

## SECTION 3: UNDERLYING WATERSHED CHARACTERISTICS



Logo design courtesy of Shane VanOosterhout, Kendall College of Art and Design, Grand Rapids (MI)

### Drowned River Mouth

Spring Lake is one of many drowned river mouths located along Lake Michigan's eastern shoreline. These systems are remnants of the most recent Ice Age, when retreating glacial ice melted and submerged (or flooded) the mouth of these rivers where they entered Lake Michigan.



LandSat Multi-Spectral Scanner (MSS) Satellite Image of lower Grand River flowing into Lake Michigan. Spring Lake is shown in the center of the image, flowing into the Grand River - Spring, 1985.

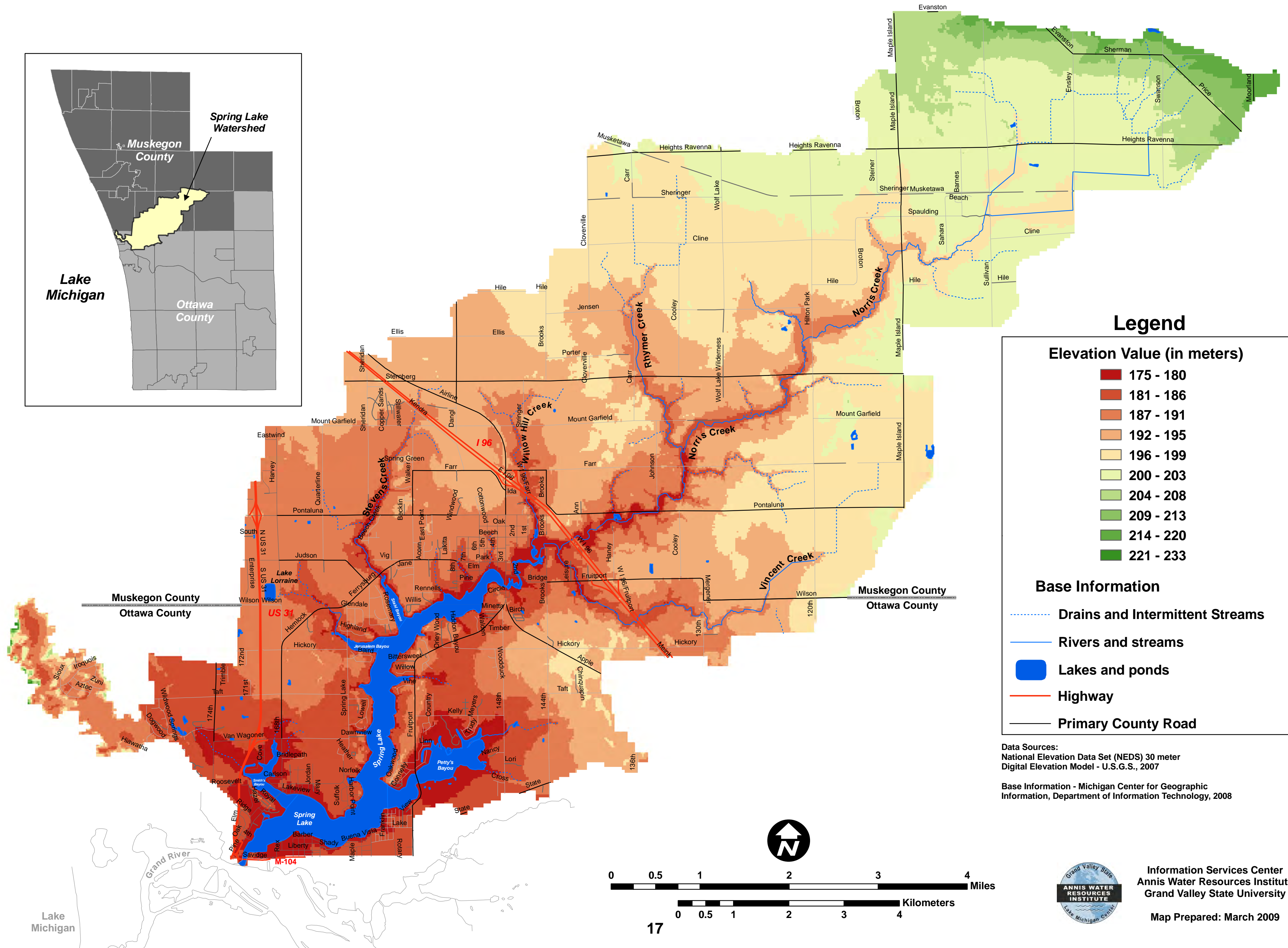
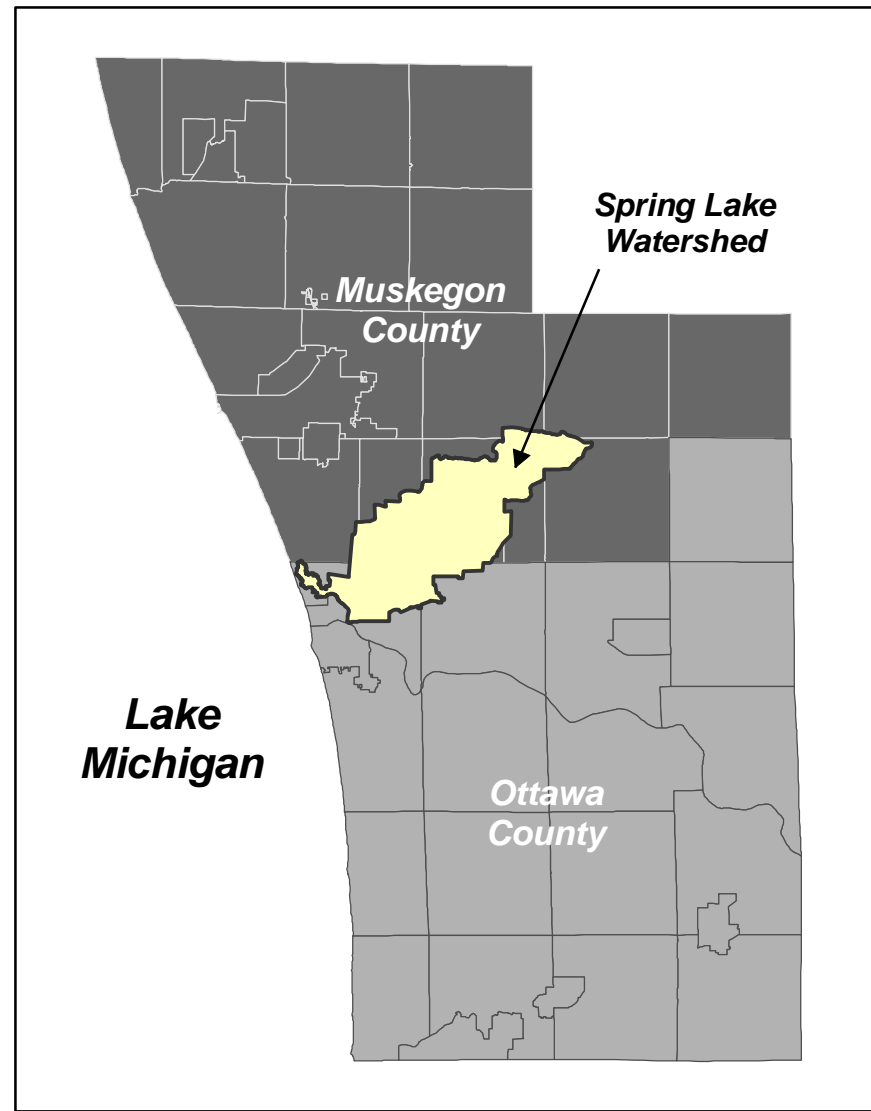
### Effects on the Stormwater Infiltration and Runoff

The young, relatively recent landscape features and soils in Michigan's Lower Peninsula that were left behind by the glaciers are mainly comprised of loose and unconsolidated glacial drift. These are typically sands, gravels, silts, and clays and/or combinations of these materials, which can be hundreds of feet thick. Generally speaking, the vast majority of soils within the Spring Lake Watershed are of a sand or sandy texture, which have the properties of high to moderately high rainfall infiltration rates and low runoff potential. This results overall in a very pervious landscape which is well-suited to handle natural precipitation. Alterations to this pervious material through the introduction of hardened, impervious materials, such as concrete, asphalt and metal, remove these natural stormwater control benefits.



Photo credit: E.S. Isely

# Digital Elevation Model



### Legend

**Elevation Value (in meters)**

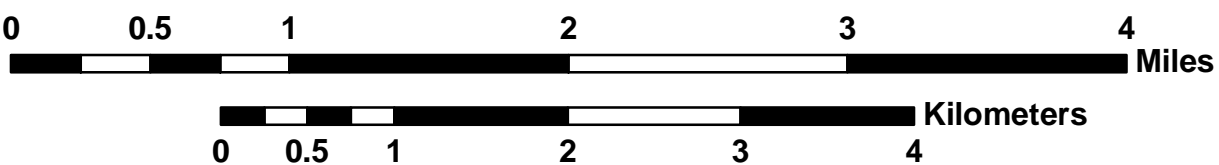
- 175 - 180
- 181 - 186
- 187 - 191
- 192 - 195
- 196 - 199
- 200 - 203
- 204 - 208
- 209 - 213
- 214 - 220
- 221 - 233

**Base Information**

- Drains and Intermittent Streams
- Rivers and streams
- Lakes and ponds
- Highway
- Primary County Road

Data Sources:  
National Elevation Data Set (NEDS) 30 meter  
Digital Elevation Model - U.S.G.S., 2007

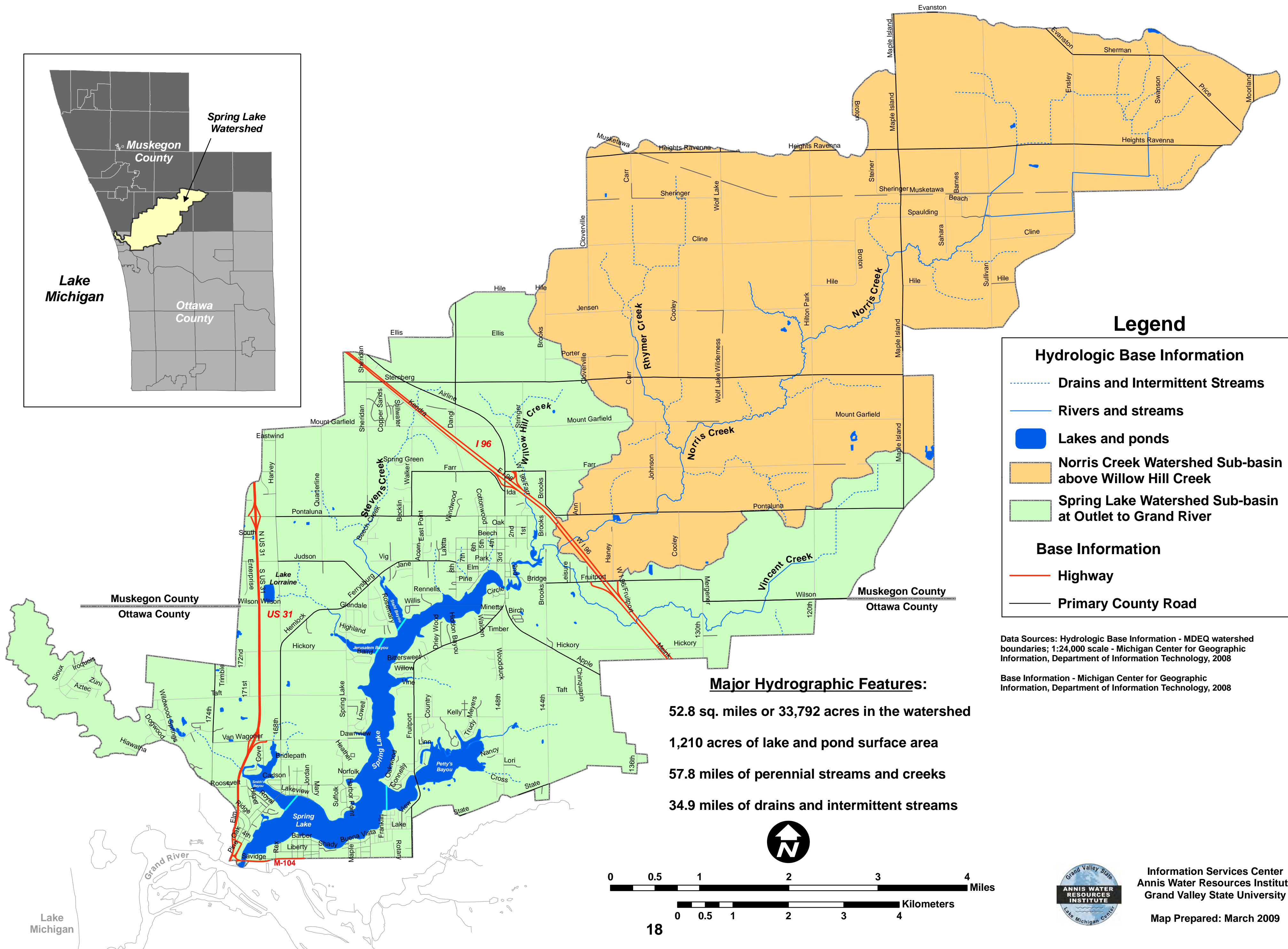
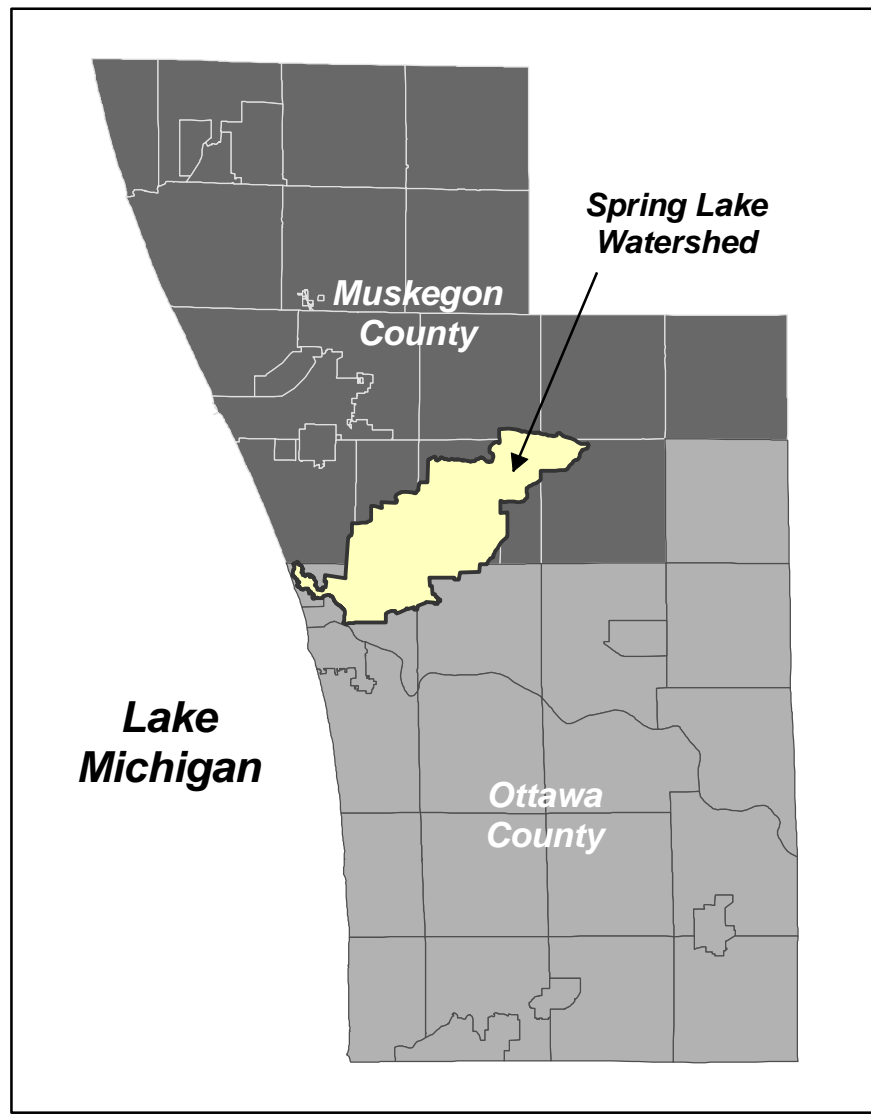
Base Information - Michigan Center for Geographic Information, Department of Information Technology, 2008



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Map Prepared: March 2009

# Hydrography



## Legend

**Hydrologic Base Information**

- ..... Drains and Intermittent Streams
- Rivers and streams
- Lakes and ponds
- Norris Creek Watershed Sub-basin above Willow Hill Creek
- Spring Lake Watershed Sub-basin at Outlet to Grand River

**Base Information**

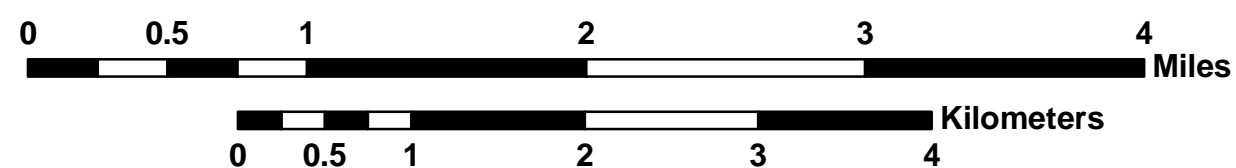
- Highway
- Primary County Road

Data Sources: Hydrologic Base Information - MDEQ watershed boundaries; 1:24,000 scale - Michigan Center for Geographic Information, Department of Information Technology, 2008

Base Information - Michigan Center for Geographic Information, Department of Information Technology, 2008

### Major Hydrographic Features:

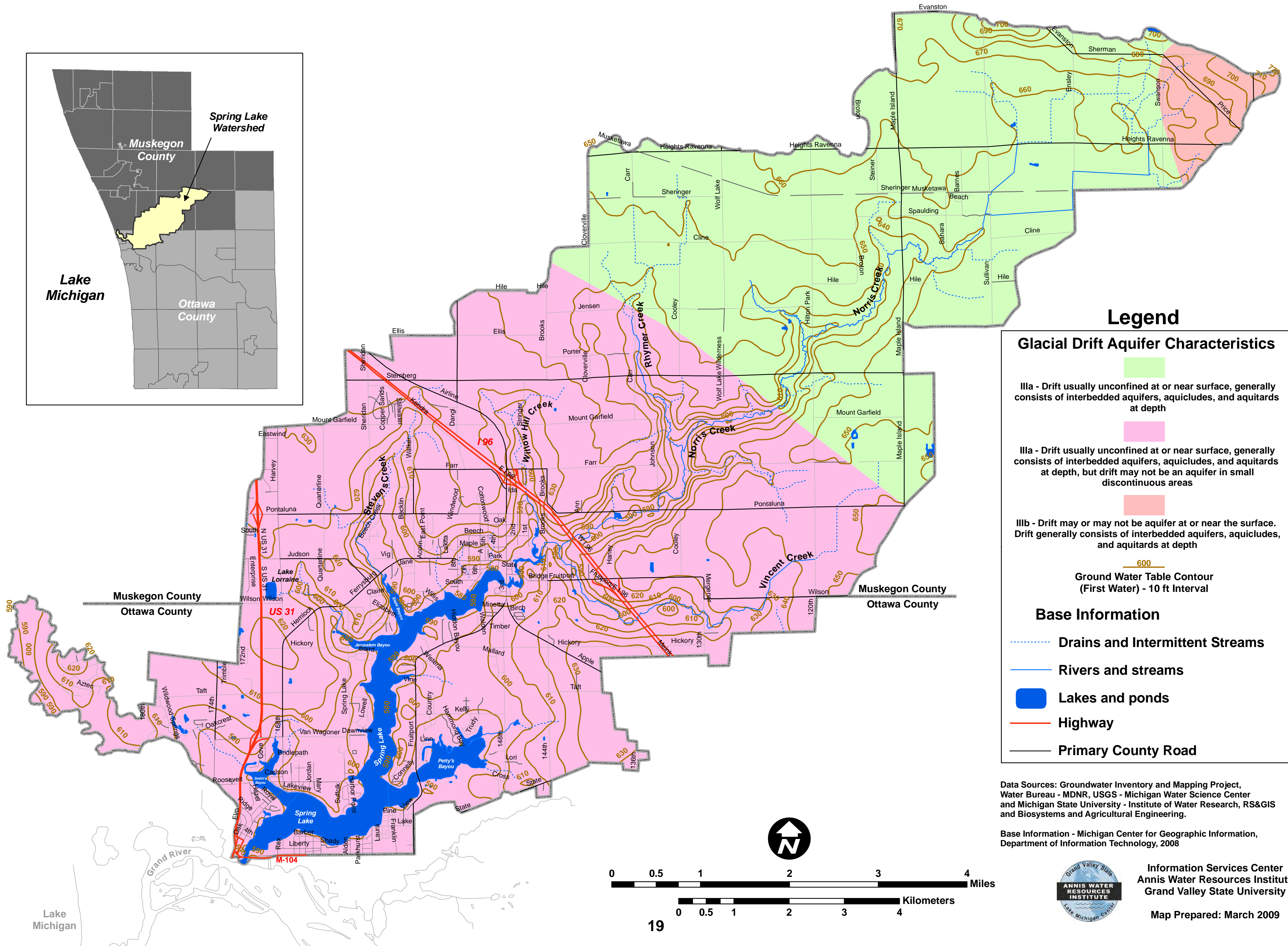
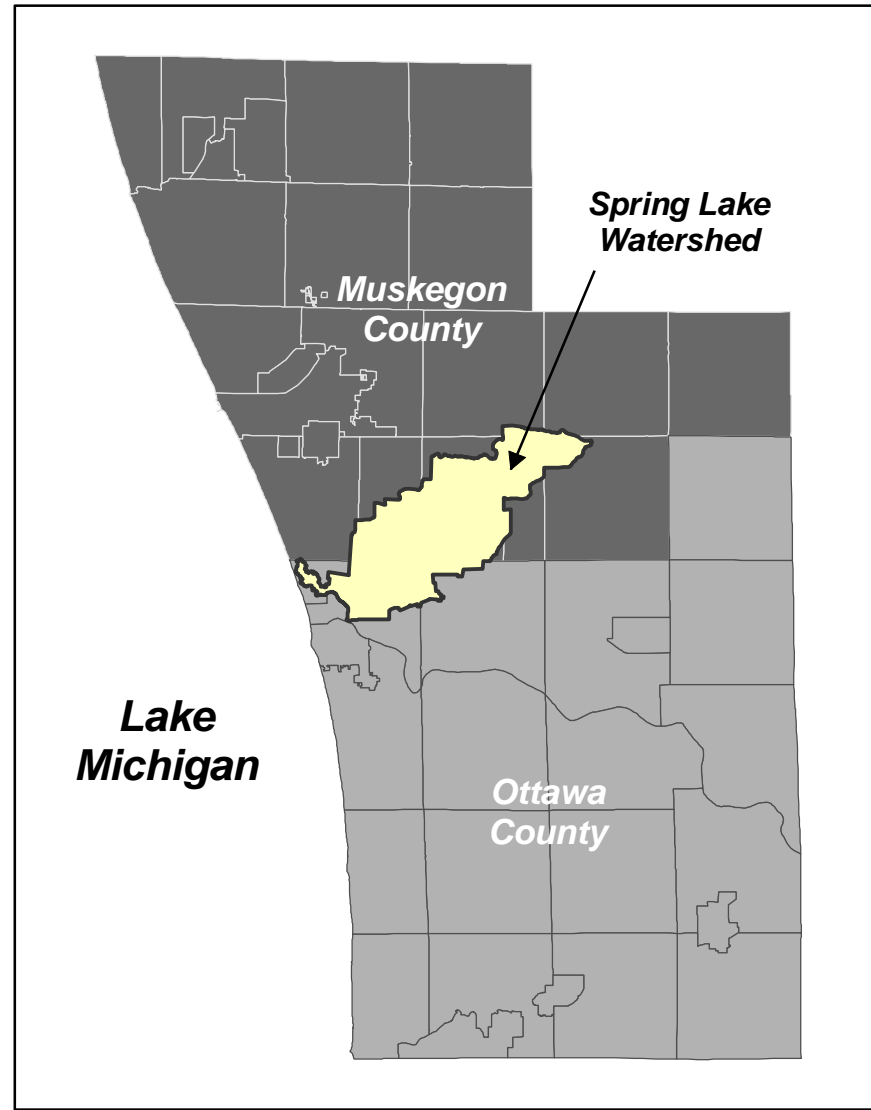
- 52.8 sq. miles or 33,792 acres in the watershed
- 1,210 acres of lake and pond surface area
- 57.8 miles of perennial streams and creeks
- 34.9 miles of drains and intermittent streams



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# Glacial Drift Aquifer Characteristics



## Legend

**Glacial Drift Aquifer Characteristics**

- IIIa - Drift usually unconfined at or near surface, generally consists of interbedded aquifers, aquicludes, and aquitards at depth
- IIIa - Drift usually unconfined at or near surface, generally consists of interbedded aquifers, aquicludes, and aquitards at depth, but drift may not be an aquifer in small discontinuous areas
- IIIb - Drift may or may not be aquifer at or near the surface. Drift generally consists of interbedded aquifers, aquicludes, and aquitards at depth

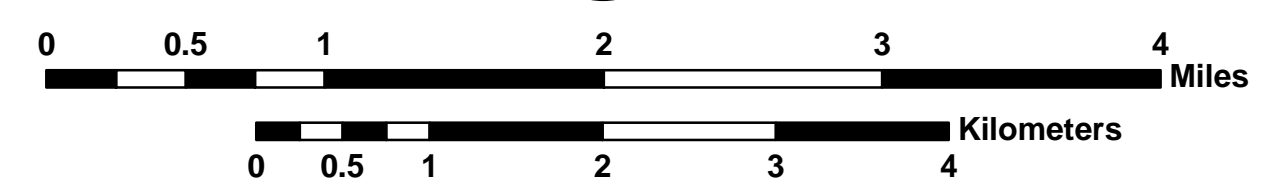
Ground Water Table Contour (First Water) - 10 ft Interval

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Data Sources: Groundwater Inventory and Mapping Project, Water Bureau - MDNR, USGS - Michigan Water Science Center and Michigan State University - Institute of Water Research, RS&GIS and Biosystems and Agricultural Engineering.

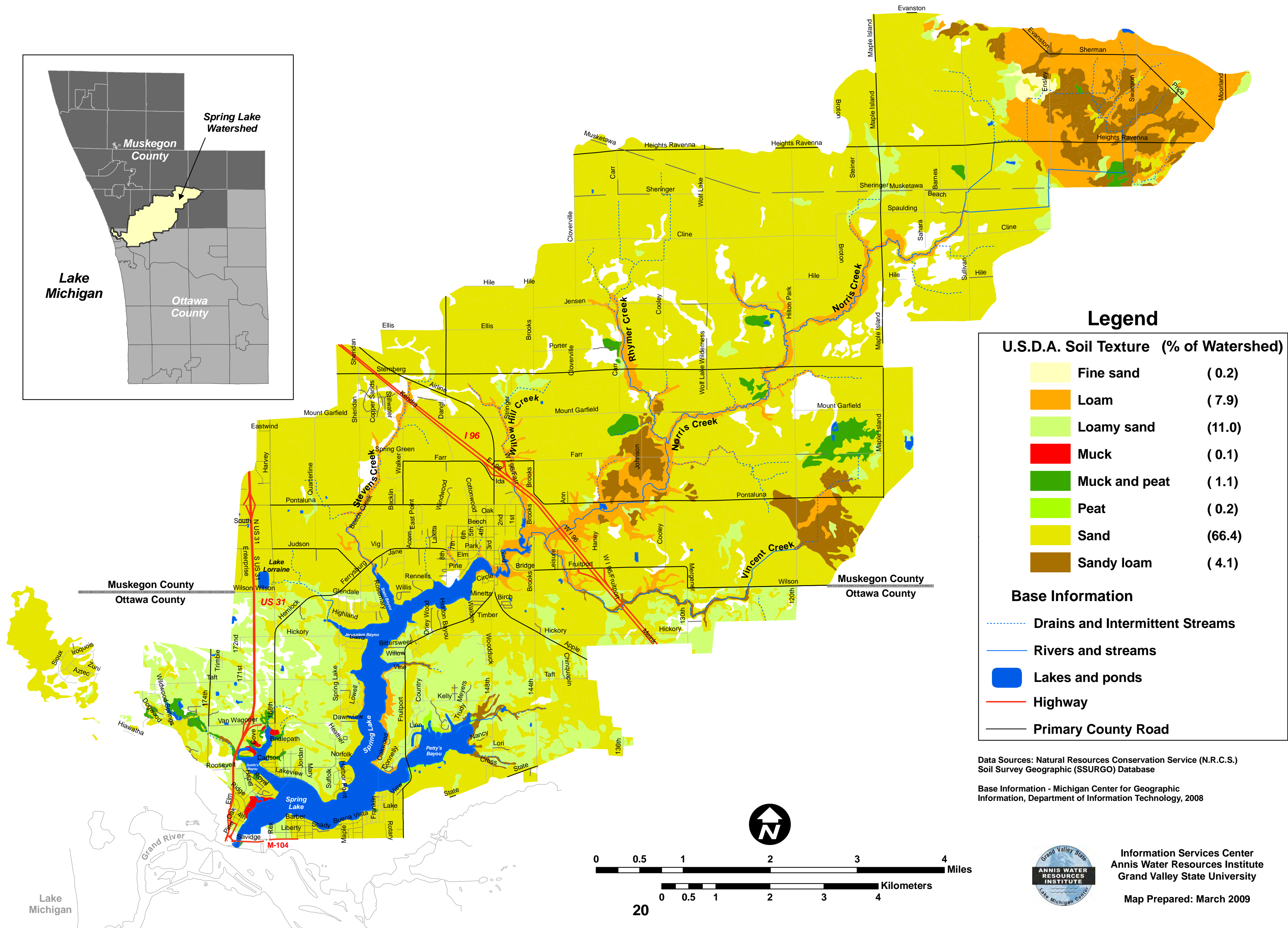
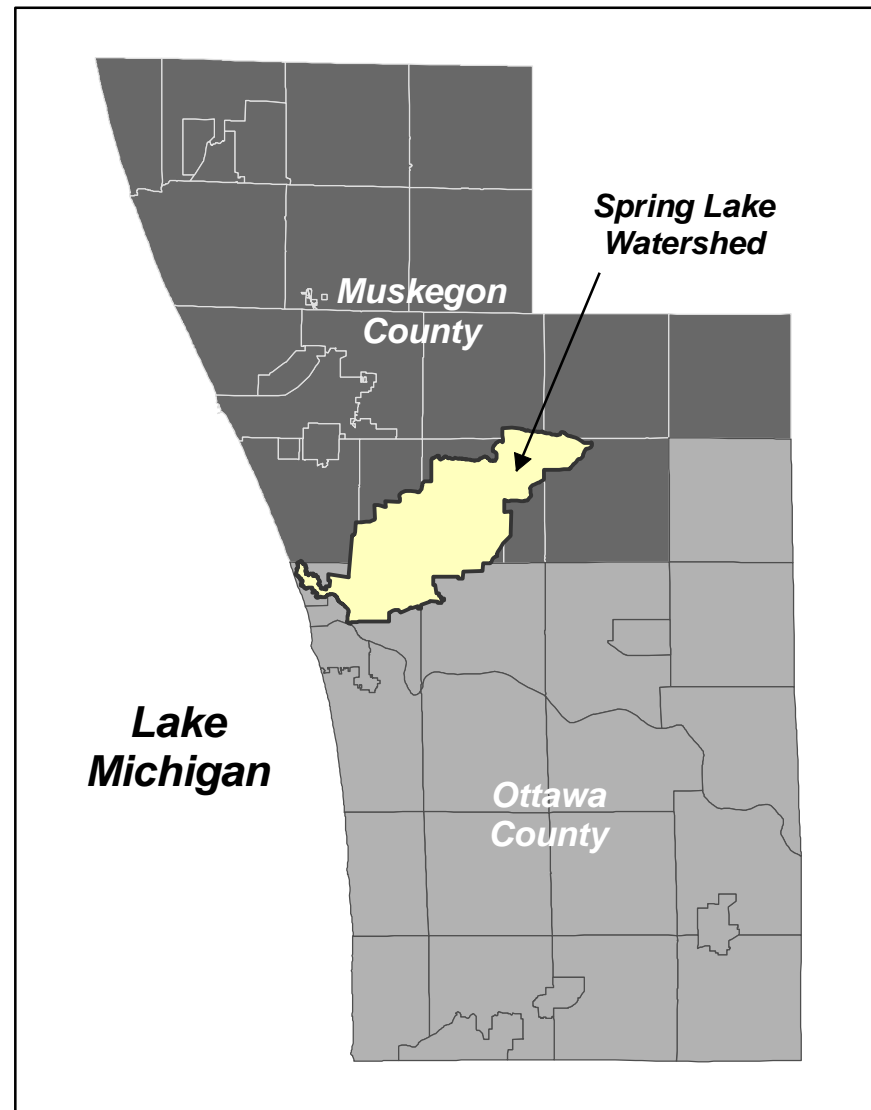
Base Information - Michigan Center for Geographic Information, Department of Information Technology, 2008



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# SSURGO Soils - U.S.D.A. Soil Texture



### Legend

**U.S.D.A. Soil Texture (% of Watershed)**

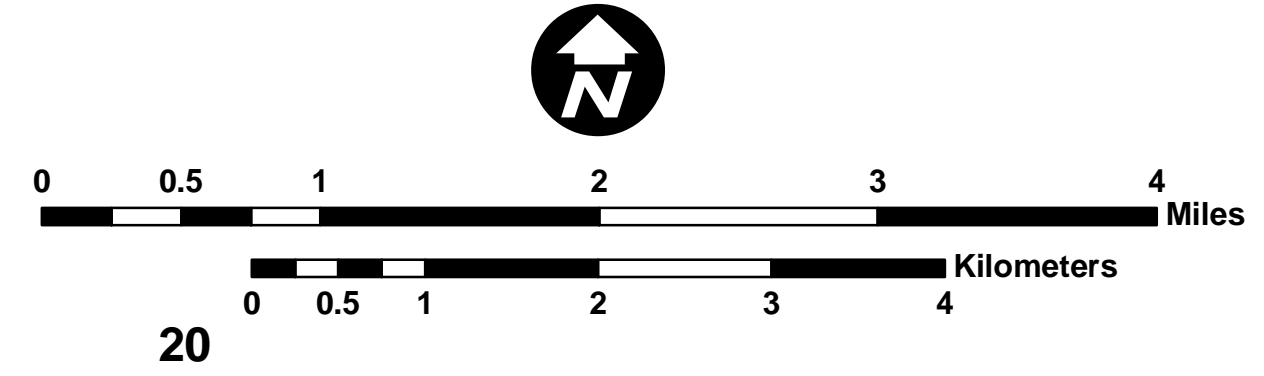
	Fine sand	(0.2)
	Loam	(7.9)
	Loamy sand	(11.0)
	Muck	(0.1)
	Muck and peat	(1.1)
	Peat	(0.2)
	Sand	(66.4)
	Sandy loam	(4.1)

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Data Sources: Natural Resources Conservation Service (N.R.C.S.)  
Soil Survey Geographic (SSURGO) Database

Base Information - Michigan Center for Geographic Information, Department of Information Technology, 2008



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