



SECTION 4 COUNTY PROFILE

This profile describes the general information of the County (physical setting, population and demographics, general building stock, and land use and population trends) as well as critical facilities located within Onondaga County. In Section 5, specific profile information is presented and analyzed to develop an understanding of the study area, including the economic, structural, and population assets at risk and the particular concerns that may be present related to hazards analyzed (for example, a high percentage of vulnerable persons in an area).

4.1 GENERAL INFORMATION

Onondaga County was established in 1794 and is comprised of separate municipalities, which include one city, 19 towns, and 15 villages. The Onondaga Nation Territory is also located in the County, near the towns of Onondaga and LaFayette. The County is located within 350 miles of all major cities in the Northeast U.S. and had an estimated 2016 population of 468,050 (U.S. Census Bureau American Community Survey 5-Year Estimates, 2016). According to the U.S. Census Bureau, Onondaga County is the 11th most populated county in New York State (U.S. Census, 2010).

Onondaga County is located in Central New York State, on the eastern side of the Finger Lakes Region. The County is bordered by Cayuga County to the west, Oswego County to the north, Madison County to the east, and Cortland County to the south. The County extends approximately 30 miles north and south, and 35 miles east and west, with a total area of about 806 square miles (both land and water). The only city, Syracuse, is located in the center of the County with one of the five lakes, Onondaga Lake, in its northwestern corner. Several major highways run through Onondaga County, including Interstates 81, 90, 481 and 690, and U.S. Route 20.

Onondaga County’s population increased by 0.9% between 2010 and 2016. The total population increased slightly but is projected to decrease slightly over time (Cornell University, 2018). Youth and elderly populations have decreased slightly from 2010 to 2017. Development in Onondaga County has continued to occur within the City of Syracuse suburban area and cause a shift in population from the city to the surrounding communities within the past several decades. This population shift is supported by an increase in water and sewer infrastructure which has allowed for previously undeveloped areas to be developed.

4.2 MAJOR PAST HAZARD EVENTS

Presidential disaster declarations are typically issued for hazard events that cause more damage than state and local governments can handle without assistance from the federal government, although no specific dollar loss threshold has been established for these declarations. A presidential disaster declaration puts federal recovery programs into motion to help disaster victims, businesses and public entities. Some of the programs are matched by state programs. Review of presidential disaster declarations helps establish the probability of reoccurrence for each hazard and identify targets for risk reduction. Table 4-1 shows FEMA disaster declarations that included Onondaga County through 2018 (records date back to 1954).

Table 4-1. History of Hazard Events in Onondaga County, New York

Disaster Number	Date of Event	Declaration Date	Incident Type	Title
EM-3351	October 27-November 8, 2012	10/28/2012	Hurricane	Hurricane Sandy
DR-1993	April 26-May 8, 2011	6/10/2011	Flood	Severe Storms, Flooding, Tornadoes, And Straight-Line Winds





Disaster Number	Date of Event	Declaration Date	Incident Type	Title
EM-3262	August 29-October 1, 2005	9/30/2005	Hurricane	Hurricane Katrina Evacuation
DR-1564	August 13-September 16, 2004	10/1/2004	Severe Storm(s)	Severe Storm: Severe Storms and Flooding
DR-1534	May 13-June 17, 2004	8/3/2004	Severe Storm(s)	Severe Storms and Flooding
EM-3186	August 14-16, 2003	8/23/2003	Other	Power Outage
DR-1467	April 3-4, 2003	05/12/2003	Severe Ice Storm	Severe Ice Storm: Ice Storm
DR-1391	September 11, 2001	9/11/2001	Fire	Fire and Explosions
EM-3155	May 22 – November 1, 2000	10/11/2000	Other	West Nile Virus
DR-1335	May 3 – August 12, 2000	7/21/2000	Severe Storm(s)	Severe Storms and Flooding
DR-1244	September 7, 1998	9/10/1988	Severe Storms(s)	Severe Storms: Severe Weather
DR-1095	January 19-30, 1996	1/24/1996	Flood	Severe Storms and Flooding
EM-3107	March 13-17, 1993	3/17/1993	Snow	Severe Blizzard
DR-487	October 2, 1975	10/2/1975	Flood	Storms, Rains, Landslides & Flooding
DR-447	July 23, 1974	7/22/1974	Flood	Flood: Severe Storms & Flooding
DR-338	June 23, 1972	6/23/1972	Flood	Tropical Storm Agnes

Source: FEMA 2019

4.3 PHYSICAL SETTING

This section presents topography and geology, hydrology and hydrography, and climate.

Topography and Geology

Onondaga County is located in the eastern section of the Finger Lakes Region of New York State. The northern part of the county is fairly level lake plain. Oneida Lake, three rivers, as well as the Erie and subsequent Barge Canals are in the lake plain. The main line of the CSX Railroads and the New York State Thruway extend east and west across the county through the lake plain, while the NY Central and Susquehanna rail lines run north through the county. The southern part of the county is Appalachian Plateau, with high hills and locally famous drumlins rising at the southern edge of Syracuse. Skaneateles Lake, Onondaga Lake, and Otisco Lake are within the County, while Cross Lake is partially in Onondaga County, and the Oneida Lake shoreline forms the northern border of Onondaga County.

Hydrography and Hydrology

The major rivers of Onondaga County include the Seneca, Oneida and Oswego rivers. The Seneca River is a large river that drains an area of approximately 5,567 square miles of central New York State. It is part of the New York State Barge Canal System and part of the original Erie Canal System, as are the Oswego and Oneida Rivers, connecting Seneca River to Oneida Lake in northern Onondaga County. Nine Mile, Onondaga, Butternut and Chittenango Creeks are also important waterways within the county.

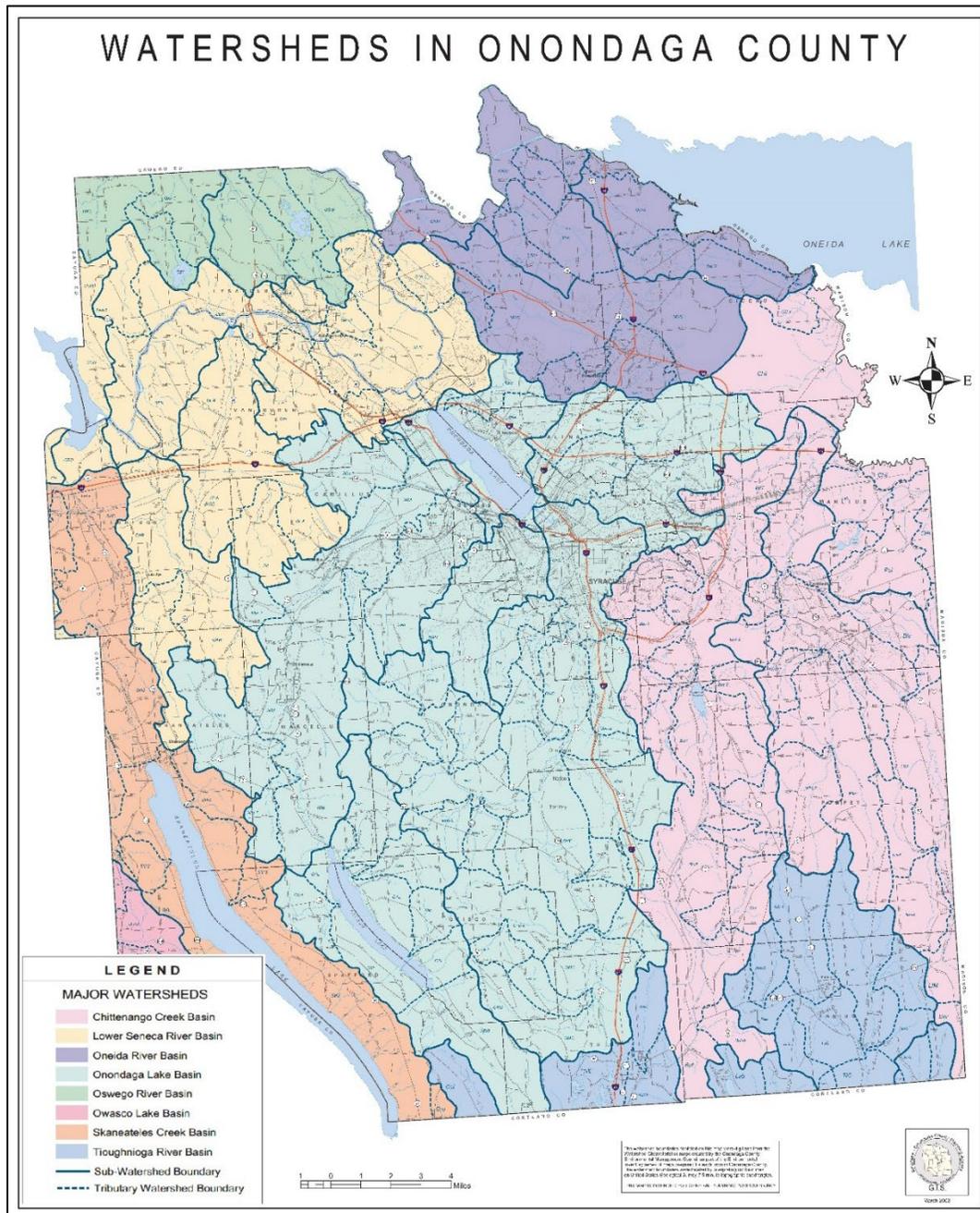
Drainage Basins and Watersheds

There are eight watersheds located within Onondaga County as noted in Figure 4-2. A watershed is the area of land that drains into a body of water such as a river, lake, stream, or bay. It is separated from other systems by high points in the area such as hills or slopes. It includes not only the waterway itself but also the entire land



area that drains to it. For example, the watershed of a lake would include not only the streams entering the lake but also the land area that drains into those streams and eventually the lake. Drainage basins generally refer to large watersheds that encompass the watersheds of many smaller rivers and streams.

Figure 4-1. Watersheds Located Within Onondaga County



Source: Syracuse-Onondaga County Planning Agency, 2013

Oswego River Basin

Most of Onondaga County falls within the Oswego River basin shown in Figure 4-2. The Oswego River Basin is located in central New York State and contains a diverse system of streams, lakes, and canals. It has an area of 5,100 square miles and encompasses three physiographic provinces – the Appalachian Plateau, the Tug Hill





Plateau, and the Lake Ontario Plain (USGS, 2002). This basin is one of the largest in New York State. The drainage area of the Oswego River basin includes all of Seneca County; most of Onondaga, Cayuga, Tompkins, Schuyler, Yates and Ontario Counties; large portions of Oswego, Oneida, Madison and Wayne Counties; and smaller parts of Lewis, Cortland, Chemung, Steuben and Livingston Counties (NYSDEC, 2007). Many waterbodies and tributaries fall within the Oswego River Basin including, but not limited to, the Oswego River; Oneida Lake, Oneida River, Butternut Creek, Limestone Creek; and Onondaga Lake, Skaneateles Lake, Otisco Lake, Onondaga Creek, Nine Mile Creek, Ley Creek, Bloody Brook, Harbor Brook, Skaneateles Creek, and the Seneca River (NYSDEC, 2007).

Figure 4-2. Oswego River Basin



Source: Musser, 2007

Within the Oswego River basin, three watersheds are found in Onondaga County: Seneca River, Oneida River and Oswego River.

Seneca River Watershed

The Seneca River watershed has a total of 4,497 miles of streams and a drainage area of 3,437 square miles. This watershed is found in 14 New York State counties, which include: Cayuga, Chemung, Cortland, Livingston, Monroe, Onondaga, Ontario, Schuyler, Seneca, Steuben, Tioga, Tompkins, Wayne, and Yates (NYSDEC, 1998; EPA, 2009). The Seneca River is located in central New York State and flows west to east from Seneca Lake. It is part of the New York State Barge Canal System and part of the original Erie Canal System. The River stretches from Geneva in Ontario County to Phoenix, where its waters combine with the Oneida and Oswego Rivers that flow into Lake Ontario. This river traverses west to east within the northern portion of Onondaga County.

The Onondaga Lake watershed of the Seneca River watershed covers 285 square miles located almost entirely within Onondaga County (Figure 4-2) and encompasses the major urban area of the City of Syracuse. The major



natural tributaries to the lake are Onondaga Creek and Nine Mile Creek, which together account for approximately 70-percent of the total amount of water that flows into Onondaga Lake each year. Other natural tributaries include Ley Creek, Harbor Brook, Saw Mill Creek and Bloody Brook (Onondaga Lake Partnership [OLP]).

Oneida River Watershed

The Oneida River watershed has a total of 1,772 miles of streams and a drainage area of 1,489 square miles. This watershed is found in six New York State counties, which include: Cortland, Lewis, Madison, Oneida, Onondaga, and Oswego (NYSDEC, 1998; EPA, 2009). The Oneida River is located in central New York State and flows from Oneida Lake to its confluence with the Seneca and Oswego Rivers. The Oswego River eventually empties into Lake Ontario. This river traverses within the northeastern section of Onondaga County.

Oswego River Watershed

The Oswego River watershed has a total of 177 miles of streams and a drainage area of 132 square miles. This watershed is found in three New York State counties, which include: Cayuga, Onondaga, and Oswego (NYSDEC, 1998; EPA, 2009).

Skaneateles Lake Watershed

Skaneateles Lake is the fourth largest lake of the Finger Lakes in New York State. It is a long and narrow lake that is over 15 miles in length, has a maximum depth of 300 feet, and a total of 413 billion gallons of water. That watershed is approximately 59 square miles and the lake has a surface area of 13.6 square miles. Skaneateles Lake is governed by three counties and five towns and one village: the counties of Onondaga, Cayuga, and Cortland and the towns of Skaneateles, Niles, Scott, Spafford, and Sempronius. And village of Skaneateles. The lake's high water quality is used for drinking water for the City of Syracuse, towns of Camillus, DeWitt, Geddes, and Onondaga and the Village of Skaneateles. In addition, approximately 1,000 lakefront residents have private intakes to provide drinking water to their homes (EPA 2010; OCWA 2019).

Otisco Lake Watershed

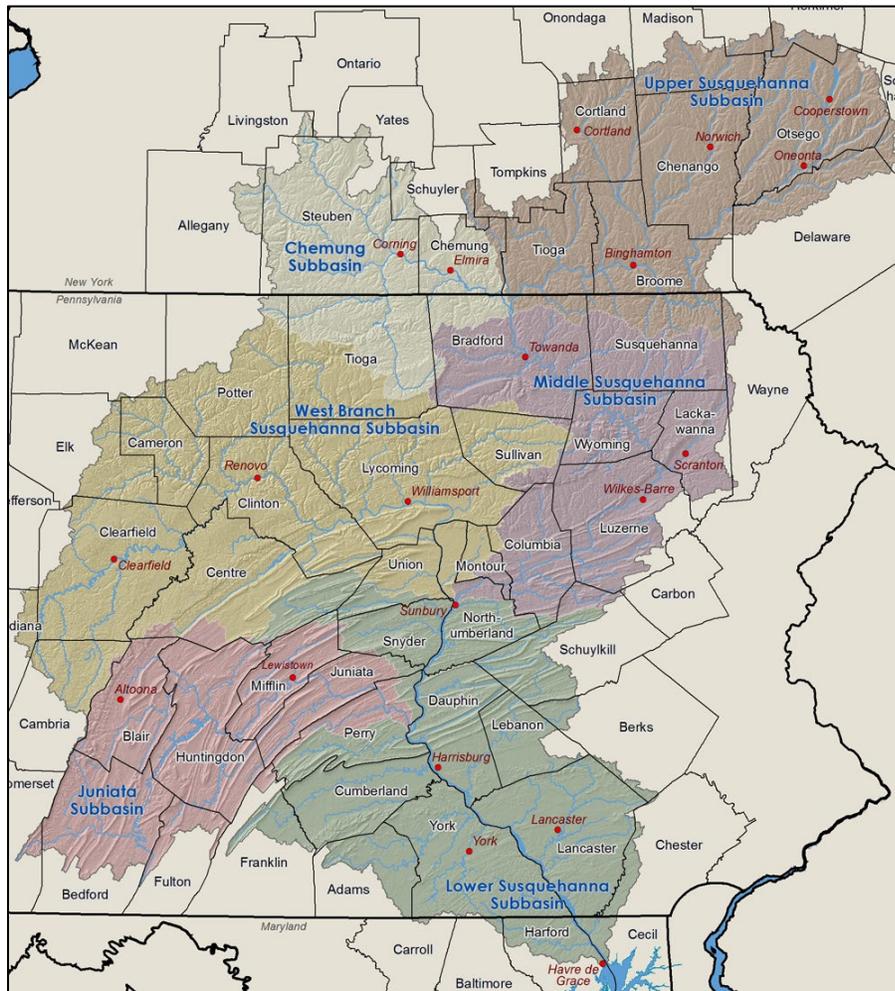
Otisco Lake is the most easterly of the Finger Lakes and seventh in size of the 11 lakes. It is approximately 5.4 miles long, $\frac{3}{4}$ miles wide, and covers 3.5 square miles. The watershed land area covers nearly 24,000 acres and is found in six towns in two counties (Cortland and Onondaga) (Water on the Web 2004). OCWA customers receives a portion of their drinking water from Otisco Lake. OCWA treats and delivers water from the lake to the southern and western half of Onondaga County. This includes the towns of Camillus, Cicero, Clay, DeWitt, Elbridge, Geddes, Lysander, Marcellus, Onondaga, Otisco, Salina, Skaneateles, Spafford, and VanBuren, the City of Syracuse, and the villages of Camillus, East Syracuse, Liverpool, Marcellus, Minoa, North Syracuse, and Solvay. (OCWA 2019).

Susquehanna River Basin

The Susquehanna River basin drains a total of 27,510 square miles. It covers half of Pennsylvania and portions of New York State and Maryland. In total, it includes all or portions of 67 counties in these three states. Within the Susquehanna River basin, there are six major subbasins. This basin has more than 49,000 miles of waterways (Susquehanna River Basin Commission, 2006).



Figure 4-3. Susquehanna River Basin



Source: Susquehanna River Basin Commission 2006

Upper Susquehanna Subbasin

The source of the Susquehanna River is Otsego Lake in Cooperstown, New York. From Cooperstown, the river flows southward through New York and into Pennsylvania just south of Windsor, New York. Downstream of Great Bend, it flows back into New York and continues westward before being joined by the Chemung River at Sayre, Pennsylvania. It has a total drainage area of 4,944 square miles (4,520 square miles in New York State and 424 square miles in Pennsylvania). The major tributaries of this subbasin are the Chenango River, Tioughnioga River, and Unadilla River. It is the only subbasin located within the Susquehanna River Basin in Onondaga County.

Climate

The climate of New York State is very similar to most of the Northeast U.S. and is classified as Humid Continental. Differences in latitude, character of topography, and proximity to large bodies of water all have an effect on the climate across New York State. Precipitation during the warm, growing season (April through September) is characterized by convective storms that generally form in advance of an eastward moving cold front or during periods of local atmospheric instability. Occasionally, tropical cyclones will move up from southern coastal areas and produce large quantities of rain. Both types of storms typically are characterized by



relatively short periods of intense precipitation that produce large amounts of surface runoff and little recharge (Cornell, Date Unknown).

The cool season (October through March) is characterized by large, low-pressure systems that move northeastward along the Atlantic coast or the western side of the Appalachian Mountains. Storms that form in these systems are characterized by long periods of steady precipitation in the form of rain, snow, or ice, and tend to produce less surface runoff and more recharge than the summer storms because they have a longer duration and occasionally result in snowmelt (Cornell, Date Unknown).

The climate of the region is characterized by mild summers; the average July temperature is 68.7 degrees Fahrenheit (°F) and the summer maximum 101°F. Winter temperatures are often severe, reaching as low as -26°F. The average monthly temperature for January is 22.2°F (FEMA FIS 2016). Overall, the county averages 38.47 inches of rain each year and 123.8 inches of snowfall each year (NWS 2019).

4.4 POPULATION AND DEMOGRAPHICS

An understanding of the planning area population characteristics provides a foundation for deciphering the impacts of natural hazards in the County. As noted in Section 5 (Methodology) of this plan, modelling of the impacts of natural hazards on the population was performed using FEMA’s Hazards U.S. Multi-Hazard (HAZUS-MH) in which the available population information includes the 2010 U.S. Decennial Census data which indicates a County population of 467,026. However, more current data, according to U.S. Census Bureau, 2016 American Community Survey 5 Year Estimate, indicates a population of approximately of 468,050 in the County, or a slight increase in population. A detailed population table for the 2010 Census is shown below in Table 4-2. A detailed table for the 2016 American Community Survey can be located in Appendix E. Figure 4-4. shows the distribution of the general population density (persons per square mile) in 2010 by Census block. Both sets of statistics are provided for context, but for the purposes of this plan, the data available in HAZUS-MH v4.2 are used (representing 2010 data) to support the analysis as the more recent data does not significantly skew the analysis.

Table 4-2. Onondaga County Population Statistics (2010 Census)

Jurisdiction	U.S. Census 2010						
	Total ¹	Pop. 65+ ²	% Pop. 65+	Under 5 ¹	% Under 5 ¹	Low Income (\$0-\$20K HAZUS) ²	2010 % Low Income (\$0-\$20K HAZUS) ²
Baldwinsville (V)	7,378	1,307	17.7%	391	5.3%	1,798	24.40%
Camillus (T)	22,954	4,287	18.7%	1,153	5.0%	2,734	11.90%
Camillus (V)	1,213	174	14.3%	69	5.7%	247	20.40%
Cicero (T)	29,641	3,641	12.3%	1,831	6.2%	3,449	11.60%
Clay (T)	53,397	6,152	11.5%	3,280	6.1%	3,312	6.20%
De Witt (T)	22,754	4,095	18.0%	1,047	4.6%	3,086	13.60%
East Syracuse (V)	3,084	396	12.8%	202	6.5%	974	31.60%
Elbridge (T)	3,496	506	14.5%	154	4.4%	389	11.10%
Elbridge (V)	1,058	182	17.2%	53	5.0%	118	11.10%
Fabius (T)	1,612	179	11.1%	77	4.8%	96	6.00%
Fabius (V)	352	49	13.9%	21	6.0%	26	7.50%
Fayetteville (V)	4,373	780	17.8%	213	4.9%	331	7.60%



Jurisdiction	U.S. Census 2010						
	Total ¹	Pop. 65+ ²	% Pop. 65+	Under 5 ¹	% Under 5 ¹	Low Income (\$0-\$20K HAZUS) ²	2010 % Low Income (\$0-\$20K HAZUS) ²
Geddes (T)	10,534	2,327	22.1%	434	4.1%	1,426	13.50%
Jordan (V)	1,368	184	13.5%	77	5.6%	127	9.30%
La Fayette (T)	4,952	707	14.3%	218	4.4%	622	12.60%
Liverpool (V)	2,347	426	18.2%	113	4.8%	487	20.80%
Lysander (T)	17,175	2,228	13.0%	971	5.7%	1,574	9.20%
Manlius (T)	19,844	3,652	18.4%	945	4.8%	1,298	6.50%
Manlius (V)	4,704	786	16.7%	229	4.9%	530	11.30%
Marcellus (T)	4,397	643	14.6%	188	4.3%	298	6.80%
Marcellus (V)	1,813	337	18.6%	109	6.0%	247	13.60%
Minoa (V)	3,449	557	16.1%	205	5.9%	461	13.40%
North Syracuse (V)	6,800	1,229	18.1%	369	5.4%	1,675	24.60%
Onondaga (T)	23,101	3,657	15.8%	4	0.0%	2,350	10.20%
Onondaga Nation Reservation	468	124	26.5%	1095	234.0%	0	0.00%
Otisco (T)	2,541	280	11.0%	115	4.5%	326	12.80%
Pompey (T)	7,080	889	12.6%	367	5.2%	360	5.10%
Salina (T)	31,363	5,702	18.2%	1,725	5.5%	5,155	16.40%
Skaneateles (T)	4,669	813	17.4%	226	4.8%	362	7.80%
Skaneateles (V)	2,540	604	23.8%	96	3.8%	336	13.20%
Solvay (V)	6,584	1,097	16.7%	430	6.5%	1,526	23.20%
Spafford (T)	1,686	241	14.3%	76	4.5%	72	4.30%
Syracuse (C)	145,170	15,332	10.6%	10,217	7.0%	48,938	33.70%
Tully (T)	1,865	229	12.3%	96	5.1%	127	6.80%
Tully (V)	873	160	18.3%	49	5.6%	79	9.10%
Van Buren (T)	10,391	1,626	15.6%	533	5.1%	1,282	12.30%
Onondaga County	467,026	65,578	14.0%	27,378	5.9%	86,220	18.50%

Source: U.S. Census 2010 (U.S. Census Bureau)¹; HAZUS-MH v4.2 (2010 Data)²

Note: Pop. = population

* Individuals below poverty level (Census poverty threshold for a 3-person family unit is approximately \$19,749); HAZUS-MH v4.2 provides counts as households, so the total counts in HAZUS-MH v4.2 were multiplied by 2.31 (Average Household Size per 2010 U.S. Census)

It is noted that the Census data for household income provided in HAZUS-MH includes two ranges (\$0-10,000 and \$10,000-\$20,000/year) that were totaled to provide the “low-income” data used in this study. This does not correspond exactly with the “poverty” thresholds established by the 2017 U.S. Census Bureau. According to the values established in 2017 by the U.S. Census Bureau, households with three adults and no children with an annual household income below \$19,173 per year, or households with one adult and two children with an annual household income below \$19,749 per year are identified as “low income” for this region (U.S. Census Bureau, 2017). This difference is not believed to be significant for the purposes of this planning effort.



4.4.1 Vulnerable Populations

The DMA 2000 requires that HMPs consider socially vulnerable populations. These populations can be more susceptible to hazard events, based on a number of factors including their physical and financial ability to react or respond during a hazard and the location and construction quality of their housing. For the purposes of this study, vulnerable populations shall include (1) the elderly (persons aged 65 and over) and (2) those living in low-income households.

Identifying concentrations of vulnerable populations can assist communities in targeting preparedness, response and mitigation actions. Populations with a higher level of vulnerability may be more seriously affected during the course of an emergency or disaster. Vulnerable populations have unique needs which need to be taken into consideration by public officials to help ensure the safety of demographics with a higher level of risk. For the purposes of this planning process, vulnerable populations in Onondaga County include children, elderly, low-income, the physically or mentally disabled, and non-English speakers.

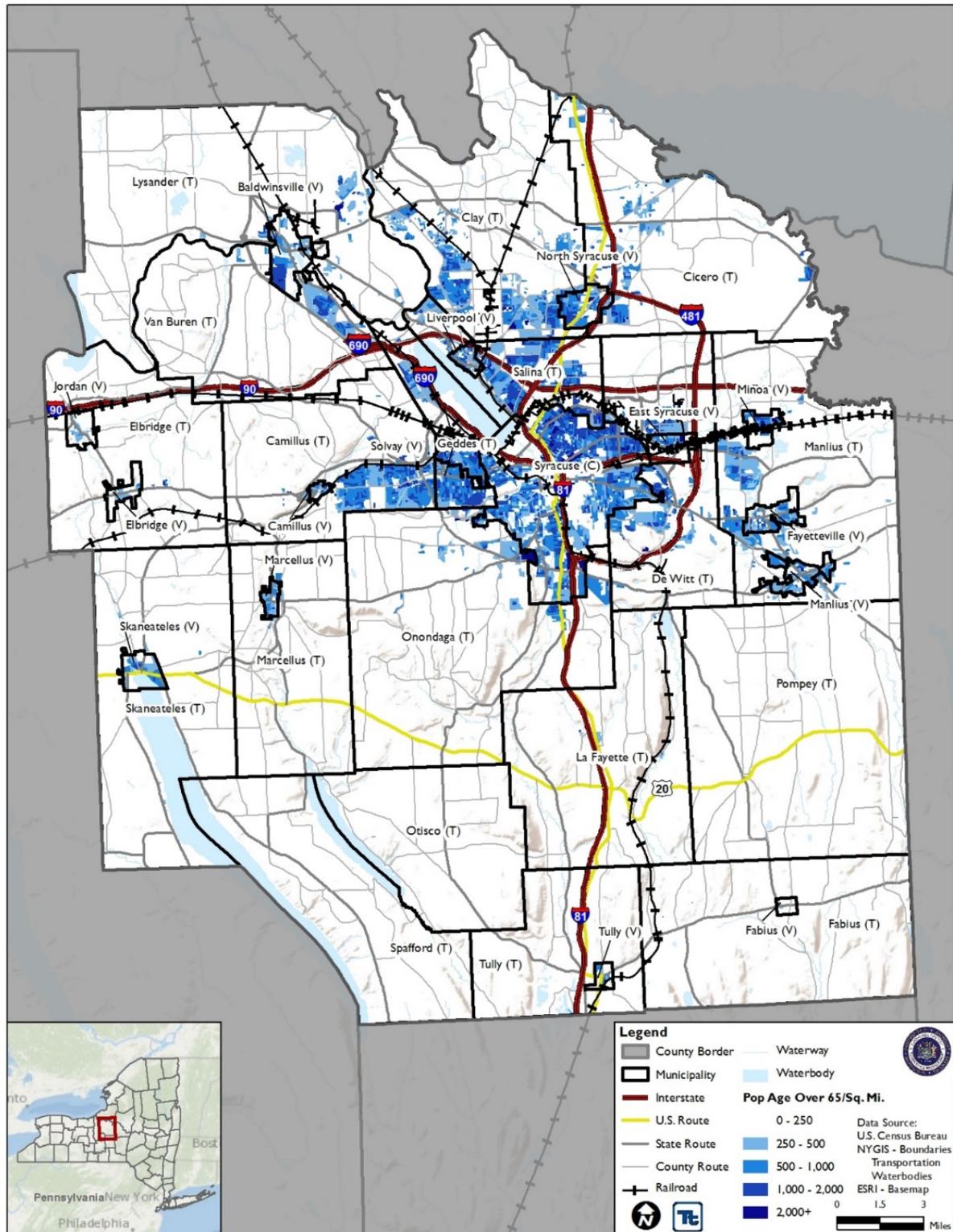
Age

Children are considered vulnerable to hazard events because they are dependent on others to safely access resources during emergencies and may experience increased health risks from hazard exposure. The elderly are more apt to lack the physical and economic resources necessary for response to hazard events and are more likely to suffer health-related consequences. Those living on their own may have more difficulty evacuating their homes. The elderly are also more likely to live in senior care and living facilities (described in Section 4.4.1) where emergency preparedness occurs at the discretion of facility operators.

According to the 2012-2016 American Community Survey 5-Year Estimates, the median age in Onondaga County was 38.8 years. HAZUS-MH reports 22.9 percent of the 2010 Onondaga County population is under the age 16. Of the 2016 population, 15.3 percent of the County's population is age 65 and older. Figure 4-5. shows the distribution of persons over age 65 and Figure 4-6. shows the distribution of persons under the age of 16 and in Onondaga County.



Figure 4-5. 2010 Distribution and Density of Persons over the Age of 65 in Onondaga County, New York

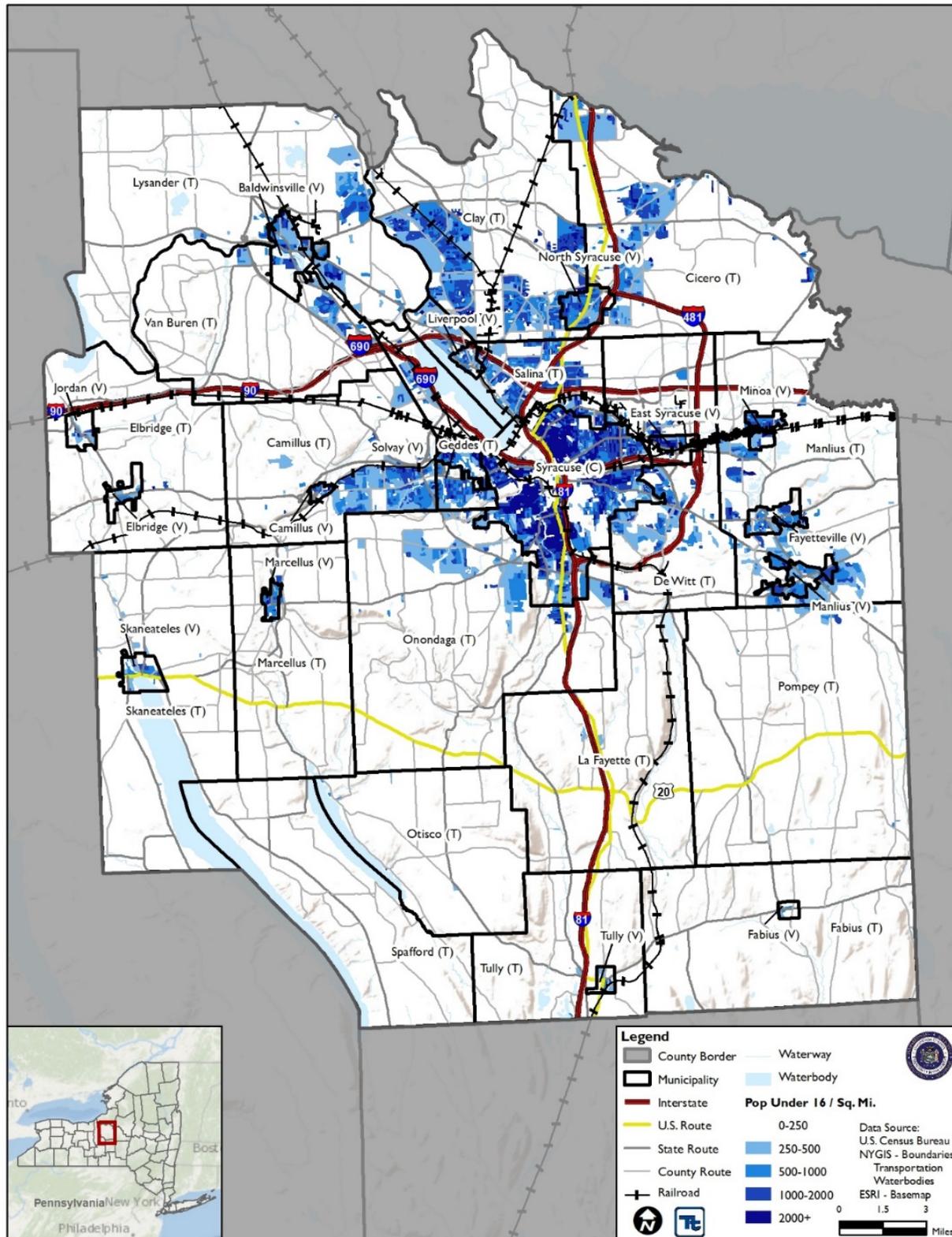


Source: HAZUS-MH v4.2 (Based on US Census 2010 data)





Figure 4-6. 2010 Distribution and Density of Persons under the Age of 16 in Onondaga County, New York



Source: HAZUS-MH v4.2 (Based on US Census 2010 data)

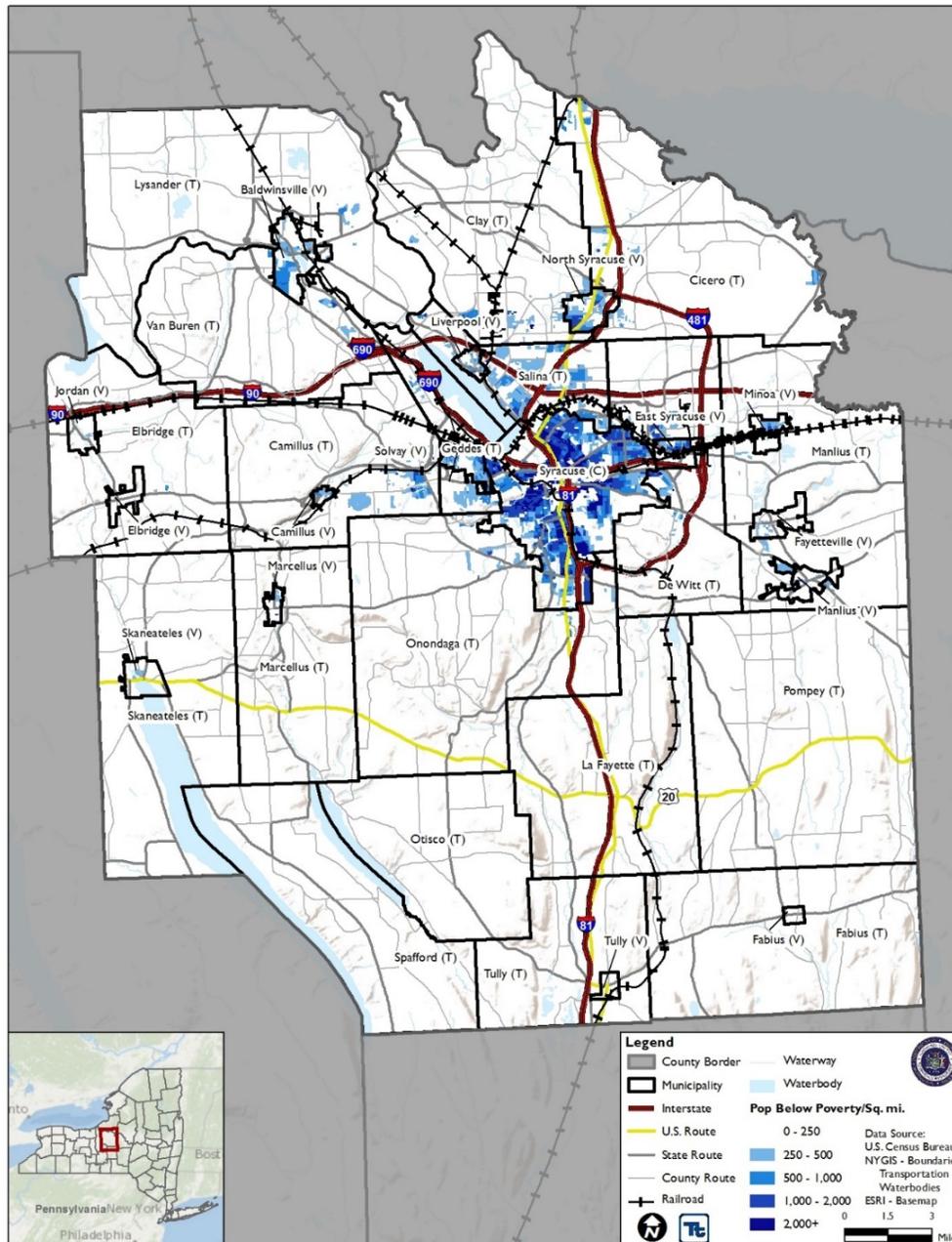




Income

The 2012-2016 American Community Survey 5-Year Estimates find that the median household income in Onondaga County was \$55,717, and the per capita income was \$30,225. The U.S. Census Bureau identifies households with two adults and two children with an annual household income below \$24,339 per year as “low income” (U.S. Census 2016). The 2012-2016 American Community Survey 5-Year Estimates indicates a total of 15.2 percent persons below the poverty level within the County. Figure 4-7. below illustrates the low-income population density in Onondaga County.

Figure 4-7. 2010 Distribution and Density of Low-Income Population in Onondaga County, New York



Source: HAZUS-MH v4.2 (Based on US Census 2010 data)

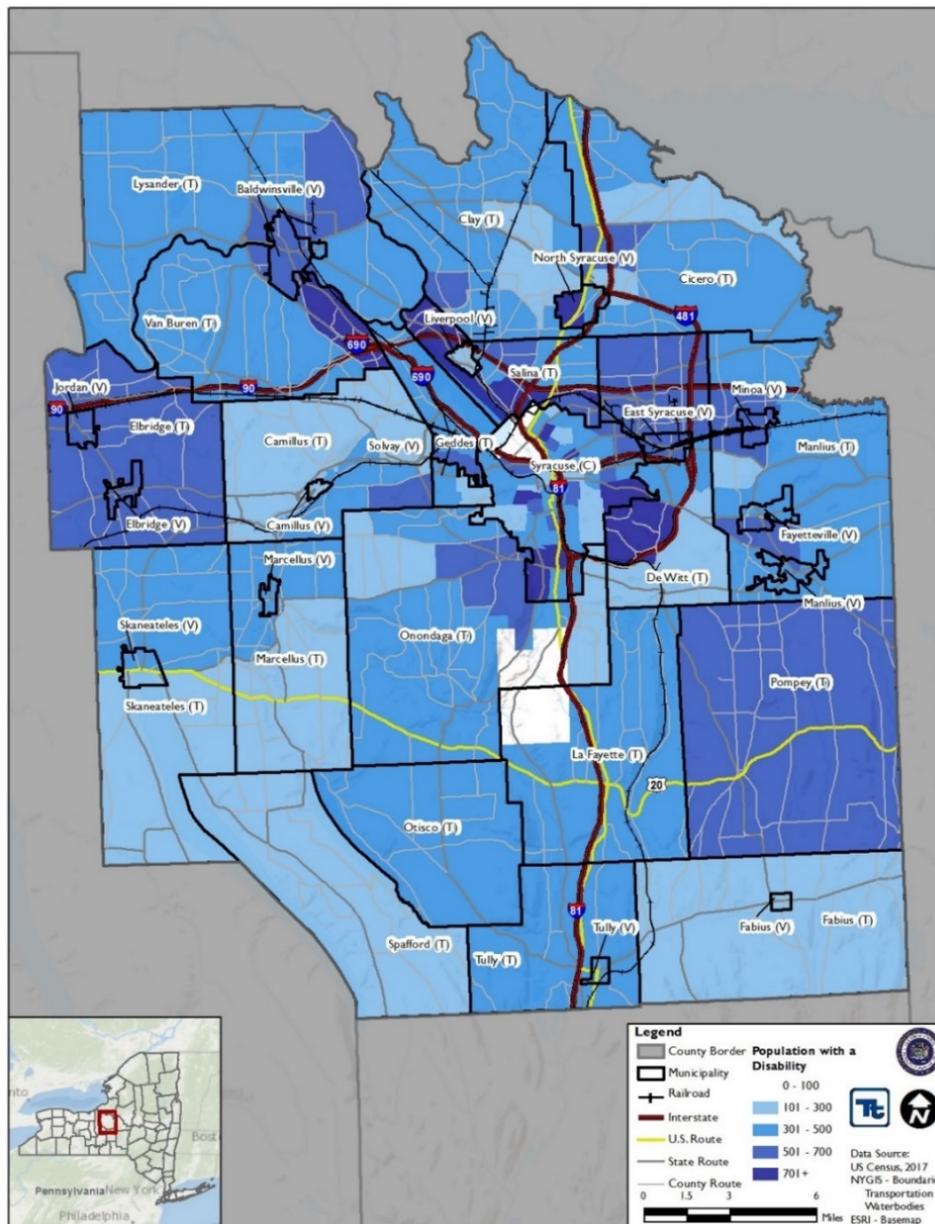




Physically or Mentally Disabled

“Persons with a disability include those who have physical, sensory, or cognitive impairment that might limit a major life activity (Center for Disease Control, 2015).” These impairments may increase the level of difficulty that individuals may face during an emergency. Cognitive impairments may reduce an individual’s capacity to receive, process, and respond to emergency information or warnings. Individuals with a physical or sensory disability may face issues of mobility, sight, hearing, or reliance on specialized medical equipment. According to the 2012-2016 American Community Survey, 12.4 percent residents of Onondaga County are living with a disability. Figure 4-8. shows the geographic distribution of disabled individuals throughout Onondaga County, including individuals with: hearing, vision, cognitive, ambulatory, self-care, and independent living difficulties.

Figure 4-8. Distribution of Persons with a Disability in Onondaga County, New York



Source: United States Census Bureau, 2012-2016 American Community Survey; New York GIS Clearinghouse
 Note: The figure indicates distribution based on Census Tract designations.

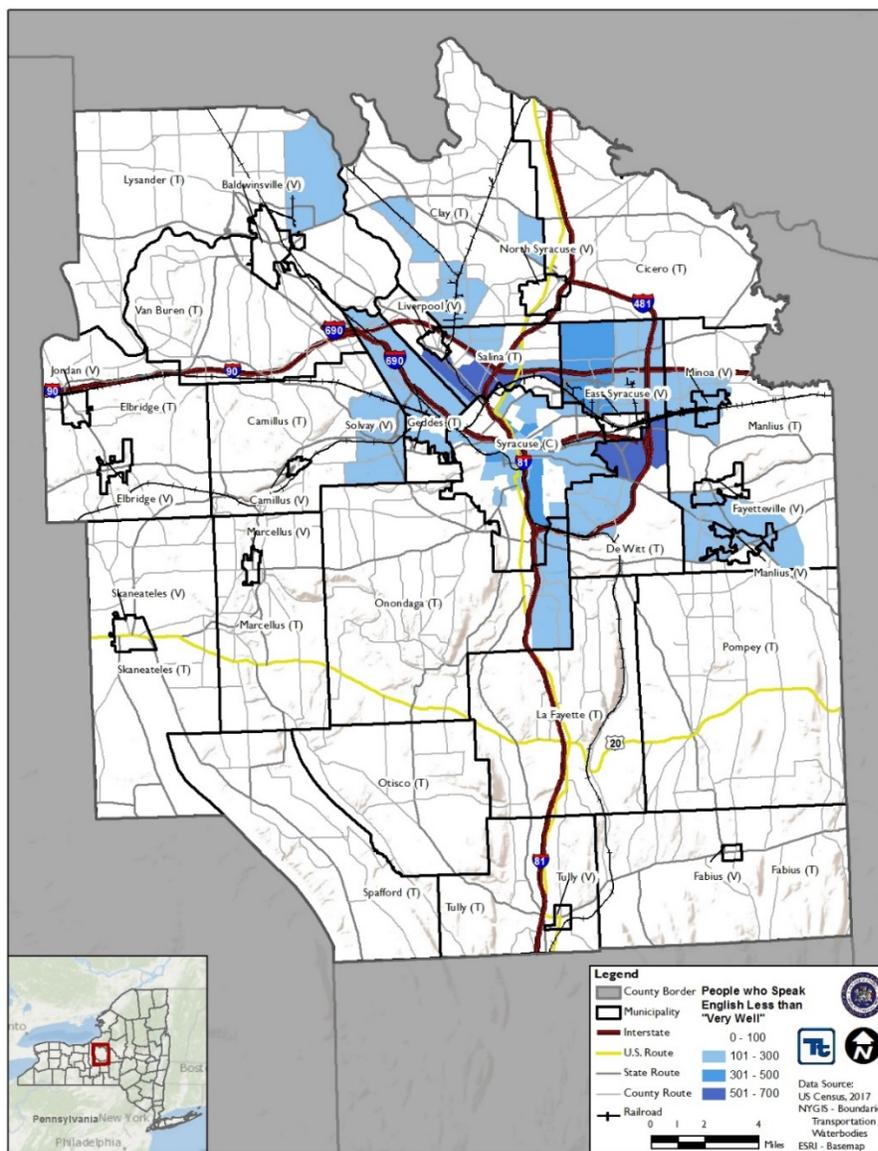




Non-English Speakers

Individuals who are not fluent or working proficiency in English are vulnerable because they may have difficulty with understanding information being conveyed to them. Cultural differences can also add complexity to how information is being conveyed to populations with limited proficiency of English (Centers for Disease Control, 2015). According to the 2012-2016 American Community Survey, 10.4 percent of residents of the County’s population over the age of 5 primarily speak a language other than English at home; of those 16,369 individuals are reported to speak English less than “very well.” Of the County’s population, 3.1% percent speak Spanish, 3.9% speak other Indo-European languages, 2.3% speak Asian and Pacific Island Languages, and 1.2% speak other languages. Figure 4-9. below shows the geographic distribution of individuals who speak English less than “very well.”

Figure 4-9. Distribution of Persons Who Speak English Less than “Very Well” in Onondaga County, New York



Source: United States Census Bureau, 2012-2016 American Community Survey; New York GIS Clearinghouse
Note: The figure indicates distribution based on Census Tract designations.



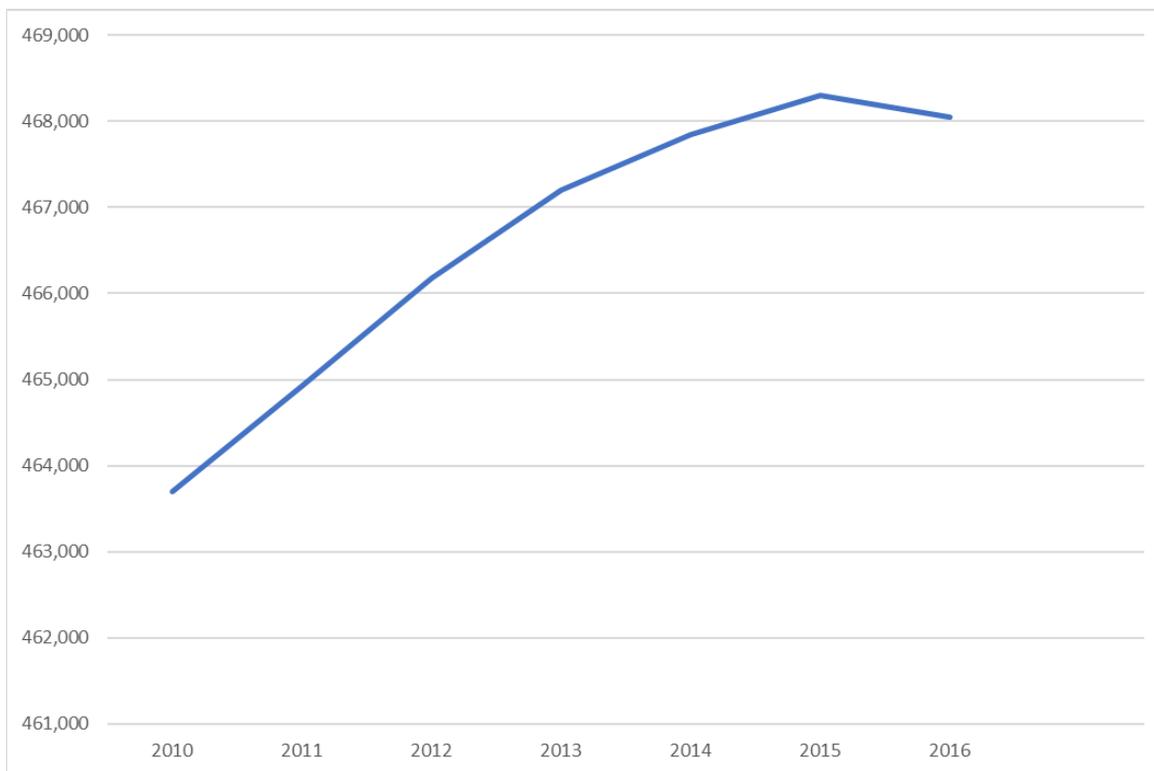


Population and Demographic Trends

This section discusses population trends to use as a basis for estimating future changes that could result from the seasonal character of the population and significantly change the character of the area. Population trends can provide a basis for making decisions on the type of mitigation approaches to consider and the locations in which these approaches should be applied. This information can also be used to support planning decisions regarding future development in vulnerable areas. Various Census Bureau products were used as sources for the population trends section. The Decennial Census is the official population count taken every 10 years. American Community Survey 5-Year Estimates are used to show annual population changes, but it is not an official population county. 5-Year Estimates are used because they are the most accurate form of American Community Survey with the largest sample size which allows for greater accuracy at smaller geographic areas. The American Community Survey 5-Year Estimate products were used to establish annual changes in population. The numbers provided are not official census counts, but are official estimates provided to communities so that they may have a greater understanding in population changes within their jurisdictions.

Although Onondaga County’s population has not undergone any notable change since the last hazard mitigation plan, the current data shows an increase in population from 2010 to 2015, and a slight population decline from 2015 to 2016 as illustrated in Figure 4-10. below, which shows the annual population estimate from the 2010 to the 2016.

Figure 4-10. County Population Change, 2010-2016



Source:

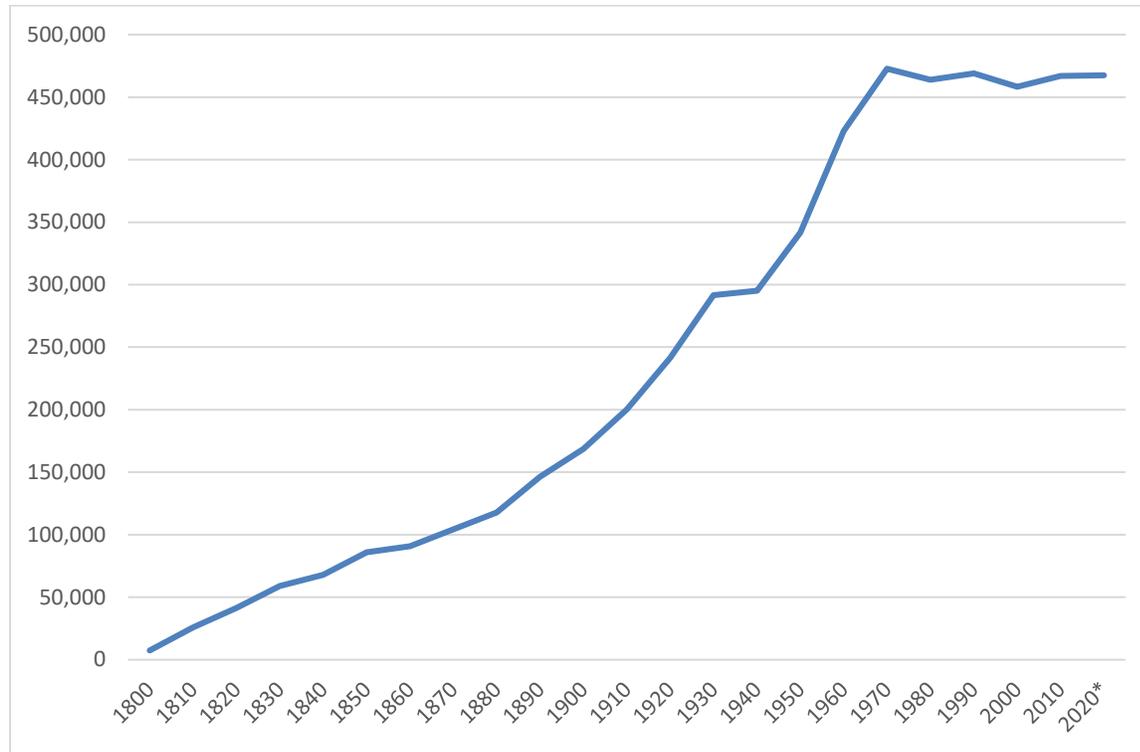
U.S. Census Bureau 2010-2016, American Community Survey 5 Year Estimates

Cornell University’s Program on Applied Demographics produced population projections by county and by age and sex for New York State. The projections were completed in 2011 and are in five-year intervals up to the year 2040. The projections are based upon rates of change estimated from historic data. The projections have been combined with historical census information to illustrate population trends within Onondaga County over a



longer study period. Onondaga County experienced population growth from 1800 until 1990. There was a slight decrease from 1990 to 2000, but since that time there has been a relative population stabilization. This population stability is projected to continue until the year 2020, shown in Figure 4-11.

Figure 4-11. Onondaga County Population Change, 1800 to 2020



Source: U.S. Census Bureau, 1995 and 2007; University of Virginia, 2004, Cornell University 2018
*Years listed are population projections

Population changes at the municipal level are also important to capture to better understand changing populations within the county and where the concentration of population resides. There is almost an equal split between municipalities that have increased and decreased in population from the 2006-2010 American Community Survey to the 2012-2016 American Community Survey. The general population change for the county was a 0.9 percent increase in population, while the average population change at the municipal level was a 0.55 percent increase. Based on historical data, population projections have been created which show Onondaga County’s population to gradually decrease over time. Onondaga County’s total population increased slightly between 2010 and 2016, while the elderly and youth populations decreased. Population increase will require increased consideration during the planning process to

At A Glance – Total County Population
From 2010 to 2016 Onondaga County Population increased by 0.9%.

Largest Population Increases (Persons):

1. Town of Clay: 1,423
2. Town of Cicero: 627
3. Town of Onondaga: 449

Largest Population Decreases (Persons):

1. City of Syracuse: 384
2. Town of Elbridge: 282
3. Town of Spafford: 275

Source: American Community Survey 5-Year Estimates

Population Age 5 & Under
The 5 & Under population has decreased by 0.1% from 2010 to 2016.

Largest Increases in 5 & Under Population (Persons):

1. Town of Lysander: 468
2. Town of Cicero: 206
3. Village of Minoa: 170

Largest Decreases in 5 & Under population (Persons):

1. Town of Manlius: 869 persons
2. Town of La Fayette: 864
3. Town of Clay: 387

Source: American Community Survey 5-Year Estimates



ensure capability to accommodate a higher number of people. Appendix E (Figure E-3) displays the change in population from the 2006-2010 American Community Survey to the 2012-2016 American Community Survey. This comparison was done because of the data collection methods used within the American Community survey to provide a more accurate comparison of population. The American Community Survey does not separate the population of villages from the town populations, which makes the Village populations double counted within the ACS. The figure separates the village and town populations where possible. Some municipal populations may be skewed because of overlapping boundaries between village and town populations. These municipalities include: the Village of Baldwinsville, the Town of Cicero, the Town of Clay, the Village of North Syracuse, the Onondaga Nation Territory, and the Town of Van Buren.

Population Age 65 & Over
 The 65+ Population has decreased by 2.4% from 2010 to 2016.

Largest Increases in 65+ Population:

1. City of Syracuse: 1,830
2. Town of Clay: 1,637
3. Town of Lysander: 1,433

Largest Decreases in 65+ Population:

1. Town of Manlius: 1,536
2. Town of Geddes: 1,048
3. Town of De Witt: 800

Source: American Community Survey 5-Year Estimates

4.5 GENERAL BUILDING STOCK

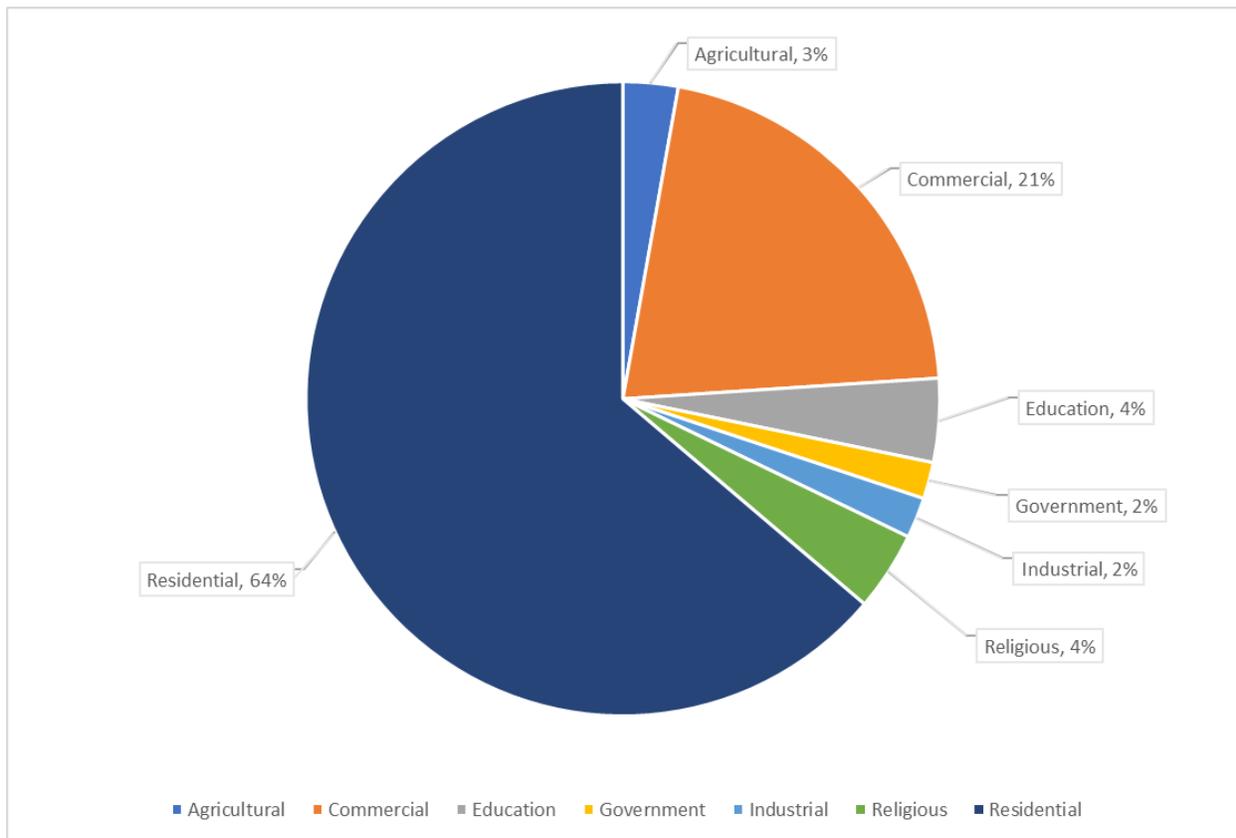
The 2010 U.S. Census data identified 202,357 housing units in Onondaga County. The 2012-2016 American Community Survey 5-Year Estimates reported 204,504 housing units in Onondaga County which represents a 1.1% increase in housing units from 2010. The U.S. Census defines household as all the persons who occupy a housing unit, and a housing unit as a house, an apartment, a mobile home, a group of rooms, or a single room that is occupied (or if vacant, is intended for occupancy) as separate living quarters. Therefore, you may have more than one household per housing unit. The median value of an owner-occupied housing unit in Onondaga County was estimated at \$137,000 (U.S. Census American Community Survey 5-Year Estimate, 2016).

For this update, the default general building stock in HAZUS-MH v4.2 was updated and replaced with a custom-building inventory for Onondaga County. The building inventory was generated using building footprints provided by the Syracuse – Onondaga County Planning Agency. The updated building inventory [221,685 buildings with a total building replacement value (structure and content) of greater than \$118 billion] was incorporated into HAZUS-MH at the structure and aggregate level. Approximately 91.5% of the buildings (202,762 buildings) and 63.8% of the building stock replacement value are associated with residential housing. The residential building count is less than housing unit counts above, because the general building stock inventory includes individual structures and not the individual units of each building. One apartment building could have more than 10 units but is only represented in the inventory as one structure. Refer to Section 5.1 – Methodology and Tools for a more detailed description of the general building stock inventory.

Generally, contents for residential structures are valued at about 50 percent of the building’s value. For non-residential facilities, the value of the content is generally about equal to the building’s structural value. Actual content value varies widely depending on the usage of the structure. In Appendix E, Table E-6 presents the total number of buildings and their replacement cost by municipality. Table E-7 presents building stock statistics by occupancy class for Onondaga County. Figure 4-12. below illustrates the percentage of total building replacement value by occupancy class.



Figure 4-12. General Building Stock by Occupancy Class, Onondaga County, New York



Source: Syracuse-Onondaga County Planning Agency, 2018

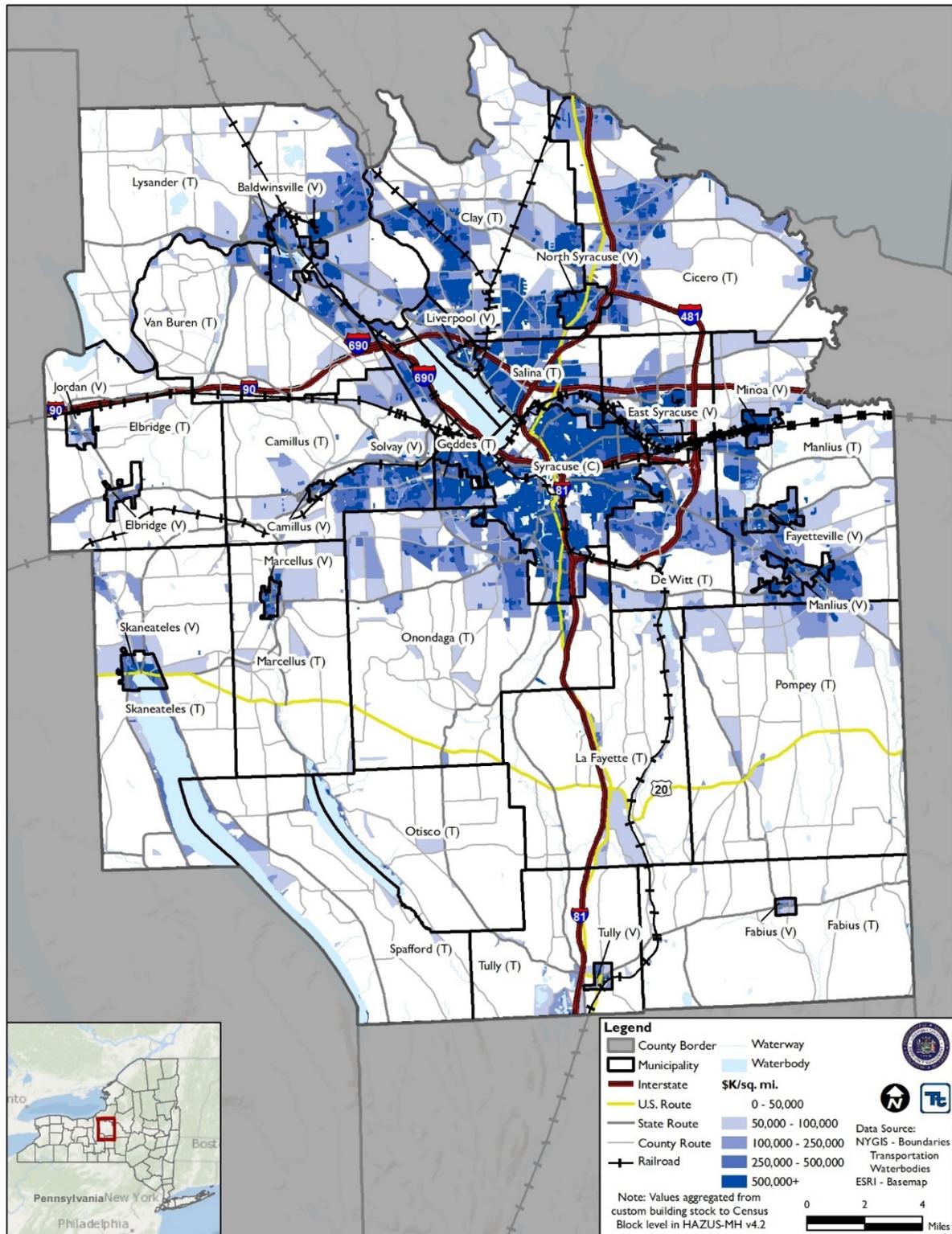
The 2012-2016 American Community Survey data identified that the majority of housing units (62.9% or 128,623 units) in Onondaga County are single-family detached units. The 2016 U.S. Census Bureau’s County Business Patterns data identified 11,709 business establishments employing 218,730 people in Onondaga County. The retail trade industry has the highest number of establishments in the County, with 1,660 establishments. This is followed by the health care and social assistance industry with 1,275 establishments and the other services (except public administration) sector with 1,240 establishments (U.S. Census, 2016).

Figure 4-13 and Figure 4-14 show the distribution and exposure density of residential and commercial buildings, respectively, in Onondaga County based on the aggregate custom-building stock values input into HAZUS-MH v4.2. Exposure density is the dollar value of structures per unit area, including building content value. The densities are shown in units of \$1,000 (\$K) per square mile.

Viewing exposure distribution maps, such as Figure 4-13. and Figure 4-14. , can assist communities in visualizing areas of high exposure and in evaluating aspects of the study area in relation to the specific hazard risks.



Figure 4-13. Distribution of Residential Building Stock and Value Density in Onondaga County

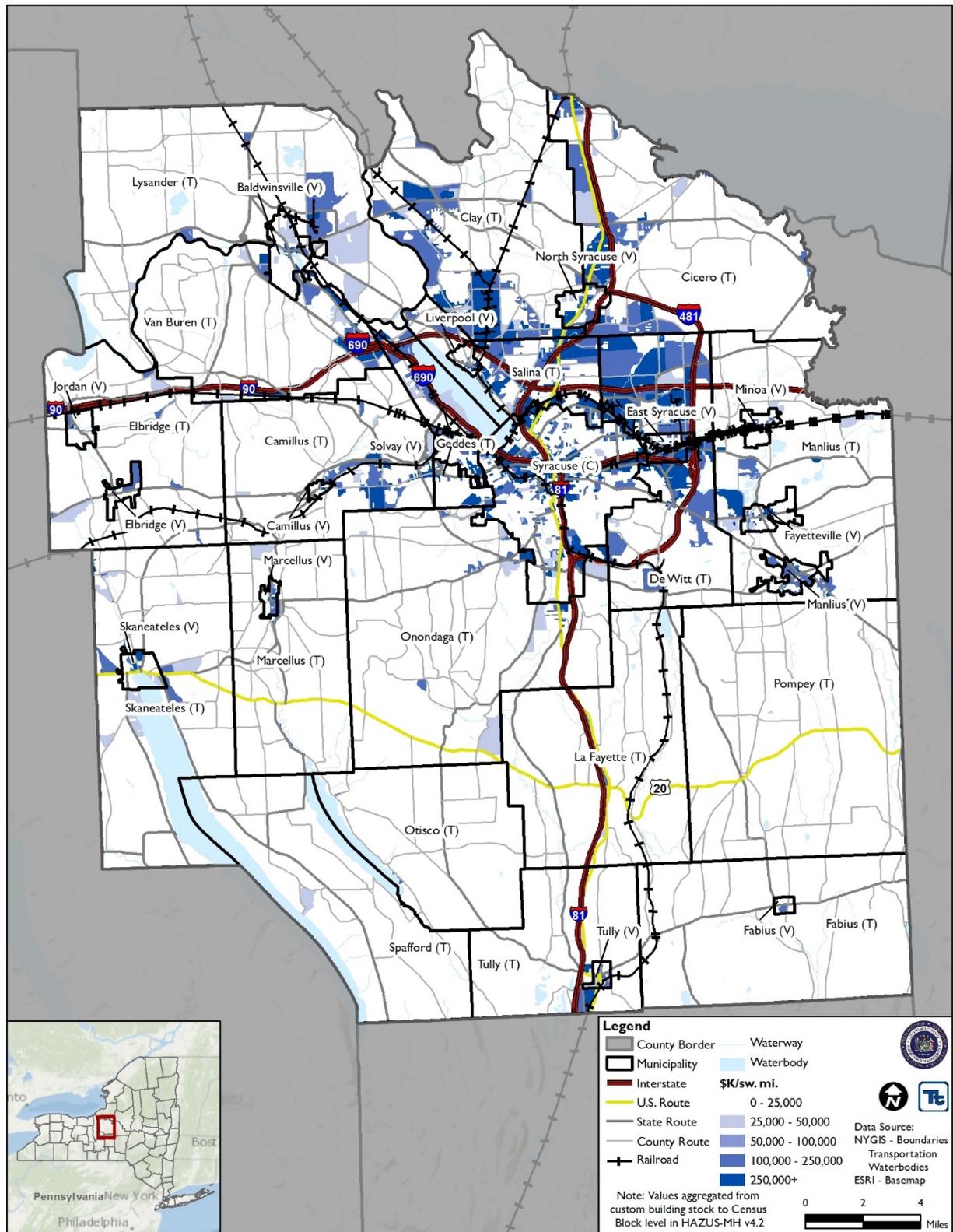


Source: Syracuse-Onondaga County Planning Agency; RS Means 2019





Figure 4-14. Distribution of Commercial Building Stock and Exposure Density in Onondaga County



Source: Syracuse-Onondaga County Planning Agency; RS Means 2019





4.5.1 Land Use and Development Trends

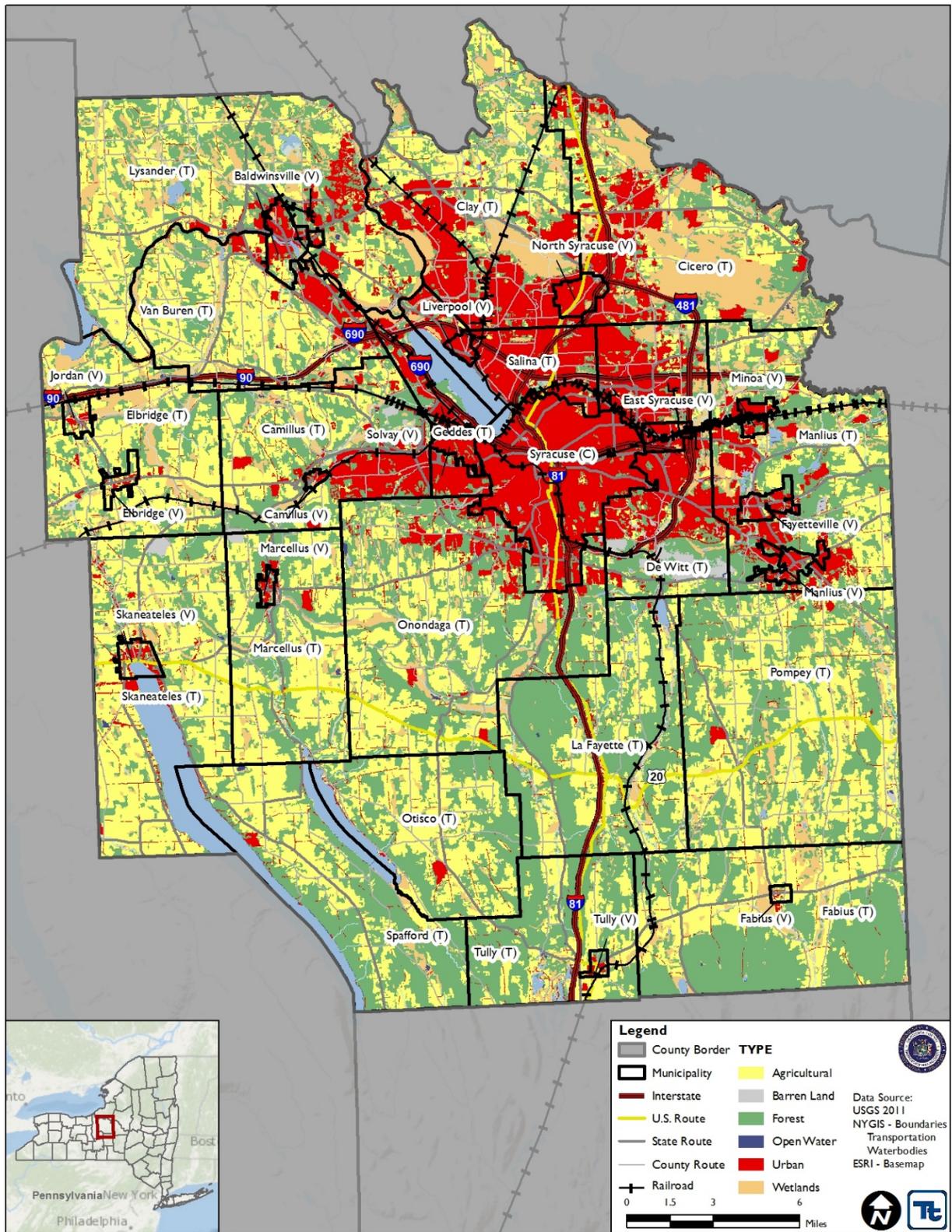
Land use in Onondaga County is influenced by natural resources, topographic constraints, water lines, sewers, and roads. The County has a relatively compact development pattern and is made up of rural, suburban and urban areas (Syracuse-Onondaga County Planning Agency, 1998). Land development has followed a pattern of decentralization that has existed for the past several decades, leading to expansion in the suburban areas and mixed pattern of stability, decline, and redevelopment in Syracuse (2010 Development Guide, Syracuse-Onondaga County Planning Agency, 1998).

The urbanized area in the County is mainly found in Syracuse and extends outward along former “farm to market” roads. Suburban areas are found around villages, wetlands and flood plains, avoiding glacial uplands and steep valleys in the southern towns. These suburban areas are surrounded by farmland, wooded areas, parks, and protected open space. Retail and commercial uses are concentrated in downtown areas, in shopping malls and office parks, and along main roadways. Industrial areas are typically located near rail lines (2010 Development Guide, Syracuse-Onondaga County Planning Agency, 1998).

Land use has changed over the years in Onondaga County. Manufacturing has declined while institutional and government uses have increased. Retail uses have seen many changes in the relative strength of various malls and commercial areas. Office uses along with other service activities have increased, primarily in suburban locations. Agriculture remains a large land use; however, the number of farms and the number employees is decreasing slightly.



Figure 4-15. 2011 Land Cover for Onondaga County



Source: USGS National Land Cover Database, 2011





4.5.2 Development Trends and New Development

In New York State, land use regulatory authority is vested in towns, villages, and cities. However, many development and preservation issues transcend local political boundaries. In Onondaga County, each town and village is empowered by the Municipal Home Rule Law to plan and zone within its boundaries. DMA 2000 requires that communities consider land use trends, which can impact the need for, and priority of, mitigation options over time. Land use trends can also significantly impact exposure and vulnerability to various hazards. For example, significant development in a hazard area increases the building stock and population exposed to that hazard.

This plan provides a general overview of land use trends and types of development occurring within the study area. An understanding of these development trends can assist in planning for further development and ensuring that appropriate mitigation, planning, and preparedness measures are in place to protect human health and community infrastructure.

Over the past several decades, land development in Onondaga County has followed a pattern of decentralization. This has led to expansion in the suburban municipalities and a mixed pattern of stability, decline and redevelopment in the City of Syracuse (2010 Development Guide, Syracuse-Onondaga County Planning Agency, 1998).

Since 1970, the northern municipalities of the County have had the greatest growth. The eastern and western municipalities have had somewhat less of growth and the southern municipalities have had relatively minor population growth. This difference amongst the municipalities is most likely due to differences in land development costs, attitudes toward development, availability of highway and other infrastructure, and environmental/physical barriers. Some suburban areas have limited growth, most likely due to landowner resistance or other areas were cheaper and easier to develop (Syracuse-Onondaga County Planning Agency, 1998).

The City of Syracuse experienced population stability between 2000 and 2010 after a population loss from 1990 to 2000. Over 2000 housing units were added to the Downtown and University Hill sections of the city in recent years. (Syracuse-Onondaga County Planning Agency, 2019).

Other types of land uses in the County have seen changes as well. Manufacturing has declined, while institutional and government uses have increased. Retail land use has seen an increase, due to the numbers of various malls and commercial strips. Office and other services have seen an increase, mainly in suburban locations. Agricultural land use is still large; however, it employs fewer people on fewer farms each decade. The City of Syracuse remains the largest employment center and it is predicted to remain this way over the next twenty years (Syracuse-Onondaga County Planning Agency, 1998).

Onondaga County has experienced growth in both the number of housing units and housing unit size. Almost 8,000 new residential parcels have been created in Onondaga County since 2000, while average house size increased approximately 40% between 1982 and 2000 (SOCPA planning presentation, 2012). Water and sewer infrastructure expansion is taking place within Onondaga County, which encourages development in previously undeveloped areas therefore decreasing open space and agricultural land (Onondaga County, 2012).

An ongoing trend in development is an increase in suburbanization throughout Onondaga County. Since the 1960's the population of the City of Syracuse has decreased as the remaining municipalities within Onondaga County have seen an increase as a whole. This decentralization of the population from the City of Syracuse to the surrounding communities has increased the total urban land area within Onondaga County. As population becomes less concentrated, this creates a greater dependence on motor vehicles and transportation infrastructure



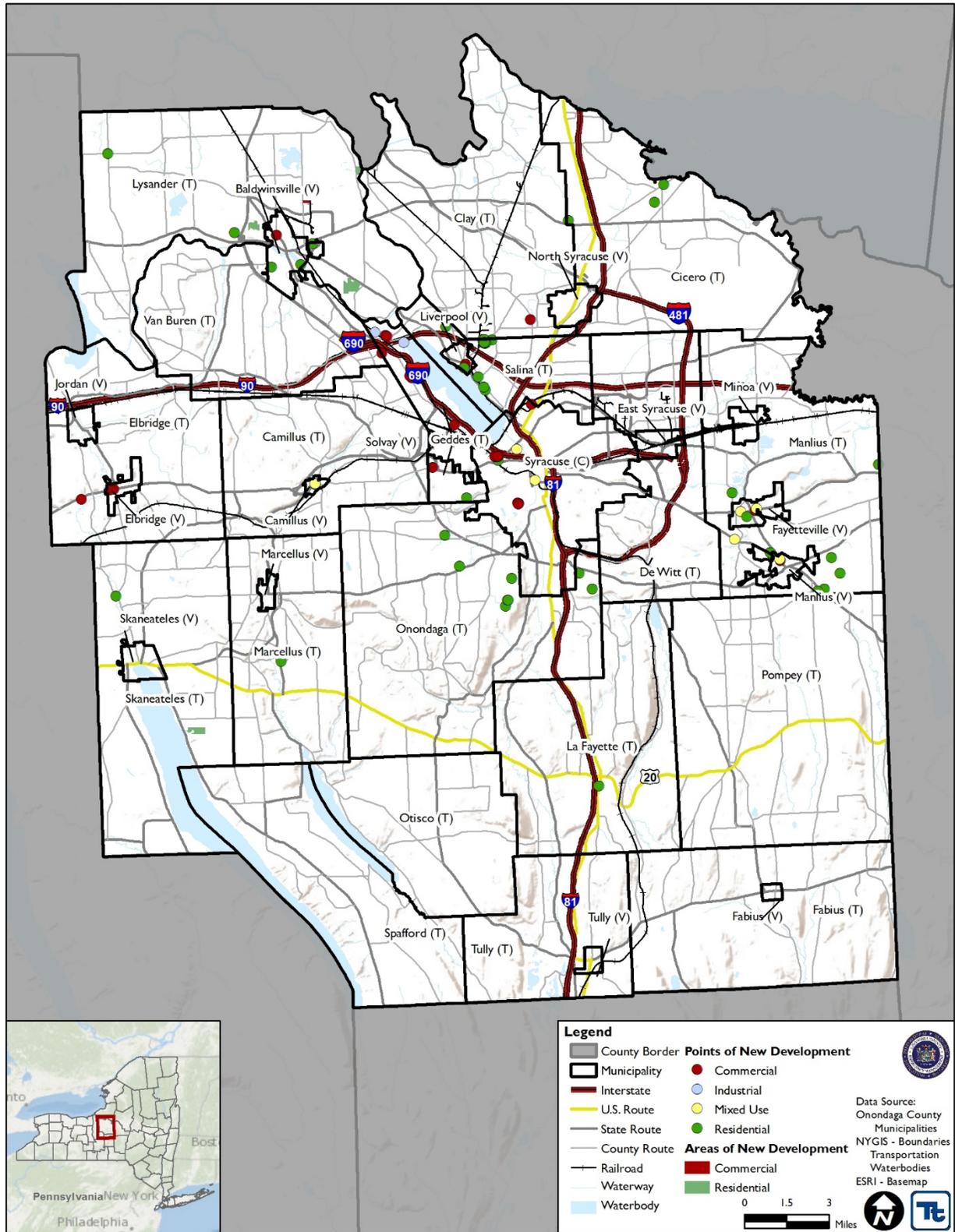
for travel throughout the county (Syracuse Metropolitan Transportation Council, 2015). This dependence on motor vehicle travel can lead to increased risk during various natural hazards. Individuals who move out of the City of Syracuse will likely move to suburban areas which are already developed, therefore creating smaller clustered populations around the County. As the population shifts towards these areas, there will be a greater likelihood that development will continue based on where there are concentrations of population.

The County and participating municipalities have identified development that has occurred in the last five years and potential future development in the next five years, along with the development's exposure to natural hazards. Figure 4-16 below shows the locations of new development taking place across Onondaga County. Additional information can be found within the jurisdictional annexes in Section 9 regarding new development at the municipal level.

Certain communities have adopted ordinances to further protect against natural hazards (e.g. Steep Slope Ordinances) and protect natural resources that provide natural mitigation benefits (e.g. wetlands and wetland buffers, stream courses and stream banks, areas of retention/detention). County and community capabilities to manage development so as to minimize increased natural hazard risk are discussed in the capability assessment subsection of Section 6 (Mitigation Strategy), as well as within each jurisdictional annex in Section 9. Also identified within each annex are actions the community has or will take to further integrate the findings and recommendations of this plan into other planning mechanisms and programs, many of which support land use and development so as to minimize the increase of natural hazard risk.



Figure 4-16. Onondaga County New Development

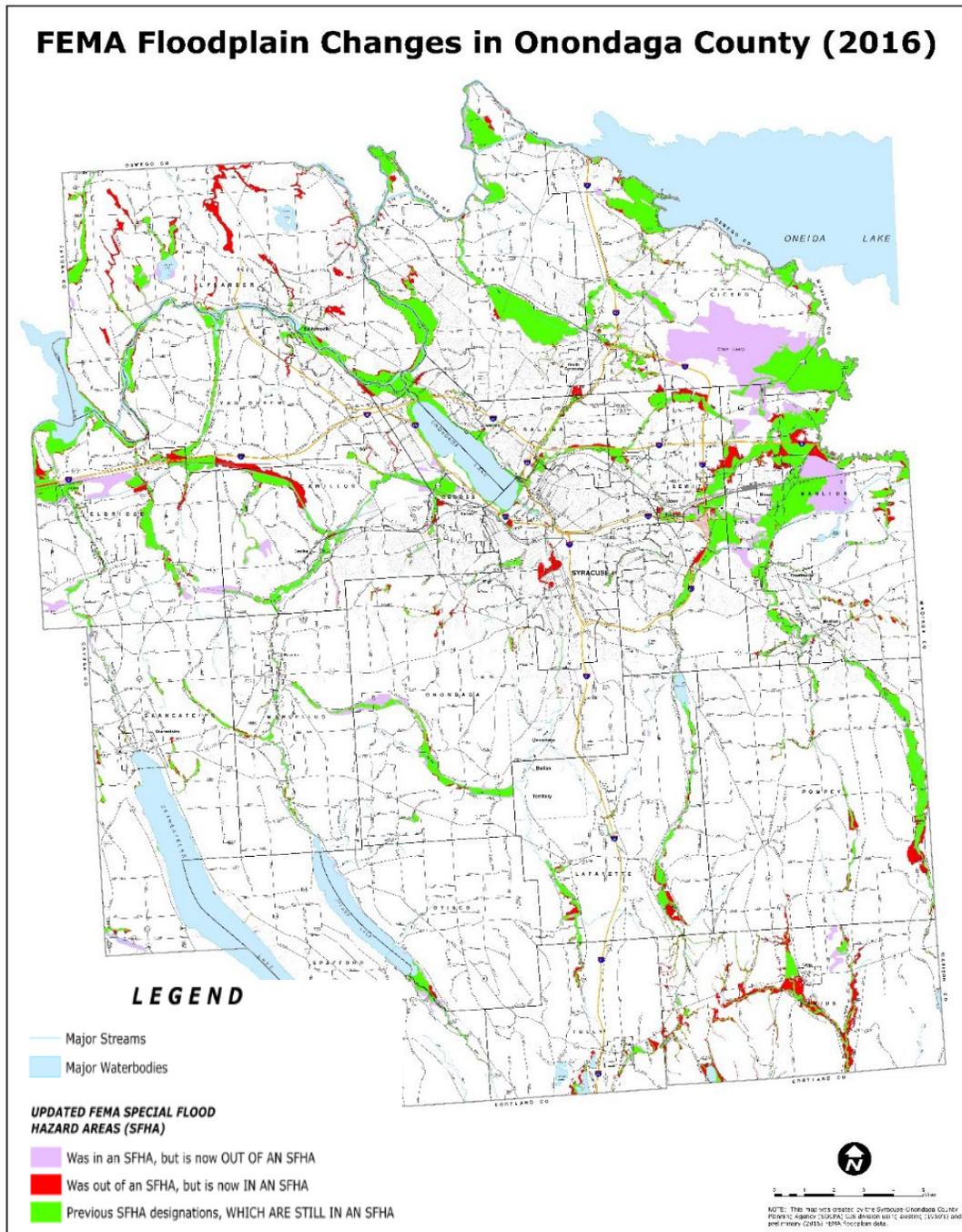




4.5.3 Changes in Mapped Flood Hazard Areas

FEMA Digital Flood Insurance Rate Map (DFIRM) data was updated for Onondaga County and is effective as of November 4th, 2016: a Letter of Map Revision (LOMR) was incorporated into this data and released on November 2nd, 2018. This updated DFIRM information has changed the boundaries of Special Flood Hazard Areas (SFHA) throughout the county.

Figure 4-17. Onondaga County Flood Hazard Area Changes 1980-2016



Source: Syracuse-Onondaga County Planning Agency, 2016





4.5.4 Potential Sites for Temporary Housing and Relocation

Flooding events in Onondaga County are anticipated to occur most often at a relatively small geographic scale, and Onondaga County also has very few dense concentrations of flood prone residences. Other identified hazards in the plan are not likely to require temporary housing accommodations. As such the need for temporary housing for displaced residents is relatively small in scale and could likely be absorbed by facilities available through the American Red Cross, Salvation Army, etc. and the existing available housing stock.

In the event that trailers or other temporary housing is necessary, the NYS Fairgrounds, and existing and underutilized regional shopping malls have ample parking lots with proximity to infrastructure and services that would likely provide adequate space for temporary housing needs. Large tracts of vacant and underutilized land also occur in nearly every town in the County.

In order to identify potential sites for temporary housing and relocation, each municipality provided possible locations suitable for the placement of temporary housing for residents displaced by disaster including sites to accommodate relocation of houses out of the floodplain or for the construction of new replacement developments. These locations are indicated in Table 4-3 and are located on the map in Figure 4-18 below. In addition, 19 mobile home parks within the county have been identified to provide potential accommodation of temporary housing units dependent upon availability at the time of an event.

Table 4-3. Potential Temporary Housing Locations in Onondaga County

Site Name	Address	Parcel	Jurisdiction	Infrastructure/ Utilities Available	Capacity*	Type
Oneida Shores County Park	9400 Bartell Road	108.-01-27.0	Cicero (T)	Yes	210 Sites	Mixed
White Pines Commerce Park	5171 Route 31, Clay	046.-02-04.0	Clay (T)	Limited	180 Sites	Open Space
Highland Forest	1254 Highland Park Rd	112.-02-12.0	Fabius (T)	Limited (septic/well)	120 Sites	Mixed
Lakeview Amphitheater	Restoration Way	029.-01-02.0	Geddes (T)	Yes	250 Sites	Open Space
NYS Fairgrounds	581 State Fair Blvd	026.-01-04.1	Geddes (T)	Yes	340 Sites	Mixed
Jamesville Beach Park	3992 Apulia Road	001.-05-07.0	La Fayette (T)	Limited (park restrooms), septic, public water	60 Sites	Mixed
Onondaga Lake Park	106 Lake Drive	004.-07-06.1	Liverpool (V)	Yes	110 Sites	Mixed
Beaver Lake Nature Center	8477 East Mud Lake Road	032.-02-01.1	Lysander (T)	Limited (park restrooms), septic, public water	70 Sites	Mixed
Hopkins Softball Park	4821 Hopkins Road	035.-01-02.0	Salina (T)	Yes	180 Sites	Mixed
YMCA	97 State Street	004.1-01-01.2	Skaneateles (V)	Yes	15 Sites	Parking Lot
Destiny USA	9090 Destiny USA Dr.	116.-01-03.0 to 116.-01-07.0; 116.-02-01.0; 116.-02-07.0	Syracuse (C)	Yes	375 Sites	Parking Lot
Meacham Field	100 Block West Seneca Turnpike	068.-01-01.0	Syracuse (C)	Yes	50 Sites	Mixed
NBT Bank Stadium	1 Tex Simone Dr	001.2-02-02.0	Syracuse (C)	Yes	125 Sites	Parking Lot
Rosamond Gifford Zoo	One Conservation Place	098.2-01-02.1	Syracuse (C)	Yes	45 Sites	Parking Lot



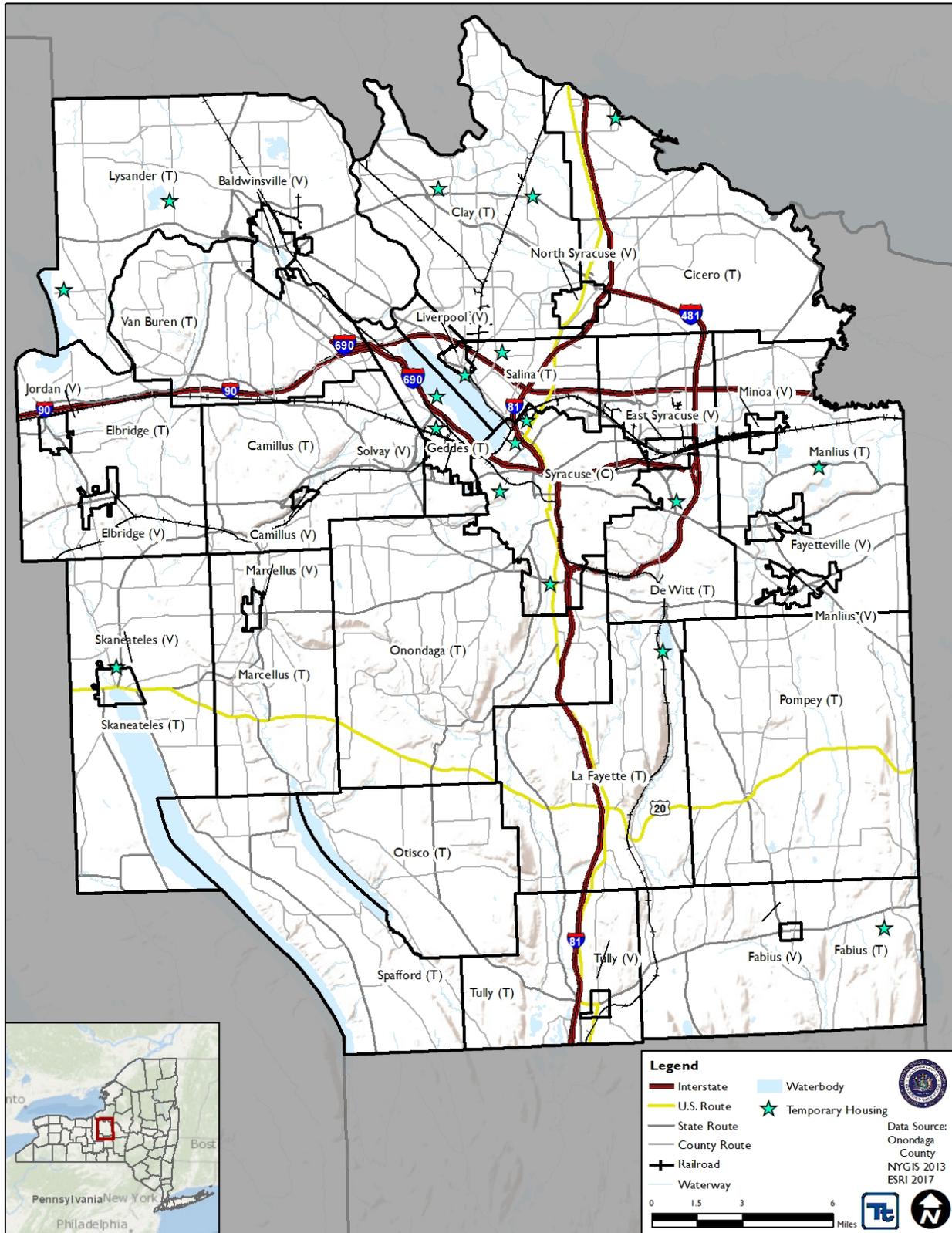
Site Name	Address	Parcel	Jurisdiction	Infrastructure/ Utilities Available	Capacity*	Type
Great Northern Mall	4155 Route 31	028.-01-40.3, 028.-01-40.4, 028.-01-40.5	Clay (T)	Yes, inside mall	420 Sites	Parking Lot
Shoppingtown Mall	3649 Erie Blvd. E.	063.-01-02.2, 063.-01-02.1	DeWitt (T)	Yes, inside mall	250 Sites	Parking Lot
Green Lakes State Park	7900 Green Lakes Rd.	081.01-02.1	Manlius (T)	Yes, for camping facilities	215 Sites	Mixed
Sunset Park Campground	455 Sprague Rd. (Memphis)	036.-01-03.1	Lysander (T)	Yes, for camping facilities	100 sites	Open Space

RPS=Real Property System

*assumed 0.1 acre per housing unit



Figure 4-18. Potential Temporary Housing Locations in Onondaga County





Shelters

The 2003 Onondaga County CEMP states that the American Red Cross (ARC) will be the agency with primary responsibility for general reception and care operations. As stated in the CEMP, “Onondaga County will assist the ARC with reception and sheltering operations if there is insufficient capability to respond to a given event. The Emergency Management Department will coordinate this effort with the ARC, Social Services, the Sheriff’s Department and other appropriate law enforcement agencies, the Department of Aging and Youth, the Health Department, the Mental Health Department, the Department of Long-Term Care and appropriate municipalities”(Onondaga County, 2003). Table 4-4 below lists the shelter locations as identified by each municipality and available information on capacity and amenities.

The American Red Cross has primary contractual responsibility to provide shelter for Onondaga County individuals and families during an emergency occurring in Onondaga County. Services of the ARC include emergency sheltering needs, mass care, feeding, information and referral, and special population assistance, including pets. The ARC is responsible for maintaining shelter agreements with selected facilities.

A list of available shelters with associated agreements in place list is maintained by the ARC, identifying capacity for 15,000+ residents across Onondaga County, including those accommodating pets. Onondaga County is not authorized by the American Red Cross to release shelter information to the public until an actual hazard event occurs. Local ARC policy is to only release open shelter location information to the public at the time shelters are activated, in order to minimize confusion and ensure accuracy of location information during an event.

A Special Needs Shelter Task Force is also formalized by involved agencies to respond to issues regarding sheltering, home care nurses and aides, oxygen, durable medical equipment, supplies and medications. The Committee includes representatives from a variety of county departments. The Onondaga County Health Department determines the need for and designates and supervises a Special Needs Shelter. The shelter must have an adequate supply of regulated power to sustain life support equipment such as Kidney Dialysis Machines, continuous ventilation devices and aspiration devices. The Onondaga County Health Department, Syracuse University School of Nursing, and local home care agencies supply staffing. Routine shelter supplies are the responsibility of the American Red Cross. Special supplies are supplied by Special Needs Task Force members and patients.

HAZUS-MH v4.2 estimates displacement and long-term sheltering needs for flood, hurricane, and earthquake events. These results are presented under Impacts on Life, Health, and Safety in the Vulnerability Assessments for Section 5.4.2 (Earthquake), Section 5.4.3 (Flood), and Section 5.4.7 (Severe Storm). These results indicate that the need for sheltering large numbers of residents is minimal. However, these results should be used as a starting point for determining the sheltering needs for the county, as this will not include sheltering for populations in surrounding counties or residents that are displaced due to widespread power outages.



Table 4-4. Shelters in Onondaga County

Site Name	Address	Municipality	Capacity	Accommodates Pets?	ADA Compliant?	Backup Power?	Types of Medical Services Provided	Other Services Provided	Identified by:
Shove Park Ice Rink	Shove Park Drive	Camillus (T)	300	Yes	Yes				Municipality
Camillus Fire Department		Camillus (T)	100	Yes	Yes				Municipality
Camillus Fire Station	5801 Newport Road	Camillus (V)		Yes	Yes	Yes	EMT		Municipality
Red Cross		Cicero (T)							Municipality
Morgan Road		Clay (T)	635			Yes			Municipality
Liverpool High School	4338 Wetzal Rd	Clay (T)	920			Yes			Municipality
Chestnut Hill Middle School	200 Saslon Park Dr	Clay (T)	150			No			Municipality
Liverpool Middle School	720 7th St	Clay (T)	261			No			Municipality
American Red Cross National		DeWitt (T)			Yes	Yes			Municipality
Doubletree Hotel	6301 NY-298	DeWitt (T)	250 rooms plus ballroom	Yes	Yes				Municipality
Jamesville DeWitt School District		DeWitt (T)	1,000		Yes				Municipality
Fire Station 2	148 Sanders Creek Parkway	East Syracuse (V)	30						Municipality
EAVES	6440 New Venture Gear	East Syracuse (V)	40						Municipality
DeWitt Town Hall	5500 Butternut Drive	East Syracuse (V)	100						Municipality
JE High School	5721 Hamilton Road	Elbridge (T)		No	Yes	Yes			Municipality
Jordan Fire Department	1 North Hamilton Street	Elbridge (T)	96		Yes	Yes	General		Municipality
Elbridge Elementary School	130 E Main Street	Elbridge (V)						NY State Education inspections	Municipality
Elbridge Fire Department	275 E Main Street	Elbridge (V)	86					local codes inspections	Municipality



Site Name	Address	Municipality	Capacity	Accommodates Pets?	ADA Compliant?	Backup Power?	Types of Medical Services Provided	Other Services Provided	Identified by:
Fabius Pompey High School	1211 Mill St.	Fabius (T)	100		Yes				Municipality
Fabius Pompey Elementary School	7800 Main St.	Fabius (T)	100		Yes				Municipality
JE Middle School	8 Chappell Street	Jordan (V)						Conforms with the NYS Uniform Fire Prevention and Building Code.	Municipality
Jordan Fire Department	1 North Hamilton Street	Jordan (V)	96		Yes	Yes	General		Municipality
Fire House	Route 11 South	LaFayette (T)							Municipality
Grimshaw Elementary	5957 Route 20	LaFayette (T)						Conform with the NYS Uniform Fire Prevention and Building Code	Municipality
LaFayette High School	3122 Route 11	LaFayette (T)						Conform with the NYS Uniform Fire Prevention and Building Code	Municipality
Liverpool Village Hall	310 Sycamore Street	Liverpool (V)	123	Yes		Yes			Municipality
Liverpool Fire Department	1110 Oswego St	Liverpool (V)	266	Yes		Yes	EMT		Municipality
Manlius Municipal Building (Warming Center)	1 Arkie Albanese Avenue Manlius, NY 13104	Manlius (T)	20	Yes	No	Yes	None		Municipality
Village Centre	1 Arkie Albanese Ave	Manlius (V)	80	No	Yes	Yes	Paramedic Ambulance		Municipality
Fire Station	8200 Cazenovia Rd	Manlius (V)	100	No	Yes	Yes	Paramedic Ambulance		Municipality
Marcellus Schools (High School)	Mustang Hill	Marcellus (T)	100	No	Yes	Yes	Basic		Municipality
Baltimore Woods	Bishop Hill	Marcellus (T)	50	No	Yes	Yes	None		Municipality
Red Cross		Minoa (V)							Municipality



SECTION 4: COUNTY PROFILE

Site Name	Address	Municipality	Capacity	Accommodates Pets?	ADA Compliant?	Backup Power?	Types of Medical Services Provided	Other Services Provided	Identified by:
Town of Onondaga Town Hall	5050 Ball Road Syracuse, NY 12315	Onondaga (T)				Yes			Municipality
HOWLETT HILL FD	3384 Howlett Hill Rd	Onondaga (T)				Yes			Municipality
NATION FD	3383 Route 11 A	Onondaga (T)				Yes			Municipality
NAVARINO FD	3276 Amber Rd	Onondaga (T)				Yes			Municipality
NEDROW FD	6505 S Salina St	Onondaga (T)				Yes			Municipality
ONONDAGA HILL FD	4831 Velasko Rd	Onondaga (T)				Yes			Municipality
SENTINEL HEIGHTS FD	4200 Dave Tilden Drive	Onondaga (T)				Yes			Municipality
SOUTH ONONDAGA FD	3130 Cedarvale Rd	Onondaga (T)				Yes			Municipality
SOUTHWOOD FD	4581 Grace Pl	Onondaga (T)				Yes			Municipality
TAUNTON FD 1	4300 Onondaga Blvd	Onondaga (T)				Yes			Municipality
TAUNTON FD 2	4789 Harris Rd	Onondaga (T)				Yes			Municipality
Fire Department	77 West Genesee Street	Skaneateles (V)	300	Yes	Yes	Yes	EMT and ambulance access		Municipality
Village Fire Department	1925 Milton Avenue	Solvay (V)	50	Yes	Yes	Yes	EMT medical services		Municipality
Borodino FD	2500 Nunnery Road	Spafford (T)	50						Municipality
Spafford FD	600 E Lake Rd	Spafford (T)	50						Municipality
LeMoyne College	1419 Salt Springs Rd	Syracuse (C)			Yes	Yes			Municipality
Syracuse University	900 South Crouse Ave.	Syracuse (C)			Yes	Yes			Municipality
Oncenter War Memorial Arena	515 Montgomery St.	Syracuse (C)	500+		Yes	Yes			Municipality
Oncenter Convention Center	800 S State St.	Syracuse (C)	1000+		Yes	Yes			County



Site Name	Address	Municipality	Capacity	Accommodates Pets?	ADA Compliant?	Backup Power?	Types of Medical Services Provided	Other Services Provided	Identified by:
New York State Fairgrounds – Exposition Center	581 State Fair Blvd.	Syracuse (C)	1,000		Yes	Yes		Restrooms	County
New York State Fairgrounds – Wegmans Art & Home Center	581 State Fair Blvd.	Syracuse (C)	100+		Yes	Yes		Kitchen, Restrooms	County
New York State Fairgrounds – Horticulture Building	581 State Fair Blvd.	Syracuse (C)	100+		Yes	Yes		Kitchen, Restrooms	County
New York State Fairgrounds – International Building	581 State Fair Blvd.	Syracuse (C)	100+		Yes	Yes		Kitchen, Restrooms	County
New York State Fairgrounds – Exhibit Center	581 State Fair Blvd.	Syracuse (C)	100+		Yes	Yes		Kitchen, Restrooms, Showers	County
Carrier Dome	900 Irving Ave.	Syracuse (C)	1,000+		Yes	Yes		Kitchen, Restrooms, Showers	County
Tully High School	Route 80	Tully (T)							Municipality
Fire House	Railroad Street	Tully (T)							Municipality

Note: ADA = Americans with Disabilities Act
 * Activation of CART - County Animal Rescue Team



Evacuation Routes

As stated in the 2003 Onondaga County CEMP, under Section 24 of the New York State Executive Law-2B, allows first responders to take actions necessary to protect public safety in the absence of an emergency declaration. This authority is often applied when immediate action is necessary to evacuate citizens from a hazardous or potentially unsafe area. In situations where an evacuation is of significant scope and magnitude, it is then best to carry out the evacuation using an emergency order by the chief executive (Onondaga County CEMP 2003). Evacuations that involve larger numbers of people who are evacuated for extended periods and require extensive support from multiple services are better managed and coordinated under an emergency order by the chief executive.

The primary roads and highways are the evacuation routes for Onondaga County. The route used depends on the location of the incident. The County is fortunate to have a variety of well-connected arterial roadways throughout all regions of the county, and offering a variety of routing options in many portions of the county. Figure 4-19 illustrates the major roadways in Onondaga County that would be utilized as evacuation routes in and out of the County in the event of an emergency that results in an evacuation.

Other than evacuation plans based on the geographically-specific risks, evacuations are conducted on an event-specific basis. Due to the variable nature of such events Onondaga County Department of Emergency Management, working with local municipalities, assists with the coordination and communication of evacuation routing for the County. The County has a mass notification system in place which can utilize landline and cellular phone lines as well as email alerts.

Per the County CEMP, the Department of Emergency Management is tasked with coordinating evacuation procedures with the Sheriff's Department, the On-scene Commander, the Transportation Coordinator, the ARC, hospitals, special facilities, the fire service and the Health Department. The Sheriff's Department is responsible for implementing traffic control procedures including coordination of vehicular traffic and protection of resources, facilities and services in the affected areas.

The Onondaga County CEMP also includes the NYS Highway Emergency Task Force Policy and Procedures, a product of the NYS Disaster Preparedness Commission. The Terrorism Incident Annex of the CEMP also includes evacuation planning. Depending upon the assessment of the terrorist incident and the risks to the public evacuation planning may commence under the direction of law enforcement, the fire service, emergency management, the health department, and other agencies, as may be determined at the time of the incident.

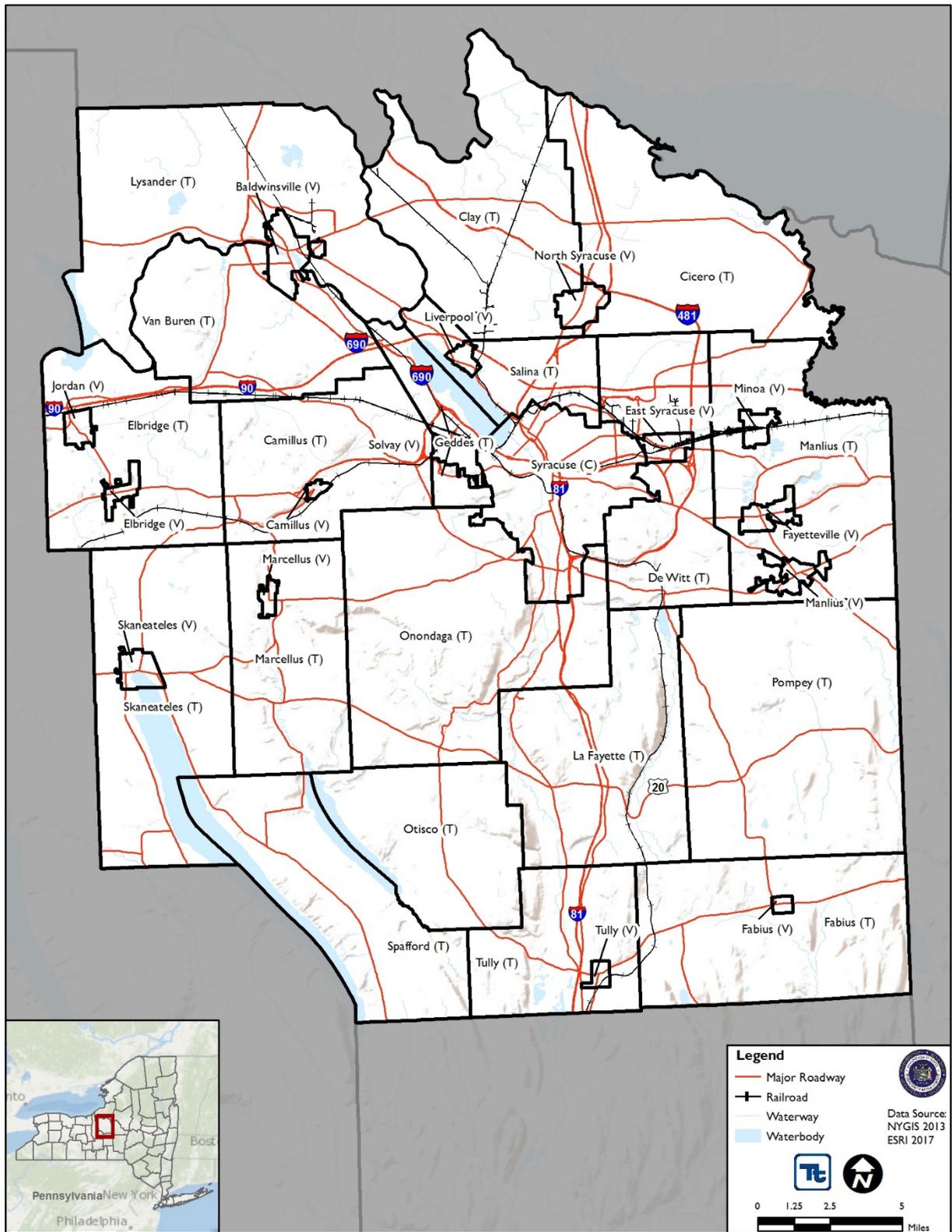
Responsibilities & Priorities

During an evacuation, there are state and local responsibilities to clear roadways of debris and make repairs. State responsibilities including clearing debris from impacted roadways and public property. Local responsibilities include removing debris to a storage/disposal site. Priorities for debris removal after an evacuation are as follows:

- First priority – clearing of transportation corridors to allow passage of emergency vehicles
- Second priority – clearing of transportation corridors and other property to allow utility crews access to damaged power lines and other utility infrastructure needing repair to allow for power restoration
- Third priority – other emergency-related needs as identified by the affected local municipality or by state agencies, and as authorized by the State Coordinating Officer.



Figure 4-19. Evacuation Routes in Onondaga County





Long-Term Housing

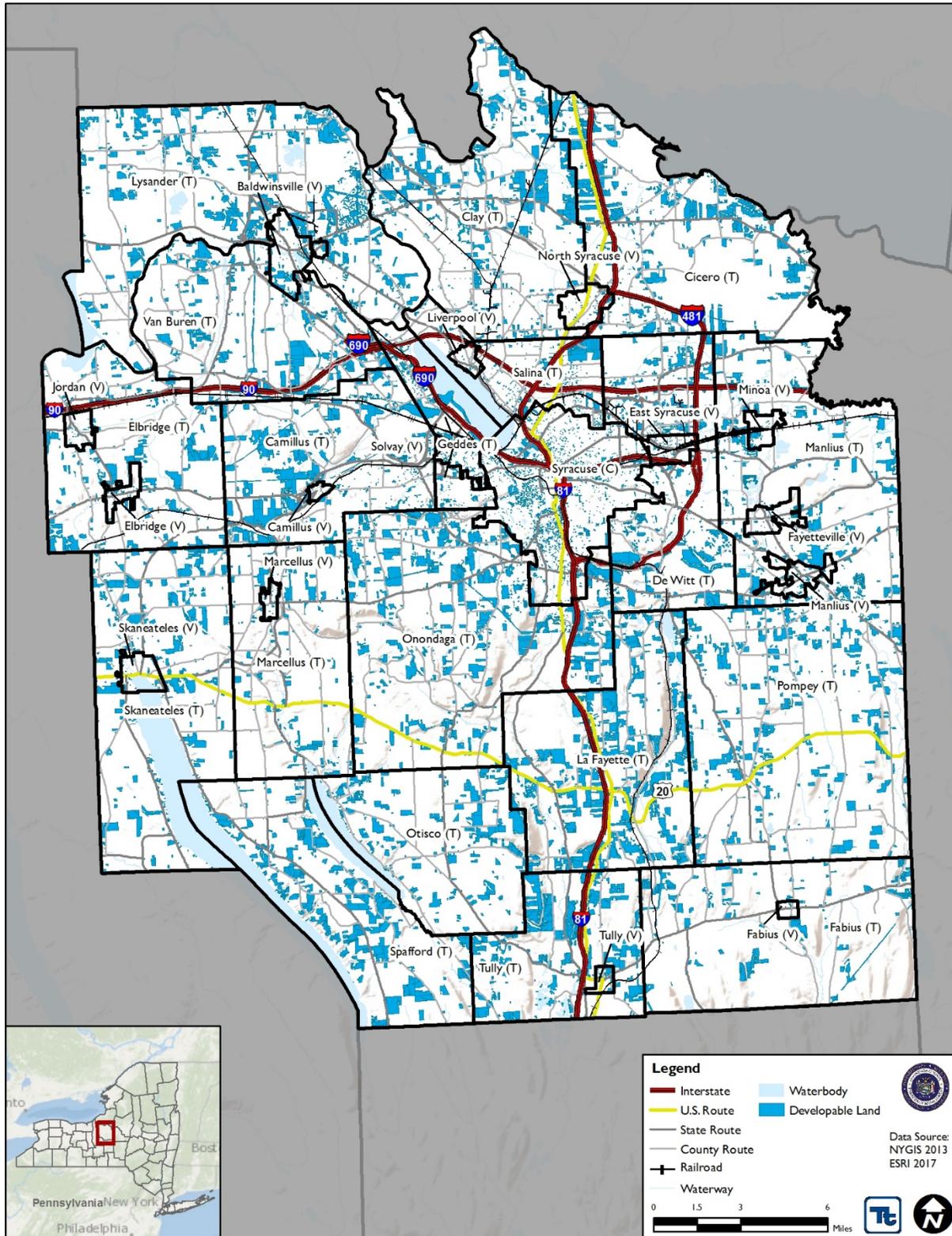
A buildable parcel analysis was conducted to support identification of potential sites suitable for relocating houses out of hazard areas (i.e., the floodplain) or building new homes in the event structures are destroyed by a natural hazard event. The analysis identified potential areas for post-disaster development in accordance with the 2017 NYSDHSES Hazard Mitigation Planning Standards Guide requirement “to identify long-term housing options for relocating displaced residents to maintain post-disaster social and economic stability”. The analysis provides an indication of vacant land suitable for development. In this case, vacant land is defined as a parcel that is classified as vacant and is located outside the following hazard areas:

- 1) FEMA floodplain (1- and 0.2-percent annual chance flood).
- 2) Wetlands (National Wetlands Inventory; National Land Cover Database)
- 3) Land that has steep slopes (>15% gradient) without consideration of ownership or availability.

Figure 4-20 provides potential long-term housing locations in Onondaga County. Developable land displayed on the figure represents the portion of each identified vacant parcels with greater than 50-percent of their land area outside the three above hazard areas



Figure 4-20. Potential Long-Term Housing Locations in Onondaga County, New York





4.6 CRITICAL FACILITIES

Critical facilities and infrastructure are those that are essential to the health and welfare of the population. These become especially important after any hazard event. Critical facilities are typically defined to include police and fire stations, schools and emergency operations centers. Critical infrastructure can include the roads and bridges that provide ingress and egress and allow emergency vehicles access to those in need and the utilities that provide water, electricity and communication services to the community. Also included are Tier II facilities (hazardous materials) and rail yards, rail lines hold or carry significant amounts of hazardous materials with a potential to impact public health and welfare in a hazard event.

A comprehensive inventory of critical facilities in Onondaga County was developed from various sources including Syracuse-Onondaga County Planning Agency and input from the Steering and Planning Committees. The inventory of critical facilities presented in this section represents the current state of this effort at the time of publication of the draft HMP and used for the risk assessment in Section 5. The number and type of critical facilities and infrastructure identified for this plan are indicated in Appendix F.

Critical Facilities are those facilities considered critical to the health and welfare of the population and that are especially important following a hazard. As defined for this HMP, critical facilities include essential facilities, transportation systems, lifeline utility systems, high-potential loss facilities, and hazardous material facilities.

Essential facilities are a subset of critical facilities that include those facilities that are important to ensure a full recovery following the occurrence of a hazard event. For the County risk assessment, this category was defined to include police, fire, EMS, schools/colleges, shelters, senior facilities, and medical facilities.

4.6.1 Essential Facilities

This section provides information on emergency facilities, hospital and medical facilities, schools, shelters and senior care and living facilities. For the purposes of this plan, emergency facilities include police, fire, emergency medical services (EMS), and emergency operations centers (EOC). Figure 4-22 shows the location of the facilities and a list of the critical facilities is provided in Appendix F (Critical Facilities).

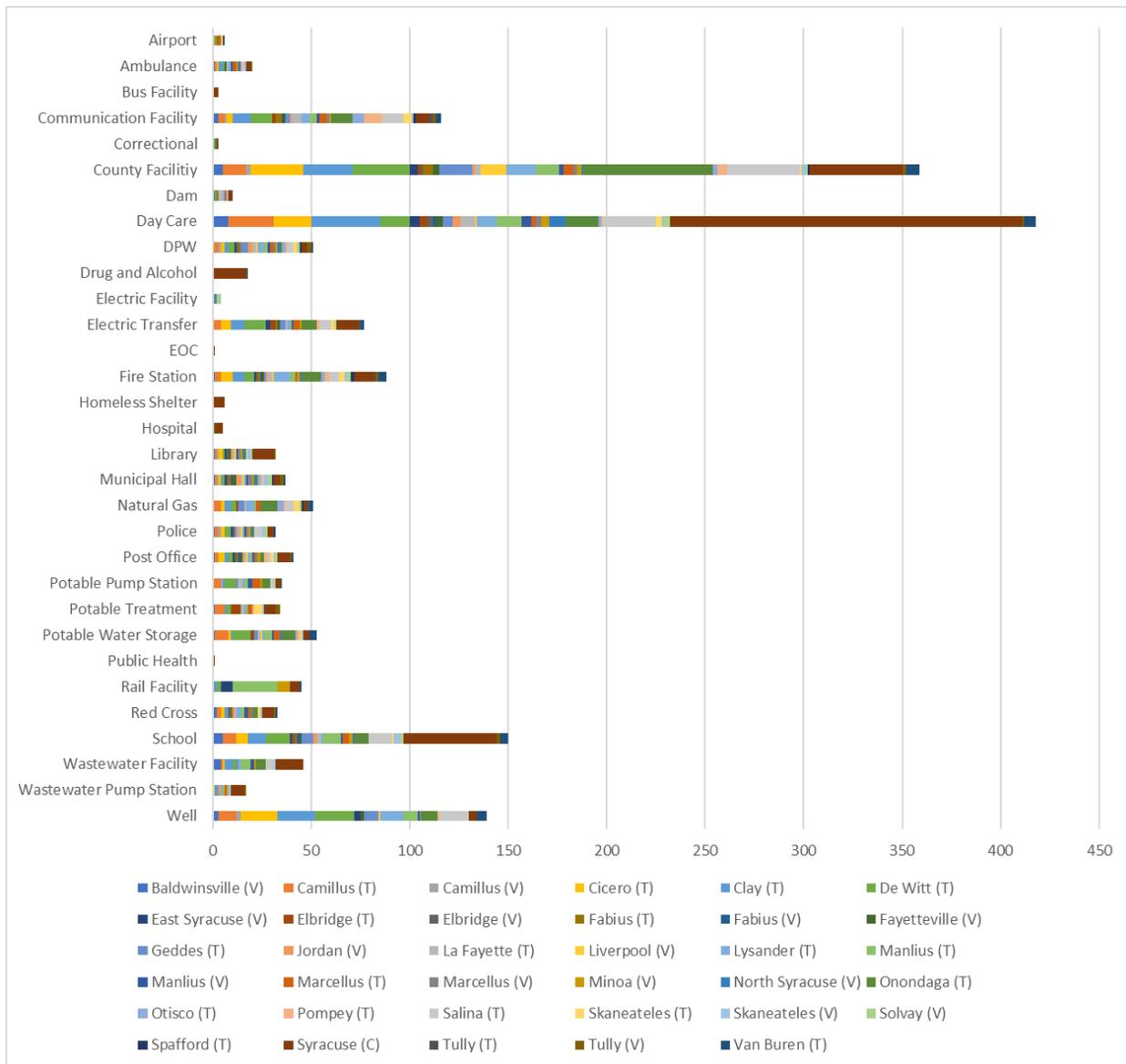
Emergency Facilities

The Onondaga County Department of Emergency Management is responsible for coordinating the County's emergency services and emergency planning. The Department of Emergency Management works with County departments and other local, state and federal agencies during an emergency to help protect lives and property, assist those injured, and to provide the rapid restoration of normal services. The Office is comprised of three divisions:

- Emergency Management – this department is designated to coordinate all emergency management activities: mitigation, preparedness, response and recovery.
- Emergency Medical Services – this division administers NYS certified emergency medical training programs. Plans for adequate delivery of emergency medical services and coordinates mutual aid among EMS providers.
- Fire Bureau- this division oversees Fire Mutual Aid in Onondaga County, Negotiating and coordinating fire service training, Overseeing the County Fire Investigation Unit, Project Concern: A Juvenile Firesetters Program, Onondaga County Animal Rescue Team (OnCART), Central Regional Special Emergency Response (CRSER), the Auxiliary Police, and support for Search and Rescue teams.



Figure 4-21. Planning Area Critical Facilities



Source: Syracuse-Onondaga County Planning Agency 2018, Onondaga County Municipalities 2018
 Note: Chemical Storage facilities were removed from the figure because they skewed the data. There are a total of 1,352 Chemical Storage facilities in Onondaga County.

Emergency Communications within Onondaga County are coordinated by the Department of Emergency Communications/911 Center. The mission of the Onondaga County Department of Emergency Communications is to serve as the critical and vital link between the citizens of Onondaga County and the public safety agencies that serve them.

The Onondaga County Sheriff’s Office, located in the City of Syracuse, is the primary law enforcement agency in the County, and consists of several main operating departments, including the Civil Department, Corrections Department, Custody Department, and Police Department. In addition to the Sheriff’s Department, several municipalities have their own police departments. The New York State Police also control provide services within the County.



The New York State Department of Transportation has 2 facilities that are considered essential facilities; 1) Transportation Management Center housed at the Region 3 office in Syracuse, and 2) Regional Operations Center located at the NYSDOT building on South Bay Road.

Onondaga County identified 20 EMS stations, 88 fire stations, and 32 police stations in the County (Syracuse-Onondaga County Planning Agency, 2018).

Hospitals and Medical Facilities

There are five major hospitals located within Onondaga County. These include: Crouse Hospital, St. Joseph's Hospital, Upstate Golisano Children's Hospital, Upstate Medical University (University Hill/Downtown) and Upstate University Hospital at Community Campus (Town of Onondaga).

Schools

Onondaga County is home to 34 school districts. Onondaga County is also a center for higher learning, with 32,000 students currently attending colleges within the County. The Central New York region houses the third largest concentration of colleges and universities in the nation. Syracuse University is one of the nation's most highly regarded private colleges, offering a diverse portfolio of undergraduate and graduate degrees to its 18,200 students. Syracuse University's Maxwell School of Citizenship and Public Affairs and Newhouse School of Communications are consistently ranked as the country's best schools of public administration and journalism, respectively. Also located within Onondaga County are LeMoyne College, a Jesuit-run liberal arts college; the State University of New York's Upstate Medical University, the largest medical school in upstate New York; and the SUNY College of Environmental Science and Forestry. In addition, more than 6,500 students attend Onondaga Community College, a two-year college that is part of the State University of New York system (Onondaga County, 2018).

In times of need, schools can function as shelters and are an important resource to the community Figure 4-23 shows the location of schools within the County.

Senior Care and Living Facilities

Onondaga County has 46 senior care facilities. The 2012-2016 American Community Survey 5-Year Estimates identified 71,770 people over the age of 65 living within Onondaga County. Figure 4-24 shows the location of senior care facilities within the County. These facilities include 4 adult homes, 22 assisted living facilities, 12 nursing homes, and 8 retirement homes.



Figure 4-22. Critical Facilities in Onondaga County

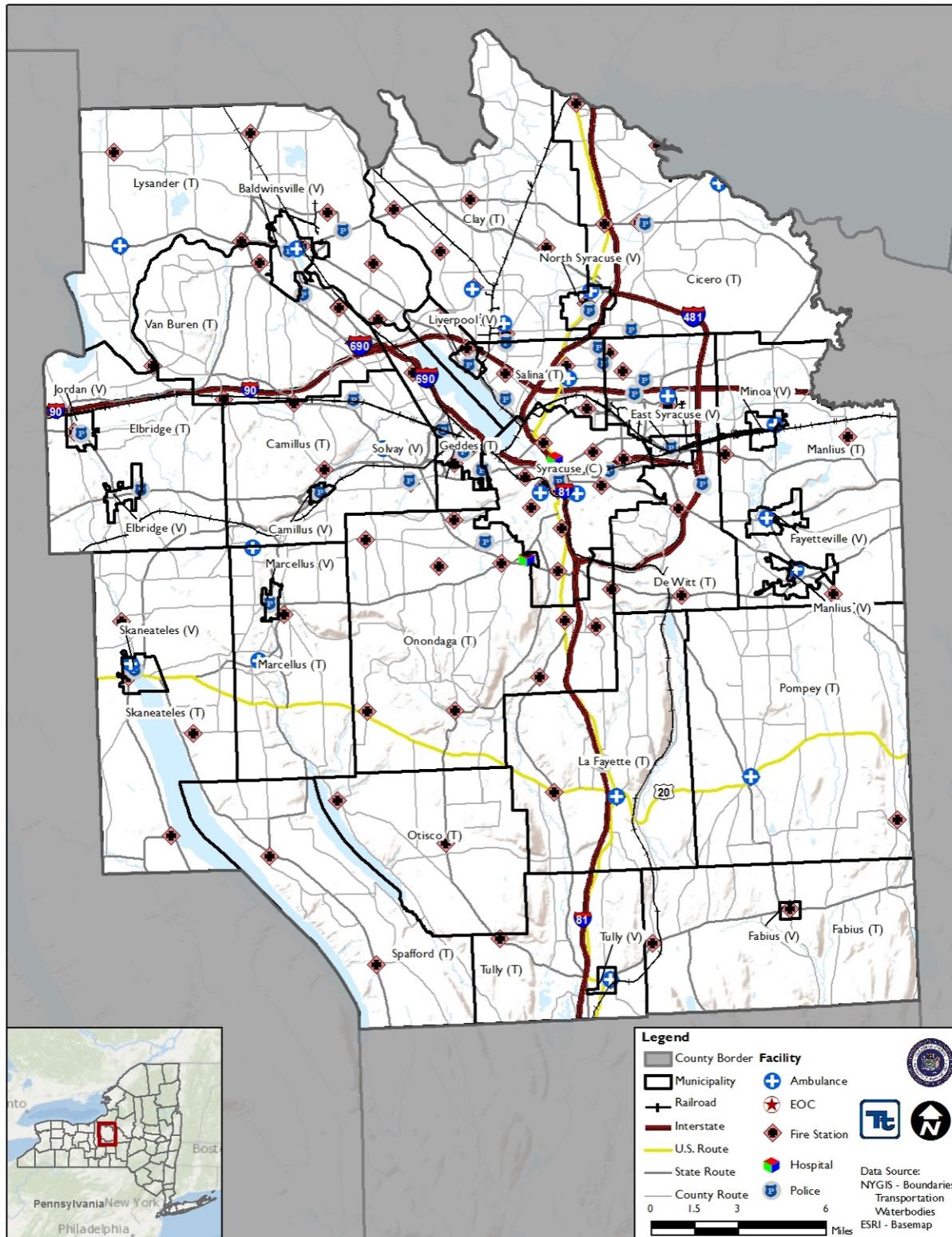




Figure 4-23. Schools within Onondaga County

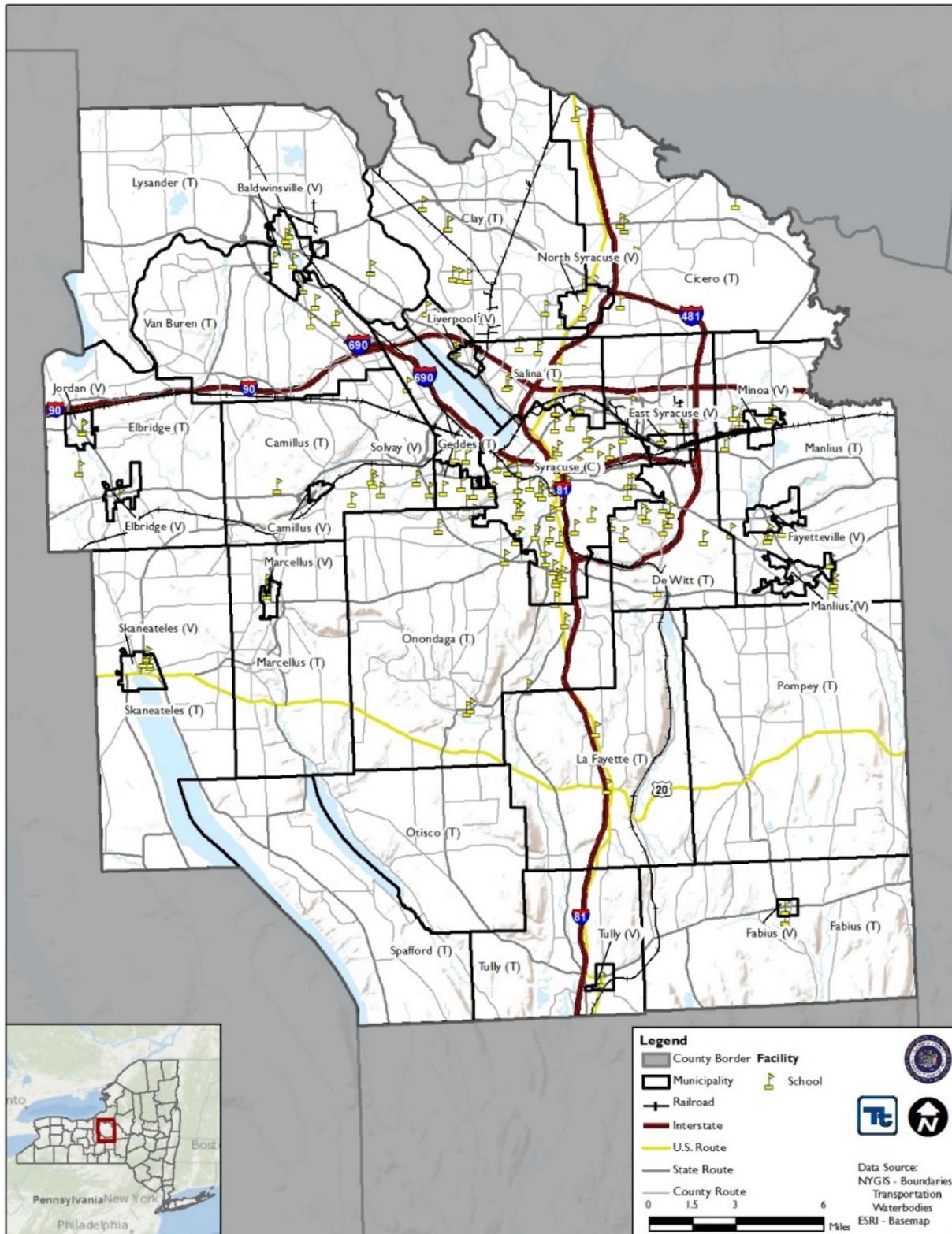
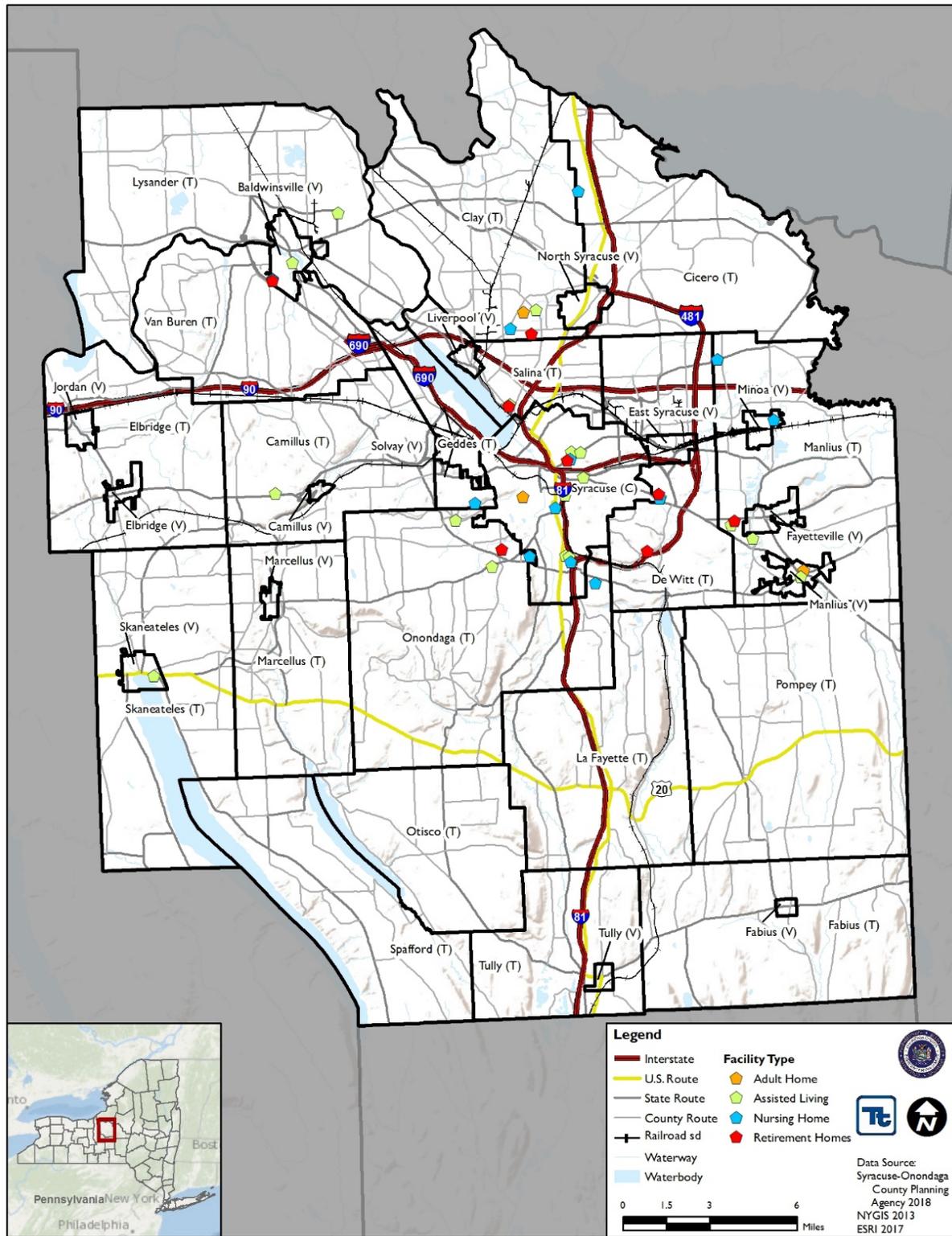




Figure 4-24. Senior Facilities and Shelters in Onondaga County





4.6.2 Transportation Systems

Onondaga County's transportation network offers residents and employees various options for transportation throughout the county and the region. Transportation throughout the county runs along Interstates 81, 90, 481 and 690 as well as US Route 11 and 20. There are over 300 county routes and 30 state routes found throughout the county as well. Nearly 2,000 miles of roadways in Onondaga County are owned by individual municipalities, with a majority of them identified as being local roadways. The county owns approximately 800 miles of the roads in the county.

Highway, Roadways and Associated Systems

Onondaga County has been appropriately named the "Crossroads of New York State" due to the fact that the State's two major interstate routes - the east-west New York State Thruway (I-90) and the north-south Interstate 81 intersect just north of the City of Syracuse. The New York State Thruway is accessed by six interchanges within the County. Interstate 690 forms an east-west axis through the County and Interstate 481 provides interstate access to and from suburban towns north and east of the city. Onondaga County is serviced by approximately 3,400 miles of highways, bridges, roads, and streets, as well as the New York State Barge Canal System (Onondaga County Legislature 2019; SMCT 2019; Onondaga County 2019).

Airports and Heliports

Air passenger service is provided by six major airlines and seven commuter airlines at the Syracuse Hancock International Airport, offering approximately 225 daily arrivals and departures. The County is also served by six major air cargo carriers. Hancock International Airport is located within a fifteen minute drive of downtown Syracuse and within two miles of the crossroads of the region's major east-west interstate highway (I-90/NYS Thruway) and north-south interstate highway (I-81) (Onondaga County Legislature 2019; Onondaga County 2019). The county identified a number of small private airstrips as well, including Camillus Airport, Marcellus Airport, Skaneateles Aerodrome Airport, and the Woodford Airfield Airport.

Bus and Other Transit Facilities

Bus service in Onondaga County is provided by three independent carriers, as well as CENTRO, which is operated by the Central New York Regional Transportation Authority. CENTRO provides a high level of public transportation service to the county. A centralized transit hub, primarily serving bus users, has recently been constructed in Downtown Syracuse.

CENTRO also operates an intermodal transportation center, the William F. Walsh Regional Transportation Center (RTC), adjacent to the Regional Market, Alliance Bank Stadium, and in close proximity to Destiny USA shopping mall. RTC is considered a one-stop transportation center for intercity and local travel via CENTRO, Greyhound, Megabus, Trailways, and Amtrak. The RTC serves the City of Syracuse and its neighboring communities.. Destinations outside of the county include Rochester, Niagara Falls, Boston, New York City, Washington D.C., and Philadelphia (CENTRO 2019).

Rideshare services are also present in the County, including Uber and Lyft, although service will be dependent on driver location and availability.

Railroad Facilities

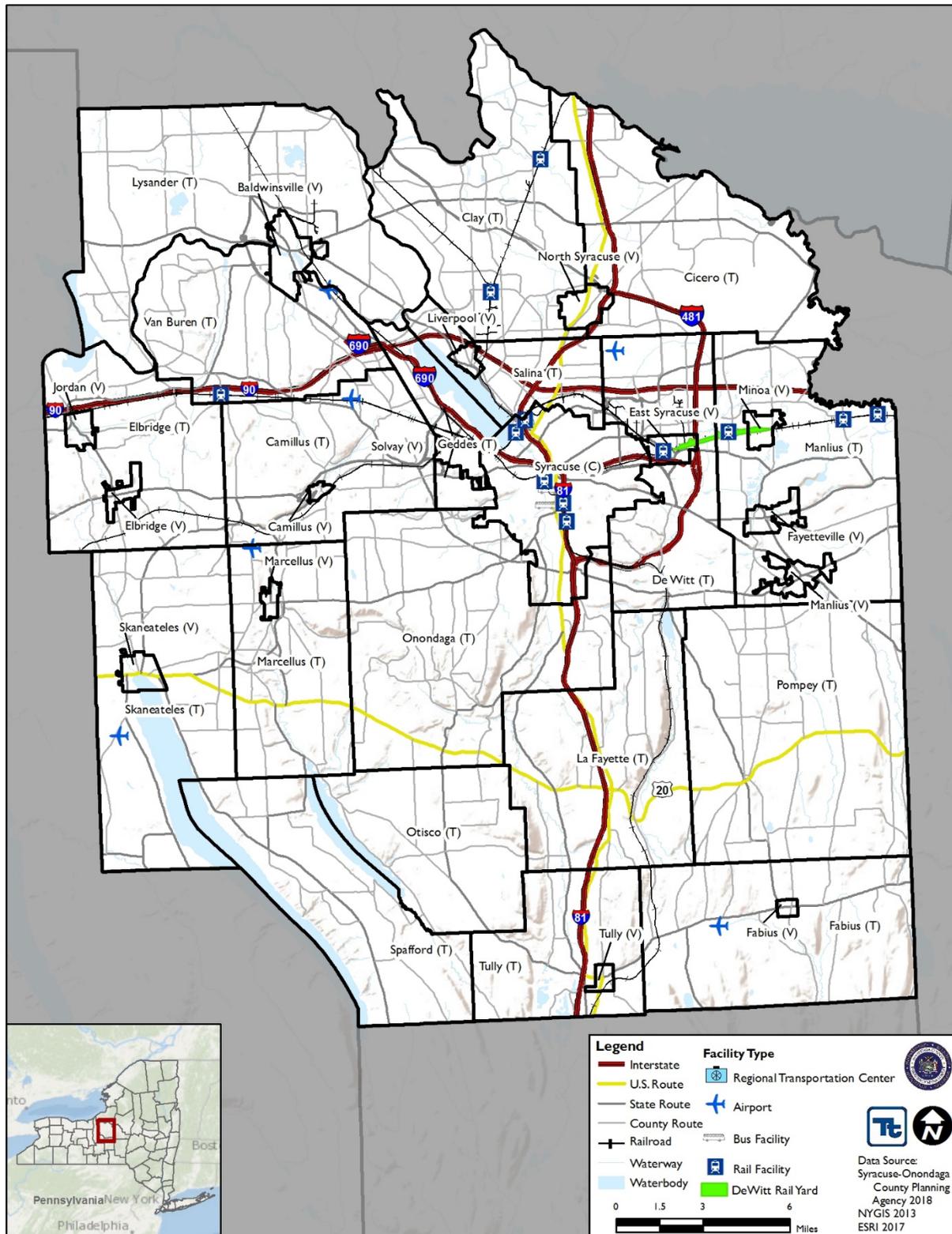
Amtrak provides the sole passenger rail service in Onondaga County, with stopovers at the William F Walsh Regional Transportation center. Amtrak Rail serves Central New York travelers with eight daily departures from the RTC.



For freight, CSX Transportation operates over 80% of the active rail lines within the county with its major, intermodal facility located at the DeWitt Rail Yard. CSX's computerized rail yard has the capacity to handle 2,200 cars per day. CSXT is the only Class 1 freight carrier active in the county; New York, Susquehanna, & Western Railway (Class II) and Finger Lakes Railway (Class III) also service the county (SMTC 2015).



Figure 4-25. Transportation Features in Onondaga County





4.6.3 Lifeline Utility Systems

This section presents data and information on potable water, wastewater, energy resources, and communication utility systems. Due to heightened security concerns, local utility lifeline data, needed to complete the analysis, have only partially been obtained.

Potable Water

The Onondaga County Water Authority (OCWA) is responsible for the distribution of potable water to a majority of County residents. Customers of OCWA receive water that originates primarily from Otisco Lake and Lake Ontario. Customers located in certain areas may get a mixture of these waters or their source water may vary with changes in seasonal demand. In 2019, OCWA supplied approximately 38 million gallons per day to its 500,000 residential and commercial customers located in our five-county service territory (Onondaga, Oswego, Madison, Oneida, and Cayuga). OCWA also supplies water daily to thirty large industrial customers and three municipal wholesale water customers. OCWA can also supply water on an intermittent or emergency basis to seven additional municipal water systems (Onondaga County Water Authority, 2019).

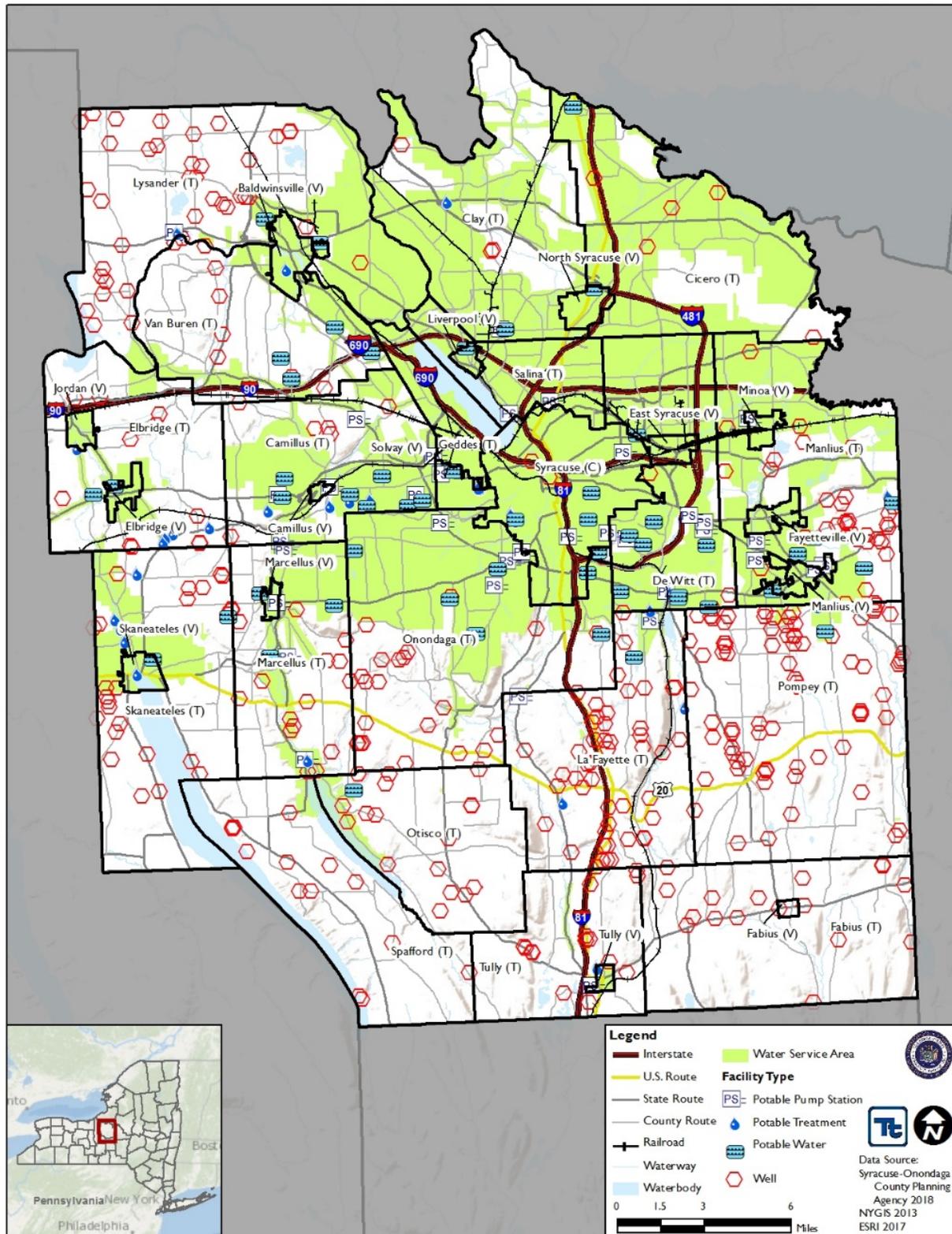
The OCWA distribution system is comprised of 47 pumping stations, 61 storage tanks that distributes water via 2,140 miles of water main to roughly 103,000 meter accounts and 13,400 hydrants. The Water Authority operates a 20 MGD treatment plant in Marcellus, which filters and chlorinates an average of 18 million gallons per day (MGD) of Otisco Lake water. OCWA also operates the Lake Ontario water treatment plant in the Town of Oswego that is capable of delivering 50 MGD to Onondaga County and currently averages 20 MGD of potable filtered water. OCWA also can purchase up to 3 MGD from the Syracuse Water Department with current daily purchases averaging 1.2MGD (Onondaga County Water Authority, 2019).

The Syracuse Water Department supplies water service to the entire City of Syracuse and portions of the towns of Dewitt, Onondaga, Geddes, Camillus, Salina, and the villages of Skaneateles, and Jordan and Elbridge. The Water Department utilizes Skaneateles Lake for its water supply and is able to draw water without a filtration system due to the lake's exceptionally high water quality although recent harmful algal blooms (HAB's) in the county may warrant changes to the intake system. The Water Department also draws a small portion of their water from Lake Ontario (through OCWA transmission facilities). In 2017, the Water Department reported 35 million gallons per day of water use. The water system is made up of over 500 miles of pipelines to deliver water from Skaneateles Lake to the city and to distribute the water throughout the city. The water supply system consists of water storage in the Woodland and Westcott Reservoirs. Water is also stored in two standpipes and in the three tanks that make up the Morningside Reservoir (Syracuse Department of Water, 2017).

In addition to the OCWA and Syracuse Water Department, the NYS DEC Water Well Information database has begun to document potable water wells as of the year 2000, and currently reports 355 within the county new wells drilled since that date.



Figure 4-26. Potable Water Facilities in Onondaga County





Wastewater Facilities

Wastewater treatment for most municipalities is provided by the Onondaga County Department of Water Environment Protection (WEP), which processes over 33 billion gallons of wastewater each year. To accomplish this, Onondaga County WEP operates six wastewater treatment plants, two regional treatment facilities, more than 160 county and municipally owned pumping stations, and eight wet weather facilities throughout the Consolidated Sanitary District. The six wastewater treatment plants operated by WEP are Metropolitan Syracuse (Metro), Oak Orchard, Baldwinsville-Seneca Knolls, Meadowbrook-Limestone, Wetzel Road and Brewerton. As of early 2019, WEP calculates approximately 1,700 miles of gravity and force main sewers owned by the county and municipalities that feed into the county treatment system.

County sewer service is confined to the Onondaga County Consolidated Sanitary District, which includes all or portions of 21 urban and suburban municipalities. Outside the Sanitary District boundary, a number of villages also own and maintain their own sewage treatment plants, including the Villages of Jordan, Marcellus, Minoa, Skaneateles and Tully.

Where municipal sewage treatment is not available, on-site septic systems are used. Soil quality in the county is variable, resulting in many parts of the county which are unsuitable for on-site wastewater treatment. Undersized or unmaintained on-site septic systems can be an issue, particularly in the drinking watersheds, where exposure and runoff can impair water quality.

During the planning process, the Steering and Planning Committees identified 17 wastewater treatment facilities in Onondaga County. Of these 17 facilities, 14 are county owned. Additionally, 139 pump stations were identified, of which 132 are County owned.. These facilities and pump stations are displayed in Figure 4-27.

Energy Resources

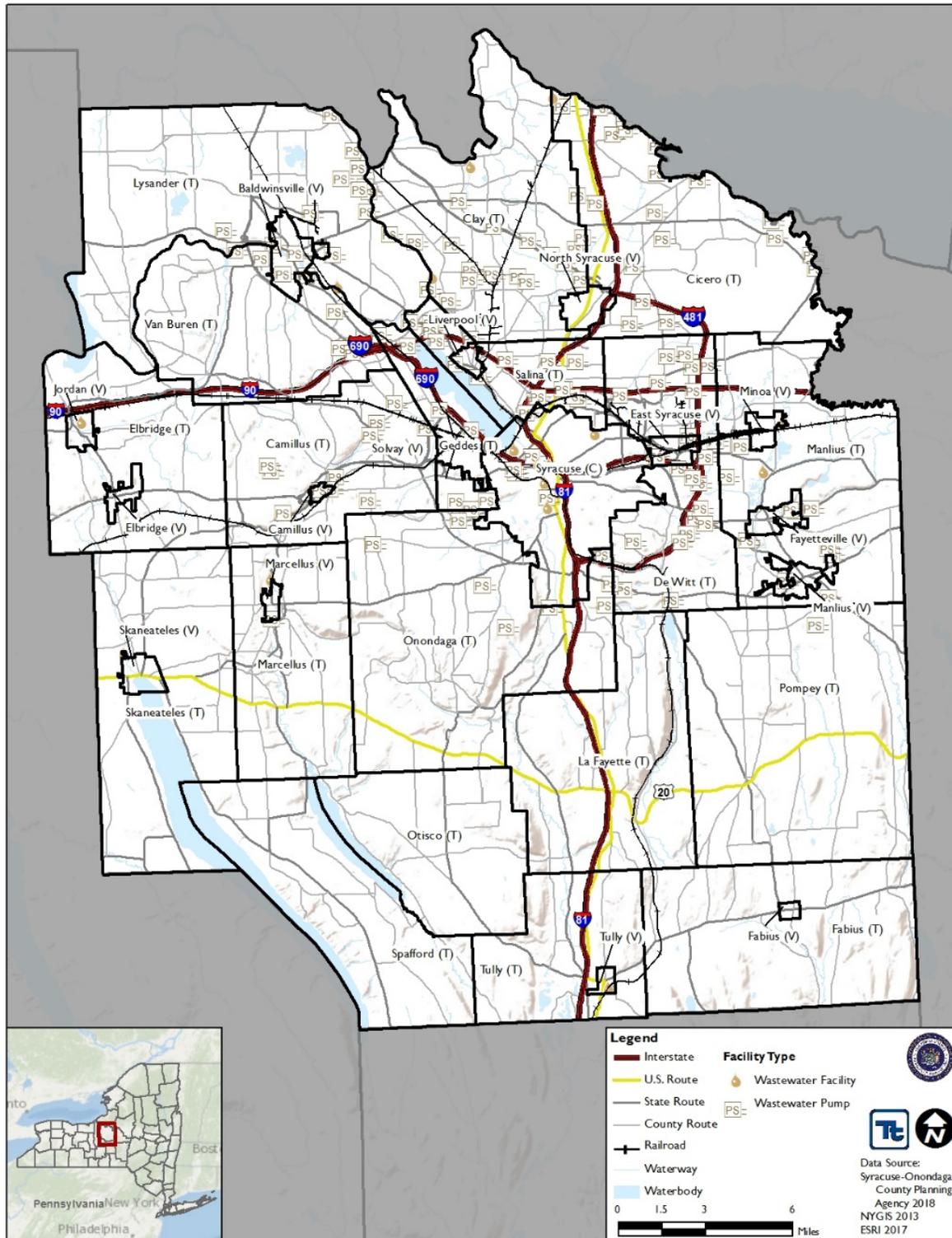
Gas and electric power in Onondaga County are transmitted and distributed primarily by National Grid, with New York State Electric & Gas servicing western areas of Onondaga County.

Communications

Onondaga County is served by a variety of communications systems, including traditional land line, fiber optic, and cellular service provided by multiple companies, such as Verizon, Spectrum, and Frontier. In addition to land line, fiber optic and cellular communications systems, Onondaga County has an extensive radio communications network that is utilized by emergency services agencies, hospitals, law enforcement, public works, transportation, and other supporting organizations.



Figure 4-27. Wastewater Facilities in Onondaga County

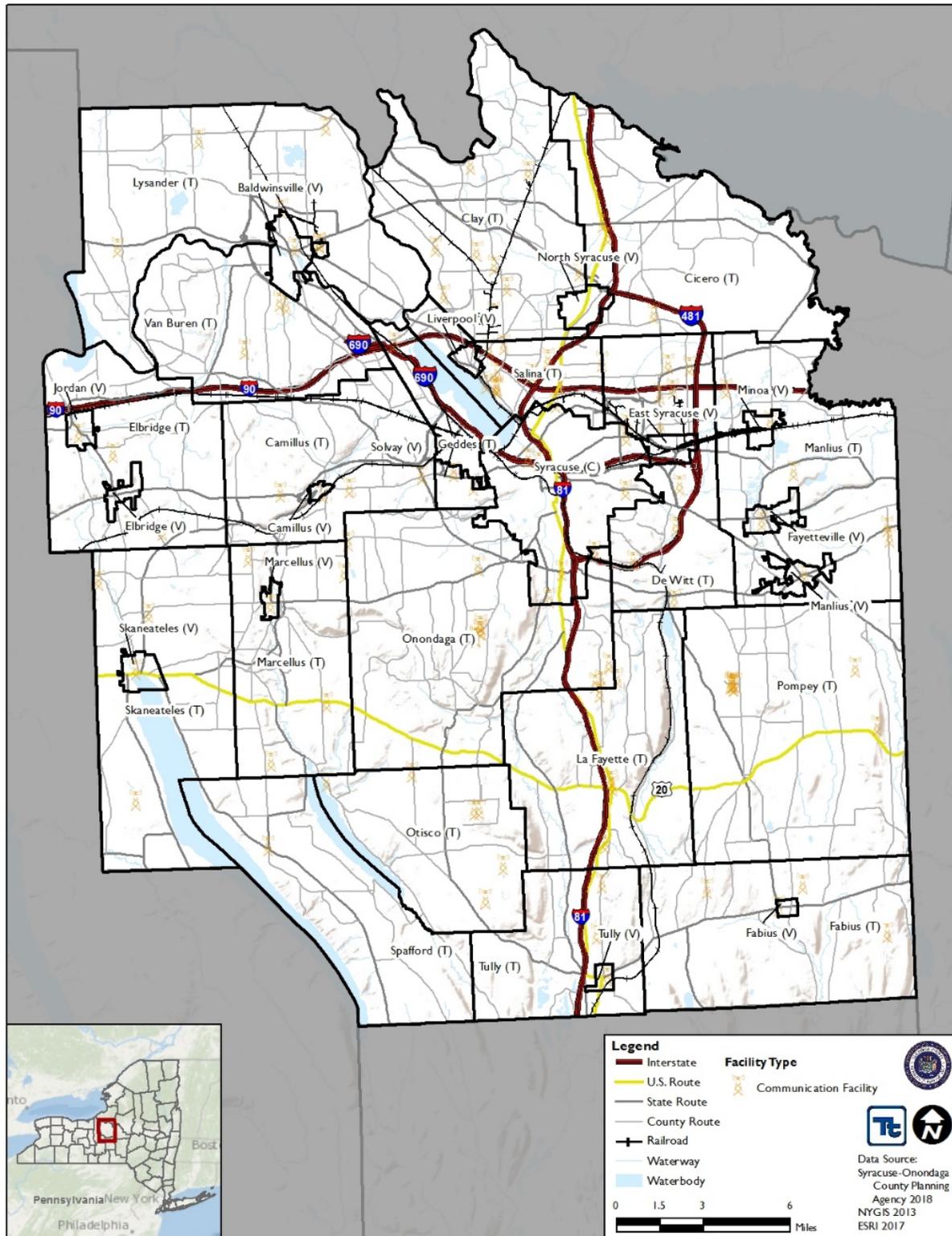


Note: Sewer service is dependent on the size of the treatment plant, age of the infrastructure, and quantity being produced compared to the discharge point





Figure 4-28. Communication Facilities within Onondaga County





4.6.4 High-Potential Loss Facilities

High-potential loss facilities include dams, levees, hazardous materials (HAZMAT) facilities, nuclear power plants, and military installations. Dams and levees are discussed below.

HAZMAT Facilities

A Superfund site consists of land in the United States that has been contaminated by hazardous waste and identified by the U.S. Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment. These sites are placed on the National Priorities List (NPL). The NPL is the list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories. The NPL is intended primarily to guide the EPA in determining which sites warrant further investigation.

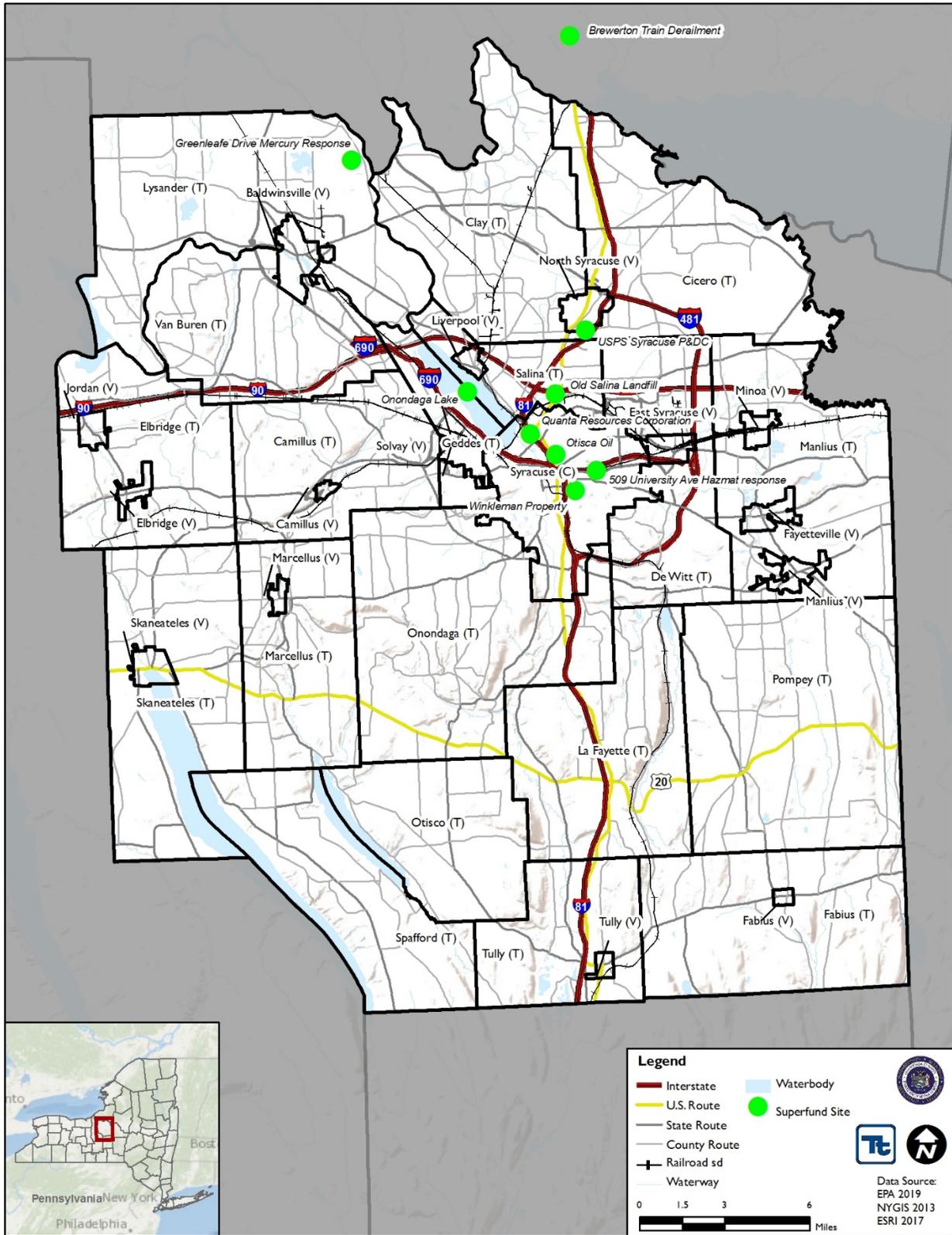
Abandoned hazardous waste sites placed on the federal NPL include those that the EPA has determined present “a significant risk to human health or the environment,” with the sites being eligible for remediation under the Superfund Trust Fund Program. As of 2019, Onondaga County has ten hazardous sites in the federal Superfund Program that are listed as on the NPL (CERCLIS 2019).

Superfund sites are contaminated locations, requiring a long-term response to clean up hazardous materials; NPL sites are included. The EPA Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) (Superfund) Public Access Database (CPAD) reports that there are currently fifty-eight archived Superfund sites located in Onondaga County (CERCLIS 2019). An archived Superfund site is one that has no further interest under the Federal Superfund Program based on available information and is no longer part of the CERCLIS inventory.

In addition to the hazardous waste sites, there are numerous hazardous facilities in Onondaga County cataloged by the NYSDEC’s Bulk Storage Program Database. The Bulk Storage Program includes three types of facilities; Petroleum Bulk Storage (PBS), Major Oil Storage Facilities (MOSF), and Chemical Bulk Storage (CBS). Registration with NYSDEC is mandatory for all PBS facilities with a total storage capacity of 1,100 gallons or more; all CBS underground tanks and all stationary aboveground tanks with a capacity of 185 gallons or more; and all MOSF sites storing more than 400,000 gallons of petroleum products. As of January 2019, 1,794 sites are listed in the NYSDEC’s Bulk Storage Program Database in Onondaga County, New York (New York State Department of Environmental Conservation [NYSDEC] 2019).



Figure 4-29. National Priority List Superfund Sites in Onondaga County





Dams and Levees

Dams

According to the NYSDEC Division of Water Bureau and Flood Protection and Dam Safety, there are three hazard classifications of dams in New York State. The dams are classified in terms of potential for downstream damage if the dam were to fail. The hazard classifications are as follows:

- *Low Hazard (Class A)* is a dam located in an area where failure will damage nothing more than isolated buildings, undeveloped lands, or township or county roads and/or will cause no significant economic loss or serious environmental damage. Failure or operation problems would result in no probable loss of human life. Losses are principally limited to the owner's property
- *Intermediate Hazard (Class B)* is a dam located in an area where failure may damage isolated homes, main highways, and minor railroads; interrupt the use of relatively important public utilities; and will cause significant economic loss or serious environmental damage. Failure or operation problems would result in no probable loss of human life, but can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns. Class B dams are often located in predominantly rural or agricultural areas but may also be located in areas with population and significant infrastructure.
- *High Hazard (Class C)* is a dam located in an area where failure may cause loss of human life; serious damage to homes, industrial, or commercial buildings; important public utilities; main highways or railroads; and will cause extensive economic loss. This is a downstream hazard classification for dams in which excessive economic loss (urban area including extensive community, industry, agriculture, or outstanding natural resources) would occur as a direct result of dam failure.

The New York State Inventory of Dams, identifies 146 dams in Onondaga County: 60 low hazard, 9 intermediate hazard, 9 high hazard, 67 negligible or no hazard classification, and 1 has an unknown classification (NYS DEC 2018).

Levees

There are four levees within Onondaga County. The Limestone Creek levee is maintained by the Village of Fayetteville and New York State Department of Environmental Conservation (NYSDEC). The Limestone Creek system (Figure 4-31) consists of approximately 0.6 miles of levee embankment along the Limestone Creek. A flood in the area behind the levee could impact nearly 140 people, 54 commercial and residential structures and cause an estimated \$29.8 million of possible flood-related damages (USACOE, 2018).

The Marcellus-Tyler Hollow levee system (Figure 4-32) is accredited and located on the Ninemile Creek in the Village of Marcellus. The levee approximately 0.05 miles long and protects the Upper Crown Mill Condominiums. A flood in the area puts 13 people at risk, 2 commercial and residential structures, and cause an estimated \$1.97 million of possible flood-related damages (USACOE, 2018).



Figure 4-30. Dam Locations in Onondaga County

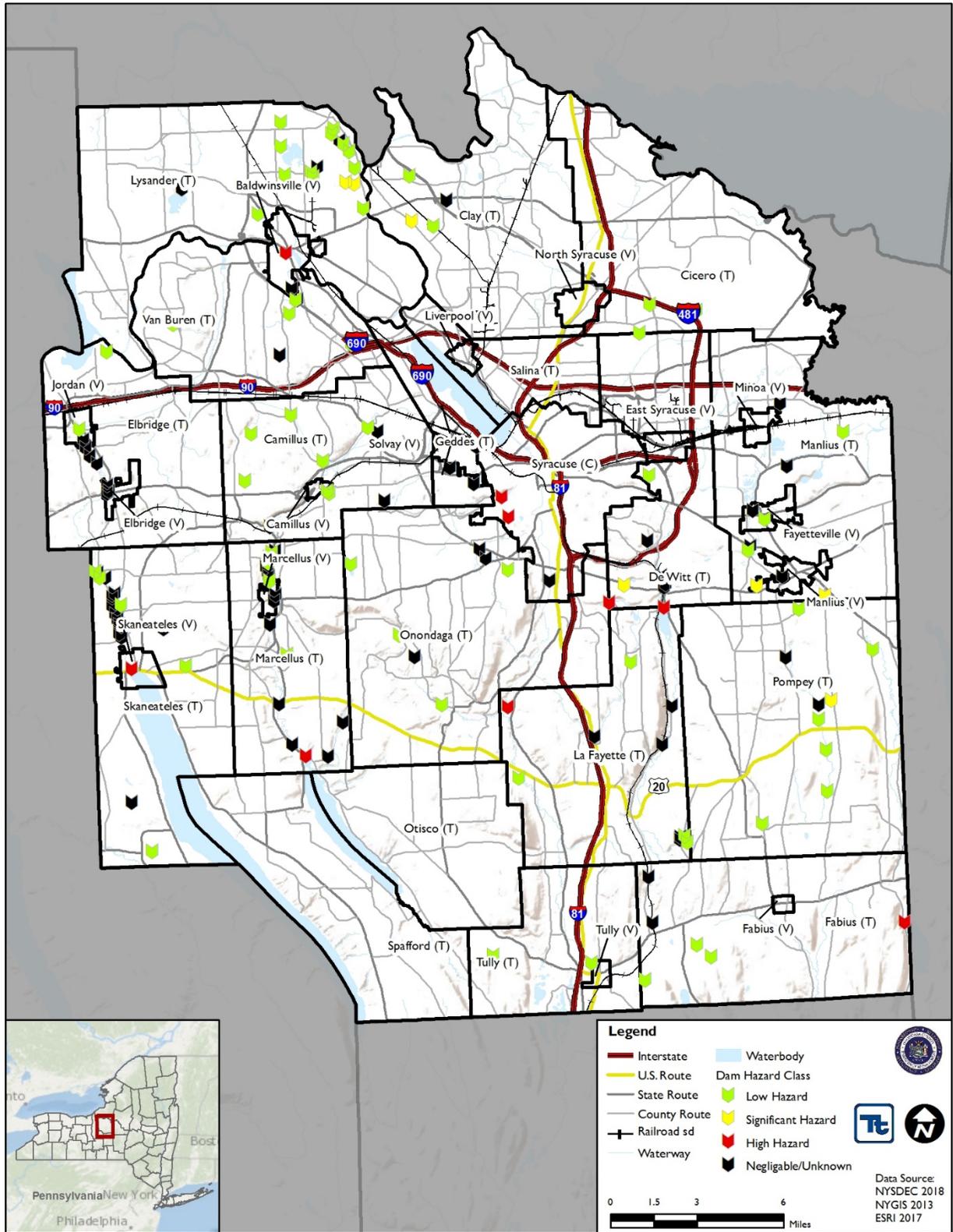


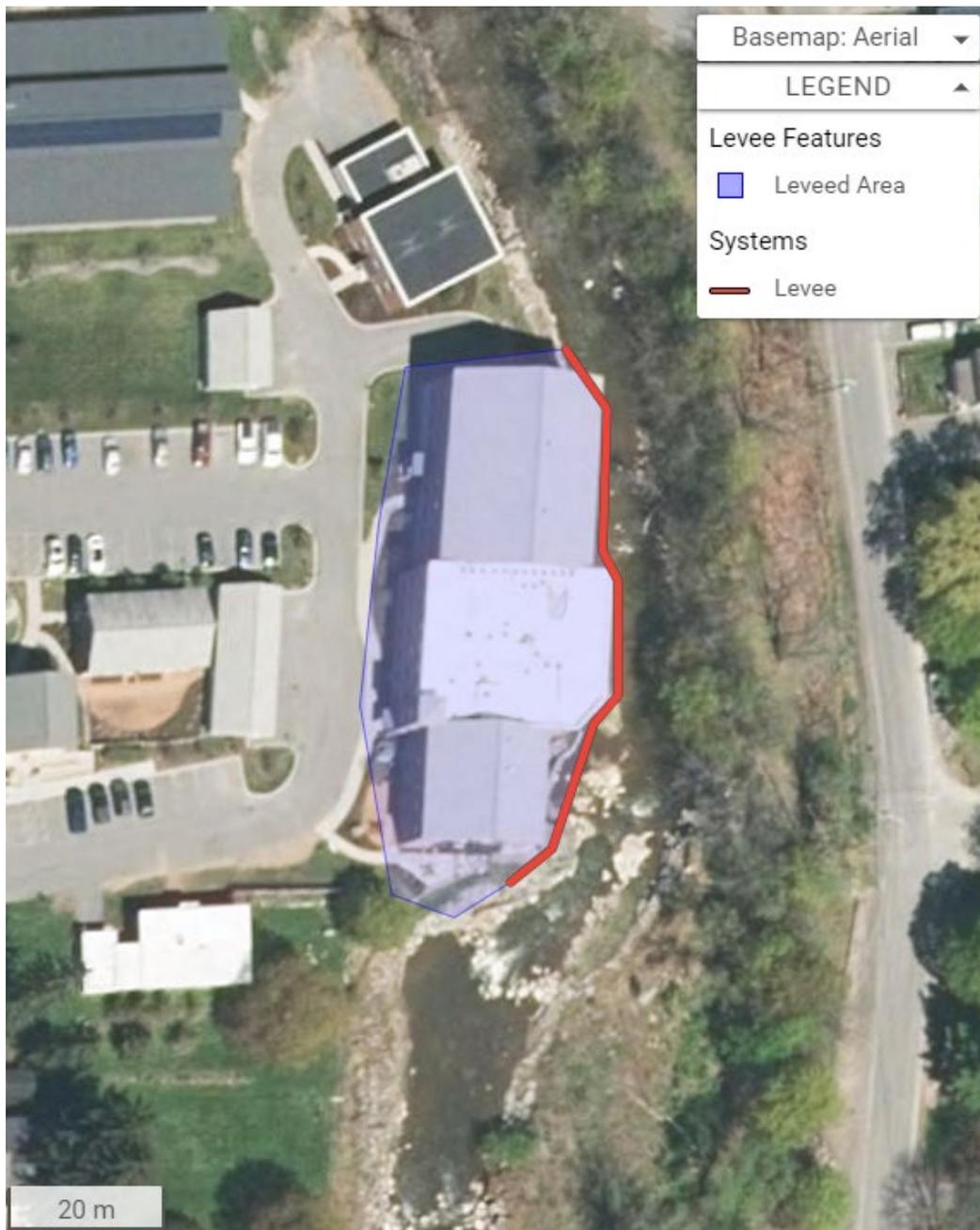


Figure 4-31. Limestone Creek Levee





Figure 4-32. Marcellus-Tyler Hollow Levee



The Onondaga Creek levee system consists of two embankments on either side of the Onondaga Creek. The left bank is 0.33 miles long and has an average height of six feet. Since construction (1951), the levee system has not been loaded up to the base of the embankment. United States Geological Survey (USGS) stream gage near Dorwin Ave. indicated that the highest water levels on record were associated to a high-water event in July 1974. The levee system, including the right bank levee and channel, has prevented greater than an estimated \$7,376,800 of flood damages since completion. (USACOE, 2018). The right bank of the Onondaga Creek levee system is smaller at 0.24 miles long with an average height of four feet. Based on the condition of the system at the time of this publication, this levee system has a relatively low risk and is expected to perform as designed. However, there is some uncertainty as the levee has not been fully (100%) loaded and there is significant unwanted



vegetation/trees on the levee landside slope. Water could overtop the levee during a greater than 500-year event (less than 0.2% chance of occurring in any given year). If flooding occurred within the leveed area, there would be a minimal risk to life safety. Residents are still encouraged to pay attention to local media reports and follow flood warnings or evacuation orders during times of high water. The NYSDEC has developed an Emergency Action Plan that details the procedures necessary for effective response to a flood event.

Figure 4-33. Onondaga Creek Levee Right Bank





Figure 4-34. Onondaga Creek Levee Left Bank

