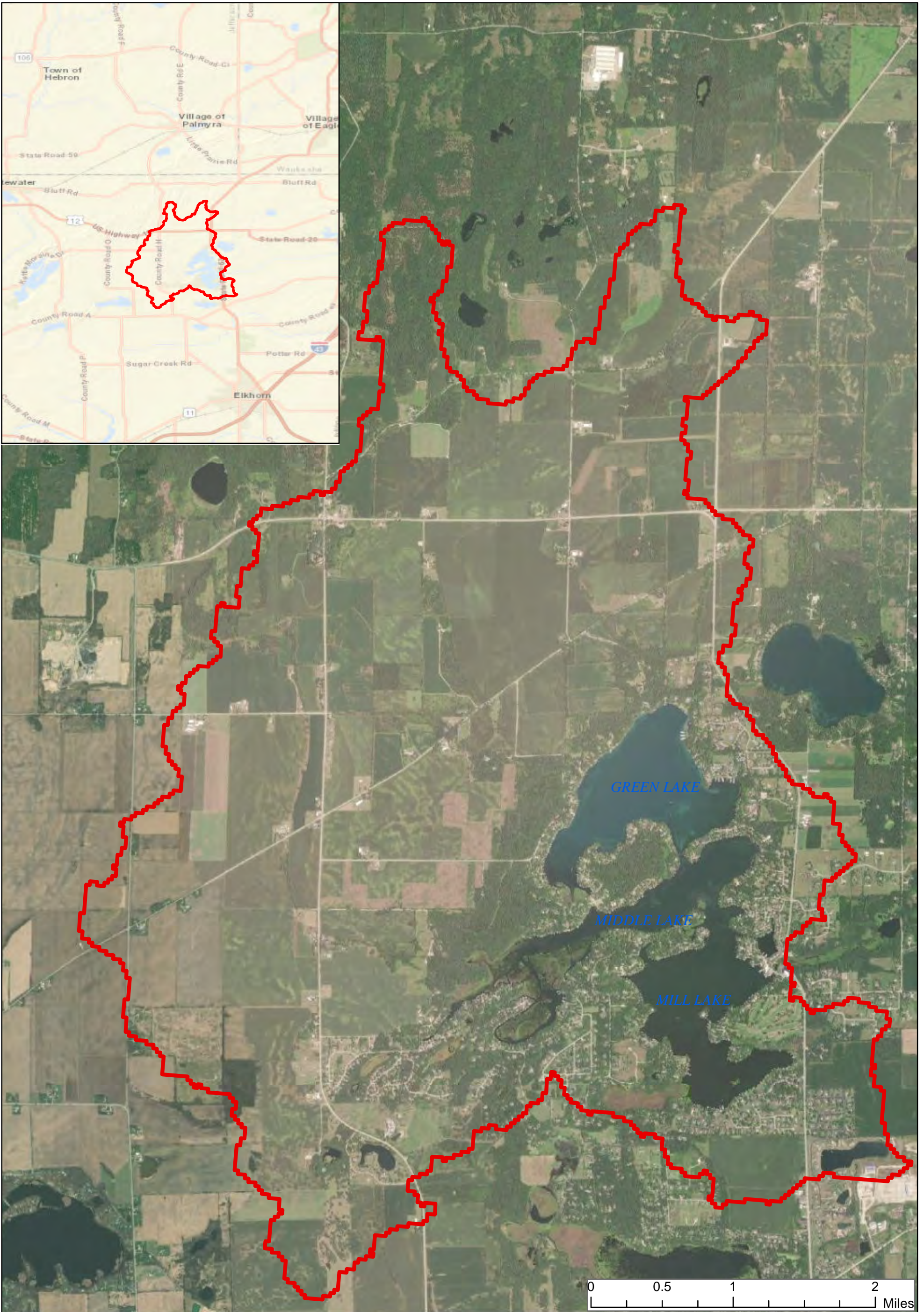
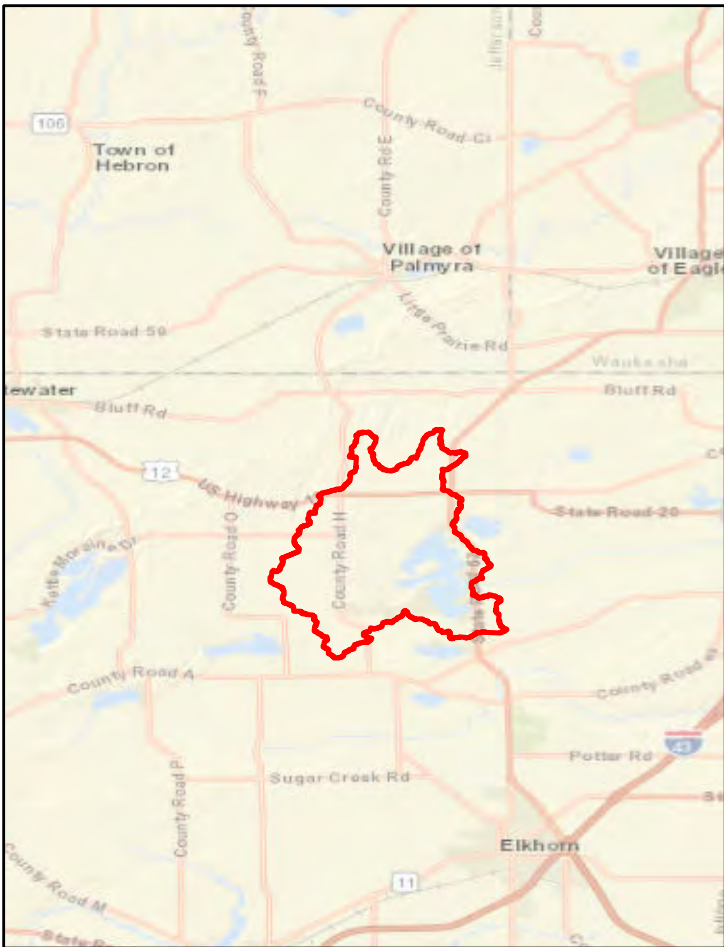



Appendix A: Supporting Figures



Legend

 Watershed Boundary

Watershed Boundary to Route 12 Outlet = 13.1 square miles

Delineation performed by USGS Stream Stats

Website: <https://streamstats.usgs.gov/ss/>



**Lauderdale Lakes
Location Map**

Lauderdale Lakes Lake Management District (LLMD)
Walworth County, Wisconsin

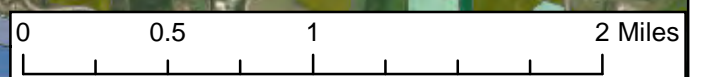
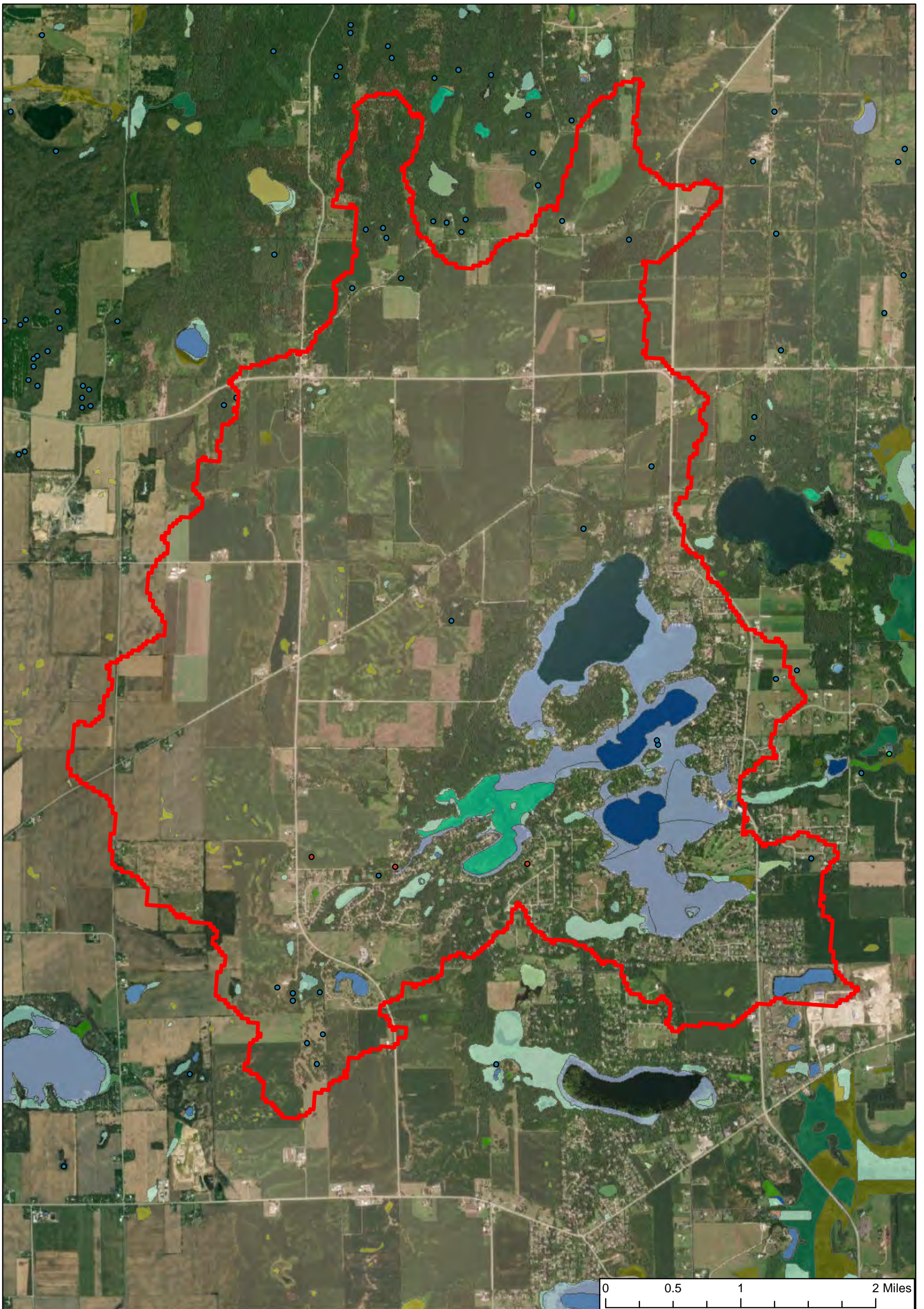
Geosyntec
consultants

Figure

1

Mequon, WI - MOW5536

November 2021



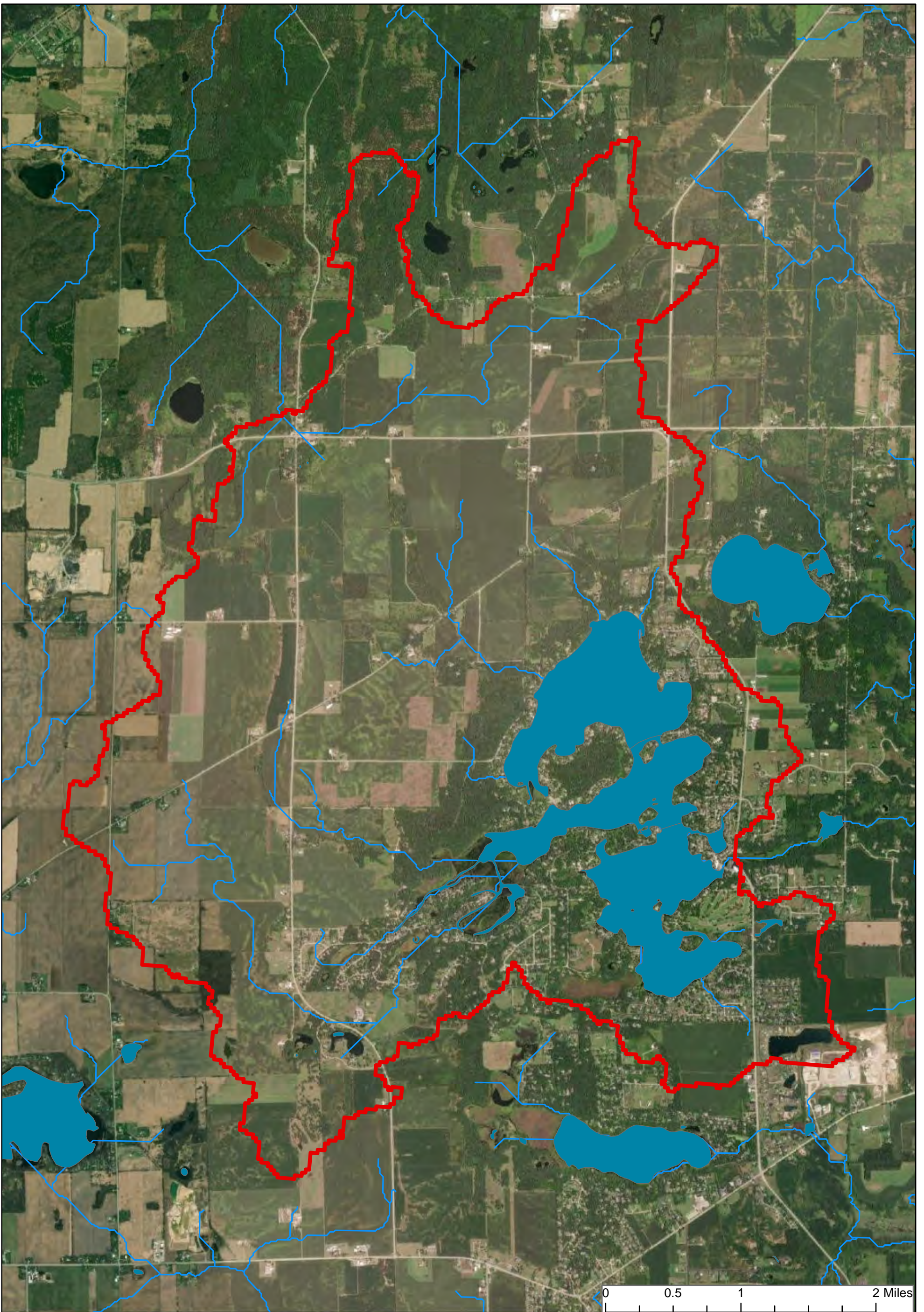
Aquatic bed	Filled/draind wetland, Forested	Open Water
Aquatic bed, Open Water	Filled/draind wetland, Forested, Emergent/wet meadow	Scrub/shrub
Deep water lake	Filled/draind wetland, Scrub/shrub	Scrub/shrub, Emergent/wet meadow
Emergent/wet meadow	Filled/draind wetland, Scrub/shrub, Emergent/wet meadow	Lauderdale Lake Watershed Boundary (Stream Stats)
Emergent/wet meadow, Aquatic bed	Flats/unvegetated wet soil	Excavated pond
Emergent/wet meadow, Flats/unvegetated wet soil	Forested	Filled excavated pond
Emergent/wet meadow, Open Water	Forested, Emergent/wet meadow	Filled/draind wetland
Filled/draind wetland, Emergent/wet meadow	Forested, Open Water	Wetland too small to delineate
Filled/draind wetland, Flats/unvegetated wet soil	Forested, Scrub/shrub	

Lauderdale Lakes Wetland Inventory

Lauderdale Lakes Lake Management District (LLMD)
Walworth County, Wisconsin

Figure
2

Mequon, WI - MOW5536
November 2021



- WDNR Identified Lakes/Ponds
- Lauderdale Lake Watershed Boundary (Stream Stats)
- Overland Flow Path

Overlad flow paths defined using ArcGIS builtin Arc Hydro function and Walworth County one foot contours.



0 0.5 1 2 Miles

**Lauderdale Lakes
Existing Hydrology**

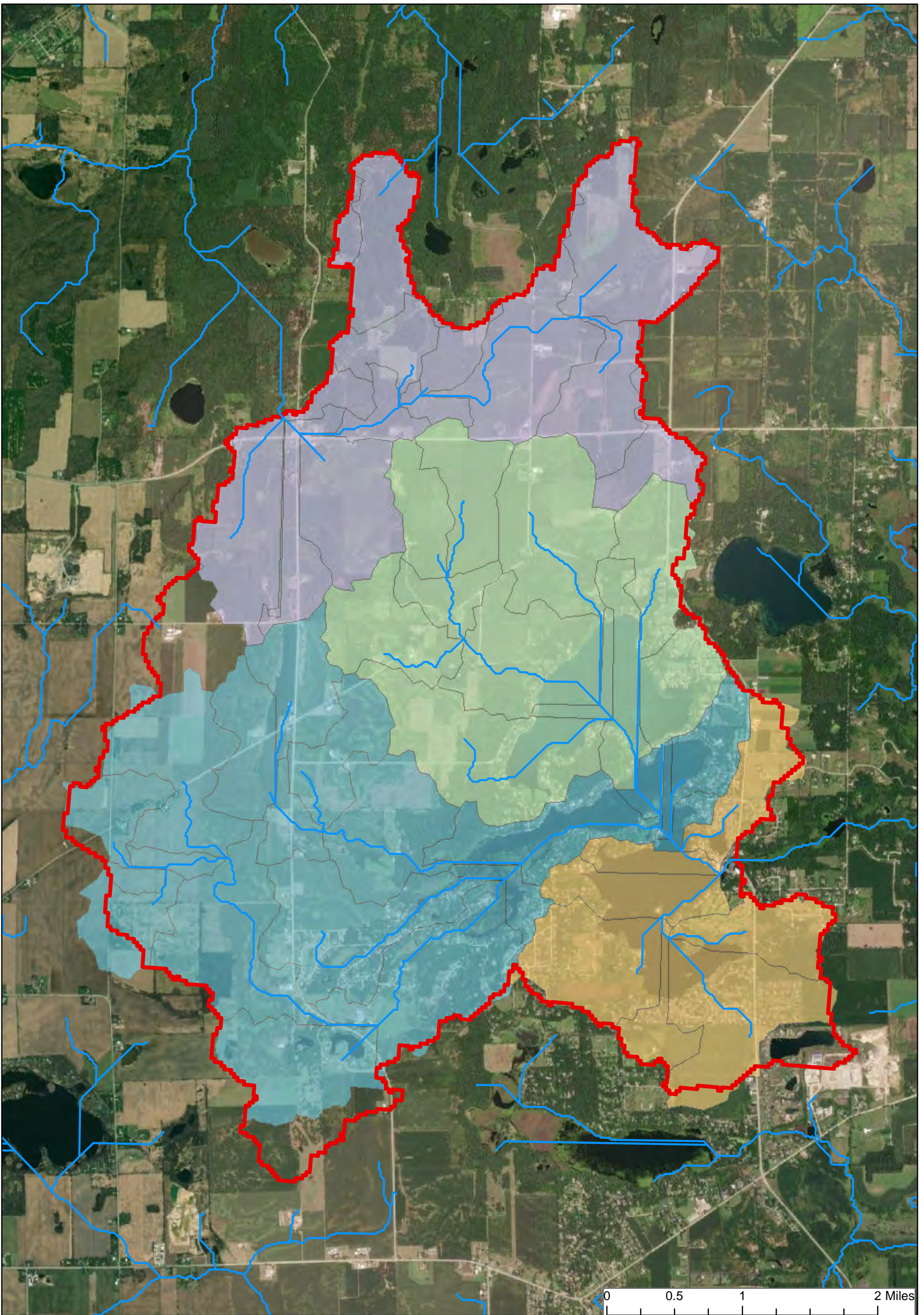
Lauderdale Lakes Lake Management District (LLMD)
Walworth County, Wisconsin

Geosyntec
consultants

**Figure
3**

Mequon, WI - MOW5536

November 2021



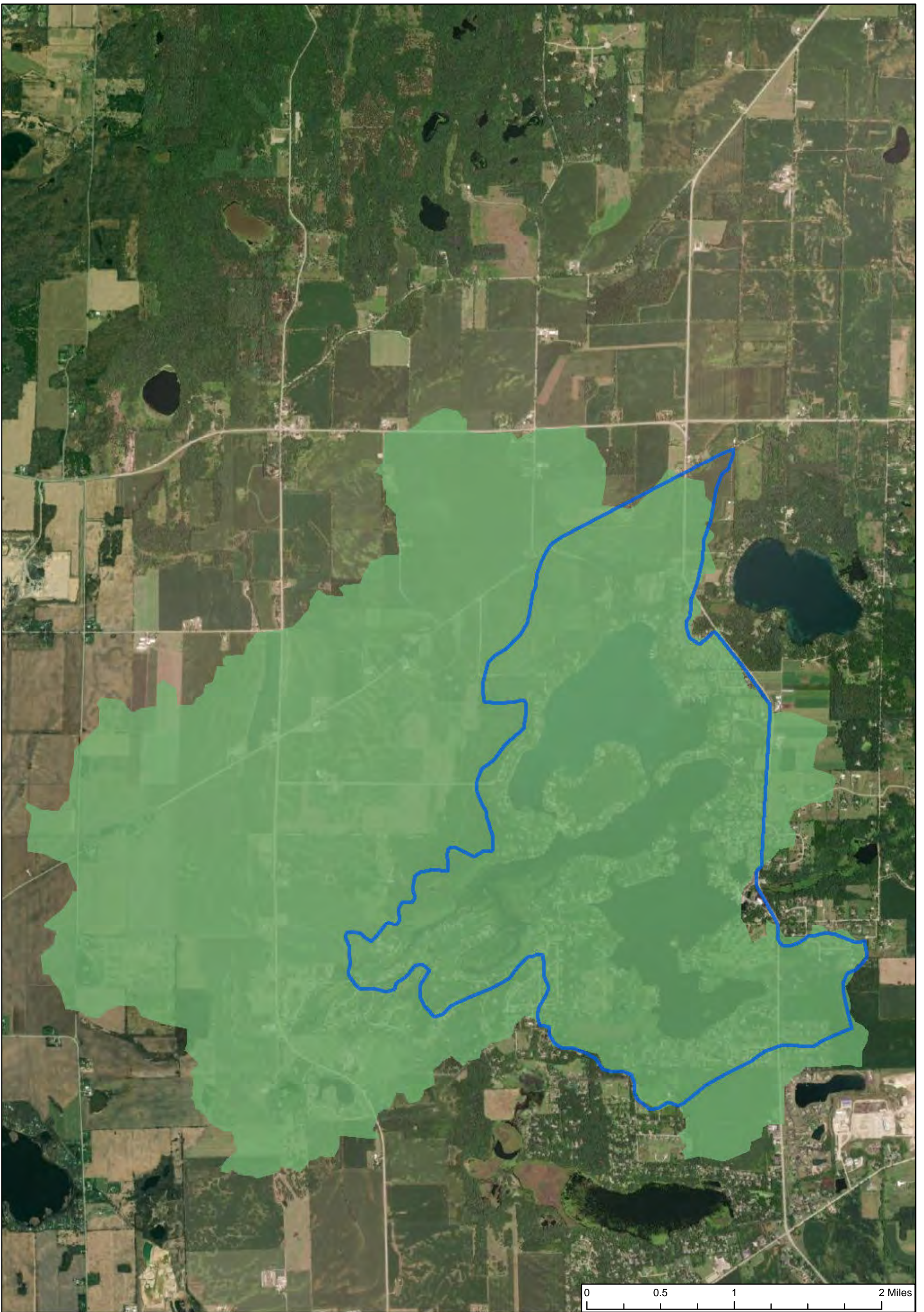
- Middle Lake Watershed
- Green Lake Watershed
- Mill Lake Watershed
- Not Tributary
- Lauderdale Lake Watershed Boundary (Stream Stats)
- Overland Flow Path

Overlad flow paths defined using ArcGIS builtin Arc Hydro function and Walworth County one foot contours.

0 0.5 1 2 Miles



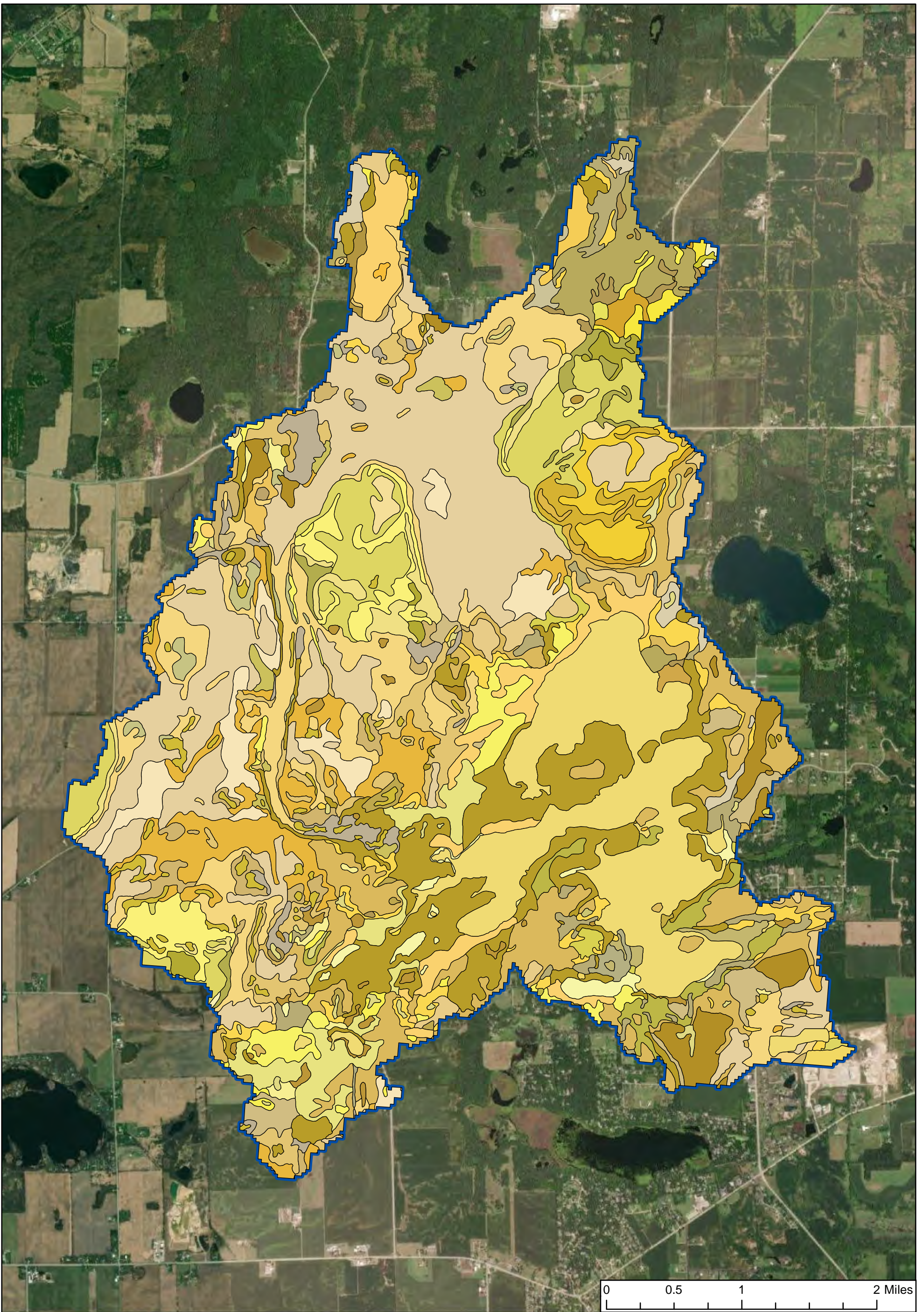
<p>Lauderdale Lakes Updated Tributary Areas</p> <p>Lauderdale Lakes Lake Management District (LLMD) Walworth County, Wisconsin</p>	
<p>Geosyntec consultants</p>	<p>Figure 4</p>
Mequon, WI - MOW5536	November 2021



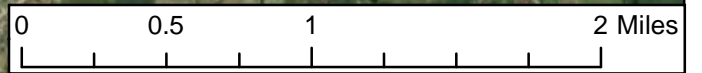
Geosyntec Study Area
 USGS Study Area



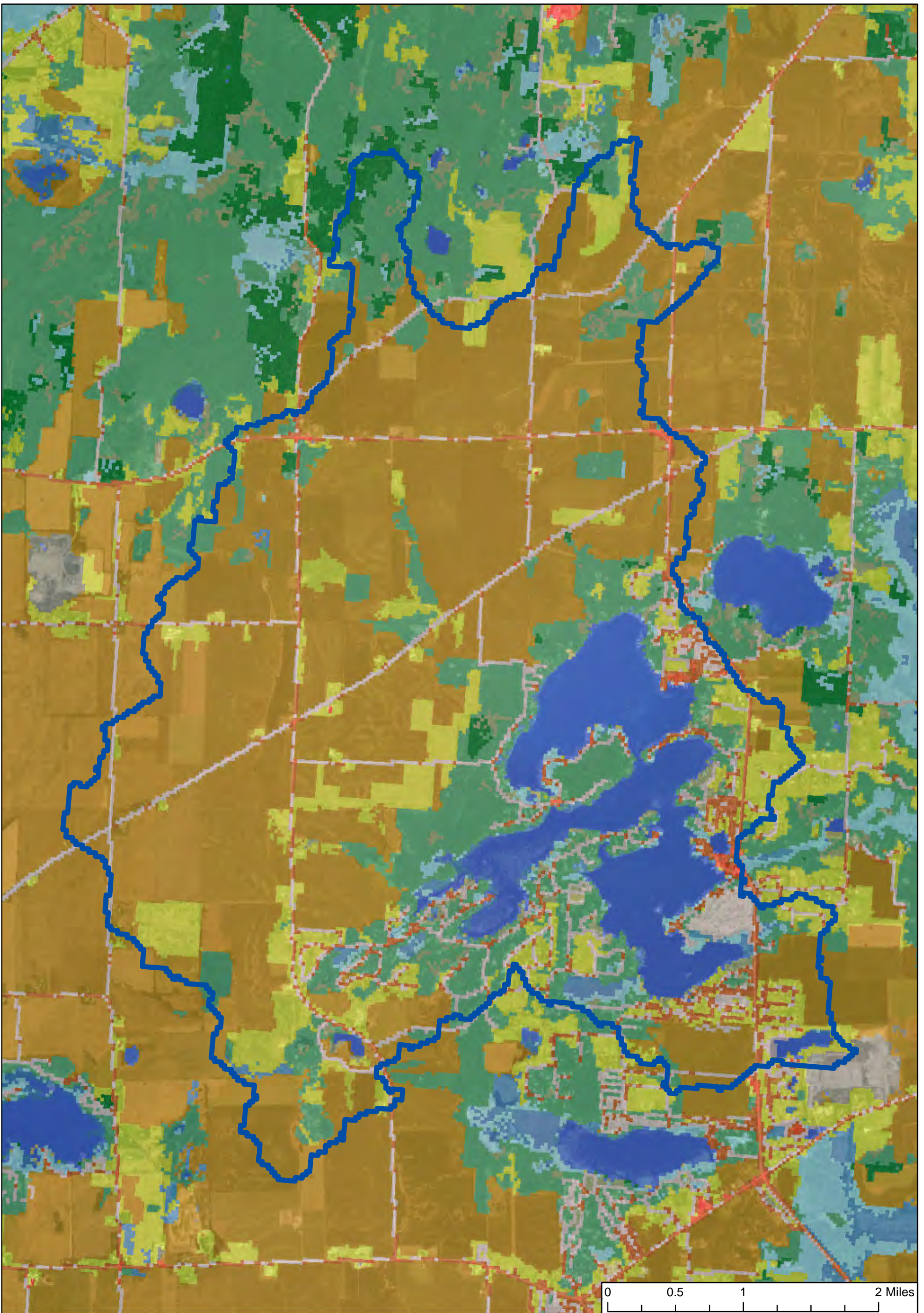
Lauderdale Lakes USGS Study Area Boundary VS Geosyntec Study Areas Lauderdale Lakes Lake Management District (LLLMD) Walworth County, Wisconsin	
	Figure 5
Mequon, WI - MOW5536	November 2021



Soil Type	CrE2	GP	MpB	PsC	WhA
Ac	CtB	GsB	MpC2	PtA	WhB
BpB	CtE	GsC2	MuA	PtB	WhC2
BpC2	Dt	GsD2	MuB	PtC2	Lauderdale Lake Watershed
CeB2	EgA	HeB	MvB	RaA	Boundary (Stream Stats)
CeC2	FmB	HfE	MwD2	RsF	
CeD2	FmC2	Ht	MxC2	SeA	
CfC3	FoB	JuA	MxD2	SeB	
CfD3	FoC2	LyB	Pa	Sm	
CkD2	FsA	LyC2	Ph	TxA	
CiC2	FsB	LzD2	PsA	W	
CrD2	FsC2	Mf	PsB	WeA	



Lauderdale Lakes Soils Map Lauderdale Lakes Lake Management District (LLMD) Walworth County, Wisconsin	
	Figure 6
Mequon, WI - MOW5536	November 2021



2016 National Land Cover Database

- Woody Wetlands
- Shrub/Scrub
- Open Water
- Mixed Forest
- Herbaceous

- Hay/Pasture
- Evergreen Forest
- Emergent Herbaceous Wetlands
- Developed, Open Space
- Developed, Medium Intensity
- Developed, Low Intensity
- Developed, High Intensity
- Deciduous Forest
- Cultivated Crops
- Barren Land
- Lauderdale Lake Watershed Boundary (Stream Stats)

0 0.5 1 2 Miles



Lauderdale Lakes Land Cover

Lauderdale Lakes Lake Management District (LLMD)
Walworth County, Wisconsin

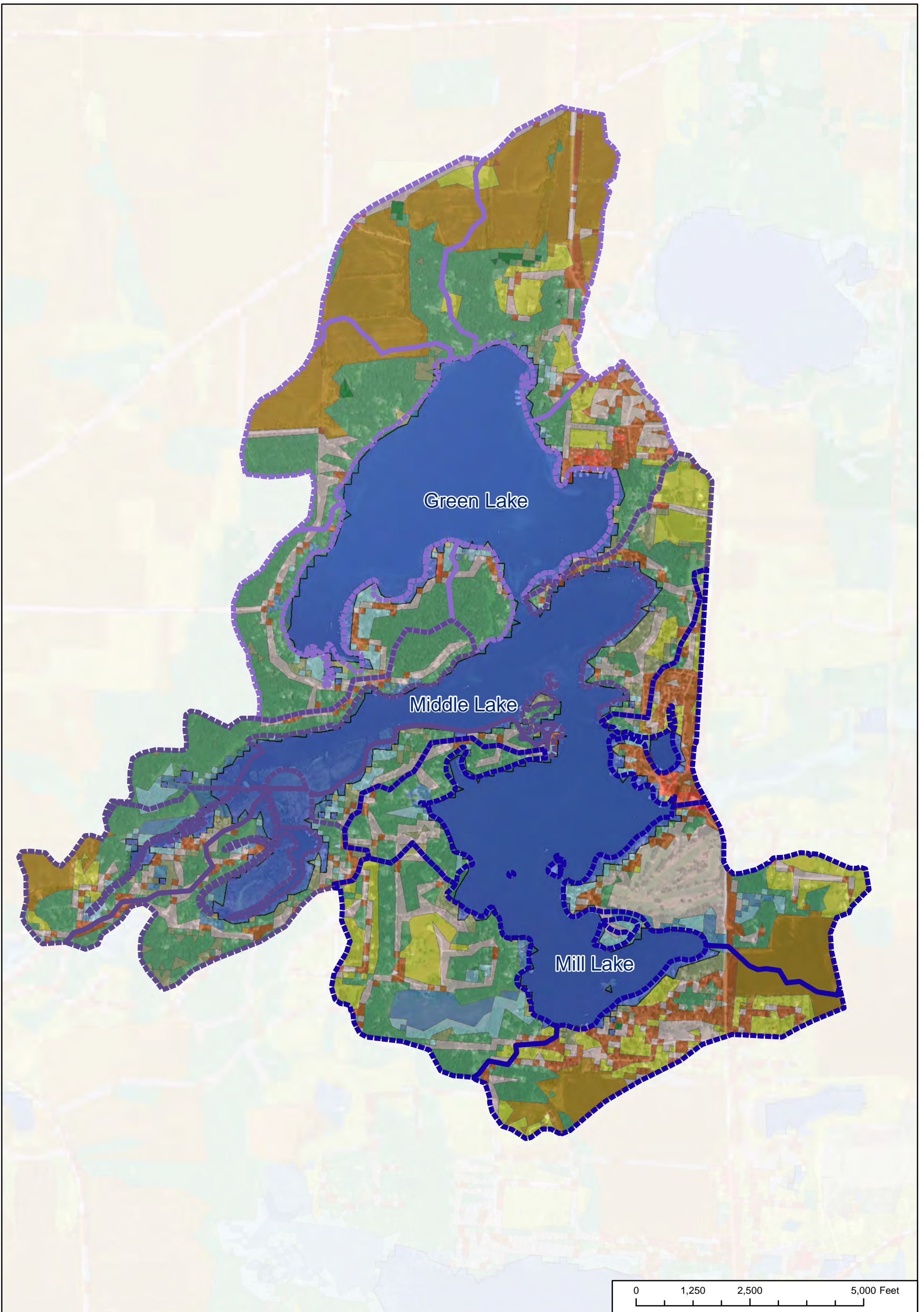
Geosyntec
consultants

Figure

7

Mequon, WI - MOW5536

November 2021

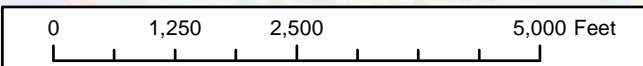


Watershed

- Green Lake
- Middle Lake
- Mill Lake

2016 National Land Cover Database

- | | | |
|---------------------------|------------------------------|----------------|
| Barren Land | Developed, Medium Intensity | Herbaceous |
| Cultivated Crops | Developed, Open Space | Mixed Forest |
| Deciduous Forest | Emergent Herbaceous Wetlands | Open Water |
| Developed, High Intensity | Evergreen Forest | Shrub/Scrub |
| Developed, Low Intensity | Hay/Pasture | Woody Wetlands |



Lauderdale Lakes Tributary Area Land Cover Overview

Lauderdale Lakes Lake Management District (LLMD)
Walworth County, Wisconsin

Geosyntec
consultants

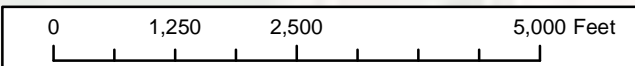
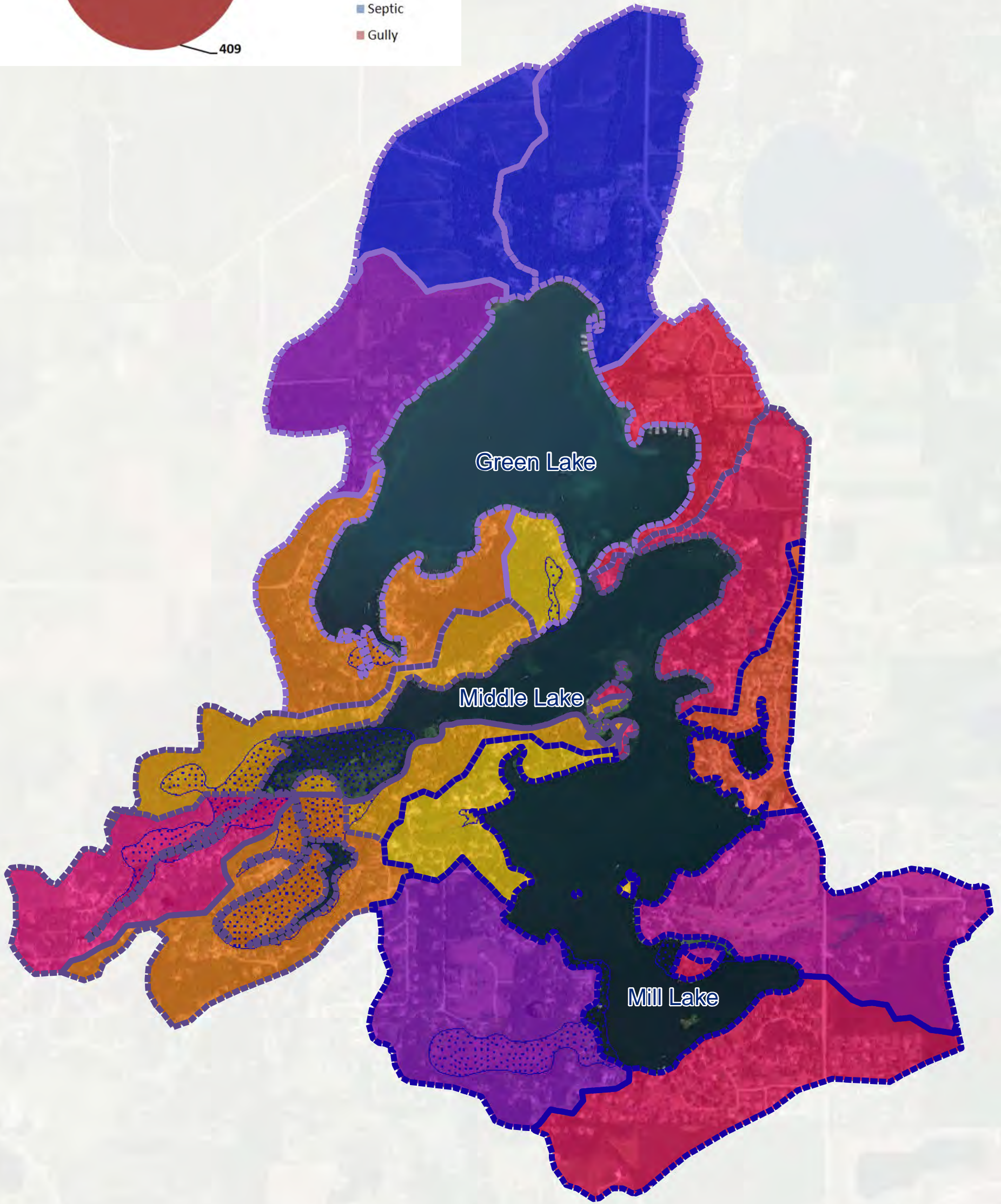
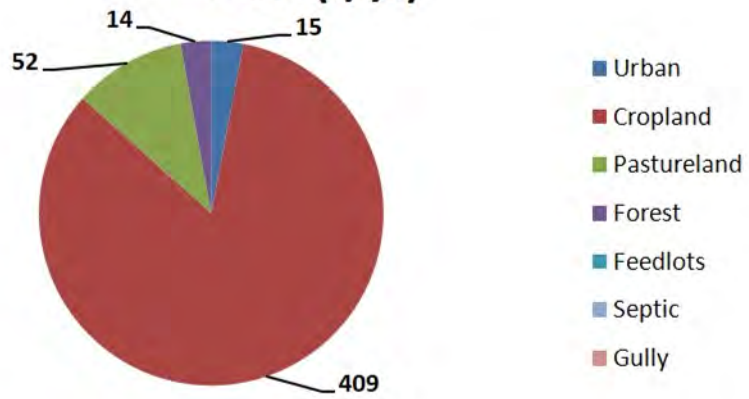
Figure

8

Mequon, WI - MOW5536

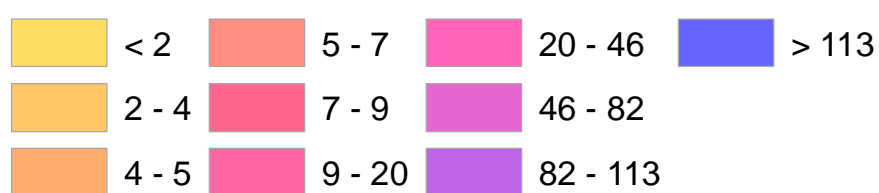
December 2021

LLLD Total Sediment Load by Land Uses (t/yr)



- Sensitive Areas
- Watershed**
- Green Lake
- Middle Lake
- Mill Lake

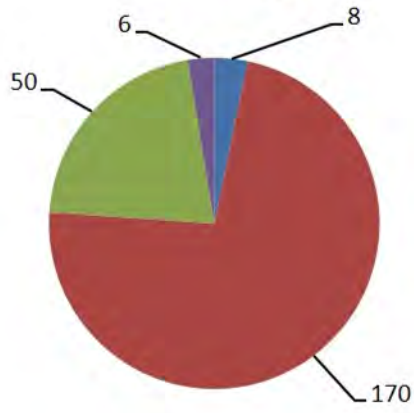
TSS Load (tons/yr)



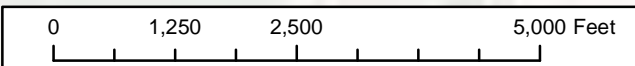
Lauderdale Lakes TSS Loadings Map	
Lauderdale Lakes Lake Management District (LLLMD) Walworth County, Wisconsin	
 Geosyntec consultants	Figure 9
Mequon, WI - MOW5536	November 2021

Total Sediment Load by Land Uses

(t/yr)

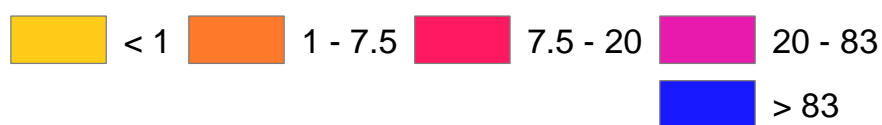


- Urban
- Cropland
- Pastureland
- Forest
- Feedlots
- User Defined
- Septic
- Gully



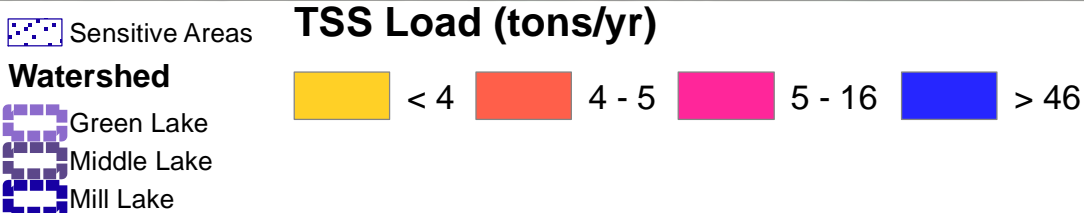
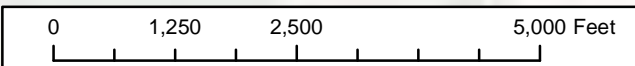
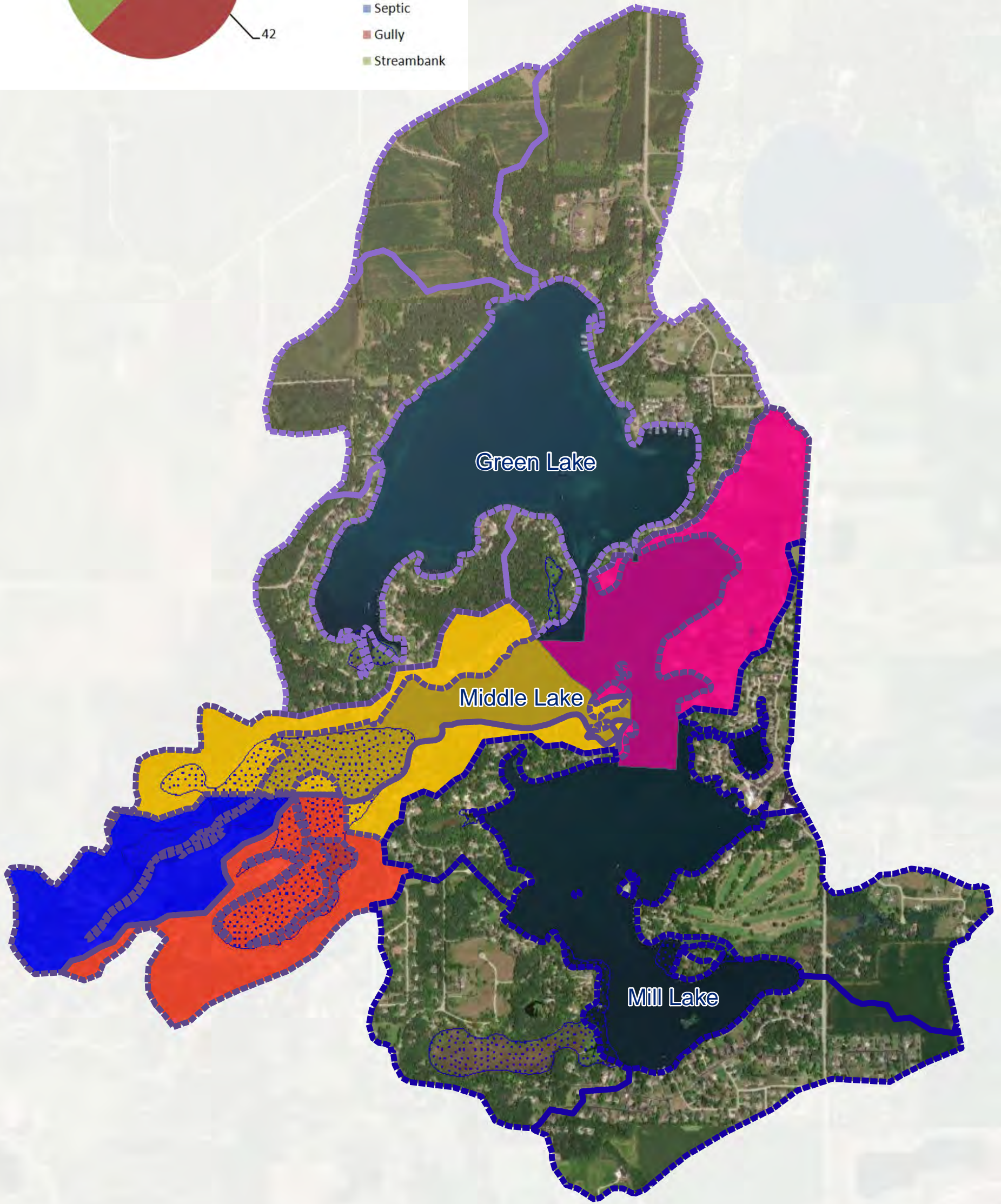
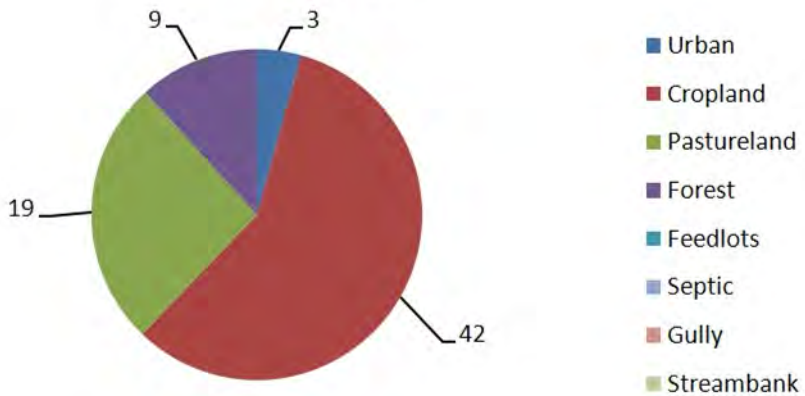
- Sensitive Areas
- Watershed**
- Green Lake
- Middle Lake
- Mill Lake

TSS Load (tons/yr)



Lauderdale Lakes Mill Lake TSS Loadings	
Lauderdale Lakes Lake Management District (LLMD) Walworth County, Wisconsin	
 Geosyntec consultants	Figure 9A
Mequon, WI - MOW5536	November 2021

Total Sediment Load by Land Uses (t/yr)



**Lauderdale Lakes
Middle Lake TSS Loadings**

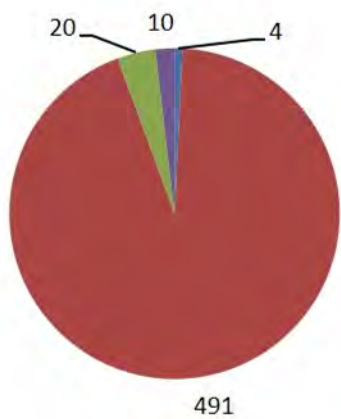
Lauderdale Lakes Lake Management District (LLMD)
Walworth County, Wisconsin

Geosyntec
consultants

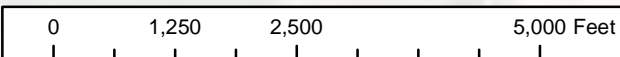
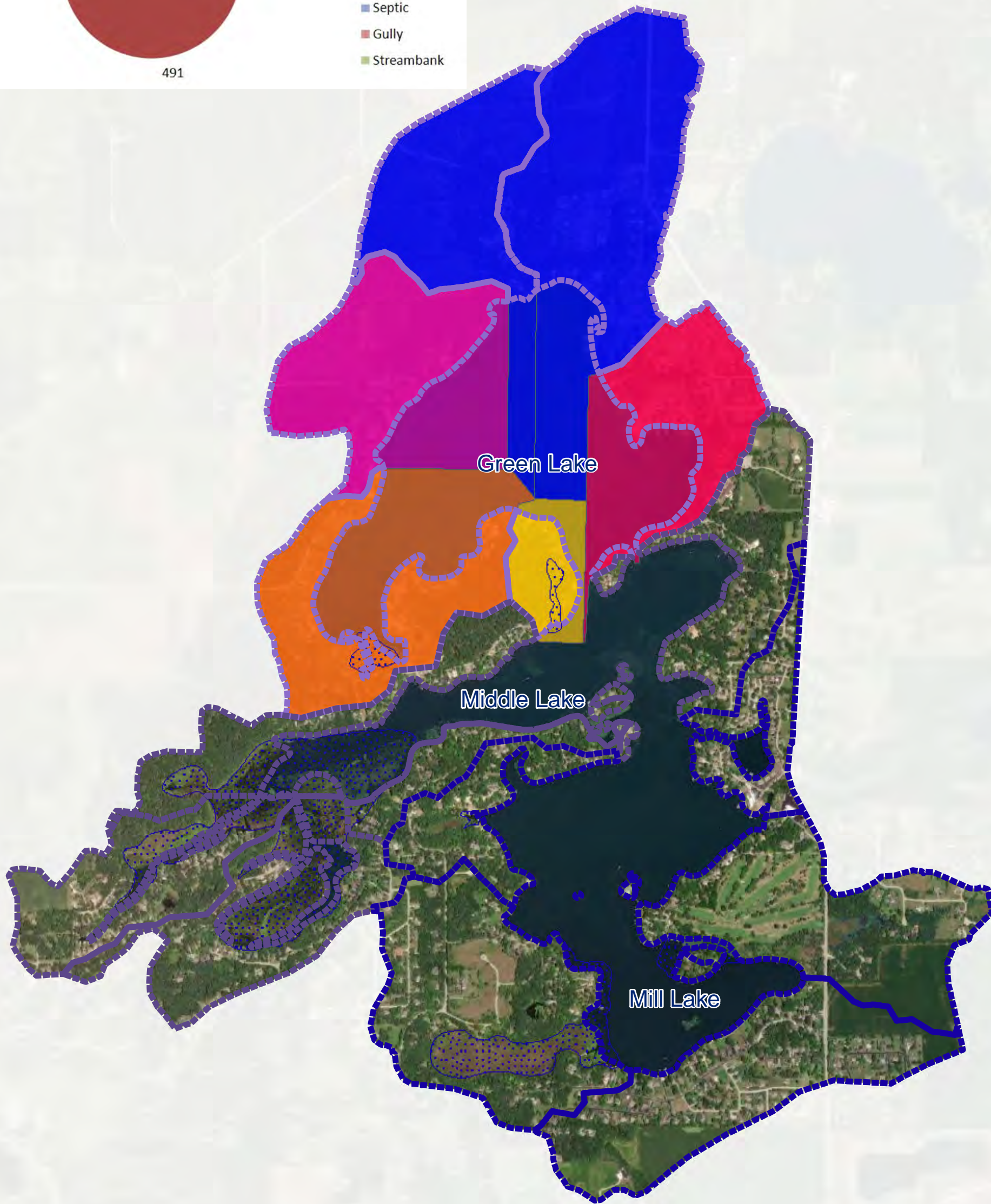
**Figure
9B**

Mequon, WI - MOW5536 November 2021

Total Sediment Load by Land Uses (t/yr)

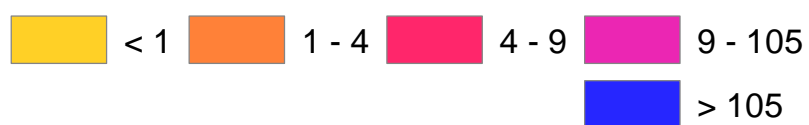


- Urban
- Cropland
- Pastureland
- Forest
- Feedlots
- Septic
- Gully
- Streambank



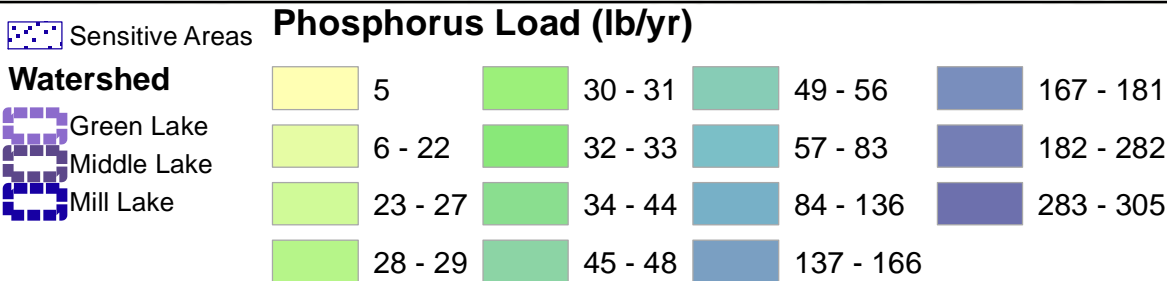
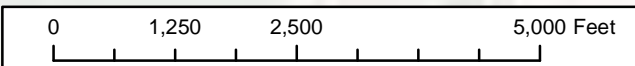
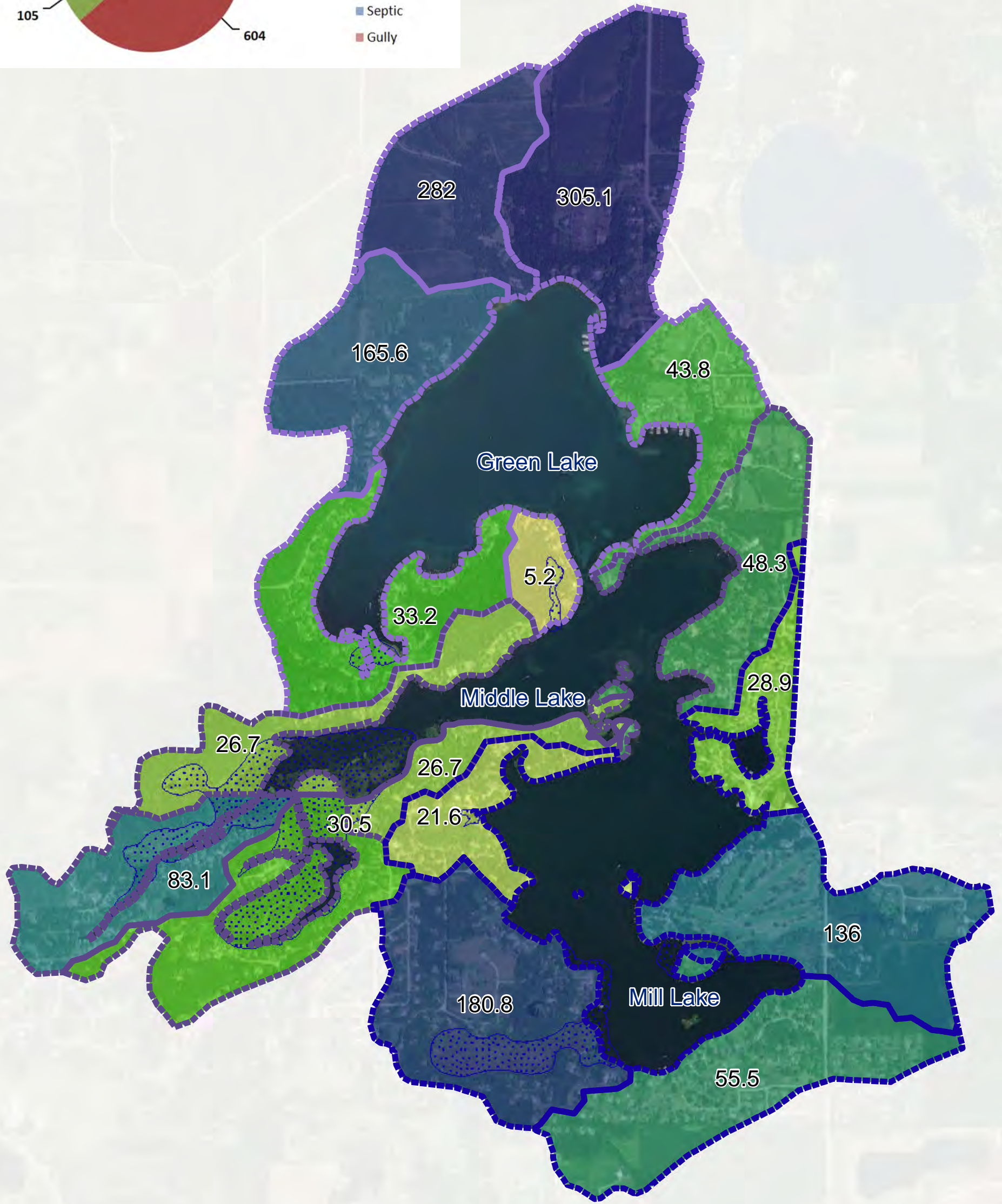
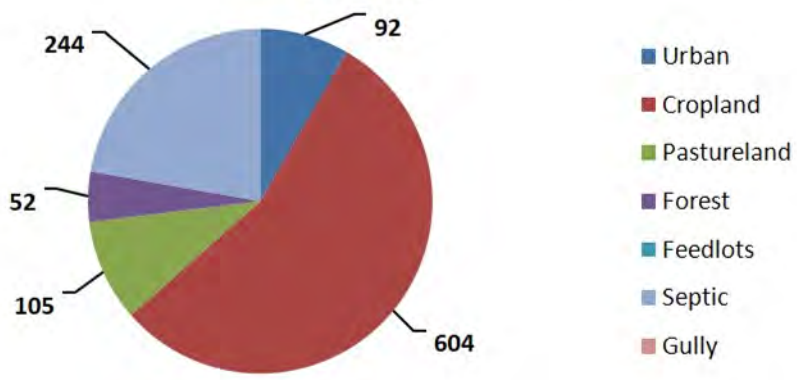
- Sensitive Areas
- Watershed**
- Green Lake
- Middle Lake
- Mill Lake

TSS Load (tons/yr)



Lauderdale Lakes Green Lake TSS Loadings Lauderdale Lakes Lake Management District (LLMD) Walworth County, Wisconsin	
 Geosyntec consultants	Figure 9C
Mequon, WI - MOW5536	November 2021

LLLD Total P Load by Land Uses (lb/yr)



**Lauderdale Lakes
Total Phosphorus Loadings**

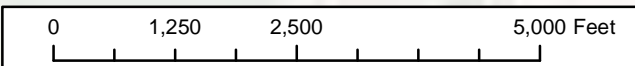
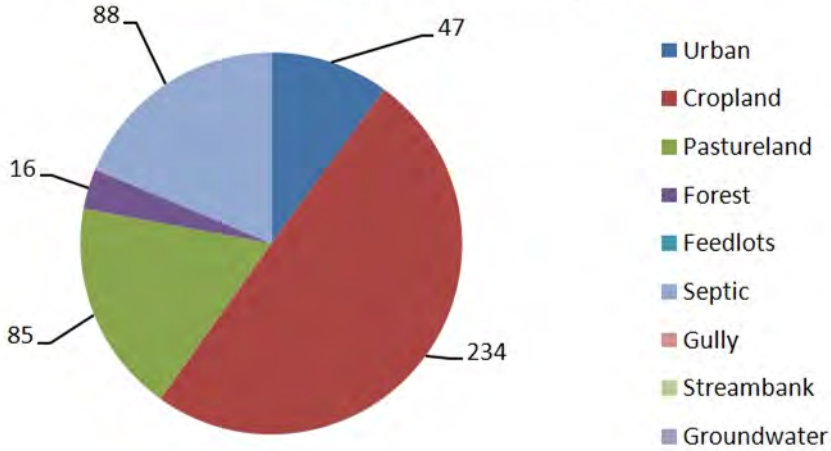
Lauderdale Lakes Lake Management District (LLMD)
Walworth County, Wisconsin

Geosyntec
consultants

**Figure
10**

Mequon, WI - MOW5536 November 2021

Total P Load by Land Uses (lb/yr)



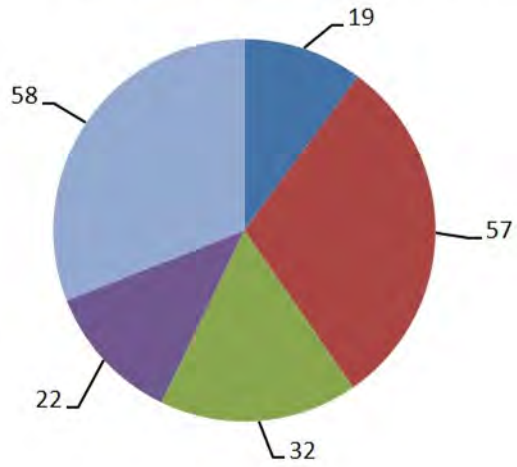
- Sensitive Areas
- Watershed**
- Green Lake
- Middle Lake
- Mill Lake

Phosphorus Load (lb/yr)

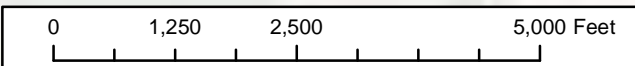
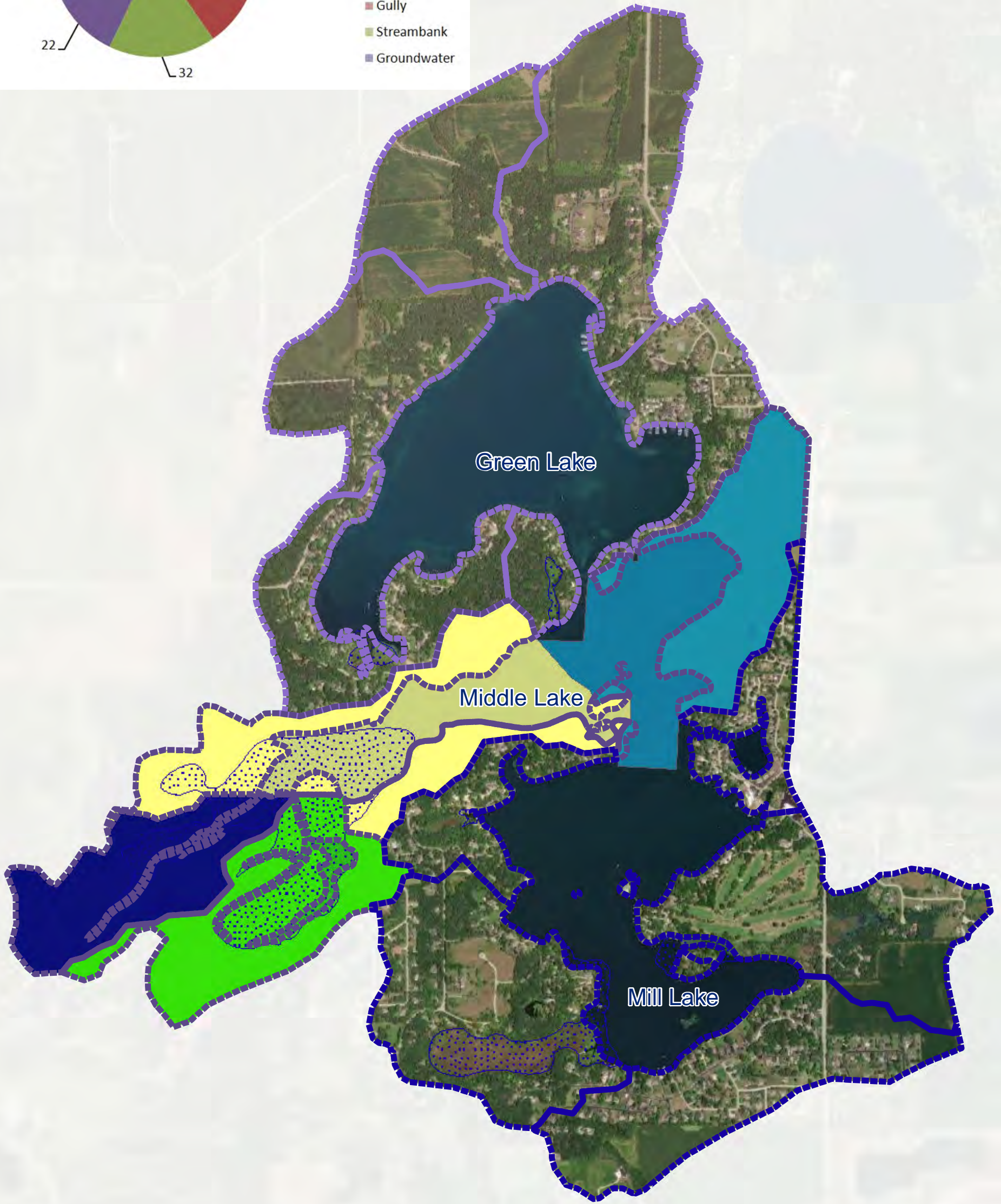


Lauderdale Lakes Mill Lake Phosphorus Loading Lauderdale Lakes Lake Management District (LLMD) Walworth County, Wisconsin	
	Figure 10A
Mequon, WI - MOW5536	November 2021

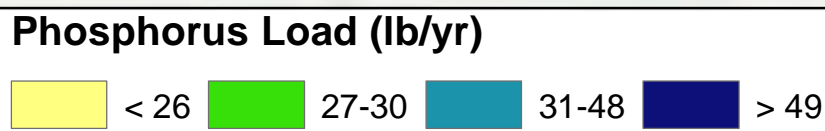
Total P Load by Land Uses (lb/yr)



- Urban
- Cropland
- Pastureland
- Forest
- Feedlots
- Septic
- Gully
- Streambank
- Groundwater



- Sensitive Areas
- Watershed**
- Green Lake
- Middle Lake
- Mill Lake



**Lauderdale Lakes
Middle Lake Phosphorus Loading**

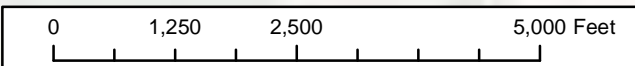
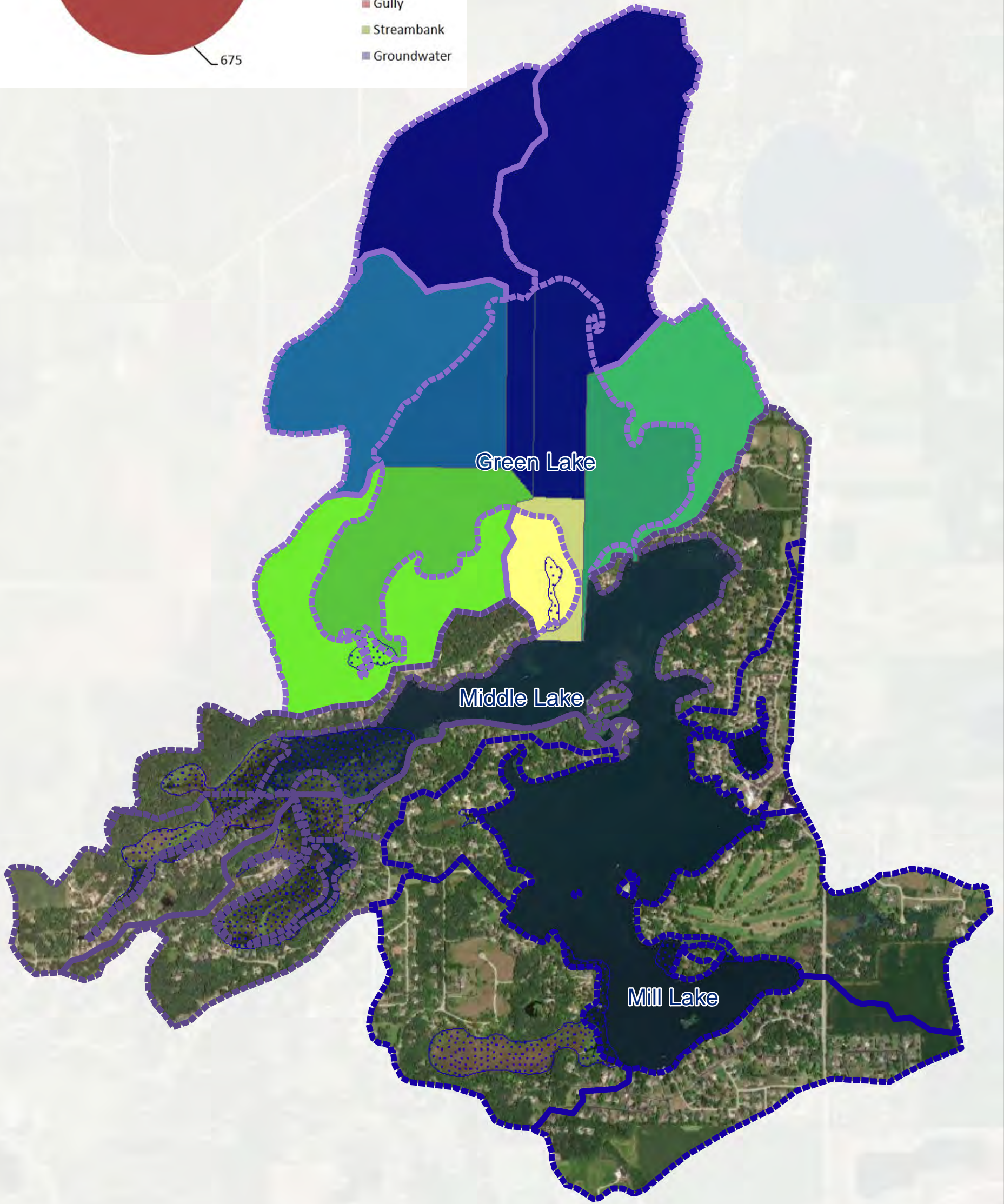
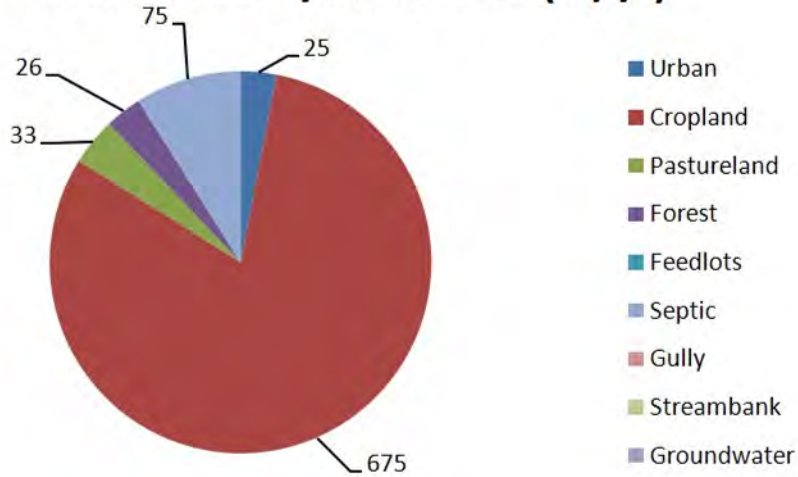
Lauderdale Lakes Lake Management District (LLMD)
Walworth County, Wisconsin

Geosyntec
consultants

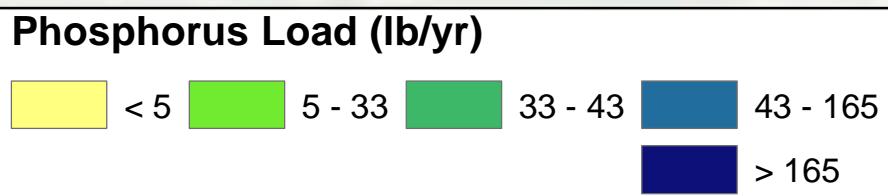
**Figure
10B**

Mequon, WI - MOW5536 November 2021

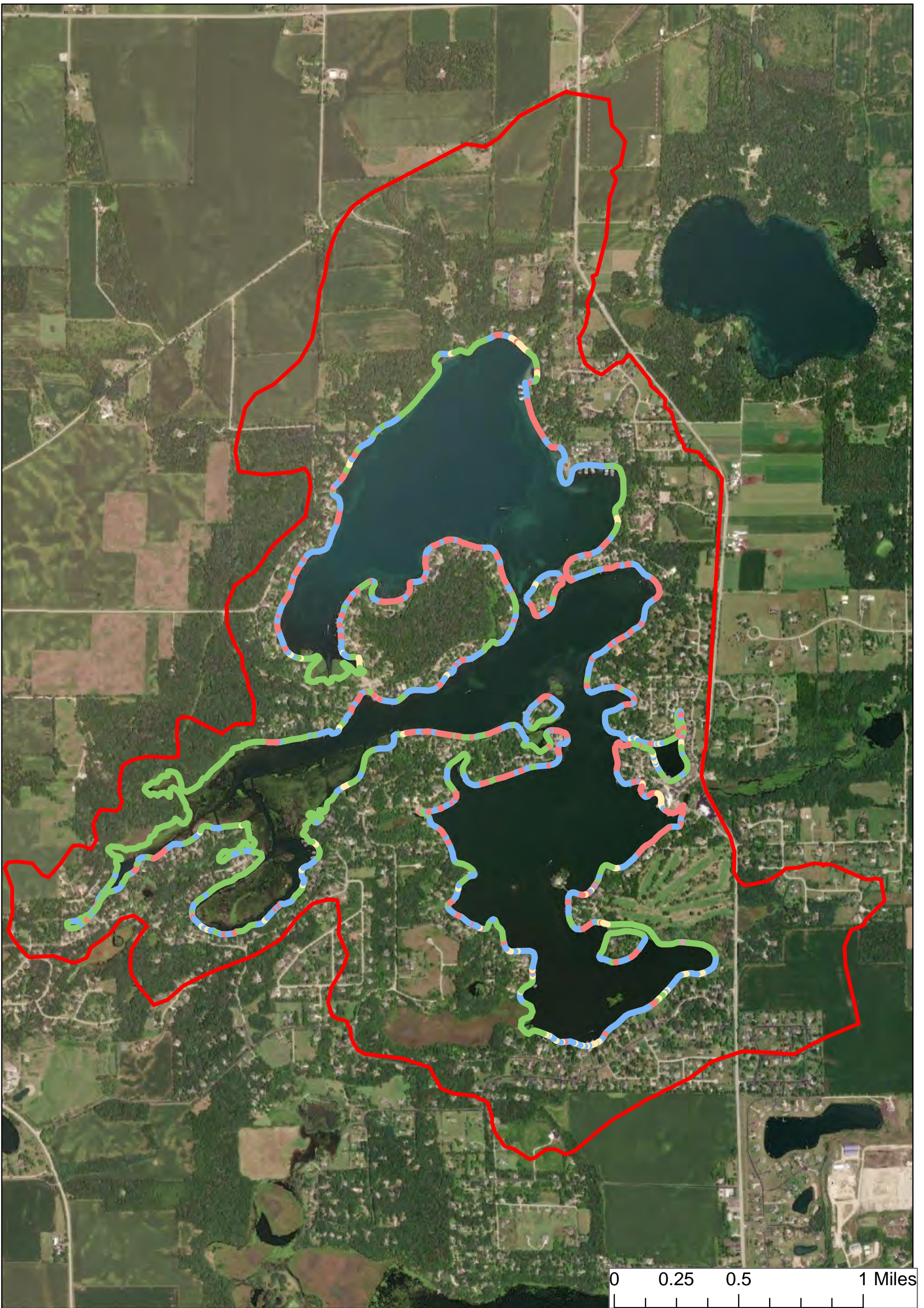
Total P Load by Land Uses (lb/yr)



- Sensitive Areas
- Watershed**
- Green Lake
- Middle Lake
- Mill Lake



Lauderdale Lakes Green Lake Phosphorus Loading Lauderdale Lakes Lake Management District (LLMD) Walworth County, Wisconsin	
 Geosyntec consultants	Figure 10C
Mequon, WI - MOW5536	November 2021



- Beach
- Bulkhead
- Natural
- Revetment
- RipRap
- USGS Direct Runoff



0 0.25 0.5 1 Miles

**Lauderdale Lakes
Shoreline Summary**

Lauderdale Lakes Lake Management District (LLMD)
Walworth County, Wisconsin

Geosyntec
consultants

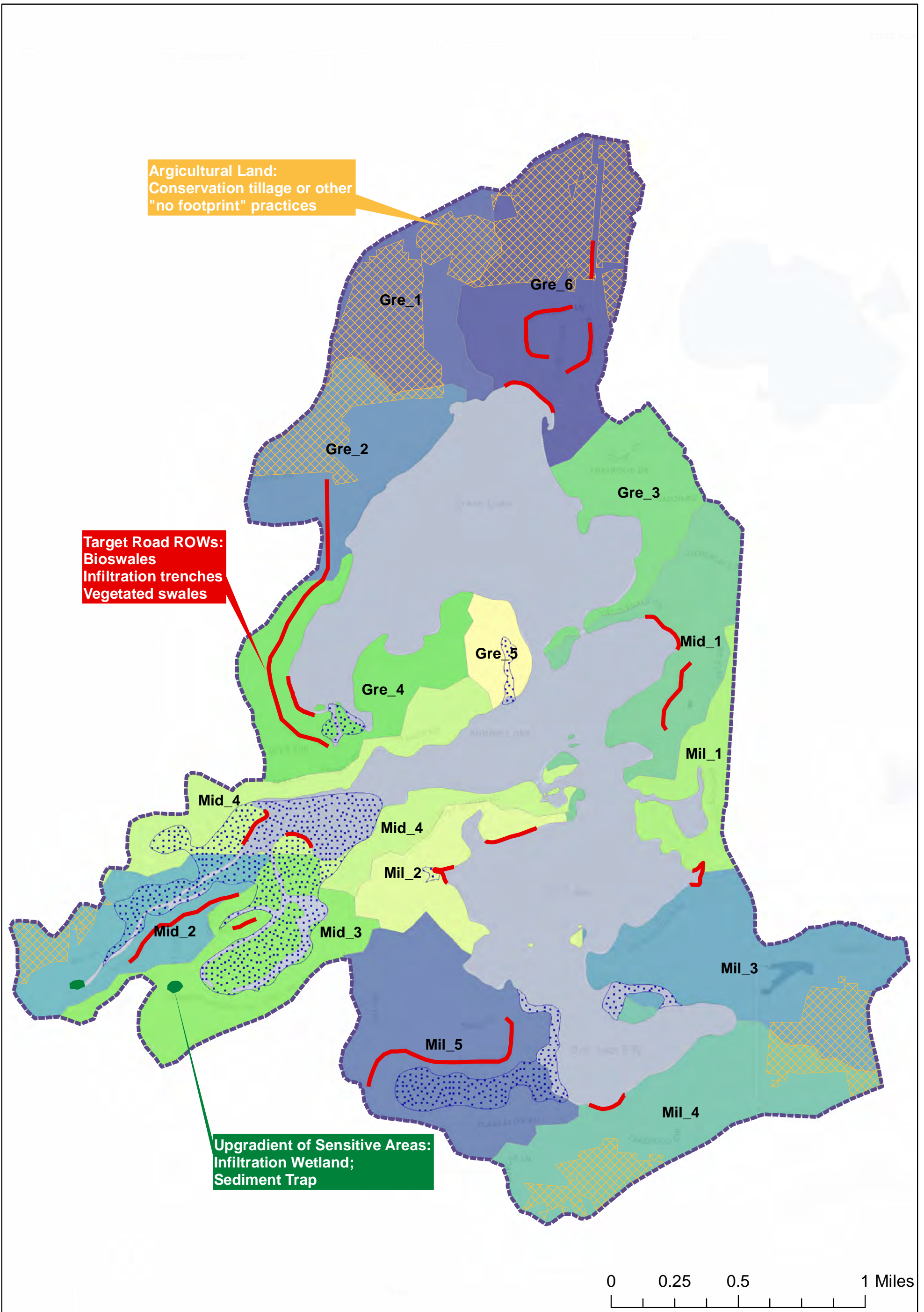
**Figure
11**

Mequon, WI - MOW5536

November 2021



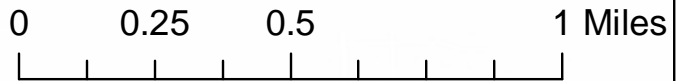
Lauderdale Lakes Wave Analysis Lauderdale Lakes Lake Management District (LLMD) Walworth County, Wisconsin	
 Geosyntec consultants	Figure 12
Mequon, WI - MOW5536	November 2021



Agricultural Land:
Conservation tillage or other
"no footprint" practices

Target Road ROWs:
Bioswales
Infiltration trenches
Vegetated swales

Upgradient of Sensitive Areas:
Infiltration Wetland;
Sediment Trap



Phosphorus Load (lb/yr)	
5	32 - 33
6 - 22	34 - 44
23 - 27	45 - 48
28 - 29	49 - 56
30 - 31	57 - 83
	84 - 136
	137 - 166
	167 - 181
	182 - 282
	283 - 305

- Lauderdale Lake Watershed Boundary (Stream Stats)
- Sensitive Areas
- Waterbodies
- LinearBMPs
- BMPs
- Cropland BMPs



Lauderdale Lakes BMP Placement	
Lauderdale Lakes Lake Management District (LLMD) Walworth County, Wisconsin	
 Geosyntec consultants	Figure 13
Mequon, WI - MOW5536	December 2021