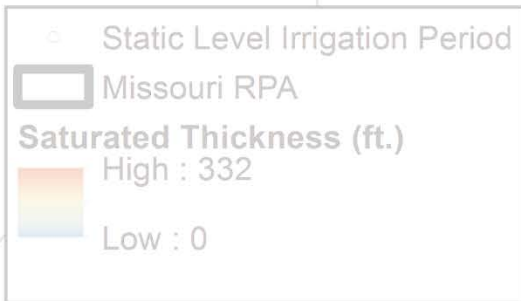


# Addressing Groundwater Goals of the Missouri Regional Planning Area: Phase 2 Progress Report

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Andrea Brookfield  
Geoff Bohling  
Don Whittemore  
Jim Butler  
Brownie Wilson



# Objectives

- Establish a groundwater level and groundwater quality monitoring network in the Missouri Regional Planning Area (MRPA)
- Provide improved estimates of safe yield and establish a groundwater quality baseline.

# Categories

- Water Quantity
  - Monitor groundwater levels
  - Estimate safe yield
- Water Quality
  - Assess and monitor groundwater quality
- Information Dissemination
  - Make information accessible to all interested parties

# Tasks – Water Quantity

1. Assess robustness of current data interpretation
2. Identify exact location of some existing wells
3. Equip existing wells for monitoring
4. Drill new monitoring wells
5. Interpret groundwater-level surface and estimate aquifer storage and safe yield

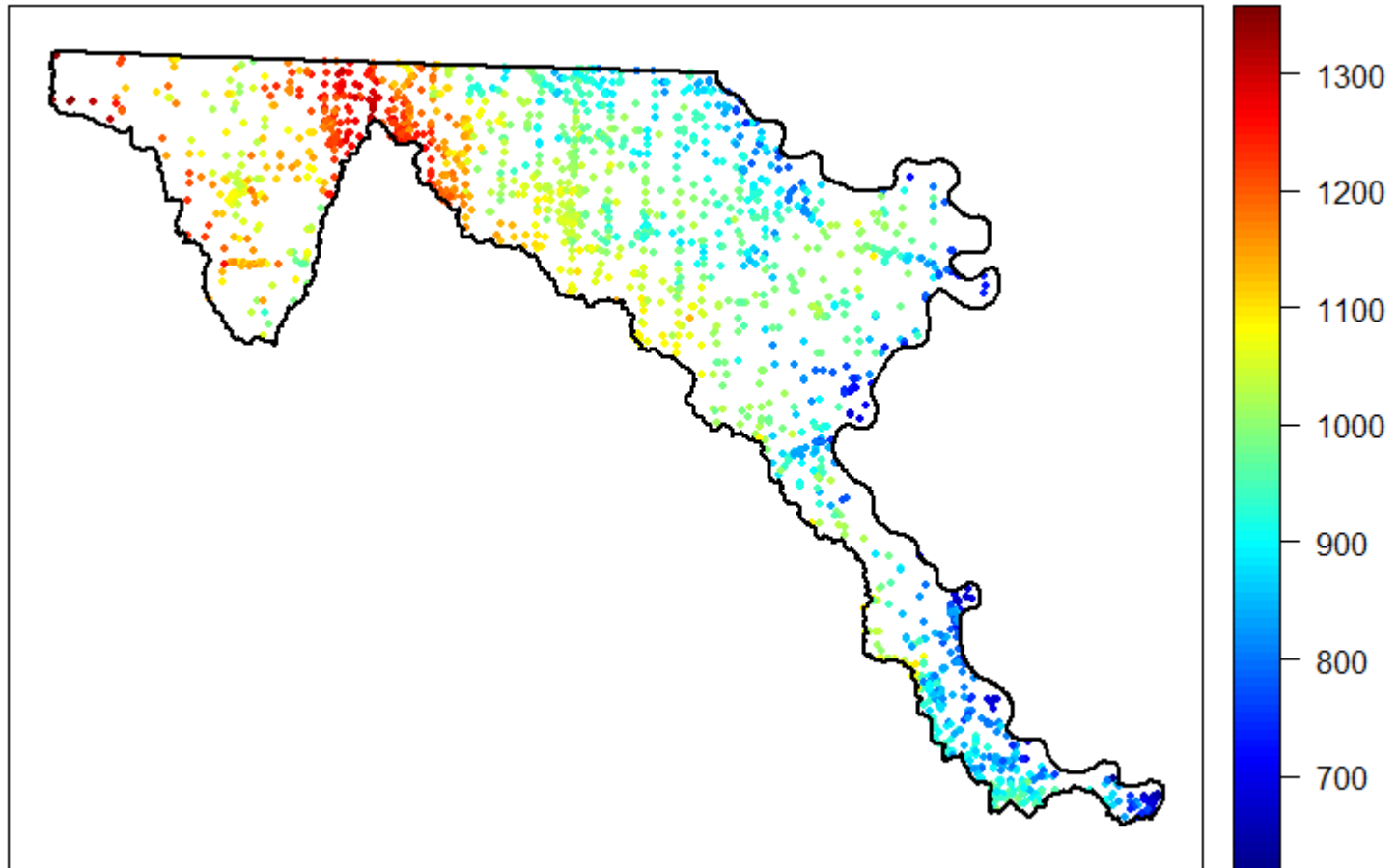
Task	Year 1	Year 2	Year 3	Year 4	Year 5
Water Quantity 1					
Water Quantity 2					
Water Quantity 3					
Water Quantity 4					
Water Quantity 5					

# Progress – Water Quantity

- Added bedrock depths for 57 new WWC5 wells
- Examined bedrock depth conflicts at locations with multiple boreholes\*
- Identified bedrock elevation outliers
- Made revised elevation map + map of associated uncertainty
- Tried to incorporate information from boreholes that do not reach bedrock

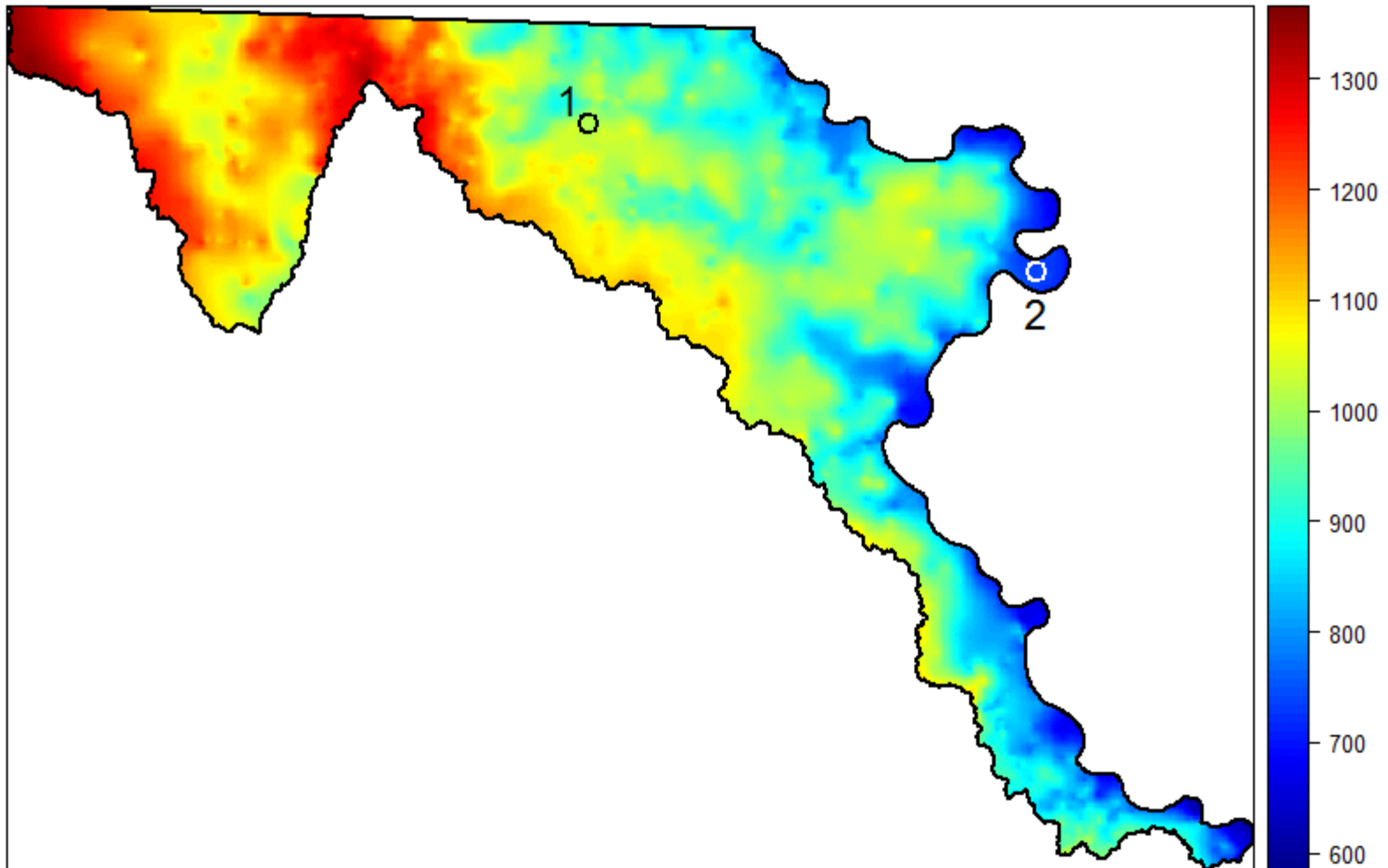
\*“borehole” means WWC5 well or test hole

# Bedrock Elevations at Boreholes



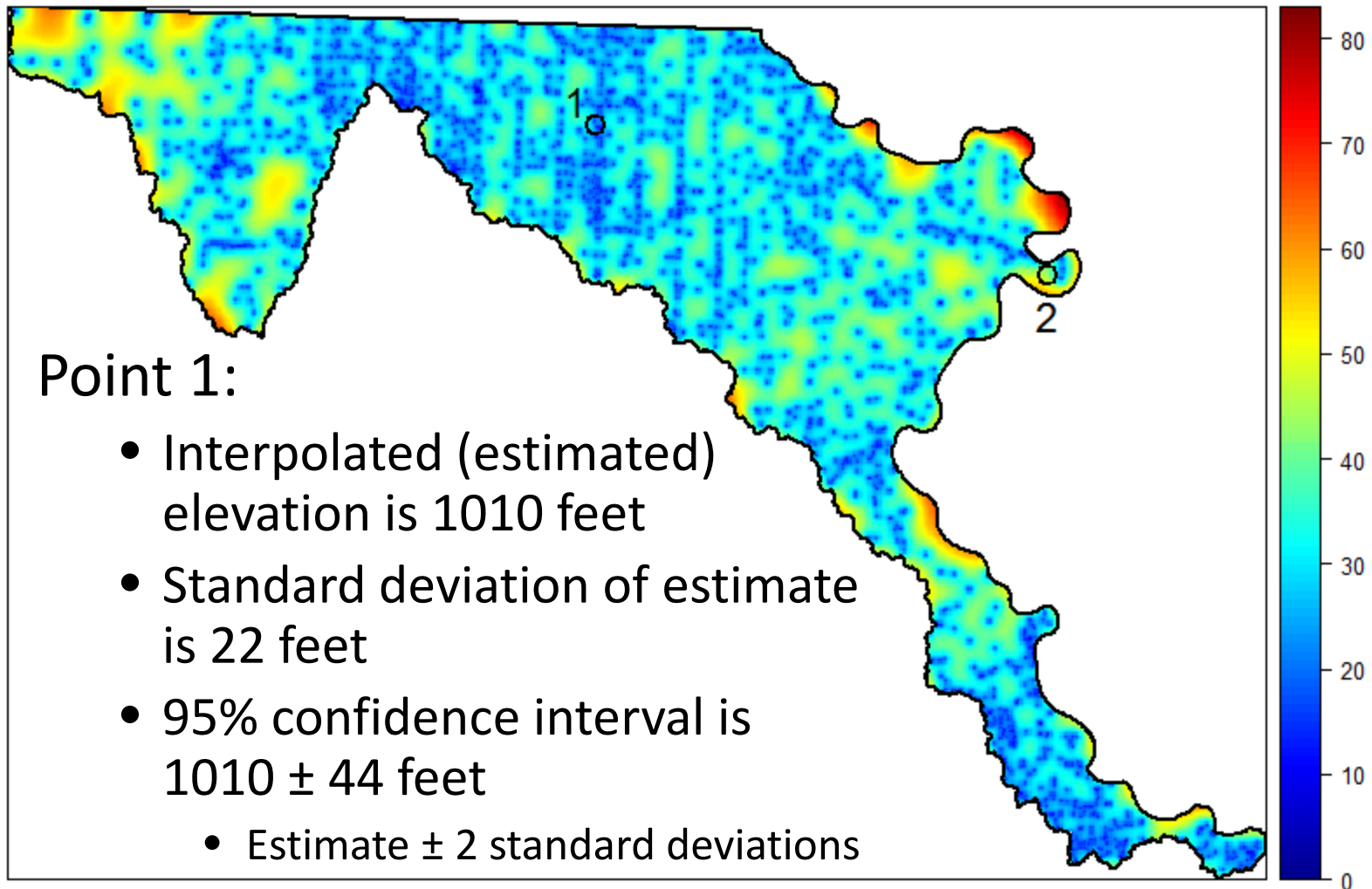
Bedrock elevations (feet above sea level) at 1775 locations in 2058-borehole dataset; average elevation at locations with multiple boreholes

# Interpolated Bedrock Elevations (ft)



Interpolated bedrock elevations are *estimates* at points in a grid  
Example points 1 and 2 will be discussed in a moment

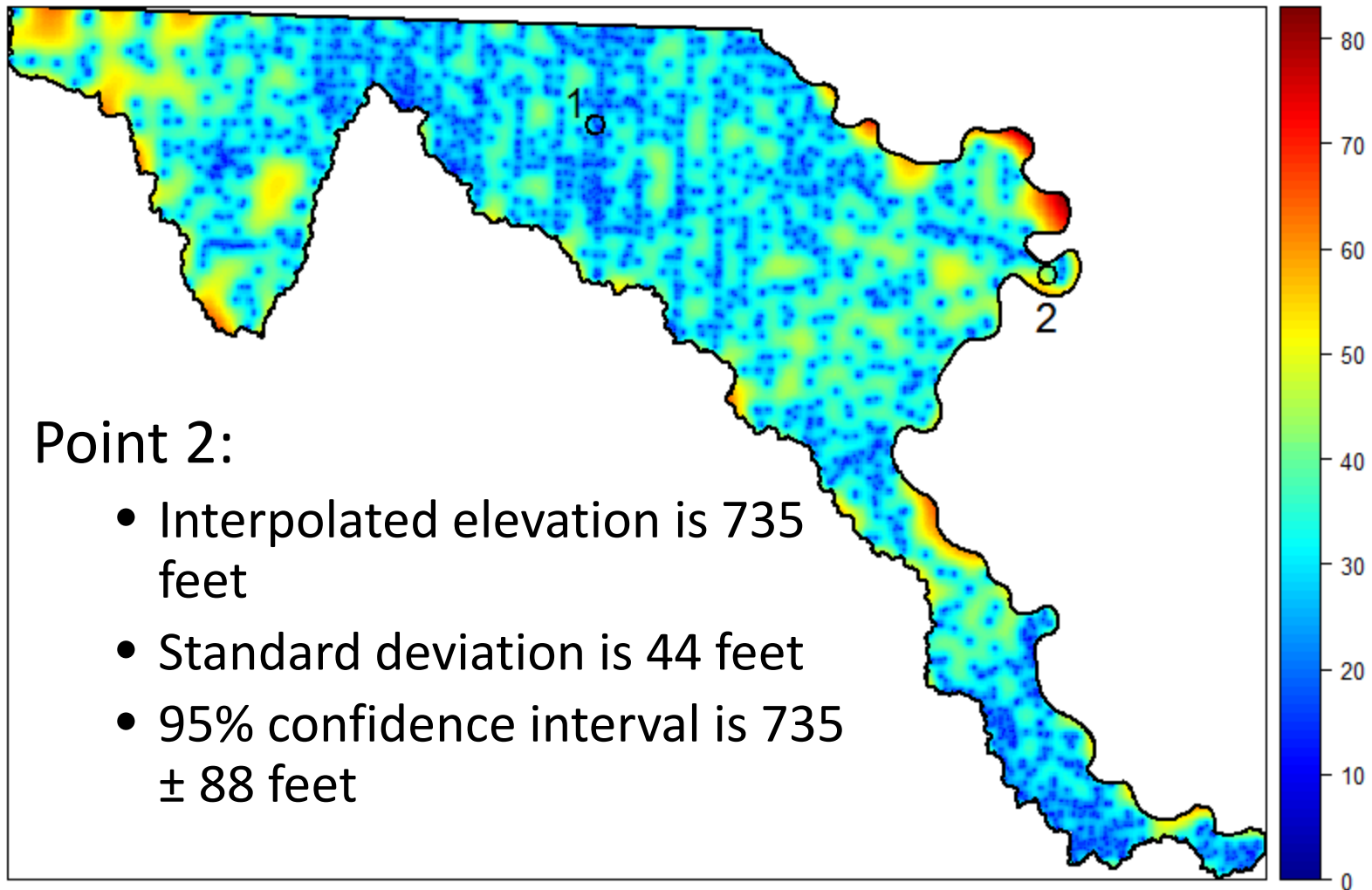
# Uncertainty in Interpolated Elevations



This represents *uncertainty* in previous map, in terms of standard deviation (feet)  
Uncertainty is smaller near boreholes, larger farther away from them



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This represents *uncertainty* in previous map, in terms of standard deviation (feet)  
Uncertainty is smaller near boreholes, larger farther away from them

# Next Steps – Water Quantity

- Identify any wells that require us to go into the field and physically locate
- Develop the finalized bedrock map
- Update maps of thickness of coarse and fine grained material
- Develop strategy for interpreting groundwater-level surface and estimate aquifer storage and safe yield, including:
  - Identify existing wells for water level monitoring (year 2)
  - Identify potential locations for installing new monitoring wells (year 3)

# Tasks – Water Quality

1. Interpret existing well water-quality data and trends
2. Select groundwater quality monitoring locations and collect samples
3. Analyze samples
4. Interpret analytical data and plan for future sampling

Task	Year 1	Year 2	Year 3	Year 4	Year 5
Water Quality 1					
Water Quality 2					
Water Quality 3					
Water Quality 4					

# Progress – Water Quality

- Water-quality data for public water supply wells from KDHE (Data additional to past ambient water-quality network)
  - A few new well locations
  - Additional sampling dates for wells in ambient network
  - Includes nitrate concentration data

# Next Steps – Water Quality

- Reinterpret water quality trends with new data
- Identify locations for water quality sampling
  - Wells used for water level monitoring
  - Active public supply wells
- Conduct first round of water sampling

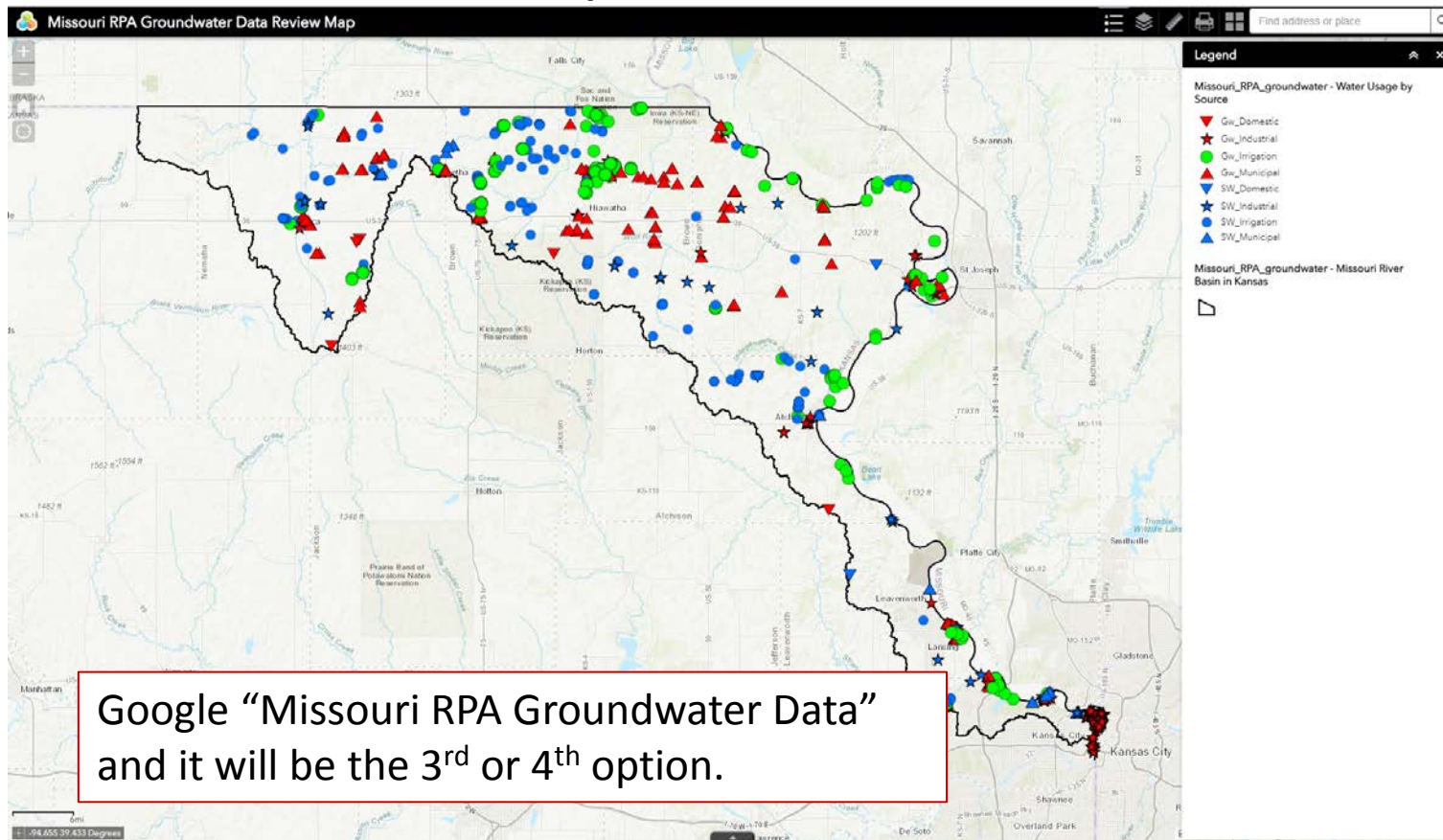
# Task – Information Dissemination

- Make Phase 1 maps available online
- Update maps and information as project progresses

Task	Year 1	Year 2	Year 3	Year 4	Year 5
Info. Dissemination					

# Progress – Info. Dissemination

- Make Phase 1 maps available online



Google "Missouri RPA Groundwater Data" and it will be the 3<sup>rd</sup> or 4<sup>th</sup> option.

<http://arcg.is/1DzS91>

# Next Steps – Info. Dissemination

- Continue to develop online mapping tool
  - We would appreciate your feedback:
    - What do you like? Not like?
    - What information is not available that you would like available?
    - Do we want to minimize options for mobile access?
- Update maps and information as project progresses



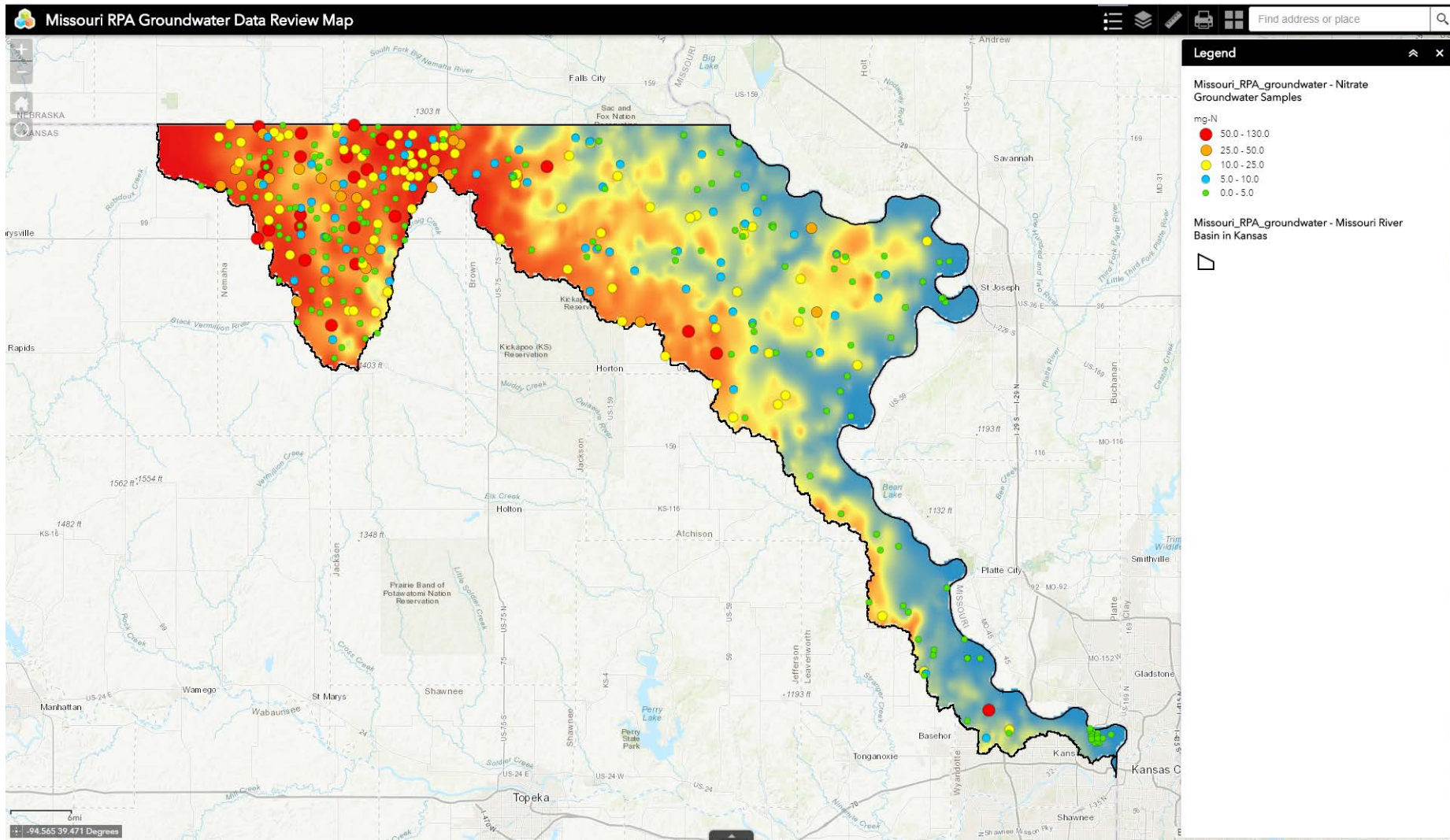
# Schedule

Task	Year 1	Year 2	Year 3	Year 4	Year 5
Water Quantity 1	█				
Water Quantity 2	█				
Water Quantity 3		█	█	█	█
Water Quantity 4			█	█	█
Water Quantity 5	█	█	█	█	█
Water Quality 1	█				
Water Quality 2	█	█	█	█	█
Water Quality 3	█	█	█	█	█
Water Quality 4		█	█	█	█
Info. Dissemination	█	█	█	█	█



We are here!

# Thank you!



Additional questions/comments: [andrea@kgs.ku.edu](mailto:andrea@kgs.ku.edu)

785-864-2199