



## American Ground Water Trust

**Ground Water Institute for Teachers™**  
**Riverside/ Diamond Valley, California**  
Western Municipal Water District (main office)  
450 Alessandro Boulevard, Riverside, CA 92508



**Two-day program - Pre-registration required**  
**Register at [www.agwt.org](http://www.agwt.org) (Institutes)**

**Thursday, November 8<sup>th</sup> Western Municipal Water District Riverside, California, and**  
**Friday, November 9<sup>th</sup>, field trip to Diamond Valley Lake (Bus leaves from Alessandro Blvd.)**

**Institute sponsors:**  
Metropolitan Water District  
Western Municipal Water District  
Eastern Municipal Water District

### **Background:**

The aim of the Ground Water Institute for Teachers program is to increase water awareness of teachers, school students, citizens, and communities so they may recognize the connected and integrated nature of the environment and be empowered to play an active role in protecting resources for sustainable use. The Trust believes that teachers who are excited about environmental education and who are provided with training in environmental principles will be more likely to effectively teach environmental concepts to their students. Students made aware of “cause and effect” related to water resources and aquatic habitat are likely to become motivated to protect and conserve resources. Increasing the environmental awareness of citizens and communities is a vital need worldwide, and specifically in California because of the state’s finite resources and increasing environmental pressures.

### **Grade Levels:**

The Trust’s Ground Water Institute for Teachers program is a content-focused training opportunity with applicability to most grades. The exciting and practical “science” of ground water can be applied to existing curriculum in many traditional subject areas. This training program has applicability way beyond the typical “earth science” perspective. Institute presenters are all top experts with a wealth of expertise. The program provides real-life example of the applications of science and technology to water issues. Over 40 Institutes have been completed in 17 states involving 1,200+ educators. Past California Institute programs have been held in Riverside (2), Claremont, Fresno (2) and San Jose (2).

### **California Science Standards:**

(State’s mandated curriculum content standards for public schools)

The Institute specifically addresses:

- Section 9c of the Earth Science Content Standards for Grades 9 through 12
- Section 9, (Investigation & Experimentation) for 8<sup>th</sup> Grade Physical Science
- Sections 4a, 6b and 7 (Focus on Earth Science) for 6<sup>th</sup> Grade
- Sections 1g,h,i,j,k,& l of (Investigation & Experimentation) for Grades 9 through 12

### **Program Requirements:**

(See web-site for information related to substitute funding)

Secondary grade educators who are granted substitute funding for Friday’s absence from school must attend the full two day, 12-hour program. All educators attending the program must turn in a brief project summary report that demonstrates how institute content has been used in his or her classroom. This will be due by the end of the current school year. Further explanation of the format for this requirement will be given during the program.

**Program: Thursday, November 8<sup>th</sup>**

**4:00pm to 8:15pm (At Western Water District)**

4:00pm – 4:30pm

### **WELCOME & INTRODUCTION**

**John Rossi, General Manager, Western Municipal Water District, Riverside, CA**

- Background to historical water use and the development of water supply in the Riverside area
- Responsibilities of Water Districts
- Potential problems for the future

4:30pm – 5:15pm

### **HYDROLOGIC SYSTEM: BASICS OF HYDROLOGY & ECONOMICS**

**Andrew Stone, Executive Director, American Ground Water Trust, Concord, NH**

- Geology fundamentals (rock types/ geologic structure/ aquifer geometry)
- Concept of water balance (hydrologic accounting at local & regional scales)
- Perceptions of water as a shared resource (who owns it?)
- Global & national economic realities of competing water demands

5:15pm – 6:00pm

### **WATER FOR SOUTHERN CALIFORNIA**

**Grace Chan\*, Section Manager, Water Resources Management, Metropolitan Water District of Southern California, Los Angeles, CA**

- Water sources for Metropolitan's Service Area
- Integrated Resources Plan: Building Adaptability and Flexibility in Providing Water
- What are the important investments and partnerships that exist today?
- The importance of Ground Water relative to water supplies
- Key Water Challenges: Colorado River, Bay-Delta, Water Quality, Invasive Species, Climate Change...
- "Getting Serious" about water conservation

\* Pending Confirmation

6:00pm – 6:45pm

### **GROUND WATER EXPLORATION AND DEVELOPMENT**

**D. Scott Riegert, Hydrogeologist, Layne Christensen Company, Fontana, CA**

- Geophysical methods used to find and quantify aquifer resources
- The ABC of drilling and constructing a well (Typical problems, solutions and costs)
- Case studies of successfully developing ground water in Southern California

[Sandwiches available to feed the body while the presenters feed the mind]

6:45pm – 7:45pm

### **MONITORING AND ASSESSMENT OF GROUND-WATER QUALITY IN CALIFORNIA**

**Tim Cliffe, Hydrologist, US Geological Survey, San Diego, CA**

- CA's Water Resources ("mentally-mapping" the resource)
- Assessing Ground-Water Quality Statewide (the "GAMA" Program)
- Basic Geology and hydrology of the Greater Los Angeles area
- Research work of the USGS in Southern California

7:45pm – 8:15pm

### **GROUND WATER TOPICS AND THEIR CONNECTION TO SCIENCE TEACHING (Part 1)**

**Andrew Stone, Executive Director, American Ground Water Trust, Concord, NH**

- Chemicals and compounds in ground water and surface water
- Pharmaceutical residuals and personal care products
- Technologies to reduce levels of arsenic in water supplies
- Integrating institute content in the classroom and follow-up activity\*

[Expectations for Day 2 of the program. \*Day two will include professional discussion opportunities for participants to share ideas for teaching strategies (lessons) that will engage student interest and enhance learning about water and water issues.]

8:15pm **End of Day One Program**

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**Program: Friday, November 9th      8:00am – 4:00pm**

7:30 (**Bus leaves from Alessandro Blvd.**) (**Wake-up coffee available!**)

7:30am – 8:30am

**GEOLOGIC, HYDROLOGIC & ENGINEERING FEATURES - ALESSANDRO BLVD to DIAMOND VALLEY**

- Eyes and ears open on the bus for a narrated explanation

8:30am – 9:30am

**DIAMOND VALLEY LAKE**

**Lynda Poggenphol, Government Affairs Representative, Metropolitan Water District, Hemet, CA**

- Role of Diamond Valley Lake in regional water management
- Engineering aspects of the reservoir's design & construction
- Mitigation and Protecting Environmental Habitat (The Big Picture)

9:30am (Arrive at Water Resources Center)

9:30am – 9:45am

**ATTITUDE ADJUSTMENT OPPORTUNITY** (Coffee/ juice and sugar fix)

9:45am – 10:30am

**GROUND WATER TOPICS AND THEIR CONNECTION TO SCIENCE TEACHING (part 2)**

**Andrew Stone, Executive Director, American Ground Water Trust, Concord, NH**

- In-stream flows, wetlands & ground water
- Aquifer tests (interpreting relationships between well pumping and water level changes)
- Home wells and water systems (science, technology & economics)

10:30am – 11:30am

**GROUND WATER EDUCATION**

**Blanca Biller, Education Program Coordinator, Metropolitan Water District, Hemet, CA, and**

**Monique Navarrette, Public Affairs-Education Specialist, Western Municipal Water District, Riverside, CA**

- Classroom teaching ideas that work:

Use of models and "wet" demonstrations

Groundwater activities for students in the classroom

- Printed and multi-media resources for students and teachers (distribution of goodie-bags)
- Selection of web-site sources available for students and teachers

11:30am – 1:00pm

**LUNCH AT THE DIAMOND VALLEY LAKE MARINA WITH A LUNCH-TIME PRESENTATION**

**Mike Giusti (California Department of Fish & Game Biologist)**

- Flora and Fauna of the Lake (wanted and unwanted)
- Habitat creation and maintenance
- Potential treats to integrity of aquatic species

1:00pm – 1:30pm

**TOUR OF THE WATER RESOURCES CENTER EXHIBITS**

**Lynda Poggenphol, Government Affairs Representative, Metropolitan Water District, Hemet, CA**

1:30pm – 2:15pm

**GROUND WATER IN EASTERN AND WESTERN DISTRICTS**

**Jack Safely, Water Resources Manager, Western Municipal Water District**

**Behrooz Mortazavi, AGM of Resource Development, Eastern Municipal Water District**

- District water management plans
- Resource protection strategies
- Engineering solutions (Aquifer storage, desalination, water re-use)

2:15pm – 2:30pm

**CALIFORNIA ACADEMIC STANDARDS**

**Andrew Stone, Executive Director, American Ground Water Trust, Concord, NH**

How the Institute content relates to California academic standards in the core areas:

- Language Arts, - Science, - Math, - History/Social Studies

2:30pm – 3:30pm

**MAKING THE CONTENT RELEVANT: GETTING WATER INTO THE CURRICULUM**

(education strategies that work)

**Facilitated by Russ Donnelly, Education Programs Manager, Metropolitan Water District, Los Angeles, CA**

- Break-out groups for grade-alike discussions on how best to use the institute's content in the classroom
- Develop a consensus on how Institute participants can share their classroom experiences of using Institute ideas for follow-up activity

3:30pm – 4:00pm

**WRAP UP**

**(All presenters)**

- Lessons learned? Questions not answered?
- Where to find additional education materials on ground water and hydrology
- Complete Institute evaluation forms
- Complete continuing education credit paperwork

4:00pm

**ADJOURN**