

## EXISTING LAND USE ASSESSMENT

The characteristics of the land in the Mayville Community, and the way people use land, change over time. Trees grow and mature in areas that once were open fields. Lands that were once cultivated as farmfields become shrub-covered fields. Houses are built in areas that once were forests.

This section will describe recent patterns of land use in the Mayville Community and how those patterns changed between 1978 and 2005. To make this comparison, we have used a geographic information system (GIS) to evaluate and compare two different land use maps derived from aerial photographs and other data. The first map was created for the Michigan Resource Information System (MIRIS) in 1978 under the direction of the Michigan Department of Natural Resources. The second map was derived by the Land Information Access Association (LIAA) using the MIRIS standards and procedures and based on aerial photographs taken in 2005.

Both maps were created by trained technicians following procedures for interpreting aerial photographs and categorizing the land uses identified. In general, land use areas were mapped if they were 2.5 acres or greater in size. For example, a half-acre residential lot in the middle of a forest would be ignored. As a result, these maps provide relatively accurate summaries of land characteristics on a township-wide basis, but not detailed point-by-point analyses.

The land use maps in this section should be interpreted in conjunction with the text and tables to gain a better understanding of the variation and distribution of land uses throughout the township. The data represents the actual use of land as seen from the air and recorded in the land use classification system. This system uses seven major categories, referred to as Level 1 Categories, as follows:

1. Urban/Built (residential, commercial, industrial, transportation, parks)
2. Agricultural (crop land, orchards, feedlots, permanent pasture)
3. Non-Forested (shrub lands, scrub lands)
4. Forested (deciduous, coniferous, mixed, clear cut)
5. Water (streams, lakes, reservoirs)
6. Wetlands (forested, non-forested)
7. Barren (beach, dune, rock)

The seven major categories can be further subdivided into the Level 2 subcategories listed in parentheses above. For example, an area of land used for residential housing would be mapped and categorized as 11 – urban residential use. In some cases, aerial photography and detailed interpretation would allow further categorization to Level 3. However, in performing this analysis, we focused on larger areas of land use, using level 1 and level 2 categorizations.

*Maps 17(a) and 17(b)* depict the distribution of land uses identified for the Mayville Community in 1978. There are approximately 23,000 acres of land in the Mayville Community (i.e., all of Fremont Township). In 1978, approximately 47% of this area (10,911 acres) was being used for agriculture; about 28% of the area (6,474 acres) was covered with forests, and about 15% of the area (3,525) was classified as non-forest land. Just over 4% of the area, or 974 acres, was classified as urban.

The 2005 land use map [Map 18(a and 18(b))] shows that land use and land cover changed significantly from that of 1978. In 2005, roughly, 34% of the land area (7,880 acres) was used for agriculture while about 34% of the area (7,890 acres) were classified as forests.

Table 22 below provides the acreages and percentages of land areas classified for each category in Level 1 and Level 2 for 1978 and 2005. Again, these calculations are based on mapping with a limited level of accuracy (e.g., no mapped areas of less than 2 ½ acres). Regardless, comparisons of the two maps and related tables present a useful summary of land use patterns in the Mayville Community and indicate trends in land use over the past 27 or 28 years.

<b>Table 22.</b>					
<b>Existing Land Use: 1978 - 2005</b>					
Level 1	Land Use Code	1978 Land Use		2005 Land Use	
		Acres	Percent	Acres	Percent
Urban	1	974	4	2,560	11
Agriculture	2	10,911	47	7,880	34
Nonforested	3	3,525	15	3,576	16
Forest	4	6,474	28	7,890	34
Water	5	123	1	159	1
Wetlands	6	1,019	4	961	4
Total		23,026	100	23,026	100

Level 2	Land Use Code	Acres	Percent	Acres	Percent
Residential	11	318	1	1,992	9
Commercial/Gov	12	55	0	125	1
Industrial	13	38	0	30	0
Transport/Utility	14	6	0	4	0
Extractive	17	537	2	352	2
Rec/Cemetery	19	20	0	57	0
Cropland	21	10,641	46	7,750	34
Orchard/Fruit	22	113	0	4	0
Confined Feeding	23	16	0	13	0
Permanent Pasture	24	141	1	29	0
Other Agriculture	29	0	0	84	0
Herbaceous/Grass	31	2,208	10	1,234	5
Shrub	32	1,317	6	2,342	10
Deciduous Forest	41	6,306	27	7,528	33
Coniferous Forest	42	168	1	362	2
Lake	52	123	1	159	1
Forested Wetland	61	995	4	921	4
Nonforest Wetland	62	24	0	40	0
Total		23,026	100	23,026	100

Table 23 shows the actual net change in Level 1 land use over the nearly three decades from 1978 to 2005 in the Mayville Community. In terms of total acreage, the largest change was the more than 3,000 acre decrease in agricultural land uses, a 28% decline. The second most substantial change was the 1,586 acre increase in urban land uses, a 163% increase. As indicated above in Table 22, the vast majority of this change can be attributed to



the increase in residential development. (Note that a decrease in *extractive* land uses offsets some of the change.) There was also a substantial increase in the acreage classified as forested, an estimated increase of 1,416 acres or 22%. There were relatively small net changes in the other land use categories.

Table 23.							
Existing Land Use Net Change: 1978 - 2005							
Level 1 Code	Urban 1	Agriculture 2	Nonforest 3	Forest 4	Water 5	Wetland 6	Totals
1978 Acres	974	10,911	3,525	6,474	123	1,019	23,026
2005 Acres	2,560	7,880	3,576	7,890	159	961	23,026
Change in Acres from 1978	Gained 1,586	Lost 3,031	Gained 51	Gained 1,416	Gained 36	Lost 58	Change 6,178
Change in Percent from 1978	Gained 163%	Lost 28%	Gained 1%	Gained 22%	Gained 29%	Lost 6%	Change 27%

Although the changes described above are substantial, they do not present the whole picture. Over time, changes of land use in one area may offset changes of land use in another. As a result, there may be a much greater amount of change than depicted in the net totals listed above. For example, a farmer may abandon one field and allow it to change slowly to herbaceous plants and shrubs and then to forest. While that same farmer may clear a new parcel of shrubs and turn that into cropland. To fully analyze the type and amount of land use change, we need to consider the acres of land shifting into and out of various categories.

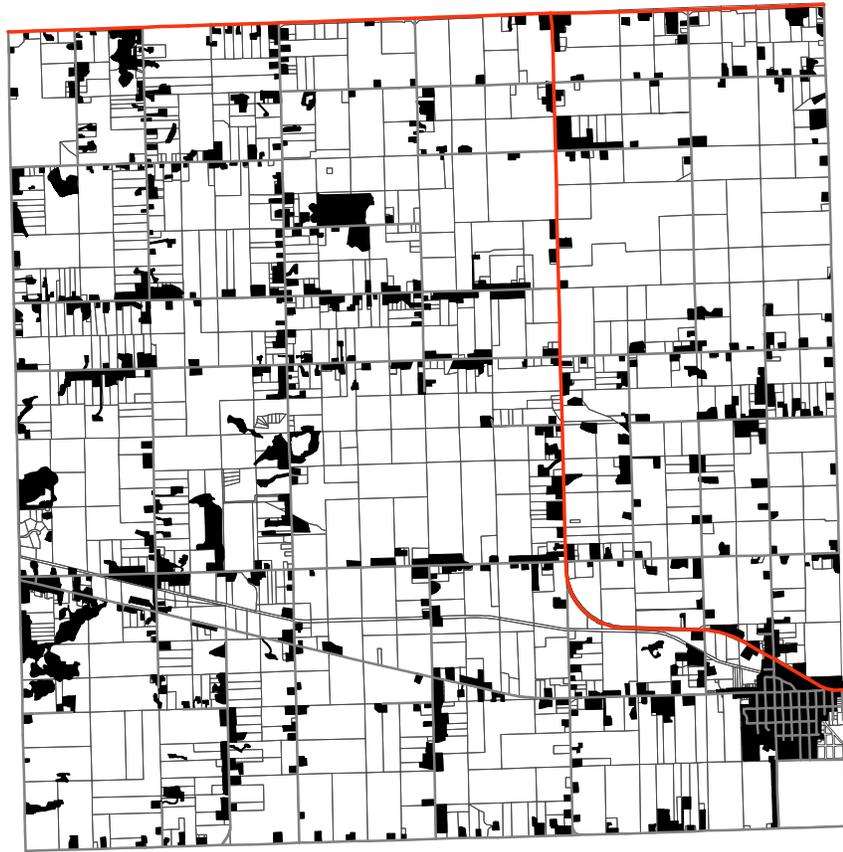
The land use cross tabulations (see *Appendix H*) gives a much clearer picture of the dynamic nature of land use change. For example, it is estimated that there was a loss of 3,623 acres of cropland (Land Use Code 21); but during the same period, 732 acres of cropland were added. Similarly, the Mayville Community added 2,116 acres of forest land in various locations while losing about 700 acres of forest land in other areas. If all of these land use changes are taken into account, we can see that land use changes occurred on about 7,967 acres of land – over 34% of the Mayville Community. Given the relatively modest increase in total population, this is a substantial amount of land use change.

***Analysis of Land Use Pattern in the Mayville Community***

As documented in the comparison of land use maps, there have been substantial changes in characteristics of the Mayville Community from 1978 to 2005, particularly in Fremont Township. In most cases, these changes would be visible to the observer over time. For example, there has been a relatively large amount of residential development throughout the Township along the road corridors. (*Figure 4* shows the pattern of all urban land uses in the Mayville Community, as mapped for 2005.) Similarly, there has been a substantial amount of agricultural land converted to other uses – much of this area would have been visible from the roadways. These land use changes are consistent with well-documented statewide trends of low-density, large lot residential development and the conversion of farmlands to other uses.



Figure 4.  
All Lands Classified as  
Urban



As noted in the section on population, there has been a relatively modest increase in population of the Mayville community over the past 20 years. A higher population translates into an increase in overall population density. However, due to the pattern of low-density residential development, the amount of land used to accommodate each Mayville Community resident has increased. In 1980, the estimated population in the Mayville Community was 3,829. Given a total urban area of 974 acres in 1978, there were about 0.254 acres of urban area per person at that time. Using recent population estimates (estimate 4,744) and the total acreage of urban land uses mapped, there were over 0.539 acres of urban land per Mayville Community resident in 2005. In other words, the population of the Mayville Community is using more than double the amount of urban land to accommodate the resident population today than it did in 1978.

Another substantial change in land use over the years between 1978 and 2005 has been the increase in forested lands. (*Figure 5* shows the pattern of all forested areas in the Mayville Community, as mapped for 2005.) Much of this increase appears to be the growth of trees in areas formerly categorized as shrub and herbaceous grasslands. Additionally, some of this increase in forested acreage resulted from the conversion of cropland (e.g., planted to trees or simply allowed to return to a forested state.)

Figure 5.  
All Lands Classified as  
Forest

