

## Overview of CEAP

Purpose of CEAP: Quantify environmental effects and benefits of conservation practices

- Watershed case studies (37 )
- National Assessment
  - **Cropland**
  - Wildlife
  - Wetlands
  - Grazing Land



## Cropland National Assessment-- Goals

1. Estimate the benefits of conservation practices **currently present** on the landscape
2. Estimate the **need** for conservation practices and the benefits that could be realized under “full treatment”
3. Simulate **alternative options** for implementing conservation programs on cropland

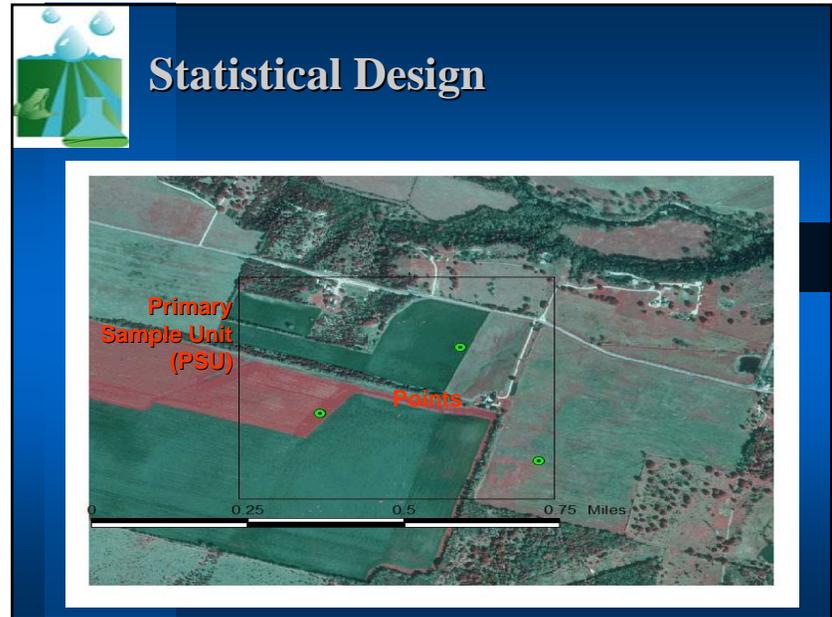
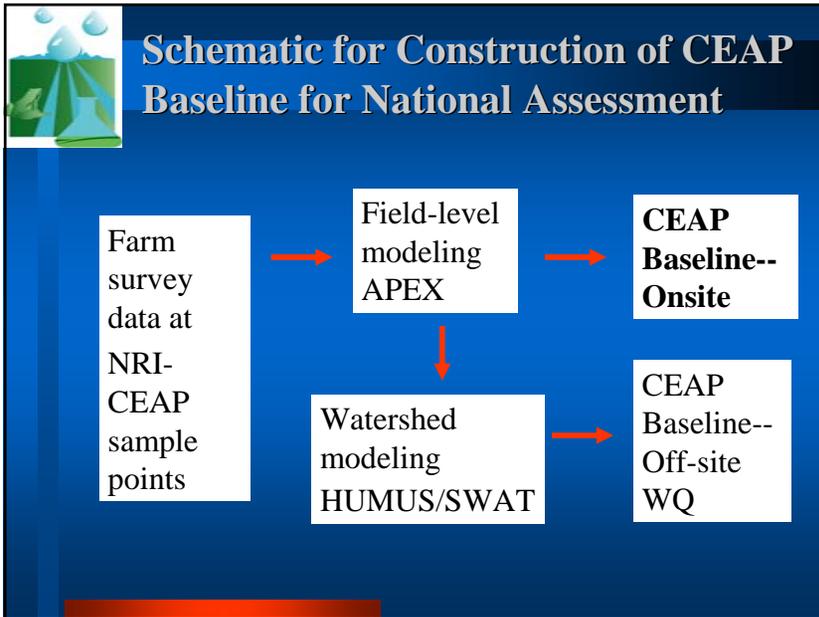


## Modeling Strategy

1. Estimate a CEAP Baseline using farmer survey information at NRI sample points
2. Construct an alternative scenario assuming “no practices”

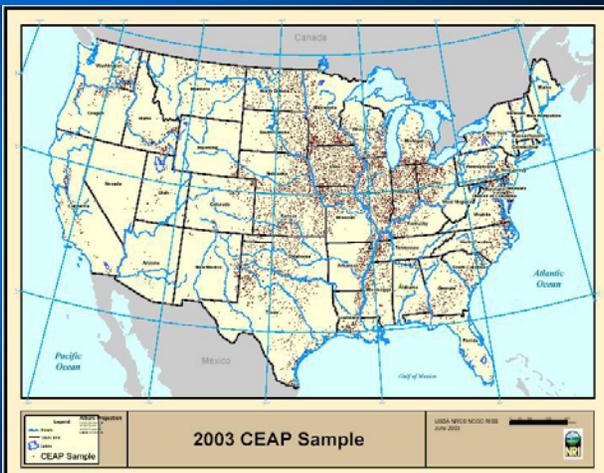
Difference between these two scenarios represents the benefits of the accumulation of conservation practices currently in place.







## NRI-CEAP Sample



## Sediment Loss From Water Erosion

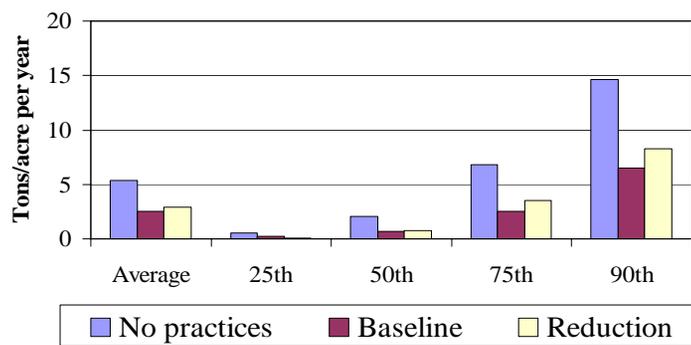
Tons/acre per year

	Treated acres	All acres
No practices	5.4	4.0
Baseline	2.5	3.1
Reduction	2.9	0.9
	54%	23%



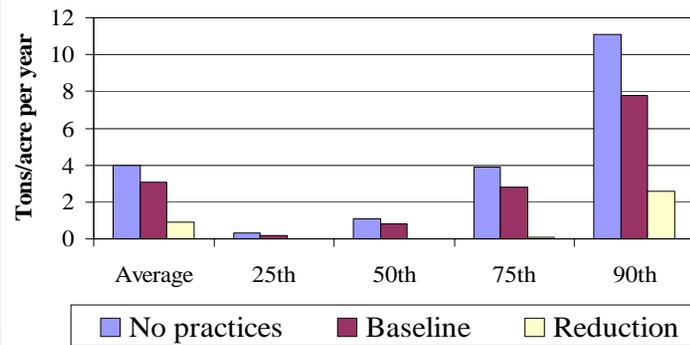
## Sediment Loss From Water Erosion

MUSLE for Treated Acres



## Sediment Loss From Water Erosion

MUSLE for All Acres





## Conservation Treatment Needs

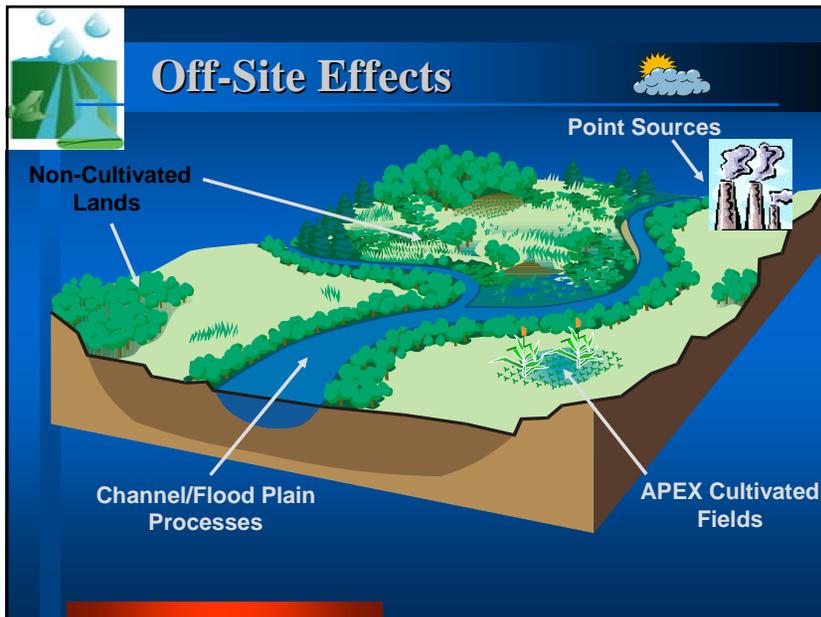
	<u>Criteria</u>	<u>Million Acres</u>
<b>Sediment Loss</b>	1 ton/acre	133
	2 ton/acre	89
	3 ton/acre	66
<b>Total P Loss</b>	2 pound/acre	112
	4 pound/acre	57
	6 pound/acre	35
<b>Soluble P Loss</b>	1 pound/acre	55
	2 pound/acre	14
	3 pound/acre	5



## Off-Site Effects

HUMUS/SWAT(Soil and Water Assessment Tool)

- SWAT is a physical process model that simulates runoff and stream flow in large river basins.
- SWAT also estimates transport of sediment, nutrients, and pesticides.
- HUMUS is a modeling system that includes input databases needed to run SWAT for every 8-digit watershed in the US.



- ### Off-Site Effects
- Reductions in in-stream nutrient, sediment, pesticide concentrations and environmental risk.
  - Reductions in the number of days during the year that in-stream nitrogen concentrations exceed the drinking water standard.
  - Reductions in the number of days during the warm summer months that in-stream nitrogen and phosphorus concentrations exceed critical thresholds related to algal blooms and eutrophication.

### Preliminary Results Grafton, IL

- Sediment Reduction  
820,000 tons/yr 4.2%
- Total Nitrogen  
11,036 tons/yr 5.1%
- Total Phosphorus  
2,351 tons/yr 4.8%



### Next Steps...

#### Interim Report—June, 2007 (Feb. review draft)

- Based on 2003-04 survey data
- Focus is on conservation treatment needs
- Long-term projection (42 years) to capture long-run effects of practices
- Crop rotations simulated, derived from the survey data
- Off-site assessment for 3 river basins



## Next Steps...

### Final Report—December, 2008

- Based on 2003-06 survey data
- 3-year crop sequence repeated for various weather conditions
- Survey data simulated without significant modification
- Estimates of short-run effects of conservation practices
- Focus is on risk assessment
- Off-site assessment for all river basins



## For More Information...

CEAP website at:

[www.nrcs.usda.gov/technical/NRI/ceap](http://www.nrcs.usda.gov/technical/NRI/ceap)

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