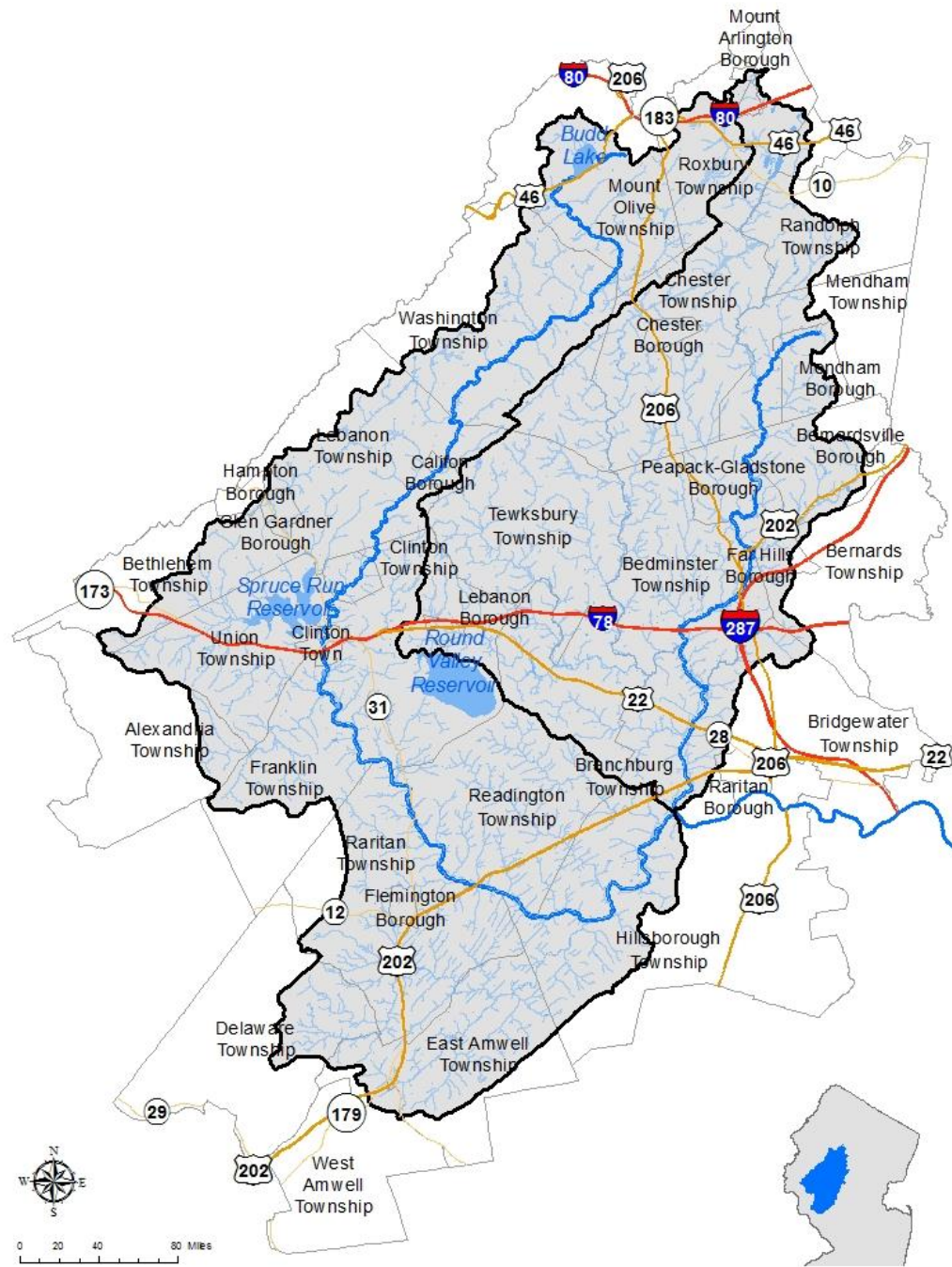


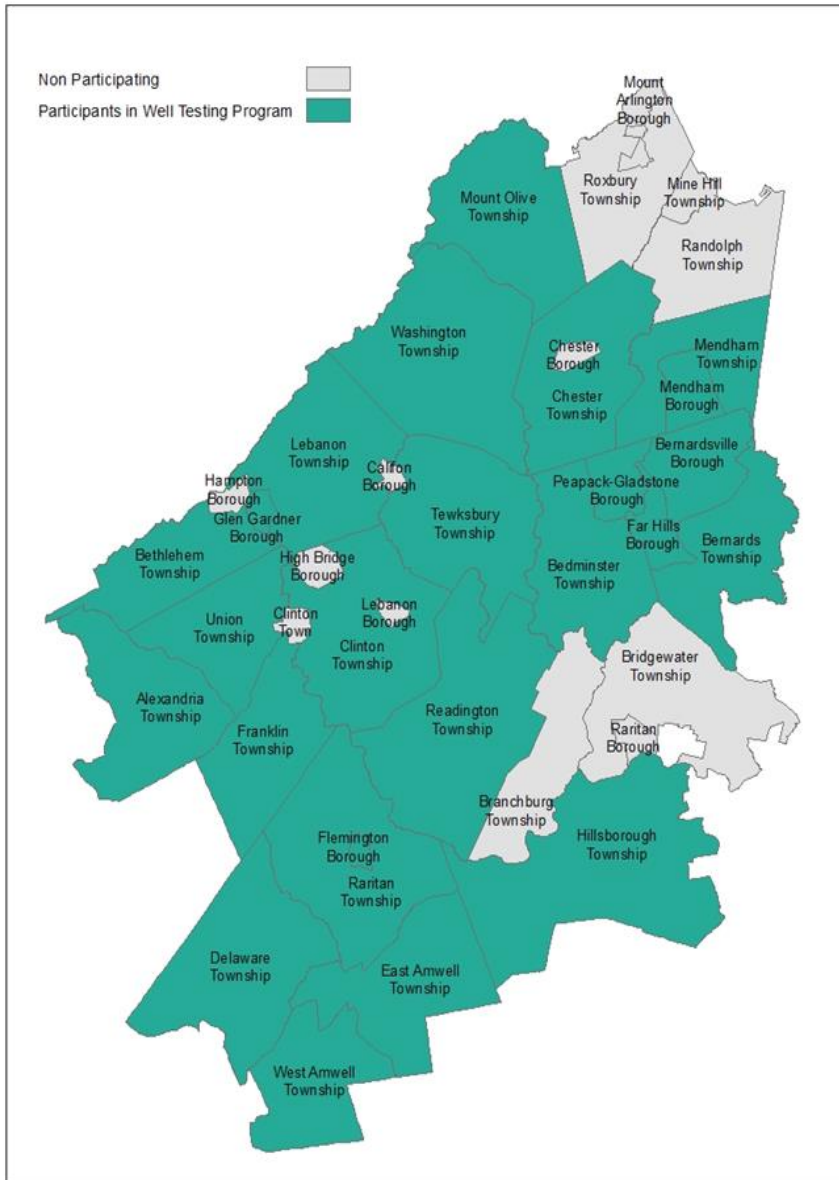
Long-term Trends in Groundwater Quality in the North and South Branch Raritan Watershed (WMA8)

Kristi MacDonald
Sustainable Raritan Conference
Rutgers University
June 10, 2016





RHA's Well Test Program



- Established in 1974
- 80% of residents rely on wells
- Reduced cost, convenient and confidential testing
- Category 1 & 2 contaminants
- 33 municipalities (out of 39)
- 14,700 records in database ranging from 1984-2015

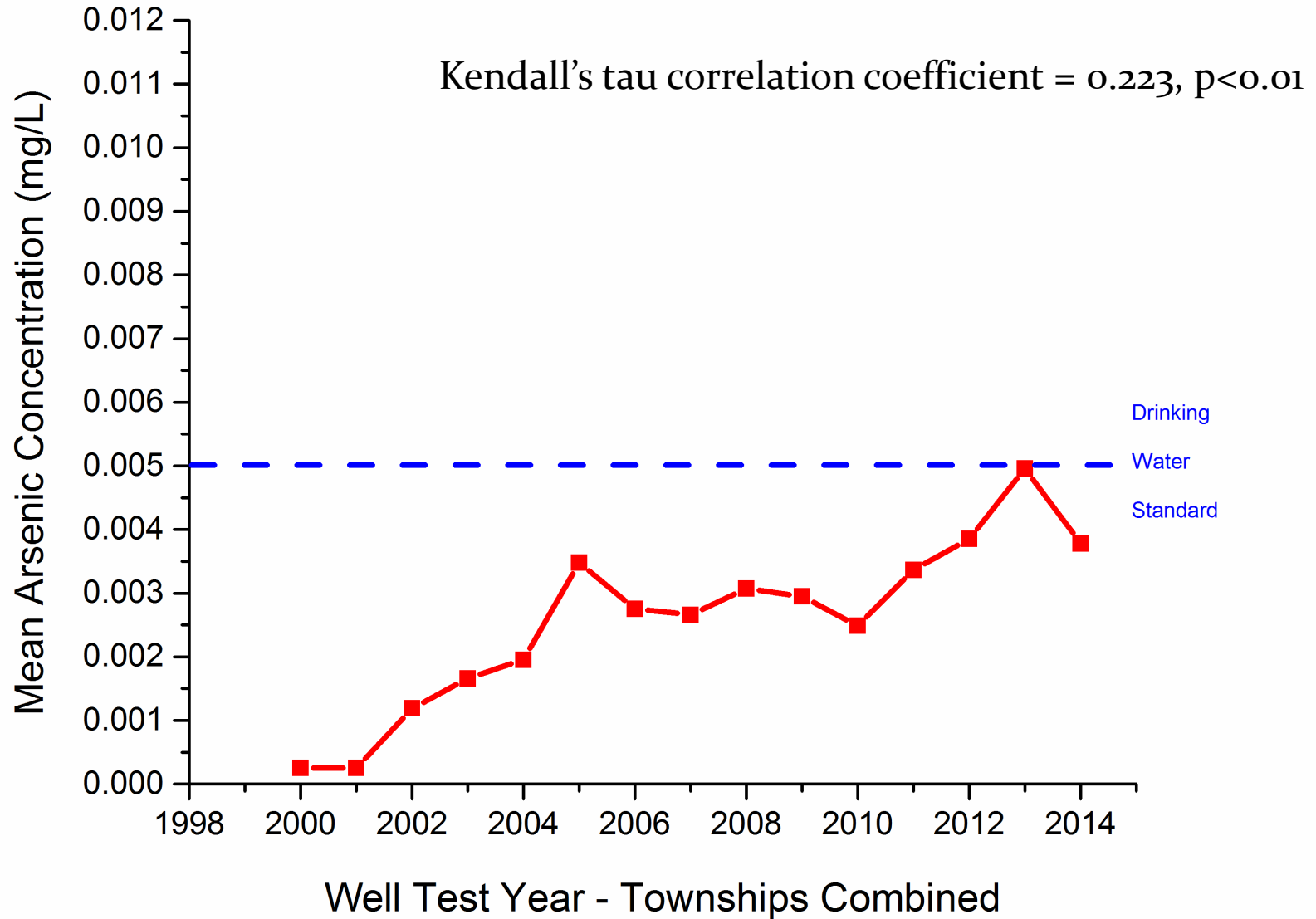
Groundwater Trend Analysis

- Has water quality changed over time?
- Do trends vary geographically?
- What are the possible causes of these trends in water quality?
- What can we do about it?

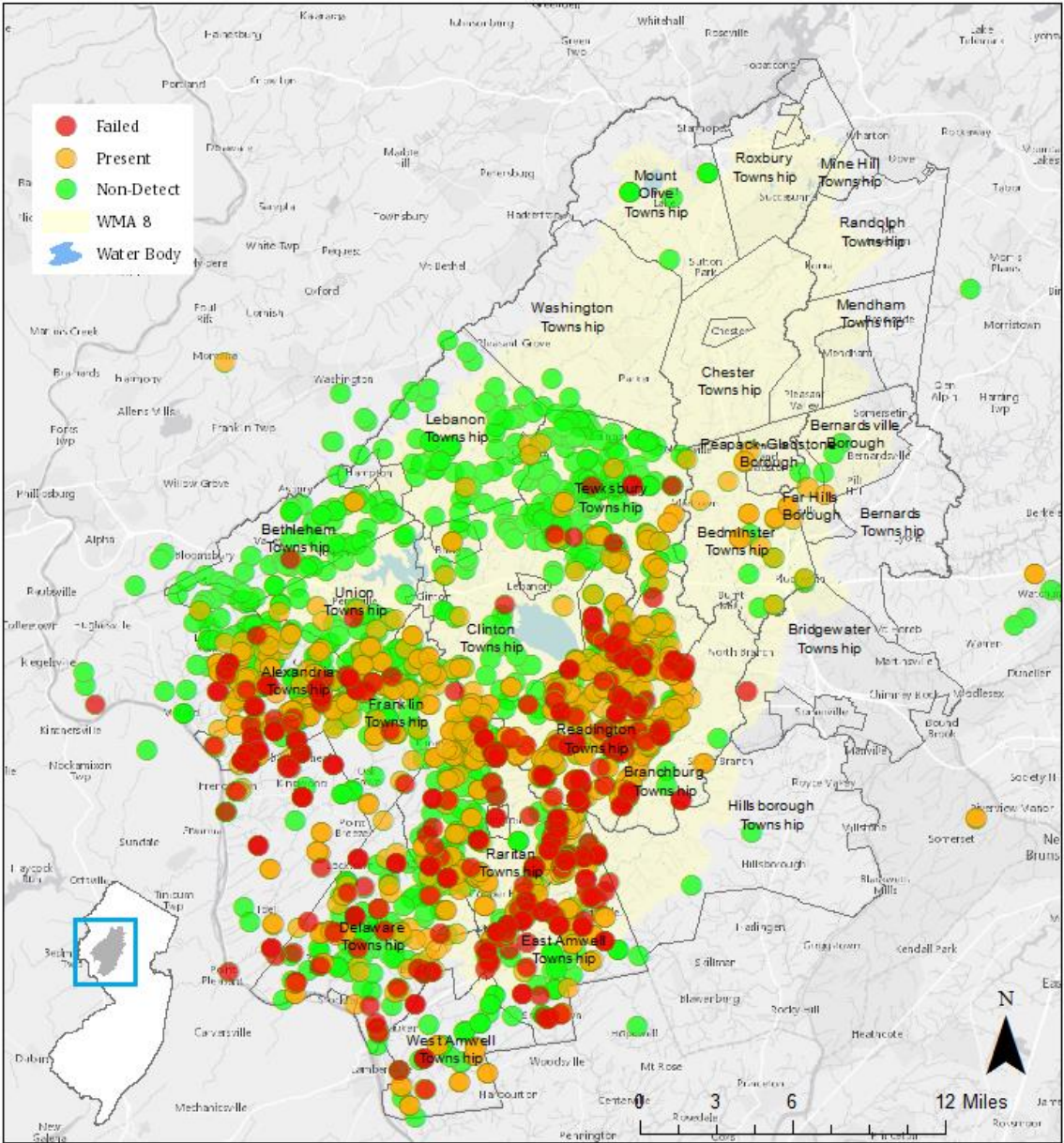
Statistical Methods

- Half the Reporting Limit for non-detects
- Parametric Tests – Linear regression on raw and log-transformed data
- Non-parametric Tests – Kendall's Tau b Trend Test
- Significant at $p < 0.05$

Mean Arsenic Concentration by Year



Arsenic Test Results 2003-2015



- Potential causes of mobilization:
 - Land use change
 - Well drilling and pumping practices

Download the Full Report at www.raritanheadwaters.org

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Important Next Steps

- More Research & Monitoring:
 - Mechanisms for arsenic mobilization in our region
 - Improved monitoring of groundwater quality and quantity
 - Connections between groundwater and surface water
- Raise public awareness about groundwater
 - The need to test private wells
 - Regional planning, BMPs, ordinances, and regulations to protect groundwater



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