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# Evaluation of Social, Economic and Environmental Impacts of Encompass 2035

ASSOCIATION OF CENTRAL OKLAHOMA GOVERNMENTS

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The contents of this report reflect the views of the Association of Central Oklahoma Governments (ACOG), the Metropolitan Planning Organization for the Oklahoma City Area Regional Transportation Study (OCARTS) Transportation Management Area. ACOG is responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect official views or policy of the U.S. Department of Transportation. This report does not constitute a standard, specification, or regulation.

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## INTRODUCTION

In August of 2005, the president signed into law the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). This legislation builds upon the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21) of 1998 and its commitment to the preservation and utilization of the existing transportation system. Among the tasks that federal law delegates to the Metropolitan Planning Organizations (MPOs), such as the Association of Central Oklahoma Governments (ACOG), is the development of the regional transportation plan and the examination of the related social, economic, and environmental impacts. This report provides an overview of the various Oklahoma City Area Regional Transportation Study (OCARTS) Plan alternates and detailed information as to how ACOG, its committees, and citizens groups gathered, prepared, and analyzed information on the potential impacts of the Encompass 2035 alternates. [Figure 1](#) shows the OCARTS area boundary, counties, and entities.

It is important to note that this impact analysis is regional in nature. It in no way replaces the detailed Environmental Impact Statement (EIS) required by the National Environmental Policy Act (NEPA)<sup>1</sup> for any transportation improvement project utilizing federal funds.

## ASSESSMENT CATEGORIES

As part of the Encompass 2035, ACOG staff created a list of social, economic, and environmental impacts relevant to the study area. Data relating to these topics was gathered and analyzed in relation to the transportation networks considered for the Encompass 2035. ACOG staff, along with the Intermodal Transportation Policy Committee (ITPC), Intermodal Transportation Technical Committee (ITTC), Citizens Advisory Committee (CAC), and the Area-wide Planning and Technical Advisory Committee (APTAC), identified social, economic, and environmental characteristics of the OCARTS region which could impact, or be affected by the transportation plan alternates. After these areas were identified, staff gathered information on the following topics relating to the social, economic, and environmental impacts of the Encompass 2035:

- Social Impacts
  - OCARTS Archaeological sites
  - OCARTS Federal Tribal Trust Land Holdings
  - OCARTS Historic Sites and Districts
  - Safety (annual accidents predicted)
- Economic Impacts
  - Total Cost
  - Residential/Employment displacements
  - OCARTS Low Income Neighborhoods

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<sup>1</sup> The National Environmental Policy Act (NEPA) [42 U.S.C. 4321 et seq.] was signed into law on January 1, 1970. The Act establishes national environmental policy and goals for the protection, maintenance, and enhancement of the environment and provides a process for implementing these goals within the federal agencies. The Act also establishes the Council on Environmental Quality (CEQ). The complete text of the law is available for review at <http://ceq.hss.doe.gov/nepa/nepanet.htm>.

- Environmental Impacts
  - OCARTS Parks/Open Spaces
  - OCARTS Endangered Species
  - OCARTS Flood zones
  - Surface and Subsurface/Aquifer Water Quality
  - OCARTS Hazardous Waste and Superfund Sites
  - OCARTS Leaking Underground/Aboveground Storage tanks
  - OCARTS Noise Sensitive Locations

## DATA COLLECTION

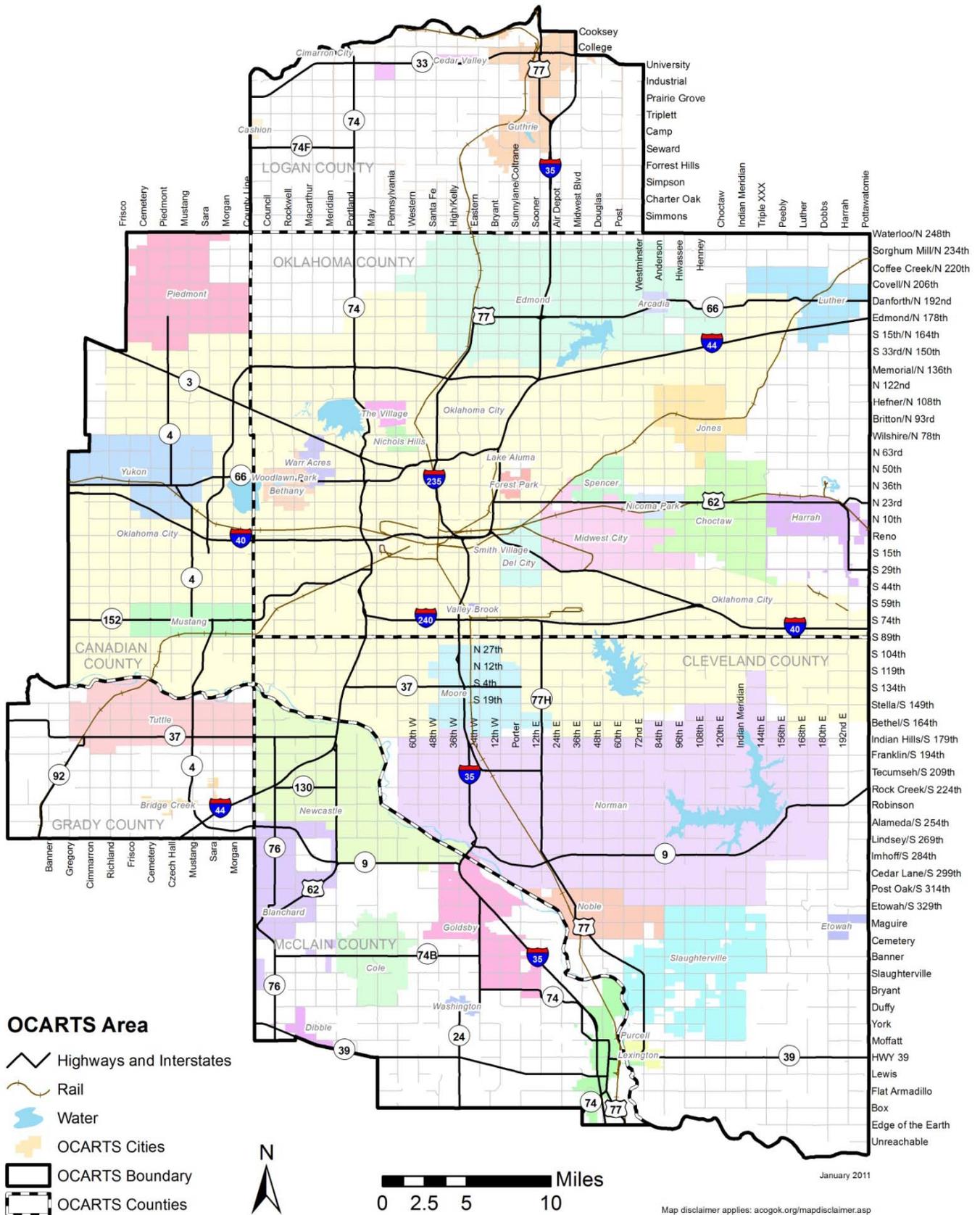
The data collection process included contacting numerous federal, state, and local agencies via correspondence, personal interviews, and telephone conversations. In most cases, these agencies were asked to provide the most recent impact data along with any associated physical locations. If the database included a complete address field, the information could be linked with a physical location by using the address-matching feature in the (ESRI) ArcGIS mapping software. Unfortunately, this was not always possible due to inadequate address information in the impact's data. The ArcGIS software was then used to map each impact by the physical locations identified from the databases. This was done by manually locating the address range and inserting a point, or by digitizing the feature on separate layers into the active GIS file. Staff also used a technique known as overlay analysis to evaluate the social, environmental, and economic impacts. This allowed identification of any potential conflicts.

To better illustrate how the Encompass 2035 recommendations could impact the social, economic, and environmental quality of the area, maps were developed to visually represent the location and/or magnitude of the potential impacts. In cases where an impact could not be mapped appropriately a chart or table was developed.

## METHODOLOGY

To better illustrate how the Encompass 2035 transportation improvements would impact the social, economic, and environmental quality of the area; maps were developed to visually represent the location of the potential impacts. In most cases agencies were asked to provide year 2009 data or the most recent database of the applicable impact information, along with an associated physical location for each data item. If the databases included a complete address field, the information could be linked with a physical location by using the address matching feature in the ArcGIS software. This was not always possible due to poor address information for some of the locations of the impacts. The ArcGIS software was then used to map each impact by the physical locations identified from the databases. This was done by manually locating the address range and inserting a point or by digitizing the feature on separate layers into the active ArcGIS file.

Figure 1:  
(2009) OCARTS Area Entities





## SOCIAL IMPACTS

### ARCHAEOLOGICAL SITES

The State of Oklahoma Archaeology Department was requested to provide a listing of all archaeological sites in the OCARTS area. Due to confidentiality issues, information on the sites could not be listed by physical location. Approximately 800 recorded sites are located in the OCARTS area. It was emphasized that only a small amount of the land in this area has been studied and there was a great probability for the discovery of more sites. Therefore, the State Archaeologist recommended that new projects be reviewed on a case by case basis.

Since the exact location of any archaeological sites could not be determined, staff could not develop maps and graphically display the sites. This impact analysis will need to be completed by each project during the required National Environmental Policy Act (NEPA) review process for street and highway projects utilizing federal funds.

### TRIBAL TRUST LAND HOLDINGS

These are lands under the jurisdiction or control of a Native American tribe (also known as trust land). Information was requested from various tribal organizations in the Central Oklahoma area including the Bureau of Indian Affairs (BIA) at Anadarko, OK, the Absentee Shawnee Tribe, the Kickapoo Tribe and Chickasaw Nation, were also contacted. The Absentee Shawnee Tribes land holdings were primarily in an area on the east side of Lake Thunderbird in Cleveland County. The Kickapoo Tribal land holdings were in eastern Oklahoma County north of Harrah. At least two parcels of the Chickasaw Nation were located in the Newcastle area, but in general, the McClain County area was unknown. Because of the sensitivity of the data, a detailed site-specific proximity analysis, and graphical display of the individual land holdings were not produced. [Figure 2](#) illustrates the Federal Tribal Trust land holdings within the OCARTS area.

### NATIONAL HISTORIC SITES/DISTRICTS

Information on the National Register of Historic Places; Sites and Districts were collected from the National Park Service, the Oklahoma State Historical Society, and the City of Oklahoma City Planning Department. All of the existing, new, pending, and proposed historic districts and sites have been digitized using ArcGIS. Historic districts were drawn as a region on a separate layer. There are 146 sites and 24 districts in the OCARTS area that are listed on the National Park Service's National Register of Historic Places. Minor accommodations may be necessary for specific transportation projects. Staff contacted the State Historical Society representatives to verify data. [Figure 3](#) and [Figure 4](#) illustrate the National Registered Historic sight and district locations within the OCARTS area.

### SAFETY

ACOG staff calculated the annual fatalities and injuries for the OCARTS area in 2035 using the accident rates per million vehicle miles of travel (VMT) published in the U.S. Department of Transportation. The projected annual fatalities predicted are 113. The projected annual injuries are 11,352. Project level design should strive to resolve potential safety hazards.

Figure 2:  
OCARTS Approximate Location of Federal Tribal Trust Land Holdings

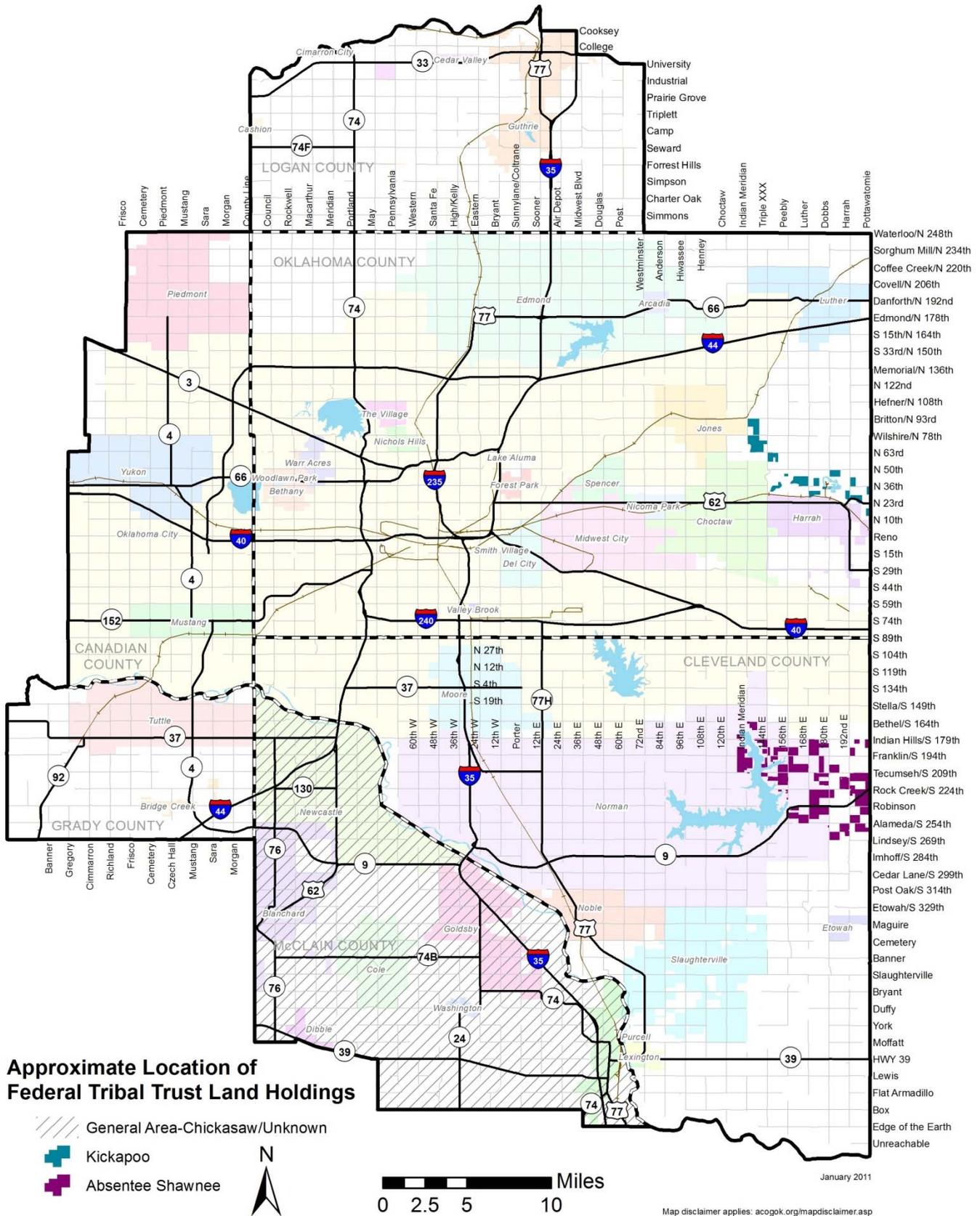


Figure 3:  
OCARTS National Register of Historic Places-Sites

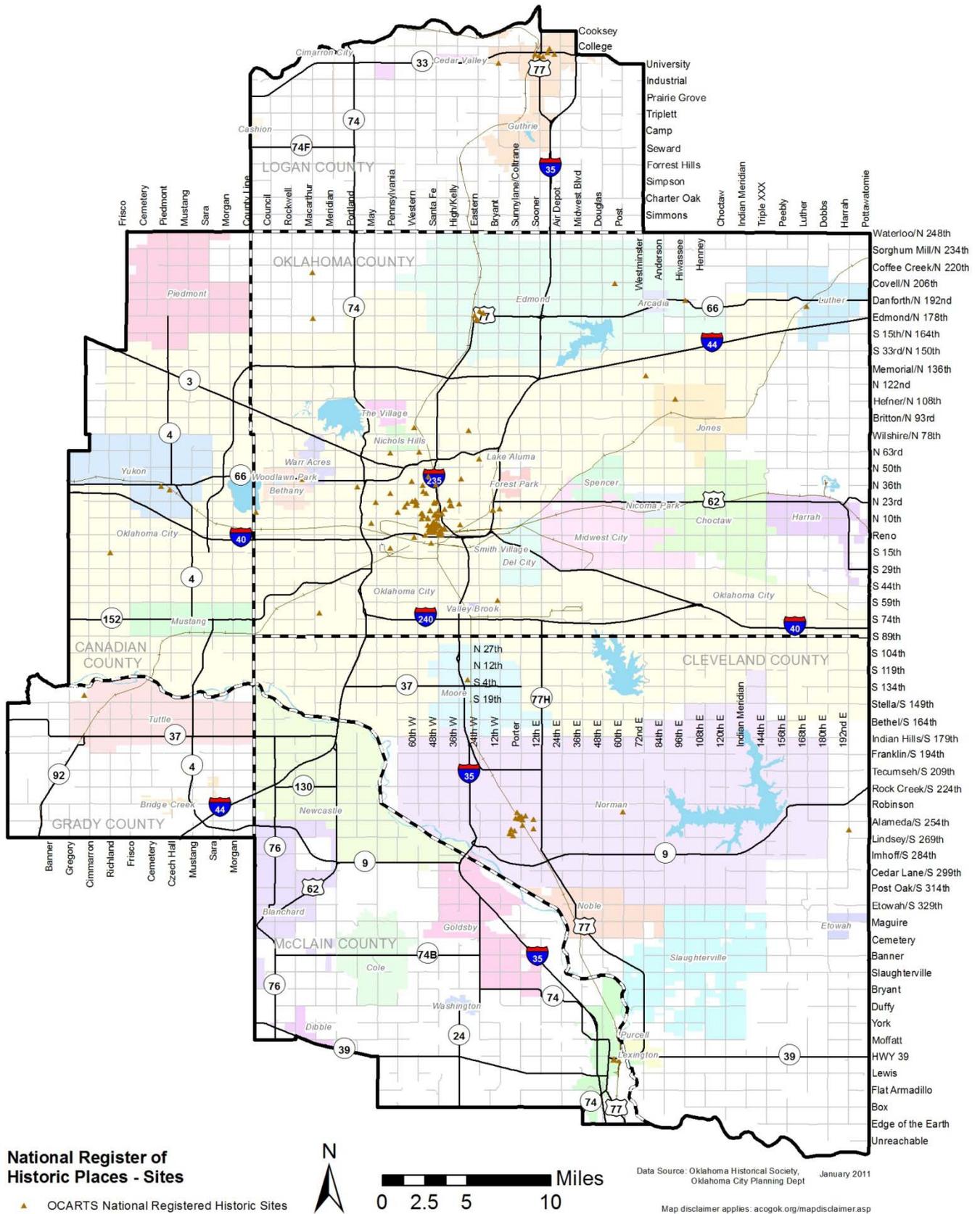
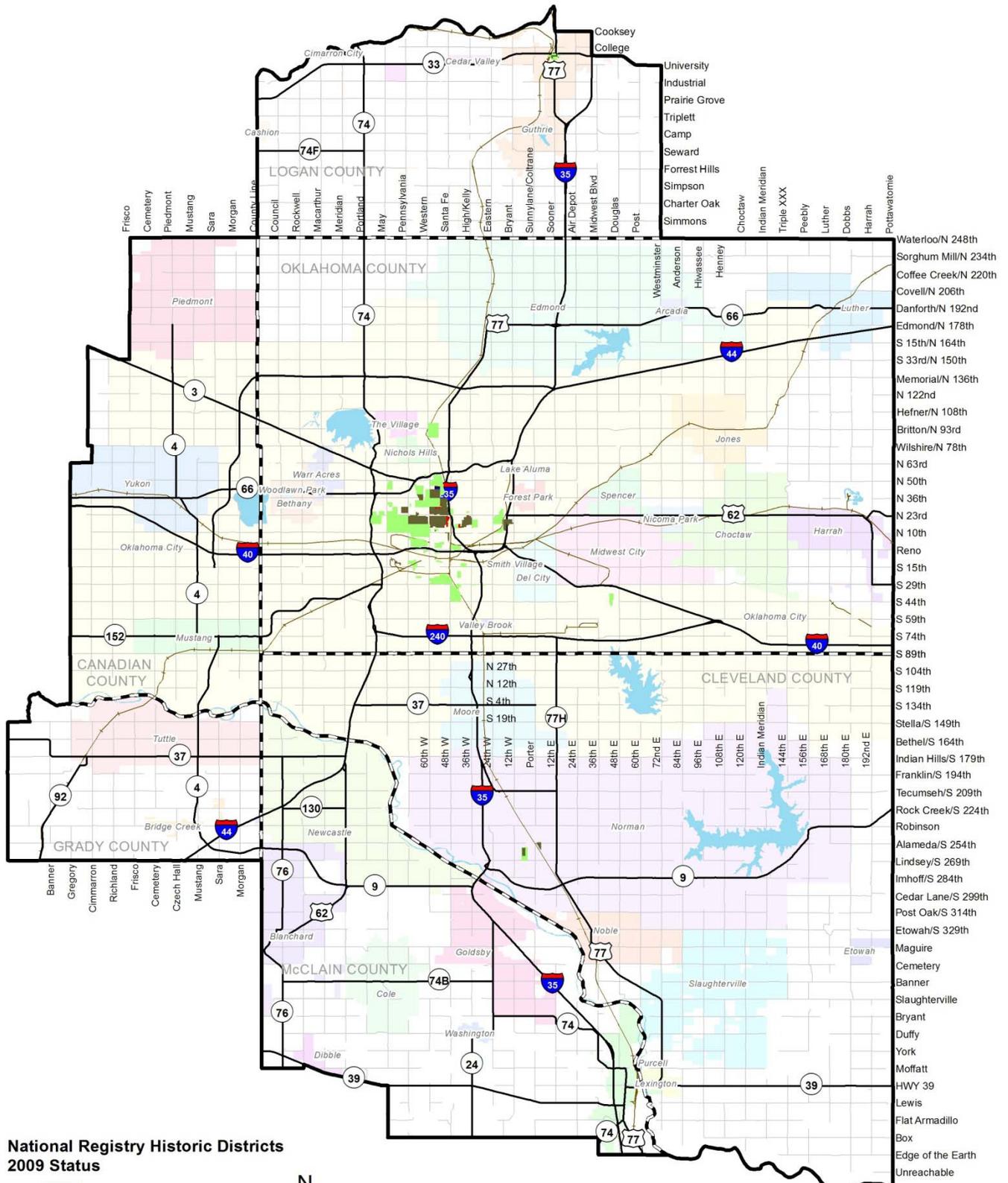


Figure 4:  
OCARTS National Register of Historic Places-Districts



## ECONOMIC IMPACTS

### TOTAL COST

Each of the Encompass 2035 Alternates was assigned an estimated cost by the MPO. Costs for the street and highway portion were based on estimated unit costs developed from recent construction information provided by the Oklahoma Department of Transportation (ODOT) and by local entities for the non-interstate facilities. The approved unit cost estimates reflected 2005 base year dollars, which were later inflated to year-of-expenditure (YOE) dollars.

The following information reveals that the recommended Encompass 2035 metropolitan transportation plan is financially feasible by demonstrating that the estimated costs to implement the Plan's recommendations will not exceed the estimated revenues reasonably available to the OCARTS area during the 30-year plan period.

#### ANTICIPATED REVENUES AND COSTS FOR THE ENCOMPASS 2035 RECOMMENDED PLAN

Mode	Estimated Percent	Projected Revenues	Estimated Plan Costs	Difference
Streets and Highways	86.7%	\$8,717,273,175	\$6,272,533,691	\$2,444,739,484
Transit (Urban & Rural)	10.0%	\$1,005,452,500	\$1,004,563,795	\$888,705
Bicycle and Pedestrian*	3.3%	\$331,799,325	\$328,943,366	\$2,855,959
Total	100.0%	\$10,054,525,000	\$7,606,040,852	\$2,448,484,148

\*Bike/Ped revenues include local sources and 5% of federal formula fund revenues.

### RESIDENTIAL DISPLACEMENTS

ACOG staff contacted the Oklahoma Department of Transportation (ODOT) and other local area transportation staff in regards to the possible number of residential and business displacements that could be caused by the 2035 Plan projects. It was not possible to get an accurate count of the number of future residential displacements, as these are calculated on a project by project basis. Staff did obtain a list of residential and commercial displacements from the years 2005-2009 from ODOT, Norman, and Oklahoma City.

### NEIGHBORHOODS, LOW INCOME AND TRADITIONALLY UNDERSERVED GROUPS

Acquisition of rights-of-way and/or close proximity of improvements may negatively impact low-income and minority groups. (See related Environmental Justice Report).



## ENVIRONMENTAL IMPACTS

### PARKS AND OPEN SPACES

An inventory of the current park and anticipated future park land was extracted from the 2005 OCARTS land use shapefile. These parcels included public parks and area golf courses. Also, river boundary areas, common areas, flood plain, sub-divisions and apartment complex green space are not classified as city parks but show up as parkland or open space use in some cases. The Oklahoma Department of Wildlife Conservation (ODWC) provided the shapefile of the Wildlife Management Area in Southeast Cleveland County. [Figure 5](#) illustrates OCARTS Parks and Open Space.

### WILDLIFE AND ENDANGERED SPECIES

United States Fish and Wildlife Services (USFWS), Southwest Region, provides a listing on their website of all endangered and threatened species for Oklahoma counties. The animals identified, and their status, located within the OCARTS area counties are the:

- Arkansas River shiner (Threatened), (Critical habitat designated)
- Black-capped vireo (Endangered)
- Interior least tern (Endangered)
- Lesser prairie-chicken (Candidate, Warranted but precluded)
- Piping plover (Threatened)
- Whooping crane (Endangered)

The Arkansas River Shiner and Interior Least Tern are the only OCARTS area species to have an official USFWS critical habitat delineation and can be reliably mapped, i.e. the OCARTS watersheds. Although these species are primarily restricted to the main river channels and lakes that does not ensure they actually exist or nest in the specific areas.

Staff conversed with staff from the Oklahoma Department of Wildlife Conservation Department and ODOT to obtain OCARTS data on Endangered Wildlife.

There are no state-listed threatened or endangered species in the OCARTS area - only the federally-listed species are identified. The map data was provided by ODOT. [Figure 6](#) illustrates OCARTS Threatened Endangered Species.

### FLOODPLAINS

Staff acquired data from the Federal Emergency Management Agency (FEMA) that contained floodplain files for Canadian, Cleveland, Logan, and Oklahoma counties. The Digital Flood Insurance Rate Map (DFIRM) database depicts flood risk information and supporting data used to develop the risk data. The DFIRM database is derived from Flood Insurance Studies (FISs) and previously published Flood Insurance Rate Maps (FIRMs). The 2008 FEMA shapefiles of the four counties (Canadian, Cleveland, McClain, Oklahoma) were combined with Logan county flood hazard data from 2010 as well as Grady county flood hazard data from 2005. The shapefiles of the six counties were combined then queried forming a 100 and 500 year floodplain shapefile. The features were clipped to the OCARTS boundaries. Staff conferred with several area entities to verify that the data was accurate. [Figure 7](#) illustrates OCARTS Flood Hazard Zones.

Figure 5:  
OCARTS Area Parks and Open Spaces

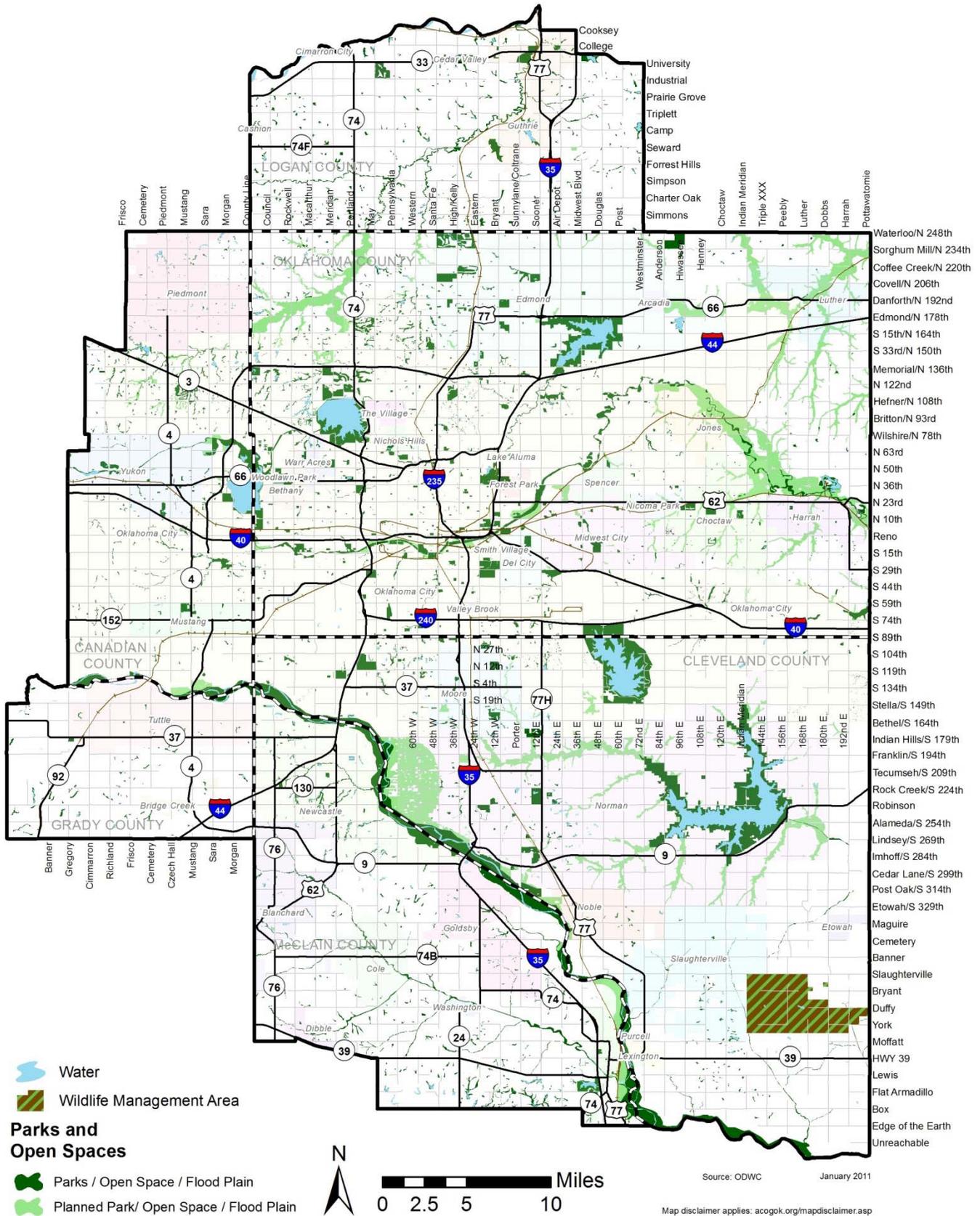
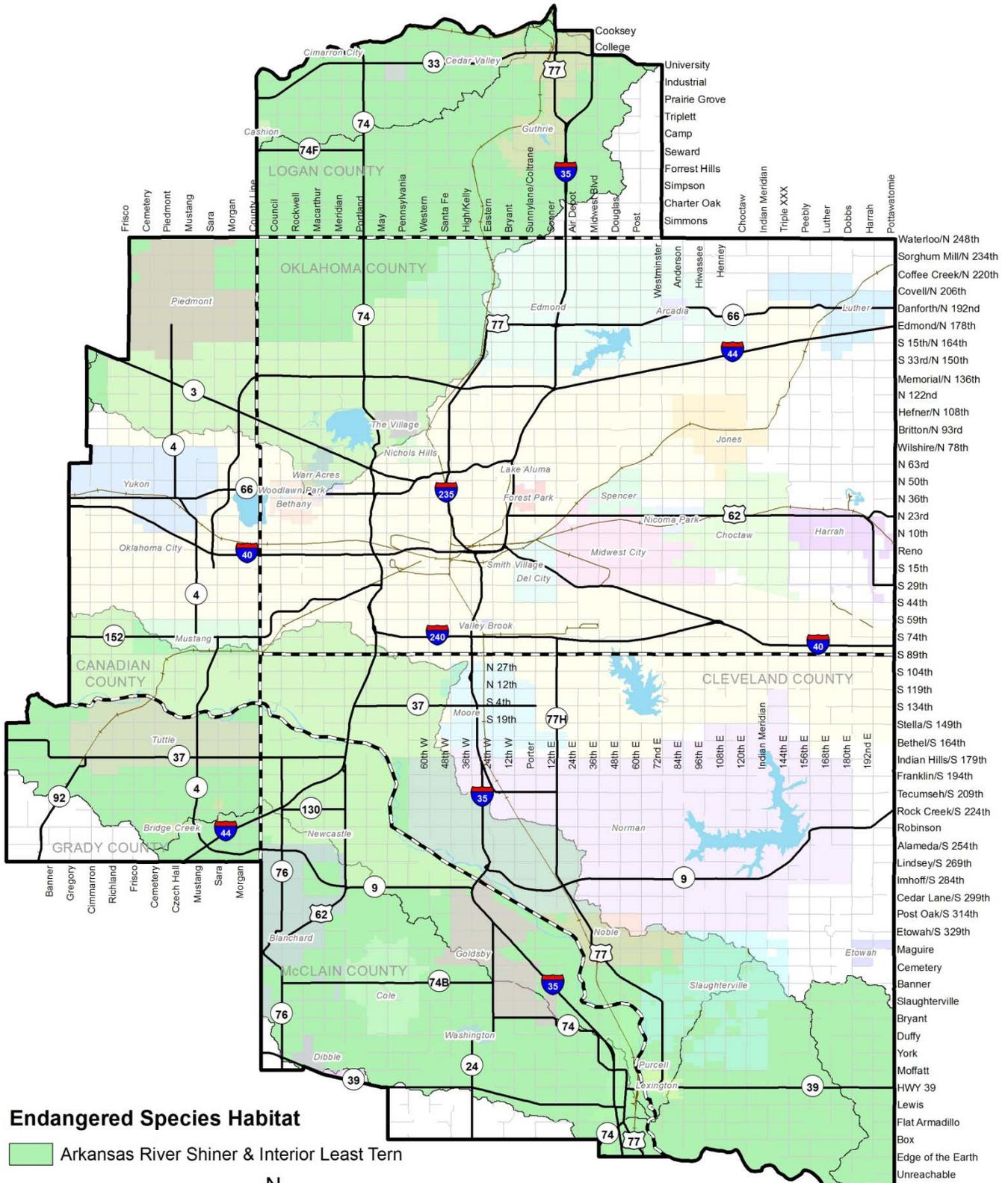


Figure 6:  
OCARTS Endangered and Threatened Species Habitat



**Endangered Species Habitat**  
 Arkansas River Shiner & Interior Least Tern



Data Source: ODOT  
 January 2011  
 Map disclaimer applies: [acogok.org/mapdisclaimer.asp](http://acogok.org/mapdisclaimer.asp)



## WATER QUALITY

Staff acquired GIS shapefiles of the Aquifers located within the OCARTS Area from ACOG's Water Resource Division. The three Aquifers are the El Reno Minor Aquifer, the Canadian River Alluvial Aquifer, and the Garber-Wellington Aquifer. The Garber Wellington Aquifer is the largest Aquifer system in the OCARTS area. It covers parts of Canadian, Cleveland, Oklahoma and Logan Counties. The Aquifers are a significant natural feature and a source of ground water for many entities in the OCARTS area. Most of the recharge for the Aquifer is located east of I-35. Many of the large area lakes provide drinking water for entities in the OCARTS area, and the Plan is not expected to impact these surface water supplies. [Figure 8](#) illustrates OCARTS Surface and Subsurface/Aquifer Water Quality.

## HAZARDOUS WASTE SITES/SUPERFUND SITES

The Superfund program was created as a result of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLA was enacted in 1980, and amended by the Superfund Amendments and Reauthorization Act of 1986. These acts established broad authority for the government to respond to problems posed by the release, or threat of release, of hazardous substances, pollutants, or contaminants. CERCLA also imposed liability on those responsible for releases and provided the authority for the government to undertake enforcement and abatement action against responsible parties. Staff obtained Oklahoma's Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database of Hazardous Waste sites by county from the Internet website at <http://cfpub.epa.gov/supercpad/cursites/srchsites.cfm>. The county files were loaded into Excel and the files were imported into ArcGIS, converted to shapefiles and verified by aerial photo. Staff members at the Oklahoma Department of Environmental Quality (ODEQ) and ODOT were contacted to obtain further guidance and knowledge of sites throughout the OCARTS area. [Figure 9](#) illustrates OCARTS Hazardous Waste and Superfund Sites.

## LEAKING UNDERGROUND STORAGE TANKS (LUST)

Staff received a current listing of the Leaking Underground Storage Tanks (LUST) and Leaking Above Ground Storage Tanks (LAST) database from staff at the Oklahoma Corporation Commission (OCC) and staff from ODOT. Staff obtained the database in Excel. The files were imported into ArcGIS, converted to shapefiles and verified by aerial photo. All open and closed cases were geocoded from 1998 to 2009. Closed cases could be viewed as an environmental liability only because those sites may retain impacted groundwater and/or soils caused by a release from a regulated fuel tank.

The OCC staff provided guidance on why closed LUST/LAST investigations are important to document:

All of assessment/cleanup investigations are based on a determination of regulated fuel contamination levels in soils and/or groundwater, and the presence of risk for exposure to that contamination by either current or potential receptors at or near that site. Oklahoma uses the ORBCA methodology to determine acceptable levels of regulated fuel contaminants at each release site. These acceptable contaminant levels are based on site conditions present at the time the investigation is completed. Therefore, even though a release case is closed, there may remain remnant levels of contamination in

site soils and/or groundwater that have been determined to not pose a threat to human health, safety or the environment.

However, if site conditions change from those reported during the ORBCA investigation, or previously unknown contamination is found, the level of risk for exposure may, also, change. If this situation should occur, a current environmental liability may be present at a closed release case site. This is why, in my opinion, older closed cases should be considered, potentially, as important as more recently closed cases in such a study.

[Figure 10](#) illustrates *OCARTS Leaking Underground/Aboveground Storage tanks*

## POTENTIAL NOISE SENSITIVE LOCATIONS

A listing of potential public noise sensitive areas were compiled which included: schools institutions of higher education, hospitals, nursing homes, child care facilities and religious organizations. ACOG Staff created a subset of 2005 employment file containing records with Standard Industrial Classification (SIC) codes that fall within the noise sensitive guidelines. The SIC codes groups were combined into a database. This database was imported into ArcGIS and converted to a shapefile.

Locations falling under the SIC CODES for Hospitals, Day Care Centers, Nursing Homes, Churches, and Schools were extracted from the geocoded 2005 employment dataset. The SIC codes used in the selection included:

- SIC Group 80 - Health Services (hospitals, etc.)
- SIC Group 82 - Educational Services (Schools, Colleges, Universities, etc.)
- SIC 8351 - Child Day Care Services
- SIC 8361 - Residential Care
- SIC 8661 - Religious Organizations

[Figure 11](#) illustrates OCARTS Noise Sensitive Locations.

Figure 8:  
OCARTS Area Aquifers

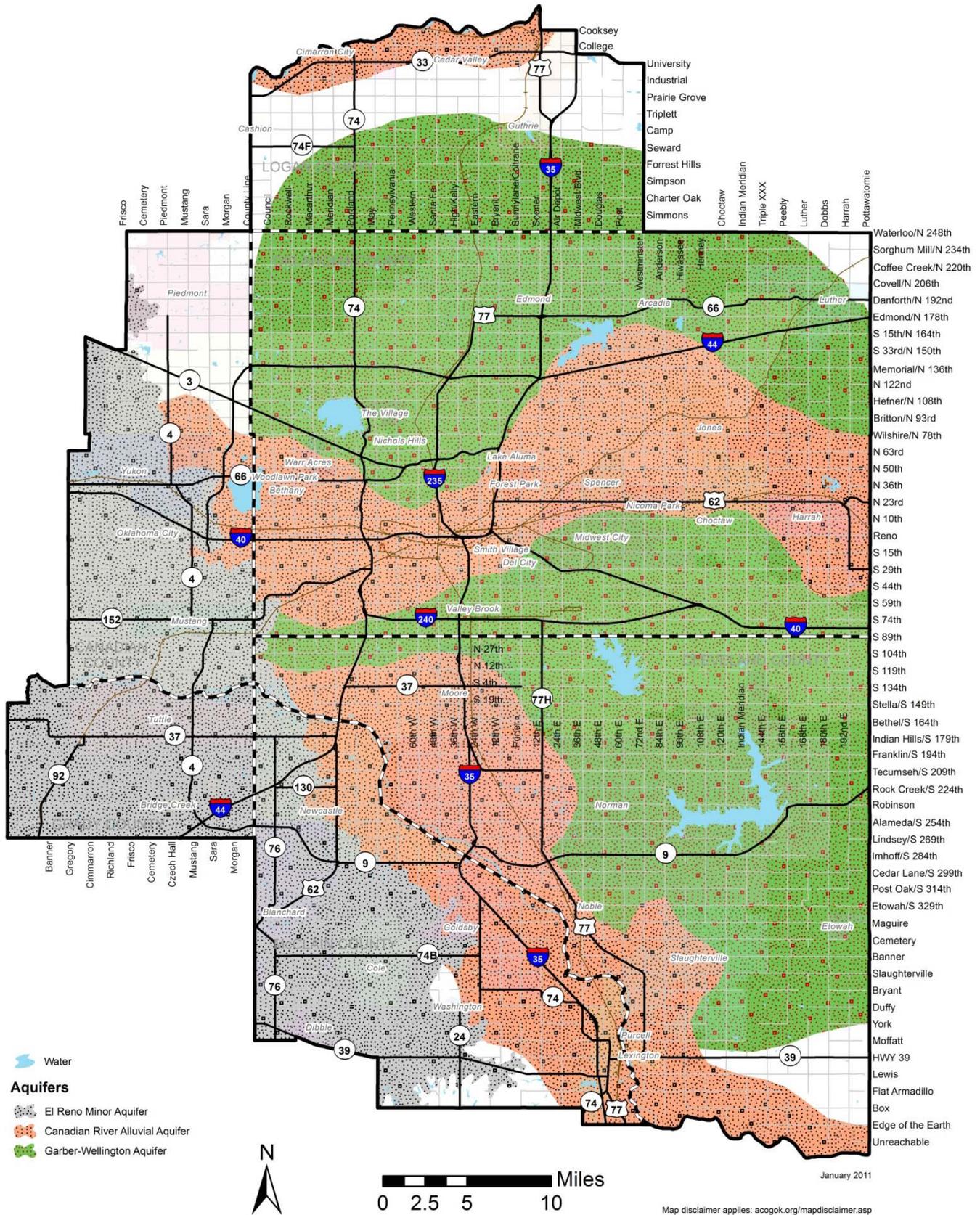


Figure 9:  
OCARTS Area EPA-CERCLA Hazardous Waste and Superfund Locations

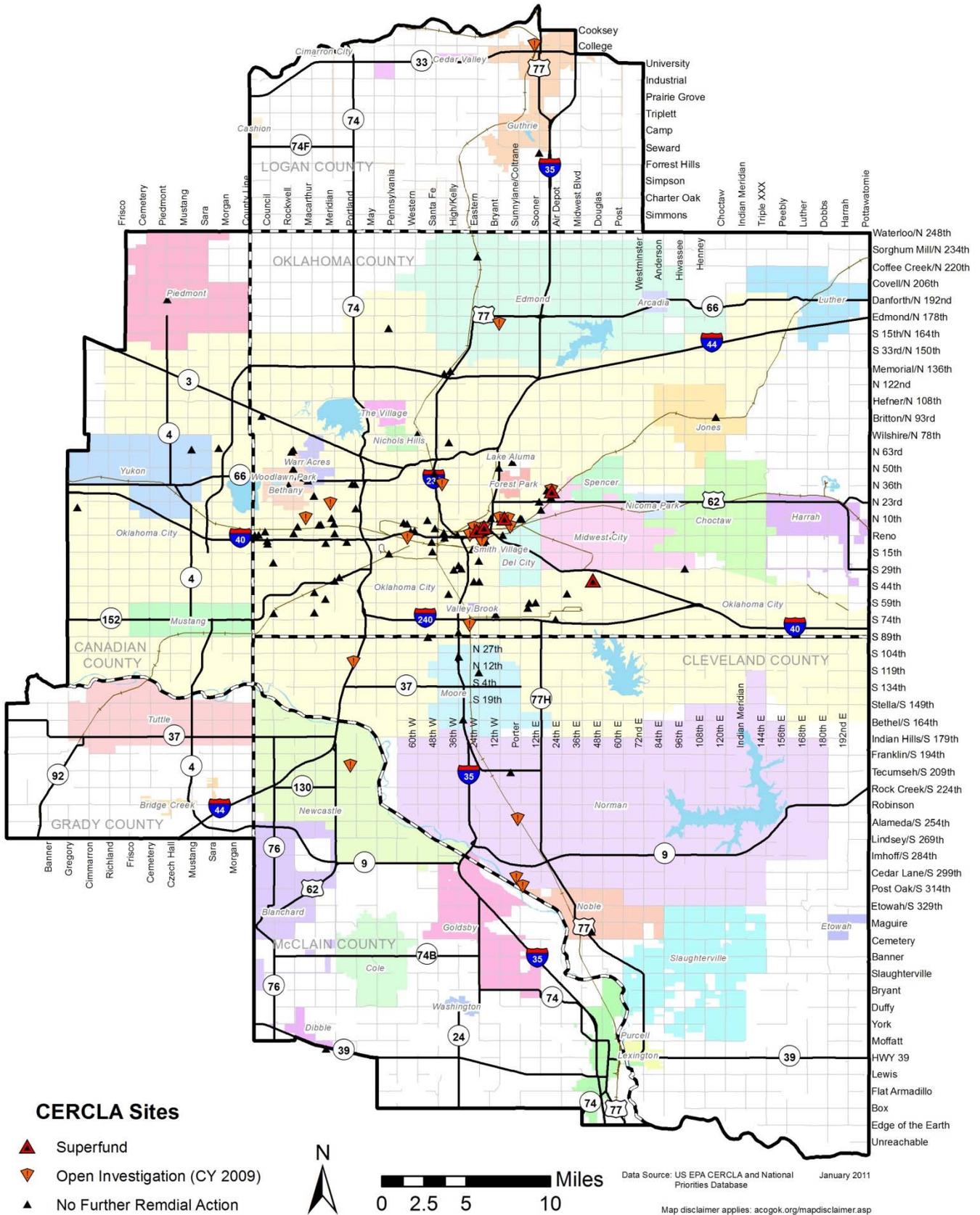
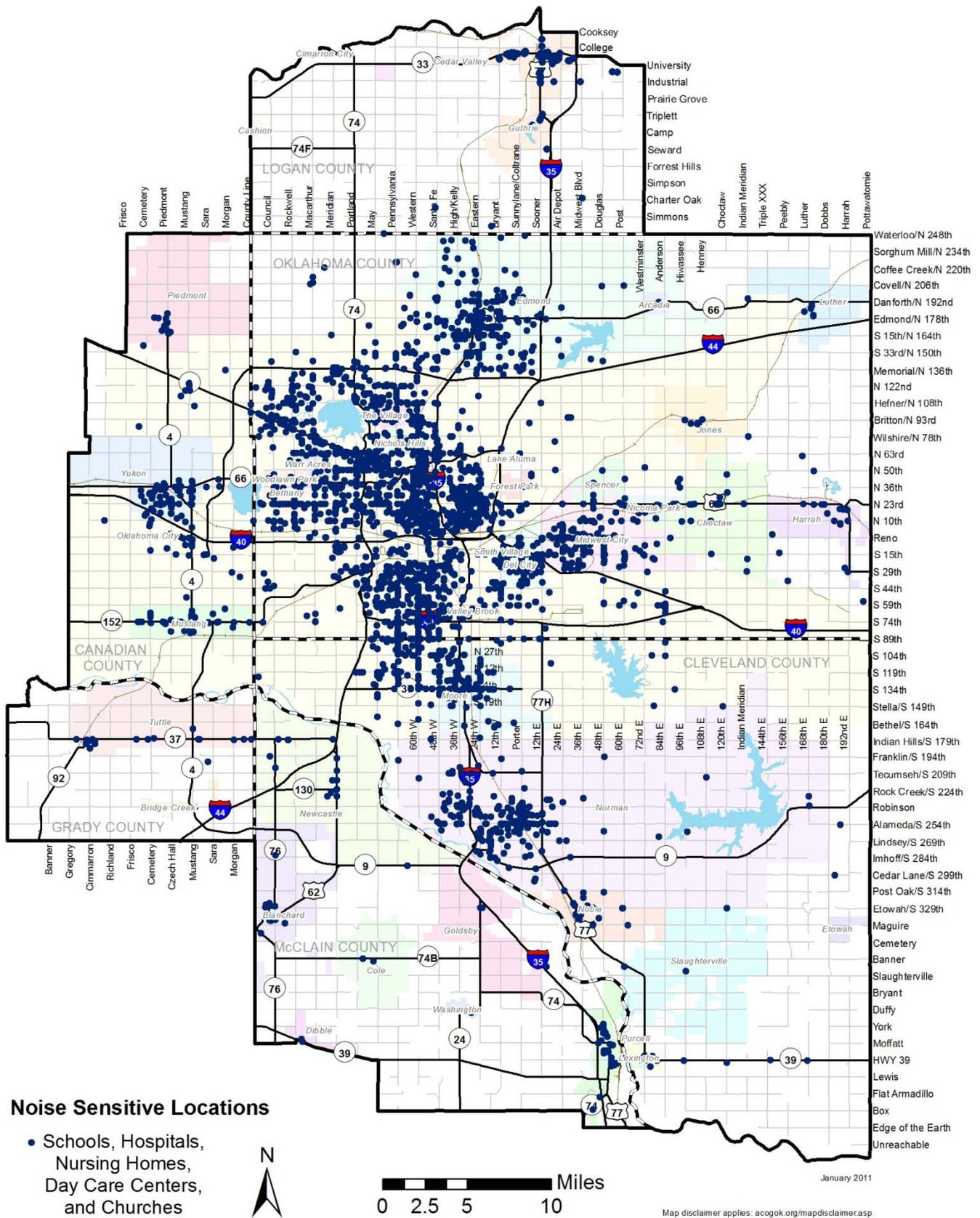




Figure 11:  
OCARTS Area Potential Noise Sensitive Locations



## CONCLUSION

Staff concluded that the social, environmental, or economic impacts, identified at the regional level, would not prohibit final plan adoption. Some projects may require increased time and costs in the planning and review process due to compliance with environmental and historical regulations, additional rights-of-way acquisition, and potential accommodations to neighborhoods, businesses, and historical places. Furthermore, a detailed site-specific impact assessment is required, as outlined by the National Environmental Policy Act (NEPA), for any street or highway project utilizing federal funds. This regional analysis process provided a forum for discussion and consideration of the potential system level impacts during the plan adoption phase.



## ATTACHMENT 1: EVALUATION OF ECONOMIC, ENVIRONMENTAL AND SOCIAL IMPACTS

An evaluation of economic, environmental and social impacts was conducted for each of the Encompass 2035 alternates. The following tables represent potential impacts.

Social impacts include archaeological sites, tribal lands, national historical sites/districts, and safety. The environmental impacts include parks/open spaces, endangered species, floodplains, water quality, hazardous waste and Superfund sites, leaking underground storage tanks, and noise sensitive sites. The economic impacts include residential and business displacements, environmental justice issues, (e.g., minority/underserved groups), and the total cost of each alternate.

This information is very general in nature since the data and potential impacts were evaluated at the regional level. The specific impacts of individual projects (highway, transit, trails, etc.) will be evaluated in greater detail as part of the planning process prior to construction, as appropriate

**Potential Social Impacts of Encompass 2035**

Social Impacts	Consideration	Anticipated Impacts
Archaeological Sites	There are approximately 800 archaeological sites within the OCARTS area.	Minor accommodations may be necessary for specific projects; no significant impact.
Tribal Lands	The federal tribal trust lands in the OCARTS are mostly located in the eastern parts of Cleveland, McClain and Oklahoma counties.	The BIA and individual tribes must be contacted to determine exact locations. Otherwise no anticipated impact.
National Historic Sites and Districts	There are 146 sites and 24 districts in the OCARTS area that are listed on the National Park Service's National Register of Historic Places.	Minor accommodations may be necessary for specific projects. Otherwise no anticipated impact.
Safety (Annual Accidents Predicted)	Fatalities - 113 Injuries - 11,352	Project level design should strive to resolve potential safety hazards.

**Potential Economic Impacts of Encompass 2035**

Economic Impacts	Consideration	Anticipated Impacts
<b>Residential and Employment Displacements</b>	Acquisition of rights-of-way for roadway improvement may result in displacement of residential and business properties.	Accommodations may be necessary for specific projects.
<b>Neighborhoods Low Income and Traditionally Underserved Groups</b>	Acquisition of rights-of-way and/or proximity of improvements may negatively impact low income groups.	Accommodations may be necessary for specific projects.
<b>Encompass 2035 Costs</b>	Street and Highway: \$6,272,533,691 Transit: \$1,004,563,795 Bicycle/Pedestrian: <u>\$ 247,631,366</u> \$7,524,728,852	None. Encompass 2035 is financially constrained.

**Potential Environmental Impacts of Encompass 2035**

Environmental Impacts	Consideration	Anticipated Impacts
<b>Parks and Recreational Areas</b>	There will be minimal effects from bike or pedestrian paths on the natural environment; increased costs to handle additional stormwater runoff may develop.	Minor accommodations may be necessary for specific projects.
<b>Wildlife, and Endangered Species</b>	There are five endangered or threatened species in the OCARTS area; a portion of the South Canadian River, between McClain and Cleveland counties, has been designated a critical habitat by the Fish and Wildlife Service; the exact habitat of threatened avian species is unpredictable from year to year due to their migratory nature.	Minor accommodations may be necessary for specific projects.
<b>Flood Plains</b>	Street widening and construction projects across or near Cottonwood Creek, North Fork Walnut Creek, Deep Fork, Cimarron, Little, North or South Canadian Rivers or other major flood prone areas will incur increased construction costs.	Accommodations may be necessary for specific projects.
<b>Water Quality: Surface and Aquifers</b>	Street widening and construction projects will incur increased costs to protect surface and underground water resources from stormwater runoff and construction activities (EPA NPDES, Oklahoma's CSGWPP, and other Source Water Protection Programs).	Minor accommodations may be necessary for specific projects.
<b>Hazardous Waste and Superfund Sites</b>	There are 136 hazardous waste sites (some of which may require remediation) and 5 superfund sites within the OCARTS area.	Planning and design of street widening/ construction projects near these sites will require special attention.
<b>Leaking Underground Storage Tanks</b>	There are approximately 103 open investigations of suspected or confirmed leaking underground storage tanks in the OCARTS area; removal of tanks and remediation could delay progress on intersection improvements or street widening projects.	Minor accommodations may be necessary for specific projects.
<b>Noise Sensitive Areas/Sites</b>	There are 4,197 noise sensitive locations, (e.g., day care centers, schools, colleges, nursing homes, hospitals) within the OCARTS area.	Street widening and construction projects could increase noise levels for residential areas and accommodations may be necessary for specific projects.