

PLATE 4

Green County

Groundwater Recharge

BASEMAP FEATURES

- Green County Boundary
 - State Road
 - County Road
 - Township Road
 - Gravel Road
 - Village/City Street
 - Private Drive
 - Multi-use Trail
 - Public Land Survey System Township Boundary
 - Public Land Survey System Section Boundary
 - Railroad
 - Perennial Stream/River Flowline
 - Intermittent Steam/River Flowline
 - Populated Place (City/Village)
- #### ANNUAL GROUNDWATER RECHARGE
- Modeled Groundwater Recharge Rate
- < 4 inches/year
 - 4 - 6 inches/year
 - 6 - 8 inches/year
 - 8 - 10 inches/year
 - 10 - 12 inches/year
 - > 12 inches/year

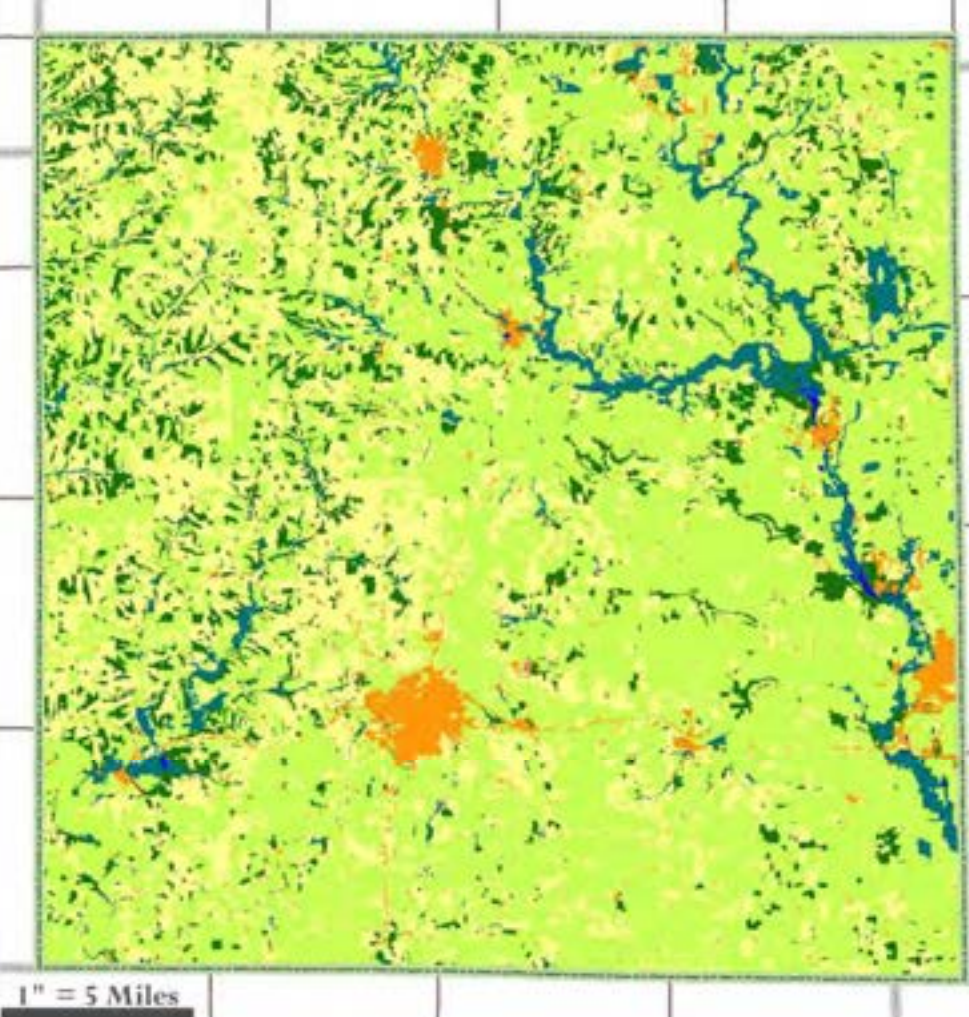
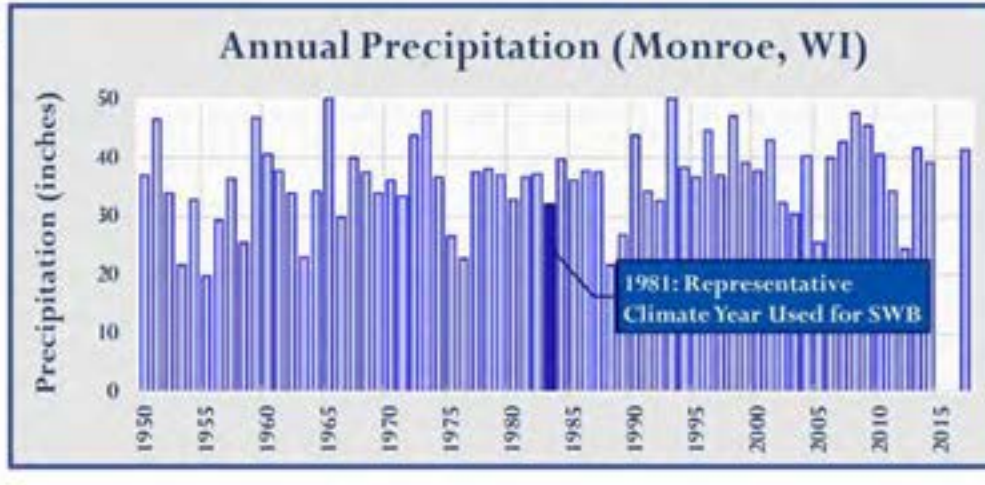
ABOUT THIS MAP

This map presents the modeled groundwater recharge rate for Green County. Groundwater recharge was estimated using a soil-water balance (SWB) model developed by USGS. The model relies on the datasets described below to estimate annual groundwater recharge. Daily climate information is a tabular dataset, while the other parameters are represented as coded raster (grid) files for the county. The miniature maps shown below have been generalized for presentation. All raster files were generated at a 50'x50' grid resolution.

Information in this map is the result of a model of the available data and is not a substitute for site-specific ground and subsurface studies that should be conducted, as appropriate.

LOCAL CLIMATE INFORMATION

Climate data used for modeling purposes was provided by the National Oceanic and Atmospheric Administration Climate Data Online dataset. Daily climate information, including precipitation and temperature data from Monroe, WI was used for the model. The year 1981 was used for climate data as it has been determined in state code (NR 151.12) to be a representative climate year and has been used for similar studies in southern Wisconsin. Shown to the right are annual precipitation totals in Monroe, WI.

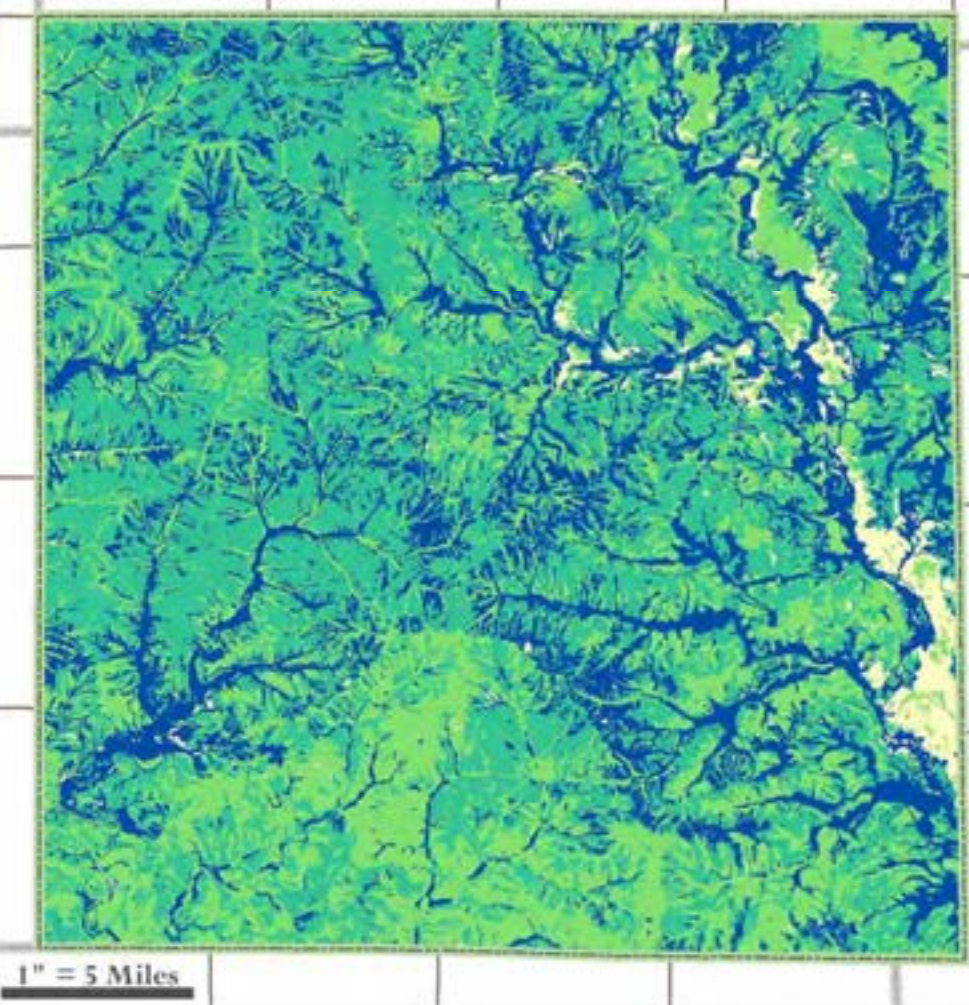
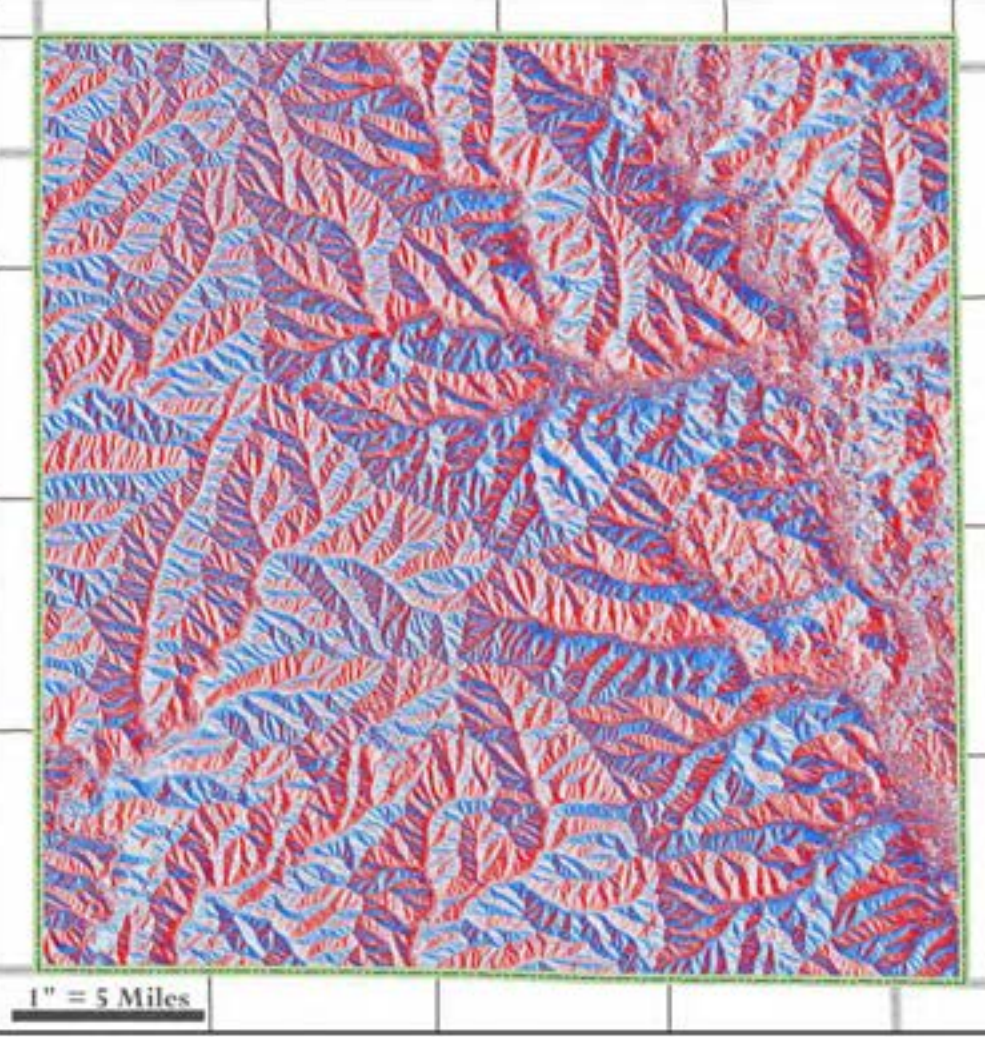
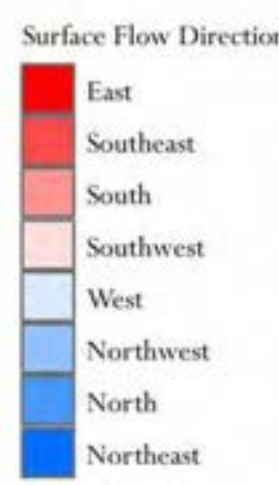


LAND USE CLASSIFICATION

Land use data for Green County was extracted from the Wisconsin Department of Natural Resources Wisconsin 2.0 dataset. This data is derived from Landsat satellite imagery acquired between 2010 and 2014, with an original grid resolution of 30m x 30m. For the SWB model, this was resampled to a 50' x 50' resolution. Shown to the left is the generalized Wisconsin Level 1, 8-category land use map. The data used for the SWB model used a more detailed 23-category classification.

SURFACE FLOW DIRECTION

To determine flow routing of surface water in the model, a flow direction grid was generated from topographic information using Geographic Information Systems software. Shown to the right is a classified flow direction grid, indicating the direction of surface water flow at each grid cell. The information is derived from high resolution LIDAR topographic surface information. The LIDAR-based topographic surface was originally provided as a 5' x 5' grid by Green County.



SOIL PROPERTIES

The remaining model parameters were derived from Natural Resources Conservation Service SSURGO Soil Survey information. Two parameters from the soil survey were used: Hydrologic Group and Available Water Capacity. Shown to the left is the Hydrologic Group rating for the soils in the county. These parameters represent soil infiltration rates and water-holding capacity. Both of these parameters were converted to 50' x 50' resolution grid files.

MAP REFERENCES

- Hart, D.J., Schoephoester, P.R., Bradbury, K.R., 2012, Groundwater Recharge in Dane County, Wisconsin: Estimating Recharge Using a GIS-Based Water-Balance Model, Wisconsin Geological and Natural History Survey, B107, 11 p.
- The National Climatic Data Center's (NCDC) Climate Data Online (CDO), National Oceanic and Atmospheric Administration (NOAA), Daily Summaries Dataset, 1981, Green County, WI Location ID: HPS-55943, www.nodc.noaa.gov/cdo/web/, Accessed 2017.
- Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture, Soil Survey Geographic (SSURGO) Database for Green County, Wisconsin, WI045, Available online, Accessed 2017.
- Westenbrook, S.M., Kelson, V.A., Driggs, W.R., Hunt, R.J., and Bradbury, K.R., 2010, SWB—A modified Thornthwaite-Mather Soil-Water-Balance code for estimating groundwater recharge: U.S. Geological Survey Techniques and Methods 6-A31, 60 p.

