

# County groundwater initiatives at the Wisconsin Geological and Natural History Survey

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## Background

- 2021 Act 223 (also known as the “nitrate” bill) created a County Hydrogeologist position at the Wisconsin Geological and Natural History Survey (WGNHS).
- The County Hydrogeologist develops groundwater resource information primarily at county or local scales and assists state and local governments, industries, and the public in interpreting and using the information.
- Initiatives associated with this position fall within three main areas, including 1) groundwater data accessibility, 2) county groundwater studies, and 3) groundwater outreach and education.

## 1. Increasing accessibility of WGNHS maps

- Digitizing existing water-table elevation maps and increasing their availability in a GIS format (Figure 1). These maps show groundwater levels and can be used to determine the direction of shallow groundwater flow. Knowledge of groundwater flow direction is useful for siting wells or developments that have the potential to impact groundwater quantity and quality.
- Developing an interactive web tool showing the status of WGNHS geologic and groundwater maps with direct links to available maps and associated GIS data.

### WGNHS water-table elevation maps

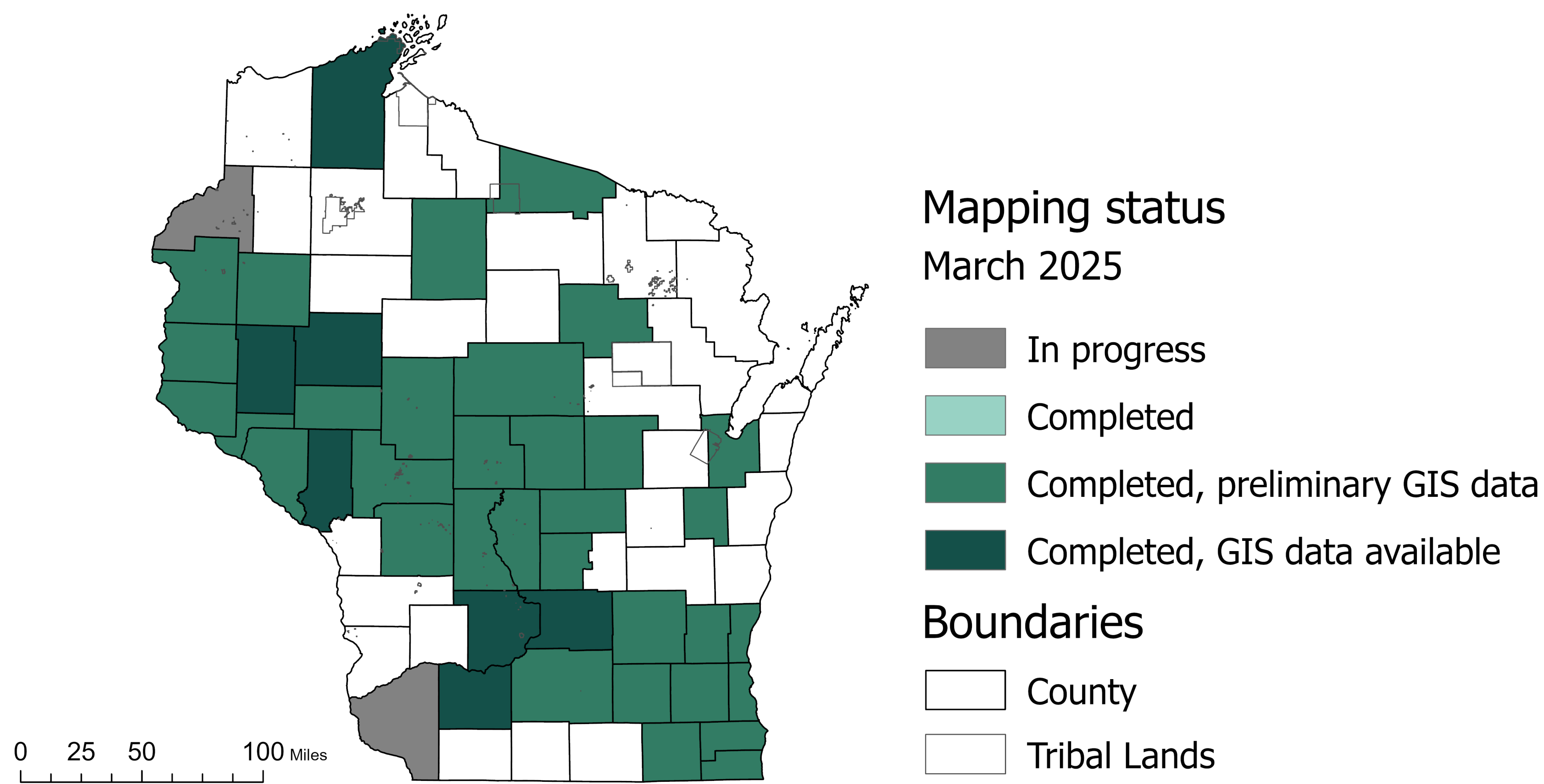


Figure 1. Mapping status of 1:100,000-scale WGNHS water-table elevation maps. The goal of this effort is to convert datasets from “Completed” and “Completed, preliminary GIS data” to “Completed, GIS data available.”



Check out our preliminary interactive map-status viewer!

## 2. County groundwater studies

- Characterizing groundwater in Burnett County, in collaboration with the Burnett County Conservation Division/Land Services Dept., the St. Croix Chippewa Environmental and Natural Resources Dept., and the UW-Stevens Point Center for Watershed Science and Education.
- Includes maps of water-table elevation (Figure 2), depth to the water table, surficial geology, groundwater recharge, depth to bedrock, and groundwater susceptibility to contamination (Figure 3). These baseline maps can be used to answer groundwater-related questions and assist with local/county planning efforts.

### Preliminary results for the Burnett County Groundwater Study

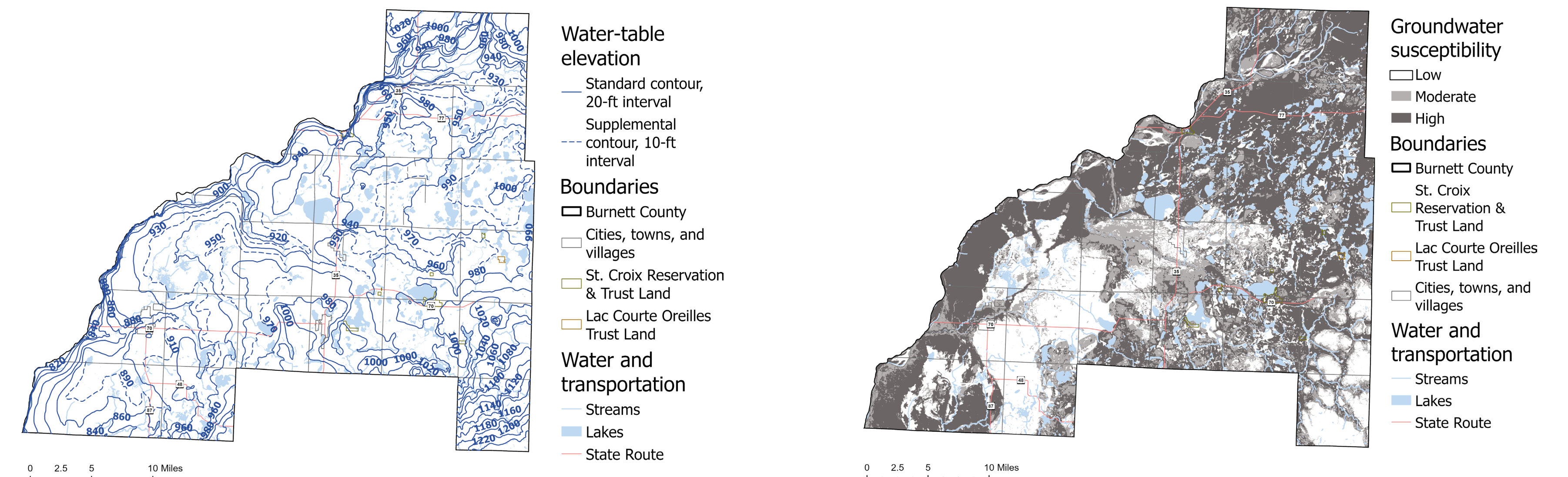


Figure 2. Map of water-table elevation or groundwater levels interpolated using water-level measurements recorded on well construction reports and the elevation of surface water bodies. Shallow groundwater flow direction is interpreted by drawing lines perpendicular to the contour lines.

Figure 3. Map of relative groundwater susceptibility to contamination from near-surface sources. Inputs include depth to the water table, groundwater recharge, depth to bedrock, and type of surficial sediment.

- Upcoming groundwater studies in collaboration with Rock County and the Lac Courte Oreilles Band of Lake Superior Ojibwe.

## 3. Groundwater outreach & education

- Facilitating groundwater workshops for K-12 teachers, in partnership with the UW-Stevens Point Center for Watershed Science and Education and the Wisconsin Department of Natural Resources (Figure 4).
- Developing an online groundwater education course for private well owners in collaboration with UW-Madison, Division of Extension colleagues (Figure 5).



Figure 4. Amy Wiersma helping a participant at the 2024 groundwater education workshop.



Figure 5. Welcome page and modules for an online groundwater education course targeting private well owners.

### Modules

- Managing your private well
- Where does well water come from?
- Learn about your well
- What determines your well water quality?
- Understanding well water test results
- Improving private well water quality
- Additional resources