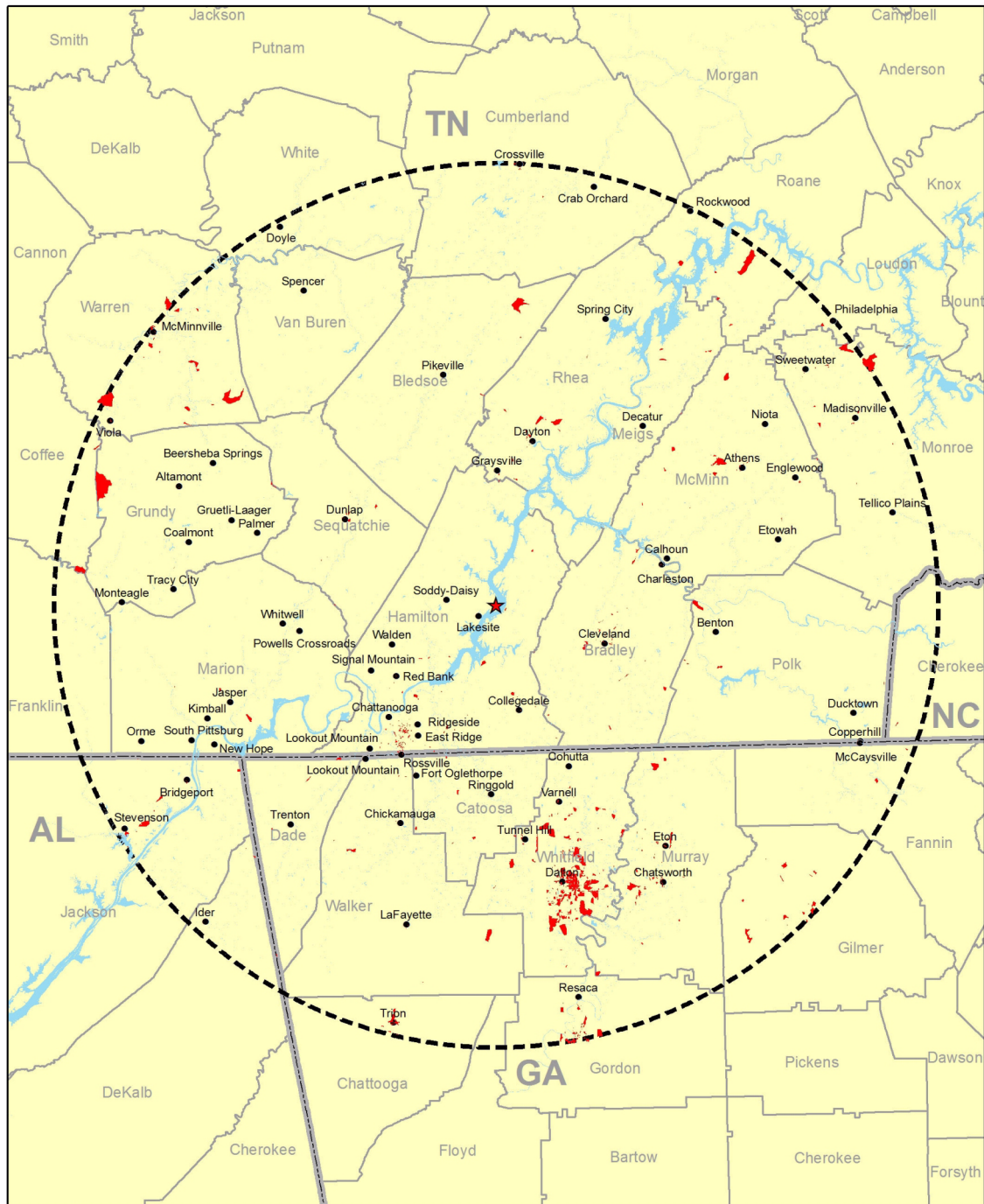
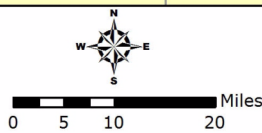


**Figure 2.6-4**  
 Native Hawaiian and Other Pacific Islander Populations, Combined State Method



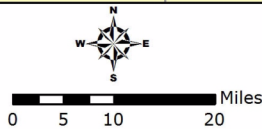
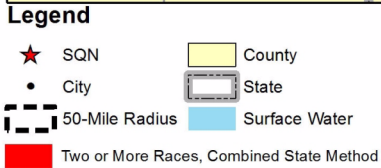
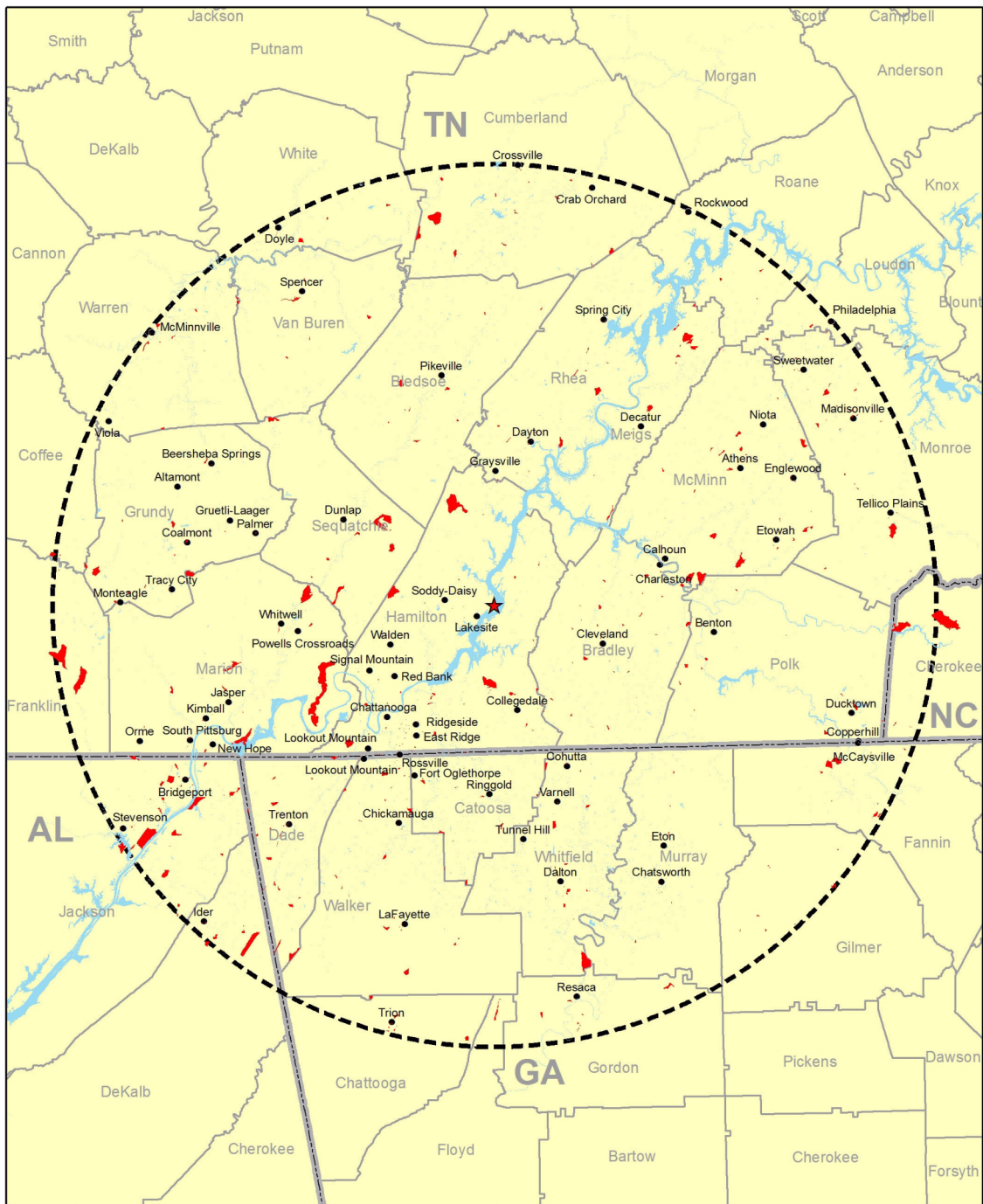
(USCB 2010f; USCB 2010i; USDOT 2010)

- Legend**
- ★ SQN
  - City
  - 50-Mile Radius
  - Some Other Race, Combined State Method
  - County
  - ▭ State
  - Surface Water



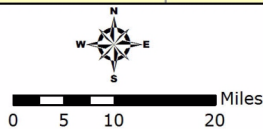
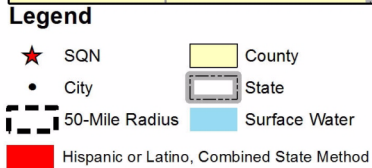
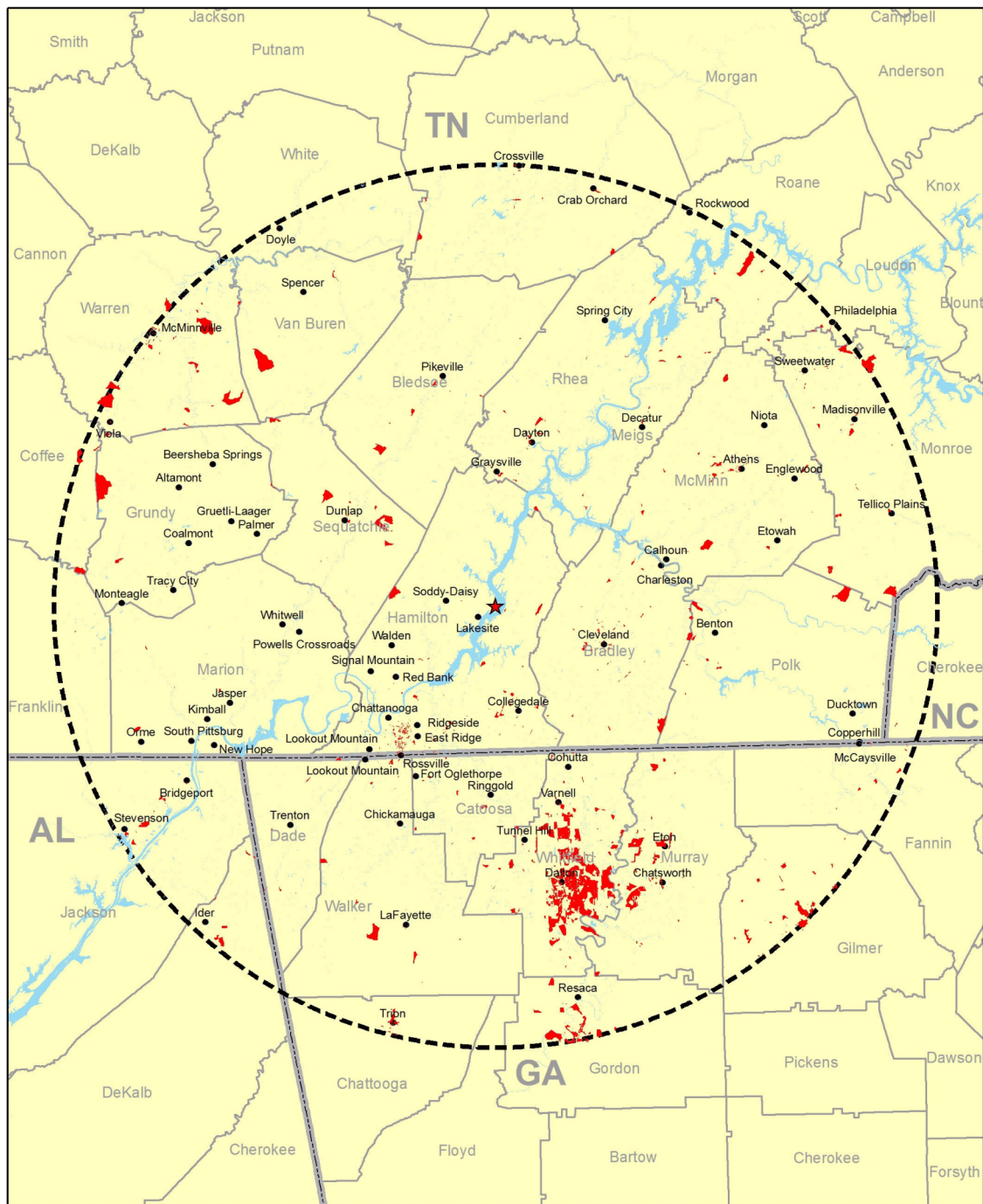
**Figure 2.6-5**  
**Some Other Race, Combined State Method**





(USCB 2010f; USCB 2010i; USDOT 2010)

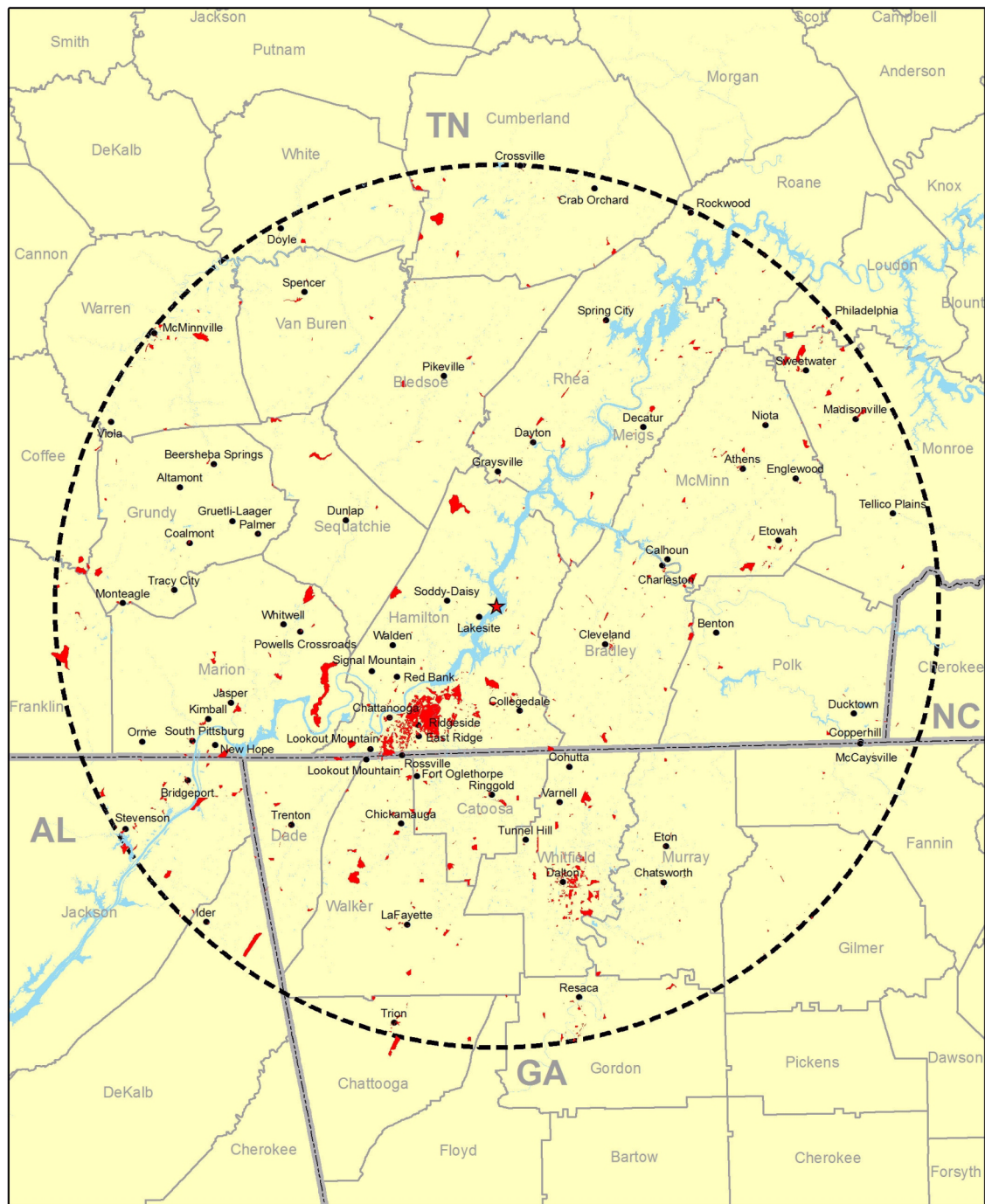
**Figure 2.6-6**  
**Two or More Races, Combined State Method**



(USCB 2010f; USCB 2010i; USDOT 2010)

**Figure 2.6-7**  
**Hispanic or Latino Populations, Combined State Method**

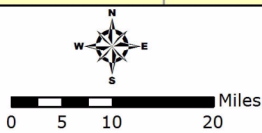




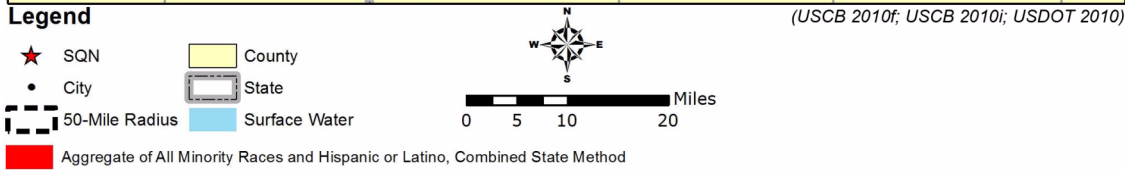
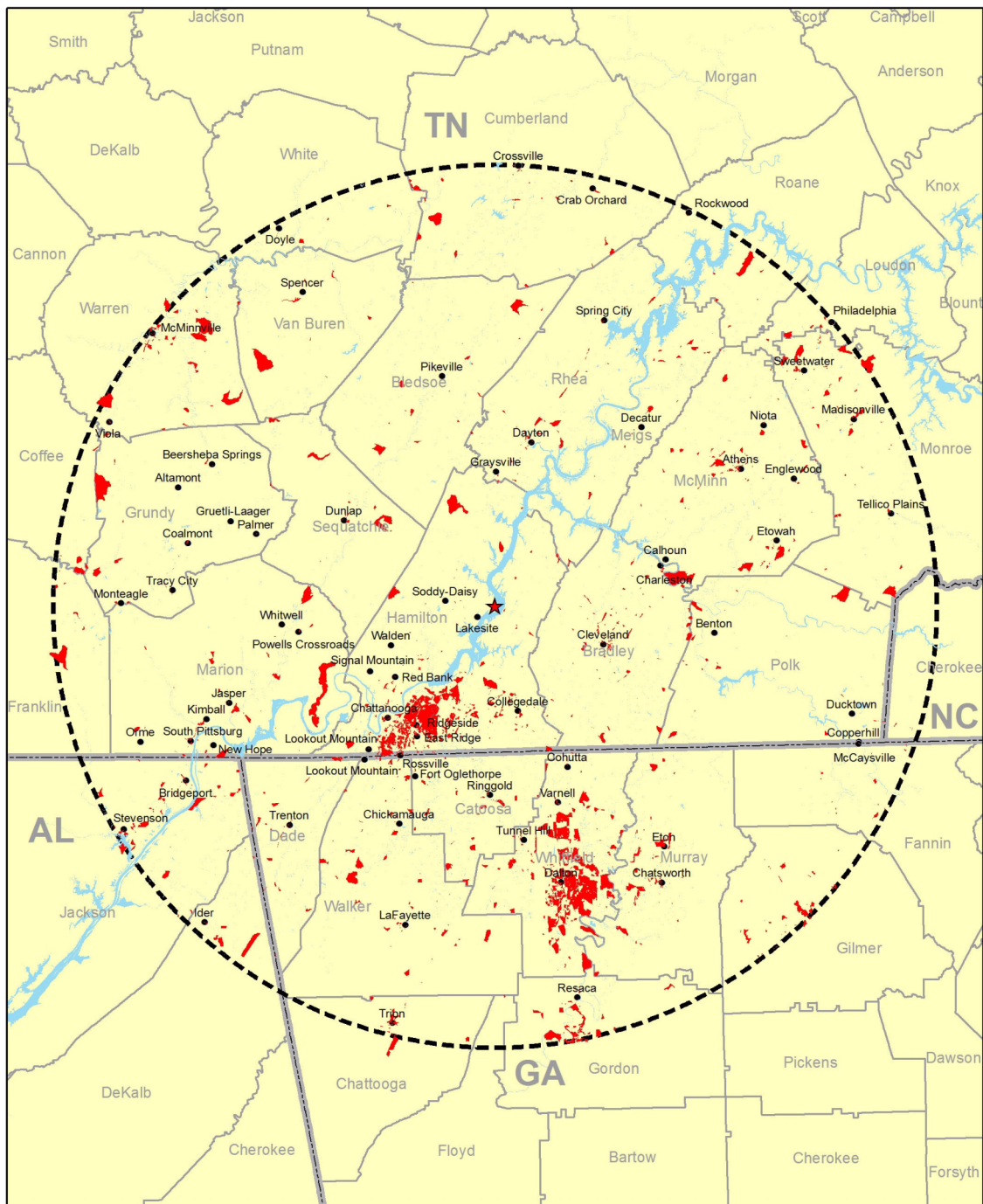
(USCB 2010f; USCB 2010i; USDOT 2010)

**Legend**

- ★ SQN
- City
- ▭ County
- ▭ State
- ⊖ 50-Mile Radius
- Aggregate of All Minority Races, Combined State Method

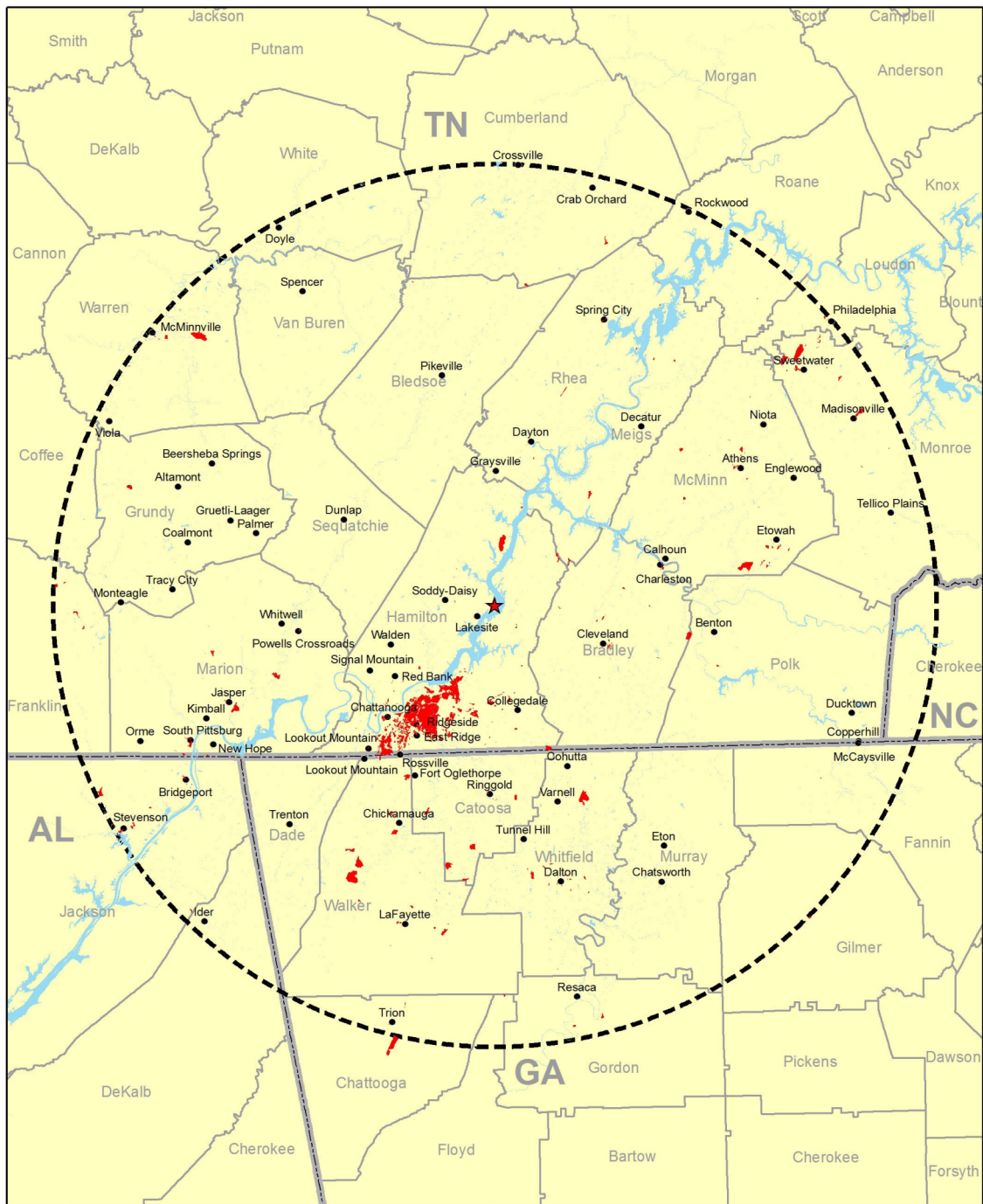


**Figure 2.6-8**  
**Aggregate of All Minority Races, Combined State Method**



**Figure 2.6-9**  
**Aggregate of All Minority Races and Hispanic or Latino, Combined State Method**

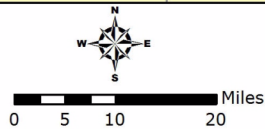




(USCB 2010f; USCB 2010i; USDOT 2010)

**Legend**

- ★ SQN
- City
- ▭ County
- ▭ State
- ⊖ 50-Mile Radius
- ⊖ Surface Water
- Black or African American, Individual State Method

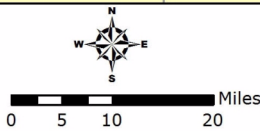


**Figure 2.6-10**  
**Black or African American, Individual State Method**



**Legend**

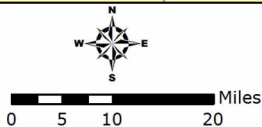
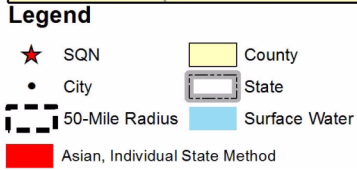
- ★ SQN
- City
- County
- ▭ State
- ⊖ 50-Mile Radius
- American Indian and Alaska Native, Individual State Method



(USCB 2010f; USCB 2010i; USDOT 2010)

**Figure 2.6-11**  
**American Indian and Alaska Native, Individual State Method**





(USCB 2010f; USCB 2010i; USDOT 2010)

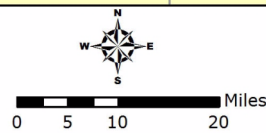
**Figure 2.6-12**  
**Asian, Individual State Method**



(USCB 2010f; USCB 2010i; USDOT 2010)

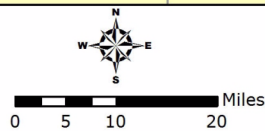
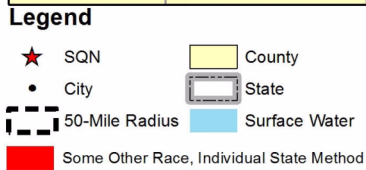
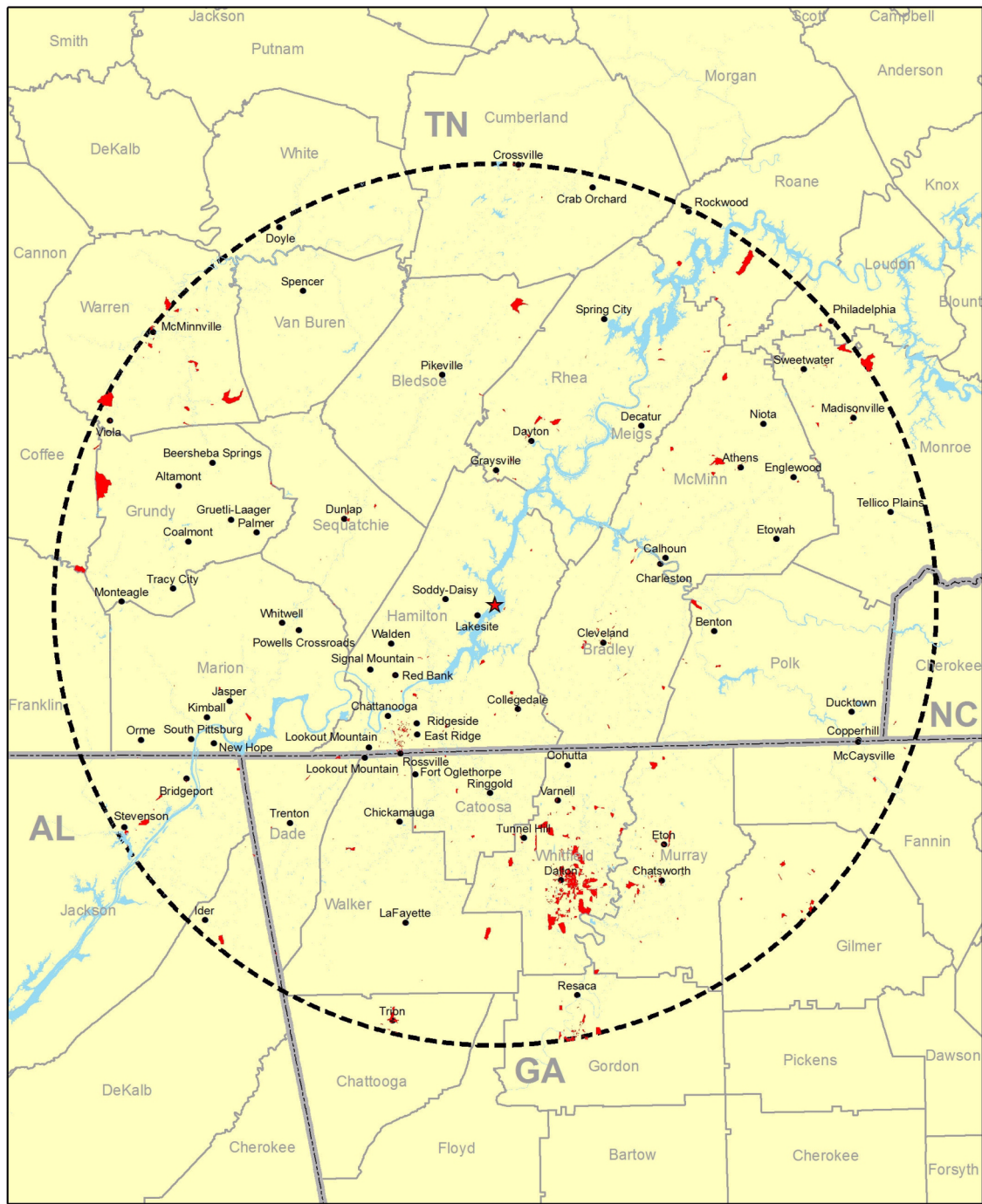
**Legend**

- ★ SQN
- City
- 50-Mile Radius
- County
- State
- Surface Water
- Native Hawaiian and Other Pacific Islander, Individual State Method



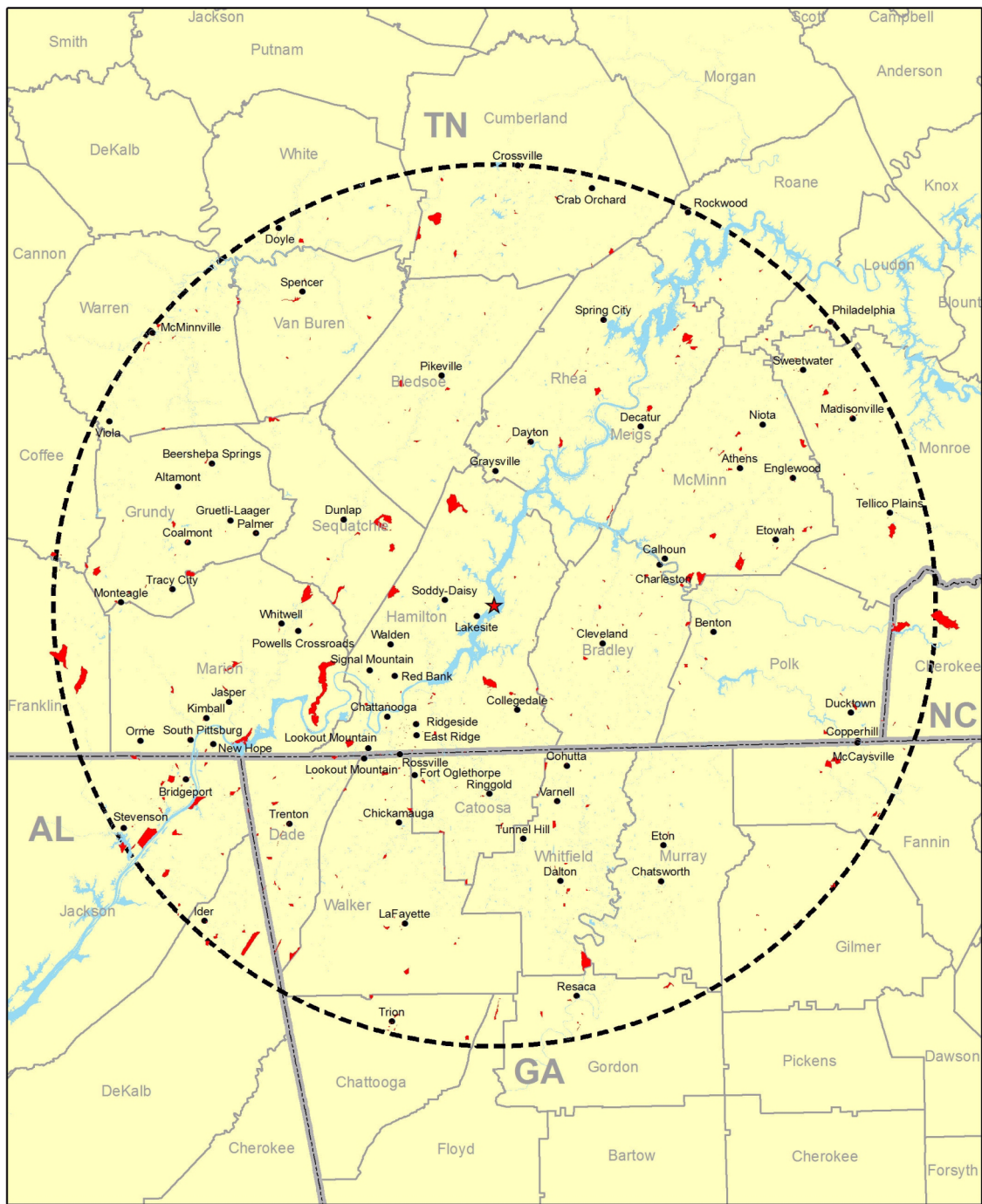
**Figure 2.6-13**  
**Native Hawaiian and Other Pacific Islanders, Individual State Method**





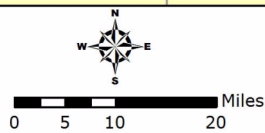
(USCB 2010f; USCB 2010i; USDOT 2010)

**Figure 2.6-14**  
**Some Other Race, Individual State Method**



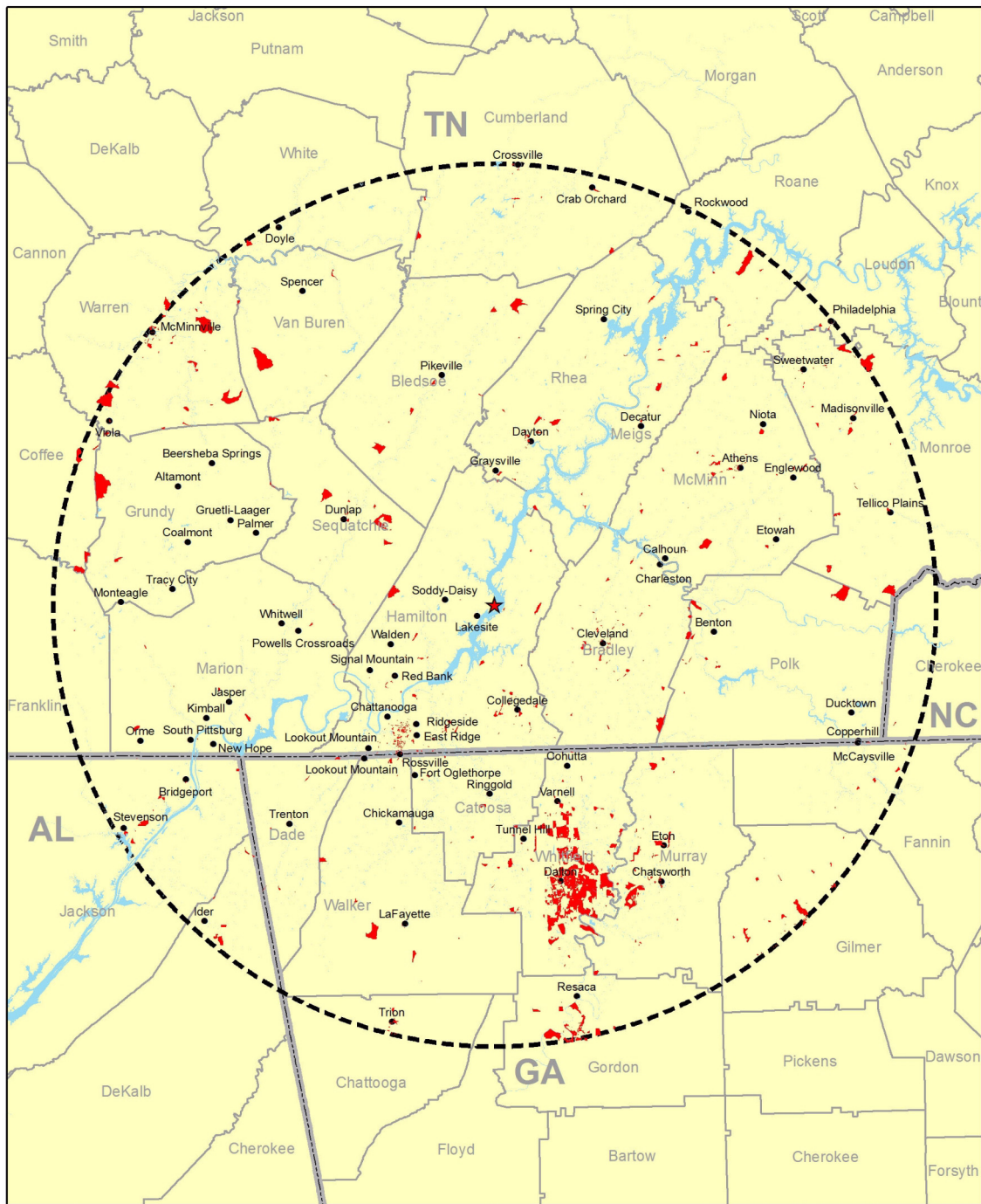
(USCB 2010f; USCB 2010i; USDOT 2010)

- Legend**
- ★ SQN
  - City
  - 50-Mile Radius
  - Two or More Races, Individual State Method
  - County
  - ▭ State
  - Surface Water



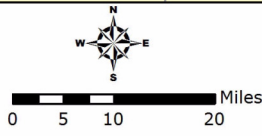
**Figure 2.6-15**  
**Two or More Races, Individual State Method**



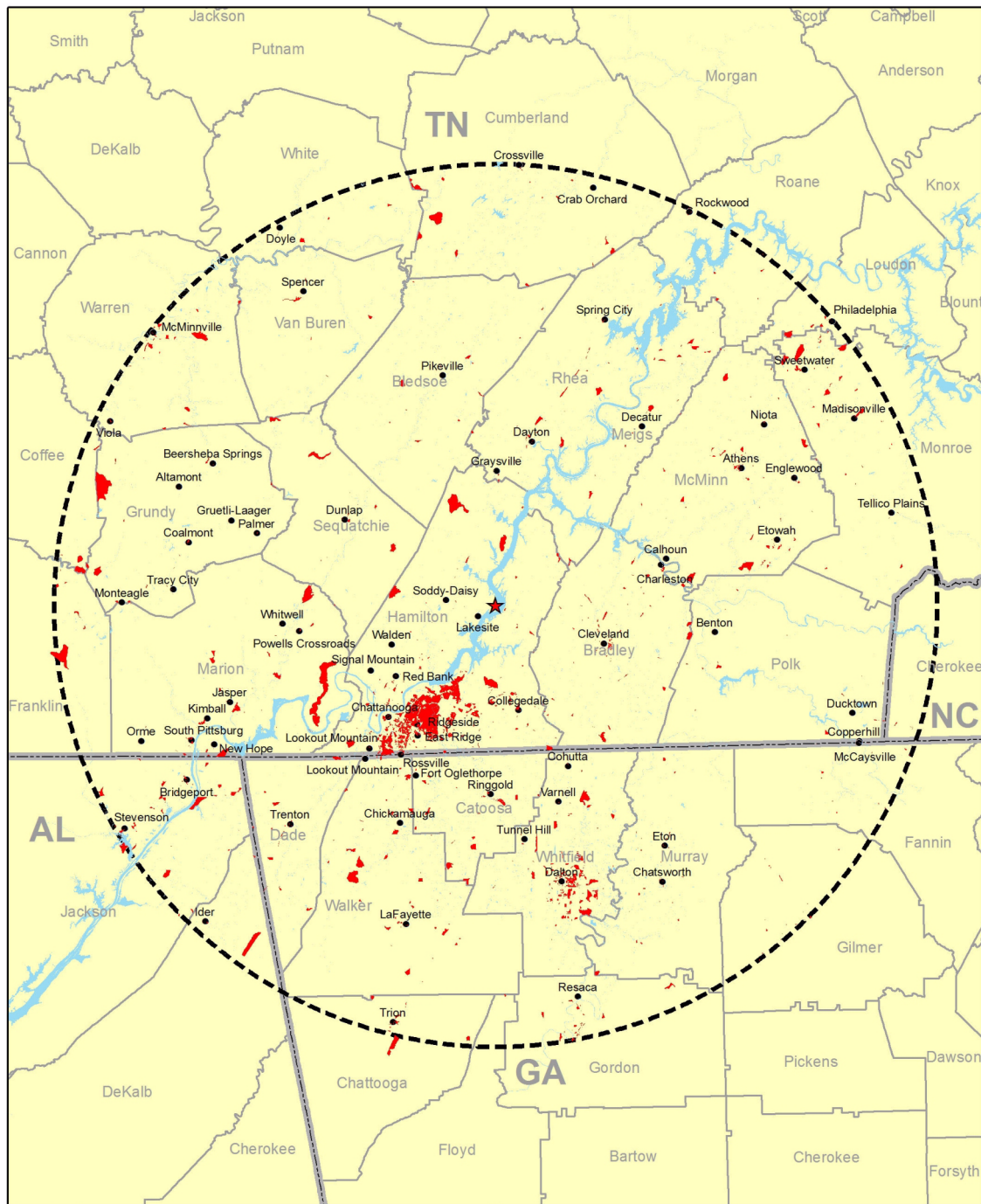


(USCB 2010f; USCB 2010i; USDOT 2010)

- Legend**
- ★ SQN
  - City
  - 50-Mile Radius
  - Hispanic or Latino, Individual State Method
  - County
  - ▭ State
  - Surface Water



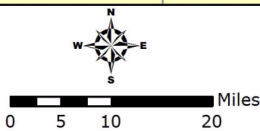
**Figure 2.6-16**  
**Hispanic or Latino, Individual State Method**



(USCB 2010f; USCB 2010i; USDOT 2010)

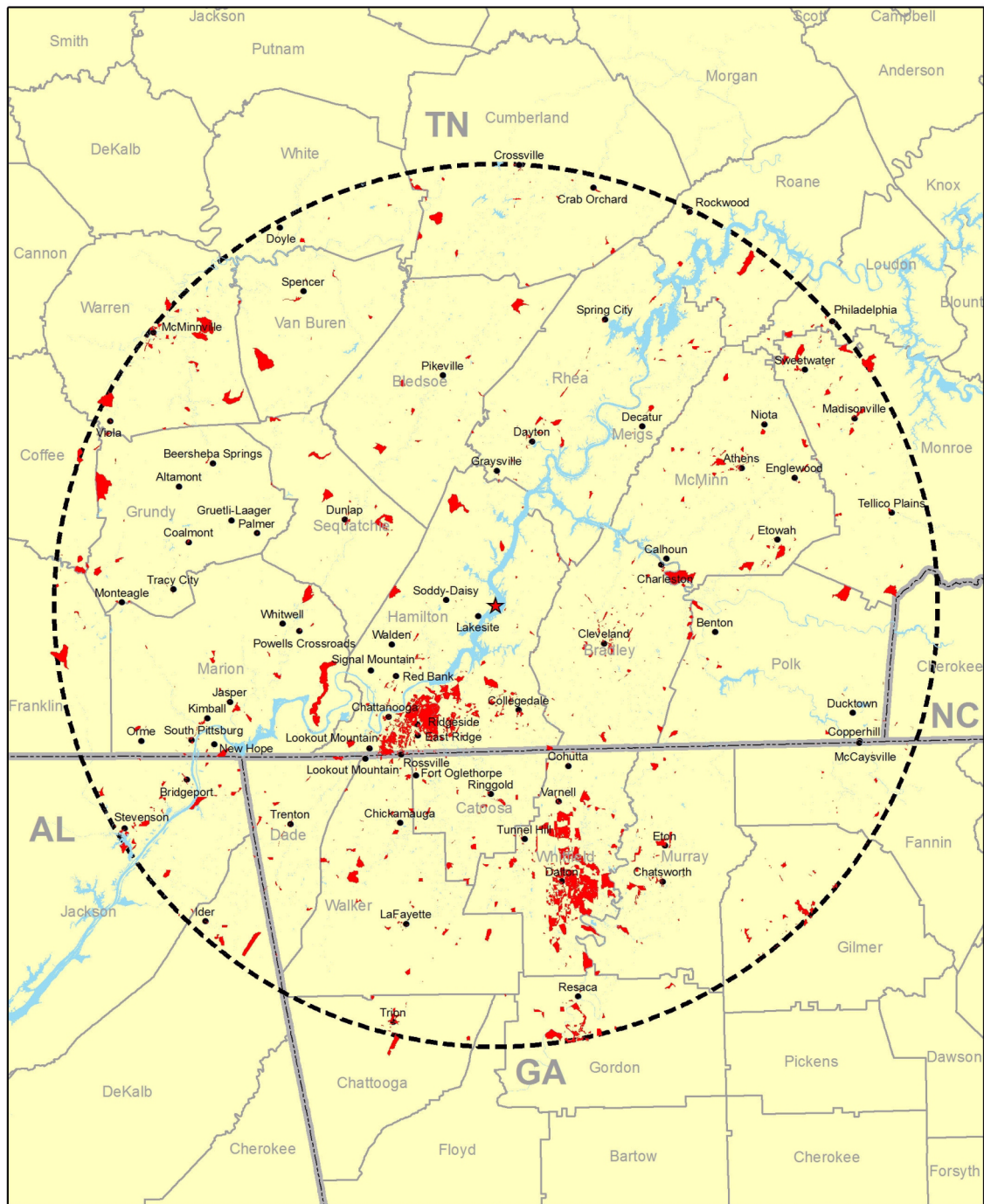
**Legend**

- ★ SQN
- City
- County
- State
- 50-Mile Radius
- Aggregate of All Minority Races, Individual State Method



**Figure 2.6-17**  
**Aggregate of All Minority Races, Individual State Method**

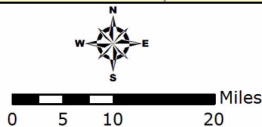




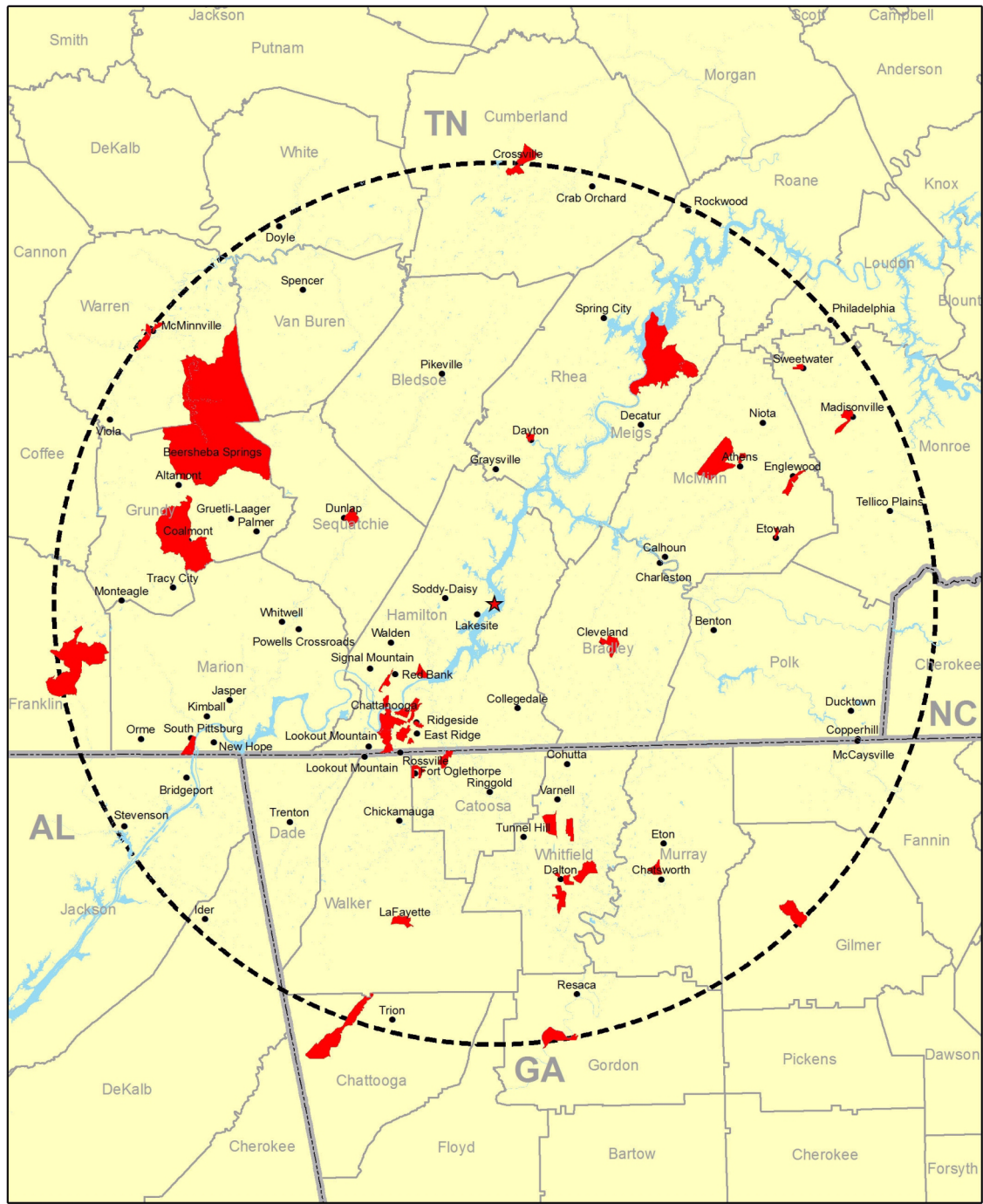
**Legend**

- ★ SQN
- City
- County
- State
- 50-Mile Radius
- Aggregate of All Minority Races and Hispanic or Latino, Individual State Method
- Surface Water

(USCB 2010f; USCB 2010i; USDOT 2010)

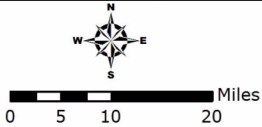


**Figure 2.6-18**  
**Aggregate of All Minority Races and Hispanic or Latino, Individual State Method**



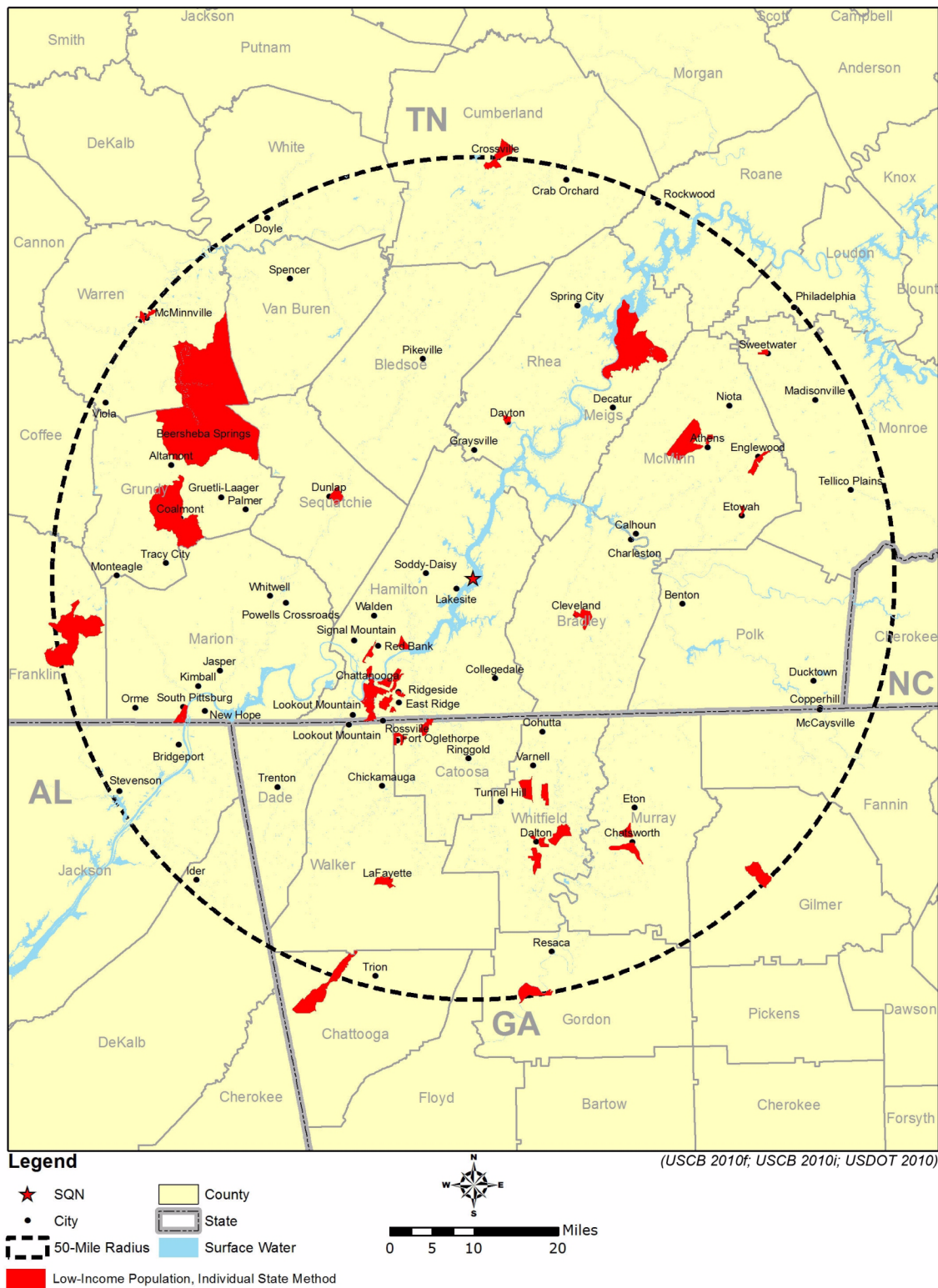
(USCB 2010f; USCB 2010i; USDOT 2010)

- Legend**
- ★ SQN
  - City
  - County
  - ▭ State
  - 50-Mile Radius
  - Low-Income Population, Combined State Method
  - Surface Water



**Figure 2.6-19**  
**Low-Income Population Groups, Combined State Method**





**Figure 2.6-20**  
**Low Income Population Groups, Individual State Method**

## 2.7 Taxes

TVA is a federal corporation and agency, created under the Tennessee Valley Authority Act of 1933 (TVA Act), and is the nation's largest public power company, producing 4 percent of all electricity in the nation. As shown in [Figure 2.7-1](#), TVA's power service area covers 80,000 square miles in the southeastern United States, including almost all of Tennessee and parts of Mississippi, Kentucky, Alabama, Georgia, North Carolina, and Virginia, serving approximately nine million people. ([TVA 2011j](#))

As a federal entity, TVA is not subject to federal income taxes. In addition, neither TVA nor its property, franchises, or income is subject to taxation by states or their subdivisions. ([TVA 2010d](#); [Henry 2011b](#)) However, TVA is required under the TVA Act to make annual tax equivalent payments to help states and counties where it does business. Under this Act, TVA makes payments to states based on its power operations in those states. TVA also makes payments to counties where TVA has acquired properties once owned and operated by another utility company and once subject to local property taxes. ([TVA 2011k](#))

### Payment in Lieu of Taxes

As previously discussed, Section 13 of the TVA Act requires TVA to make payments in lieu of taxes (tax-equivalent payments) to states and counties in which TVA conducts power operations, or in which TVA has acquired power-producing properties previously subject to state and local taxation. The total amount of these payments is 5 percent of gross revenues from the sale of power during the preceding year, excluding sales or deliveries to other federal agencies and power sales to utilities not on the TVA grid, with a provision for minimum payments under certain circumstances. ([TVA 2010d](#)) The share to each state is apportioned as follows: one-half is determined by the percentage of total TVA gross proceeds of power sales within each state, and the other half is apportioned by the percentage of book value of TVA power property in each state. Except for certain direct payments that TVA is required to make to counties, distribution of payments in lieu of taxes within a state is determined by individual state legislation. ([TVA 2011a](#))

Direct payments are also mandated by Section 13 of the TVA Act, as amended, which requires TVA to make payments to counties in which it holds power properties that were previously privately owned and operated by another utility company. The payment is based upon the 2-year average of county ad valorem property taxes (including taxes levied by taxing districts within the respective counties) for the power property and reservoir lands allocable to power. The 2-year average payment amount is calculated based upon the last 2 years during which the property was privately owned and operated. ([Henry 2011b](#))

For the State of Tennessee, in which SQN is located, TVA tax-equivalent payments are distributed according to Tennessee Code, Title 67, Chapter 9. Under this code, 48.5 percent of the total payments received by the state are distributed to the counties and municipalities of Tennessee. Of this amount, 30 percent is distributed to counties based on county shares of the total state population, 30 percent to counties based on county acreage shares of the state total, and 30 percent to incorporated municipalities based on each municipality's share of the total population of all incorporated municipalities in the state. The remaining 10 percent is allocated to



counties on the basis of county shares of TVA-owned land in the state. Thus, 4.85 percent of the payment to the county varies based on the level of TVA property or facilities in the state. ([Tennessee Code 2010](#))

TVA also makes payments in lieu of taxes to the seven states and many counties in the TVA power service area, plus the state of Illinois and two of its counties for coal reserves TVA owns there, which are agreements to buy coal yet to be mined ([TVA 2011k](#)). Total TVA payments for fiscal years (FY) 2008–2010 are as follows: for FY 2008, almost \$455 million; for FY 2009, more than \$505 million; for FY 2010, more than \$550 million; and for 2011, almost \$530 million ([TVA 2008a](#); [TVA 2009d](#); [TVA 2010e](#); [TVA 2011l](#)). TVA payments in lieu of taxes for FY 2012 are estimated at \$567 million ([TVA 2012d](#)). The portions received by Tennessee for this time period were approximately \$265 million in 2008, \$295 million in 2009, \$327 million in 2010, and \$321 million in 2011. ([Table 2.7-1](#)) The amount of payments in lieu of taxes received by Hamilton County, Chattanooga, and Soddy-Daisy are also provided in [Table 2.7-1](#).

TVA is exempt from sales and use taxes per Section 13 of the TVA Act 1933, as amended, which states that TVA is "expressly exempted from taxation in any manner or form by any state, county, municipality, or subdivision or district thereof."

In summary, TVA payments in lieu of taxes each year are based upon the gross revenues TVA receives from electricity sales from within the service area, regardless of where the power is generated, and are not anticipated to change significantly during the license renewal period. Therefore, TVA will still be responsible for producing and distributing electricity (and the resulting in-lieu-of payments), even if the operating licenses for SQN are not renewed.

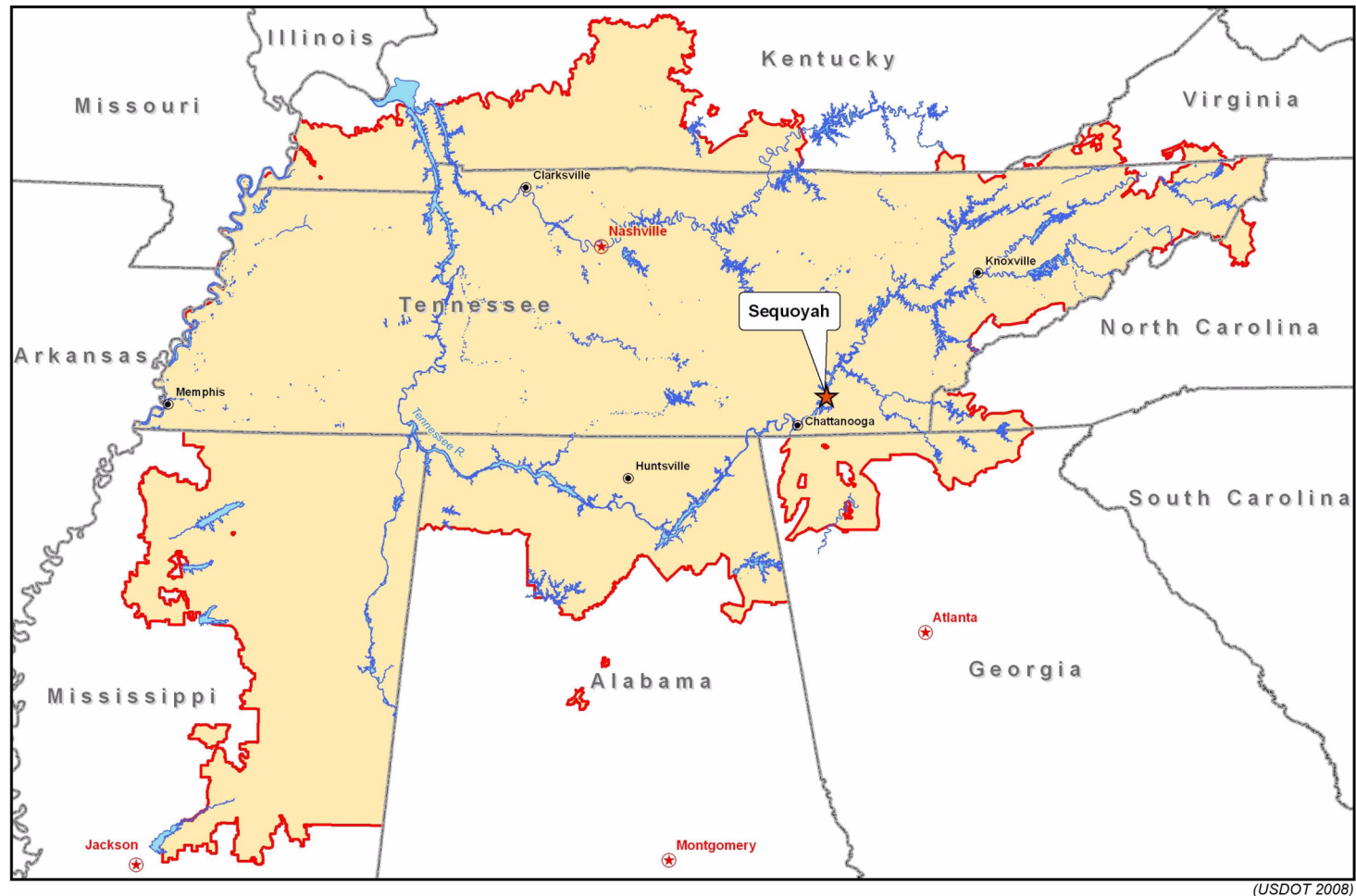
**Table 2.7-1**  
**TVA Estimated Tax Distributions, 2006–2010 (\$)<sup>(a)</sup>**

| <b>Tax</b>                 | <b>2008</b>   | <b>2009</b>   | <b>2010</b>   | <b>2011</b>   |
|----------------------------|---------------|---------------|---------------|---------------|
| Tennessee in-Lieu-of Taxes | \$264,836,829 | \$295,197,502 | \$327,323,789 | \$321,488,305 |
| City of Chattanooga        | \$1,487,106   | \$1,534,726   | \$1,754,192   | \$1,793,597   |
| City of Soddy-Daisy        | \$107,039     | \$110,569     | \$126,836     | \$129,757     |
| Hamilton County            | \$2,677,694   | \$2,801,711   | \$3,221,427   | \$3,293,602   |

(Henry 2011b; TVA 2008a; TVA 2009d; TVA 2010e; TVA 2011i)

a. Dollars shown are inclusive of taxes associated with all TVA power generation types. SQN represents approximately 7 percent of TVA's 34,443 megawatts electric (MWe) power generation capacity.

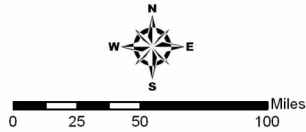




(USDOT 2008)

**Legend**

- ★ Site
- Regional Major Cities
- ★ (with red star) Capitols
- Surface Water
- TVA Power Service Area
- State Boundary



**Figure 2.7-1**  
**TVA Power Service Area**

## **2.8 Land Use Planning**

Land-use planning focuses on Hamilton County in Tennessee, because the operation of SQN is important to the economy of this county. Of the 1,141 people employed at SQN, 78 percent reside in Hamilton County and represent only 0.26 percent of the county's population ([Table 3.5-1](#)) ([Lundy 2010a](#); [USCB 2010d](#)). The remaining 22 percent of employees are scattered throughout surrounding counties ([Table 3.5-1](#)) ([Lundy 2010a](#)). Because the TVA employees and baseline contractors residing in Hamilton County represent such a small percentage of the county's population, any effects on land use would be expected to be minor. The effects on land use from the small number of TVA employees and baseline contractors living in surrounding counties would be expected to be even less; therefore, land-use planning in counties surrounding SQN was not considered in this section.

### **2.8.1 Existing Land-Use Trend**

Hamilton County, in which SQN is located, is generally urban or suburban in character, with the existing developmental form consisting of approximately 6 percent urban, 42 percent suburban, 30 percent rural, and 23 percent transitional (rural to suburban development). The rural area predominates in the northern portion of the county, and the urbanized areas and cities dominate in the south. In 2000, 90 percent of Hamilton County's population was living in the urbanized area. ([CHCRPA 2005b](#))

Hamilton County is situated in southeastern Tennessee and comprises approximately 368,479 acres (542 square land miles). The Tennessee River bisects the county from northeast to southwest and accounts for approximately 6 percent of total county area. ([CHCRPA 2005a](#)) Since 2000, there has been a notable increase in commercial growth and residential development, particularly along highway and interstate corridors. Since SQN began operation, new major housing subdivisions have developed in the area immediately adjacent to plant property. ([CHCRPA 2010](#)) Land-use estimates based on Hamilton County parcel land-use activity, shown in [Table 2.8-1](#), indicate that residential (36.54 percent) and farm-agriculture (23.09 percent) are the two primary land-use types, followed by vacant land (19.60 percent) and park-open space (10.66 percent). Non-residential, developed land areas account for approximately 9.66 percent of land use in Hamilton County. ([CHCRPA 2005a](#))

In 2007, the U.S. Department of Agriculture (USDA) reported approximately 54,599 acres of the land in Hamilton County were in farms ([USDA 2007a](#)). The county has 669 farms, averaging 82 acres per farm, with most of the agricultural land in farms devoted to cropland (41.25 percent), pasture (28.47 percent), and woodland (26.52 percent). The major agricultural crop produced in the county is forage, or crops used for hay, grass silage, etc. Some of the major livestock commodities are cattle, calves, horses, and ponies ([USDA 2007b](#)).

The SQN site is located along the Tennessee River, approximately 6 miles from the center of Soddy-Daisy and 18 miles from the center of Chattanooga. As seen in [Table 2.6-1](#), the city of Soddy-Daisy had a 2010 population of 12,714, an increase of approximately 10.3 percent since 2000 ([USCB 2000a](#); [USCB 2010a](#)). The city of Chattanooga grew by approximately 7.8 percent and had a 2010 population of 167,674. Chattanooga is Hamilton County's largest city by



population and occupies approximately 135 square land miles (86,400 acres) (USCB 2000a; USCB 2010b).

Land use within a 6-mile radius of SQN is primarily rural, with pockets of developed areas. Land cover classifications for the 6-mile radius are listed in Table 2.4-3. The largest cover type is deciduous forest (30.07 percent), followed by pasture/hay (18.18 percent) and open water (13.35 percent). When summed, developed land accounts for approximately 13 percent (MRLC 2006).

## 2.8.2 Future Land-Use Trends

As previously discussed in Section 2.6, Hamilton County has seen a steady increase in total population, and the county population is anticipated to increase through 2041. Along with increasing populations in the Hamilton County communities of Soddy-Daisy and Chattanooga, the cities of Collegedale, East Ridge, Ridgeside, and Signal Mountain have also experienced population growth between 2000 and 2010. But not all communities in Hamilton County have uniformly grown in the 10-year period. The cities of Lakesite, Lookout Mountain, Red Bank, and Walden have seen population declines since 2000, as shown in Table 2.6-1. (USCB 2000a; USCB 2010a)

Hamilton County has well-developed zoning and land-use development strategies, with every parcel of land carrying a zoning designation (CHCRPA 2005a). It is one of Tennessee's largest counties, with a 2010 population of 336,463 residents (Table 2.6-2) (USCB 2010d). Based on the number and size of parcels, zoning within the county is primarily agricultural (59.64 percent), followed by residential (30.51 percent), manufacturing/industrial (6.58 percent), commercial (2.20 percent), special zoning (0.64 percent), and office (0.12 percent). Subdivision of land for residential lots continues to be prevalent in Hamilton County, with 68 percent occurring in unincorporated areas. (CHCRPA 2005a) Soddy-Daisy has experienced considerable residential subdivision growth between 2000 and 2008, with a peak in 2000 of 235 lots. As of 2008, Soddy-Daisy had the most housing units permitted among the smaller municipalities. Chattanooga's share of residential subdivisions for the same time period increased a total of 159 new major subdivisions, including 4,085 new lots. (CHCRPA 2009) This increase accounts for 38 percent of the county's residential building permit activity and includes a growing residential investment in Chattanooga's downtown, Alton Park, and the North Shore (CHCRPA 2005a; CHCRPA 2009). SQN is located in Commission District 1, which had 80 major subdivisions (comprising 2,193 lots) zoned between 2000 and 2008 and accounted for more than 20 percent of Hamilton County's newly zoned subdivisions (CHCRPA 2009). Between 2000 and 2009, new residential recorded lots in Hamilton County accounted for 6,884 acres that were designated for new housing (CHCRPA 2010).

Land use in Hamilton County is in a constant state of transition. As required by state legislation in Tennessee Code 13-3-301, the regional planning agency for Chattanooga-Hamilton County has adopted an active land-use plan and advisory guide (Comprehensive Plan 2030) designed to encourage and provide for new business and future development opportunities while protecting neighborhoods, infrastructure, and the environment. (CHCRPA 2005b) Along with the current

land-use plan, Hamilton County has recognized there are limitless ways in which growth can occur in the future. While the county could continue for the next 25 years with the current development pattern of low-density residential subdivisions, low-density rural development, and strip-oriented commercial growth, it has investigated alternate growth options and may choose to shift toward more compact growth scenarios to preserve rural land and open space. ([CHCRPA 2011a](#))



**Table 2.8-1  
 2005 Hamilton County Land Use by Category**

| <b>Category<sup>(a)</sup></b> | <b>Approximate Acres<sup>(b)</sup></b> | <b>Percentage of Total</b> |
|-------------------------------|--|----------------------------|
| Residential                   | 117,967                                | 36.54                      |
| Commercial-Office             | 6,446                                  | 2.00                       |
| Industrial                    | 11,110                                 | 3.44                       |
| Transportation                | 2,408                                  | 0.75                       |
| Institutional                 | 9,648                                  | 2.99                       |
| Public Utility                | 1,534                                  | 0.48                       |
| Park-Open Space               | 34,428                                 | 10.66                      |
| Farm-Agriculture              | 74,567                                 | 23.09                      |
| Vacant                        | 63,294                                 | 19.60                      |
| Other-Unknown                 | 1,479                                  | 0.46                       |
| <b>TOTAL<sup>(c)</sup></b>    | <b>322,880</b>                         | <b>100.00</b>              |

(CHCRPA 2005a)

- a. Land-use categories reported by Chattanooga Hamilton County Regional Planning Agency (CHCRPA).
- b. Acre amounts based on county parcel data.
- c. Total acres represent 100 percent of land-use acres reported by CHCRPA – not total acres in Hamilton County.

## **2.9 Housing**

As of 2010, SQN employed a staff of approximately 1,141 permanent and contract employees. Of these, 893 employees, or 78 percent, reside in Hamilton County, Tennessee, while the remaining 248 employees live in the surrounding region and other states as presented in [Table 3.5-1 \(Lundy 2010a\)](#).

Between 2000 and 2010, the total population for Hamilton County increased by 9.3 percent, from 307,896 to 336,463 as shown in [Table 2.6-2 \(USCB 2000c; USCB 2010d\)](#). To accommodate the increase in population growth described in [Section 2.6.1](#), the number of total housing units also increased in Hamilton County ([Table 2.9-1](#)). From 2000 to 2010, there was a 12.2 percent increase in total housing units. The vacancy rates rose by 1.9 percent between 2000 and 2010, indicating that more than enough housing was available, even as county population increased. Based on 2009 estimates, median home values for Hamilton County also increased by 57.1 percent between 2000 and 2010. Likewise, median rental fees increased in Hamilton County by 32.7 percent between 2000 and 2010. ([USCB 2000c; USCB 2009; USCB 2010j](#))

Overall, adequate housing is available to county residents. In addition, Hamilton County has land-use and zoning regulations that address county and community priorities and plans for dealing with the development of subdivisions and housing needs ([Section 2.8.1](#)).

**Table 2.9-1  
 Hamilton County, Tennessee, Housing Statistics 2000 and 2010**

|                         | <b>2000<sup>(a)</sup></b> | <b>2010<sup>(b)</sup></b> | <b>2000 to 2010 % Change</b> |
|-------------------------|---------------------------|---------------------------|------------------------------|
| Total housing units     | 134,692                   | 151,107                   | 12.2                         |
| Occupied units          | 124,444                   | 136,682                   | 9.8                          |
| Vacant units            | 10,248                    | 14,425                    | 40.8                         |
| Vacancy rate (percent)  | 7.6                       | 9.5                       | 1.9                          |
| Median house value (\$) | 94,700                    | 148,800 <sup>(c)(d)</sup> | 57.1                         |
| Median rent (\$/month)  | 510                       | 677 <sup>(c)(d)</sup>     | 32.7                         |

a. (USCB 2000c)

b. (USCB 2010j)

c. (USCB 2009)

d. The U.S. Census Bureau has not released 2010 decennial census updates for median home values and median monthly rental fees. The data provided are based on 2009 American Community Survey census estimates.



## **2.10 Social Services and Public Facilities**

### **2.10.1 Public Water Supply**

Public water supply discussion focuses on Hamilton County in Tennessee, because the majority of SQN employees reside there. Most Hamilton County residents receive their potable water from one of 10 major providers in the county: Hixson, Sale Creek, Savannah Valley, Soddy-Daisy/Falling Water, Tennessee-American, Union Fork-Bakewell, Walden's Ridge, Signal Mountain, Mowbray, and Eastside utility districts. Tennessee-American Water, the major provider of public water services in Hamilton County, as shown in [Table 2.10-1](#), draws surface water from the Tennessee River. The Chattanooga-Hamilton County Regional Planning Agency (CHCRPA) has stated that additional water treatment capacity was not a critical issue for Hamilton County. ([CHCRPA 2005a](#)) More than 336,443 people are served by these 10 water districts ([TDEC 2012b](#)). As discussed in [Section 2.3.5](#), private residential wells also provide water to a portion of the population within the vicinity. Registered groundwater withdrawals for municipal, industrial, and irrigation within Hamilton County are listed in [Table 2.3-1](#).

Residents closest to SQN are served by the Hixson Utility District. The district serves a population of 56,117, and its primary water source is six groundwater wells located at Cave Springs (four wells) and Walker's Corner (two wells). Hixson Utility District is currently operating at 84 percent capacity. As discussed in [Section 2.3.5](#), current average annual groundwater withdrawals by the Hixson Utility District are 7.87 MGD: Cave Springs withdraws 5.14 MGD and Walker's Corner 2.73 MGD. As shown in [Table 2.10-1](#), the Union Fork-Bakewell Utility District also relies on groundwater as its plant primary water source and has three wells. Union Fork-Bakewell serves a population of 4,372 and is operating at 60.5 percent capacity. The average annual groundwater withdrawal for Union Fork-Bakewell is 0.49 MGD ([Table 2.3-1](#)).

Two additional county water systems rely primarily on groundwater wells, but the wells are considered to be influenced by surface water. Sale Creek Utility District treatment plant has three wells. Sale Creek serves a population of 1,730 and is at 62.1 percent capacity ([Table 2.10-1](#)). As presented in [Table 2.3-1](#), the average annual withdrawal from the Sale Creek wells is 0.17 MGD. The Savannah Valley Utility District has three plants. The Smith Road plant and Sims Road plant are groundwater filtration and treatment plants; the Carson Springs plant is a groundwater treatment plant. The Sims Road plant is generally used only during peak demand periods or in emergencies in support of the District's facilities. ([Savannah 2012a](#)) However, the Sims Road plant will be put back into service in spring 2012, while the Carson Springs plant is down for the construction of a new 4.0 MGD filtration plant there ([Savannah 2012a](#); [Savannah 2012b](#)). Savannah Valley serves a population of 19,338 and is at 43.5 percent capacity ([Table 2.10-1](#)). The average annual groundwater withdrawal for Savannah Valley Utility District is 2.44 MGD ([Table 2.3-1](#)).

The remaining water systems in Hamilton County rely primarily on surface water, or they purchase surface water to meet population needs ([Table 2.10-1](#)). With access to surface water at the Soddy Creek Embayment, the Soddy-Daisy/Falling Water Utility District water treatment plant serves a population of 10,840 and is at 30.3 percent capacity. The Eastside Utility District

has two treatment facilities and relies on surface water from the Tennessee River and Carson Spring. Eastside Utility serves a population of 46,011 and is at 64.7 percent capacity. The Tennessee-American Water Company serves the largest population in the county and has a filter plant on the Tennessee River. Tennessee-American serves a population of 179,191 and is at 82.8 percent capacity.

Three county water systems purchase surface water as their primary source from other nearby water systems. These include Mowbray Mountain Utility District, which purchases its water from Soddy-Daisy. Mowbray Mountain serves a population of 3,938 and is at 90.1 percent capacity. The Signal Mountain Water System purchases water from Tennessee-American. Signal Mountain serves a population of 7,869 and is at 40.3 percent capacity. The Walden Ridge Utility District purchases water from both Tennessee-American (approximately 1 MGD surface water) and Hixson (approximately 0.03 MGD groundwater). Walden Ridge serves a population of 7,037 and is at 75 percent capacity. (TDEC 2012b) TVA contracts with Hixson Utility District to supply potable water to SQN, where the average daily requirement varies according to plant operation and fluctuations in plant personnel population. The SQN average monthly consumption of potable water during 2011 was 442,327.5 cubic feet, or approximately 108,784 gallons per day (gpd) (SQN 2012a).

Section 2.3.5 discusses the decline in the use of groundwater as a source for community water systems and the move towards reliance on surface water to meet population needs in Hamilton County. As presented in Table 2.10-1, adequate water capacity exists to meet the needs of SQN and Hamilton County residents.

Sanitary sewer service in Hamilton County is provided by four entities: the Hamilton County Wastewater Treatment Authority, City of Chattanooga, City of Collegedale, and Town of Lookout Mountain. The Moccasin Bend Treatment Plant is a regional facility that receives and treats the wastewater from these four systems. It serves a population of approximately 400,000 including Chattanooga, the sewered portions of Hamilton County, and parts of counties and municipalities in both Georgia and Tennessee. Since 2001, the plant has undergone approximately \$71 million in upgrades. In addition to Chattanooga, the system serves seven suburban areas, including part of Hixson Utility District and the City of Soddy-Daisy. (CHCRPA 2005a)

While Moccasin Bend is still under capacity and has had upgrades, other wastewater systems in the region need sewer plant and line improvements associated with their aging and/or outdated infrastructure (STDD 2009).

At SQN, the maximum quantity of sanitary water to be handled, treated or disposed of, or pumped off site is approximately 70,000 gpd (0.07 MGD). Sewage collected on site is pumped off site to the Moccasin Bend sewage treatment system. (TVA 2011p, Section 9.2.4.2) The Moccasin Bend Treatment Plant has a design capacity of 160 MGD and currently treats 120 MGD of effluent (STDD 2009). Because the facility is operating at 75 percent of its capacity, adequate future capacity exists for SQN and Hamilton County residents.

## 2.10.2 Transportation

SQN is located in Hamilton County on the western shore of the Tennessee River, outside the cities of Chattanooga, Lakesite, and Soddy-Daisy (Figures 2.1-3 and 2.1-4). The city of Chattanooga is a crossroads location for several national interstate transportation routes. The major Hamilton County east-west road network passing through Chattanooga on the east side of the Tennessee River is I-75, with connections to both Knoxville, TN, and Atlanta, GA. Accessing Chattanooga from the west is I-24, with connections to Nashville, TN, and Birmingham, AL, via I-59. On the west side of the river, running north-south, US 27 becomes a major expressway in Hamilton County, feeding traffic from Chattanooga to Soddy-Daisy and northward into the communities of Rhea County (Figure 2.1-3).

Chickamauga Reservoir on the Tennessee River is a navigable waterway used by commercial and recreational traffic. Through a series of locks and dams, commercial traffic can travel from Knoxville, Tennessee, more than 100 miles northeast of the site, to the mouth of the Tennessee River at the Ohio River. Commercial and private traffic on the Tennessee River are discussed in greater detail in the SQN Updated Final Safety Analysis Report, Section 2.2. (TVA 2011p, Section 2.2)

Two of the nation's largest rail networks serve the region: CSX and Norfolk Southern Corporation. CSX operates a rail line from Chattanooga to the Tyner area, where it serves several industries. The largest railroad presence in the region is Norfolk Southern Corporation, which is also the operator of the southwest to northeast line running near the SQN site through Soddy-Daisy (Figure 2.1-3). (CHCRPA 2005a; Norfolk Southern Corporation 2010) A railroad spur runs from the Norfolk Southern line to SQN just outside the EAB. Amtrak does not serve Chattanooga, and there is no local intercity passenger rail service (CHCRPA 2005a).

Hamilton County's long-range transportation plan forecast for 2030 anticipates greater demand than the currently available capacity on many of the existing roadways, although US 27 is not included in this list. The plan recommends that while increased transit opportunities and other strategies are needed to reduce single-occupancy vehicle travel, capacity additions would still be needed for the most congested roadways. (CHCRPA 2005a)

Focusing on potential population growth scenarios and subsequent future transportation needs in central Hamilton County, the Tennessee Department of Transportation (TDOT) and CHCRPA have developed a planning study to examine relative impacts of particular future development strategies. The objective of the study is not to recommend a preferred growth scenario, but rather to inform community stakeholders and decision-makers of the relative impacts of each scenario so they can get a better understanding of the relationships between growth, transportation, and public infrastructure and services. One scenario discussed is the potential construction of a Tennessee River toll bridge in north Hamilton County, using the Sequoyah Access Road on the west side of the river as the connection from US 27 to the river crossing, with the new bridge and toll road connecting to I-75 on the east side of the river. (CHCRPA 2011a) This project is in the planning stage and a corridor has been established which shows the general location of the proposed routing across the Tennessee River; however, the exact location



of the proposed bridge crossing has not yet been determined. TDOT is currently evaluating the feasibility of undertaking this project as a toll facility. (TDOT 2012) TVA is working with TDOT to ensure that the routing of the proposed bridge and toll road will be acceptable to TVA, including nuclear security considerations.

#### 2.10.2.1 Traffic Counts

SNQ personnel access the site from either US 27 or SR 319-Hixson Pike, via the Sequoyah Access Road (Figure 2.1-4). The Sequoyah Access Road runs eastward from US 27 and intersects with SR 319 near the site. In 2010, the average daily traffic volume on US 27, west of the Sequoyah Access Road intersection, was 32,488 vehicles per day. The average daily traffic volume on the Sequoyah Access Road, immediately west of SR 319-Hixson Pike, was 2,452 vehicles per day. Similarly, the 2010 vehicle count on SR 319-Hixson Pike, immediately south of Sequoyah Access Road, was 3,185, and the vehicle count on SR 319-County Highway 602 north of Sequoyah was 922. As shown in Table 2.10-2, the traffic counts on several of these road sets, overall, have risen slightly between 2000 and 2010, with US 27 average traffic flow showing an increase of 14 percent during this time period. The exception is County Highway 603, where traffic has fallen by approximately 3 percent. (TVA 2009a; TDOT 2011a)

#### 2.10.2.2 Level of Service

The U.S. Transportation Research Board has developed a commonly used indicator, called level of service (LOS), to measure roadway traffic volume. LOS is a qualitative assessment of traffic flow and how much delay the average vehicle might encounter during peak hours. Table 2.10-3 presents the LOS definitions used by local and state agencies, as well as by the NRC in its GEIS (NRC 1996, Section 3.7.4.2).

The CHCRPA's Transportation Planning Organization has developed an LOS AM and PM map series for Hamilton County roads. According to current maps, the road sets described in Table 2.10-2 have not been singled out for LOS assignment at this time. However, county reports and maps, and Tennessee annual average daily traffic (AADT) counts for local roads, give no indication that the capacities of access roads to SNQ are exceeded by current needs. (CHCRPA 2011b)

### 2.10.3 Education

Hamilton County has one public school district. Based on the 2009–2010 school year, the Hamilton County School District has 80 schools with 41,832 students. The student-to-teacher ratio is 14.5 to 1. Near SNQ, there are seven schools in Soddy-Daisy: three elementary schools, a middle school, and three high schools. Eight schools are located in the nearby Chattanooga suburb of Hixson: five elementary schools, two middle schools, and a high school. The city of Chattanooga has 42 schools (NCES 2011).

Hamilton County developed a community-based 10-year facilities plan to guide construction, as well as renovation of existing facilities. The district opened a new high school on Signal Mountain and new schools to replace the aging Soddy Elementary, Orchard Knob Elementary,

and Hixson Middle School in 2008. Hamilton County also opened the East Hamilton Middle/High School (grades 6-12), a new combination school in the east county area in 2009. (HCDE 2011a, HCDE 2011b) In addition to the public school system, Hamilton County also has approximately 10,990 students in 34 private schools (NCES 2011).

Schools in the Hamilton County School District are funded by a combination of federal, state, and local revenue sources. The district's budget for 2011 was approximately \$351 million. (HCDE 2011a)

Hamilton County also has a number of public and private higher education facilities located in Chattanooga, consisting of six 4-year universities and four 2-year community colleges or technical schools. The two public institutions include Chattanooga State Community College and the University of Tennessee at Chattanooga (NCES 2011).

#### **2.10.4 Transient Population**

Fine geographical-level tourism (transient) data are not available for the area within the 50-mile radius of SQN. Instead, Alabama, Georgia, North Carolina, and Tennessee collect these data for their respective states. The websites for the state and national tourism agencies were accessed to obtain the most recent tourism (transient) information, which is presented in Table 2.10-4.

These tourism numbers were used to develop the estimate of county-level transient populations included in the Section 2.6.1 discussion of projected total population. Table 2.10-5 describes the 2010 permanent population and transient visits estimated for Hamilton County, where the majority of SQN employees reside. This information was used to develop a transient population ratio that was multiplied by the permanent population within the region to create a total transient population estimate.

#### **2.10.5 Migrant Farm Labor**

Migrant farm labor was reviewed using the USDA National Agricultural Statistics Service (NASS) data for 2007. The USDA defines a migrant farm worker as a farm worker whose employment required travel that prevented the worker from returning to his/her permanent place of residence the same day. While actual migrant worker numbers are not directly reported, county-level data on hired farm labor are available. For Hamilton County, NASS reported that 100 out of a total of 669 farms employed farm labor, and of those, three employed hired contract workers who were considered migrant labor. Two farms employed only contract labor consisting of migrants. Overall, Hamilton County had a total of 198 hired farm workers, with 133 workers employed fewer than 150 days. (USDA 2007a)

#### **2.10.6 Employment**

Hamilton County is where the majority of SQN employees reside and is the county most influenced by plant operations. As shown in Table 2.6-2, the 2010 population for Hamilton County was 336,463 (USCB 2010d); total employment for the county was 234,747 in 2009 (BEA 2009). Overall, the distribution of employment by industry in Hamilton County is similar to the statewide distribution. Consistent with its metropolitan status, it has relatively fewer workers in

farm and farm-related jobs, and relatively more in manufacturing, retail trade, and health care/social assistance. [Table 2.10-6](#) lists the top employing North American Industry Classification System (NAICS) categories and the number of persons employed in each category within Tennessee, Hamilton County, and Chattanooga. The largest number of jobs by place of employment is in the government sector, which accounts for 13.3 percent of jobs within Hamilton County in the top employing NAICS categories, slightly below the state level of 14.7 percent ([Table 2.10-6](#)). Total compensation of employees within Hamilton County in 2009 was nearly \$12.5 billion. The annual average wage per job within Hamilton County for 2009 was approximately \$39,566, which is slightly less than the state average wage of \$39,684. However, the 2009 per capita personal income for Hamilton County was \$36,971, higher than the state level of \$34,277. ([BEA 2009](#))

The Chattanooga metropolitan statistical area (MSA), fourth largest MSA in the state, has a 2010 population of 528,143 ([USCB 2010k](#)). With a total personal income of approximately \$17.7 billion, 298,466 people were employed in the Chattanooga, TN-GA MSA in 2009. Because Hamilton County dominates the MSA, industrial employment in the Chattanooga MSA was similar to that of the county ([Table 2.10-6](#)). However, the Chattanooga MSA annual average wage per job for 2009 was \$38,017 per year—less than both the state and Hamilton County averages; the per capita personal income was \$33,760—considerably less than Hamilton County and slightly less than the state. ([BEA 2009](#))

Following the national pattern, unemployment within the Chattanooga MSA increased significantly from 2007 to 2009, but showed signs of improvement in 2012, with the unemployment rate dropping by 2.6 percentage points since 2009 ([Table 2.10-7](#)). This decrease in unemployment could be partly due to the addition of new manufacturing, such as the new Volkswagen automotive assembly plant that opened in 2011 and brought more than 2,000 new direct jobs and as many as 9,500 related jobs ([Volkswagen 2011a](#)). In addition, the Amnicola Industrial Park and other existing industrial parks have prime industrial land available for development, specifically the Enterprise South Industrial Park. A new interstate exchange is nearing completion and will provide direct access to Enterprise South Industrial Park from I-75, potentially bringing more industrial jobs to the Chattanooga MSA. ([STDD 2009](#)) By comparison, in Tennessee, the unemployment rate reached 10.8 percent in 2010, and subsequently dropped to 8.0 percent in 2012. ([BLS 2008](#); [BLS 2010](#); [BLS 2012](#))



**Table 2.10-1  
Public Water Supply Systems**

| <b>Water System</b>                        | <b>Source</b>                           | <b>Number of Wells</b> | <b>Population Served</b> | <b>Design Capacity<sup>(a)</sup><br/>(gal/day)</b> | <b>Average Production<sup>(b)</sup><br/>(gal/day)</b> | <b>Demand<br/>(% Design Capacity)</b> | <b>Year (Reference)</b> |
|--|---|------------------------|--------------------------|--|---|---------------------------------------|-------------------------|
| Eastside Utility District                  | Surface water                           | NA                     | 46,011                   | 15,308,000   | 9,900,000   | 64.7                                  | 2011 (TDEC 2012b)       |
| Hixson Utility District                    | Groundwater                             | 6                      | 56,117                   | 9,216,000  | 7,743,000   | 84.0                                  | 2011 (TDEC 2012b)       |
| Mowbray Mountain Utility District          | Surface water (purchase)                | NA                     | 3,938                    | 460,800  | 415,000   | 90.1                                  | 2011 (TDEC 2012b)       |
| Sale Creek Utility District                | Groundwater/<br>surface water influence | 3                      | 1,730                    | 368,640  | 229,000   | 62.1                                  | 2010 (TDEC 2012b)       |
| Savannah Valley Utility District           | Groundwater/<br>surface water influence | 3                      | 19,338                   | 5,604,000  | 2,440,000   | 43.5                                  | 2011 (Savannah 2012a)   |
| Signal Mountain Water System               | Surface water (purchase)                | NA                     | 7,869                    | 2,340,000  | 943,000   | 40.3                                  | 2011 (TDEC 2012b)       |
| Soddy-Daisy–Falling Water Utility District | Surface water                           | NA                     | 10,840                   | 5,971,680  | 1,811,000   | 30.3                                  | 2011 (TDEC 2012b)       |
| Tennessee-American Water Company           | Surface water                           | NA                     | 179,191                  | 45,139,000   | 37,381,000  | 82.8                                  | 2011 (TDEC 2012b)       |
| Union Fork-Bakewell Utility District       | Groundwater                             | 3                      | 4,372                    | 800,000  | 484,000   | 60.5                                  | 2011 (TDEC 2012b)       |
| Walden Ridge Utility District              | Surface water (purchase)                | NA                     | 7,037                    | 2,100,000  | 1,576,000   | 75.0                                  | 2011 (TDEC 2012b)       |

a. Maximum amount of water the plant is designed to produce in a day.

b. Average treatment plant production per day.

**Table 2.10-2**  
**AADT Traffic Counts on Roads Near SQN, 2000–2010**

| <b>Route</b>              | <b>Location</b>               | <b>2000</b> | <b>2010</b> |
|---------------------------|-------------------------------|-------------|-------------|
| US 27 (SR 29)             | West of Sequoyah Access Road  | 28,553      | 32,488      |
| Sequoyah Access Road      | West of SR 319-Hixson Pike    | 2,195       | 2,452       |
| SR 319-Hixson Pike        | South of Sequoyah Access Road | 3,041       | 3,185       |
| SR 319-County Highway 603 | North of Sequoyah Access Road | 949         | 922         |

(TDOT 2011a)

**Table 2.10-3  
 Level of Service Definitions**

| Level of Service | Conditions  |
|------------------|---|
| A                | Free flow of the traffic stream; users are unaffected by the presence of others.  |
| B                | Stable flow in which the freedom to select speed is unaffected, but the freedom to maneuver is slightly diminished.   |
| C                | Stable flow that marks the beginning of the range of flow in which the operation of individual users is significantly affected by interactions with the traffic stream.   |
| D                | High-density, stable flow in which speed and freedom to maneuver are severely restricted; small increases in traffic will generally cause operational problems.   |
| E                | Operating conditions at or near capacity level causing low but uniform speeds and extremely difficult maneuvering that is accomplished by forcing another vehicle to give way; small increases in flow or minor perturbations will cause breakdowns.      |
| F                | Defines forced or breakdown flow that occurs wherever the amount of traffic approaching a point exceeds the amount that can traverse the point. This situation causes the formation of queues characterized by stop-and-go waves and extreme instability. |

(NRC 1996, Section 3.7.4.2)



**Table 2.10-4  
State Tourism Offices and Reported Visitor Numbers, 2010**

| State                       | Category              | Reported Annual Visitor Numbers (Visits in a Year) | Average Stay (Days per Visit) |
|-----------------------------|-----------------------|--|-------------------------------|
| Alabama tourism data        | 5 counties (2010)     | 14,268,183   | 2.6                           |
|                             | Other counties (2010) | 8,920,809  | 2.6                           |
| Georgia tourism data        | Domestic (2009)       | 114,300,000  | 2.5                           |
|                             | Canadian (2009)       | 421,100  | 3.9                           |
|                             | International (2010)  | 935,000  | 8.5                           |
| North Carolina tourism data | Domestic (2010)       | 28,900,000   | 3.3                           |
|                             | Canadian (2010)       | 379,600  | 3.9                           |
|                             | International (2009)  | 511,115  | 8.5                           |
|                             | Domestic day (2010)   | 7,900,000  | 1.0                           |
|                             | Canadian day (2010)   | 557,200  | 1.0                           |
| Tennessee tourism data      | Domestic (2010)       | 79,700,000   | 2.2                           |
|                             | Canadian (2009)       | 346,400  | 3.9                           |

(AHLA 2011; ATD 2010a; ATD 2010b; CGCA 2010; GDED 2009; GDED 2010; NCDOC 2009; NCDOC 2010a; NCDOC 2010b; TDTD 2010; USCB 2010d)

**Table 2.10-5  
Estimated Transient Population in Hamilton County, 2010**

|                 | <b>2010 Permanent Population</b> | <b>Person Visits (per day)</b> | <b>Transient Permanent Ratio (per day)</b> |
|-----------------|----------------------------------|--------------------------------|--|
| Hamilton County | 336,463                          | 25,666                         | 0.076                                      |

(CGCA 2010; TDTD 2010; USCB 2010d)

**Table 2.10-6**  
**Top Employing NAICS<sup>(a)</sup> Industry Categories**

| Category                                     | Number of Jobs  |                 |           |
|--|-----------------|-----------------|-----------|
|  | Chattanooga MSA | Hamilton County | Tennessee |
| Construction                                 | 17,636          | 12,460          | 209,909   |
| Manufacturing                                | 29,803          | 21,592          | 321,667   |
| Retail trade                                 | 30,247          | 22,441          | 381,865   |
| Transportation and warehousing               | 18,181          | 15,797          | 159,932   |
| Finance and insurance                        | 21,426          | 19,023          | 180,370   |
| Real estate/rental/leasing                   | 9,844           | 7,658           | 131,560   |
| Professional, scientific, technical services | 15,110          | 13,475          | 182,004   |
| Administrative and waste services            | 16,224          | 14,782          | 228,743   |
| Health care and social assistance            | 29,515          | 25,161          | 370,645   |
| Accommodation and food services              | 22,434          | 18,076          | 254,392   |
| Other services                               | 19,816          | 14,030          | 219,355   |
| Government                                   | 37,659          | 28,359          | 454,334   |

(BEA 2009)

a. North American Industrial Classification System



**Table 2.10-7  
 Chattanooga MSA and Tennessee Unemployment 2007–2011**

| Year (Month) | Chattanooga MSA | Tennessee | Percentage of Labor Force |           |
|--------------|-----------------|-----------|---------------------------|-----------|
|              |                 |           | Chattanooga MSA           | Tennessee |
| 2007 (March) | 9,900           | 139,200   | 3.8                       | 4.6       |
| 2008 (March) | 14,300          | 177,100   | 5.4                       | 5.8       |
| 2009 (March) | 24,900          | 320,900   | 9.7                       | 10.6      |
| 2010 (March) | 24,100          | 323,500   | 9.5                       | 10.8      |
| 2011 (March) | 21,800          | 298,800   | 8.3                       | 9.6       |
| 2012 (March) | 18,500          | 247,600   | 7.1                       | 8.0       |

(BLS 2008; BLS 2010; BLS 2012)