

### **Climate**

The climate in Crawford County and Beaver Creek Township is humid, continental, and is not strongly influenced by the climate moderation typical of areas closer to the Great Lakes. The most noticeable lake influence is the increased cloudiness and snowfall during fall and winter months.

The average temperature during a year is 42 degrees Fahrenheit. The lowest temperature on record is -42 degrees, occurring on February 17, 1979. In summer, the average temperature is 65.5 degrees, and the average daily high temperature is 78.8 degrees. The highest recorded temperature was 106 degrees occurring on June 28, 1887.

The total annual precipitation is 32 inches. Of this, 20.7 inches, or 64 percent, usually falls in April through September. The growing season for most crops falls within this period. The heaviest 24-hour rainfall during the period of record was 5.02 inches on August 8 and 9, 1965. Thunderstorms occur on about 30 days each year, and most occur in June, July, and August.

The average seasonal snowfall is about 75 inches. The greatest snow depth at any one time during the period of record was 51 inches. On the average, 127 days of the year have at least one inch of snow on the ground.

The average relative humidity in mid-afternoon is about 63 percent. Humidity is higher at night, with the average at dawn about 85 percent. During daylight hours, clouds obscure the sun 33 percent of the time in summer, and 63 percent of the time in winter. The prevailing wind is from the southwest. Average wind speed is highest in January, at 10 miles per hour.

### **Physiography**

The southern part of Crawford County where Beaver Creek Township is located, is underlain by the Michigan Formation of the late Mississippian age. This formation is composed of inter-bedded layers of shale, sandstone, and limestone, and is up to 500 feet thick. This formation is covered by approximately 200 feet of glacial drift (Western Michigan University, Department of Geology, 1981).

The landform is the result of late Wisconsinan glaciation. The retreat of glacial ice in this area occurred between 12,500 and 14,500 years ago (Burgis and Eschman, 1981). The dominant landforms of the County are outwash plains, kames, moraines, and lake plains.

The physiographic region in Beaver Creek Township, and across the southern part of the County, consists of a nearly level to gently sloping plain interrupted by a series of high kame moraines. Much of the gently sloping plain is overwashed with sand. The kame moraines have a general east-west orientation. A few small post-glacial lake plains also occur in this region. The soils are predominately sandy and loamy, and slopes range from nearly level to steep.

### **Surface Water**

Most of Beaver Creek Township, like 85 percent of Crawford County, is drained by the AuSable River watershed. Beaver Creek, for which the Township is named, feeds the South Branch of the AuSable River which is part of the Wild & Scenic River system. The north and south branches coverage in South Branch Township, and together drain into Lake Huron. The peripheral western and southwest portions of Beaver Creek Township drain into Lake Michigan via the Manistee Watershed.

Two of the lakes in Crawford County are found in Beaver Creek Township. The northern shore of Higgins Lake lies on the southern edge of Beaver Creek Township. The small Mud Lake feeds into the AuSable watershed.

### **Soils**

Beaver Creek Township contains several varieties of soils. Many development problems that occur in Beaver Creek Township could have been avoided if available soil information had been utilized to guide development decisions in planning and zoning. It is strongly recommended that soil limitations be considered when deciding upon permitting future land uses. Soil interpretation records describe the limitations of each soil series regarding various types of development. Limitations for each category are given as slight, moderate, or severe, and are defined for the USDA Crawford County Soil Survey as follows:

- Slight** - relatively free of limitations or limitations are easily overcome.
- Moderate** - limitations need to be recognized but can be overcome with good management and careful design.
- Severe** - limitations are severe enough to make the use questionable for intensive residential, commercial and industrial development.

The two types of soil limitations which are most important for defining areas of future development in Beaver Creek Township are the limitations for building site development, and limitations for sanitary facilities. All but 48 acres of the Township are also rated severe with respect to limitations of filtering capacity for septic tanks. Some soils allow water to pass through too quickly, while others restrict the flow and cause problems with ponding. One area without those severe septic tank limitations covers 28 acres 1,400 feet north of the Roscommon County line east of Moorestown Road. The other 20 acres are found 1,800 feet south of West Beaver Road.

Some other soils in the Township are too steep for sewage lagoons, or too wet for septic tanks. Extra care must therefore be exercised in the design, construction, and maintenance of such facilities in those areas.

Soils have been identified and analyzed for their suitability for building site development in two locations. The northern most portion of Beaver Creek Township, east of Military Road and the entire area between US-27 and I-75. The northern portion of the Township is within close proximity to the City of Grayling and Grayling Township. The area covers approximately 10,240 acres and it is thought that sewer and water service can be extended south to this area. The area between US-27 and I-75 north of the Township boundary covers approximately 7,050 acres.

Table 2-1 shows environmentally sensitive soils in the northern portion of Beaver Creek Township, which are not generally suitable for the construction of various types of development, including streets, dwellings with basements, buildings with heavy footing loads or deep foundations, septic tanks, and sewage lagoons. The slope guidelines for commercial buildings are more restricted than for housing. For

## Section 2- Physical Features

commercial buildings, slopes between zero and four percent are listed as slight, four to eight percent as moderate, and slopes over eight percent are rated severe. For residential structures, slopes are rated moderate at eight percent, and severe at 16 percent.

**TABLE 2-1 - BEAVER CREEK TOWNSHIP SOILS WITH LIMITED CAPACITY FOR BUILDING SITE DEVELOPMENT**

Soil Type	Acres	Dwellings without Basements, Streets	Dwellings with Basements	Small Commercial Buildings
Au Gres Sand	41.72	Severe: wetness	Severe: wetness	Severe: wetness
Blue Lake Loamy Sand	17.04	Moderate: slope	Moderate: slope	Severe: slope
Croswell Sand	240.51	Moderate: wetness	Severe: wetness	Moderate: wetness
Dawson-Loxley Peats	431.39	Severe: ponding	Severe: ponding	Severe: ponding
Graycalm-Grayling Sand	1,816.39	Moderate: slope	Moderate: slope	Severe: slope
Graycalm-Grayling Sand	373.52	Severe: slope	Severe: slope	Severe: Slope
Graycalm-Klacking Complex	286.16	Moderate: slope	Moderate: slope	Severe: slope
Graycalm-Klacking Complex	87.54	Severe: slope	Severe: slope	Severe: slope
Graycalm Sand	858.78	Moderate: slope	Moderate: slope	Severe: slope
Graycalm Sand	151.98	Severe: slope	Severe: slope	Severe: slope
Grayling Sand	294.10	Moderate: slope	Moderate: slope	Severe: slope
Grayling Sand	482.84	Severe: slope	Severe: slope	Severe: slope
Tawas-Lupton Muck	1,139.63	Severe: ponding	Severe: ponding	Severe: ponding
Leaferiver Muck	33.28	Severe: ponding	Severe: ponding	Severe: ponding
Kinross-AuGres Complex	59.41	Severe: wetness	Severe: wetness	Severe: wetness
Tawas-Leaferiver Muck	48.08	Severe: ponding	Severe: ponding	Severe: ponding
Kalkaska Sand	114.47	Severe: slope	Severe: slope	Severe: slope
Kalkaska Sand	42.00	Moderate: slope	Moderate: slope	Severe: slope
Kneff Sandy Loam	18.85	Moderate: wetness	Severe: wetness	Moderate: wetness
Perecheney Sand	589.48	Moderate: wetness	Severe: wetness	Moderate: wetness
Rubicon-Graycalm Sands	14.2	Moderate: slope	Moderate: slope	Severe: slope
Rubixon Sand	5.57	Severe: slope	Severe: slope	Severe: slope
Udipsamments-Haplorthods-Eutroboralfs Complex	1,200.76	Moderate: slope	Moderate: slope	Severe: slope
<b>SUBTOTAL</b>	<b>7,758.22</b>			
Acreage in the Area Without Moderate or Severe Limitation	9,532			
<b>TOTAL</b>	<b>17,290</b>			

SOURCE: Soil Survey of Crawford County, Michigan 1998

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## Section 2- Physical Features

Soil capability as depicted in Map 2-1 will be used in helping to determine potential future land use in the area. Soils should be viewed along with transportation, social factors, and economic development to arrive at a rational future land use distribution.

**See Section 7, map 7-1**

MAP 2-1 - ENVIRONMENTALLY SENSITIVE SOILS IN PRIME DEVELOPMENT AREAS