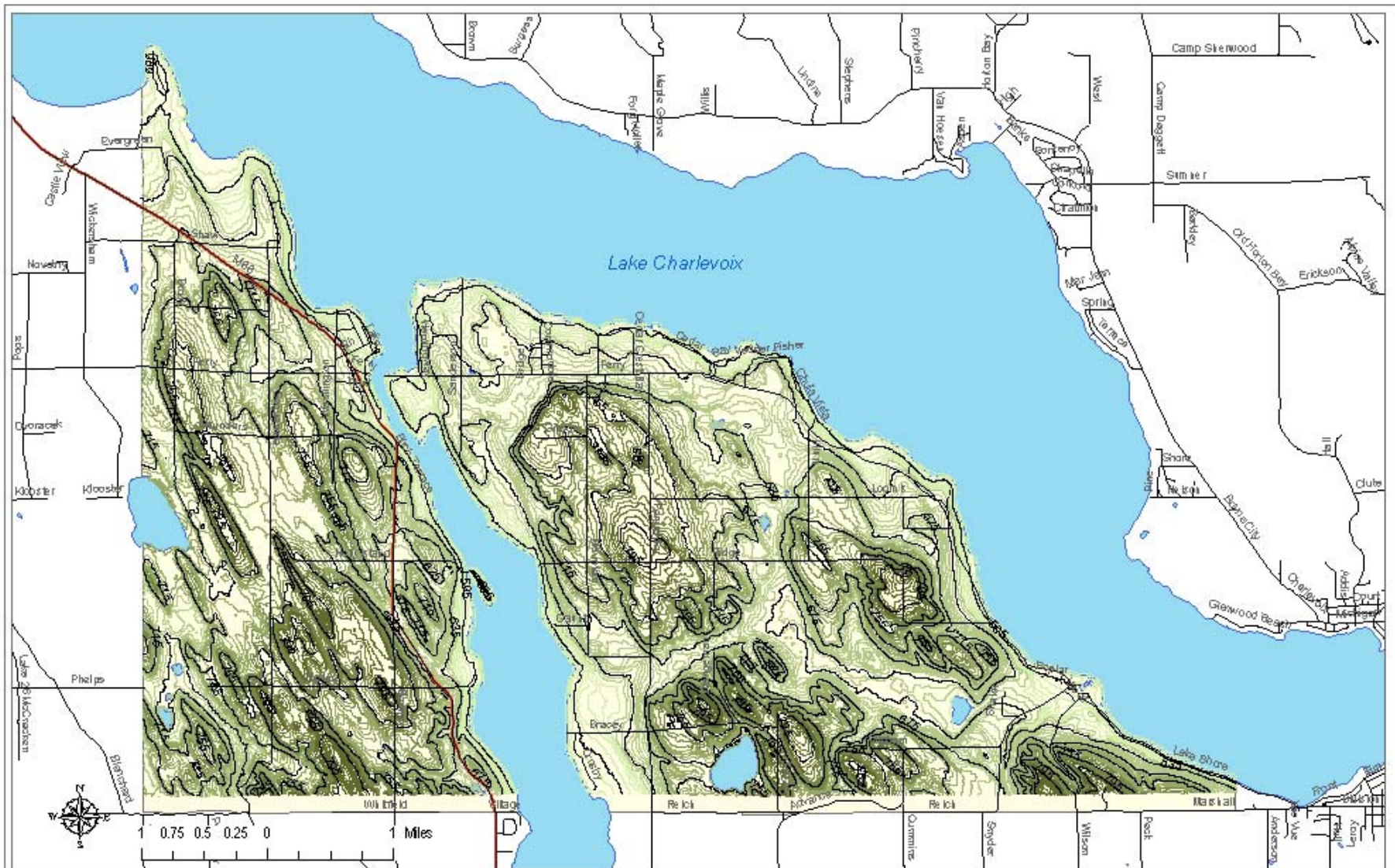


Revision Date: 5/02/05

Map 6 Septic Limitations Eveline Township, Charlevoix County

SEPTIC LIMITATIONS	
	NOT REPORTED
	SLIGHT
	MODERATE (PERC.)
	MODERATE (SLOPE)
	SEVERE (FILTER)
	SEVERE (FILTER/SLOPE)
	SEVERE (PERC.)
	SEVERE (PERC./SLOPE)
	SEVERE (SLOPE)
	SEVERE (WET)
	SEVERE (WET/ PERC.)



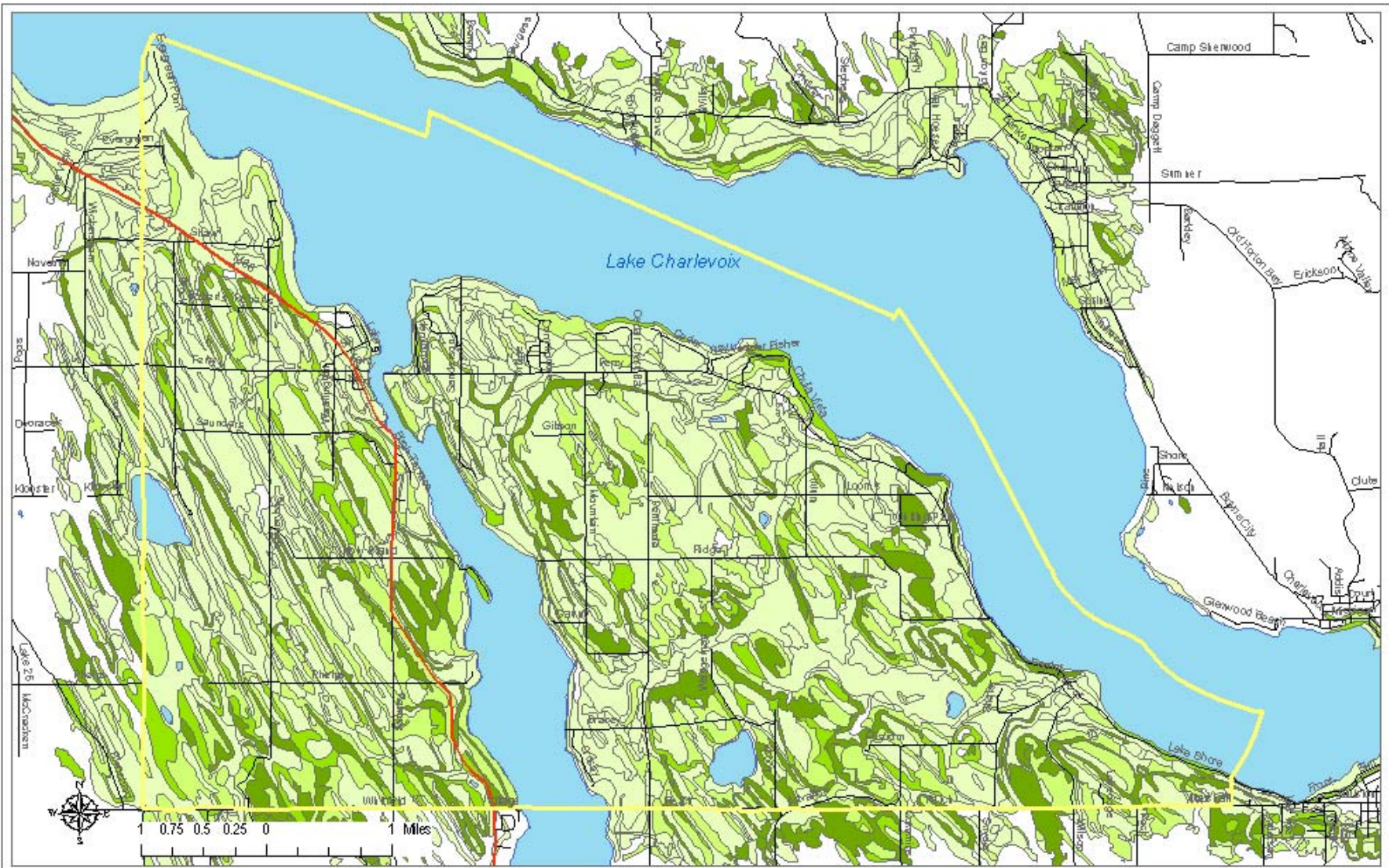
Map 7 Topography Eveline Township, Charlevoix County

CONTOURS (FEET)

- UNDER 620
- 621 - 660
- 661 - 735
- 736 - 775
- OVER 775

Revision Date: 5/02/05





Map 8 Slopes Eveline Township, Charlevoix County

SLOPE

- 0-6%
- 6-12%
- 12-18%
- 18-50%

Revision Date: 5/02/05



AGRICULTURE & FORESTRY OVERVIEW

PRODUCTIVE LAND USES

The Charlevoix County Planning Department completed a land use survey in 1998 based primarily on aerial photography. This land use survey identified several agricultural land uses including cropland, orchards/vineyards, feedlots, and pastureland. These can be seen in Map 11 on page 41. In determining which areas should be planned for future agricultural use in the updated master plan, those areas now (or recently) in agricultural use are an important consideration.

Some areas in agricultural use that were not previously planned for future agricultural use include areas north of M-66 north of Ironton; pastureland southwest of Advance; and some areas along west Ferry Road near the Ironton narrows. Lands formerly planned for agricultural use without any agricultural uses identified in the survey include areas south of the village of Advance; areas south of Ferry Road on the east side of the township; and some areas in the southwestern portion of the township.

AGRICULTURAL & TIMBERLAND SOILS

The following Prime Farmland Map (Map 9 on page 39) signifies areas that, based on soil profiles, are best suited to agricultural pursuits. This map represents prime agricultural soils as identified in the most recent soil survey for Charlevoix County. The soils included among prime agricultural soils are Emmet-Onaway sandy loams, Emmet sandy loams, Nester loams, and Ubyly sandy loam. This map also represents "Important" farmland soils and soils that would be considered prime farmland soils if properly drained.

Pockets of prime agricultural soils are found throughout the inland areas of Eveline Township but are most predominantly concentrated in the east half of the township along Peninsula and Ridge Roads and along Bracey Road east of Peninsula. On the West half of the township, the pattern of prime agricultural soils is striated due to the topographic character of the land. These long, thin pockets of prime agricultural soils run in a northwesterly to southeasterly pattern.

When comparing the locations of the known prime agricultural soils to the areas planned under the township's former master plan for agricultural use, there are a few notable discrepancies. Specifically, there are areas along the western township boundary near Phelps Road, areas along the Sear Creek waterway, and areas south of M-66 northwest of Ironton that have prime agricultural soils but were not planned for future agricultural use. Likewise, there were areas planned for agricultural use in the future without benefit of prime agricultural soils including an area south of Ironton; north of Shaw Road near the western township boundary; areas south of Advance, near Whiting Park, and south of Ferry Road on the east side of the township.

Map 10 on page 40 depicts forest suitability including prime timberland soils. Timberland soils are also identified through the county soil survey and include the following soil profiles that are not also prime agricultural soils Emmet-Leelanau complex, Leelanau loamy sand, Leelanau Rubican

loamy sands, Mancelona loamy sand, and Menominee loamy sand. Significant pockets of prime timberland soils are found in the southwestern portion of the township; north of M-66 and west of Sequanota Road; north of Ferry Road on the east side of the township; and generally in the southeastern portion of the township east of Wangerman Road. With the exception of those areas near the lakefront including north of M-66 and north of Ferry Road, the prime timberlands were formerly planned for agricultural use.

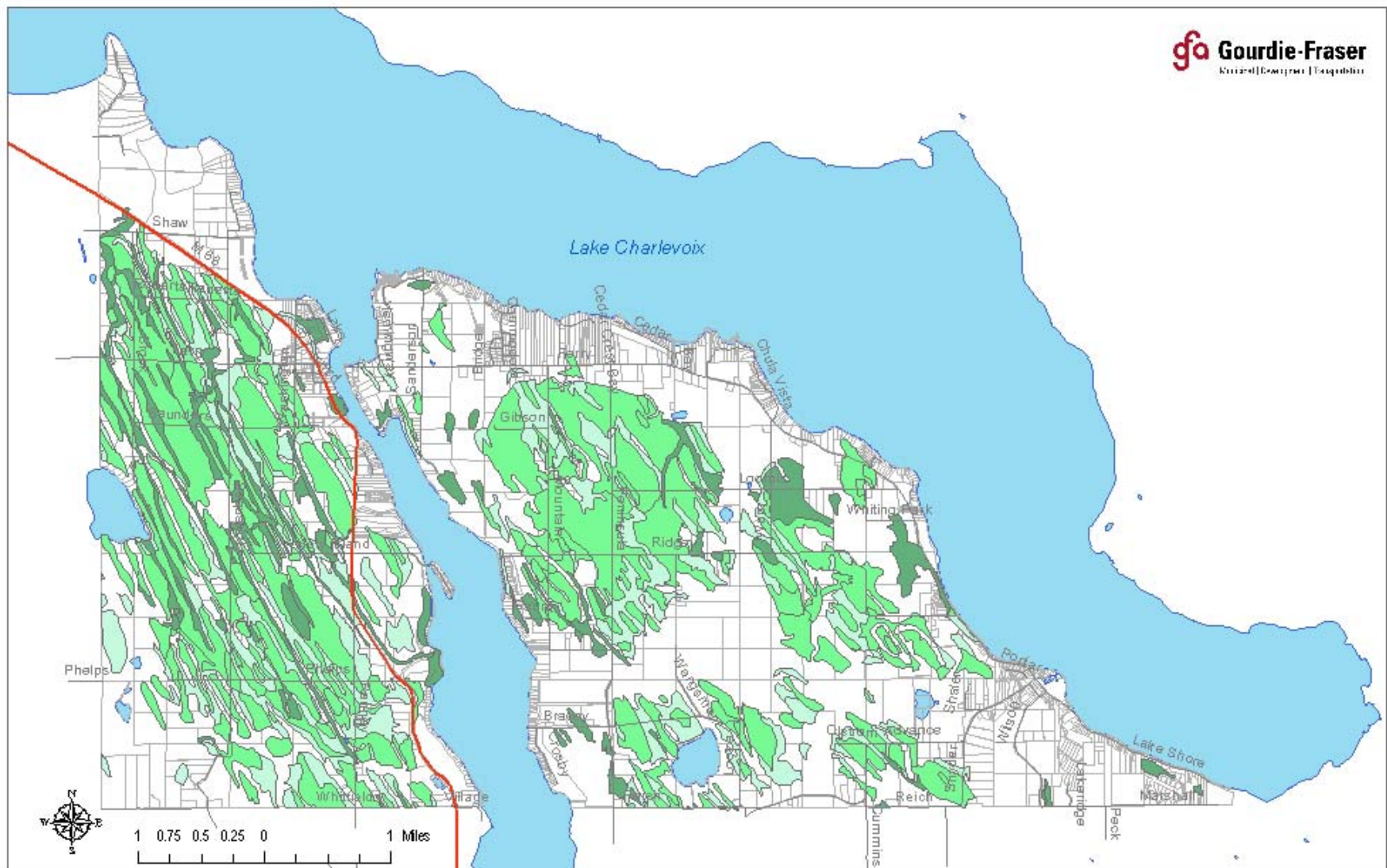
AGRICULTURAL SUITABILITY

Another consideration is the properties that are being taxed as agricultural properties. In order to be taxed as agricultural or timber land, owners must demonstrate to the assessor that certain criteria are met, including that a minimum portion of the land is being farmed and that a minimum return is being netted on the property. The properties being farmed according to tax records are found throughout the township and are shown on Map 12 on page 42. The only areas being taxed as farm property that were formerly planned for non-agricultural use is the area south of M-66 just north of Ironton; this area was planned for medium density residential. There are no parcels taxed as agricultural in the area formerly master planned for agricultural use in the following areas: around Gibson Road south of Ferry Road; south of Advance; and in the Whiting Park area.

Generally, the core planned agricultural areas from the former master plan were retained in the current master plan. Some alterations were made based on the preceding analysis and the agricultural planned areas were divided into two districts: Agricultural-1 and Agricultural-2. In summary, the alterations to the planned agricultural areas were based on the following:

- Areas that have a combination of two or more elements including prime agricultural soils, a history of productive agricultural use, currently taxed as agricultural or timber cut-over, are held in large tracts, and are currently being farmed were planned for Agricultural-1.
- Areas that have only one or two of these elements, and may have some limitations for farming, but are suitable for grazing, or timbering, or limited crop production were planned for Agricultural-2.
- Areas that have only one or two of these elements, but may be substantially wet lowlands not suitable for limited agricultural pursuits or high-density residential uses were planned for Rural Residential.

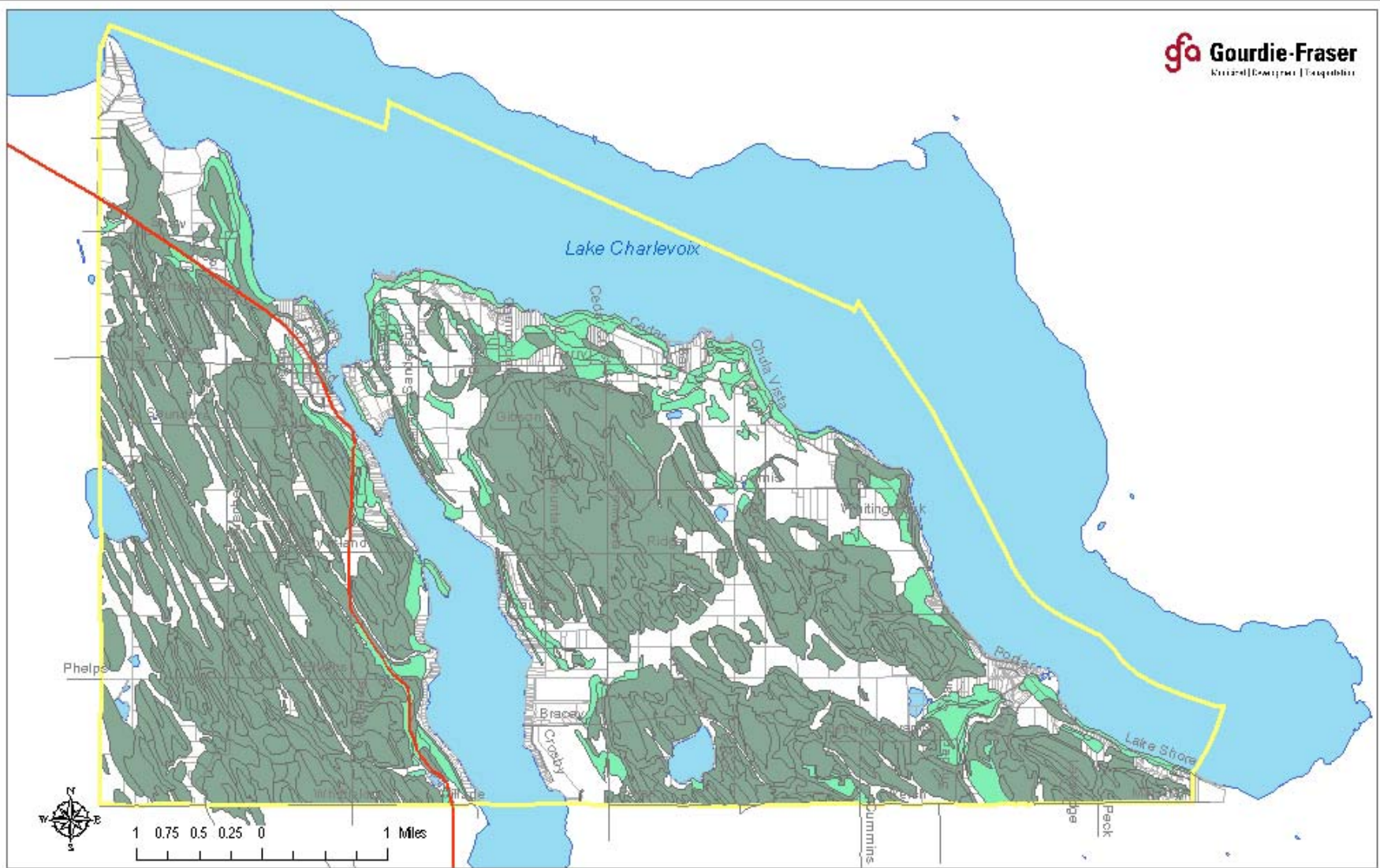
Further descriptions of all the planned districts and the Future Land Use Map (page 7) detailing the locations of the planned districts are found in the master plan section of this document, starting on page 3. It should be noted that the agricultural plan districts are general and contain limited isolated areas within them that have few of the agricultural elements described above. In many cases, these are small homesteads within the agricultural district and are not concentrated enough to plan for alternative districts.



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Map 9 Prime Farmland Eveline Township, Charlevoix County

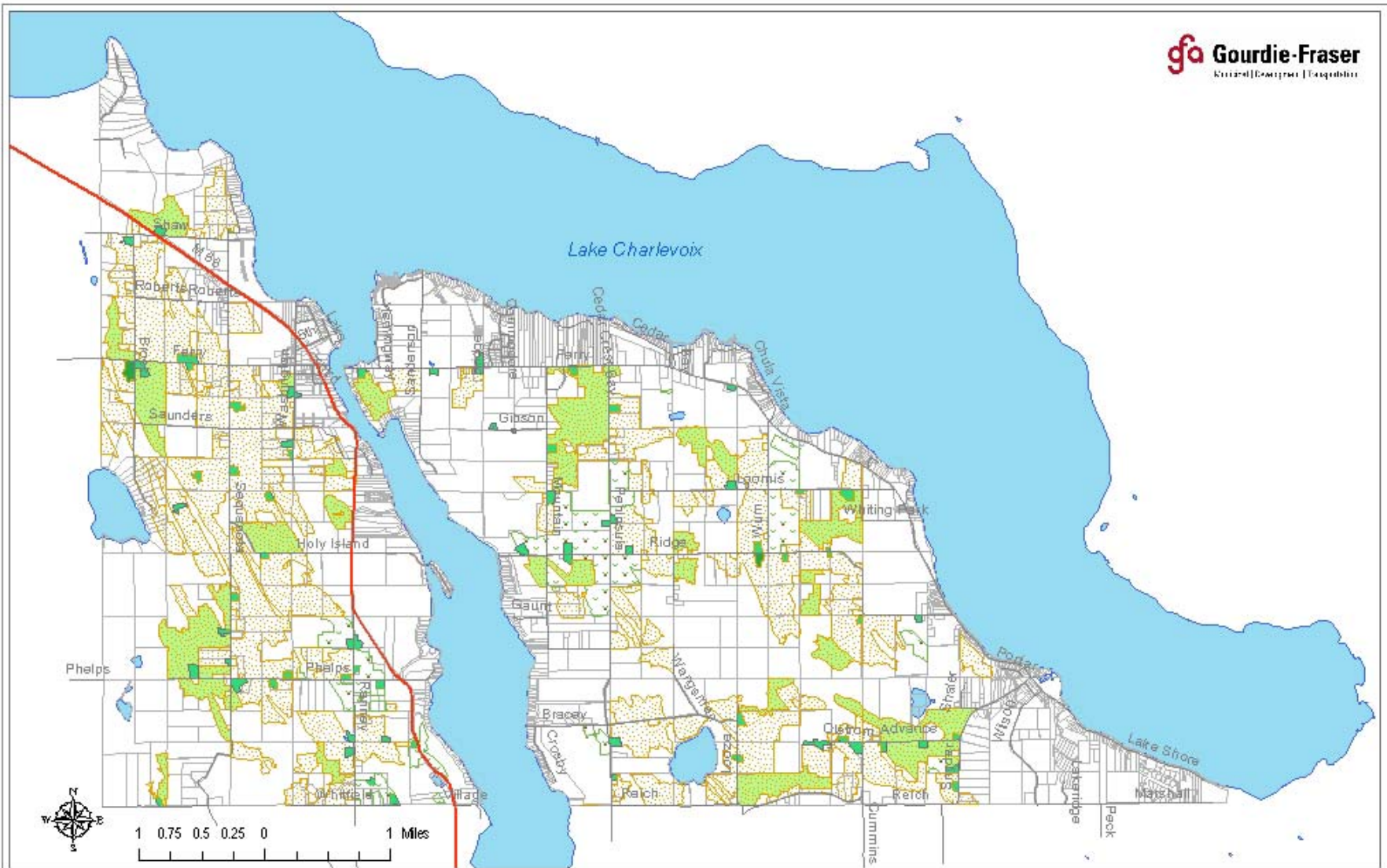
- FARMLAND**
- PRIME IF DRAINED
 - IMPORTANT
 - PRIME



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Map 10 Forest Suitability Eveline Township, Charlevoix County

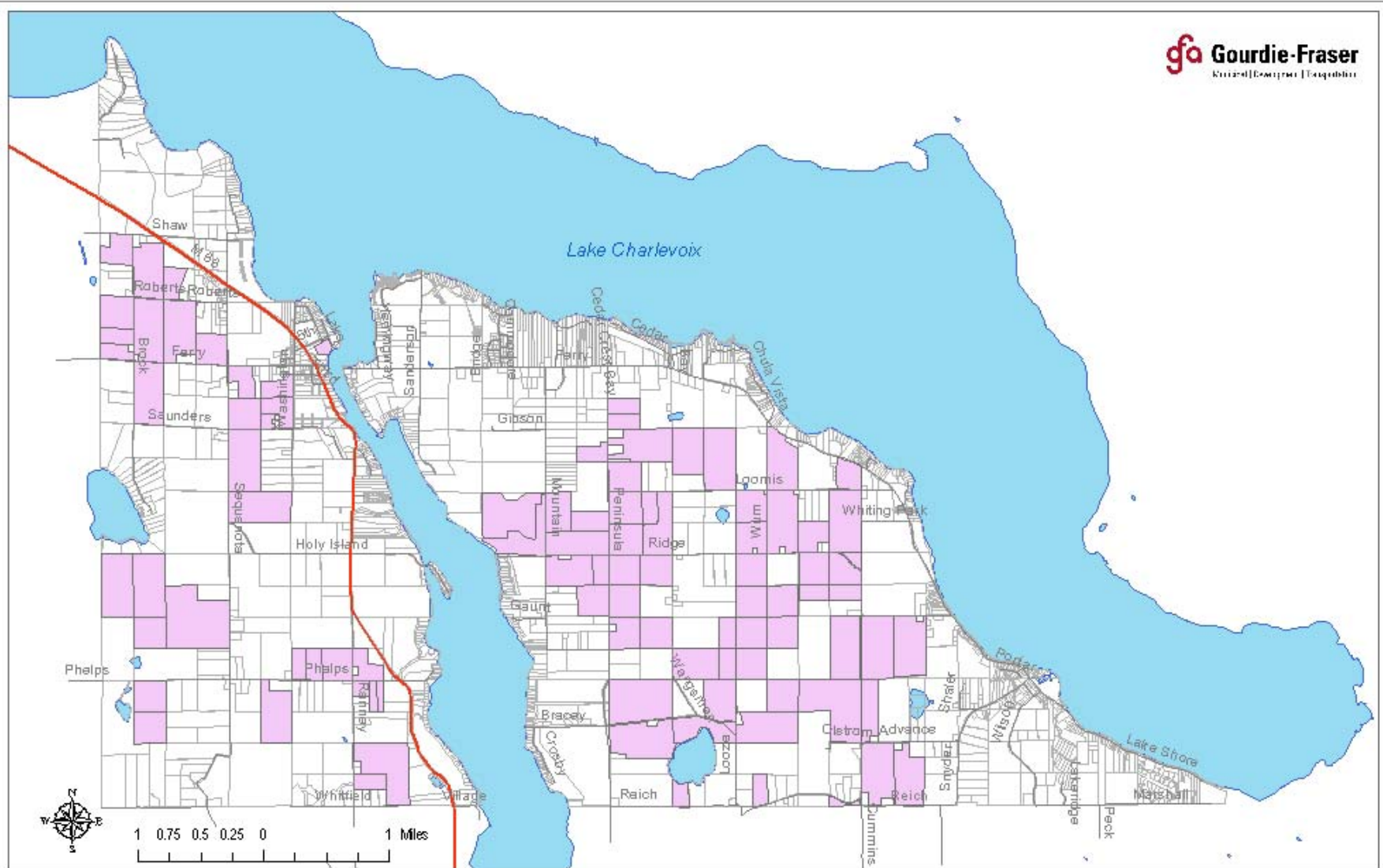
- FOREST SOILS**
- PRIME TIMBERLAND
 - REGIONALLY IMPORTANT



**Map 11 Agricultural Land Uses (1998)
 Eveline Township, Charlevoix County**

- CROPLAND
- ORCHARD, VINEYARD
- FEEDING
- PASTURE
- FARMSTEAD

Revision Date 5/2/05



Map 12 Parcels Taxed as Agricultural Eveline Township, Charlevoix County

Revision Date: 5/02/05

 PARCELS TAXED AS AGRICULTURAL/TIMBER CUTOVER
2003 TAX ROLLS

WIND ENERGY OVERVIEW

COMMERCIAL WIND TURBINE DEVELOPMENT LIMITATIONS

Three factors have been identified that limit the development of commercial wind turbine generators. These factors are mapped on the accompanying Map 13 (page 46). A description of each and impacts are discussed below.

1. **Tree Cover Areas:** Areas of existing tree cover are less suited to development of wind turbine generators because, generally, these areas have less open areas with less wind volume. Encouraging wind turbine development in heavily treed areas may also precipitate removal of existing vegetation to increase the efficiency of the generators. The tree cover areas generally coincide with the planned residential areas of the township. The exceptions to this are small pockets of pine or conifer tree cover scattered throughout the upland areas of the township.
2. **Wetland Areas:** Wetland areas are considered environmentally sensitive, and generally speaking, very limited development is planned for these areas. Due to the potential short-term disturbance and ongoing impacts of wind turbine development in the wetland areas, wetlands are considered a limitation to development of wind turbines.
3. **Proximity to Airports:** According to information from the Federal Aviation Administration, any tower of greater than 200 feet in height requires FAA approval. Further, towers less than 300 feet above ground level located closer than four nautical miles from an airport are considered an obstruction to air navigation and may require, on a case-by-case basis, "obstruction lighting". Obstruction lighting may consist of high intensity flashing white lighting or other similar lighting that may create a significant impact on the community. Therefore, any areas within four nautical miles of an airport are considered a limitation.

These limitations affect certain parcels to a greater extent than others; likewise, some of these factors are more limiting than others. Therefore, a system of scoring each parcel was used as follows:

Table 15 Commercial Wind Turbine Suitability Study Limiting Factors

Limiting Factor	Point Assignment
Wetlands Present	
Some wetlands on parcel	1 negative point
Mostly wetland on parcel	3 negative points
Forest Cover	
Some forest cover on parcel	1 negative point
Mostly hardwood cover on parcel	3 negative points
Airport Buffer	
Parcel within 4 nautical miles of airport	1 negative point

Each parcel received a net score of between 0 and 7 negative points.

COMMERCIAL WIND TURBINE SUPPORTING ATTRIBUTES Map 14, on page 47, depicts the three physical attributes that support the development of commercial wind turbine generators. That is, these are the areas in the township that can best support this land use notwithstanding the limitations discussed above.

1. **High Elevation:** Generally, the highest wind volumes and therefore most efficient and cost-effective locations for wind turbine generators are at relatively high elevations. Map 7 (page 35) identifies the elevations between 665 feet and 714 feet, the elevations between 715 feet and 774 feet and the elevations above 775 feet. These elevations are found in the interior land masses of the township, roughly one-half mile from the shorelines, exclusive of river corridors.
2. **Prime Agricultural Soils:** The soil types known to be prime agricultural soils best supporting agriculture are identified on Map 9 (page 39). This is an attribute supporting wind turbine development because these areas are more isolated from residential uses and increasing use options may increase the financial viability of holding large tracts of agricultural land. These soils are found throughout the township's interior sections with a large concentration in the central eastern part of the township.
3. **Agricultural Future Land Use:** For the same reasons cited above, the parts of the township now planned for ongoing agricultural use are identified as supporting wind turbine development. These areas include expansive portions of the interior sections of the township as shown on Map 1 (page 7).

Again, the supporting factors affect certain parcels to a greater extent than others and some factors have more impact than others. The related scoring for each parcel was as follows:

Table 16 Commercial Wind Turbine Suitability Study Supporting Factors

Supporting Factor	Point Assignment
Topography	
665-714 feet	1 positive point
715-774 feet	2 positive points
775 feet and up	3 positive points
Agricultural Soils	
Some ag soils on parcel	1 positive point
Approximately half ag soils on parcel	2 positive points
Mostly ag soils on parcel	3 positive points
Agricultural Future Land Use Designation	
Partial ag FLU designation on parcel	1 positive point
Half ag FLU designation on parcel	2 positive points
Mostly ag FLU designation on parcel	3 positive points

Each parcel received a net score of between 0 and 9 positive points.

PLANNED WIND TURBINE OVERLAY

The composite score for each parcel is shown in Map 15 on page 48. Scoring ranged from negative 7 to positive 9 points. The five areas of the township with the highest concentration of positive composite scoring were identified as “wind turbine overlay areas”. These overlays include almost all of the areas with an elevation over 775 feet (except for one area in the southeastern part of the township that is also within 4 nautical miles of the Boyne City airport and another area east of Nowland Lake that received a relatively low composite score because it was not planned for future agricultural use and contains some wetlands); all of the five overlay areas include the majority of the areas with elevation between 715-774 feet.

An overlay zoning approach for wind turbine development is planned based on the overlay identified in this section. Further, zoning restrictions related to the following will be included in the overlay restrictions:

- Tower height,
- Tower lighting restrictions,
- Ample setbacks to address concerns regarding blade and ice throw, vibration and noise impacts on residential land uses,
- Aesthetics (tower color, signage, landscaping, and related regulations).

Such zoning restrictions should be based on industry norms and standards. All restrictions should be designed to allow this land use within reason in a variety of appropriate locations within the township.