

**Onterra LLC**  
 Lake Management Planning  
 815 Prosper Road  
 De Pere, WI 54115  
 920.338.8860  
 www.onterra-eco.com

Sources:  
 Roads and Hydro: WDNR  
 Map Date: February 22, 2017  
 Filename: Map1\_Grand\_Location.mxd



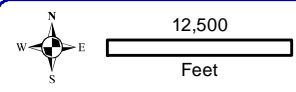
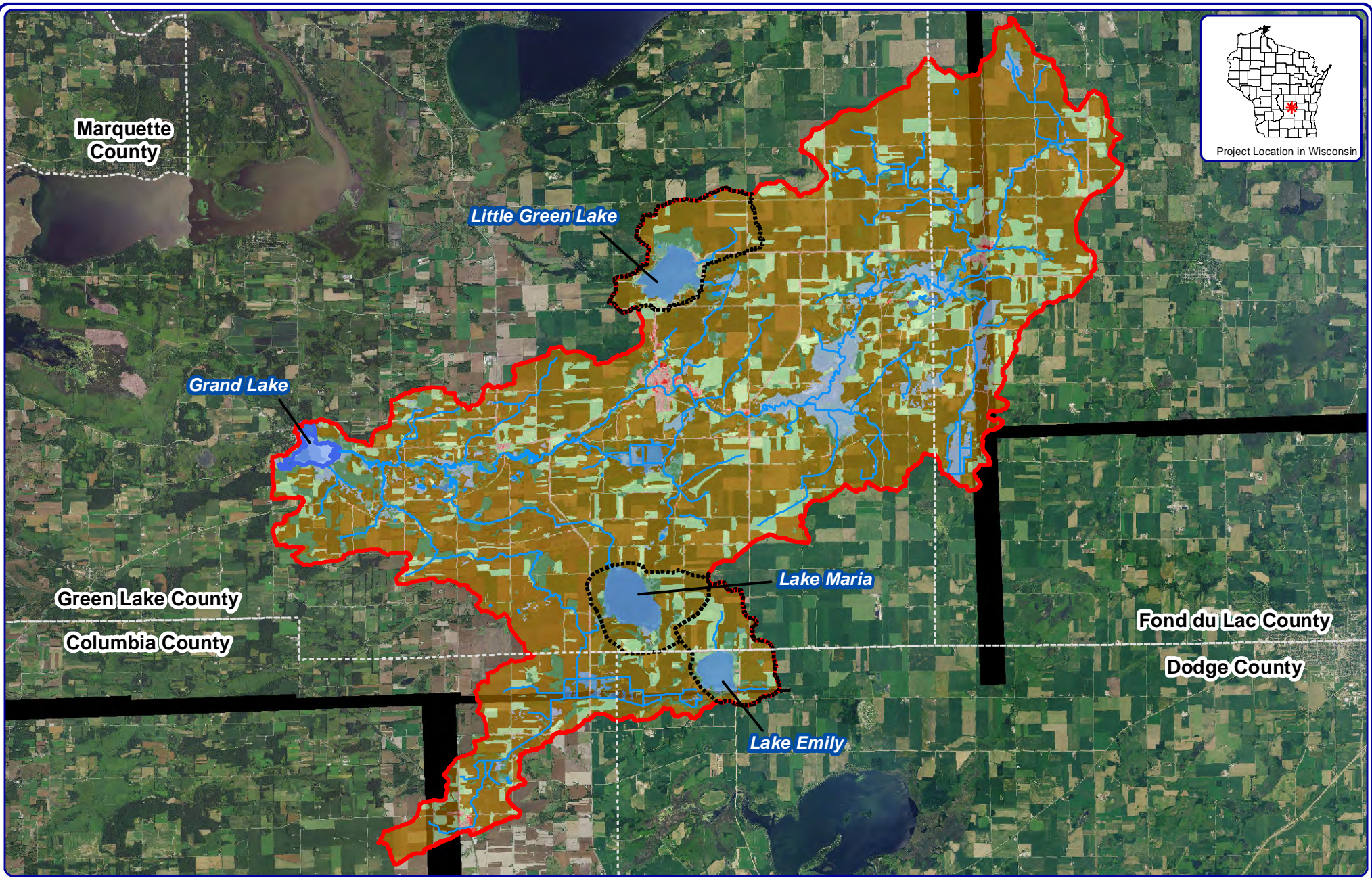
- Grand Lake ~ 242 acres  
W.D.N.R. Definition
- Point-Intercept Survey Location  
48 meter spacing, 423 total points
- Village of Kingston

**Legend**

- Public Access
- Public Park
- Dam Location
- Water Quality Sampling Locations

Map 1  
 Grand Lake  
 Green Lake County, Wisconsin  
**Project Location  
 & Lake Boundaries**





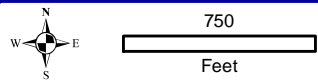
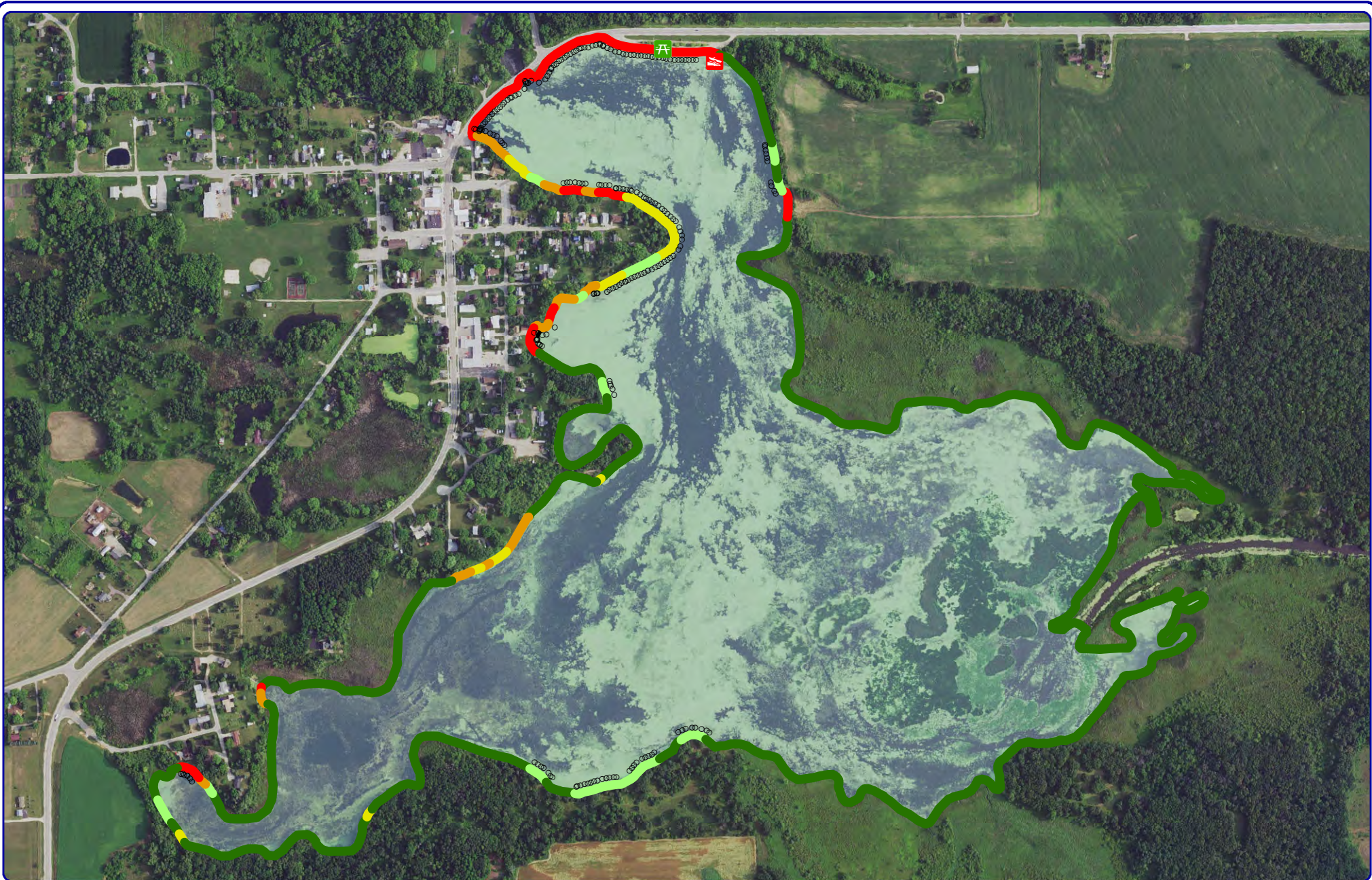
**Onterra LLC**  
 Lake Management Planning  
 815 Prosper Road  
 De Pere, WI 54115  
 920.338.8860  
 www.onterra-eco.com

Sources:  
 Hydro: WDNR  
 Bathymetry: WDNR  
 Orthophotography: NAIP 2015  
 Land Cover: NLCD 2011  
 Watershed Boundaries: Onterra 2016  
 Map Date: January 12, 2017  
 Filename: Map2\_Grand\_WS.mxd

Land Cover Types		Legend	
	Forest		Grand Lake Watershed Boundary
	Forested Wetlands		Subwatershed Boundaries
	Wetlands		County Boundaries
	Open Water		River/Stream
	Rural Open Space		Pasture/Grass
	Row Crops		Rural Residential
	High Density Urban		Medium Density Urban

Map 2  
 Grand Lake  
 Green Lake County, Wisconsin  
**Watershed &  
 Land Cover Types**





**Onterra LLC**  
 Lake Management Planning  
 815 Prosper Road  
 De Pere, WI 54115  
 920.338.8860  
 www.onterra-eco.com

Sources:  
 Hydro: WDNR  
 Orthophotograph: NAIP, 2015  
 Shoreland Condition: Onterra, 2016  
 Map Date: December 9, 2016  
 Filename: Grand\_ShorelandCondition\_2016.mxd

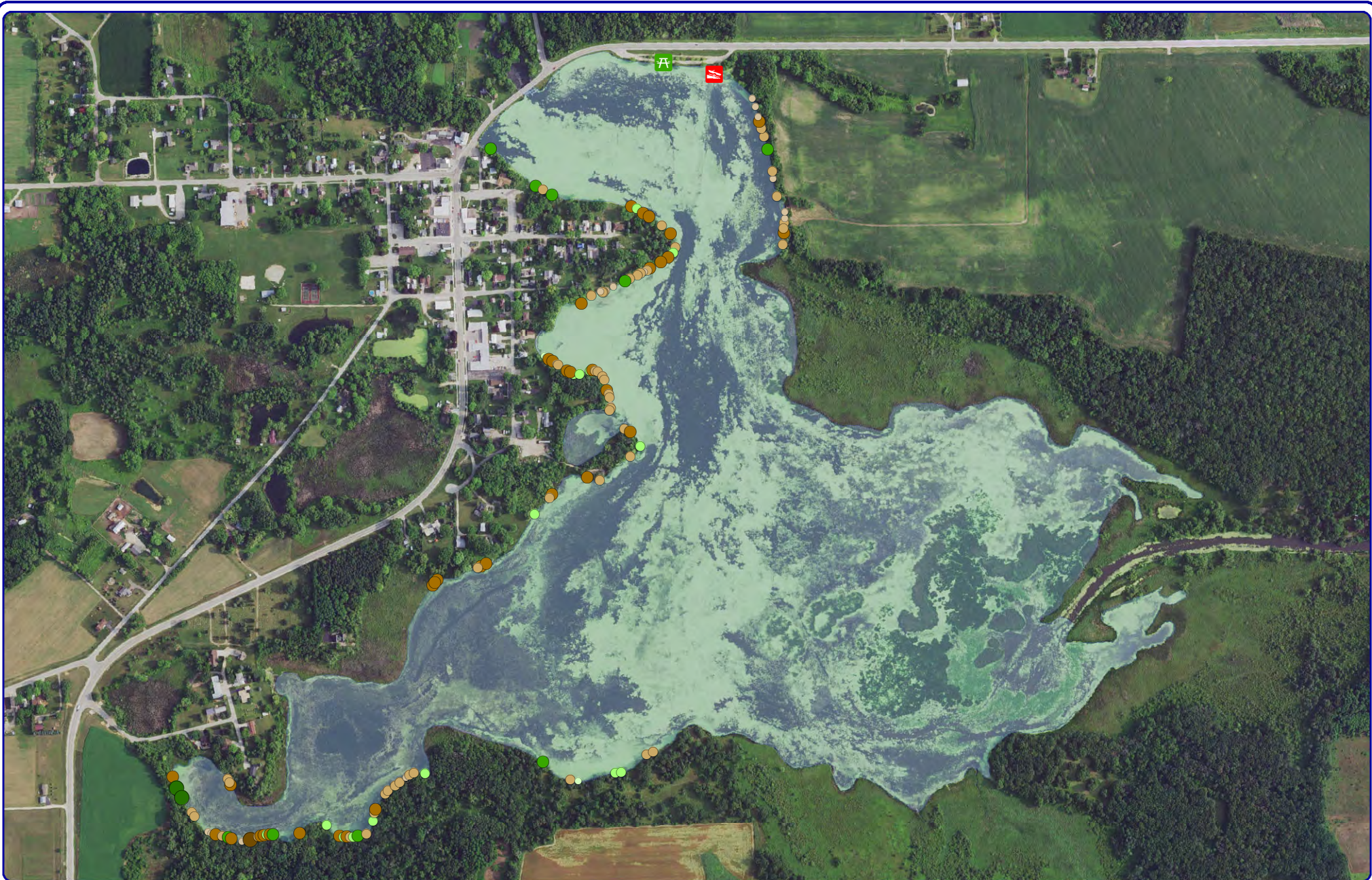


**Legend**

- Natural/Undeveloped
- Developed-Natural
- Developed-Semi-Natural
- Developed-Unnatural
- Urbanized
- Seawall
- Rip-Rap
- Masonry/Wood

Map 3  
 Grand Lake  
 Green Lake County, Wisconsin  
**2016 Shoreland  
 Assessment**





**Onterra LLC**  
 Lake Management Planning  
 815 Prosper Road  
 De Pere, WI 54115  
 920.338.8860  
 www.onterra-eco.com

Sources:  
 Hydro: WDNR  
 Orthophotograph: NAIP, 2015  
 Coarse Woody Habitat: Onterra, 2016  
 Map Date: November 18, 2016  
 Filename: Map4\_Grand\_CWH\_2016.mxd



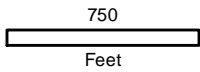
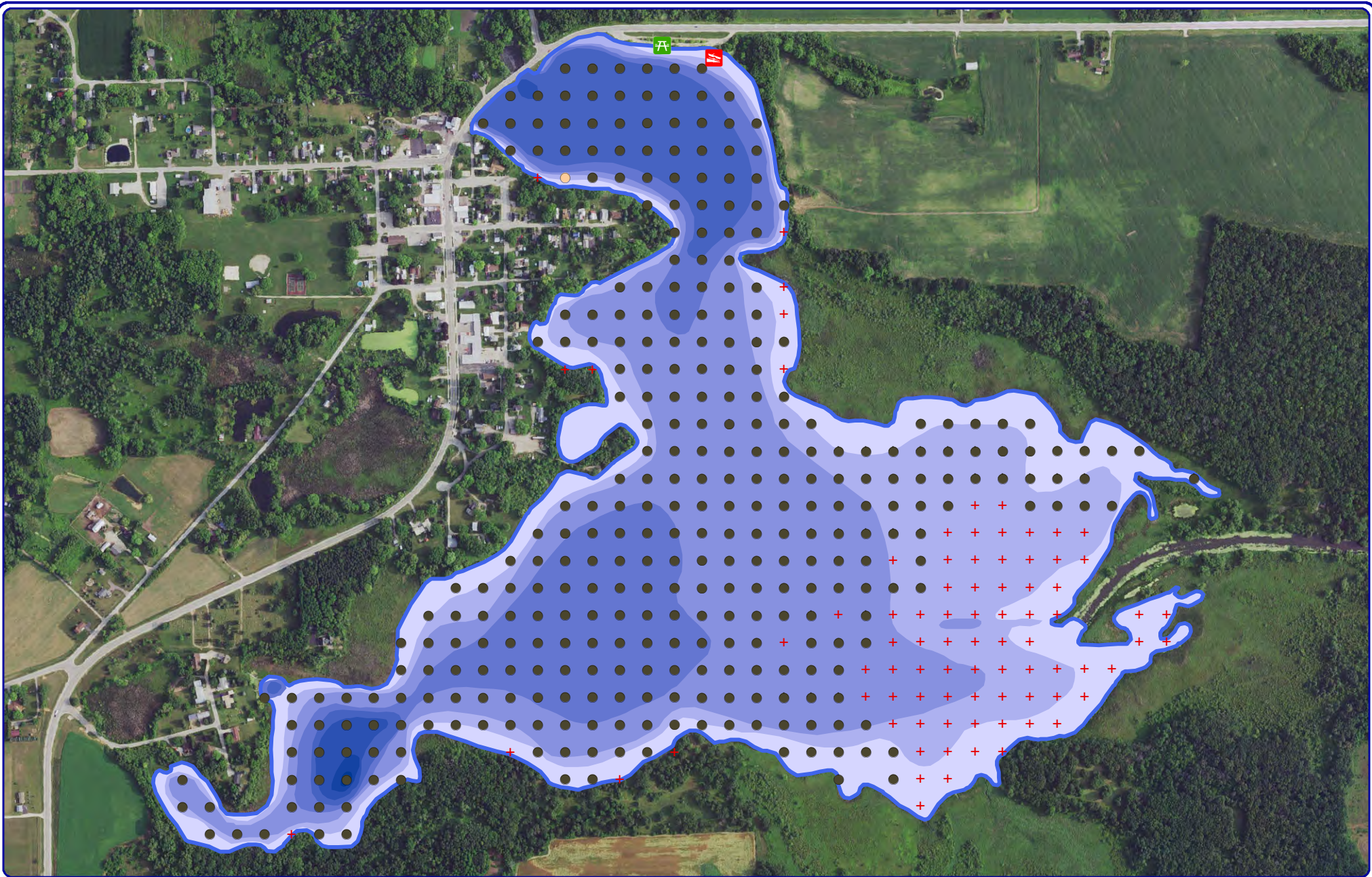
Project Location in Wisconsin

### Legend

- |                        |                       |                                     |
|------------------------|-----------------------|-------------------------------------|
| <b>2-8 Inch Pieces</b> | <b>8+ Inch Pieces</b> | <b>Cluster of Pieces</b>            |
| ○ No Branches          | ○ No Branches         | ■ No Branches ( <i>None</i> )       |
| ○ Minimal Branches     | ○ Minimal Branches    | ■ Minimal Branches ( <i>None</i> )  |
| ○ Moderate Branches    | ○ Moderate Branches   | ■ Moderate Branches ( <i>None</i> ) |
| ○ Full Canopy          | ○ Full Canopy         | ■ Full Canopy ( <i>None</i> )       |

Map 4  
 Grand Lake  
 Green Lake County, Wisconsin  
**2016 Coarse Woody  
 Habitat Survey Results**





**Onterra LLC**  
 Lake Management Planning  
 815 Prosper Road  
 De Pere, WI 54115  
 920.338.8860  
 www.onterra-eco.com

Sources:  
 Hydro and Roads: WDNR  
 Bathymetry: WDNR, digitized by Onterra  
 Aquatic Plant Survey: Onterra, 2016  
 Map Date: February 21, 2017  
 Filename: Map5\_Grand\_SubstratePI\_2016.mxd



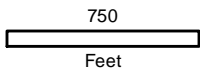
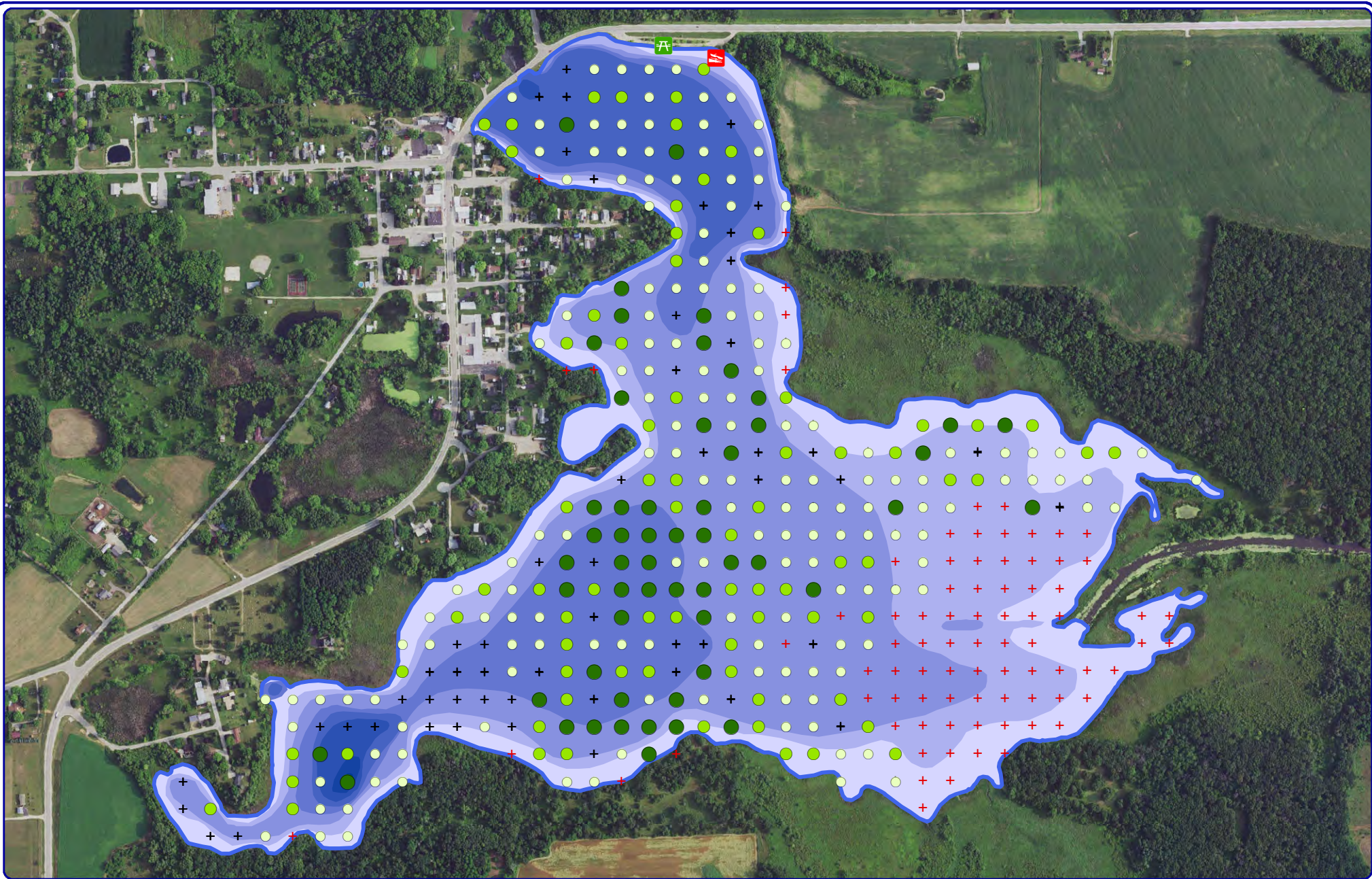
Project Location in Wisconsin

**Legend**

- Soft/Organic Sediments
- Rock
- Sand
- + Too Deep
- + Non-navigable

**Map 5**  
**Grand Lake**  
 Green Lake County, Wisconsin  
**2016 PI Survey:**  
**Substrate Types**





Project Location in Wisconsin

### Legend

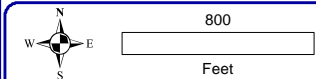
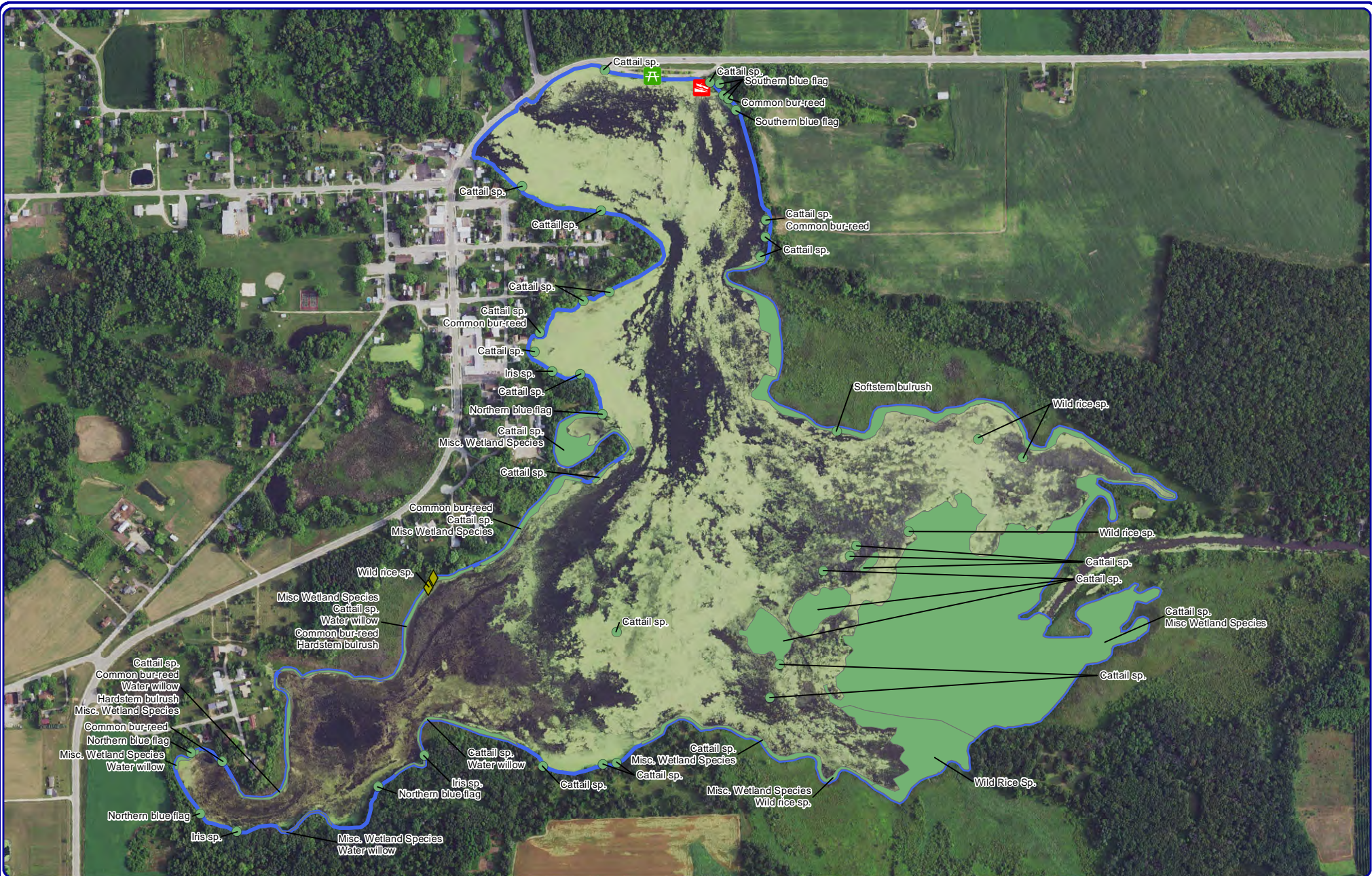
- Total Rake Fullness = 1
- Total Rake Fullness = 2
- Total Rake Fullness = 3
- + No Vegetation
- + Non-Navigable

**Onterra LLC**  
 Lake Management Planning  
 815 Prosper Rd  
 De Pere, WI 54115  
 920.338.8860  
 www.onterra-eco.com

Sources:  
 Roads and Hydro: WDNR  
 Plant Survey: Onterra, 2016  
 Map Date: November 29, 2016  
 Filename: Map6\_Grand\_TRFPI.mxd

Map 6  
 Grand Lake  
 Green Lake County, Wisconsin  
**2016 PI Survey:  
 Aquatic Vegetation  
 Distribution**





Extent of large map shown in red.

**Onterra LLC**  
 Lake Management Planning  
 815 Prosper Road  
 De Pere, WI 54115  
 920.338.8860  
 www.onterra-eco.com

**Sources:**  
 Aquatic Plants: Onterra, 2016  
 Orthophotography: NAIP, 2015  
**Map date:** February 13, 2017  
 Filename: Map7\_Grand\_Comm\_2016.mxd

**Small Plant Communities**

- Emergent
- Floating-leaf
- Mixed Floating-leaf & Emergent
- ◆ Giant reed

**Legend**

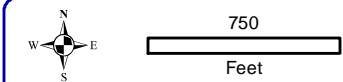
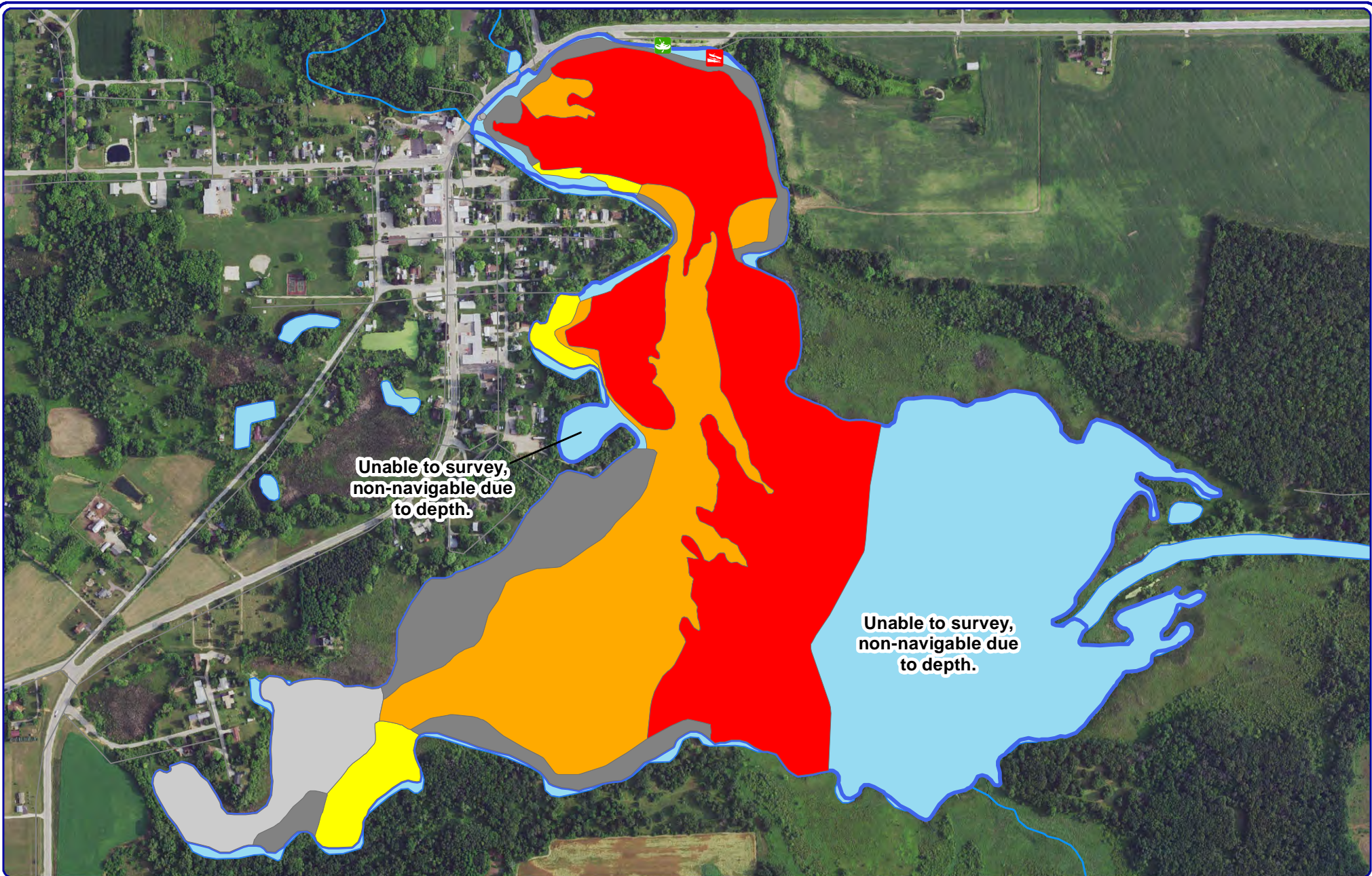
**Large Plant Communities**

- Emergent
- Floating-leaf
- Mixed Floating-leaf & Emergent

**Map 7**  
 Grand Lake  
 Green Lake County, Wisconsin

**Aquatic Plant Communities**





**Onterra LLC**  
 Lake Management Planning  
 815 Prosper Rd  
 De Pere, WI 54115  
 920.338.8860  
 www.onterra-eco.com

Sources:  
 Roads and Hydro: WDNR  
 EWM Survey: Onterra, 2016  
 Map Date: June 13, 2016  
 Filename: Map8\_Grand\_CLP\_June16.mxd



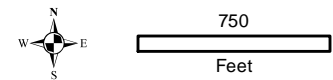
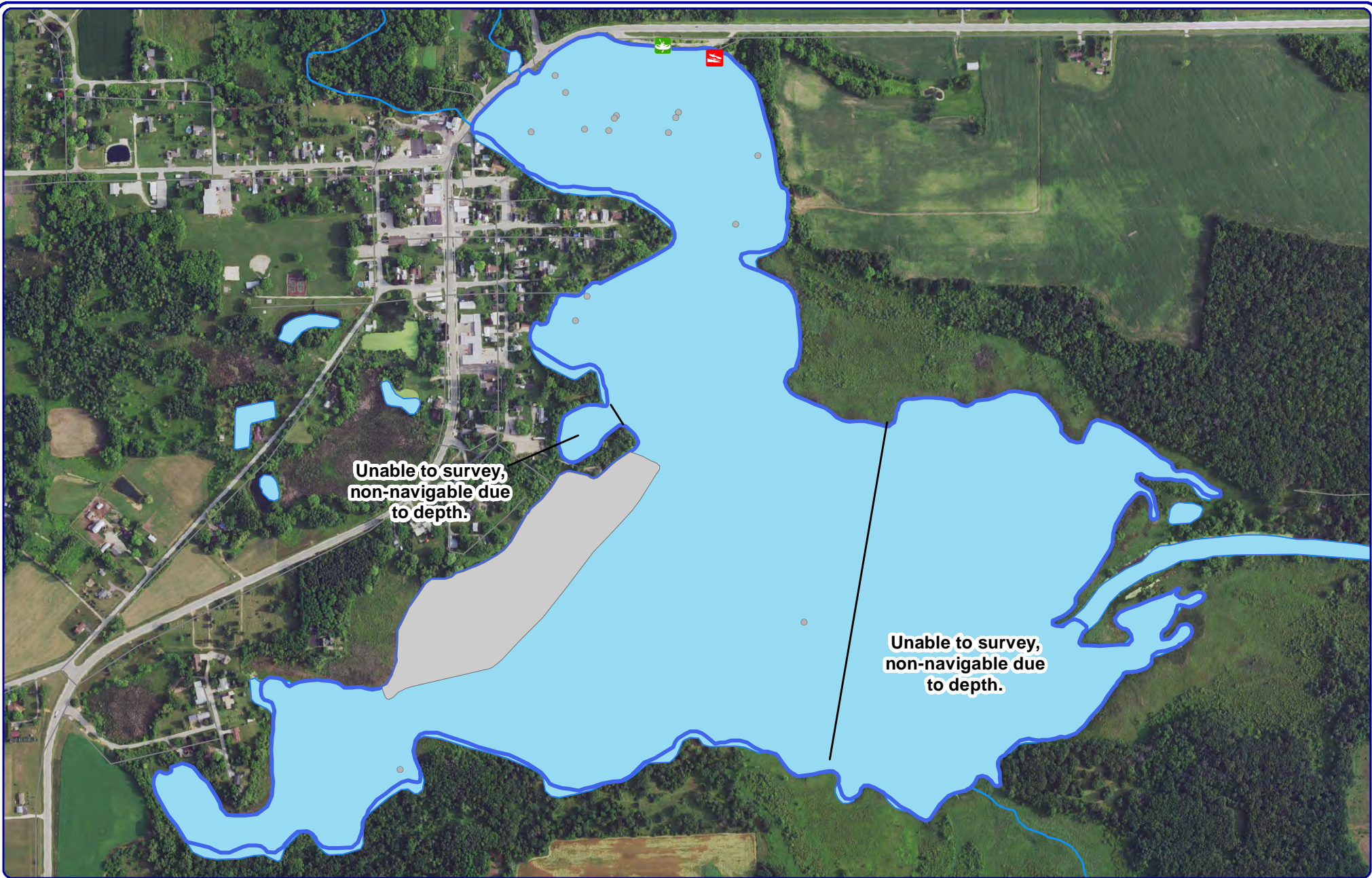
Project Location in Wisconsin

**Legend**

- |  |                  |  |                      |
|--|------------------|--|----------------------|
|  | Highly Scattered |  | Single or Few Plants |
|  | Scattered        |  | Clump of Plants      |
|  | Dominant         |  | Small Plant Colony   |
|  | Highly Dominant  |  |                      |
|  | Surface Matted   |  |                      |

**Map 8**  
**Grand Lake**  
 Green Lake County, Wisconsin  
**June 2016 CLP**  
**ESAIS Survey Results**





**Onterra LLC**  
 Lake Management Planning  
 815 Prosper Rd  
 De Pere, WI 54115  
 920.338.8860  
 www.onterra-eco.com

Sources:  
 Roads and Hydro: WDNR  
 EWM Survey: Onterra, 2016  
 Map Date: June 13, 2016  
 Filename: Map9\_Grand\_EWM\_June16.mxd



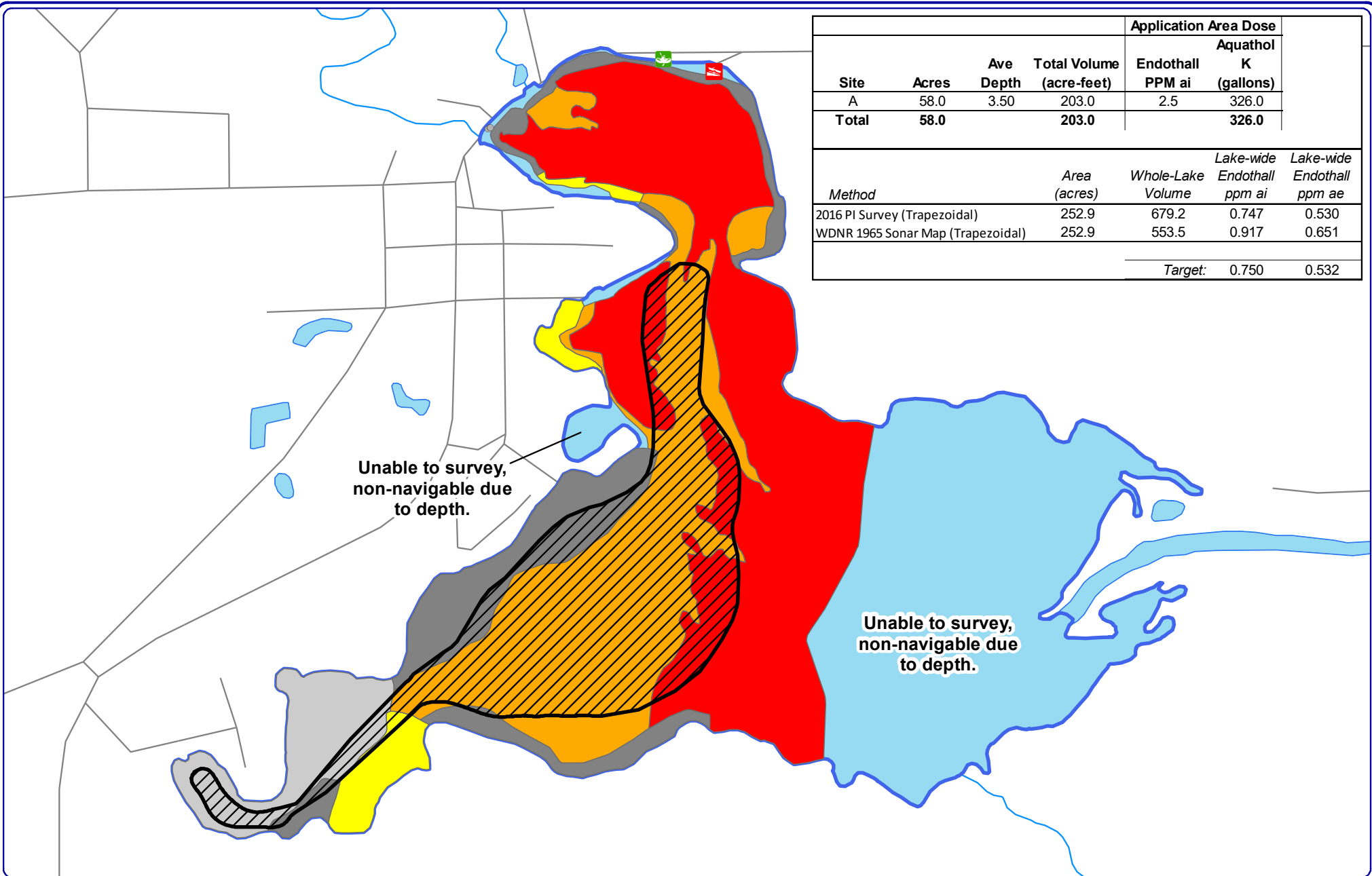
Project Location in Wisconsin

**Legend**

- |  |                                       |  |                      |
|--|---------------------------------------|--|----------------------|
|  | Highly Scattered                      |  | Single or Few Plants |
|  | Scattered ( <i>None found</i> )       |  | Clump of Plants      |
|  | Dominant ( <i>None found</i> )        |  | Small Plant Colony   |
|  | Highly Dominant ( <i>None found</i> ) |  |                      |
|  | Surface Matted ( <i>None found</i> )  |  |                      |

Map 9  
 Grand Lake  
 Green Lake County, Wisconsin  
**June 2016 EWM**  
**ESAIS Survey Results**





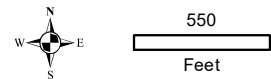
				Application Area Dose	
Site	Acres	Ave Depth	Total Volume (acre-feet)	Endothall PPM ai	Aquathol K (gallons)
A	58.0	3.50	203.0	2.5	326.0
<b>Total</b>	<b>58.0</b>		<b>203.0</b>		<b>326.0</b>

Method	Area (acres)	Whole-Lake Volume	Lake-wide Endothall ppm ai	Lake-wide Endothall ppm ae
2016 PI Survey (Trapezoidal)	252.9	679.2	0.747	0.530
WDNR 1965 Sonar Map (Trapezoidal)	252.9	553.5	0.917	0.651
			<i>Target:</i>	0.750 0.532

Unable to survey,  
non-navigable due  
to depth.

Unable to survey,  
non-navigable due  
to depth.



**Onterra LLC**  
Lake Management Planning  
815 Prosper Rd  
De Pere, WI 54115  
920.338.8860  
www.onterra-eco.com

Sources:  
Roads and Hydro: WDNR  
CLP Survey: Onterra, 2016  
Map Date: May 1, 2016 JLW  
Filename: Grand\_CLP\_TreatmentExample.mxd



Project Location in Wisconsin

- Legend**
- Highly Scattered
  - Scattered
  - Dominant
  - Highly Dominant
  - Surface Matted
  - Example CLP Treatment Area

**Map 10**  
**Grand Lake**  
Green Lake County, Wisconsin  
**CLP Treatment Example**