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# Sustainable Groundwater Management
# CA Food and Agriculture Board
# June 3, 2014

# Presentation Outline

- Groundwater Management Opportunities
- Legislative framework; CWF effort
- Findings
- Recommendations
- Challenging issues

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# Recharge on Agricultural Lands

- Study area: Merced, Chowchilla, Madera and Kings sub-basins
- Appropriate soil and crop types
- Flood flows and available infrastructure

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# Agricultural Recharge (cont.)

- On average 130,000 AF per year
- Over 70,000 AF is stored in the aquifer
- 123,000 AF additional water could be applied with additional infrastructure

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# Groundwater Banking

- Deliberate storage of surface water in aquifers during relatively wet years
- Provides dry year supply
- Water market allowed managers to purchase and bank water for later use
- **Kern County**
  - *3 million acre-feet stored from 1990-2006*
  - *Drawn down in late 2000s*
  - *Replenished in 2011*
  - *Semiformal arrangements*
- **Southern California**
  - *435,000 AF stored at peak in 2005*
  - *164,000 remained by 2009*
  - *Recharge has been slower than in Kern County but rose to 295,000 AF by 2011*
  - *Rights formalized through adjudications or special management districts*

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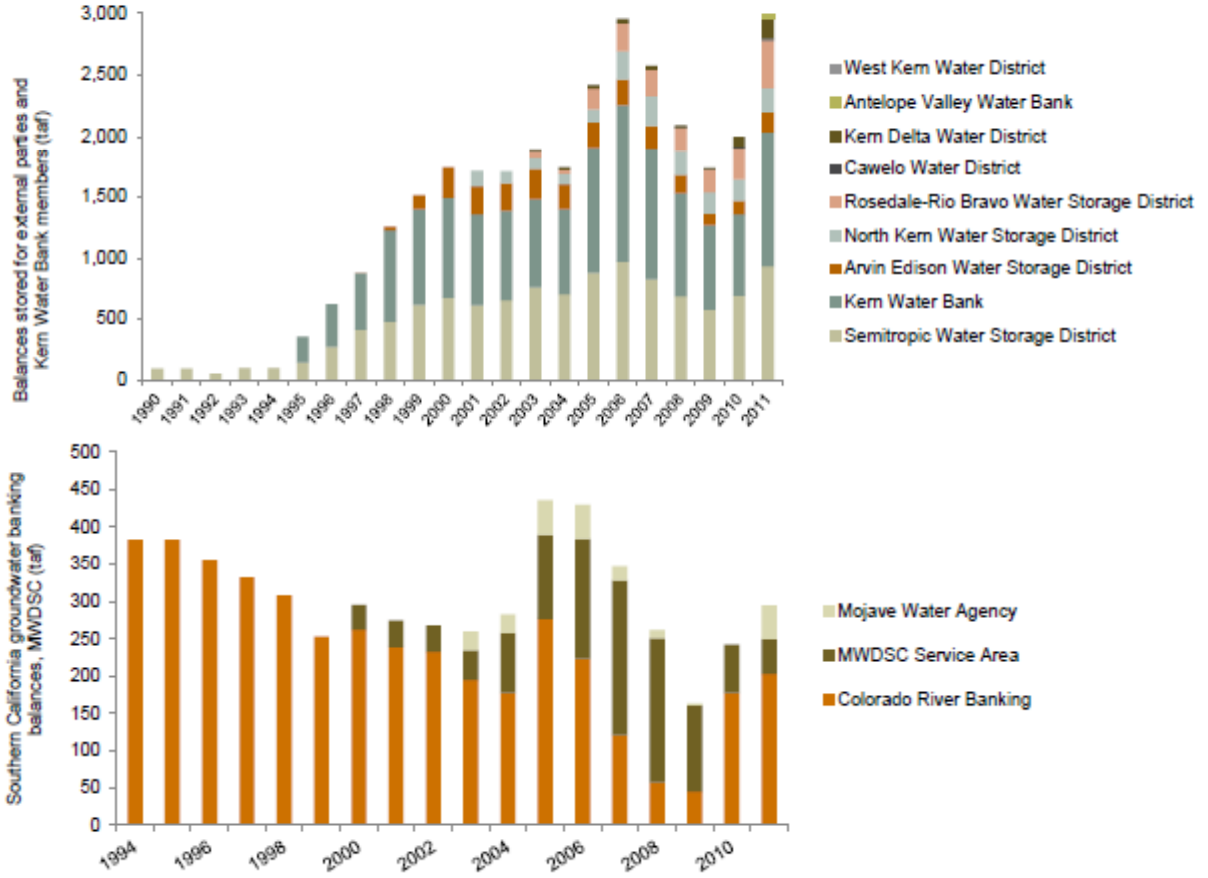
# Groundwater Bank Balances




Source: "California's Water market, By the Numbers: Update 2012", PPIC, Figures 13 and 14

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# Groundwater in Context

- 40% of supply in an average year; 60% in dry
- Critical part of integrated management
- Flexible source for storage and use
- Several decades of increasing use
  - *Reduction in surface supplies*
  - *Hardening of demand*
- Increasing landowner conflicts

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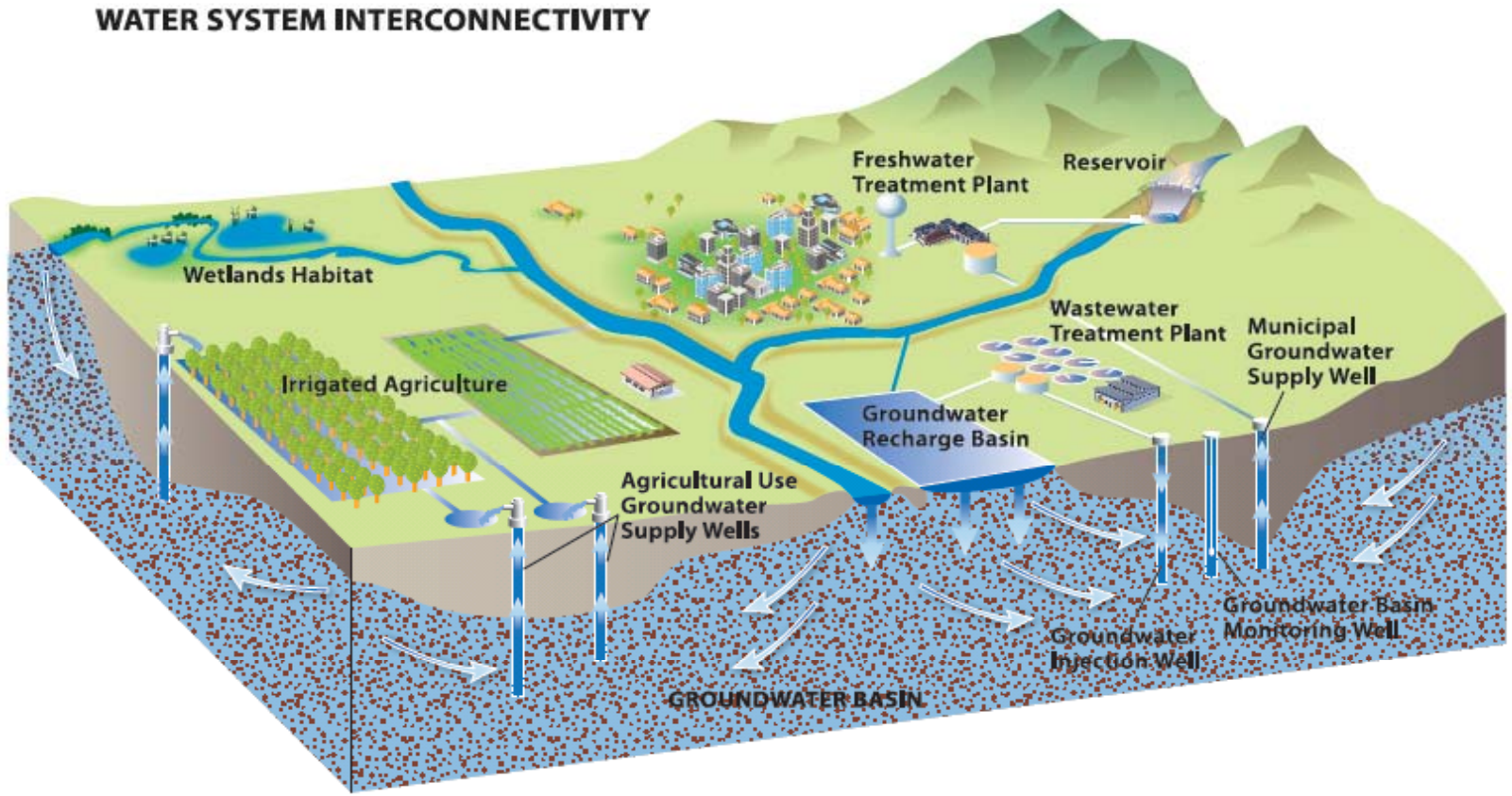
# Integrated Water Management

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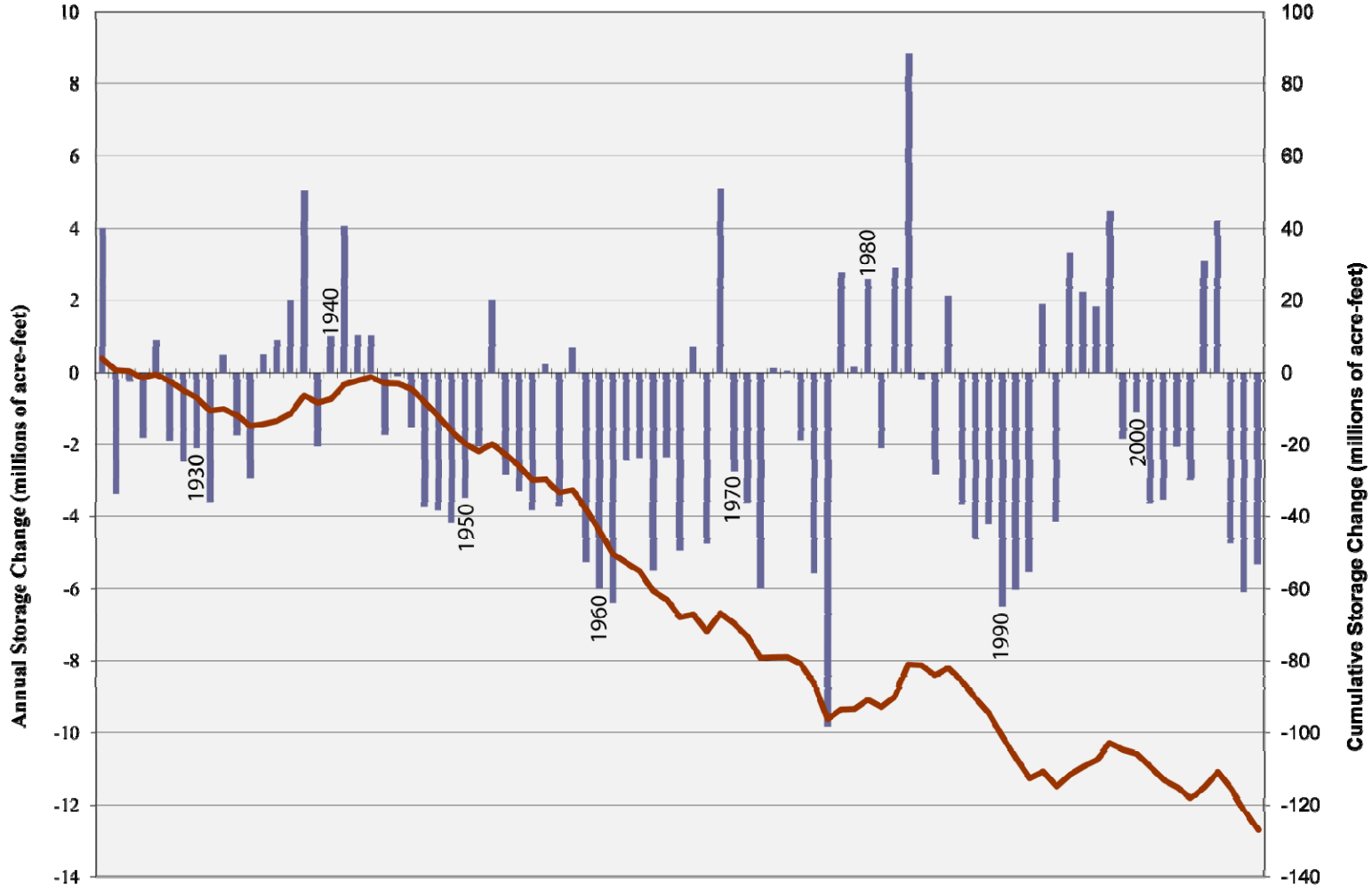
# Change in Groundwater Storage for the Central Valley




Source:
RMC analysis of CZVSIM historical simulation results, 2012.

# Outreach Efforts

- Stakeholder Steering Committee
- Multiple Interest Group meetings
- Individual Stakeholder discussions
- State Agency discussions
- State Administration and Legislative discussions

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# Findings

- Groundwater is essential to California's economy and environment.
- Current groundwater trends are not sustainable.
- Groundwater is closely linked to surface water, and is part of an interrelated system of water infrastructure.
- Groundwater is **most effectively managed at a local and regional level.**
- Local groundwater managers require clear authority and better tools to do their jobs.
- **Protection of private property and water rights** is imperative.

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# Findings (cont.)

- Clear and meaningful state roles are needed to protect state interests (**state backstop**).
- Groundwater is an important source of drinking water.
- Correcting the problem will take time, but in many places time is of the essence.
- Funding is needed to support effective management.
- Access to information is important for management and citizen understanding.
- Comprehensive legislative framework is necessary.

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# Recommendations

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# Sustainable Groundwater Management Recommendations

1. Adopt a definition of sustainable groundwater management.
2. Develop a statewide program that establishes a system of prioritization for all sub-basins.
3. Establish local groundwater management entities (LGMEs).
4. Provide LGMEs with tools and authorities to achieve sustainability.

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# Sustainable Groundwater Management Recommendations (cont.)

5. Require LGMEs to develop management plans with benchmarks and milestones.
6. Establish a clear and coordinated state role for assistance, oversight, and enforcement.
7. Provide funding for groundwater management.

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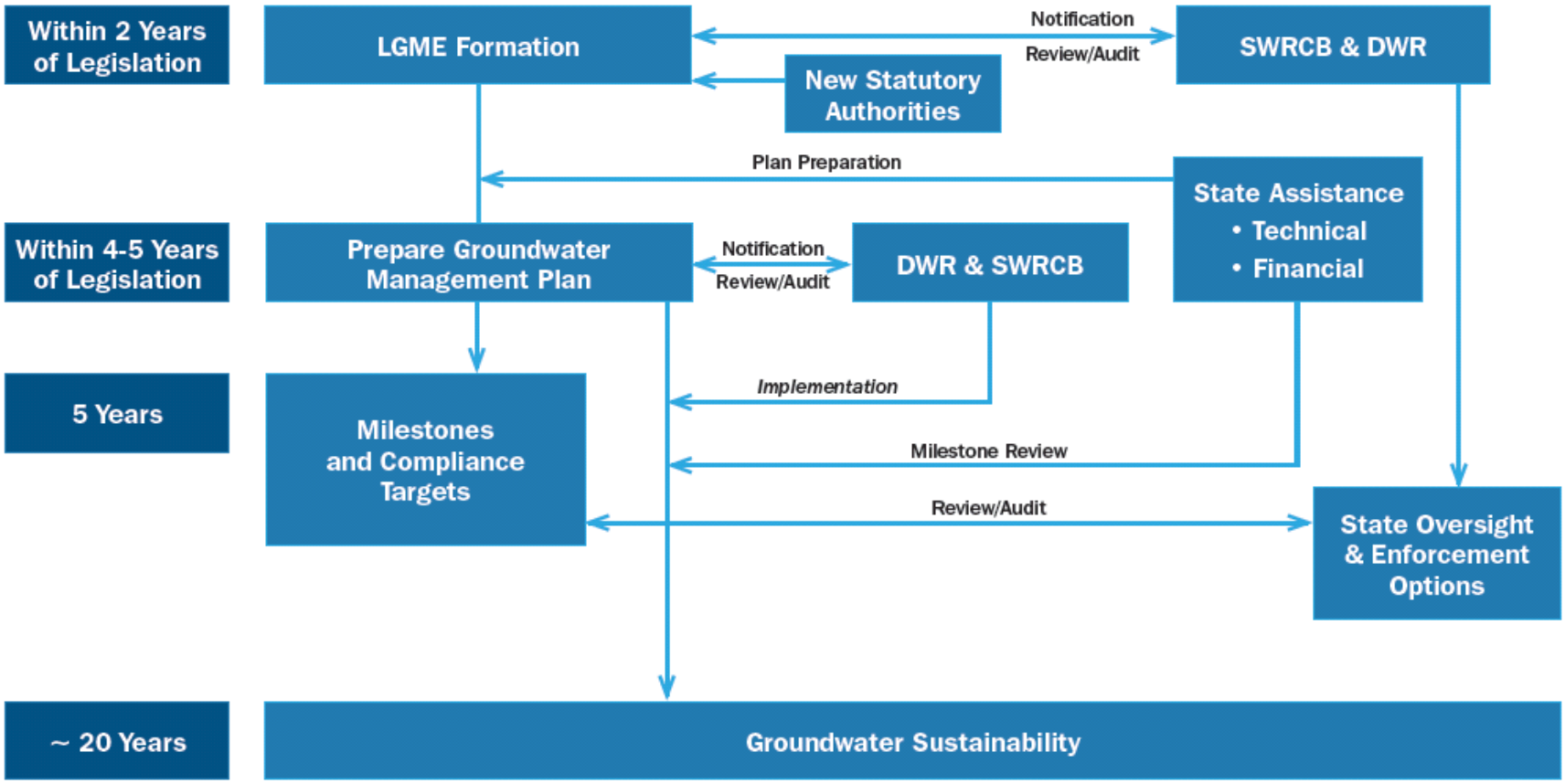
# Proposed Groundwater Management Framework

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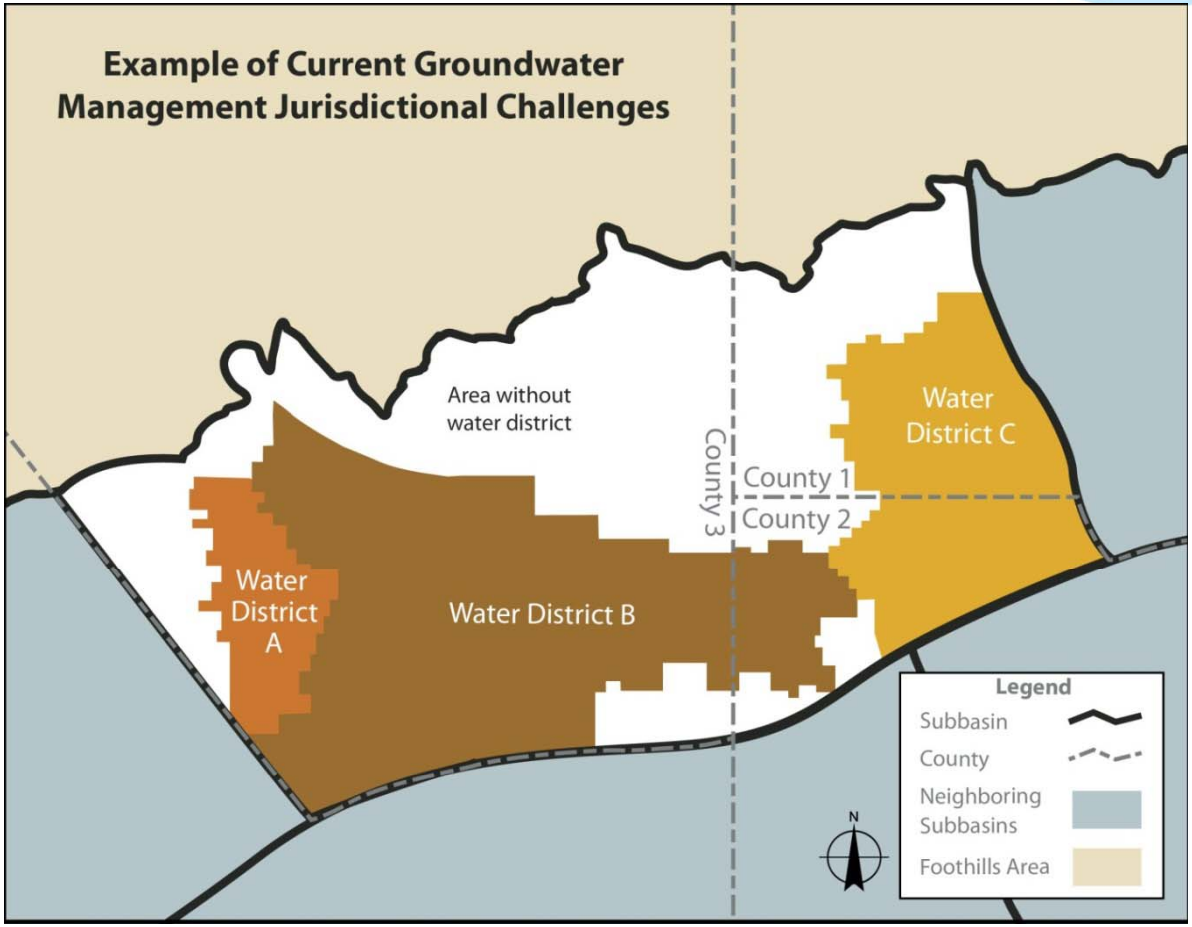
# LGME Jurisdiction Formation

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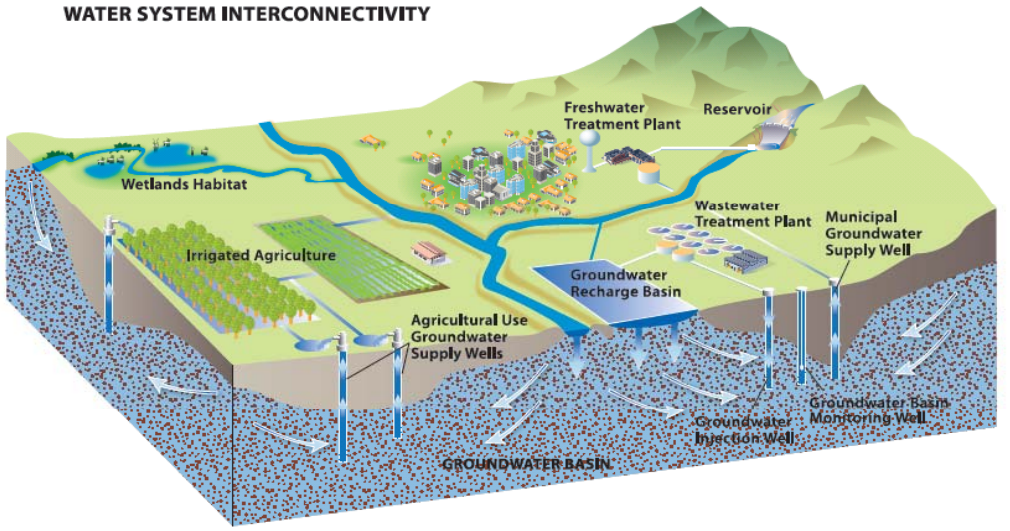
# Moving Forward

- 100 years to get here
- Critical issue for everyone
- Must avoid the slow moving disaster
- Now is the time

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