

Nitrate Priority Areas

DEQ Board Meeting
April 25, 2011

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DEQ Ground Water Program



Idaho Department of Environmental Quality

PM-004 Policy for Addressing Degraded Ground Water

- **Identify areas** with significant degradation
- **Prioritize areas** with significantly degraded areas
- **Develop management strategies** to improve ground water quality with local input
- **Evaluate effectiveness** of ground water quality management strategies
- **Remove area** from high priority designation



Nitrate

- Nitrate is widespread, commonly found, caused by land use activities
 - Confined Animal Operations
 - Fertilizer
 - Septic Systems
 - Abandon Wells
- Nitrate is converted to nitrite in the digestive system which depletes oxygen in the blood, can cause serious illness and other health problems



Nitrate Priority Areas

■ First Ranking in 2002

- 25 Areas
- Delineated using GIS, professional judgement
- Data used from 1970's - 2001

■ Second Ranking in 2008

- 32 areas
- Added Geostatistical Component (Indicator and Predictive Kriging) to previous delineation considerations (GIS, professional judgement)
- Used data from 1991 - 2006



Criteria for Nitrate Areas

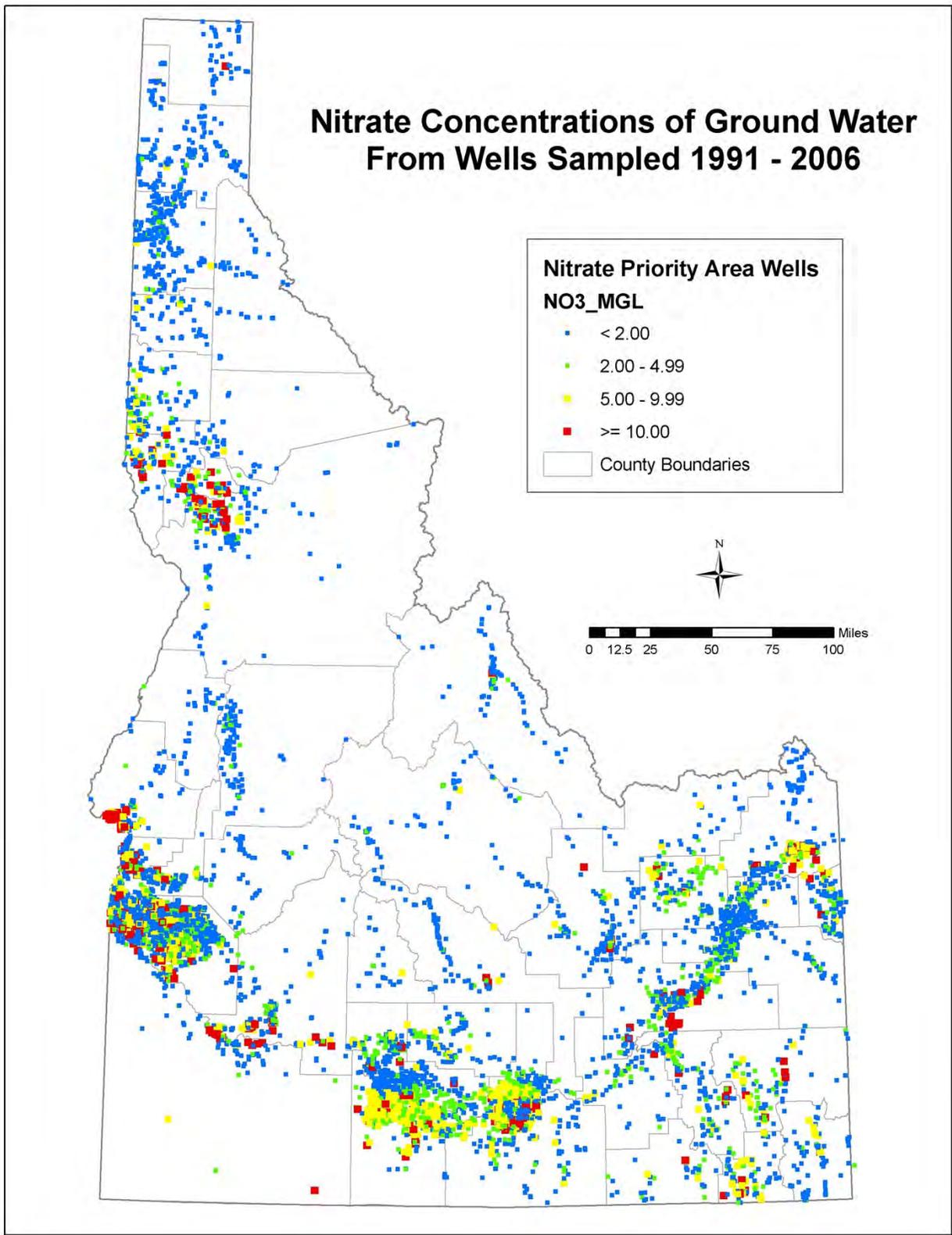
- **Nitrate Priority Areas** - 25% of ground water samples are greater than or equal to 5.00 mg/L, which is $\frac{1}{2}$ the maximum contaminant level for drinking water
- Most recent sample per site
- Samples obtained directly from the well or spring, prior to treatment



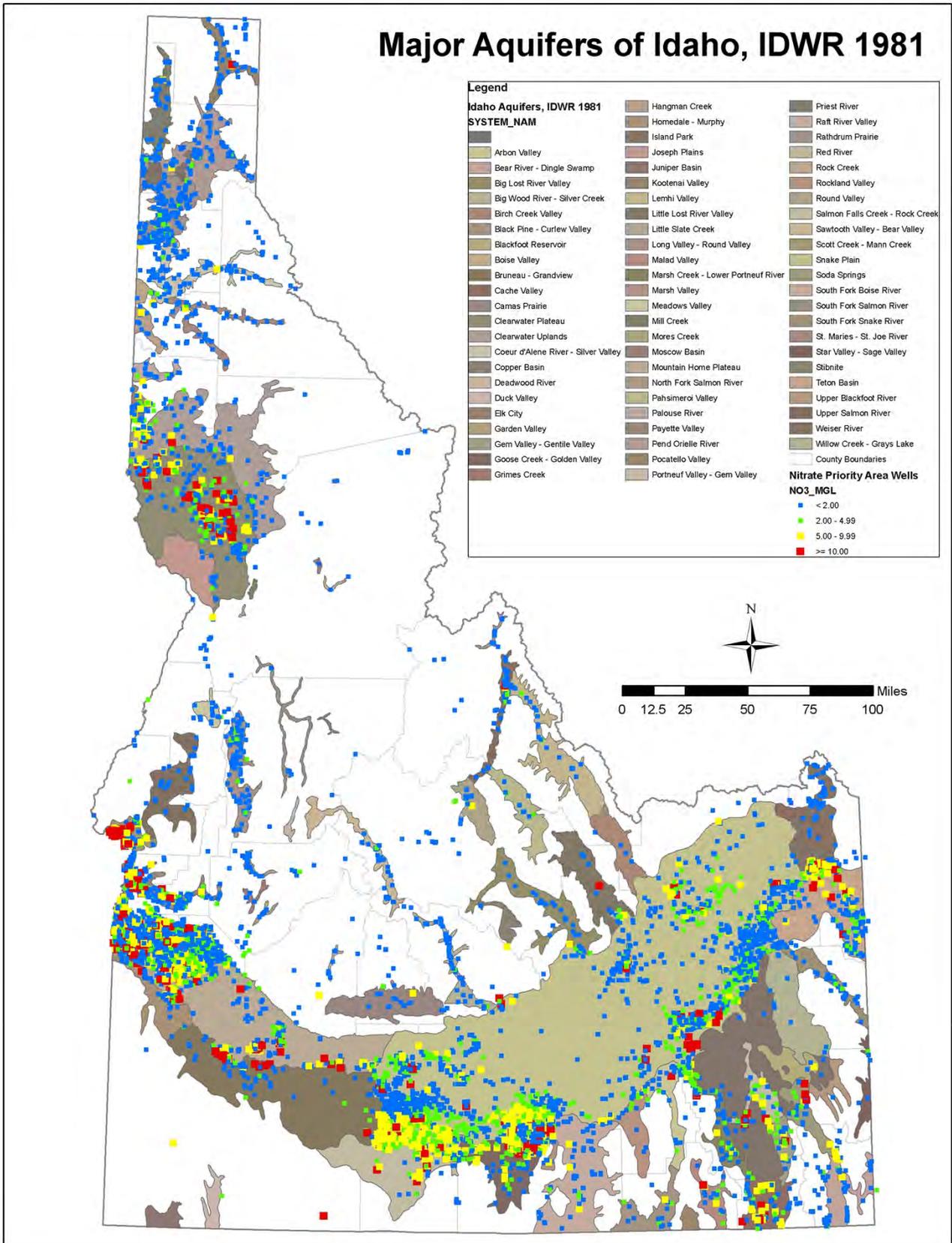
Idaho Department of Environmental Quality

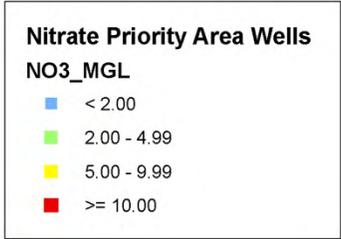
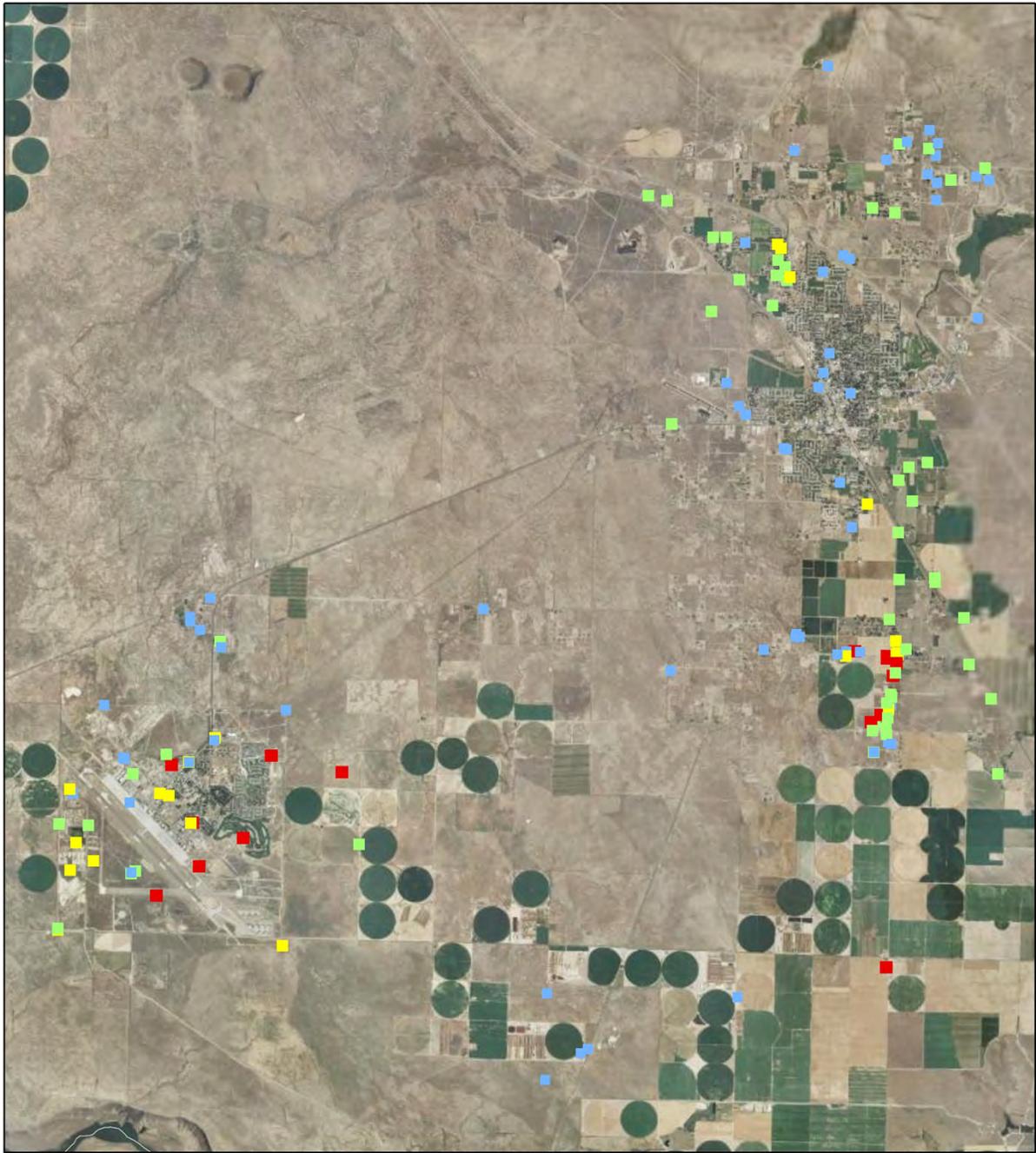
mg/l is milligrams per liter or parts per million

Nitrate Concentrations of Ground Water From Wells Sampled 1991 - 2006

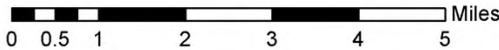


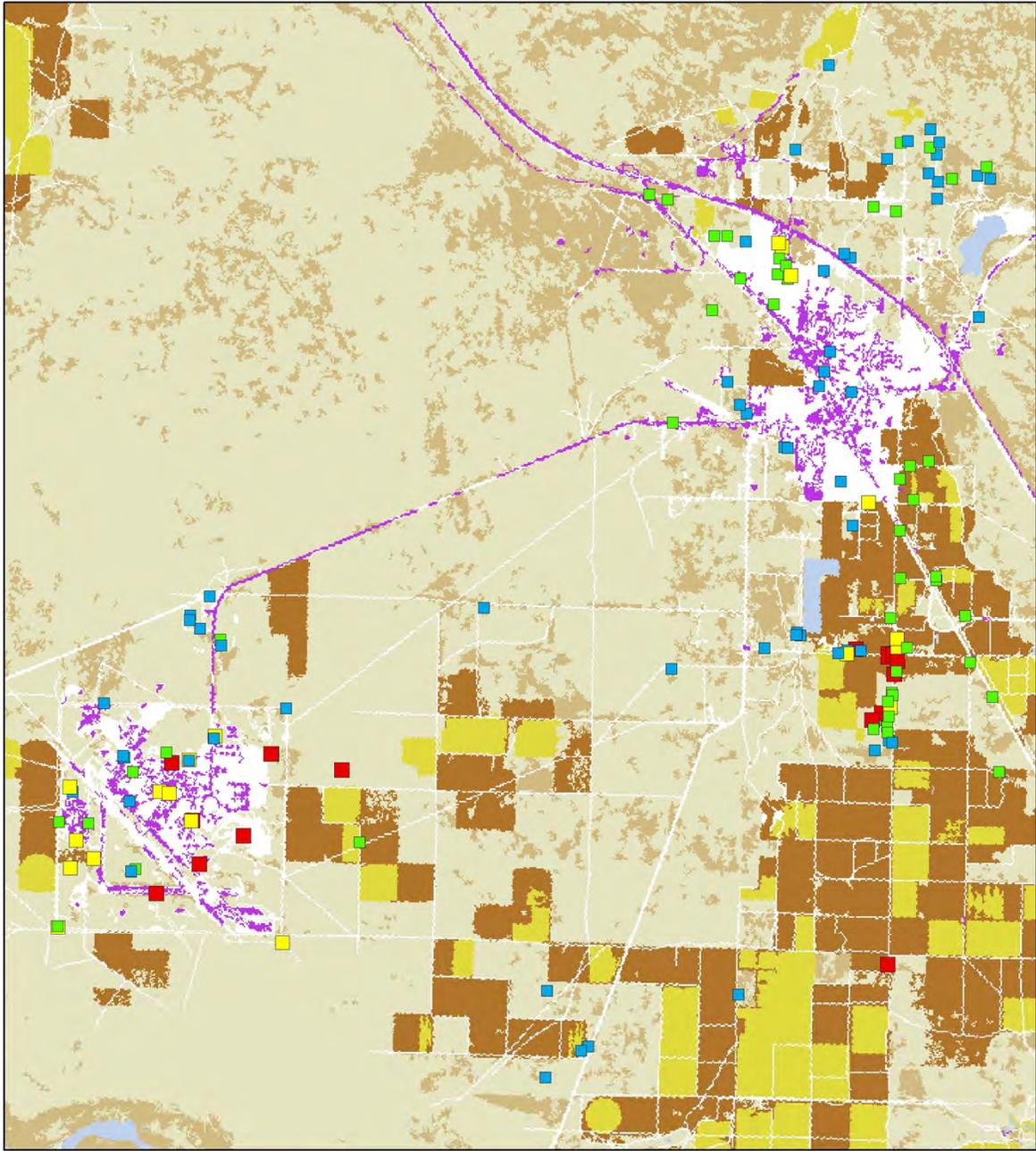
Major Aquifers of Idaho, IDWR 1981



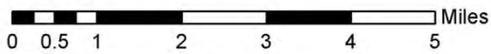


Mountain Home Area, Idaho



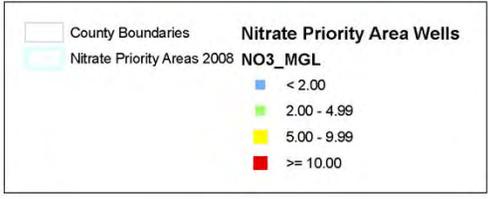
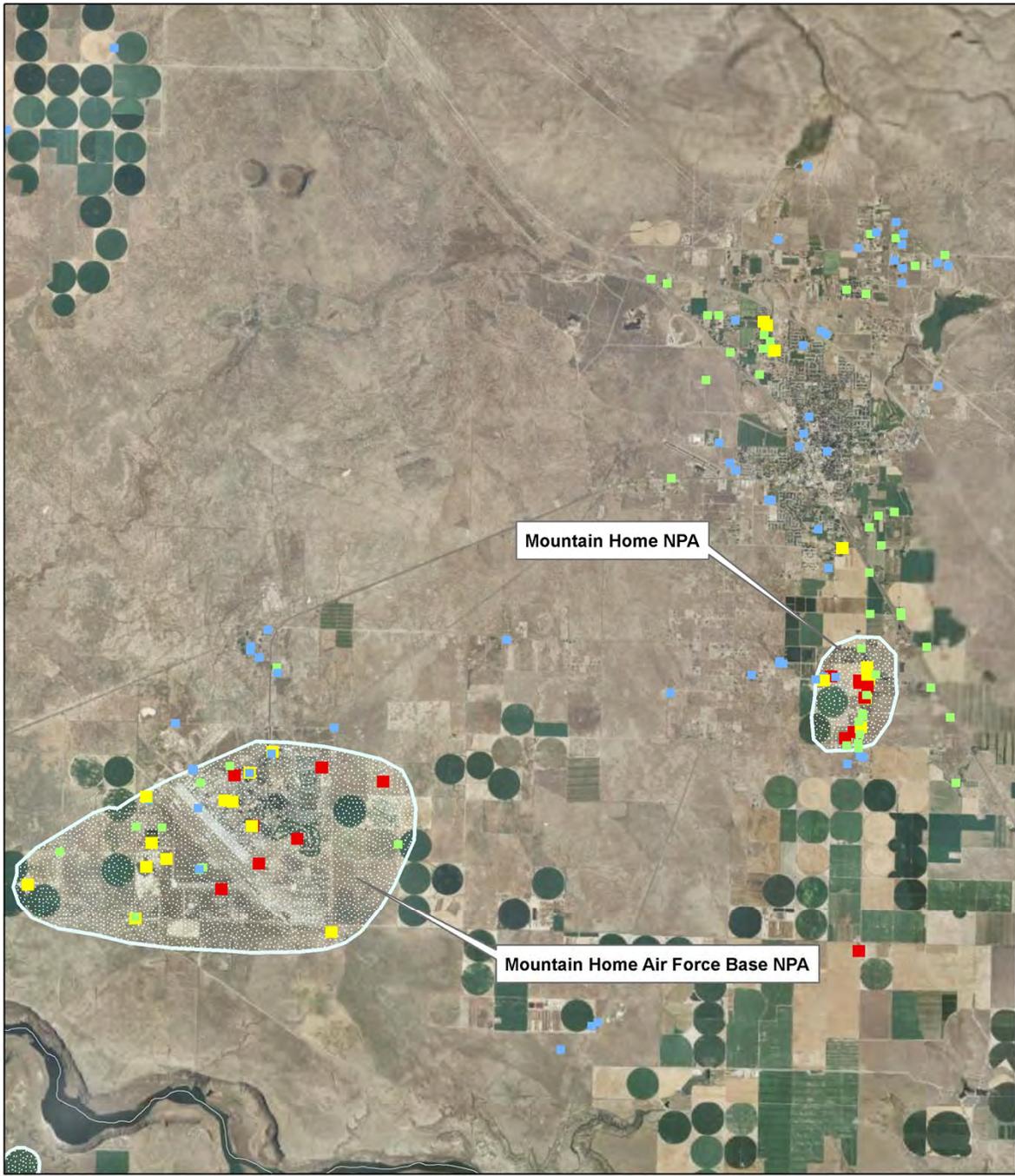


Mountain Home Area, Idaho Land Use

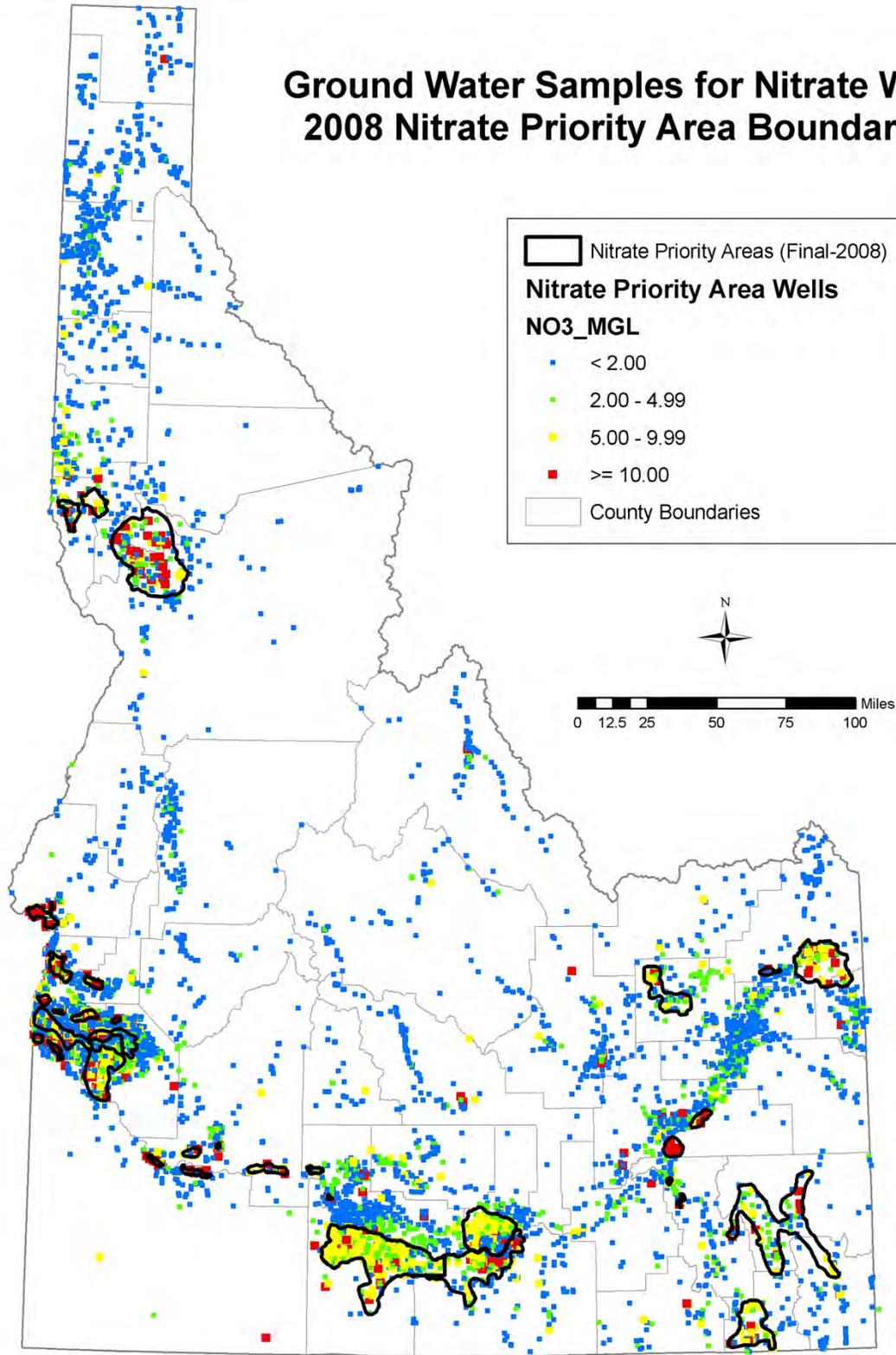


Nitrate Priority Area Wells NO3_MGL	Land Use 2001 Description
■ < 2.00	■ Cultivated Crops
■ 2.00 - 4.99	■ Developed, Medium Intensity
■ 5.00 - 9.99	■ Grassland/Herbaceous
■ ≥ 10.00	■ Open Water
	■ Pasture/Hay
	■ Shrub/Scrub





Ground Water Samples for Nitrate With 2008 Nitrate Priority Area Boundaries



Prioritize

- **Allocate limited resources for –**
 - Improvement Plan Development
 - Implement Improvement Projects

- **Monitoring**
 - Obtain water quality information
 - Evaluate effectiveness of improvement projects
 - Confirm background nitrate concentrations for nutrient pathogen evaluation studies



Prioritize - Criteria to Rank Areas

- Population
- Water Quality – Number of sites over drinking water standards
- Number of public water systems/source water protection areas
- Water quality trends
- Other beneficial uses



Ranking Score Mountain Home AFB

Priority Area Number: 13	Priority Area Name: Mountain Home AFB			
Ranking Criteria			Score	Comments
1) POPULATION				
	Points	Select One		
a) Within Degraded Area				
<5000	1			
5000 to 50,000	2	x	2	8903
>50,000	3			
		Subtotal	2	
b) Source Water Protection Areas or Public Water System wells in Priority Area				
0	0			
1 to 20	1	x	1	8
21 to 40	2			
>40	3			
		Subtotal	1	
c) Number of Wells with NO₃ > 10 mg/l				
0	0			
1 to 5	1			
6 to 20	2	x	2	8
21 to 40	3			
>40	4			
		Subtotal	2	
		Population Score	5	
		Max Possible Score = 10		
2) WATER QUALITY				
	% wells	Nitrate Concentration Criteria		
Percent of wells with NO ₃ >2 mg/l	81%	2	1.62	
Percent of wells with NO ₃ >5 mg/l	56%	5	2.80	
Percent of wells with NO ₃ ≥ 10 mg/l	22%	10	2.20	
		Water Quality Total	6.62	
3) WATER QUALITY TRENDS				
		Select One		
Increasing	10			
No Discernable Trend	5	x	5	
Decreasing trend	0			
		Trend Score	5	
		Max Possible Score = 10		
4) OTHER BENEFICIAL USES				
Other beneficial uses are impaired	1	Yes=1 No = 0	0	
		Beneficial use score	0	
		Max Possible Score = 1		
Total Score			16.62	



2008 NITRATE PRIORITY AREAS

25% OF SAMPLES ARE GREATER THAN OR EQUAL TO ONE HALF THE DRINKING WATER STANDARD FOR NITRATE

Drinking Water Standard for Nitrate is 10 mg/L

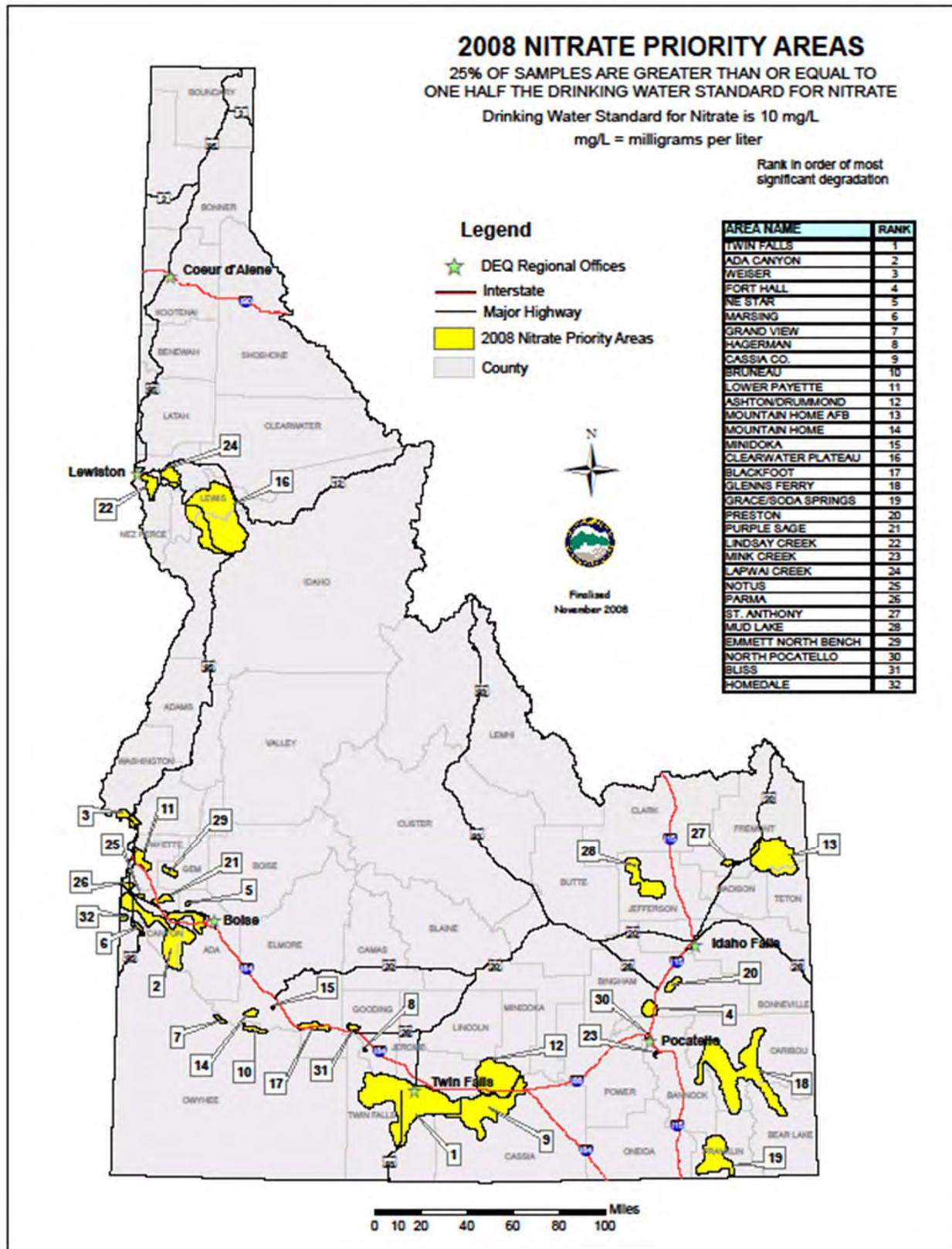
mg/L = milligrams per liter

Rank in order of most significant degradation

Legend

- ★ DEQ Regional Offices
- Interstate
- Major Highway
- 2008 Nitrate Priority Areas
- County

AREA NAME	RANK
TWIN FALLS	1
ADA CANYON	2
WEISER	3
FORT HALL	4
NE STAR	5
MARSING	6
GRAND VIEW	7
HAGERMAN	8
CASSIA CO.	9
BRUNEAU	10
LOWER PAYETTE	11
ASHTON/DUMMOND	12
MOUNTAIN HOME AFB	13
MOUNTAIN HOME	14
MINIDOKA	15
CLEARWATER PLATEAU	16
BLACKFOOT	17
GLENNS FERRY	18
GRACE/SODA SPRINGS	19
PRESTON	20
PURPLE SAGE	21
LINDSAY CREEK	22
MINK CREEK	23
LAPWAI CREEK	24
NOTUS	25
PARMA	26
ST. ANTHONY	27
MUD LAKE	28
EMMETT NORTH BENCH	29
NORTH POCATELLO	30
BLISS	31
HOMEDALE	32



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Ground Water Quality Improvement Plan Status

- Completed Plans
 - Twin Falls
 - Camas Prairie
 - Weiser
 - Lower Boise/Canyon County
 - Bruneau/Grand View
 - Bliss
 - Minidoka
 - Ada County
- Plans Under Development
 - Marsing
 - Ashton
 - Lindsay Creek
 - Eagle Star

