Annexation Ordinances**
- **New Subdivision Plats**
- **New Roads**
- **Road Closings**
- **Fire District Changes**
- **Ambulance District Changes**

# Emergency Service Zone Boundaries (ESN)



# Emergency Service Zones (ESN)

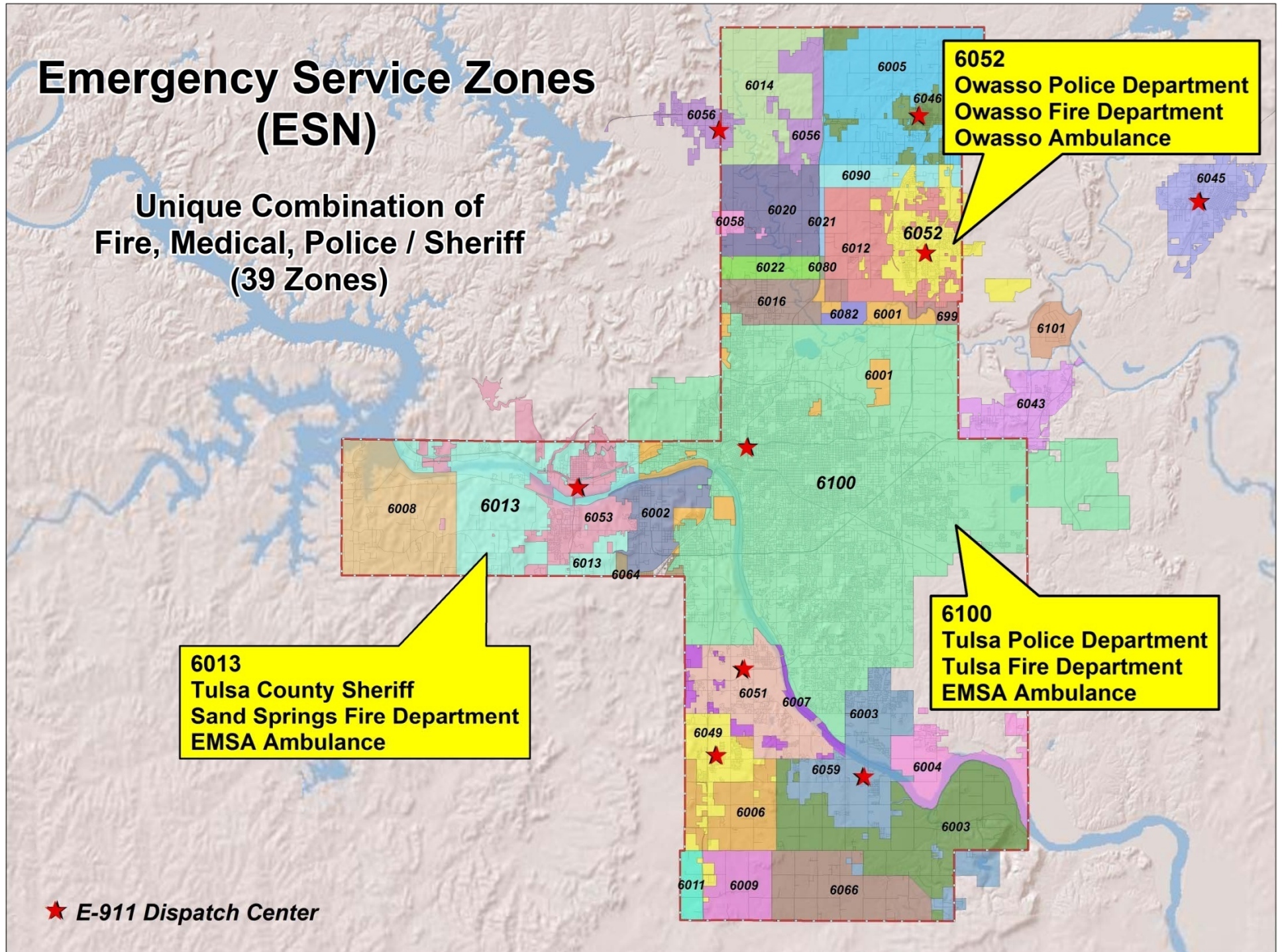
Unique Combination of  
Fire, Medical, Police / Sheriff  
(39 Zones)

**6052**  
Owasso Police Department  
Owasso Fire Department  
Owasso Ambulance

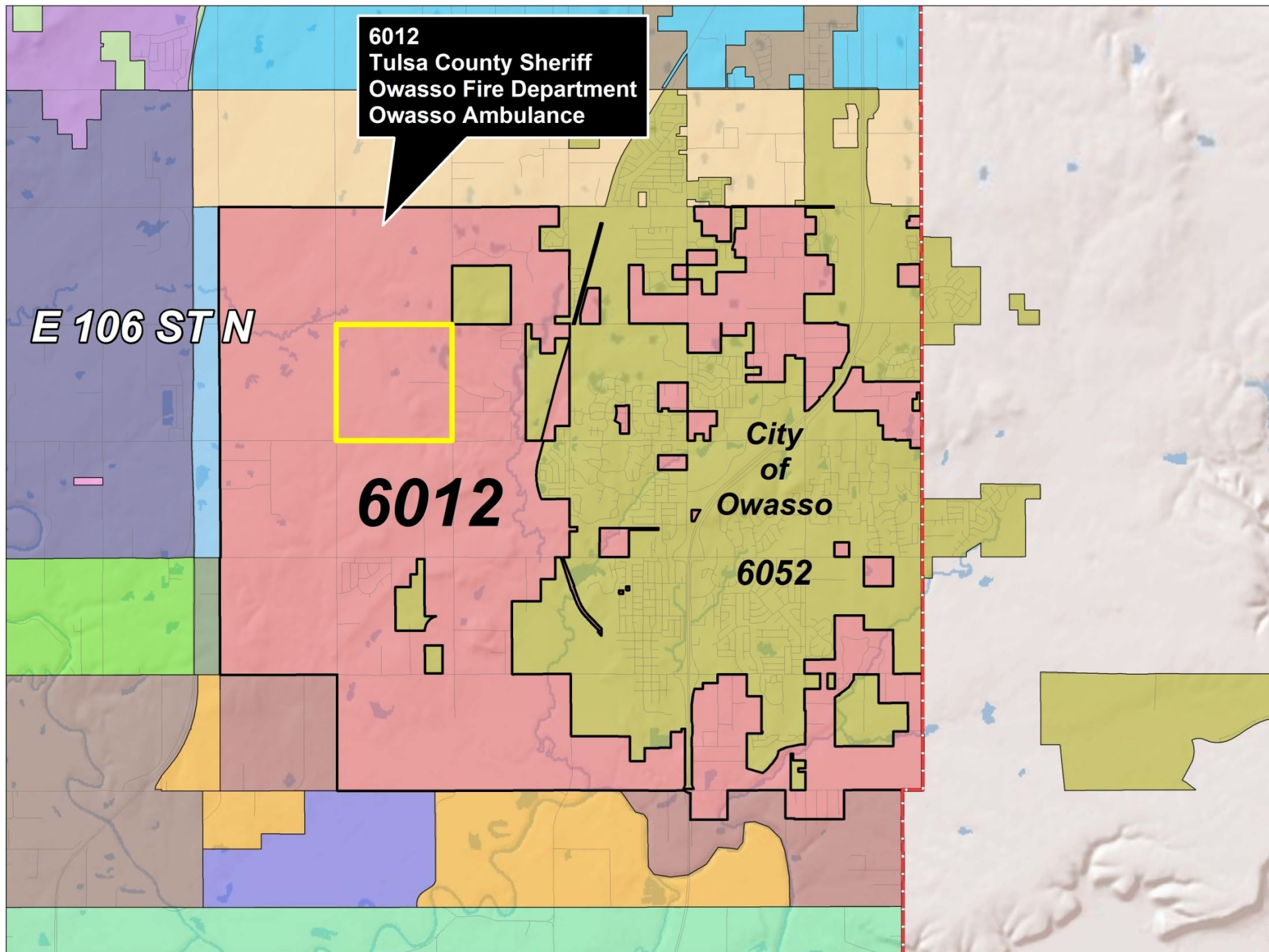
**6100**  
Tulsa Police Department  
Tulsa Fire Department  
EMSA Ambulance

**6013**  
Tulsa County Sheriff  
Sand Springs Fire Department  
EMSA Ambulance

★ E-911 Dispatch Center

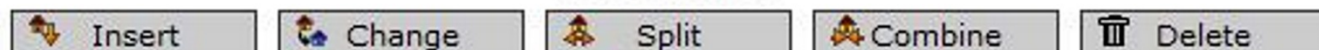






**MSAG - Details**

To update this MSAG record or to insert a new record, use the MSAG Toolbar buttons.

**MSAG Toolbar****MSAG Record**

Pre-Dir	Street	St. Sfx.	Post-Dir	
N	LEWIS AVE			
Community		County	State	
TULSA		143	OK	
TN Comment	MSAG Comment			
	CHG ESN FROM 100			
O/E/B	Lo House #	Hi House #	ESN	Exchg.
B	1100	— 2457	6100	TUL

**Related TN(s)**[Related MSAG CR\(s\)](#)



Viewing record 1 of 1 selected records

&lt; Previous Record

Next Record &gt;

[Back to Summary](#)**TN Detail****TN Record**

TN						Service			
NPA	NXX	LN	Customer Name			Cust Code	Class	Type	essid
918	382	9577	RAINBOW; APPAREL			147	2	0	EM
House #						ESN			
House #	Sfx.	Pre-Dir	Street	St. Sfx.	Post-Dir	ESN	Origin		
1548	-	N	LEWIS AVE			6100	M		
Community		County	State	Exchg.	Order #	Co. ID	Reseller ID	S.O. Source	
TULSA		143	OK	TUL	R763252	SWBT		1033	
Loccom flag: <input type="checkbox"/> Off									
Location		Telco		MSAG Comment					

[Related MSAG\(s\)](#)[Related ALI DR\(s\)](#)

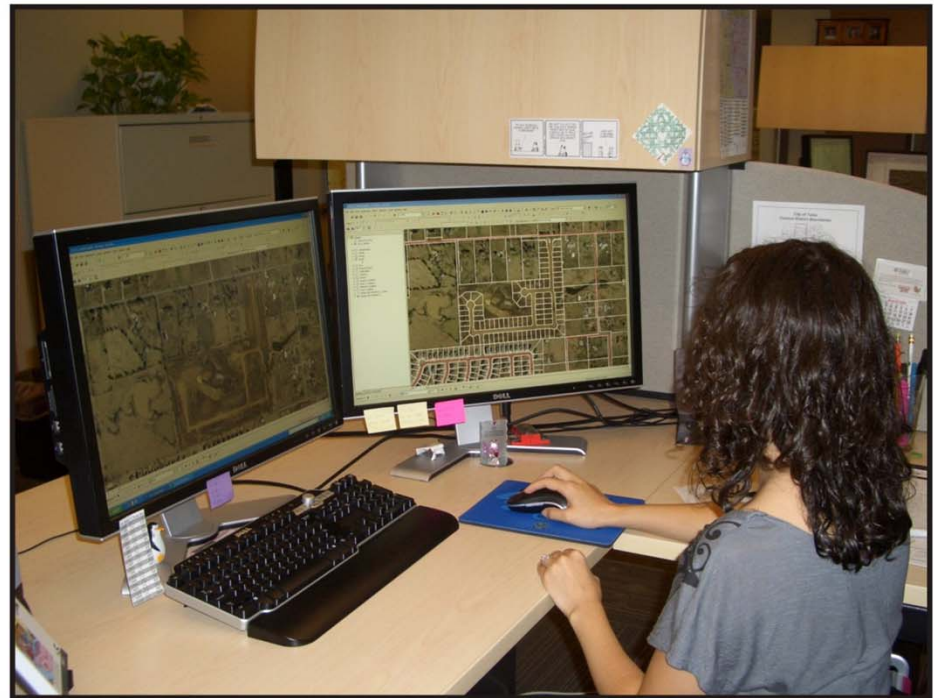
Viewing record 1 of 1 selected records

&lt; Previous Record

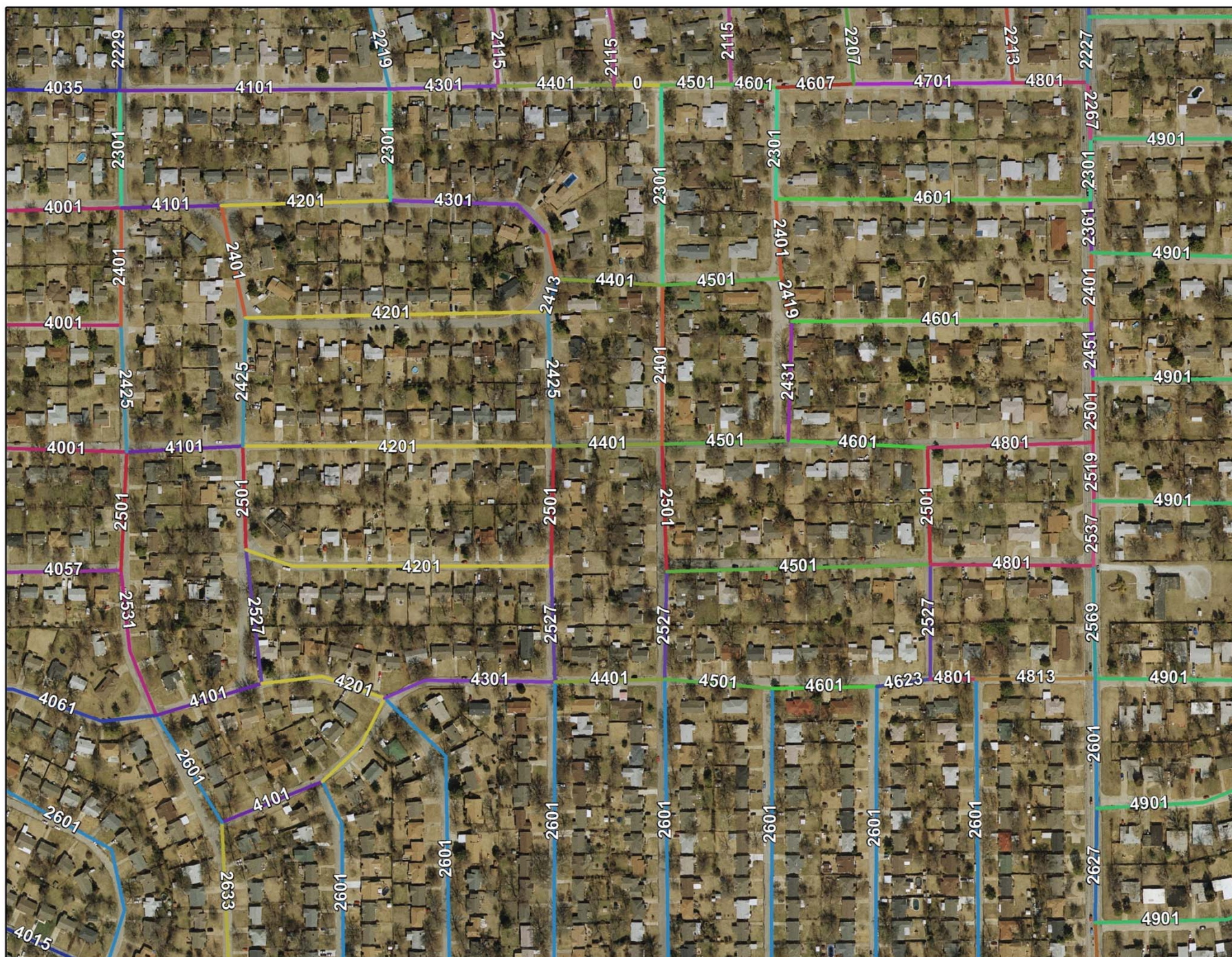
Next Record &gt;

[Back to Summary](#)

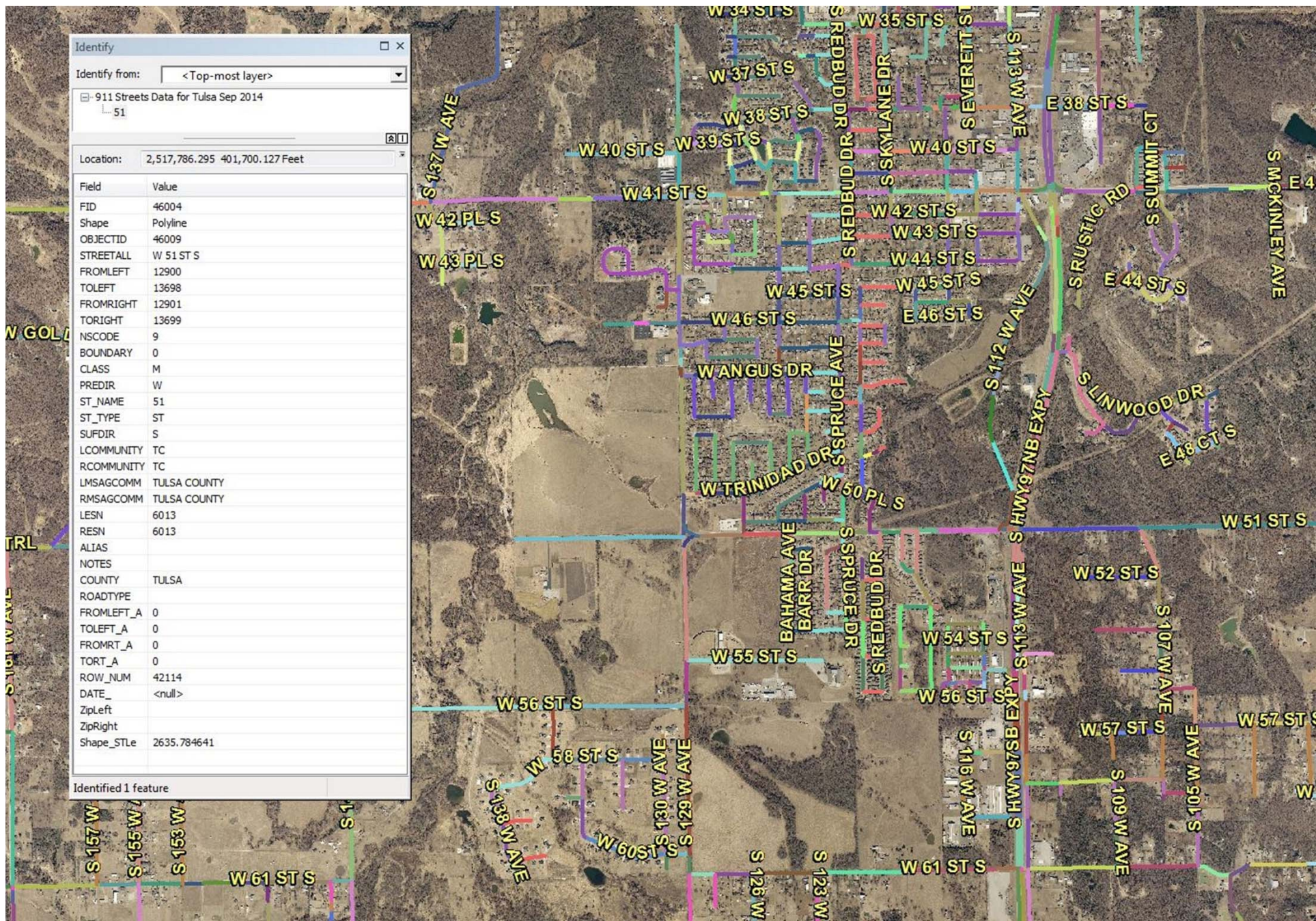
# E-911 Streets Updates & Maintenance Using ArcGIS













E 106 St N

N 123 E AVE





T IN A CONCRETE  
NEAR SECTION  
, N.E. OF 106TH  
(ELEV.=688.83

WERE ACCURATE  
ADDRESSES ARE  
EVER BE RELIED  
1.

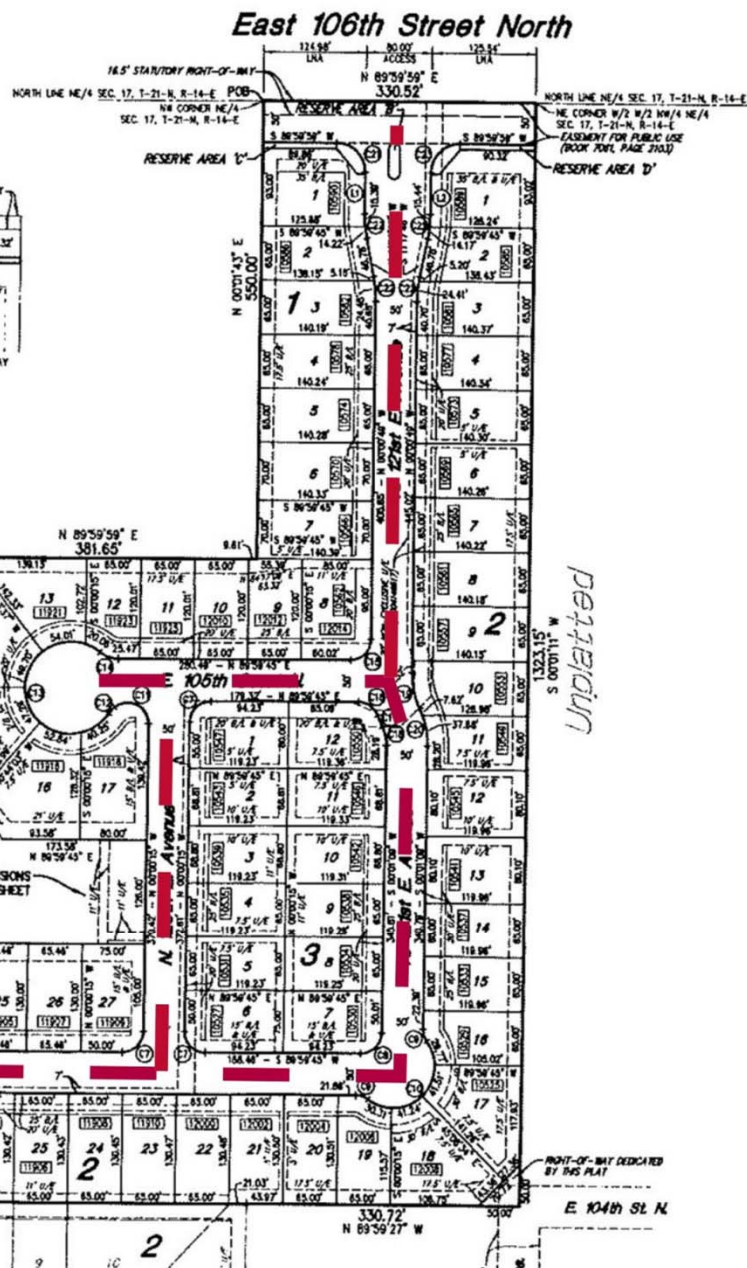
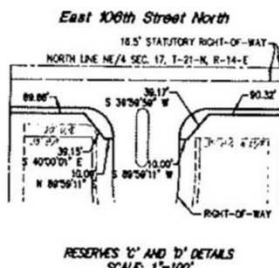
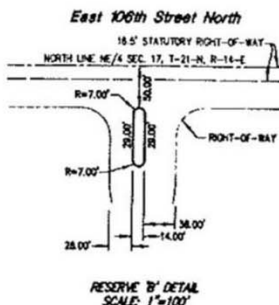
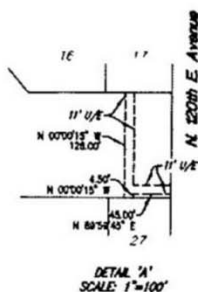
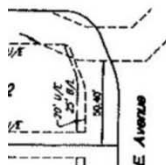
AND MAINTAINED  
ATER DISTRICT

. BE SUPPLIED  
WASSO.

ARC LENGTH
265.24'
30.72'
28.11'
16.09'
142.91'
39.28'
39.27'
39.26'
16.08'
142.85'
56.12'
10.77'
264.17'
23.79'
39.27'
30.42'
14.79'
22.65'
45.24'
45.30'
54.97'
29.61'
54.99'

LENGTH
49.64'
49.61'

Street N



Unplatted

Detleif  
M. 11.10.00 S

I HERE  
*Aug*  
THIS AP  
IS NOT



**E 106 ST N**

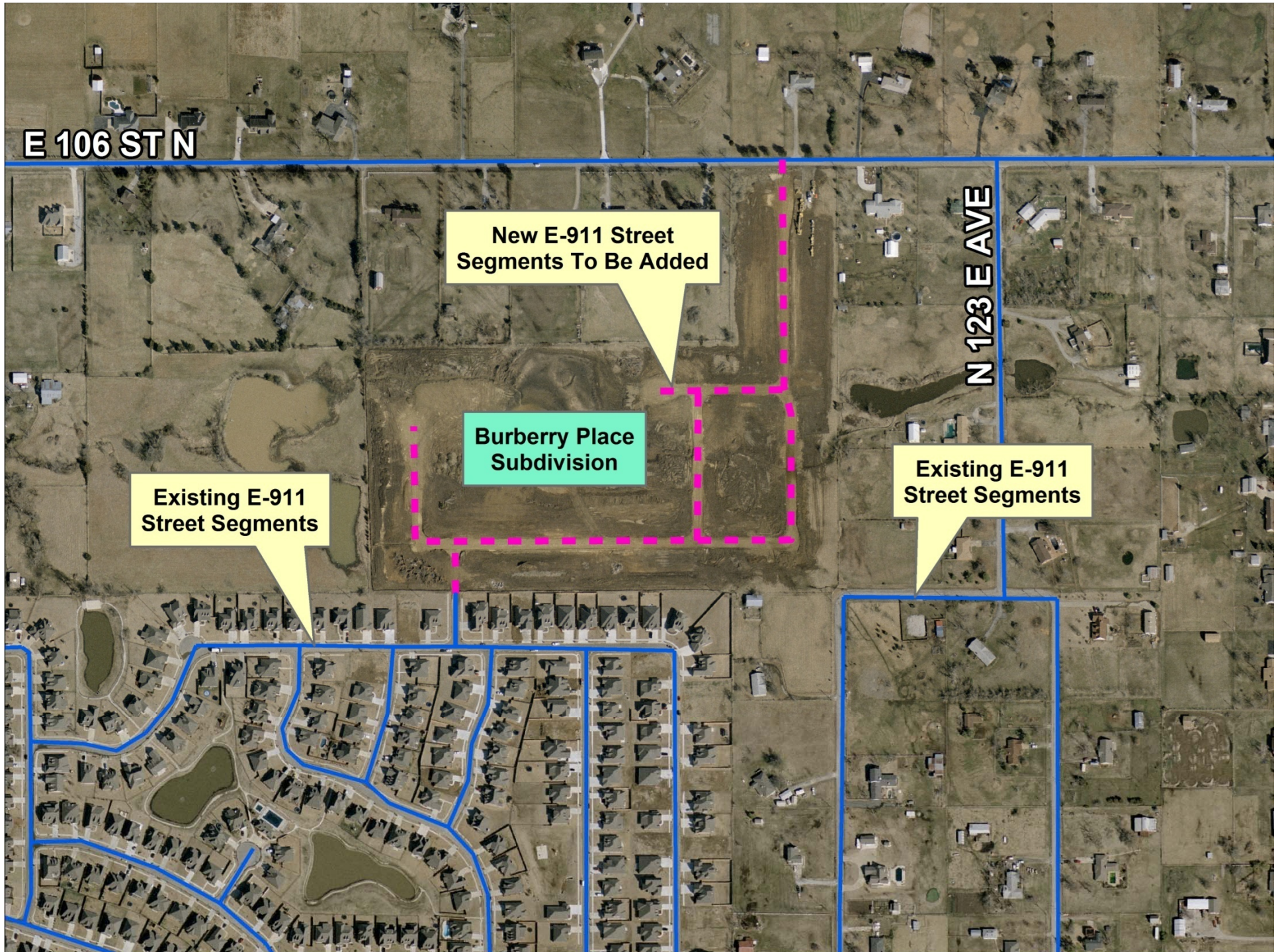
**New E-911 Street  
Segments To Be Added**

**Burberry Place  
Subdivision**

**Existing E-911  
Street Segments**

**N 123 E AVE**

**Existing E-911  
Street Segments**





# MSAG Updating and Maintenance



Current User: c79605m

Logout

Current Database: dms

Sep. 22, 2014

Home

MSAG

ALI

TN

Reports

Preferences

Help

Query

Update

Create

**MSAG - Insert**

Enter new MSAG information, and click the Submit button.

(\* Indicates a required field.)

**New MSAG Record**

Autofill

Clear

1 *Select the type of change you wish to make. Change Request ▾				
2 Enter address information.				
Pre-Dir S ▾	*Street Sandusky Ave	St. Sfx. ▾	Post-Dir ▾	
*Community Tulsa		County 143	*State Ok	
TN Comment ▾		MSAG Comment ▾		
3 Enter one or more ranges.				
* O/E/B B ▾	Lo House # 2601	Hi House # 2672	* ESN 6100	Exchg. Tul
4 Select an action to perform with this record and enter remarks.				
Action 1 - Opened	Remarks ▾ Maximum characters:255. You have 255 characters remaining.			
5				

Cancel

Submit

O/E/B	Lo House #	Hi House #	ESN	Exchg.
B	5800	9699	6012	OWS

### Related TN(s)

### Related MSAG(s)

### Related MSAG CR(s)

## MSAG Record Split

Split the above range into 2 or more new segments, 1 row per segment. Click the Add Rows button if you need more segments. Click the Split button when finished.

1

\*Select the type of change you wish to make.

Change Request

2

Pre-Dir	Street	St. Sfx.	Post-Dir
E	106 ST N		
		County	State
		143	OK

TN Comment	MSAG Comment
	ESN CONVERSION

* O/E/B	* Lo House #	* Hi House #	* ESN	Exchg.	* Community
B	5800			OWS	TULSA COUNTY

Add	1	ws
-----	---	----





Current User: c79605m

Logout

Current Database: dms

Sep. 22, 2014

Home

MSAG

ALI

TN

Reports

Preferences

Help

Query

Update

Create

MSAG

CRs

Viewing record 1 of 1 selected records

&lt; Previous Record

Next Record &gt;

[Back to Summary](#)**MSAG - Details**

To update this MSAG record or to insert a new record, use the MSAG Toolbar buttons.

**Activity Log Summary**Mod. Date and Time 2009/02/23 16:47:03  
Lst Mod. User ID zj2974**MSAG Toolbar**

Insert Change Split Combine Delete

**MSAG Record**

Pre-Dir	Street	St. Sfx.	Post-Dir	
W	COYOTE TRL			
Community		County	State	
TULSA COUNTY		143	OK	
TN Comment	MSAG Comment			
	ESN CONVERSION			
O/E/B	Lo House #	Hi House #	ESN	Exchg.
B	15700	19299	6013	SSP

**[Related TN\(s\)](#)**Preview 21 records found. [Show](#)**[Related MSAG CR\(s\)](#)**[Show](#)

Viewing record 1 of 1 selected records

&lt; Previous Record

Next Record &gt;

[Back to Summary](#)

MSAG Toolbar

## MSAG Record

Pre-Dir Street St. Sfx. Post-Dir

W COYOTE TRL

Community County State

TULSA COUNTY 143 OK

TN Comment MSAG Comment

ESN CONVERSION

O/E/B Lo House # Hi House # ESN Exchg.

B 15700 19299 6013 SSP

## Related TN(s)

Preview 21 records found. [Hide](#)

☒ Select Item

View Related

TN							Address											
<input checked="" type="checkbox"/>	<input type="checkbox"/>	M/s	NPA	NXX	LN	Customer Name	House #-Sfx.	Pre-Dir	Street	St. Sfx.	Post-Dir	Community	County	State	Exchg.	essid	ESN	Co. 1
<input type="checkbox"/>	<input type="checkbox"/>		918	241	2489	[REDACTED]	17842	W	COYOTE TRL			TULSA COUNTY	143	OK	SSP	EM	6013	SV
<input type="checkbox"/>	<input type="checkbox"/>		918	241	3018	[REDACTED]	17886	W	COYOTE TRL			TULSA COUNTY	143	OK	SSP	EM	6013	SV
<input type="checkbox"/>	<input type="checkbox"/>		918	241	3074	[REDACTED]	18508	W	COYOTE TRL			TULSA COUNTY	143	OK	SSP	EM	6013	SV
<input type="checkbox"/>	<input type="checkbox"/>		918	241	3252	[REDACTED]	16101	W	COYOTE TRL			TULSA COUNTY	143	OK	SSP	EM	6013	SV
<input type="checkbox"/>	<input type="checkbox"/>		918	241	4836	[REDACTED]	18120	W	COYOTE TRL			TULSA COUNTY	143	OK	SSP	EM	6013	SV
<input type="checkbox"/>	<input type="checkbox"/>		918	241	5249	[REDACTED]	17502	W	COYOTE TRL			TULSA COUNTY	143	OK	SSP	EM	6013	SV
<input type="checkbox"/>	<input type="checkbox"/>		918	241	8229	[REDACTED]	16919	W	COYOTE TRL			TULSA COUNTY	143	OK	SSP	EM	6013	SV
<input type="checkbox"/>	<input type="checkbox"/>		918	241	9477	[REDACTED]	18104	W	COYOTE TRL			TULSA COUNTY	143	OK	SSP	EM	6013	SV
<input type="checkbox"/>	<input type="checkbox"/>		918	245	0930	[REDACTED]	18128	W	COYOTE TRL			TULSA COUNTY	143	OK	SSP	EM	6013	SV
<input type="checkbox"/>	<input type="checkbox"/>		918	245	1510	[REDACTED]	18708	W	COYOTE TRL			TULSA COUNTY	143	OK	SSP	EM	6013	SV
<input type="checkbox"/>	<input type="checkbox"/>		918	245	1948	[REDACTED]	17872	W	COYOTE TRL			TULSA COUNTY	143	OK	SSP	EM	6013	SV
<input type="checkbox"/>	<input type="checkbox"/>		918	245	2136	[REDACTED]	17824	W	COYOTE TRL			TULSA COUNTY	143	OK	SSP	EM	6013	SV
<input type="checkbox"/>	<input type="checkbox"/>		918	245	3000	[REDACTED]	18411	W	COYOTE TRL			TULSA COUNTY	143	OK	SSP	EM	6013	SV
<input type="checkbox"/>	<input type="checkbox"/>		918	245	4531	[REDACTED]	16433	W	COYOTE TRL			TULSA COUNTY	143	OK	SSP	EM	6013	SV
<input type="checkbox"/>	<input type="checkbox"/>		918	245	4570	[REDACTED]	16333	W	COYOTE TRL			TULSA COUNTY	143	OK	SSP	EM	6013	SV
<input type="checkbox"/>	<input type="checkbox"/>		918	245	4821	[REDACTED]	18818	W	COYOTE TRL			TULSA COUNTY	143	OK	SSP	EM	6013	SV
<input type="checkbox"/>	<input type="checkbox"/>		918	245	5451	[REDACTED]	18422	W	COYOTE TRL			TULSA COUNTY	143	OK	SSP	EM	6013	SV
<input type="checkbox"/>	<input type="checkbox"/>		918	245	6483	[REDACTED]	17916	W	COYOTE TRL			TULSA COUNTY	143	OK	SSP	EM	6013	SV
<input type="checkbox"/>	<input type="checkbox"/>		918	245	8045	[REDACTED]	17876	W	COYOTE TRL			TULSA COUNTY	143	OK	SSP	EM	6013	SV

# Cell Tower Routing Verifications









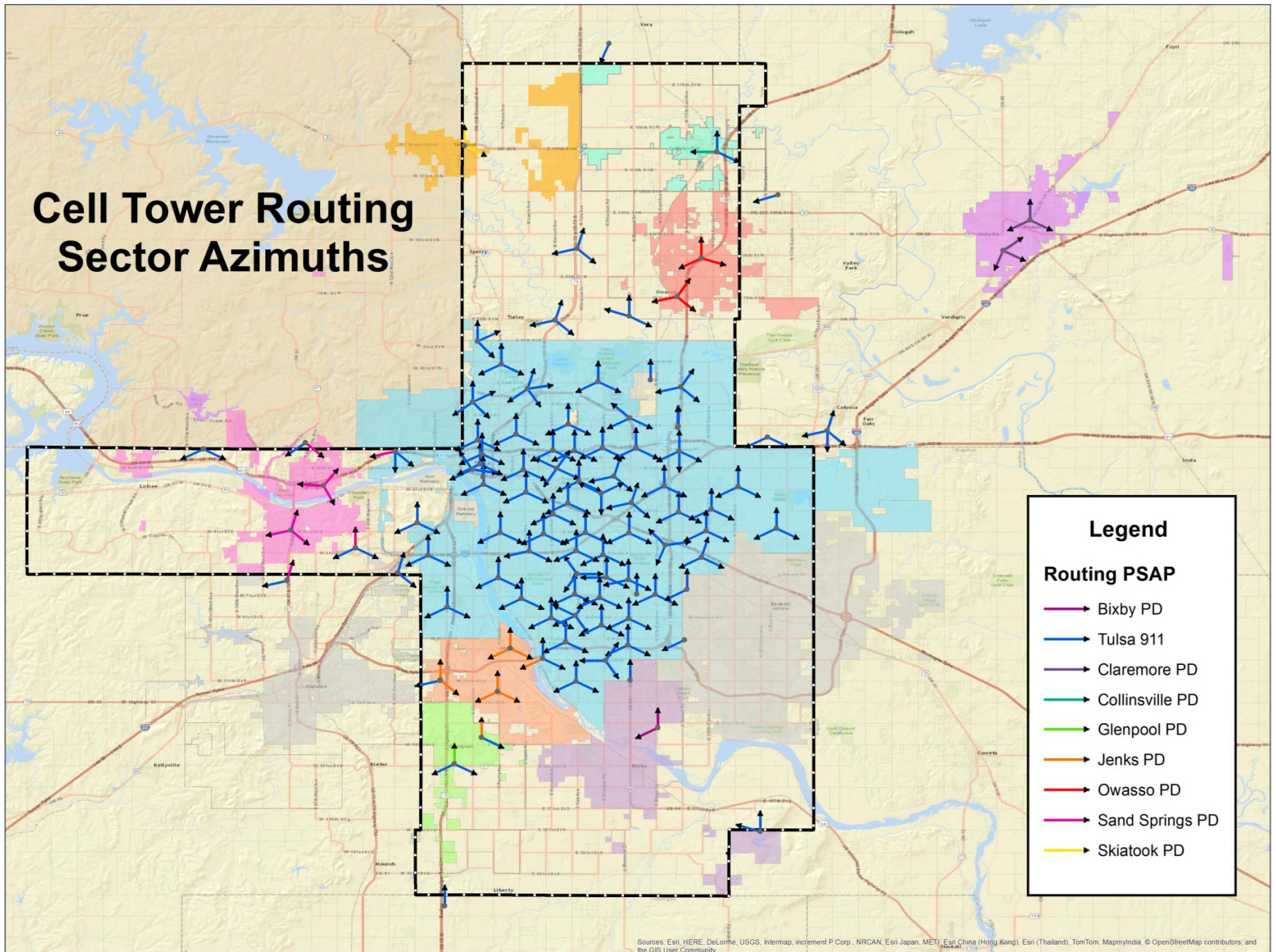




	I	J	K	L	M	N	O	P	Q	R	S	T	U
	Air Interface Technology	Street Address	City	State	County	Latitude (degrees) - (+/- 2 before decimal/6 after decimal)	Longitude (degrees) (+/- 3 before decimal/6 after decimal)	Sector Orientation /Azimuth (degrees,N=0)	Beam Width (degrees)	Sector Compass Orientation	Avg. Sector Radius Range (Miles)	ESRD or ESRK 1st No.	PSAP To Receive Wireless 9-1-1 Calls (Routing PSAP)
1													
2	GSM	204 S 2 ST	Collinsville	OK	Tulsa	36.36342	-95.827518	0	0	N	NA	9182113597 918211359 8,91821135 99,9182113	Collinsville Police
3	GSM	204 S 2 ST	Collinsville	OK	Tulsa	36.36342	-95.827518	130	0	SE	NA	9182113597 918211359	Collinsville Police
4	GSM	204 S 2 ST	Collinsville	OK	Tulsa	36.36342	-95.827518	240	0	SW	NA	9182113597 918211360	Collinsville Police
5	GSM	11535 N GARNETT RD	OWASSO	OK	Tulsa	36.321151	-95.847212	60	0	NE	NA	9182113597 918211360	Collinsville Police
6	GSM	4512 E 146 ST N	SKIATOOK	OK	0	36.363667	-95.92575	0	0	E	NA	9182113597 918211360	Collinsville Police
7	GSM	12120 E. 156TH ST N	COLLINSVILLE	OK	0	36.37991714	-95.8389969	90	0	E	NA	9182113597 918211359	Collinsville Police
8	GSM	12120 E. 156TH ST N	COLLINSVILLE	OK	0	36.37991714	-95.8389969	210	0	SW	NA	9182113597 918211359	Collinsville Police
9	GSM	12120 E. 156TH ST N	COLLINSVILLE	OK	0	36.37991714	-95.8389969	330	0	NW	NA	9182113597 918211359	Collinsville Police
10	GSM	12120 E. 156TH ST N	COLLINSVILLE	OK	0	36.37991714	-95.8389969	90	0	E	NA	9182113597 918211359	Collinsville Police
11	GSM	12120 E. 156TH ST N	COLLINSVILLE	OK	0	36.37991714	-95.8389969	210	0	SW	NA	9182113597 918211359	Collinsville Police
12	GSM	12120 E. 156TH ST N	COLLINSVILLE	OK	0	36.37991714	-95.8389969	330	0	NW	NA	9182113597 918211359	Collinsville Police
13	UMTS	204 S 2 ST	Collinsville	OK	Tulsa	36.36342	-95.827518	0	0	N	NA	9182113597 918211360	Collinsville Police
14	UMTS	204 S 2 ST	Collinsville	OK	Tulsa	36.36342	-95.827518	120	0	SE	NA	9182113597 918211360	Collinsville Police
15	UMTS	204 S 2 ST	Collinsville	OK	Tulsa	36.36342	-95.827518	240	0	SW	NA	9182113597 918211360	Collinsville Police
16	UMTS	204 S 2 ST	Collinsville	OK	Tulsa	36.36342	-95.827518	0	0	N	NA	9182113597 918211360	Collinsville Police
17	UMTS	204 S 2 ST	Collinsville	OK	Tulsa	36.36342	-95.827518	130	0	SE	NA	9182113597 918211360	Collinsville Police
18	UMTS	204 S 2 ST	Collinsville	OK	Tulsa	36.36342	-95.827518	240	0	SW	NA	9182113597 918211360	Collinsville Police
19	UMTS	204 S 2 ST	Collinsville	OK	Tulsa	36.36342	-95.827518	0	0	N	NA	9182113597 918211359	Collinsville Police
20	UMTS	204 S 2 ST	Collinsville	OK	Tulsa	36.36342	-95.827518	130	0	SE	NA	9182113597 918211359	Collinsville Police
21	UMTS	204 S 2 ST	Collinsville	OK	Tulsa	36.36342	-95.827518	240	0	SW	NA	9182113597 918211359	Collinsville Police
22	UMTS	4512 E 146 ST N	Skiatook	OK	Tulsa	36.363667	-95.92575	90	0	E	NA	9182113597 918211360	Collinsville Police
23	UMTS	4512 E 146 ST N	Skiatook	OK	Tulsa	36.363667	-95.92575	90	0	E	NA	9182113597 918211360	Collinsville Police
24	UMTS	12120 E. 156TH ST N	Collinsville	OK	Tulsa	36.379917	-95.838997	90	0	E	NA	9182113597 918211359	Collinsville Police

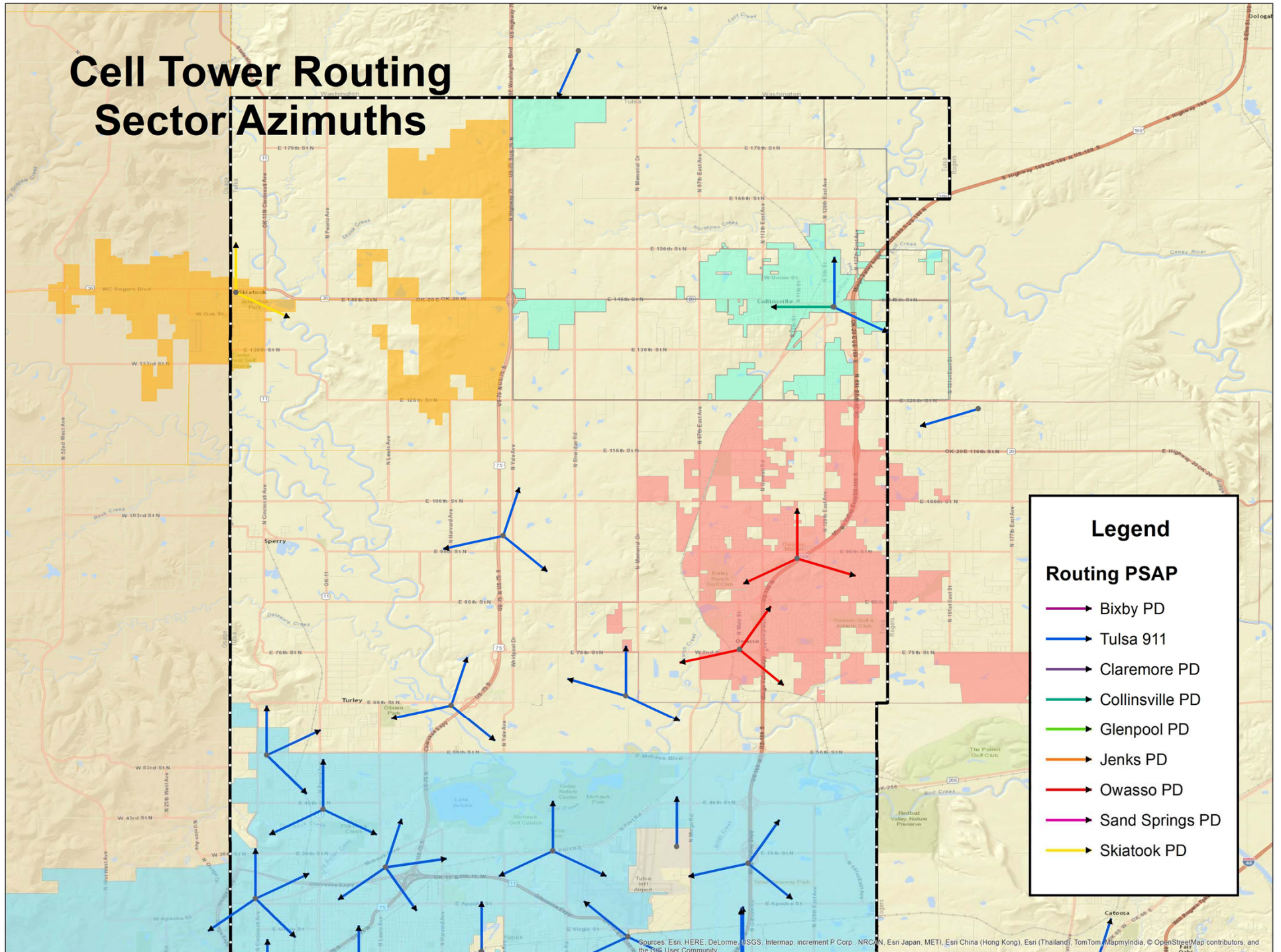


# Cell Tower Routing Sector Azimuths





# Cell Tower Routing Sector Azimuths



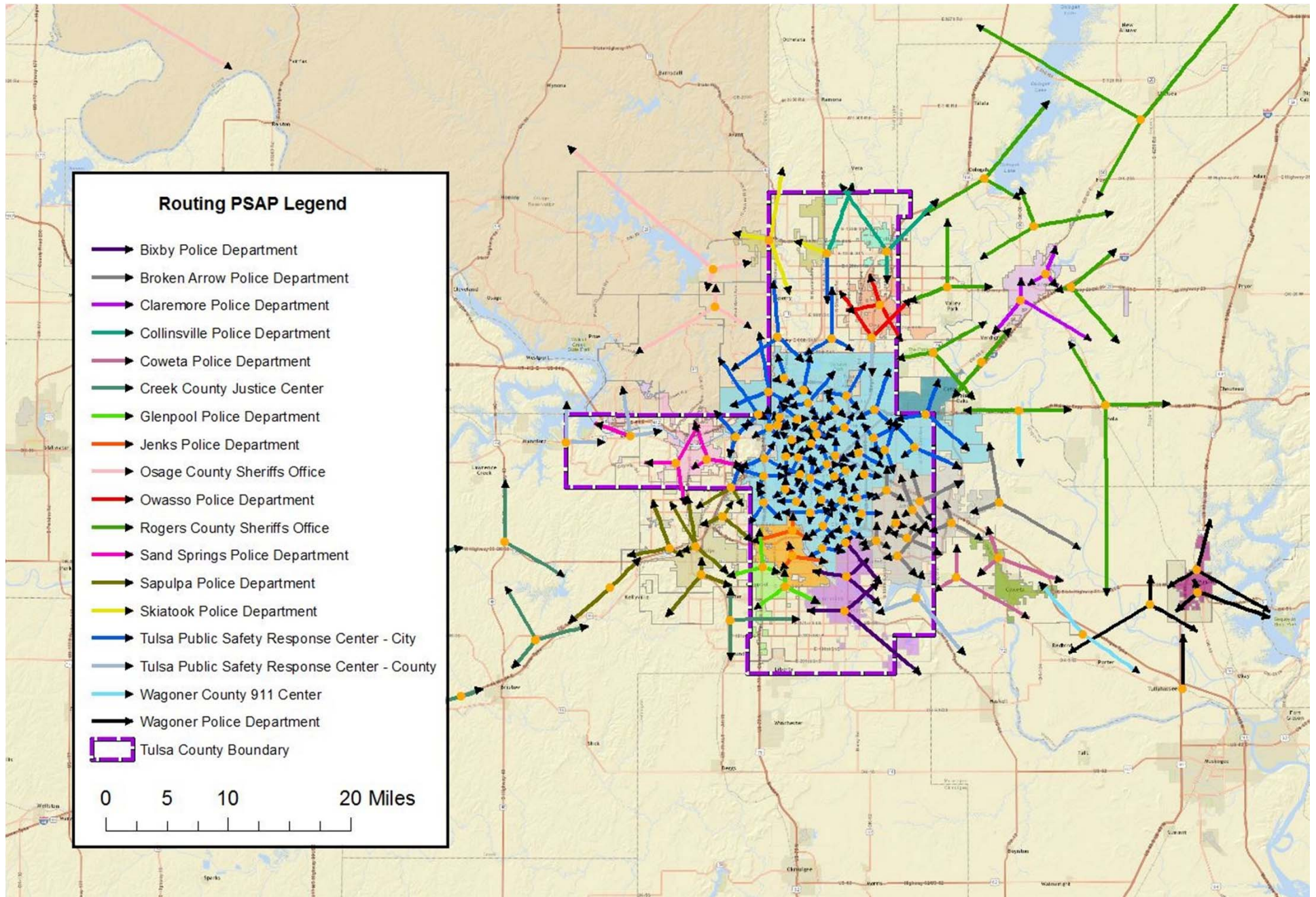
### Legend

**Routing PSAP**

- Bixby PD
- Tulsa 911
- Claremore PD
- Collinsville PD
- Glenpool PD
- Jenks PD
- Owasso PD
- Sand Springs PD
- Skiatook PD

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community





# **Criminal Investigations Using Cell Phone Records**



