American Ground Water Trust
Ground Water Institute for Teachers™

In cooperation with

San Antonio Water System
Edwards Aquifer Authority and
Witte Museum

Witte Museum, 3801 Broadway, San Antonio, Texas 78209
San Antonio Water System Central Office, 2800 US Hwy 281 North, San Antonio, Texas 78212

Friday, November 16 (9:00am to 5:00pm)
Saturday, November 17 (8:00am to 2:15pm)

The Ground Water Institute for Teachers program is a content-focused training opportunity with applicability to many grades and to adult education initiatives. 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. The American Ground Water Trust has completed forty Institutes in 17 states involving 1,000+ educators.

Institute Program

Program - Friday November 16- Witte Museum

9:00 – 9: 15
Greg Wukasch, San Antonio Water System, San Antonio, TX
Garret Graaskamp, American Ground Water Trust, Concord, NH

Welcome and Introduction:

- What we expect to achieve at the Institute
- Adding "ground water" to traditional subject areas (math, civics, ecology etc.)
- From Global to Local

9:15-10:00
Garret Graaskamp, American Ground Water Trust, Concord, NH
The Hydrologic System:

- Hydrology connections (springs, wetlands, lakes, rivers and aquifers)
- Concept of water balance (hydrologic accounting at local & regional scales)

10:00-10:45
Ari Herrera, Water For People, San Antonio, TX

- The Water for People Program
- Case study of implementing rural water supply projects in Honduras
- Involving the community with protecting and managing the new water supply
- The process of evaluating water supply projects in developing countries
- How Texas schools can become involved with WFP

10:45 – 11:00 **Break**

11:00-11:45
Amy Clark, US Geological Survey, San Antonio, TX,
Ground Water in Texas:

- Ground water use trends in Texas (agriculture, industry, cities,)
- USGS research activities in Texas (science for a changing world)
- Role of ground water in maintaining aquatic habitats in Texas

11:45-12:30 **Lunch** (provided by the Edwards Aquifer Authority)

12:30 – 12:50
Edwards Aquifer Simulation Theater

- A Journey Through the Edwards Aquifer

12:50-1:30
John Hoyt. P.G., Assistant General Manager - Aquifer Management, Edwards Aquifer Authority, San Antonio
Ground Water in San Antonio:

- The Edwards Aquifer (geologic origins and hydrologic dynamics)
- Origin of the Edwards Aquifer Authority (The role of EAA in regional ground water management decisions
- How the EAA monitors the storage and quality status of the Edwards and its watershed

1:30-2:15
Eddie Wilcut, Conservation Manager, San Antonio Water System, San Antonio Texas
Protecting Our Aquifer: Status of Water Conservation in San Antonio

2:15-2:30 **Break**

2:30-3:15
Weldon Hammond, Director, Center for Water Research, University of Texas, San Antonio
Running Dry: Water and Development in San Antonio

- The early development of San Antonio (How water was accessed and delivered)
- Population growth (Development of engineering solutions)
- The impact of environmental concerns on resource development

3:15-4:00
CASE STUDY: PGA Development
Erik Hobson, San Antonio Water System, San Antonio Texas
Protecting Our Aquifer: Storm Water Basin Basics

- Vulnerability of the Edwards Aquifer-The need for storm water basins
- How a storm water basin works
- Monitoring and inspecting

4:00 – 4:45
CASE STUDY: Helotes Mulch Fire
Kirk Nixon and Brian Lillibridge , Wellhead Protection, San Antonio Water System, San Antonio Texas
Protecting our Aquifer: Wellhead Protection Program in San Antonio

- Ground Water Projection, Wellhead protection, Resource protection (same or different?)
- Strategies (land use control, structural/ design/ engineering, behavior change)
- Programs and policies in place in San Antonio (including the well plugging program)

4:45 – 5:00 **Wrap up for day one**

Saturday November 17-San Antonio Water System Central Office

8:00 "On the Road" Breakfast
8:15 Depart for Field trip
Field trip leader, Lynne Christopher, Greg Wukasch, San Antonio Water System, San Antonio, TX

8:15-8:45
Stop 1 SAWS Control Center-SAWS Main Office

- SCADA System
- Customer Service Dispatch

9:05-9:40
Stop 2 SAWS Basin Pump Station Tour

- Well field
- Storage Tank
- Chlorination and Fluoridation
- Distribution System

10:15-11:00
Stop 3 Twin Oaks Aquifer Storage and Recovery Facility

Mario Aguilar, Water Resources Communication, San Antonio Water System, San Antonio, TX
Water to people or people to water?

- Assessment of future of water demand and supply for San Antonio (Will there be enough?)
- Solutions to meet demand (new supply, increased storage, less use, wastewater reuse etc.)
- SAWS Aquifer Storage Recovery project (storing excess water underground for later use)

11:00-11:30
Stop 4 Twin Oaks Aquifer Storage and Recovery Facility-TOUR

- Turbine pumps
- Water treatment needs
- Water storage and distribution
- Recharge process

12:00
Return to SAWS

12:00-1:00
Lunch (provided)

12:15-1:00
Garret Graaskamp, American Ground Water Trust, Concord, NH
Access to aquifers:

- Water well design and construction
- Typical installation of well-based home water system

1:00-1:45
Greg Wukasch, San Antonio Water System, San Antonio, TX
Ground Water Education

- Water Education For Teachers (Project WET)
- Where ground water fits with State Standards
- Organizations and institutions with ground water education resources
- Curriculum materials and lesson ideas, tools for teaching
- Water related teaching programs and training opportunities for teachers in the San Antonio area

1:45-2:15
Greg Wukasch, San Antonio Water System, San Antonio, TX
Garret Graaskamp, American Ground Water Trust, Concord, NH
Wrap Up:

- High school and college subjects that lead to careers in hydrology & water resources
- Lessons learned? Questions not answered?
- Complete Institute evaluation forms
- Complete continuing education credit paperwork

2:15 Adjourn