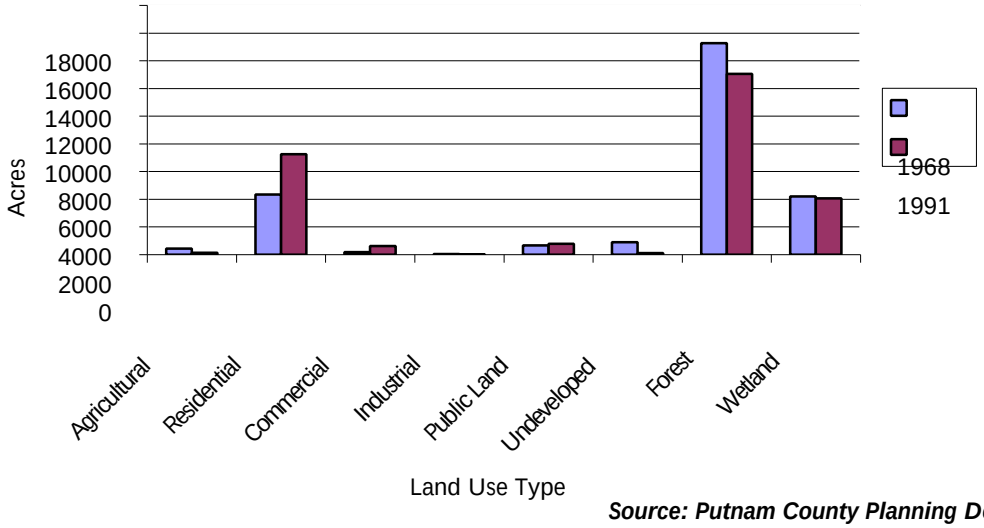
4 LAND USE

4.1 Existing Land Use

According to Putnam County Planning Department records, Carmel has become increasingly more residential. From 1968 to 1991, the Town has gained over 2,900 acres of residential development, representing a near 67% increase. A portion of the development can be attributed to residential expansion on vacant or undeveloped land. Most of residential land, however, was previously forest area. The loss of over 2,200 acres of forestland can only be attributed to the 2,900 acres of newly created residential development. The new residential settlement has largely been outside of the Mahopac and Carmel hamlet areas where land has been available. Figure 4.1 and Table 4.2 depict the land use averages for 1968 and 1991, respectively.

Figure 4.1
Carmel General Land Use Change, 1968 to 1991



Source: Putnam County Planning Dept.

Commercial development also increased during the same time period. Over 400 acres of have been developed for commercial use since 1968: a near 240% increase. Largely, the settlement pattern has been concentrated in strip development complexes along State Routes 6 and 52. Although the aggregate commercial land has dramatically increased, commercial land represents only 2.4% of the total land area, up from 0.7 % in 1968.

Public land was the only other land use to increase in the 1968 to 1991 time period. The Town and other agencies added over one hundred acres of public land representing three percent of the overall land area.

The most dramatic decline in land use type in the 1968 to 1991 time period has been in the amount of forestland. Over 2,200 acres were lost, declining from nearly 60 to 50 percent of the Town's overall land area. Over 300 acres of agricultural were also lost; farmland represented only 0.5 percent of the overall land use in 1991, down from 1.7 percent in

1968. Industrial lands represent the smallest overall land use type in 1991 at 0.1 percent. This figure is down from 0.2 percent in 1968.

In 1999, the Town of Carmel Industrial Development Agency issued an analysis of industrial land; *The IL District Study* (See Appendix C). The study revealed that 1,188 acres of land are industrially zoned, but only 332 acres contain industrial developments. The vacant industrial land was reported to be 885 acres. The report indicated that some existing sites contain wetlands and severe slopes, limiting their overall development potential. An evaluation of individual parcels would be required to determine developable areas. The report suggested that a great deal more industrial land than the 33 acres, depicted in the County's 1991 data, was used for 1999 industrial purposes.

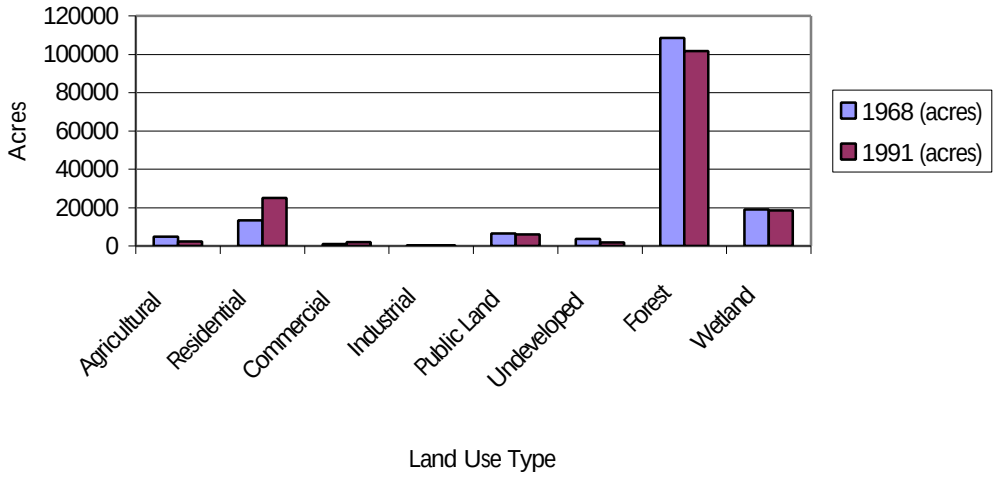
Table 4.2
Carmel Land Use by Type, 1968 to 1991

	1968 (acres)	% of Total	1991 (acres)	% of Total	Change '68-'91	%
Agricultural	441	1.7	128	0.5	-313	-71.0
Residential	4,344	16.7	7,246	27.8	2,902	66.8
Commercial	184	0.7	622	2.4	438	238.0
Industrial	55	0.2	33	0.1	-22	-40.0
Public Land	676	2.6	783	3.0	107	15.8
Undeveloped	901	3.5	118	0.5	-783	-86.9
Forest	15,263	58.6	13,059	50.1	-2,204	-14.4
Wetland	4,196	16.1	4,070	15.6	-126	-3.0
Total	26,060	100.0	26,059	100.0		

Source: Putnam County Planning Department, LUNR 1968, 1991.

The land use changes that the Town has witnessed are similar to changes throughout the County. Generally, residential development has increased at a dramatic rate, 86.6 percent, in the 1968 to 1991 time period, while all other land use types have declined (see Figure 4.3 below). Commercial development was the only other land use that experienced an increase, but commercial uses represented only a small portion of overall development. Importantly, forest and wetlands still represent a sizable amount of land within the County.

Figure 4.3
Putnam County General Land Use Change, 1968 to 1991



Source: Putnam County Planning Dept.

The most significant decline in land use throughout the County has been with forested lands. Nearly 7,000 acres were lost from 1968 to 1991, but only 6.4 percent of the total forest area had declined. More significant may be the loss of agricultural land marked by a 52 percent reduction and over 2,500 acres lost. Only 1.2 percent of undeveloped land was available in 1991, representing a decline of 49 percent from 1968. Significantly, however, only 656 acres of wetlands were lost in the 23-year study period, accounting for a respectable 12 percent of overall land use in 1991. The summary of land use for the County can be found in Table 4.4.

Table 4.4
Putnam County Land Use by Type, 1968 to 1991

	1968 (acres)	% of Total	1991 (acres)	% of Total	Change '68-'91	%
Agricultural	4,889	3.1	2,343	1.5	-2,546	-52.1
Residential	13,377	8.5	24,967	15.9	11,590	86.6
Commercial	911	0.6	2,028	1.3	1,117	122.6
Industrial	394	0.3	300	0.2	-94	-23.9
Public Land	6,593	4.2	5,941	3.8	-652	-9.9
Undeveloped	3,608	2.3	1,838	1.2	-1,770	-49.1
Forest	108,620	69.0	101,632	64.6	-6,988	-6.4
Wetland	19,032	12.1	18,376	11.7	-656	-3.4
Total	157424	100.0	157425	100.0		

Source: Putnam County Planning Department, LUNR 1968, 1991.

Residential growth in both the Town of Carmel and Putnam County can be expected to continue based on the previous growth. Through the 1990's, the Town has added nearly 900 single family dwelling units as reported in Table 4.5 below. During the reported time period, Carmel has consistently added on average over 30% (for comparable years) of the single family residential supply within the entire County, even though it contains only 15% of the land area.

Table 4.5
Single Family Building Permits 1990-1999

	YEAR									
Building Permits	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**
Carmel	60	78	88	92	105	75	72	79	99	149
Putnam Co.	490	204	238	183	257	178	184	189	484	N/A
% in Carmel	12%	38%	37%	50%	41%	42%	39%	42%	20%	N/A

Source: Putnam County Planning Department and Town of Carmel Building Department, 1999.

Housing in the Town is predominantly single family residential with a total 10,152 homes in 1990. The housing stock is relatively new; 6,271 dwellings, representing over sixty percent, were constructed after 1960 (see Table 4.6). The majority are owner occupied with only 14 percent, or 1,442 households, occupied by renters.

Table 4.6
Housing Construction 1939 to 1990

Construction Years	Houses Built
1980 to March of 1990	1,573
1970 to 979	1,978
1960 to 1969	2,720
1950 to 1959	1,573
1940 to 1949	799
Before 1939	1,509
Total	10,152

Source: U.S. Census, 1990

The developed land use in Carmel is largely single family residential. By subtracting the industrial and developed residential lands from the undeveloped, forested and agricultural lands, an estimate of single family development can be made. The following table (Table 4.7) depicts the potentially developable land as of 1991.

4.2 Development Potential

Table 4.7
1991 Development Potential

1991 Developable Land Use	Acres
Agricultural	128
Undeveloped	118
Forest	13,059
Total	13,305

Vacant zoned industrial land, as noted in the 1997 IL District Study was 885 acres (See Appendix C). Developed residential since 1991 included 837 single family dwellings as referenced in Table 4.5. Single family residential development typically requires 1.75 to 2 acres per lot since the new lots are largely in R-60 (60,000 square feet minimum lot area) zones and take into account roads and environmental constraints. In fact, recently approved subdivisions in the R-60 and R-60/40 zones for which data was available averaged 2.3 acres per lot (see Table 4.8).

Table 4.8
Subdivision Lot Size Comparison

Subdivision Name	Acres	Approved Lots	Acres per Lot
Lakeview at Hill Farm	172	48	3.6
Reservoir Estates	21	11	1.9
Levine	55	18	3.1
Kirkwood Estates	45	17	2.6
Laurel Hill	26	10	2.6
Carmel MacGregor	133	215	0.6
Shenandoah Estates	36	14	2.6
The Links	281	100	2.8
Michaels Glen	29	24	1.2
Average Lot Size			2.3

Source: Carmel Planning Board, 1999.

With this, the total developed residential acreage is assumed to be approximately 1,550 acres. As shown below in Table 4.9, the total available vacant land for residential purposes has been interpolated to be 10,870 acres.

Table 4.9
Residential Land Potential, 2000

1991 Vacant Land (from Table 4.7)	13,305
Vacant Industrial Land	**-** 885
Developed Residential Land	**-** 1,550
Total	10,870

The development potential can be estimated using the calculation of vacant land in Table 4.9. Some of the remaining developable land in the Town is characterized by several environmental constraints including steep slopes and wetland. In addition, subdivided land will require roads, accounting for approximately 20 percent of land area. For the discussion purposes here, 30 percent of vacant land is assumed to be used for conservation of slopes and wetlands and road construction or design inefficiencies.

By subtracting the area that will not be developed due to slopes, wetlands and design (approximately 30%) from the 10,870 acres of vacant residential land shown in Table 4.9, the net developable acreage is approximately 7,600 acres. As the R-60 density (minimum lot area of 60,000 square feet) allows for today, the present potential development is approximately 5,000 development lots.