

Nitrate in Idaho's Ground Water – Statewide Program Overview and Canyon County

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Idaho Department of Water Resources

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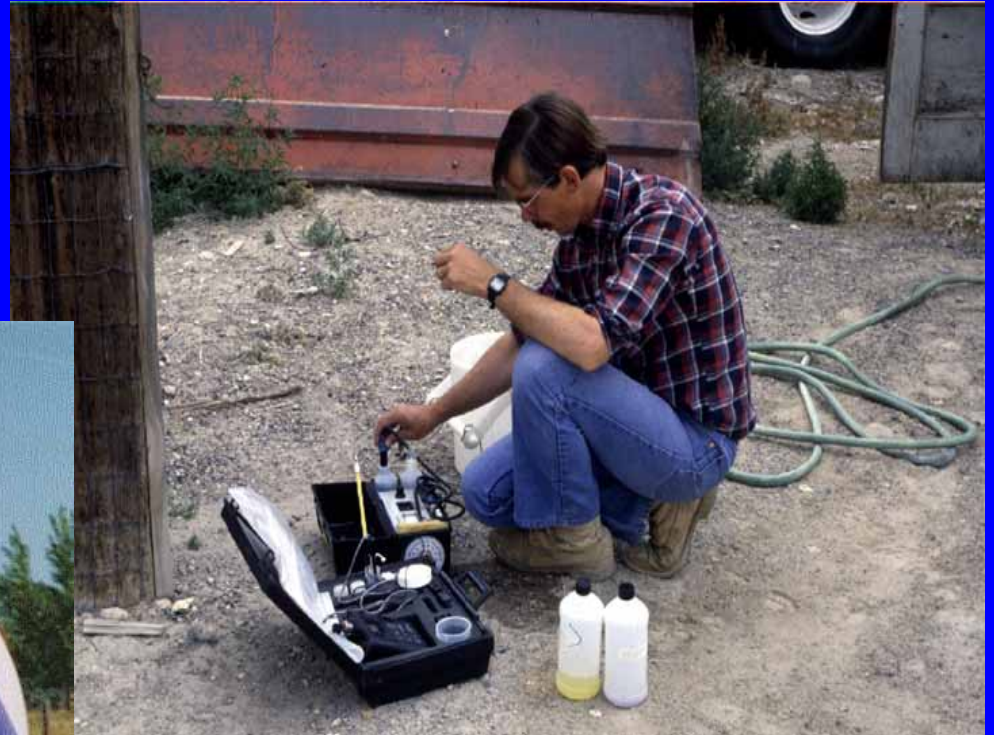
Main Points

- Statewide Program
- Canyon Nitrate Occurrences
- Canyon Nitrate Trends



Ground Water Quality Monitoring is a 3-part program in Idaho

- Statewide
- Regional



- Local



1. Statewide Program Overview

Objectives

- Characterization
- Trend Analyses
- Identify Potential Problems

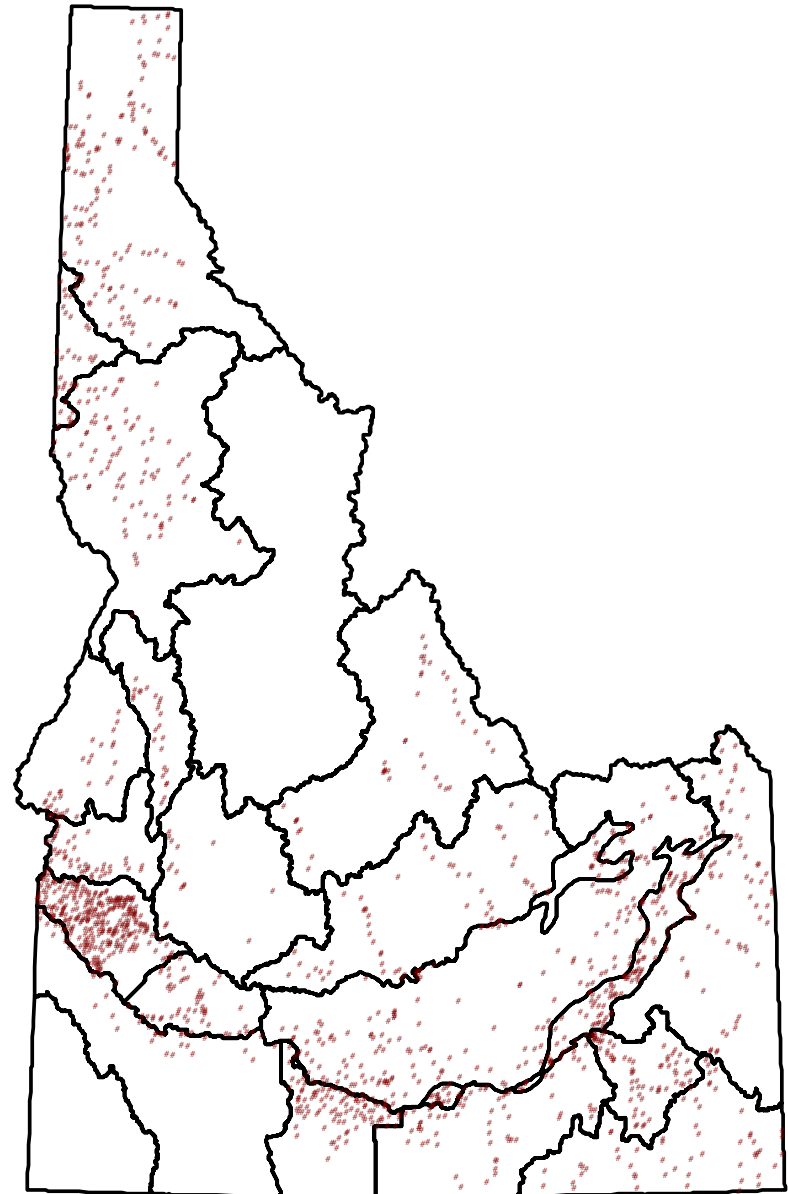


20 subareas

**Stratified random
sampling**

**Data from about
1,900 monitoring
Sites**

~1,600 Active Sites



Program Development

- First Round (1991 - 94)
- Second Round (1995 - 98)
- Third Round (1999 – 2003)
- Fourth Round to start in 2004
- Annual Sites since 1995
- Most sites on 5 year rotation

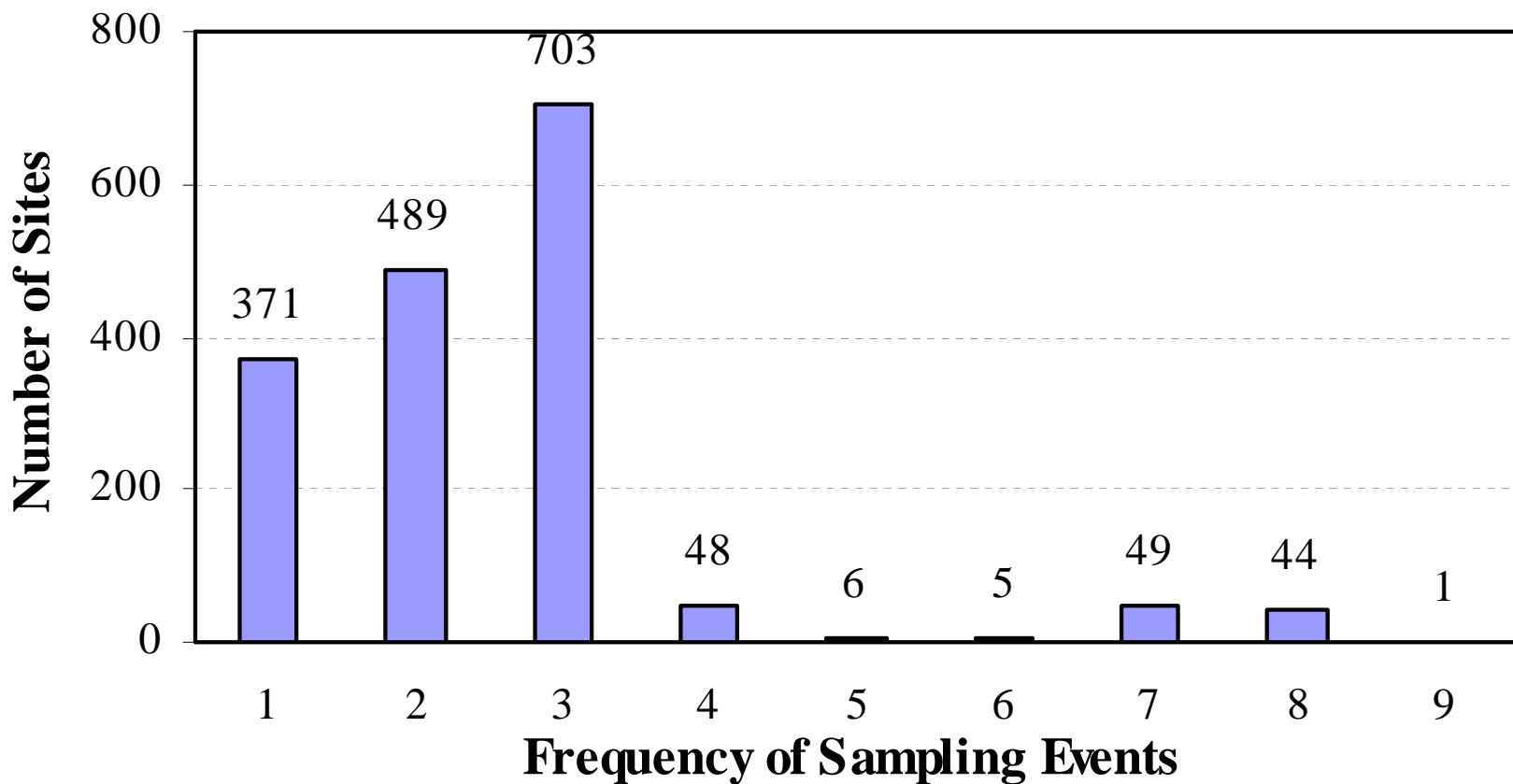
Constituents Monitored

Field parameters
Common Ions
Nutrients/Bacteria
Trace Elements
Radioactivity
VOCs
Pesticides



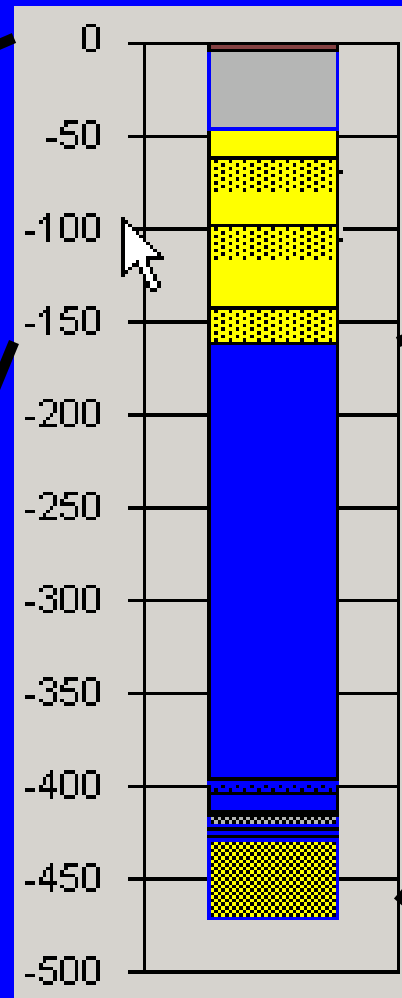
of Samples/Sites

Number of Sites vs. Frequency of Sampling Events



Treasure Valley Hydrogeology

Snake River Group



Idaho Group

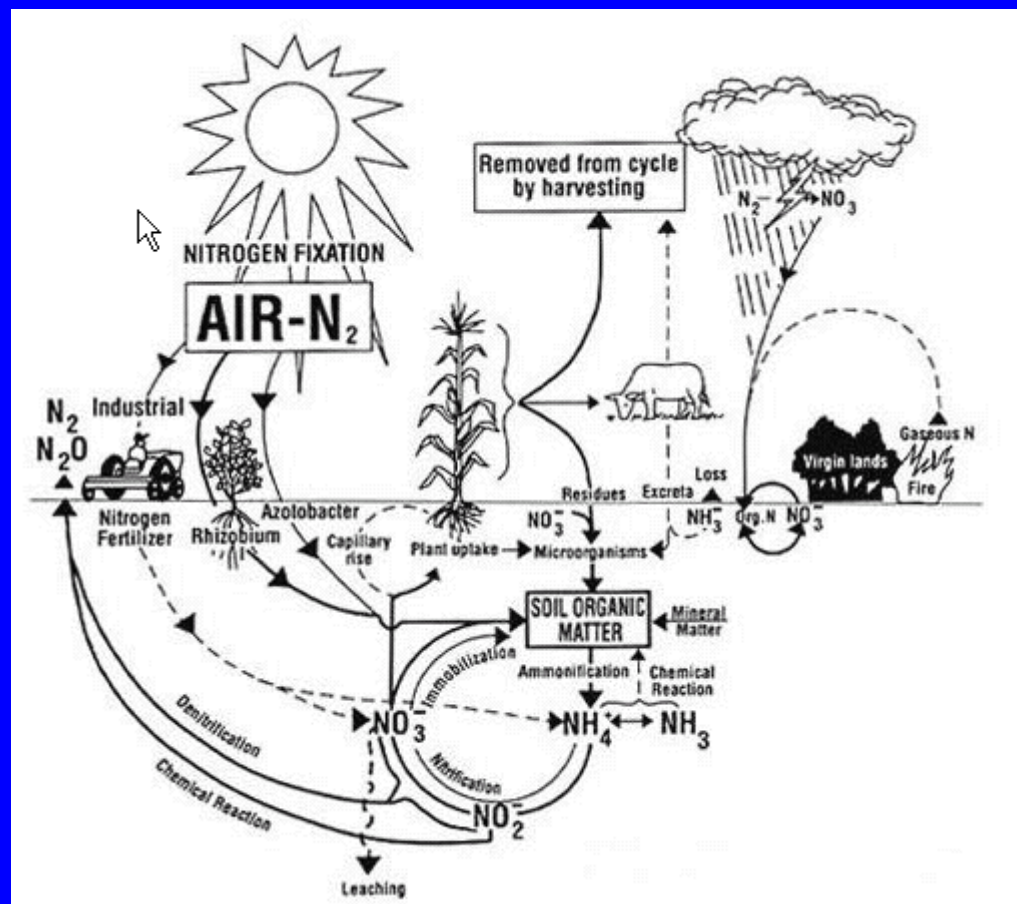
Canyon County has lots of wells

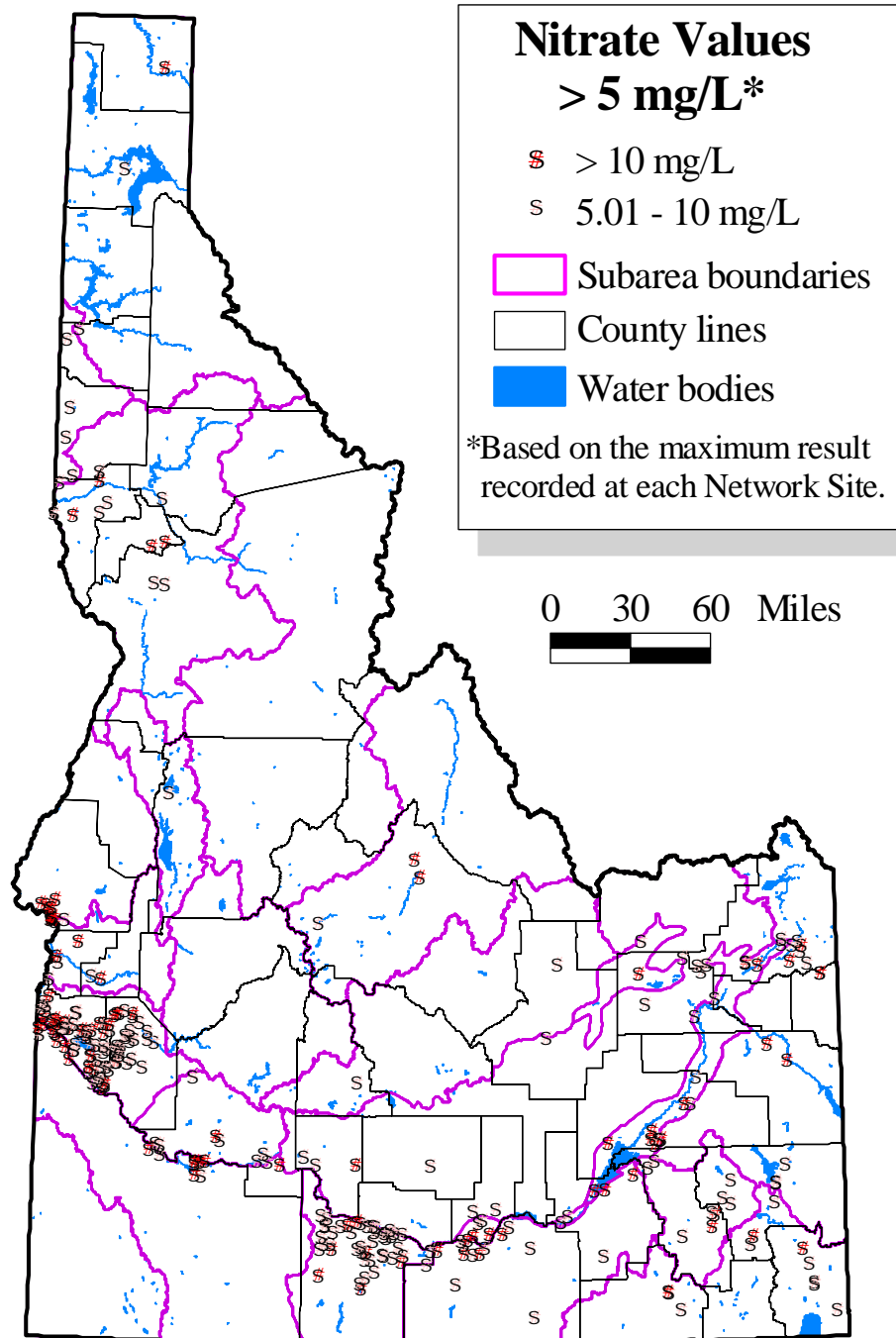


Canyon County has a long history of farming.



Nitrates



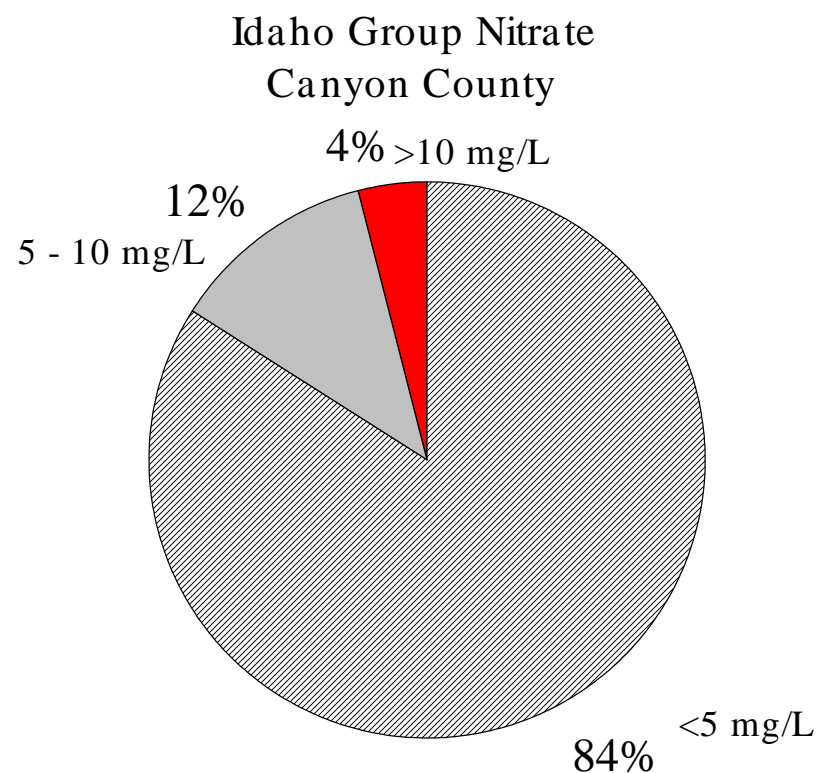
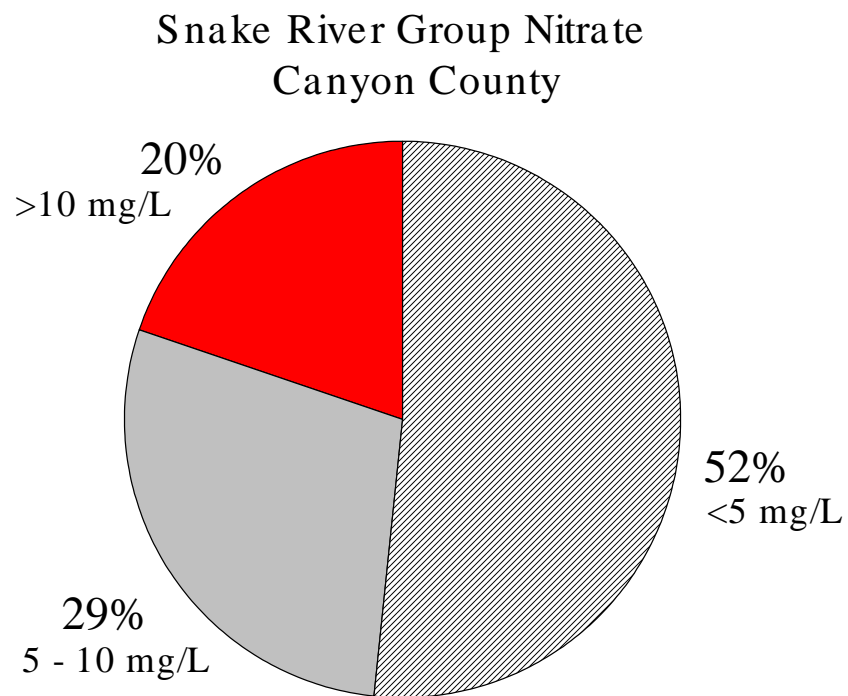


Canyon N03 Statistics

Aquifer Type	# of Wells	Minimum	Maximum	Mean	Median
Snake River Group Wells	91	<0.05 mg/L	29.8 mg/L	6.3 mg/L	4.8 mg/L
Idaho Group Wells	75	<0.05 mg/L	21 mg/L	2.3 mg/L	0.6 mg/L

Based on the maximum nitrate value at each site.

Maximum N03 Values

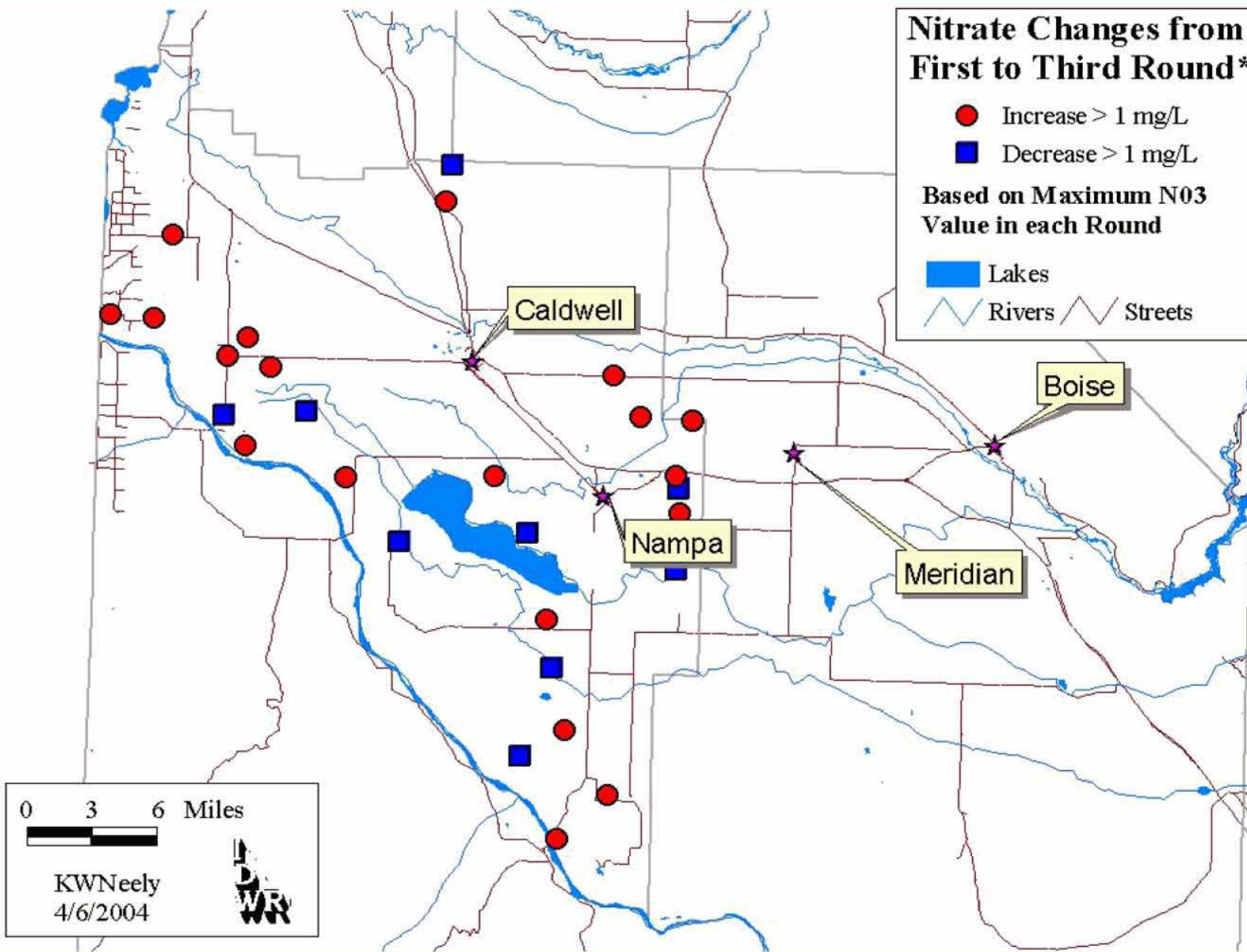


Nitrate Changes from First to Third Round*

- Increase > 1 mg/L
- Decrease > 1 mg/L

Based on Maximum N03 Value in each Round

■ Lakes
~ Rivers ~ Streets



Maximum Nitrate Values Thru 2003

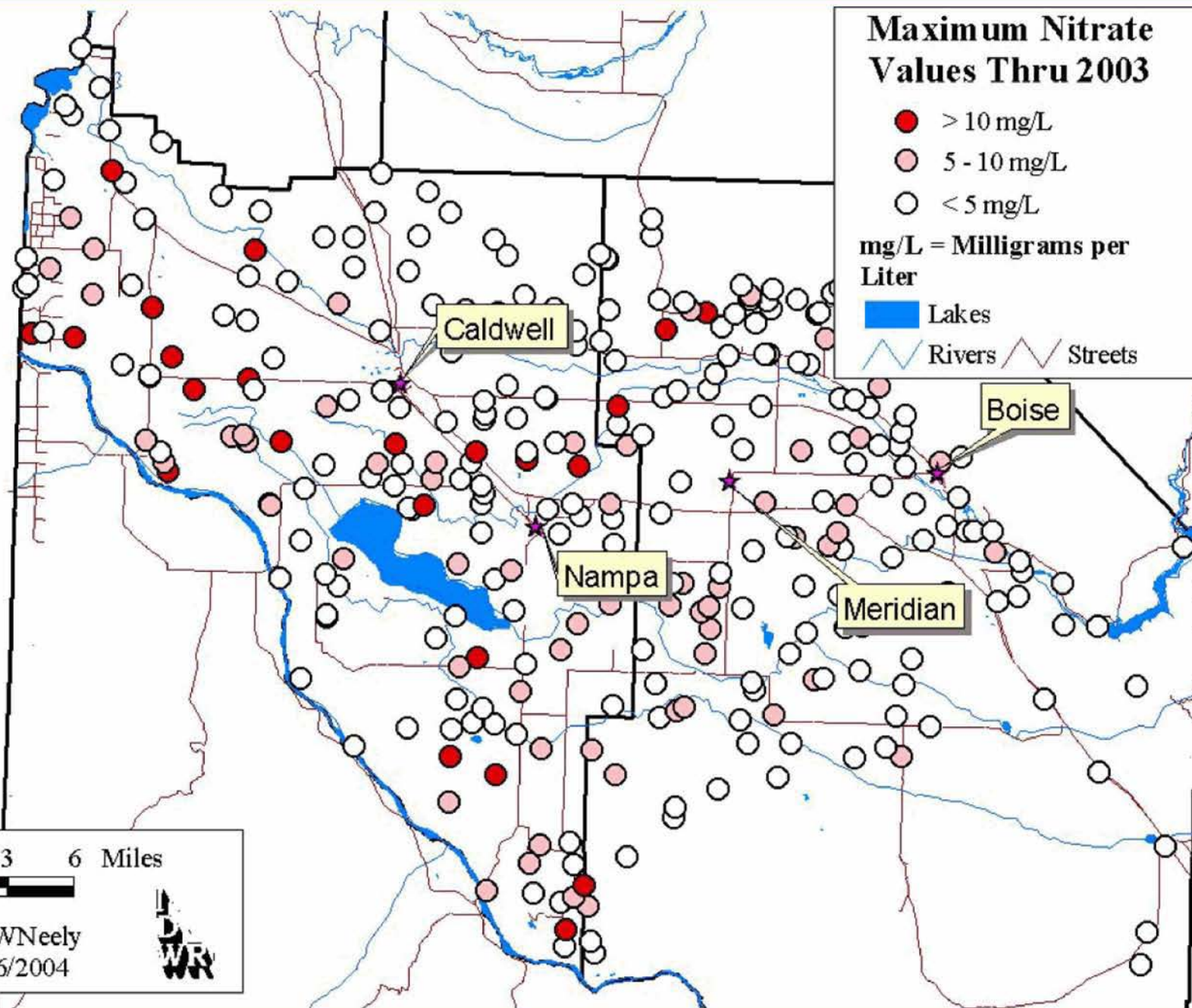
- > 10 mg/L
- 5 - 10 mg/L
- < 5 mg/L

mg/L = Milligrams per Liter

■ Lakes
~ Rivers ~ Streets

0 3 6 Miles

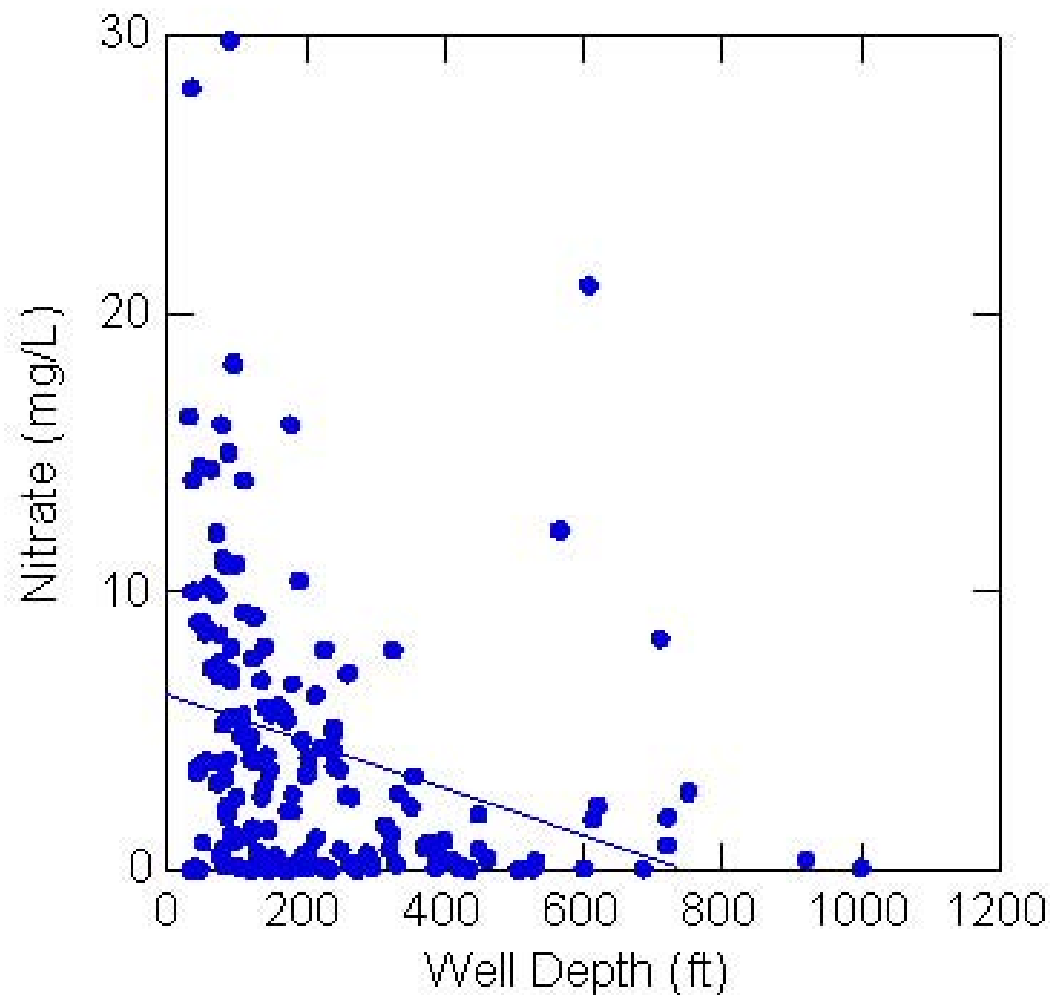
KWNeely
4/6/2004



Relationships and Trend Analyses

- Depth vs. concentration
- Concentration change over time throughout the area or at specific sites.
- Models

Ada and Canyon N03 vs. Well Depth



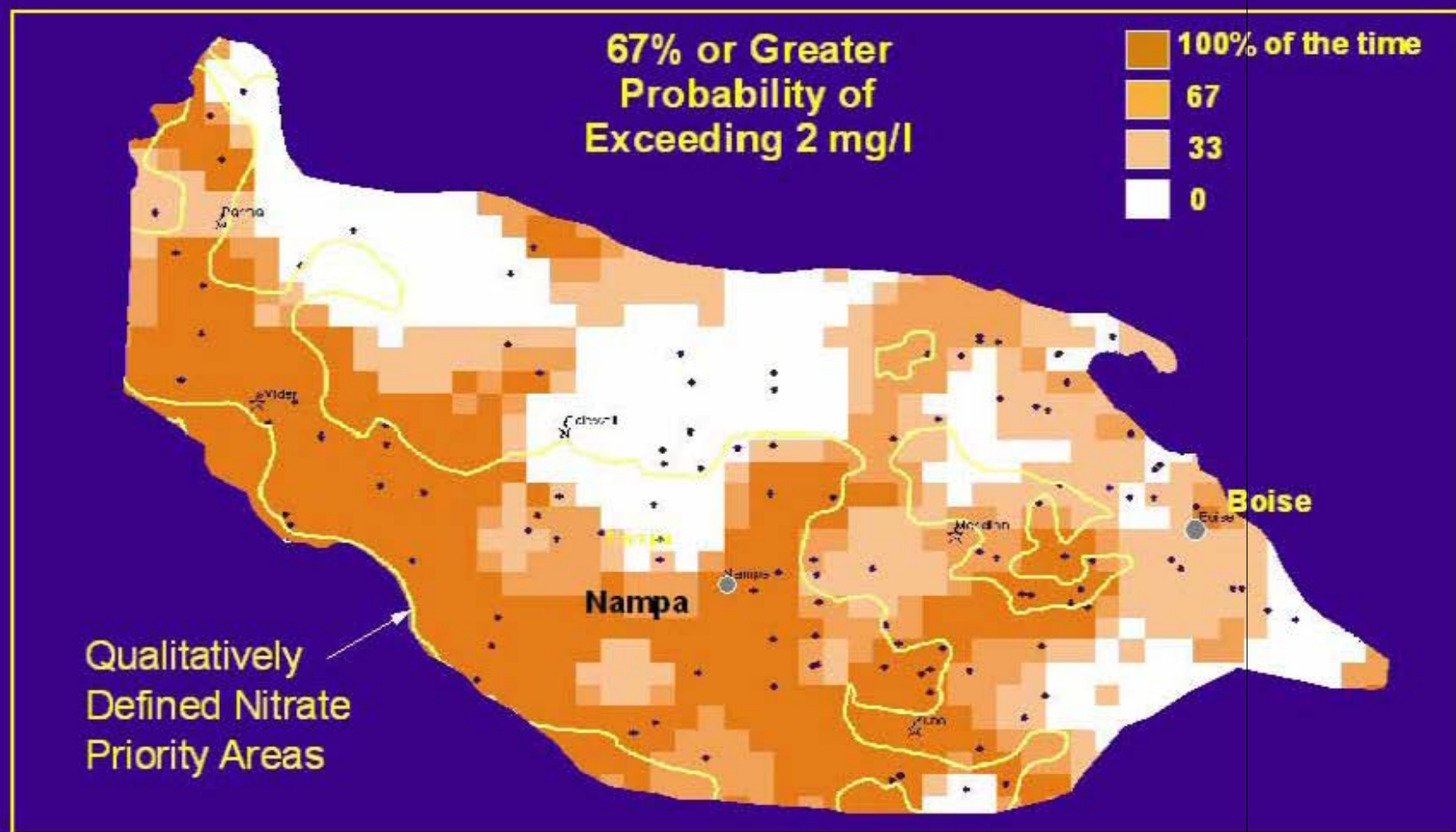
Changes in N03 Values from First to Third Rounds

For wells in Ada and Canyon Counties. Based on the maximum value at each well in each round.

Aquifer Type	# of Wells	Range of Changes	Increase > 1 mg/L	Decrease > 1 mg/L
Snake River Group Wells	86	-6.7 to 13.6 mg/L	35 (41%)	6 (7%)
Idaho Group Wells	87	-7.1 to 7 mg/L	5 (6%)	4 (5%)

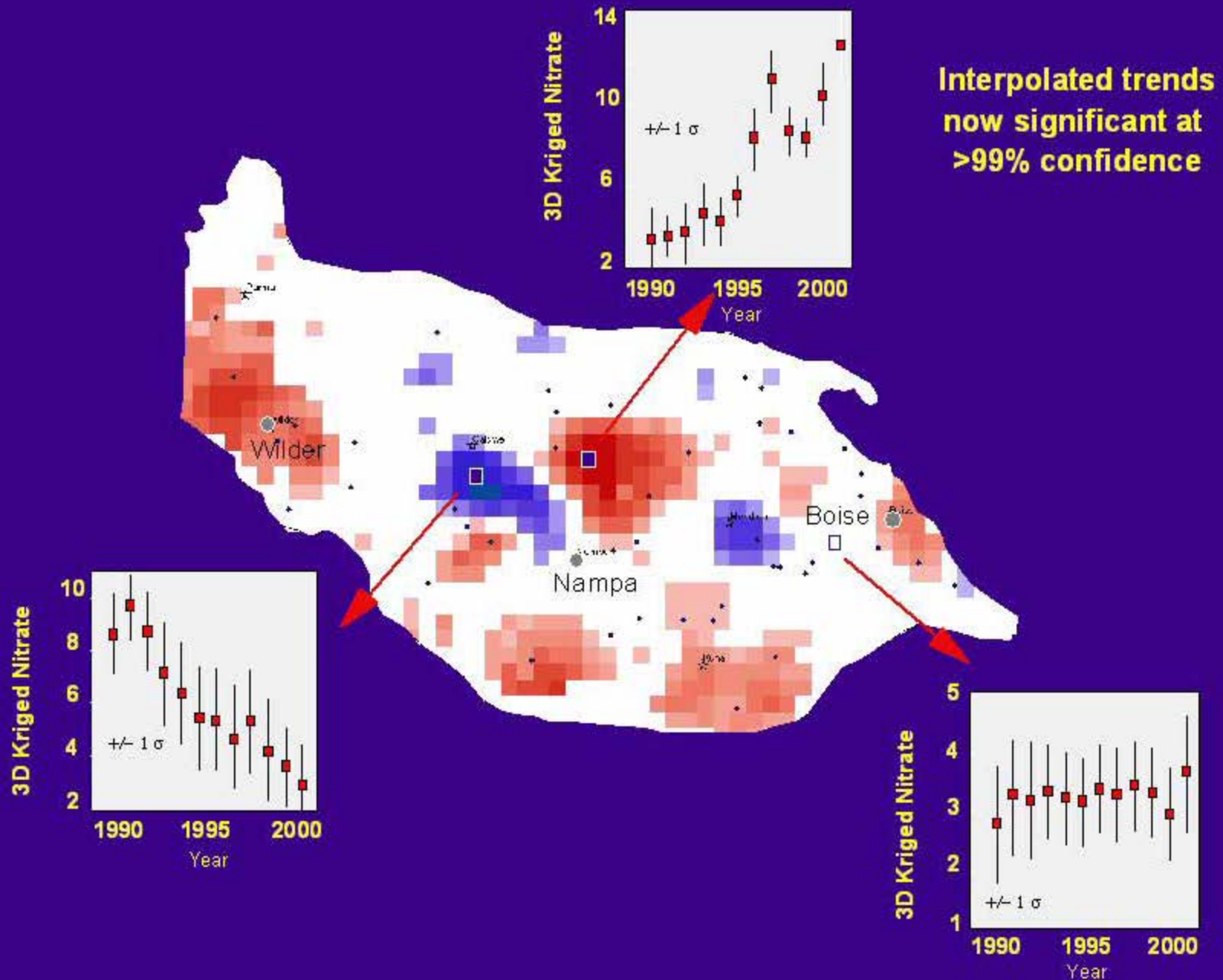
Results from a recent Kriging study done by Dr. John Welhan.

Areas of Chronic Exceedance Over Three Periods

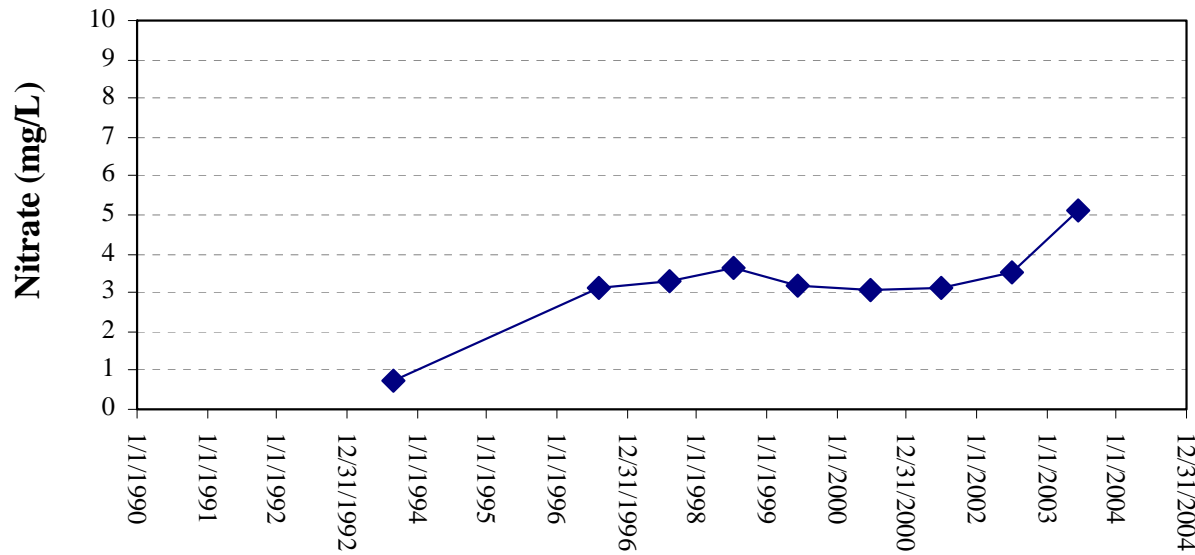


Calculated from Composited Data
1990-93; 1994-97; 1998-01

Results from a recent Kriging study done by Dr. John Welhan.

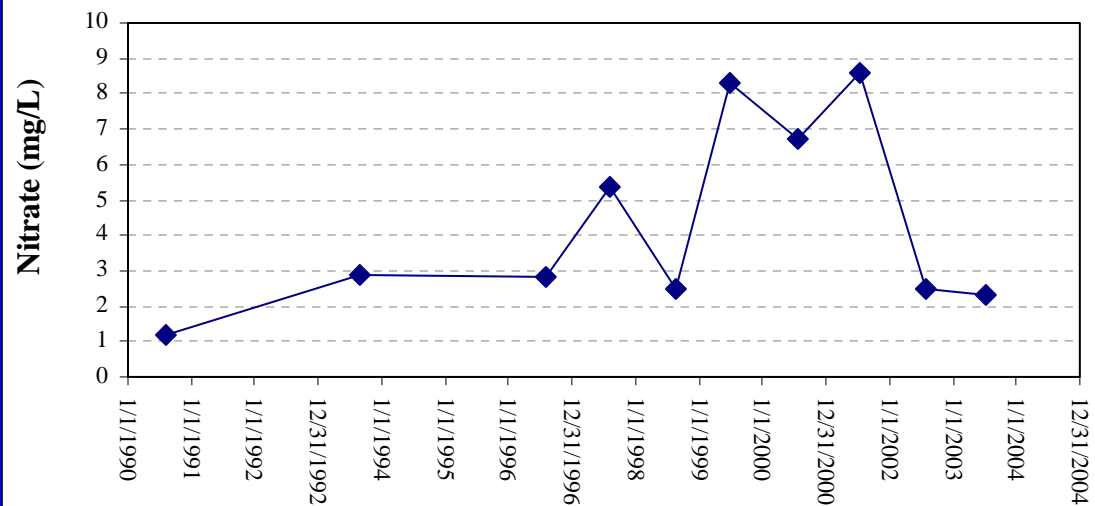


Annual Site - 3N 1W 18DAC1



**Results from two
Annual Statewide
Program sites**

Annual Site - 5N 5W 32CDC1



Pesticides



**Pesticide detections
are common, but
concentrations are
below drinking water
standards in most wells**



Contact



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