OLIVER LAKE WATERSHED DIAGNOSTIC STUDY

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Arion Consultants

TODAY'S GOALS

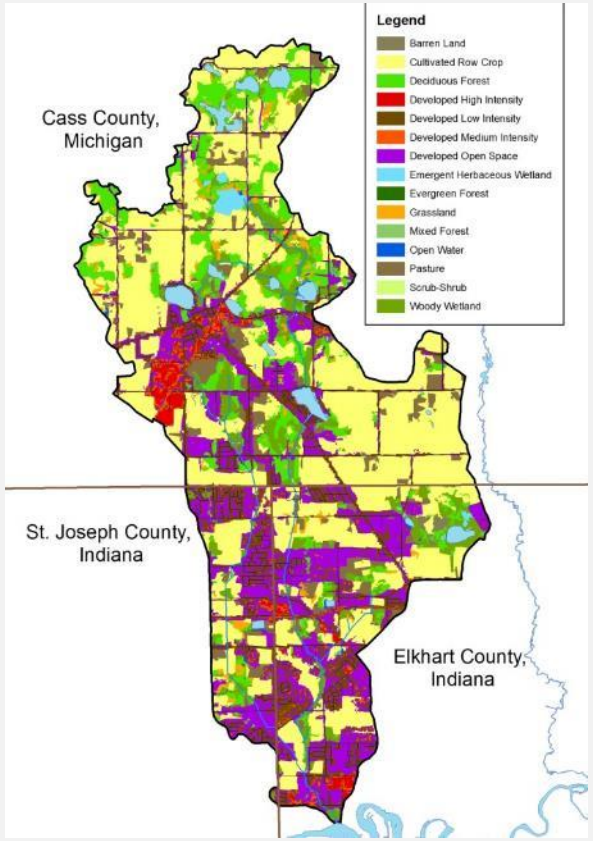
- Outline the three main phases of the watershed diagnostic study
- Highlight the data we've collected to date
- Solicit input from you and your knowledge of Oliver Lake and its drainage

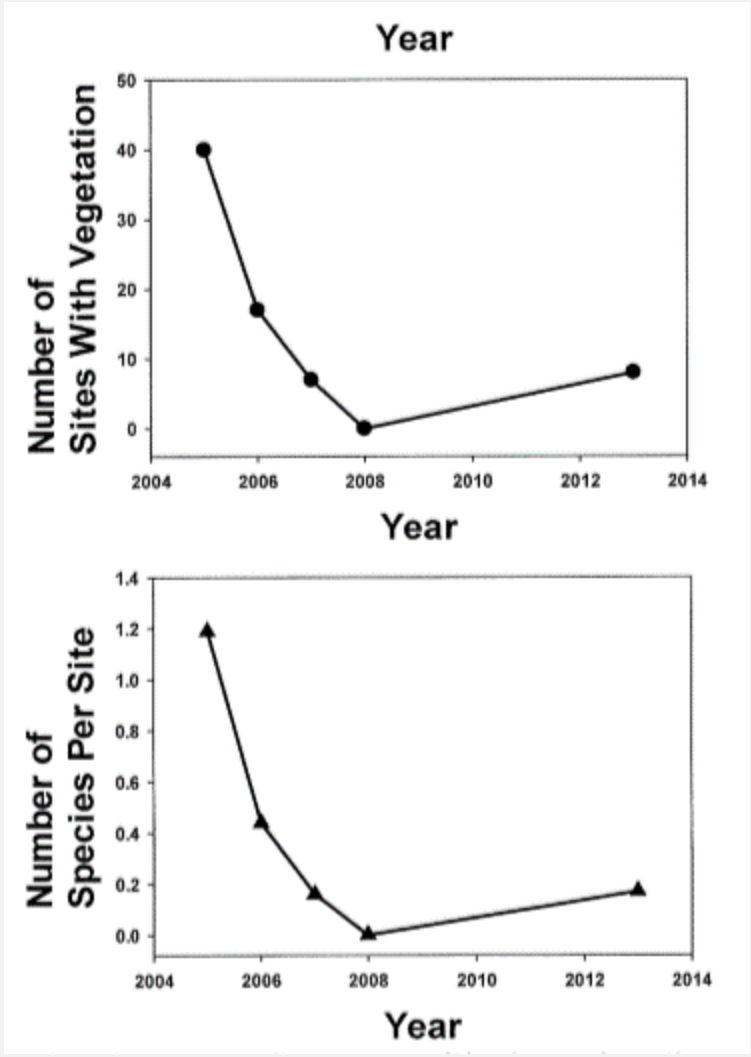
PROJECT PURPOSE

- Describe conditions and trends in Oliver Lake & its watershed
- Identify potential sources of water quality problems in the Oliver Lake Watershed
- Propose specific directions for future work in the watershed
- Prioritize potential watershed improvement projects

TASK 1: DATA COLLECTION AND REVIEW

- Desktop Mapping
- Historic Data Collection



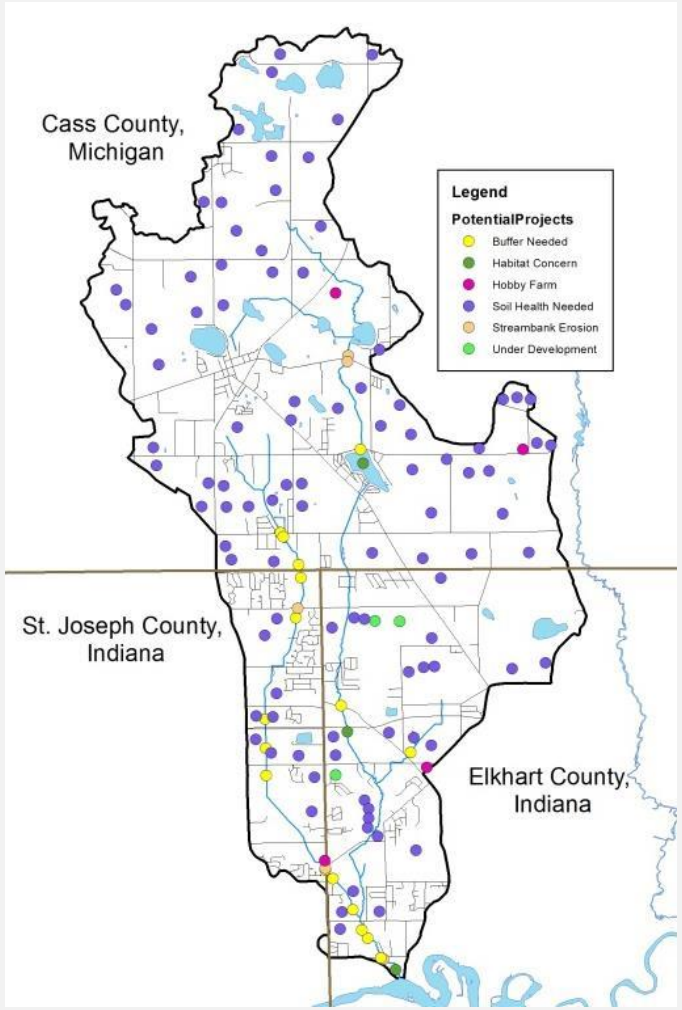


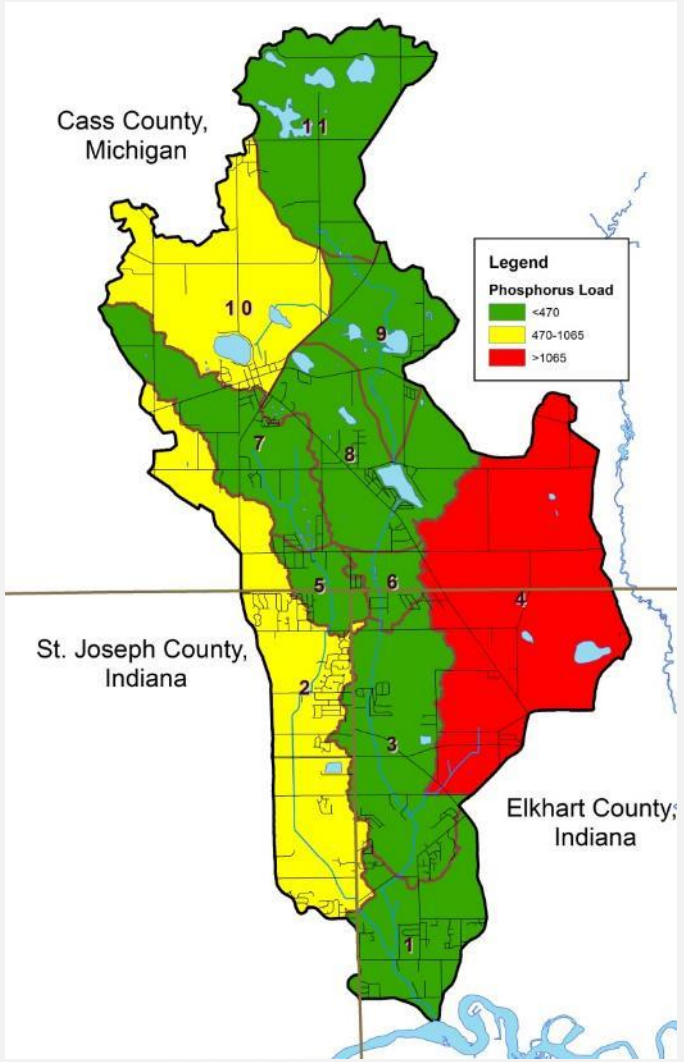
TASK 2: TRIBUTARY AND LAKE DATA COLLECTION

- Storm Flow Stream Sampling (12 sites)
- Stream habitat and aquatic bug sampling (7 sites)
- In-lake monitoring (1 time – deepest point all three lakes)
- Watershed inventory – map concern areas and identify potential solutions

TASK 3: RESULTS ANALYSIS AND INTERPRETATION

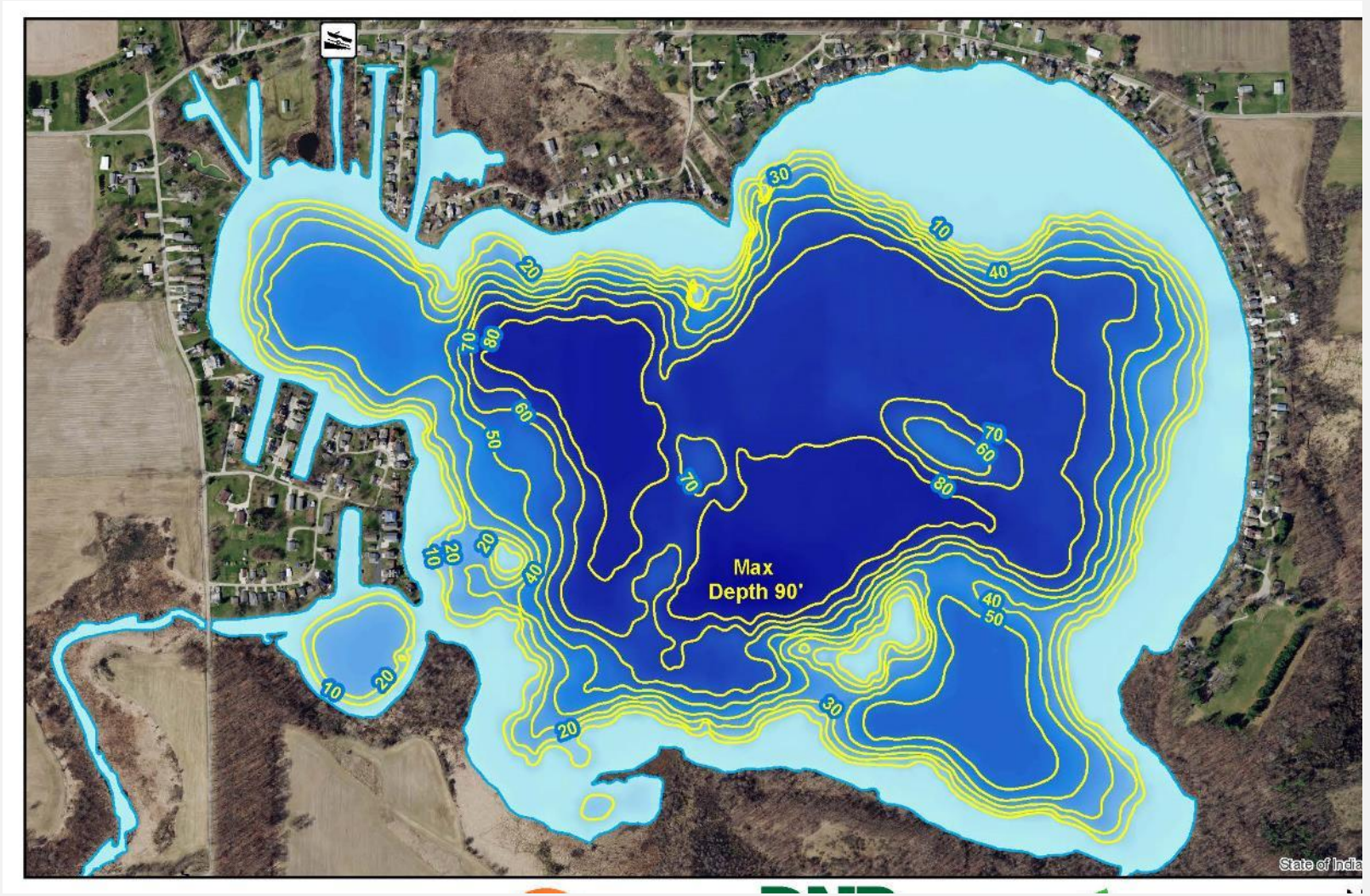
- Data Assessment
- Nonpoint Source Pollution Modeling
- Future Effort Prioritization





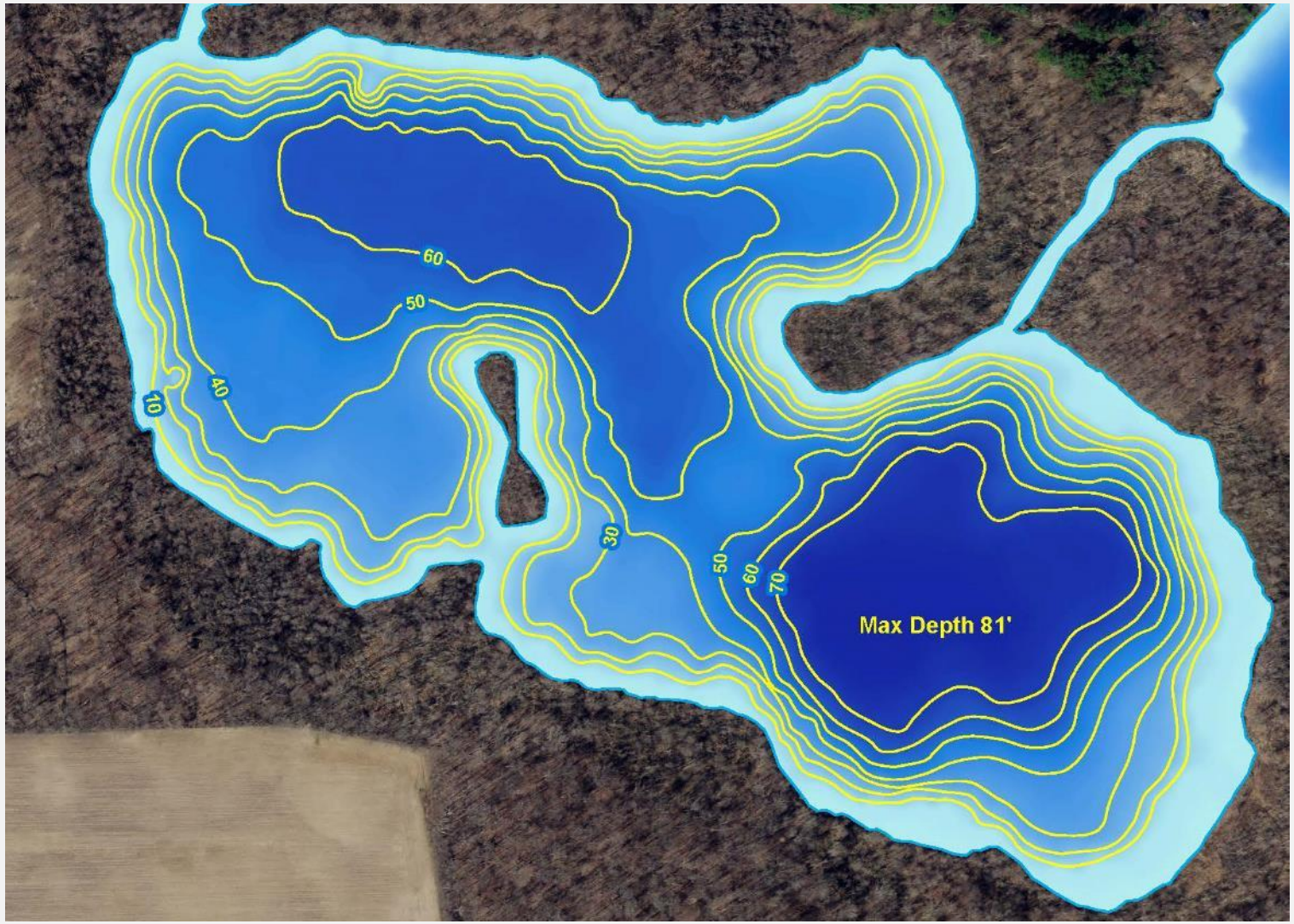
OLIVER LAKE WATERSHED: DATA COLLECTION & MAPPING

OLIVER LAKE



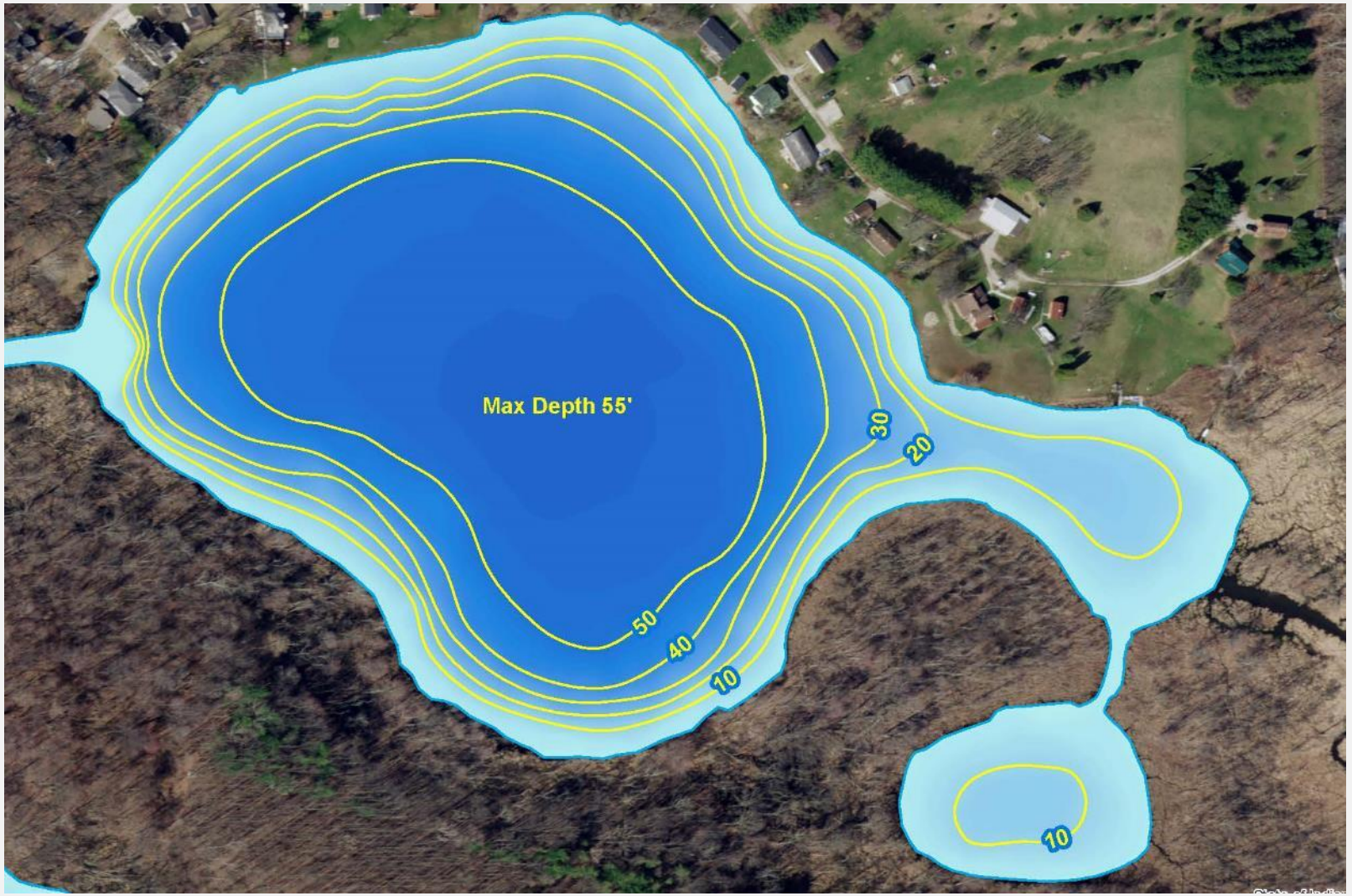
- 394 acres
- 90 feet max depth (2018); 93 feet (1956)
- 40 feet mean depth

OLIN LAKE

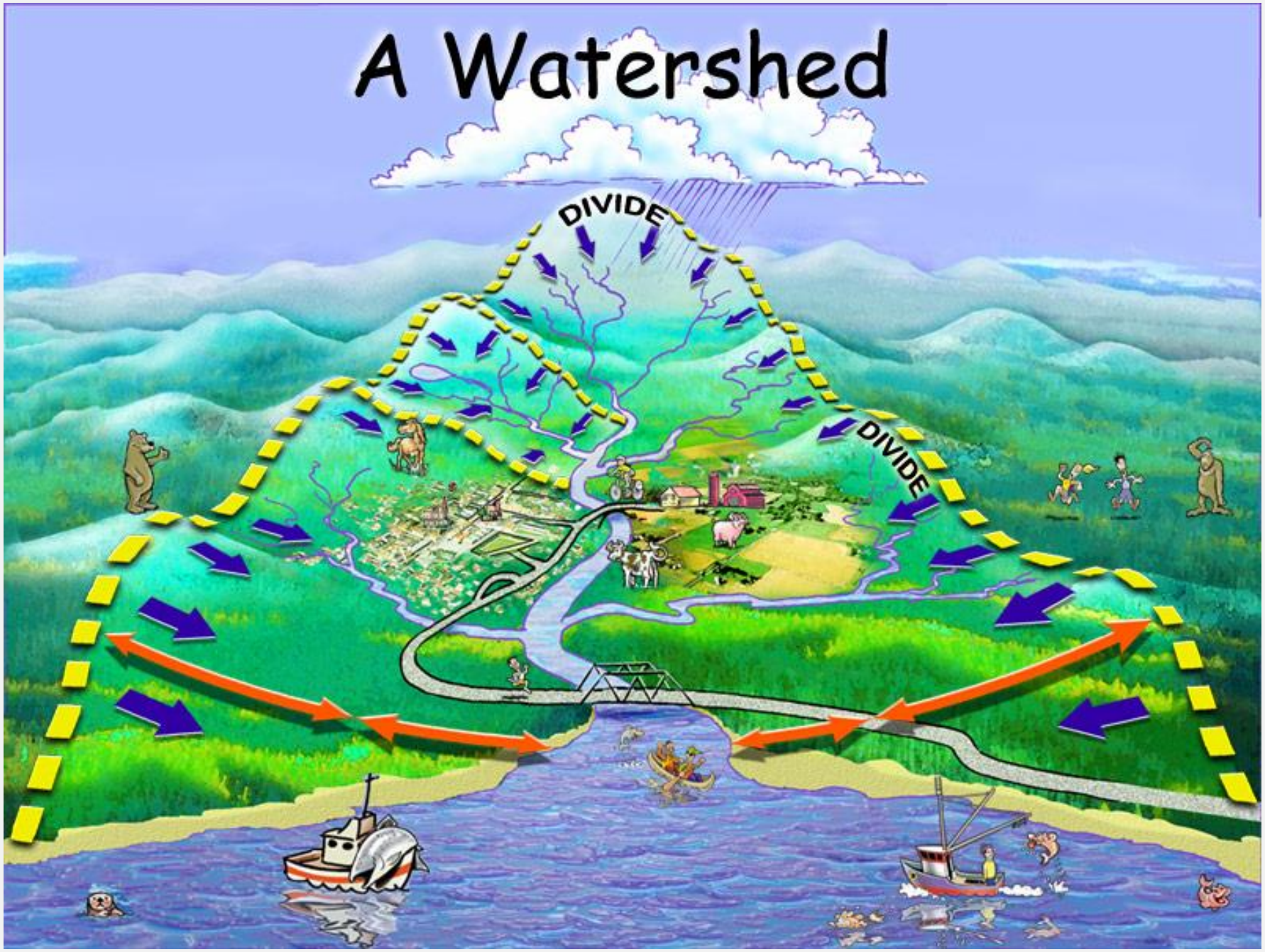


- 394 acres
- 81 feet max depth (2018); 82 feet (1956)
- 38 feet mean depth

MARTIN LAKE



- 26 acres
- 55 feet max depth (2018); 56 feet (1956)
- 34 feet mean depth


A Watershed
DIVIDE
DIVIDE

OLIVER LAKE WATERSHED TRIBUTARIES

Tributaries (Oliver):

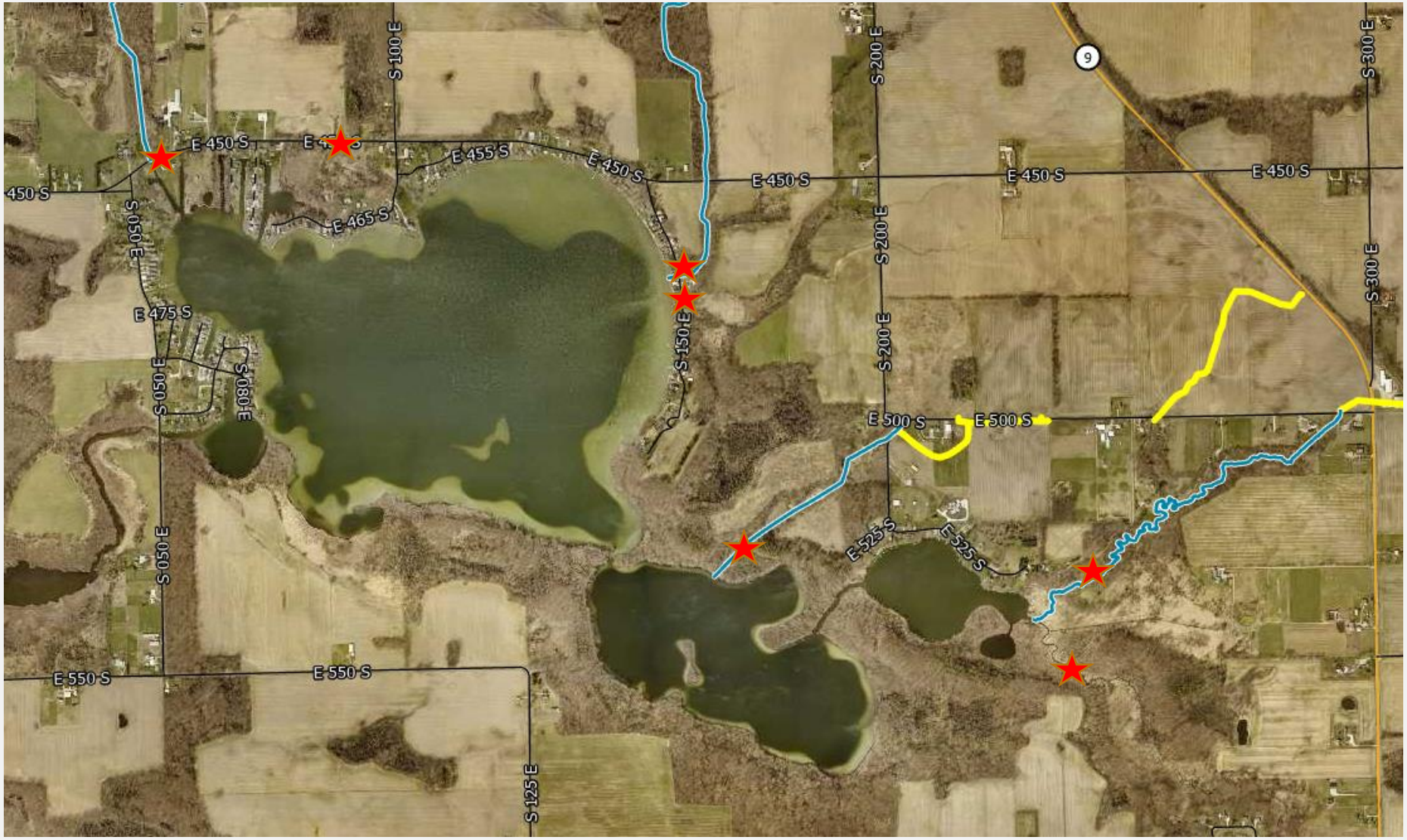
- Dove Creek/Colwell Drain
- Unnamed (CR 450 S)
- Bert Hart Drain
- Winling Creek

Tributaries (Olin):

- Stoner Drain

Tributaries (Martin):

- Truman Flint Drain
- Broughton Drain



OLIVER LAKE WATERSHED

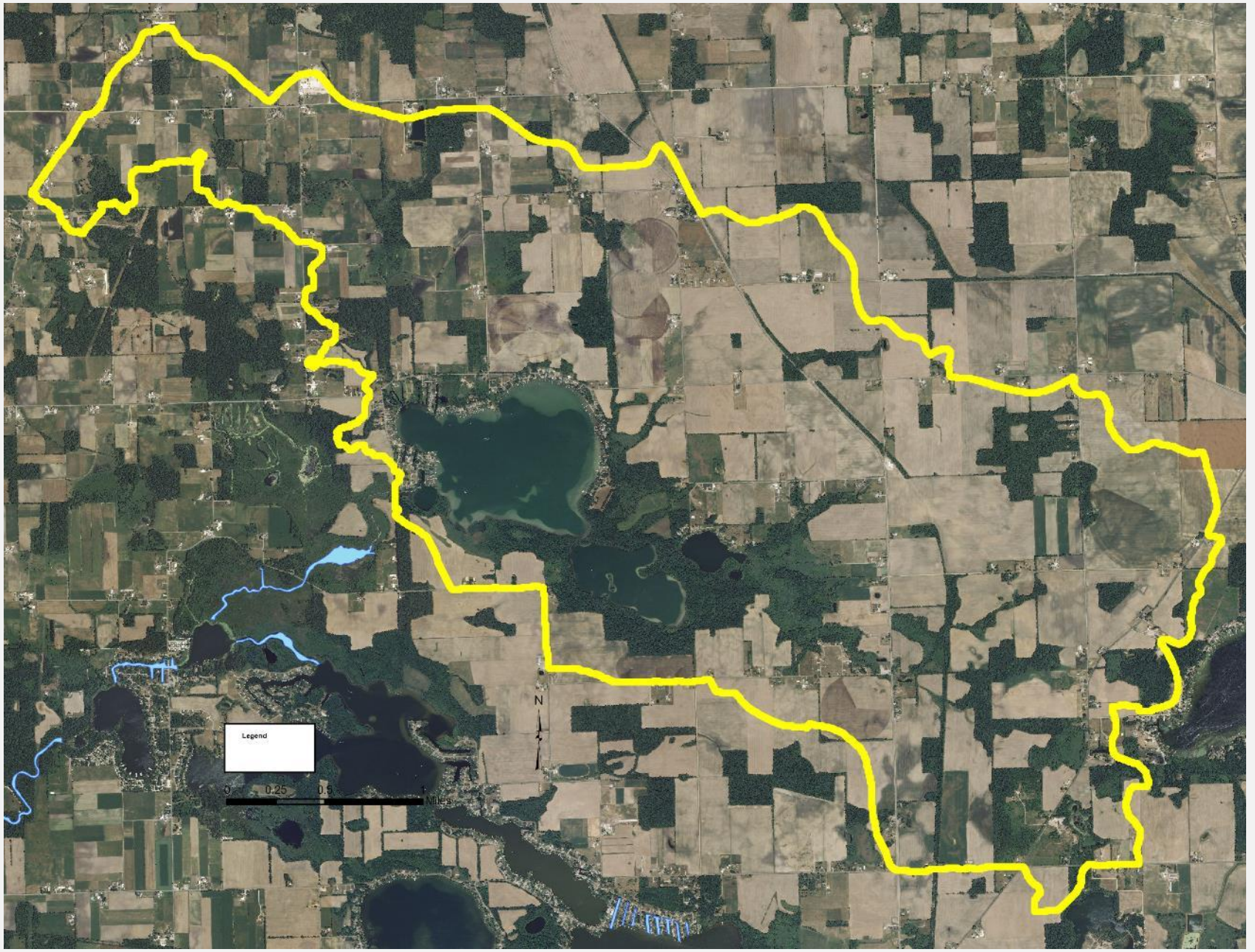
- 7,268 acres
- Watershed area: Lake area =

  Oliver: 17.5:1

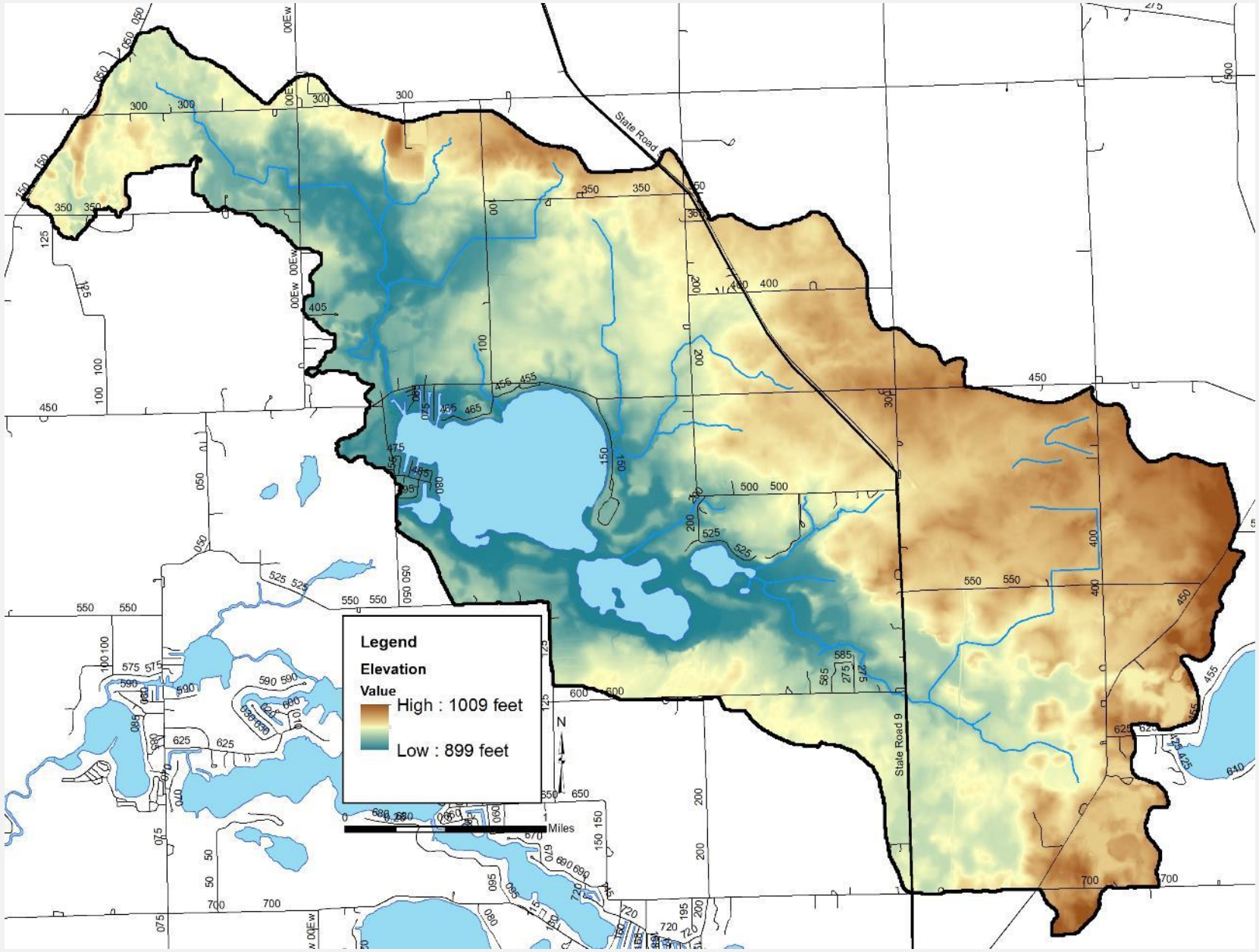
  Olin: 34:1

  Martin: 112:1

(For Oliver Lake ~18 acres of watershed for each acre of lake)



ELEVATION


Legend
Elevation
Value
High : 1009 feet
Low : 899 feet
N
0
1
Miles
State Road 9

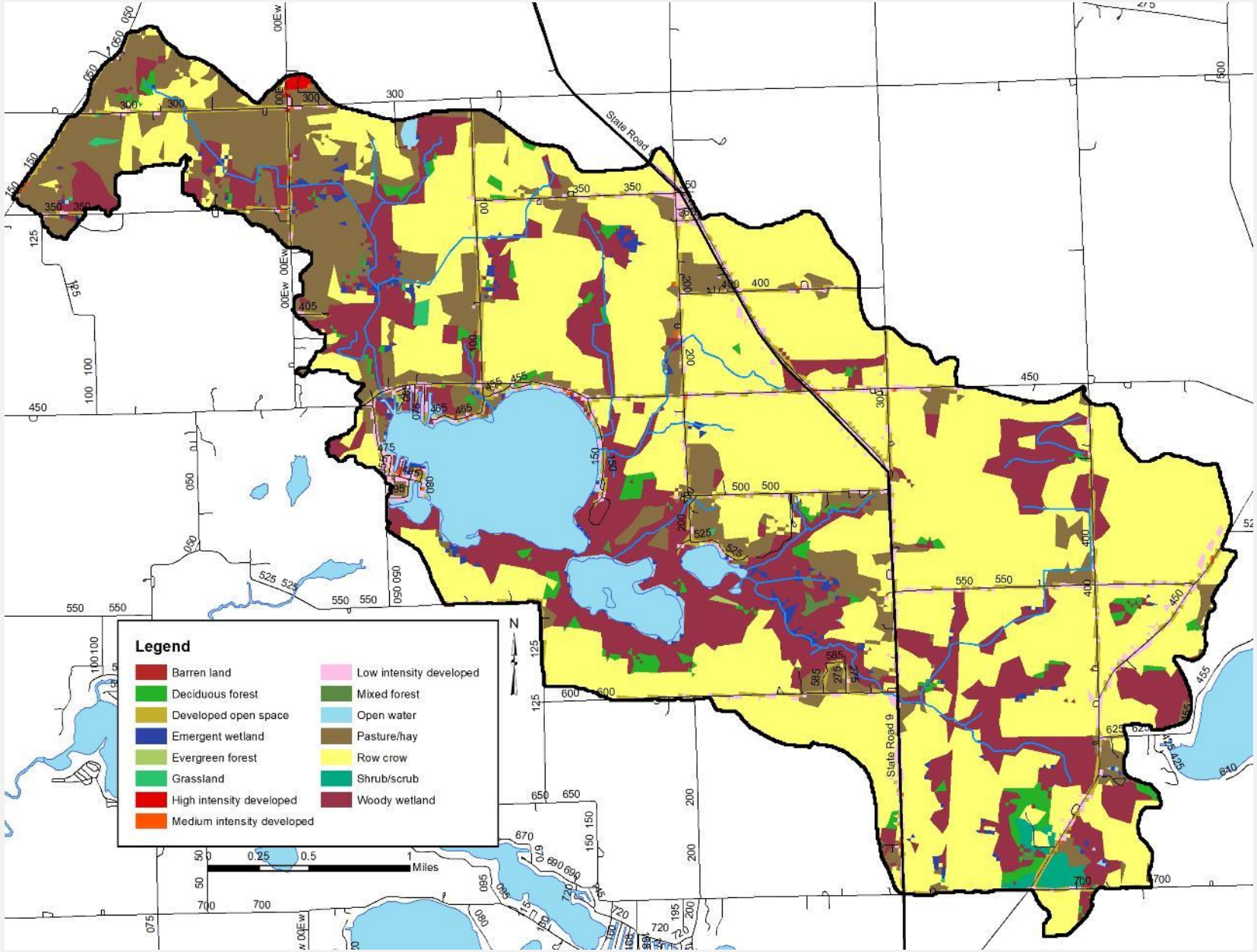
LAND USE

2006 data:

- 70% agriculture (pasture, row crop)
- 15% natural (forested, wetland)
- 11% open water
- 4% developed (residential, commercial)

2022 data:

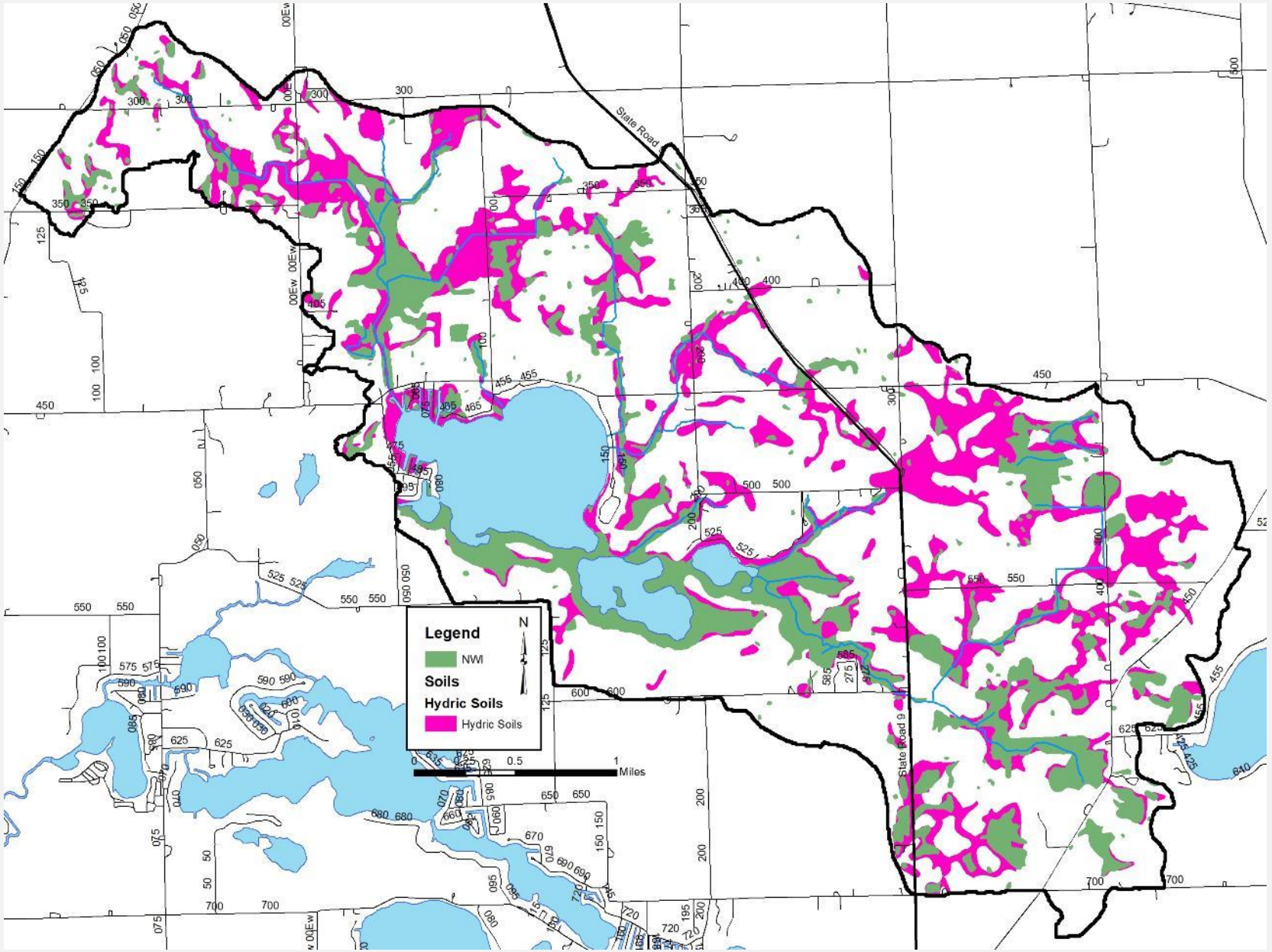
- 59% agriculture
- 22% natural
- 7% open water
- <1%% developed



WETLANDS AND WETLAND SOILS

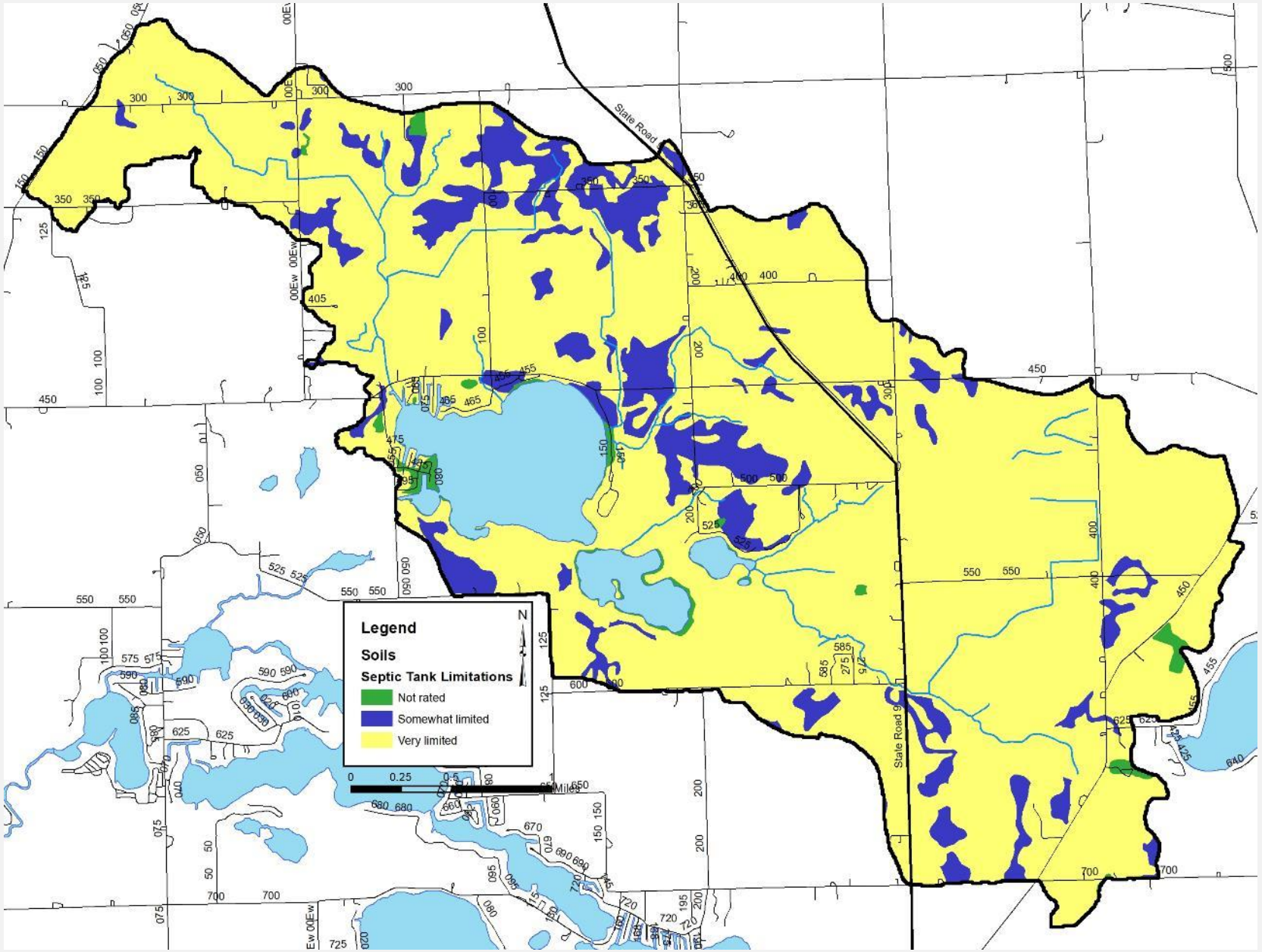
Wetland (hydric) soils: 1,900 acres (26%)
Wetlands: 1,497 acres

403 acres lost or 21%



SEPTIC SOILS

- 5,932 acres of 82% very limited
- 4,409 acres (64%) VL in 2018

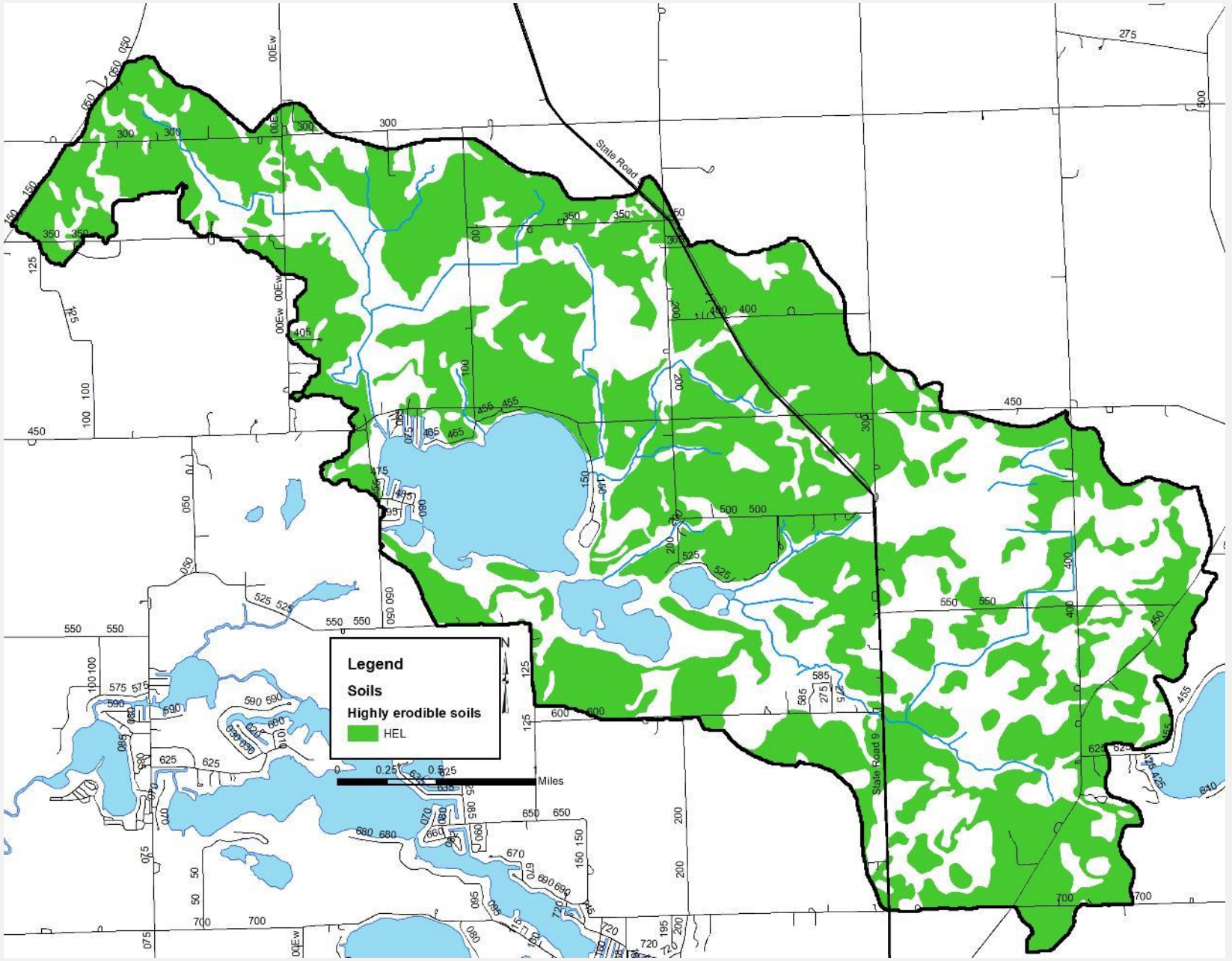


SOIL ERODIBILITY

- 3,945 acres or 54% highly erodible

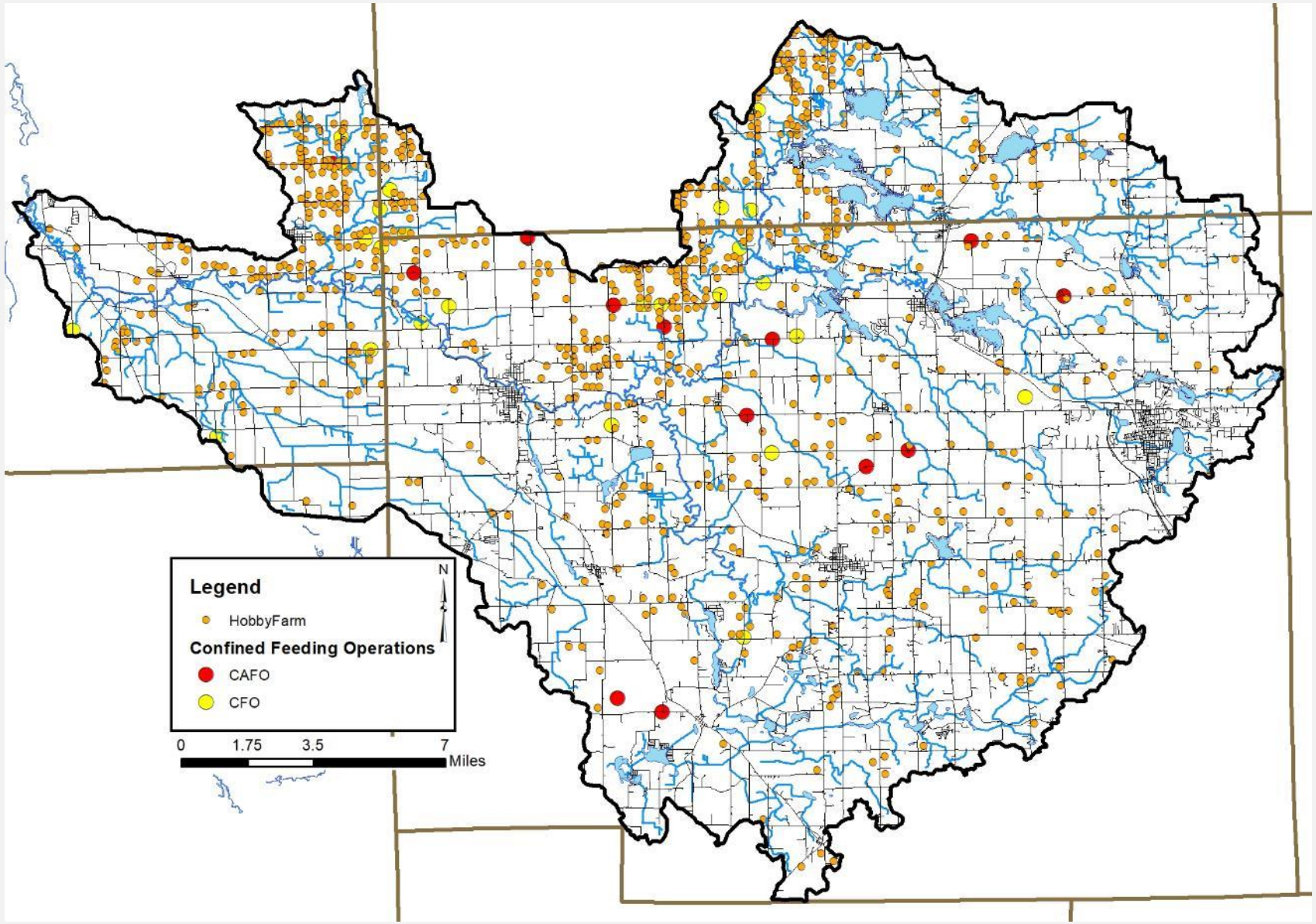
2008 diagnostic study:

- 15 acres highly erodible (0.2%)
- 519 acres potentially highly erodible (8%)

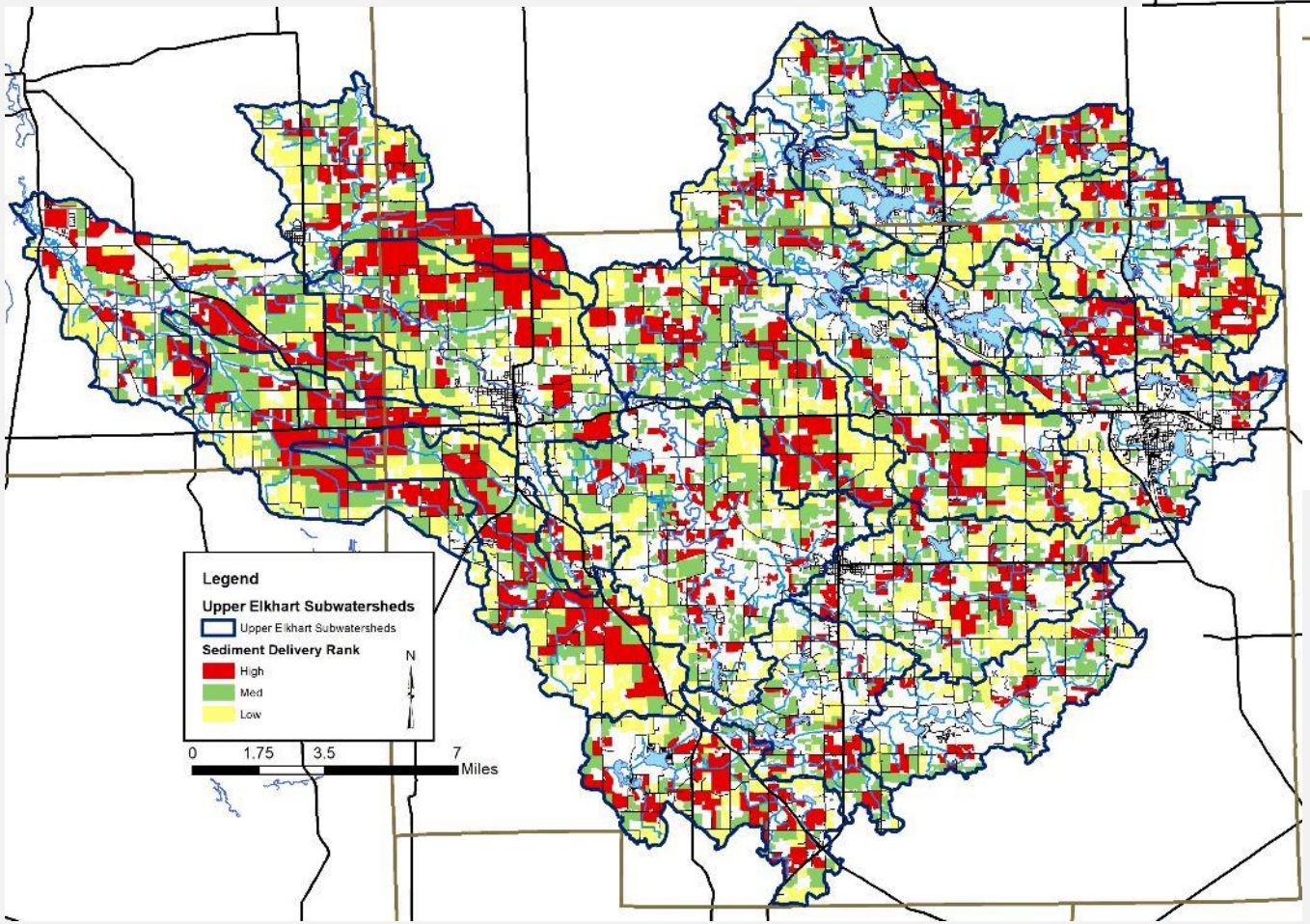


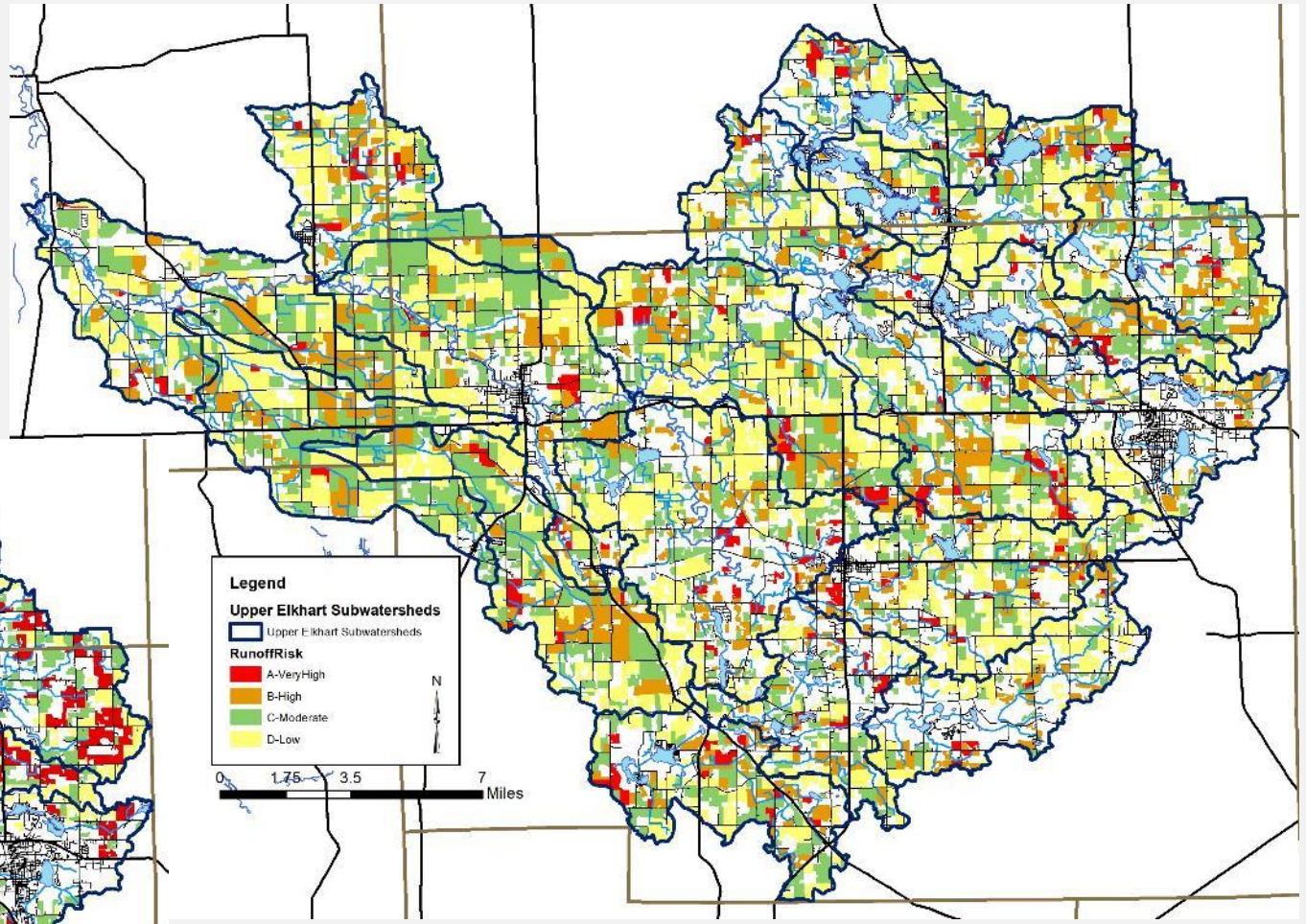
OLIVER LAKE WATERSHED: DATA & MAPS FROM UPPER ELKHART RIVER WATERSHED PLAN

WATERSHED INVENTORY(FROM UPPER ELKHART WMP)



SEDIMENT DELIVERY RANK (FROM UPPER ELKHART WMP)





FE&D Study projects 1 & 2 (reference lines 9 and 10 on the sheet and pages 10 & 13 of the Study) were completed by the Lake Association using LARE land improvement grants in the Fall of 2015.

Project 3 (Line 18 and Page 17) was completed by the DNR division of nature preserves in 2018 using the design/engineering info contained in our LARE-funded feasibility study.

Project 4 (line 25 and page 21) was completed by a property owner adjacent to the inlet on the North side of the lake. A similar stream-bank stabilization project was completed later on the East side of the lake on what is called Krauss Creek.

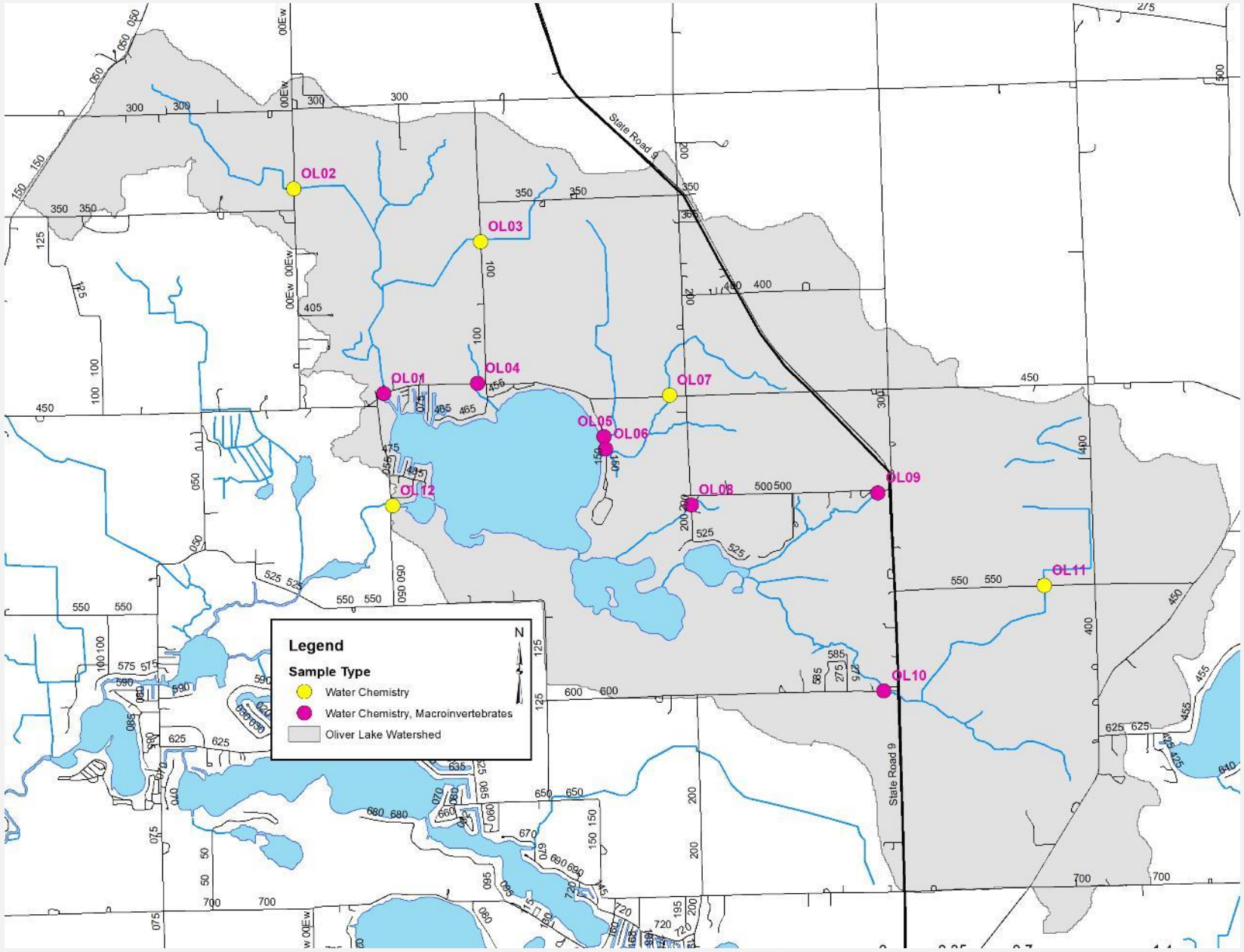
Project 5 (line 11 and Page 21) has not been completed. This parcel of 32 acres is on the East side of Martin Lake and was formerly owned by The Nature Conservancy and later transferred to ACRES Land Trust. ACRES has little interest in pursuing wetland restoration projects in general, much less one on a parcel that is landlocked. Also, after the F&E project DNR gave us some feedback questioning the efficacy of the design that was done. That was before Steve Vaughan's time.

Project 6 (line 27 and Page 28) is not complete. It addresses a sediment/nutrient sheet runoff problem on a 100 or so acre irrigated seed corn/bean field North of Oliver Lake, owned by the Sears family (David & Margaret Sears also own a lakefront home on the East side of Oliver Lake). LaGrange Co SWCD obtained a Great Lakes Restoration Grant in 2016 for the North Branch ER in LaGrange Co in 2016 and this improvement opportunity was a key focus. A grass waterway or WASCOB/retention basin was designed by the consulting firm on the project (SNRT, Inc., formerly of LaGrange Co and no longer in business) but Mr. Sears declined to implement it despite 75% cost-share by the grant. His position was that the lake association needed to prove that his

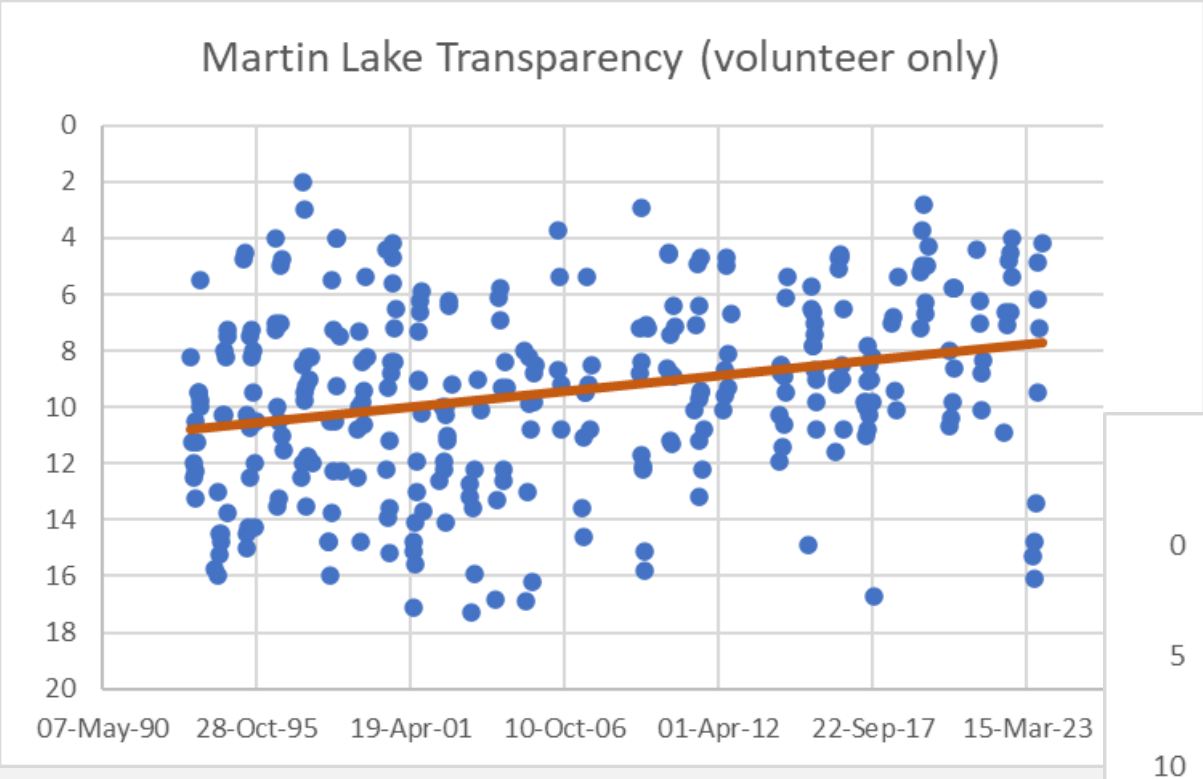
OLIVER LAKE WATERSHED: DATA COLLECTION
WATER QUALITY DATA

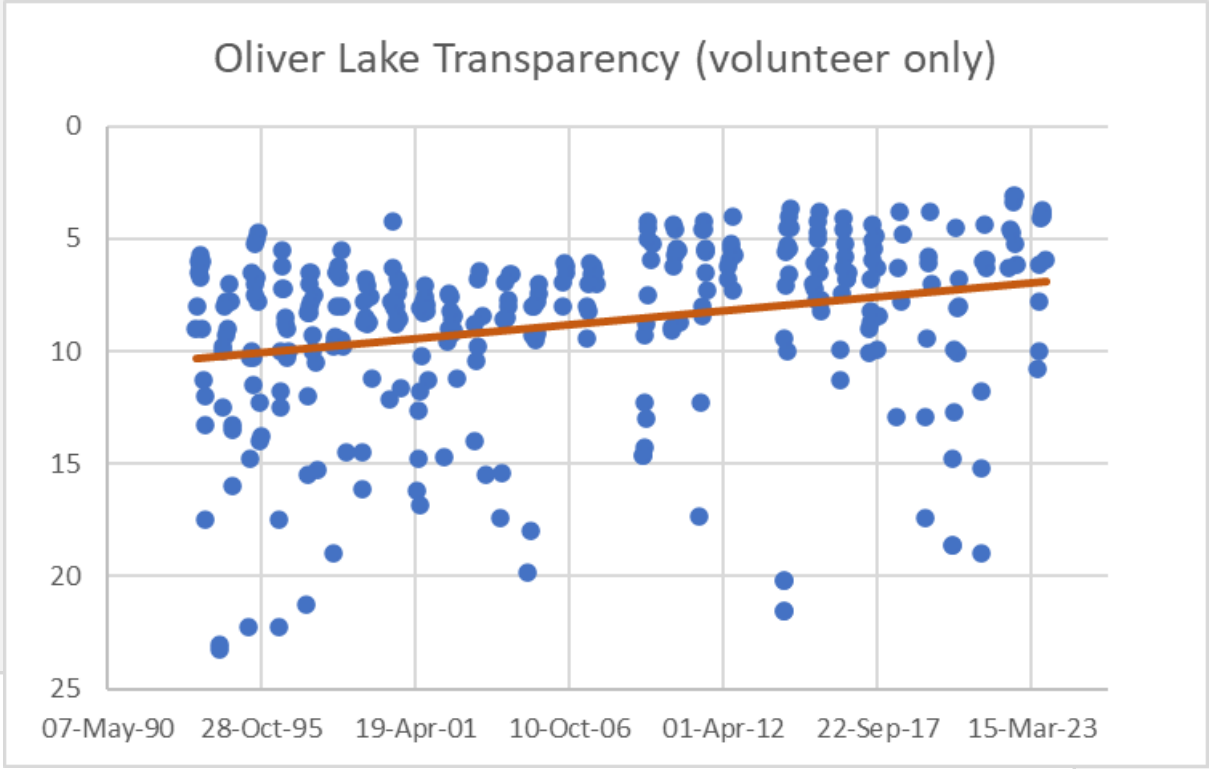
STREAM SAMPLE SITES

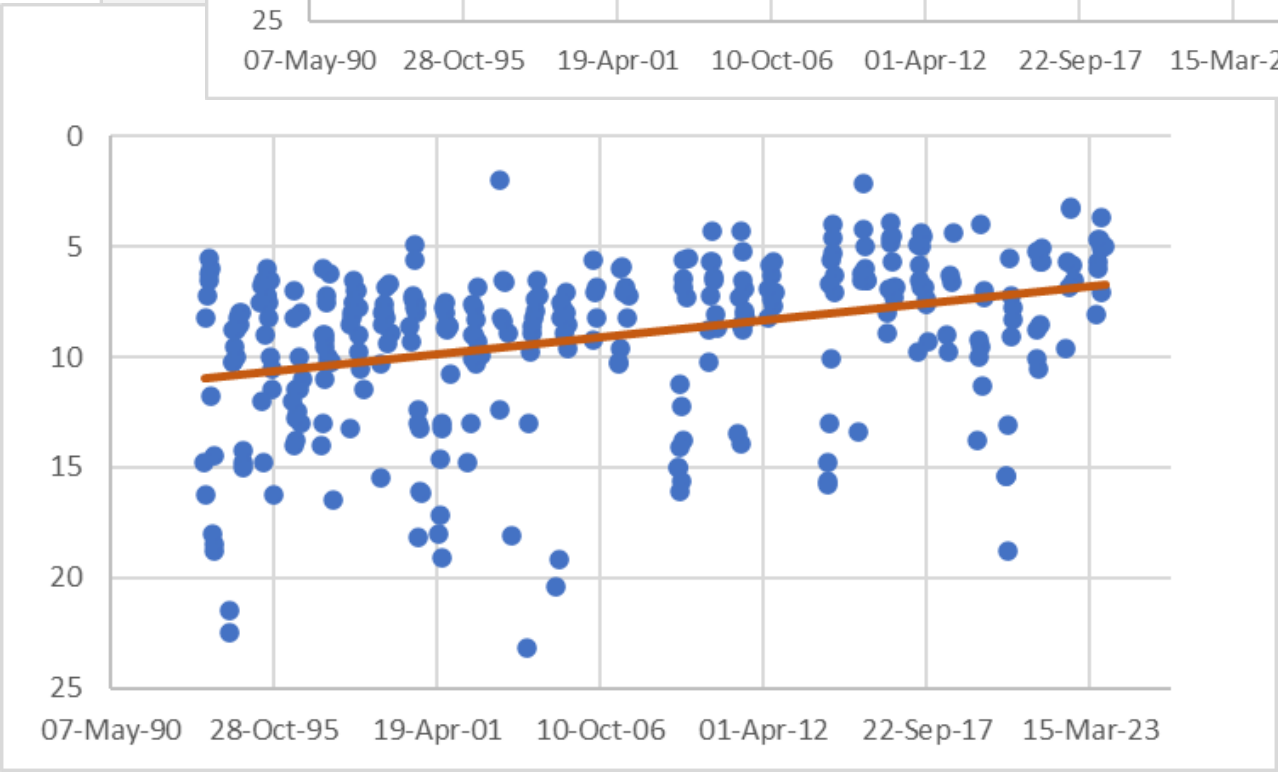
- Base and Strom Flow Stream Sampling (12 sites)
- Macroinvertebrate (bug) and habitat assessment July/August

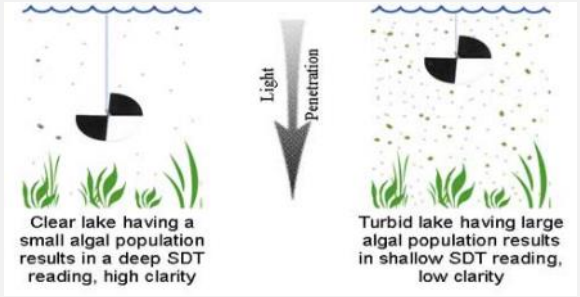


HISTORIC LAKE WATER QUALITY DATA TRANSPARENCY









ICLP volunteer data 1989-2023

OLIN, OLIVER, MARTIN LAKE: HISTORIC WATER QUALITY DATA

	Martin Lake			Olin Lake			Oliver Lake		
Year	Secchi (ft)	TP average	Chl a	Secchi (ft)	TP average	Chl a	Secchi (ft)	TP average	Chl a
1990	11.8	0.016							
1993	12.5	0.175		8.2	0.028	3.03	5.6	0.010	4.08
2000	12.1	0.042	1.02	3.9	0.046	1.22	6.9	0.023	1.14
2003	12.1	0.014	0.10	5.6	0.010	3.40	6.6	0.010	1.43
2006							8.2	0.018	4.86
2008	11.2	0.034	0.89	6.9	0.175	2.00	5.2	0.115	2.60
2010				5.9	0.015	1.15			
2011	12.1	0.021	2.00						
2012							5.6	0.021	3.34
2015	4.6	0.059	20.33				5.6	0.030	5.94
2019				10.2	0.025	1.59	11.5	0.019	4.08
2021				6.7	0.012	2.30			
IN Avg	5.4	0.093	7.25	5.4	0.093	7.25	5.4	0.093	7.25

NEXT STEPS

- Continue to analyze mapped and historic water quality data
  - Indiana Clean Lakes Program, diagnostic study and DNR fisheries report data; locally collected stream data
  - Plant survey data (historic) and recommendations
- Stream base and storm sampling – June for base sampling and when it rains next
- Base flow biological stream sampling (bugs!)
- In lake monitoring – July or August (worst case condition)
- Utilize data gathered as part of the Upper Elkhart Watershed Planning project to supplement this effort
- Inventory – what should this look like in the Oliver Lake Watershed?
- Identify problem areas and develop future projects suggestions (prioritize)
- Calculate potential impacts
- Fall 2024/Spring 2025 public meeting to share findings
- January 2025 – application due for Implementation
- Fall 2025 – IMPLEMENT!

HOW YOU CAN HELP?

- Provide feedback
  - What are we missing?
  - Are there known problem areas in the lakes (shoreline erosion, aquatic plant problems, etc)?
  - What about the watershed (streambank erosion, ravine erosion, narrow buffers, logjams, livestock access, areas where dumping occurs, etc)?
  - Any available water quality data?
  - Are updates or repairs needed for previously-installed projects?

QUESTIONS?

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