



American Ground Water Trust

Ground Water Institute for Teachers™
At
Inland Empire Utilities Agency,
6075 Kimball Avenue, Chino, CA 91708



Pre-registration required
Register at www.agwt.org (Institutes)

Thursday, November 29th 4:00pm to 8:15 pm and
Friday, November 30th 8:30am to 4:00pm

Institute sponsors:
Inland Empire Utilities Agency
MWH Americas

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 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:

(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 29th 4:00pm to 8:15pm (At Inland Empire)

4:00pm – 4:30pm

WELCOME & INTRODUCTION

Martha Davis, Executive Manager for Policy Development, Inland Empire Utilities Agency, Chino, CA

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

4:30pm – 5:30pm

HYDROLOGIC SYSTEM: BASICS OF HYDROLOGY AND ECONOMICS

Andrew Stone, American Ground Water Trust, Concord, NH

- Things you didn't know about rocks and water (Geology – Hydrology)
- *“Ground water is the part of the hydrologic system that occurs in a geologic environment”*
- Geology fundamentals (rock types, geologic structure, aquifer geometry)
- Concept of water balance (hydrologic accounting at local and regional scales)
- Global and national economic realities of competing water demands

5:30pm – 6:15pm

WATER FOR SOUTHERN CALIFORNIA

Grace Chan, Section Manager, Water Resources Management, Metropolitan Water District of Southern California, Los Angeles, CA (to be confirmed)

- 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

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

6:15pm – 7:00pm

EFFECTS OF CLIMATE CHANGE ON WATER RESOURCES

Greg Arifian, MWH Americas, Arcadia, CA

- Overview of current state, national and international perspectives on climate change
- Potential environmental and economic impacts of changing resource availability
- Planning, management and engineering solutions

7:00pm – 7:45pm

CLIMATE CHANGE – HYDROLOGIC EFFECTS - (Reaching out to Teachers)

Lizzette Villegas, Outreach Coordinator and

Emma Reiners, Marketing Coordinator, MWH Americas, Arcadia CA

- The MWH initiative to bring scientists and engineers into schools
- Classroom module on Climate Change
- Classroom module on the Hydrologic Cycle

7:45 – 8:15

ENVIRONMENTAL OPPORTUNITIES & RESOURCES

Dave Ficke, Upland High School (Chair CREEC Region 10 RIMS), Upland, CA

- The California Regional Environmental Education Community (CREEC Network)
- Education and the Environment Initiative (EEI)
- Green Valley Initiative (GVI)

8:15pm End of Day One Program

Program: Friday, November 30th 8:30pm to 4:00pm (At Inland Empire)

8:30 – 9:15

WATER WELLS AND AQUIFERS

Ted Caldwell, Regional Manager, Roscoe Moss Company, Los Angeles, CA

- The geologic origins and hydrology of California's aquifers
- Examples of the development of ground water resources
- The basics of water flow from an aquifer to a well
- The ABCs of designing and equipping a well (How wide? How deep? What screen? (What pump?)
- How do we know if a well is operating at optimum performance?

9:15 – 10:00

GROUND WATER IN THE CHINO BASIN

Mark Wildermuth, P.E., CEO, Wildermuth Environmental, Inc., Lake Forest, CA

- Background to the hydrology of the basin
- Background to ground water quality issues
- Changes in water use and supply sources
- Optimizing the resources for sustainable use

10:00 – 10:30

SITE VISIT TO THE INLAND EMPIRE DESALTER

- Why was it built? How does it work? Where does the salt go? Will it have to operate for ever?

10:45 – 12:15

DEMONSTRATION OF GROUND WATER MODEL

Cheryl Yeamans, Analyst Conservation, City of Chino Hills

Field Visit to City of Chino Hills, Public Facilities and Operations

(Location of model) 15091 La Palma Drive, Chino, CA 91710

12:15 – 1:00 **LUNCH** (At IEUA)

1:00 – 1:45

LOW IMPACT DEVELOPMENT AT THE IEUA SITE

Martha Davis, Executive Manager for Policy Development, Inland Empire Utilities Agency, Chino, CA

- Leadership in Energy and Environmental Design (the LEED program)
- Explanation of the IEUA's commitment to LEED
- Hydrologic benefits of Low Impact Development Design

1:45 – 2:30

GROUND WATER TOPICS AND THEIR CONNECTION TO SCIENCE TEACHING

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

Including:

- Chemicals and compounds in ground water and surface water
- Technologies to reduce levels of arsenic in water supplies
- How water well sites are selected
- Springs & wetlands
- Shakespeare's Hydrology

CALIFORNIA ACADEMIC STANDARDS

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

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

2:30 – 3:00

SCIENCE AND PUBLIC PERCEPTION

Andrew Stone, American Ground Water Trust, Concord, NH

- Viewing of short excerpts from the AI Gore DVD
- Integration of climate change issues in teaching

3:00 – 4:00

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 -

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
- 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**

