

Missouri's Groundwater Observation Well Network

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Missouri's Groundwater Observation Well Network

- Maintained by Missouri Geological Survey's Water Resources Center
- Network was started in 1956 in response to severe drought
- 169 wells recording groundwater levels statewide in 94 of 114 Missouri counties
- Network includes precipitation gages at 41 sites
- Six of the rain gage sites also collect atmospheric data
- Wells are owned by the state (MDNR, MDC, MoDOT, State Parks), cities, water districts or private citizens
- Wells range in depth from 11 to 1825 feet

Missouri's Groundwater Observation Well Network

- Monitor water level in 13 separate aquifers
 - confined and unconfined
 - consolidated and unconsolidated
- Measures changes in groundwater levels due to various influences, both natural and man
- Water level measured by float/counterweight or pressure transducer
- Water level recorded every 30 minutes
- Data is posted in real-time through a cooperative agreement with USGS
- The network DOES NOT collect water quality data



MoDNR/USGS Partnership

- State responsibilities
 - Purchase, Install and Maintain Equipment
 - Collect Water Level Data
 - Seek Site for Possible Network Expansion
- Federal responsibilities
 - Quality check water level data
 - Post data on the internet
 - Perform quality checks on state activities

Why Is Groundwater Level Data Important?

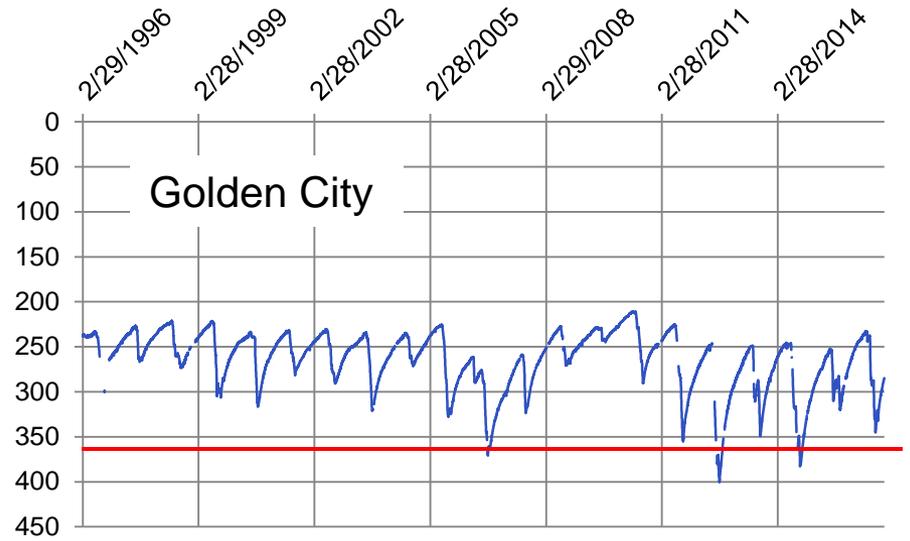
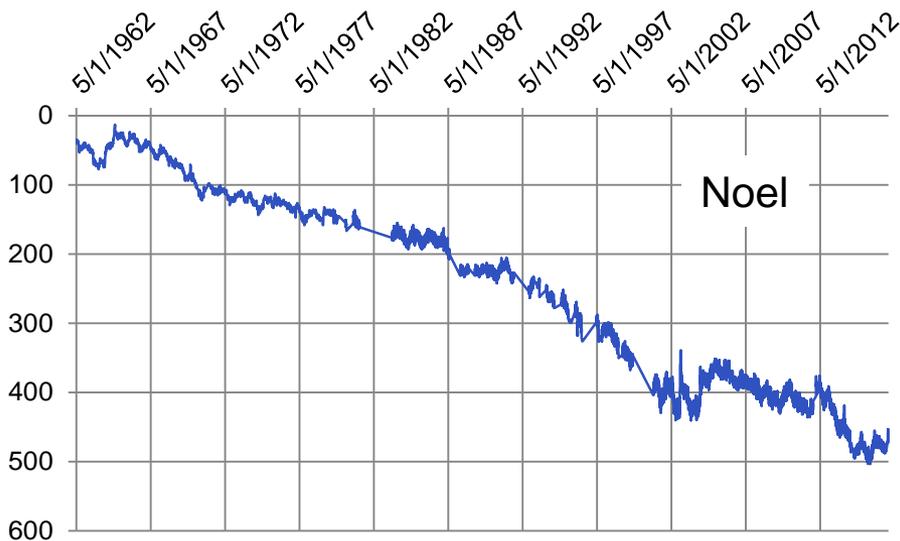
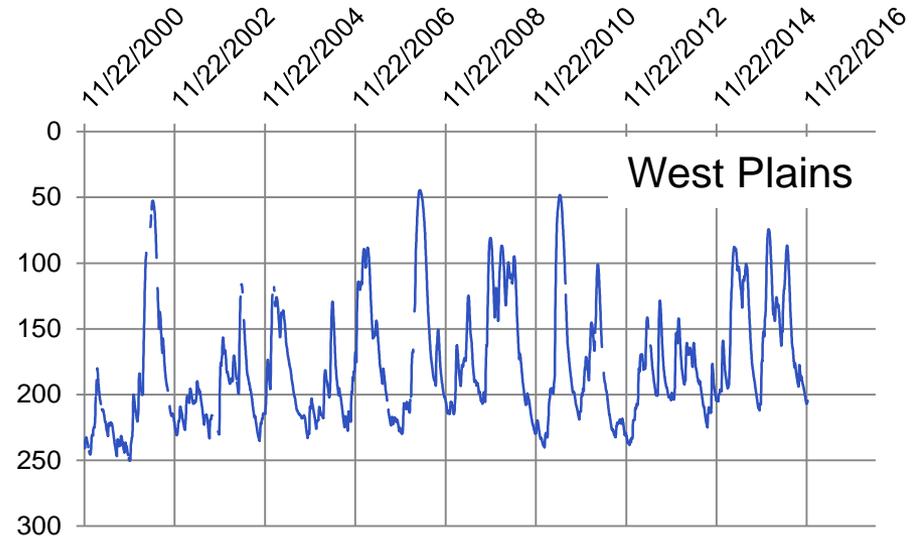
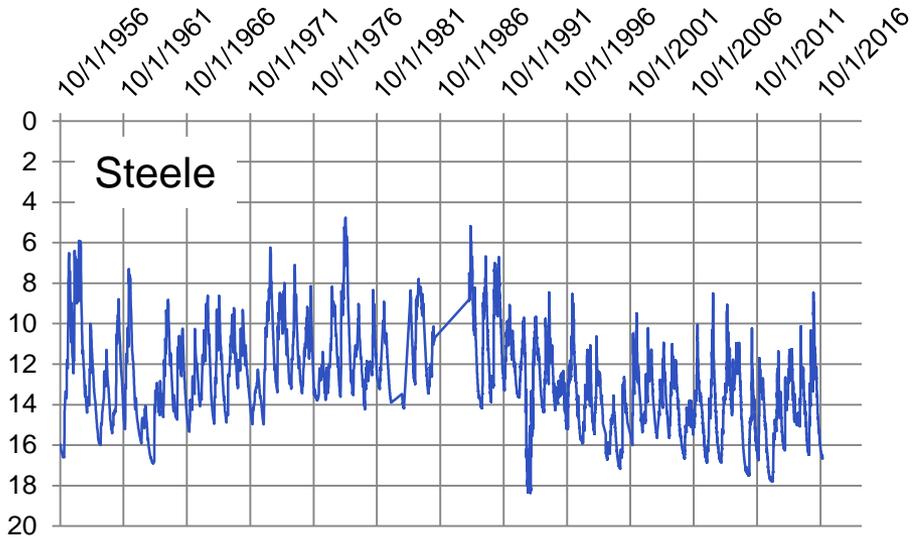
- 80% of Missouri's PWS systems utilized groundwater with most rural citizens consuming groundwater
- Hundreds of thousands of wells are in use in Missouri
- An average of over 3,600 water wells have been drilled each of the last 10 years (does not include other well types)
- Over 350 billion gallons of groundwater is produced annually

Usage of Groundwater Level Data

- Calculate area of influence of production wells
- Adjust pumping cycles for nearby production wells
- Assessment of possible regional groundwater decline
- Assist in determination of salt water intrusion
- Aide in evaluating the effects on aquifers from over usage
- Determine influence of mine collapse on the aquifer
- Validate well construction standards
- Affects of drought on aquifers
 - Projections of water availability
 - Assessing suitability of locations for new wells
 - Determination of total drill depths for new wells and pump depths



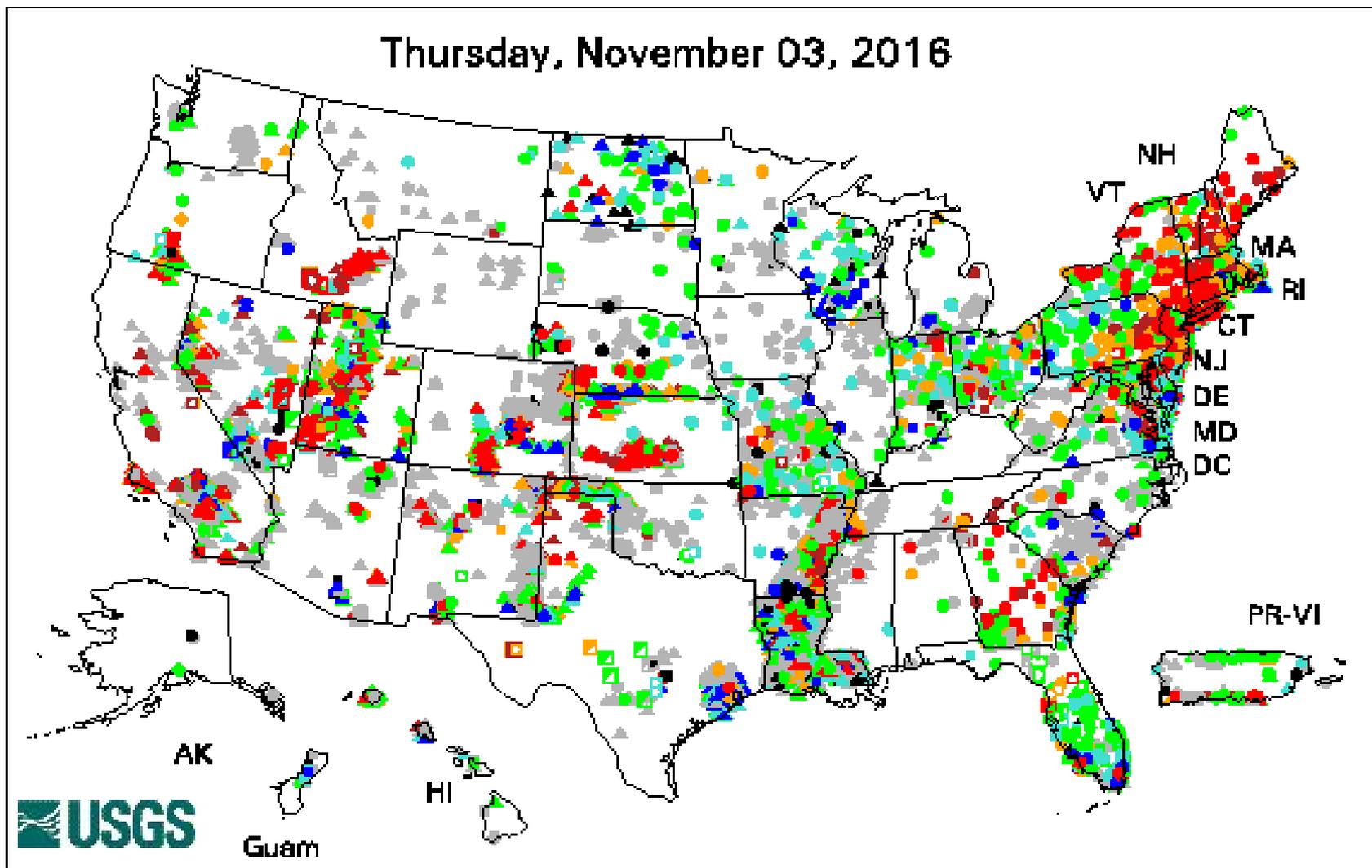
Example Hydrographs





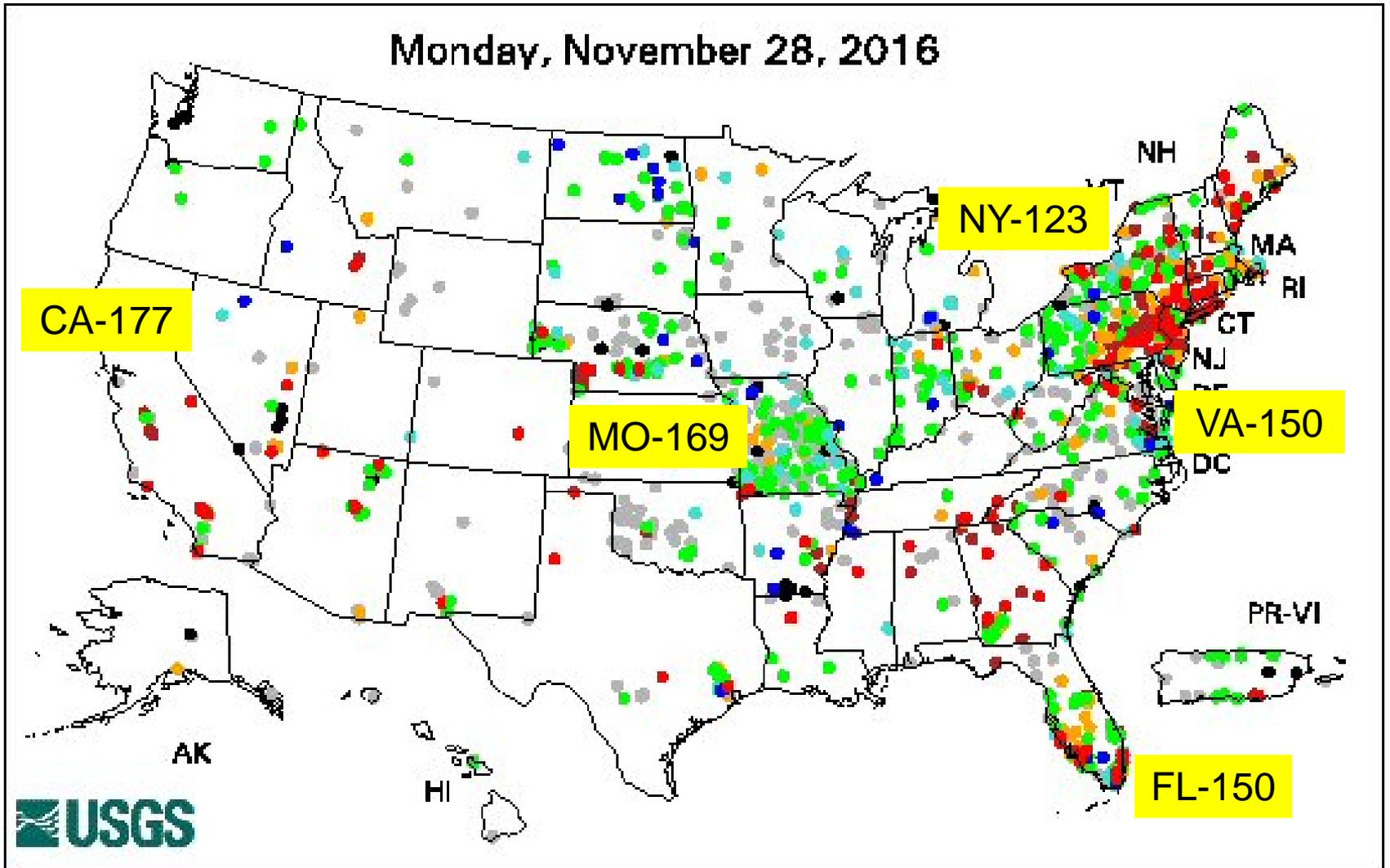
Active GW Monitoring Well Network

Thursday, November 03, 2016

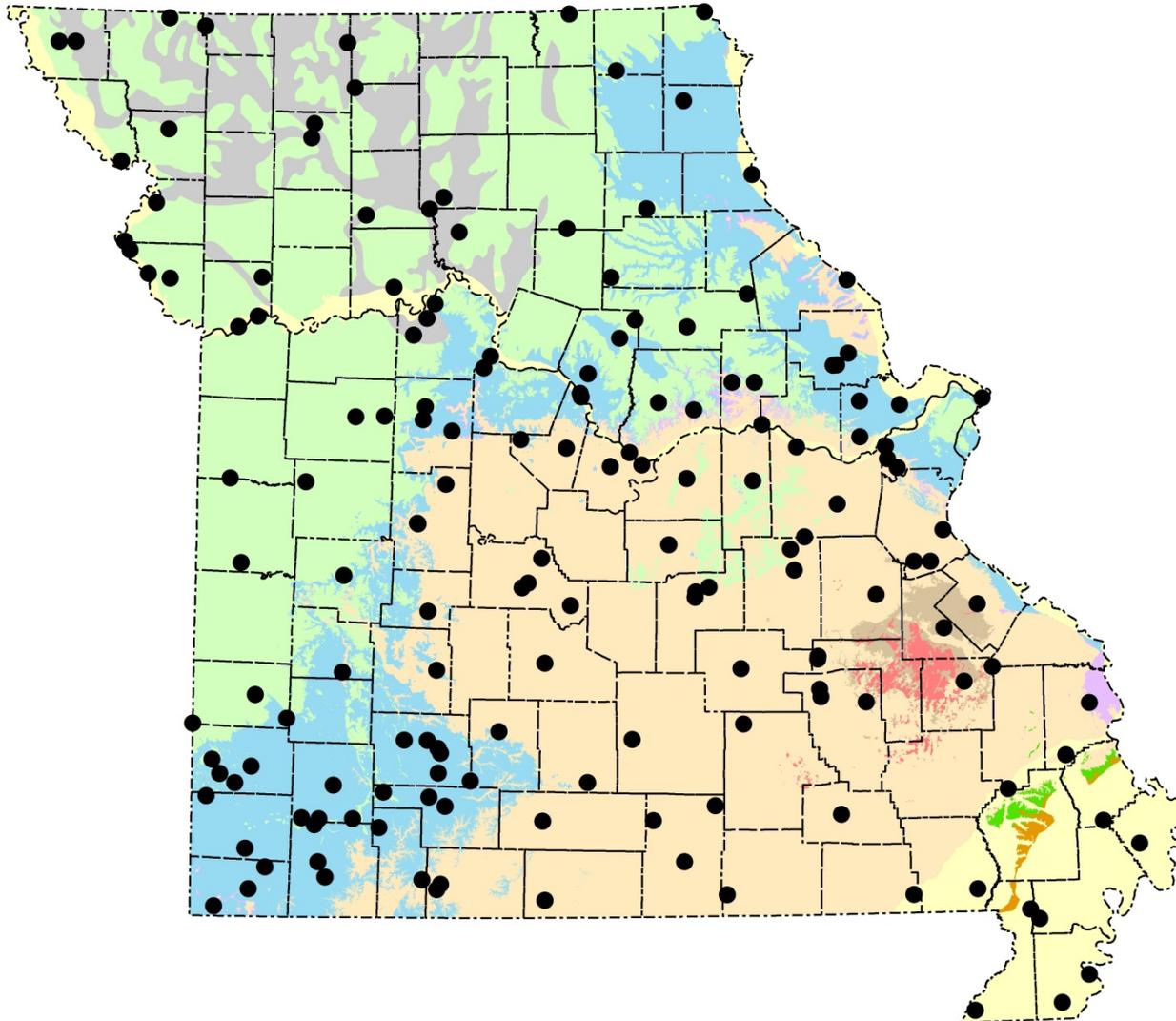


Active Real Time Sites

Monday, November 28, 2016



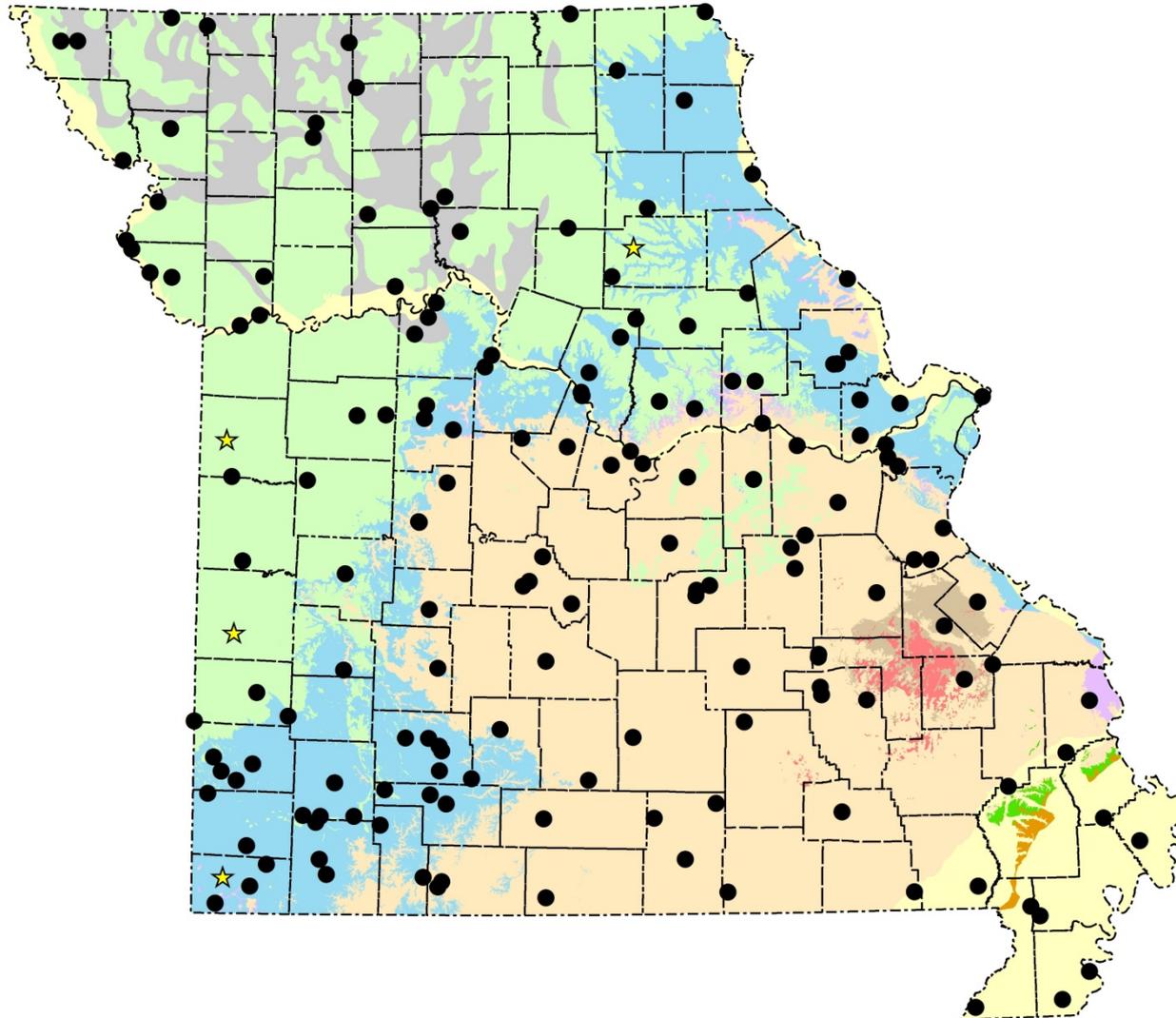
Observation Well Locations Related to Aquifers





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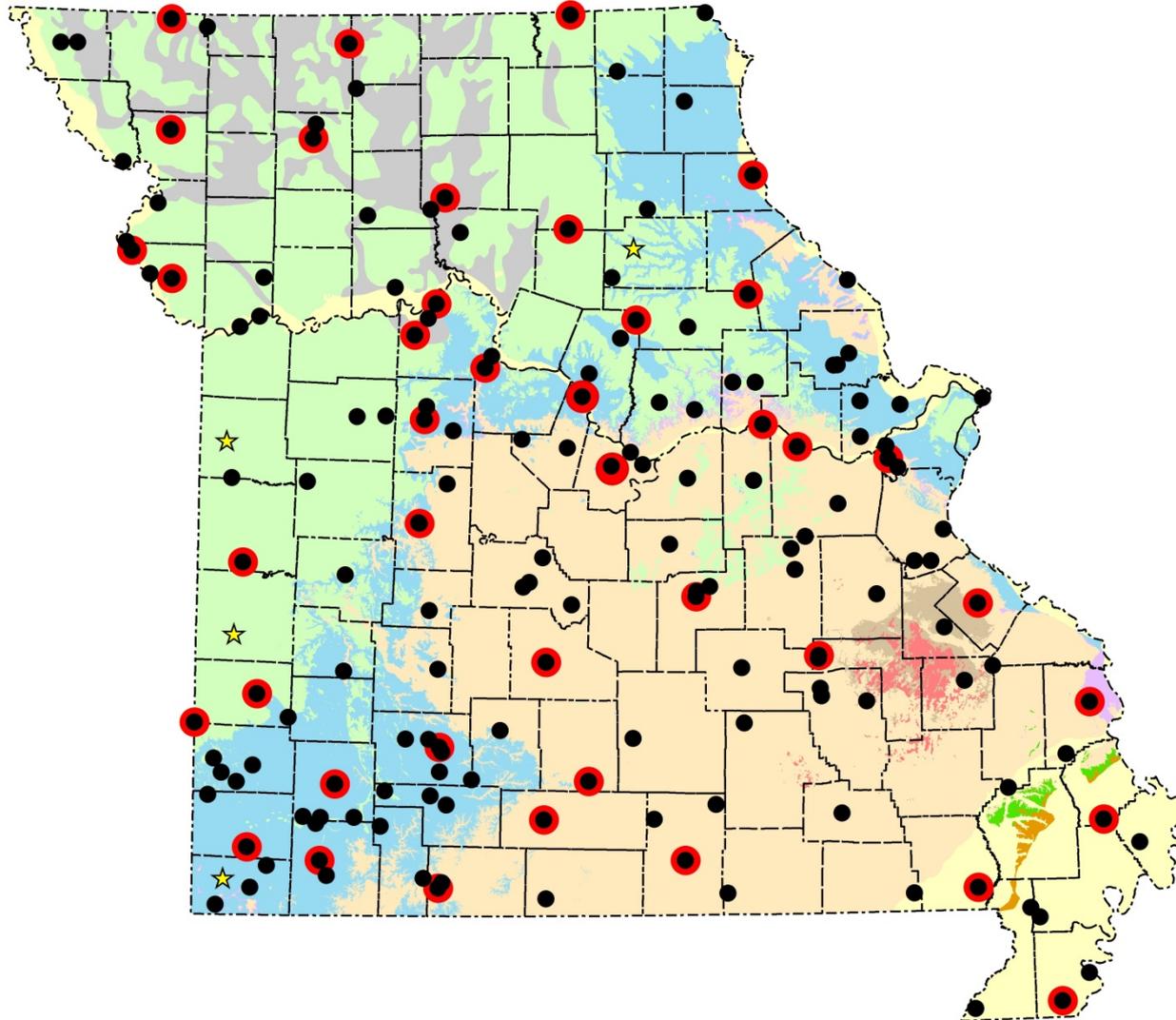
Future Expansion Sites





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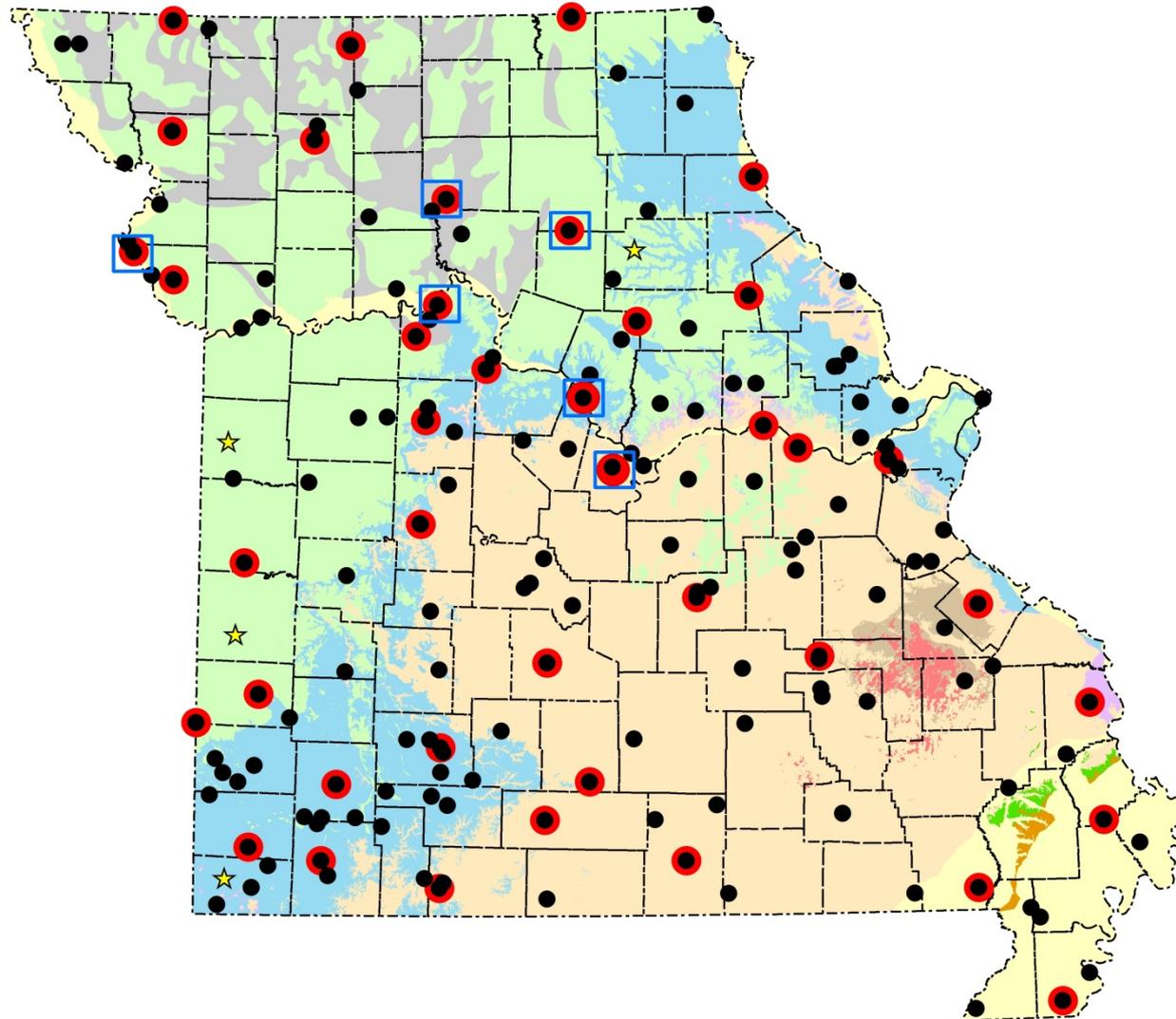
Rain Gage Locations





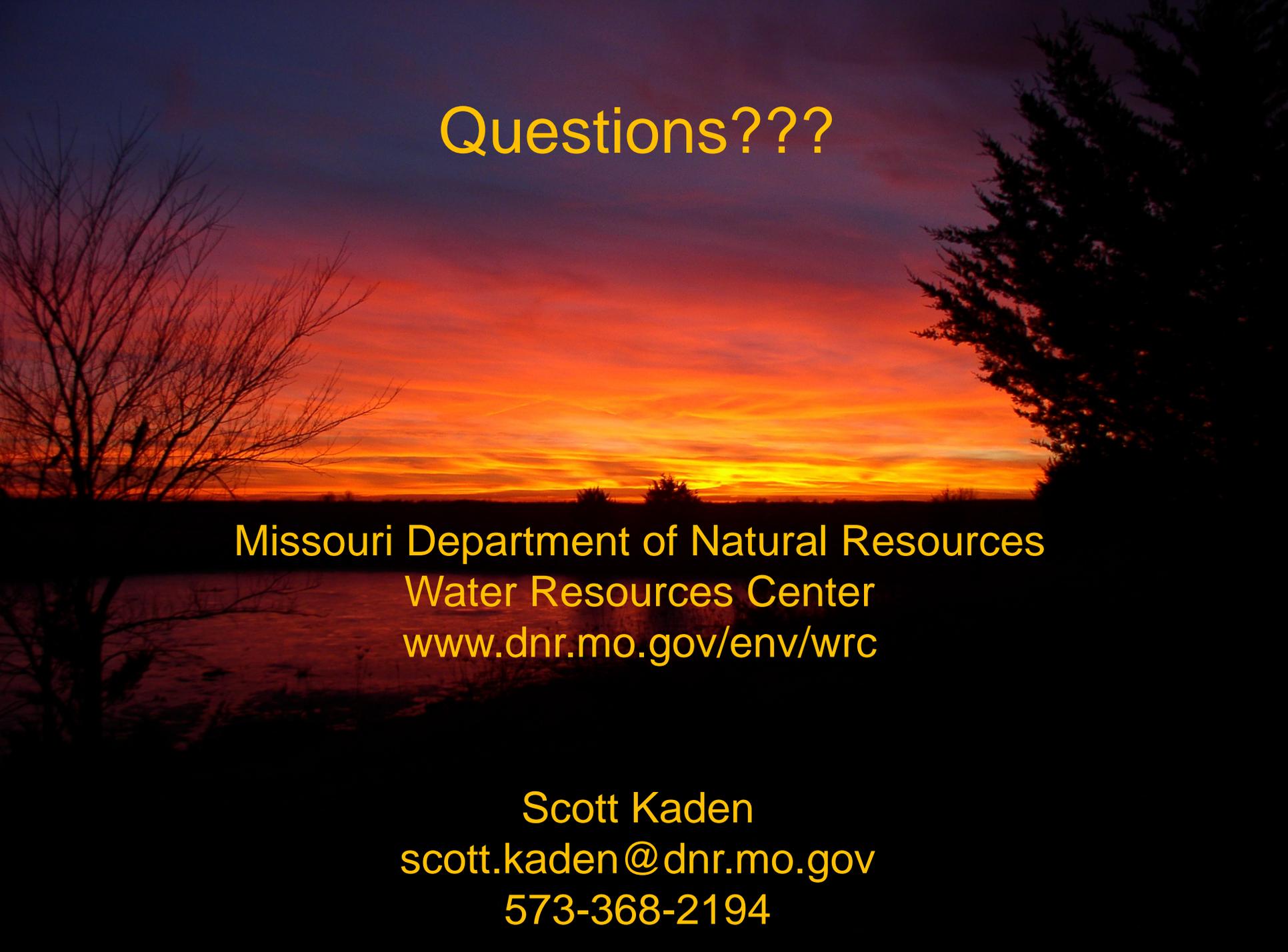
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Atmospheric Data Collection Sites



Plans to Enhance the Network

- Currently constructing and surveying benchmarks at 145 sites
- Will be combing through well data for the 169 wells to get the last 24 added to NWIS
- Will be assimilating water quality data for former public water supply wells that are now observation wells
- Two existing wells have holes in casing that will require reconstruction
- Plan to identify holes in the network where additional wells may be constructed

A sunset over a body of water with silhouettes of trees. The sky is a mix of orange, red, and purple, with the sun low on the horizon. The water in the foreground is dark and reflects the colors of the sky. Silhouettes of trees are visible on the left and right sides of the frame.

Questions???

Missouri Department of Natural Resources
Water Resources Center
www.dnr.mo.gov/env/wrc

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