

Special Topics

Grady County Disaster Resiliency Assessment

The purpose of this section is to assess at the county level key components of disaster resiliency. Housing location and quality as well as planning activities can help reduce impacts from disaster events and allow for faster recovery. Disasters can include tornadoes, extreme weather, high winds, as well as man-made events. These events may largely be inevitable, but the ability to reduce damage and casualties as well recovery can be improved with good planning.

C.0 Comprehensive Plans & Hazard Mitigation Plans

There are 15 key cities within the county: Alex, Amber, Bradley, Blanchard, Bridge Creek, Chickasha, Middleberg, Minco, Ninnekah, Norge, Pocasset, Rush Springs, Tabler, Tuttle, and Verden.

Comprehensive plans are the guiding documents for cities of various sizes to address key aspects of their community from land use, transportation, environment, housing, and economic development.

The other key plan for a city to manage, mitigate and plan for recovery related to disasters is a **Hazard Mitigation Plan** (or Emergency Management Plan). Often low density counties, the Hazard Mitigation Plan is done at the county level, though some cities may augment the county plan with a city plan.

Grady County does not have a Hazard Mitigation Plan.

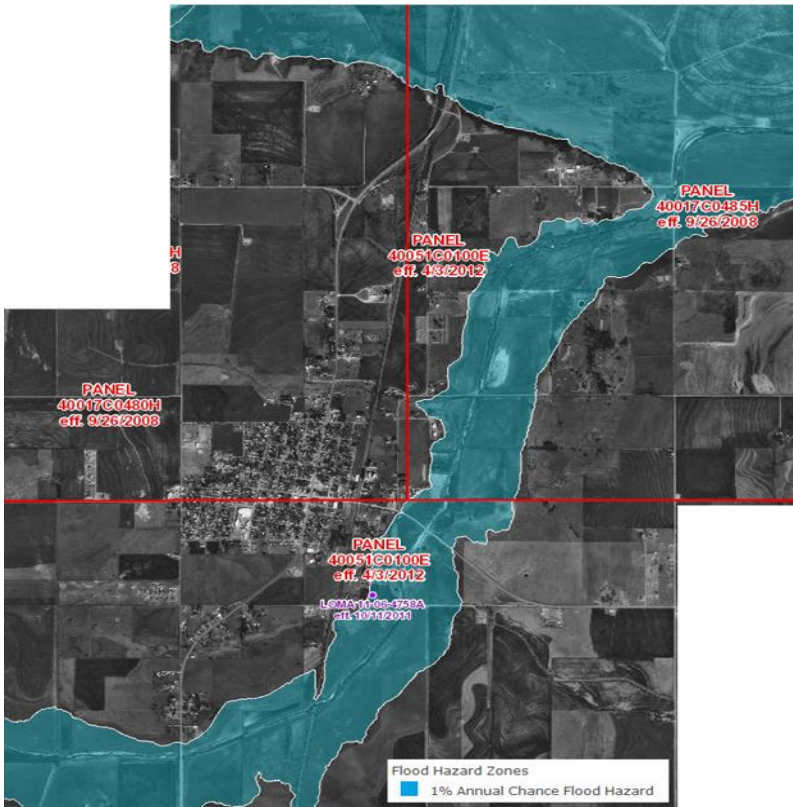
C.2.1.1. Historical Data on Natural Disasters and Other Hazards

Data on historical damages and casualties is typically collected as part of a **Hazard Mitigation Plan** preparation to determine the appropriate planning measures and actions to take before and after an event.

Flooding

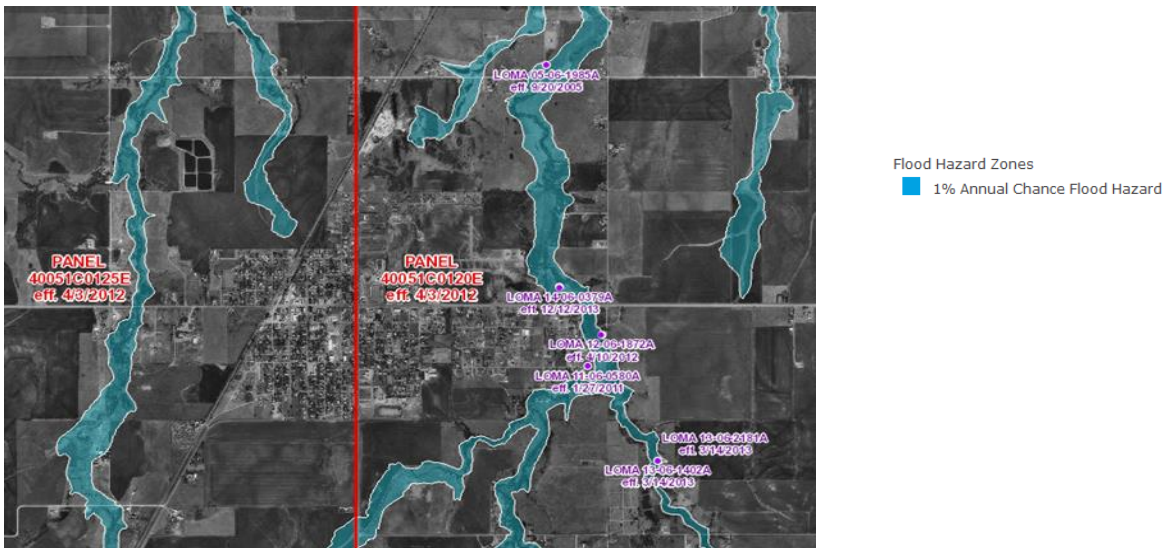
All parts of the county may be subject to flash flooding, freeze-thaw flooding and extreme precipitation that can cause flooding, unrelated to the streams and rivers. Below are images taken from the FEMA National Flood Hazard Layer maps displaying floodplains in each of the key towns:

Minco



FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

Tuttle



FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

Bridge Creek



FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

Pocasset



Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

Amber



Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

Middleberg



Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

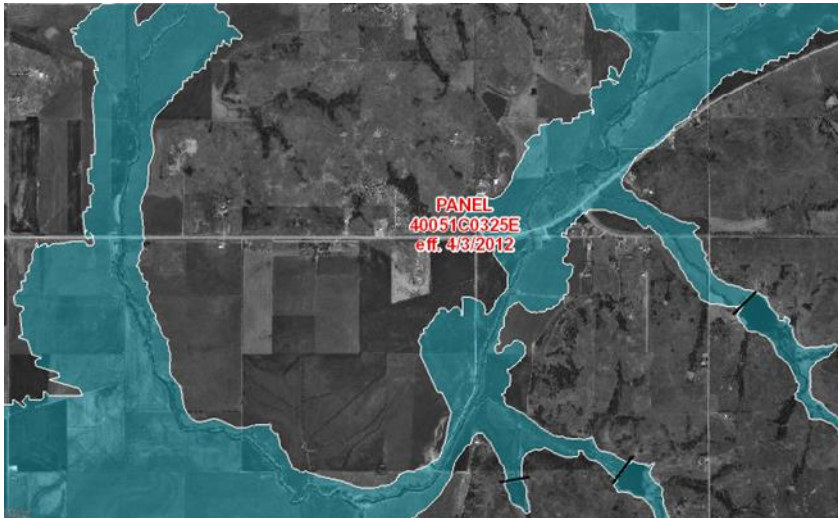
Blanchard – the part in Grady County



Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

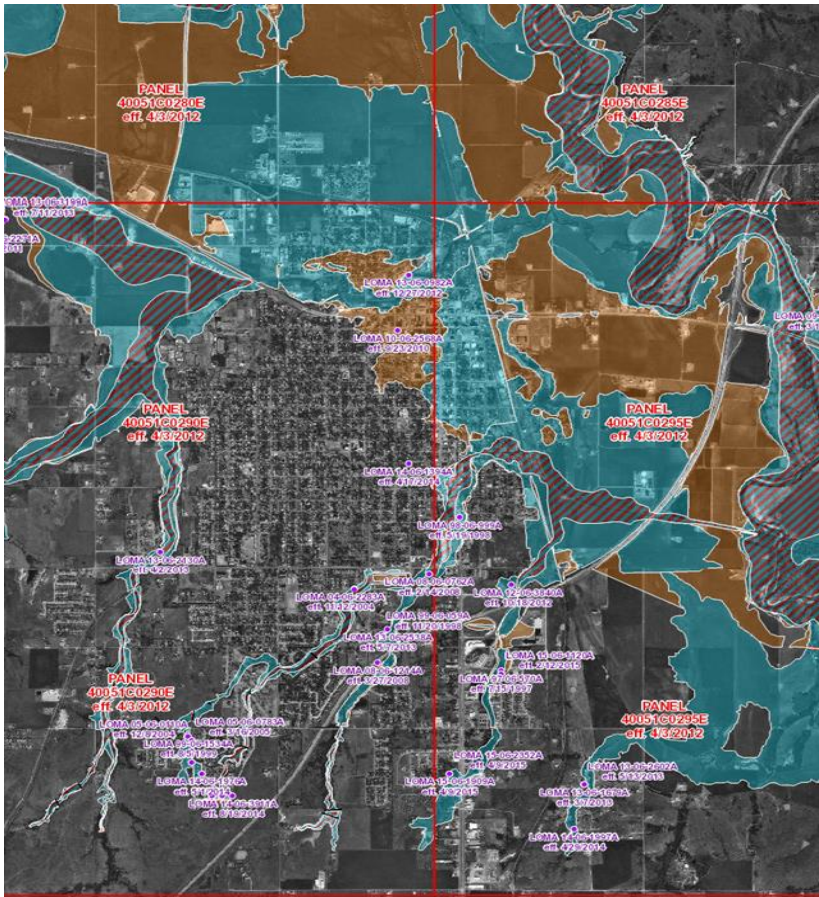
Tabler



Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

Chickasha



- Flood Hazard Zones
- 1% Annual Chance Flood Hazard
 - Regulatory Floodway
 - Special Floodway
 - Area of Undetermined Flood Hazard
 - 0.2% Annual Chance Flood Hazard
 - Future Conditions 1% Annual Chance Flood Hazard
 - Area with Reduced Risk Due to Levee

FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

Norge



- Flood Hazard Zones
- 1% Annual Chance Flood Hazard

FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

Ninnekah



Flood Hazard Zones

■ 1% Annual Chance Flood Hazard

FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

Alex

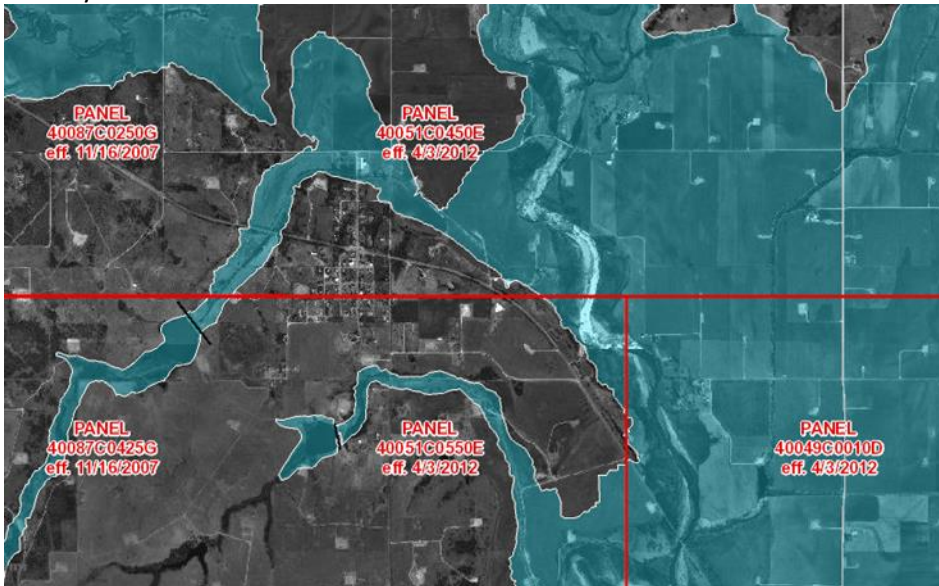


Flood Hazard Zones

- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Special Floodway
- Area of Undetermined Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Risk Due to Levee

FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

Bradley



Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

Rush Springs

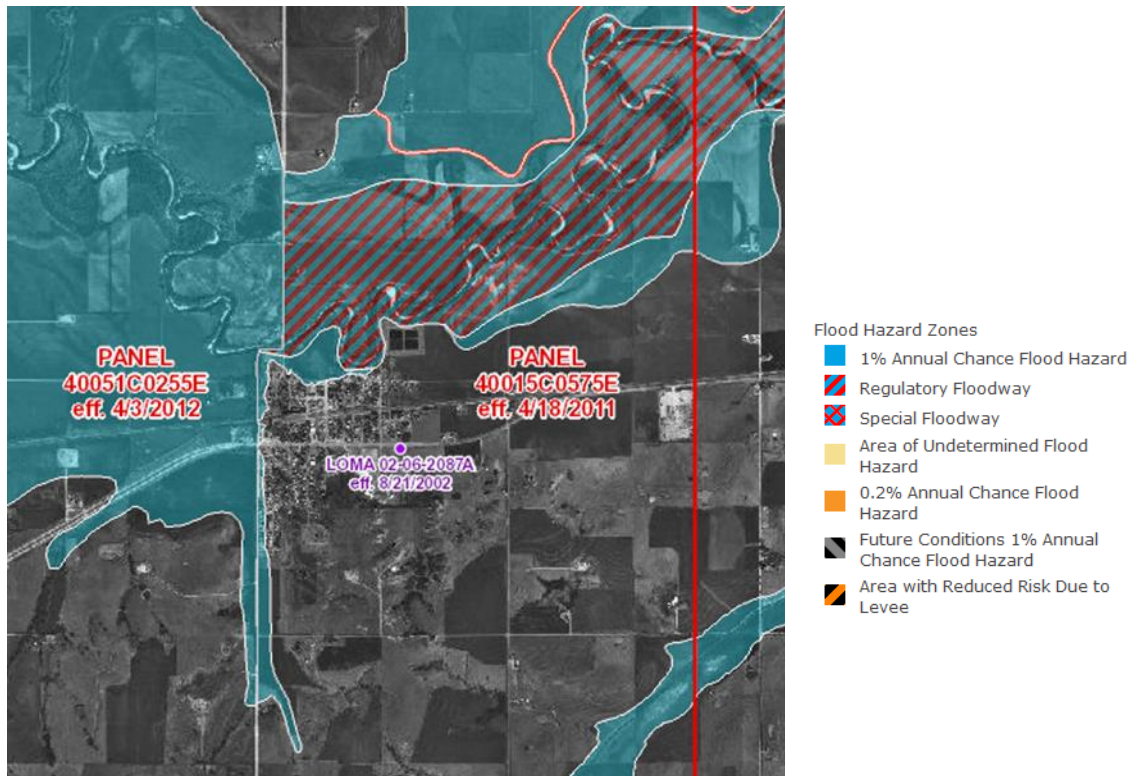


Flood Hazard Zones
■ 1% Annual Chance Flood Hazard

FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>



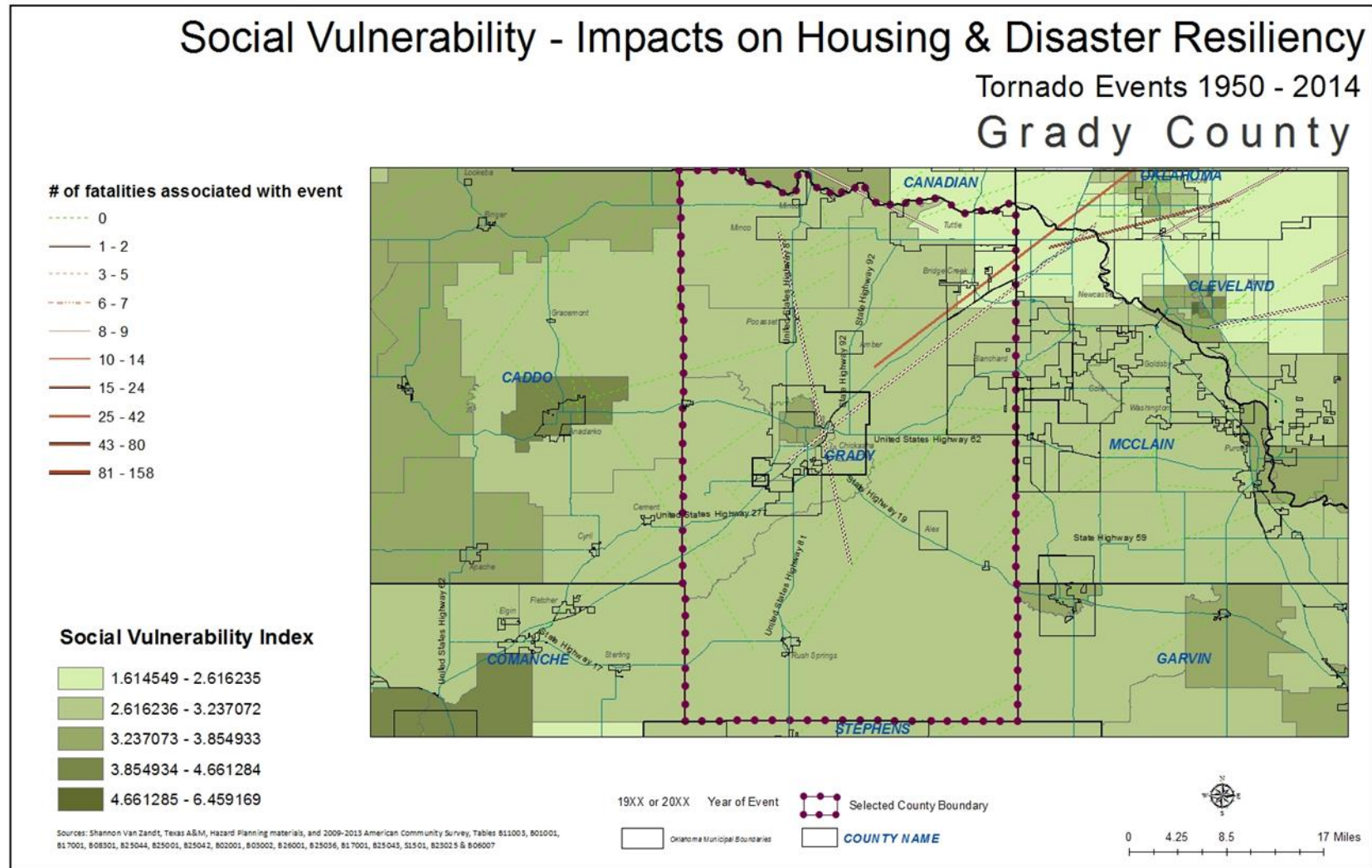
Verden

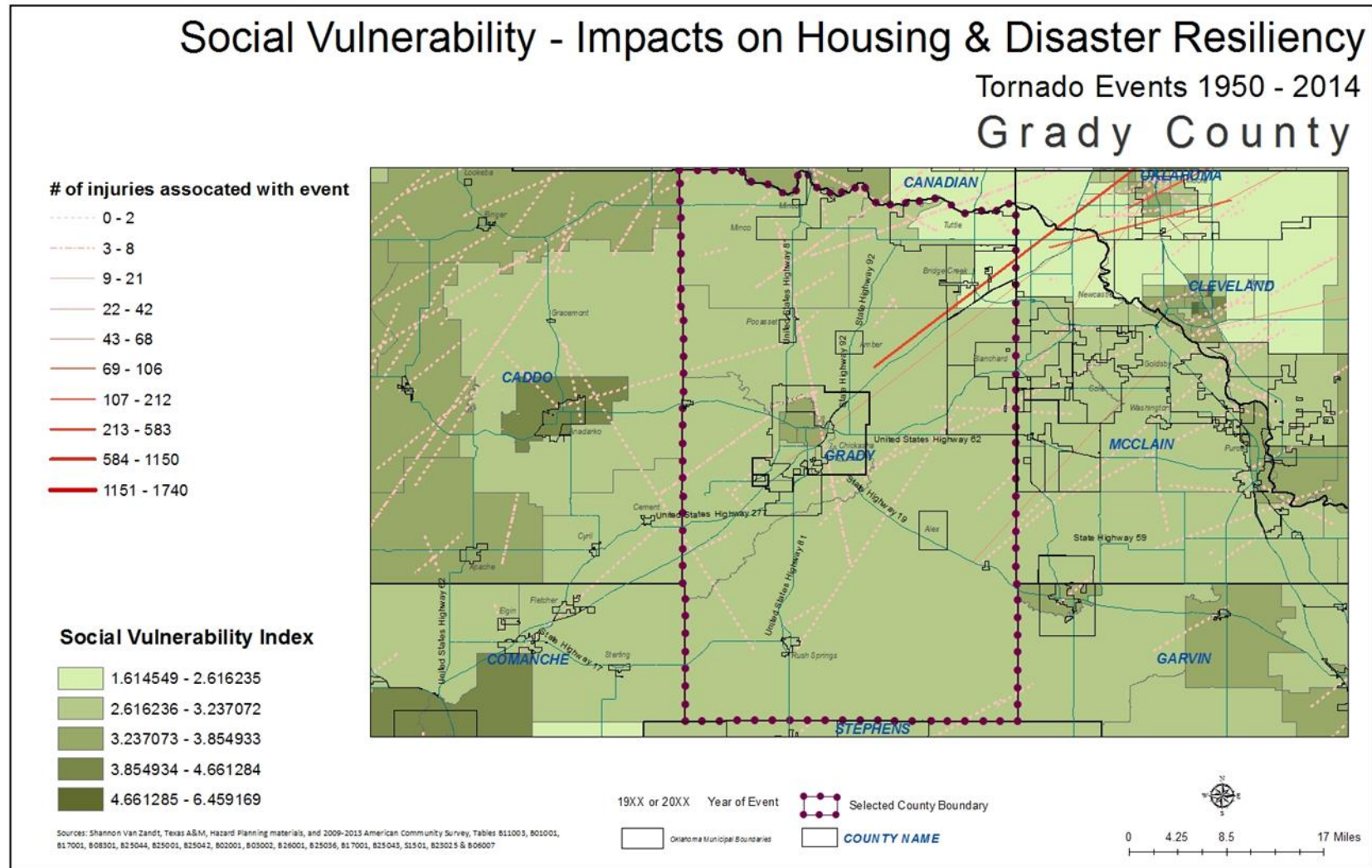


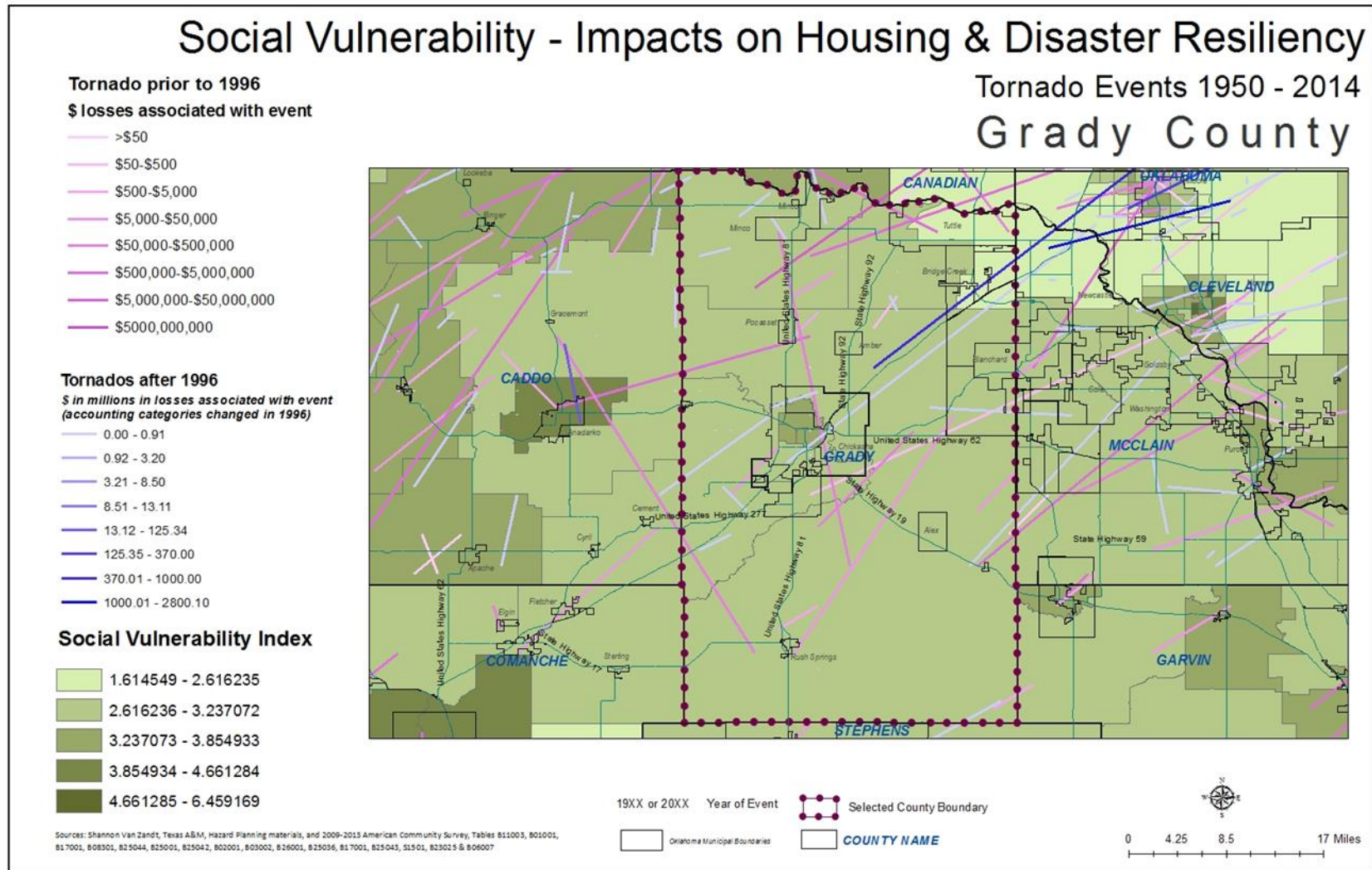
FEMA's National Flood Hazard Layer <http://fema.maps.arcgis.com/>

NOAA data shows the following historic data on disaster events for the county:

Historic data on tornados between 1951-2013 there are 64 tornados documented. There were 738 injuries that occurred connected to these tornados, with 583 of those injuries happening in the May 3rd, 1999 tornado. There were 41 fatalities connected to tornadoes during this time period, 36 of which occurred in the May 3rd, 1999 tornado. Property losses between 1951-1996 ranged from \$7,443,900 to \$74,439,150. Accounting for losses estimated changed in 1996. The losses estimated between 1996-2014 was \$1,000,890,000. The May 3rd, 1999 tornado alone was estimated to cost \$1 billion







C.2.1.2; C.2.1.6; C.2.1.7;C.2.1.8 Shelters from Disaster Event

Grady County online storm registration:

<http://gradycountyok.com/safe-room-registration/>

In 2013, Minco considered using its Armory as a public storm shelter, however no follow-up article was found discussing whether or not this was adopted.

<http://www.mustangpaper.com/contentitem/355296/1586/minco-revisits-public-shelter-talks>

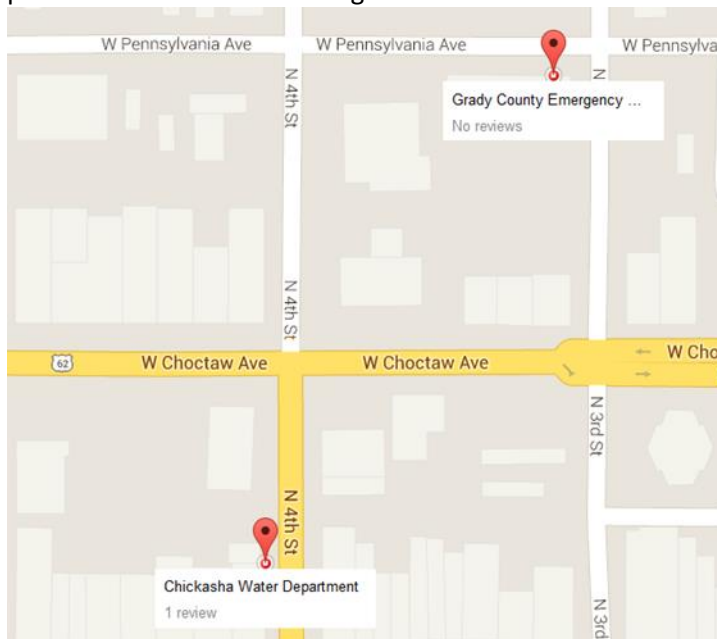
In 2013, Tuttle built a 1000-person community safe room using FEMA funds. "...in smaller communities like Tuttle, with a small downtown area, a community shelter is ideal for protecting for residents in need."

<http://kfor.com/2013/10/03/tuttle-builds-community-shelter-with-fema-funds/>

Bridge Creek Elementary school provided shelter for more than 100 people in May 2015, though it is unclear if it is listed as a public shelter.

<http://www.news9.com/story/29009343/bridge-creek-elementary-provided-shelter-for-community-during-tornado>

Chickasha lists their Water Department and the Grady County Emergency Management facility as public storm shelters on Google:



https://www.google.com/search?safe=strict&q=Chickasha+OK+public+storm+shelters&npsic=0&rflfq=1&rlha=0&tbm=lcl&sa=X&ved=0ahUKUWjQoODySS_JAhVW2mMKHVQxA7oQtgMIHw&biw=1366&bih=657#rflfi=hd:;si:

While Alex does not have a public shelter listed, in September 2015 the town proposed a bond that included building a storm shelter in the school for public use. This bond was passed by the town in October.

http://www.chickashanews.com/news/proposed-alex-school-bond-includes-town-tornado-shelter/article_92ae5458-6246-11e5-af1f-23337c9c3c4e.html

http://www.chickashanews.com/news/alex-passes-million-school-bond/article_cdcfa25c-7291-11e5-9f57-b75f015cc3fd.html

C.2.1.3 Public Policy and Governance to Build Disaster Resiliency

Information not available.

C.2.1.4 Local Emergency Response Agency Structure

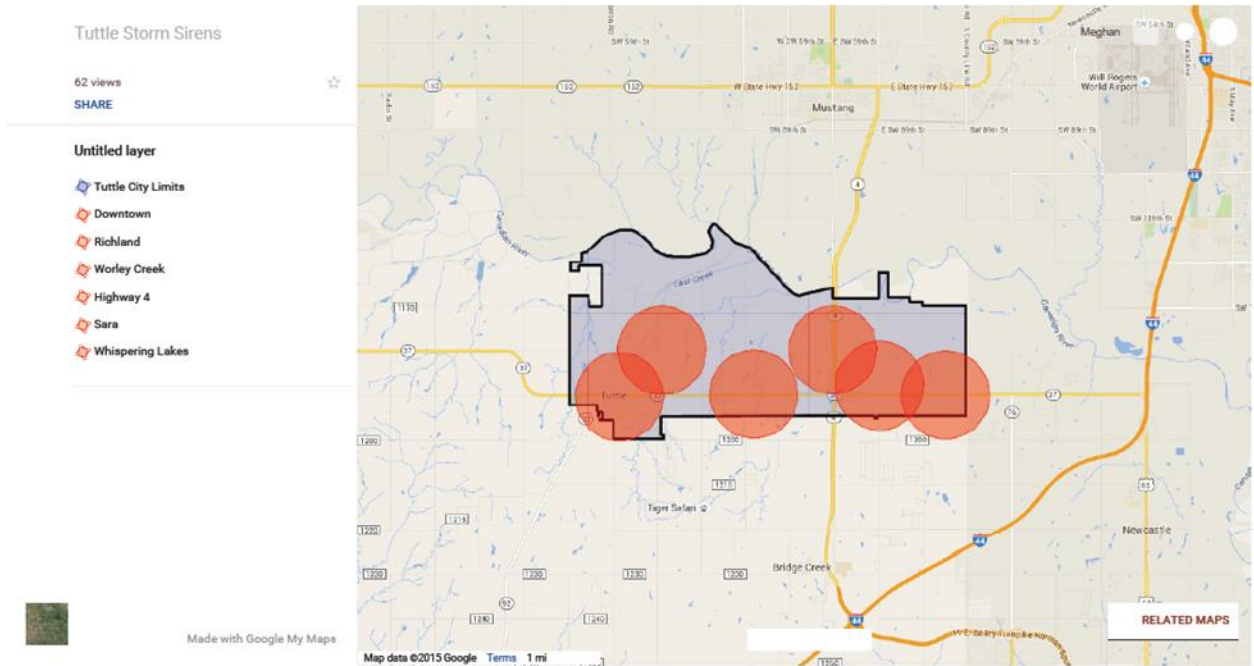
Information not available.

C.2.1.5 Threat & Hazard Warning Systems

The identified Threat & Hazard Warning Systems for Grady County include:

- Sirens

Tuttle storm sirens



Social Vulnerability

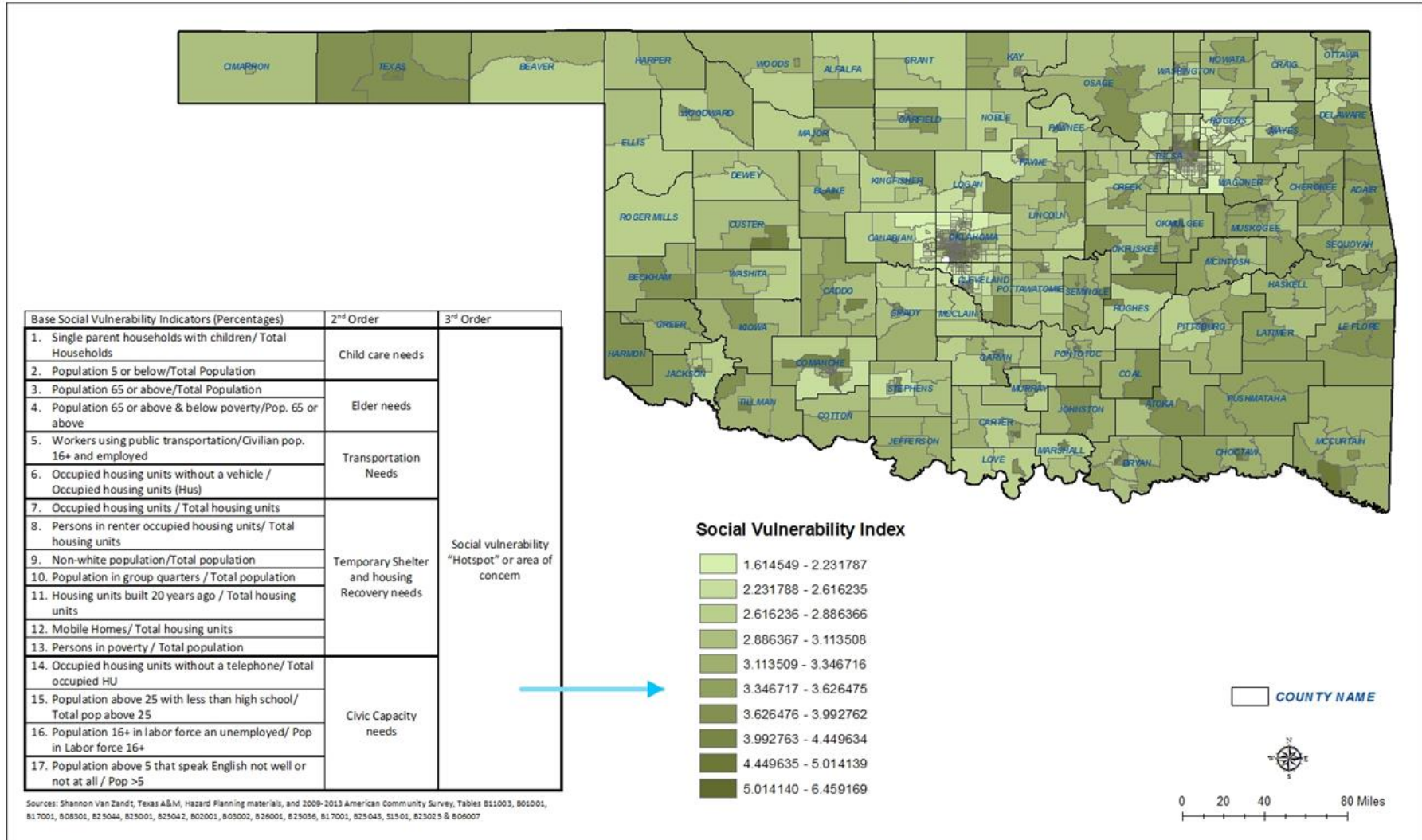
Based on the research work done by the Texas A&M University Hazard Reduction and Recovery Center, an added component is being included in this section. Social vulnerability can place households at a further disadvantage during and after a disaster. This analysis is assessing for the county the levels of social vulnerability based on demographic indicators to highlight ‘hotspots’ or counties that have higher social vulnerability. That combined with Hazard Mitigation Plans – or lack thereof – can highlight places where additional work is needed to reduce impacts on households.

Social Vulnerability Analysis - Grady County			
Base Social Vulnerability Indicators (%)		2nd Order	3rd Order
1.) Single Parent Households	11.61%	0.181	2.976 Social Vulnerability 'Hotspot' or Area of Concern
2.) Population Under 5	6.48%	(Child Care Needs)	
3.) Population 65 or Above	13.96%	0.233	
4.) Population 65 or Above & Below Poverty Rate	9.31%	(Elder Needs)	
5.) Workers Using Public Transportation	0.30%	0.039	
6.) Occupied Housing Units w/o Vehicle	3.59%	(Transportation Needs)	
7.) Housing Unit Occupancy Rate	89.03%	2.293 (Temporary Shelter and Housing Recovery Needs)	
8.) Rental Occupancy Rate	23.70%		
9.) Non-White Population	16.90%		
10.) Population in Group Quarters	1.43%		
11.) Housing Units Built Prior to 1990	68.94%		
12.) Mobile Homes, RVs, Vans, etc.	15.38%		
13.) Poverty Rate	13.92%		
14.) Housing Units Lacking Telephones	2.63%	0.231 (Civic Capacity Needs)	
15.) Age 25+ With Less Than High School Diploma	14.90%		
16.) Unemployment Rate	4.49%		
17.) Age 5+ Which Cannot Speak English Well or Not At All	1.07%		

Sources: Shannon Van Zandt, Texas A&M, Hazard Planning materials, and 2009-2013 American Community Survey, Tables B11003, B01001, B17001, B08301, B25044, B25001, B25042, B02001, B03002, B26001, B25036, B17001, B25043, S1501, B23025 & B06007



Social Vulnerability - Impacts on Housing & Disaster Resiliency



Social Vulnerability - Impacts on Housing & Disaster Resiliency

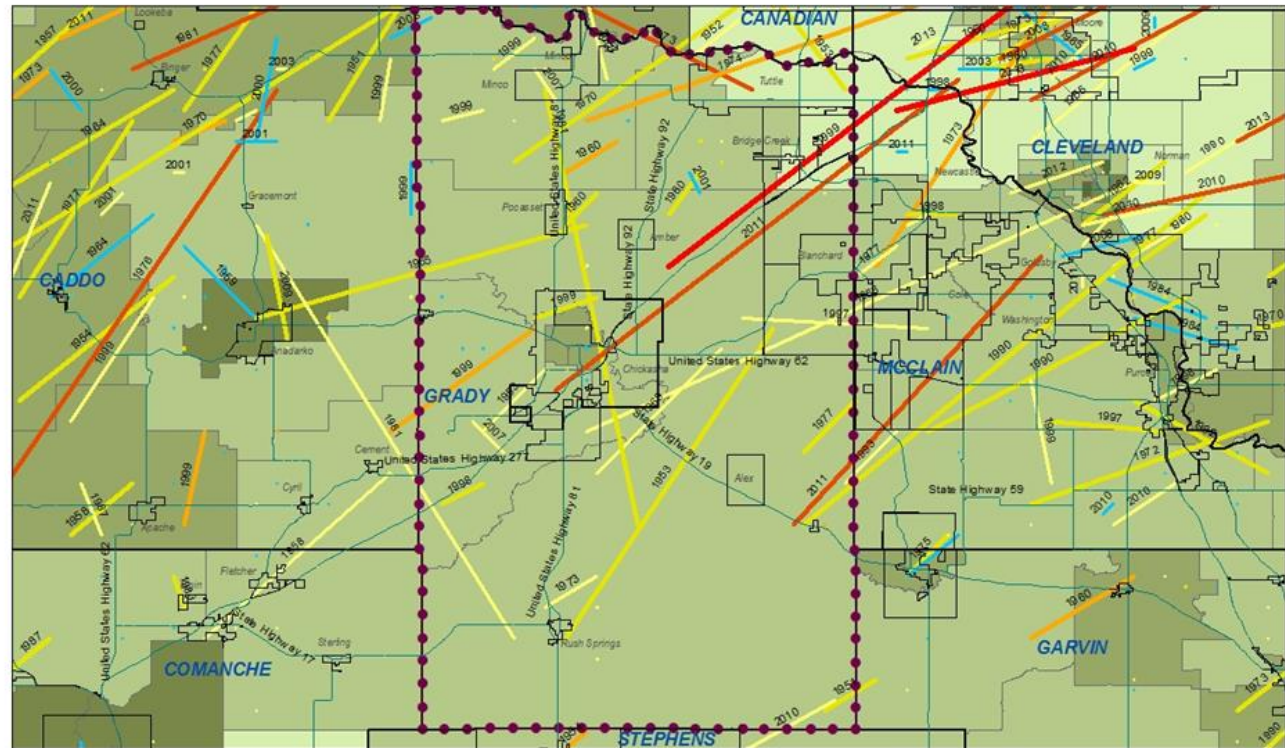
Tornado Events 1950 - 2014

Grady County

Tornado Magnitude



Social Vulnerability Index



19XX or 20XX Year of Event Selected County Boundary

○ Oklahoma Municipal Boundaries

□ COUNTY NAME



0 4.25 8.5 17 Miles

Sources: Shannon Van Zandt, Texas A&M, Hazard Planning materials, and 2009-2013 American Community Survey, Tables 811003, 801001, 817001, 808301, 825044, 825001, 825042, 802001, 803002, 826001, 825036, 817001, 825043, 51501, 825025 & 806007

Social vulnerability combined with the devastating impacts of a natural or man-made disaster can compound a household's ability to recover and in fact can place those individuals at an even greater gap or disadvantage prior to the event (Shannon Van Zandt, Texas A&M, Hazard Planning).

This county falls below the state score per this index for social vulnerability when comparing as a county to other counties in the state. Looking at the census tract level, the central area near Chickasa has elevated social vulnerability and historically has been hit by tornados.

Recommendations for this county:

- Continue to update and maintain the county HMP and include attention to areas within the county that in addition to physical vulnerability may have compounding social vulnerability factors.
- Efforts to strengthen building codes related to tornadoes and natural disasters should be considered.
- Planning for shelters from disaster events for multifamily, HUD and LIHTC units, in addition to all housing in the community should be incorporated with any effort to increase housing.