City of Raymore

Growth Management Plan

Prepared for

City of Raymore, Missouri

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Population

INTRODUCTION

One of the prerequisites to developing a plan for future growth is to estimate the amount of growth which is likely to take place. This chapter will include population projections through the year 2005 to fulfill this requirement. The analysis will include a review of recent trends and an evaluation of age characteristics.

The Future Land Use Chapter will transform the estimates of population growth into estimates of land use demand by category of use. This information will then be used as one of the determinants of Raymore's future land use pattern. In addition, the population data contained in this chapter can be used to predict future demand for municipal services. Depending on the type of service being provided, the level of demand is generally linked to some combination of population and service area size.

THE COMPONENTS OF POPULATION CHANGE

The elements which determine the direction and magnitude of population change are births, deaths and migration. Although data is only available for the past six years, it is clear that natural population increase (births minus deaths) has played only a minor role in Raymore's population growth. This means that the in-migration of new residents has been the driving force behind the rapid increase in population since 1970.

In the case of cities which are expanding in land area as well as population, annexation can be viewed as a fourth element in the

TABLE 1.1

POPULATION CHANGES IN RAYMORE TOWNSHIP

	TOTAL	RAYMORE	BELTON	UNINCORPORATED
1980	7,332	3,154	2,367	1,811
1970	2,471	587	958	926
1960	960	268	--	692
1950	683	208	--	475

Source: U.S. Census Bureau

population change equation. Although it is difficult to document the precise impact of annexation on population change, it is important that Raymore's growth projections be based primarily on in-migration patterns rather than on the annexation of long-time Cass County residents. Table 1.1 illustrates the pattern of population change for both incorporated and unincorporated areas in Raymore Township. From this data, it appears as though past annexations have not substantially distorted the City's growth trends. First, total township population has increased at nearly the same rate as the City. If the Township population were stagnant, then Raymore's population increase might have been due solely to annexation rather than in-migration. Secondly, the population of the unincorporated portion of the Township has increased consistently. If in-migration was not occurring, then the unincorporated population would be declining with each annexation.

POPULATION CHARACTERISTICS

In addition to knowing total population, it is helpful to understand the characteristics of the population. For example,

TABLE 1.2

AGE DISTRIBUTION

(PERCENTAGE OF TOTAL 1980 POPULATION)

	RAYMORE (PERCENT)	CASS CO. (PERCENT)	K.C. METRO (PERCENT)	MISSOURI (PERCENT)
0 - 4	7.29	7.83	7.45	7.20
5 - 9	10.27	8.66	7.53	7.23
10 - 14	10.94	9.39	7.92	7.77
15 - 20	8.02	9.60	8.89	9.38
20 - 24	2.86	7.56	8.98	9.06
25 - 29	6.66	7.46	9.07	8.10
30 - 34	10.59	7.98	8.19	7.21
35 - 39	11.41	7.63	6.50	5.93
40 - 44	6.85	6.15	5.33	5.06
45 - 49	4.25	5.48	5.12	4.94
50 - 54	3.74	4.86	5.35	5.16
55 - 59	2.96	4.46	5.19	5.19
60 - 64	2.31	3.56	4.13	4.58
65 - 69	2.98	2.97	3.42	4.23
70 - 74	3.42	2.42	2.66	3.53
75 & Up	5.45	3.99	4.27	5.43
	100.00%	100.00%	100.00%	100.00%

Source: U.S. Census Bureau

Table 1.2 includes the distribution of the Raymore population by age, as well as for Cass County, the Kansas City metropolitan area, and the State of Missouri. This comparison illustrates the fact that Raymore has an unusually high proportion of its population in the 5 through 14, 30 through 44, and 75 and over age groupings. On the other hand, Raymore has an unusually low proportion of its population in the 15 through 29, and 50 through 65 age groupings.

TABLE 1.3

INCOME COMPARISON (1980)

	RAYMORE	CASS CO.	K.C. METRO	MISSOURI
Income:				
Median Family	$26,662	$21,401	$20,034	$18,784
Mean Family	$28,324	$23,398	$22,638	$21,665
Per Capita	$ 8,342	$ 7,187	$ 7,480	$ 6,917

Source: U.S. Census Bureau

This data suggests that the majority of in-migrants are either retirees over age 65 or families with the adults aged 30 to 45 and children aged 5 to 15. This is consistent with the experience of other suburban communities that contain housing aimed at the upper-middle income brackets. This data also suggests that young households (ages 20-30) either cannot find appropriate housing or do not want to live in a suburban location.

Furthermore, the majority of in-migrants appear to have above average incomes. The data in Table 1.3 shows that both per capita and family incomes are significantly above the income levels of the County, metro area and the State.

POPULATION PROJECTIONS

An examination of past population trends reveals that Raymore had virtually no growth between 1940 and 1960. This was followed by a period of modest growth during the Sixties and by rapid growth during the Seventies and Eighties. The underlying factor behind this growth pattern is the gradual expansion of the Kansas City

Metropolitan Area. Raymore is now on the edge of the development zone which rings the metro area. As vacant land "closer in" becomes harder to find, development pressure will continue to increase.

Raymore is currently experiencing the early phases of metro area expansion. New residents in Raymore are typically affluent families seeking spacious home sites, good schools and reasonable access to the rest of the region. In order to be able to afford a large lot and escape the frustrations of "big city" life, these families are willing to skip over vacant land closer to the center of the metro area in order to locate in Raymore. As continuing development in the region makes vacant land increasingly difficult to find, outlying locations such as Raymore will be perceived as being logical locations for a broader spectrum of development. This is likely to include higher density single-family housing, multi-family housing and retail centers. It is at this point that some suburban communities have chosen to emphasize local job creation efforts in order to make the transition from bedroom community to full-service community. If those efforts are successful, then the community's growth becomes increasingly self-sustaining and less dependent on other parts of the region.

This typical suburban growth pattern has a number of implications for developing any forecasts of Raymore's population growth. First, it suggests that the high level of development demand in recent years will undoubtedly continue, and will probably intensify. Secondly, the rate of growth (at least for the short-term) will be directly influenced by the economic well-being of the region and the growth of employment opportunities elsewhere in the metro region. Finally, the pace of development will be affected by the City's approach to development controls. Initially, some developers may view Raymore as a location with easily developable ground suitable

for low-cost "tract" housing. Strict development standards may discourage them from locating in Raymore and thus slow the rate of growth. In the long-run, however, a reputation for quality is likely to sustain development demand over a longer period of time.

All of these factors work to increase the difficulty of making accurate population projections. In this type of situation, forecasting becomes much more of an "art" than a "science". In order to develop a range of population growth scenarios, four mathematical models were developed to project future population change in Raymore. Each of these models is then evaluated to determine the reasonableness of its results. It is important to point out, however, that mathematical models predict the future based on past trends. As a result, they define only what could be, and not necessarily what will be.

The first two models are based on Raymore past growth trends since 1940 (including a 1986 population estimate of 5,000). Two regression models (curvilinear and linear) were used to determine an equation which accurately described past trends and then that equation was extrapolated into the future. The curvilinear regression (labeled "B" in Table 1.4 and Figure 1.1) fit past population trends reasonably well and projected very rapid future growth. The formulas project Raymore's population to the year 2005 to be 27,230. The linear regression (labeled "D") was less successful at matching past trends because Raymore's past growth has not been very linear. Linear regression projects relatively slow growth with a 2005 population of 7,500.

One of the disadvantages of preparing forecasts from Raymore's past population trends is that growth has occurred so recently in Raymore that it is difficult to accurately project the current upward

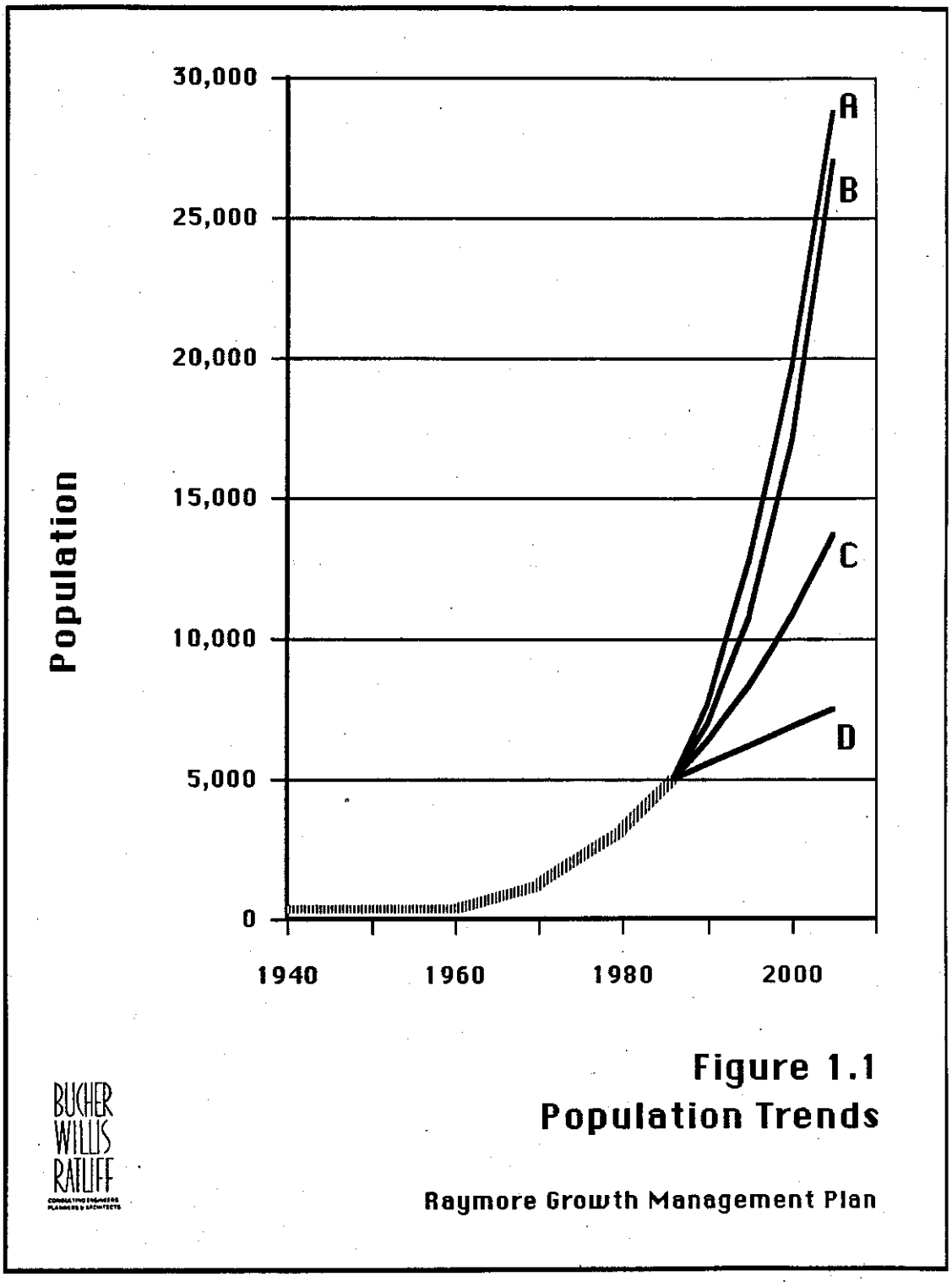


Figure 1.1
Population Trends

Raymore Growth Management Plan

TABLE 1.4

RAYMORE POPULATION

	PAST TRENDS	FUTURE PROJECTIONS			
		A	B	C	D
1940	207				
1950	208				
1960	268				
1970	587				
1980	3,154				
1986	5,000				
1990		7,730	7,020	6,430	5,530
1995		12,830	10,900	8,450	6,180
2000		19,740	17,160	10,900	6,840
2005		28,930	27,230	13,670	7,500

Note: See text for explanation of projection techniques.

Source: U.S. Census Bureau; City of Raymore; and Bucher, Willis & Ratliff.

trend into the future. As an alternative, the population of Cass County has been projected to the year 2005 (using both linear and curvilinear models) and a share of the anticipated growth allocated to Raymore. Since the County has been experiencing relatively rapid increases since the Fifties, the magnitude of future growth is easier to pinpoint. Raymore's share of Cass County growth is expected to increase over time to roughly 50 percent by 2005. Based on the curvilinear forecast of County growth, Raymore would grow rapidly to a population of 28,930 by 2005 (see projection "A" in Table 1.4 and Figure 1.1). The more conservative linear projection yields a Raymore population of 13,670 in the year 2005 (see projection "C").

The wide range of results exhibited by these four models is indicative of the difficulty in projecting population change in rapidly growing suburban communities. Selecting the most accurate projection will require balancing:

1. The regional growth trends of the Kansas City metropolitan area;
2. The ability of Raymore to accommodate new growth; and
3. The degree to which Raymore encourages or discourages new development.

Barring a major economic recession, projection "D" seems unrealistically low and is the least likely to be accurate. On the other hand, projections "A" and "B", although conceivable, appear to be overly optimistic regarding long-range demand and would probably strain the City's ability to provide municipal services in an orderly and efficient manner. Projection "C" is probably the most plausible. However, the precise magnitude of future growth will depend upon a variety of factors, many of which are beyond the control of Raymore. On balance, projection "C" seems to be most probable given current trends.

Chapter 2
Existing Land Use

INTRODUCTION

Before the future land use pattern of Raymore can be developed, it is necessary to have a full understanding of the existing land use pattern. The location and character of existing uses will have an obvious impact on the location and character of future uses. This chapter examines the existing land use pattern of Raymore and compares it with other cities of similar size.

The use of land in a community is not a random process. Numerous distinct variables influence the way a given piece of land is used. Some of the variables -- such as the demand for new development, the cost of construction, and environmental constraints -- are beyond the control of the community. Other variables, however, are at least partially within the community's control, including traffic patterns, public utilities and municipal services. These variables, together with the ideas and aspirations of each property owner, shape the way in which land is developed.

LAND USE INVENTORY

A field survey of the use of each parcel of land in Raymore was conducted by the City in June of 1986. The results of that survey are presented in both graphic form as a map and tabular form as acreage calculations. This data represents a "baseline" from which the City can measure its progress at achieving its future land use goals. In order to take advantage of this baseline, however, it is important that this data be kept up-to-date. It is recommended that the inventory of existing land uses be kept current by adjusting the totals as new building permits are issued.

TABLE 2.1
EXISTING LAND USE
RAYMORE, MISSOURI

	ACRES (Structures)	PERCENT OF TOTAL	PERCENT OF DEVELOPED
Residential	1,019	12.62%	62.83%
Single-Family[1]	940 (1,298)	11.81%	58.82%
Duplex[2]	14 (39)		
Multi-Family	64 (42)	0.80%	3.95%
Mobile Homes	1	0.01%	0.06%
Commercial	42	0.52%	2.59%
Industrial	51	0.63%	3.14%
Parks	102	1.26%	6.29%
Public & Semi-Public	44	0.54%	2.71%
Street Right-of-Way	364	4.51%	22.44%
Railroad R.O.W.	0	0.00%	0.00%
Total Developed	1,622	20.08%	100.00%
Undeveloped	6,455	79.92%	
TOTAL	8,077	100.00%	

[1] Single-family residential includes farmsteads and duplexes.

[2] Assumes 16,000 square feet per duplex lot; per city staff.

Source: City of Raymore, Missouri.

Table 2.1 shows the existing land use data aggregated by type of use. One of the most obvious characteristics of Raymore is that it is largely undeveloped. Roughly 80 percent of the City's 8,077 acres are vacant or used agriculturally. Of the land that is developed, the majority (63 percent) is used for residential uses. The second largest category is for street rights-of-way, and it accounts for 22 percent of developed land. All the remaining categories together account for only 15 percent of developed area.

LAND USE COMPARISON

One way of putting the distribution of land uses in Raymore in perspective is to compare it with other cities of similar size. This

has been done in Table 2.2. In this case, the "typical city" used for comparison is a composite of eight Midwestern cities ranging in population from 2,000 to 10,000.

It is important to note that the typical city statistics are not necessarily goals to be achieved, but are included simply for the purpose of comparison. Such a comparison is a descriptive tool which leads to a better understanding of past land use demand and development patterns.

The comparison underscores the current predominance of single-family residential development in Raymore. That category accounts for 58 percent of Raymore's developed land compared with 34 percent for the typical city. Raymore's high 18.82 acres of single-family development per 100 persons is an indicator of much larger than average lot sizes and, consequently, much lower densities.

TABLE 2.2
LAND USE COMPARISON

	RAYMORE		TYPICAL CITY [1]	
	PERCENT OF DEVELOPED LAND	ACRES PER 100 PERSONS	PERCENT OF DEVELOPED LAND	ACRES PER 100 PERSONS
Residential	62.82%	20.38	36.2%	8.08
Single-Family[2]	57.98%	18.82	34.7%	7.72
Multi-Family	4.84%	1.56	1.5%	0.36
Commercial	2.59%	0.84	5.9%	1.38
Industrial	3.14%	1.02	3.8%	0.77
Parks	6.29%	2.04	6.9%	1.60
Public & Semi-Public	2.71%	0.88	14.4%	3.25
Street & Rail R.O.W.	22.45%	7.28	32.8%	7.33
Total Developed	100.00%	32.44	100.0%	22.41

[1] The "typical city" represents an average of eight Midwestern cities between 2,000 and 10,000 population.
[2] Single-family includes farmsteads and mobile homes.

Source: City of Raymore; Bucher, Willis & Ratliff.

The amount of commercial land uses is somewhat lower than is typical, but the amount of industrial and park land equals or exceeds the typical city standards. The public and semi-public category is the most noticeably deficient. This is not surprising, however, given the existence of only one public school in Raymore and the absence of common public uses such as airports, hospitals, sewage treatment facilities and cemeteries.

The difference in the amount of total developed land per 100 persons again reflects the City's unusually low residential densities.

DEVELOPMENT PATTERNS

The geographic pattern of the existing land uses reveals the dual nature of Raymore's past. The characteristics of the older portions of the City are typical of small, rural communities -- a grid pattern of residential streets surrounding a small core of retail and public uses. The areas of more recent development reflect Raymore's emerging status as a suburban growth center. As a result, the streets are curvilinear and discontinuous, and the locations for commercial uses are selected based on their vehicular accessibility rather than geographic accessibility.

So far, this transition from rural to suburban has not created any serious problems. The overwhelmingly residential emphasis of past growth has given the City a great deal of flexibility in planning future growth.

There are problems, however, related to the dispersed pattern of recent development. In addition to the original Raymore "core" area, there are now several other areas of development which are relatively

distant from each other. This lack of compactness typically creates two problems. First, the cost of providing municipal services increases dramatically. Second, the undeveloped areas which have been "skipped over" often become difficult to develop in a manner consistent with surrounding development. Fortunately, Raymore is growing so quickly that both problems may be relatively short-lived.

Finally, a potential problem may be created by the configuration of the major highways in the area. Due to Raymore's dependence on the rest of the metro area for employment opportunities, access via Highways 71 and 291 is crucial to the City's continued growth. Unfortunately, Highway 58 is the only major east/west arterial linking Raymore with Highways 71 and 291. As a result, new development has no choice but to focus on the 58 corridor. Although the long-term impact of this growth pattern is manageable, there will be short-term problems in making public improvements to that corridor without disrupting accessibility to the rest of the community.

HOUSING CHARACTERISTICS

One of the issues which suburban communities typically struggle to resolve is determining the appropriate balance between single-family and multi-family housing. There are, unfortunately, no simple solutions to this problem because it is largely a matter of local goals and values. If Raymore chooses to accommodate as broad a spectrum of people as possible, then additional multi-family dwellings will be necessary to provide a reasonably diverse array of housing choices for future residents. On the other hand, if Raymore chooses to maintain its existing character, then multi-family housing will need to be carefully located and limited in quantity.

Table 2.3 shows the 1980 housing characteristics for Raymore and seven other suburban communities. Only Leawood has a lower

percentage of multi-family dwelling units. Unfortunately, the 1980 census data does not reflect recent development trends. Data from the Home Builder's Association of Greater Kansas City indicates that multi-family housing starts actually exceeded single-family starts from 1980 to 1986. Although this data is less accurate than census information, it clearly shows a change in Raymore's development pattern.

What is probably more important than the quantity of multi-family dwellings is their quality. It may be more appropriate for the City to set minimum standards for the quality of apartment projects and let the housing market determine the quantity. Finally, the City may want to explore ways of encouraging owner-occupied units (condominiums or townhouses, for example), rather than renter-occupied units in order to promote better maintenance and greater stability. It is important, however, that the City not discriminate based on income.

TABLE 2.3

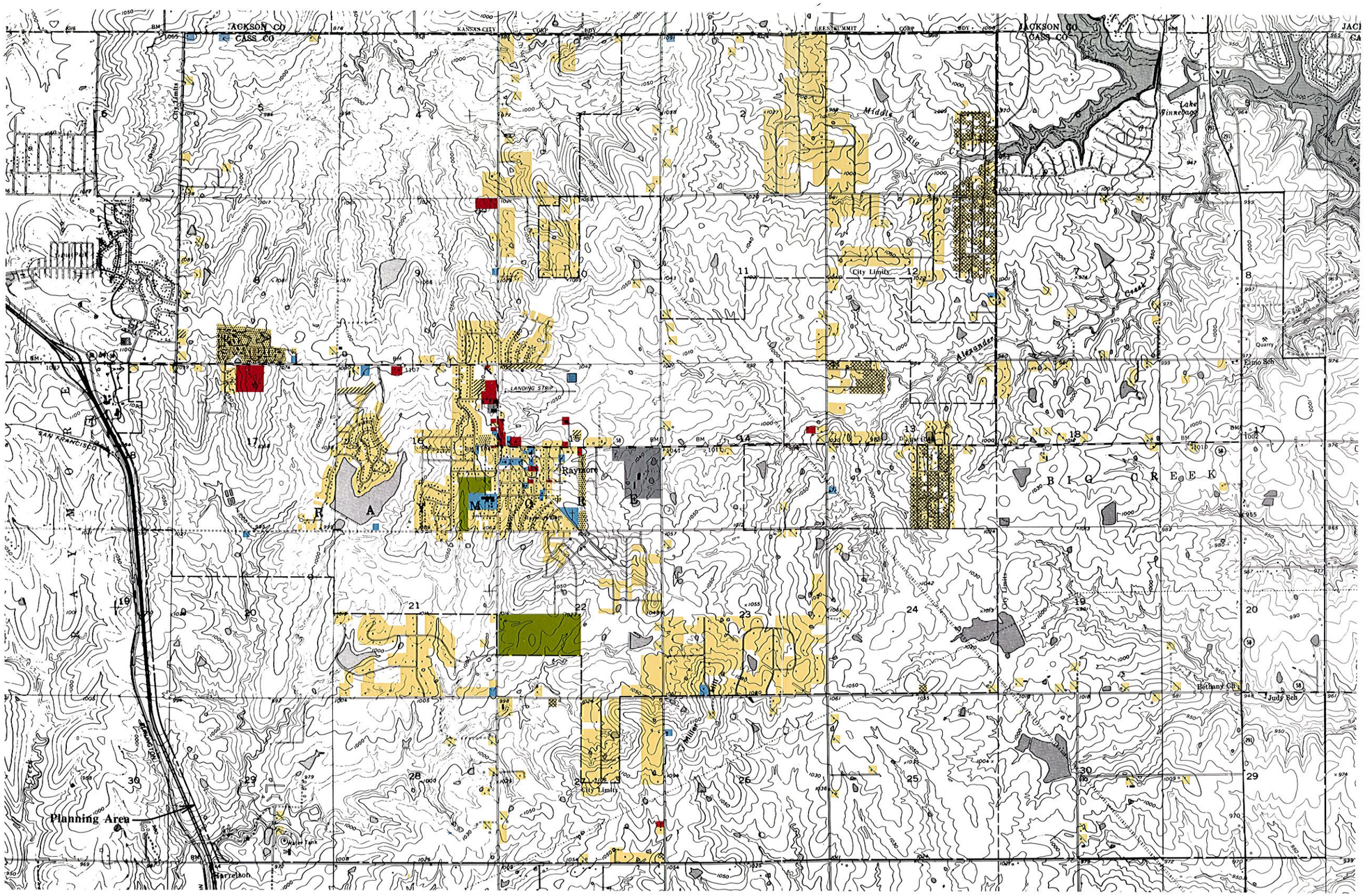
COMPARISON OF HOUSING CHARACTERISTICS, 1980

	TOTAL UNITS	OWNER/ RENTER	UNITS AT ADDRESS 1	UNITS AT ADDRESS /2 & UP	UNITS AT ADDRESS M. HOME	PERSONS PER UNIT TOTAL	PERSONS PER UNIT OWNER	PERSONS PER UNIT RENTER
Raymore	1,116	905/ 100	1,040/	72/	4	3.00/	3.12/	1.91
Oak Grove	1,370	996/ 312	1,191/	173/	6	2.96/	3.19/	2.13
Harrisonville	2,531	1,564/ 848	1,927/	494/	108	2.28/	2.38/	2.06
Belton	4,807	3,151/1,271	3,583/	537/	687	NA/	2.72/	2.42
Blue Springs	8,803	6,448/1,852	7,951/	848/	4	NA/	3.33/	2.18
Lee's Summit	11,072	6,313/4,066	7,834/	3,231/	7	NA/	2.71/	1.54
Leawood	4,703	4,414/ 82	4,643/	60/	0	NA/	2.54/	2.40
Lenexa	7,096	4,465/1,960	5,564/	1,530/	0	NA/	3.13/	2.00

Source: U.S. Census Bureau.

Raymore Growth Management Plan

Raymore, Missouri



L E G E N D

- Single-Family Residential
- Two-Family Residential
- Multi-Family Residential
- Mobile Homes
- Farmsteads
- Industrial
- Commercial
- Public & Semi-Public
- Parks & Recreation
- Vacant or Agricultural

Note:

Existing land use completed in June 1987 by City Staff.

EXISTING LAND USE

0 800' 1600' 2400' 3200'

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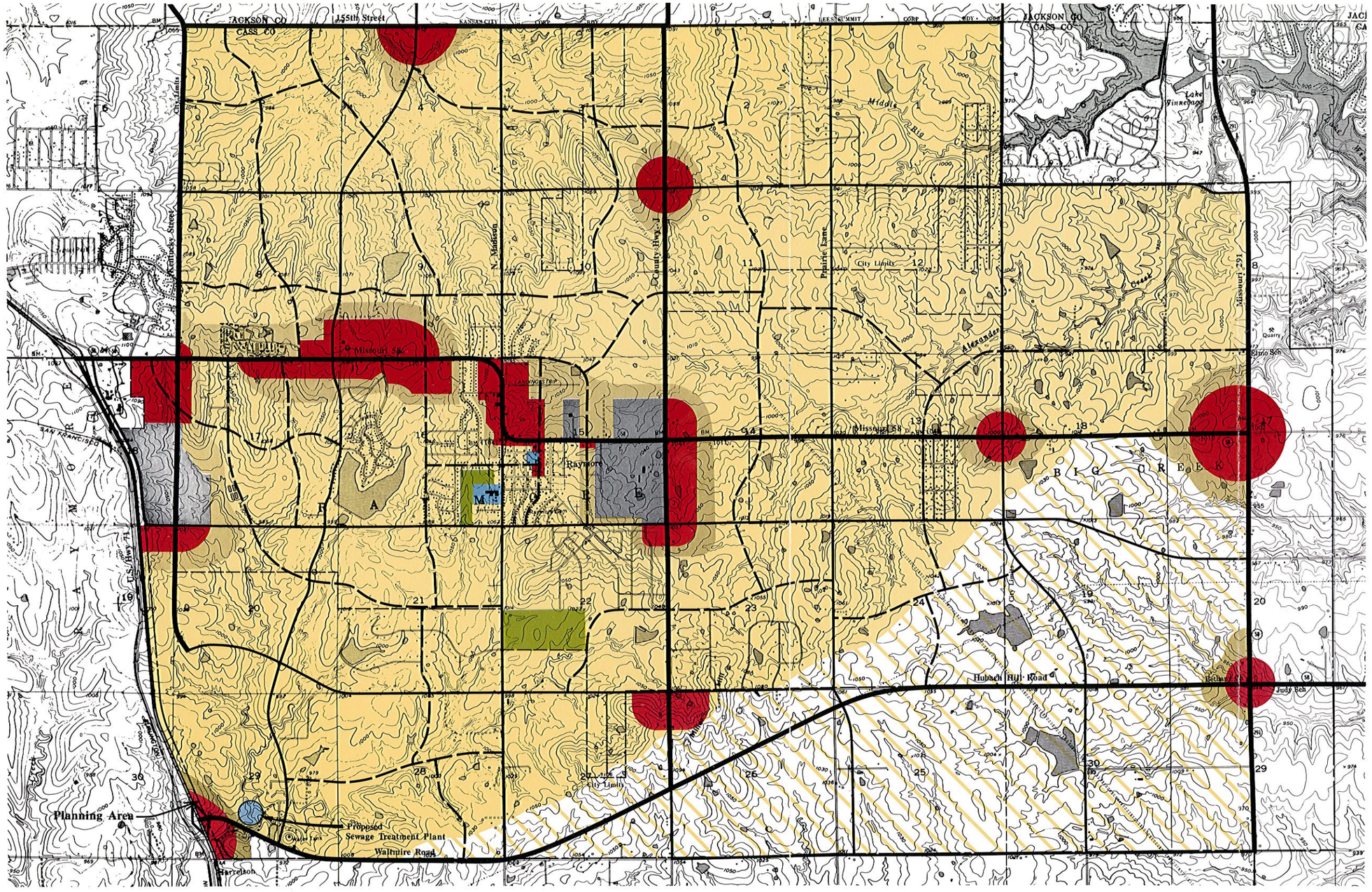
Raymore Growth Management Plan

Raymore, Missouri



L E G E N D

- Low Density Residential
- Very Low Density Residential
- Moderate Density Residential
- Commercial
- Industrial
- Parks
- Public
- Major Arterial
- Minor Arterial
- Collector

Note:

Sewage treatment plant location to be determined in the final design.

0 800' 1600' 2400' 3200'

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FUTURE LAND USE

Chapter 3
Public Facilities

INTRODUCTION

One of the benefits of community planning is that it enables a City to promote an efficient pattern of growth. In determining what is efficient and what is not, it is particularly important to consider the cost of providing public services. This chapter will briefly analyze existing public facilities in Raymore to determine their impact on future growth patterns.

The emphasis of this analysis will be two-fold. First, the existing facilities will be evaluated to determine whether or not they represent a constraint on the future growth of Raymore. In other words, will the limitations of existing facilities prevent the City from accommodating new development without causing a deterioration in the level of service to existing residents. Second, if improvements to existing facilities are required, it will be helpful to know the approximate timing of those improvements so that financing and design issues can be resolved in advance, and a "crisis" situation avoided.

Finally, it is important to point out that public facilities generally have a long life. Water and sewer lines, for example, usually have a useful life of forty years or more. Thus, it is important that the type, location and size of facility improvements be determined in light of long-term plans for community growth and system expansion. As a result, it is recommended that the City continue to periodically conduct not only planning evaluations such as this, but also more detailed engineering studies for each facility's system.

WATER SYSTEM

Municipal water systems consist of three components: supply, storage and distribution. For the entire system to function properly, each component must be sized to meet anticipated demand and designed in a manner consistent with the rest of the system. The primary purpose of a water system, of course, is to deliver an adequate volume of water to each customer at an adequate pressure. In addition to normal customers, however, water must also be available in all parts of the community for use by the fire department in fighting fires.

The source of supply for Raymore's water system is the City of Kansas City, Missouri. Raymore has a contract, valid until 1998, to buy up to 640,000 gallons per day (this limit applies to the average day in any month). The point of supply is the City's extreme northwestern corner where the City maintains its own ground storage reservoir and pumping station. Assuming an average per capita consumption of 80 to 100 gallons per day, the available supply should be sufficient until some time between 1989 and 1994 (based on population projection "C"). Although the City is not in immediate danger of a water shortage, it would be advisable to begin renegotiation of the contract and/or investigation of alternative water sources in the near future.

The ground storage reservoir at the point of supply has a capacity of 760,000 gallons. This is supplemented by additional storage facilities for approximately 250,000 gallons near the center of the City (50,000 gallons elevated, 200,000 gallons ground reservoir). Furthermore, there are plans for an additional 250,000-gallon elevated tank along the ridge line north of Highway 58. Since the pumping station at the ground reservoir has an auxiliary power supply

to keep it operational during a blackout, the amount of existing storage should be adequate for overall system needs until the late 1990s. Depending upon the dynamics of the distribution system, however, the proposed water tower may be necessary prior to that time to maintain adequate water pressure and provide adequate fire flows.

Water is pumped into the distribution system from the ground reservoir via a main which follows the County line and North Madison and a second main which parallels Kentucky. This avoids the potential, albeit unlikely, problem of a water main break isolating the rest of the water system with only the elevated tank as a source of supply. It is recommended that a second point of supply be developed further east to provide a stronger distribution system for eventual eastern growth.

The rest of the distribution system appears to be in reasonably good shape. The majority of water lines are 6 or 8 inches in diameter, and there are relatively few deadends. In order to support long-range growth to the east and south, it will probably be necessary to design a system of 12- to 15-inch water supply mains to serve as feeders for the more localized lines and still have adequate volume to support the more distant subdivisions.

SANITARY SEWER SYSTEM

A public system for the collection and treatment of sewage is a virtual necessity for all types of urban development in order to avoid health, pollution and odor problems. Unfortunately, the layout of a public sewer system is constrained to a substantial degree by topography. Therefore, the location of future development must be carefully coordinated with the expansion of the sewer system, if the efficiency of the system is to be maintained.

In general, sewer systems depend upon gravity flow to transport sewage from each source to the treatment plant. The weakness of this method of collection is that it can only serve the area directly uphill from the treatment plant. Areas which are below the treatment plant or in a different drainage basin require either an additional treatment plant or a lift station to pump the sewage uphill. Although lift stations are widely used, they are considerably more expensive -- both to install and maintain -- than are systems which are entirely gravity flow. For this reason, it is preferable for new development to be encouraged to locate in areas which can gravity-flow into the existing system. If additional lift stations are installed, they should be located to serve as large an area as is reasonably possible to avoid a proliferation of small systems.

Unfortunately, Raymore's location astride a major ridge line guarantees either multiple treatment plants or lift stations. The majority of Raymore is divided into three major drainage basins. To the north and northwest is Lamkins Fork, a tributary of the Little Blue River. To the northeast and east is the Middle Big Creek. To the south and southwest is the Grand River drainage basin. In addition, there is a portion of the extreme southeastern corner of the City which is in still another drainage basin, but it currently does not contain any public sewers.

The result of this topographical division is a complex sewer system. Currently, all of the City's sewage flows to the Middle Big Creek treatment plant northeast of Raymore. It is carried to the plant via the Alexander Creek Interceptor, which is already at or above capacity in certain segments. The current problems are not caused by excessive development in the basin, which is relatively minimal, but rather, by development in other basins. The Grand River basin, which is the site of the vast majority of recent development,

has three lift stations which ultimately pump all of their wastewater into the Middle Big Creek basin. Similarly, the Lamkins Fork basin has two lift stations which pump into Middle Big Creek.

In addition to the capacity problems of the Alexander Creek Interceptor, several of the interceptors and lift stations in the Grand River basin are also experiencing capacity problems due to wet weather infiltration.

A recent report by Larkin Associates examined the City's sewer system and contained several alternative scenarios for making improvements. The scenario which seems most likely calls for the construction of a new sewage treatment plant in the Grand River basin. This treatment plant, combined with some new interceptors, would eliminate the need for the three Grand River lift stations and would dramatically lessen the load on the Middle Big Creek facility, thus facilitating further development in that part of the City. The estimated cost of the first priority improvements for this course of action is estimated at $2.6 million.

In addition to the recommendations of the Larkin report, it is also recommended that the City continue to encourage the Little Blue Sewer District to extend trunk mains to serve the Lamkins Fork basin in Raymore. This would open the northwest portion of the City to development and eventually lead to the elimination of two lift stations which, in turn, would lessen the Middle Big Creek load even further.

CITY HALL

From a planning perspective, the adequacy of City Hall is less crucial than the water, sewer and street systems because it does not

have a direct impact on future growth patterns. Nevertheless, it is an important issue because there are several indirect impacts on the long-term well-being of the community. Improving the current City Hall is likely to have the following benefits:

1. The convenience of City residents will be increased;
2. The efficiency and productivity of City employees will be improved;
3. The self-image of the community will be enhanced and will be more consistent with its emphasis on quality development; and
4. It will be easier for the City to attract and keep quality employees.

Although the absence of improvements will not create a crisis or public hazard, it is important that improvements to City Hall keep pace with the growth of Raymore.

The primary City offices are currently located in a single-story building containing just over 3,500 square feet of space. This space must accommodate the needs of approximately 40 employees, 19 of which are normally at City Hall during the day. The existence of over-crowding is evidenced by the location of the Community Development and Building Inspection departments in a separate building.

Due to the rapid growth anticipated for the future, it is recommended that City Hall expansion plans contain space for at least 25 to 30 employees to be in-house during a normal day. Using a standard rule-of-thumb of 150 to 200 square feet per employee, this would mean that there should be between 4,000 and 6,000 square feet of available office space. In addition, there should be an expanded Council Chambers, a separate Municipal Courtroom, jail space and

increased storage area (including a fire-resistant vault for municipal records).

The location of City Hall should be accessible to the residents of the community, but is otherwise relatively unconstrained. The option of expanding City Hall into the adjacent buildings to the south which is presently under consideration appears to be a reasonable solution, since the current location is centrally located and already familiar to most residents. Rehabilitation of existing buildings has the added advantages of generally being less expensive than new construction, while helping to preserve some of the history of Raymore.

Finally, it is recommended that the City consider consolidating and expanding its public works and maintenance facilities. The construction of such a facility is likely to lengthen the lifespan of the City's heavy equipment, facilitate equipment maintenance and repair, and improve the appearance of the area behind City Hall. The site selected for a maintenance facility should be centrally located, have direct access to a major street, and be separated or buffered from any nearby residences. The proposed site in the northwest corner of the new park would be excellent providing that a buffer can be established to protect the houses to the north, and that the facility does not interfere with park activities.

STREET SYSTEM

Given our society's preference for and dependence on automobile travel, a well-designed public street network is a virtual prerequisite for continued urban growth. This is particularly true for suburban communities such as Raymore which are dependent upon the rest of the metropolitan area for most employment, shopping and

cultural opportunities. In Raymore's case, it relies upon Highway 71 and Highway 291 to provide the links to the greater Kansas City region.

The most notable limitation of the City's street system is that Highway 58 is the only major east-west arterial linking Raymore with Highways 71 and 291. As a result, the accessibility of the entire community is dependent upon the performance of Highway 58. Not surprisingly, 58 is becoming congested, particularly at the interchange with Highway 71. Table 3.1 shows two-way traffic counts for selected locations throughout the City taken during 1986. The five- to ten-fold difference between traffic volumes of 58 and volumes on other major streets illustrates the degree to which traffic is focused on Highway 58. The effects of this situation are that peak hour traffic moves at a speed well below the posted speed limit and turning movements onto 58 from intersecting streets are difficult and unsafe.

TABLE 3.1

TRAFFIC COUNTS AT SELECTED LOCATIONS, 1986

LOCATION	AVERAGE DAILY TRAFFIC	AVERAGE PEAK HOUR TRAFFIC
Highway 58, East of Kentucky	12,867	1,222
Highway 58, East of Johnston	11,236	1,084
Highway 58, East of Woodson	9,635	923
Highway 58, North of Pine	4,574	N/A
Sky-Vue Drive, at Highway 58	1,203	N/A
Washington, at Highway 58	1,467	N/A
South Madison, at Lucy Webb	1,307	N/A
Olive, West of Madison	1,764	N/A

Source: City of Raymore and Larkin Associates.

To relieve this congestion and allow for continued development, it is necessary to establish other east-west arterials. The most obvious alternatives are the improvement of County Line Road (155th Street) and the extension of 163rd Street (Gore Road). Both of these streets have interchanges with Highway 71 and are in logical locations for a major arterial. An alternative which might serve as a short-term solution would be to pave Kurzweil Road to provide improved access to Highway 150. Further into the future, there is the possibility that Highway 58 could be re-aligned to follow Hubach Hill Road to a new interchange with 71. Despite these possible alternatives for east-west travel, it is highly probable that Highway 58 will still need to be widened to four lanes with turning bays at major intersections. Although the State does not have this project in their current plans, the City should continue their efforts to increase its priority.

The City should also support improvements to Highways 71 and 291. The State is currently initiating a 3- or 4-year project to widen Highway 71 to six lanes from 115th Street to the County line (155th Street). Future plans call for the widening of Highway 58 to five lanes across Highway 71 and the re-signalization of both the exit ramps and the frontage roads.

Finally, it is strongly recommended that the City continue its policy of following a Major Street Plan. If future traffic problems are to be avoided, it is important that major streets be located at appropriate intervals, that sufficient rights-of-way be acquired during development, and that streets be constructed to meet strict design standards.

CONCLUSION

This chapter may give the initial impression that the City's public facilities are in poor condition. Major improvements are suggested for each of the areas examined and many of the needed improvements are likely to be necessary in the near future if continued growth is to be adequately accommodated. In fact, the City's public facilities are in reasonably good condition, and City officials are well aware of future needs. The problems which are discussed here are caused by Raymore's rapid growth in the past and the high probability of continued rapid growth.

Problems with public facilities are common to all rapidly growing communities, and it is likely to be a situation which the City of Raymore will have to live with for the foreseeable future. Unfortunately, it is rarely possible or desirable to solve such problems by closing the door to further growth. As a result, there will be constant "growing pains" caused by attempts to keep the capacity of public facilities in line with the demands of new development.

It is important that two points be kept in mind. First, the adequacy of public facilities should continually be re-evaluated in light of anticipated demand five to ten years in the future. This will allow sufficient lead time to plan appropriate solutions, coordinate those solutions with other aspects of community development, and arrange the most economical form of financing. Secondly, the City should continue to insist on public facilities of a high quality. In the long run, it is far easier and less expensive to do things right initially than to correct problems later on.

Chapter 4
Growth Strategies

INTRODUCTION

Although it seems inevitable that Raymore will continue to grow, the location, rate and type of future development are variables which are difficult to predict. To a degree, these issues will depend on market forces beyond the City's control. The City does have the power to influence development patterns, however, and thus it is appropriate to examine just how that power can best be applied.

In general, Raymore's power to influence growth is limited to regulatory controls such as zoning and subdivision regulations, and to public improvements such as a new sewage treatment plant or a new street. It is important to point out that the City's powers do not actually cause development, but only guide it. As a result, any growth strategy is likely to be less than perfect and to require periodic adjustments.

ASSETS AND DEFICIENCIES

Raymore is located in the developing area surrounding the core of metropolitan Kansas City. This "development zone" is characterized by large amounts of developable land available at reasonable prices. Consequently, it is the focus of residential development activity and, in its later stages, commercial activity. As land "closer in" becomes increasingly scarce and/or more expensive, the land in Raymore will become increasingly attractive.

In addition, past development in Raymore has been predominantly high in quality and low in density. As a result, the character of

Raymore is distinctly different from those communities containing primarily tract housing which is low in quality, unimaginative in design and high in density. This difference is a significant advantage for Raymore particularly in terms of long-term growth potential.

On the other hand, Raymore is currently a bedroom community dependent on the rest of the metro area for employment opportunities. Furthermore, the City contains few of the public or semi-public resources around which economic development programs are typically built. There is, for example, no interstate highway, no rail service, no university and no recreational reservoir. Thus, it seems likely that Raymore will have difficulty shedding its bedroom community status, at least in the foreseeable future.

This leads to a related deficiency in the City's ability to generate tax revenue. Since the local employment base is small, there are no large office buildings or manufacturing plants to boost property tax revenues and no major shopping centers to boost sales tax revenues. As a result, the city's traditional revenue sources are likely to have a difficult time keeping pace with the demands of future growth.

RECOMMENDED GROWTH STRATEGY

It is recommended that Raymore pursue a two-part growth strategy. First, the City should continue to encourage residential development, although residential developers are not likely to need much encouragement. Second, Raymore should try to accelerate the commercial development process by marketing itself more actively. This second step is the City's best strategy for expanding the tax base and improving local employment opportunities.

It is not recommended that the City pursue an aggressive industrial development strategy at this time. Such a strategy would be expensive and its likelihood for short-term success appears minimal given competing efforts elsewhere in the metro area. This is not to say that such a strategy might not be warranted at some time in the future, perhaps in 15 or 20 years. It is also important to point out that the City should continue to cooperate with private economic development efforts providing such efforts are not speculative in nature. For the time being, however, it would be more productive for Raymore to focus primarily on meeting the needs of residential and commercial development rather than trying to stimulate industrial development.

In implementing the residential development strategy, it is recommended that a strong emphasis be placed on quality. This will enable the City to maintain and enhance property values while avoiding many of the problems which can accompany poorly planned growth. An emphasis on quality will also create a distinct image of Raymore separate from many of the surrounding cities which have generally welcomed development of any kind. This will increase the probability that future retail and office development will also be high-value in nature.

In order to make sure that the City's desire for high quality growth is actually reflected in future development, it will be necessary for the City to adopt and enforce strict development standards. Although all types of development restrictions should include the quality emphasis, it is particularly important for those issues which affect visual appearance and public improvements. Visual appearance issues include such things as subdivision design, sign control and landscaping/open space requirements. Public improvement issues include construction and design standards for items such as streets, water lines, sewer lines and storm drainage facilities.

One side effect of an emphasis on quality is that strict standards can increase development costs. This could, in turn, slow the pace of growth if developers choose to develop in other communities with lower standards. The potential slow down is likely to be temporary, however, since the beneficial effects on property values will eventually outweigh the added cost of development. In addition, in a community with a limited tax base, insisting on quality may almost be mandatory as a way to maximize the impact of scarce revenues by avoiding the need to fix or improve poorly planned public improvements.

In deciding precisely how the development standards should be defined, however, it is important to realize that the cost of public improvements will largely be the developer's responsibility and that the developer's ability to pass those costs on to the final buyer will be limited by the market place. Although the City has the right to require new development to meet appropriate standards, it also has the obligation to permit property owners a reasonable use of their property. Thus, there must be a balance between the standards which the community would like to set and the reality of the market place.

As the population of southern Jackson County and northern Cass County increases, there will be a corresponding increase in commercial development activity. The goal of the second part of the strategy is to speed up this commercial development process. It is recommended that the City cooperate with the Chamber of Commerce and other economic development organizations in marketing Raymore as a prime location for retail and office projects. Particular emphasis should be placed on the high income characteristics of Raymore residents and the unique character of the community. In addition, it may be possible for a local economic development group to serve as an intermediary between property owners and developers to facilitate the development process.

Since these uses are likely to require high levels of visibility and transportation access, the land along Highways 71, 58 and 291 will be the most desirable location for this type of development. Less intensive use of this land (e.g., single-family residential) should be discouraged so that future opportunities are not foreclosed.

Again, it is recommended that the City place a strong emphasis on quality. Not only would this approach be consistent with the recommended residential strategy, but it will also enhance the City's chance to attract high value development. Although the benefits of this strategy are long-term in nature, the potential impact on the community in terms of the quality of employment opportunities and the volume of tax revenues are great. The drawback to this strategy is that the early stages of commercial and industrial development are likely to have a difficult time meeting high quality standards and still remain profitable. This means that commercial developers may ask to have development standards lowered rather than delay their projects until the market is stronger. In general, the benefits of quality seem to outweigh the disadvantages.

PUBLIC IMPROVEMENTS AND ANNEXATION

In order to implement this strategy as fully as possible, the City of Raymore will need to be as aggressive in taking care of its responsibilities as it is in overseeing the actions of private developers. Unfortunately, the needs of such a rapidly growing community will place a severe strain on the City's financial resources. As a result, the City must maximize its "return" on public improvements and be as innovative as possible in finding alternative sources of funding.

To begin with, much of the responsibility for making localized public improvements will fall to individual developers simply because the City does not have the resources to subsidize the development process. The City should, however, search for new ways to allocate and finance improvement costs so that developers have as much flexibility as possible and so that the costs are shared as fairly as possible among all those who benefit from the improvement. The use of impact fees and benefit districts are two possible options.

With respect to community-wide improvement programs, the City will need to be resourceful in locating outside funding sources. Sewer system expansion, for example, is a major limitation on Raymore's ability to accommodate future growth in the Grand River Basin and yet the cost of a new treatment plant could be prohibitively expensive. It is important that the City actively pursue available grant programs and explore alternative sources for local matching funds. It is also recommended that the City continue pressuring the Little Blue Sewer District to extend a trunk main to serve the Lampkins Fork area. Finally, the City should continue lobbying efforts with the State and Cass County for road improvements to Highway 58, County Line Road and Kurzweil Road. Although the current climate for governmental assistance is relatively poor and the decision making process is slow, it is still one of the most attractive options open to the City.

Due to the large amount of undeveloped land in Raymore, the City can be less aggressive on the issue of annexation. In fact, additional annexations could further strain municipal resources. There are, however, five situations in which further annexation might be warranted:

1. Where annexation would substantially increase Raymore's tax base or revenue producing ability;

2. Where annexation is necessary to control short-term development in an area which is important to Raymore's long-term growth plans (e.g., the Highway 291 corridor);

3. Where the annexation plans of adjacent communities threaten the long-term growth potential of Raymore;

4. Where annexation would add an area with short-term development potential which can be easily serviced by existing infrastructure; and

5. Where land in Raymore's long-term growth area is being inappropriately developed under County development regulations.

Absent the presence of one of these five factors, it is recommended that further annexation not be undertaken for the next 5 to 10 years. This recommendation must be tempered, however, by the realization that poorly planned development outside current boundaries could limit the City's future growth capabilities. Thus, annexation decisions must balance the problems of assuming short-term service costs against the long-term benefits.

Chapter 5
Future Land Use

INTRODUCTION

This chapter contains recommendations governing the future development of the City of Raymore. These recommendations are based on the findings of prior chapters and the development goals of the community, and are intended to guide future decisions. Although a generalized Future Land Use Map is included, an equal or greater emphasis should be placed on the accompanying text and development policies.

Since the purpose of the Comprehensive Plan is to serve as a guide for future development, the Future Land Use chapter is perhaps the most crucial element. It will be the recommendations of this chapter which will be referred to most frequently when decisions are being made regarding rezonings, subdivision requests and site plan approvals. Because of their importance, these recommendations should be reviewed periodically and kept up-to-date with current attitudes toward development and changes in development technology.

COMMUNITY PLANNING

Land use planning, like any type of planning, is a process. It is a process which provides the means by which a community can change from its current state to a desired future state. In order for a community to attain the goals it has set for its physical form and future growth, it is helpful to understand the dynamics of urban development. Without such an understanding, it is quite possible that local actions would not be effective in promoting community

goals and might, in fact, be counterproductive. Therefore, the purpose of this section is to provide the background information necessary to turn goals into effective actions.

Land Use Externalities

One of the most basic factors affecting the use of a given parcel of land is the use of adjoining parcels. This is due to the fact that the use of land has an impact that goes beyond the boundary of the land being used. Economists refer to this impact as a "land use externality" because it is generally not included in the property owner's decision-making process since it is external to the efficiency and profitability of the property being used. As an example of land use externalities, a house surrounded by factories is less enjoyable to live in and has less value for residential purposes than the same house surrounded by similar houses. The noise, smoke and heavy truck traffic generated by the factories are so incompatible with residential life that the value of the house declines. Yet the factory owners have no economic incentive to lessen the impacts of their activities since the declining value of the house does not affect the profitability of their businesses. In effect, it is a cost imposed by the factory owners on the owner of the house. In addition, there is often the undesirable side-effect of accelerated deterioration. The owner of the house, to continue the previous example, has little incentive to maintain or improve the condition of this house because it is likely that only a small fraction of the cost of the improvements can be recovered when the house is sold. The best way to minimize these external costs is to separate incompatible land uses or buffer them from each other.

On the other hand, it is equally important to realize that community design can create positive externalities. A shoe store, for

example, will frequently do more business if it is located adjacent to other clothing and department stores than it will located by itself. The increase in business due to being located in a shopping district is an example of a positive land use externality.

In general, residential land uses are the most sensitive to adjacent land uses. This is because the characteristics which most people value in a residential area -- quiet, serenity, stability, to name but a few -- are the most difficult characteristics to find and maintain in an urban environment. Most urban uses are intensive enough to disrupt these characteristics unless they are sufficiently buffered from residential areas. Due to their sensitivity to land use externalities, it is generally recommended that residential uses be clustered into neighborhoods which include only those uses which are compatible with the desired residential characteristics. As long as these neighborhoods remain intact, the residential uses within are relatively sheltered from the negative effects of other urban activities. It is important to note, however, that the neighborhood will remain intact only if its edges are defined clearly enough to prevent the encroachment of incompatible uses. Ambiguous or uneven edges can weaken the neighborhood by creating the image of instability.

Other types of land uses are sensitive to negative externalities as well, although to a lesser degree. More important, perhaps, is the potential for creating positive externalities. As noted earlier, commercial uses clustered together often do better than scattered commercial uses because each store benefits from the customers drawn by other stores and because a concentrated shopping district will attract customers from a wider market area than any single store. Office uses and certain public buildings and facilities often reinforce shopping districts even further and benefit themselves from increased public accessibility.

Finally, it is important not to think of land use externalities solely in terms of economic effects. Minimizing negative externalities and creating positive externalities can lead to a variety of benefits. Not only will property values be increased and stabilized, but social values can be reinforced, safety and convenience can be improved, and psychological stress can be lessened.

Transportation Access

A second factor which affects the use of land in urban areas is the location of major transportation corridors. Again, certain uses are more sensitive than others. In general, the greater the transportation need of a particular use, the greater its preference for a site near major transportation facilities. Commercial activities probably are most sensitive to accessibility since their survival often depends upon the ease with which potential buyers can travel to their location. In this case, accessibility refers not only to the distance which must be driven, but also to the ease with which the particular site can be found and a convenient parking spot located. Thus, commercial land uses are generally located near the center of their market area and along a highway or at the intersection of arterial streets. The clustering of commercial uses is again an advantage for the following reasons: a) it creates an image which is more easily remembered than scattered commercial uses; b) it allows the joint use of parking facilities; and c) it facilitates the efficient channeling of traffic onto arterial streets.

Industrial uses are also highly dependent on transportation access, although in a different way. For example, visibility is not as great a concern for an industry as it is for a retail store.

However, industrial uses often need access to more specialized transportation facilities. Thus, industrial sites are often provided near railroad lines, airports or highways as may be necessary to suit individual companies.

Residential uses are the least sensitive to transportation access since they generate the least traffic. In fact, it is normally preferable for arterial streets to go around neighborhoods rather than through them to avoid disrupting residential areas with high volumes of traffic. In new subdivisions, curvilinear street patterns are often used to reduce vehicular speeds and thereby discourage through traffic.

Distribution Of Public Services

The final facet of community planning to be discussed here involves the way public services are distributed throughout the community. Although existing technology is certainly sophisticated enough to provide all urban services to any conceivable pattern of development, some patterns are obviously more efficient, and therefore, less costly to serve, than others. This issue has increasing relevance given the current pressure on municipal government to practice fiscal restraint. Cities will undoubtedly be under mounting pressure to limit spending and consequently will be forced to choose between providing fewer services or providing services more economically.

Basically, there are three types of public services. The first group includes those services which are provided to each parcel of land, such as water, sewer and streets. Obviously, these services require a network of public improvements for their distribution. If land uses were located randomly across the community, each segment of

the network would have to be large enough to serve the largest users. A more efficient alternative is to cluster the land uses which create the greatest demand for these services so that they require only a few segments to be sized for their needs and thus allow the remaining segments to be more modestly sized.

The second category of municipal services are generally housed in a centrally located facility and are provided only on request. Examples include police and fire protection. The effectiveness of these services depends primarily on the size of the area which they are responsible for. Thus, the more compact the City remains, the more efficient the delivery of these services. Compactness can be achieved by encouraging development adjacent to the existing built-up areas rather than allowing "leap-frog" development which skips over large tracts of undeveloped land. A second means of increasing service delivery efficiency is to cluster those land uses which have the greatest need for fire and police protection, such as high value commercial uses or hazardous industrial uses. This clustering will allow the concentration of protection efforts where it is most needed.

The third group of services are provided from facilities located in various locations across the community to which the users of the service must travel. This group would include schools, parks, libraries, hospitals and municipal offices. Again, these facilities operate most effectively when the pattern of development is compact. This is a result of demand being directly influenced by the distance which must be travelled. These distances are minimized by compact development. Furthermore, services aimed at a specific segment of the community, such as elementary schools, can be located in a more rational manner when the pattern of development is concise and well defined rather than jumbled and confused.

Finally, one characteristic which all types of public services have in common is that it is more cost-effective to develop areas which can be served by existing facilities than to develop those areas which require new facilities. Although this may appear to be stating the obvious, it is a factor which is often overlooked when decisions regarding growth policies are made. Expansions must be made to public facilities eventually, of course, if the community is to continue to grow. However, in order to maximize efficiency, the timing, size and direction of these expansions should be considered in light of the availability of alternative sites which could be more easily served.

Summary

Throughout this discussion of community planning, several factors have emerged which are particularly relevant to the development of Raymore.

1. Since many of the current residents moved to Raymore because of its semi-rural atmosphere, it is likely that they will be particularly sensitive to encroachment of more intensive uses.

2. Land uses which are transportation sensitive are likely to have a difficult time finding appropriate sites in Raymore because of the limited number of access routes to the major highways. The Highway 58 corridor is one of the few possibilities, particularly where it intersects with Highways 71 and 291.

3. The amount of undeveloped land in the City is so large that development will tend to be rather dispersed. This trend will be reinforced by existing utility and street systems.

These factors are likely to cause recurring problems unless they are adequately addressed through future development plans.

DEVELOPMENT GOALS, OBJECTIVES AND POLICIES

The purpose of a Land Use Plan is to guide the day-to-day decision making process so that each decision leads toward a definite goal rather than being arbitrary or counterproductive. The traditional Future Land Use Map is useful as a generalized guide to future development patterns but has two important weaknesses. First, it is not specific enough to address site design and municipal service issues. Second, it is generally not flexible enough to accommodate unforeseen problems or opportunities. For these reasons, it is important to supplement the map with written criteria which can be used to evaluate future development requests.

In addition, it is helpful to have a set of explicit statements on the community's attitude toward future growth. This gives developers and City officials a clear idea of what standards residents expect future development to meet.

These standards and criteria have been expressed as development goals, objectives and policies. Goals are broad statements which describe the kind of city which the plan should try to achieve. Objectives are more specific statements which outline methods of accomplishing a specific goal. Policies are specific actions or standards designed to implement an objective. The following goals, objectives and policies have been prepared in conjunction with a citizen's committee composed of a cross-section of Raymore residents. As community attitudes change, it is important that these development policies be changed as well.

GENERAL DEVELOPMENT GOAL:

TO PROVIDE AMPLE OPPORTUNITY FOR THE CONTINUED DEVELOPMENT OF RAYMORE IN A MANNER CONSISTENT WITH THE LIMITATIONS OF PUBLIC FACILITIES AND NATURAL ENVIRONMENT.

OBJECTIVE G1: Integrate new development with the public sewer system so as to maintain system performance and environmental safety.

Policy G1.1: It shall be the City's responsibility to plan for improvements to the sewer system to permit continued development without overloading treatment or collection facilities. Such improvements shall be guided by a sewer system plan and subject to the limits of available resources.

Policy G1.2: It shall be the Developer's responsibility to provide all internal sewer improvements and the connection to the existing collection system. All such improvements shall be in conformance with City construction standards and long-range plans for sewer system design. Internal improvements may include over-sized lines necessary for optimum system performance.

Policy G1.3: New development in areas without public sewer service or where the sewer system is temporarily at or above capacity shall only be permitted if the Developer installs the necessary sewer improvements or private sewage treatment systems approved by the City. All private sewage treatment systems shall be designed for connection to the public sewer system when service becomes available.

OBJECTIVE G2: Integrate new development with the public water system so as to maintain system performance and fire protection capabilities in all parts of the City.

Policy G2.1: It shall be the City's responsibility to plan for improvements to the water system to permit continued development without exceeding supply, storage or distribution capacity. Such improvements shall be guided by a water system plan and subject to available resources.

Policy G2.2: It shall be the Developer's responsibility to provide all internal improvements and the connection to the existing distribution system. All such improvements shall be in conformance with City construction standards and long-range plans for water system design. Internal improvements may include over-sized lines where necessary for optimum system performance.

Policy G2.3: New development in areas without public water service or where the water system is temporarily at or above capacity shall only be permitted if the Developer installs the necessary water system improvements including water line loops, extensions or booster pumps.

OBJECTIVE G3: Develop a storm drainage system which facilitates the efficient handling of storm water runoff while protecting existing development from flooding caused by new development.

Policy G3.1: It shall be the Developer's responsibility to provide all internal drainage improvements in conformance with City standards.

Policy G3.2: Existing drainageways through new development areas shall be maintained in size and shape so as to be able to accommodate all upstream runoff from a 100-year storm (assuming full development) without flooding.

Policy G3.3: All drainage improvements for new development shall be designed so that no new or additional downstream flooding occurs during a 100-year storm. Where normal development would create downstream flooding, it shall be the Developer's responsibility to prevent such flooding by making downstream drainage improvements or by retaining/detaining storm water on-site.

TRANSPORTATION GOAL:

TO PROVIDE A SAFE AND EFFICIENT NETWORK OF STREETS WITH THE SIZE, SPACING AND ALIGNMENT TO ACCOMMODATE EXISTING AND ANTICIPATED TRAFFIC VOLUMES.

OBJECTIVE T1: Prepare and implement a Major Street Plan in order to ensure smooth traffic flow and properly designed street facilities.

Policy T1.1: All new development shall incorporate any major streets shown on the City's Major Street Plan if such streets are within or adjacent to the development. The cost of developing such major streets shall be the responsibility of the developer.

Policy T1.2: All subdivisions shall include the dedication of street rights-of-way designed in width and alignment to meet the requirements of the Major Street Plan and City construction standards.

Policy T1.3: All street improvements shall meet the minimum design and construction standards established by the City with respect to street width, intersection design, traffic controls, vertical and horizontal alignment, pavement type and thickness, and curbs and gutters.

OBJECTIVE T2: Maintain and enhance the traffic-carrying capacity of arterial streets.

Policy T2.1: Access onto arterial streets should generally be limited to traffic from other public streets such as frontage roads or side streets. Curb cuts (driveways) providing direct access to private property shall be allowed only when the use being served is anticipated to draw more than an average of 1,000 vehicle trips per day or 100 peak-hour trips, or where an existing lot does not have other available options.

Policy T2.2: The spacing between access points (including both intersecting streets and curb cuts) shall be a minimum of 400 feet, unless unusual conditions warrant otherwise. Where possible, intersections shall be four-way intersections at 90-degree angles.

Policy T2.3: Developers proposing new intersections or curb cuts with arterial streets may be required to construct such intersection to include both left and right turn bays.

OBJECTIVE T3: Increase the number of east/west linkages between Raymore and Highways 71 and 291 in order to relieve congestion on Highway 58.

Policy T3.1: Encourage and cooperate with multi-jurisdictional efforts to improve 155th Street (County Line Road) to arterial standards.

Policy T3.2: Develop 163rd Street as an arterial in cooperation with Belton and those property owners along its alignment.

Policy T3.3: Encourage the State to eventually realign Highway 58 along Hubach Hill Road and to construct a new interchange with Highway 71.

Policy T3.4: Improve Kurzweil Road from Highway 58 north to Highway 150 to facilitate the use of Highway 150 as an east/west arterial.

HOUSING GOAL:

TO PROVIDE A REASONABLE VARIETY OF HOUSING CHOICES WHILE MAINTAINING RAYMORE'S SUBURBAN CHARACTER THROUGH AN EMPHASIS ON HOME OWNERSHIP AND LOW-DENSITY RESIDENTIAL DEVELOPMENT.

OBJECTIVE H1: Maintain and upgrade the character of existing residential neighborhoods.

Policy H1.1: Discourage the incremental conversion of existing single-family dwellings to duplexes or multi-family dwellings, unless such conversion is part of a comprehensive housing strategy for a selected area.

Policy H1.2: Restrict vacant lots in otherwise developed neighborhoods to densities and housing types similar to surrounding development.

Policy H1.3: Restrict the encroachment of commercial and industrial uses into residential neighborhoods except in areas identified for commercial expansion. Encourage the eventual conversion of non-conforming uses to conforming uses.

OBJECTIVE H2: Encourage new residential development to approximate existing residential densities and housing mix levels.

Policy H2.1: Encourage the combined net density of all residential development to remain at or below 3 units per acre. Exceptions to this policy should be permitted where the Developer can demonstrate that the quality of the project design, construction and amenities warrants a different housing density.

OBJECTIVE H3: Minimize the negative impact of medium- and high-density residential projects on adjacent low-density residential areas.

Policy H3.1: Encourage multi-family dwellings (including duplexes and townhouses) to locate in areas where they can serve as intermediate-intensity buffers between intensive uses and low-density residential uses. Discourage the development of isolated pockets of multi-family development.

Policy H3.2: Require multi-family residential projects to meet minimum site design criteria:

A. Access to multi-family projects shall be from a major street and shall not cause an increase in traffic levels through single-family areas.

B. At least 30 percent of the site shall be landscaped open space or recreational areas.

C. Off-street parking shall be provided sufficient to eliminate the need for residents to park in public streets.

D. The layout and shape of multi-family structures shall be designed to encourage a suburban character and avoid monotonous repetition.

E. A visual buffer shall be established between multi-family developments and single-family districts.

Policy H3.3: Mobile homes shall be allowed only in mobile home parks. Mobile home parks shall meet the same locational criteria as specified in Policy H3.2, and shall not cause a substantial decrease in the value of adjacent property.

OBJECTIVE H4: Encourage new residential construction to equal or exceed the quality of existing residential development.

Policy H4.1: Encourage developers to use private covenants and deed restrictions which specify architectural, maintenance and landscaping standards within their development.

Policy H4.2: The City, in conjunction with private developers, should promote an image of quality and diversity in the housing stock.

COMMERCIAL DEVELOPMENT GOAL:

TO EXPAND THE RANGE AND SCOPE OF OFFICE AND RETAIL USES IN RAYMORE WHILE PROTECTING THE RESIDENTIAL CHARACTER OF THE COMMUNITY.

OBJECTIVE C1: Locate commercial uses in areas consistent with the market they are intended to serve.

Policy C1.1: Because of its function as the major access route into and out of Raymore, the Highway 58 corridor should serve as the primary commercial area for uses with a community or regional market emphasis.

Policy C1.2: Commercial uses with an exclusively regional orientation should be located as close to the accessibility and visibility of Highways 71 and 291 as possible.

Policy C1.3: Commercial uses with an exclusively localized or neighborhood orientation should be given greater locational flexibility, provided that the following criteria can be met:

A. The site should be located at the intersection of two major streets, with sufficient capacity to accommodate anticipated traffic demand.

B. There should be clear evidence that a localized market exists for the type and scale of commercial center being proposed.

C. The site should be capable of being appropriately integrated with surrounding development.

OBJECTIVE C2: Commercial uses shall be required to meet site design criteria intended to protect the character of Raymore and the efficiency of public facilities.

Policy C2.1: At least 20 percent of the area of each site shall be landscaped open space. In order to enhance the visual quality of the major entrances into Raymore, a landscaped setback should be required along any street segment designated as a major access route into the community.

Policy C2.2: The layout and design of commercial structures should be encouraged to be as consistent as possible with the scale and character of Raymore.

Policy C2.3: All commercial uses shall be visually buffered from adjacent residential uses or districts. Direct access from commercial uses into residential areas shall be discouraged.

Policy C2.4: Off-street parking areas shall be provided for all commercial development and shall be sufficiently sized to handle normal parking demand. Parking lots shall be located, designed and landscaped so as to prevent the site from being visually dominated by the lot itself.

INDUSTRIAL DEVELOPMENT GOAL:

TO PROVIDE APPROPRIATE LOCATIONS FOR LIGHT INDUSTRIAL USES IN AREAS WITH THE TYPE OF PUBLIC FACILITIES, ACCESS AND TOPOGRAPHY SUITABLE FOR INDUSTRIAL DEVELOPMENT.

OBJECTIVE I1: Limit industrial areas to those uses which have an intensity consistent with the character of Raymore.

Policy I1.1: Restrict industrial uses which are likely to create nuisance or near-nuisance conditions due to traffic levels or the emission of smoke, noise or odors. All industrial uses shall comply with all Federal, State and local pollution control requirements.

Policy I1.2: Restrict industrial uses which have the potential to cause pollution, health or safety problems due to the use of toxic chemicals or explosive materials.

OBJECTIVE I2: Limit industrial uses to those areas which have the necessary public facilities in place to accommodate industrial development.

Policy I2.1: Industrial uses shall be located only in areas which have adequate public water and sewer service. Each utility system shall be capable of accommodating the additional service load without causing a deterioration in service to existing customers.

Policy I2.2: Industrial uses shall be located only in areas which have direct access to a major arterial or a highway frontage road. Primary access routes to the site shall avoid traversing residential areas.

OBJECTIVE I3: Industrial uses shall be required to meet site design criteria intended to protect the character of Raymore and the usefulness of adjacent property.

Policy I3.1: At least 20 percent of the area of each site shall be landscaped open space. In order to enhance the visual quality of the major entrances into Raymore, a landscaped setback should be required along any street segment designated as a major access route into the community.

Policy I3.2: The layout and design of industrial structures should be encouraged to be as consistent as possible with the scale and character of Raymore.

Policy I3.3: All industrial uses shall be visually buffered and physically separated from adjacent residential uses of districts. Direct access from industrial uses into residential areas shall be discouraged.

Policy I3.4: Off-street parking areas and loading docks shall be provided for all industrial development and shall be sufficiently sized to handle normal parking and loading demand. Parking lots shall be located, designed and landscaped so as to prevent the site from being visually dominated by the lot itself.

PUBLIC AND SEMI-PUBLIC DEVELOPMENT GOAL:

TO PROVIDE SITES THROUGHOUT THE COMMUNITY FOR PUBLIC AND SEMI-PUBLIC USES IN LOCATIONS WHICH ARE APPROPRIATE FOR EACH TYPE OF USE.

OBJECTIVE P1: Locate public and semi-public uses in a manner consistent with the market or population group which they are intended to serve.

Policy P1.1: Those public uses which are oriented toward the community or region (such as City Hall or a senior high school) should be located on or near a major street in order to maximize their accessibility and minimize problems with traffic.

Policy P1.2: Those uses with a neighborhood orientation (such as elementary schools or churches) may be located in residential areas, although a location on or near a collector street is preferable.

OBJECTIVE P2: Public and semi-public uses shall be required to meet site design criteria intended to protect the character of Raymore and the value of adjacent property.

Policy P2.1: At least 30 percent of the area of each site shall be landscaped open space. In order to enhance the visual quality of the major entrance into Raymore, a landscaped setback should be required along any street segment designated as a major access route into the community.

Policy P2.2: The layout and design of public structures should be encouraged to be as consistent as possible with the scale, use and character of adjacent structures.

Policy P2.3: Public uses should be buffered from adjacent residential uses or districts where the public use is intensive enough to be disruptive.

Policy P2.4: Off-street parking areas shall be provided for all public uses and shall be sufficiently sized to handle peak-day parking demand. Parking lots should be located away or screened from adjacent residences.

NEIGHBORHOOD DESIGN

Although much of this chapter is focused on the broader issues affecting the entire community, it is also important to discuss how individual developments should relate to adjacent developments to form strong neighborhoods. Since cities tend to grow in a somewhat piece-meal fashion, it is often the neighborhood-scale issues which are the most difficult to resolve and the most controversial.

Finding Appropriate Locations

The most basic issue is whether or not a proposed use is appropriate at a particular location. The development policies and the Future Land Use Map will guide this decision by defining development standards and by establishing a general character and intensity for the

area. Those proposed developments which are obviously in conformance with the policies and the map should generally be approved while those that are obviously in conflict should generally be denied.

There will be a significant group of proposals, however, which are neither obviously in conformance nor obviously in conflict with the Plan's recommendations. These cases will require the Planning Commission and Board of Aldermen to use their best judgement in conjunction with the following guidelines:

1. The proposed development should be consistent with the character and function of the surrounding area;

2. The proposed development should not substantially damage adjacent property values;

3. The proposed development, if it is more intensive than surrounding uses, should be located close to a major street and should be buffered from adjacent property; and

4. The proposed development should not set a precedent or attract other uses which would be detrimental to the area.

By following these guidelines, the City should be able to avoid "islands" of inappropriate development and yet should have sufficient flexibility to deal with unusual proposals.

Buffering Incompatible Uses

One of the most common problems in planning is the separation (or lack of separation) between dissimilar land uses. Cities, by their very nature, contain a broad variety of uses in a relatively small area. As a result, low-intensity uses often suffer from the negative side-effects of high-intensity uses located nearby. These effects can be minimized, however, through the use of appropriate buffering techniques.

Segregation of Uses: The most obvious technique, and one of the original rationales for zoning, is simply the segregation of uses into separate districts. Assuming that each district contains only compatible uses, this method eliminates land use compatibility problems except along the edges of each district.

Intermediate-Intensity Uses: Many compatibility problems can be minimized if the transition from low-intensity to high-intensity uses is gradual rather than abrupt. For this reason, intermediate-intensity uses are often used to separate and buffer unintensive uses from intensive ones. Uses commonly designated as intermediate-intensity include apartments, offices and certain public uses such as libraries, schools and churches.

Open Space: Another obvious technique is to separate incompatible uses with a strip of undeveloped land. Unfortunately, this is sometimes physically or financially impractical. Drainageways, park land and increased yard setbacks are the most common forms of open space used to satisfy buffer requirements.

Barriers: Where land area is at a premium or where the compatibility problem is relatively minor, a simple barrier between the two uses may be sufficient. Typically, such barriers are either fences, a strip of landscaping, or both. Although landscaping is often preferable because of its appearance, it may be difficult to assure appropriate long-term maintenance.

Orientation: The simplest method of buffering is through the appropriate orientation of adjacent uses. In general, there will be fewer compatibility problems if uses are placed back-to-back rather than side-to-side or face-to-face. The back-to-back orientation avoids problems relating to traffic and access, and minimizes problems of visual appearance.

In determining which technique or combination of techniques is most useful, it is important to match the nature and severity of the problem to the characteristics of the buffer. A fence, for example, is not likely to be an effective solution if the problem is noise or odor but might be appropriate if the problem is privacy or safety.

Finally, many potential problems can be avoided through careful site design. To begin with, the topography and vegetation of the site should be examined to determine if any natural buffers exist, such as

drainageways or wooded areas, which can be used as an open space separation. Utility easements for high-voltage power lines or high-pressure gas lines are also potential open space buffers. In addition, controlling the location and orientation of buildings, driveways, parking areas and landscaping can often minimize development side-effects.

FUTURE LAND USE

The final set of land use recommendations addresses the geographic distribution of future growth. This will include a Future Land Use Map along with written recommendations. Prior to creating the map, however, it is helpful to determine approximately how much land will be needed to accommodate the growth of Raymore. These estimates, although only approximate, are valuable because they indicate the scale of future development in terms of land area. This information, in turn, makes it easier to visualize the need for further public improvements.

Land use needs are estimated using the level of current land usage as indicated in the Existing Land Use chapter. In that chapter the amount of land used in Raymore was expressed in terms of acres per 100 persons. This acreage-to-population ratio (adjusted to include new street rights-of-way) is then multiplied by the anticipated population increase to yield the number of additional acres of land required by new development. The results of this process are shown in Table 5.1.

Although informative, this type of projection has several limitations. First, it assumes that past land consumption patterns will continue into the future. This is likely to result in a conservative estimate of commercial development since the rapid growth of Raymore will probably stimulate more retail and office development than has occurred in the past. Second, this type of projection may mask recent

TABLE 5.1

ESTIMATED LAND USE NEEDS

	CURRENT USAGE[1]	R.O.W. FACTOR[2]	ADDL. LAND USE NEEDS (ACRES)[3] 1990	1995	2000	2005
Residential	20.38	x 1.3	380	915	1,565	2,300
Commercial	0.84	x 1.3	15	40	65	95
Industrial	1.02	x 1.3	20	45	75	115
Public & Parks	2.92	x 1.3	55	130	225	330
Total			470	1,130	1,930	2,840

[1] Current land usage expressed in acres per 10 people.

[2] This factor represents the current proportion of land used as public rights-of-way.

[3] Land use needs are determined by multiplying current usage by the anticipated increase in population. Each column is cumulative.

development trends. Industrial prospects, for example, are increasingly interested in large parcels of land in order to provide room for expansion. As a result, the 115 acres projected for industrial development could easily be too little even though Raymore is not ideally suited for most industrial uses.

Despite its weaknesses, it is reasonable to assume that over the next 20 years the growth of Raymore will consume 4 to 5 square miles of land. In addition, it is recommended that roughly twice as much area be available for development as is actually needed so that there will never be a monopoly on developable land. Fortunately, there is already more than enough undeveloped land in Raymore to accommodate foreseeable growth.

Future Land Use Map

The Future Land Use Map is a generalized view of the community's future development pattern. It is intended to identify the general nature and intensity of future development, the areas of prime growth potential, and the probable direction of future annexations. The Future Land Use Map is not meant to identify the exact use of land on a parcel-by-parcel basis. To make specific recommendations, the map must be used in conjunction with the written recommendations and the goals, objectives and policies contained elsewhere in the plan.

In addition, the Future Land Use Map should not be viewed as a zoning map. Besides being somewhat generalized, the Future Land Use Map addresses needs far into the future. Zoning, on the other hand, should reflect short-term needs and should take into consideration the limitations on municipal service systems and maintenance abilities.

There are three factors which will strongly influence the pattern of future growth. The first is the availability of water and sewer service. Public sewer service is currently provided to at least some degree in all three major drainage basins, although only the Alexander Creek basin has its own treatment facilities. The extension of the Little Blue sewer system to serve the Lampkins Fork basin appears to be a reasonable possibility and would substantially enhance the developability of 5 to 6 square miles of vacant land. The construction of a treatment plant for the Grand River basin seems somewhat less likely because of its cost but is probably the area of greatest development pressure. Water service is most readily available to the western portion of the study area due to the existing point of supply and location of existing storage reservoirs. Extensions to the east are certainly possible but service levels may be substandard unless a

second point of supply is developed or additional storage facilities are constructed.

The second factor is the availability of convenient vehicular access in and out of the community. As Highway 58 becomes more congested, land with alternative access routes will be increasingly attractive. The northwest quadrant of the City has far more alternative routes, and thus more flexibility, than other areas.

The final factor is the relative strength of development activity along the Highway 71 and 291 corridors. The growth of Raymore is likely to shift toward whichever corridor is most active. Currently, there is far more activity along Highway 71, and that trend appears likely to continue for the near future due to its superior connections to the rest of the metropolitan area. The 291 corridor, however, will attract more development interest in the future and may be roughly equivalent in its activity in 15 to 20 years.

As a result of these three factors, the Future Land Use Map shows the bulk of growth occurring in the western and northwestern sections of the planning area. It is not recommended, however, that all areas shown for eventual development be allowed to develop simultaneously. This would result in an inefficient scattering of development and would create future development problems for those areas which are skipped over.

Residential Development. Low-density residential development (3-4 units per acre) is the predominant type of future development shown on the Future Land Use Map. This category consists primarily of single-family dwellings similar in density to most of the existing neighborhoods in Raymore. It is recommended that developers be given

some flexibility within their project, however, as long as total densities remain at this level.

Moderate-density residential (6-10 units per acre) is shown as an intermediate intensity buffer between commercial and industrial uses, and less intensive single-family residences. Site design review should focus on reinforcing the effectiveness of this approach to buffering by controlling vehicular circulation and building orientation. This category is likely to contain a mix of duplexes, townhouses and garden apartments. The precise size and mix of each project should be decided on a case-by-case basis.

The final category of residential use contains single-family dwellings with an average density of roughly 1 unit per acre. The areas shown for this very low density seem inappropriate for a higher intensity of development because of difficulties in providing full urban services or because of the character of adjacent development.

Commercial Development. Future retail and office development is shown at a variety of locations across the City. In most cases, it is recommended that commercial uses be clustered into a relatively compact area in order to minimize problems with traffic or adjacent uses. The exception is the Highway 58 corridor which is shown for commercial development along much of its length. This is the only logical location for short-term commercial growth since there currently are no other east/west arterials connecting Highways 71 and 291. Even so, the intensity of commercial development should be controlled so that the most intensive uses occur near the intersection of arterial streets.

It is anticipated that commercial uses along Highway 58 will have a predominantly community-wide orientation while the remaining commercial centers will have a neighborhood orientation. The exceptions are

the commercial developments at the intersections of Highway 58 and Kentucky, Highways 58 and 291, and Highway 71 and Hubach Hill Road. Because of their accessibility, these areas have the potential to serve more of a regional market.

Except for those areas which are already planned or under development, the commercial centers shown on the Map are somewhat flexible in their location. Although the number and general spacing should be preserved, the precise location of each center may need to be adjusted to take advantage of unforeseen opportunities or avoid unforeseen problems. Any new location, however, should meet the standards established by the goals, objectives and policies.

Industrial Development. Only two areas are shown for industrial development due to the relatively low demand anticipated for such uses in the future. The first area is the existing industrial district at the intersection of Highway 58 and Highway J. This area is probably best suited for light warehousing, wholesaling and large-lot commercial uses (such as nurseries, building supply stores and car dealers) with a relatively local market. The second area abuts Highway 71 on the north side of Lucy Webb Road. The visibility and accessibility of this location make it suitable for larger-scale warehousing and distribution uses serving a regional market. Depending upon the relative demand for commercial and industrial development, the land along Highway 71 and south of Lucy Webb might be an appropriate area for further industrial development rather than commercial as shown. In both cases, the uses permitted should be limited to "light industrial" rather than large-scale manufacturing.

Public Development. Future public uses are not shown on the Future Land Use Map because their location is nearly impossible to predict. Potential sites should be evaluated based on the criteria set

out in the Goals, Objectives and Policies section of this chapter. It is likely, however, that a major park eventually will be needed north of Highway 58.

Chapter 6
Major Thoroughfare Plan

INTRODUCTION

Of the factors which are most noticeable about a community, few are as apparent or have a greater impact than the street system. Development cannot occur unless property is accessible and, in the era of the automobile, few experiences are as frustrating as either traffic congestion or an inability to get from one part of a community to another. Further, providing the essential public safety services -- police, ambulance and fire protection -- requires an efficient, well designed street system.

The older portions of Raymore have developed around a "grid" or modified "grid" system of streets. But, as new developments are proposed, curvilinear street systems which follow natural contours are becoming more common. To ensure safe and efficient traffic movement through newly developing areas as well as an orderly connection to the metro-area highway network, careful transportation planning must take place.

As Raymore continues to grow, the street network must grow with it. Because different uses of land generate differing amounts and types of traffic, the major street plan must coordinate the current land use pattern and the Future Land Use Plan. If well conceived and implemented, congestion resulting from major traffic generators will be reduced, fewer accidents should occur, residential neighborhoods will be protected from through traffic, and the street improvement budget can be minimized.

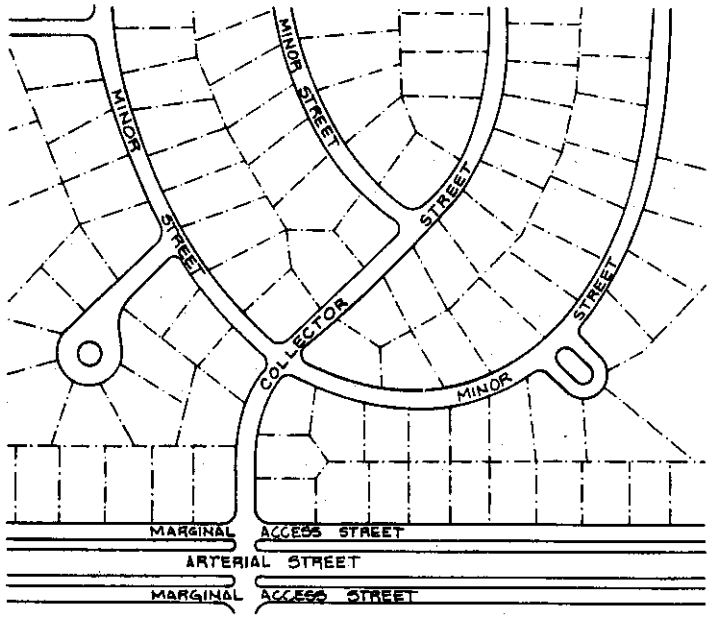
The purpose of this Chapter, then, is to develop a network of streets in the City of Raymore which will achieve effective traffic movement throughout the community. Standards for right-of-way and street design are also included to help ensure that the layout of each new subdivision is consistent with transportation needs.

STANDARD STREET CLASSIFICATIONS

Street classifications are based on the functioning of a hierarchy of vehicle origin-destination movements. Traffic flow in and out of the City or from one section of the City to another is carried on arterials which ideally are uninterrupted corridors designed for the smooth flow of large volumes of traffic. Sub-section movement occurs on collector streets which connect residential areas with commercial areas, with schools, and with other heavy-use areas. The lowest level of the system, local streets, carries the flow to the abutting properties.

FIGURE 6.1

STREET CLASSIFICATION HIERARCHY



In order to work effectively, each level of the hierarchy must be properly interconnected with the other street types. The following section explains the function of each street classification and its relationship to other types of streets.

Arterial Streets

Arterial streets should function to connect areas of principal traffic generation and important highways. They provide for the distribution and collection of traffic to and from collector streets and local streets. The arterial street is given preferential treatment over collector and local streets in signing and signalization of intersections. It is preferable that private property not have direct access to arterials, but be provided access to the arterial through the local and collector street system.

The best way to maximize the traffic capacity and safety of arterial streets is to minimize conflicting traffic movements. These conflicting movements are most likely to occur in two situations. First, each point of vehicular access will generate cross traffic and turning movements both onto and off of the arterial. This applies not only to intersecting streets, but also to driveways leading to individual parcels of land. Where possible, access points should be kept to a minimum by requiring frontage roads. Where providing access is necessary, interruptions to traffic flow can be lessened by using turning lanes. In general, a minimum spacing of 400 feet is recommended between access points on major arterials. Second, on-street parking generates turning movements and often necessitates backing up into traffic lanes. Thus, it should be allowed only where it is absolutely unavoidable.

While a variety of factors will affect the ultimate design of a given street, the following criteria are recommended for arterial streets:

Major Arterial

Right-of-Way Width	100-120 feet	
Lane Configuration	Number	Width
Moving Lanes	4	12 feet
Turning Lanes	1-2	10 feet
Parking Lanes	None	
Design Speed	45 MPH	
Maximum Grade	6 percent	
Design Volume		
2 Lanes	12,000 vehicles/day	
4 Lanes	24,000 vehicles/day	

Minor Arterial

Right-of-Way Width	100 feet	
Lane Configuration	Number	Width
Moving Lanes	2-4	12 feet
Turning Lanes	0-1	10 feet
Parking Lanes	None	
Design Speed	35-40 MPH	
Maximum Grade	6 Percent	
Design Volume		
2 Lanes	12,000 vehicles/day	
4 Lanes	24,000 vehicles/day	

Collector Streets

Collector streets serve traffic desiring to travel between major arterials and local streets, and are used mainly for traffic movement within residential, commercial and industrial areas. Collector routes provide the combined functions of through traffic service and access to adjacent land, but they should be designed or developed to discourage any long distance of continuous through traffic.

In order to safely accommodate local traffic without unnecessarily disrupting the character of residential areas, experience has shown that collector streets should be spaced at intervals of roughly one-half mile. Collectors should be given preferential treatment over local streets at intersections.

The following criteria are recommended for collector streets:

Right-of-Way Width	70-80 feet	
Lane Configuration	Number	Width
Moving Lanes	2	11 feet
Turning Lanes	0-1	10 feet
Parking Lanes	0-2	9 feet
Design Speed	30-35 MPH	
Maximum Grade	8 percent	
Design Volume	12,000 vehicles/day	

Local Streets

The primary function of a local street is to provide access to abutting property. Continuity of local streets is not important and through traffic should be discouraged. Local streets should be designed to intersect with a collector street and provide easy access to adjacent property. Although they should not be unnecessarily confusing, it is often preferable for local streets to have a curvilinear alignment. This frequently improves the visual appearance of the area, slows the speed of traffic, and allows the street to be more naturally integrated with the topography.

The following criteria are recommended for local streets:

Right-of-Way Width	50-60 feet	
Lane Configuration	Number	Width
Moving Lanes	2	10 feet
Turning Lanes	0-1	9 feet
Parking Lanes	1-2	7 feet
Design Speed	25 MPH	
Maximum Grade	10 percent	
Design Volume	1,500 vehicles/day	

Curbs and Gutters

It is recommended that all urban streets be paved and have curbs and gutters. The curb and gutter system serves three functions. First, it provides a surface drainage channel along the side of the street. Second, it protects the pavement edge from breaking up and thus extends the life of the street. Finally, it limits access onto major streets to intersections and curbcuts.

MAJOR THOROUGHFARE SYSTEM

Based on the information presented above and the anticipated distribution of trip demand, a network of arterial streets has been designated. Where appropriate, the existing street system has been used to minimize costs. Arterial streets are shown on the Future Land Use Map and are listed below.

Major Arterials	Minor Arterials
Kentucky	Silvertop Lane
Highway J/Kurzweil Road	Madison
Highway 291	Prairie Lane Road
155th Street (County Line)	Ward Road
Highway 58	163rd Street (Gore Road)
Hubach Hill Road	Lucy Webb Road

In addition to accommodating current traffic needs, the major thoroughfare system anticipates future traffic needs based on the Future Land Use Plan. Thus, several major streets have been proposed where no street currently exists. This is not intended to imply that these streets should be constructed in the near future. Construction should not occur until the surrounding land is developed. The reason they are included is to assist in coordinating the major thoroughfare system with future subdivision proposals and to assure that adequate right-of-way is obtained where necessary.

Collector streets are also shown on the Future Land Use Map although their location is somewhat more flexible. In general, collector streets should be located halfway between arterials. Their precise location, however, may need to be adjusted because of topographical or land use constraints.

The layout of local streets is normally left to the discretion of individual subdividers. The Institute of Transportation Engineers, however, has recommended the following guidelines for local street system design.

1. Adequate vehicular and pedestrian access should be provided to all parcels.
2. Local street systems should be designed to minimize through traffic movements.
3. Street patterns should minimize excessive vehicular travel.
4. Local street systems should be logical and comprehensible, and systems of street names and house numbers should be simple, consistent and understandable.
5. Local circulation systems and land development patterns should not detract from the efficiency of major streets.
6. Traffic generators within residential areas should be considered in the local circulation pattern.

7. Planning and construction of residential streets should clearly indicate their local function.

8. Local streets should be designed to discourage excessive speeds.

9. Pedestrian-vehicular conflict points should be minimized.

10. A minimum amount of space should be devoted to street uses.

11. There should be a minimum number of intersections.

12. The arrangement of local streets should permit economical and practical patterns, shapes and sizes of development parcels.

These guidelines, as with most planning standards, require the use of good judgement and the consideration of site-specific conditions. If they are used during the subdivision design and plat review process, however, they can help ensure a logical and efficient street system in the future.