

# American Ground Water Trust

In cooperation with

## San Antonio Water System

Presents:

# Ground Water Institute for Teachers™

At

Witte Museum, 3801 Broadway, San Antonio, Texas 78209

November 18 & 19, 2005

Friday, November 18, (9:00am to 4:30pm)

Saturday, November 19, (8:30am to 3:00pm)

*SAWS will pay for a substitute teacher on Friday Nov. 18<sup>th</sup> for the first ten Middle School and High School teachers from the San Antonio area that register by October 1st.*

## Institute Program and invited presenters

### Program - Friday November 18<sup>th</sup> -, San Antonio, Texas

9:00 – 9:15

**Greg Wukasch, San Antonio Water System, San Antonio, TX**

**Andrew Stone, 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

**Andrew Stone, 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)
- What have we done to our aquifers? (quality and quantity issues)

10:00-10:45

**USGeological Survey, San Antonio, TX,**

#### **Ground Water in Texas:**

- The state’s aquifers (The Edwards isn’t the Only Aquifer 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

10:45 – 11:00 **Break**

11:00-11:45

**John R. Hoyt, Program Manager, Aquifer Science, Edwards Aquifer Authority, San Antonio, TX**

#### **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

11:45-12:30      **Lunch** (provided by EAA)

12:30 – 1:15

**TBA**

**Water use in the San Antonio Area:**

- 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

1:15-2:00

**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)

2:00-2:45

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

**Access to aquifers:**

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

2:45-3:00      **Break**

3:00-3:45

**Jim O'Connor, Wellhead Protection, San Antonio Water System, San Antonio Texas**

**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)

3:45 – 4:15

**Eddie Wilcut, Conservation, San Antonio Water System, San Antonio Texas**

**Status of Water Conservation in San Antonio**

4:15 – 4:30      **Wrap up for day one**

**Saturday November 20**

8:30      Depart for Field trip

**Field trip leaders,**

**Edwards Aquifer Staff, Edwards Aquifer Authority, San Antonio, TX**

**Greg Wukasch, San Antonio Water System, San Antonio, TX**

**Brandon Leister, San Antonio Water System, San Antonio, TX**

**Stop 1 Hills and Dales Cave**

- Recharge of the Edwards Aquifer

**Stop 2 NW Pump Station**

- Dye Tracing the Edwards Aquifer

**Stop 3 San Pedro Springs**

- Discharge from the Edwards Aquifer

12:00 – 12:45 **Lunch at Witte Museum** (provided)

12:45 – 2:00

**Witte Museum Staff, San Antonio, TX**

- Guided Tour of the World of Water at the Witte
  - Historical look at water use in San Antonio
  - Conservation House demonstration
  - Water pumping and delivery system
  - Journey Into the Edwards Aquifer-Virtual interactive tour inside the Edwards Aquifer

2:00 – 2:30

**Witte Museum Staff, San Antonio, TX**

- Lessons learned from exhibit
- Other educational opportunities in San Antonio

2:30 – 3:00

**Greg Wukasz, San Antonio Water System, San Antonio, TX**

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

**Wrap Up:**

- Lessons learned? Questions not answered?
- Complete Institute evaluation forms
- Complete continuing education credit paperwork
- Adjourn