

# 2 PLANNING AREA PROFILE AND CAPABILITIES

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Chapter 2 provides a general profile and description of Phelps County and each of the jurisdictions participating in the hazard mitigation planning process. A list of capabilities for each jurisdiction is also included.

## 2.1 Phelps County Profile

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Figure 2.1 provides a map of Phelps County including incorporated cities, major highways, and topography.

### 2.1.1 History and Development

Phelps County was created by the legislature on Nov. 13, 1857, from territory originally belonging to Crawford, Pulaski and Maries counties in South Central Missouri. The county was named for John Phelps of Green County, who was governor from 1877 to 1881. The county seat locating commission designated the area now known as Rolla to be the county seat. When the locating commission made its report, considerable protest was voiced concerning the choice of sites. Approximately 600 citizens of the county signed a petition of protest, citing the fact that only two of the three commission members had met to consider the possible sites for the county seat. The matter went first to the Circuit Court and then to the Supreme Court. Before the high court could make a decision, however, the legislature took action on Jan. 14, 1860, confirming the location of the county seat in Rolla. Smarting under a considerable amount of criticism concerning the matter, all members of the county court resigned during April 1858, but later withdrew their resignations.

The town of Rolla did not exist as of Nov. 13, 1857, when the county was created. Only the J. Stever office and John Webber's home were located in the area. Early court business included the location and opening of roads from the county seat to various places within the state, including: St. Louis, Springfield, Jefferson City, Lake Spring and Salem. It is in this last road order, dated in July 1858 that the use of the name Rolla first appears in the court records. The name was used earlier, in May 1858, in a deed of railroad land to the county.

On April 26, 1859, the county court ordered the 50 acres donated by Mr. Bishop for the site of the county seat to

**Original Phelps County Courthouse**



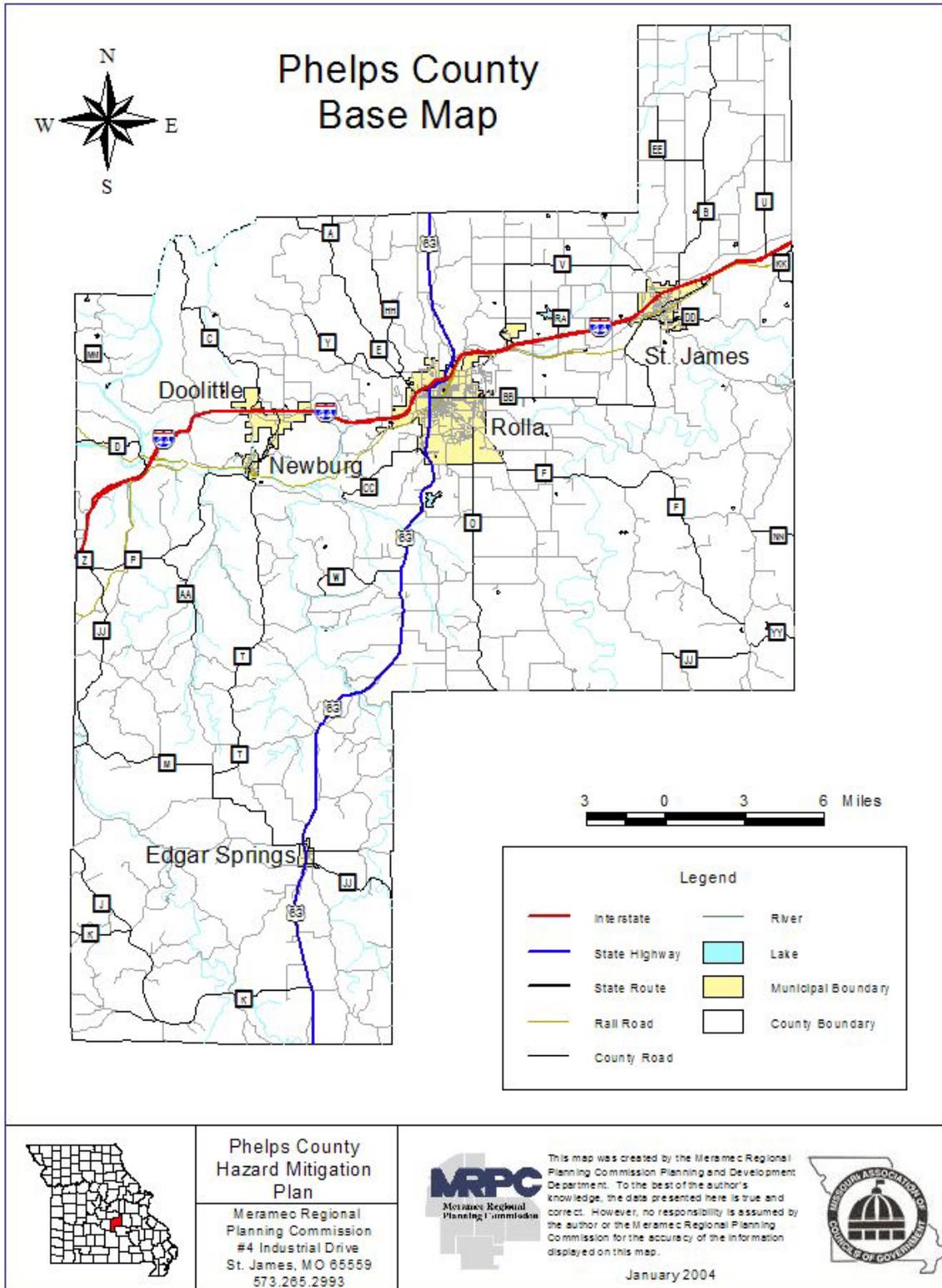
be surveyed. The survey was conducted by A.E. Buchanan, a young railroad surveyor. Buchanan delivered his plat to the county court on May 31, 1859.

On Feb. 9, 1861, the day of Rolla's first town council meeting, a county-wide meeting was held to determine whether to join the Confederacy in secession. The consensus at that time was not to take any action until there were further developments. Further developments came in April of that year when Fort Sumter was fired upon, and county residents decided to support the South. The May 10 Circuit Court session saw a heated debate of secession, which broke up the court. Circuit Court Judge James McBride departed to assume command as a Confederate general under Sterling Price. Outside the courthouse, a group of men drew down the United States Flag and raised a Confederate flag, which had been sewn by the women of Rolla. The group then moved to the newspaper office of Charles Walder, a Union supporter and editor of the *Rolla Express*, and forced him to close his shop. Southern sympathizers patrolled the town day and night, often ordering Union sympathizers to leave town.

On June 14 of that year, General Franz Sigel arrived by train with his 3rd Missouri Infantry and took over the town. From that day until the close of the war, Rolla was in Union hands. The 13th Illinois Infantry Regiment, under Colonel John B. Wyman, was brought in to guard Rolla and the Pacific Railroad's terminal. It was this regiment that did the basic planning and building of Fort Wyman, although other regiments undertook the task of finishing it. President Lincoln's personal order was that Rolla should be held at all costs. Being situated at the terminus of the railroad, military wagon trains went out from Rolla to all Union armies stationed southwest in Arkansas, Hartville and Springfield and northwest to the Linn Creek area, now known as the Lake of the Ozarks. After General Price's defeat at Pea Ridge in March 1862, several troops that were organized by Gov. Jackson returned home. Confederate sympathizers, unwilling to profess their loyalty and support to the Union after the battle, were treated harshly. One example is the shooting of former Presiding Justice Lewis F. Wright and four of his sons in 1864, after being taken from their homes for "questioning."

Other towns within the county include Newburg, incorporated in 1888, and St. James, incorporated in 1869. Arlington and Jerome were both incorporated in 1867, but neither is incorporated at this time. Doolittle was incorporated on July 2, 1944. Other Phelps County communities include Edgar Springs, a city incorporated during the 1970s and Flat, which remains unincorporated.

Figure 2-1

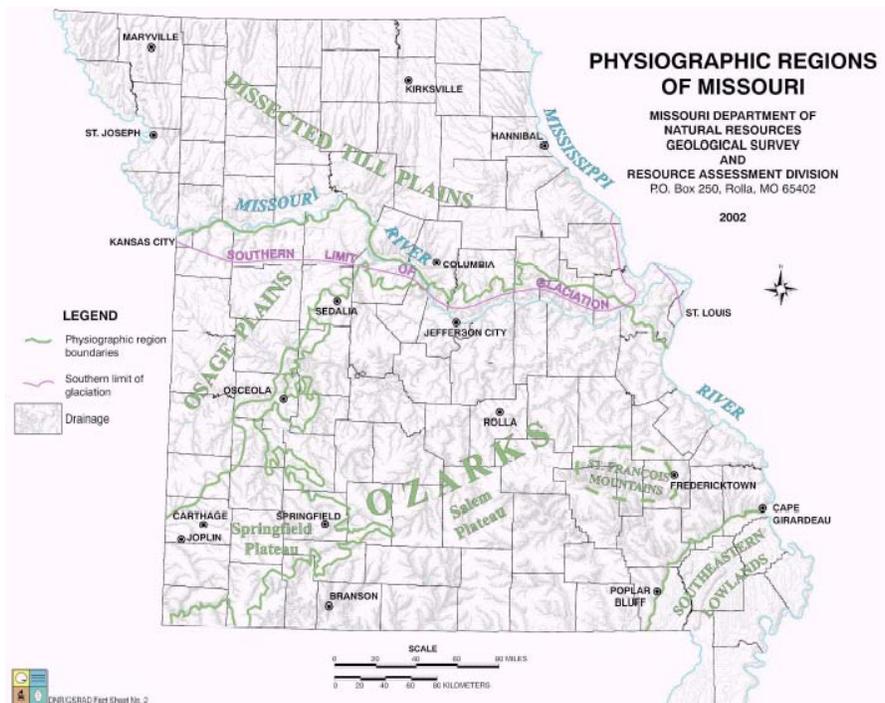


### 2.1.2 Geography and Topography

The topography in Phelps County east of Rolla is generally rolling hills with steeper hills near the Meramec River. West of Rolla, the terrain is considerably rougher with steep, sloping valleys. In the southern portion of the county, the topography flattens to form a small platform around Edgar Springs. The maximum relief in the county is approximately 500 feet.

Physiographic features, such as river basins and watersheds, play an important role in the development of any given area. Practical planning and engineering methods take advantage of the topography in planning and designing sewer and water facilities. The individual watersheds should form the basis for sewer and water districts, while several contiguous watersheds within the same drainage basin may be combined to form a sewer or water district.

**Figure 2-2**  
**Physiographic Regions of Missouri**



A drainage basin is the total area drained by a river and all of its tributaries. A watershed is the area drained by a single stream. During the last 100 years, stream channels in the Ozarks have become wider and shallower, and deep-water fish habitat has been lost. Historical data indicate that channel disturbances have resulted most directly from clearing of vegetation along stream channels, which decreases bank strength. Historical and stratigraphic data show that after 1830, Ozarks streams responded to land-use changes by depositing more gravel and less muddy sediment, compared to pre-settlement conditions. Because less muddy sediment is being deposited on flood plains, many stream banks now lack cohesive sediments, and, therefore, no longer support steep banks. Land use statistics indicate that the present trend in the rural Ozarks

is toward increased populations of cattle and increased grazing density; this trend has the potential to continue the historical stream-channel disturbance by increasing storm-water runoff and sediment supply.<sup>1</sup>

Phelps County is located in two river basins: Gasconade and Meramec. The Gasconade River and its tributaries including the Big Piney River, Beaver Creek, Little Beaver Creek and Little Piney Creek drain parts of Phelps County. Included within this basin are 53 springs, with 28 of these located in Phelps County.

The Meramec River and its tributaries including the Bourbeuse River, Dry Creek, Huzzah Creek, Courtois Creek, Hazel Creek, Big River and Mineral Fork also drain parts of Phelps County. Included with this basin are 36 springs, three of these located in Phelps County.

Seven miles northeast of the town of Salem in Southeastern Missouri, a spring-fed brook called the Watery Fork merges with a larger wet-weather branch and becomes the source of the Meramec River. For many millions of years the Meramec has been carving its twisting, sometimes-tortuous 240-mile course into the solid rock of the Ozark Plateau, scouring its way through a deep, slowly widening valley, bordered by limestone bluffs and steep hills. It is joined along the way by innumerable springs, creeks, and four large tributaries, which transform the Meramec into a 100-yard to 200-yard wide floodplain stream at its confluence with the Mississippi River eighteen miles below St. Louis.

Maramec Spring is the first of the four major contributors. It pours an average volume of 100 million gallons of cold clear water into the Meramec River per day, swelling the river to twice its size. It is interesting to note that the Dry Fork creek, which is about the same size as the Meramec River in that area, loses most of its volume underground to become a major contributor to Maramec Spring, and in a round-about way—a major contributor to the Upper Meramec. Over the next 30 miles, the inflows from many smaller branches turn the river into a prime stream. Then, from the right, the translucent waters of the second and largest of the headwater contributors, the Courtois-Huzzah creek, mingles with the Meramec, giving it the impression of a truly big river. Swirling on past Onondaga Cave (Leasburg), Meramec State Park (Sullivan), and the Meramec Caverns (Stanton)—all on the left—the Meramec receives the cloudy waters of the Bourbeuse River—its only major contributor from the west. As the darker waters flow on, the valley widens, and the river becomes a series of long, slow, wide pools, connected by short, fast, riffles. Around 25 miles below the Bourbeuse River confluence, the last major contributor, the Big River, flows into the Meramec from the right. Now, even wider and more sluggish, it enters the Mississippi floodplain, and wends its way another thirty miles before draining into the Mississippi. The name Meramec is of Algonquin Indian origin (probably the Fox tribe), and is widely thought to mean 'the good fish' or 'catfish', which were abundant in its waters. But, there is evidence that the river may get its name after a tribe of Indians called the Maroa, who once lived in Illinois across from the Meramec's mouth. Since the Algonquin syllable 'mec' or 'meg' stands for small river or stream, the names Meramec or Merameg (the river has been called Merameg in the past) could be derived from the Algonquin Maroamec, which means 'Little River of the Maroas'. The name of the Mississippi is also of Algonquin origin, derived from their term mesisi-piya, meaning Big River. Also, the title of this state Missouri is of Indian origin, meaning People of the Big Canoe or He of the Big Canoe.

Even in geological time, the Meramec is a very old river. It does not drain its northeastern section of the Ozark Plateau with the reckless abandon of a mountain stream. Instead, it meanders through the landscape in a countless succession of bends, riffles, and placid slow stretches, each of which is another small step in the Meramec's 800-foot descent from the Ozark Plateau to the Mississippi River.<sup>ii</sup>

The Gasconade River watershed is located within the Ozark Plateau of the Interior Ozark Highlands. The river meanders north to northeast through Webster, Texas, Laclede, Pulaski, Dent, Maries, Osage, Phelps, and Gasconade counties to join the Missouri River. The Gasconade River is 271 miles long from mouth to headwaters with 263 miles having permanent flow. The Upper and Lower Gasconade River watersheds drain 2,806 square miles. The Upper Gasconade River watershed has an average gradient of 27.6 feet/mile, and the Lower Gasconade River watershed has an average of 3.9 feet/mile. A number of springs within the middle Gasconade River portions are due to the karst geology of the Roubidoux and Gasconade Dolomite Formation and losing stream segments. The karst topography causes losing portions in the Osage Fork, Roubidoux, North Cobb, Little Piney, Spring, and Mill creeks, and Gasconade River. The entire Gasconade River watershed is reported to have 76 springs and the largest concentration of big springs in the state.

As a whole, the Gasconade River watershed is rural with low population density and high farmland density. The most populated areas are Pulaski and Phelps counties, which are experiencing land development from growth surrounding Fort Leonard Wood and the City of Rolla. Lower watershed areas of Maries, Osage, and Gasconade counties have low population density. The Upper and Lower Gasconade River watersheds have 49% and 33%, respectively, grassland and cropland as land use. A general trend in the rural Gasconade River watershed toward increased cattle numbers per pastured acre has continued to the present. Forest comprises approximately 46% of the land cover within the Upper Gasconade River watershed and 66% within the Lower Gasconade River watershed. Forests are in good health and have sustainable forest production. Forest land is largely under private ownership with federally-owned forest having the second largest holdings, followed by state-owned lands having a smaller percentage. Public land is 12% or 221,040 acres within the entire watershed. To provide water-based recreational opportunities, 23 public stream accesses have been developed in the watershed.

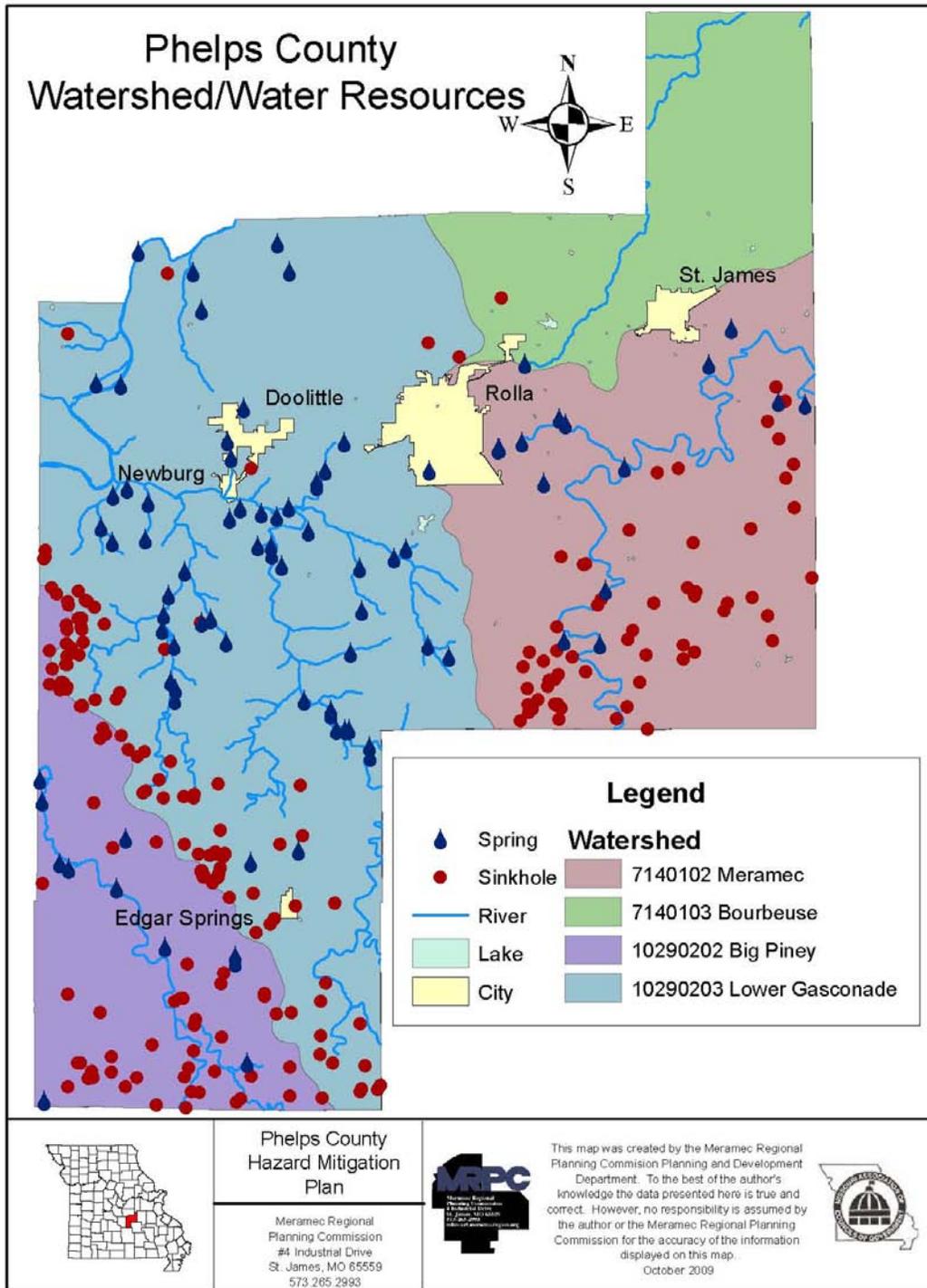
Gasconade River watershed annual precipitation ranges from 40.35 to 42.67 inches with a annual mean of 41.66 inches. This precipitation and the local geology provides good base flow conditions and lower variability in stream flow throughout major portions of the watershed. Average runoff had greater extremes from the late 1970s to the present than during the 1960s to the late 1970s.<sup>iii</sup>

Phelps County has been a participant in the National Flood Insurance Program since February 1987. The City of Rolla has been a participant in the NFIP program since September 1977, St. James since July 1985, Newburg since April 1972, Doolittle since August 1984, and Edgar Springs since August 1984.<sup>iv</sup>

As part of its floodplain management plan, the county requires that houses be built one foot above base flood elevation. A permit must be granted by the floodplain administrator for any

new construction inside the floodplain. County road crews or employees are expected to notify the flood plain administrator when they witness any new construction in the floodplain that has not been granted a construction permit. Phelps County contracts with the Meramec Regional Planning Commission to administer its floodplain management.

**Figure 2-3**

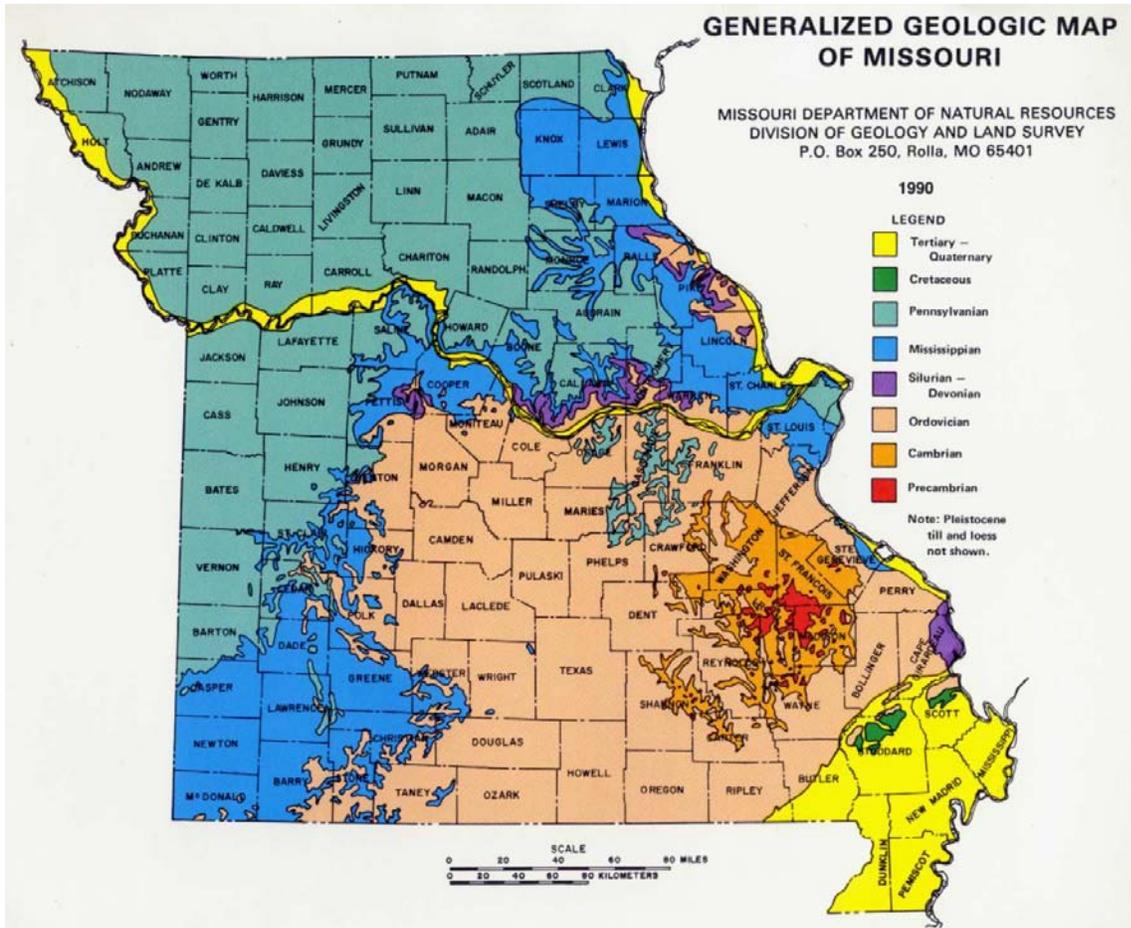


### 2.1.3 Soil Types

Phelps County is located in the Ozark soils which is an area of narrow, cherty limestone ridges that break sharply to steep side slopes of narrow valleys. Loess occurs in a thin mantle or is absent. Soils formed in the residuum from cherty limestone or dolomite range from deep to shallow and contain a high percentage of chert in most places. Some of the soils formed in a thin mantle of loess are on the ridges. Soils formed in loamy, sandy and cherty alluvium are in narrow bottom-land areas. These soils are found throughout all of Pulaski County. The Ozarks soils include the Lebanon-Goss-Bardley-Peridge, Needle-ye-Viration-Wilderness, Gerald-Union-Goss, Lebanon-Hobson-Clarksville, Hobson-Coulstone-Clarksville, Captina-Clarksville-Hartville-Ashton-Cedargap-Nolin soil associations. The Hartville-Ashton-Cedargap-Nolin soils association is located along the Gasconade River.<sup>v</sup>

Soil makeup in Phelps County includes 53 percent Bender-Tonti-Poynor Association, 6 percent Alred Bardley Association, 11 percent Cedargap-Kaintuck-Razort Association, 5 percent Gatewood-Useful Association, 24 percent Union-Beemont-Gatewood Association, and 1 percent Rosati-Glensted Association.

Figure 2-4



### 2.1.4 Climate

Snow occurs between November and April, both inclusive, but most of the snow falls in December, January and February. An average of about 13 inches of snow occurs annually in the Meramec Region. It is unusual for snow to stay on the ground for more than a week or two before it melts. Winter precipitation usually is in the form of rain, snow or both. Conditions sometimes are borderline between rain and snow, and in these situations freezing drizzle or freezing rain occurs. Spring, summer and early fall precipitation comes largely in the form of showers or thunderstorms. Thunderstorms are most frequent from April to July. Measurable precipitation occurs on the average of less than 100 days per year. About half of these will be days with thunderstorms.

Most of the precipitation is absorbed by the soil and plants; however, a portion of the precipitation forms runoff and is returned to streams and other bodies of water.

**Table 2.1 Average Rainfall for Phelps County**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
inches	1.93	2.29	3.73	3.92	4.80	3.92	4.24	3.67	3.94	3.51	4.30	2.96	43.2

*Average of rainfall from 1971-2000. Source: [www.nass.usda.gov](http://www.nass.usda.gov)*

Because of its inland location, Missouri and Phelps County are subject to frequent changes in temperature. The average annual temperature is in the mid 60s with an average in January of about 30 degrees and an average in July of about 78 degrees. A high temperature of 113 degrees has been observed in Rolla.

**Table 2.2 Average Minimum and Maximum Temperatures for Phelps County by Month**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual
Minimum	19.7	24.8	34.2	44.6	54.6	63.4	48.2	66.1	57.6	46.3	35.4	24.5	45.0
Average	29.2	35.1	44.8	55.6	65.0	73.5	78.6	76.9	68.5	57.5	45.0	33.7	55.3
Maximum	38.6	45.4	55.3	66.5	75.3	83.6	89.0	87.7	79.4	68.6	54.5	42.8	65.6

Min and Max represent the coldest and warmest average months on record.<sup>vi</sup>

Source: <http://www.average-temperature.com>

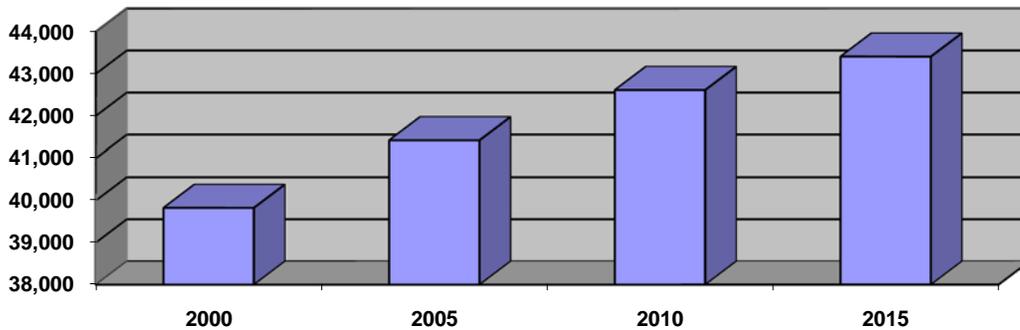
While winters are cold and summers are hot, prolonged periods of very hot weather are unusual. Occasional periods of mild, above freezing temperatures are noted almost every winter. Conversely, during the peak of the summer season occasional periods of dry, cool weather break up stretches of hot, humid weather. About half of the days in July and August will have temperatures of 90 degrees or above, but it is not unusual for the temperature to drop into the 50s by the evening. In winter, there is an average of about 100 days with temperatures below 32 degrees. Temperatures below zero are infrequent with only about three days per year reaching this low temperature. The first frost occurs in mid-October, and the last frost occurs about mid-April.

### 2.1.5 Population/Demographics

Phelps County’s current 39,825 residents are spread across the county’s 673 square miles and almost evenly divided by sex with 50.8 percent male and 49.2 percent female. The median age of county residents is 34.9 years. Seventy-six percent of the population is over the age of 18 years and 16.3 percent is over the age of 62 years. Ninety-three percent of Phelps County residents are Caucasian, 1.8 percent black or African American, and 2.7 percent Asian.<sup>vii</sup>

According to Census 2000 data, the population of Doolittle is 644, Edgar Springs is 190, Newburg is 484, Rolla is 16,367 and St. James is 3,704. There are 15,683 households in Phelps County and 17,501 housing units.<sup>viii</sup> The median value for homes in rural and urban Phelps County is estimated at \$74,800. Almost fifty percent are valued between \$50,000 and \$99,999 and nearly twenty-five percent are valued less than \$50,000.

**Table 2.3 Phelps County vs. Statewide Projected Population Growth 2000-2015<sup>ix</sup>**



According to the State of Missouri’s Office of Administration, Phelps County is predicted to grow 4 percent by 2005, 7 percent by 2010, and 9 percent by 2015 from its current population of 39,825.<sup>x</sup>

Table 2.4 shows population trends for communities in Phelps County from 1900 to 2000.

**Table 2.4 Historic Population Trends of Phelps County Communities 1900-2000**

Community	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000
Doolittle	***	***	***	***	***	237	499	535	701	599	644
Edgar Springs	***	***	***	***	***	***	***	***	271	215	190
Newburg	481	932	1235	1036	1056	949	884	806	743	589	484
Rolla	1600	2261	2077	3670	5141	9354	11,132	13,571	13,303	14,090	16,367
St. James	575	1100	1117	1294	1812	1996	2384	2929	3328	3256	3704

Source: Missouri Census Data Center

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**Table 2.5 Phelps County Population Trends and Breakdown of Racial Groups**

Year	1970	1980	1990	2000
<b>Total Population</b>	<b>29,481</b>	<b>33,633</b>	<b>35,248</b>	<b>39,825</b>
<b>White Alone</b>	<b>28,902</b>	<b>32,691</b>	<b>33,815</b>	<b>37,132</b>
<b>Black/African American Alone</b>	<b>194</b>	<b>333</b>	<b>397</b>	<b>596</b>
<b>Amer. Indian/ AK Native Alone</b>	<b>**</b>	<b>77</b>	<b>148</b>	<b>236</b>
<b>Asian Alone</b>	<b>**</b>	<b>330</b>	<b>774</b>	<b>936</b>
<b>Hawaiian/ Pacific Islander Alone</b>	<b>**</b>	<b>Included with Asian</b>	<b>9</b>	<b>25</b>
<b>Some Other Race Alone</b>	<b>385</b>	<b>202</b>	<b>105</b>	<b>186</b>
<b>Two or More Races</b>	<b>**</b>	<b>**</b>	<b>**</b>	<b>714</b>
<b>% White</b>	<b>98.04</b>	<b>97.2</b>	<b>95.9</b>	<b>93.2</b>
<b>% Non-White</b>	<b>1.96</b>	<b>2.80</b>	<b>4.1</b>	<b>6.8</b>

*Source: 1970, 1980, 1990, 2000 U.S. Census of Population, Bureau of the Census, US Department of Commerce*

Table 2.6 shows the age and sex composition of the county for the years 1990 and 2000.

**Table 2.6**  
**AGE-SEX COMPOSITION OF THE POPULATION**  
**FOR**  
**PHELPS COUNTY, 1990-2000**

Age Group	2000				1990			
	Number of Males	% of Total Males	Number of Females	% of Total Females	Number of Males	% of Total Males	Number of Females	% of Total Females
0-4	1,150	5.7	1,111	5.7	1,177	6.5	1,121	6.5
5-9	1,267	6.3	1,244	6.3	1,180	6.5	1,167	6.8
10-14	1,477	7.3	1,423	7.3	1,303	7.2	1,068	6.2
15-19	2,032	10.1	1,508	7.7	1,886	10.4	1,264	7.4
20-24	2,556	12.7	1,467	7.5	2,405	13.3	1,370	8.0
25-29	1,308	6.5	1,096	5.6	1,389	7.7	1,292	8.1
30-34	1,117	5.5	1,217	6.2	1,300	7.2	1,289	7.5
35-39	1,317	6.5	1,421	7.3	1,160	6.4	1,164	6.8
40-44	1,429	7.1	1,494	7.6	1,093	6.0	1,136	6.6
45-49	1,257	6.2	1,323	6.8	908	5.0	1,019	5.9
50-54	1,179	5.8	1,197	6.1	842	4.7	817	4.8
55-59	941	4.7	1,073	5.5	762	4.2	794	4.6
60-64	837	4.1	857	4.4	679	3.8	809	4.7
65-69	710	3.5	787	4.0	680	3.8	847	4.9
70-74	578	2.9	750	3.8	567	3.1	634	3.7
75-79	514	2.5	697	3.6	351	2.0	582	3.4
80-84	337	1.7	455	2.3	259	1.4	468	2.7
85+	219	1.1	480	2.4	145	.8	321	1.9
<b>County Totals</b>	<b>20,225</b>	<b>50.8%</b>	<b>19,600</b>	<b>49.2%</b>	<b>18,086</b>	<b>51.3%</b>	<b>17,162</b>	<b>48.7%</b>

SOURCE: 1990 & 2000 Census, U.S. Department of Commerce

Table 2.7 shows the median age of the population of Phelps County for 1970 through 2000.

**Table 2.7 Median Age In Years for Phelps County: 1970-2000**

1970			1980			1990			2000		
Male	Female	Total									
23.5	28.5	24.8	24.4	31.2	27.8	28.9	35.1	31.9	33.4	38.8	36.2

\*\* Information not available.

Source: 1970, 1980, 1990, 2000 Census, U.S. Department of Commerce

Table 2.8 compares the family income of Phelps County residents with the rest of the Meramec Region, State of Missouri and United States. This table shows that Phelps County has a slightly higher percentage of families living on \$19,999 or less than the rest of the region – 33.8 percent compared to 30.4 percent for the region; and a slightly lower percentage of families living on \$35,000 or more – 42.5 percent compared to the regional average of 45 percent. Compared to the

state and nation, Phelps County also fared worse than average for families living on \$19,999 or less and \$35,000 or more on the state level.

**Table 2.8 Phelps County Family Income**

	Under \$10,000	\$10,000 - \$14,999	\$15,000- \$19,999	\$20,000 - \$24,999	\$25,000 - \$29,999	\$30,000- \$34,999	\$35,000 and over
Phelps County	2394 15.3%	1443 9.2%	1455 9.3%	1316 8.4%	1372 8.8%	1037 6.6%	6660 42.5%
Meramec Region	8,676 12.9%	5,792 8.6%	5,942 8.9%	5,773 8.6%	5,810 8.7%	4,911 7.3%	30,172 45.0%
State of Missouri	221,242 10.1%	156,370 7.0%	156,062 7.1%	163,924 7.5%	159,663 7.3%	154,948 7.1%	1,187,005 54.0%
United States	10,067,027 9.5%	6,657,228 6.3%	6,601,020 6.3%	6,935,945 6.6%	6,801,010 6.4%	6,718,232 5.9%	61,758,660 58.5%

Source: 2000 U.S. Census Bureau, U.S. Department of Commerce

Table 2.9 compares Phelps County’s median income with the rest of the Meramec Region, State of Missouri and nation. Phelps County’s median income is slightly higher than the region’s average and, as with most rural counties in south central Missouri, significantly lower than the State and National averages. These figures are based on the 2000 Census.

**Table 2.9 Phelps County Median Income Comparison**

Location	Median Family Income	Percent of U.S. Median	Persons in Poverty	Percent in Poverty
Phelps County	\$38,693	77.3	6,129	16.4
Meramec Region	\$38,118	76.2	24,260	14.0
State of Missouri	\$46,044	92.0	637,891	11.7
United States	\$50,046	100.0	33,899,812	12.4

Source: 2000 U.S. Census Bureau, U.S. Department of Commerce

Table 2.10 shows the educational attainment of Phelps County residents – both the number and percentage of the population. As demonstrated by the table, 46.2 percent of the population has some education beyond high school, with 4.6 percent holding an associate degree, 12 percent holding a bachelors degree and 9.1 percent with graduate or professional degrees.

**Table 2.10 Phelps County General Education Attainment (2000)**

Education Attainment	High School no diploma	High School Diploma	Some College No Degree	Associate Degree	Bachelors Degree	Graduate or Professional Degree
Number of Population	3,216	8,123	5,045	1,134	2,934	2,258
Percent of Population	13.0	32.9	20.5	4.6	12.0	9.1

Source: 2000 U.S. Census Bureau, U.S. Department of Commerce

The civilian labor force in the Meramec Region increased 36.9 percent between 1980 and 2000, while the civilian labor force in Missouri grew 22.3 percent for the same time period. The bulk of that growth occurred as more and more women entered the workforce. From 1980 – 2000 the male civilian labor force in Missouri increased by 12.5 percent compared to 25.1 percent in the Meramec Region, while the female civilian labor force increased by 35.3 percent statewide but 53.7 percent for the region.

As shown in Table 2.11, Phelps County's civilian labor force increased by 25 percent and the unemployed person percentage remained consistent with 6.9 percent unemployment in 1980 to 6.5 percent unemployment in 2000. The female civilian labor force percentage of unemployed dropped from 6 percent in 1980 to 5.2 percent in 2000. The male civilian labor force unemployment remained in stasis, holding at 7.5 percent in 1980 and 2000. According to the Missouri Department of Economic Development, unemployment for the United States has dropped from 7.1 percent in 1980 to 5.5 percent in 2006. The Missouri rates closely mirror those percentages and usually are a few tenths of a point less than the national figure. According to statistics from 2006, Phelps County had unemployment rates lower than the national level of 4.8 percent, with an average unemployment rate of 4.3 percent.

When comparing 2004 weekly wage rates, Phelps County wage rates are about 69 percent of Missouri's average weekly wage rates. The highest paying employment sector in Phelps County in 2004, according to the Quarterly Census of Employment and Wage Industry Information is Utilities (NAICS 22) with an average weekly salary of \$768. This is followed by Manufacturing (NAICS 31) with an average weekly salary of \$590. Construction jobs (NAICS 23) come in third with \$540 average weekly salaries.

The 2004 average of \$465 per week was 30 percent lower than the state of Missouri average of \$670 and 40 percent lower than the national average of \$779.

**Table 2.11 Phelps County Labor Force**

<b>LABOR FORCE FOR PHELPS COUNTY</b>			
<b>1980</b>			
	<u><b>Total</b></u>	<u><b>Male</b></u>	<u><b>Female</b></u>
Persons 16 years and older	26,248	13,888	12,360
Civilian Labor Force	14,207	8,268	5,939
Persons Employed	13,230	7,647	5,583
Persons Unemployed	977	621	356
% Unemployed CLF	6.9	7.5	6.0
Persons Not in Labor Force	12,041	5,620	6,421
<b>1990</b>			
	<u><b>Total</b></u>	<u><b>Male</b></u>	<u><b>Female</b></u>
Persons 16 years and older	27,759	14,175	13,584
Civilian Labor Force	15,892	9,063	6,829
Persons Employed	14,793	8,416	6,377
Persons Unemployed	1,099	647	452
% Unemployed CLF	6.9	7.1	6.6
Persons Not in Labor Force	11,605	4,887	6,718
<b>2000</b>			
	<u><b>Total</b></u>	<u><b>Male</b></u>	<u><b>Female</b></u>
Persons 16 years and older	31,553	16,026	15,527
Civilian Labor Force	18,838	10,280	8,558
Persons Employed	17,616	9,507	8,109
Persons Unemployed	1,222	773	449
% Unemployed CLF	6.5	7.5	5.2
Persons Not in Labor Force	12,578	5,632	6,946

SOURCE: 1980, 1990 & 2000 Census of Population

### 2.1.6 Schools/Vocational/Technological Schools/Colleges/Universities

Phelps County has four public school districts. Of those four, all have elementary through high school with the exception of Phelps Co. R-III, which has just an elementary school. Those school districts and the size of the student population are identified in Table 2.12.

**Table 2.12 Phelps County School Districts and Student Enrollment 2009**

School District	St. James R-I	Newburg R-II	Phelps Co. R-III	Rolla 31
Student Enrollment	1750	454	189	4004

Source: Missouri Department of Elementary and Secondary Education website [www.dese.mo.gov](http://www.dese.mo.gov)

Rolla Technical Institute (RTI) located at 1304 East 10<sup>th</sup> Street, Rolla, MO 65401 and Rolla Technical Center (RTC) located at 500 Forum Drive, Rolla, MO 65401. These schools have been providing adult education opportunities for over 40 years. RTI and RTC are operated by the Rolla Public School District 31. Most of the programs are built around a training period that can be completed as a half-time student in two years or one year as a full-time student. These programs are designed for secondary students and adults. The career and technical education courses offer highly specialized training using state-of-the-art technology and equipment to enable students to acquire the skills, knowledge and work attitudes needed to secure entry-level employment and advance with additional training and education.

RTI/RTC serves approximately 600 secondary students annually. These students are from 11 sending schools located in four different counties. Our sending schools are located in the counties of Phelps, Crawford, Maries, and Gasconade and in the towns of Belle, Bourbon, Cuba, Licking, Newburg, Owensville, Rolla, Salem, St. James, Steelville, and Vienna.

RTI/RTC serves about 300 adult students annually. Adult students commute from approximately a 50-mile radius.

The school has a community and continuing education program that serves approximately 1,000 adult students annually, with both daytime and evening classes. This program is also responsible for developing customized training to meet the needs of local businesses. The school also serves as a satellite for East Central College and William Woods University.

Additionally, RTI/RTC houses the administrative offices of a full-time Adult Education and Literacy (AEL) program and houses the Rolla High School Credit-Recovery program.

Several universities and colleges have satellite campuses located in Phelps County. These higher education campuses provide many educational opportunities for local residents. Below is a list of these satellite campuses:

- Columbia College, located at 2303 North Bishop, Rolla, Mo., providing both Associates as well as Bachelor degrees. The main campus is located in Columbia, Mo.
- Drury University, located at 1280 Forum Drive, Rolla, Mo., offering Bachelor degrees. The main campus is located in Springfield, Mo.
- East Central Community College is located at 500 Forum Drive, Rolla, MO, providing Associate degrees. The main campus is located at Union, Mo.
- Metro Business College, located at 1202 East St. Rte 72, Rolla, MO, providing Associates degrees, Diplomas and Certificates.
- Missouri University of Science and Technology, located at 1870 Miner Circle, Rolla, MO, providing Bachelors, Masters and Doctorial degrees.
- Webster University, located at 1103 Kingshighway, Rolla, MO. The main campus is located in St. Louis, Mo.

### 2.1.7 Business/Industry

Two major public employers located in Phelps County are Phelps County Regional Medical Center with 1,335 employees and the Missouri University of Science and Technology with 1,000 employees. Other large public employers in the county include Phelps County Schools with 486 employees, Mid-Continent Mapping Center (USGS) with 250 employees, Missouri Veterans Home with 180 employees, Phelps County Government with 170 employees, and Missouri Geological Survey (DNR) with 115 employees.

**Table 2.13 Employees By Industry for the Employed Civilian Population 16 Years Old & Over**

Category	Number
Total Employed:	17,616
Agriculture, forestry, fishing and hunting, mining:	398
Agriculture, forestry, fishing and hunting	353
Mining	45
Construction	1,192
Manufacturing	1,841
Wholesale trade	297
Retail trade	2,210
Utilities:	853
Transportation and warehousing	730
Utilities	123
Information	267
Finance, insurance, real estate and rental and leasing:	580
Finance and insurance	406
Real estate and rental and leasing	174
Professional, scientific, management, administrative and waste management services:	797
Professional, scientific and technical services	476
Management of companies and enterprises	0
Administrative and support and waste management services	321
Educational, health and social services:	5,781
Educational services	3,177
Health care and social assistance	2,604
Arts, entertainment, recreation, accommodation and food services:	1,459
Arts, entertainment and recreation	178
Accommodation and food services	1,281
Administration	822
Public administration	1,119

Source: U.S. Census Bureau, 2000 U.S. Census

There are 134 employers in the county that are considered private manufacturing firms, with the largest being Brewer Science Inc., with 134 employees. According to the 2002 Census of Retail Trade, conducted by the U.S. Department of Commerce, there are 213 retail trade establishments in Phelps County, with annual combined sales of \$462,951,000.<sup>xiii</sup>

### 2.1.8 Agriculture

Due to the rural nature of the area, agriculture and timber are significant factors in the local economy. According to the 1997 Census of Agriculture, Phelps County had 758 farms encompassing 196,197 acres, with an average farm size of 259 acres. Five years later in the 2002 Census of Agriculture, the number of farms had risen to 824 encompassing 201,067 total acres and the average farm size had decreased to 244 acres. In 2002 the county had 31 farms with 1,000 or more acres, 3.8 percent of the total number of farms in the county.<sup>xiv</sup> Due to the rugged nature of the region, row crop farming is for the most part limited to the river valleys. In 2002, a total of 30,473 acres of cropland was harvested.<sup>xv</sup>

The Ozarks region of Missouri is the focal point of several converging ranges of plant associations. Eastern hardwoods, southern pines and western prairies and the wildlife each supports, all reach the outward limits of their range in this area. As a result, various types of forest lands and animal habitats co-exist within a limited area. Several sawmills operate in the area and the large amount of National Forest Lands in the region also contribute to the importance of timber production and logging to the local economy.

Table 2.14 shows the amount of timber resources available in Phelps County.

**Table 2.14 Timber Resources of Phelps County**

	Total	Softwoods	Hardwoods
All Live Trees on Timberland (in cubic feet)	162,010,071	11,705,633	150,304,438
Net Volume of Growing-Stock on Timberland (in cubic feet)	240,606,899	14,899,420	225,707,479
Average Annual Mortality of Growing-Stock on Timberland(in cubic feet)	1,916,301	N/A	1,916,301
Average Number of Growing Trees on Timberland (in cubic feet)	152,501,173	11,101,098	141,400,075

Source: U.S. Department of Agriculture: Forest Service, EVALIDator version 4.1, <http://fiatools.fs.fed.us/Evalidator401/tmprc.jsp>

### 2.1.9 Environmentally Sensitive Areas

The location and characteristics of natural areas need to be considered when considering hazard mitigation projects. Environmentally sensitive areas exist in Phelps County because of the area's geological characteristics, primarily karst terrain and seismic zones. Karst can best be described as a land area lying on soluble rock through which a tangible amount of water moves through naturally occurring cracks and crevices. The most significant natural process occurring in karst areas is the solutional weathering of the soluble rock. This process takes place when rainwater combines with carbon dioxide in the soil or atmosphere and forms a carbonic acid (a weak acidic solution that breaks down limestone). The dissolved limestone washes away leaving cracks and crevices in the rock. These fissures in the stone formation act as conduits from surface water to groundwater.

Because of the porous nature of the underlying rock, a large amount of the rainfall in karst areas moves quickly and directly into the groundwater system. Water moves rapidly through karst and does not undergo the purification it would receive if seeping through soil and less permeable rock formations. Karst area groundwater is very susceptible to contamination, thus making it extremely difficult, if not impossible, to site landfills in karst areas under Subtitle D regulations. The state, when compared to the nation as a whole, is at a distinct disadvantage.

The Ozark Plateaus National Water Quality Assessment Program (NAWQA) study, initiated by USGS in 1991, determined that the factors that affect water quality are climate, physiography, soils, water use, land use, population, and geology. Poultry, cattle and swine production, in addition to septic tanks and sewage-treatment plants, have affected water quality by increasing concentrations of nutrients and bacteria in water. Surface- and ground-water quality has been significantly degraded by drainage from abandoned lead and zinc mines in the Tri-State District of Kansas, Missouri, and Oklahoma and the Old Lead Belt in southeastern Missouri.<sup>xvi</sup>

Several of Missouri's endangered animal and plant species are found in Phelps County. The tiny, white, eyeless Central Missouri cave amphipod lives under rocks or sticks in seven caves and springs in three Missouri counties and nowhere else in the world. This species and other karst species are highly susceptible to poor water quality. Landowners and others work to protect recharge areas that supply water to cave streams and springs.<sup>xvii</sup> The Missouri glyphopsyche caddisfly is known from only one spring in the Missouri Ozarks, Maramec Spring near St. James, making it a Missouri endemic species. A mishap, such as a chemical spill or some other major disturbance, could wipe out the entire species. Fortunately, the spring is on protected land and seems safe for the time being.<sup>xviii</sup> Phelps County's only endangered plant species is the Running Buffalo Clover, which flowers during mid April through June. This plant, which grows in moist, shaded woodlands, historically grew along bison trails, which often followed major streams and rivers. Only three occurrences of the federally endangered running buffalo clover are currently known from Missouri and none are considered secure. The reason for the species decline since the early 1900s is not known, although it seems to have been linked to the earlier extirpation of bison in the state.<sup>xix</sup>

*National Forest*

The headquarters for the Mark Twain National Forest is located in Rolla. The forest area includes 13 ranger districts and encompasses 1.5 million acres of Missouri land. The responsibilities of the National Forest include the following:

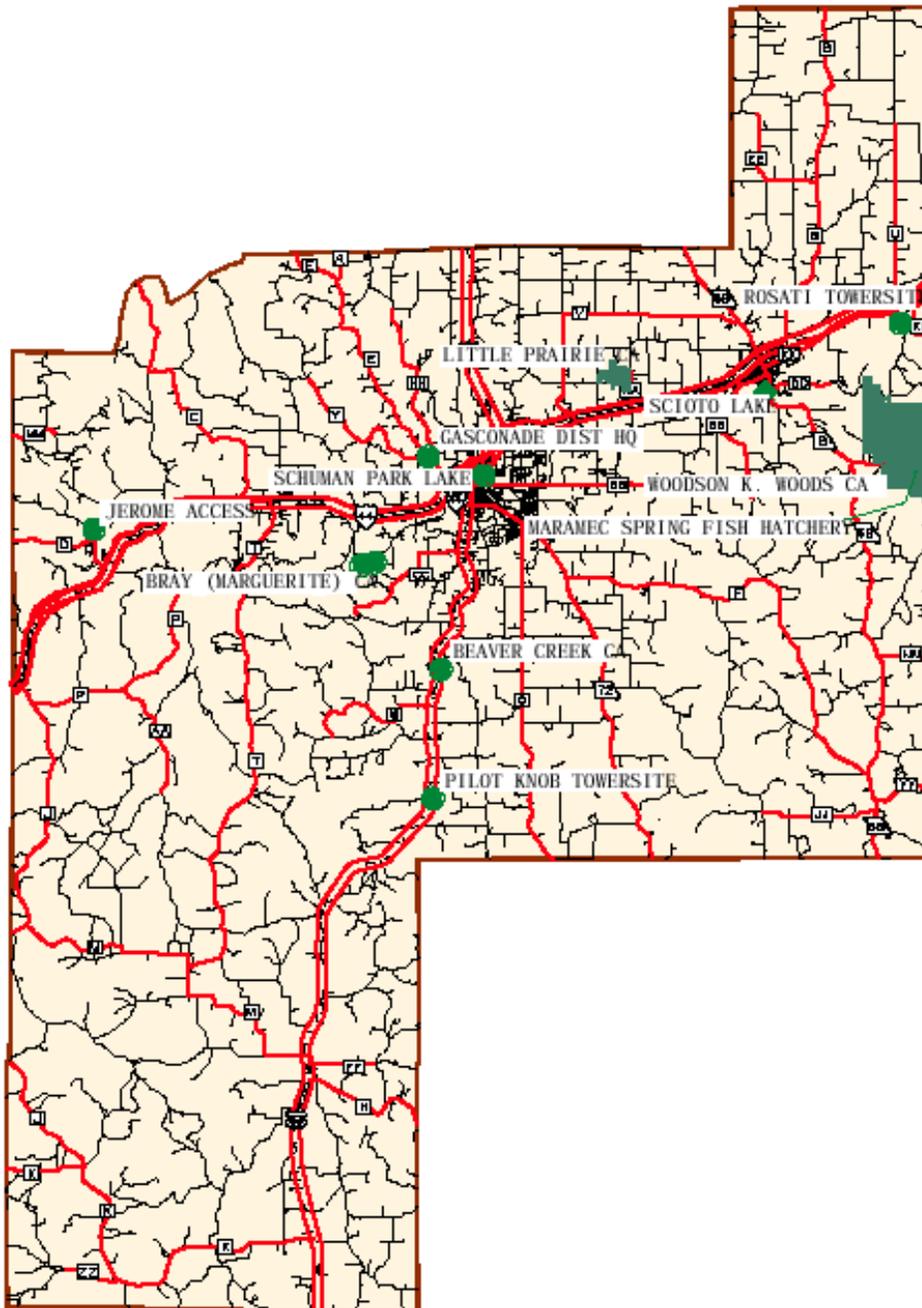
1. Coordinate timber management activities with the use of other resources.
2. Achieve a better balance of size classes throughout the forest, based on a rotation period of 80 years for pine and 90 years for hardwood.
3. Market the programmed annual cut and promote the marketing of the allowable cut.
4. Assist industries, communities, and area development agencies to expand wood using industries.
5. Assure adequate stocking of all regeneration areas.

**Figure 2.15 Summary of Public Use Areas and Conservation Areas**

<b>County</b>	<b>Area</b>
Phelps	Beaver Creek Conservation Area Jerome Access Little Prairie Conservation Area Maramec Spring Fish Hatchery Maramec Spring Trout Park Milldam Hollow Access Pilot Knob Towersite Rosati Towersite Schuman Park Lake Scioto Lake

*Source: Missouri Department of Conservation Atlas, 2003.*

Figure 2.5 Missouri Department of Conservation Lands in Phelps County



Source: Missouri Department of Conservation – <http://www.mdc.mo.gov/documents/areas/counties/PHELPS.pdf>

Other areas that are considered environmentally sensitive would include the water resources located in the county, including the Gasconade River basin, the Meramec River basin, and the Big Piney River basin.

Phelps County is home to a large number of natural springs. Meramec Spring, located in the Meramec River, with an average flow of 93 million gallons per day, is included among the 15 largest springs in Missouri. Twenty-six springs located in Phelps County are significant enough to have had flow studies done by the Missouri Department of Natural Resources. In the Gasconade River basin these include:

- Arndt Spring-65,000 gpd
- Cold Spring-13,000 gpd
- Coolbrook Spring-129,000 gpd
- Coppedge Spring-12,500,000 gpd
- Cox Spring-13,000 gpd
- Elm Spring-52,000 gpd
- Gollahon Spring-174,000 gpd
- Groover Spring-969,000 gpd
- Lane Spring-11,600,000 gpd
- Martin Spring-840,000 gpd
- Mathis Spring-26,000 gpd
- Mill Creek Camp Spring-13,000 gpd
- Pillman No. 1 Spring-7,490,000 gpd
- Piney Spring-3,230,000 gpd
- Pruett Spring-97,000 gpd
- Roach Spring-116,000 gpd
- Rolufs Spring-155,000 gpd
- Saltpeter Spring-142,000 gpd
- Sugar Tree Spring-1,030,000 gpd
- Yancy Mills Spring-1,000,000 gpd

In the Meramec River basin these springs include:

- Brook Spring-3,030,000 gpd
- Brown Spring-58,000 gpd
- Maramec Spring-93,000,000 gpd <sup>xx</sup>

Most of these springs are used for watering stock, but two are used for commercial fish raising. Many are unused and most are located on private property. Coppedge Spring and Yancy Mills Spring were used at one time to power grist and woolen mills; some did so halfway through the twentieth century. Maramec Spring was used in the 1800s to provide water power for a charcoal iron-making industry.

The headquarters for the Mark Twain National Forest is located in Rolla, the largest city in Phelps County. The forest area includes 13 ranger districts and encompasses 1.5 million acres of Missouri land. The Forest Service lands located in Phelps County are part of the Houston/Rolla/Cedar Creek Ranger District. The responsibilities of the National Forest include the following:

1. Coordinate timber management activities with the use of other resources.
2. Achieve a better balance of size classes throughout the forest, based on a rotation period of 80 years for pine and 90 years for hardwood.
3. Market the programmed annual cut and promote the marketing of the allowable cut.
4. Assist industries, communities, and area development agencies to expand wood using industries.
5. Assure adequate stocking of all regeneration areas.

### 2.1.10 Endangered Species and Species of Concern



According to the Missouri Department of Conservation, several of Missouri’s endangered animal and plant species, as well as species of concern, are found in Phelps County. The tiny, white, eyeless Central Missouri cave amphipod lives under rocks or sticks in seven caves and springs in three Missouri counties and nowhere else in the world. This species and other karst species are highly susceptible to poor water quality. Landowners and others work to protect recharge areas that supply water to cave streams and

springs.<sup>xxi</sup> The hellbender is a large salamander that lives in clear streams and springs in the Ozarks region. The numbers of this amphibian have declined significantly in recent years leading to the placement of this animal on the state’s list of species of concern. Birds included on the list are bald eagles and cerulean warblers. Although the bald eagles numbers have increased dramatically in recent years, the cerulean warbler’s population has been in decline. Two bat species are on the federal endangered species list – the gray bat and the Indiana bat. Both populations have declined precipitously and the decline has been attributed to human disturbance, decline of food sources due to pesticides and warming temperatures in hibernation caves. The plains spotted skunk is also listed as a species of concern. This animal’s population has also declined due to habitat loss. Phelps County was historically a home to the scaleshell mollusk, which has not been sighted in the county in more than 25 years. This mollusk has been proposed to be added to the federal endangered species list. Phelps County was also once home to the Bush’s poppy mallow, an endangered wildflower that now only survives in five counties in the state of Missouri.<sup>xxii</sup>

## 2.2 Jurisdictional Descriptions and Capabilities

The mitigation capabilities for each of the jurisdictions participating in the hazard mitigation plan are profiled in this section. These profiles include an overview of the jurisdiction and its organizational structure; a description of staff, fiscal and technical resources; and information regarding existing hazard mitigation capabilities such as adopted plans, policies and regulations, if any. The descriptions and capabilities assessments are based on available and applicable data, including information provided by the jurisdictions during the planning process.

### 2.2.1 Unincorporated Phelps County

#### Phelps County

##### *Overview.*



Current Phelps County Courthouse

The jurisdiction of Phelps County includes all unincorporated areas within the county boundaries. Phelps County is governed by a three-member County Commission. The Commission is composed of a presiding commissioner, representing all of the county's population who is elected for a four-year term. Two associate commissioners representing roughly half the county's population each, are elected for four-year terms. The commission meets Tuesday and Thursday of each week.

The county government has the authority to administer county structures, infrastructure and finances as well as floodplain regulations. Third class counties do not have the authority to enforce building regulations. Other elected county officials include the county clerk, assessor, circuit clerk and recorder, collector, treasurer, prosecuting attorney, sheriff, county surveyor, public administrator and coroner.

Phelps County has staff resources in floodplain management, emergency management and GIS. Lesley Bennish, a community development specialist at the Meramec Regional Planning Commission, serves as the floodplain manager for the county. The county has a part-time emergency management director. The Assessor's office has GIS capabilities. The county has a 9-1-1 central dispatch center that includes enhanced 9-1-1. Table 2.16 outlines Phelps County's personnel resources in 2009.

**Table 2.16 Phelps County Administrative and Technical Resources**

Personnel Resources	Department/Position	Comments
Personnel Skilled in GIS	County Assessor's Office	
Floodplain Manager	MRPC	
Emergency Management Director	Office of Emergency Management	Part-time

The county is also served by an Air Ambulance service stationed at the St. Johns Clinic in St. Robert which also serves Pulaski, Miller, Maries, Texas and Laclede counties.

### ***Existing Plans and Policies***

Phelps County participates in the National Flood Insurance Program. Lesley Bennish, a community development specialist at the Meramec Regional Planning Commission, serves as the floodplain manager for the county. Construction occurring in the floodplain in unincorporated areas of the county is required to obtain a permit from the County. The unincorporated areas of the County do not have building codes. The county has a local emergency operations plan (LEOP) that is administered and maintained by the Phelps County Office of Emergency Management.

### ***Other Mitigation Activities***

The Office of Emergency Management, local fire departments, Sheriff's Department and the Phelps County Health Department have conducted public education campaigns to raise awareness and increase preparedness among the county's population. Those programs have included Ready-In-3 emergency preparedness, fire safety, storm preparedness, heat wave preparedness and DARE (Drug Abuse Resistance Education).

## **2.2.2 Cities**

Five incorporated cities participated in the planning development process. The mitigation capability of these communities varies, but each supports the mitigation goals of the county overall. Descriptions of each participating city are provided below and Table 2.15 at the end of the section summarizes mitigation capabilities for each of the cities.

### **City of Doolittle**

#### ***Overview***

Doolittle is located in the west central portion of Phelps County. Doolittle is located on U.S. Interstate I-44. According to the 2000 U.S. Census, the community has a population of 644. Doolittle is a fourth class city with a six-member board of alderman and a mayor. The city also employs a city clerk, city attorney, police chief, and a city superintendent.

#### ***Technical and Fiscal Resources***

Doolittle is a participating community in the National Flood Insurance Program and has a Flood Insurance Study. The City of Doolittle has a police department located in the city hall. The Central Communications Center, located in and operated by the Rolla Police Department, is contracted by Phelps County to provide 911 dispatching throughout the county. The office is staffed 24 hours a day. The Phelps County Ambulance Service accommodates the western, two-thirds of the county, including the City of Doolittle. There is also a Rural Fire District located in Doolittle, which serves a portion of Phelps County including the Newburg School District. The Duke Rural Fire Department in Pulaski County serves the Doolittle portions of Highways J & K.

Fiscal tools or resources that the City could potentially use to help fund mitigation activities include Community Development Block Grants, capital improvements project funding, taxes for specific purposes, fees for water, sewer, gas or electric services, impact fees for new development, debt through general obligation bonds, debt through special tax bonds, debt through private activities and withholding spending in hazard prone areas.

### ***Existing Plans and Policies***

Doolittle Rural Fire Department's ISO rating is nine. The city is currently developing a stormwater management ordinance. The city is included in the county LEOP.

## **City of Edgar Springs**

### ***Overview***

Edgar Springs is located in the southern portion of Phelps County. As of the 2000 census, Edgar Springs is the closest town to the mean center of U.S. population, the theoretical center of the United States based on population. Edgar Springs is located on U.S. Highway 63. According to the 2000 U.S. Census, the community has a population of 190. Edgar Springs is incorporated as a fourth class city with four aldermen and the mayor who make decisions regarding city issues. Other city personnel include a city clerk, city attorney, and a city superintendent.

### ***Technical and Fiscal Resources***

Edgar Springs currently participates in the National Flood Insurance Program. Law enforcement in the community is provided by two police officers. The Edgar Springs rural fire department provides fire protection. The Central Communications Center, located in and operated by the Rolla Police Department, is contracted by Phelps County to provide 911 dispatching throughout the county. The office is staffed 24 hours a day. The Phelps County Ambulance Service accommodates the western, two-thirds of the county, including the City of Edgar Springs.

Fiscal tools or resources that the City could potentially use to help fund mitigation activities include Community Development Block Grants, capital improvements project funding, taxes for specific purposes, fees for water, sewer, gas or electric services, impact fees for new development, debt through general obligation bonds, debt through special tax bonds, debt through private activities and withholding spending in hazard prone areas.

### ***Existing Plans and Policies***

The city is included in the county LEOP.

## **City of Newburg**

### ***Overview***

Newburg is located in the west central portion of Phelps County. Newburg was founded in the 1880s and was built with the intention of being a railroad town. Newburg is located off of I-44 on the banks of the Little Piney River. According to the 2000 U.S. Census, the community has a population of 484. Newburg is incorporated as a fourth class city and has a four member board of aldermen and a mayor. The city employs a city clerk, attorney, police judge, collection, police chief, fire chief, water/sewer superintendent, and two part-time EMDs.

### ***Technical and Fiscal Resources***

Newburg participates in the National Flood Insurance Program. The city has a Flood Insurance Study and maintains certificates of elevation. The city has a floodplain ordinance that is maintained by the city's emergency management director.

Law enforcement in the community is provided by a police department. The Central Communications Center, located in and operated by the Rolla Police Department, is contracted by Phelps County to provide 911 dispatching throughout the county. The office is staffed 24 hours a day. The Phelps County Ambulance Service accommodates the western, two-thirds of the county, including the City of Newburg. The Newburg Fire Department provides fire protection. The city has two warning sirens which are controlled by the city police department, fire department and city hall.

Fiscal tools or resources that the City could potentially use to help fund mitigation activities include Community Development Block Grants, capital improvements project funding, taxes for specific purposes, fees for water, sewer, gas or electric services, impact fees for new development, debt through general obligation bonds, debt through special tax bonds, debt through private activities and withholding spending in hazard prone areas.

### ***Existing Plans and Policies***

Newburg is a member of the National Flood Insurance Program. The fire department's ISO rating is eight. The city is also part of the county LEOP.

### ***Other Mitigation Activities***

The local fire department provides education/awareness programs and materials on a variety of subjects including Fire Safety Week and emergency preparedness.

## City of Rolla

### *Overview*

Rolla is centrally located on the Interstate 44 corridor, and serves as the seat of Phelps County. Rolla is incorporated as a third class city. The City of Rolla was founded by Edmund Bishop. In 1858, Rolla was officially founded. The Missouri University of Science and Technology was founded in 1870 (then known as the Missouri School of Mines and Metallurgy). Rolla is located on U.S. Interstate I-44, U.S. Highway 63, and was once a highlight of U.S. Route 66. According to the 2000 US Census, the city has a population of 16,367. There is a twelve member city council and a mayor. The city employs a full-time city administrator. Other city personnel include a city clerk, community development director, prosecutor, chief of police, fire chief, public works director, municipal utilities manager, parks and recreation director, municipal judge, director of environmental services, and a part-time EMD. The city provides municipal services for water, sewage treatment, natural gas and electricity.

### *Technical and Fiscal Resources*

Rolla participates in the National Flood Insurance Program. Lesley Bennish, a community development specialist at the Meramec Regional Planning Commission serves as the floodplain administrator for Phelps County and the City of Rolla. Rolla has a Flood Insurance Plan and maintains certificates of elevation. The city has a floodplain ordinance #3500, Chapter 15 Article 6, adopted on September 12, 1977 and amended in April 2002 and again in January 2008.

Rolla's Community Development Department administers and enforces all building codes, 2000 ICC codes, fire codes, housing codes, BOCA codes, plumbing codes, mechanical codes and the National Electric Code. The city has ICC certified inspectors on staff, including the city building official, city zoning inspector and the city administrator. All residential and non-residential construction – both new and renovations – require a building permit and inspections by the city.

The Central Communications Center, located in and operated by the Rolla Police Department, is contracted by Phelps County to provide 9-1-1 dispatching throughout the county. The office is staffed 24 hours a day. The Phelps County Ambulance Service accommodates the western, two-thirds of the county, including the City of Rolla. Rolla receives fire protection services from both the City of Rolla Fire & Rescue and Rolla Rural Fire Protection Association. In addition, the Missouri State Highway Patrol Troop I Headquarters is located in the city of Rolla.

The city has ten severe weather sirens that are activated by the central dispatch center with coordination from the city fire chief. In addition to being served by Phelps County 9-1-1, the city has dispatch capability through the city police dispatch. Additional warning is provided through the local radio stations, KZNN, KTTR, and KMST Radio and the local Channel 6 cable television station.

The City EOC is located at Rolla Police Department, with the Phelps County Regional Medical Center serving as a backup location. The community and city government has high speed broadband internet capabilities at all city facilities.

### ***Existing Plans and Policies***

Rolla has a Snow and Ice Route Priority Plan, Infrastructure Development Regulations, Capital Improvement Plan, City Comprehensive Plan, Economic Growth Strategy, Land Development Regulations, Stormwater Management Regulations and Floodplain Management Regulations. The rural fire district's ISO rating is 8, while the city ISO rating is 4. The city is also part of the county LEOP.

### ***Other Mitigation Activities***

The fire department provides a number of education/outreach programs in the community and school district, including flood awareness and safety, hazardous weather awareness and preparedness, Fire Safety Week, and home smoke detectors.

## **City of St. James**

### ***Overview***

The City of St. James is located on the I-44 corridor in eastern Phelps County. In 1826, the Maramec Iron Works was founded by Thomas James of Chillicothe, MO. The City of St. James was established to accommodate the iron works. St. James was incorporated as a town in 1869. St. James experienced significant growth in the mid-20th century. Route 66 came through St. James, bringing the population up to about 3,000. According to the 2000 census, the population of St. James is 3,704.

St. James is a third class city with an eight member city council and a mayor. The city also employs a city clerk, city attorney, police chief, fire chief/EMD, utilities superintendent, street supervisor, police chief, judge, parks and recreation director, tourist information director, and community development director. The city provides municipal services for water, sewage treatment, electric and natural gas.

The city has a floodplain ordinance #631, adopted in 2000 and amended #903 in 2008. St. James has building codes that were adopted in 1975 as well as ICC codes, National Electric Codes. St. James also has a zoning ordinance, site plan review requirements, and stormwater management ordinance #612 adopted in November 1999. Building permits, codes and ordinances are enforced by the city's code administrator.

### ***Technical and Fiscal Resources***

St. James participates in the National Flood Insurance Program. Law enforcement in the community is provided by a police department. The Central Communications Center, located in and operated by the Rolla Police Department, is contracted by Phelps County to provide 9-1-1 dispatching throughout the county. The office is staffed 24 hours a day. The St. James Ambulance District serves St. James and the eastern one-third portion of Phelps County. The city has two warning sirens which are controlled by the St. James Fire Department and the St. James Police Department.

In addition to being served by Phelps County 9-1-1, the city has dispatch capability through the city police dispatch and fire department. The City EOC is located at the fire station, with the

Tourist Center serving as a backup location and the St. James Middle School serving as a second backup location. The city government has high speed broadband internet capabilities at all city facilities.

Fiscal tools or resources that the City could potentially use to help fund mitigation activities include Community Development Block Grants, capital improvements project funding, taxes for specific purposes, fees for water, sewer, gas or electric services, impact fees for new development, debt through general obligation bonds, debt through special tax bonds, debt through private activities and withholding spending in hazard prone areas.

***Existing Plans and Policies***

St. James is a member of the National Flood Insurance Program. The fire department’s rural ISO rating is nine, while the city ISO rating is six. The city is also part of the county LEOP.

***Other Mitigation Activities***

The local fire department provides education/awareness programs and materials on a variety of subjects including Fire Safety Week and emergency preparedness.

**Table 2-17 Phelps County & Participating Cities: Summary of Mitigation Capabilities**

Capability	Phelps Co.	Doolittle	Edgar Springs	Newburg	Rolla	St. James
Emergency Operations Plan	Y	Y	Y	Y	Y	Y
Building Code/Year	N	N	N	N	Y/1962	Y/1975
Fire Department ISO Rating	8	9	Info not available	Info not available	4/8	6
Floodplain Management Ordinance	Y	N	N	Y	Y	Y
Zoning Ordinance	N	N	Info not available	N	Y	Y
Site Plan Review Requirements	N	N	N	N	Y	Y
National Flood Insurance Program	Y	Y	Y	Y	Y	Y
Economic Development Plan/Policy	N	N	N	Info not available	Y	Y
Stormwater Management Ordinance	N	In Progress	N	Info not available	Y	Y
Flood Insurance Study	Y	Y	N	Y	Y	N
Elevations Certificates Maintained	Y/N	N	N	Y	Y	N

**2.2.3 School Districts**

The following school districts are participating jurisdictions in this plan: Phelps County R-III (Edgar Springs), Newburg R-II, Rolla 31, and St. James R-I. As public institutions responsible for the care and education of the county’s children, these school districts share an interest with Phelps County in public safety and hazard mitigation planning. Figure 2-6 provides the boundaries of the school districts participating in this planning process.

### ***Technical and Fiscal Resources***

The school districts in Phelps County all have the authority to levy taxes for special purposes related to education and student safety and/or incur debt through general obligation or special tax bonds.

All schools in the district participating in this plan have NOAA all hazard radios on site to provide early warning of hazard events. In addition, each school has fire alarms and a public address system capable of providing specific instructions in the event of an emergency. All of the Phelps County school districts all have automated phone message systems used to contact parents for normal school announcements. These automated phone message systems could also be utilized to provide emergency information regarding the schools.

None of the school districts have dedicated grant writers on staff. Existing staff work on grants when necessary. At most schools the Superintendent of schools or principals or vice principals perform grant writing duties as well as emergency management planning.

### ***Existing Plans and Policies***

All schools in the district have crisis management plans in place. All schools in the district participate in the Emergency Response Information Portal (ERIP) program sponsored by the Missouri Department of Homeland Security or are in the process of training and registering for ERIP. This internet based project assists schools with the development of all-hazards emergency plans and through a restricted website provides access to those plans to local emergency response agencies.

### ***Other Mitigation Activities***

All schools participating in the plan conduct regular fire, earthquake and tornado drills and tornado drills on a quarterly basis or semi-annual basis. Although all the schools have designated safe areas for tornados – none of these areas would be considered certified safe rooms.

Figure 2-6

# Phelps County Schools and School Districts



**Table 2.18 Schools in Participating Districts with Reported 2008-09 Enrollment**

<b>Phelps Co. R-III School District (Edgar Springs)</b>	<b>2008-09 Enrollment – Total: 191</b>
Phelps County Elementary	191
<b>Newburg R-II School District</b>	<b>2008-09 Enrollment – Total: 497</b>
Newburg Elementary (K-4)	249
Newburg Middle (5-8)/Senior High School (9-12)	248
<b>St. James R-I School District</b>	<b>2008-09 Enrollment – Total: 1,748</b>
Lucy Wortham James Elementary School (K-5)	747
St. James Middle School (6-8)	389
John F. Hodge High School (9-12)	612
<b>Rolla 31</b>	<b>2008-09 Enrollment – Total: 4,084</b>
Harry S. Truman Elementary (K-4)	480
Mark Twain Elementary (K-4)	469
John B. Wyman Elementary (K-4)	501
Rolla Middle School (5-7)	889
Rolla Junior High (8-9)	638
Rolla High School (10-12)	1,107

Source: Missouri Department of Elementary and Secondary Education website: <http://www.dese.mo.gov>

## 2.2.4 Colleges/Universities

The Missouri University of Science and Technology is located in Rolla, Phelps County, Missouri. This is an internationally recognized institution with a 2009 enrollment of 6,800, and more than 65 degree programs. MS&T is shown on Table 2.19. There are also several satellite campuses representing post-secondary educational institutions from around the state. These satellite campuses mostly consist of a single building or a few offices located in a larger office complex. These satellite campuses and their locations are shown in Table 2.19.

**Table 2.19 College/University Satellite Campuses Located in Phelps County**

College/University	Location	Description
Missouri University of Science and Technology (Formerly UMR)	Parker Hall Rolla, MO 65401	Main campus in Rolla, MO Bachelor, Masters, and Doctoral Degrees
Drury University	Forum Plaza Rolla, MO 65401	Main campus in Springfield, MO Bachelor degrees
East Central College	500 Forum Drive Rolla, MO 65401	Main campus in Union, MO Bachelor degrees
Webster University	1103 Kingshighway Rolla, MO 65401	Main campus in St. Louis, MO Bachelor and Masters degrees
Metro Business College	Hwy 72 Rolla, MO 65401	Main campus in Jefferson City, MO Associates degrees
Columbia College	Hwy 63 N Rolla, MO 65401	Main campus in Columbia, MO Bachelors degrees

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- <sup>i</sup> U.S. Geological Survey Fact Sheet FS-027-96
- <sup>ii</sup> Kammer, William Ray. "The Meramec River: Then and Now" 3<sup>rd</sup> edition.
- <sup>iii</sup> <http://www.conservation.state.mo.us/fish/watershed/gascon/contents/130cotxt.htm>
- <sup>iv</sup> NFIP Community Status Report
- <sup>v</sup> *Ozark Rivers Solid Waste Management Plan, 2004.*
- <sup>vi</sup> <http://www.average-temperature.com/temps/MO/Rolla>
- <sup>vii</sup> U.S. Census Bureau, Census 2000.
- <sup>viii</sup> U.S. Census Bureau, Census 2000.
- <sup>ix</sup> Ibid.
- <sup>x</sup> Missouri State Government, Division of Budget & Planning website  
<http://www.oea.state.mo.us/bp/projections/scenario.html>
- <sup>xi</sup> U.S. Census Bureau, Census 2000.
- <sup>xii</sup> Ibid.
- <sup>xiii</sup> 2002 Census of Retail Trade – U.S. Department of Commerce- [census.gov/prod/ec02/ec0244amott](http://census.gov/prod/ec02/ec0244amott)
- <sup>xiv</sup> 1997 & 2002 Census of Agriculture, USDA, National Agriculture Statistics Service
- <sup>xv</sup> Ibid.
- <sup>xvi</sup> U.S. Geological Survey Fact Sheet FS-027-96
- <sup>xvii</sup> Missouri Department of Conservation, "Missouri Animals of Conservation Concern"
- <sup>xviii</sup> Ibid.
- <sup>xix</sup> Missouri Department of Conservation, "Missouri Plants of Conservation Concern"
- <sup>xx</sup> Springs of Missouri by Jerry D. Vinyard, Assistant State Geologist, Missouri Department of Natural Resources, Division of Geology and Land Survey and Gerald L. Feder, Hydrologist, U.S. Geological Survey
- <sup>xxi</sup> Missouri Department of Conservation, "Missouri Animals of Conservation Concern"
- <sup>xxii</sup> Missouri Department of Conservation, "Missouri Plants of Conservation Concern"