

CEAP Workshop Report
St. Joseph River Watershed
March 1-3, 2005

USDA-Agricultural Research Service
National Soil Erosion Research Laboratory
West Lafayette, IN

Scientists

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Objectives

Watershed Areas

- **Land Use Surveys – CP Inventory/Implementation (2.1.1/2)**
- **WQ, Weather, & Soil Moisture Network (2.4.1)**
- **Soil Characterization & Relationships (2.16.1)**
- **Artificial Drainage Systems (2.5.1)**
- **Scale Effects – Plot, Field, Watershed (2.9)**

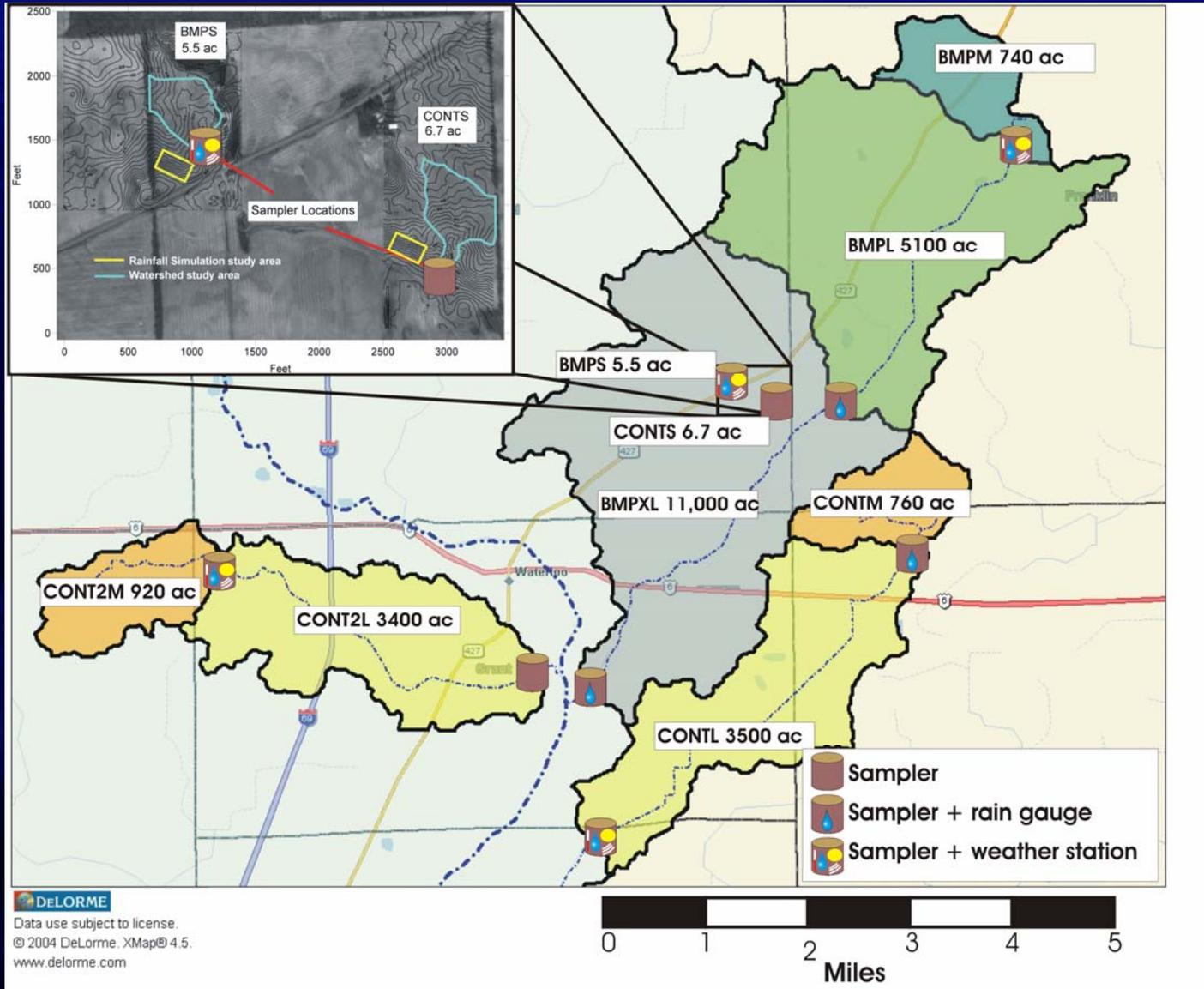
Hydrologic Modeling

- **SWAT Model Data Base- MGT/HRU Input (2.3)**
- **Calibration/Validation (3.2)**

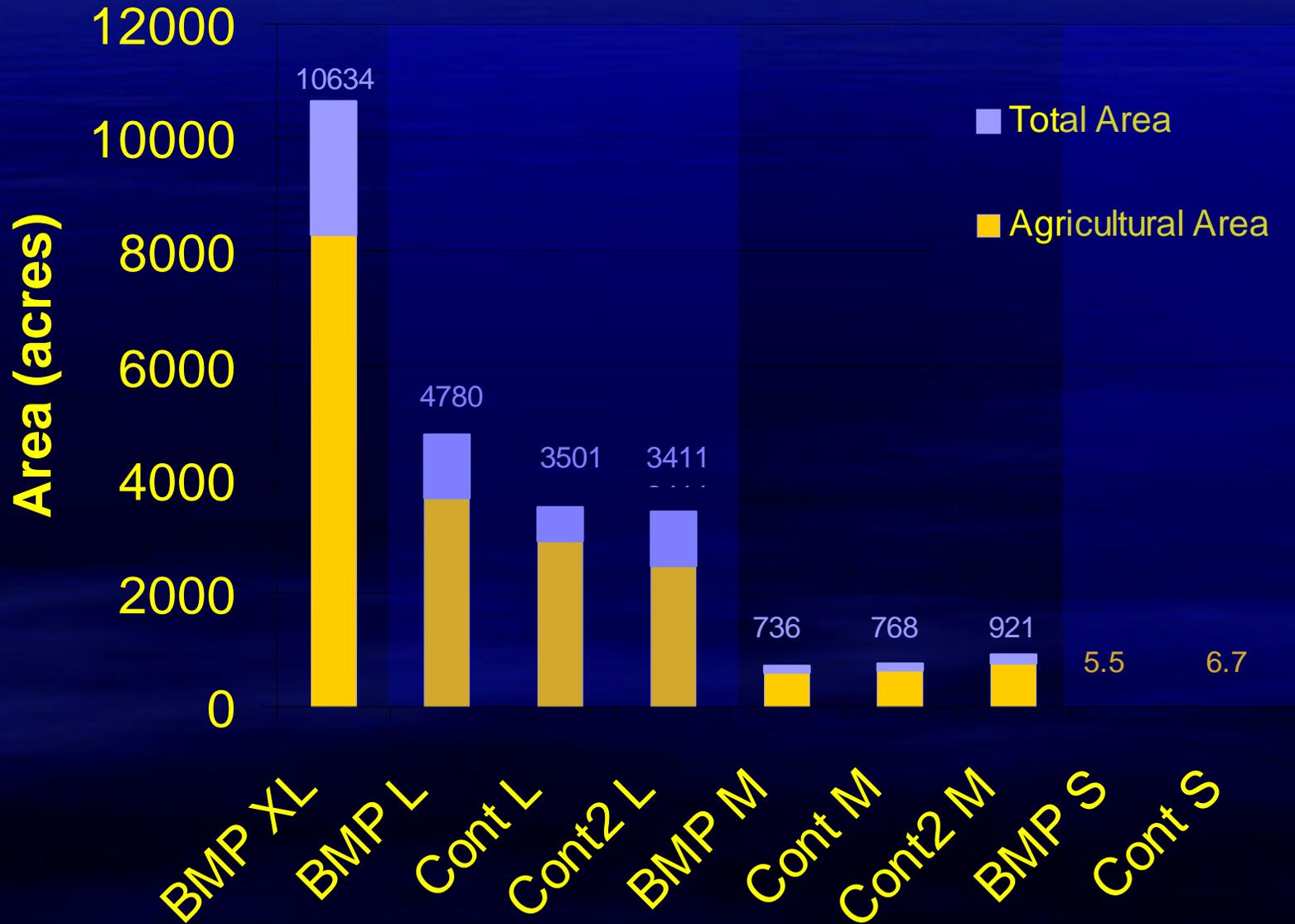
St. Joseph River Watershed (281,000 ha) and Cedar Creek Watershed (70,820 ha)



Water Quality Monitoring in Upper Cedar Creek Watershed (Plot, Field, and Small Watersheds)



Watershed Size and Land Use



Research Approach

Field Research

- Different Scales
- Management Practices
- Transport Pathways

Laboratory Experiments

- Rainfall Studies
- Fluvarium Studies
- Detailed Analysis

Hydrologic Modeling

- SWAT Model
- Calibration/Validation
- Assessment Strategies

Hydraulics Lab Fluvarium Studies



Field Plot Rainfall Simulation, Summer 204

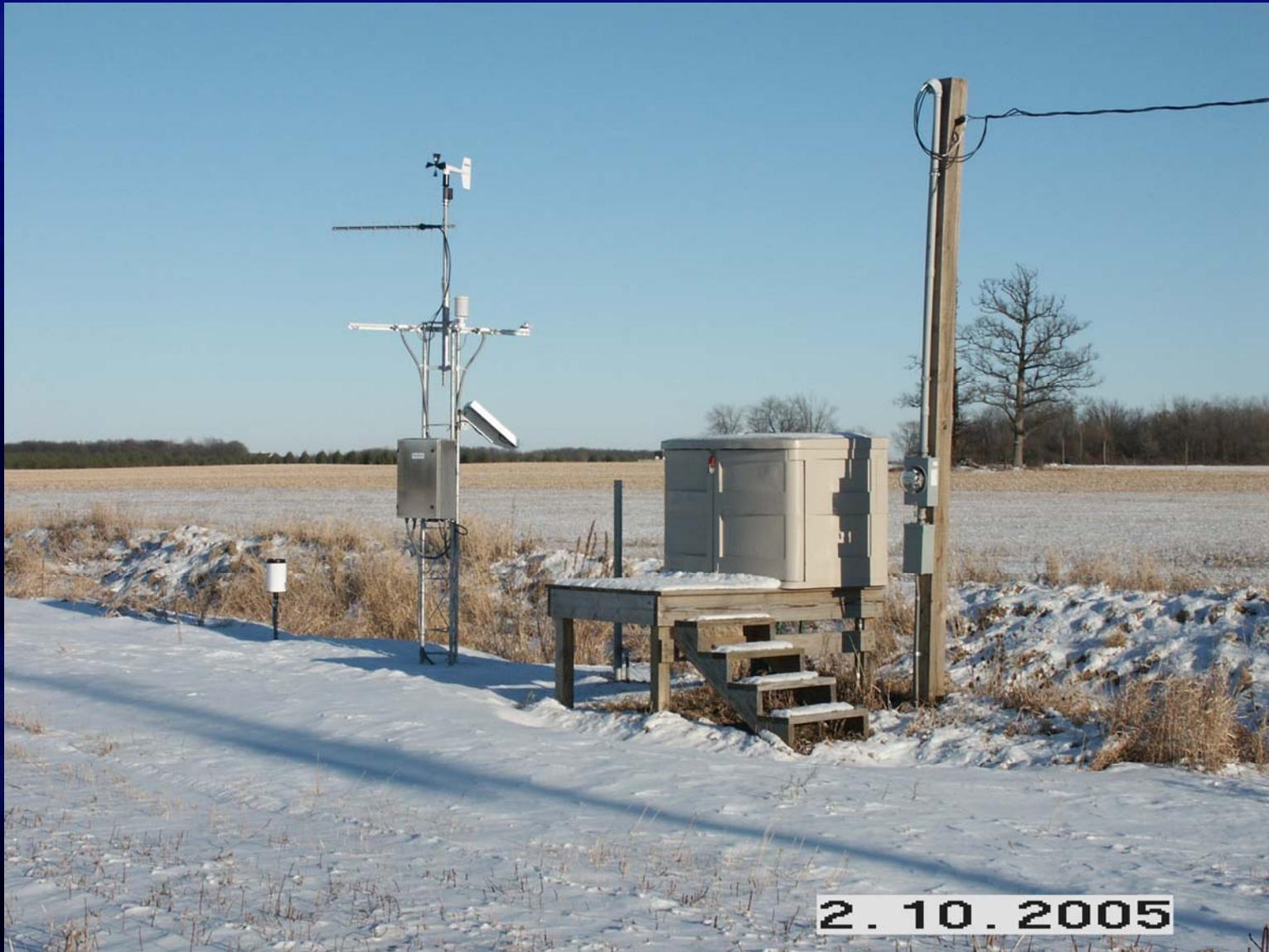


Field Studies (till and no-till)



**Edge of Field
Flumes**

Weather Station and Water Quality Monitoring



Stage Probe / Sampling Tube with Sonde



ISCO Automatic Sampler and Refrigeration System



Channel Characterization: Stage / Discharge Survey



Water Quality Data

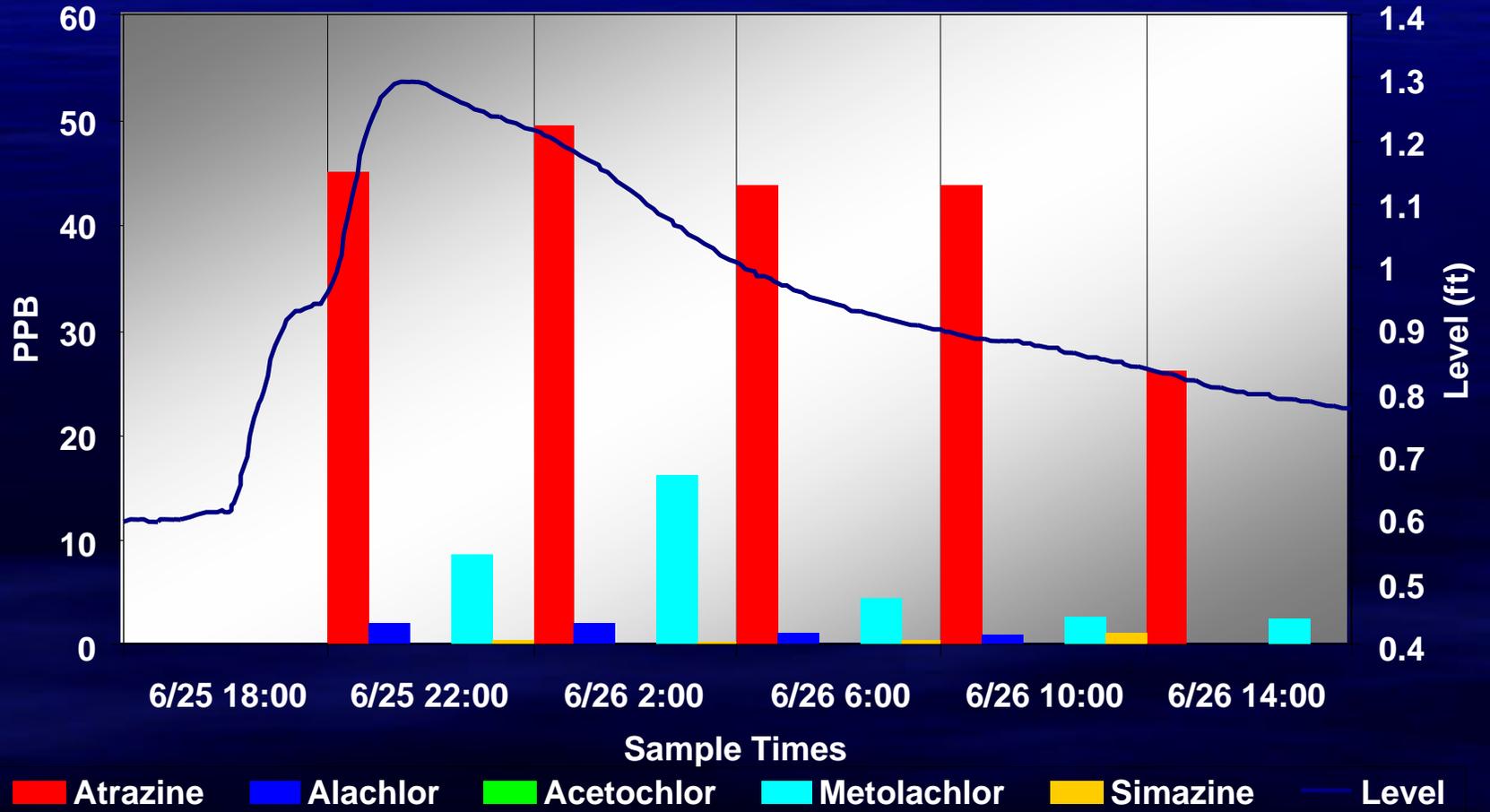
Pesticides

- Atrazine
- Acetochlor
- Simazine
- Metolachlor
- Alachlor
- Glyphosate

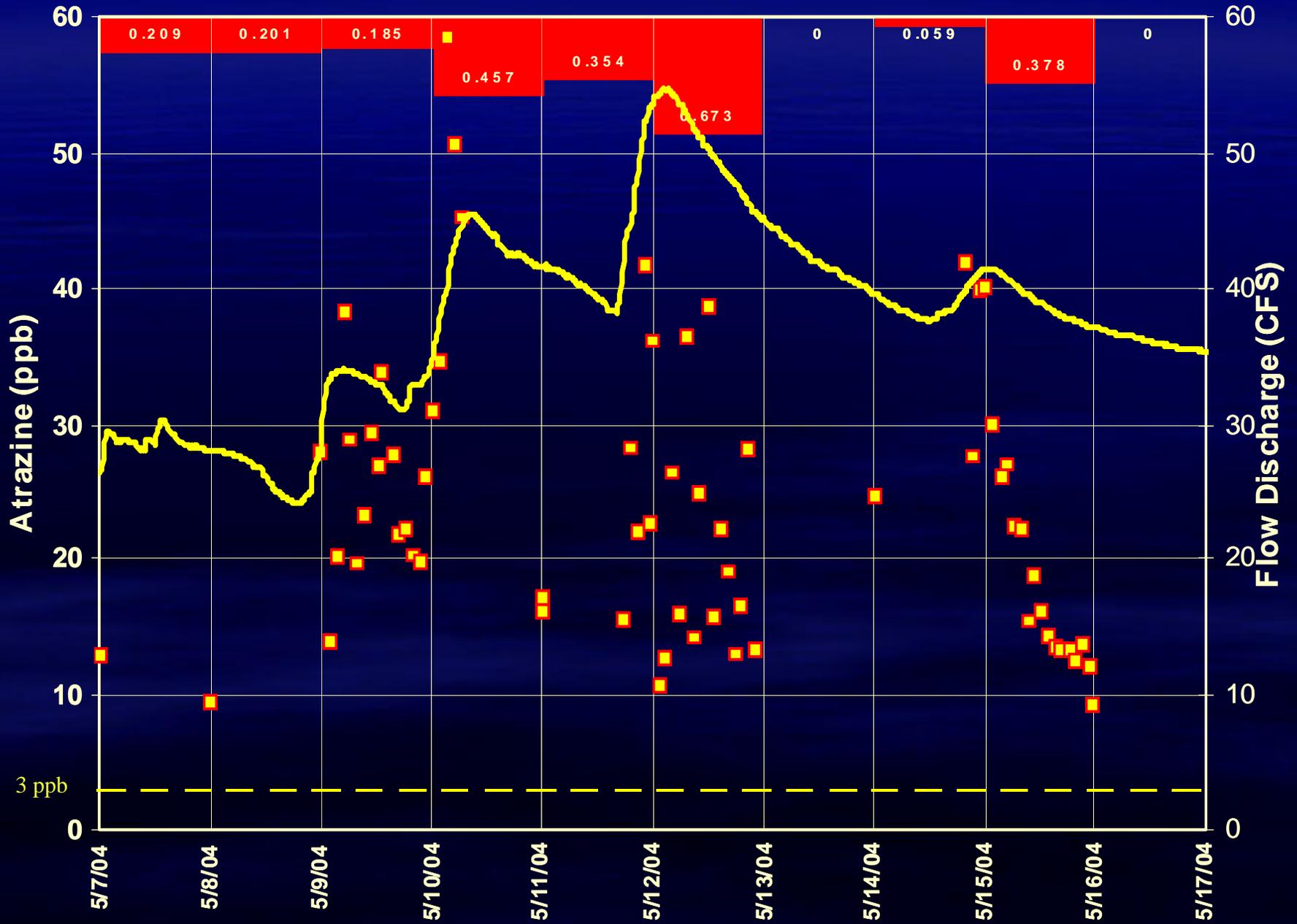
Nutrients

- Nitrate
- o-phosphate
- Total phosphorus
- Ammonia
- Total Kjeldahl Nitrogen
- Sediment
- *E. coli*

Pesticides-BMPL Event 1 6/25 - 6/26, 2002



BMP XL Rainfall and Response, May 2004



Current Progress

Watershed Research

- Land Use - Working with NRCS, SWPI, and IDEM (80%)
Working on CP implementation/cooperation
- Installing additional instrumentation (creek & surface inlet, weather & soil moisture, 11 WQ sites)
- Soil property characterization for different practices
- Analysis of 2002-2004 WQ data for scaling effects, etc.

Hydrologic Modeling

- Basic input completed – Detailed input continues
- Good calibration results for annual & monthly
Working on daily (hydrology, atrazine, *E. coli*)
- Validation next

Collaborators

America's Clean Water Federation, Washington DC

St. Joseph River Watershed Initiative, Ft Wayne, IN

Allen County SWCD, Ft. Wayne, IN

Dekalb County SWCD, Auburn, IN

City of Fort Wayne

DeKalb County Drainage Board

Purdue University

USDA-NRCS

USDA-ARS, Soil Drainage Research Unit, Columbus, OH

Indiana Department of Environmental Management

Local Landowners and Farmers

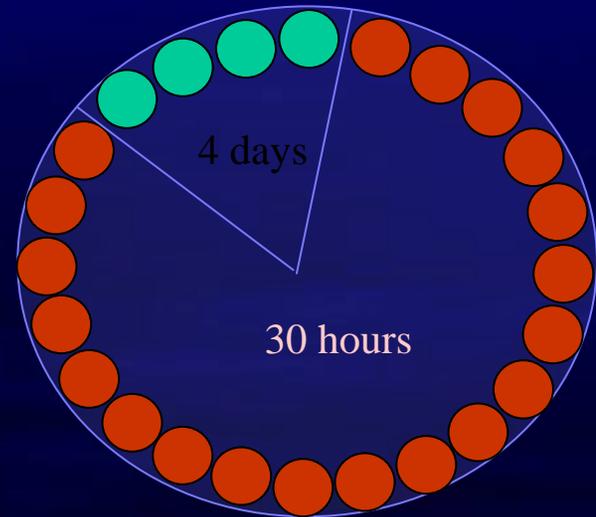
*When we try to pick out anything by itself, we find it
hitched to everything in the universe.*

John Muir



Sampling Program

- Base Flow Sampling
 - 50 mL sampled every 4 hours
 - One 300-mL composite sample every day
- Event Sampling
 - 100 mL sampled every 30 minutes
 - One 300-mL composite sample every 1.5 hours



24-Bottle ISCO Sampler