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

Alabama has abundant water resources, more navigable river miles than any other state. Averages 22" of runoff each year. The Tallapoosa River has the richest biodiversity of any stream in the US. Alabama has a long agricultural tradition. But... Alabama ranks nearly last in terms of irrigable acres that are irrigated. Mississippi is ranked higher.
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 apriori
Western Doctrine

- No harm → No Foul
- No harm → Foul!
- Harm → No Foul
- Harm → Foul!

Proactive Arbitration
Geographic Division - Definitions

West
- Conservation:
  - “Highest and best” use
  - Maintain or improve efficiency

East
- Conservation:
  - Preservation
  - Maintain or improve quality
Geographic Division – Soil Resources

West
- Marginal farm land
  - Converted to production
  - Surface Erosion
  - Water degradation

East
- Prime farm land
  - Converted to Forest
  - Converted to Urban
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

West
- Inter-basin transfer
  - It is a way of life
    - Can’t live without it
    - Move the commodity to where it can be used

East
- 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

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<tr>
<th>Flat, prime, high infiltration area</th>
<th>%</th>
<th>Acres</th>
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<tbody>
<tr>
<td>Swamp/Wetland</td>
<td>22.04%</td>
<td>12,999.83</td>
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<tr>
<td>Mixed Forest</td>
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<td>Resid/Dry Forest</td>
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<td>Rock/Gravel</td>
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<td>Emergent Herbaceous Wetlands</td>
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<td>Commercial/Industrial/Transport</td>
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<td>Low Density Residential</td>
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