

## 2 PLANNING AREA PROFILE AND CAPABILITIES

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Chapter 2 provides a general profile and description of Maries 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 Maries County Profile

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

#### 2.1.1 History and Development

The first land entry within the present limits of Maries County was made on Jan. 11, 1826, at which time Charles Lane entered an 80-acre tract. In April of the following year, he entered the adjacent 80 acre tract giving him 160 acres of land known for a hundred years thereafter as the Old Pay Down Mills. Mill sites were in great demand by the early settlers, and Lane probably had such a use for the land in mind when he acquired it.

The trace known as Boone's Lick Road was the site of the first three post offices to be established in the county. The first of these was established on the farm of Lunsford L. Lane in Lane's Ford in 1837. Mr. Lane was the postmaster. The second post office, also located on the road, was established in July 1842, in William Hawkins' store and lasted until June 1864. The third post office, located near the crossing of the Boone's Lick and Springfield roads, was established in February 1851 and was located in the home of William Pinnell.

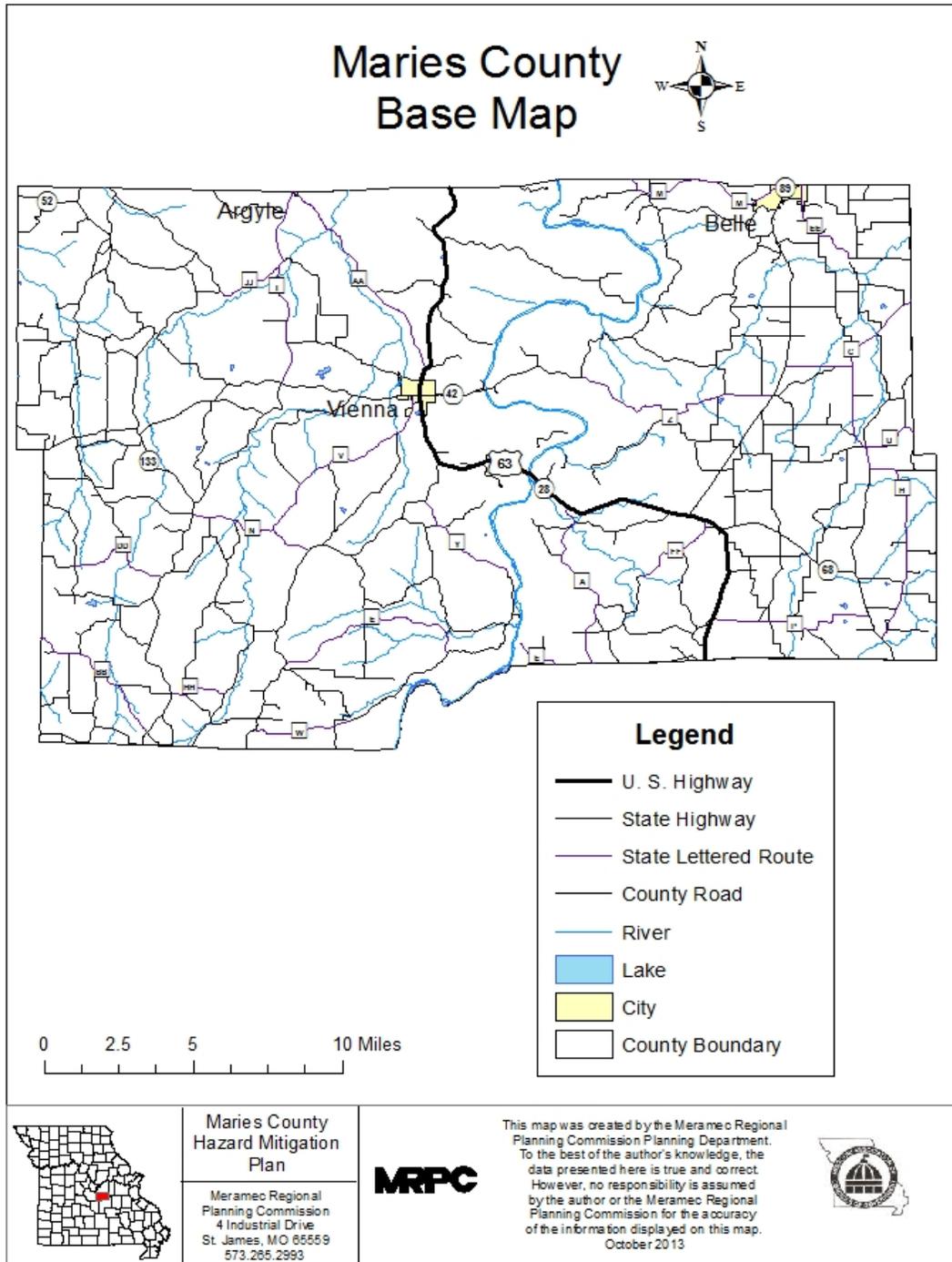
The first school district was organized in Maries County in 1843. Its boundaries were indefinitely described, but it included the northwestern portion of the present Maries County, and the southwestern part of the present Osage County. Davis Woody was the first president of the board of education of the new district.

By the beginning of the 1850s, the population of the area now embraced by Maries County had grown large enough that agitation began for the formation of a separate county. A bill for the organization of the county was introduced into the legislature in December 1854 and was approved by the governor on March 2, 1855. The county was named for two streams, the Maries and the Little Maries. Maries is a derivative of a French word *marais*, which means marsh, lake or pond.



Current Maries County Courthouse

Figure 2.1 Base Map of Maries County



[Although listed on some Maries County maps, the city of Argyle is not included in the Maries County Hazard Mitigation Plan. Argyle is included in the Osage County Hazard Mitigation Plan.]

When originally formed, Maries County extended farther south than it does at present, taking in the city of Rolla and barely missing Newburg, both now in Phelps County. This situation existed only a short time, since Phelps County was formed shortly afterward. Maries County lost some territory to Phelps County, but gained almost as much from Crawford County at the same time.

On July 20, 1855, title to the 70 acres of land on which Vienna, the county seat, now stands was acquired from William Shockley, who donated the tract in consideration of the county seat being located there. The construction of the first courthouse was completed, and the building occupied in October of 1856. It was the most elevated building in the town, standing on the ridge between the Gasconade and Osage rivers and the roof divided the falling rain to flow into the Gasconade on the east and into the Osage to the west. The building was completely destroyed by fire on Nov. 6, 1868, and all court records were lost or destroyed. Work on a new building began in 1869 and was completed in 1870. This second courthouse was razed in 1939 to make way for the construction of the present courthouse.

The City of Belle was the location of a post office and train depot along the route of the Chicago, Rock Island and Pacific Railroad built across a portion of Maries County in 1904. The community is a fourth-class city with a four member board of aldermen and a mayor. The city is located in the northeast corner of the county and straddles the Maries/Osage county line. The community lies at the convergence of Highways 28 and 89. Belle is the largest city in the county with a population of 1,545.

The City of Vienna was formed in 1855 as the county seat. Initially the community had a population of about 250. It contained a brick school house, a newspaper – the *Central Missouriian*, two churches, one hotel, four stores and a wagon shop.<sup>i</sup> Vienna is a fourth-class city with a four member board of aldermen and a mayor. The city is located in central Maries County at the convergence of Highways 63 and 42. The current population for the city is 610.

### **2.1.2 Geography and Topography**

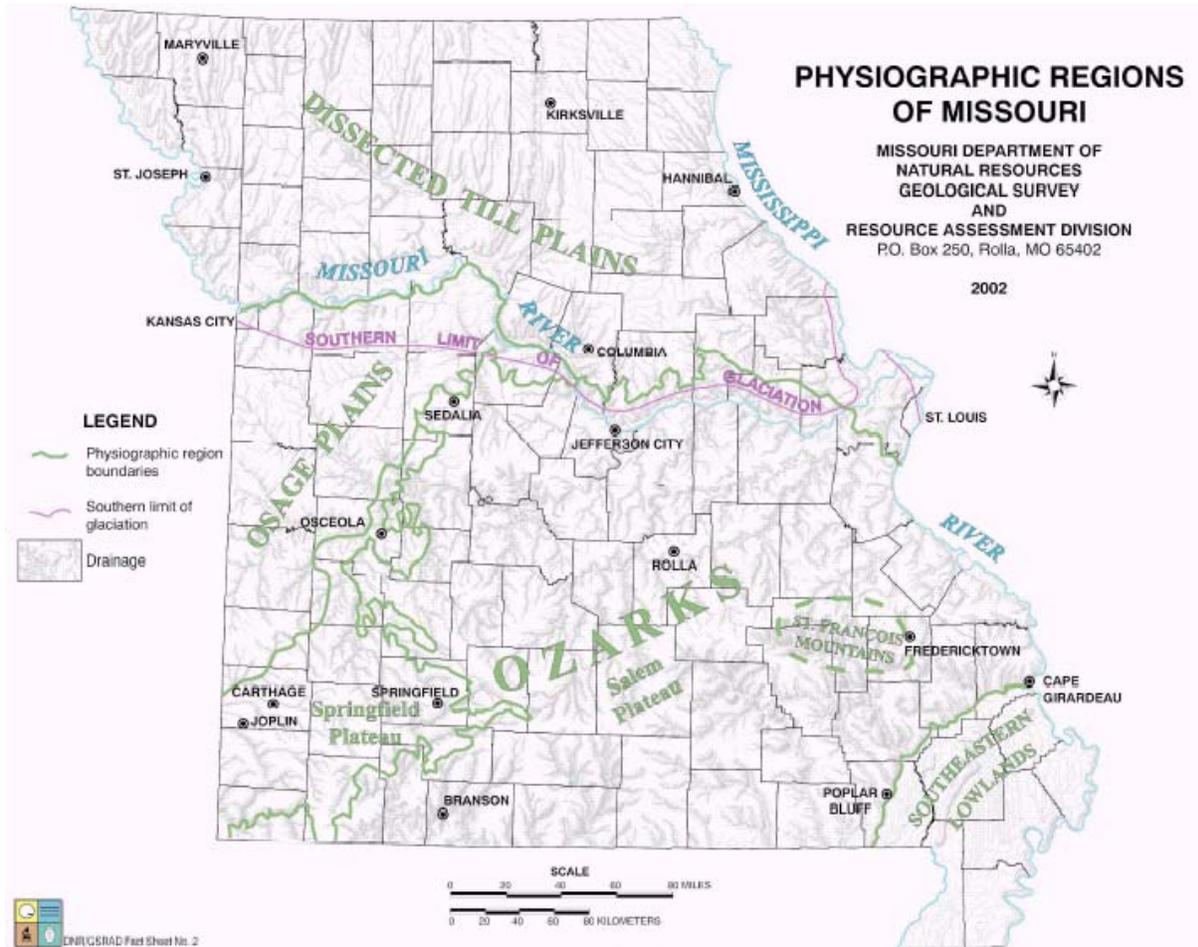
Maries County falls into two major topographic areas. The topography in the eastern portion of the county is typical of the Bourbeuse Watershed, with gently rolling hills and prairie-like terrain. West of the Bourbeuse Watershed the terrain grows rough and hilly. The most rugged terrain is in the western portion of the county in the Maries River Watershed. The maximum relief in the county is approximately 500 feet.

The landscape pattern of Maries County is highly diverse. Highways 63 and 28 closely approximate the location of a winding ridgetop that divides the major watersheds in the county. To the west, tributaries flow to the Maries River and/or to other small tributaries that all drain to the Osage River in neighboring counties. On the eastern side, most of the drainage is toward the Gasconade River. On the far eastern side of the county water flows through tributaries that run into the Bourbeuse River. The dominant landscape between these rivers consists of moderately sloping to steep uplands dissected by flood plains along small streams. In the eastern part of the county, broad plateaus occur on crests of the major divides.<sup>ii</sup>

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 2.3**  
**Physiographic Regions of Missouri**



**Watersheds.** 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>iii</sup>

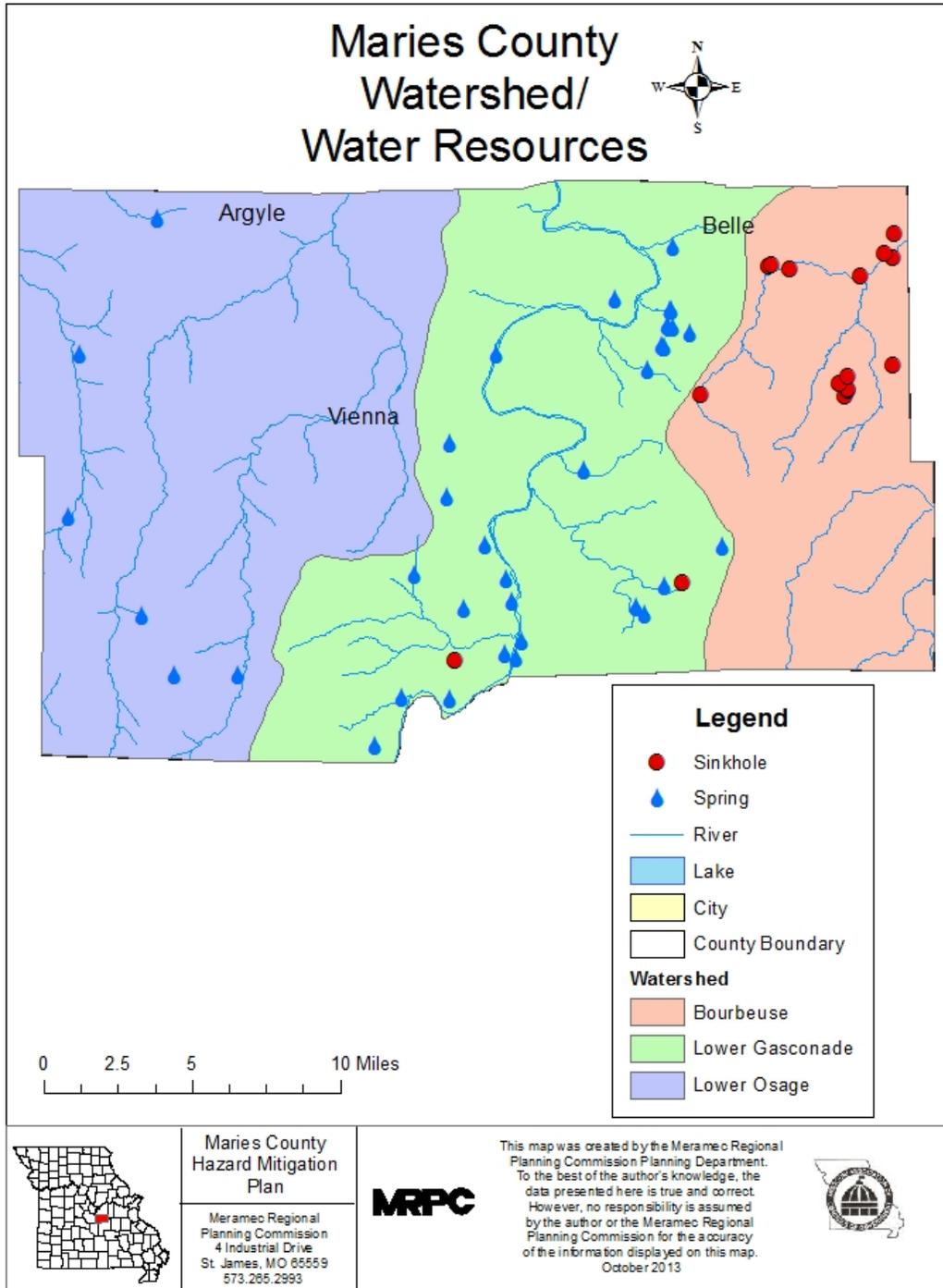
There are three major watersheds in Maries County: Bourbeuse, Lower Gasconade, Lower Osage. These watersheds are illustrated in Figure 2.4. The Bourbeuse River lies on the eastern side of the county and includes the following tributaries: Little Bourbeuse Creek, Upper Bourbeuse River, and Dry Fork Creek. The Lower Osage River lies on the western side of the county and includes Tavern Creek, Sugar Creek, Little Maries River and Upper Maries River. The Lower Gasconade basin run northward through the middle of the county and includes Spring Creek.

The main stem of the Bourbeuse River does not cross Maries County, but several of its tributaries do. The entire watershed drains 843 square miles. Approximately half of the watershed area is used for cropland and pasture. The other half is primarily deciduous forest. Water quality in the Bourbeuse River watershed is basically good. Issues that could adversely affect the watershed include organic waste from livestock, sediment from erosion and discharge from sewer treatment facilities.

Riparian corridors are negatively affected by riparian land use, especially along tributary streams. The basin exhibits good aquatic biodiversity. Fish taken from this watershed are considered safe for human consumption. There are 90 fish species located in the watershed, including the highfin carpsucker, which is listed on the Missouri Department of Conservation's Species of Concern. In the most recent survey, 31 living mussel species were sampled, down from 39 collected in previous surveys.<sup>iv</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.<sup>v</sup>

**Figure 2.4  
Maries County Watersheds**



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>vi</sup>

The Gasconade River watershed's designated stream uses, assigned by the Missouri Department of Natural Resources (MDNR) are warm water aquatic life protection and fishing, and livestock and wildlife watering. Threats to beneficial uses in the Gasconade River watershed are point and non-point sources of pollutants. The number of point pollution sources and flow from point pollution sources is low. In fact, improvements have been made to point source discharges through monitoring by the MDNR and sewage treatment upgrades. Also, the Gasconade River has recovered well from the December 1988 oil spill that released hundreds of thousands of gallons of crude oil into the main stem Gasconade River from a broken pipeline near Vienna. On the contrary, non-point source pollution remains a difficult challenge. Numerous MDNR Soil and Water Program Special Area Land Treatment projects in the Upper Gasconade River Hydrologic Unit (HU), and portions of the Upper Osage Fork HU are addressing nutrient problems that have cattle manure as their sources. Sand and gravel mining in sensitive areas can and has effected fisheries, especially sensitive cool- and cold-water fisheries. Other potential non-point pollution sources are two landfills in Wright and Phelps counties. Runoff from farms, mining operations, construction sites, forest operations, residential septics, and impervious surface in urbanized areas create a complex resource management challenge.<sup>vii</sup>

The East Osage River Basin is found in central Missouri in the Missouri counties of Osage, Maries, Cole, Pulaski, Miller, Camden, Morgan, Benton, and Hickory and encompasses 2,474.52 mi<sup>2</sup>. Lake of the Ozarks was formed in 1931 in the western half of the East Osage River Basin.<sup>viii</sup>

This basin lies within a dissected plateau known as the Salem Plateau and is represented by four of Missouri's natural divisions. Karst features are common and soils are generally acidic with moderate to low fertility. Erosion rates are generally low although new housing developments, road construction, intensive confinement of livestock and overgrazing have denuded land causing locally-increased erosion and sediment pollution.<sup>ix</sup>

The basin has undergone a major shift in land use during the last 300 years. Historically, the basin was occupied by the native Osage tribe. As European settlers moved into the basin, they degraded environmental quality and displaced the native people. European settlers cleared timber, over harvested fish and game, and plowed soil on steep hillsides. In the early days, people used the Osage River and its tributaries as a main mode of transportation and constructed wing dikes to control the flows of the river. In 1931, construction of Bagnell Dam was completed forming Lake of the Ozarks-a prime recreational and tourist destination. Harry S Truman Dam and Reservoir was completed in 1979. Bagnell Dam and Truman Dam both currently provide hydroelectric power generation. Agriculture in the basin has experienced a shift from a crop-based system in the earlier days of settlement to a livestock-based system today. Many concentrated animal feeding operations (CAFOs), gravel mining operations, waste water treatment plants, and urban construction projects currently exist within the basin. The Missouri Department of Natural Resources (MDNR), Environmental Protection Agency (EPA), U.S. Army Corps of Engineers (USACE), Missouri Department of Conservation (MDC), Natural Resources Conservation Service (NRCS), and county Soil and Water Conservation Districts have worked with landowners to protect natural resources in the basin.<sup>x</sup>

Precipitation in the basin is typical of a mid-Missouri basin with an average of 42 inches per year. The U.S. Geological Survey (USGS) has maintained 16 gauging stations within the basin. Due to the karst topography of the basin, a number of losing streams and springs exist within the area. Truman Dam and Bagnell Dam on the Osage River have significantly impacted the hydrology of the region.<sup>xi</sup>

Water of the basin is used for household use, commercial use, recreational use, and hydroelectric use. There are more than 85,000 residents of the basin served by public supplied surface water, public supplied groundwater, or private wells. Water quality is normally good, but pollution incidents occasionally occur, causing stream contamination and fish kills. The Clean Water Act requires each state to maintain a list of critically impaired streams. Currently, there are 1.9 miles of 303(d)-listed impaired streams and 50 impaired reservoir acres found within the basin. Sources of impairment include damming, riparian degradation, channel alteration, urbanization, flow alteration, sedimentation, low dissolved oxygen, point source pollution, and nonpoint source pollution.<sup>xii</sup>

Habitat conditions of the basin have been considerably altered in some areas. Logging, land clearing, burning, and overgrazing have degraded fish and wildlife habitats within the basin. Stream channels have become destabilized due to peaking-style discharge from dams, gravel mining, and channelization. Riparian corridors are in fair condition throughout the basin with an average of 61% riparian forest and 35% riparian grassland. There is only about one percent of the basin in riparian cropland and less than one percent in urban land-use. The Osage River below Bagnell Dam has the highest percentage of riparian cropland (20 percent) in the basin.<sup>xiii</sup>

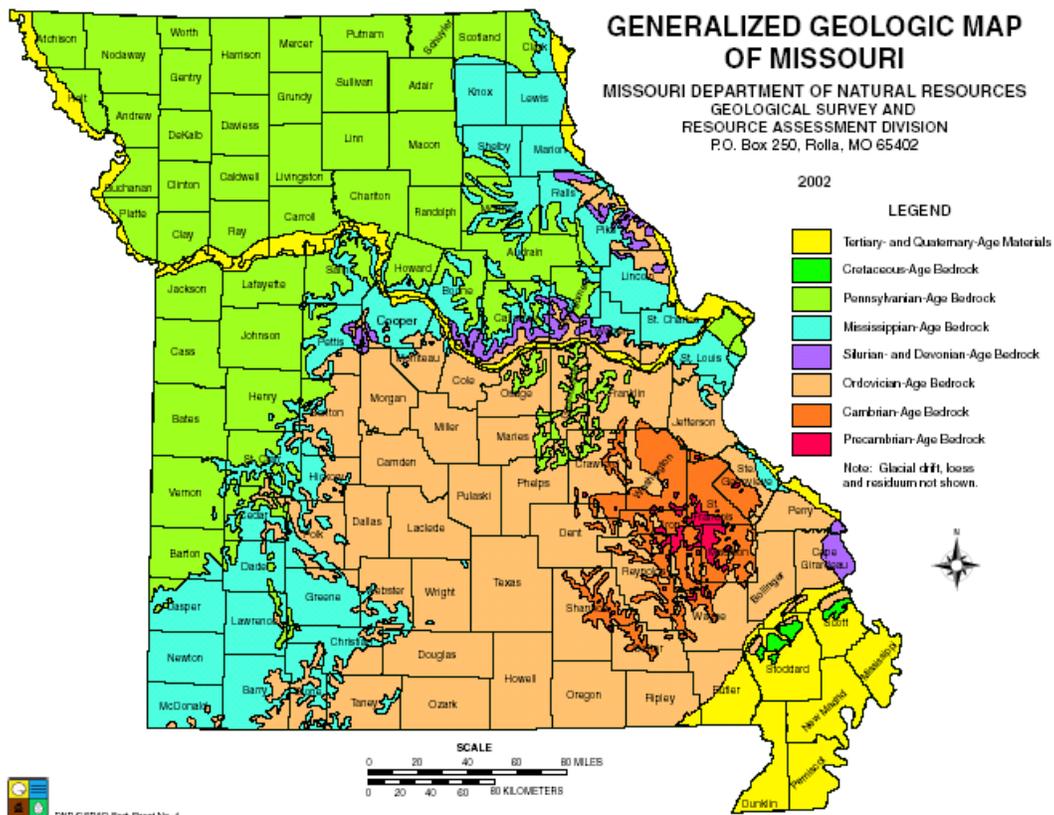
The basin has a rich diversity of animal and plant species within its boundaries. Some species which historically occurred within the basin could not cope with the changes brought about by the European settlers. Other species such as the Niangua darter, lake sturgeon, and pink mucket mussel still exist, although their future is imperiled due to habitat changes, over harvest, introduction of exotic species, or water quality changes. The MDC has sampled the fish

communities of the basin since 1940. Each sub-basin hosts a different fish community structure depending on a variety of factors including inter-species competition, habitat availability, pollution events, or hydrologic characteristics.<sup>xiv</sup>

**Geography.** As demonstrated in Figure 2.5 *Generalized Geologic Map of Missouri*, Maries County’s geology consist of basically two types of formations—the Ordovician Age Bedrock—predominant through most of the county, and the Cretaceous Age Bedrock—found in the eastern quarter of the county.

The county is located in the Ozark Plateau – the largest outcrop area of Ordovician–age rocks in the United States.<sup>xv</sup> This rock is 505 to 441 million years old and made up primarily of carbonates and thin shales with three distinctive sandstone layers: the Gunter at the base of the column, the red and white Roubidoux which is often used as a building stone and the St. Peter glass sand. This stone is the result of a time period when Missouri was covered by a shallow sea and the stone frequently produces aquatic fossils from that time period.<sup>xvi</sup> Portions of this formation contain rock that dissolves and fractures over time from rainwater, thus resulting in the karst features found throughout the Ozarks. Figure 2.5 shows the geologic regions of the state.

**Figure 2.5**  
**Generalized Geologic Map of Missouri**



Maries County has been a participant in the National Flood Insurance Program since July 1987. The City of Vienna has been a participant in the NFIP programs since November 1979. The City of Belle is not a member of the NFIP.

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

### 2.1.2 Soil Types

According to *The Soil Survey of Maries County, Missouri*, published by the Natural Resources Conservation Service (NRCS), there are nine different soil types found in Maries County. However, 82 percent of the county is dominated by three soil associations – the Union-Swiss Association, which makes up 20 percent of the county; Gatewood-Gravois Association, which makes up 34 percent of the survey area; and the Rueter-Union Association which makes up 28 percent of the county. Other soil associations present include the Jamesfin-Cedargap-Racoon Association, which makes up 12 percent of the county; Beemont-Gravois Association which makes up five percent of the county and the Mariosa Association which makes up just one percent of the county. All three of the primary soil associations in the county are found mainly on ridges and side slopes and are made up of loess and residuum materials.

The major flood plains in the county are along the Gasconade and Maries Rivers and their tributaries. Loamy and silty alluvium was deposited along these rivers from periodic overflow. Gravelly basal deposits underlie alluvial soils along the smaller streambeds, where they are underlain by the karsted portions of the Gasconade geologic formation. This formation, where exposed, is also rife with small caves and springs.<sup>xvii</sup>

### 2.1.3 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 Maries County**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Inches	2	2.3	4.1	4	4.4	3.3	3.4	4.3	3.9	3.3	3.8	3.4	42.2

Source: <http://countrystudies.us>

Because of its inland location, Missouri and Maries County are subject to frequent changes in temperature. The mean annual temperature is in the mid-50s with the January mean of about 32 degrees and July mean of about 78 degrees.

**Table 2.2 Average Low and High Temperatures for Maries County**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Avg-Low	20	25	34	44	54	61	65	64	56	45	36	25	44
Mean	32	36	47	57	65	74	78	76	68	58	47	36	56.1
Avg-High	42	47	58	68	77	84	88	87	80	71	58	47	72.6

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

Source: <http://www.countrystudies.us>

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.

#### 2.1.4 Population/Demographics

According to the 2010 U.S. Census, the population of Maries County was 9,176. With the county being 530 square miles, this translates to a population density of 17.3 persons per square mile. The 2010 Census indicates that the county’s population increased since 2000 by three percent. Other communities in the county and their 2010 U.S. Census population figures are reflected in Table 2.3. Approximately 85.7 percent of the county’s population lives in unincorporated areas.

**Table 2.3 County/City Population from Census 2010**

Jurisdiction	Population
Maries County	9,176
Belle	1,545
Vienna	610

Source: 2010 US Census

In the 1940s, 1950s and 1960s the population for Maries County decreased – 14.1 percent from 1940 to 1950; 1.9 percent from 1950 to 1960 and 5.9 percent from 1960 to 1970. After three decades of declining population, the county began steadily growing from a low of 6,851 in 1970

to 9,176 in 2010. Table 2.4 shows population trends for the county and communities in Maries County from 1950 to 2010.

**Table 2.4 Population Trends of Maries County & Communities 1950-2010**

Community	1950	1960	1970	1980	1990	2000	2010
<b>Maries County</b>	7,423	7,282	6,851	7,551	7,976	8,903	9,176
<b>Belle</b>	471	536	505	514	611	628	610
<b>Vienna</b>	906	1,016	1,133	1,099	1,218	1,344	1,545

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

The City of Belle lost population in the 1970s and then grew until 2000. The community had a population loss of 2.9 percent from 2000 to 2010. The City of Vienna lost population in the 1980s, but has had steady population growth of 10 to 15 percent in the 1990s and 2000s. The Missouri Office of Administration, Division of Budget and Planning projections show Maries County’s population growing slightly at 2.7 to 3 percent per decade through 2030. But the projections indicate the county’s population will likely remain below 11,000 during that time period.

According to the 2010 U.S. Census Bureau statistics, 97.71 percent of Maries County’s population is white. The racial breakdown of the remaining 2.29 percent of the population is shown in Table 2.5. As is demonstrated in the table, the racial diversity in the county increased from 1970 to 2010 by 2.23 percent.

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

Year	1970	1980	1990	2000	2010
<b>Total Population</b>	6,851	7,551	7,976	8,903	9,203
<b>White Alone</b>	6,847	7,533	7,909	8,674	8,992
<b>Black/African American Alone</b>	0	0	67	29	145
<b>Amer. Indian/ AK Native Alone</b>	***	5	27	49	11
<b>Asian Alone</b>	***	5	19	10	0
<b>Hawaiian/ Pacific Islander Alone*</b>	***	Included with Asian	10	0	0
<b>Some Other Race Alone***</b>	4	8	11	31	44
<b>Two or More Races**</b>	**	**	**	110	11
<b>% White</b>	99.94	99.76	99.16	97.43	97.71
<b>% Non-White</b>	0.06	0.24	0.84	2.57	2.29

Source: 1970, 1980, 1990, 2000, 2010 U.S. Census of Population, Bureau of the Census, US Department of Commerce

\* Asian Alone, Hawaiian/Pacific Islander were combined in the 1980 Census

\*\* Two or More Races were not listed on the 1970, 1980 or 1990 Census

\*\*\* Other includes Native American, Asian, Pacific Islander and all other races

Table 2.6 shows the age and sex composition of the county for the years 1980 through 2010. The age and sex composition for the county has stayed relatively stable for the past 30 years.

**TABLE 2.6 - AGE-SEX COMPOSITION OF THE POPULATION  
FOR  
MARIES COUNTY, 1980 - 2010**

Age Group	2010				2000				1990				1980			
	Number of Males	% of Total Males	Number of Females	% of Total Females	Number of Males	% of Total Males	Number of Females	% of Total Females	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	310	3.4	252	2.7	323	7.2	264	2.0	261	6.6	282	7.0	267	7.0	243	6.5
5-9	288	3.1	298	3.2	345	7.7	286	6.5	288	7.3	267	6.6	294	7.7	268	7.2
10-14	324	3.5	303	3.3	340	7.6	350	7.9	316	8.0	287	7.1	307	8.0	301	8.1
15-19	326	3.6	275	3	326	7.3	290	6.6	312	8.0	271	6.7	404	10.6	323	8.7
20-24	239	2.6	229	2.5	236	5.3	207	4.7	226	5.7	229	5.7	226	5.9	229	6.1
25-29	225	2.5	225	2.5	235	5.2	240	5.4	308	7.8	255	6.3	255	6.7	226	6.1
30-34	256	2.8	227	2.5	258	5.8	278	6.3	261	6.6	274	6.8	233	6.1	236	6.3
35-39	259	2.8	245	2.7	376	8.4	313	7.1	240	6.1	238	5.9	210	5.5	218	5.9
40-44	259	2.8	305	3.3	327	7.3	335	7.6	247	6.3	242	6.0	207	5.4	197	5.3
45-49	406	4.4	357	3.9	305	6.8	279	6.3	227	5.8	271	6.7	194	5.1	187	5.0
50-54	352	3.8	349	3.8	282	6.3	292	6.6	234	6.0	229	5.7	203	5.3	215	5.8
55-59	336	3.7	308	3.4	251	5.6	290	6.6	230	5.8	214	5.3	234	6.1	209	5.6
60-64	292	3.2	285	3.1	250	5.6	230	5.2	205	5.2	213	5.2	214	5.6	214	5.7
65-69	240	2.6	288	3.1	217	4.8	208	4.7	208	5.3	222	5.5	206	5.4	229	6.1
70-74	213	2.3	210	2.3	177	4.0	190	4.3	138	3.5	180	4.5	160	4.2	184	4.9
75-79	153	1.7	157	1.7	126	2.8	151	3.4	131	3.3	156	4.0	120	3.1	122	3.3
80-84	107	1.2	128	1.4	59	1.3	121	2.7	70	2.0	109	2.7	46	1.2	90	2.4
85+	53	0.6	97	1.1	46	1.0	97	2.2	43	1.1	92	2.3	41	1.1	39	1.0
<b>Total</b>	<b>4,638</b>	<b>50.5</b>	<b>4,538</b>	<b>49.5</b>	<b>4,479</b>	<b>50.3</b>	<b>4,424</b>	<b>49.7</b>	<b>3,945</b>	<b>49.5</b>	<b>4,031</b>	<b>50.5</b>	<b>3,821</b>	<b>50.6</b>	<b>3,730</b>	<b>49.4</b>

SOURCE: 1980, 1990, 2000 & 2010 Census, U.S. Census Bureau

Table 2.7 shows the median age of the population of Maries County for 1970 through 2010. In 1970 the average age of the population was 34.6. Since 1980 the average age of the population has increased steadily by 8.2-years to 42.8 years of age, a significant jump in a 40 year period. This can likely be attributed to younger people migrating out of the county for jobs.

**Table 2.7 Median Age In Years for Maries County: 1970 - 2010**

1970			1980			1990			2000			2010		
Male	Female	Total												
34.2	35.0	34.6	33.2	36.1	34.6	35	38.1	36.6	37.5	39.8	38.5	41.7	43.5	42.8

Source: 1970, 1980, 1990, 2000, 2010 Census, U.S. Department of Commerce

Table 2.8 compares the family income of Maries County residents with the rest of the Meramec Region, State of Missouri and United States. This table shows that Maries County has a higher percentage of families living on \$34,999 or less than the rest of the region, state and nation – 52.1 percent compared to 42.4 percent for the region, 38.2 percent for the state and 34.6 percent for the nation. 22.5 percent of the county population has an annual income of \$14,999 or less compared to the region, state and nation at 15.9 percent, 14.3 percent and 13 percent respectfully.

**Table 2.8 Maries County Family Income – 2011**

	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
Maries County	320 8.9 %	231 6.4%	256 7.1%	413 11.4%	167 4.6%	185 5.1%	2,043 56.5%
Meramec Region	6,247 8.6%	5,327 7.3%	4,616 6.3%	5,277 7.3%	4,994 6.9%	4,335 6.0%	41,958 57.6%
State of Missouri	190,559 8.1%	145,390 6.2%	142,611 6.1%	144,260 6.1%	138,306 5.9%	136,677 5.8%	1,457,459 61.8%
United States	8,529,677 7.4%	6,472,374 5.6%	6,326,462 5.5%	6,329,273 5.5%	6,084,213 5.3%	6,052,286 5.3%	75,137,579 65.4%

Source: 2009 – 2011 American Community Survey and U.S. Census of Population 1980-2010 Census Bureau, U.S. Department of Commerce

Table 2.9 compares Maries County’s median income with the rest of the Meramec Region, State of Missouri and nation. Maries County’s median income is lower than the region’s average and as with most rural counties in south central Missouri, lower than the State and National averages. These figures are based on the 2006-2010 American Community Survey.

**Table 2.9 Maries County Median Income Comparison**

Location	Median Family Income	Percent of U.S. Median	Persons in Poverty	Percent in Poverty
Maries County	\$48,504	77.0	1,259	13.9
Meramec Region	\$48,794	77.5	28,735	15.8
State of Missouri	\$57,661	91.6	802,596	14.0
United States	\$62,982	100.0	40,917,513	13.8

Source: 2006 – 2010 American Community Survey and U.S. Census of Population 1980-2000 Census Bureau, U.S. Department of Commerce

Table 2.10 shows the educational attainment of Maries County residents – both the number and percentage of the population of 6,205 25-years of age and older. As demonstrated by the table, 36.4 percent of the population has some education beyond high school, with 5.9 percent holding an associate degree, 8.9 percent holding a bachelor’s degree and 5.3 percent with graduate or professional degrees. In Maries County, 20.4 percent of the population has not attained a high school diploma which is high as compared to the percentage for Missouri of 13.9 percent and for the Meramec region of 18.4 percent.

**Table 2.10 Maries County General Education Attainment (2010)**

Education Attainment	Elementary - High School No Diploma	High School Diploma	Some College No Degree	Associate Degree	Bachelor's Degree	Graduate or Professional Degree
Number of Population	1,268	2,676	1,011	367	555	328
Percent of Population	20.4	43.1	16.3	5.9	8.9	5.3

*Source: 2006 – 2010 American Community Survey 5 year estimates and 1990 and 2000 Census, U.S. Census Bureau*

The civilian labor force in the Meramec Region increased 53.2 percent between 1980 and 2010, while the civilian labor force in Missouri grew 31.6 percent for the same time period. From 1980 – 2010 the male civilian labor force in Missouri increased by 19.6 percent compared to 39.2 percent in the Meramec Region, while the female civilian labor force increased by 73.1 percent within the region compared to 47.6 percent for statewide.

As shown in Table 2.11, in 2010 Maries County's civilian labor force increased by 41.8 percent from 1980. The unemployed person percentage was the same in 1980 as in 2010. However, in the two decades between it dropped to 5.7 percent in 1990 and 3.6 percent in 2000. The female civilian labor force percentage of unemployed dropped from 11.7 percent in 1980 to 3.8 percent in 1990, 3.6 percent in 2000 and then bumped back up to 6.4 percent in 2010. According to the Department of Labor, Bureau of Labor Statistics, unemployment for the United States has risen from 7.1 percent in 1980 to 9.6 percent in 2010. The Missouri and regional rates closely mirror those percentages and usually are a few tenths of a point less than the national figure. According to statistics from 2010, Maries County had an unemployment rate of 8.9 percent, two tenths lower than the region's rate of 9.1 percent and 1.5 percent higher than the state average unemployment rate. Since 1980 Maries County has experienced unemployment rates between 3.5 and 9 percent. Since 1990, the unemployment rate for females has been consistently lower than that for males in the county.

**Table 2.11 Maries County Labor Force**

2010	Total	Male	Female
Persons 16 years & Older	7,273	3,595	3,678
Total Labor Force	4,552	2,452	2,100
Civilian Labor Force (CLF)	4,534	2,434	2,100
Persons Employed	4,132	2,166	1,966
Persons Unemployed	402	268	134
% Unemployed CLF	8.9%	11%	6.4%
Persons not in Labor Force	2,721	1,143	1,578
2000	Total	Male	Female
Persons 16 years & Older	6,892	3,390	3,502
Total Labor Force	4,290	2,369	1,921
Civilian Labor Force (CLF)	4,280	2,359	1,921
Persons Employed	4,126	2,273	1,853
Persons Unemployed	154	86	68
% Unemployed CLF	3.6%	3.6%	3.5%
Persons not in Labor Force	2,602	1,021	1,581
1990	Total	Male	Female
Persons 16 years & Older	6,141	3,011	3,170
Total Labor Force	3,648	2,069	1,579
Civilian Labor Force (CLF)	3,624	2,045	1,579
Persons Employed	3,418	1,899	1,519
Persons Unemployed	206	146	60
% Unemployed CLF	5.7%	7.1%	3.8%
Persons not in Labor Force	2,533	942	1,591
1980	Total	Male	Female
Persons 16 years & Older	5,743	2,891	2,852
Total Labor Force	3,205	1,911	1,294
Civilian Labor Force (CLF)	3,197	1,903	1,294
Persons Employed	2,914	1,771	1,143
Persons Unemployed	283	132	151
% Unemployed CLF	8.9%	6.9%	11.7%
Persons not in Labor Force	2,538	980	1,558

*SOURCE: 2006-2010 American community survey 5-year Estimates*

*SOURCE: 1980-2000 census of Population*

### 2.1.5 Schools/Vocational/Technological Schools/Colleges/Universities

Maries County has two public school districts and one parochial school. There are no colleges located within the county. The school districts and the size of the student population are identified in Table 2.12.

**Table 2.12 Maries County School Districts and Student Enrollment 2012**

School District	Maries County R-I	Maries County R-II	Visitation Inter-Parish School (Parochial)
Student Enrollment	536	835	45

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

Source: <http://www.vi-ps.org>

Maries County R-I has two facilities: Vienna Elementary School and Vienna High School. Both schools are co-located on the same campus at 300 Fourth Street, Vienna, Missouri.

Maries County R-II has three facilities: Belle Elementary School located at 402 West Third, Belle, Missouri; Maries County Middle School located at 300 South Main, Bland, Missouri; and Belle High School located adjacent to the elementary school at 504 West Third, Belle, Missouri.

Visitation Inter-Parish School, a Roman Catholic parochial school, has one facility located at 105 North Coffey Street, Vienna, Missouri and is associated with Visitation Catholic Church. The school offers classes for kindergarten through eighth grade.

### 2.1.6 Business/Industry

The major private employers located in Maries County are Kingsford Charcoal Products near Belle with 124 employees and Maries Manor Nursing Home with 63 employees in Vienna. Large public employers in the county include Maries County schools with 132 employees, and Maries County government with 60 employees.

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

Category	Number
Total Employed:	4,132
Agriculture, forestry, fishing and hunting, mining:	347
Construction	373
Manufacturing	688
Wholesale trade	129
Retail trade	390
Transportation and warehousing, and Utilities	247
Information	58
Finance, insurance, real estate and rental and leasing:	232
Professional, scientific, management, administrative and waste management services:	179
Educational services, and health care, and social assistance:	736
Arts, entertainment, recreation, accommodation and food services:	175
Other services, except public administration	252
Public administration	326

Source: 2010 American Community Survey

According to the 2007 Census of Retail Trade, conducted by the U.S. Department of Commerce, there are 26 retail trade establishments in Maries County, with annual combined sales of \$46,261,000.<sup>xix</sup>

### 2.1.7 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, Maries County had 892 farms with an average farm size of 267 acres. Five years later in the 2002 Census of Agriculture, the number of farms had dropped to 883 and the average farm size had decreased to 265 acres. In 2007 the number of farms increased to 898 but the average farm size increased to 268 acres.<sup>xx</sup> Due to the rugged nature of the region, row crop farming is for the most part limited to the river valleys. According to the 2007 Census of Agriculture, Maries County’s market value of agricultural sales was \$26,061,000. The average market value of agricultural products sold per farm was \$29,021, the second highest in the region and well above the regional average of \$24,256.

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 Maries County.

**Table 2.14 Timber Resources of Maries County**

Category	Total	Softwoods	Hardwoods
All Live Trees on Timberland (in cubic feet)	162,819,606	5,704,608	139,425,231
Net Volume of Growing-Stock on Timberland (in cubic feet)	131,186,903	15,750,233	115,436,670
Average Annual Mortality of Growing-Stock on Timberland(in cubic feet)	2,137,007	577,597	1,559,410
Average Annual Harvest Removals of Growing-Stock Trees on Timberland (in cubic feet)	1,234,439	205,000	1,029,439

Source: 2012 Forest Inventory, <http://apps.fs.fed.us/fia/fido/customrpt/app.html#display-output>

### 2.1.8 Environmentally Sensitive Areas

The location and characteristics of natural areas need to be included when considering hazard mitigation projects. Environmentally sensitive areas exist in Maries 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>xxi</sup>

The Missouri Department of Conservation maintains several public use and conservation areas in the county. There are six acres and a boat ramp at the Bell Chute Access on the Gasconade River; 256 acres in Clifty Creek CA with an additional 230 acres adjacent in Clifty Creek Natural Area; 11.8 acres and an old fire tower in the Freeburg Towersite; 4.6 acres and a boat ramp on the Gasconade River at the Paydown River Access; 285.96 acres and a 29 acre lake at Rinquelin Trail Lake CA; and 1,819.12 acres at Spring Creek Gap CA. Figure 2.5 is a map of conservation areas located in Maries County. The Gasconade River is a popular recreational destination, especially during summer weekends.

Table 2.15 provides a summary of public use areas and conservation areas located in Maries County.

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

County	Area
Maries	Bell Chute River Access Clifty Creek Conservation Area Clifty Creek Natural Area Freeburg Towersite Paydown River Access Rinquelin Trail Lake Conservation Area Spring Creek Gap Conservation Area

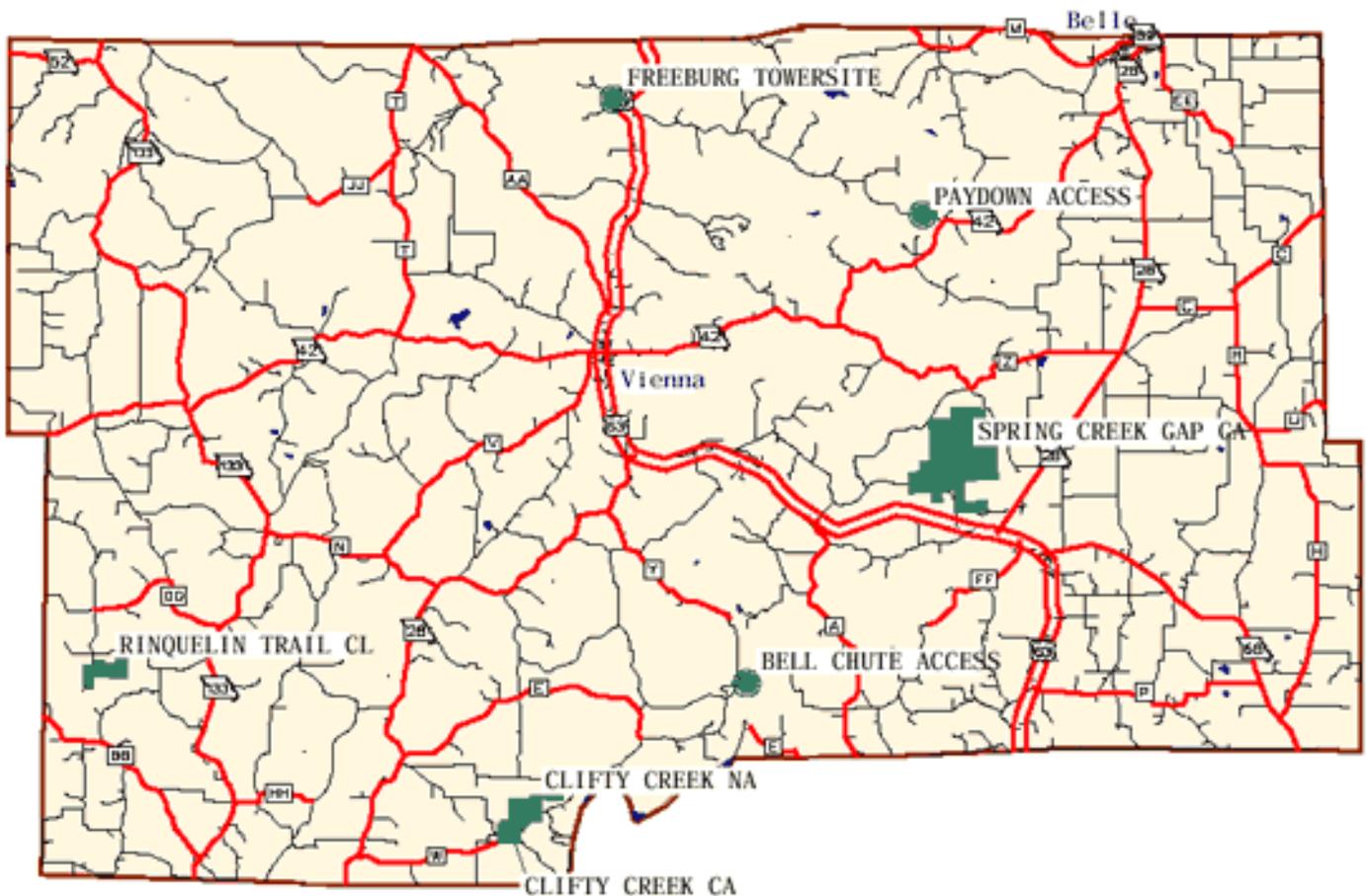
*Source: Missouri Department of Conservation Atlas, 2003*

Other areas that are considered environmentally sensitive would include the water resources located in the county, including the Gasconade River Basin, Osage River Basin and Bourbeuse River Basin.

Maries County is home to four natural springs that are large enough to have had flow studies done by the Missouri Department of Natural Resources: Davis Spring, Little Gaines Ford Spring, Nagogami Spring and Paydown Spring all are located in the Gasconade River Basin.

- Davis Spring, 26,000 gpd
- Little Gaines Ford Spring, 19,000 gpd
- Nagogami Spring, 3,880,000 gpd
- Paydown Spring, 11,900,000 gpd

**Figure 2.5 Missouri Department of Conservation Lands in Maries County**



Source: Missouri Department of Conservation, 2003.

### 2.1.9 Endangered Species and Species of Concern

According to the Missouri Department of Conservation, several of Missouri's imperiled or critically imperiled species are found in Maries County. These include four species of mussels – the Black Sandshell, Ebonyshell, Elephantear, Elktoe, Pink Mucket, Scaleshell and Spectaclecase mussels that are found in the county's streams and rivers. Also occupying the county's streams are four species of fish that are listed as either imperiled or critically imperiled – the Alabama Shad, Crystal Darter, Highfin Carpsucker and Niangua Darter. The Eastern Hellbender, a large salamander found in Ozark streams is also considered critically imperiled in the state. There are two insects on the list – the Frison's Seratellan Mayfly and the Ozark Stone – a species of stonefly. Running Buffalo Clover is a plant that is listed as endangered on both the state and federal lists.



## 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 Maries County

#### Maries County

##### *Overview*

The jurisdiction of Maries County includes all unincorporated areas within the county boundaries. Maries County is governed by a three-member County Commission. The Commission is composed of a presiding commissioner, representing all of the county's population. The presiding commissioner is elected to a four-year term. Two associate commissioners are also elected to four year terms. The associate commissioners each represent half of the county's population.



Maries County operates as a third-class county. The county government has the authority to administer county structures, infrastructures, and finances as well as floodplain regulations. Third class counties do not have building regulations. The three-member county commission generally is the final authority on county issues. Other county officials include the county clerk, assessor, circuit clerk, recorder, collector, treasurer, prosecuting attorney, sheriff, associate circuit judge, coroner, public administrator, surveyor and emergency management director.

Maries County has staff resources in floodplain management and emergency management. The county has an emergency management director who is appointed by the county commission. The EMD also serves as the floodplain coordinator. The county has a 9-1-1 center located in the Sheriff's Office at Central Communications Center that is located at 211 Fourth Street, Vienna, MO 65582. Table 2.16 outlines Maries County's personnel resources in 2009.

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

Personnel Resources	Department/Position	Comments
Floodplain Coordinator	Meramec Regional Planning Commission	Contracted by County Commission
Emergency Management Director	Office of Emergency Management	Appointed by County Commission

There are four fire protection districts located in the county. All are made up of volunteers. Those departments include Dixon Rural Fire Protection District – Brinktown Station; Vichy Volunteer Fire Protection Association, Vienna Fire Protection District, and Belle Volunteer Fire Department.

The county is served by the Ozark Central Ambulance District located in Belle and the Maries/Osage Ambulance District located in Vienna.

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

Maries County participates in the National Flood Insurance Program. The county does have a flood plain ordinance. The county commission contracts with the Meramec Regional Planning Commission to provide floodplain administration services. Construction occurring in the floodplain in unincorporated areas of the county is required to obtain a permit from the County and all new construction is required to meet the minimum flood-proofing standards outlined in the county floodplain ordinance. Maries County does not have building codes or require building permits or inspections. The county has a local emergency operations plan (LEOP) that is administered and maintained by the Emergency Management Director.

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

The County Emergency Management Director, local fire departments, Sheriff’s Department and the Maries County Health Department periodically conduct public education campaigns to raise awareness on hazards 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). The County EMD works with the local school districts, SEMA area coordinator, the Meramec Regional Emergency Planning Committee, Region I Homeland Security Oversight Committee and emergency response agencies on joint drills and trainings. The county has two mobile generators that can be used throughout the county. The county courthouse has backup generator power available. Storm spotter training is held regularly in the county. The County joined the NFIP in 1987 and now regulates floodplain development in unincorporated areas.

## **2.2.2 Cities**

Two 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 2.17 at the end of the section summarizes mitigation capabilities for each of the cities.

### **City of Belle**

#### ***Overview***

Belle is located at the junction of Highways 28 and 89 in the northeast corner of Maries County. Part of the city is located in Osage County and Part is located in Maries County. The city has

been included in the Maries County Hazard Mitigation Plan. The community was incorporated in 1904. According to the 2010 U.S. Census, Belle is the largest city in the county with a population of 1,545. Belle is a fourth-class city with a four member board of aldermen and a mayor. City personnel include a city clerk/collector, city treasurer, court clerk, municipal court judge/city attorney, police chief, fire chief and two public works employees.

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

Belle does not participate in the National Flood Insurance Program and does not have a Flood Insurance Study. Law enforcement for Belle is provided by the city police chief. The city has one warning siren. The warning siren is controlled by the Osage County Emergency Operations Center and Belle Fire Department.

Belle is served by the county 9-1-1 center located in Vienna and the Osage County 9-1-1 Center located in Linn. The Ozark Central Ambulance District provides ambulance service for Belle. The Belle Volunteer Fire Department provides fire protection.

Belle does have building codes which the city enforces by requiring building permits and inspections for new builds as well as renovations. The city employs a non-certified inspector to carry out inspections and the board of aldermen enforces the codes. In addition the city requires site plan review.

The city does have both a zoning ordinance and a storm water ordinance in place which is enforced by the public works department.

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.

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

Belle's Fire Department has an ISO rating of seven inside the city limits and ten outside of the city limits. The city has an Emergency Operations Plan on file and is also included in the county LEOP. The city also has both a capital improvements plan, and infrastructure plan in place.

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

The local fire department provides education/awareness and emergency preparedness programs for their firefighters and for the local school district.

## **City of Vienna**

### ***Overview***

Vienna is the county seat for Maries County and is located at the junction of Highways 63 and 42 in the center of the county. According to the 2010 Census, the community has a population of 610. Vienna, a fourth-class city, has four aldermen and a mayor to make decisions regarding city issues.

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

Vienna is a member of the National Flood Insurance Program. The only portion of the city that lies within the floodplain is the northwest corner that includes the city’s lagoons. There is no other development in the area nor plans to develop the designated floodplain. Vienna does not have a Flood Plain Ordinance, Flood Plain Manager nor a Flood Insurance Study. Elevation Certificates are not maintained. Vienna has a police chief and one additional full time officer as well as two part time officers who provide law enforcement for the city. The city’s volunteer fire department provides fire protection for the community and surrounding area. The Central Communications Center (9-1-1) is located in the courthouse at 211 Fourth Street, Vienna, MO. The Ozark Central Ambulance District is located in Vienna and covers the city and surrounding areas of the county.

The city of Vienna does not have building codes nor planning and zoning. The city does not require building permits, inspections nor review of site plans, but does have a building ordinance that gives city officials the right to inspect buildings. When necessary the mayor can appoint a building inspector. The building ordinance is enforced by the city council.

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 and sewer, 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***

Vienna is part of the county local emergency operations plan. The volunteer fire department has an ISO rating of five within the city limits and nine for areas outside a five mile radius of Vienna.

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

The local fire department provides education/awareness programs on fire safety to the local school district.

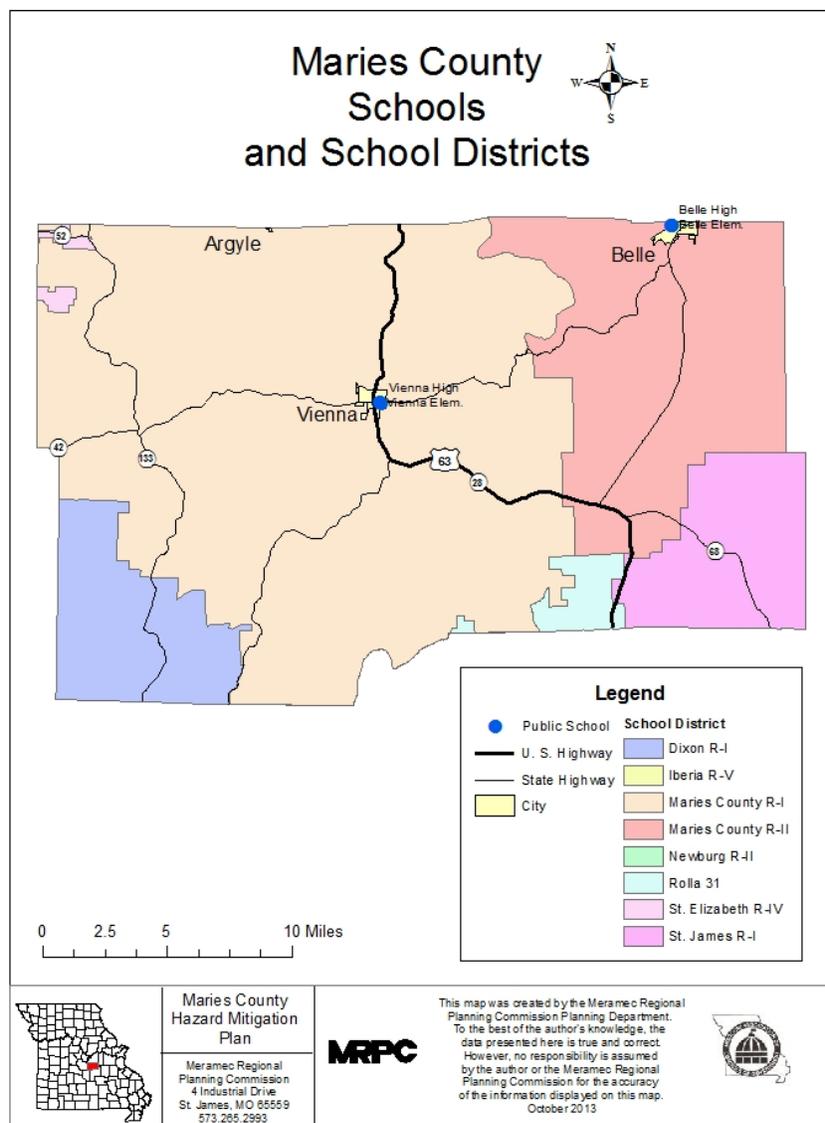
**Table 2-17 Maries County & Participating Cities Summary of Mitigation Capabilities**

Capability	Maries County	Belle	Vienna
Emergency Operations Plan	Y	Y	Y
Building Code/Year	N	Y	N
Fire Department ISO Rating	N/A	7/10	5/9
Floodplain Management Ordinance	Y	N	N
Zoning Ordinance	N	Y	N
Site Plan Review Requirements	N	Y	N
National Flood Insurance Program	Y	N	Y
Economic Development Plan/Policy	N	N	N
Storm Water Management Ordinance	N	Y	N
Flood Insurance Study	N	N	N
Elevations Certificates Maintained	N	N	N

### 2.2.3 School Districts

The following school districts are participating jurisdictions in this plan: Maries County R-I and Maries County R-II. As public institutions responsible for the care and education of the county's children, these school districts share an interest with Maries County in public safety and hazard mitigation planning. Figure 2-6 provides the boundaries of the school districts. The county has portions of seven school districts, but the majority of the county is served by Maries County R-I and R-II school districts. These two districts are the only schools with physical facilities located in the county.

Figure 2-6



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

The school districts in Maries 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 districts in the county have fire alarms and public address systems capable of providing specific instructions in the event of an emergency. Both districts 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. Maries County R-I has a NOAA weather radio. Both school districts use internet to monitor weather.

Neither of the school districts have dedicated grant writers on staff. Existing staff work on grants when necessary. Generally the Superintendent of schools, principals, curriculum directors, or director of student services perform grant writing duties as well as emergency management planning.

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

Both school districts in the county have crisis management plans in place.

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

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

**Table 2.18 Schools in Participating Districts with Reported 2012-13 Enrollment**

<b>Maries County R-I</b>	<b>2011-12 Enrollment – Total: 744</b>
Vienna Elementary School (K-6)	266
Vienna High School	270
<b>Maries County R-II</b>	<b>2011-12 Enrollment – Total: 2,376</b>
Belle Elementary School (K-4)	356
Maries County Middle School (5-8)	253
Belle High School (9-12)	226

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

### **2.2.4 Colleges/Universities**

There are currently no college or university campuses or branches located in Maries County.

<sup>i</sup> *Gazetteer of Missouri*, page 348

<sup>ii</sup> *Soil Survey of Maries County, Missouri*, publication of the United States Department of Agriculture, Natural Resources Conservation Service

<sup>iii</sup> U.S. Geological Survey Fact Sheet FS-027-96

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- <sup>iv</sup> Missouri Watershed Inventory and Assessment, Missouri Department of Conservation, <http://mdc.mo.gov>
- <sup>v</sup> Ibid
- <sup>vi</sup> Ibid
- <sup>vii</sup> Ibid
- <sup>viii</sup> Ibid
- <sup>ix</sup> Ibid
- <sup>x</sup> Ibid
- <sup>xi</sup> Ibid
- <sup>xii</sup> Ibid
- <sup>xiii</sup> Ibid
- <sup>xiv</sup> Ibid
- <sup>xv</sup> <http://geology.about.com/library/bl/maps/blmissourimap.htm>.
- <sup>xvi</sup> <http://members.socket.net/~joschaper/ordo.html>. *Ordovician Period*
- <sup>xvii</sup> *Soil Survey of Maries County, Missouri*, publication of the United States Department of Agriculture, Natural Resources Conservation Service
- <sup>xviii</sup> <http://www.average-temperature.com/temps/MO/Rolla>
- <sup>xix</sup> 2002 Census of Retail Trade – U.S. Department of Commerce- [census.gov/prod/ec02/ec0244amott](http://census.gov/prod/ec02/ec0244amott)
- <sup>xx</sup> 1997 & 2002 Census of Agriculture, USDA, National Agriculture Statistics Service
- <sup>xxi</sup> U.S. Geological Survey Fact Sheet FS-027-96