USDA-ARS Water Quality & Management National Program (NP 201) Overview and Highlights

Mark A. Weltz, National Program Leader, Watersheds and Remote Sensing, Co-Leader

USDA-Agricultural Research Service
Natural Resources and Sustainable Agricultural Systems
National Program Staff

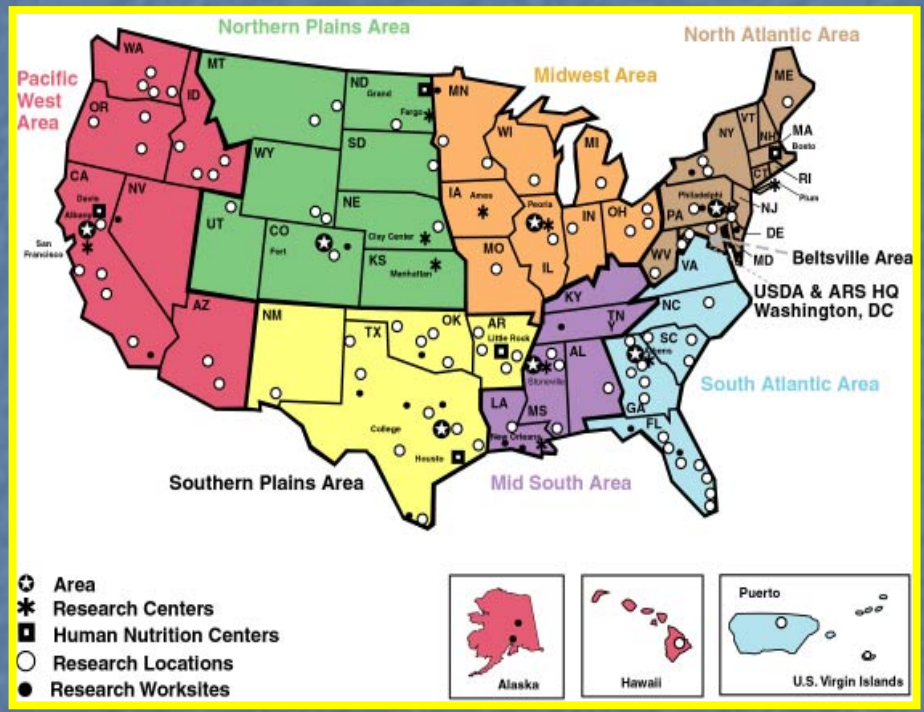
Agriculture in U.S. Economy

- ~16% of U.S. gross domestic product
- ~17% of U.S. employed
- ~8% of U.S. exports
- <2% U.S. workforce on farms and ranches
- 100% of the citizens are users

UNITED STATES DEPARTMENT OF AGRICULTURE

Agricultural Research Service

- 104 Locations, ~70 in Natural Resources
- ~$1.1 billion annual budget (FY04), ~$185 million annually in NR
- ~2,100 scientists, ~350-400 in NR
- ~1,000+ research projects ~200 in Natural Resources
- 22 National Programs



Vision and Mission Statements

Vision

A Safe, More Water Efficient Society

Mission

- **To develop innovative concepts for determining the movement of water and its constituents in agricultural landscapes and watersheds.**
- **To develop new and improved practices, technologies, and systems for managing the Nation's water resources.**

Scope of Water Quality & Management within USDA-ARS

- 45 research units at 38 field stations
- 85 projects
- ~ 225 scientists participate (≈157 FTE's)
- ~ $55.8 M annual budget
- ~ $7.1 M budget increase from 2000 to 2005

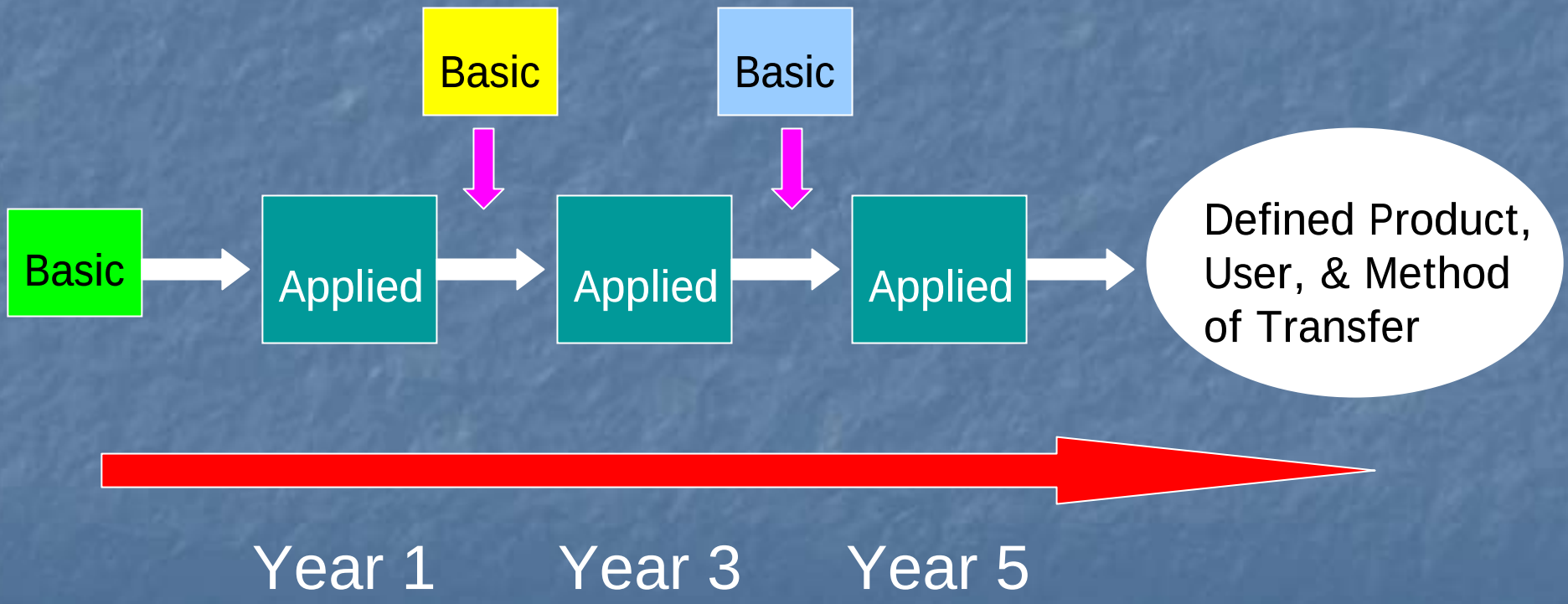
Research Locations

Research Components

NP 201 has three components:

- Agricultural Watershed Management
- Irrigation and Drainage Management
- Water Quality Protection and Management

Collaborative Efforts for USDA-ARS Water Resource Management



Attributes of Successful Collaborative Efforts

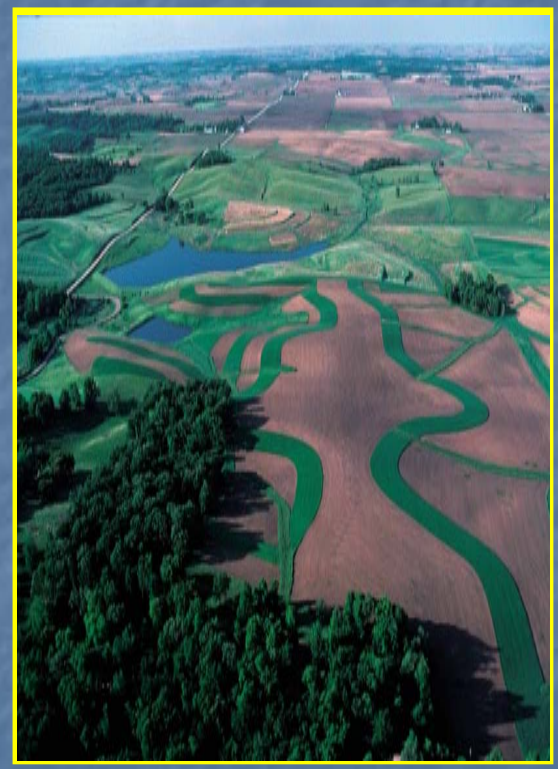
- Manageable, focused project identified & designed by consensus
- Explicitly stated end product, objective, approach, membership, timeline (inc. communications), expectations of each participant
- Open discussion of authorship expectations
- Team Leader/Co-Leader(s) identified & committed

SWAT is used worldwide to assess environmental benefits

- SWAT stands for Soil and Water Assessment Tool.
- The USEPA and ARS have made SWAT available to State agencies and consultants throughout the United States in BASINS for Total Maximum Daily Load evaluations.
- In 2003, SWAT was chosen as the tool to quantify the environmental benefits of conservation practices at the national and watershed scales for the Conservation Effects Assessment Project (CEAP).

Why CEAP?

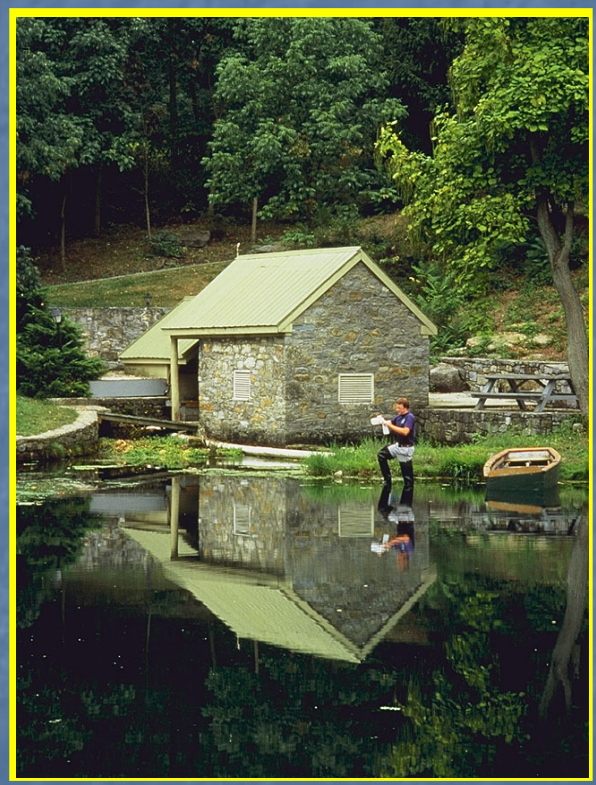
- The Environmental Quality Incentive Program may provide as much as $6 billion over the life of the Farm Bill (2002 to 2007).
- New programs like the Conservation Security Program need tools that document environmental benefits to justify payment on existing conservation management practices.



The Focus of CEAP

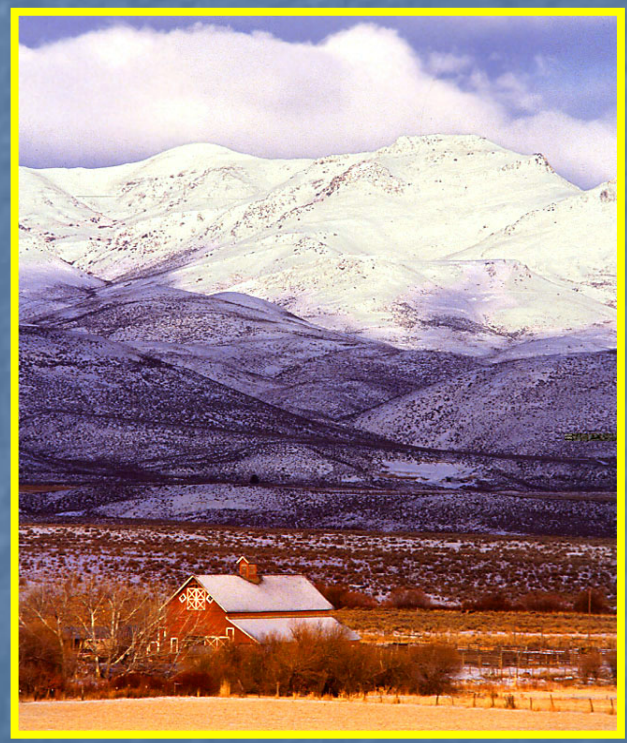
- The purpose of CEAP is to quantify the environmental benefits of conservation practices implemented under the 2002 Farm Bill.

- Tracking these benefits over time will allow policy-makers and program managers to implement and modify existing programs to more effectively and efficiently meet the goals of Congress.



CEAP has Two Major Components and Reporting Scales

- The NRCS-led national assessment provides estimates of conservation benefits at the national scale.
- The ARS and NRCS-led watershed assessment studies provide for more detailed information on conservation effects/benefits in selected benchmark watersheds.



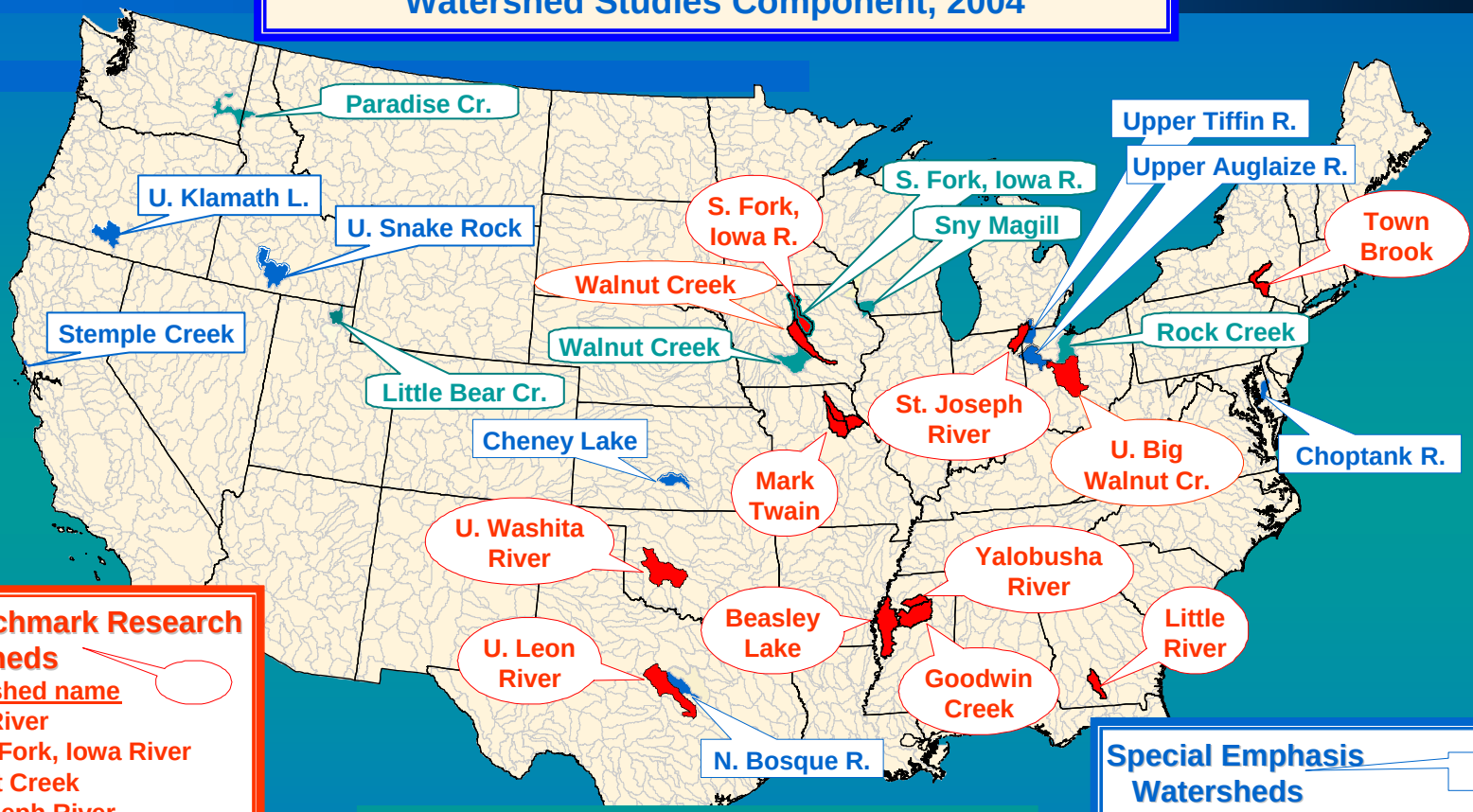
National Assessment—Water Quality

- Water quality benefits will be assessed at the 8-digit watershed scale using a combination of models and databases called SWAT/HUMUS
- EPIC-APEX results from the NRI modeling will be used to represent cropland
- This will allow estimation of the reduction in in-stream concentrations of nutrients and sediment attributable to implementation of conservation practices at the outlet of each 8-digit watershed in the country.

Watershed Assessment Studies Categories

- Three Watershed Categories:
  - Agricultural Research Service (ARS) Benchmark Watersheds
  - Special Emphasis Watersheds (NRCS)
  - Competitive Grants Watersheds (CSREES)

Conservation Effects Assessment Project (CEAP): Watershed Studies Component, 2004



ARS Benchmark Research Watersheds

	Watershed name
GA	Little River
IA	South Fork, Iowa River
IA	Walnut Creek
IN	St. Joseph River
MO	Mark Twain
NY	Town Brook
OH	Upper Big Walnut Creek
OK	Upper Washita River
MS	Goodwin Creek
MS	Beasley Lake
MS	Yalobusha River
TX	Upper Leon River

Competitive Grants Watersheds

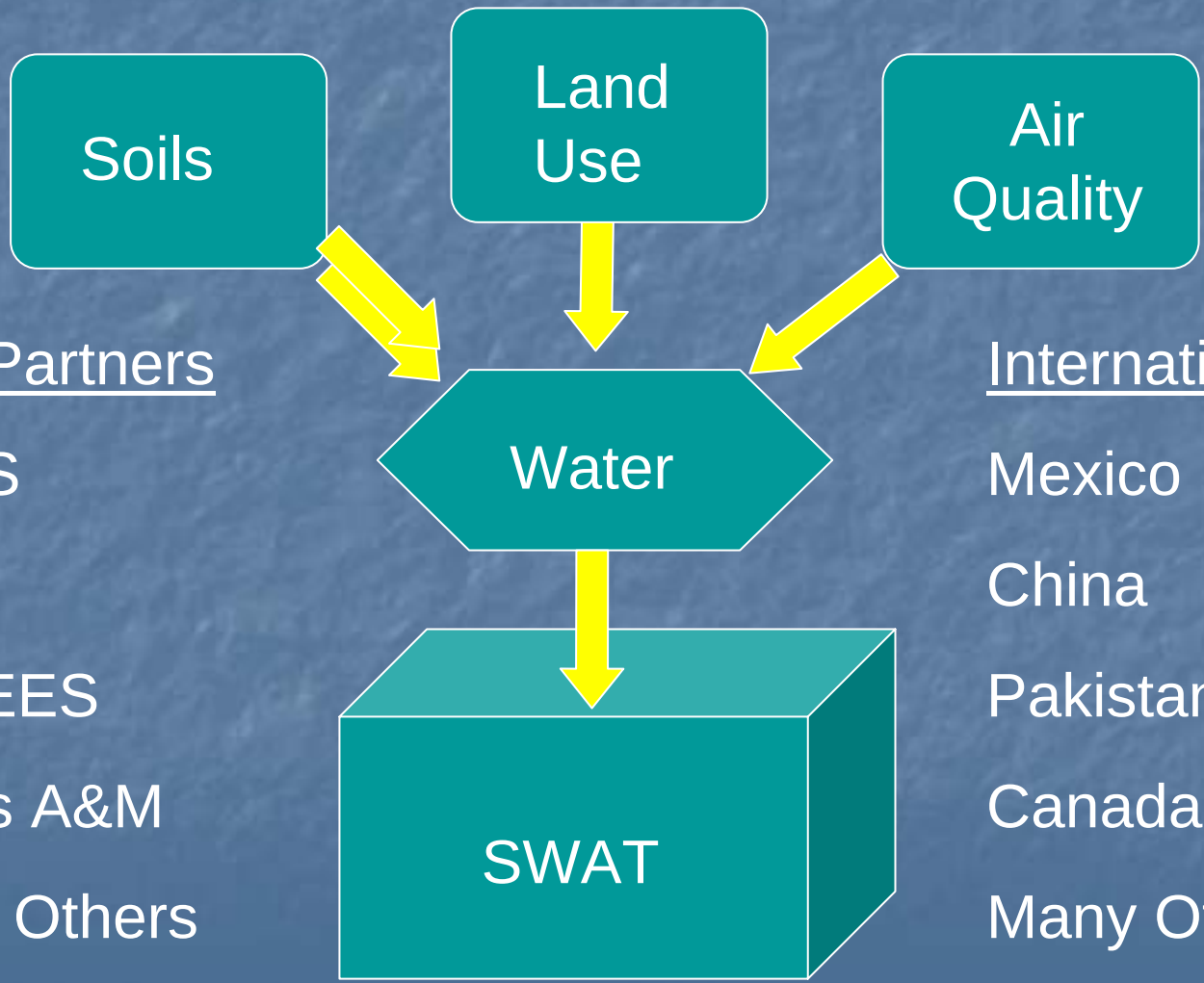
	Watershed name	Research Lead
IA	Three watersheds (Walnut Creek, South Fork Iowa River, Sny Magill)	(Iowa St. U.)
UT	Little Bear River	(Utah St. U.)
OH	Rock Creek	(Heidelberg College)
ID	Paradise Creek	(U. of Idaho)

Special Emphasis Watersheds

	Watershed name
CA	Stemple Creek
ID	Upper Snake Rock Creek
KS	Cheney Lake
MD	Choptank River
OH	Maumee River (Upper Auglaize R.)
MI	Maumee River (Upper Tiffin R.)
OR	Upper Klamath Lakes
TX	North Bosque River

Note: CEAP Watershed locations are plotted as 8-digit Hydrologic Unit Code Watershed boundaries for general locations only.

Collaborative Efforts are Required to Improve SWAT



U.S. Partners

NRCS

EPA

CSREES

Texas A&M

Many Others

International Partners

Mexico

China

Pakistan

Canada

Many Others

We appreciate and welcome partners in continuing to develop and apply SWAT

"Water is fundamental to life and is a basic requirement for all our agricultural, industrial, and recreational activities, as well as for the sustained health of the natural environment."