

Expanded Sampling Efforts by West Virginia State Agencies

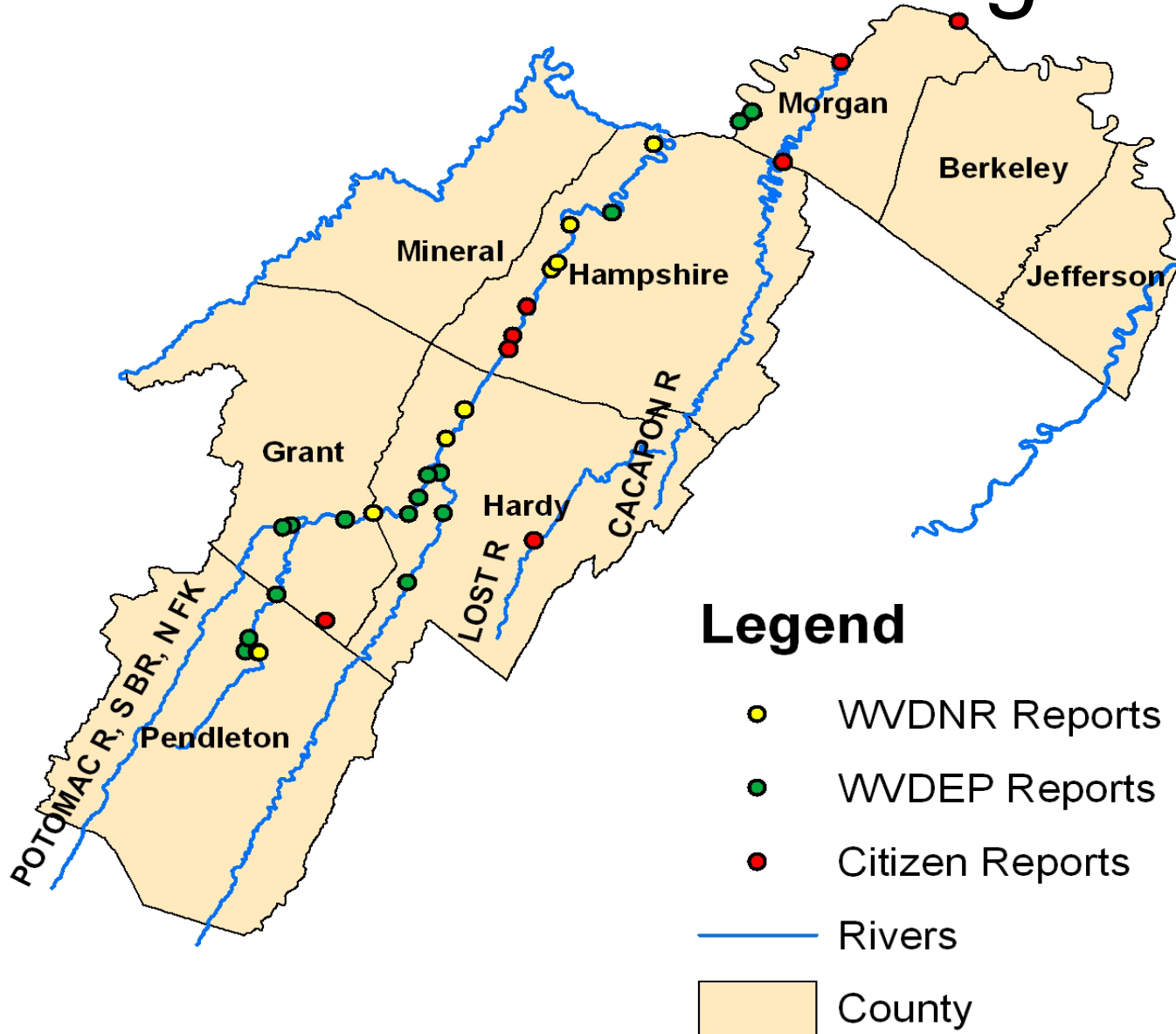


Fish Kill Monitoring

- Multiple teams
- All 3 forks of the South Branch
- Detailed notes



Fish Kill Monitoring



Monthly Sampling

- WV DNR and DEP
- Old Fields Bridge, South Branch River
- Near Talcott, Greenbrier River
- February, March, April, **May**, and July



Mark and Recapture

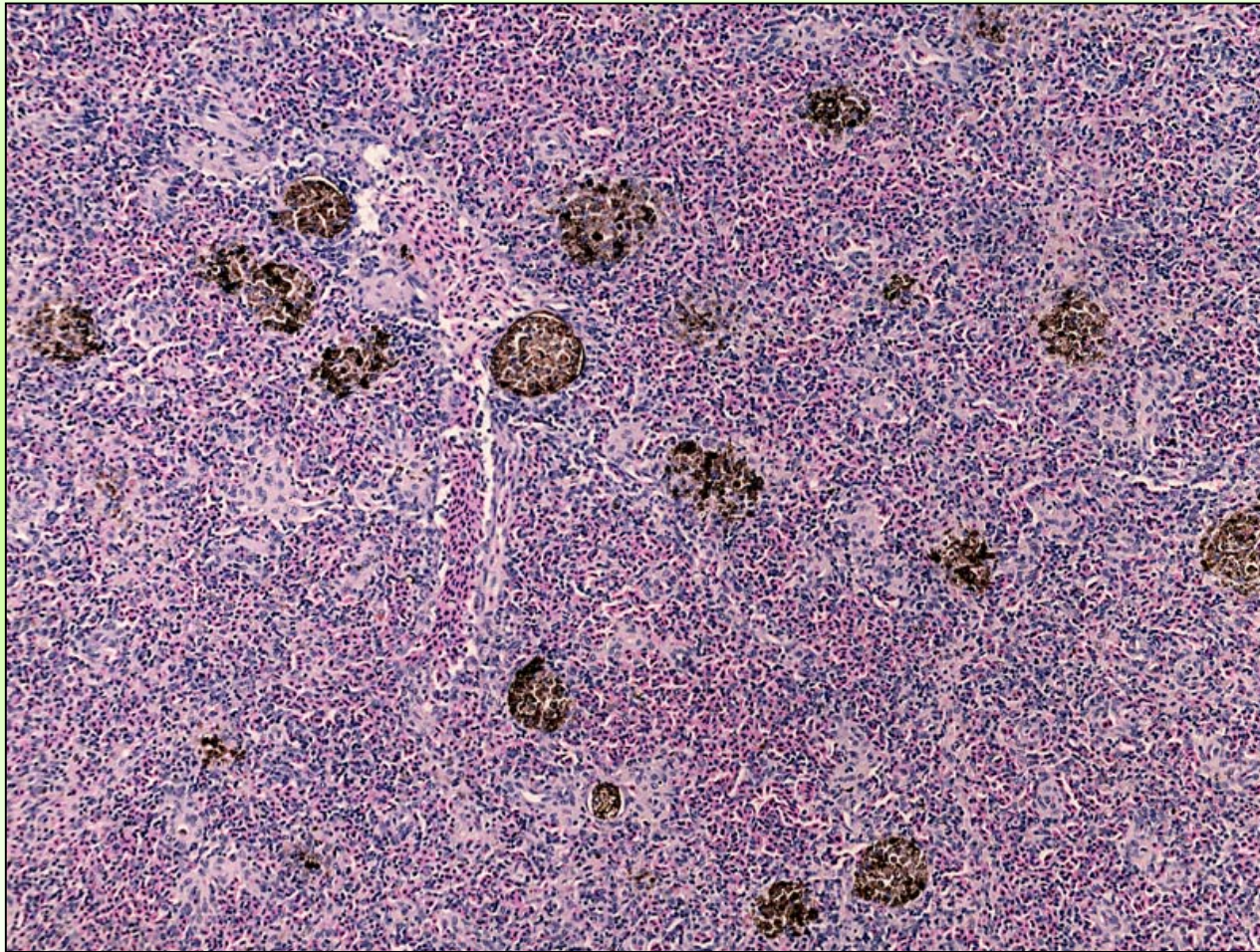
- Jim Hedrick of DNR
- Smallmouth Bass and Golden Redhorse
- Home range and growth rate data

Histopathology

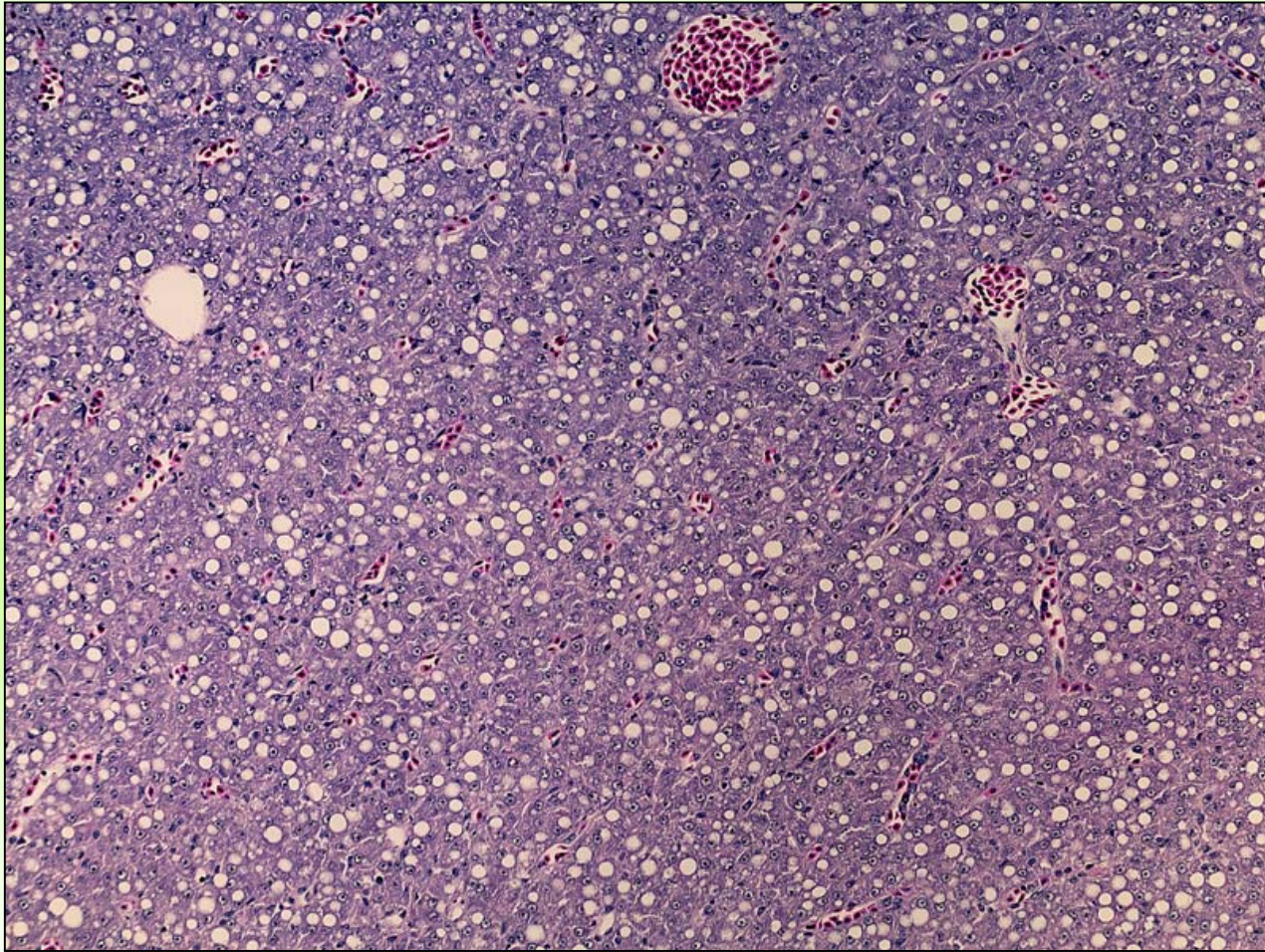
- WV DEP and US EPA
- Fish kill and monthly samples
- South Branch and Greenbrier Rivers
- No “significant pathologies” in dying fish



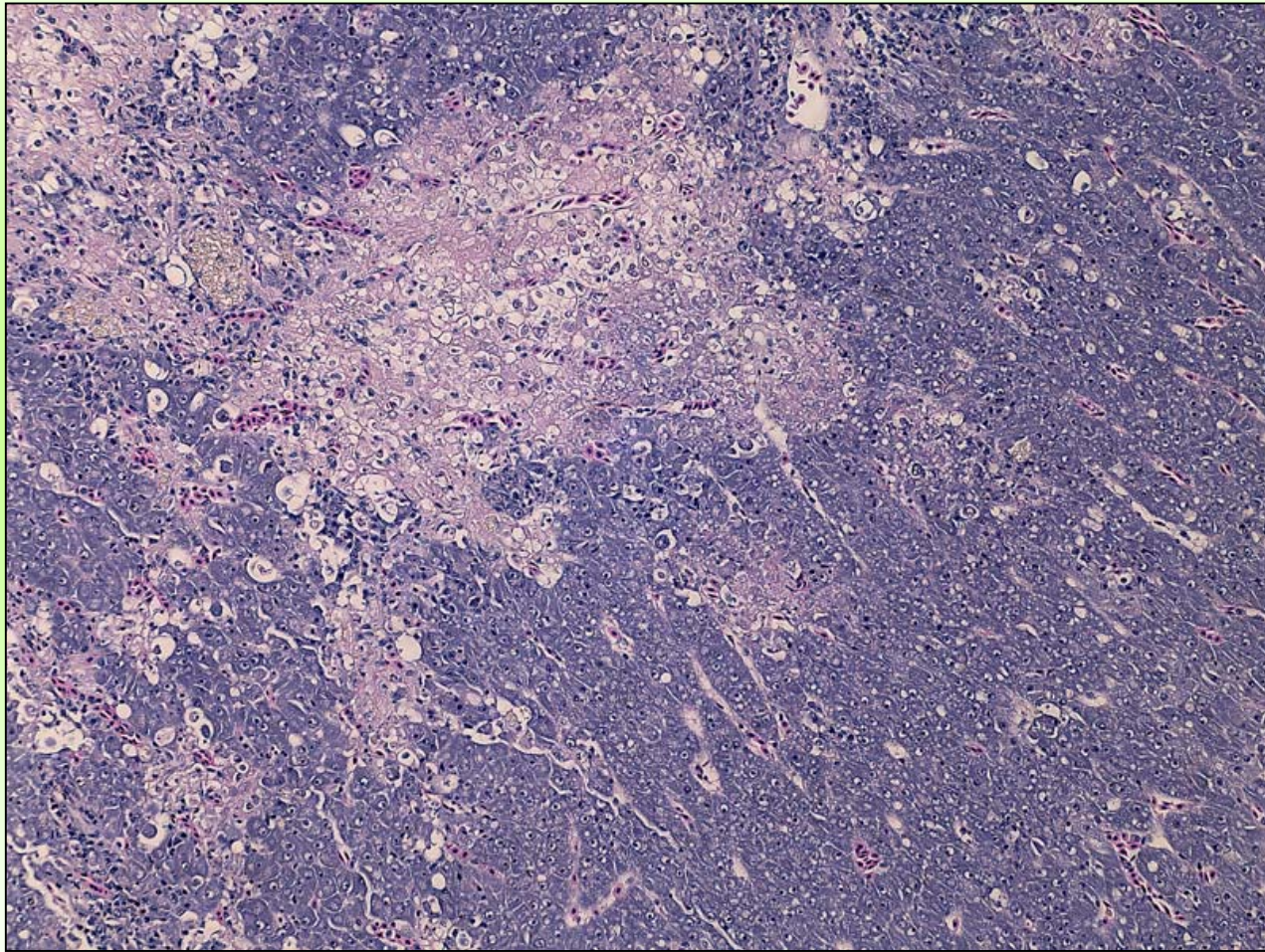
Spleen Macrophage Aggregates



Fatty degeneration in liver



Liver necrotic foci



Microbiological Samples

- Monthly fish samples were screened for known viruses and bacteria
- No viruses
- No pathogenic bacteria
- Unknowns?

Continuous Monitors

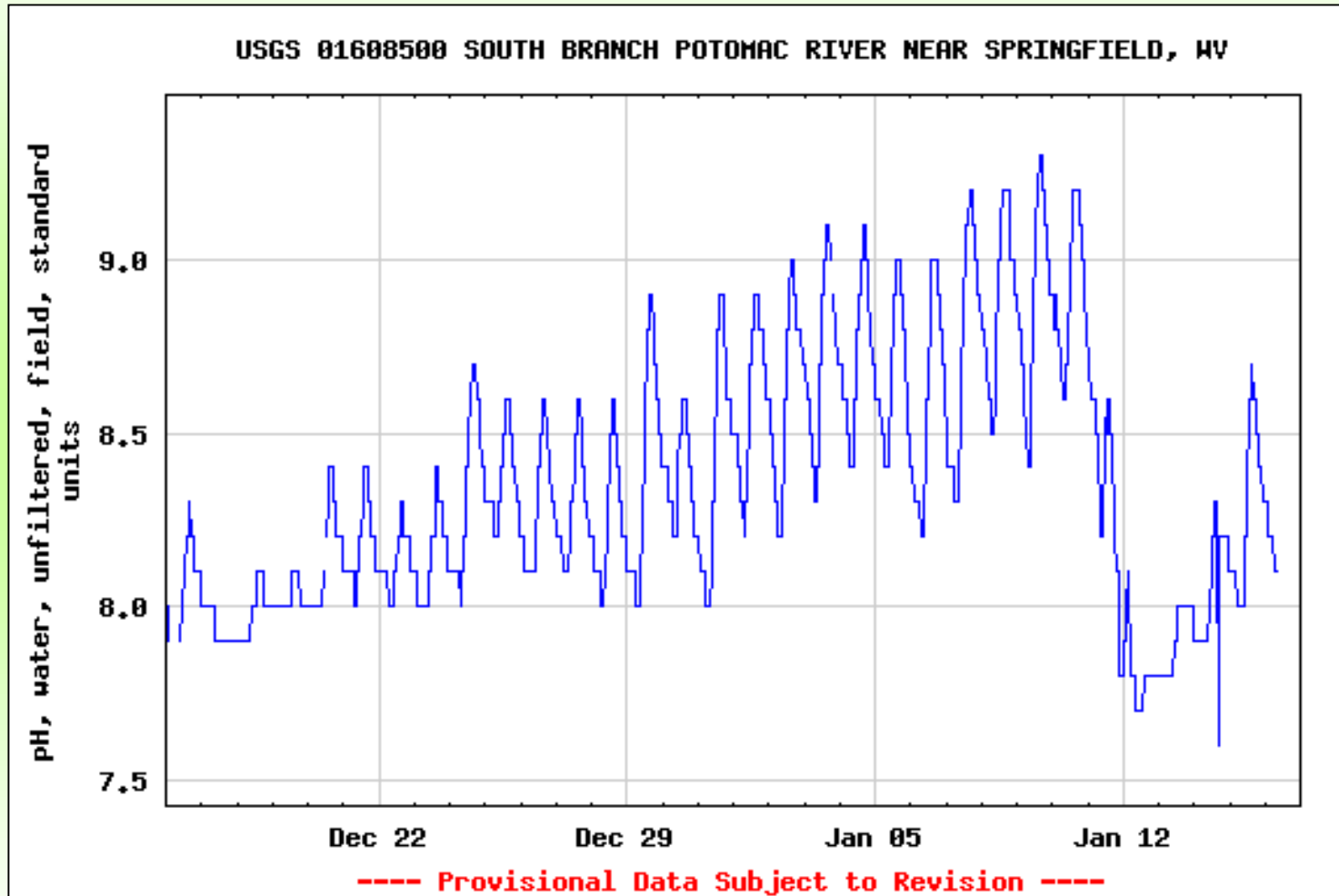
- Seven new sites with continuous monitors
 - Opequon, Cacapon, North Branch, North Fork, Patterson, South Fork, and South Branch
- Also two new USGS Real time monitors
 - Cacapon and Greenbrier

StreamName	AvgOfTemp	MaxOfTemp	Avg Cond	pH Min.	ph Max.	pH Avg.	LastOfDate
Cacapon River	7.69	22.88	145.56	6.47	8.32	7.08	17-May-07
North Branch Pot.	15.20	29.24	457.87	3.99	8.34	6.16	
North Fork/So. Br.	14.39	28.86	211.21	4.00	8.91	6.24	28-Nov-07
Opequon Creek	14.57	27.79	616.13	6.91	8.88	7.85	28-Nov-07
Patterson Creek	14.87	28.50	257.06	7.06	8.65	7.71	28-Nov-07
South Branch Pot.	20.49	27.43	223.28	6.96	8.89	7.71	25-Jun-07
South Fork/So. Br.	15.02	30.34	180.25	6.70	9.20	7.40	28-Nov-07

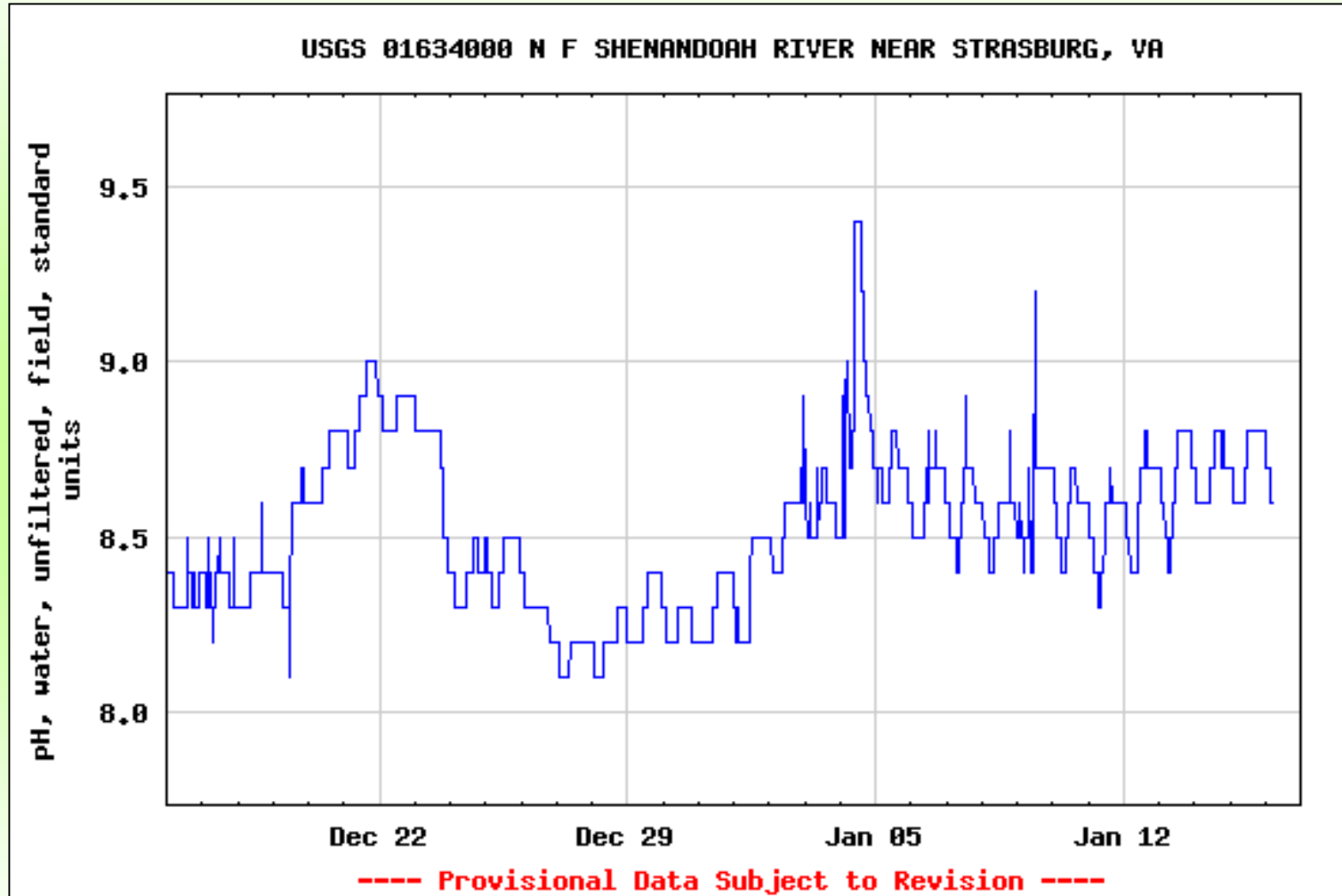
Continuous Monitors

- USGS monitor data from Cacapon, South Branch, and Greenbrier
- Percentage of days with a pH Maximum above 9.0 between April and September
 - Cacapon 0.6%
 - Greenbrier 28%
 - South Branch 25%

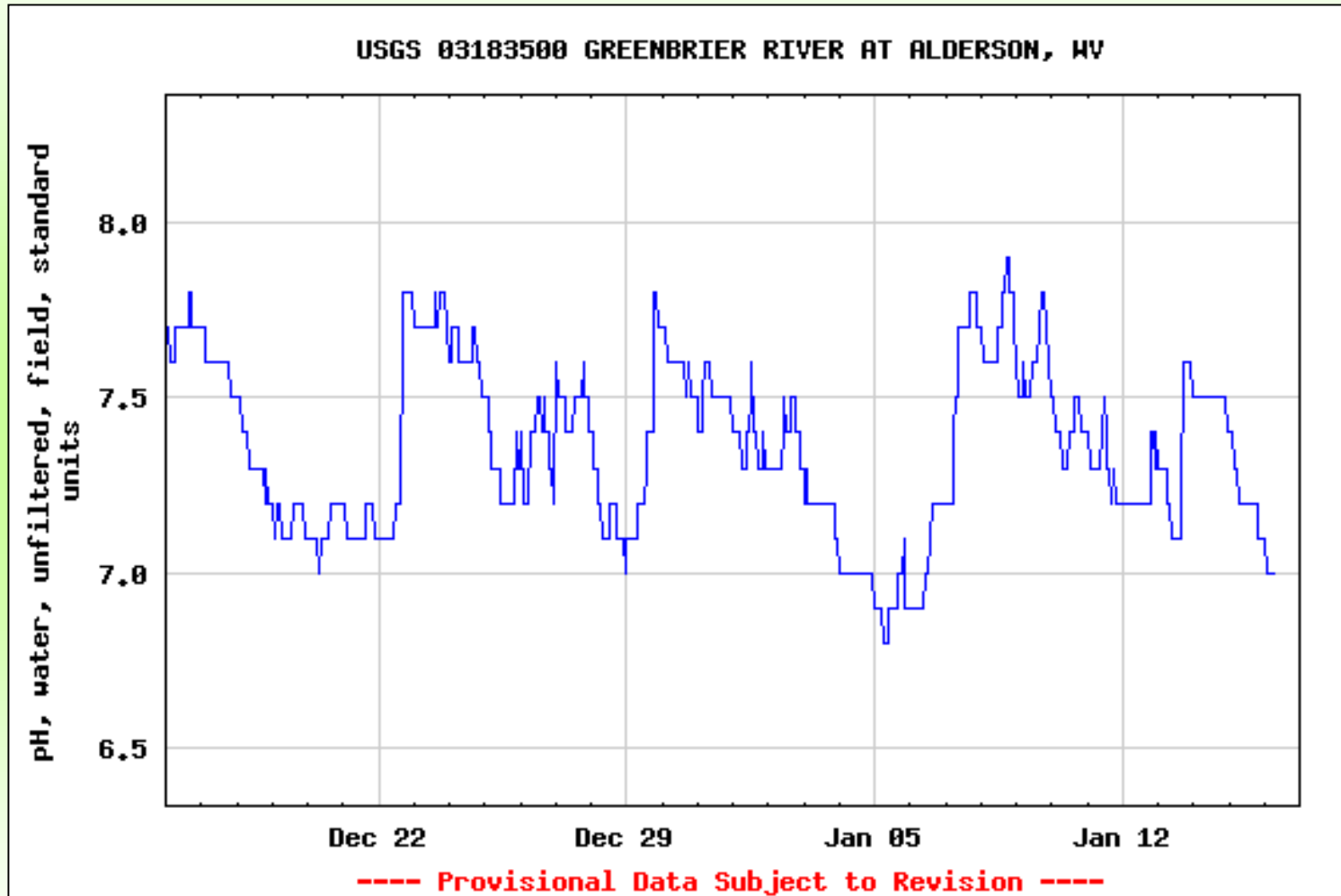
Wintertime pH's



Wintertime pH's

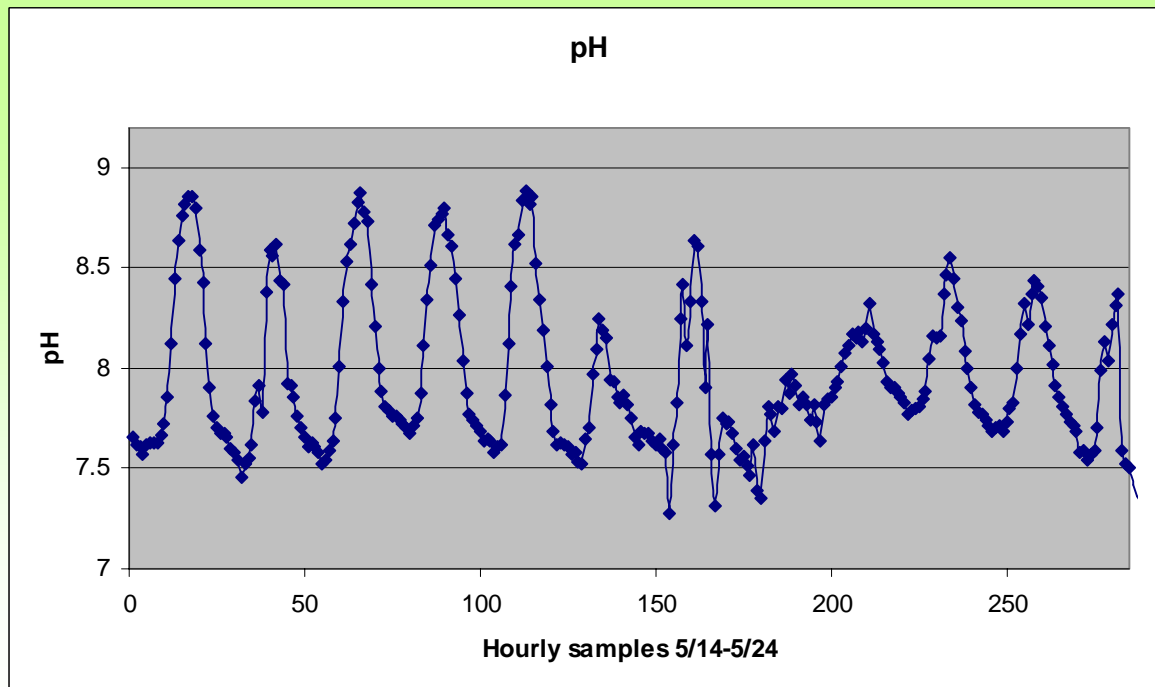
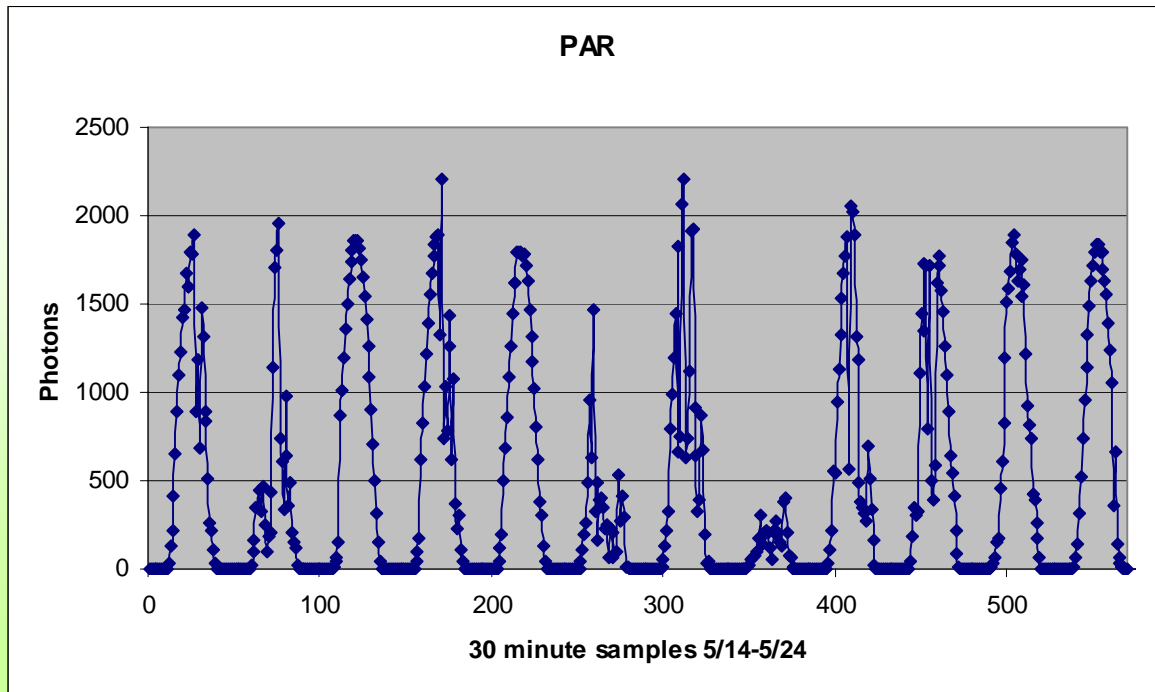


Wintertime pH's



Light vs. pH

- Moorefield
- Photosynthetically Active Radiation Meter
- Micromoles of photons
- 30 minute intervals for PAR samples
- Hourly pH samples



Toxic Algae

- Water, periphyton, fish muscle tissue, and fish livers were analyzed
- *Planktothrix aghardii* was identified
- Fish livers were positive for microcystin-LR
- However, concentrations were sub-lethal

Biological Assemblages

- WV DNR, DEP, WVU, and WVCA
- Barge, parallel wires and boat shocking
- Four sites
 - Lost River
 - Cacapon River
 - South Branch (upper)
 - South Branch (Lower)



Sediment Sampling

- Determination of N loads in stream sediments
 - Total ammonia
 - Total Kjeldahl nitrogen
 - Nitrate
 - Nitrite

- 6 sampling locations

What are we missing?

