



GROUNDWATER RESOURCES ASSOCIATION
OF CALIFORNIA

Annual Workshop Summary Contemporary Groundwater Issues Council Groundwater Resources Association of California

April 26, 2011

Founders Room, Buehler Alumni Center, University of California - Davis

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1. Opening Remarks

GRA Board Member, Vicki Kretsinger, opened by announcing that 2011 marks the 20th anniversary of the Groundwater Resources Association of California.

Ms. Kretsinger introduced a few of GRA Board members present at the workshop and involved in GRA's programming, including:

- Thomas Harter, Robert M. Hagan Endowed Chair in Water Management and Policy for the Department of the Land, Air, and Water Resources Dept. at UC Davis and GRA Board Member and Chair of GRA's Education Committee,
- Tim Parker of Parker Groundwater, GRA Board Member and Chair of GRA's Legislative Committee,
- Jim Strandberg of ARCADIS, GRA Board Member, and Chair of GRA's Nominating Committee,

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- Brian Lewis of the California Department of Toxic Substances Control, GRA Board Member and Board Liaison to GRA's Technical Committee,
- Past GRA Board Members present at the workshop included Tom Johnson, Eric Reichard, and Steve Goldberg.

She introduced Mr. Dorian Fougères, Lead Mediator with the Center for Collaborative Policy, who facilitated the workshop. Also present to assist with notetaking during the workshop were two University of California Davis students in the Hydrology Program, including Reid Bryson and Simon Cook.

Ms. Kretsinger explained that the overarching vision of the Council is to help GRA identify the state's most pressing information, education, and networking needs which pertain to groundwater, thereby allowing GRA and other stakeholder organizations to effectively address integrated, multidisciplinary water resources and environmental stewardship issues. The Council includes a distinguished group of leaders from a broad range of disciplines and backgrounds at the local, state and national level representing regulatory agencies, research and educational institutions, water agencies, and consultants sharing a common interest in groundwater. GRA is seeking Council members' input and varied perspectives on key ongoing or future groundwater-related issues, challenges, and opportunities. It is planned that Council input will occur during this type of in-person workshop on a once-a-year basis, and the plan is to have such a workshop in the spring and prior to GRA's Annual Planning Meeting.

The new Council complements the roles of GRA's Board of Directors, a 15-member Board, and GRA's Committees. GRA organized the workshop to obtain input on key issues and how they might be addressed through GRA's wide array of educational, extension and legislative outreach programs. The GRA Board will meet the weekend of May 14-15 for one of its quarterly Board meetings joined with its Annual Planning Meeting. Draft notes from this workshop will be provided to the Board for consideration during this meeting.

Ms. Kretsinger also announced that the GRA has taken on administration of the 28th Biennial Groundwater Conference, to be held along with the GRA's 20th Annual Meeting on October 5 - 6, 2011 in Sacramento. She noted that input from the day's workshop would be used as input for the conference planning process.

Tim Parker provided an update from the GRA legislative committee. The GRA is co-sponsoring 3 bills in the current California legislative session:

- *AB 359*: Adds additional incentive-based mapping and monitoring funding for Groundwater Management Plan authors to encourage mapping basin recharge areas and share the recharge maps with local planning agencies.
- *SB 263*: A bill to provide open access to well completion reports, which are currently confidential.
- *AB 1152*: To amend and clean up language in the 2009 groundwater monitoring bill to allow counties and local agencies to receive state grants or loans to recoup the costs of groundwater elevation monitoring in basins or subbasin determined by DWR to lack monitoring.

Thomas Harter welcomed all participants to the Workshop and described the day as an opportunity for people from a variety of professional disciplines to discuss their key groundwater related issues and help GRA identify key programs to address those key issues.

Workshop Facilitator, Dorian Fougères, covered the workshop goals, agenda, and ground rules. The agenda and ground rules had been distributed electronically prior to the workshop and were available in hard copy form that day. Mr. Fougères emphasized that the primary goal for the morning was to identify key ideas and issues for each participant. The afternoon sessions would then focus on exploring

possible objectives for GRA and opportunities for collaboration among the participants representing varied specialties within groundwater-related professions, including management, research, and education.

2. Introductions and Key Issues

At the direction of Mr. Fougères, participants were invited to briefly introduce themselves and state up to two key issues that they interpret as of particular importance to the future of groundwater management.

Abdul Khan, DWR:

1. Developing groundwater budgets for CA groundwater basins, we need knowledge of where water comes from and where it and goes out for sustainable management.
2. Identifying, characterizing, and mapping conjunctive use options and constraints in groundwater basins statewide. This will be important for future increased population and tighter regulation. Likely to be moved towards conjunctive management as a key tool in resource management.

Tom Johnson, ARCADIS:

1. Water quality as it relates to conjunctive use. How does water quality change with time and in response to anthropogenic and natural impacts as a result of conjunctive management?
2. Continuing lag of law behind science - how can this be better addressed so that science is not shoehorned into laws that don't make sense?

Eric Reichard, USGS:

1. Conjunctive use is a driving force for the agencies that USGS works with, including the integration of hydraulic and chemical aspects of surface water and groundwater management.
2. Tools to integrate surface water, groundwater, and climate models in a practical fashion so they can be tailored and scaled for practical use.

Tim Horner, CSU-Sacramento:

1. Groundwater and surface water interactions and management implications for river restoration goals.
2. Groundwater budgets:
 - a. Are northern California sub-basins in overdraft? A better understanding of withdrawal rates and recharge rates needed to ensure balance.
 - b. Concerned that conjunctive use implicitly interpreted to mean using groundwater to span surface water supply gaps. Is conjunctive use a fallacy?

Maurice Hall, The Nature Conservancy:

1. Drinking water contamination, particularly for disadvantaged communities relying on groundwater.
2. General loss of groundwater's ecological function (e.g., support of surface water flows and impact on surface water temperatures).

Bruce Macler, USEPA:

1. Environmental Justice (especially in South San Joaquin basin) including source protection of drinking water supplies from activities such as hydro-fracturing.
2. On the resources side of conjunctive use, the ability to track water quality of inputs and withdrawals.

Mike Kavanaugh, Geosyntec consultants:

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1. Groundwater restoration and reuse: reaching point where beneficial uses are restoring groundwater systems and adapting groundwater management if restoration is not possible.
2. Integrated basin water management in groundwater basins: How do we develop an optimum strategy for dealing with legacy/residual contaminants?

Karl Longley, Central Valley Regional Water Quality Control Board, Fresno:

1. Developing a strategy for dealing with regional scale groundwater contamination of drinking water, including disadvantaged communities.
2. Restoring hydrologic function of landscape and surface water features that have been altered over a generation of dam construction, floodplain alteration, and removal of instream obstructions that prevent natural groundwater recharge processes.

Graham Fogg, UC Davis:

1. Understanding groundwater quality and sustainability, particularly for the entire Sacramento Valley, with an emphasis on relatively young non-point source contaminants in groundwater that is hundreds or thousands of years old.
2. Regional scale conjunctive use management: Reservoir storage is down 10% in last 20 years due to spring runoff occurring earlier in the year. Central Valley is a logical storage option, but how can it be managed on such a large scale in collaboration with reservoir operations? Challenges include the still largely unknown Central Valley stratigraphy and actual aquifer storage that is much less than total groundwater.

David Orth, Kings River Conservation District:

1. Governance: What are the appropriate levels and structures of groundwater management of both quality and quantity, and who are the parties to that management process (local agencies, academia, etc.)? Local agencies are well positioned to manage resources, but cannot do so alone.
2. Water quality: lack of data to identify and prioritize issues and management systems for managers to rely upon.

Sue McClurg, Water Education Foundation:

1. Communicating with local and regional elected leaders, the media, and the general public to help inform decision making and water use choices.

Tim Quinn, Association of California Water Agencies:

1. Wants to see all member organizations implement sustainable groundwater management plans, based on partnerships rather than state regulation.
2. Delta Stewardship Council success in achieving co-equal goals, no acceptable future for groundwater without Delta sustainability.
3. Water use efficiency to address water demand in order for conjunctive use to function.

Kirby Brill, Mojave Water Agency:

1. Near term: Conjunctive use is still an inefficient market for moving water around as is needed under current management programs.
2. Long term: Data management is needed to support basin management (Central Valley scale, not operators/agencies with 30-50 wells). Are we training professionals to implement new management programs at those large scales, with systems thinking to identify problems, collect, manage, and process data (not necessarily with models) with integration of spatial data to support decision-making?

Steve Goldberg, Downey Brand Seymour and Rohwer:

1. There is a need to educate groundwater managers about integrated groundwater management at basin scales to prevent compartmentalized thinking both spatially and among management actions (e.g., remediation, demand management, etc.).

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2. Regulatory framework: Resolving the tension between local control advocates and state control advocates in a way that allows for effective integrated management and provides for more consistent management rigor among local managers.

Andy Eaton, MWH Global, Inc.:

1. The unknown-unknowns: How do we address potential threats to avoid future groundwater contamination? Are we overly concerned about some contamination potential?
2. Developing trust with the public regarding contaminant concerns based on the latest science to avoid over reaction (e.g. industrial versus natural sources of hexavalent chromium).

Pamela Creedon, Central Valley Regional Water Quality Control Board, Rancho Cordova:

1. Water quality in the Central Valley groundwater: With limited data and basin understanding, groundwater impacts are unavoidable. How do we avoid contamination when we must dispose of waste somehow (i.e., negative impacts will occur)? What do we need to do to improve resource protection, management, and public knowledge, particularly in light of potential future impacts of emerging contaminants and recycled water? Regulation may only go so far, and it is unrealistic to believe that it is the final answer.
2. How do we define reasonable use of public groundwater resources to protect water quality and quantity?

David Ceppos, Center for Collaborative Policy:

1. Desires for collaboration need to address accountability and sovereignty regarding groundwater basin contamination and management.
2. Can collaboration be prioritized as a desired or necessary outcome before legislation is enacted to limit the scope of collaborative possibilities?
3. How do we determine the ecological/biological impacts associated with conjunctive use (e.g., streamflow needs and the potential for groundwater plume migration between sub-basins)?

Jay Lund, UC-Davis:

1. Long term degradation: We face unavoidable consequences for many basins from any likely groundwater use, these impacts must be more fully considered at the societal and policy levels.
2. Short term: How can groundwater management be implemented successfully with what will likely be limited state resources in the future.

Jonathon Bishop, SWRCB:

1. Overdraft associated with conjunctive use and the inability to regulate on a statewide basis.
2. Drinking water contamination in disadvantaged communities.

Peter Kitandis, Stanford University:

1. Management without data is like shooting in the dark, it can have unforeseen implications. Data availability even at the local level is important.
2. Effective management requires regulation at some scale with effective science as a basis while also considering property rights and economic issues.

Mary Scruggs, DWR:

1. Effective use of limited state resources.
2. Scale and diversity between local issues and state issues in terms of determining important issues at different scales.

Andy Fischer, UC-Santa Cruz:

1. Central Coast sustainability and management of recharge in all forms to improve supply and quality at the same time (as studies have shown is possible). How can storm water be more

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effectively managed for recharge (Managed Aquifer Recharge(MAR); any form of augmented recharge). Education and outreach: helping people understand and participate in local groundwater management.

2. Recharge process: given that recharge processes have changed significantly with human influences (and increasingly climate change); how can basin sustainability be defined and implemented with incomplete knowledge of current and future recharge processes?

Peter Dillon, CSIRO: (e-mailed comments presented on his behalf by Ms. Kretsinger)

1. Develop more managed aquifer recharge in conjunction with demand management.
2. Risk-based management approach to groundwater quality protection to avoid future costs.

Martha Conklin, UC-Merced:

1. Integrated watershed management should be implemented to include mountain-front forest management to protect water quality for eventual use and recharge.
2. Lesson from Arizona: Public education is an important part of decision-making. Public decisions in favor of recharge of Colorado River water before use has tripled the water's delivered cost.
3. Allowing existing data to guide decisions about practices such as reuse, with allowance for increased risks and contaminant concentration with each cycle of reuse.
4. Data management: Integrating surface water and groundwater databases for conjunctive use.

John Laird, CA Secretary for Natural Resources:

(Submitted by Mr. Harter from a statement made by Mr. Laird at the Legislative Symposium on 4/26/2011 in response to a question similar to the one posed at the CGIC Workshop)

1. Educate people about the linkage between groundwater sustainability around the state and solving the Delta issue.

At the end of the key issues session, Mr. Parker suggested the incorporation of the following key issue:

1. The economic value of water may be another key issue, for the Council's consideration, at a time when supplies are becoming more scarce, while on one hand water is considered a basic human right which should be provided basically or nearly free, and the other hand managing water as a commodity at a cost based on demand. There is also the question of how much groundwater should be cleaned up and at what cost?

3. Identification of Issues for Afternoon Discussions

Following workshop participants' introductions and statements of key issues, Mr. Fougères instructed the participants to review the summarized key issues that he had written on large pieces of paper as participants spoke. He then instructed the participants on how they should vote for the key issues to be discussed in the afternoon small group sessions. The participants received four colored adhesive dots as voting tokens to place beside the key issues of their choice. Voting occurred just before and during the lunch break. After the votes were cast, Mr. Fougères and other GRA workshop organizers counted the votes. Six broad key issues were identified through the voting and distinguished for consideration in the afternoon small group sessions: (1) Data management, (2) Conjunctive use, (3) Water quality impacts and disadvantaged communities, (4) Recycled water and managed aquifer recharge, (5) Economics, regulatory consistency, and sovereignty, and (6) Contaminant cleanup and water resources management.

4. Keynote Speech

Following the lunch break, Mr. Quinn delivered the keynote speech titled: Sustainability from the Ground Up: Groundwater Management in California, A Framework. The presentation provided an overview of

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the Association of California Water Agencies' board-approved review of groundwater management in California. The Framework document identifies broad principles that ACWA supports, but avoids technical details of various management strategies and their implementation. The Framework identifies goals including sustainable management of surface water and groundwater resources statewide.

Development of the document began in 2009 (after major federal Endangered Species Act (ESA) rulings and other events), and was developed by ACWA board members and others who are experienced groundwater managers.

Purpose of Framework:

1. Highlight successful groundwater management cases at the local level.
2. Provide policy foundation for moving forward.

Foundational Themes:

1. Sustainability must be a key goal, furthermore environmental and economic goals must be co-equal, and addressed in a balanced way).
2. Management tools that we need already exist today (Integrated Regional Water Management Plans (IRWMPs), etc.).
3. The local level is the appropriate level to implement sustainable management.
4. Sustainable groundwater management must happen in the context of complete water resource sustainability (Delta conveyance, surface storage, etc.).

Successful Examples:

1. Glenn County: groundwater management plan with overdraft penalties
2. Sacramento Groundwater Authority
3. Upper Kings Basin IRWM Authority
4. Orange County

Summary of Recommendations

1. Local water agencies throughout California need to implement sustainable groundwater management plans (presently not all are).
2. State should facilitate development of plans (bond funding has been a positive incentive).
3. State should remove obstacles to sustainable groundwater management (no existing designation of recharge as a beneficial use).
4. Sustainable groundwater management must be done in concert with sustainable management of other water resources.

Next Steps:

1. Implementation subcommittee
2. Stakeholder outreach
3. Partnerships
 - a. DWR, GRA, California Groundwater Coalition (CGC)

Following the presentation, workshop participants offered questions to Mr. Quinn. It was asked whether ACWA has considered partnering with state agencies in a collaborative way that is not based on state regulation. Mr. Quinn indicated that ACWA prioritizes enabling local control. If sustainability is necessarily regional and data needs require complete transparency across basins for study and management, can ACWA facilitate transparency and education among its member managers? Mr. Quinn responded that ACWA is relying on the Integrated Regional Water Management Plan (IRWMP) process to get local agencies to think more broadly, but ACWA's members fear that data may be used to litigate and regulate them. He further indicated that ACWA's members would be inclined to agree to transparency if they trust how the data will be used. It was noted that groundwater management plans have been consolidated and cover larger areas in recent years because water agencies are increasingly

working together. Another question was posed to Mr. Quinn about whether the state could really be kept out of local agency's businesses if the local agencies resist enforcing any local policing power? Mr. Quinn indicated that local agencies should use their local enforcement power; however, that will not be an easy process either.

5. Small Group Discussions in Two Rounds

Following the keynote speech Mr. Fougères reviewed the six key issues that received the most votes from workshop participants during the earlier voting process. Mr. Fougères then explained the two key questions for the small group discussions to address and the process for conducting the discussions. Participants had the opportunity to join two 45-minute small group discussions on the topics that most concerned them.

6. Small Group Reports and Discussion

Following the second round of small group discussions, all workshop participants reconvened to hear the small group facilitators report back on the discussions in each small group.

Conjunctive use/integrated regional water management (IRWM)

Group Reporter: Ms. Kretsinger

- Conjunctive use and the IRWM process are working well in some areas, but there is room for improvement. The definition of conjunctive use may vary between basins depending on local interpretation.
- There is a need to quantify results (both successful and unsuccessful).
- There is a need to integrate results, track the tools used, note how results were achieved with the models used, and data gaps.
- Define success (e.g., the potential for recharge and water supply augmentation).
- Define the institutional, legal, and technical tools that are available to achieve success.
- There are some problems with current conjunctive use practices that have been identified, but those could be detailed in a white paper that also includes definitions of terms (including conjunctive use) commonly used across different basins for standardization and defining standards for success.
- GRA could organize a technical committee to guide the white paper's production and solicit input from others. The committee could include representatives from some of the Council members' organizations.
- GRA could investigate water markets as a means of implementing conjunctive use management.

Data management

Group Reporter: Mr. Parker

- How do we define high quality data and facilitate the collection of raw data (i.e., information) and application of quality control standards to increase knowledge of groundwater resources.
- Need to avoid the Garbage In – Bible Out approach.
- GRA can help identify and promote standards for high quality data collection.
- DWR PIE (Planning and Information Exchange) and SWRCB Groundwater Ambient Monitoring and Assessment (GAMA) can be useful sources for providing water managers with prioritized data lists for different basins.

- Problems include: unfunded mandates, variation in existing data types, lack of transparency, inconsistent interpretation of Homeland Security regulations by various government agencies inhibits transparency.
- Have a decision-maker level process to help advance valid prioritizations of data needs.

Water quality impacts and disadvantaged communities

Group Reporter: Mr. Lewis

- Do we have sufficient data to manage water quality, especially if 20% of aquifers provide 80% of groundwater?
- Data should be of high quality and able to answer key, identified questions.
- GRA can help water managers identify key data needs in their basin (s).
- GRA can solicit community input and education by hosting various events/tours focused on public outreach in a way that recognizes initial tendencies and attempts to identify the sources of the problems. In reality, something else may be causing the problem.
- GRA could help identify source water protection methods or collaborative approaches between users (e.g., irrigation districts and domestic users that could collaborate to have agricultural users irrigate with nitrate impacted groundwater and domestic users use more surface water).
- GRA could facilitate studies for solutions to rural or disadvantaged community water treatment in collaboration with local residents and water districts.

Recycled water and managed aquifer recharge

Group Reporter: Mr. Strandberg

- GRA/Council could conduct a survey of water users regarding recycled water use/recharge.
- GRA/Council can conduct outreach regarding use of recycled water and the related technical issues.
- GRA/Council should seek involvement from stakeholders, such as California Department of Public Health (DPH) and water providers.
- GRA could apply funding (source unknown) to survey public perceptions of water recycling.
- GRA could encourage a fee to be collected to fund outreach and research.

Economics, regulatory consistency, and sovereignty

Group Reporter: Mr. Lewis

- As water becomes increasingly scarce, education of the public and decision makers as to the true value of water will be beneficial, specifically education that water can have beneficial uses downstream and that value varies spatially.
- Education should address the importance of the Delta in any water resources sustainability solutions.

Contaminant cleanup and water resources management

Group Reporter: Mr. Strandberg

- Lack of communication between water users (well operators) and irrigation districts (rechargers) inhibits best treatment of contaminant plumes.
- Case studies could be used to identify potential solutions.
- GRA could organize conferences to address identified concerns, including the affect of contamination source type (e.g., point source or non-point source) on best cleanup approaches and how best practices may vary between basins.
- Group proposed that the GRA/Council survey members to determine problems pertaining to the particular topic.

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- GRA/Council could develop best management practices (BMPs) for groundwater management.
- GRA/Council could start working groups (four to six) to include water users not already in the Council to incorporate all useful perspectives.
- Discussed other research entities and their funding structures, for example water environment foundation (electric power industry) that uses a fee based mechanism to fund research.
- A nominal fee on groundwater use could be effective for funding robust research efforts.
- GRA member organizations could provide valuable in-kind services.

Following the small group reports, Mr. Fougères opened a brief discussion to allow the workshop participants a chance to comment on ideas from the small group reports that resonated with them.

(Unattributed): Funding fundamental research to address needs identified by the various group discussions.

Mr. Orth: There is a need to help define to consumers how water is valued in different forms around the state (tap vs. bottled, basin to basin, etc.).

Dr. Kavanaugh: 10 cent user fee per 1000 gallons of groundwater drinking water use could generate \$25 million/year for research and management.

Unattributed: There is a need to develop data mining resources to take advantage of existing data.

Dr. Conklin: CITRIX and Microsoft are working on data mining of water data and might present potential funding sources.

Mr. Brill: In light of future resource scarcity, we need to identify sources of data and host workshop to coordinate data collection.

Ms. Creedon: Data quality is very important, particularly in light of the move towards increased transparency, perhaps a guiding document could be produced for groundwater data collection standards.

Dr. Macler: GRA could lead on setting up venues for truly candid discussions at all scales that allow members to build trust in the absence of the threat of legal or regulatory repercussions.

Ms. Scruggs: Homeland Security regulations limit the ability to share data and there is inconsistency between agencies regarding their interpretation of the laws and their ability to share data.

7. Next Steps and Action Items

Mr. Parker thanked all participants for what he considered a very successful meeting and that he looks forward to future, continuing dialogues. He commented that he was excited with all the key issue discussions, and observed how integral, important and influential the valuation of both water and data is to sustainable groundwater management in the future. DWR is forming a new groundwater caucus as part of the California Water Plan Update 2013 (CWP) process, he and Ms. Kretsinger will contribute the GRA/GRA Council's discussions and priorities from the workshop to that process. New groundwater content enhancement elements will include more detail on groundwater integration and will identify funding needs for the CWP.

Ms. Kretsinger added that meeting notes will be submitted to attendees for editing/revision. Ms. Kretsinger thanked participants for their time and contributions, and closed the workshop.

8. List of Attendees

#	Name	Affiliation
1	Jonathon Bishop	State Water Resources Control Board
2	Kirby Brill	Mojave Water Agency
3	Reid Bryson	University of California, Davis
4	Dave Ceppos	Center for Collaborative Policy
5	Martha Conklin	University of California, Merced
6	Simon Cook	University of California, Davis
7	Pamela Creedon	Central Valley Regional Water Quality Control Board, Rancho Cordova
8	Andrew Eaton	MWH Global, Inc.
9	Andrew Fisher	University of California, Santa Cruz
10	Graham Fogg	University of California, Davis
11	Dorian Fougères	Center for Collaborative Policy, CSUS
12	Steve Goldberg	Downey Brand Seymour and Rohwer
13	Maurice Hall	The Nature Conservancy
14	Thomas Harter	University of California, Davis/GRA Board Member
15	Tim Horner	California State University, Sacramento
16	Tom Johnson	ARCADIS U.S., Inc.
17	Mike Kavanaugh	Geosyntec Consultants
18	Abdul Khan	Calif. Department of Water Resources
19	Peter Kitandis	Stanford University
20	Vicki Kretsinger	Luhdorff & Scalmanini, Consulting Engineers/ GRA Board Member
21	Brian Lewis	California Department of Toxic Substances Control
22	Karl Longley	Central Valley Regional Water Quality Control Board, Fresno
23	Jay Lund	University of California, Davis
24	Bruce Macler	U.S. Environmental Protection Agency
25	Sue McClurg	Water Education Foundation
26	David Orth	Kings River Conservation District
27	Tim Parker	Parker Groundwater/GRA Board Member
28	Tim Quinn	Association of California Water Agencies
29	Eric Reichard	U.S. Geological Survey
30	Mary Scruggs	Department of Water Resources
31	Jim Strandberg	ARCADIS U.S. Inc./GRA Board Member

9. List of Reference Materials

Association of California Water Agencies (ACWA) - Sustainability from the Ground Up: A Framework for Groundwater Management in California <http://www.acwa.com/content/groundwater/sustainability-ground-framework-groundwater-management-california>

Legislative Analyst's Office (LAO) - Liquid Assets - Improving Management of the State's Groundwater Resources <http://www.lao.ca.gov/laoapp/PubDetails.aspx?id=2242>

Public Policy and Information Center (PPIC) - Managing California's Water: From Conflict to Reconciliation <http://www.ppic.org/main/publication.asp?i=944>

Woods Institute on the Environment, Stanford University – Water in the West Working Paper 1 – Uncommon Developments in Groundwater Management Planning in California
http://www.stanford.edu/group/waterinthewest/cgi-bin/web/sites/default/files/Nelson_Uncommon_Innovation_March_2011.pdf

Guidelines and Reports on Managed Aquifer Recharge (MAR)

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2. NRMCC, EPHC, NHMRC (2009). Australian Guidelines for Water Recycling, Managing Health and Environmental Risks, Volume 2C - Managed Aquifer Recharge. Natural Resource Management Ministerial Council, Environment Protection and Heritage Council National Health and Medical Research Council. (Writing team: Dillon, P., Page, D., Pavelic, P., Toze, S., Vanderzalm, J., Levett, K., Stevens, D. and Newland, P.), Jul 2009, 237p. <http://www.ephc.gov.au/taxonomy/term/39>
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4. Dillon, P., Pavelic, P., Page, D., Beringen H. and Ward J. (2009) Managed Aquifer Recharge: An Introduction, Waterlines Report No 13, Feb 2009. <http://www.nwc.gov.au/www/html/996-mar--an-introduction---report-no-13--feb-2009.asp>

Journal papers on overview of MAR

1. Dillon, P., Toze, S., Page, D., Vanderzalm, J., Bekele, E., Sidhu J. and Rinck-Pfeiffer S. (2010). Managed Aquifer Recharge: Rediscovering nature as a leading edge technology. Water Science & Technology 62 (10) 2338–2345.
2. Dillon, P., Gale, I., Contreras, S., Pavelic, P., Evans, R., Ward, J. (2009). Managing aquifer recharge and discharge to sustain irrigation livelihoods under water scarcity and climate change. IAHS Publ. 330, 1-12.
3. Ward J.D., Simmons, C.T., Dillon, P.J. and Pavelic, P. (2009). Integrated assessment of lateral flow, density effects and dispersion in aquifer storage and recovery. J. Hydrology 370, 83-99.
4. Dillon, P. (2009). Groundwater Replenishment with Recycled Water – An Australian Perspective. Ground Water News and Views, Groundwater Journal, 47(4) 492-495.