

# NEBRASKA'S EXPERIENCES WITH GROUNDWATER AND SURFACE WATER MANAGEMENT

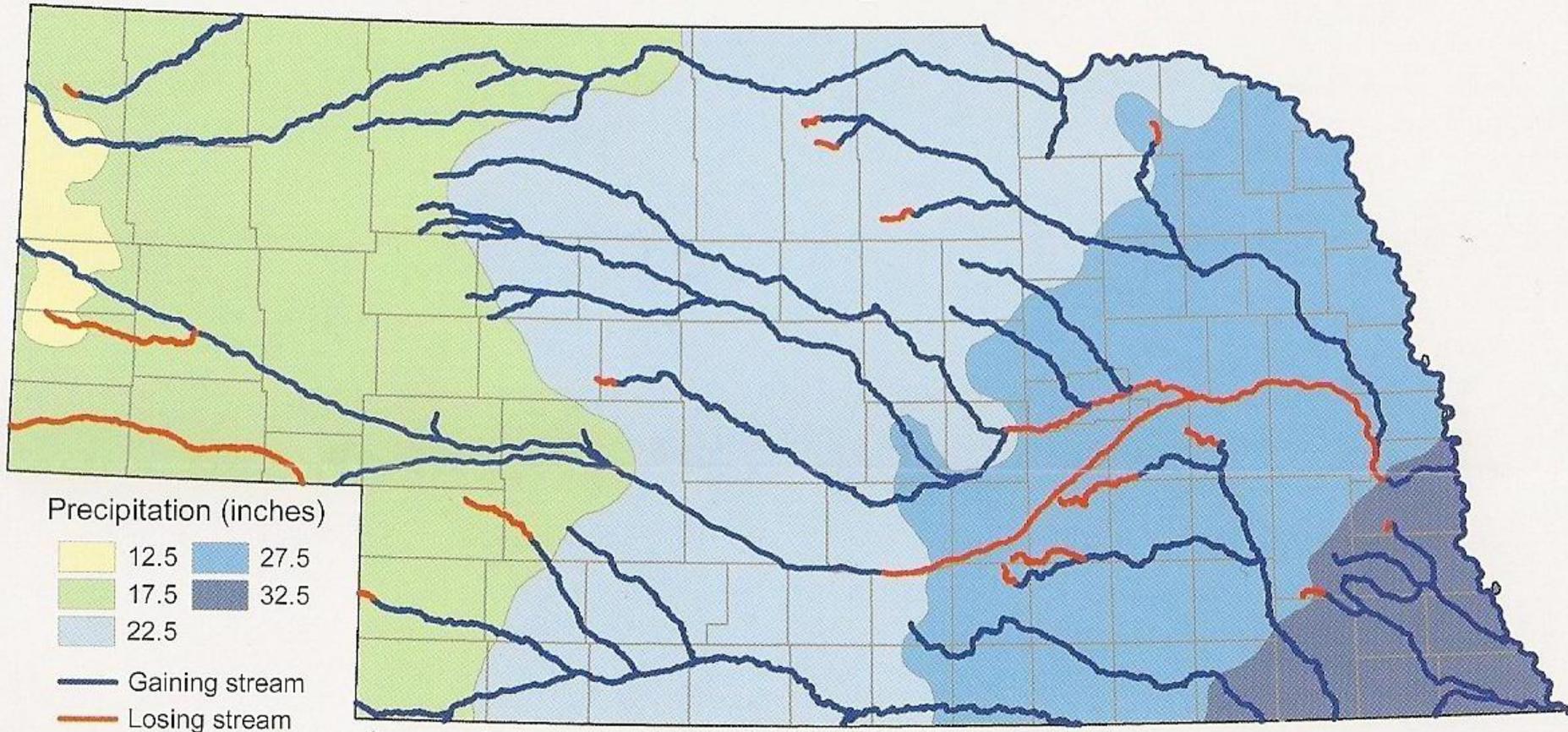
Ann Bleed

Colorado Aquifer Management

Groundwater and River Flow Connections

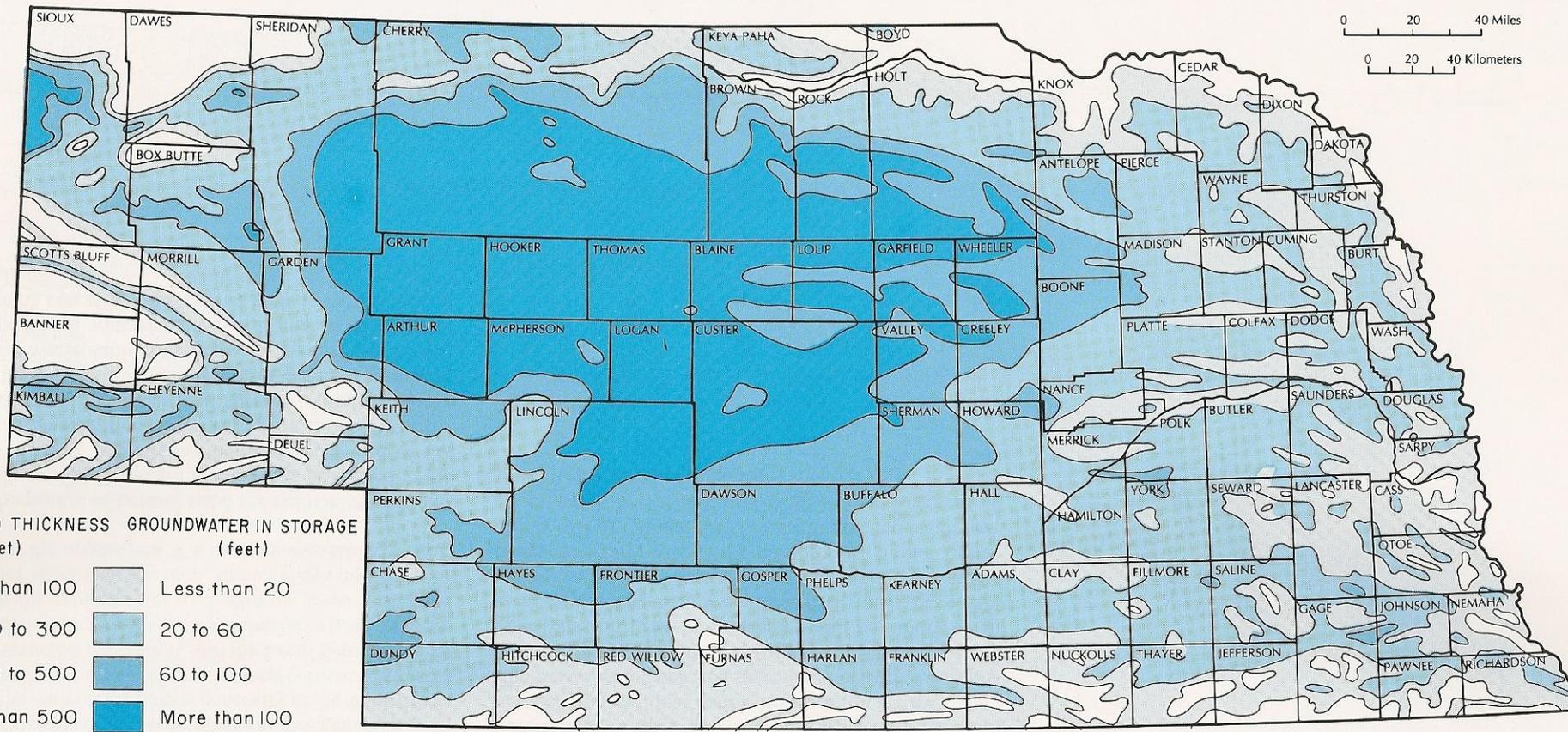
November 28-29, 2012

## Mean Annual Precipitation, 1971 - 2000 and Generalized Gaining/Losing Streams



Seasonal changes and human influences can result in variations of gaining and losing streams shown here. Sources: Gaining/Losing Streams, Conservation and Survey Division, School of Natural Resources, UNL ([snr.unl.edu/csd](http://snr.unl.edu/csd)). Precipitation, PRISM Group, Oregon State University ([www.prismclimate.org](http://www.prismclimate.org)).

Figure 11



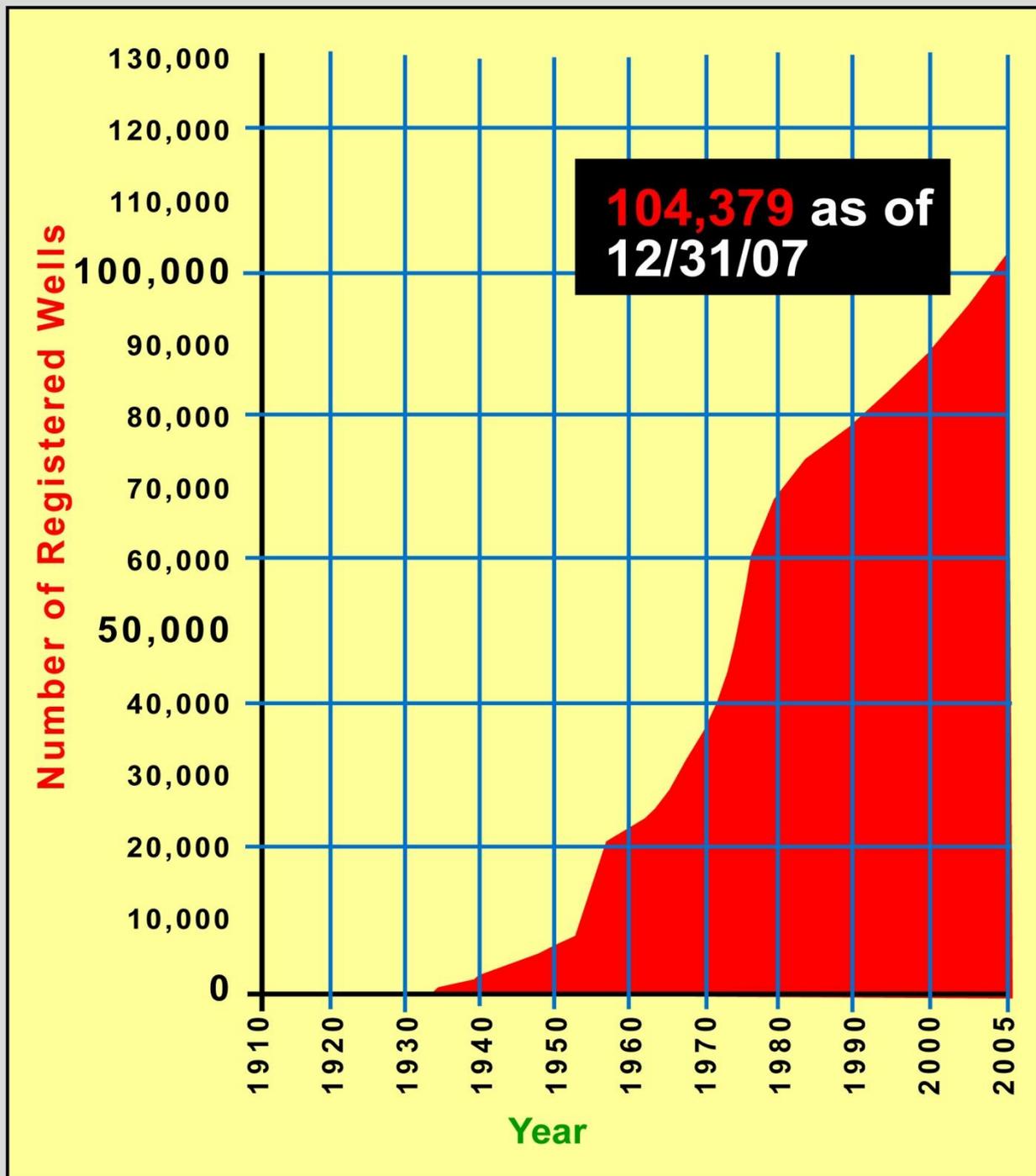
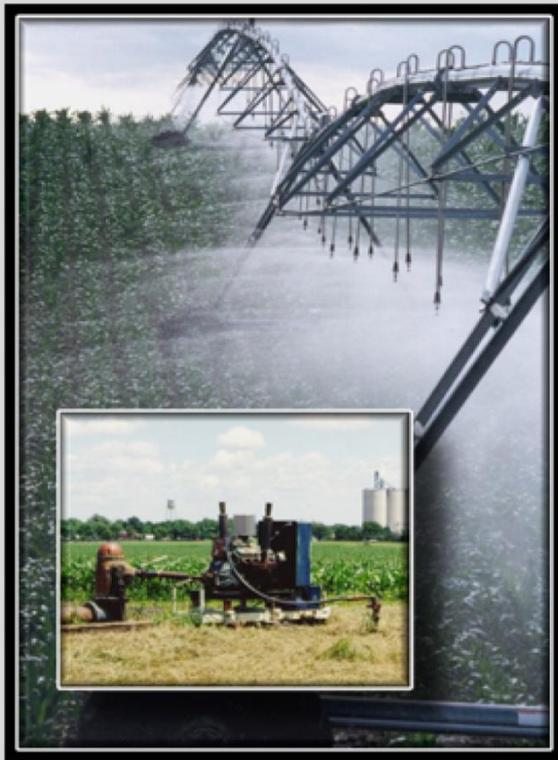
White areas indicate principal groundwater reservoir very thin or absent

*Saturated Thickness of the Principal Groundwater Reservoir*

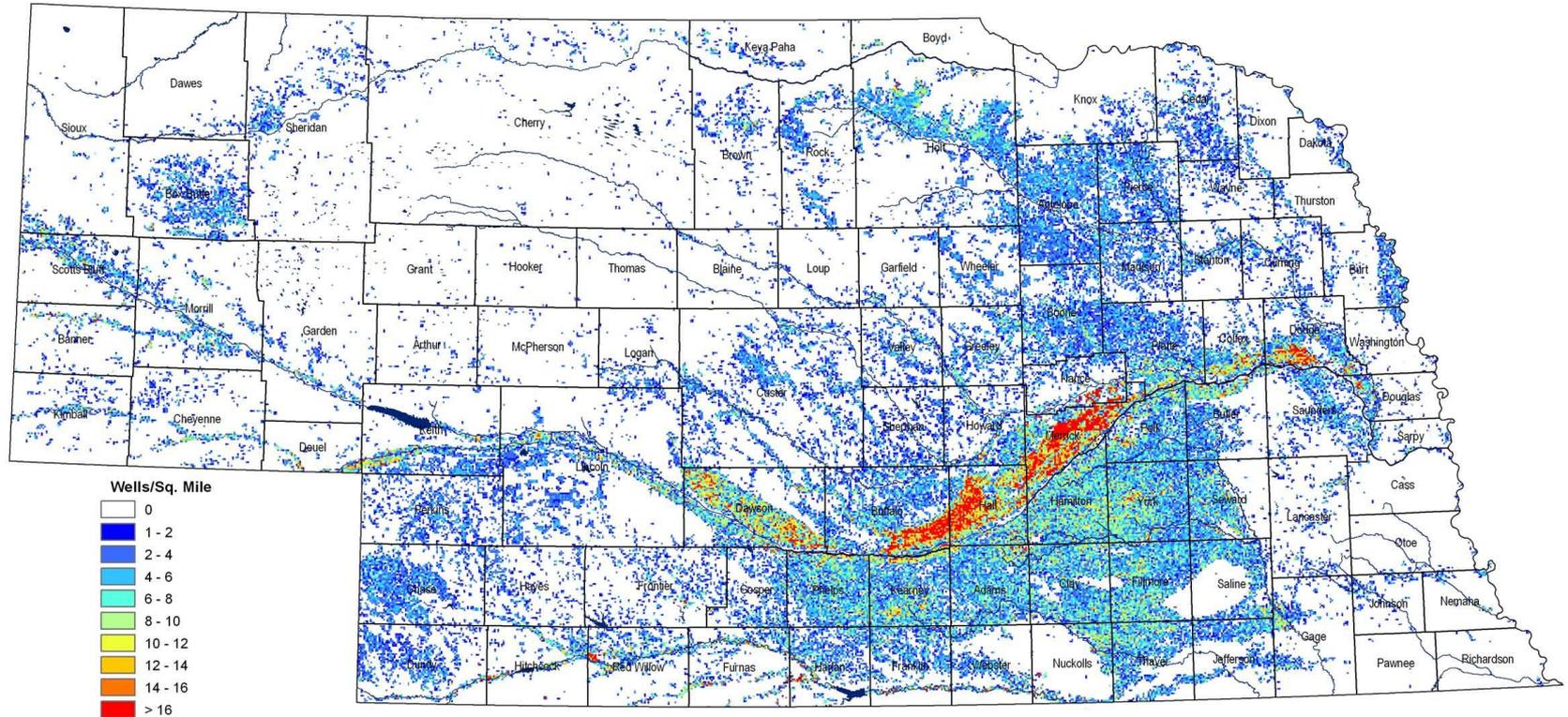
# Time Line

- 1895 Prior Appropriation System
- 1900's Reservoir Development
- 1933 Nebraska Supreme Court Decision  
(*Olson v. City of Wahoo*)
  - No waste
  - Reasonable use
  - Correlative rights
- 1957 Minimum Spacing between wells

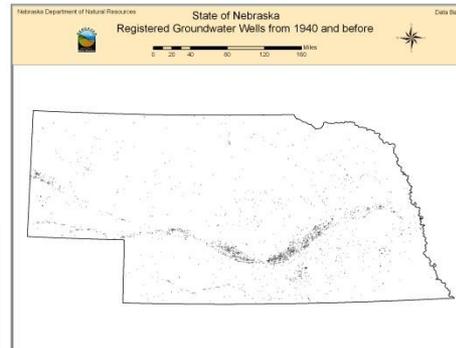
# Cumulative Totals of Irrigation Wells Registered in Nebraska 1910 - 2007



# Density of Registered Irrigation Wells in Nebraska August 2007



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CONSERVATION AND SURVEY DIVISION (<http://csd.unl.edu>)  
School of Natural Resources (<http://snr.unl.edu>)  
Institute of Agriculture and Natural Resources/College of Arts and Sciences  
University of Nebraska-Lincoln

Mark Burbach, Water Levels Coordinator, CSD

# Natural Resources Districts



# Time Line

- 1984 Groundwater Management and Protection Act
- 1980 s - Conflicts Between Surface Water and  
1990s Groundwater Users More Apparent
- 2004 Water Policy Task Force

# LB 962

- State in Charge SW – Appropriative Rights  
NRDs in Charge GW = Correlative Rights
- State Annual Determination of Fully  
Appropriated Basins – need to plan
- By Statute Portion of Platte River  
Overappropriated
- Determination of FA or OA
  - Temporary moratorium
  - Develop Integrated Management Plan

# Integrated Management Plan

Sustain a balance between water uses and water supplies so that the economic viability, social and environmental health, safety, and welfare of the river basin, subbasin, or reach can be achieved and maintained for both the near term and the long term;

# Integrated Management Plan

- One or more ground water controls authorized for NRD
- One or more surface water controls authorized for adoption by DNR
- Plan to develop information
- Interrelated Water Review Board appointed by Governor

# Fully and Overappropriated Areas



# Pumpkin Creek Decision 2005

- Surface water law of prior appropriation did not apply to ground water
- For surface water user to get restrictions on ground water, the surface water user must show withdrawals of groundwater caused a direct and substantial harm to the surface water user
- LB 962 and found provisions of LB 962 were
  - general and not intended to resolve individual disputes
  - forward-looking and do not require NRDs to remedy past injuries.



**ELINOR OSTROM**

2009 Nobel Laureate  
in Economic Sciences

Nobel symbol © The Nobel Foundation



Governing  
the  
Commons

Characteristics of long-enduring governing institutions that have managed to sustain the productivity of Common Pool Resources

# Design Principles Illustrated by Long- Enduring CPR Institutions

- ✓ Clearly defined boundaries delineating who has rights to withdraw resource units from the CPR.
- ✓ Congruence between appropriation and provision rules and local conditions.
- ✓ Collective-choice arrangements in which most individuals affected by the operation rules can participate in rule making

# Design Principles Illustrated by Long Enduring CPR Institutions

- ✓ Monitoring systems in which the monitors are accountable to the appropriators of the resource.
- ✓ Graduated sanctions in which the punishment depends on the seriousness of the crime.
- ✓ Conflict resolution mechanisms in which appropriators and administrators have quick, low cost access to local venues to resolve the conflict.

# Design Principles Illustrated by Long-Enduring CPR Institution

- ✓ Recognition of the rights to organize at the local level
- ✓ Nested enterprises in which the governance activities are organized in multiple layers of nested institutions

# Ostrom's Additional Observations

Groups that did not communicate were more likely to overuse the resource

Learning to trust one another is essential

- With trust comes reciprocity and cooperation
- Trust is cumulative over time – when outcomes are good, there is increasing trust.
- Distrust is also cumulative

# Assessment of Nebraska's System Using Ostrom's Guidelines

- ✓ Clearly defined boundaries Yes
- ✓ Congruence between rules and local conditions. Yes
- ✓ Monitoring systems monitors are accountable to users of the resource. Yes
- ✓ Graduated Sanctions Yes

# Assessment of Nebraska's System Using Ostrom's Guidelines

✓ Recognition of the rights to organize at the local level

Yes

✓ Nested enterprises in which the governance activities are organized in multiple layers of nested institutions

Yes

# Assessment of Nebraska's System Using Ostrom's Guidelines

- ✓ Most individuals affected can participate in rule making No
- ✓ Good communication among ALL stakeholders No
- ✓ Easy access to conflict resolution mechanisms No
- ✓ Trust No

# Basic Problem

## Hobb's Rule Is Not Being Followed in Nebraska

A water right is a use right and government cannot take the water right for another purpose