

# American Ground Water Trust Ground Water Institute for Teachers™

Tampa, Florida – May/ June, 2007

For teachers in Pasco, Pinellas and Hillsborough Counties



Nature's Classroom  
13100 Verges Rd.  
Thonotosassa, FL 33592



Thursday	May 31st	4:00pm – 8:00pm
Friday	June 1st	8:30am – 4:00pm
Saturday	June 2nd	8:30am – 3:00pm



**Institute Sponsor: Southwest Florida Water Management District**

Contacts:

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SWFWMD: Raina O'Neil (800) 423-1476, ext 4774 [raina.oneil@watermatters.org]

## **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.

**Thursday, May 31st      4:00pm to 8:00pm**

4:00    REGISTRATION            (Nature's Classroom, TECO Building)

**4:30 – 5:00    INTRODUCTION TO THE INSTITUTE PROGRAM**

**Andrew Stone, American Ground Water Trust, Concord, NH**  
**Ann Tihansky, U.S. Geological Survey, St. Petersburg, FL**  
**Raina O'Neil, Southwest Florida Water Management District, Brooksville, FL**

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

**5:00 – 5:15    NATURE'S CLASSROOM – MISSION, PROGRAMS AND IMPACT**

**Karen Johnson, Site Coordinator, Nature's Classroom, Thonotosassa, FL**

**5:15 – 6:00    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)
- Perceptions of water as a shared resource (who owns it?)
- Global and national economic realities of competing water demands

**6:00 – 6:50    SOURCES OF RAW WATER**

**Mike Weatherby, Hydrogeologist, MWH Americas, Tampa, FL**

- What is a WUP?
- What are the potential sources of raw water available in Florida?
- Problems and challenges associated with developing each potential supply source.
- How to integrate sources to maintain raw water supply

**6:50            DINNER** (presentation while you eat!)

**7:10 – 8:00    AQUIFER STORAGE RECOVERY**

**John Powers, Hydrogeologist, CH2M Hill, Tampa, FL**

- How data sets are used to work out where ground water occurs and where it flows
- How the water storage potential of an aquifer is assessed
- How computer simulation models can assist in water management and aquifer protection
- Case study [St. Petersburg's deep injection well program and reclaimed water ASR program]

**8:00            (End of Day one activities)**

**Friday, June 1st            8:30am to 4:00pm**

8:30    (Meet at Crystal Springs Preserve, 1609 Crystal Springs Rd, Crystal Springs, Florida 33524)

**8:30 – 10:30    FIELD TRIP – CRYSTAL SPRINGS**

**Jessica Frankovich, Crystal Springs Preserve, Zephyrhills, FL**

- History of human interest and ownership of the Springs
- Hydrology of the spring system
- Ecological significance of the Springs
- Economic value of the Springs as a water source

11:00 - (Re-convene at Nature's Classroom, 13100 Verges Rd., Thonotosassa, FL 33592)

**Friday, June 1st**

**8:30am to 4:00pm (continued)**

**11:15 – 12:15 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 -

**12:15 – 1:00 LUNCH**

**1:00 – 2:00 THE STORM WATER ECOLOGIST PROGRAM**

**John McGee, Environmental Scientist, Hillsborough County, Tampa, FL**

- What are the main issues related to storm water runoff?
- The Origins and development of the Storm water Ecologist Program
- Critical Thinking Exercise using the Enviroscape Model

**2:00 – 3:00 LEGACY STEWARDSHIP PROGRAM - linking schools to education projects in their community.**

**Daniel Hayes, Youth Education Coordinator, SJRWMD; Educational Contractor for SWFWMD**

- Creating interdisciplinary experiential learning opportunities
- Involving students in hands-on service opportunities
- Teaching students to demonstrate aquifer models and envirosapes to other students and/or adult audiences
- Storm water stenciling and outreach in nearby neighborhoods
- Inventorying and monitoring tracts of public lands near schools
- Designing and constructing amenities for the visiting public (trails, kiosks, brochures, etc.)
- Making the land a 'living laboratory' for schools to apply classroom learning

**3:00 – 4:00 THE GEOLOGIC FRAMEWORK OF THE AREA**

**Ann Tihansky, U.S. Geological Survey, St. Petersburg, FL**

- USGS programs in Florida
- Overview of geology and hydrologic system of central Florida
- Special features of karst geology and hydrology
- All you ever wanted to know about sinkholes

**4:00 (End of Day two activities)**

**Saturday, June 2nd**

**8:30am to 3:00pm**

**8:30 – 9:30 GROUND WATER TOPICS AND THEIR CONNECTION TO SCIENCE TEACHING**

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

- Arsenic in ground water
- Water dowsing as a classroom discussion topic!
- Aquifer tests (interpreting relationships between well pumping and water level changes)
- The difference between ground water renewability and sustainability
- Assessing and accessing ground water for economic use

**9:30 – 10:30 To be announced**

**10:30 - 10:45 BREAK**

**10:45 – 11:45    “AN INCONVENIENT TRUTH”**

**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

**12:00 – 12:30    LUNCH**

**12:30 – 2:30    EDUCATION RESOURCES AND IMPLEMENTATION**

**Southwest Florida Water Management District (staff)**

**Raina O'Neil, Youth Education Coordinator**

**Mary Torrusio, Youth Education Specialist**

**Mary Alice Wagner, Youth Education Specialist**

**12:30 – 1:00    DEMONSTRATION OF AQUIFER MODEL CAPABILITIES AS AN ADJUNCT TO LEARNING**

- Set-up and operation of the model
- What the model can show
- How the model relates to real hydrologic situations
- What students can learn from the model
- Clean-up and storage

**1:00 – 2:00    EDUCATION RESOURCES**

- Trends in Environmental Education
- Sunshine State Standards
- Resources for teachers (tools, quizzes and lesson plans)
- SWFWMD education materials and grants
- Real-time USGS data for educators

**2:00– 2:30    ESTABLISHING A LESSON-PLAN TEMPLATE FOR INSTITUTE FOLLOW-UP**

- Potential lesson topics based on Institute presentations
- Preferred format for lesson planning
- Preferred format for report and evaluation of lesson effectiveness

**2:30 – 2:45    WRAP UP – ANSWERS TO UNANSWERED GROUND WATER QUESTIONS**

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

**2:45    - Completion of Institute CEU evaluations**

**3:00    ADJOURN**