



Measuring the Environmental Benefits of Conservation

The Conservation Effects Assessment Project (CEAP)

Scope of CEAP

LAND USE GROUPS

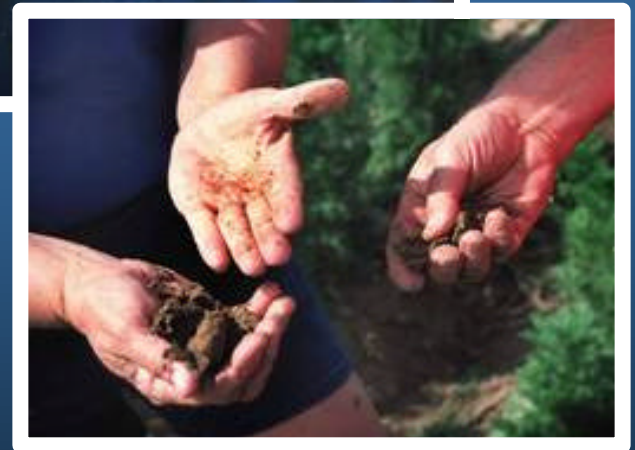
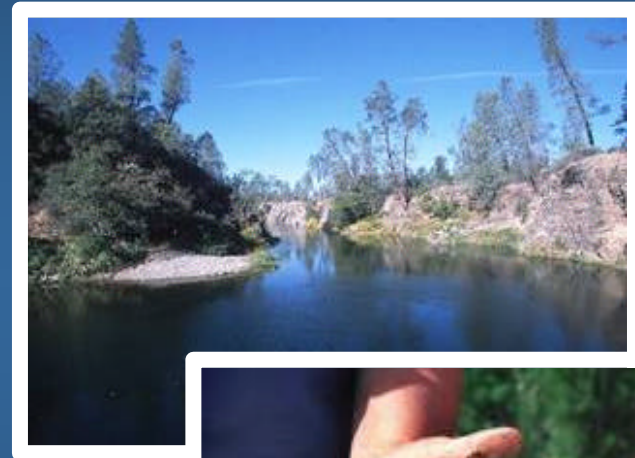
- Cropland, including CRP
- Grazing lands
- Wetlands



Scope of CEAP

RESOURCE CONCERNS

- Water Quality
- Soil Quality
- Water Conservation
- Air Quality
- Wildlife Habitat
- Ecosystem Health
- Livestock Operations



Scope of CEAP

Conservation Programs:

- EQIP Environmental Quality Incentives Program
- CRP Conservation Reserve Program
- WRP Wetlands Reserve Program
- WHIP Wildlife Habitat Incentives Program
- CTA Conservation Technical Assistance Program
- CSP Conservation Security Program
- GRP Grassland Reserve Program

Why CEAP?

- OMB requests for outcome reporting.
- Increased demand for accountability reporting associated with the 2002 Farm Bill.
 - 2002 Farm Bill Conference Report.
 - Other voices both inside and outside of government were calling for better accountability.

Challenges

- **More research is needed on the effects of conservation practices, especially off-site effects.**
- **Existing databases are inadequate for use in quantifying the benefits of conservation practices. New databases need to be developed.**
- **For some land uses and resource concerns, analytical approaches need to be developed.**
- **Meeting these challenges is expensive and will take time.**

Implementing CEAP

- Initial focus is on cropland, including CRP
 - Water Quality
 - Soil Quality
 - Water Conservation
- The most common conservation practices will be addressed first.
- As the project progresses, efforts will be made to expand the coverage of resource concerns, land uses, and conservation practices.

Summary of CEAP-Related Costs \$ Million

	Actual FY2003	Actual FY2004	Projected FY2005
NRCS	\$5.40	\$8.45	\$8.00
ARS	\$15.0	\$16.0	\$18.0
FSA		\$1.0	\$1.0
CSREES		\$1.8	\$1.8

CEAP Components

- National Assessment
- Watershed Assessment



National Assessment

The purpose of the national assessment is to provide an accounting of the environmental benefits obtained from USDA conservation programs for reporting at the national level.

The focus is on developing approaches, methodologies, and databases to produce estimates of benefits based on scientific findings.

CEAP Components

- National Assessment
- Watershed Assessment



The Watershed Assessment Studies

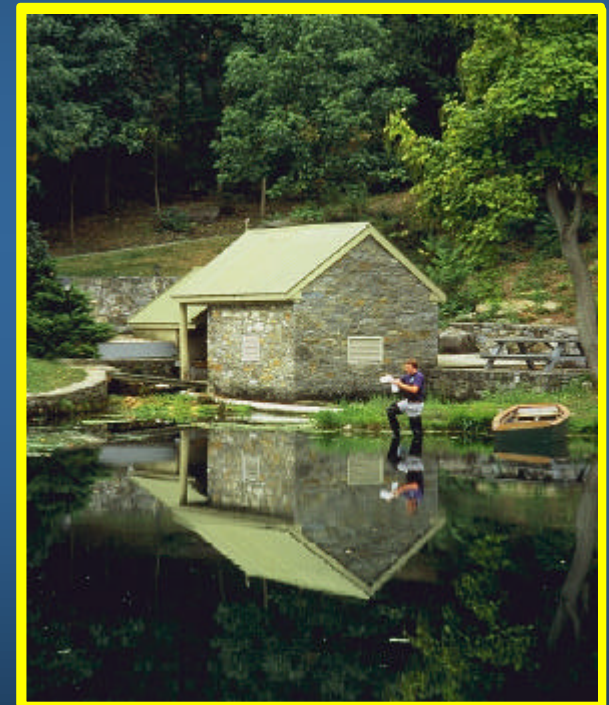
Purpose is to support the National Assessment by:

- Providing detailed research findings for a few intensively studied watersheds.
- Evaluate and improve models for use in the National Assessment.
- Initial analysis will utilize existing data and models.
- The initial focus is on cropland.



The Watershed Assessment Studies

- Future work will address grazing lands, wetlands, and wildlife.
- Future work will also incorporate manipulative treatments to quantify cumulative effect of implementing conservation practices at the watershed scale.



Assessment of Watershed Effects



The Watershed Assessment Studies

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



The ARS Watershed Assessment Study

Approach:

- 12 ARS Benchmark Watersheds
- Six multi-location teams
- Collaborative research will be the centerpiece of the CEAP assessment activities.



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



ARS Benchmark Research Watersheds

	<u>Watershed name</u>
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

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

The Watershed Assessment Studies

- **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**



Special Emphasis Watersheds	
	<u>Watershed name</u>
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.

CEAP- Special Emphasis Watersheds (SEWs)

Watershed	Programs	Monitoring	Modeling
Stemple Creek	EQIP, PL-566	Surface Water	AnnAGNPS, CONCEPTS
Upper Snake Rock Creek	CREP, CRP, EQIP, WRP, WHIP, 319, 104b	Surface Water, Ground Water, Biological	MODFLOW (Gr. W.) SWAT
Choptank River	CREP, CRP, EQIP, WRP, WHIP, 319	Surface Water, Biological	GWLF, WSM, RADM (Air), SPARROW
Cheney Lake	CRP, EQIP, WRP, WHIP, 319	Surface Water, Biological	AnnAGNPS, BATHTUB
Upper Tiffin River	CRP, EQIP, WRP, 319	Biological	AnnAGNPS
Upper Auglaize River	CREP, CRP, EQIP, WRP, WHIP	Surface Water, Erosion	AnnAGNPS
Sprague River, Upper Klamath	CREP, CRP, EQIP, WRP	Surface Water, Ground Water, Lake, Biological	AnnAGNPS, MIKE SHE, DHSVM
North Bosque River	EQIP, PL-566, 319	Surface Water	SWAT, APEX

The Watershed Assessment Studies

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 - **Competitive Grants Watersheds (CSREES)**



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

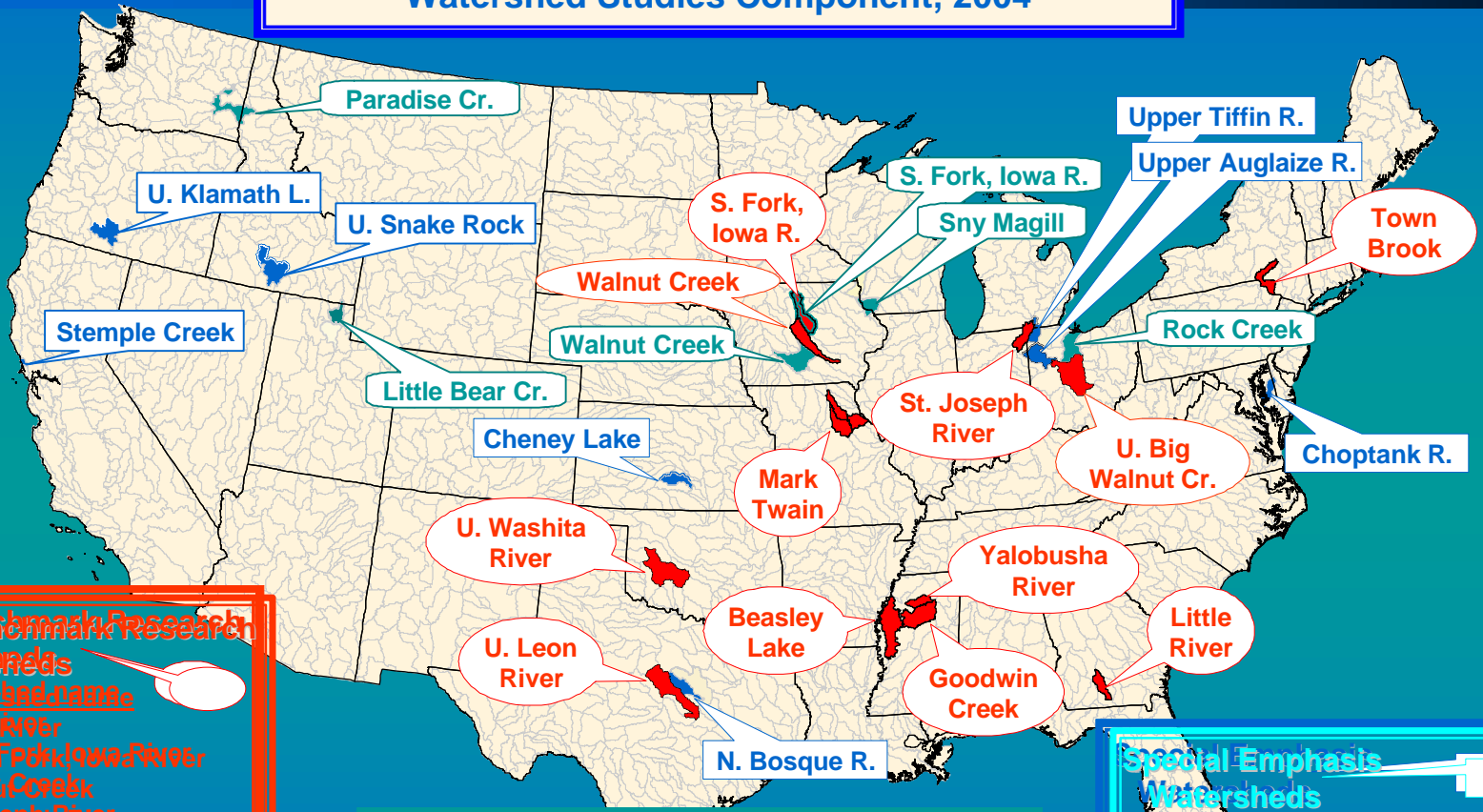


**Competitive Grants
Watersheds**

	<u>Watershed name</u>	<u>Research Lead</u>
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)

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



ARS Benchmark Research Watersheds	
State	Watershed name
CA	Upper Klamath Lakes
CA	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

Competitive Grants Watersheds		
State	Watershed name	Research Lead
IA	Upper Auglaize R.	(Iowa State U.)
IA	Upper Tiffin R.	(Iowa State U.)
OH	Maumee River (Upper Auglaize R.)	(Iowa State U.)
MI	Maumee River (Upper Tiffin R.)	(Iowa State U.)
OR	Upper Klamath Lakes	(Iowa State U.)
TX	North Bosque River	(Iowa State U.)

Special Emphasis Watersheds	
State	Watershed name
CA	Upper Klamath Lakes
ID	Upper Snake Rock Creek
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The Watershed Assessment Studies

Anticipated Products:

1. Water, soil, management, and economic data system.
2. Quantification of effects of conservation practices on environmental quality.
3. Validation of models and quantification of uncertainties of model predictions.

The Watershed Assessment Studies

Anticipated Products: (cont'd)

4. Evaluation of cost effectiveness of selection and placement of conservation practices.
5. Development of new software tools for quantifying environmental outcomes in major agricultural regions.

The Watershed Assessment Studies

Anticipated Products: (cont'd)

6. Contribute to the CEAP 4 volume Bibliography.
7. Contribute to the Soil & Water Conservation Society effort in publishing a book entitled:
Environmental Benefits of Conservation Practices: State –of –Knowledge.

CEAP Collaboration

- within USDA (NRCS, ARS, CSREES, FSA, NASS, ERS)
- Interagency
 - Steering Committee
- Non Governmental Organizations
 - Soil & Water Conservation Society (SWCS)
 - Blue Ribbon Panel
 - Focus Group Meetings
 - The Wildlife Society (TWS)
 - Others

CEAP- Special Emphasis Watersheds(SEWs)

- Previous remarks/concerns from SWCS
 - Take advantage of all USGS and EPA data
 - Once effects are reported, they need to be put in perspective with environmental conditions.
 - Use models to estimate the “with” and “without” practices conditions.
 - Estimates of effects for the before or without condition may be of the most value.
 - Share data
 - Confidentiality issue

CEAP- Special Emphasis Watersheds(SEWs)

- Previous remarks/concerns from BRP (cont'd)
 - Time required to do the job right
 - Focus on the quality of the analytical system rather than just the initial reports.
 - Focus on combined effects of systems and multiple practices, not just single practices.
 - Effects need to be measured against standards.
 - Is it beneficial, and how much?

CEAP- Special Emphasis Watersheds(SEWs)

- Previous remarks/concerns from SWCS (cont'd)
 - How to rationalize or explain divergence of monitored results from modeled results?
 - CEAP results could shift emphasis to modeling (cheaper), if shown to be reliable.
 - Some CEAP funds should be directed to prove/disprove
 - CEAP results must be used to change the administration of conservation programs.

CEAP- Special Emphasis Watersheds (SEWs)

- Previous remarks/concerns from SWCS (cont'd)
 - Need independent verification of CEAP results
 - CEAP results may/will be used to determine future conservation programs and their funding levels.
 - Use experience in applying watershed models to support TMDLs and other watershed implementation programs.

CEAP- Special Emphasis Watersheds(SEWs)

- Previous remarks/concerns from SWCS (cont'd)
 - “The CEAP Watershed studies may produce the most value over the long-term.”



- **CEAP Web site:**

<http://www.nrcs.usda.gov/technical/nri/ceap/index.html>

- **Tom Drewes**

CEAP Watersheds Coordinator

USDA-NRCS Resource Inventory & Assessment Division

(301)504-2365

tom.drewes@usda.gov