

- Education Workshop -

**PUBLIC HEALTH, GROUND WATER
AND WATER WELLS**
Small Water Systems, Private Wells
and Onsite Wastewater Disposal

Presented by

American Ground Water Trust

Ground Water Information, Awareness & Education Since 1986

16 Centre Street, Concord, NH



Cooperators and Presenters

American Society of Home Inspectors

DENR – Division of Environmental Health

DENR – Division of Water Quality

DHHS – Division of Public Health

EGIS, PA

National Association of Certified Home Inspectors, Inc

National Association of Home Inspectors, Inc.

Purologix Water Systems

Simonsen Law Firm, P.C.

TriTest Inc.

United States Geological Survey

Water Quality Association

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TUESDAY, JUNE 4, 2007

8:00 AM - 4:40 PM

HILTON - RALEIGH-DURHAM AIRPORT

4810 OLD PAGE ROAD, RESEARCH TRIANGLE PARK, NC 27709

TEL: 919-941-4810

What's It All About?

North Carolina's ground water is an important water supply source for homes, communities, schools and many other users such as shops, restaurants, campgrounds, etc. Health risk information regarding drinking water from wells and how to prevent contamination and maintain viable safe well sources will be presented.

The Trust has presented this important education workshop on many occasions in Connecticut, Florida, Kentucky, Massachusetts, New Hampshire, New York, North and South Carolina, Virginia and Wisconsin. The workshop provides a unique opportunity for specialists involved with water supply and public health in North Carolina to learn about essential technical and regulatory issues relating to drinking water, public health, ground water protection, well construction and water systems. *The complete aquifer to tap picture in one workshop.*

Who Should Attend?

Environmental Health Professionals, Home Inspectors, Septic Tank Contractors, Real Estate Agents, Home Builders and Developers, Operators/Owners of Water Systems, Water Well Contractors, Town Officials (Conservation, Zoning, Planning), Water Testing Specialists, Water Conditioning Specialists, Conditioning Equipment Sales Staff.

Why Should I Attend?

Many different specialists are involved in providing and maintaining safe drinking water. Even though most professionals work independently, success results from a team effort. This workshop will bring you up to speed with the whole spectrum of technical issues that lie behind providing safe and reliable drinking water.

Water Professionals - You will gain insight to the complete water supply picture: geology, drilling, well design, conditioning equipment, water testing, health issues, legal liabilities, regulatory requirements, source water protection, etc. The better you understand the "whole" the more effective you can be in providing your "part" of the vital service of safe water supply.

Town Officials, Regulators, Health Professionals - Many town regulations, codes and ordinances are based on drinking water related health concerns. This workshop will provide you with an overview of ground water, wells and water systems. It will be a one of a kind source of information to help you support community efforts to maintain safe drinking water supplies. Your chance to ask the experts on wells.

Real Estate Professionals, Developers, and Home Inspectors - The Trust has made presentations on the practical nuts and bolts of obtaining and protecting drinking water from wells to the Massachusetts Health Officers Association, National Association of REALTORS®, the American Society of Home Inspectors, Florida Association of Building Inspectors and various local REALTOR® Boards. Discerning home buyers need the assurance that private well water supply is safe and reliable. This workshop will be a great learning opportunity for all professionals involved in property descriptions and real estate transactions.

Workshop Program

7:15 am to 8:00 am **Registration (Coffee & Donuts)**

8:00 am to 8:30 am **The North Carolina Water Well Initiative**

- Overview of the drinking water/private wells connection in North Carolina
- Why is the new Water Well Initiative needed
- What will the Water Well Initiative accomplish?
- Who will be affected by the program?
- What is the current status of the program?

Garret W. Graaskamp, P.G., Ground Water Specialist, American Ground Water Trust, Concord, NH
David Eudy, Environmental Health Regulation Specialist, Team Leader - Private Well Program,
NC DENR, Division of Environmental Health, Raleigh, NC

8:30 am to 9:10 am **Ground Water Basics**

- Where is the State's ground water?
- How to choose a drilling site for a well
- How do aquifers, springs and natural ground water systems work?
- Summary of potential threats to ground water quality

Melinda Chapman, Ground Water Specialist, Raleigh Office, United States Geological Survey, Raleigh,
NC

9:10 am to 9:50 am **Water Quality Basics**
How Do I Know My Water is OK?

- Water quality - isn't there a little bit of something in everything?
- What is "good" drinking water?
- Typical water analyses - you will only find what you test for!
- Which bacteria-in-water test should I use? Which is "best?" What do the results mean?
- Why and when should I retest my well water?
- Testing options - do-it-yourself kits, private labs, state labs

William Sherman, Owner, TriTest, Inc., Raleigh, NC

9:50 am to 10:00 am **Break**

10:00 am to 10:50 am **Water Wells for Yield and Health**

- Well yield - How deep? Use well screens? How to test yield?
- Well health and safety - casing installation. How to seal the gap between the drilled hole and the casing
- Well maintenance needs for the homeowner, campgrounds, cottages and non-community systems
- What is required for sealing and decommissioning an abandoned well?

Michael Vaught, P.G., Hydrogeologist, EGIS, PA, Chapel Hill, NC

10:50 am to 11:30 am **Water Treatment and Conditioning Basics**

- The basics from well to faucet (homes and small systems)
- What conditioning equipment is available (UV, RO, Ion Exchange, Activated Carbon, Chemical Feed, Ozonation, Distillation)?
- When should conditioning equipment be used? What does it cost?
- What to do about microorganisms?
- Chlorination: benefits and problems
- Solutions to problems: Iron, Hydrogen Sulfide, Acidity and Hardness

Russell Elmore, Water Treatment Specialist, Purologix Water Services, Raleigh, NC

11:30 am to 12:10 pm **Arsenic and Groundwater**

- What is arsenic? What are the sources of arsenic?
- How does arsenic get into and travel in ground water?
- Does it affect many people in the Piedmont?
- How will the new arsenic regulations proposed by NC-DENR affect private well operation?

Michael Cunningham, P.G., Hydrogeologist, NC DENR, Division of Water Quality, Raleigh, NC

12:10 pm to 1:00 pm **Lunch (Provided Onsite)**

1:00 pm to 1:50 pm **Chemicals and Health**

- What are chemical toxicity and exposure and why are they important?
- How is a Maximum Contaminant Level criteria developed in North Carolina?
- How do the USEPA and NC-DHHS set drinking water standards?
- Public health concerns posed by naturally occurring contaminants in North Carolina ground water:
 - Arsenic
 - Uranium
 - Radon
- How do North Carolina's drinking water standards protect public health?

Luanne Williams, Ph.D., Toxicologist, NC DHHS - Division of Public Health, Occupational and Environmental Epidemiology Branch, Raleigh, NC

1:50 pm to 2:30 pm

Microorganisms, Water, and Health

- Introduction To Potential Pollution Sources
- What Microbes Can And Cannot Do
- Free-Living Microbes In Wells - Naturally Occurring
- Pathogenic Microbes In Wells - Life Cycles, Sources, and Health
 - Viruses
 - Escherichia coli O157:H7
 - Cryptosporidium
 - Giardia lamblia
- Microbial Indicators - Total coliforms, Fecal coliforms, Viruses
- Microbial Source Tracking (MST) - Identifying the Source of Pathogenic Microbes

Barbara Grimes, Ph.D., Non-Point Source Pollution Program Coordinator, NC-DENR, Division of Environmental Health, Onsite Water Protection Section, Raleigh, NC

2:30 pm to 2:40 pm

Break

2:40 pm to 3:20 pm

Onsite Wastewater Disposal

- What are the design options for on-site wastewater disposal?
- Overview of pollutants associated with sewage:
 - Suspended Solids
 - Bio-chemical Oxygen Demand (BOD)
 - Total Nitrogen and Phosphates
 - Grease and Oils
 - Coliform Bacteria
- Is ground water quality affected by onsite wastewater disposal systems?
- Septic tanks and leach fields: What they can and cannot do
- What is a failed septic system?
- Can a failing septic system be fixed?
- Routine maintenance needs for onsite waste water systems

Steven Berkowitz, P.E., Engineering Team Leader, NC-DENR, Division of Water Quality
Onsite Water Protection Section, Raleigh, NC

3:20 pm to 4:00 pm

**Single Family Residence (SFR) Disposal Systems
Above Ground Options**

- Above ground wastewater disposal - What do state regulations require?
- What disposal options and technologies are available for single family residences?
- What requirements must be met to install a SFR
- How are SFR systems protective of ground water?

Debra Watts, Supervisor, NC DENR, Division of Water Quality, Ground Water Unit, Raleigh, NC

4:00 pm to 4:40 pm

**Legal Issues -
Customers, Consumers and Private Wells**

The legal responsibilities and potential liabilities of water supply professionals and equipment manufacturers:

- Small Community, Transient, and Non-transient Water System Operators
- Companies selling water conditioning equipment
- Companies installing wells, pumps and water supply equipment
- Health officials and water system inspectors with advisory or oversight responsibilities
- Developers / Builders / Realtors involved with property transactions

Lars Simonsen, Esq., Attorney, Simonsen Law Firm, P.C., Edenton, NC

Adjourn

CONTINUING EDUCATION CREDIT

*You **MUST bring a photo ID**, and your **license or certificate number** to **complete the sign-in/out records** that will be submitted to these organizations and agencies to confirm Continuing Education credits. A Certificate of Attendance will be provided to those that want or need the document.*

American Society of Home Inspectors, Inc.	Approved 7.0 ASHI® MRC
International Assoc. for Continuing Education & Training	Approved 7.5 CE hrs
National Association of Home Inspectors, Inc.	Approved 7.5 CE hrs
National Association of Certified Home Inspectors, Inc.	Approved 7.5 CE hrs
NC Board of Examiners - Sanitarians	Approved 7.5 Clock Hours
NC Board for Licensing Soil Scientists	Approved 4.0 PDHs
NC Water Treatment Facility Operators Certification Bd - Certified Treatment Operators (All grades & classifications)	Approved 6.0 PDHs
NC Well Contractors Certification Commission - Well Drillers	Approved 8.0 PDHs
Water Quality Association	Approved 0.70 CEUs

Call the Trust for Updated CEU Information and to Confirm Pending CEU Approvals – 1-603-228-5444