Groundwater Resources Association of California
CELEBRATING 25 YEARS!

Attachment 1: 2016 DKT Lecturers - Lecture Titles, Abstracts, & Bios (cont'd)

Claudia Faunt, Ph.D, P.E. (Southern California)

Supervisory Hydrologist
Program Chief, Groundwater Framework and Applied Modeling
California Water Science Center
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Lecture: *Water Availability and Sustainability in California's Central Valley: Past, Present, and Future*

Bio:

Dr. Claudia Faunt has been a hydrologist for the U.S. Geological Survey since 1988 and a part of the California Water Science Center since 1998. As a USGS hydrologist, she has led studies that focused on regional groundwater flow systems, including the Central Valley of California and Death Valley, California and Nevada. Her research has specialized in water availability, regional groundwater flow modeling, hydrogeologic framework modeling, and incorporation of hydrologic and geologic spatial information into groundwater models. Claudia's recent technical experience includes several projects related to water availability in California's Central Valley. Claudia received her Doctorate in Geological Engineering in 1994 from the Colorado School of Mines. In 2013, Claudia became Program Chief of the California Water Science Center's Groundwater Framework and Applied Modeling section.

Abstract:

Management to ensure the sustainability of California's water resources is critical. Groundwater is a crucial buffer against land-use change effects, water restrictions, drought, and the impacts of climate change, including the depletion of mountain snowpack that is relied on for part of California's water supply. Despite its essential role, the state's groundwater system is under considerable strain and until recently has been largely unregulated. California's Sustainable Groundwater Management Act of 2014 (SGMA) provides a framework to comprehensively measure and manage groundwater and empowers local agencies to assess hydrologic issues that can cause "undesirable results." California's Central Valley has many basins with "undesirable results" and most of these are considered "critically overdrafted basins." The Central Valley covers about 20,000 mi^2 and is one of the most productive agricultural regions in the world. Because the valley is semi-arid, surface-water availability varies substantially. Agricultural demand for irrigation is heavily reliant on surface water and groundwater. In parts of the valley, groundwater pumping has caused severe groundwater-level declines, resulting in land subsidence of up to 30 feet. Starting in the 1950s, state and federal water distribution systems have eased the reliance on groundwater as dependence shifted to diverted surface water. As a result, groundwater levels recovered and subsidence virtually ceased for a few decades. In the last 20 years, however, land-use changes and limitations to surface-water availability—including drought and environmental flows—have increased pumping, causing groundwater-level and groundwater-storage declines, renewed subsidence, decreased stream flows, and changes to ecosystems. As these recent trends continue, monitoring and modelling are critical to understanding the dynamics of groundwater use and developing management

strategies. Modeling tools, such as the USGS Central Valley Hydrologic Model, enable (1) Groundwater Sustainability Agencies (GSAs) to have a head start in meeting requirements for key elements of their Groundwater Sustainability Plans, including a hydrogeologic conceptual model, water budgets (past & projected), development of measurable objectives and minimum thresholds, and monitoring network design; and (2) GSAs and state agencies to develop management strategies to mitigate adverse impacts while also optimizing water availability. Such capabilities are critical for successful implementation of SGMA.

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