Groundwater Data Workshops Series

1. Background

Groundwater in California is currently managed by approximately 2300 independent local agencies (Nelson, 2012). Despite having overlapping jurisdictions or adjacent boundaries, many of these agencies do not coordinate groundwater data or management efforts, resulting in management fragmentation, loss of efficiency, difficulty in evaluating watershed-scale impacts, competition for scarce resources, inconsistency in planning, and system redundancies (Blomquist 1992; Heikkila, 2004; Gerlak and Heikkila, 2011; Nelson 2012). Efforts to address this fragmentation have been limited by the voluntary nature of groundwater management programs (e.g., the Integrated Regional Water Management Program, AB 3030) and the lack of consistent resources (Hughes and Pincetl, 2014).

Passed in September, 2014, the Sustainable Groundwater Management Act (SGMA) creates the first statewide requirement for sustainable groundwater management. This legislation attempts to remedy the fragmented nature of groundwater management in the state by requiring the formation of a single or multiple *coordinated* Groundwater Sustainability Agency(s) (GSAs) across an entire groundwater basin (or sub-basin) (Cal. Water Code §10723.6) that will develop and implement a single or multiple Groundwater Sustainability Plans (GSPs) *coordinated* across an entire basin (Cal. Water Code §10727).

Groundwater data, data coordination and tools for water planning play a central role in GSP development under the new legislation (Cal. Water Code §10727.2, 10727.4, and 10727.6). California Water Code §10727.6 requires coordination of surface and groundwater data, as well as methodologies that collectively determine water budgets, sustainable yield and changes in groundwater storage. Given the existing fragmentation in groundwater management in California, basin-scale coordination of data and groundwater planning tools will be a major undertaking requiring the development of new policies, tools and technologies.

Stanford University's Water in the West Program and the Gould Center for Conflict Resolution, in partnership with California State University's Center for Collaborative Policy, are undertaking a data workshop series with water managers, technical groundwater consultants, water lawyers, facilitators, state agency officials, and others to seek solutions to the challenges that water agencies are likely to face in integrating data and water planning tools on a basin-wide and beyond scale. The data workshop series will be preceded by a survey to water managers and technical consultants regarding the current state of data collection, planning and coordination. The workshops and survey aim to answer the following four research questions:

1. What role do data, models (water or decision-support models), or advanced technologies currently play in groundwater management decisions in California?
2. How can groundwater data and models best be used to support SGMA? And how can this information inform the Department of Water Resources development of best management plans for sustainable groundwater management?
3. What are the major data-related issues or challenges local agencies are likely to face during SGMA implementation?
4. What tools or other solutions may help to address these challenges?

2. Format

Four one-day workshops (8:30 am to 4 pm) on:

- **Nov. 16, 2015**: Groundwater models
- **Jan. 29, 2016**: Groundwater data
- **June 3, 2016**: Tools to support decision-making
- **Oct. 13, 2016:** Geophysical methods

3. Work Plan

This project will proceed in four phases:

1. Survey

We will conduct a survey in advance of the workshops. The survey will target local water agencies working in groundwater management and planning, as well as groundwater consultants. It will ask questions specific to the topic areas of our data workshops including, (i) data and data management practices; (iii) groundwater models, model coordination and the role of models in groundwater management planning; (ii) geophysical methods and their potential use; (iv) communication of groundwater data, as well as broad questions about the groundwater management challenges anticipated during SGMA implementation.

2. Reports to guide workshop discussion

Results from the survey will be summarized into reports specific to each data workshop. These reports will be used to frame the discussion for each data workshop.

3. Workshops

Workshop discussion will be guided by the report on the topic, but will not be limited purely to report content.

Role of Workshop Participants:

- Read relevant material in advance of data workshop.
- Attend and actively participate in all three data workshops providing insights, suggestions and constructive feedback.

4. Incorporate feedback and findings into revised report

Workshop discussion, feedback and next steps will be incorporated into a final report(s) summarizing the findings from all the workshops. Once complete the report will be released to the public.

Role of Workshop Participants:

- Provide feedback on summary reports from the workshops.

4. Anticipated Outputs

1) **A report or series of reports** - providing background information, survey results and potential data-related tools, technologies and other solutions for sustainable groundwater management.
   Target audience: groundwater managers, policy makers, and state agencies (DWR, SWRCB).

2) **Academic publication** – regarding the groundwater data issues identified by groundwater managers and practitioners in the survey, as well potential solutions identified during the workshop series.
   Target audience – academics, decision makers, and natural resource managers.

References

Blomquist, W. A. (1992). *Dividing the Waters: governing groundwater in southern California*, ICS, Lanham, MD.

Gerlak, A. K., and T. Heikkila. (2011). Building a Theory of Learning in Collaboratives: Evidence from the Everglades Restoration Program. *Journal of Public Administration Research and Theory,* 21: 619-644. doi:10.1093/jopart/muq089

Heikkila, T. (2004). Institutional Boundaries and Common-Pool Resource Management: A Compartive Analysis of Water Management Programs in California. *Journal of Policy Analysis and Management,* 23(1): 97-117.

Hughes, S., and S. Pincetl. (2014). Evaluating collaborative institutions in context: the case of regional water management in California. *Environment Planning C: Government and Policy*, 32: 20-38. doi: 10.1068/c1210.

Nelson, R.L. (2012). Assessing local planning to control groundwater depletion: California as a microcosm of global issues. *Water Resources Research*, 48: W01502. doi:10.1029/2011WR010927.