

CREP Prioritization: Mapping Sediment Loading Risk in the Saginaw Bay Basin

Background

Michigan State University Extension (MSUE) is collaborating with the State of Michigan and local stakeholders to re-establish the Conservation Reserve Enhancement Program (CREP) in Michigan. To aid in prioritizing lands eligible for CREP enrollment, the Institute of Water Research (IWR) at MSU developed township-scale maps of sediment loading risk for the Saginaw Bay basin. This book organizes those maps at the township scale.

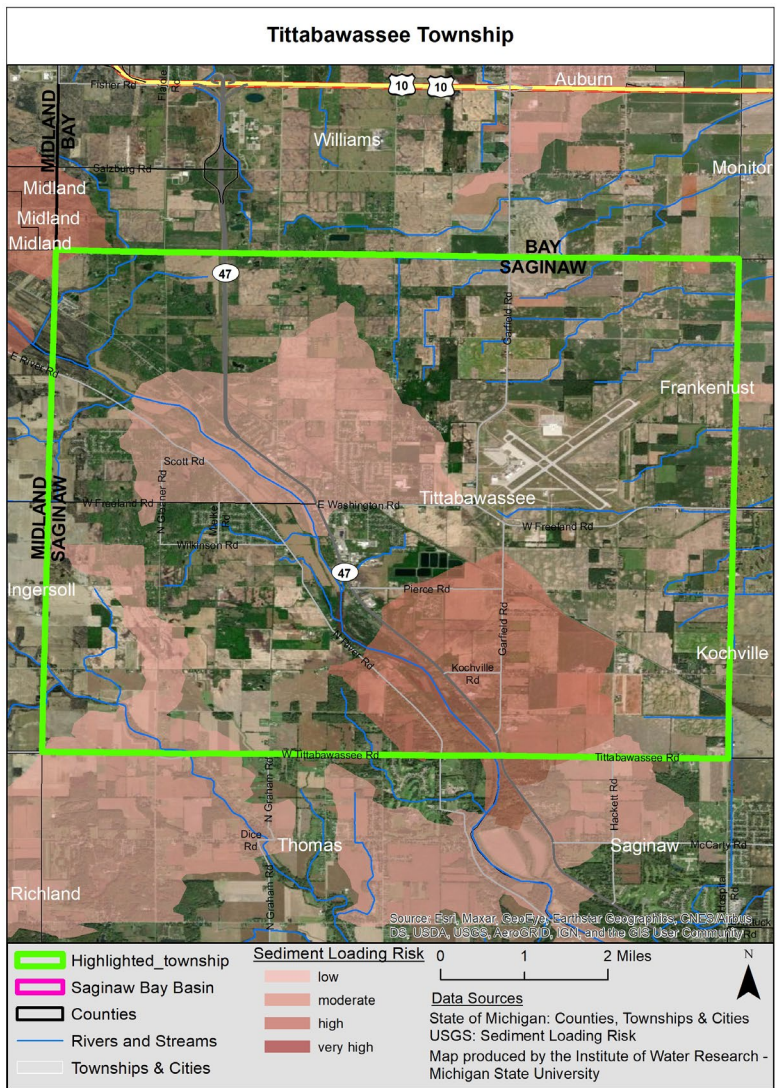
Data

The maps are based upon data from the United States Geological Survey's (USGS) SPATIally Referenced Regression On Watershed attributes (SPARROW) model*. The model uses observations, land use characteristics, and statistical relationships, among other variables, to estimate pollutant loads to streams and rivers. The data in this map book represents incremental sediment load contribution for each small catchment in the basin (see image at right), i.e. the amount of sediment load that originated in a particular area (not the total, accumulated amount moving through the stream in that area).

Contacts

Please direct questions about MSUE's project to:
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 Michigan State University Extension
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Please use the URL below to learn more about the SPARROW model, and direct questions about the maps to:
Glenn O'Neil
 Environmental Scientist
 Institute of Water Research - Michigan State University
oneilg@msu.edu

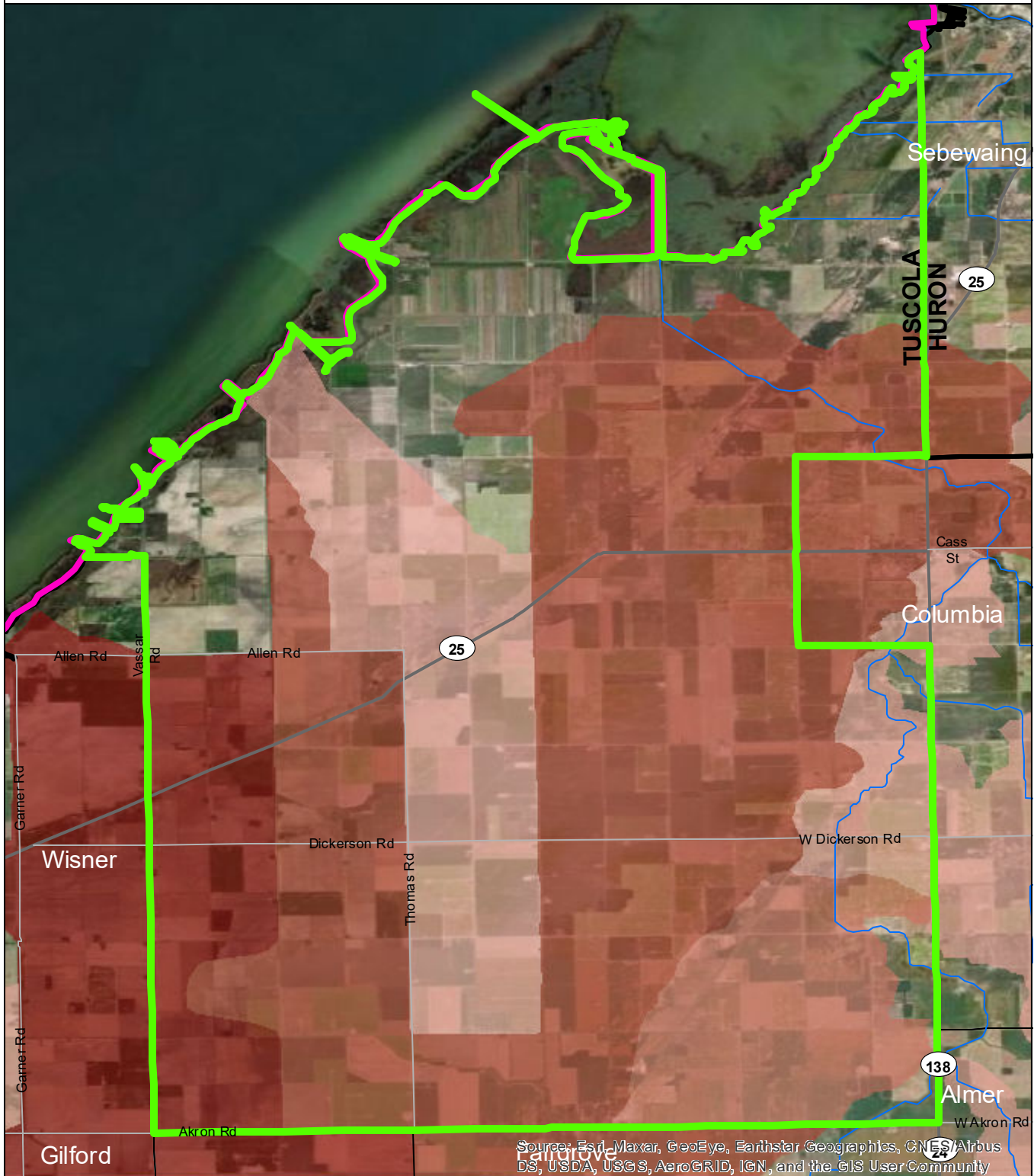


* <https://www.sciencebase.gov/catalog/item/5cbf5150e4b09b8c0b700df3>

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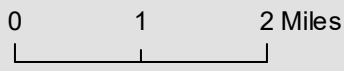
Akron Township



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

- Akron Township
- Saginaw Bay Basin
- Counties
- Rivers and Streams
- Townships & Cities

- Sediment Loading Risk**
- low
 - moderate
 - high
 - very high

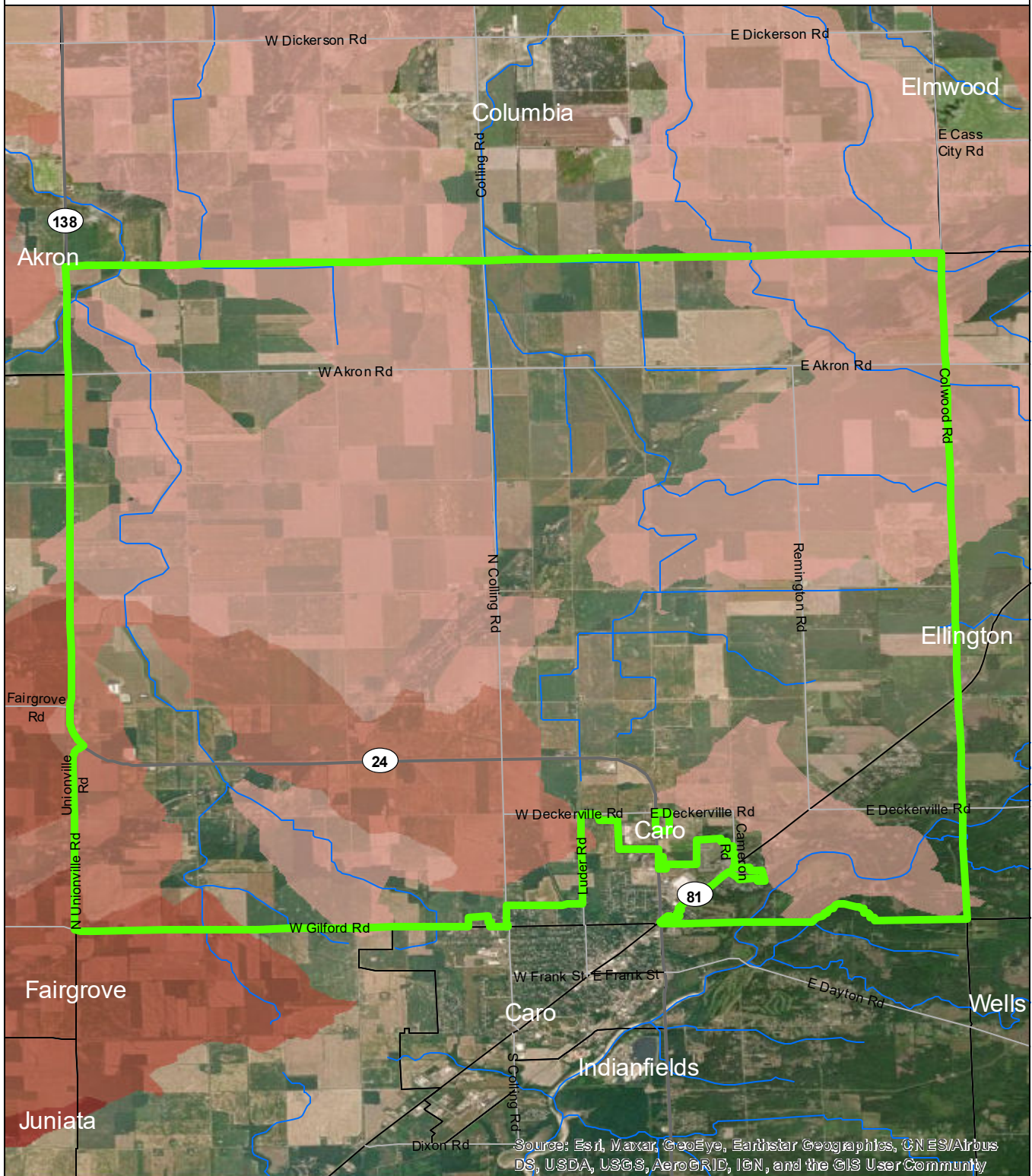


Data Sources

State of Michigan: Counties, Townships & Cities
 USGS: Sediment Loading Risk
 Map produced by the Institute of Water Research - Michigan State University



Almer Township



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

- Almer Township
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Sediment Loading Risk

- low
- moderate
- high
- very high

0 1 2 Miles

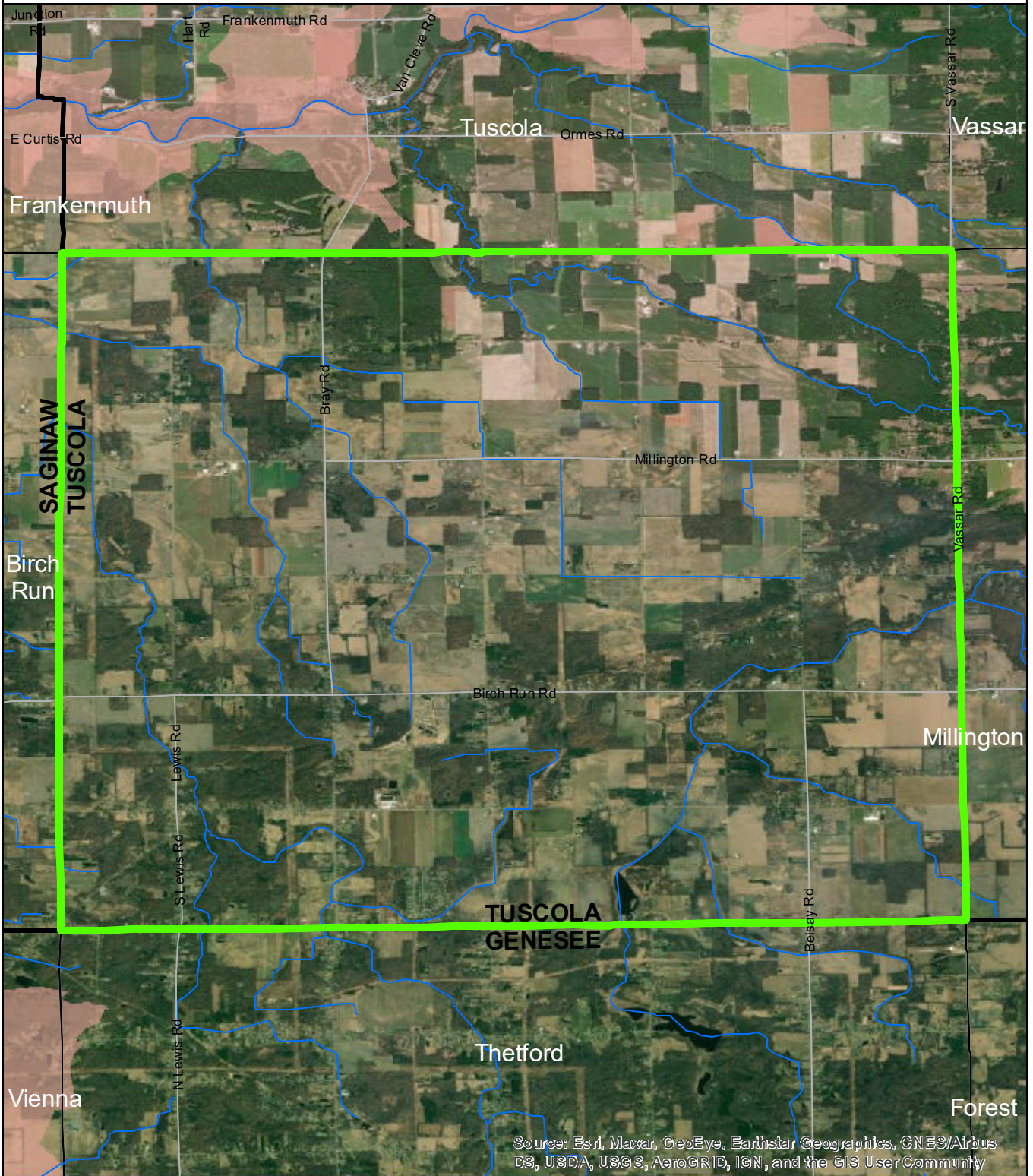
Data Sources

State of Michigan: Counties, Townships & Cities

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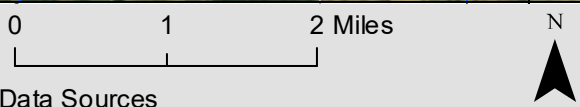
Arbela Township



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

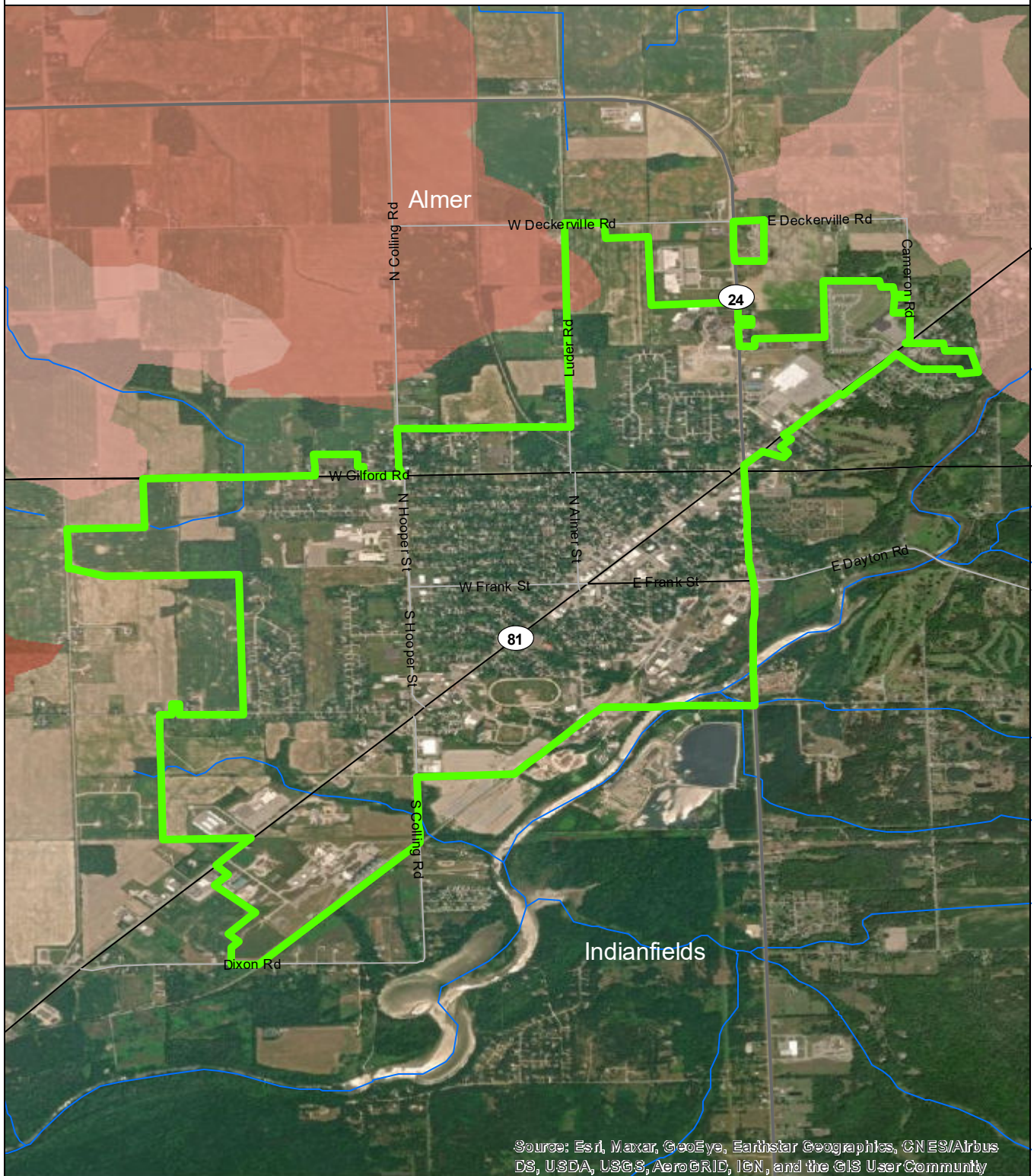
- Arbela Township
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- low
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 - very high



Data Sources
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City of Caro

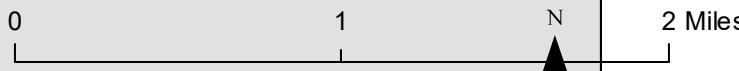


Source: Esri, Maxar, GeoEye, Earthstar Geographics, CN ES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Sediment Loading Risk

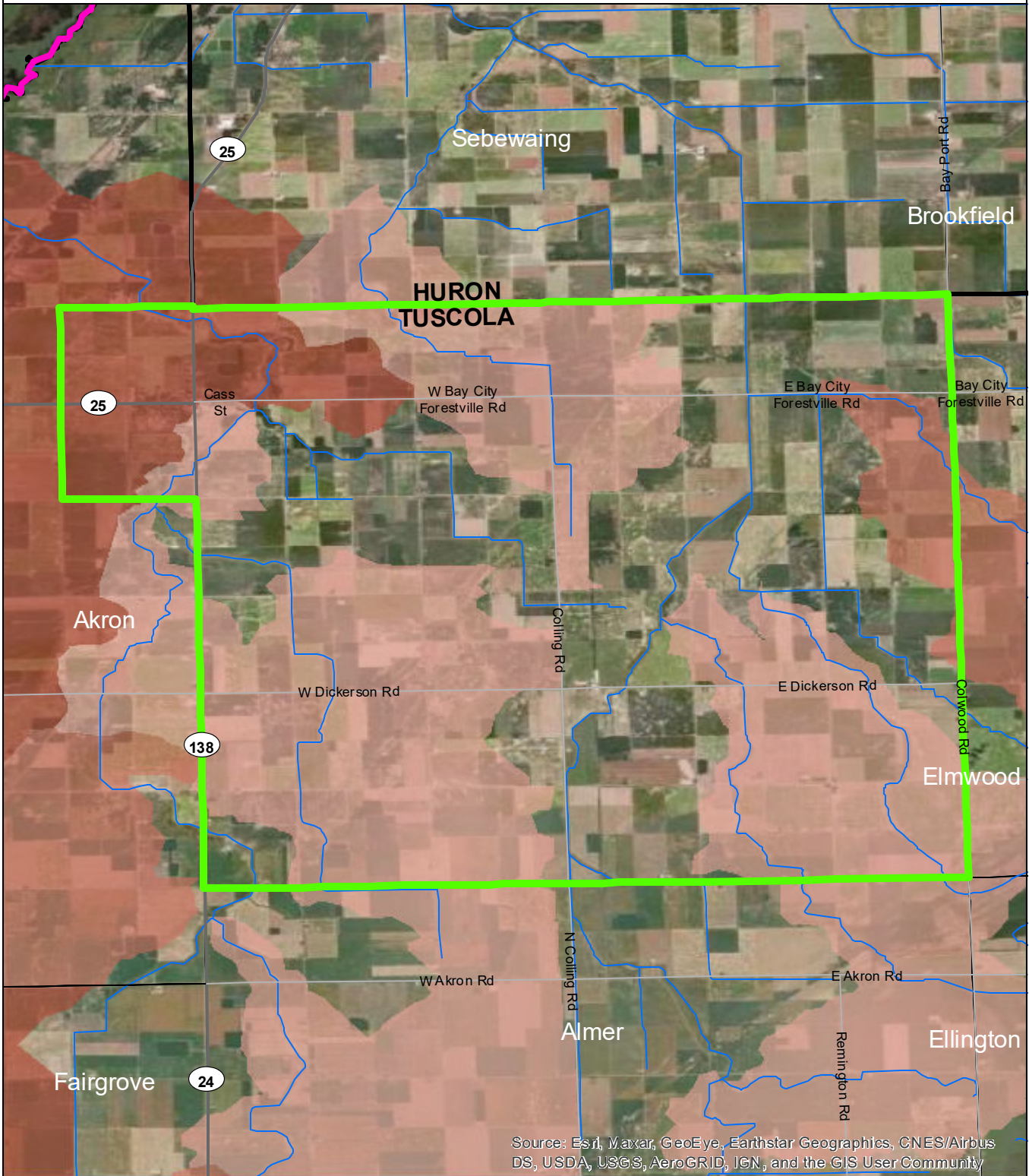
- low
- moderate
- high
- very high








Data Sources





State of Michigan: Counties, Townships & Cities
 USGS: Sediment Loading Risk
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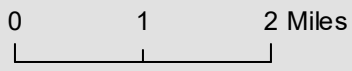
Columbia Township



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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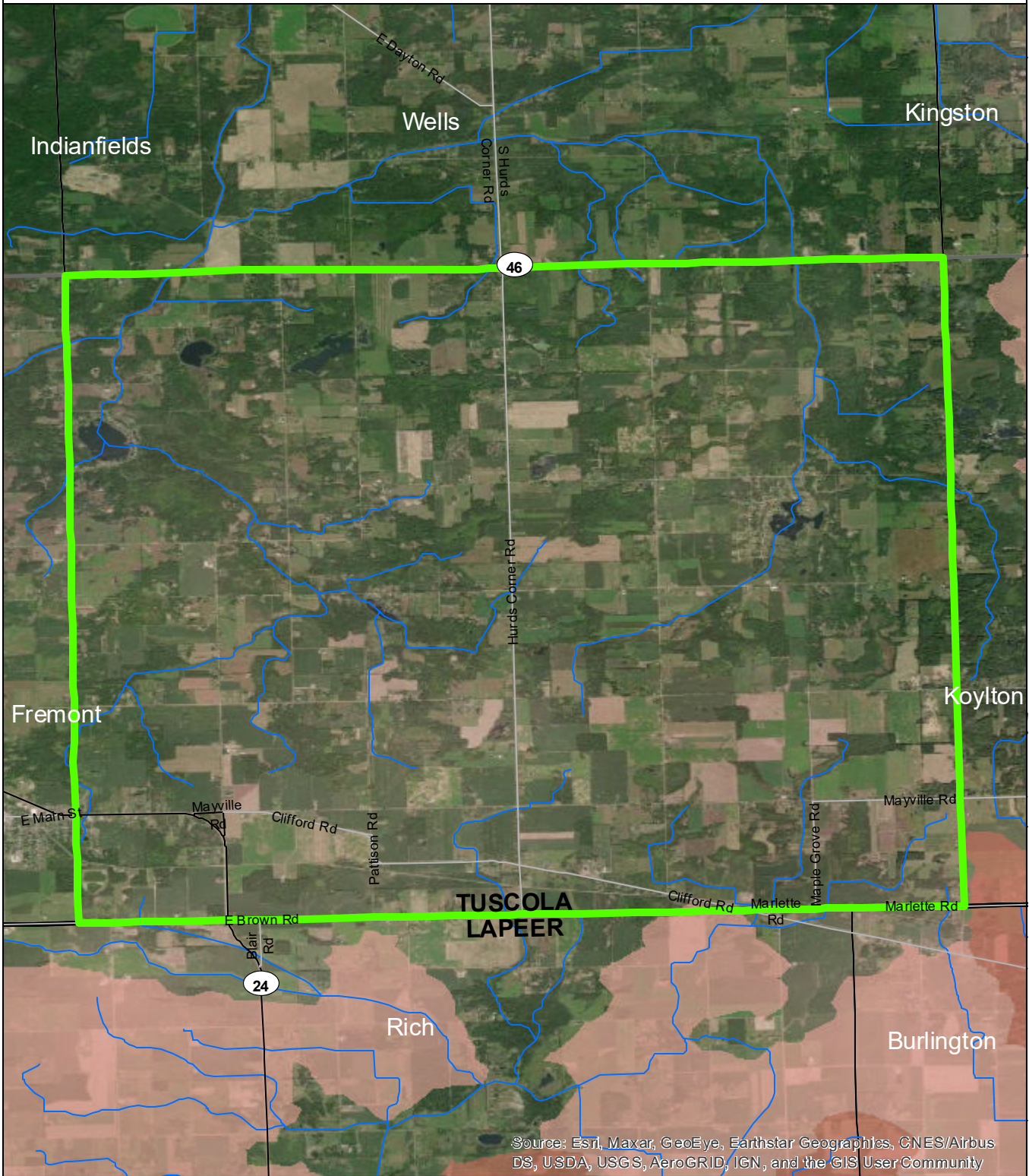
Data Sources

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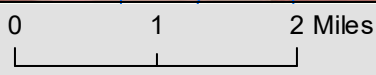
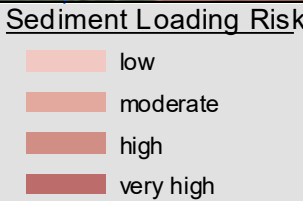


Dayton Township



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

- Dayton Township
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- Townships & Cities



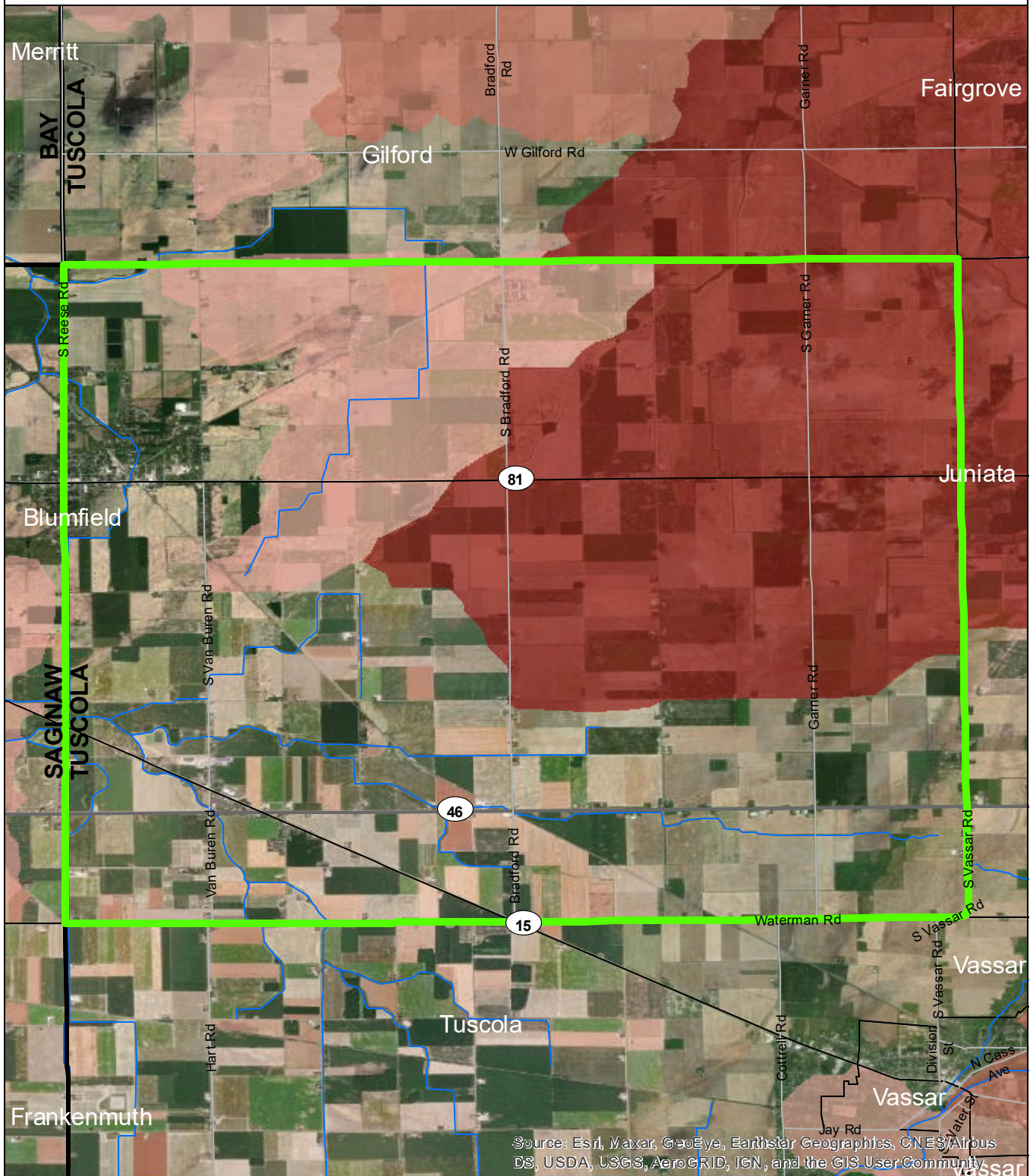
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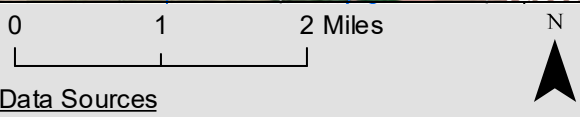
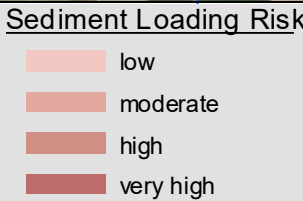


Denmark Township



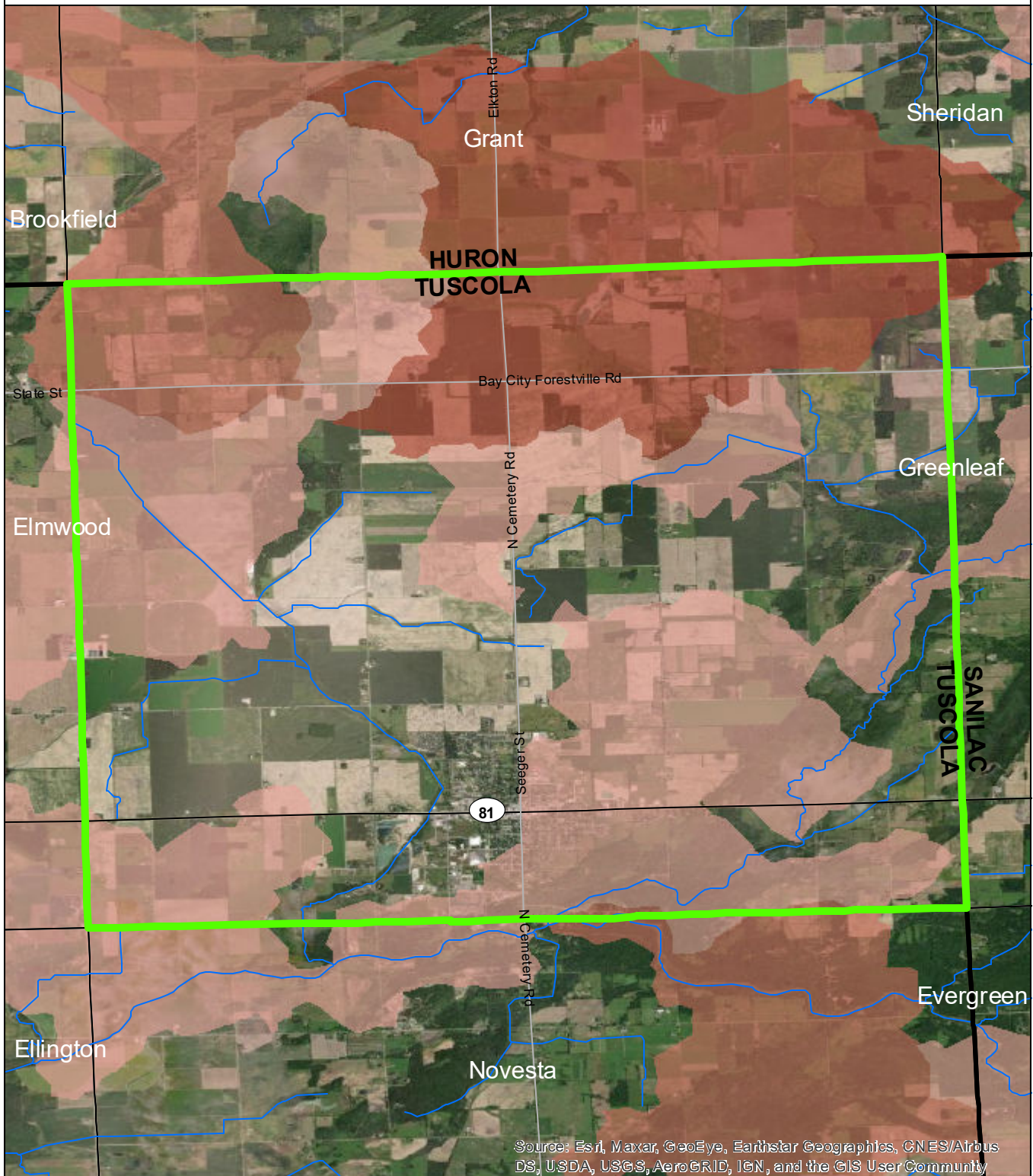
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

- Denmark Township
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Map produced by the Institute of Water Research - Michigan State University

Elkland Township

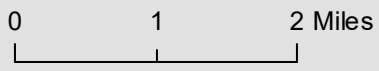


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- Elkland Township
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Sediment Loading Risk

- low
- moderate
- high
- very high



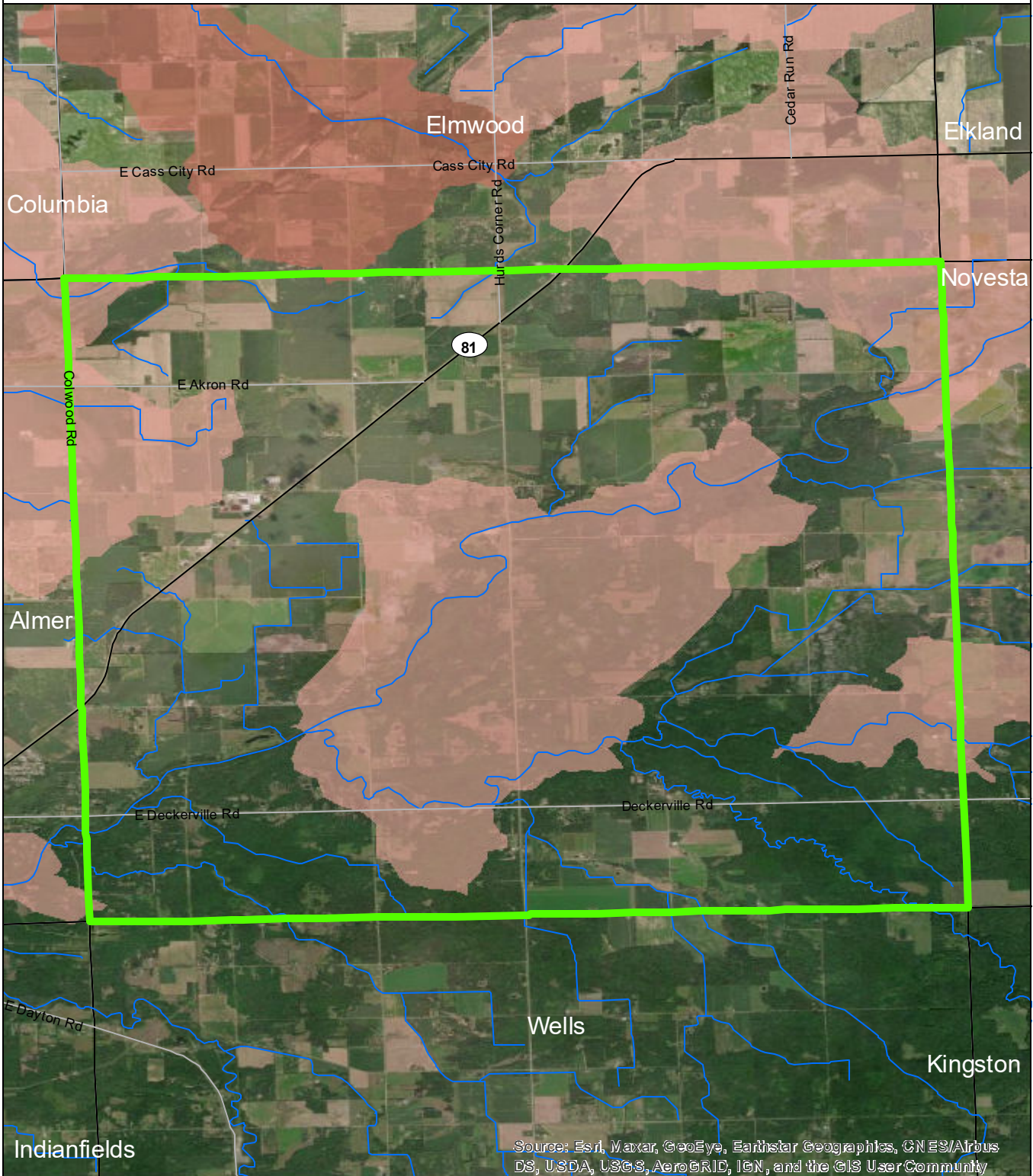
Data Sources

State of Michigan: Counties, Townships & Cities
 USGS: Sediment Loading Risk

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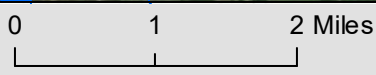
Ellington Township



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CN ES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

- Ellington Township
- Saginaw Bay Basin
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- Townships & Cities

- Sediment Loading Risk**
- low
 - moderate
 - high
 - very high

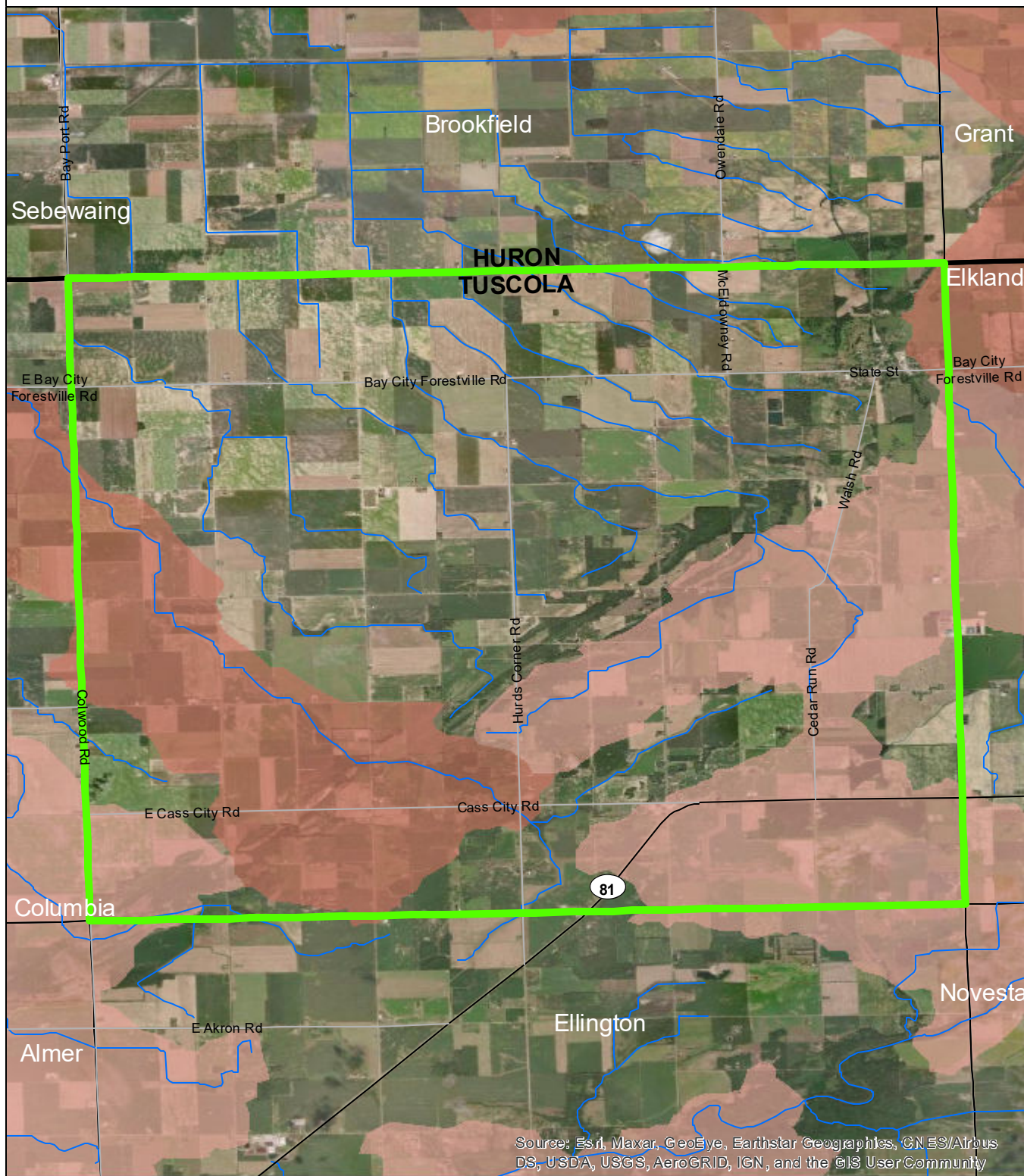


Data Sources

State of Michigan: Counties, Townships & Cities
 USGS: Sediment Loading Risk
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Elmwood Township



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

- Elmwood Township
- Saginaw Bay Basin
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- Townships & Cities

Sediment Loading Risk

- low
- moderate
- high
- very high



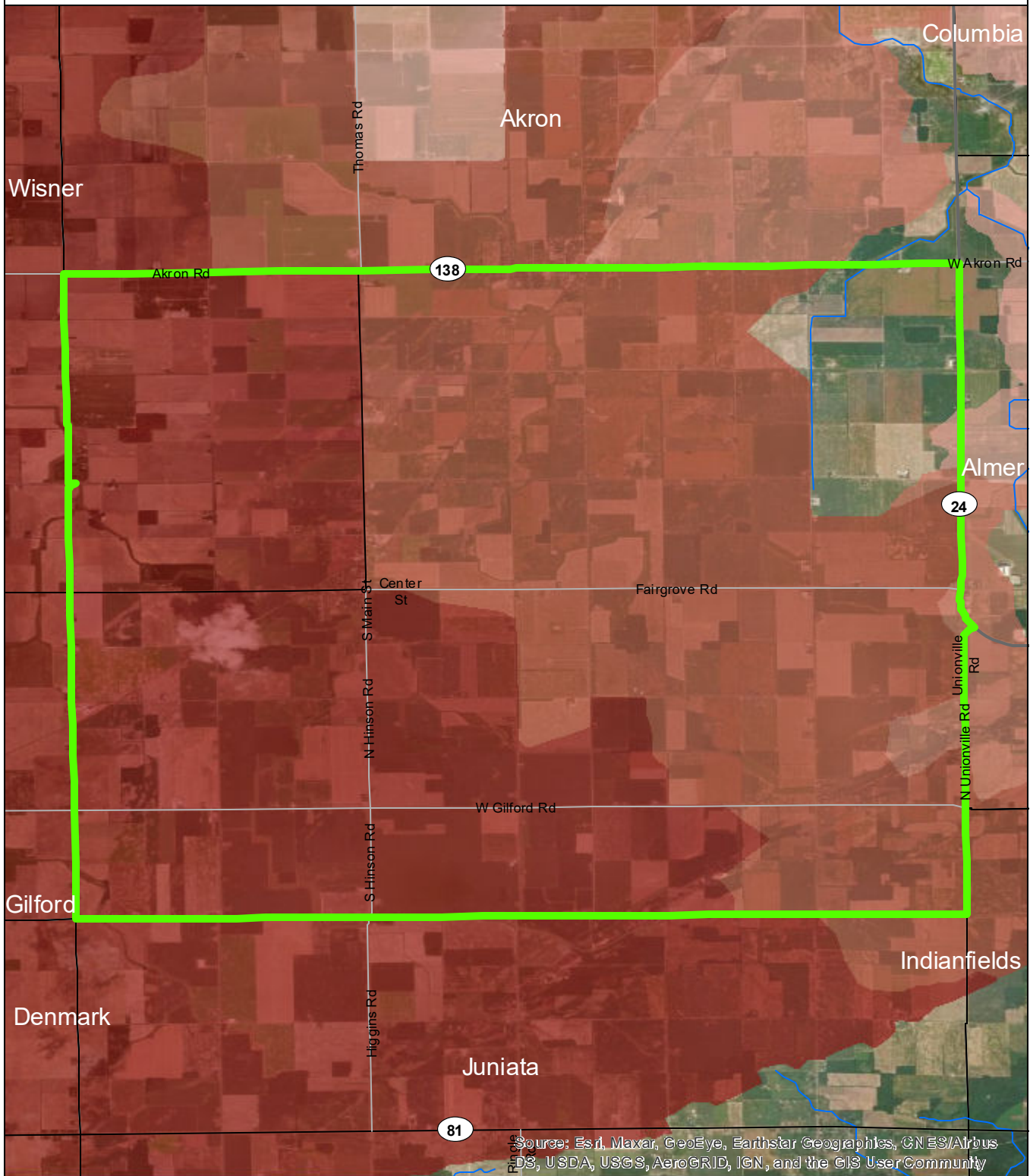
Data Sources

State of Michigan: Counties, Townships & Cities
 USGS: Sediment Loading Risk






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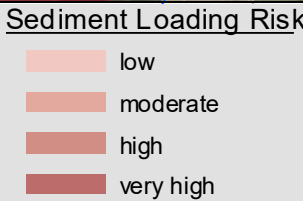


Fairgrove Township



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CN ES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

-  Fairgrove Township
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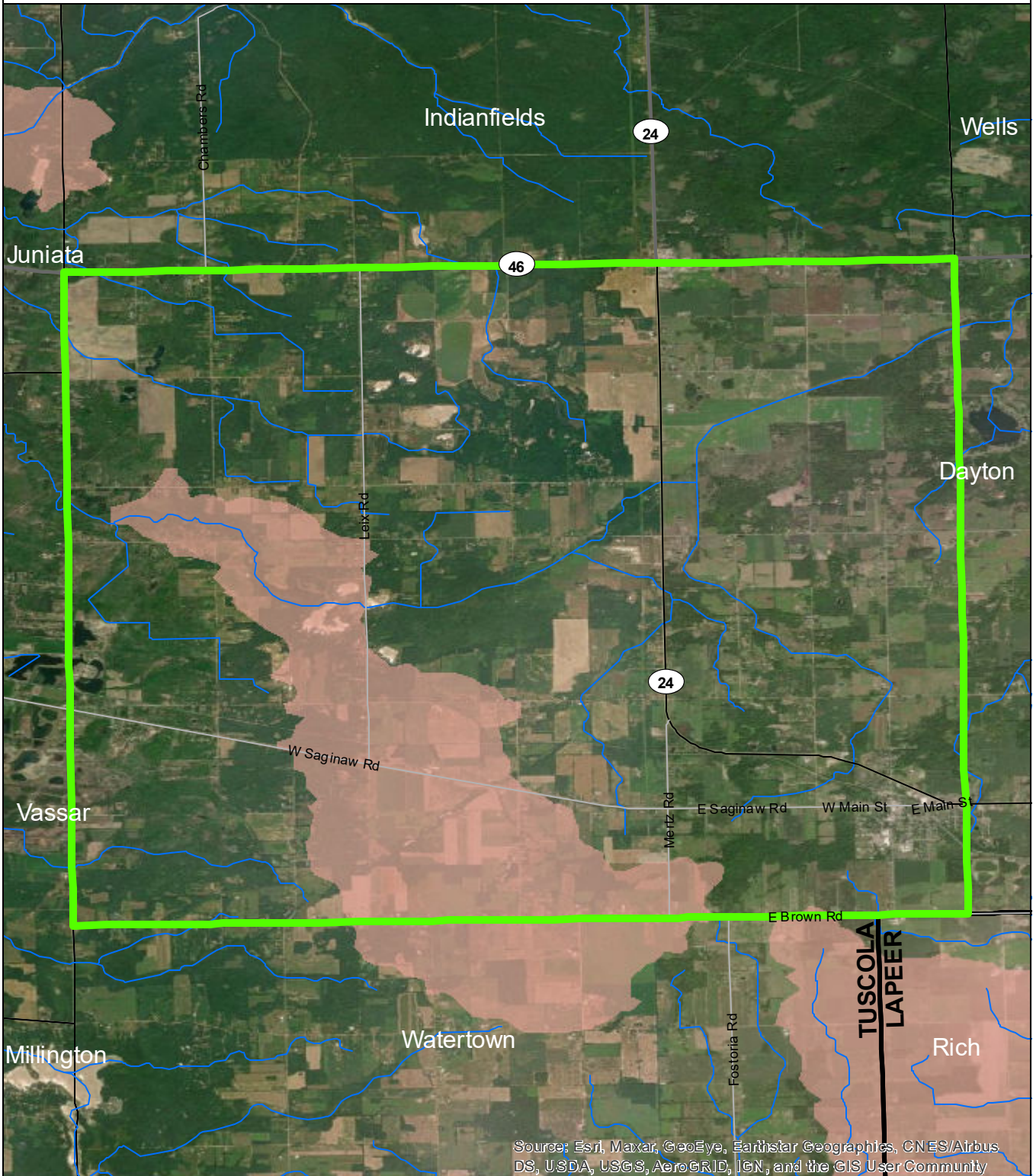


Data Sources

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Fremont Township



- Fremont Township
- Saginaw Bay Basin
- Counties
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Sediment Loading Risk

- low
- moderate
- high
- very high

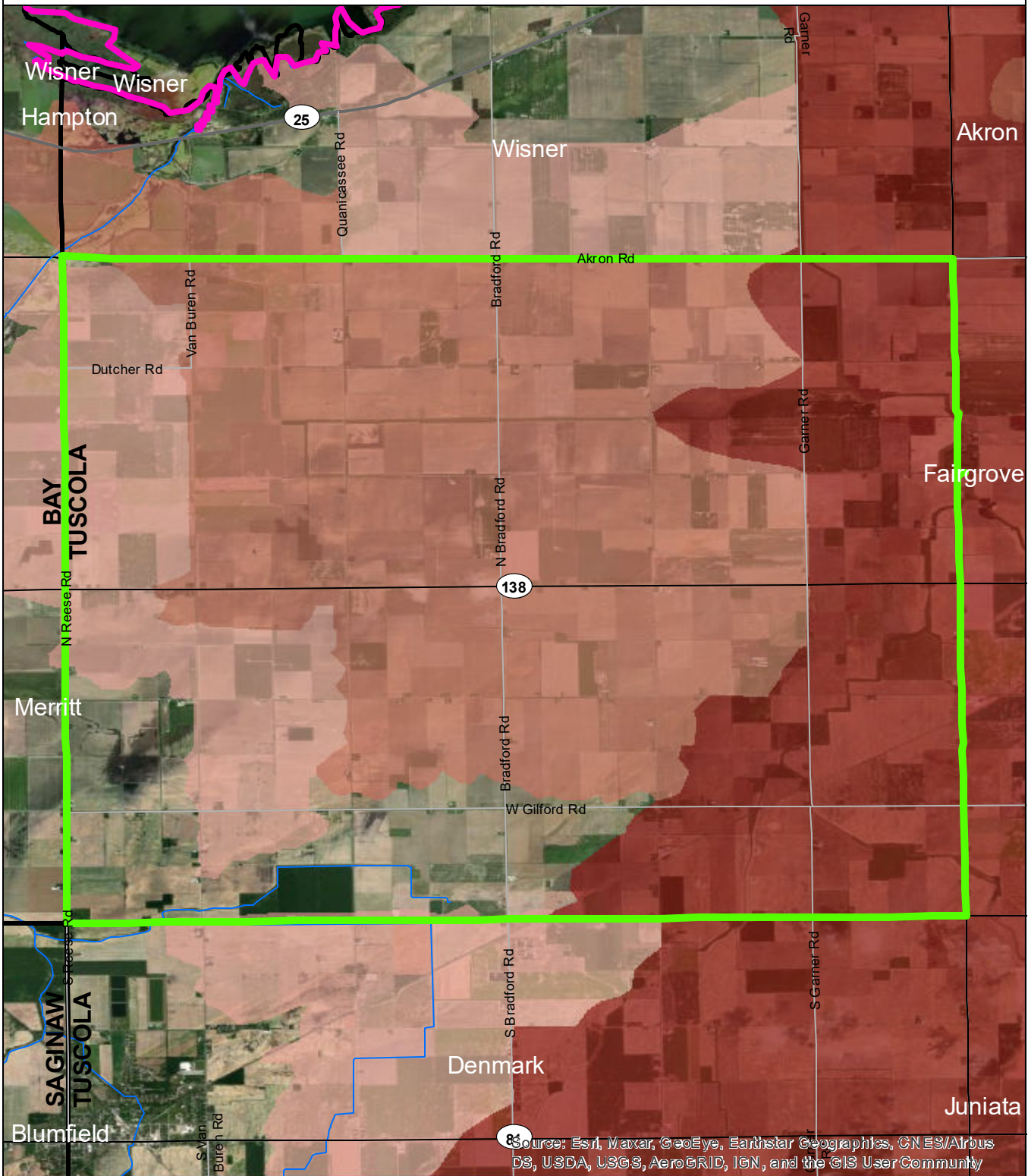


Data Sources

State of Michigan: Counties, Townships & Cities
 USGS: Sediment Loading Risk
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Gilford Township



- Gilford Township
- Saginaw Bay Basin
- Counties
- Rivers and Streams
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Sediment Loading Risk

- low
- moderate
- high
- very high



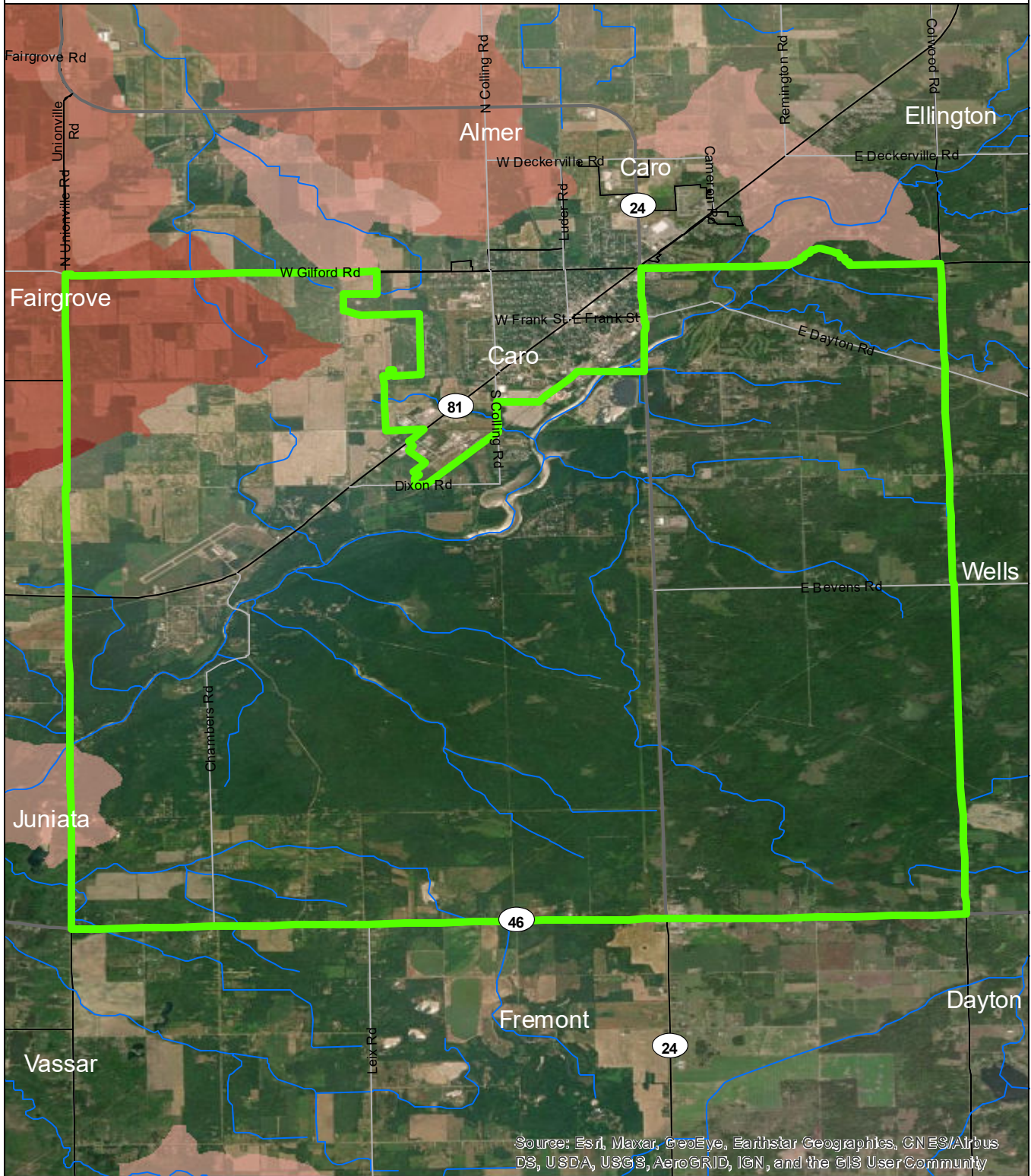
Data Sources

State of Michigan: Counties, Townships & Cities
 USGS: Sediment Loading Risk

Map produced by the Institute of Water Research - Michigan State University



Indianfields Township

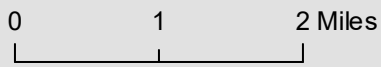


Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

- Indianfields Township
- Saginaw Bay Basin
- Counties
- Rivers and Streams
- Townships & Cities

Sediment Loading Risk

- low
- moderate
- high
- very high



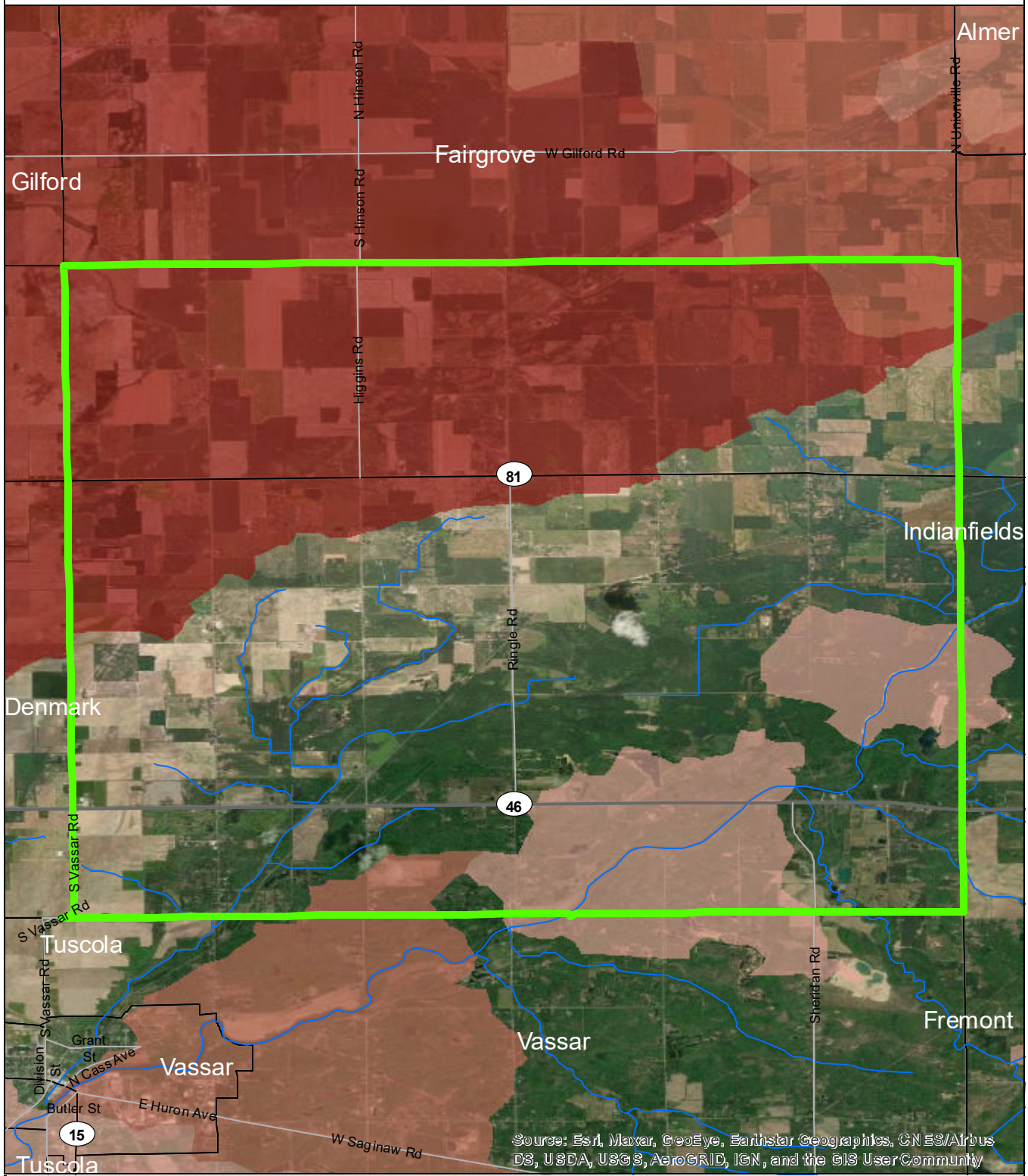
Data Sources

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 USGS: Sediment Loading Risk

Map produced by the Institute of Water Research - Michigan State University



Juniata Township



- Juniata Township
- Saginaw Bay Basin
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- Rivers and Streams
- Townships & Cities

Sediment Loading Risk

- low
- moderate
- high
- very high

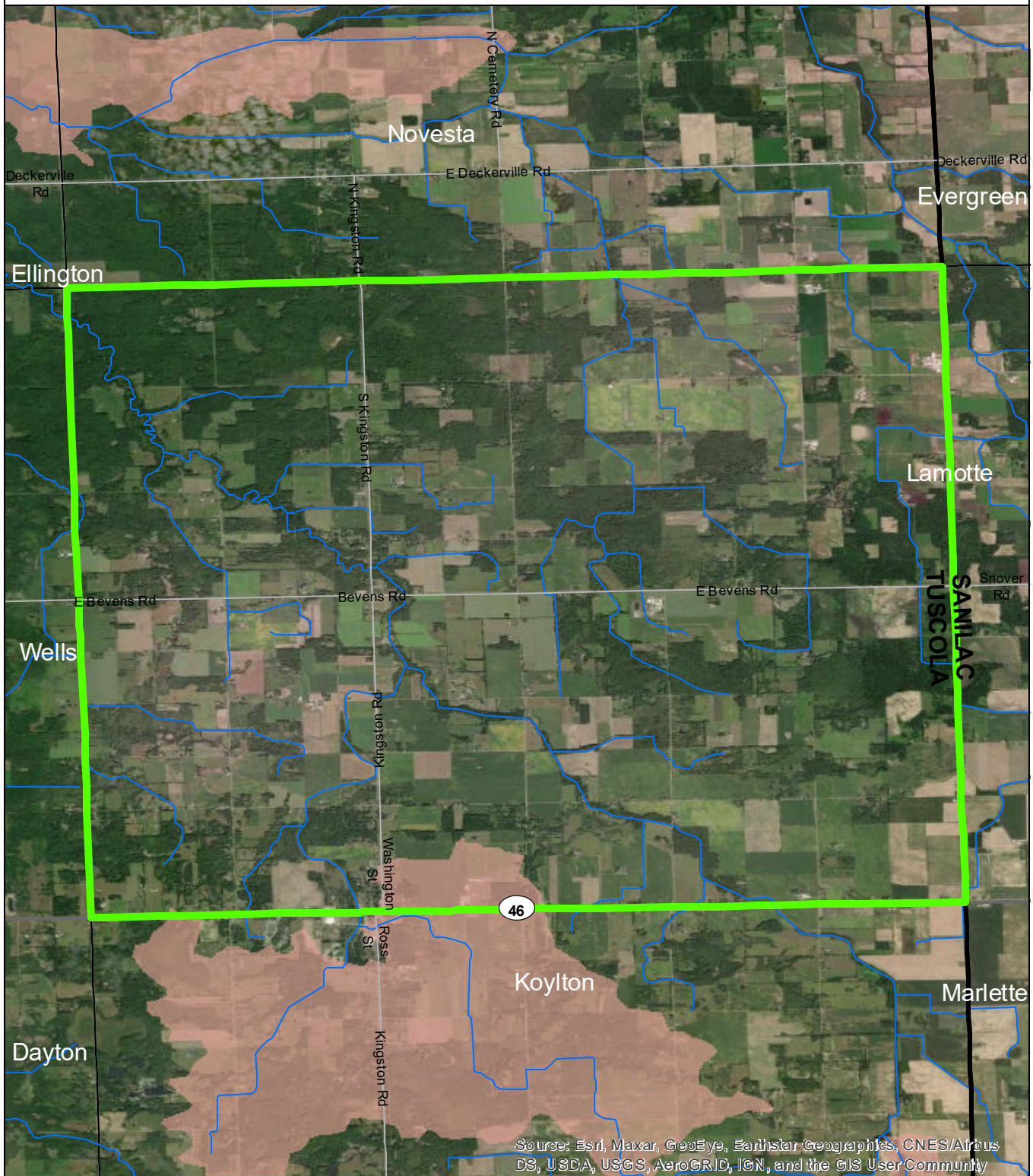


Data Sources

State of Michigan: Counties, Townships & Cities
 USGS: Sediment Loading Risk

Map produced by the Institute of Water Research - Michigan State University

Kingston Township

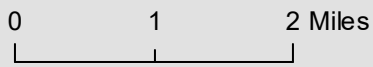


Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

- Kingston Township
- Saginaw Bay Basin
- Counties
- Rivers and Streams
- Townships & Cities

Sediment Loading Risk

- low
- moderate
- high
- very high



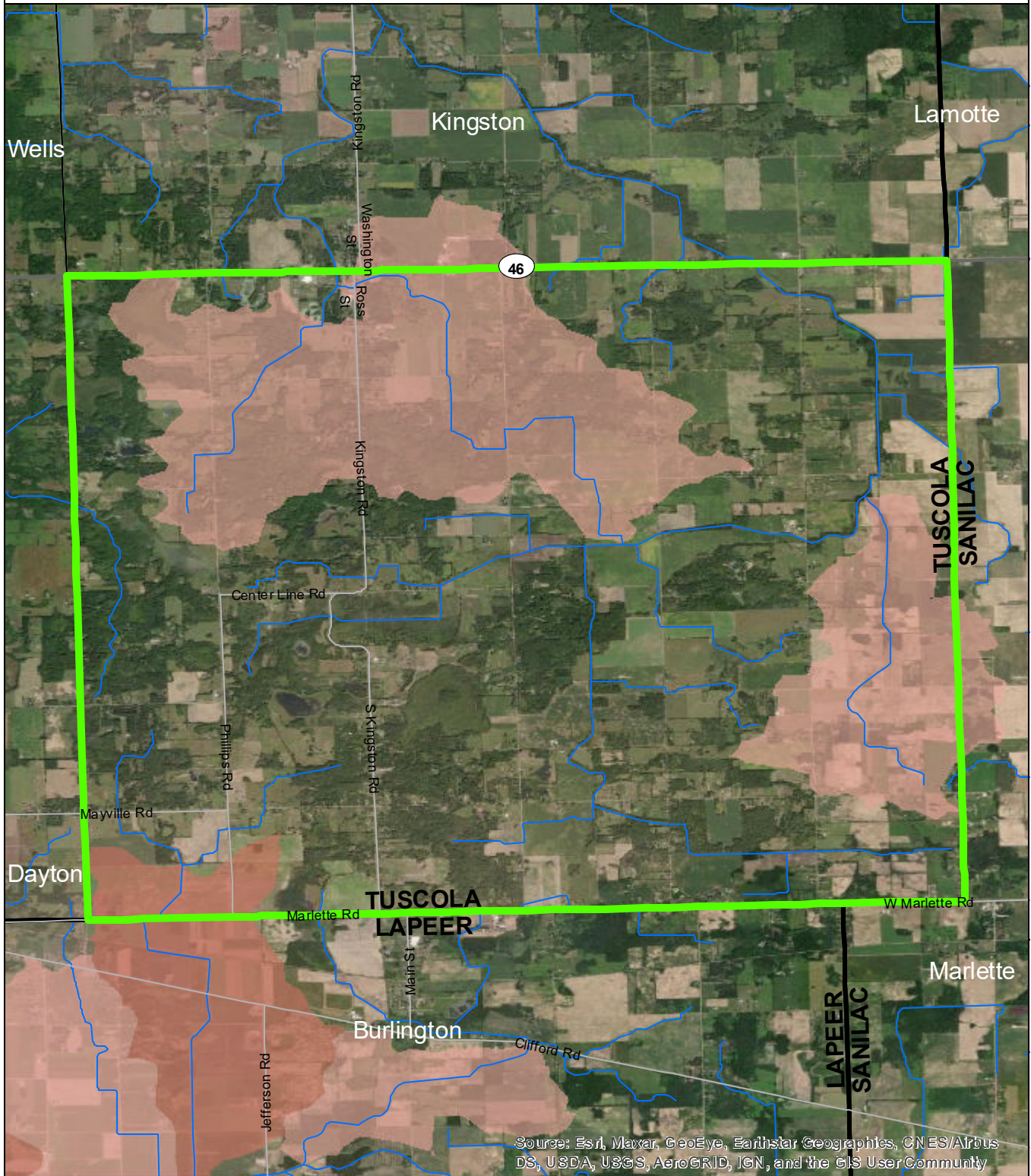
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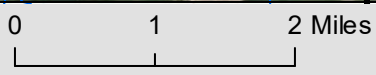
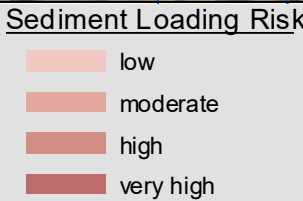


Koylton Township



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS UserCommunity

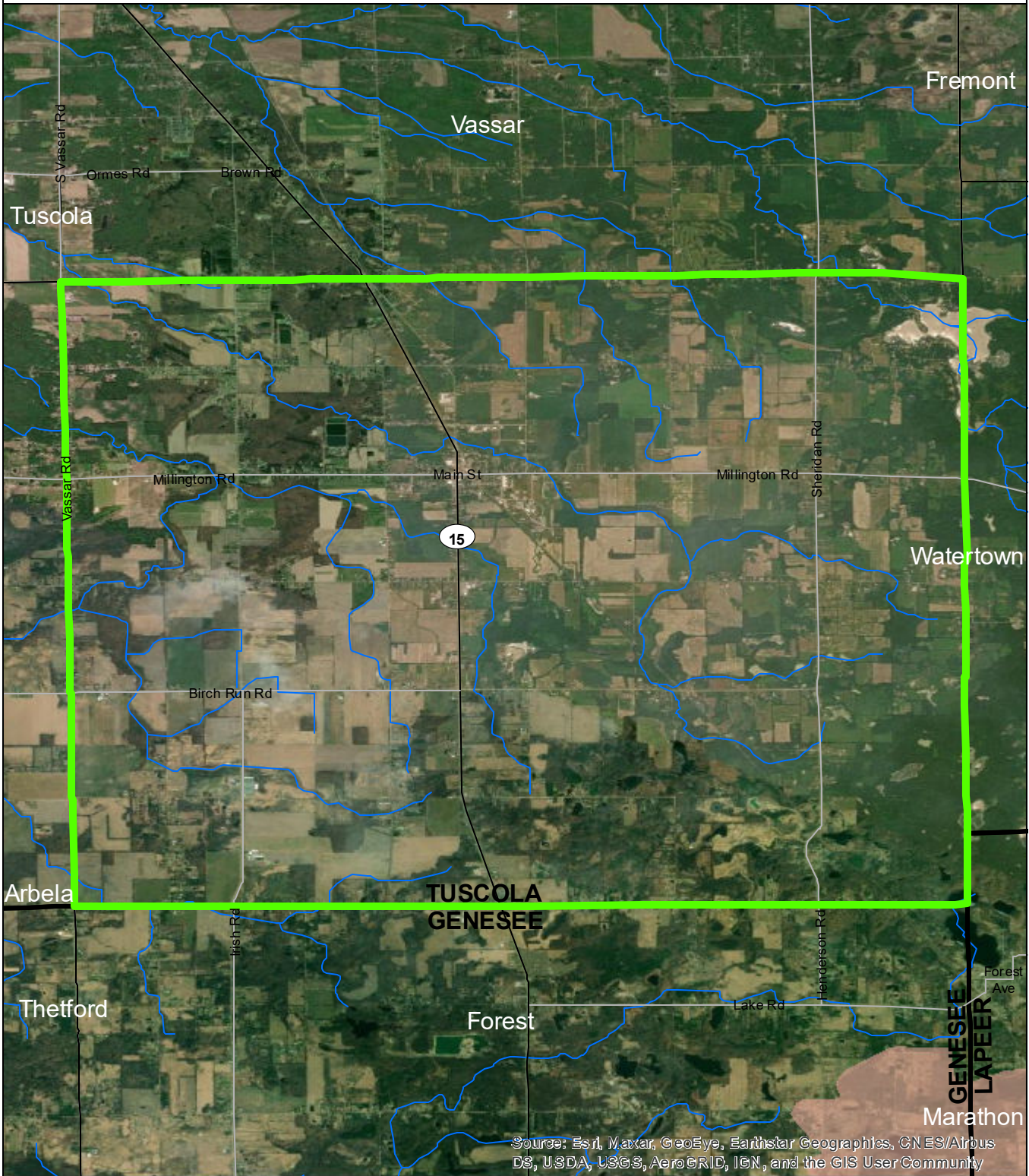
- Koylton Township
- Saginaw Bay Basin
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Data Sources

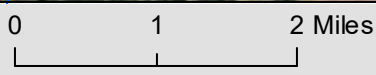
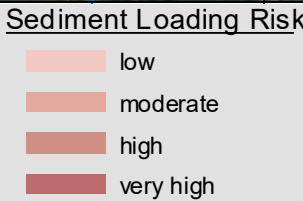
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Millington Township



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- Millington Township
- Saginaw Bay Basin
- Counties
- Rivers and Streams
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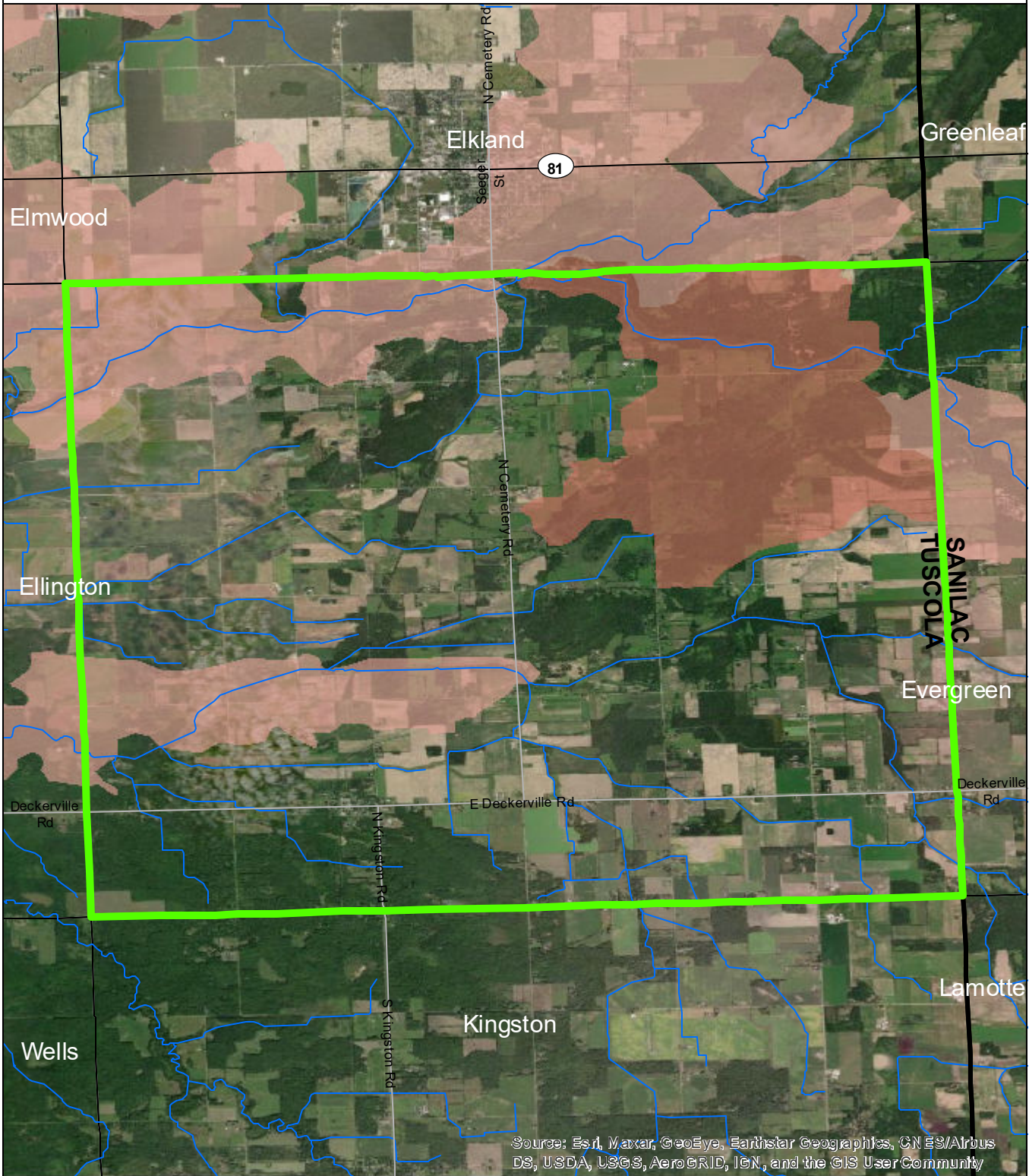


Data Sources

State of Michigan: Counties, Townships & Cities
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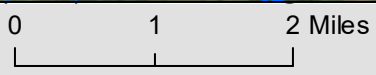
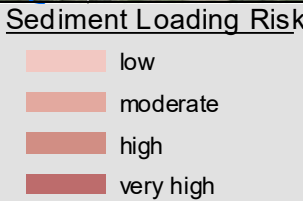


Novesta Township



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CN ES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

- Novesta Township
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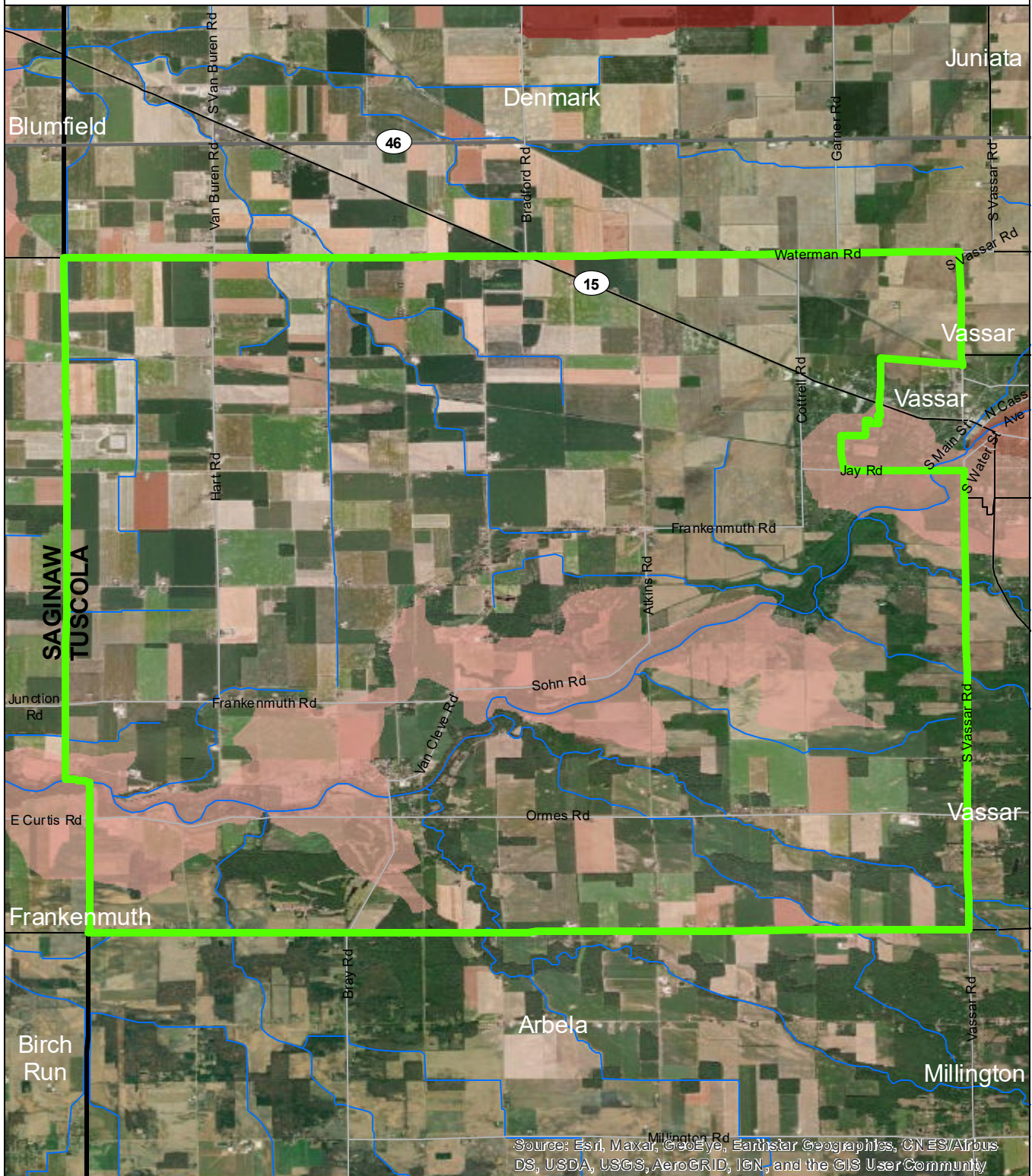


Data Sources

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Tuscola Township

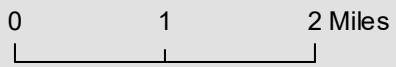


Source: Esri, Maxar, GeoEye, Earthstar Geographics, CN ES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

- Tuscola Township
- Saginaw Bay Basin
- Counties
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Sediment Loading Risk

- low
- moderate
- high
- very high



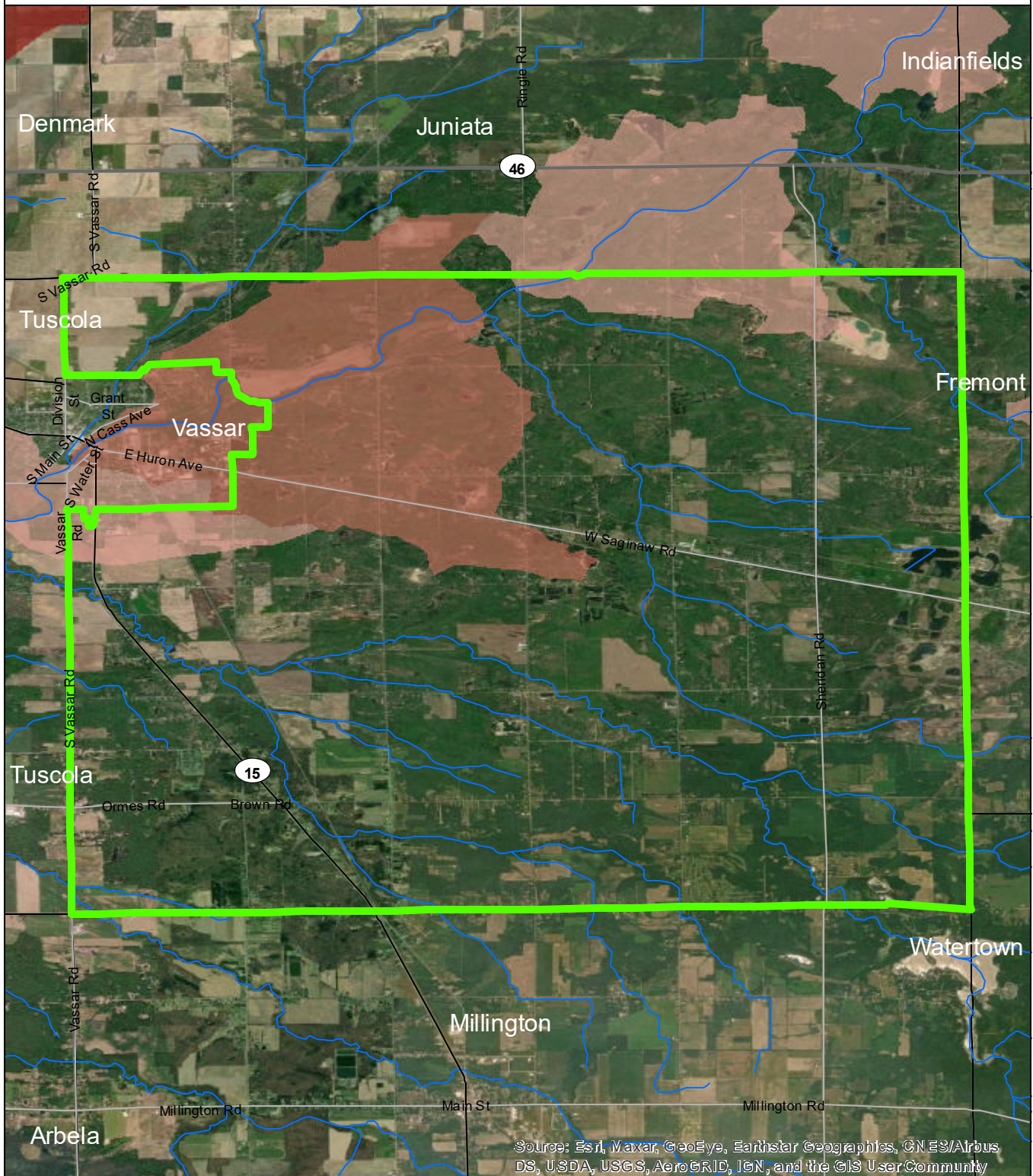
Data Sources

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Vassar Township



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- Vassar Township
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Sediment Loading Risk

- low
- moderate
- high
- very high



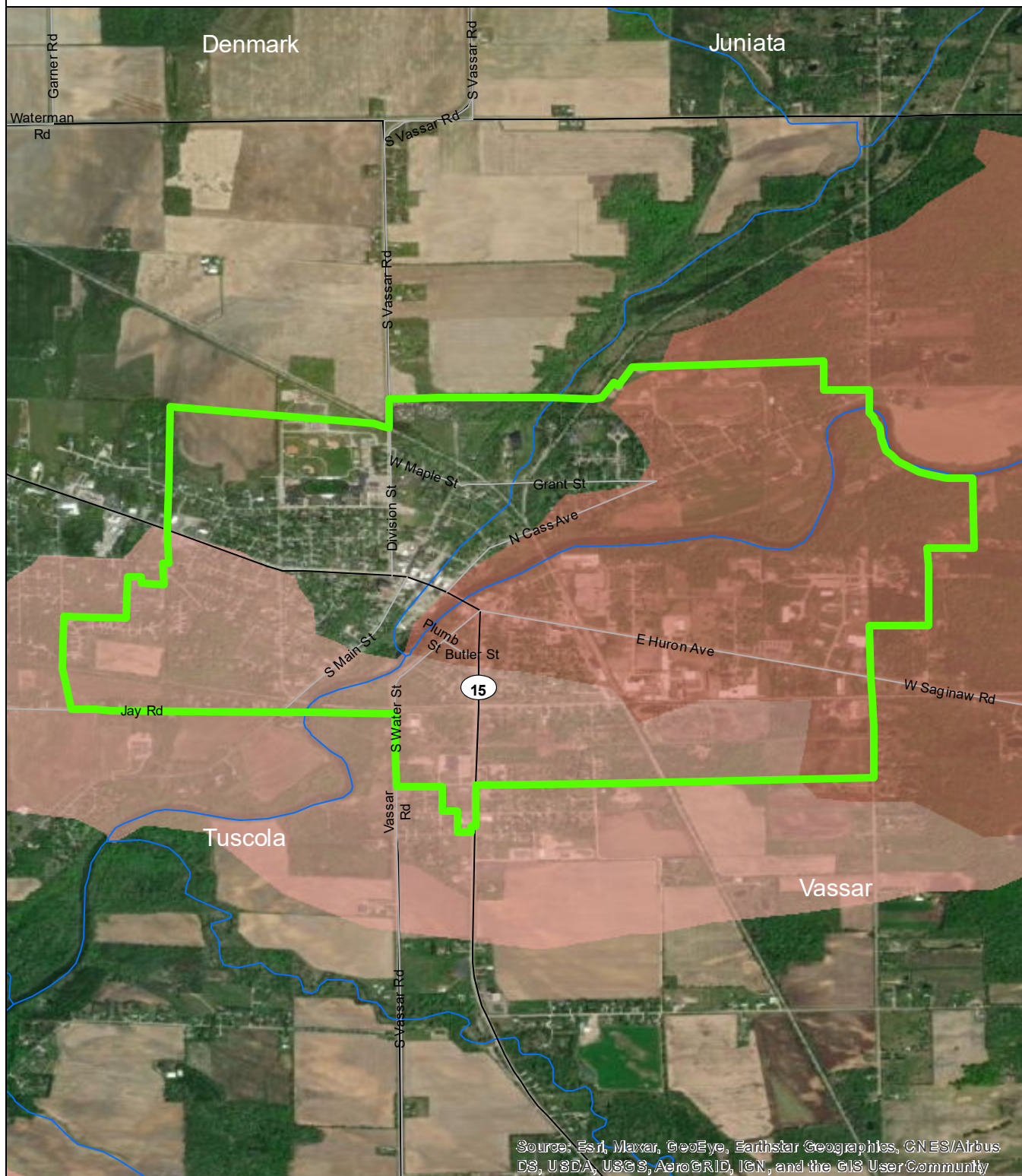
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City of Vassar

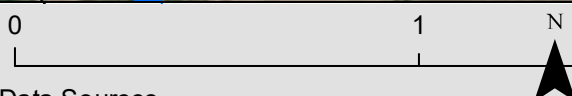


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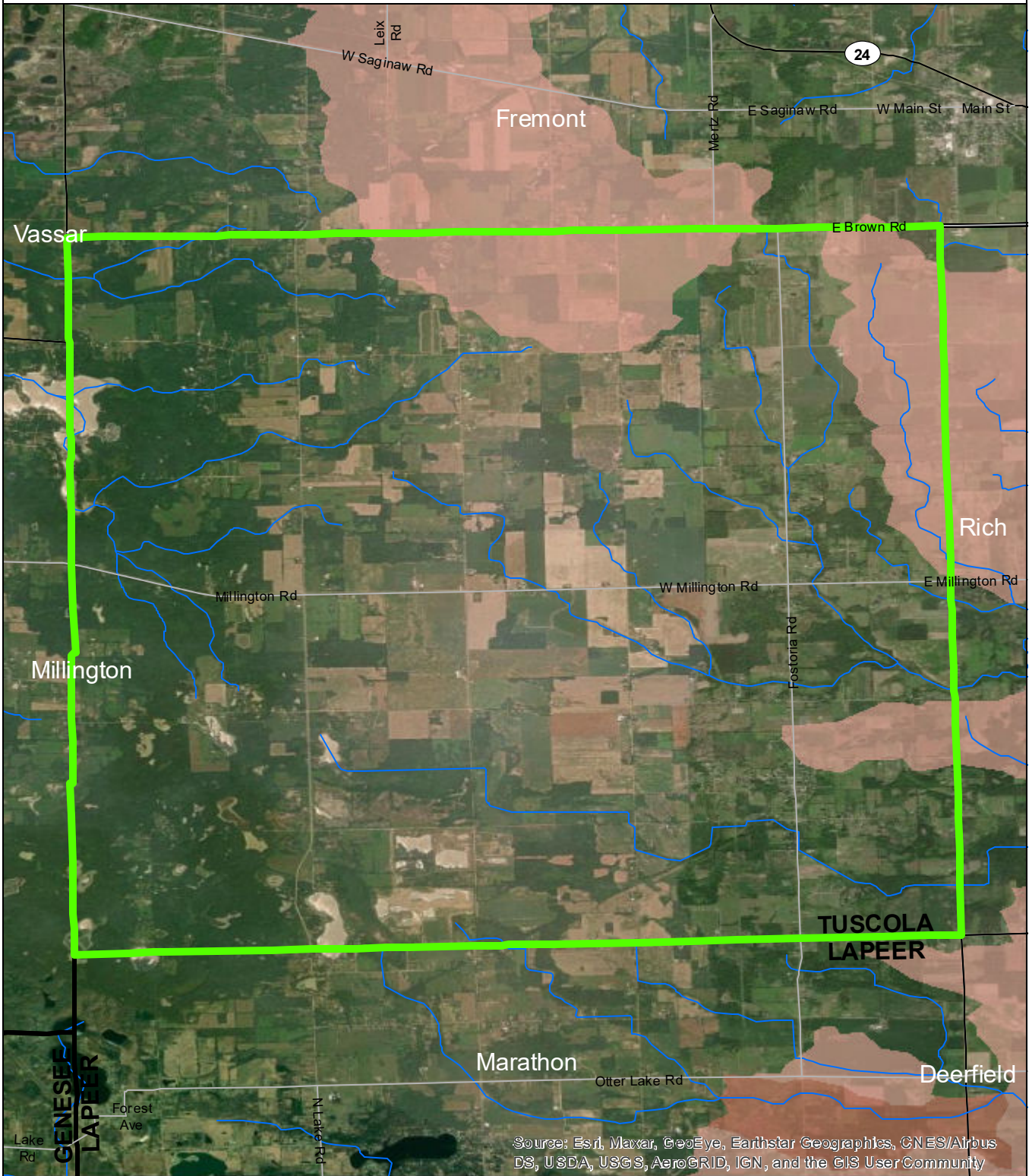


Data Sources






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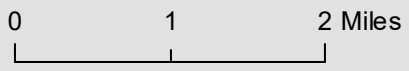
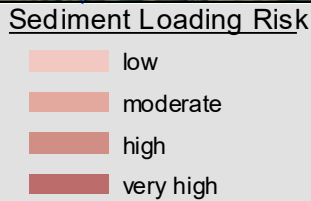
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Watertown Township



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-  Watertown Township
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-  Counties
-  Rivers and Streams
-  Townships & Cities

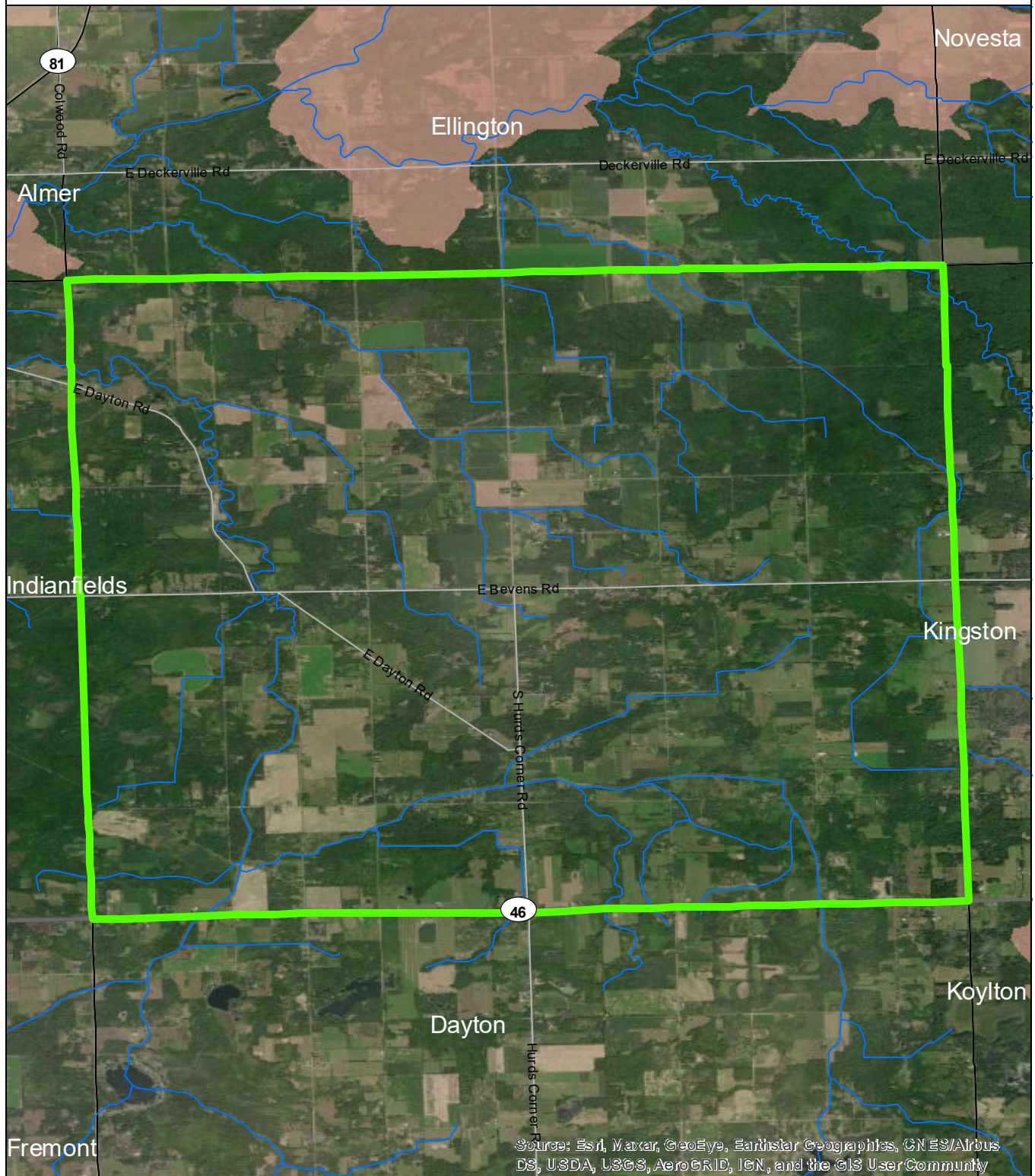


Data Sources

State of Michigan: Counties, Townships & Cities
 USGS: Sediment Loading Risk

Map produced by the Institute of Water Research - Michigan State University

Wells Township

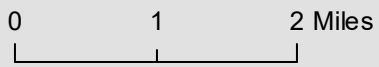


Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

- Wells Township
- Saginaw Bay Basin
- Counties
- Rivers and Streams
- Townships & Cities

Sediment Loading Risk

- low
- moderate
- high
- very high



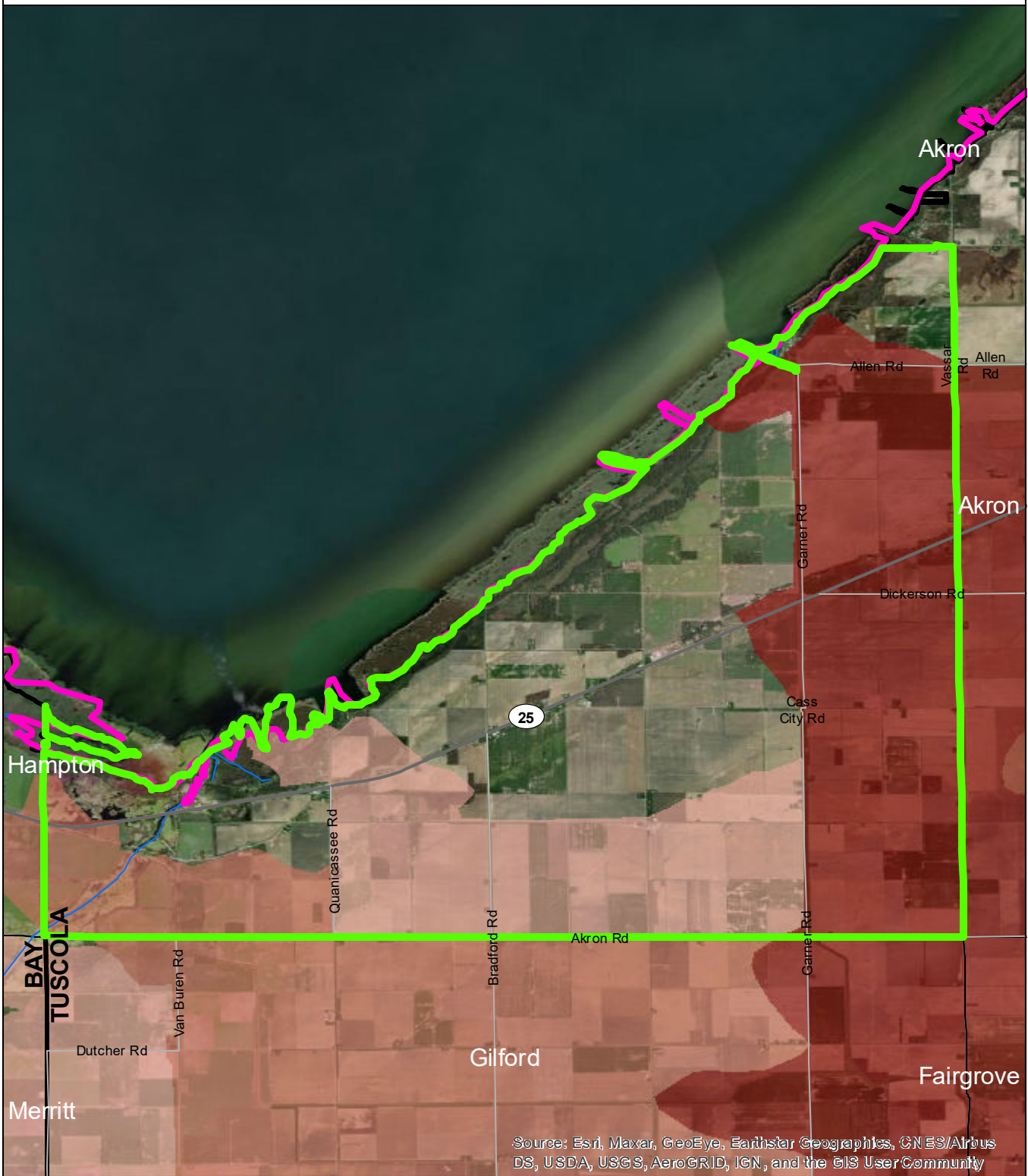
Data Sources

State of Michigan: Counties, Townships & Cities
 USGS: Sediment Loading Risk

Map produced by the Institute of Water Research - Michigan State University

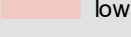
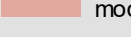
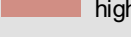



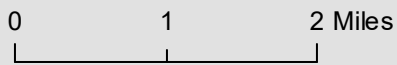
Wisner Township



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

-  Wisner Township
-  Saginaw Bay Basin
-  Counties
-  Rivers and Streams
-  Townships & Cities

- Sediment Loading Risk**
-  low
 -  moderate
 -  high
 -  very high



Data Sources

State of Michigan: Counties, Townships & Cities
 USGS: Sediment Loading Risk

Map produced by the Institute of Water Research - Michigan State University

