SAVIN LAKE SERVICES
3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900

# Henderson Lake

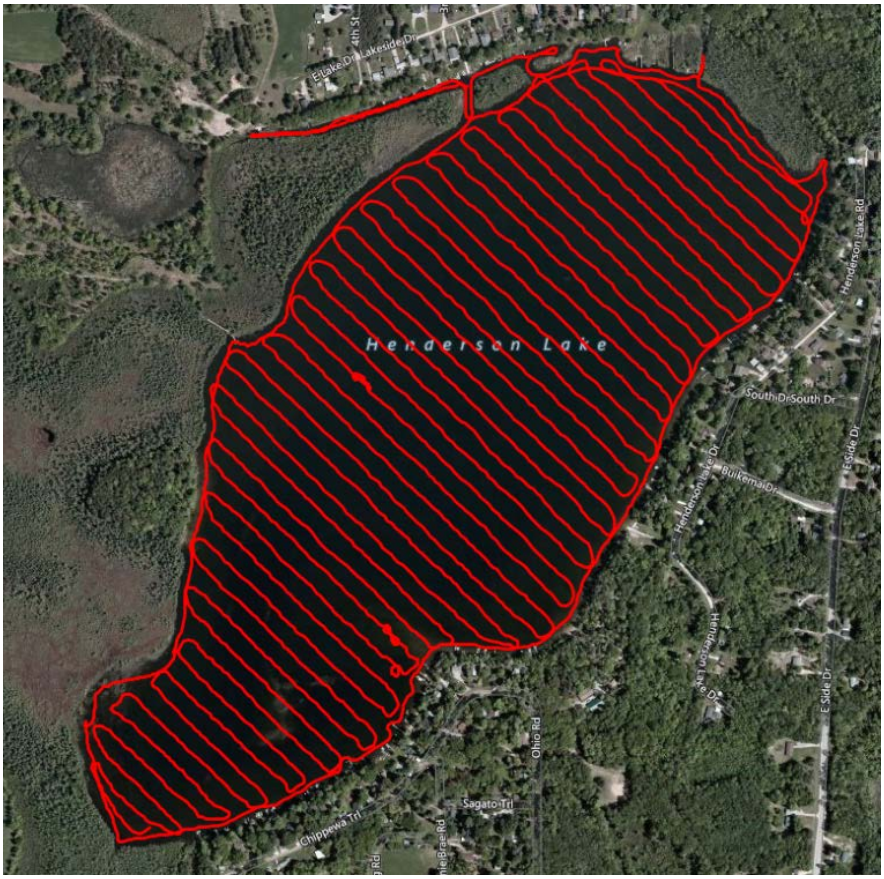
BioBase Survey Report

On June 9th, 2017, Savin Lake Services surveyed the entirety of Henderson Lake. We utilized our GPS logging capabilities and sonar data collection to use a program called ciBiobase where we are able to obtain a contour map, biovolume map, and a bottom hardness map of Henderson Lake.

## Boat Path Map

To ensure that we travel the entirety of the lakes we survey, we use a GPS technology related to agriculture applications for crops. After traveling the shoreline of the lake, we can start a linear path across lake body and produce a graph for our boat to travel. This way, every trip across the lake is equally spaced from the last, which ensures our other survey methods work correctly and covers the entire lake area.

Shown is the map displaying our boat's route using this process.



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## BioBase Survey

As we traveled around the lake, we logged a number of frequencies. When uploaded to the BioBase software, a number of reports are generated. The next few pages show the results of the mapping.

First is the contour map, additionally color shaded blue to show the depths of Henderson Lake. Each contour line is 5’ of depth. The deepest location on the lake was 25’ deep.

The second map shows the vegetation on the lake. It shows this by a metric called BioVolume. BioVolume is the percent of vegetation in the water column. By using this, we can see what areas of the lake has vegetation that is reaching the surface of the water or has yet to reach it. Coupled with a visual survey of the lake, we can determine what areas are problematic and what vegetation exist in those areas to properly plan management strategies.

The last map shows the bottom hardness of the lake. This is not the hardness of the water of the lake, but the actual physical characteristic of the lake sediment as being ‘hard’ or ‘soft’. Silt and muck are generally soft, rocks are obviously hard, and sand is shown in between. However it is useful to note these are general observations and this information does not necessarily show the bottom being exactly muck, sand, or rocks.

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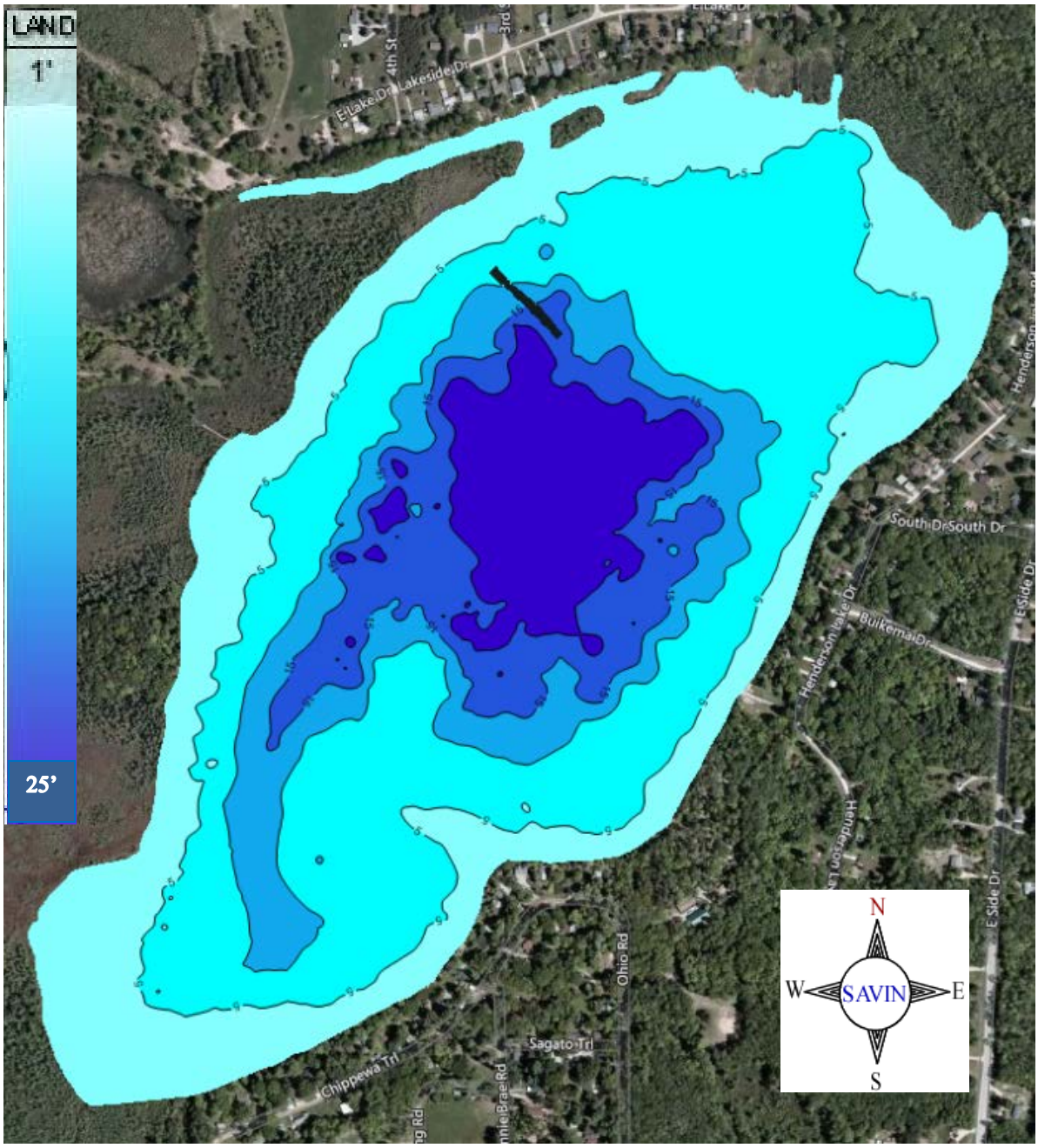


(Depth Contour Map)

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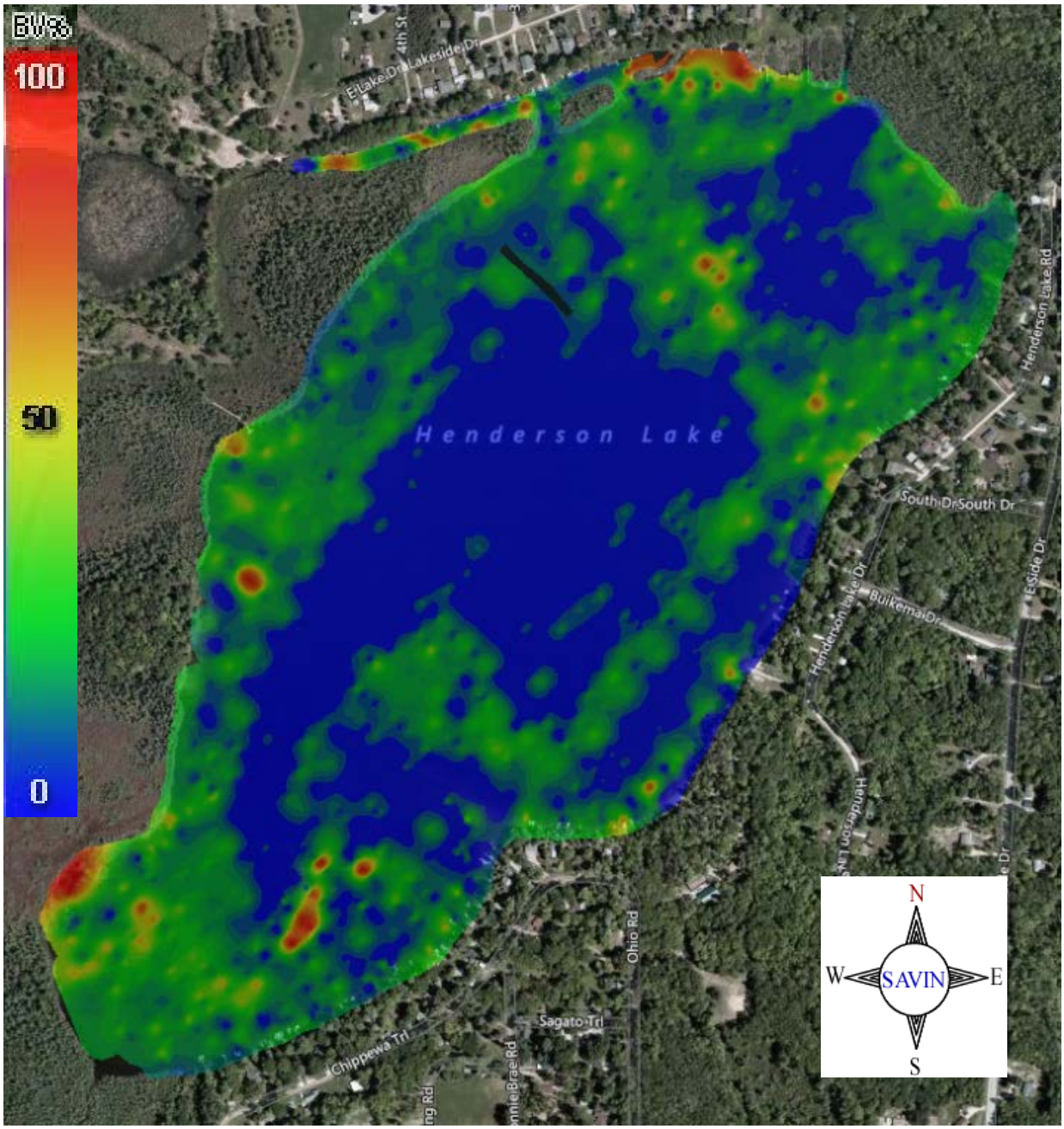


(Vegetation BioVolume Map

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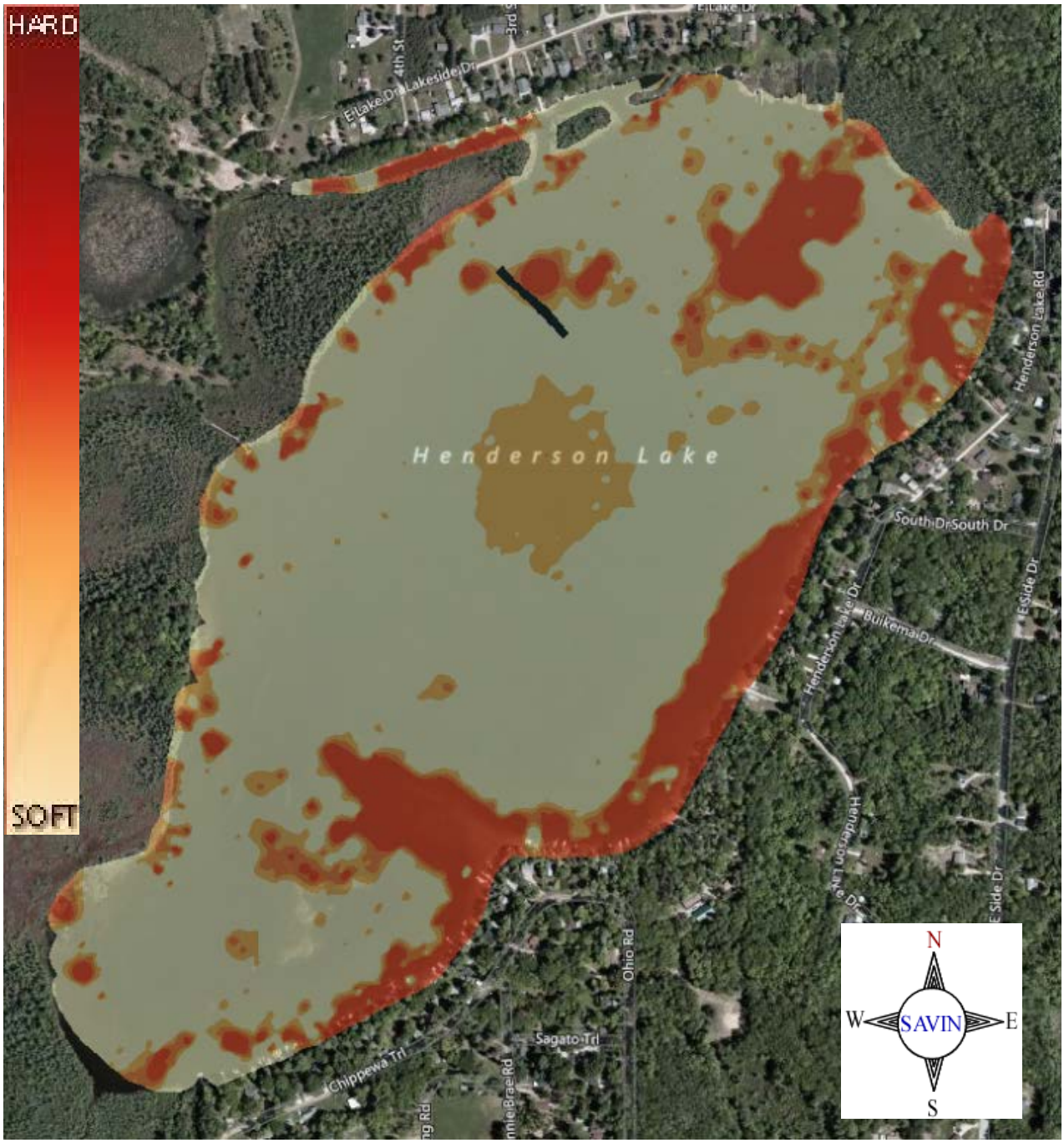


(Bottom Hardness Map)