

CHAPTER 3

Natural Resources

Climate

Blue Lake Township's position in the interior of northern Lower Michigan means it lacks the climate-moderating effects of proximity to the Great Lakes. Due to the inland location, the growing season averages approximately 100-110 days. The township is considered to be a Zone 4 for plant hardiness, though snowfall cover will allow some Zone 5 plants to survive. However, the lakes provide slight moderation of temperature extremes to the Township.

The average temperature in the summer months as recorded by the Grayling weather station is approximately 65.5 degrees Fahrenheit, while the winter average is approximately 19.5 degrees (data from Kalkaska County Soil Survey; 1960 through 1990). The overall annual average temperature for Kalkaska County is 43.3 degrees, although variations occur.

Precipitation is well distributed throughout the year with the growing season, May to October, receiving an average of 18.7 inches, 58% of the total annual average. The average annual snowfall as officially recorded at Grayling weather station is 92.9 inches, however snowfall varies considerably throughout the area with unofficial annual average snowfall being approximately 130 inches for Mancelona.

Geology

Bedrock underlying the County was formed from an ancient sea, which covered the area some 250-600 million years ago. The bedrock underlying Blue Lake Township was formed during the early Mississippian ages of the Paleozoic Era. This bedrock is Coldwater shale.

The primary surface geologic features in Blue Lake Township consist of course textured glacial outwash sand and gravel, as well as ice-contact outwash sand and gravel. The soil is primarily composed of unsorted sands and gravels left by the glacier. The surface geology of Blue Lake Township is shown in Figure 3-1.

Topography

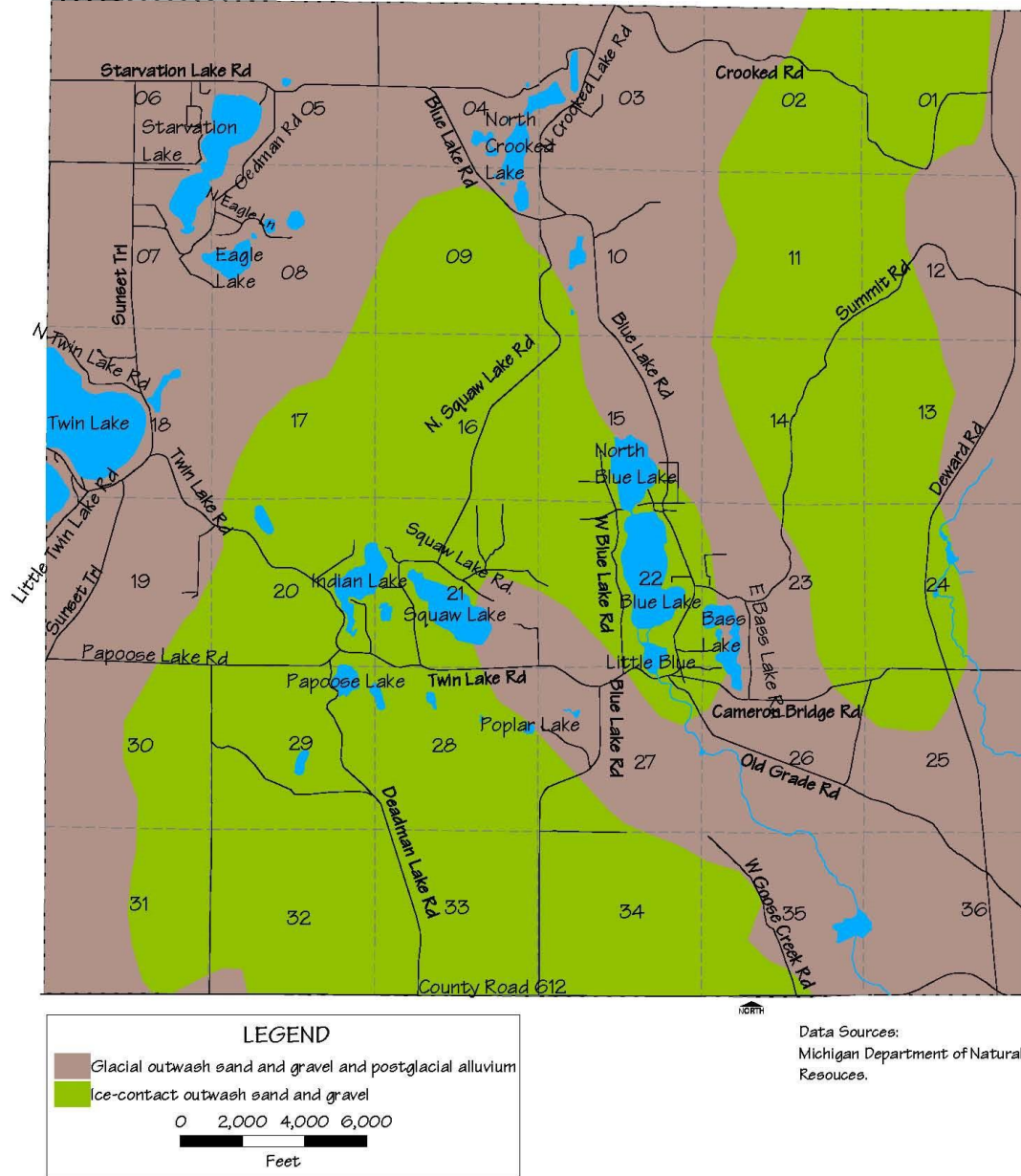
Slope is an important development consideration associated with topographic features. Steep roadway grades, septic field failures, soil erosion and excavation costs are some of the difficulties associated with severe grades. Figure 3-2 shows the topography of the Township. Areas of steep slopes (12 percent and greater) are considered a potential constraint for development. The majority of the Township is primarily gently rolling terrain.

Soils

One important determinant of land use is the soil's suitability for development. Land uses must correspond to the capacity of the soils on which they occur, and soil suitability for each use should be determined before development occurs.

Blue Lake Township
Kalkaska County, Michigan

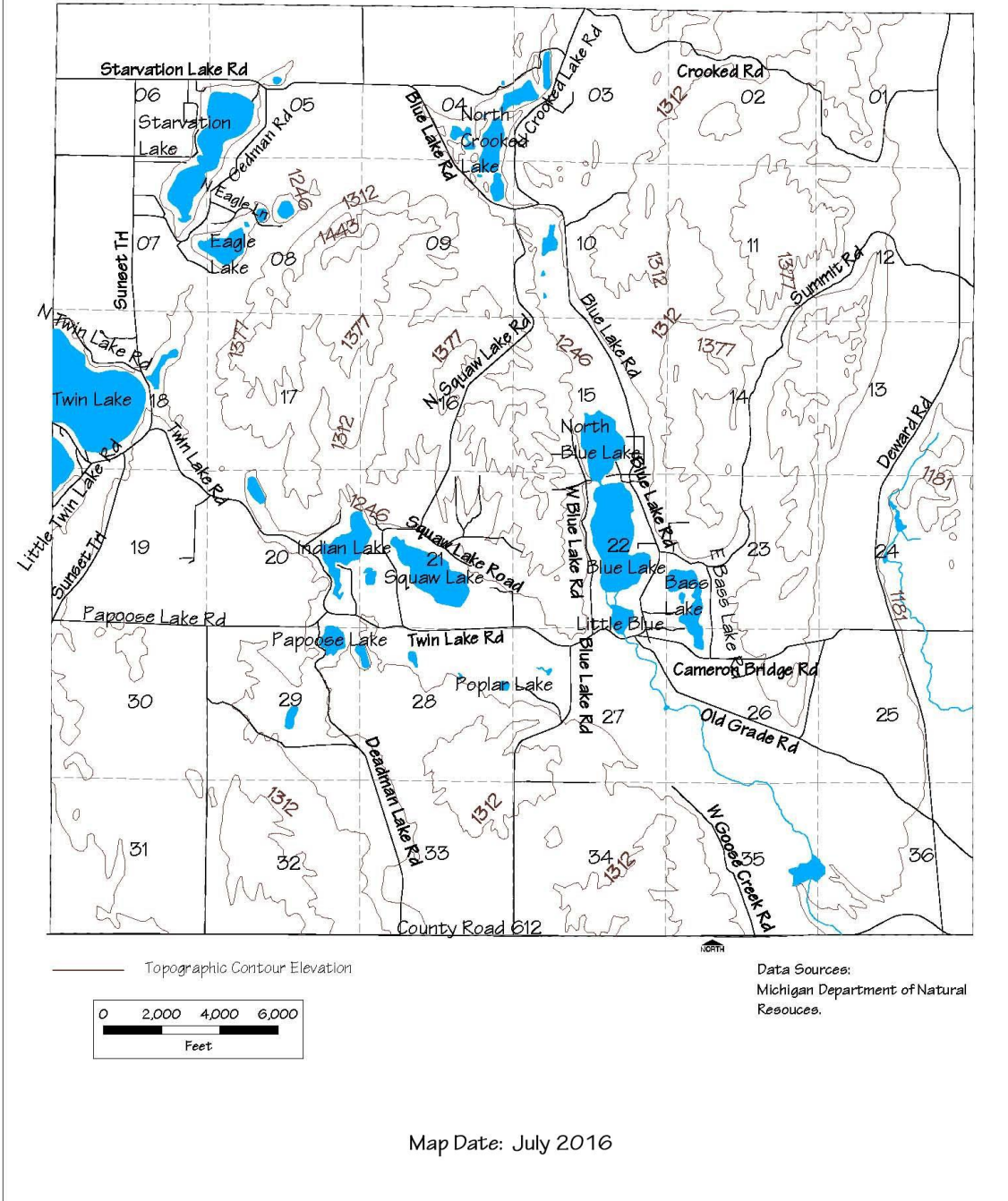
Figure 3-1: Surface Geology



Map Date: July 2016

Blue Lake Township
Kalkaska County, Michigan

Figure 3-2: Topography



The wetland areas of Blue Lake Township, comprised of soils which are hydric (wetland) soils or have hydric inclusions (see figure 3-3). Soils identified as having hydric inclusions are soil types which may have some wetland areas, but can not be determined by the soil type alone. Soils identified as having hydric inclusions must be field checked to verify whether or not wetland areas exist.

The soil limitations for septic systems were reviewed, and the entire Township is considered to have limitations either due to slope or poor filtration. Due to available engineering solutions, these limitations can be addressed. A more detailed analysis of the soils by the District Health Department will determine suitability for siting a septic system. Health Department approval is required by State law.

Figure 3-4 identifies areas with soil limitations for buildings without basements. In order to gain a better understanding of the actual impact of such limitations, the state-owned land is shown as an “overlay” on this map. The limitations identified are either related to slope, hydric soils or both. These limitations do not preclude the development of specific sites. The developer should realize, however, that construction on some soils may be costlier in time and money.

Water Resources

One of the valuable natural resources of Blue Lake Township is water. The lakes of Blue Lake Township provide for a variety of recreational activities such as fishing, boating and swimming.

Both groundwater and surface water are vital resources within Blue Lake Township. Because there is no central water distribution system, residents must rely upon individual wells for drinking water. The vulnerability of drinking water aquifers to surface contamination is high in the Township due to the highly permeable soils. Surface waters in lakes and creeks of the Township are an important resource for scenic, recreational and groundwater recharge amenities. It is therefore important that water resources be protected and managed in a manner which would ensure their quality.

Groundwater

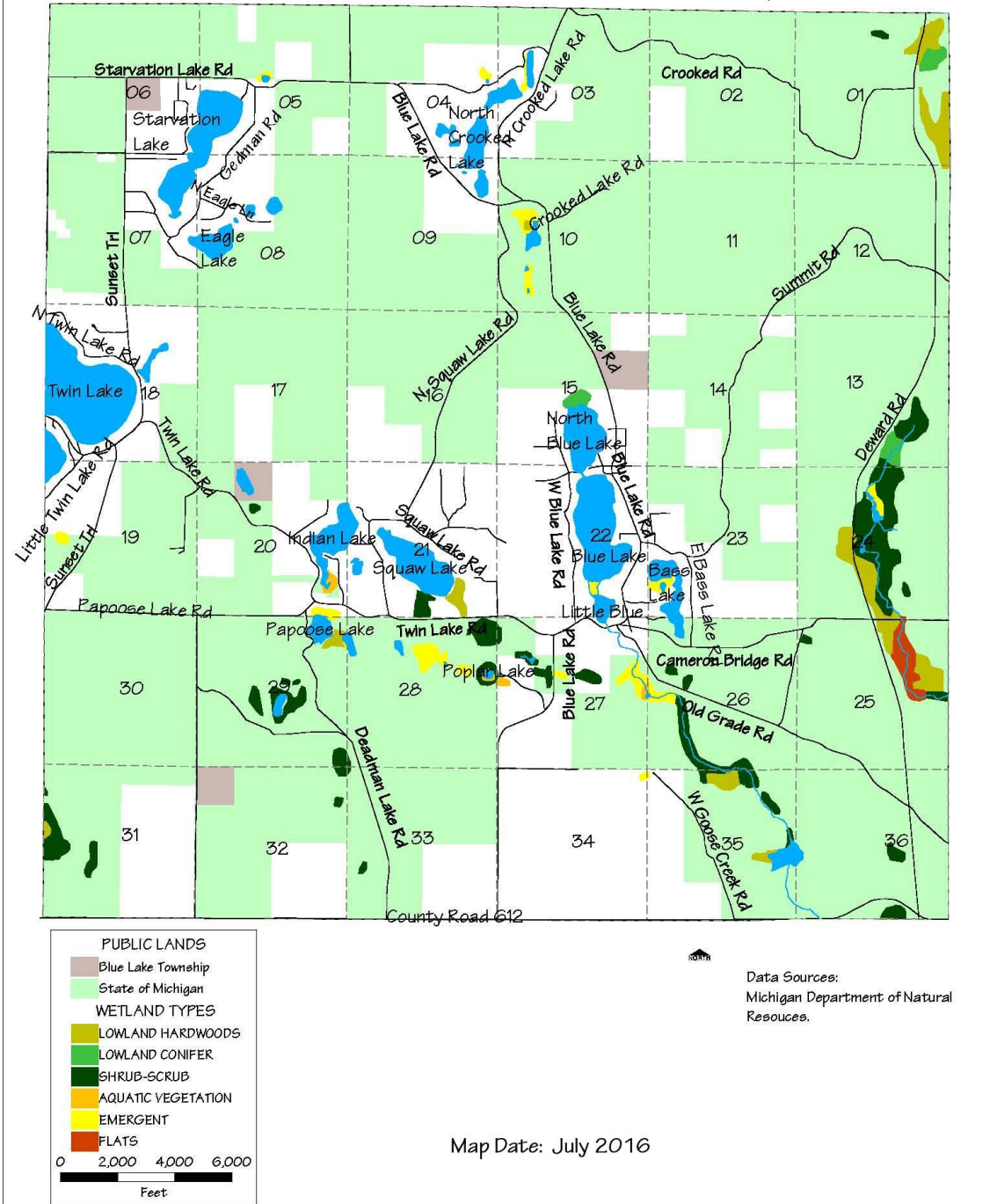
Important factors in the evaluation of groundwater are the quantity and quality of the water. The geologic and hydrologic features of the Township provide residents with sufficient water quantities. Water availability will not likely be a factor in limiting growth. In Blue Lake Township, water quality is more of a limiting factor than water supply. A more significant concern is the potential contamination of wells by septic fields. Although the Kankaska County Health Department record has no documented occurrences of contamination to date, the possibility for such pollution exists.

Surface Water

The major bodies of water in Blue Lake Township include portions of the following lakes, Big Twin and Little Twin, Starvation, Blue Lake, North Blue, Little Blue, North Crooked, Squaw, Indian, Bass, Papoose and Eagle and additional small lakes and ponds. The surface area of the lakes is 800 acres. The lakes and its associated tributary streams and creeks offer scenic and recreational amenities to Township residents and visitors. It is extremely important that the quality of these surface waters be protected from the negative impacts of development, such as pollution and loss of scenic views to open water.

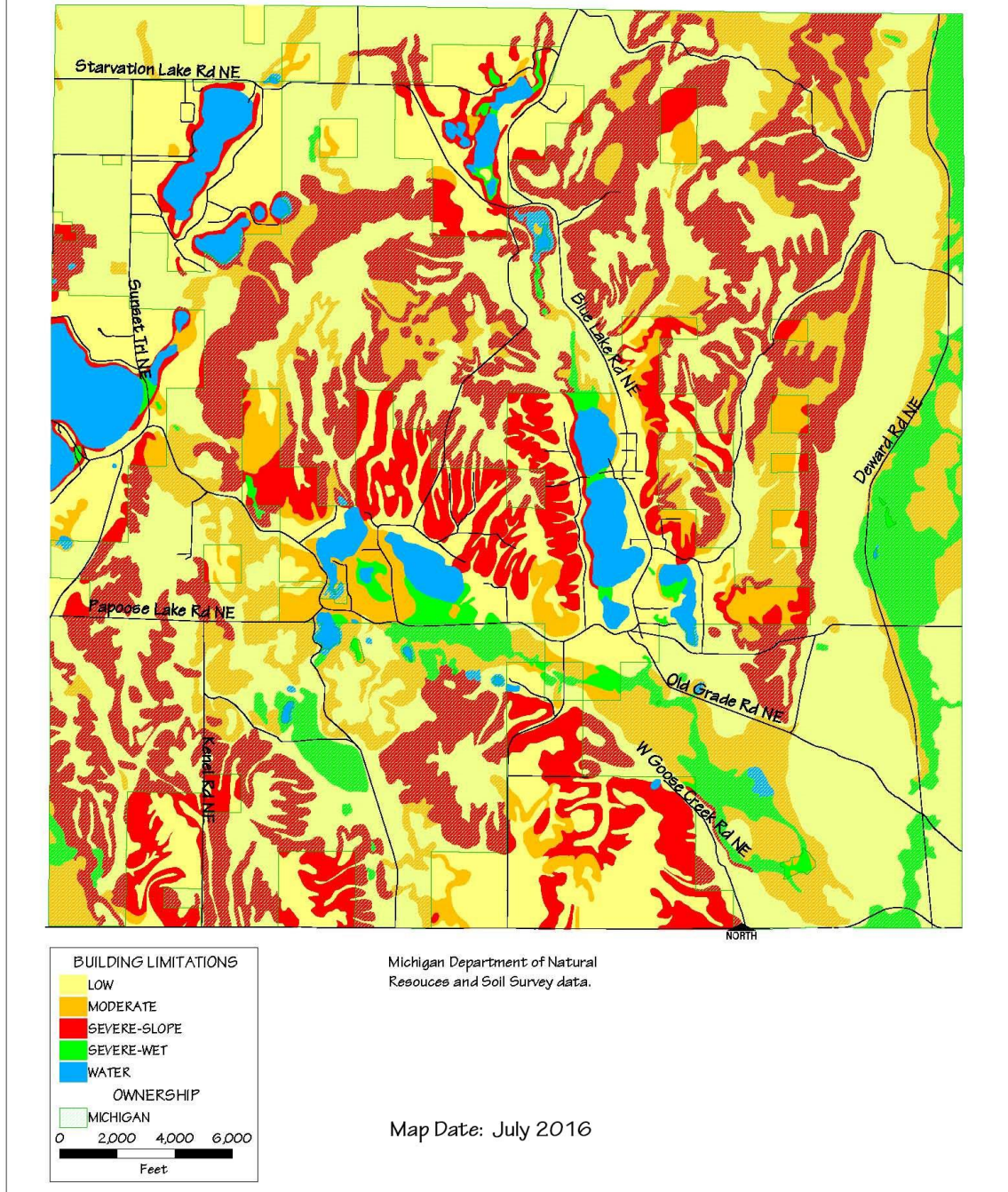
Blue Lake Township
Kalkaska County, Michigan

Figure 3-3: Wetlands and Public Ownership



Blue Lake Township
Kalkaska County, Michigan

Figure 3-4: Building Limitations for Buildings without Basements



The Blue Lake Coldsprings Lake Association and Blue Lake Association are active organizations of interested citizens and property owners concerned with monitoring and protecting the lakes or specific lakes in the Township. The Au Sable Institute also monitors some of the lakes in the Township as part of their environmental education programs.

Lakes, creeks, and wetlands are important for surface drainage, groundwater recharge and wildlife habitat. Alterations to the water features can contribute to flooding, poor water quality, insufficient water supply and loss of valuable wildlife habitat.

While the current quality of surface waters in Blue Lake Township is good, the threat of potential water pollution from non-point sources is a concern. Proper land use management can help control water quality conditions in Blue Lake Township. Some methods to curb pollution include runoff control measures, septic field standards, proper treatment of sanitary wastes, and fertilizer applications restrictions.

Wetlands and Woodlands

In addition to the scenic characteristics of woodlands, forested areas provide habitat for wildlife, protect the soil from erosion, and act as a buffer from noise on roadways. Figure 4-1 shows the distribution of forested land within the Township. Much of the forested areas throughout Blue Lake Township are located on State-owned (public) lands. These state owned forest areas are managed for timber, with timber harvested and sold according to a management plan which is reviewed every 10 years.

The dominant forest type association in Blue Lake Township is the northern hardwood forest (maple, beech, oak and basswood). Also found in the uplands are Aspen–Birch Successional Forests and Northern Pines Forests (Red, White and Jack Pines). In the lowland or wetland areas, common hardwood species include ash, elm and red maple. The common coniferous associations in the wetland areas are cedar and tamarack.

Fish and Wildlife

Trout, Bass, Yellow Perch, Blue Gill and Walleye are the primary species found in the lakes in the Township, creating good recreational fishing opportunities. The fishery management strategy includes stocking, as well as periodic surveying of the survival and growth of stocked species and assessment of fish populations several of the lakes in the Township, including Big Blue, North Blue, Starvation and Big Twin.

Habitat for populations of songbirds, wild turkeys, muskrat, mink, and raccoon are also supplied by forests within the Township. Predominant mammal species found throughout Blue Lake Township are fox, skunk, squirrel, rabbit, raccoons, porcupines, coyotes and deer. Black bear are occasionally spotted in the Township. Additionally, several species which are listed as “endangered, threatened or special concern” on either a state or federal level are found in Blue Lake Township, including, four “threatened” species, the bald eagle, osprey, red-shouldered hawk and common loon. The following “special concern” bird species are also known to nest in Blue Lake Township: Cooper’s hawk, northern goshawk, and American bittern.

Scenic Features

The dynamic, year round views from along its shorelines are another important asset to Blue Lake Township. Development which occurs along the shoreline areas is visible to many other property owners and boaters on the lakes. Just as consideration is given to the impact of development on water quality, the impact of development on visual quality should be considered.

Sites of Environmental Contamination

The Michigan Department of Environmental Quality provides for the identification, evaluation and risk assessment of sites of environmental contamination in the State, under part 201 of PA 451 of 1995. The Environmental Response Division (ERD) of the Michigan Department of Environmental Quality (DEQ) is charged with administering this law. A site of environmental contamination, as defined by the ERD, is "a location at which contamination of soil, ground water, surface water, air or other environmental resource is confirmed, or where there is potential for contamination of resources due to site conditions, site use or management practices." The agency publishes an annual list of environmentally contaminated sites by county, showing the sites by name, Site Assessment Model score, pollutant(s) and site status. As of May 2008, no environmentally contaminated sites were located in Blue Lake Township.

Surface Water Discharge Permits

All point source discharges into surface waters are required to obtain a National Pollutant Discharge Elimination System (NPDES) permit which is issued by the Michigan Water Resources Commission upon recommendation by MDNR (now DEQ), Surface Water Quality Division. Permit requirements generally address discharge limitations, effluent characteristics, monitoring and reporting requirements, along with facility management requirements. Currently no point source permit holders are listed in Blue Lake Township.

Air Quality

Air Quality is monitored by the Air Quality Division of the Michigan Department of Environmental Quality. Standards have been established as acceptable levels of discharge for any of the following air pollutants: particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, lead, and trace metals. These pollutants are monitored on a continuing basis at selected locations around the state. Monitoring in recent years has shown the level of pollutants in the region to be within the established acceptable standards.

Air discharge permits are required for businesses discharging more than the acceptable level of any of the regulated air pollutants. None are currently listed in Blue Lake Township.

Summary

The review of the natural resources in Blue Lake Township indicates the natural features and agricultural resources are currently relatively unimpaired; however, these resources are extremely vulnerable to change. Residents highly value the natural resources and scenic features of the Township. The environmental features of Blue Lake Township are an important asset to the community, and need continued protection.