



American Ground Water Trust

Ground Water Institute for Teachers™ Riverside/ Diamond Valley, California

Western Municipal Water District (main office)
450 E. Alessandro Boulevard, Riverside, CA 92508



2008 Institute sponsors:
Metropolitan Water District
Western Municipal Water District
Eastern Municipal Water District
Albert A. Webb Associates
Kleinfelder
RBF Consulting

**Thursday, October 23, 2008 Western Municipal Water District Riverside, and
Friday, October 24, field trip to Diamond Valley Lake and Diamond Valley Lake Visitor Center**
(Bus leaves bus leaves promptly at 7:30 a.m. from 450 E. Alessandro Blvd.)

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 1,400+ educators. Past California Institute programs have been held in Riverside (3), Claremont, Fresno (2) Chino 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 8th Grade Physical Science
- Sections 4a, 6b and 7 (Focus on Earth Science) for 6th Grade
- Sections 1g,h,i,j,k,& l of (Investigation & Experimentation) for Grades 9 through 12

Program Requirements:

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.

Presenters:

The program presenters include experienced education specialists and top experts from the fields of water resources science, engineering & management.

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, 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

Tim Skrove, Principal Government and Regional Affairs Representative, Metropolitan Water District, 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

6:00pm – 7:15pm

GROUND WATER QUALITY: TACKLING QUESTIONS IN CALIFORNIA!

Tim Cliffe, Hydrographer, US Geological Survey, Poway, CA

- A) CA's Water Resources (can students "mentally-map" water across CA?)
- B) Site-Specific Research Methods (including LA Basin, the Mojave, the Delta)
 1. Nested Monitoring Wells
 2. Depth-Dependent Sampling
 3. Unsaturated-Zone Sampling

7:15pm – 8:15pm

GROUND WATER TOPICS (AND THEIR CONNECTION TO SCIENCE TEACHING)

Andrew Stone, American Ground Water Trust, Concord, NH

- Chemicals and compounds in ground water and surface water
- Ground water contributing to springs and wetlands
- How aquifers are assessed and accessed (well drilling and construction)
- A day in the life of a Hydrogeologist – careers in water resources

[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.]



7:30am (Bus leaves from Western Headquarters E. Alessandro Blvd.)

7:30am – 8:30am

GEOLOGIC, HYDROLOGIC & ENGINEERING FEATURES – E. ALESSANDRO BLVD to DIAMOND VALLEY

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

8:30am – 9:30am

DIAMOND VALLEY LAKE (West Gate)

Lynda Goldberg, 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 Diamond Valley Lake Visitor Center)

Street address: 2325 Searl Parkway, Hemet, CA 92543)

9:30am – 9:45am

ATTITUDE ADJUSTMENT OPPORTUNITY (Coffee/ juice and sugar fix)

9:45am – 10:45am

OUTLINE OF STORM-WATER EXERCISES THAN CAN BE ADAPED FOR DIFFERENT GRADE LEVELS

Andrew Stone, American Ground Water Trust, Concord, NH

- Identify site-specific land-use categories (how are they connected hydrologically?)
- Follow the water drop - where and how storm water flows (direction, speed and destination)
- Calculation of land-use responses to precipitation input (choose a time-frame and do the math)
- Where does it end up? And how long does it take to get there?

10:45am – 11:45am

GROUND WATER EDUCATION

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

Tedi Jackson, Public Affairs Manager, 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

11:45am – 1:00pm

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

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

1:00pm – 1:30pm

TOUR OF THE WATER RESOURCES CENTER EXHIBITS

Lynda Goldberg, Government Affairs Representative, Metropolitan Water District, Hemet, CA

1:30pm – 2:30pm

GROUND WATER IN EASTERN AND WESTERN DISTRICTS

Jack Safely, Water Resources Manager, Western Municipal Water District

Christie Moon Crother, Water Resources Program Manager, Eastern Municipal Water District

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

2:30pm – 4:00pm

EDUCATION RESOURCES, CA ACADEMIC STANDARDS AND IMPLEMENTATION

Andrew Stone, Executive Director, American Ground Water Trust;

Russ Donnelly, Education Program Director, Metropolitan Water District, Los Angeles, CA; and

Katharine Havert, Education Coordinator, California Regional Environmental Education Community (CREEC - Region 10)

- How the Institute relates to California academic standards (Language Arts, Science, Math, History/Social Studies)
- Trends in Environmental Education
 - The concept of add-in rather than add-on to existing curriculum
- Resources for teachers
 - Education materials and grants
- Discussions on how best to use the institute's content in the classroom
- Completion of "Ideas to lessons" form
- Completion of Institute evaluation form
- Complete continuing education credit paperwork

WRAP UP

- Lessons learned? Questions not answered?

4:00pm

ADJOURN

(Bus returns to Western Headquarters, Alessandro Boulevard)

