International Conference: Groundwater, Key to the Sustainable Development Goals

Sharing worldwide case studies : best practices, successes/ failures

An Approach to Sustainable Groundwater Management: Challenges and Lessons Learned in the Implementation of California Sustainable Groundwater Management Act (SGMA)

MONTGOMERY & ASSOCIATES
Water Resource Consultants

May 18 - 20, 2022, Paris

Presenter: Lisa Porta, P.E.

Senior Water Resources Engineer

Co-Authors

MONTGOMERY & ASSOCIATES
Water Resource Consultants

Lisa Porta, P.E.
Senior Water Resources Engineer
Montgomery & Associates
Sacramento, California, USA
lporta@elmontgomery.com

Water UCI

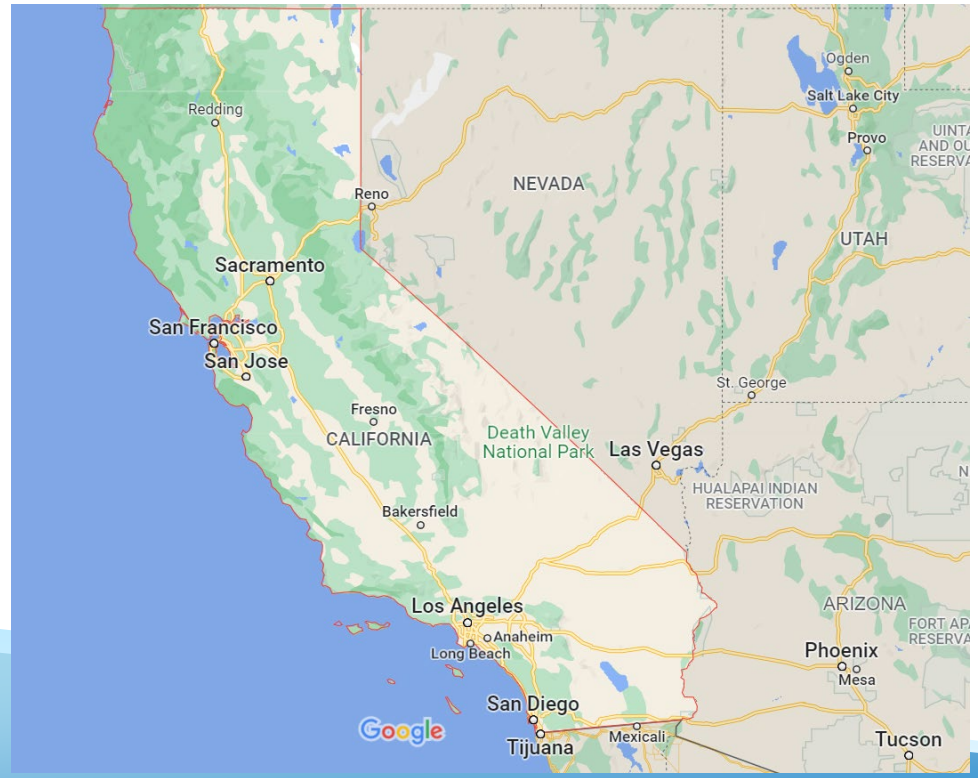
Jean Fried, PhD
Project Scientist
Urban Planning and Public Policy School of Social Ecology
University of California, Irvine,
jfried@uci.edu

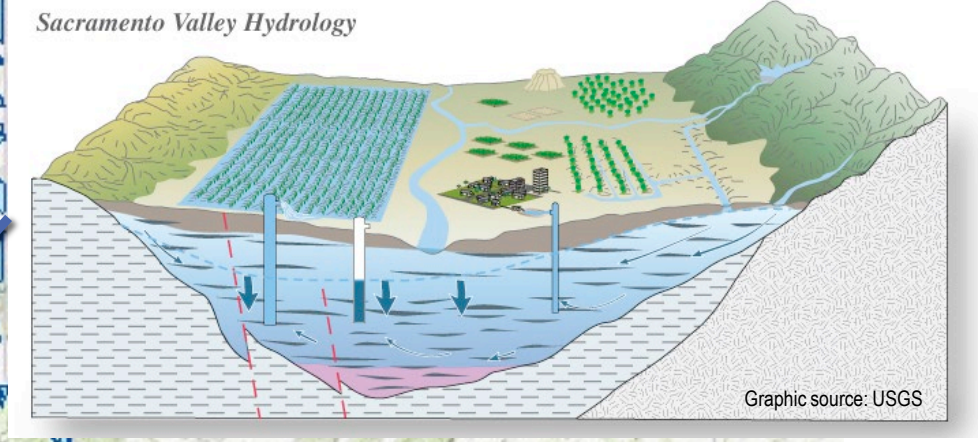
Topics of Presentation

1. Brief overview of CA water system and water use
2. The need to regulate groundwater
    1. Sustainable Groundwater Management Act
    2. Lessons learned from 6 years of implementation
3. Workshops and stakeholder outreach as a way to provide education and conflict resolution at different scales

California in Numbers

- Size: 423,970 km²
- Population: 39 million
- 5th largest economy in the world





The Importance of Groundwater

- In an average year, almost 40% of California's water supply comes from groundwater
- In a dry year, up to 60% of water supply comes from groundwater
- 85% of Californian's rely on groundwater
- Large underground storage capacity
- A buffer in drought years

The Sustainable Groundwater Management Act (SGMA)

Background and Context

SGMA: Sustainable Groundwater Management Act
GSA: Groundwater Sustainability Agency
GSP: Groundwater Sustainability Plan

Timeline: California's Groundwater Management

Develop GW Management Plans

State-wide groundwater levels monitoring

SGMA

1992 | 2002 | 2003 | 2009 | 2010 | 2012/13 | 2014 | 2015 | 2017 | 2020 | 2022 | 2040/2042

State funding for plan implementation

Start of 5-yr drought

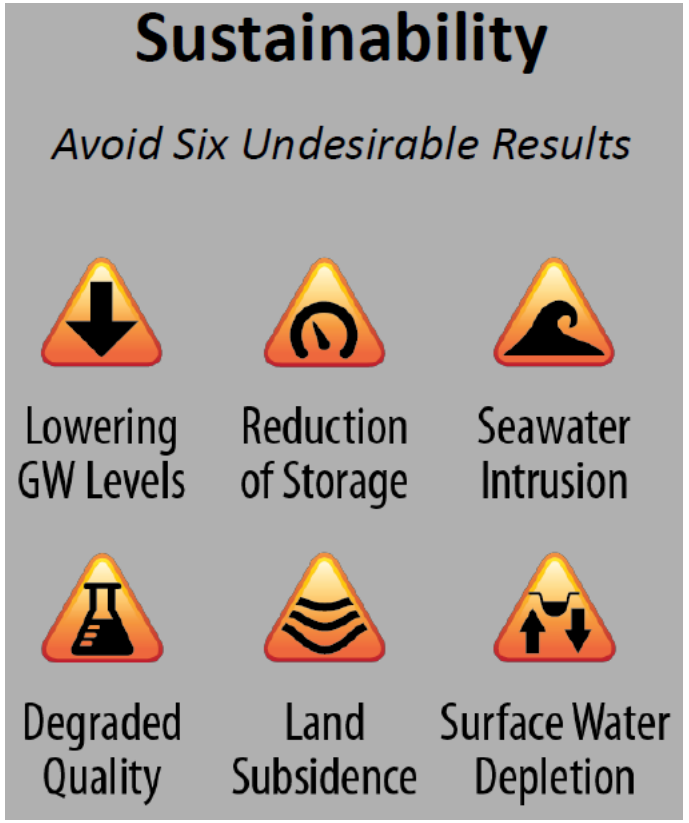
CA Water Action Plan

Formation of Groundwater Sustainability Agencies (GSAs)

Groundwater Sustainability Plans (GSPs)

Achieve local sustainability goal

SGMA Requirements:
Groundwater Management at the Basin-level

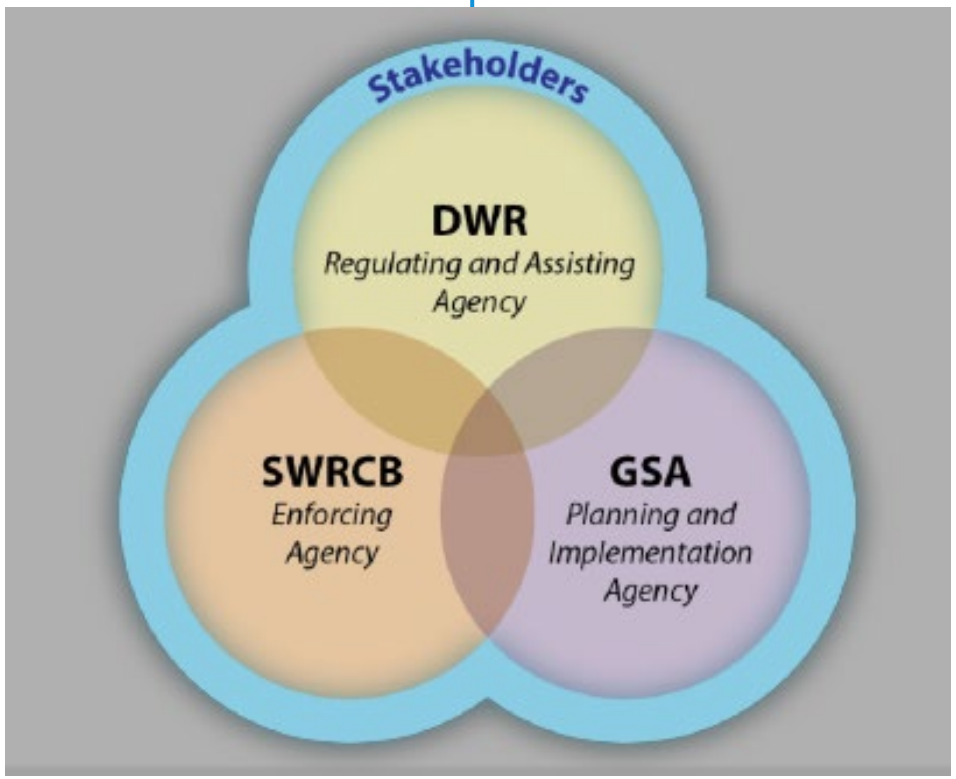


- Each basin is managed by a GSA (typically led by water districts or counties)
- Initial Groundwater Sustainability Plan (GSP)
  - Basin Setting – groundwater conditions and water budgets
  - Identify undesirable results
  - Develop sustainability goals
- Annual monitoring requirements
- Implementation of Projects and Management Actions to achieve goals
- Annual Reports
- 5-yr GSP Assessment Reports

SGMA: a Locally-Driven Program Backed by State Oversight

Local Agency Role (GSA)

- Engage all local stakeholders and beneficial users of groundwater
- Develop sustainability goals and policy backed by data
- Implement plan with monitoring and projects
- Levy fees as needed



State Role (DWR and SWRCB)

- Provide technical support and share best practices (DWR)
- Provide funding support (DWR)
- Review and enforce GSPs (both)
- Take over basin management if locals fail (SWRCB)

The Sustainable Groundwater Management Act

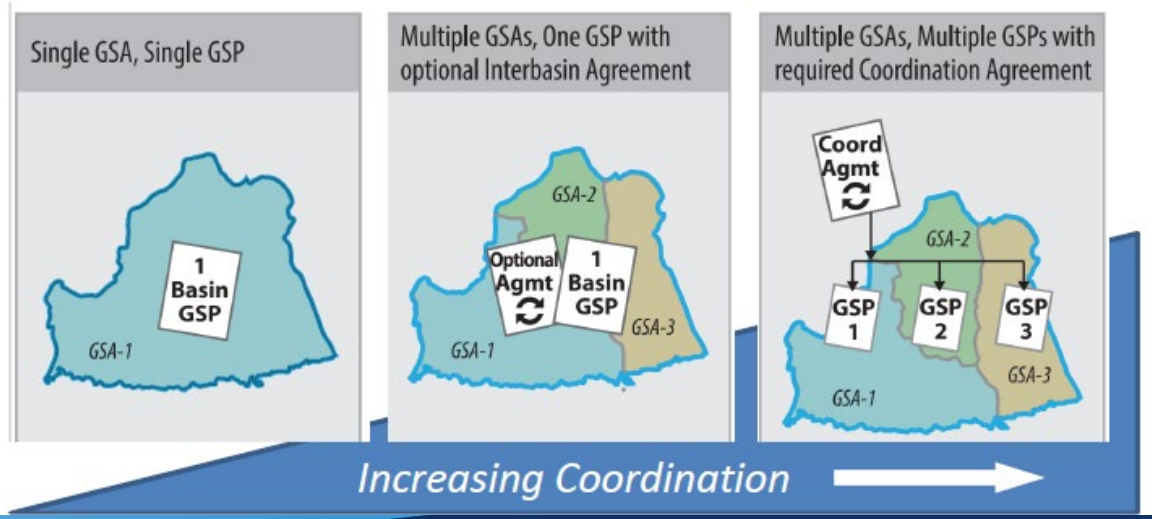
Lessons Learned from 6 Years of Implementation

Key Observations

- All GSPs were submitted on time (by January 31, 2020, and 2022)
- Some GSPs were deemed incomplete by DWR
- Needs for improved local stakeholder outreach, education, and engagement
- To implement these complex plans, needs for significant investments in adequate infrastructure development as well as technical advice and help with building organizational expertise
- A key to long-term climate change adaptation is groundwater resilience and alternative water resources, with an emphasis on MAR (Managed Aquifer Recharge)
- The current drought is causing additional challenges for implementation

Local Governance and Management Challenges

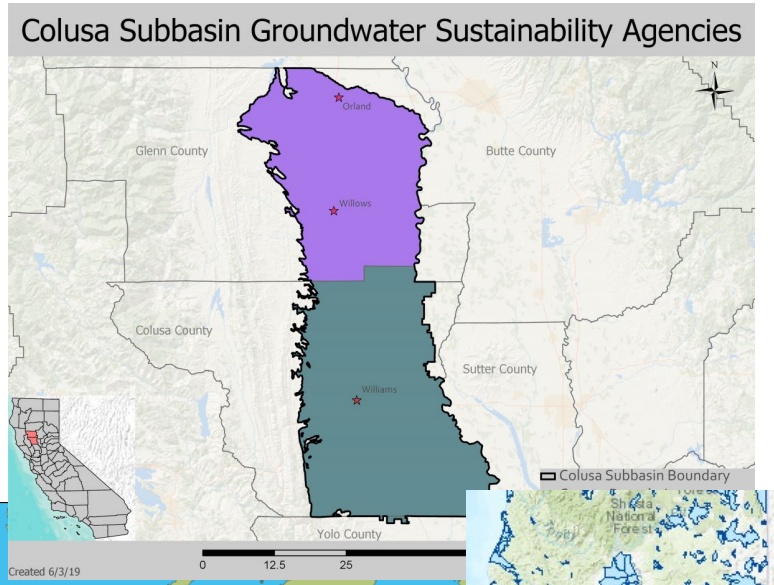
- New governance and management structures are difficult to set up
- Local and regional coordination requires leadership
- Balancing competing interests between various beneficial groundwater users creates challenges for implementation
- Sustainable funding is one of the biggest hurdles for successful implementation and reaching sustainability

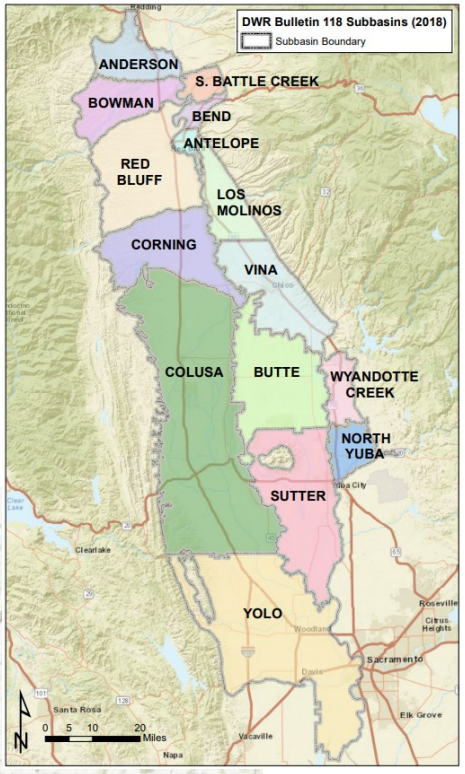


Workshops and stakeholder outreach as a way to provide education and conflict resolution at different scales

Different Scales of Coordination for Successful Groundwater Management

1. Local (basin scale)
2. Regional (interbasin)
3. State level (California example)
4. Country/international and global



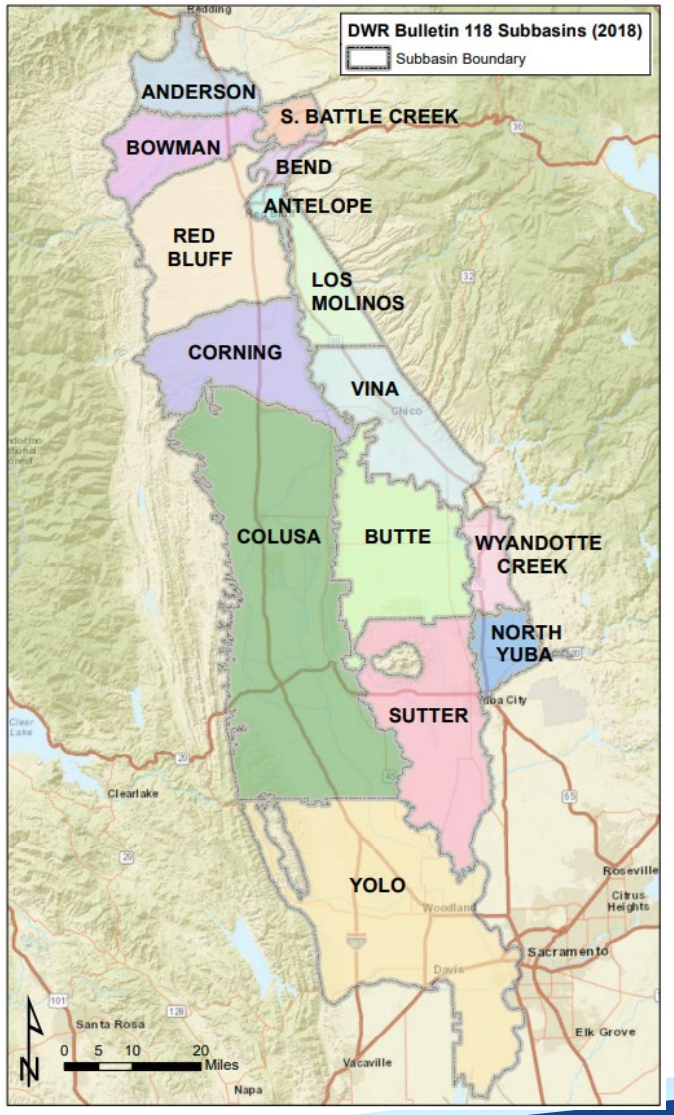


MONTGOMERY & ASSOCIATES

Regional or Interbasin Scale

Time frame: quarterly

- Neighboring basins can affect each other without coordination
- Coordination can help improve regional groundwater resources



State Level

Time frame: semi-annual

- Conferences with professional speakers
- Workshops to teach about various tools and processes
- Webinars to share updates and news on events and tools
- In-person seminars to share best practices

Country/International Scale

Time frame: annual/bi-annual

- Share best practices and knowledge across boundaries to inspire actions that have provided successful outcomes

- Example of recent CA-European Union-Australia Workshop with several industry experts and professionals from government, academia, and consulting

Virtual Workshop over two days allowed for a broad audience and a variety of participants

- Program: *SGMA Implementation, Economic Issues, Water-Energy-Food Nexus: Comparison and Lessons Learned from European Union and Australia*
  - Economic Dimensions of the EU Water and Groundwater Directives
  - Costs, Tariffs and Billings of Groundwater, Equity, and Active Public Participation
  - Groundwater Scarcity and Resilience: Policy, Legal, Economic, and Technical Issues and Answers
  - Groundwater Recharge/Managed Aquifer Recharge/Alternative Supplies
  - Water/Energy/Food Nexus
  - Conflict Resolution and Role-play

Lessons learned from workshop set the stage for future gatherings

- Conclusions: workshop discussions identified the following main categories as the most significant issues facing SGMA implementation:

1. Improved public outreach and communications on all matters of groundwater management and water policy.
2. Challenges around economics and funding.
3. Conflict identification and resolution, with an emphasis on the relationships between people and nature.
4. Relationships between people and nature and shared goals.
5. Groundwater resilience and alternative water resources, with an emphasis on MAR (Managed Aquifer Recharge) as a key to long-term climate change adaptation.
6. Improved relationship between science and policy, and better public understanding of science.

Questions

Lisa Porta, P.E.
Senior Water Resources Engineer

lporta@elmontgomery.com

MONTGOMERY
& ASSOCIATES
Water Resource Consultants