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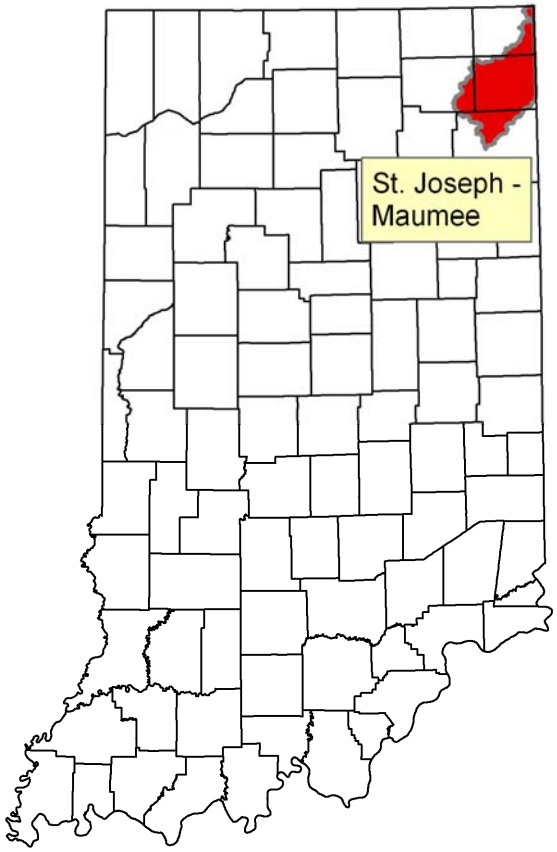
Rapid Watershed Assessment
St. Joseph-Maumee Watershed

Rapid Watershed Assessments provide initial estimates of where conservation investments would best address the concerns of land owners, conservation districts, and community organizations and stakeholders. These assessments help land owners and local leaders set priorities and determine the best actions to achieve their goals.



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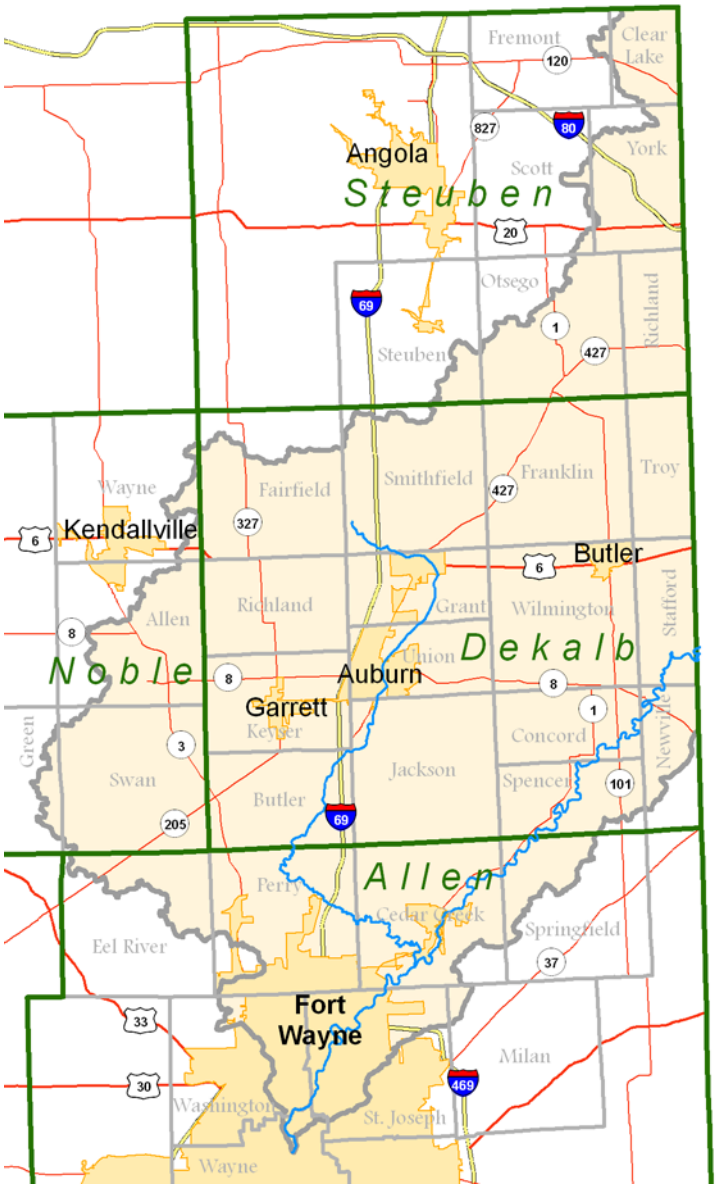
St. Joseph-Maumee Watershed



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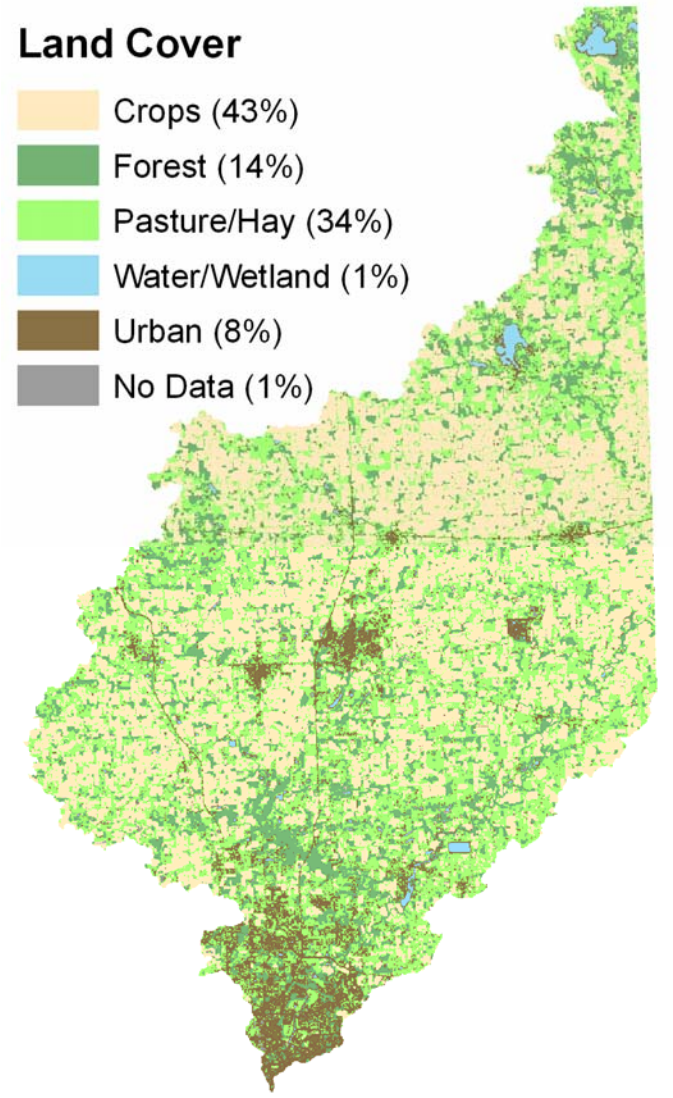
Introduction

The St. Joseph-Maumee watershed is an eight digit (04100003) hydrologic unit code HUC) watershed located in the Northeast corner of the State. The watershed drainage area is just over 380,265 acres. The watershed covers four Indiana counties. It is subdivided into 38 subbasins represented on the map by 12 digit HUCs (Figure 2-1).



One of two St. Joseph Rivers in Indiana, this river originates in Michigan and flows through Ohio before turning into northeastern Indiana. At the point where the St. Joseph converges with the St. Mary's River to form the Maumee River, the French and then the British built forts which eventually came to be called Fort Wayne after General Anthony Wayne. During the nineteenth century the St. Joseph River was a center of attraction as steamboats plied its waters and part of the river was diverted to supply water for the central section of the Wabash-Erie Canal (IDNR 1999).

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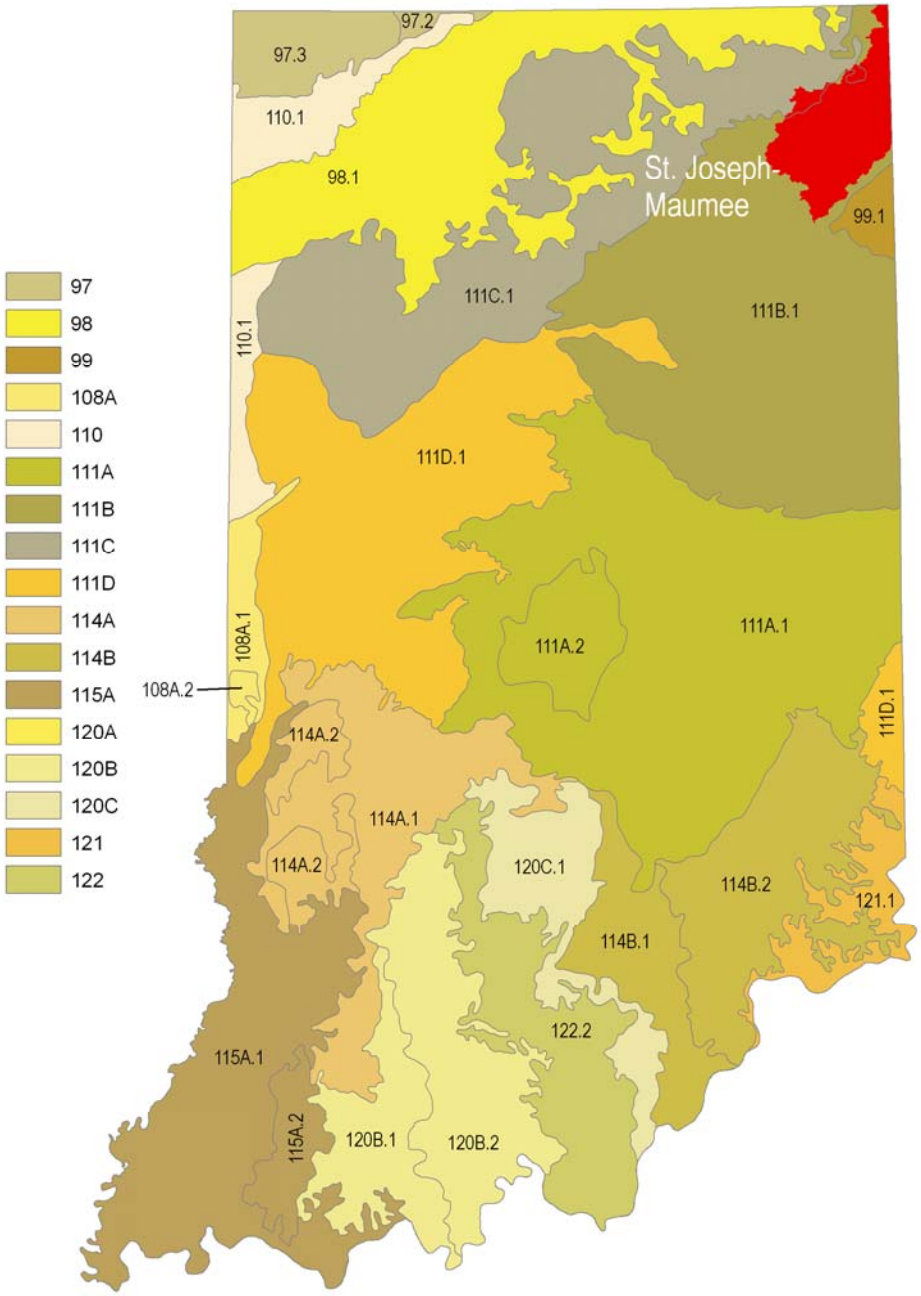
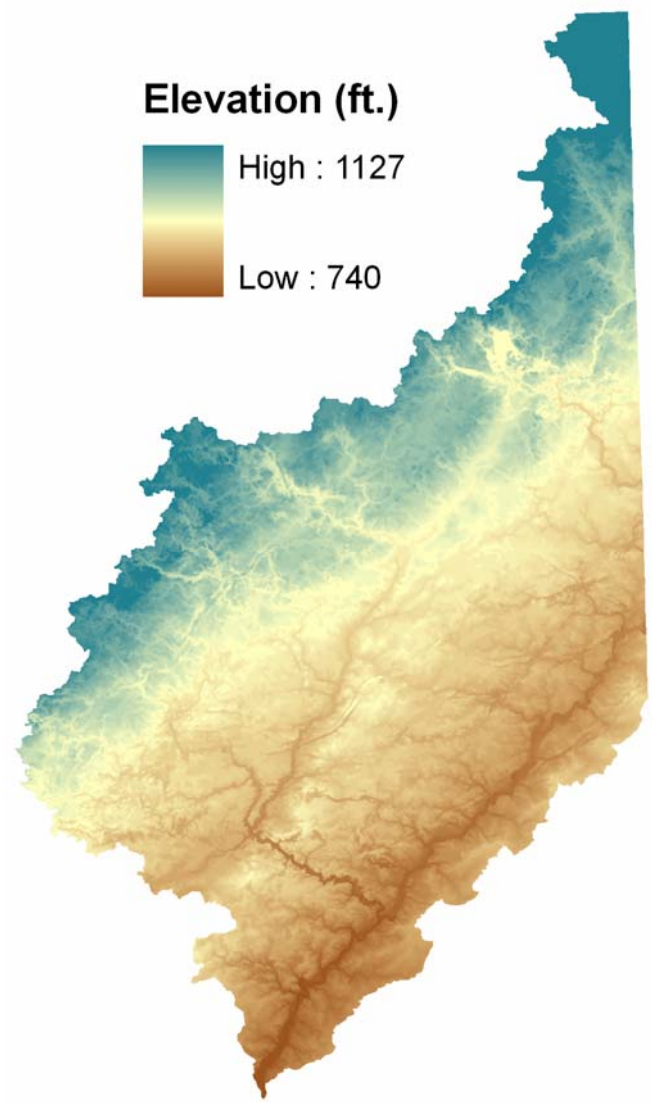
Common Resource Area

The common resource area for the St. Joseph-Maumee is 111B.1 in the watershed:

The Indiana and Ohio Till Plain, Northeastern Part (111B.1). Broad, level clayey till plain with some end moraines, lake basins, and sand and gravel outwash. Extensive corn, soybean, wheat, and livestock farming on artificially drained soils with scattered woodlots. Soils are well drained to very poorly drained, formed in Wisconsin Age glacial drift derived mostly from limestone and dolomite.



Physical Description



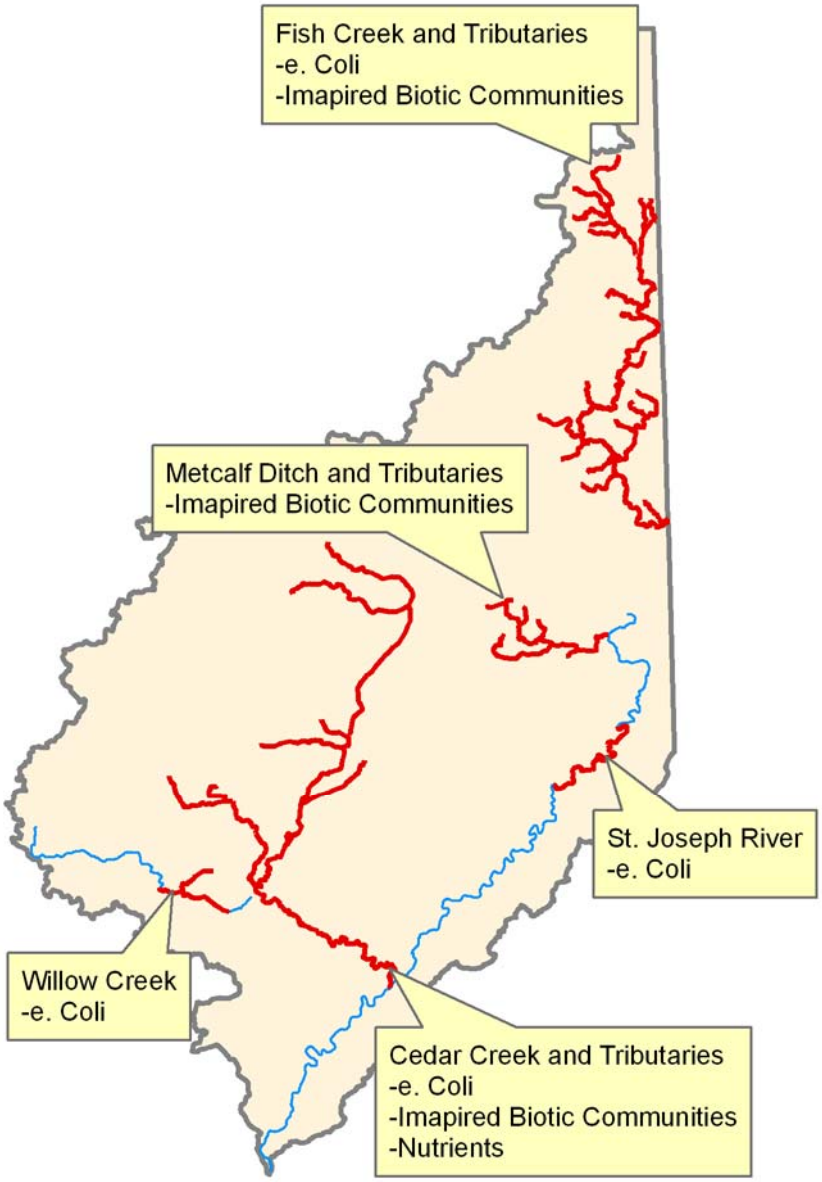
The topography of the watershed varies from rolling hills in Hillsdale County, Michigan, Williams County, Ohio, and Noble and Steuben counties in Indiana, to nearly level plains in DeKalb and Allen counties. The St. Joseph River follows the Fort Wayne moraine, and flows past numerous low bluffs and terraces. This indicates that the river was once much wider and deeper. Much of the St. Joseph River bed is composed of sand and gravel deposits. The average slope of the river's bottom is 1.6 feet per mile. The character of the river corridor alternates between hardwood forest and fertile farmland. Flooding is a rare occurrence because the flow is controlled by the many natural lakes at the headwaters (SJRWI 1999).

Assessment of waters

Section 303(d) of the Clean Water Act requires states to identify waters that do not meet, or are not expected to meet, applicable water quality standards. The Clean Water Act Section 303(d) list for Indiana provides a basis for understanding the current status of water quality in the St. Joseph-Maumee Watershed.

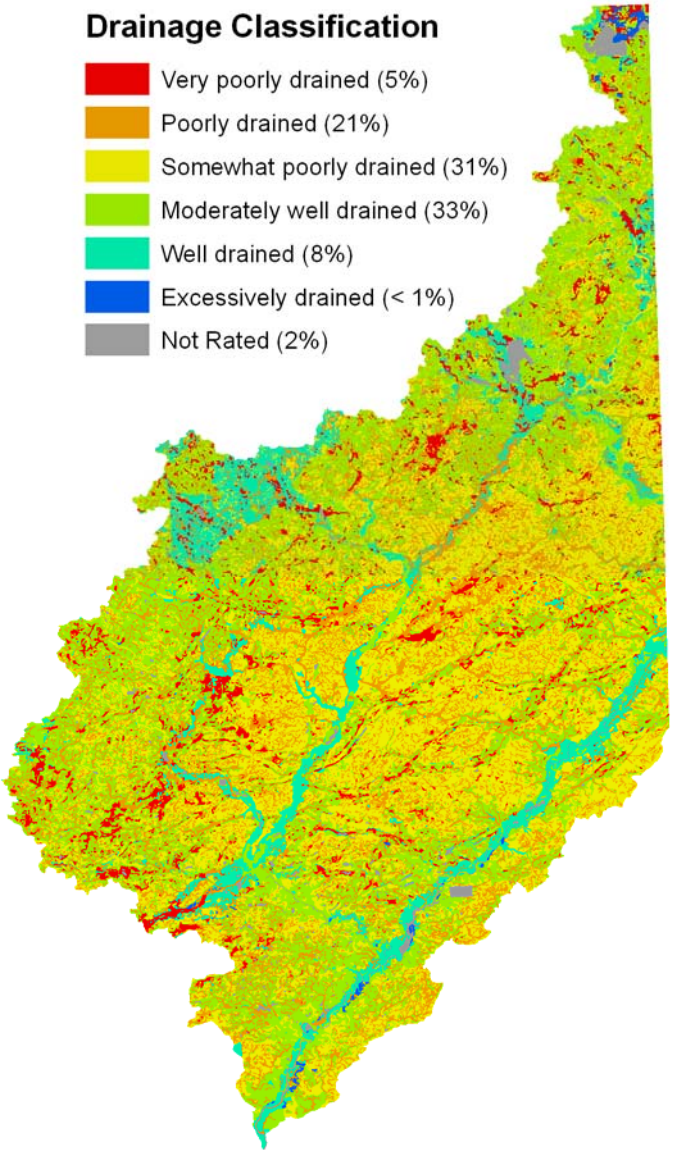
WATERBODY SEGMENT ID	WATERBODY SEGMENT NAME	CAUSE OF IMPAIRMENT
INA0351_T1064	FISH CREEK AND TRIBS	E. COLI
INA0352_T1065	WEST BRANCH FISH CREEK AND TRIBS	E. COLI
INA0353_00	FISH CREEK - ALVARADO	E. COLI
INA0355_T1072	HERMAN SWEET DITCH	E. COLI
INA0356_T1056	FISH CR TRIB/OUTLET OF BURDICK LK	IMPAIRED BIOTIC COMMUNITIES
INA0356_T1073	FISH CREEK TRIBS	E. COLI
INA0356_T1074	FISH CREEK AND TRIBS	E. COLI
INA0366_T1057	METCALF DITCH AND TRIBS	IMPAIRED BIOTIC COMMUNITIES
INA0371_T1059	ST. JOSEPH RIVER	E. COLI
INA0374_T1022	ST. JOSEPH RIVER-MAINSTEM	FCA for MERCURY
INA0374_T1022	ST. JOSEPH RIVER-MAINSTEM	FCA for PCBs
INA0375_T1025	ST. JOSEPH RIVER-MAINSTEM	FCA for MERCURY
INA0375_T1025	ST. JOSEPH RIVER-MAINSTEM	FCA for PCBs
INA0383_T1028	CEDAR CREEK	E. COLI
INA0383_T1028	CEDAR CREEK	NUTRIENTS
INA0383_T1070	SWARTZ DITCH	E. COLI
INA0385_T1029	CEDAR CREEK	E. COLI
INA0385_T1029	CEDAR CREEK	IMPAIRED BIOTIC COMMUNITIES
INA0392_T1075	DIEHL DITCH	E. COLI
INA0393_T1032	GARRETT CITY DITCH	E. COLI
INA0393_T1032	GARRETT CITY DITCH	TOTAL DISSOLVED SOLIDS
INA0393_T1033	CEDAR CREEK-MAINSTEM	E. COLI
INA0393_T1034	CEDAR CREEK	FCA for PCBs
INA0393_T1034	CEDAR CREEK	E. COLI
INA0393_T1060	DOSCH DITCH	ALGAE
INA0393_T1060	DOSCH DITCH	IMPAIRED BIOTIC COMMUNITIES
INA0395_T1061	LITTLE CEDAR CREEK TRIB	IMPAIRED BIOTIC COMMUNITIES
INA0395_T1062	LITTLE CEDAR CREEK	E. COLI
INA0396_T1069	LITTLE CEDAR CREEK	E. COLI
INA0398_T1036	CEDAR CREEK	E. COLI
INA0398_T1077	WILLOW CREEK AND TRIB	E. COLI
INA0399_T1037	CEDAR CREEK	E. COLI
INA03A1_M1038	St Joseph River - mainstem	FCA for MERCURY
INA03A1_M1038	St Joseph River - mainstem	FCA for PCBs
INA03A2_M1040	St Joseph River - mainstem	FCA for MERCURY
INA03A2_M1040	St Joseph River - mainstem	FCA for PCBs
INA03A4_M1042	ST. JOSEPH RIVER	FCA for MERCURY
INA03A4_M1042	ST. JOSEPH RIVER	FCA for PCBs
INA03P1011_00	HAMILTON LAKE	FCA for MERCURY
INA03P1024_00	CEDARVILLE RESERVOIR	FCA for MERCURY
INA03P1024_00	CEDARVILLE RESERVOIR	FCA for PCBs
INA03P1024_00	CEDARVILLE RESERVOIR	ALGAE
INA03P1024_00	CEDARVILLE RESERVOIR	E. COLI

INA03P1024_00	CEDARVILLE RESERVOIR	TASTE AND ODOR
INA03P1044_00	ST. JOSEPH RESERVOIR	FCA for MERCURY
INA03P1044_00	ST. JOSEPH RESERVOIR	FCA for PCBs
INA03P1044_00	ST. JOSEPH RESERVOIR	ALGAE
INA03P1044_00	ST. JOSEPH RESERVOIR	E. COLI



Soils

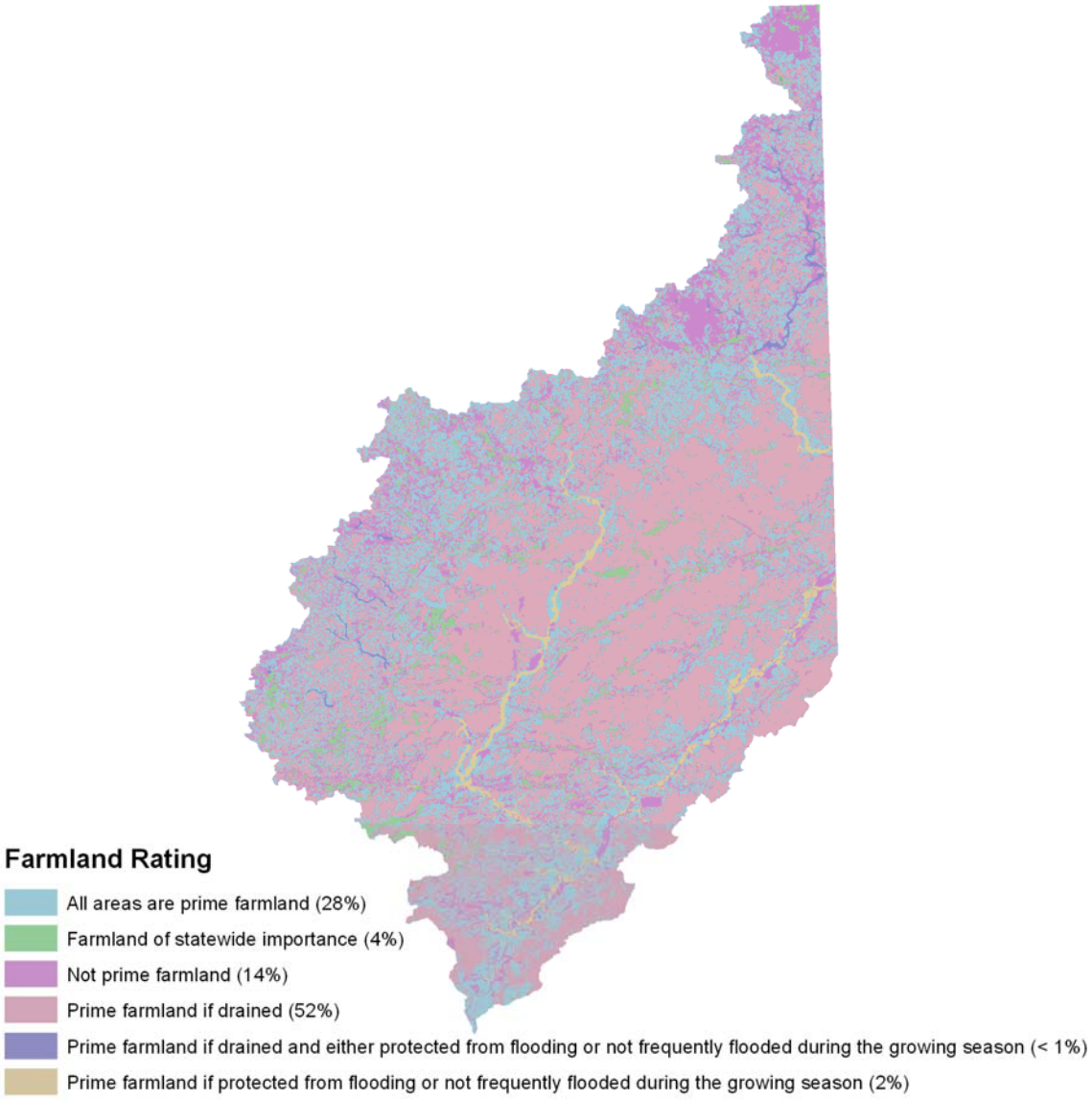
The dominant soil orders in this Major Land Resource Area (MLRA) are Alfisols, Inceptisols, and Mollisols. The soils in the area have a mesic soil temperature regime, an aquic or udic soil moisture regime, and mixed or illitic mineralogy. They are very deep, generally are very poorly drained to somewhat poorly drained, and are loamy or clayey. The dominant kinds of parent material are clayey till and lacustrine sediments. Others include outwash, alluvium, loess, and organic deposits. Hapludalfs (Glynwood and Morley series), Epiaqualfs (Blount, Nappanee, and Pandora series), Endoaqualfs (Wetzel series), and Argiaquolls (Pewamo series) are on till plains. Endoaquolls (Milford and Montgomery series) and Epiaqualfs (Del Rey series) are on lake plains. Haplosaprists (Houghton and Linwood series), Humaquepts (Roundhead and Wallkill series), and Endoaquepts (Wunabuna series) are in deep depressions or potholes. Hapludalfs (Belmore, Eldean, and Fox series), Endoaqualfs (Sleeth series), and Argiaquolls (Millgrove, Rensselaer, and Westland series) are on terraces and outwash plains. Eutrudepts (Genesee series), Endoaquepts (Shoals series), and Endoaquolls (Saranac and Sloan series) are on flood plains.



Drainage Classification

Drainage class (natural) refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized–excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the “Soil Survey Manual.”

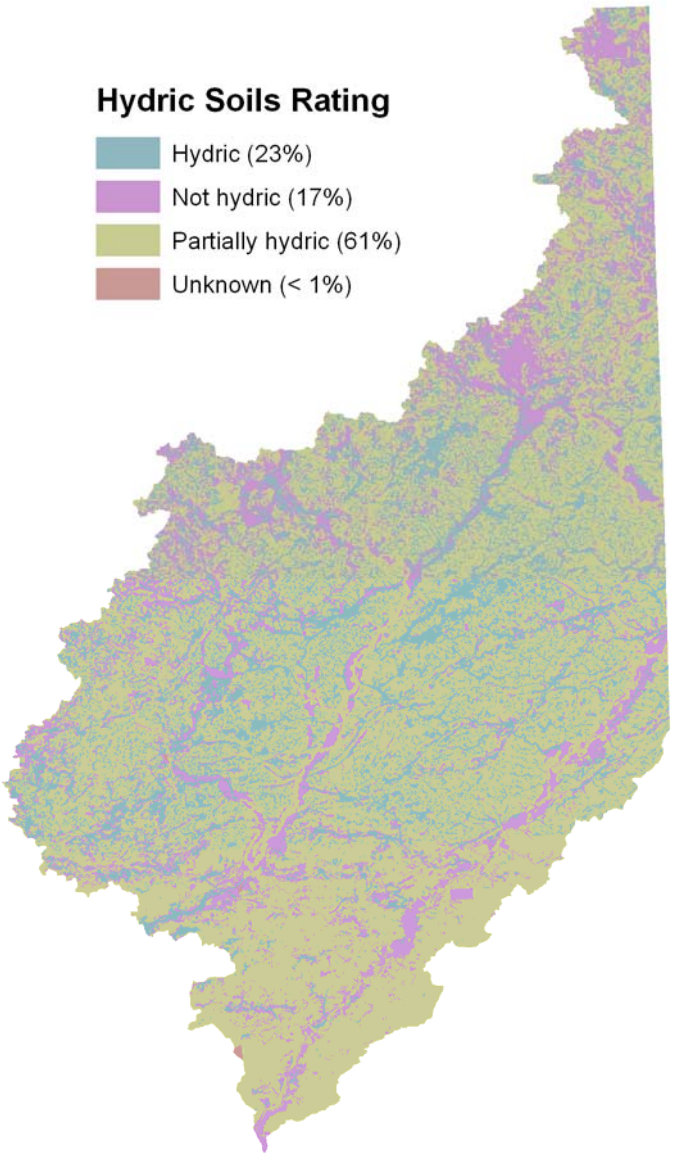
Farmland Classification Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. Farmland classification identifies the location and extent of the most suitable land for producing food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the Federal Register, Vol. 43, No 21, January 31, 1978.



Hydric Soils This rating provides an indication of the proportion of the map unit that meets criteria for hydric soils. Map units that are dominantly made up of hydric soils may have small areas, or inclusions of non-hydric soils in the higher positions on the landform, and map units dominantly made up of non–hydric soils may have inclusions of hydric soils in the lower positions on the landform.

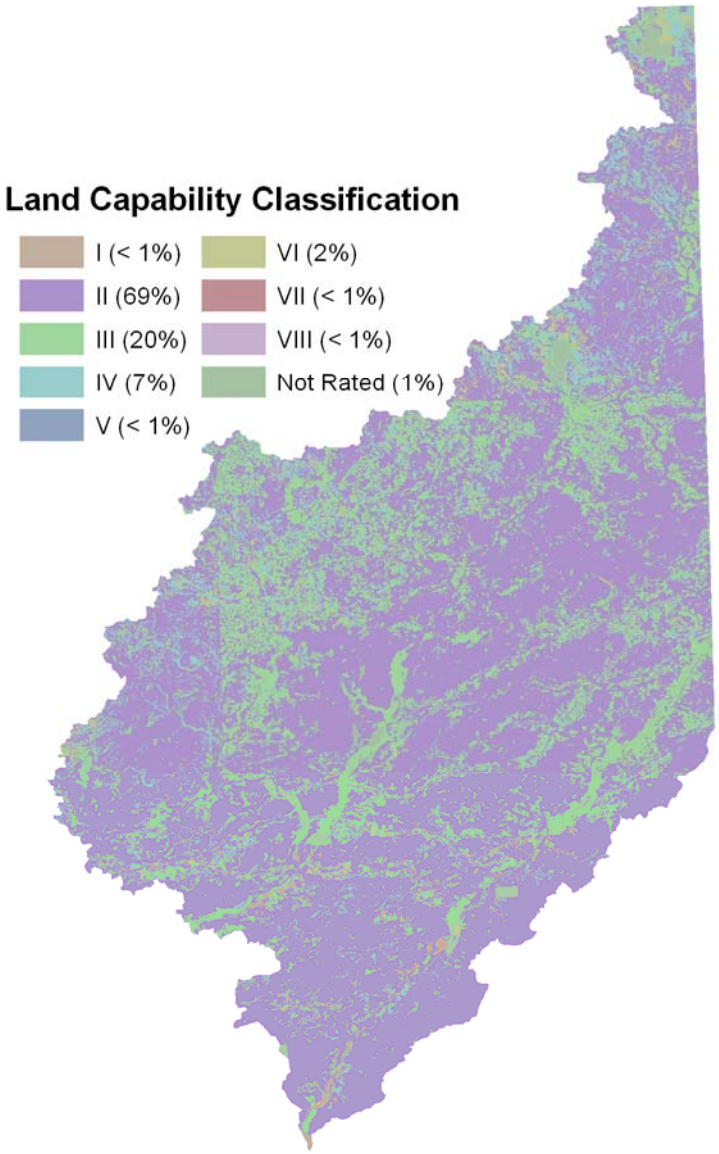
Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make on site determinations of hydirc soils are specified in “Field Indicators of Hydric Soils in the United States” (Hurt and others, 2002).



Highly Erodible Land (HEL)

A soil map unit with an erodibility index (EI) of 8 or greater is considered to be highly erodible land (HEL). The EI for a soil map unit is determined by dividing the potential erodibility for the soil map unit by the soil loss tolerance (T) value established for the soil in the FOTG as of January 1, 1990. Potential erodibility is based on default values for rainfall amount and intensity, percent and length of slope, surface texture and organic matter, permeability, and plant cover. Actual erodibility and EI for any specific map unit depends on the actual values for these properties.

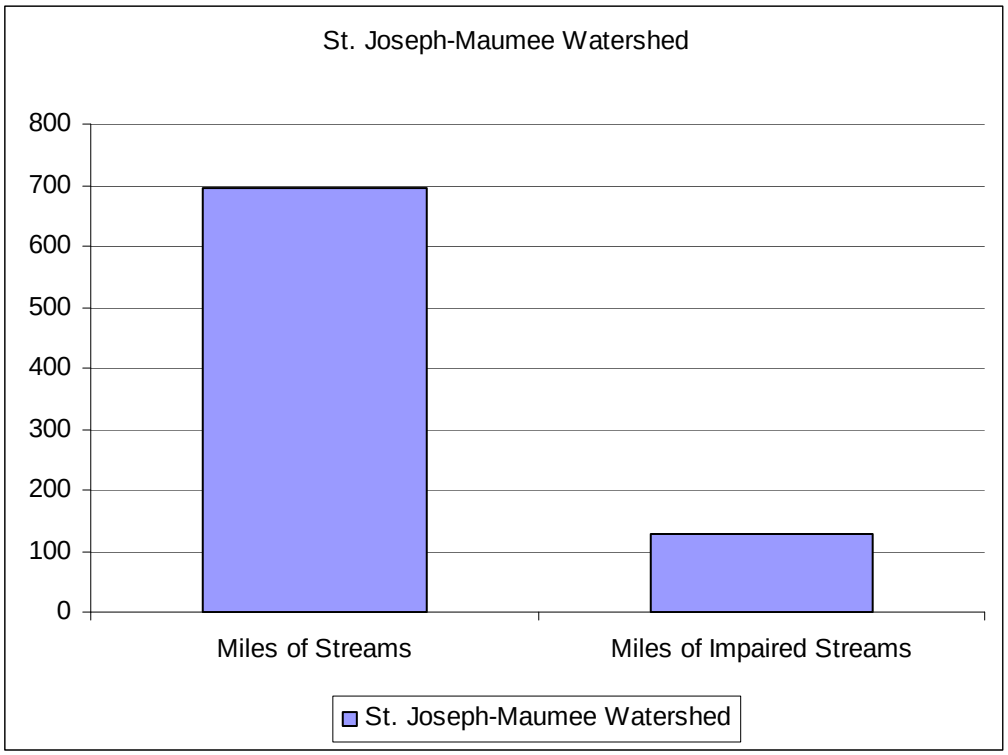


Land Capability Classification

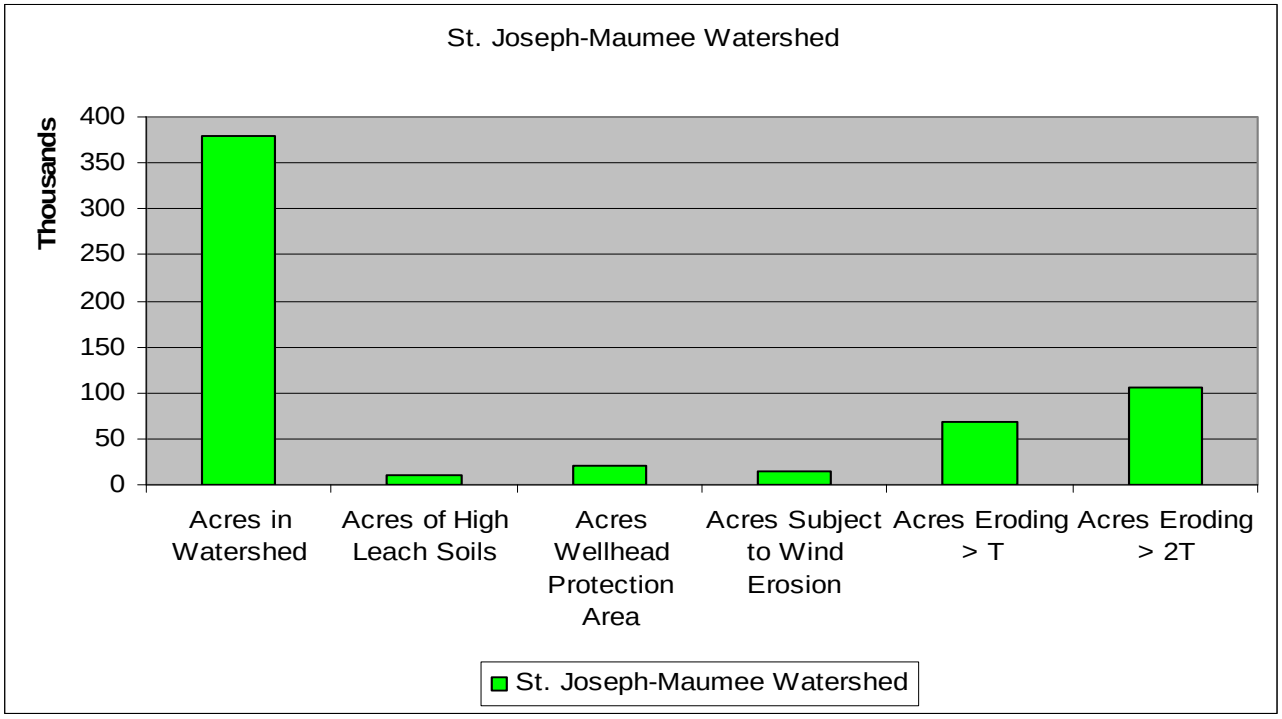
Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive land forming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.

Resource Concerns
Stakeholders and electronic analysis have been identified the following resource concerns as being the top priority:

- Surface Water Quality – There is approximately 18 percent or 127 miles of the 695 total miles of the streams within the watershed that have identified impairments. Excessive amounts of sediments, nutrients, and bacteria degrade the water quality causing an unbalanced fish community with depressed populations and limited diversity.



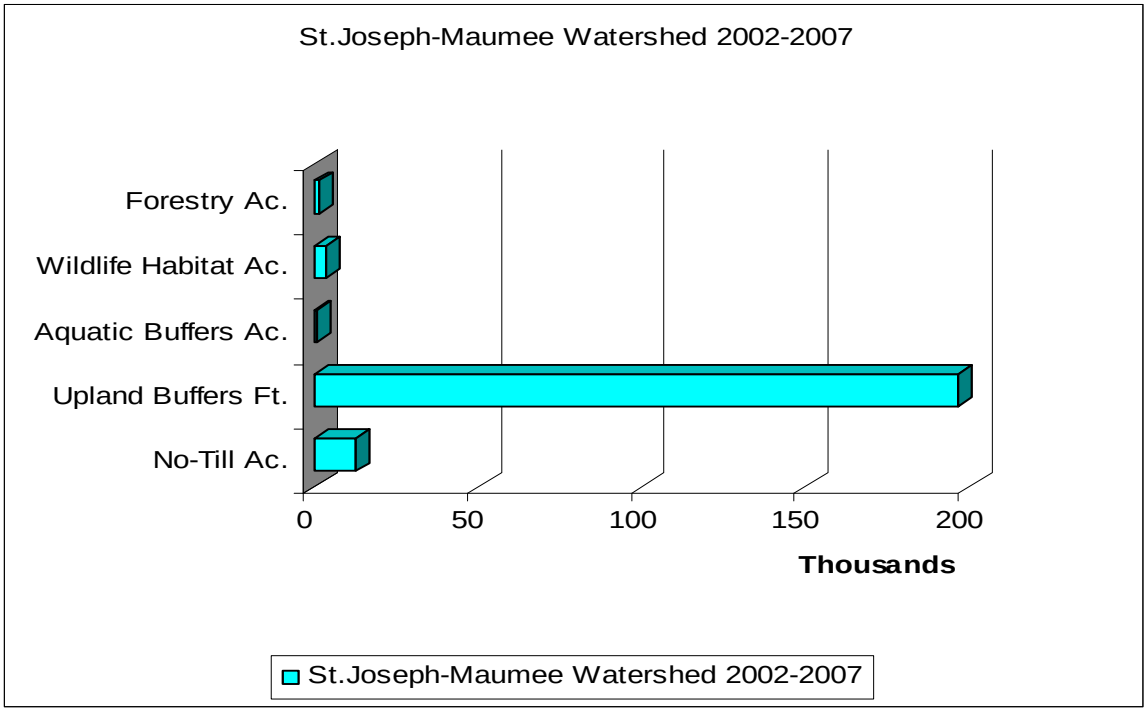
- Ground Water Quality - The watershed has in excess of 9,600 acres of soils with high leaching index (> 10) which allows containments on the land surface to be carried easily into the ground water from infiltrating water. Because of this condition, non–point pollutants such as fertilizers, pesticides, and livestock waste have the potential to contaminate the ground water aquifer.



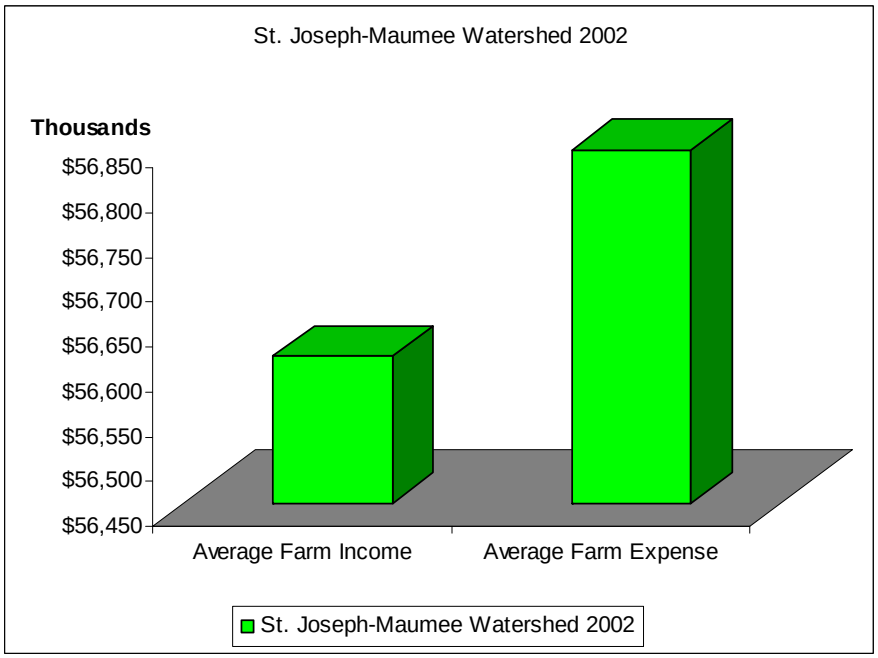
- Air Quality – 19.3 percent of the watershed has been identified by the Environmental Protection Agency as have an air quality concern.
- Soil Quality – The watershed has over 17,600 acres of soils subject to soil erosion.

Performance Results System and Other Data

The producers within the watershed have implemented a variety of conservation practices over the past five years. Since 2002 through 2007 landowners have implemented over 12,470 acres of No-Till, approximately 80,070 feet of upland buffers, and just under 30 acres of aquatic buffers. Wildlife habitat has been improved or established on more than 3,200 acres within the watershed and just less than 1,100 acres of forestry practices have been applied.

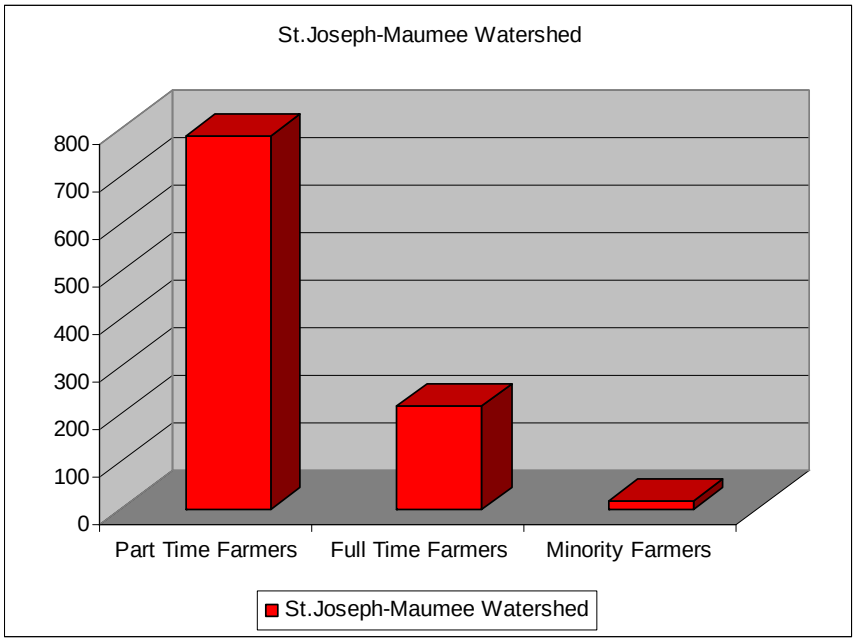


Census and Social Data (Relevant)
There are approximately 4000 farms in the watershed that average approximately 172 acres in size.



The 2002 average farm total income for all the counties was $56,614,000 while average expense was $56,845,000.

There are approximately 780 part time farmers, 220 full time farmers and 16 minority farmers.



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Data Sources:

Indiana Common Resource Area (CRA) Map delineations are defined as geographical areas where resource concerns, problems, or treatment needs are similar. It is considered a subdivision of an existing Major Land Resource Area (MLRA) map delineation or polygon. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographic boundaries of a CRA.

Indiana Agricultural Statistics 2003 – 2004 - Indiana Agricultural Statistics, 1435 Win Hentshcel Blvd., Suite B105, West Lafayette

Major Land Resource Area Map Tool - Indiana NRCS Soils Page - http://www.in.nrcs.usda.gov/mlra11/soils.html

Indiana Hydrologic Units Indiana Geodata

Indiana Watershed Action Strategy Plan

Indiana Rapid Watershed Assessment (Electronic Data Sets – Web based application.

Indiana 2006 303d List – Indiana Department of Agriculture, Division of Natural Resources