Janet Burlingame
Cass County Clerk

Deputy Clerks:
Kathy Lamberty
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Arrin Crust

FILED[3]

MAY 11 2006

Missouri Public
Service Commission

State of Missouri

ss.

County of Cass

I Janet Burlingame, County Clerk within and for Cass County Missouri, do hereby certify that the foregoing

Cass County Comprehensive Plan dated July, 2003

is a full, true and accurate copy of an instrument of writing, as the same is found in the Records of my Office.

IN WITNESS WHEREOF, I hereunto set my hand and affix my seal at my Office in Harrisonville, Missouri, this 28th day of April, A.D., 2006.

Janet Burlingame County Clerk

(Seal)

Exhibit No. 105
Case No(s). EA-2006-0309
Date 5-3-06 Rptr JK

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Comprehensive Plan

UP TWO 2003 UPDATE

CASS COUNTY, MISSOURI

COMPREHENSIVE PLAN UPDATE 2003

FINAL

July 2003

Adopted by:

THE BOARD OF COUNTY COMMISSIONERS

THE COUNTY PLANNING COMMISSION

Submitted in Association with Stinson Morrison Hecker, LLP

by:

BUCHER, WILLIS & RATLIFF CORPORATION

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EXECUTIVE SUMMARY

Cass County, Missouri has established and maintained a planning and zoning program for land use regulation. The County strives to define land use issues in the context of a countywide community. The County now seeks to influence land use development—in the public interest—by preserving its strengths and strengthening long-standing objectives:

- Balance property rights with community rights;
- Accommodate development while encouraging it to occur in appropriate places; and
- Ensure that urban growth occurs in or near the cities, or—if in rural areas—it pays its own way.

Rural Cass County does not have the needed infrastructure to support urban and suburban growth unless new developments pay their share of added services. Throughout America, suburban and city growth continues to consume rural land. This occurs because it is the natural tendency for people to want to build and buy homes that are brand new, and they are nearly always built on the outer urban fringes, where empty land is available. Also, when rural land owners want to maximize return on their land, non-ag development yields more cash from new homes than from corn.

If the rural areas become denser with new population, which is happening at a rapid pace in rural and suburban fringe areas of area cities, more services are called for. These urban services—street maintenance, snow removal, sheriff and fire protection, ambulance service, building and zoning enforcement, traffic controls, streetlights—all become too much of a burden on county government. It is county government, after all, that these new "rural-suburbanites" expect will provide "urban" services.

The key objectives of the Cass County Plan **(Ref. Chapter 3)** are two-fold:

- Encourage urban-density growth in and near the towns and cities of Cass County—in small lot subdivisions on strict development standards, with or without annexation.
- Encourage rural-density growth in rural-agricultural areas away from cities and major roads on 20-acre lots that are more agriculture-compatible; and denser development down to 1-acre lots if platted in rural residential subdivisions, provided they pay their way for on-site and off-site improvements necessitated by the more dense development.

Unincorporated, rural areas of the County see limited tax revenues to provide infrastructure. The County cannot build and maintain rural roads to serve non-farm development in rural areas unless developers pay their way. Therefore, non-farm residential development along with commercial and industrial developments should contribute to funds to build infrastructure, such as a major road impact fee. Any intense level of residential and non-residential development in the unincorporated county will have to be self supporting in terms of water, sewer, roads, and related infrastructure.

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CHAPTER ONE: COMPREHENSIVE PLAN UPDATE PROCESS

INTRODUCTION

Growth in the unincorporated area of Cass County during the 1990's has been guided by the Cass County 1991 Comprehensive Plan. The primary intent of the county's comprehensive plan was to encourage urban development to locate near incorporated areas and other urban land uses. By and large, the Plan's "Urban Reserve Areas" had little effect.

In 1996-1997 the process of reviewing the county's Comprehensive Plan was begun. Meetings were held with the Planning Commission, County Commission and representatives of various cities in the county to review the existing goals, policies and objectives of the Comprehensive Plan and to identify issues that are relevant to the future of the county. The following is a listing of the issues that were identified:

- potential impact of confined feeding operations;
- siting of communication towers;
- minimum lot width/frontage of lots;
- adequacy of existing detention pond standards;
- improvement of road specifications;
- hard surface paving of off-street parking areas including display lots for car sales;
- limiting operation of quarries on certain holidays;
- need to more clearly define and regulate recycling facilities; and
- home occupation standards and the expansion of home based businesses.

Based upon these meetings the existing goals, objectives and policies were revised and new ones drafted. Recommended amendments to the Cass County zoning and subdivision regulations were drafted in order to implement the Comprehensive Plan Update.

In 2002, the Planning Commission, County Commission and representatives of cities in the county, along with business interests, met and identified the following key issues:

- eliminate "Urban Area Reserves" in favor of a "Tier System;"
- accommodate urban growth near towns and cities—with or without annexation—where community services can be extended, such as municipal sewers;
- allow 20-acre rural residential tracts countywide;
- small-acre subdivisions should be allowed if they meet design standards and pay their way for on-site improvements necessitated by the more dense development;
- expand the use of special use permits—rather than rezone land—to regulate site development, but exempt religious institutions;
- require through roads to connect with easements and rights-of-way dedications;
- bonds, cash or letters of credit required of rural subdivisions;
- adopt access control standards on major roads;
- required paved local roads in rural subdivisions and adopt impact fees to pay for major roads;
- allow commercial development with access to major roads; and

- increase road setbacks to ensure orderly development.

The 2003 Plan Update implements these objectives, along with the new Cass County Road Impact Fee.

COMPREHENSIVE PLAN

The healthy and orderly growth of a community relies on the successful implementation of a set of well-defined development policies that serve as guidelines for all development decisions at present and in the future. The Comprehensive Plan (or "the Plan") serves as a guide for the planned and orderly growth of Cass County, focusing primarily on unincorporated regions. Zoning changes, subdivision approvals, redevelopment and new development proposals should mesh with the Plan. The plan sets out the key planning issues that are relevant to anticipated growth to the year 2020 and long-range planning objectives.

The plan consists of the Land Use Tier Map and the supporting text, both of which must be considered when making land use changes. The Plan must guide the direction of growth, but at the same time be a dynamic tool that accommodates changes in our style of living. The Plan serves as the basis for zoning decisions. If applications for zoning changes are in accordance with the plan they are presumed to be reasonable. If zoning change requests are not in accordance with the Plan, but are perceived as reasonable, the County should review its planning and regulatory documents and amend either the zoning order or the plan. Additionally, to ensure that the County is proactive to land use changes and development trends, the Plan should be reviewed approximately every five years.

Unincorporated Cass County is a large, diverse community. Planning and zoning policies which are contained in this Plan are formulated around planning analysis that looks ahead even beyond a pre-set time horizon. At the same time, near-term implementation is important. Regulation of land development is one way the Plan is to be implemented. Following are the roles played by key policy makers and administrators, and the relationship of the Plan to regulations.

ZONING ORDER

A zoning order is a legislative tool used for implementing the comprehensive plan. It delineates the boundaries for land use districts to regulate:

- use;
- density of population;
- lot coverage; and
- bulk of structures.

The purpose of the zoning order is to:

- encourage appropriate uses of land;
- maintain and stabilize the value of property;
- reduce fire hazards and improve public safety and safeguard the public health;

- decrease traffic congestion and its accompanying hazards;
- prevent undue concentration of population;
- create a comprehensive and stable pattern of land uses upon which to plan for transportation, water supply, sewerage, schools, parks, public utilities, and other facilities; and
- protect and promote the public health, safety, convenience, comfort and general welfare.

The Cass County Zoning and Subdivision regulations allow 3-acre lot development with on-site septic systems, subject to platting and soil testing. Smaller lots down to 10,000 square feet are allowed if served by a publicly owned central sewer and water system.

SUBDIVISION REGULATIONS

Subdivision regulations are another legislative tool to implement the comprehensive plan by guiding the subdivision and development of land. Subdivision regulations coordinate otherwise unrelated plans as well as govern the internal design of individual sites. The County needs to keep subdivision regulations up to date.

The general purposes of the subdivision regulations are to:

- protect and promote the public health, safety, convenience, comfort and general welfare by requiring a subdivision plat when dividing a parcel of land into more than two lots;
- guide the future growth and development;
- provide for the proper location and width of streets, roads, building lines, open space and recreation and to avoid congestion of population;
- protect and conserve the value of land, buildings and improvements and to minimize conflicts among the uses of land and buildings;
- establish reasonable standards of design for subdivisions in order to further the orderly layout and use of land; and
- ensure that public facilities, including roads, water, sewer and drainage facilities are adequate to serve the needs of proposed subdivisions and improved in a timely manner.

ROLE OF THE PLANNING AND ZONING COMMISSION

The Planning Commission's role is that of an advisory body. It should be composed of residents who are representative of countywide interests; therefore, appointments should be time-limited based on revolving terms. For example, a planning commissioner may serve two terms of four years each. Recommendations regarding rezoning issues and long range plans are forwarded to the County Commission for their approval and adoption. Specific roles include the following.

1. Adopt and recommend approval of a Comprehensive Plan for the physical development of the unincorporated areas of Cass County
   - Before recommending approval or amending the Comprehensive Plan hold a public hearing and information gathering sessions to allow the general public to voice their opinion regarding the future development of Cass County.

2. Advisory body to the County Commissioners.
   - Hold a public hearing to obtain public opinion regarding each rezoning application, special use permit application and proposed text amendments to the zoning order.
   - Submit a recommendation to the County Commissioners on each rezoning application, conditional use permit application and proposed text amendment.

3. Approve or disapprove both preliminary and final subdivision plats.

ROLE OF THE COUNTY COMMISSIONERS

1. Enact and amend the zoning order and zoning district map after considering the Planning and Zoning Commission's recommendations.

2. Approve or deny conditional use permits taking into consideration the recommendation from Planning Zoning Commission.

3. Amend the subdivision regulations after considering the Planning and Zoning Commission's recommendations. This responsibility does not include approving subdivision plats.

4. Approve and adopt the Comprehensive Plan after considering the Planning and Zoning Commission's recommendation.

5. After adoption, certify a copy of the adopted plan to each incorporated city and village within the County.

6. Record a copy of the Plan in the Office of the County Recorder of Deeds office.

7. Accept or reject dedications of easements, rights-of-way and public lands on subdivision final plats after having been approved by the Planning and Zoning Commission.

8. Review and approval of plats under appeal or protest by an adjacent municipality or landowner.

9. Approve engineering plans for construction of public improvements after input from the Planning and Zoning Commission.

10. Approve financial guarantees or financing mechanisms to ensure construction of all public improvements within subdivision plats.

ROLE OF THE BOARD OF ZONING ADJUSTMENT

The Board of Zoning Adjustment is comprised of five appointed residents. Their roles are:

1. Primarily a quasi-judicial body rather than an advisory or legislative body.
2. Role in Zoning administration is limited to two types of tasks:
   - The appeal of an administrative decision or interpretation where there is an ambiguous provision or an alleged error in the administration of the zoning order; and
   - Decide on other matters expressly granted to them by the zoning order, such as granting of variances in cases of unnecessary hardship.
3. The Board of Zoning Adjustment is not involved in the administering of the subdivision regulations.

ROLE OF THE ZONING ADMINISTRATOR

The responsibility of the Zoning Administrator is to oversee and conduct the business of planning and zoning in Cass County as set forth in policy adopted by the County Commissioners. The administrator provides leadership to the Planning and Zoning Commission and County Commission regarding local regulatory decisions and serves as custodian of the official zoning map and regulations, providing a copy to the County Clerk.

The Administrator should assist other County departments in areas where he or she can provide expertise. The Administrator should retain an understanding of the division between service provision and enforcement.

THE BASIS OF DECISION-MAKING

As with other "police powers", the exercise of zoning and subdivision regulations is subject to certain legal limitations. One of the most important of these limitations requires that zoning and subdivision regulations cannot be applied in an "arbitrary or capricious" manner. Decisions regarding zoning and subdivision issues cannot be arrived at through an exercise of favoritism, whim, will or by caprice, without consideration or adjustment with reference to principles, circumstances, or significance.

Procedures for avoiding conflicts of interest—including how to acknowledge and disclose conflicts or appearances of conflicts—are presented in **Appendix B**. They should be referenced when considering conflicts of interest as part of the decision-making process. Also presented are

rules for Planning and Zoning Commission members to follow in terms of "informed participation" and ethical principles.

CHAPTER TWO: DEMOGRAPHICS AND EXISTING CONDITIONS

POPULATION

The US Census Bureau's 2000 census brief stated that the Nation's 1990 to 2000 population increase was the largest in American history. The population growth of 32.7 million people between 1990 and 2000 represents the largest census-to-census increase in American history. The previous record increase was 28.0 million people between 1950 and 1960, a gain fueled primarily by the post-World War II baby boom (1946 to 1964). Total decennial population growth declined steadily in the three decades following the 1950s peak before rising again in the 1990s. Population growth varied significantly by region in the 1990s, with higher rates in the West (19.7%) and the South (17.3%) and much lower rates in the Midwest (7.9 %) and the Northeast (5.5%). Meanwhile, despite overall population growth in each of the past five decades, the Midwest's share of total population fell from 29 to 23%.

Cass County has added about 42,600 people in the last three decades, growing from a small County of about 39,500 people in 1970 to more than 82,000 people in 2000. According to the 2000 Census, Cass County' population is 82,092, an increase of 18,284 people (about 29%) from the 1990 Census **(Ref. Table 2.1, Fig. 2.1)**. In comparison, the State of Missouri grew by 9.3% (Source: US Census). The Kansas City Metropolitan Statistical Area (MSA) registered a population increase of 12.2% (184,024 people) over 4% higher than the average growth in the Midwest. These are significant increases compared to the average rate of growth for the Midwest and the Nation as a whole. The Office of Management and Budget (OMB) defines Metropolitan Statistical Areas (MSA) as a large population nucleus, together with adjacent communities having a high degree of social and economic integration with that core.[1]

Table 2.1 Population Growth (1970-2000)

	1970	1980	1990	2000	% Change 70-80	% Change 80-90	% Change 90-00
Cass County, MO	39,451	51,031	63,808	82,092	29.35%	25.04%	28.65%
Warren County, MO	9,700	14,902	19,534	24,525	53.63%	31.08%	25.55%
Clay County, MO	123,327	136,494	153,411	184,006	10.68%	12.39%	19.94%
Clinton County, MO	12,409	15,870	16,595	18,979	27.89%	4.57%	14.37%
Lafayette County, MO	26,495	29,849	31,107	32,960	12.66%	4.21%	5.96%
Miami County, KS	19,197	21,538	23,466	28,351	12.19%	8.95%	20.82%
Kansas City MSA	1,381,461	1,448,780	1,582,780	1,776,062	4.87%	9.25%	12.21%
Missouri	4,655,960	4,906,764	5,117,073	5,595,211	5.39%	4.29%	9.34%
US	201,606,786	224,810,186	248,709,166	281,421,906	11.51%	10.63%	13.15%

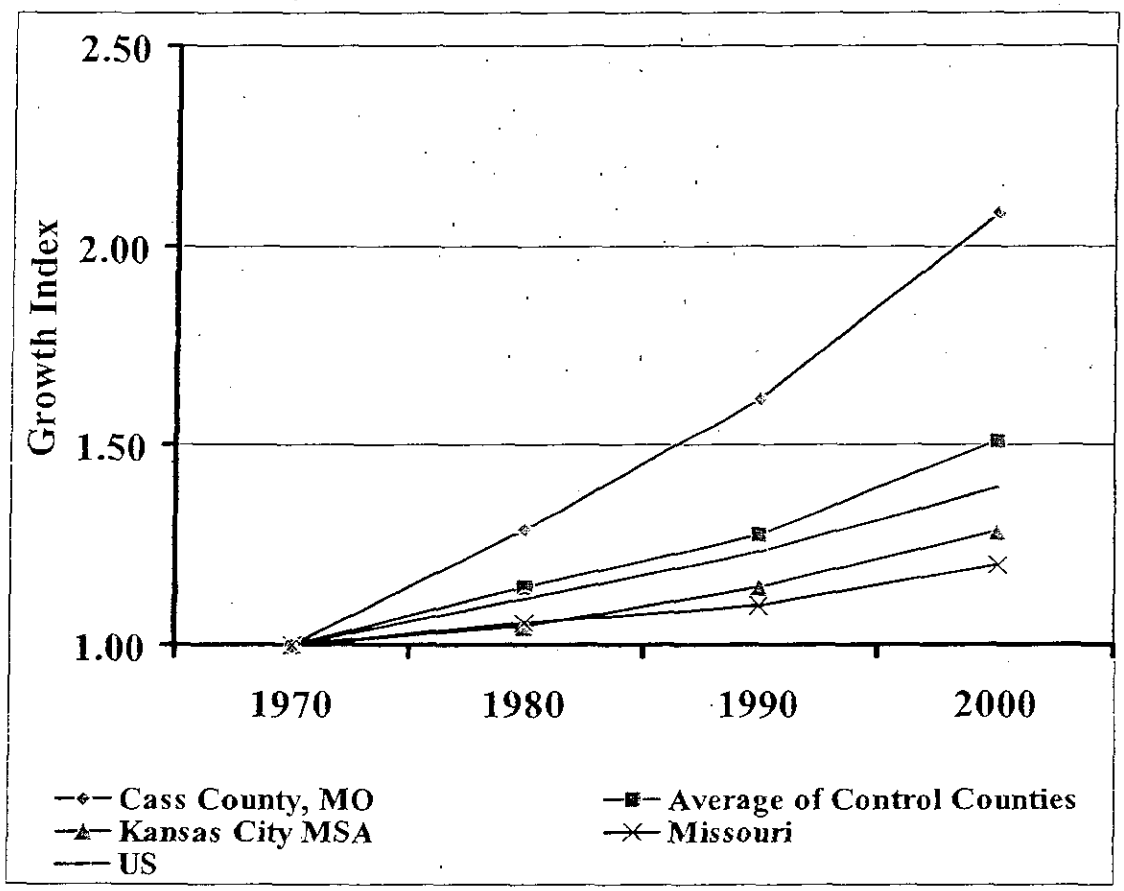
Source: US Census Bureau, BWR

[1] The Kansas City MSA includes 11 counties: Johnson, Kansas; Leavenworth, Kansas; Miami, Kansas; Wyandotte, Kansas; Cass Missouri; Clay, Missouri; Clinton, Missouri; Jackson, Missouri; Lafayette, Missouri; Platte, Missouri; and Ray Missouri.

A comparison with a *"Control Group"* of five similar sized and similar situated counties in the region shows a similar trend in most suburban Counties. The five control counties are Warren County, MO; Clay County, MO; Clinton County, MO; Lafayette County, MO; and, Miami County, KS. In the last decade, with the exception of Lafayette County, MO, which increased in population by about 6%, all other counties in the control set saw substantial increases in population. Miami County increased in population by over 40% and Warren County increased by over 25%.

Growth indices, which are a means of comparison of growth rates of different entities assuming the base population of 1 for each entity, shows that Cass County has grown faster than the average of the control counties, the MSA, the State and the Nation.

Figure 1.1 Population Growth Index (1970-2000)



Source: BWR, US Census Bureau

The cities of Belton, Raymore, Harrisonville and Pleasant Hill are the largest in the County. Between 1990 and 2000, each saw substantial increases in population. The City of Raymore saw the largest increase of over 5,500 people. The City of Belton grew by over 3,500, while Pleasant Hill added over 1,700 and Harrisonville over 1,200 people. The urban population in the County increased by about 14,700 people (34% increase) while the rural population increased by about 3,600 people (17.5% increase). **(Ref. Table 2.2)**

Table 2.2 Population Growth in Cities (1990-2000)

	Number	Percent	Number	Percent	Number	Percent
Cass County	**63,808**	**100**	**82,092**	**100**	**18284**	**28.7**
Archie city	799	1.3	890	1.1	91	11.4
Baldwin Park village	85	0.1	115	0.1	30	35.3
Belton city	18,150	28.4	21,730	26.5	3580	19.7
Cleveland city	506	0.8	592	0.7	86	17
Creighton city	289	0.5	322	0.4	33	11.4
Drexel city	835	1.3	971	1.2	136	16.3
East Lynne city	289	0.5	300	0.4	11	3.8
Freeman city	480	0.8	521	0.6	41	8.5
Garden City city	1,225	1.9	1,500	1.8	275	22.4
Gunn City village	65	0.1	85	0.1	20	30.8
Harrisonville city	7,683	12	8,946	10.9	1263	16.4
Kansas City city	42	0.1	104	0.1	62	147.6
Lake Annette city	157	0.2	163	0.2	6	3.8
Lake Winnebago city	748	1.2	902	1.1	154	20.6
Lee's Summit city	433	0.7	1,180	1.4	747	172.5
Peculiar city	1,777	2.8	2,604	3.2	827	46.5
Pleasant Hill city	3,827	6	5,582	6.8	1755	45.9
Raymore city	5,592	8.8	11,146	13.6	5554	99.3
Strasburg city	124	0.2	136	0.2	12	9.7
West Line village	98	0.2	95	0.1	-3	-3.1
Places total	**43,204**	**67.7**	**57,884**	**70.5**	**14,680**	**34**
Balance of County	**20,604**	**32.3**	**24,208**	**29.5**	**3,604**	**17.5**

Source: US Census Bureau

RACIAL CHARACTERISTICS

Table 2.3 Racial Characteristics in Cass County, MO (1980-2000)

	Total Population	White	Black or African-American	Other Population	Hispanic Origin
1980	51,031	50,140	404	487	404
1990	63,808	62,272	629	907	844
2000	82,092	79,574	1,390	1,128	1,816
absolute change 80-90	12,777	12,132	225	420	440
absolute change 90-00	18,284	17,302	761	221	972
% change 80-90	25.04%	24.20%	55.69%	86.24%	108.91%
% change 90-00	28.65%	27.78%	120.99%	24.37%	115.17%

Source: US Census Bureau, BWR

The racial composition of Cass County has not changed considerably between 1980 and 2000. In 1980 over 98% of the population in the County was white. In 2000 that percentage dropped to

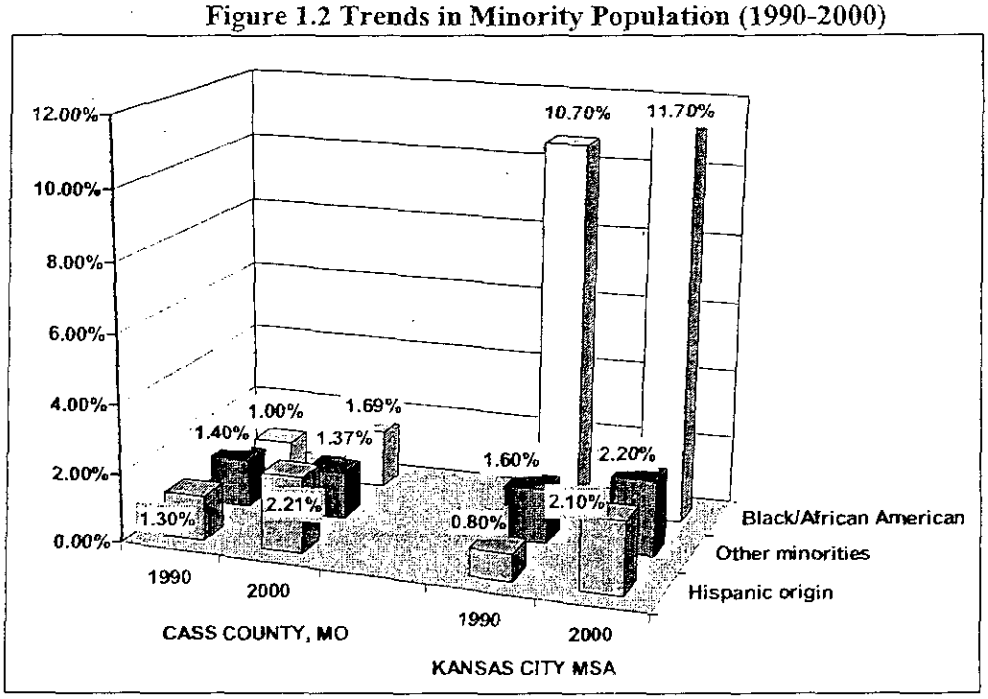
97%. At the same time there was a slight increase in the minority population **(Ref. Table 2.3, Figure 1.2)**. The MSA has a significant minority population but the control counties show trends similar to Cass County.

Table 2.4 Racial Characteristics Comparisons (1980-2000)

		White	Black or African-American	Other Population	Hispanic Origin
1980	Cass County, MO	98.30%	0.80%	0.90%	0.80%
	Average of Control Counties	97.13%	1.71%	1.16%	1.22%
	Kansas City MSA	85.40%	12.50%	2.10%	2.30%
	Missouri	88.40%	10.50%	1.10%	0.40%
	US	83.10%	11.70%	5.20%	6.50%
1990	Cass County, MO	97.60%	1.00%	1.40%	1.30%
	Average of Control Counties	96.62%	1.95%	1.43%	1.82%
	Kansas City MSA	84.50%	12.70%	2.80%	2.90%
	Missouri	87.70%	10.70%	1.60%	0.80%
	US	80.30%	12.00%	7.70%	8.80%
2000	Cass County, MO	96.93%	1.69%	1.37%	2.21%
	Average of Control Counties	93.66%	2.71%	3.63%	2.71%
	Kansas City MSA	82.47%	13.43%	4.11%	5.23%
	Missouri	86.10%	11.70%	2.20%	2.10%
	US	75.14%	12.32%	12.54%	12.56%

Source: US Census, BWR

Figure 1.2 Trends in Minority Population (1990-2000)



Source: BWR, US Census Bureau

MEDIAN AGE

Changes in the median age are important indicators of the shift in composition of the County. They are a quick way of establishing target age groups to plan for. The median age of population in Cass County has traditionally been similar to other metropolitan counties in the area.

Table 2.5: Median Age (1970-2000)

	1970	1980	1990	2000
Cass County, MO	29	29	32.3	35.8
Kansas City MSA	33.00	30	33.1	35.4
Missouri	33.00	30	33.6	36.1
US	31.60	29.2	33.4	35.3

Source: US Census, BWR

POPULATION PROJECTIONS

Five alternative population growth scenarios for Cass County have been presented in Table 2. The first scenario uses linear regression techniques to project the future growth of the County based on its past trends. This method yields an increase in the population by about 12,200 people in the next 10 years and 14,000 people between 2010 and 2020.

Table 2.6: Population Projections (2000-2020)

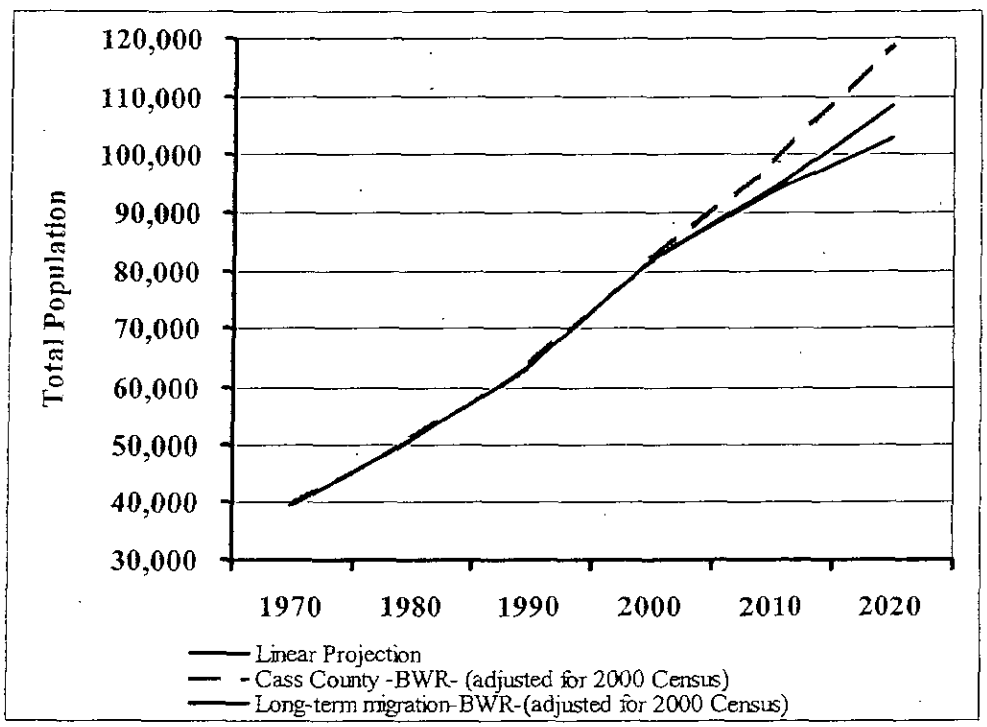
SCENARIO		1970	1980	1990	2000	2010	2020
I	**Using Linear Regression for population 1960 to 2000**						
	Linear Projection	39,451	51,031	63,808	82,092	94,271	108,341
	Growth rate		29.35%	25.04%	28.65%	14.84%	14.93%
MARC Projections							
II	Cass County -BWR- (adjusted for 2000 Census)	39,451	51,031	63,808	82,092	98,775	118,974
	Cass County-MARC-(based on 1990 Census)	39,448	51,029	63,808	81,321	97,847	117,857
	Growth rate				27.45%	20.32%	20.45%
OSEDA Projections							
III	Long-term migration-BWR-(adjusted for 2000 Census)	39,451	51,031	63,808	82,092	93,750	102,933
	Long-term migration scenario-OSEDA-(1990 Census)	39,451	51,031	63,808	76,463	87,322	95,875
	Growth rate				19.83%	14.20%	9.79%
IV	Recent migration-BWR-(adjusted for 2000 Census)	39,451	51,031	63,808	82,092	95,785	106,532
	Recent migration scenario-OSEDA-(1990 Census)	39,451	51,031	63,808	79,104	92,299	102,654
	Growth rate				23.97%	16.68%	11.22%
V	Zero migration-BWR-(adjusted for 2000 Census)	39,451	51,031	63,808	82,092	87,181	91,069
	Zero migration scenario-OSEDA-(1990 Census)	39,448	51,029	63,808	67,914	72,124	75,341
	Growth rate				6.43%	6.20%	4.46%

Source: OSEDA (Missouri Division of Budget and Planning), Mid-America Regional Council (MARC), US Census Bureau, BWR

Mid America Regional Council (MARC) projects population for the Kansas City Metro Area by Counties and areas within the Metro based on the 1990 Census. When adjusted for the 2000 Census Cass County is projected to add about 37,000 people in the next 20 years. The third, fourth and fifth scenarios project the population of Cass County, based on the Missouri Division of Budget and Planning (OSEDA) projections show growth based on long-term, recent and zero migration scenarios. They project growth between 9,000 and 21,000 people in the next twenty years.

While the first scenario is more reflective of the past and current trends in the area and in Cass County, the growth is more likely to slow down in the future. And though the increase in population is still projected to be substantial and one of the highest in the eastern Metro area, it is not expected to be as high as the previous decades. Therefore, while it is unlikely that Cass County will experience the surge of the 70s, it will most likely follow scenario III—the long-term migration scenario.

Figure 1.3: Population Projections (2000-2020)



Source: BWR Corp., Mid America Regional Council, US Census Bureau

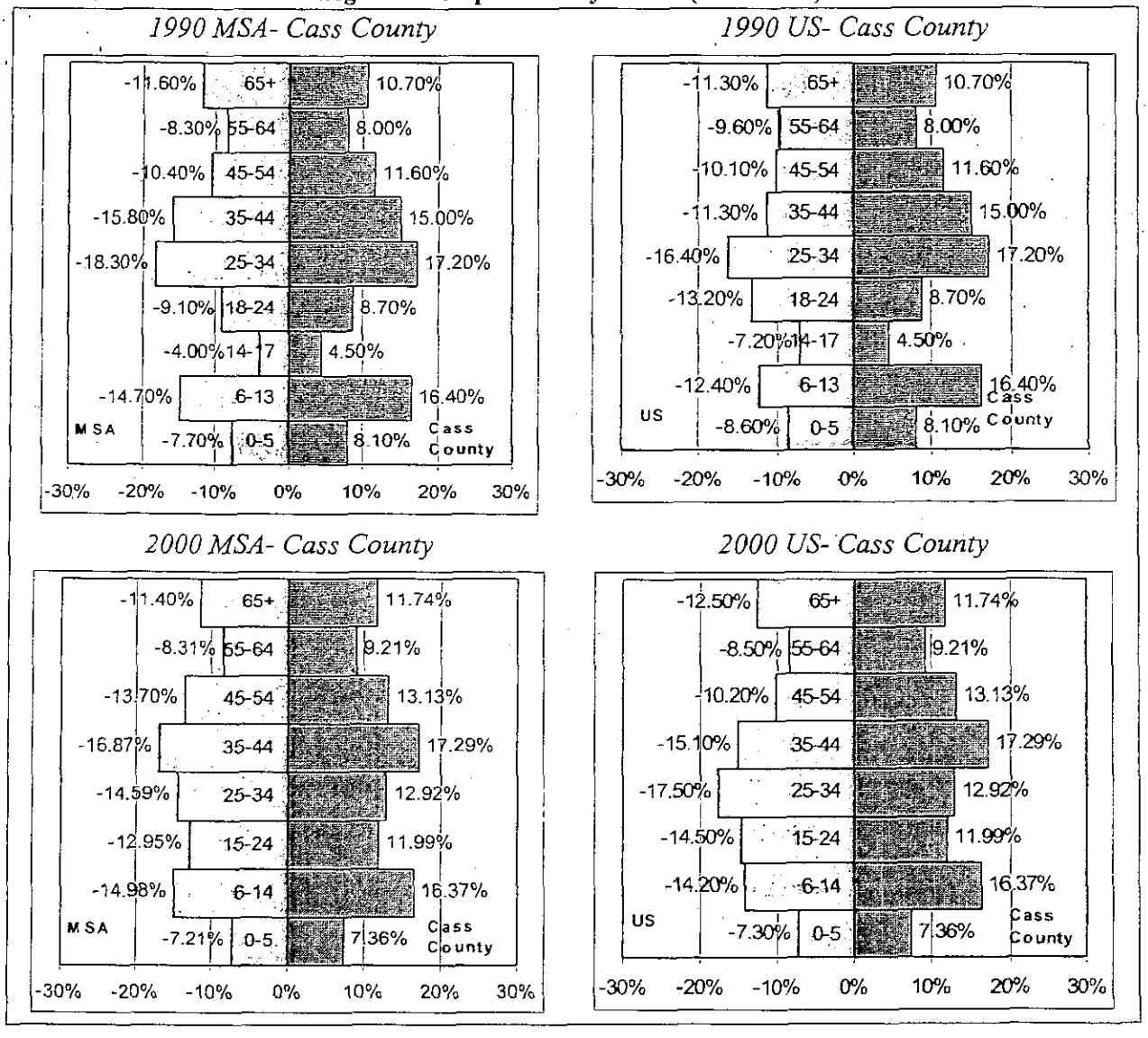
AGE CHARACTERISTICS

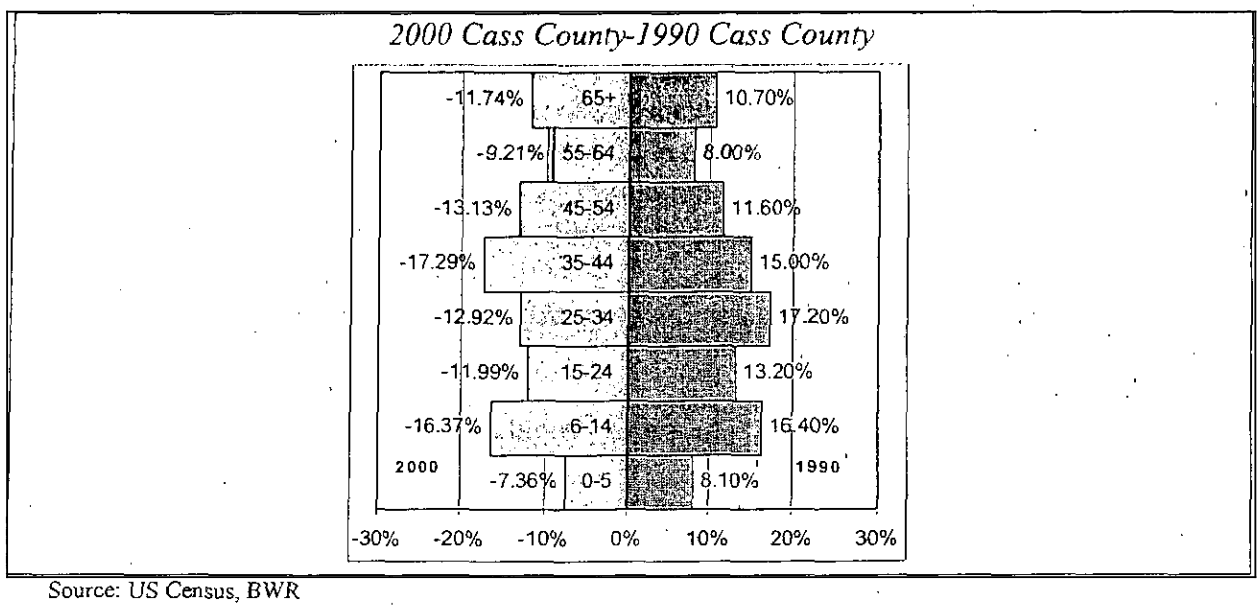
The age distribution of a population is an important feature while analyzing a jurisdiction's demographic situation. **Figure 1.4** uses population pyramids to show the age distribution differences between the County and the regional and national distribution. We have also used the pyramids to show the change in age distribution from 1990 to 2000.

In spite of the significant increase in population there has not been a significant change in the age composition of the population. The County has traditionally had a large young population. A significant number of 35-44 year-olds have moved to the area, indicating a preference for move-up housing in Cass County. This demographic group is young, has stable jobs, has crossed the very mobile stage and is settling down in the County for at least the next 15-20 years. This is also an indication of a good school system and good family-oriented services.

The elderly population has remained relatively stable the County and at ratios similar to the metro area.

Figure 1.4 Population Pyramids (1990-2000)





Source: US Census, BWR

MALE-FEMALE RATIO

The Male-Female ratio in Cass County has changed slightly in the last decade to include a higher percentage of women. The ratio now closely reflects the control counties' average, the MSA and the State.

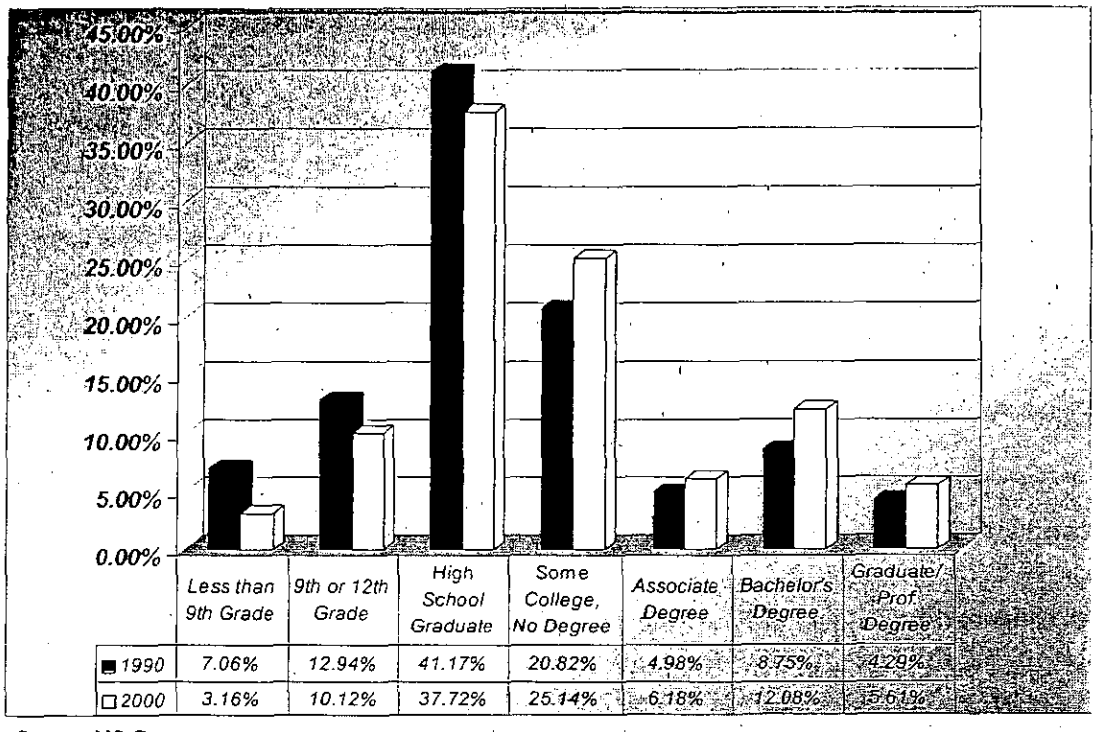
Table 2.7 Male-Female Ratio (1980-2000)

		Males	Females	Change in % from previous Census Males	Females
1980	Cass County, MO	49.40%	50.60%		
	Average of Control Counties	48.77%	51.23%		
	Kansas City MSA	48.20%	51.80%		
	Missouri	48.10%	51.90%		
	US	48.50%	51.50%		
1990	Cass County, MO	48.80%	51.20%	-1.21%	1.19%
	Average of Control Counties	48.55%	51.45%	-0.45%	0.43%
	Kansas City MSA	48.30%	51.70%	0.21%	-0.19%
	Missouri	48.20%	51.80%	0.21%	-0.19%
	US	48.70%	51.30%	0.41%	-0.39%
2000	Cass County, MO	48.20%	51.80%	-1.23%	1.17%
	Average of Control Counties	48.07%	51.93%	-0.98%	0.92%
	Kansas City MSA	48.80%	51.20%	1.03%	-0.96%
	Missouri	48.60%	51.40%	0.83%	-0.77%
	US	49.10%	50.90%	0.82%	-0.78%

Source: US Census, BWR

EDUCATION

Figure 1.5 Educational Attainment of People aged 25 or more (1990-2000)



Source: US Census

Comparison of 1990 and 2000 education statistics for people over the age of 25 shows that education levels in Cass County have substantially improved in the last decade. The percentage of adult population with at least some college experience has increased from 38% to about 50% **(Ref. Figure 1.5.)**

INCOME CHARACTERISTICS

Median household income is the dollar amount that divides the income distribution into two equal groups—half with income above the median and half with income below the median. It provides one measure of the ability of Cass County households to meet the costs of food, clothing, housing, health care, transportation, childcare, and higher education. Retail businesses, shopping centers, builders and developers consider the median household income as a guide to investment into a community.

Per Capita Income is computed by dividing the sum of personal income for a given geographic area by the total population for that area. Personal income is the sum of individual income received from employment, self-employment, investments, and transfer payments for all households for a given area. Per capita income, therefore, is an indication of the quality of labor force available and, wages and salaries disbursed in a given location. These are important indicators for industries and businesses locating to a certain area.

Table 2.8 Income Summary (1980-2000)

		1980	1990	2000	% Change 80-90	% Change 90-00
Median Household Income	Cass County, MO	$19,021	$31,548	$37,934	65.86%	20.24%
	Warren County, MO	$16,309	$29,013	$49,562	77.90%	70.83%
	Clay County, MO	$22,330	$35,270	$41,016	57.95%	16.29%
	Clinton County, MO	$16,324	$26,844	$48,347	64.44%	80.10%
	Lafayette County, MO	$15,656	$24,755	$41,629	58.12%	68.16%
	Miami County, KS	$16,937	$29,392	$38,235	73.54%	30.09%
	Kansas City MSA *	$18,897	$33,551	$46,665	77.55%	39.09%
	Missouri	$15,704	$28,334	$42,405	80.43%	49.66%
Per Capita Income	Cass County, MO	$7,197	$12,930	$19,936	79.66%	54.18%
	Average of Control Counties	$ 7,719	$13,896	$19,845	80.03%	42.81%
	Kansas City MSA	$8,036	$14,845	$21,408	84.73%	44.21%
	Missouri	$ 6,923	$12,818	$21,452	85.15%	67.36%

Source: US Census, BWR

* Kansas City MSA data for 2000 includes only part that is in Missouri

In 2000, the median household income in Cass County was $37,934. It is lower than other counties in the control group. Per capita income, however, is comparable to the average of control counties, the MSA and the State. This indicates well paying jobs but lower labor force participation rates in the County.

HOUSING

The housing market in Cass County has altered significantly in the last decade. The total housing units increased by 7,340 units, a 30% increase. The control counties on an average added to their housing stock by about 20%. The MSA saw an increase of about 12% and Missouri's housing stock increased by about 11%.

Occupancy rates increased across the board with Cass County' rates going up by about 32% and that of the control counties going up by about 21%. These were significant compared to the modest increases in the MSA and the State. Owner occupancy in Cass County increased by about 4% and renter occupancy decreased by about 2.7%. The control counties experienced similar trends.

The median housing value in Cass County has increased substantially—from $57,447 to $104,200—in the last decade. This 81.4% increase was much higher than the MSA and State averages of about 50%. Housing values in Cass County are comparable to the counties in the control set and the MSA. Mortgage rates and rental rates are also comparable to the counties in the control set. Rental rates increased by 35%.

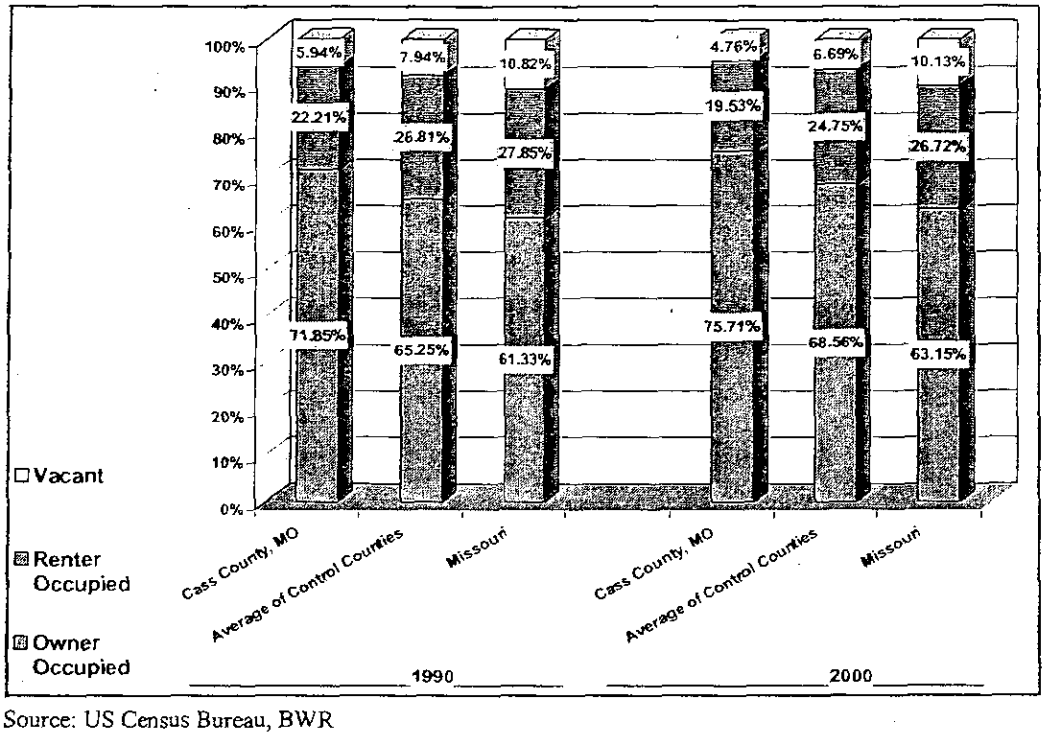
Data from the National Association of Realtors **(Ref. Table 2.11)** indicates that the areas along the major Highways—Highway 71 and 291—have higher priced and older homes. These statistics indicate high suburbanization and a strong housing market in the County.

Table 2.9: Housing Units Characteristics (1990-2000)

		Total Housing Units	Occupied Units	Owner Occupied	Renter Occupied	Vacant
Cass County, MO	1990	24,337	22,892	71.85%	22.21%	5.94%
	2000	31,677	30,168	75.71%	19.53%	4.76%
	% Change	30.16%	31.78%	3.86%	-2.68%	-1.17%
Average of Control Counties	1990	20,038	18,446	65.25%	26.81%	7.94%
	2000	23,969	22,366	68.56%	24.75%	6.69%
	% Change	19.62%	21.25%	3.31%	-2.06%	-1.26%
Kansas City MSA	1990	663,910	608,459	60.10%	31.55%	8.35%
	2000	740,884	694,468	63.69%	30.05%	6.26%
	% Change	11.59%	14.14%	3.59%	-1.50%	-2.09%
Missouri	1990	2,199,129	1,961,206	61.33%	27.85%	10.82%
	2000	2,442,017	2,194,594	63.15%	26.72%	10.13%
	% Change	11.04%	11.90%	1.82%	-1.13%	-0.69%

Source: US Census Bureau, BWR

Figure 1.6: Trends in Housing Occupancy (1990-2000)



Source: US Census Bureau, BWR

Table 2.10: Housing Values (1990-2000)

		Average Household Size	Median Housing Value	Median Monthly Mortgage	Median Monthly Rent
Cass County, MO	1990	2.80	57,447	629	401
	2000	2.69	104,200	934	543
	% Change		81.4%	48.5%	35.4%
Warren County, MO	1990	2.80	58,626	600	353
	2000	2.64	108,600	858	466
	% Change		85.2%	43.0%	32.0%
Clay County, MO	1990	2.60	59,223	665	428
	2000	2.50	104,900	975	576
	% Change		77.1%	46.6%	34.6%
Clinton County, MO	1990	2.70	52,010	575	318
	2000	2.59	86,400	801	442
	% Change		66.1%	39.3%	39.0%
Lafayette County, MO	1990	2.60	51,846	562	310
	2000	2.55	74,400	753	426
	% Change		43.5%	34.0%	37.4%
Miami County, KS	1990	2.80	52,983	599	331
	2000	2.66	106,300	959	499
	% Change		100.6%	60.1%	50.8%
Kansas City MSA	1990	2.60	61,478	684	424
	2000*	2.46	92,400	914	546
	% Change		50.3%	33.6%	28.8%
Missouri	1990	2.60	59,810	622	375
	2000	2.48	89,900	861	484
	% Change		50.3%	38.4%	29.1%

Source: US Census Bureau, BWR

* 2000 data for Kansas City MSA includes part of the MSA in Missouri only.

Table 2.11: Average Housing Trends by Zip code (2000)

	64012	64083	64034	64080	64090	64734	64078
Average Home Price	$152,768	$161,216	$172,690	$127,779	$95,200	$236,922	$124,220
Average Age of Housing	24 yrs.	9 yrs.	12 yrs.	22 yrs.	N/A	35 yrs.	16 yrs.
Average Sq.ft.	1832	1959	1979	1889	1125	2219	1903
Average price/sq.ft.	$83.39	$82.29	$87.26	$67.64	$84.62	$106.77	$65.28
	64746	**64701**	**64743**	**64747**	**64742**	**64725**	**64739**
Average Home Price	$111,815	$125,007	$71,412	$138,839	$134,286	$134,456	$115,610
Average Age of Housing	28 yrs.	27 yrs.	48 yrs.	23 yrs.	22 yrs.	31 yrs.	27 yrs.
Average Sq.ft.	2007	1812	1171	1623	1882	1596	1481
Average price/sq.ft.	$55.71	$68.99	$60.98	$85.54	$71.35	$84.25	$78.06

Source: National Association of Realtors, BWR

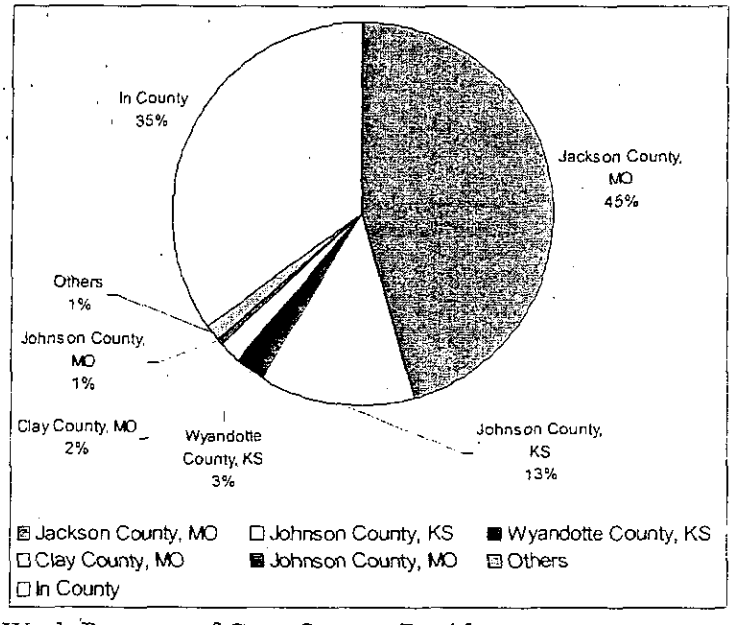
COMMUTING PATTERNS

Figure 1.7 shows the out-commuting and in-commuting patterns in 1990. These numbers are expected to increase by a significant amount in the 2000 Census, because of major population shifts that have occurred in the last decade. The 1990 figures are, however, still relevant to show trends and patterns.

The 1990 out-commuting patterns of the County show that about 65% of Cass County residents work in other Counties. Among the workers who commute to other Counties, about 14,000 commute to Jackson County, MO; 4,000 to Johnson County, KS and 770 to Wyandotte County, KS.

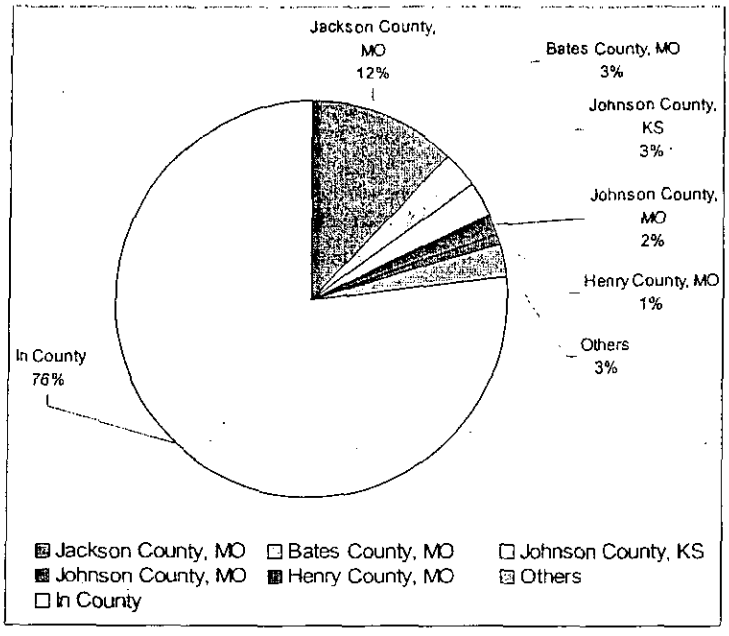
The In-commuting patterns show that about 23% of the County's workers commute from outside the County. About 1,700 come from Jackson County, MO; 420 from Bates County, MO and 380 from Johnson County, KS.

Figure 1.7: County Out-commuting and In-commuting Patterns (1990)



County	Workers	Percent
Jackson County, MO	13,904	45.40%
Johnson County, KS	4,055	13.20%
Wyandotte County, KS	771	2.50%
Clay County, MO	531	1.70%
Johnson County, MO	203	0.70%
Others	426	1.30%
In County	10,724	35.0%
Total	30,614	100%

Work Patterns of Cass County Residents



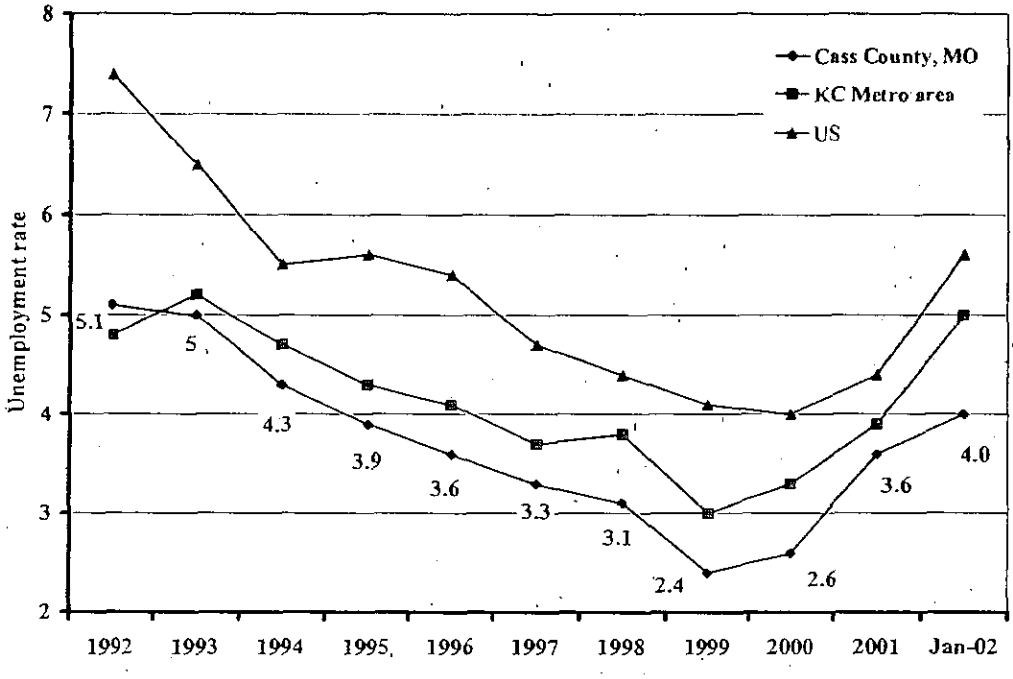
County	Workers	Percent
Jackson County, MO	1,715	12.30%
Bates County, MO	422	3.00%
Johnson County, KS	387	2.80%
Johnson County, MO	243	1.70%
Henry County, MO	113	0.80%
Others	380	2.80%
In County	10,724	76.7%
Total	13,984	100%

Residence Patterns of Cass County Workers
Source: US Census Bureau, BWR

UNEMPLOYMENT RATE

Unemployment rate in the County has traditionally been lower than the average in the metro area and lower than the National average. As of January 2002, the unemployment rate in the County was 4.0%.

Figure 1.8: Unemployment Characteristics (1991-2001)



Source: Bureau of Labor Statistics, BWR
Note: Data for County and the State is seasonally adjusted, while that for the Nation is not seasonally adjusted.

EMPLOYMENT CHARACTERISTICS

The services sector is the largest sector in Cass County economy employing over 7,000 people in 1999. The sector had grown by over 45% in the last decade. However, the military and construction sectors have been the fastest growing sectors in the County increasing by 130% and 79% respectively. Transportation sector, wholesale trade and government sectors experienced over 58% increases between 1990 and 1999. Retail trade increased by about 52%. **(Ref. Table 2.12)**

Table 2.12: Total Full and Part-time Employees by Major Industry

DESCRIPTION	1990	% OF TOTAL	1999	% OF TOTAL	NET CHANGE	PERCENT CHANGE
Total full- & part-time employment	20,491	100.0	29,706	100.0	9,215	44.97%
- Farm employment	1,958	9.6	1,834	6.2	(124)	-6.33%
- Nonfarm employment	18,533	90.4	27,872	93.8	9,339	50.39%
--- Private employment	15,789	77.1	23,493	79.1	7,704	48.79%
----- Ag.serv.,for.,fish., and other 3/	408	2.0	605	2.0	197	48.28%
----- Mining	102	0.5	156	0.5	54	52.94%
----- Construction	2,051	10.0	3,668	12.4	1,617	78.84%
----- Manufacturing	1,381	6.7	1,504	5.1	123	8.91%
-----Transportation and public utilities	791	3.9	1,252	4.2	461	58.28%
----- Wholesale trade	486	2.4	777	2.6	291	59.88%
----- Retail trace	4,152	20.3	6,320	21.3	2,168	52.22%
----- Finance, insurance and real estate	1,521	7.4	2,087	7.0	566	37.21%
----- Services	4,897	23.9	7,124	24.0	2,227	45.48%
--- Government and government enterprise	2,744	13.4	4,379	14.7	1,635	59.58%
----- Federal, civilian	165	0.8	255	0.9	90	54.55%
----- Military	367	1.8	842	2.8	475	129.43%
----- State and local	2,212	10.8	3,282	11.1	1,070	48.37%

Source: Bureau of Economic Analysis, BWR

CHAPTER THREE: FUTURE LAND USE AND POLICY

LAND USE TIERS

The Land Use Tier system was developed to help evaluate proposed residential and commercial development across Cass County. The tier boundaries were laid out utilizing several factors while providing ample area to accommodate 20 years of growth:

- Natural barriers—primarily ridgelines—which result in drainage flows to creeks and rivers in major basins and sub-basins, particularly in recognition of water quality in rivers and streams;
- Man-made improvements, such as highways and major roads, sanitary sewer systems, (both current and future improvements) and related urban systems that support non-agricultural growth; and
- Political boundaries, primarily at the edges of the cities in Cass County.

However, as new development and infrastructure are built, tier boundaries must be reevaluated so that these improvements are taken into consideration when new proposals are revised.

Urban Service Tiers

Urban density is encouraged where "Urban Residential" growth can be served cost-effectively by city services or by a community system of shared water and sanitary sewers, built to standards that are compatible with the neighboring city—with or without annexation. They are shown on the "Land Use Tier Map" around established urban areas where the cities have indicated an ability to extend utilities. Policies for development under County control are as follows:

Zoning: The County encourages urban-density zoning classifications, including commercial and industrial zoning where designated on the Land Use Tiers Map as Commercial or Planned Mixed-Use.

Roads: Paved hard surfaced roads for subdivisions.

Waste Water Treatment: Provided through a community system built to county standards, compatible with city standards. Individual on-site septic systems should not be allowed in cases where city services are provided, planned for, or may be cost-effectively extended in a timely manner. In other cases, individual on-site septic systems may be allowed provided, however, that easements are dedicated for future sanitary sewer trunk mains and road rights-of-way alignments are indicated for future major streets, as demonstrated and provided by the developer at the request of the County.

Multi-Use Tiers

These are areas near towns and cities and along paved highways and thoroughfare roads where non-agricultural development, such as commercial and industrial uses, and residential development that is denser than 20-acre lots, is encouraged. Large-scale development is allowed, including commercial and industrial zoning, provided there are provisions for direct access to paved roads.

Rural Density Tiers
Rural density is encouraged on 20-acre lots and larger; while more dense development (as small as 1-acre lots if platted in rural residential subdivisions) is allowed depending on standards set by the County for various on-site waste water discharge systems, subject to approval by the County health department.

Zoning: The County encourages agricultural zoning and allows agriculture-residential density on 20-acre lots, while permitting large-lot 1-acre development in rural residential subdivisions on strict standards.

Roads: Hard surfaced paved roads on-site within subdivisions.

Waste Water Systems: On-site discharge systems on 1-acre lots or larger (in platted rural subdivisions), depending on standards set by the County for various on-site waste water systems, subject to approval by the County health department; also, central sewer districts with alternative system designs, subject to approval by the County health department.

Agricultural Preservation Tiers
Ag-density (larger than 40-acre lots) would be restricted to where floodplain, bottomland. Residences would be allowed only at agricultural densities on levee-protected bottomlands.

Zoning: The County allows agricultural zoning only. Commercial and industrial zoning would not be allowed.

Roads: Private drives, or public roads if improved to standards of the County.

Waste Water Systems: On-site septic systems allowed for development at Ag-densities (larger than 40-acre lots).

PLANNING POLICY AND THE LAND USE TIER SYSTEM

Urban Service Tiers
The urban growth areas within the County should be (a) contiguous or in close proximity to existing municipal boundaries and should encompass the likely sites of higher density residential growth in the future; (b) reasonably compact yet sufficiently large to accommodate that growth; and (c) located where neighboring municipalities can extend public utilities to urban-density development.

The Cass County Urban Service Tier is representative of those areas within Cass County that exhibit the following characteristics:

- Have been identified by the neighboring town or city as an area for extension of future municipal utility services,
- located along highways, major arterials and intersections, and

- to be developed for residential, industrial and commercial purposes—with or without annexation.

Multi-Use Tiers
The Multi-Use Tier is representative of areas within Cass County that exhibit the following characteristics:

- positioned as transition areas from urban to rural densities,
- located along rural highways, major arterials and intersections, and
- predominately developed for a mix of land uses: residential, industrial and commercial purposes.

Rural Density Tiers
The Rural Density Tiers are in areas that historically have remained agricultural. As a result, the Rural Density Tier has the least density and is characterized by farmland and low-density residential development, or for higher-density residential development on strict standards where development pays its way.

Agricultural Preservation Tiers
These tiers are the flood plain areas of Cass County where only 40-acre density development would be allowed, subject to flood plain regulations, in addition to agricultural uses (**Ref. Natural Features Map**). The Land Use Tier Plan with its attention to floodplain lands and other sensitive lands would be particularly useful in deciding where to allow development and where to set aside land as open space. Protection of natural features and adverse impacts of uncontrolled growth would be the future direction—as well as the driving force—in the design criteria of any future development into this area. Rural areas include territory that is not within urban growth or planned growth areas and is to be preserved as agricultural lands, forests, recreational areas, and wildlife management areas within flood plains.

PLANNING POLICY AND ZONING

The Plan calls for the county to update its zoning regulations to differentiate among residential, commercial, and industrial land uses and development densities.

Urban Residential: Minimum lot size of 7,500 square feet if on community waste water system; 1-acre lots if platted in a subdivision served by on-site systems, depending on standards set by the County for various on-site waste water discharge systems, subject to approval by the County health department.

Rural Residential: Minimum lot size of 20-acres encouraged, or as small as 1-acre lots if platted in a rural residential subdivision, subject to standards set by the County for various on-site waste water discharge systems and approval by the County health department.

Agriculture Preservation Residential (in Flood Plain): Minimum lot size of 40-acres, no maximum.

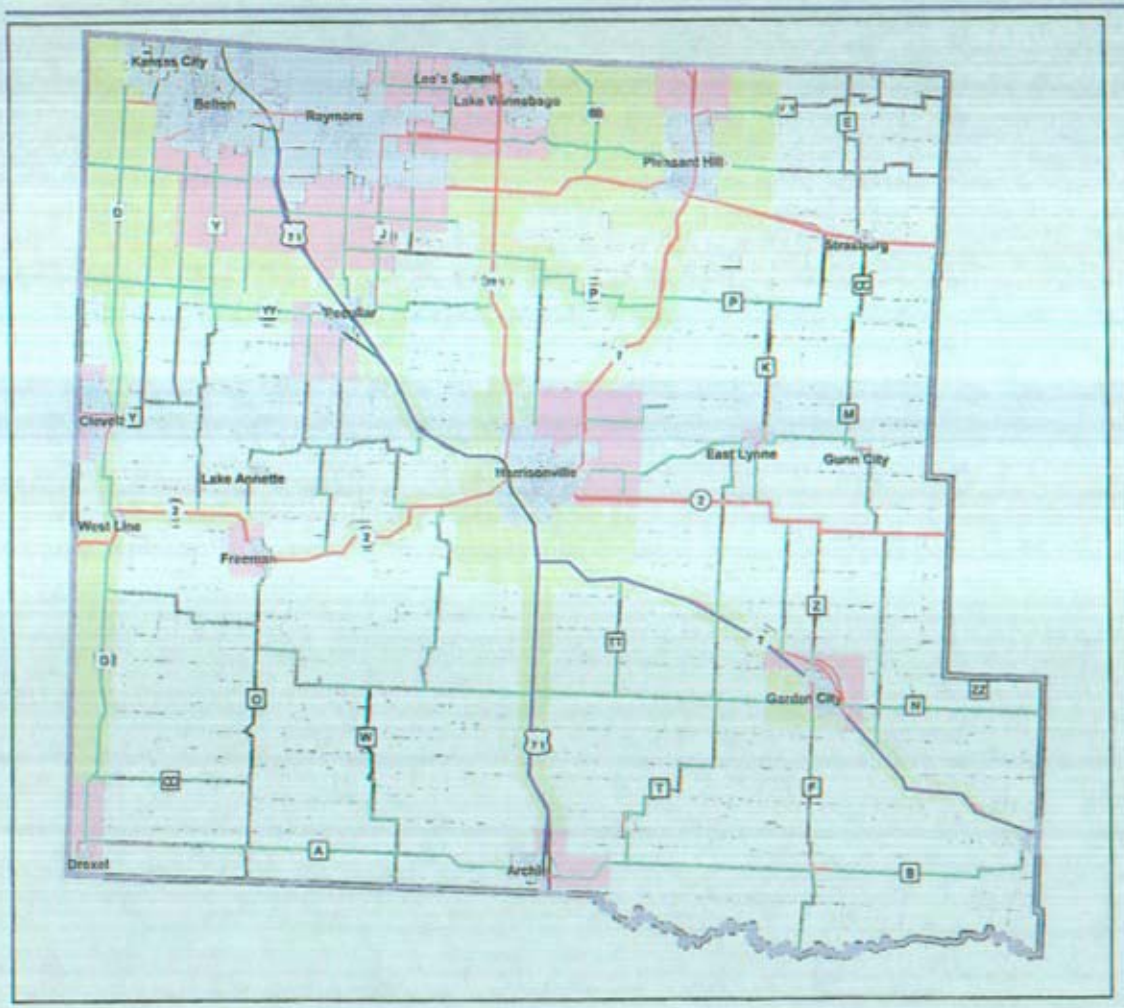
LAND USE TIER PLAN MAP

The tier map boundaries were laid out utilizing several factors while providing ample area to accommodate 20 years of growth:

- Natural barriers, such as major drainage basins and sub-basins;
- Man-made improvements, such as highways and major roads; and
- Political boundaries.

COMPREHENSIVE PLAN UPDATE - 2003

Cass County, Missouri



Land Use Tiers

LEGEND

- US Highway
- Arterials
- Collectors
- Other Roads
- Incorporated Cities
- Urban Service Tier
- Multi-Use Tier
- Rural Density Tier
- County Boundary

N

1 0 1 2 3 4 5 Miles

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LAYOUT - Development Patterns Q:\96262\gis\case.apr

PLANNING POLICY AND PUBLIC IMPROVEMENTS

Zoning and Subdivision Regulation Updates

The County shall update its zoning and subdivision regulations to require the following:

- Rezoning of more than single lots or lot splits shall be contingent on replatting.
- Soil test results shall be supplied by the applicant prior to rezoning or, if replatting is required, prior to preliminary platting.
- Public improvements shall be completed within a prescribed time period as specified in the payment and performance bond (such as two years from the initiation of development permitting); and a maintenance bond shall be required for a prescribed time period for each local street improvement project.
- Local street improvements shall be made as follows:

  Urban Residential: New local streets, improved and dedicated to the County, shall be paved (asphalt or concrete) to county standards and—upon dedication to the public—maintained by the County.

  Agriculture Residential: Local streets in rural areas may be gravel for subdivisions at agricultural-residential densities of 20-acre lots or larger, in which case they shall be privately owned and maintained. If dedicated to the public, they must be brought up to county street improvement standards.

Road Impact Fees

Major Thoroughfare Road improvements shall be financed as follows:

Off-site Improvements: A road impact fee shall be paid for improvements to major thoroughfare roads. The fee charged on new development will be reasonably related to the needs created by the development (its impact) on the County's road system and the benefits conferred upon that development through the use of the fee that is collected. Road impact fee service areas will be designated to ensure that developers pay their fair share and that fees are being distributed to the appropriate area of impact. The service area would identify the principal area from which the proposed development would attract traffic that would impact roads within the identified planning area. Using the Roadway Classification map provided in the Development Plan—as well as the Traffic Demand Model developed in the Plan Update—the County will designate road impact fee "Service Areas." The areas will be created with boundaries that are equidistant from roadways requiring improvements.

Waste Water Improvement Options

Waste water system improvements shall be planned as follows:

Community sewers (city or water district sewer systems) are required for development in Urban Service Tiers if the adjacent city or water district is prepared to extend public utilities. All community systems must be approved by the County health department and built to County standards. On-site waste water discharge systems must be built to County standards set by the County for various designs, subject to approval by the County health department.

Stream Buffer Requirements
As part of an overall urban watershed protection strategy, stream buffer requirements that are in rural residential subdivisions where Phase II stormwater permitting requirements do not apply, shall be designed as follows:

Stream buffer Requirements
Headwater streams are often severely degraded by urbanization. As a consequence, many communities have adopted stream buffer requirements as part of an overall urban watershed protection strategy. Urban stream buffers are an integral element of any local stream protection program. By adopting some of these rather simple performance criteria, communities can make their stream buffers more than just a line on a map. Better design and planning also ensure that communities realize the full environmental and social benefits of stream buffers. Recommendation in this section are from the APA, PAS Memo of August 2000.

The ability of a particular buffer to actually realize its many benefits depends to a large extent on how well the buffer is planned or designed. In general, a minimum base width of at least 100 feet is recommended to provide adequate stream protection. In most regions of the country, this requirement translates to a buffer that is perhaps three to five mature trees wide on each side of the channel

Three-zone Buffer System
Effective urban stream buffers divide the total buffer width into three zones:

- Streamside;
- Middle core; and
- Outer zone.

Each zone performs a different function and has a different width, vegetative target and management scheme.

The **streamside zone** protects the physical and ecological integrity of the stream ecosystem. The vegetative target is mature riparian forest that can provide shade, leaf litter, woody debris, and erosion protection to the stream. The minimum width is 25 feet from each stream bank—about the distance of one or two mature trees from their streambank. Land use is highly restricted, limited to stormwater channels, footpaths, and a few utility or roadway crossings.

The **middle core zone** extends from the outward boundary of the streamside zone and varies in width depending on stream order, the extent of the 100-year (or one percent) floodplain, any adjacent steep slopes, and protected wetland areas. Its functions are to protect key stream components and provide further distance between upland development and the stream. The vegetative target for this zone is also mature forest, but some clearing may be allowed for stormwater management, access and recreational uses. A wider range of activities and uses are allowed within this zone, such as bike paths and stormwater best management practices (BMPs). The minimum width of the middle core

is about 50 feet, but it is often expanded based on stream order, slope, or the presence of critical habitats (see Buffer Expansion and Contraction).

The **outer zone** is the buffer's buffer, an additional 25-foot setback from the outward edge of the middle core zone to the nearest permanent structure. In many instances, this zone is within a residential backyard. The vegetative target for the outer zone is usually turf or lawn, although the property owner is encouraged to plant trees and shrubs. Few uses are restricted in this zone. Gardening, compost piles, yard wastes, and other common residential activities are promoted within the zone. The only major restrictions are no septic systems and no new permanent structures.

Buffer Crossings

Two major goals of a stream buffer network are:

- To maintain an unbroken corridor of riparian forest; and
- The upstream and downstream passage of fish in the stream channel.

Some provision must be made for linear forms of development that must cross the stream or the buffer, such as roads, bridges, fairways, underground utilities, enclosed storm drains or outfall channels. Some performance criteria could include:

- Crossing width: define a minimum width for maintenance access.
- Crossing angle: direct right angles are preferred, because they require less buffer clearing than oblique crossing angles.
- Crossing frequency: allow only one road crossing within each subdivision, and permit no more than one fairway crossing for every 1,000 feet of buffer.
- Crossing elevation: have all direct outfall channels (the places where effluent is discharged into receiving waters) discharge at the invert elevation, or the lowest point of the stream channel.

Using buffers for stormwater treatment. The outer and middle zone of the stream buffer may be used as a grass/forest filter strip under limited circumstances. For example, the buffer cannot treat more than 75 feet of overland flow from impervious areas and 150 feet from pervious areas, such as backyards or rooftops. The designer should compute the maximum runoff velocity for both the six-month and two-year storms from each overland flow path, based on the slope, soil and vegetative cover. If the calculations indicate that velocities will be erosive under either condition (greater than three feet per second (fps) for a six-month storm, five fps for a two-year storm), the allowable length of contributing flow should be reduced.

When the buffer receives flow directly from an impervious area, the designer should include curb cuts or spacers so that runoff can spread evenly over the filter strip.

The stream buffer can be accepted as a stormwater filtering system if basic maintenance can be assured, such as routine mowing of the grass filter and annual removal of accumulated sediments at the edge of the impervious areas and the grass filter. The existence of an enforceable maintenance agreement that allows for public maintenance inspection is also helpful.

Location of stormwater ponds and wetlands within buffer. A particularly difficult management issue involves locating stormwater ponds and wetland in relation to the buffer.

Several arguments can be made for locating ponds and wetlands within the buffer or on the steam itself. Constructing ponds on or near the stream allows the greatest possible drainage area to be treated at one topographic point. Also, ponds and wetlands require the dry weather flow of a stream to maintain water levels and prevent nuisance conditions. Lastly, ponds and wetlands add a greater diversity of habitat types and structure and can add to the total buffer width in some cases.

Given the effectiveness of stormwater ponds and wetlands in removing pollutants, one should not completely prohibit their use within the buffer.

Plan Review and Construction

The limits and uses of stream buffer systems should be well defined during each stage of the development process, from initial plan review through construction. The following steps are helpful during the planning stage:

- Require that the buffer be delineated on preliminary and final concept plans;
- Verify the stream delineation in the field;
- Check that buffer expansions are computed and mapped properly;
- Check suitability of use of buffer for stormwater treatment;
- Ensure other best management practices (BMPs) are properly integrated in the buffer; and
- Examine any buffer crossings for problems.

Buffer Flexibility

The courts have generally found that buffer ordinances avoid the taking issue, by proving that buffer strips provide compelling public safety, welfare, and environmental benefits to the community to justify restriction of land use. In order to limit the hardship on developments the following planning methods can be utilized to mitigate any negative impacts associated with the creation of stream buffer strips.

Buffer averaging. Here a community provides some flexibility in the buffer width, permitting the buffer to become narrower at some points along the stream as long as the average width meets the minimum requirement.

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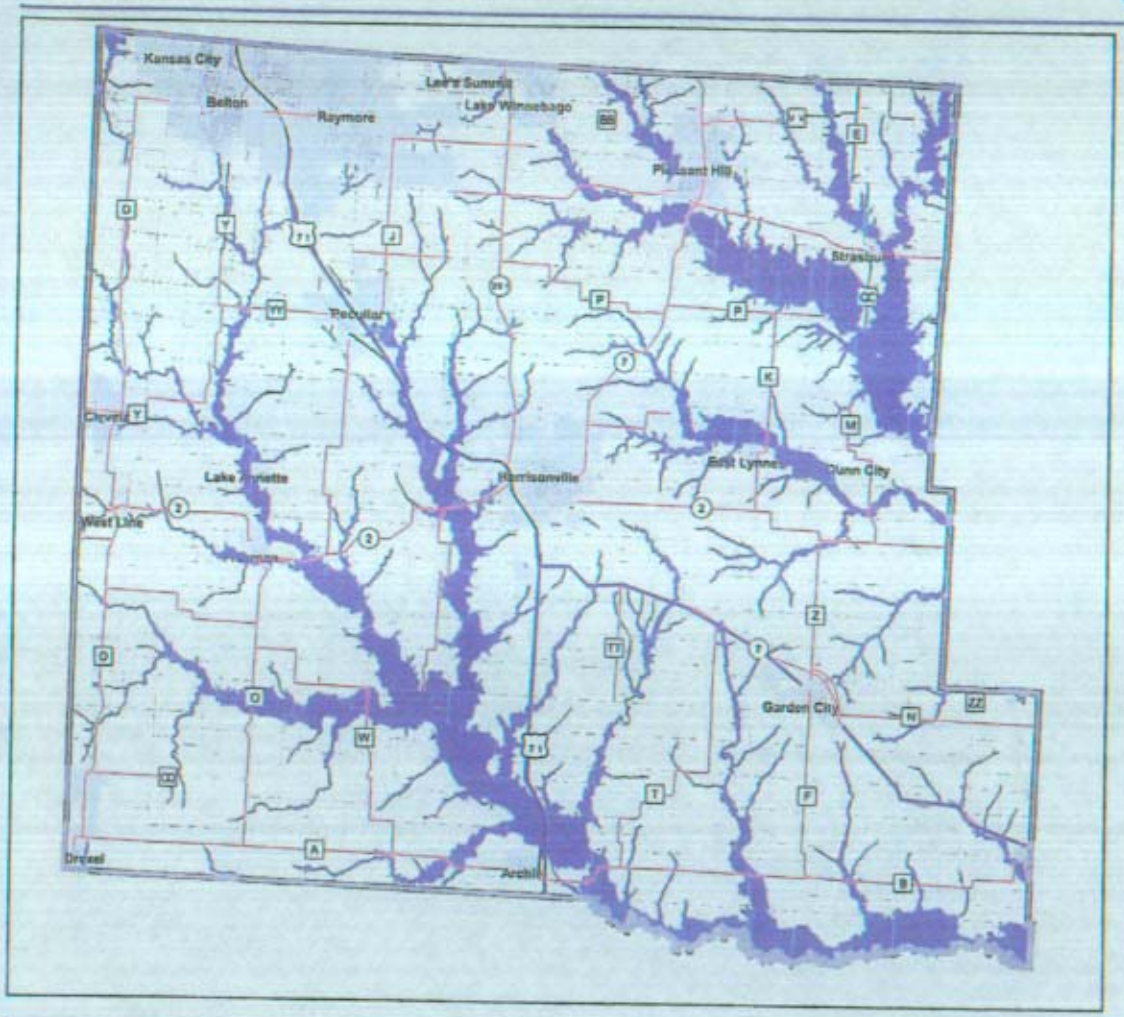
Cass County, Missouri



Natural Features Map

LEGEND

- US Highway
- Major Roads
- Other Roads
- 100-Year Floodplain
- Incorporated Cities
- County Boundary

N

0.9 0 0.9 1.8 2.7 3.6 4.5 Miles

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Density compensation. This scheme grants a developer credit for additional density elsewhere on the site to compensate for developable land lost to the buffer. Developable land is defined as the buffer area remaining after the 100-year floodplain, wetland and steep slope areas have been subtracted. Credits are granted when more than five percent of developable land is consumed, using the approach shown in Table 1. The density credit is accommodated by allowing greater flexibility in setbacks, frontage distances, or minimum lot sizes. Cluster development also allows the developer to recover lots that are taken out of production due to buffers and other requirements.

Conservation easements. Landowners should be afforded the option of protecting lands within the buffer with a perpetual conservation easement.

Variances. The buffer ordinance should have provisions that enable an existing property owner to be granted a variance, if the owner can demonstrate severe economic hardship or unique circumstances make it impossible to meet some or all buffer requirement.

Table 3.1 Example of the Use of Density Credits

(To compensate developers for excessive land consumption by buffers.)

Percentage of Site Lost to Buffers	Density Credit*
1 to 10%	1.0
11 to 20%	1.1
21 to 30%	1.2
31 to 40%	1.3
41 to 50%	1.4
51 to 60%**	1.5
61 to 70%**	1.6
71 to 80%**	1.7
81 to 90%**	1.8
91 to 99%**	1.9

Adapted form Burns, 1992.
*Additional dwelling units allowed over base density (1.0)
**Credit may be transferred to a different parcel

NATURAL FEATURES MAP

CHAPTER FOUR: MAJOR ROADWAY PLAN

ROADWAY STANDARDS

Design standards are established to provide the level of service that it is intended for each roadway classification. Many of these design standards are set forth in the Cass County Subdivision Regulations and by the Standard Specifications and Design Criteria of the Kansas City Metropolitan Chapter of the American Public Works Association. Tables 4.2 and 4.3 identify the material options for each roadway classification. Table 4.4 provides further standards, including right-of-way, cul-de-sac, sight distance and sidewalk requirements for each roadway classification (also, **Ref. Major Thoroughfare Plan Map**).

Freeway and Expressways: The Missouri Highway and Transportation Department (MoDOT) is the entity responsible for construction and maintenance of freeways and expressways within Cass County. Therefore, all freeways and expressways should be constructed in accordance with the specifications of MoDOT (Option A in Table 4.2).

Rural Parkway: A parkway should be constructed in accordance with specifications of MoDOT for expressways, with landscaping added in the grass landscape median and the outer right-of-way buffer landscape areas.

Five-Lane Primary Arterial Roadways: A five-lane primary arterial roadway section includes two 12-foot through lanes in each direction with a 12-foot to 16-foot center two-way left turn lane located between the through lanes. The surface of a five-lane arterial roadway should be paved and constructed in compliance with Option C in Table 4.2.

Traffic volumes on primary arterial roadways can range as high as 42,000 vehicles per day. Excessive curb cuts and mid-block turning movements, however, can reduce the capacity of this type of roadway. A center turn lane is appropriate because of frequent entrances into higher traffic generation land uses such as business parks and retail centers. A median can be constructed in locations where left-turns are prohibited. On-street parking should be prohibited.

Two-Lane Minor Arterial Roadways: A two-lane minor arterial roadway section includes two 12-foot through lanes. Two-lane minor arterial roadways should be paved and constructed in accordance with Option C in Table 4.2.

The traffic volume for a two-lane minor arterial roadway should range between 4,000 and 19,000 vehicles per day. Two-lane minor arterial roadways are appropriate for carrying traffic through primarily residential land uses without directly accessing any of the properties and for carrying traffic through agricultural land uses with minimal direct access to agricultural properties. Left turnbays should be provided at major intersections and at all signalized intersections.

Two-Lane Collector Roadways: This type of street is appropriate for collecting traffic in a residential neighborhood. Because traffic volumes may range between 1,500 and 4,000 vehicles per day, properties abutting the collector may not be as desirable as those abutting only a local street. Parking and private access to the collector roadway should be discouraged. If needed, parking should be allowed on one side only.

The width of a collector roadway should accommodate two 12-foot lanes. In rural areas, a right-of-way of 60 to 80 feet should be provided to allow for ditches to be constructed within the right-of-way. In Urban Service Areas where curb and gutters are provided with an enclosed storm sewer system, a right-of-way of 60 feet is appropriate.

The roadway surface should be constructed of either Option B, D, or E in Table 4.

Local Roadways: All other roadways in the county not previously described are classified as local streets. The ideal traffic volume for local streets is less than 1,000 vehicles per day. Local streets should provide direct access to private property, and generally on-street parking is not permitted. Recommended street widths are 28 feet within a 60 foot right-of-way.

TABLE 4.1: CASS COUNTY ROADWAY CLASSIFICATIONS

Roadway Name	*Location*	*Roadway Classification*
2 Highway	From west county limit, through Freeman and Harrisonville to east county line	Primary Arterial
175th Street	Between 291 Hwy and Pleasant Hill	Minor Arterial/Collector
203rd Street	Between School Rd. and Jefferson Parkway	Minor Arterial/Collector
213th Street	Between CC Hwy and Dillon Rd.	Minor Arterial/Collector
243rd Street	Between East Lynne and Gunn City	Minor Arterial/Collector
249th Street	Between Harper Rd. And 251st St.	Minor Arterial/Collector
251st Street	Between 249th St. and U.S. Hwy 71	Minor Arterial/Collector
253rd Street	Between Lake Annette Rd. and Harper Rd.	Minor Arterial/Collector
291 Highway	Between north county limit and Harrisonville	Primary Arterial
307th Street	Between W Hwy and Garden City	Minor Arterial/Collector
58 Highway	Between Raymore and east county limit	Primary Arterial
7 Highway	Between U.S. Hwy 71 and Creighton	Expressway
7 Highway	From north county limit, through Pleasant Hill to Harrisonville	Primary Arterial

Roadway Name	Location	Roadway Classification
A Highway	Between Drexel and Archie	Minor Arterial/Collector
B Highway	Between Archie and Creighton	Minor Arterial/Collector
BB Highway	Between north county limit and 58 Hwy	Minor Arterial/Collector
C Highway	Between Peculiar and 2 Hwy	Minor Arterial/Collector
CC Highway	Between Strasburg and 213th St.	Minor Arterial/Collector
Cleveland Avenue	Between Belton and Y Hwy	Minor Arterial/Collector
Country Club Drive	Between Pleasant Hill and east county limit	Minor Arterial/Collector
D Highway (Holmes Road)	From Belton through Cleveland to Drexel	Minor Arterial/Collector
DD Highway	Between 2 Hwy and 307th St	Minor Arterial/Collector
Dillon Road	Between 213th St. and M Hwy	Minor Arterial/Collector
E Highway	Between north county limit and Strasburg	Minor Arterial/Collector
EE Highway	East of 7 Hwy	Minor Arterial/Collector
F Highway	Between Garden City and Dayton	Minor Arterial/Collector
Groh Road	Between Y Hwy and 2 Hwy	Minor Arterial/Collector
Harper Road	Between Peculiar and 249th St.	Minor Arterial/Collector
Hoover Road	Between P Hwy and 58 Hwy	Minor Arterial/Collector
Hubach Hill Road	Between Raymore and 291 Hwy	Minor Arterial/Collector
J Highway	Between Raymore and Peculiar	Minor Arterial/Collector
Jefferson Parkway	Between 203rd St. and Harrisonville	Minor Arterial/Collector
K Highway	Between P Hwy and 2 Hwy	Minor Arterial/Collector
KK Highway	Between north county limit and Osborne Rd.	Minor Arterial/Collector
Kurtzweil Road	Between north county limit and Raymore	Minor Arterial/Collector
Lake Annette Road	Between 2 Hwy and 253rd St	Minor Arterial/Collector
M Highway	Between Dillon Rd. and 2 Hwy	Minor Arterial/Collector
Mullen Road	Between Belton and YY Hwy	Minor Arterial/Collector

Roadway Name	Location	Roadway Classification
N Highway	Between Garden City and east county limit	Minor Arterial/Collector
O Highway	Between Freeman and south county limit	Minor Arterial/Collector
O'Bannon Road	Between 2 Highway and 7 Highway	Minor Arterial/Collector
OO Highway	Between D Hwy and O Hwy	Minor Arterial/Collector
Orient Cemetery Road	Between 2 Hwy and East Lynne	Minor Arterial/Collector
Osborne Road	Between KK Hwy and east county limit	Minor Arterial/Collector
P Highway	Between Jefferson Parkway and Hoover Rd.	Minor Arterial/Collector
Pollard Road	Between Dayton and south county limit	Minor Arterial/Collector
Prairie Lane Road	Between north county limit and 203rd St	Minor Arterial/Collector
Prospect Avenue	Between Belton and Y Hwy	Minor Arterial/Collector
School Road	Between Raymore and Peculiar	Minor Arterial/Collector
Stark Road	Between 251st St and 263rd St	Minor Arterial/Collector
Sycamore Grove Road	Between 2 Hwy and 7 Hwy	Minor Arterial/Collector
T Highway	Between 7 Hwy and B Hwy	Minor Arterial/Collector
TT Highway	Between 7 Hwy and 307th St	Minor Arterial/Collector
U.S. Highway 71	Between Harrisonville and south county limit	Expressway
U.S. Highway 71	Between Raymore and Harrisonville	Freeway
VV Highway	Between Pleasant Hill and E Hwy	Minor Arterial/Collector
W Highway	Between O Hwy and south county limit	Minor Arterial/Collector
W Highway	Between D Hwy and O Hwy	Minor Arterial/Collector
Ward Road	Between north county limit and 58 Hwy	Minor/Arterial/Collector
Y Highway	Between Belton and Cleveland	Minor Arterial/Collector
YY Highway	Between Y Hwy and Peculiar	Minor Arterial/Collector
Z Highway	Between 2 Hwy and Garden City	Minor Arterial/Collector

The type of roadway surface that a local street should have will be determined by the County upon final platting.

TABLE 4.2: ROADWAY MATERIAL OPTIONS

Option	Material Description
A	Must meet specifications of the Missouri Department of Transportation (MoDOT).
B	Six (6) inches of Portland cement concrete over a six-inch compacted subgrade 95 percent of standard maximum density.
C	Two (2) inches of Type 3 asphaltic concrete, 10 inches of Type 1 asphaltic concrete base course and a six (6) inch compacted subgrade 95 percent of standard maximum density.
D	Two (2) inches of Type 3 asphaltic concrete with six (6) inches of Type 1 asphaltic concrete base course and a six (6) inch compacted subgrade 95 percent of standard maximum density.
E	Three (3) inches of Type 3 asphaltic concrete with a five (5) inch stabilized aggregate base and a six (6) inch compacted subgrade 95 percent of standard maximum density.

Source: Standard Specifications & Design Criteria, Kansas City Metro Chapter, American Public Works Association.

TABLE 4.3: ROADWAY MATERIAL STANDARDS

Roadway Classification	Roadway Material Options					
	A	B	C	D	E	F
Freeway and Expressway	◆					
Five-Lane Primary Arterial			◆			
Two-Lane Minor Arterial			◆			
Two-Lane Collector		◆		◆	◆	
Local		◆		◆	◆	

Source: Standard Specifications& Design Criteria, Kansas City Metro Chapter, American Public Works Association and the Federal Highway Administration.

TABLE 4.4: RECOMMENDED STREET DESIGN STANDARDS

	Arterial		Collector	Local	
	5-Lane (Major)	2-Lane (Minor)	2-Lane	2-Lane	Cul-de-sac Bulb
Right-of-Way Width	100 feet	80 feet	60-80 feet[1]	60 feet[2]	50 feet Radius
Roadway Width	65 feet[3]	36 feet[3]	24 feet[3]	24 feet[3]	N/A
Minimum Radii of Turnaround	N/A	N/A	N/A	N/A	39 feet
Shoulder Width (Each Side)[4]	8 feet	8 feet	8 feet	4 feet	4 feet
Roadway Surface Type	Paved	Paved	Paved	Varies	Varies
Design Volume (VPD) Range	10,000-42,000	4,000-10,000	1,000-4,000	Less Than 1,000	N/A
Design Speed (MPH)[5]	60	50-60	35	30	N/A
Maximum Gradient	5%	7%	6%	10%	10%
Minimum Gradient[6]	1%	1%	1%	1%	1%
Minimum Radii of Horizontal Curves	1091 feet	700 feet	300 feet	185 feet	N/A
Minimum Sight Distance on Vertical Curves	475 feet	325 feet	200 feet	150 feet	N/A

Source: Cass County Subdivision Regulations; and Standard Specifications and Design Criteria, Kansas City Metropolitan Chapter of the American Public Works Association.

Notes:

(1) The right-of-way width for a collector street with an enclosed storm water system shall be 60 feet.
(2) The right-of-way width for a local street with an enclosed storm water system shall be 50 feet.
(3) Added Right of Way shall be dedicated when adding a (2) foot curb and gutter on each side.
(4) Shoulders shall not be required on roadways with a curb and gutter. If curb and gutter are not constructed, ditches shall be constructed on each side of the roadway surface with a minimum two (2) to one (1) slope.
(5) Design speed criteria for horizontal and vertical alignment should meet the requirements of the current edition of "A Policy of Geometric Design of Highways and Streets," AASHTO.
(6) Absolute minimum grade of 0.50 percent requires approval by County Engineer.

ACCESS CONTROL

Local access control policies, along with projected traffic volumes, affect specific design characteristics associated with each functional classification. For example, higher traffic volumes, such as those exceeding 10,000 vehicles per day, warrant construction of a four or five-

lane arterial street to effectively move traffic. Conversely, traffic volumes between 4,000 and 10,000 vehicles per day can be accommodated by a two-lane arterial street that has turnbays, good signal and intersection spacing, and private driveway access control. In many cases, a well built two-lane arterial street can function as well as a four-lane street at just over half the cost.

Adopting an access control policy in Cass County will maintain existing capacity by controlling access to arterial and collector roadways while improve traffic flow as new development occurs. Constructing intersection improvements, turnbays, medians, and/or providing traffic signal timing is a method to increase street capacity. Conversely, adding cross streets, driveways, traffic signals, and other stop controls can decrease street capacity.

Specific access control guidelines are listed below for public street intersection spacing, driveway spacing, and corner clearance.

Intersection Spacing. Adequate distance between intersections is essential for the safe and efficient flow of traffic. Appropriately spaced intersections provide through-motorists an opportunity to respond to traffic entering the street from a side street. Table 7 shows the minimum standards for spacing intersections, determined by through-traffic speed.

TABLE 4.5: MINIMUM INTERSECTION SPACING STANDARDS

Through-Traffic Speed	Minimum Intersection Spacing
30 mph	210 feet
35 mph	300 feet
40 mph	420 feet
45+ mph	550 feet

Source: Institute of Transportation Engineers

Driveway Spacing. Like a street, private driveways create an intersection with a public street. Conflicts and potential congestion occur at all intersections - public and private. Methods to reduce conflict include:

- Separating the conflicts by reducing the number of driveways and intersections;
- Limiting certain maneuvers such as left turns; and
- Separating conflicts by providing turn lanes.

No access drives should be located within the operations area of an intersection. Driver conflicts need to be spaced in order to eliminate overlaps between through traffic and right turns.

It is recommended that driveway locations, at a minimum, should comply with the corner clearance criteria indicated in Figure 1 on the following page. Proper spacing of driveways

permits adequate storage and stacking of automobiles on the public street. This distance may have to be increased in cases with high volumes to ensure that driveways do not interfere with the operation of turning lanes at intersections.

The number of driveways accessing undivided arterial roadways should be minimized. The following standards were developed by the City of Overland Park, Kansas, and are based on AASHTO and the Institute of Transportation Engineers (ITE) guidelines. Cass County should adopt its own standards by using the guidelines listed in Table 8.

TABLE 4.6: SUGGESTED MAXIMUM DRIVEWAY GUIDELINES*

Maximum Number of Driveways	Driveway Spacing	
	Undivided Arterial Streets Length of Lot Frontage	Divided Arterial Streets Length of Lot Frontage
1	0-399 feet	0-529 feet
2	400 - 899 feet	530 - 1199 feet
3	900-1,399 feet	1200 - 1859 feet
4	1,400-1,899 feet[1]	1860 - 2525 feet[2]

Source: City of Overland Park Planning Commission Resolution No PC-59.

Notes:
* Cass County should consider adopting local minimum separation standards for driveways on arterial streets.
[1] For each 500 feet above 1899 feet, one additional driveway is permitted.
[2] For each 665 feet above 2525 feet, one additional driveway is permitted.

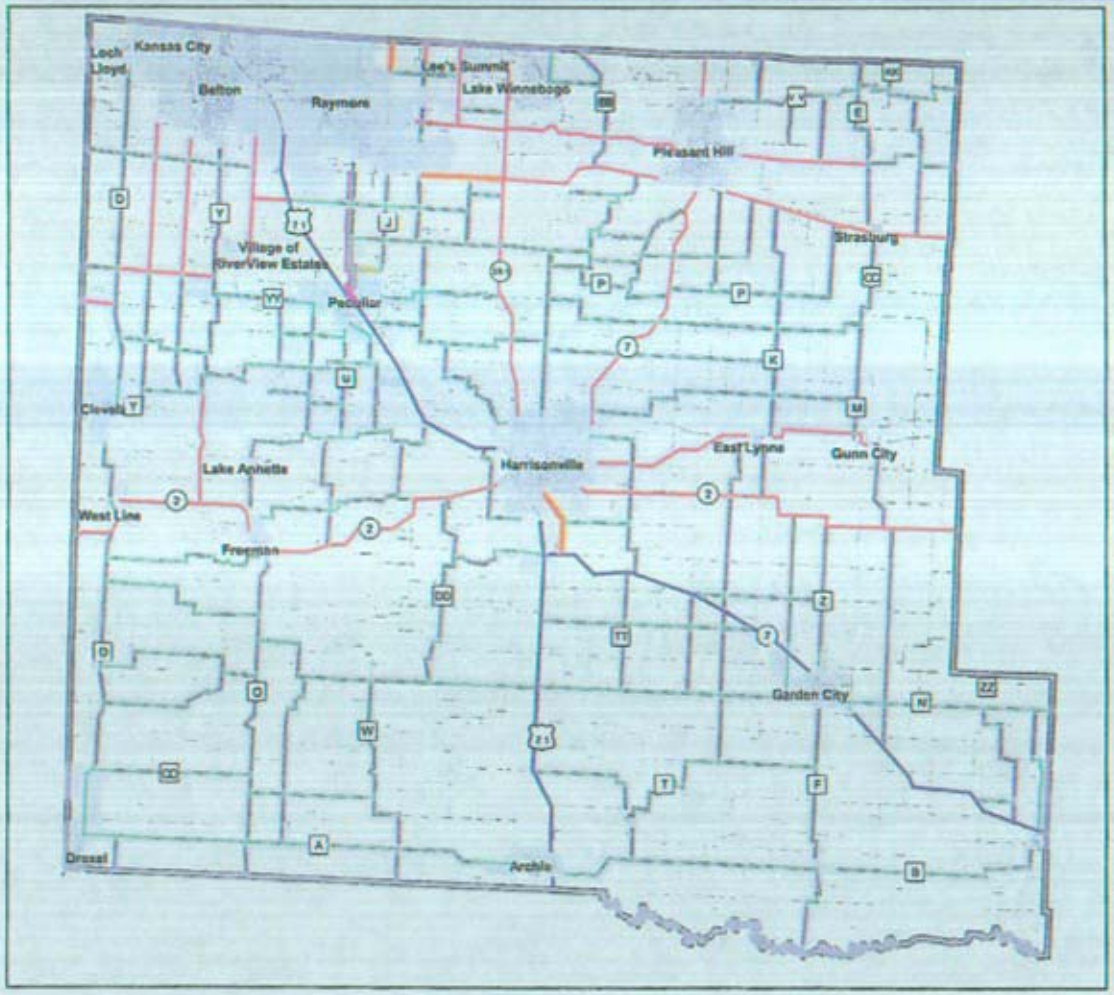
Corner Clearance. Specific minimum corner clearance guidelines are listed in Figure 1. These guidelines can be used to regulate new commercial developments which often are located along arterial or collector streets.

MAJOR THOROUGHFARE PLAN MAP

(See attached)

COMPREHENSIVE PLAN UPDATE - 2003

Cass County, Missouri



Major Thoroughfare Plan

LEGEND

- US Highway
- Arterials
- Collectors
- Other Roads

Scheduled Road Improvements

- Chip and Seal to Asphalt
- Gravel to Asphalt
- Gravel to Chip and Seal
- Incorporated Cities
- County Boundary

N

0.9 0 0.9 1.8 2.7 3.6 4.5 Miles

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