

# Water Policy and Agricultural Redevelopment in Alabama

- Some Driving Issues
- Water Laws and Policy
- Geospatial Applications

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# Driving Issues

- Homeland Security Issues

What can be done to replace the productivity of Western irrigated lands as they become less viable?

# Driving Issues

- Homeland Security Issues
- Stewardship of Resources Issues

Is Alabama adequately addressing the management needs of her natural resources, especially water?

# Driving Issues



- Homeland Security Issues
- Stewardship of Resources Issues
- Economic Development Issues

What can be done to revitalize the Black Belt without devastating the ecosystem?

# Driving Issues



- Homeland Security Issues
- Stewardship of Resources Issues
- Economic Development Issues

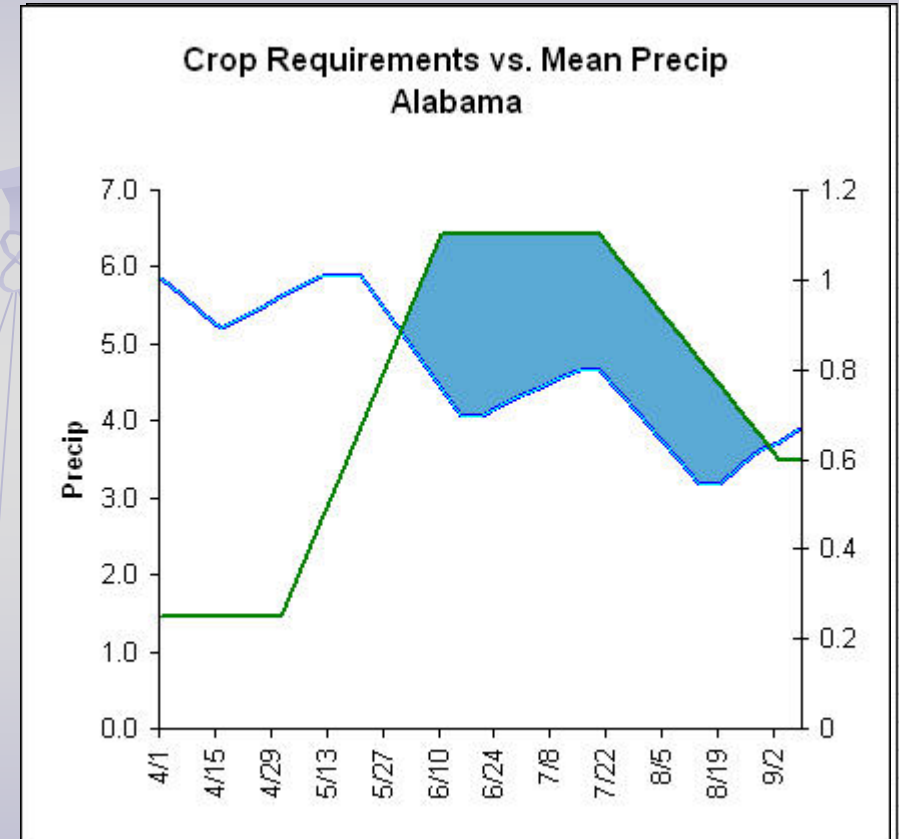
Can large to medium scale irrigation development be a tool to address these three issues?

# Aspects of Irrigation in Alabama



# Aspects of Irrigation in Alabama

- Why hasn't irrigation development occurred?
  - No perceived need
    - 55-60" average annual rainfall
    - But...
      - The rain doesn't always fall when or where it is needed



# Aspects of Irrigation in Alabama

- Why hasn't irrigation development occurred?
  - No perceived need
  - No perceived ROI
    - Tyson -- \$200 / acre / yr increase
    - But ...
      - Infrastructure and initiation dues are high
      - Forestry annual input ~ \$25 / acre, irrigated ag. ~ \$300 / acre
      - Georgia irrigation developed contradicting UGA economic analysis



# Aspects of Irrigation in Alabama

- Why hasn't irrigation development occurred?
  - No perceived need
  - No perceived ROI
  - No access to water
    - Physical constraints
    - Economic constraints
    - Political constraints



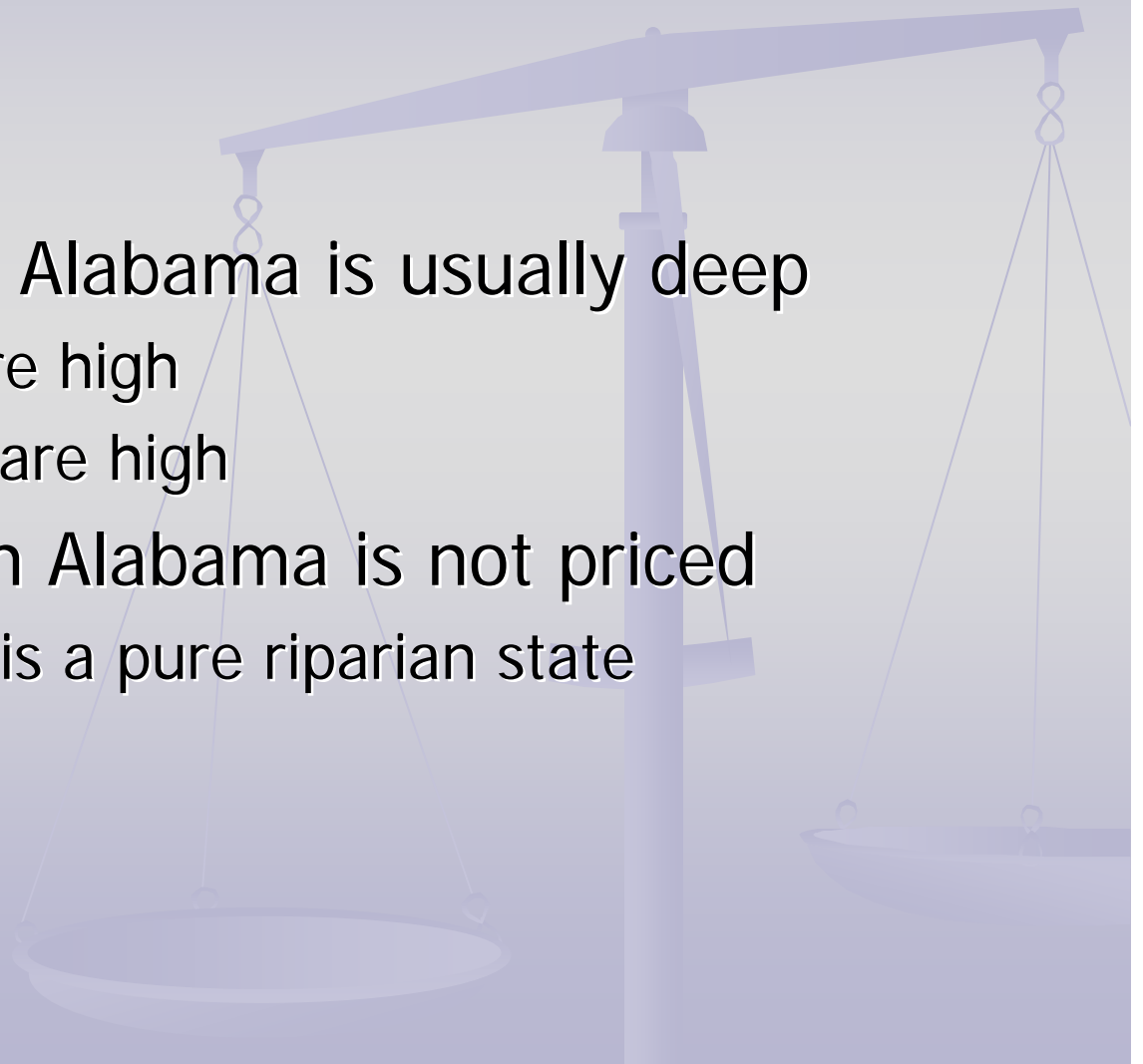
# Constraints on Access to Water

## ■ Physical

- Most, nearly all, small scale irrigation development in the West used Groundwater as the source – Land owner projects.
  - Alabama's rich water resources are surface
- Most, nearly all, large scale irrigation development in the West used Surface water as the source – Government projects.
  - Much of Alabama's prime farm land is not riparian

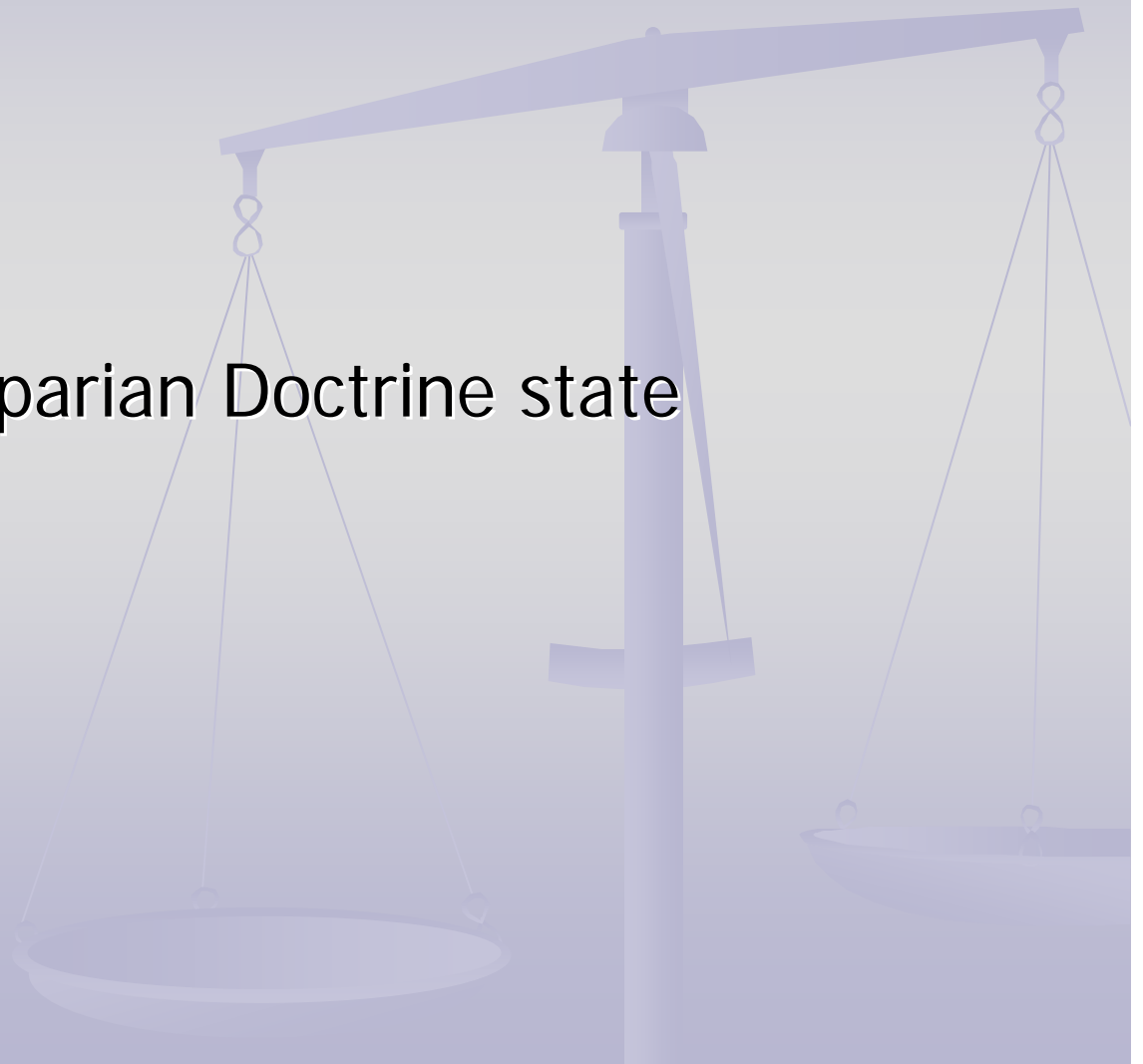
# Constraints on Access to Water

- Physical
- Economic
  - Groundwater in Alabama is usually deep
    - Drilling costs are high
    - Pumping costs are high
  - Surface water in Alabama is not priced
    - But... Alabama is a pure riparian state



# Constraints on Access to Water

- Physical
- Economic
- Political
  - Alabama is a Riparian Doctrine state

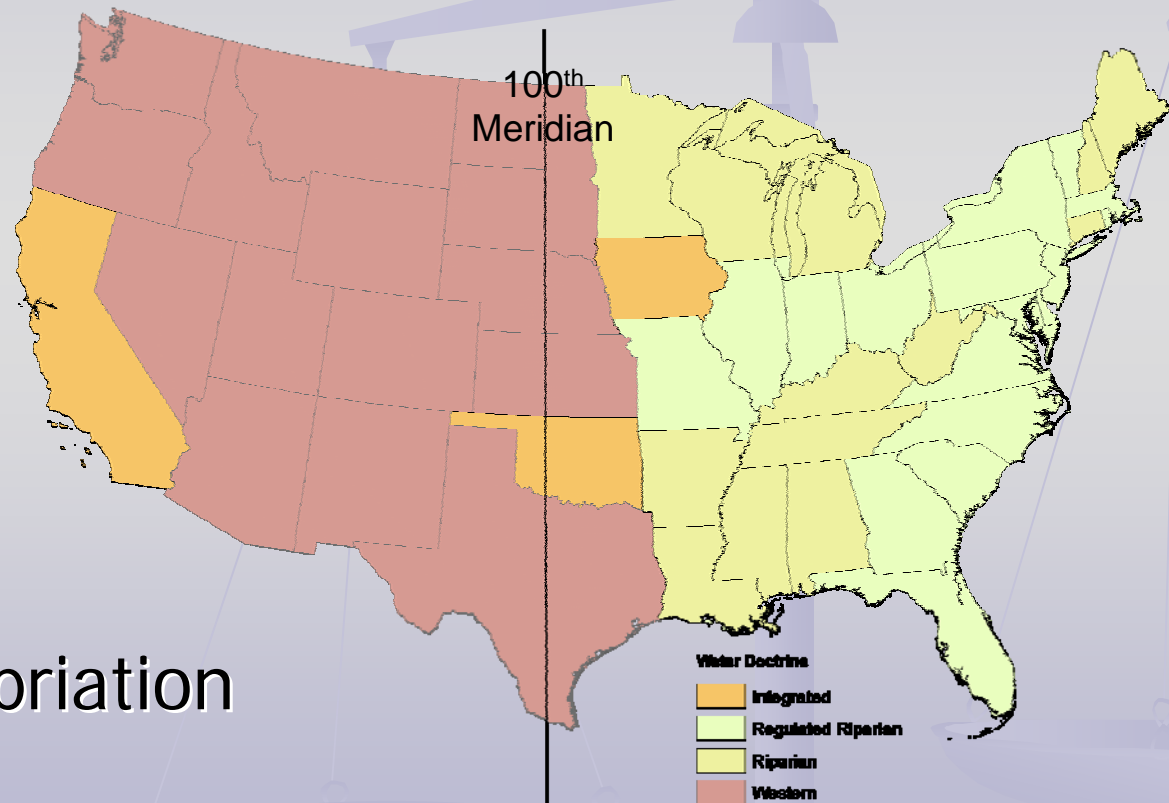


# Surface Water Management Policy

- Overview of Two Doctrines

- Riparian

- Prior Appropriation

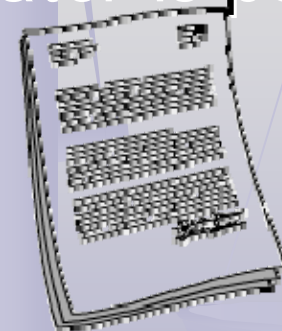


# Riparian Doctrine

- Eastern or English Doctrine
- Based upon Land ownership
- Predicated upon water abundance
  - Regulation initiated by complaint
  - Monitoring and measurement of water is post-adjudication

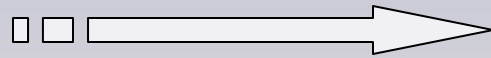
## Doctrine of Riparian Rights

The Doctrine of Riparian Rights define the rights relating to the bank of a watercourse which says that a landowner adjacent to a stream has the right to the water in that stream. This places the responsibility on the upstream users and protects private rights in streams and lakes.



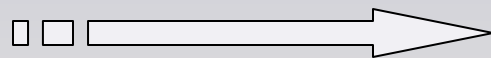
# Riparian Doctrine

No harm



No Foul

Harm



Foul!



**Watershed specific  
Case Law**



# Western Doctrine

- Colorado or Prior Appropriation Doctrine
- Based upon the State owning the water regardless of who owns the land
- Predicated upon water scarcity
  - Regulation initiated by administration
  - Monitoring and measurement is a priori



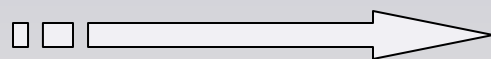
# Western Doctrine

No harm



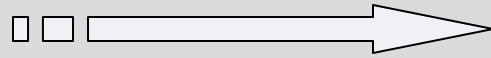
No Foul

No harm



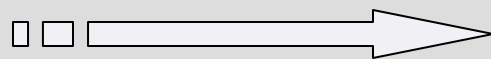
Foul!

Harm



No Foul

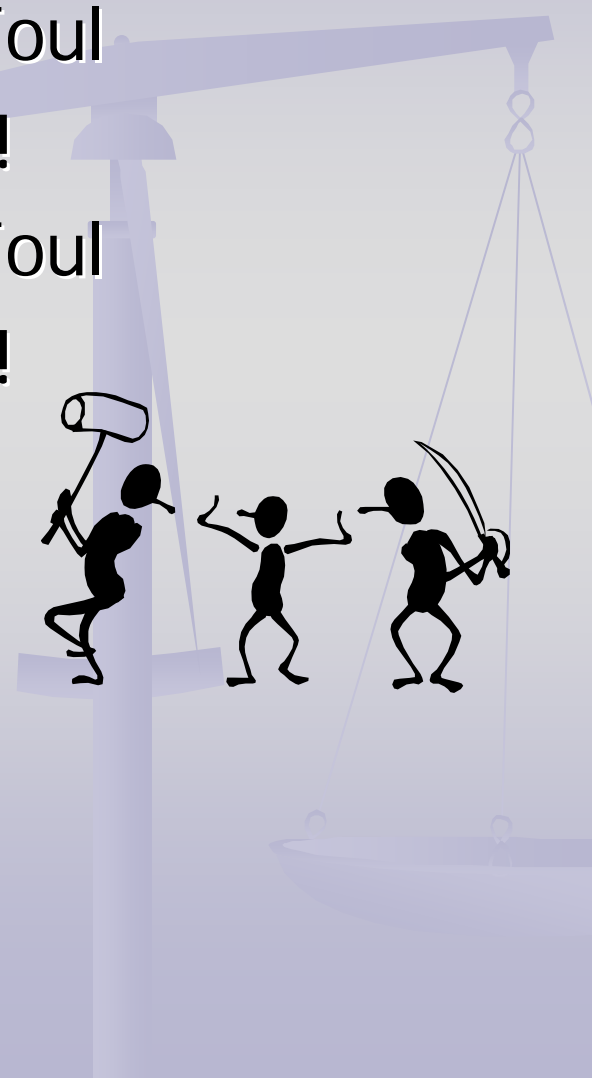
Harm



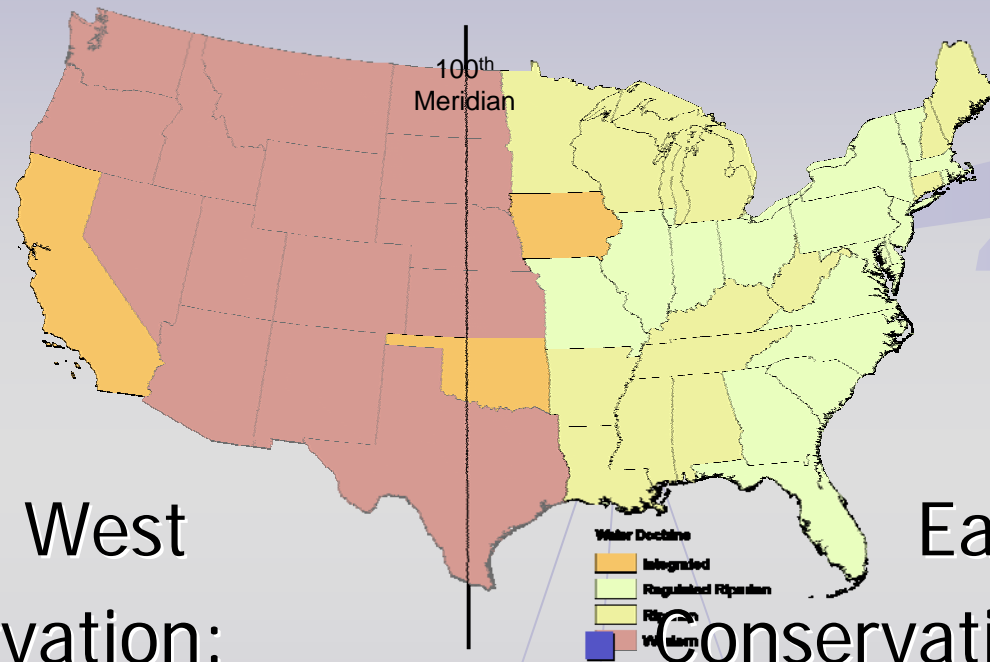
Foul!



# Proactive Arbitration



# Geographic Division - Definitions



West

East

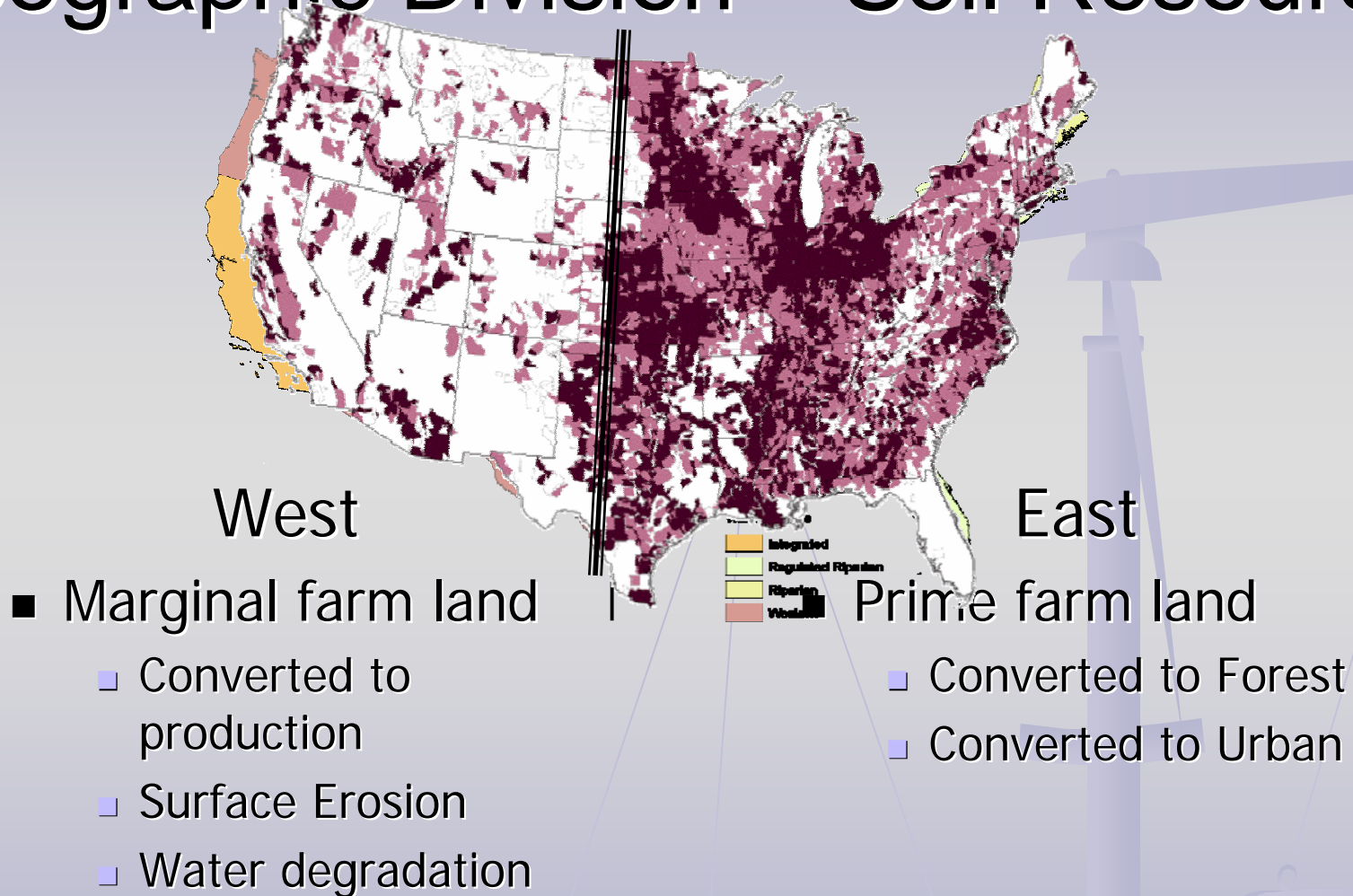
## ■ Conservation:

- "Highest and best" use
- Maintain or improve efficiency

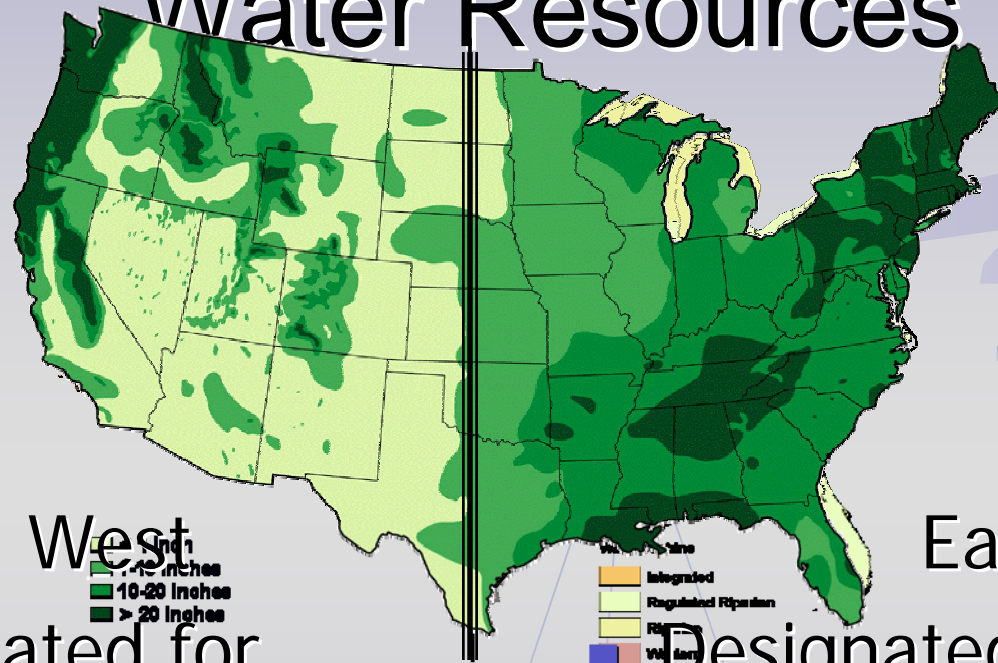
## ■ Conservation:

- Preservation
- Maintain or improve quality

# Geographic Division – Soil Resources



# Geographic Division – Surface Water Resources



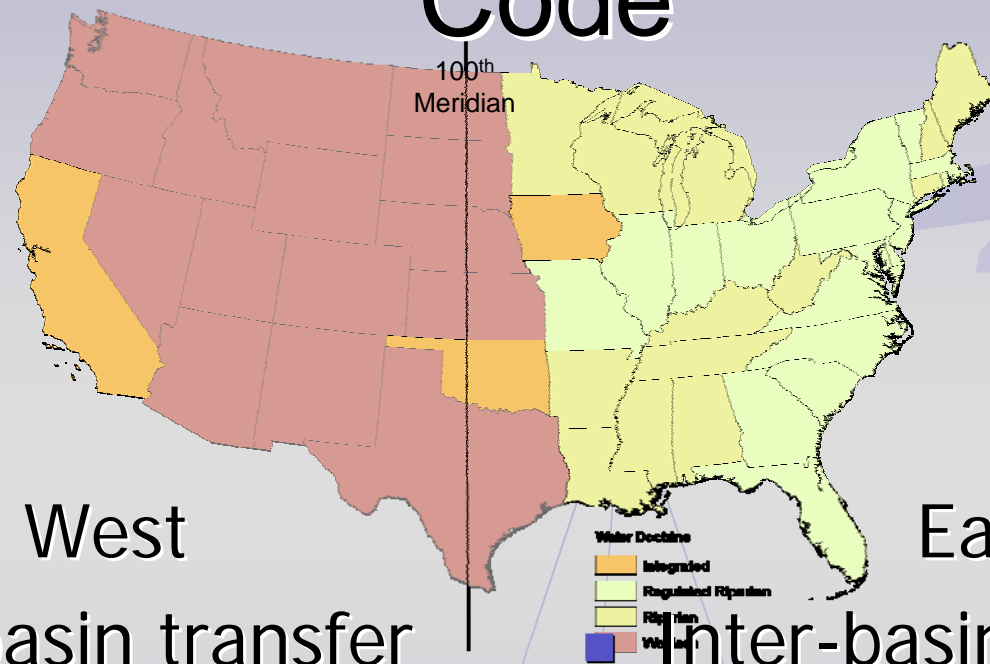
- Designated for economic development

- Power
- Agriculture

- Designated as transportation vectors

- Move goods upstream
- Move wastes downstream

# Geographic Division – Water Legal Code



## ■ Inter-basin transfer

### ■ It is a way of life

- Can't live without it
- Move the commodity to where it can be used

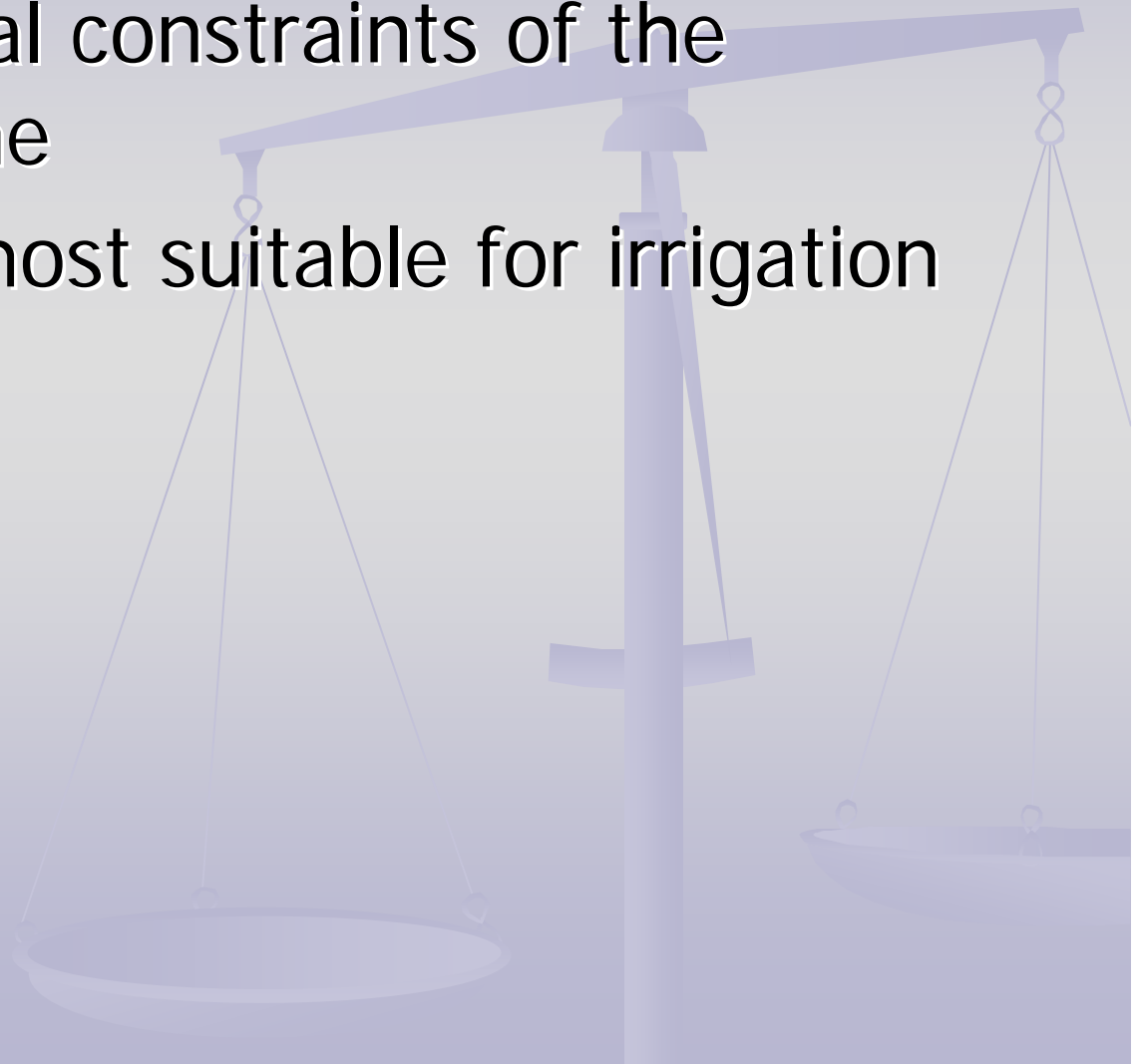
## ■ Inter-basin transfer

### ■ It is illegal

- Can't think of a good reason to allow it
- Not strongly monitored

# Feasibility of Irrigation in Alabama

- Assume the legal constraints of the Riparian Doctrine
- Identify areas most suitable for irrigation



# Mapping Physical Constraints

- Topography
- Soils
- Drainage

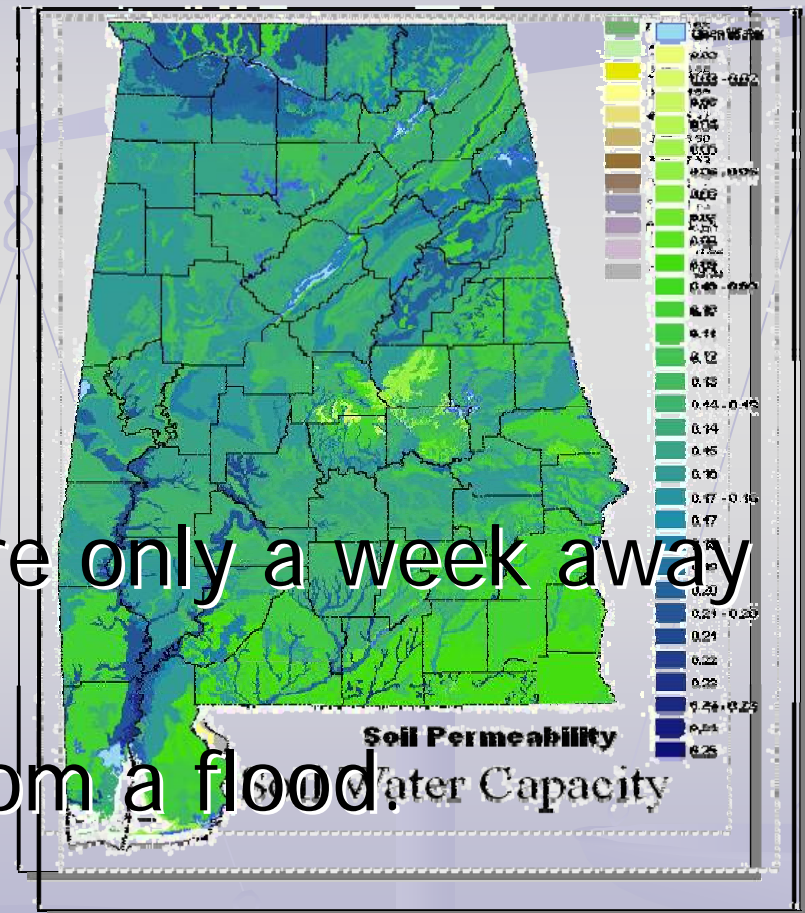


# Mapping Physical Constraints

- Water availability
  - Groundwater access and recharge
  - Soils interface
  - Moisture holding capacity

In the Southeast, we are only a week away from a Drought...

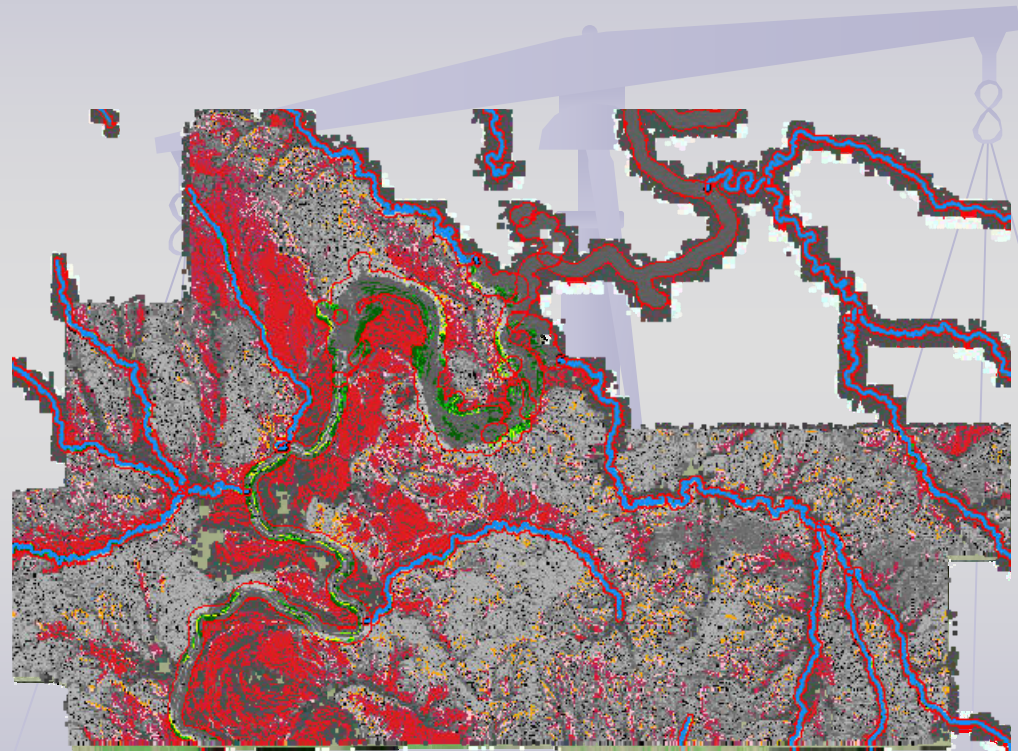
... and an hour away from a flood.





# Geospatial Analysis for Planning

- Identify prime farm land adjacent to a stream
  - Riparian land
  - $< 1.5\%$  slope
  - Classified as Prime Farm Land
- Identify prime farm land with no access to water.



# Geospatial Analysis for Planning

- Identify prime farm land and access to water

Name	%	Acres
Wooded Wetlands	29.73%	12,979.63
Mixed Forest	16.82%	11,022.35
Deciduous Forest	14.86%	9,342.86
Eastern Hardwood Forest	14.22%	9,298.63
Restio Grass	12.90%	8,368.32
Deciduous Forest	12.05%	8,080.66
Open Water	8.86%	2,318.75
Transitional	2.66%	238.69
Emergent Herbaceous Wetlands	1.89%	169.51
Commercial/Industrial/Transport	0.06%	5.76
Low Density Residential	0.01%	0.54

