

# American Ground Water Trust Ground Water Institute for Teachers™ Fort Myers /Cape Coral, Florida

For teachers and educators  
Register at [www.agwt.org](http://www.agwt.org) (Teacher Institutes)



Friday, June 29<sup>th</sup> [8:30am to 4:00pm]  
Saturday, June 30<sup>th</sup> [8:30am to 3:30pm]  
at

Lower West Coast Service Center  
South Florida Water Management District  
2301 McGregor Blvd., Fort Myers, FL 33901



In Cooperation with Audubon of Southwest Florida



**Institute Sponsors:**  
Florida Gulf Coast University  
Audubon of SW Florida  
MWH Americas  
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## 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 Florida 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 many 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 30 Institutes have been completed in 17 states involving 1,000+ educators. Past Florida Institute programs have been held in Zephyrhills, St Petersburg and Arcadia.

**On-line registration is available for teachers and educators**

**8:00 Registration**

**8:30 INTRODUCTION TO THE INSTITUTE PROGRAM**

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

**Pete Quasius, Audubon of SW Florida, Fort Myers, FL**

- Welcome to the program
- Recognition of sponsors
- Background to Institute Program (Trust / USGS partnership)
- Objectives of this Institute
- Expectations of the teacher / educator participants

**8:45 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)
- Threats to ground water
- Global and national economic realities of competing water demands

**9:30 WATER SUPPLY CHALLENGES IN SOUTHWEST FLORIDA**

**Gordon Kennedy, MWH Americas, Cape Coral**

- Seasonality of water supplies
- Pre-platted communities, water supply and disposal
- Competition for limited freshwater resources
- Changing landscape of water use
- The challenges of brackish water supplies

**10:30 BREAK**

**10:45 AQUIFER VULNERABILITY – PROTECTING THE STATE’S WATER RESOURCES**

**Harley Means, Florida Geological Survey, Tallahassee, FL**

- What does aquifer vulnerability mean?
- Florida Aquifer Vulnerability Assessment (FAVA)
- Research to identify the key indices that indicate vulnerability
- Application of the WofE method to the three principal aquifer systems in Florida
- Vulnerability maps as resources for planners, developers and policy makers
- Education resources from the Florida Geological Survey available to teachers/ educators

**11:45 WHAT HAPPENED TO LAKE OKEECHOBEE, and its role in restoring the Greater Everglades Ecosystem**

**Paul N. Gray, Audubon of Florida, Lorida, FL**

- The water management infrastructure of south Florida was designed to increase drainage
- Drainage makes floods more intense in downstream systems (like Okeechobee and the estuaries), and droughts more intense everywhere
- Drainage also exacerbates water quality problems, due to lack of "cleansing" time
- Okeechobee's outflows have been diverted from the Everglades to the estuaries
- Restoring the system requires increasing water storage to reverse drainage effects
- Storage is the first step in cleaning water and subsequently conveying it in patterns and directions beneficial to natural and human needs

**12:45 LUNCH** (Presentations / discussion during lunch)

**1:00 LEE COUNTY AQUATIC RESOURCE ISSUES & MANAGEMENT CHALLENGES**

**John Cassani, Lee County Hyacinth Control District, Fort Myers, FL**

- Why storm water is an environmental issue
- Amphibians as environmental indicators
- Effects of aquatic nuisance species on resident communities
- Unique challenges for pond management in SW Florida

Discussion session including Commissioner Tammy Hall, Lee County Board of Commissioners

**2:00 CERP's C - 43 BASIN RESERVOIR FIELD TRIP**

**LuAnn McVicker, C-43 Reservoir Project Manager, SFWMD, West Palm Beach, FL**

[The C – 43 Reservoir is scheduled for completion in 2011. It will serve to reduce the effects of flood-control releases from Lake Okeechobee and to augment low flows in the Caloosahatchee River in order to maintain the salinity balance needed to improve the ecological functions of the estuary]

- Hydrologic and engineering features of C - 43:
- Water management and policy issues related to C - 43

**2:30 Depart for Field trip to C- 43**

**3:15 Meet at the Guard Station at the Berry Grove Entrance** (map and directions will be provided)

- Visit Reservoir test cells

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**4:30 End of Day 1 Program**

**Saturday, June 30th**

**8:30 FLORIDA HYDROLOGY ----THEY PAVED PARADISE AND PUT UP A PARKING LOT.**

**Robert Renken, or Barclay Shoemaker, U.S. Geological Survey, Fort Lauderdale, FL**

- Saltwater intrusion and the "Gore-acle" --- will sea level rise impact your drinking water supply?
- Can rock mines and well fields peacefully co-exist in the karst limestone sole source aquifer?
- (Evapotranspiration) ET --- the 800 pound gorilla in hydrology
- Deep injection of your waste water -- out of site, out of mind?

**9:30 WHAT IS IN THE WATER?**

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

- Chemicals and compounds in ground water and surface water nationwide
- Pharmaceutical residuals and personal care products
- Does it matter? [Drinking water and ecological considerations]
- What are we going to do about it?

**10:00 ARSENIC**

- Background to arsenic's origins and characteristics
- Arsenic in history (arsenic as an instrument of murder)
- Uses of arsenic for industry
- Health problems and drinking water concerns
- Technologies to remove or reduce levels of arsenic in water supplies

**10:30 BREAK**

**10:45 RESPONSIBILITIES OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT**

**Sally McPherson, Lead Community Outreach Specialist, SFWMD, Fort Myers, FL**

- Mission and primary responsibilities:
  - Water quality
  - Water supply, distribution and allocation
  - Flood control and drought management
  - Ecosystem Restoration
- Why SFWMD is relevant to teachers and students
- Web information and education resources available to educators

**11:45 LUNCH**

**12:30 SCIENCE AND PUBLIC PERCEPTION**

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

- Viewing of short excerpts from the Al Gore DVD
- Scientific evidence (information) for climatic changes
- Economic and social implications of climate change
- Climate change – changes in rainfall – impact on Florida hydrology and ecology
- Integration of climate change issues in teaching

**1:15 GROUND WATER ISSUES FOR THE CLASSROOM**

- How water wells are drilled
- Water dowsing as a classroom subject (Bring your favorite stick)
- Shakespeare's Hydrology

**2:00 EDUCATION RESOURCES – SUNSHINE STATE STANDARDS**

**Cindy Bear, Assistant Science Coordinator, Environmental Education, Lee County School District**

**Teri Heath, Science Department Head, Cypress Lake High School, Fort Myers, FL**

- Classroom strategies that work
- More .... (Details to follow)

**3:00 COMPLETION OF EVALUATION FORMS**

**3:15 INSTITUTE WRAP-UP**

**3:30 ADJOURN**

