

MANAGING GROUND WATER ASSETS & WATER WELL PERFORMANCE: THE ECONOMIC BASIS FOR SYSTEM OPERATION & MAINTENANCE DECISIONS

A two-day workshop on practical, cost-effective solutions
to extend asset value by maximizing well performance



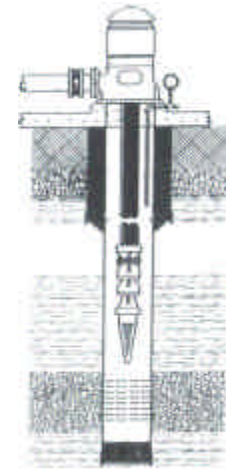
AMERICAN GROUND WATER TRUST

Independent Authority on Ground Water

Tuesday, June 20 and Wednesday June 21, 2006

SHERATON WEST DES MOINES

1800 50th Street, Des Moines, IA 50266



CEU Credit Available

What Is It All About?

This program includes fundamental aspects of well design, construction, operation, rehabilitation and maintenance. The workshop focus is on explaining practical methods for diagnosing the causes of declining yield and in finding cost-effective solutions. Speakers will include consideration of the economic aspects of well operation. This is a multi-disciplinary program with top quality presenters. The program provides up-to-date information about water well rehabilitation technologies and well maintenance from real case study experiences. The workshop will give participants a comprehensive understanding of the economic basis for well design & operation policy.

More than nine hundred utility managers, water industry professionals, regulatory staff, well owners, water users and ground water specialists have attended past American Ground Water Trust workshop programs with a focus on well design, well rehabilitation and maintaining well efficiency in: Baltimore MD; Little Rock AR; Des Moines IA; Nashua NH; Houston TX; Lansing MI; Charlotte NC; Denver CO; Cincinnati OH; Wilsonville OR; Lakewood CA; Seattle WA; Richmond VA and Bucks County PA.

Day One Workshop Program — Tuesday, June 20, 2006

- 8:30 – 8:45 **INTRODUCTION: Andrew Stone, Executive Director, American Ground Water Trust, Concord, NH**
- Overview of the structure and content of the workshop program
 - The significance of well design and maintenance in utility operation costs
 - The importance of groundwater as an economic and environmental resource in the US
- 8:45 – 9:45 **GROUND WATER AND WELLS IN THE MIDWEST: Martha Silks, President/ Hydrogeologist, Quad State Services, Inc., Perry, KS**
- Basic hydrogeology and groundwater use in Midwestern United States
 - Regional ground water source characteristics (quality and quantity) by region and major aquifer
 - Major use areas and resulting regional effects on water levels
 - How site characteristic relate to well design and construction
 - Potential for future ground water development
- 9:45 - 10:00 **BREAK**
- 10:00 – 11:00 **WELL EFFICIENCY BASICS: David Kill, Market Development Manager, ITT Industries, Shoreview, MN**
- A water well as an engineered hole in the ground
 - What happens when water leaves the aquifer and enters the well
 - Basic well hydraulics (bedrock wells and gravel-packed wells)
 - The significance of specific capacity and how to measure it
- 11:00 – 12:00 **DECLINE IN WELL PERFORMANCE: Neil Mansuy, Vice President, Subsurface Technologies Inc., Newburg, NY**
- Chemical, microbiological and physical reasons for well problems
 - Understanding typical “declining yield” problems with wells
 - New Concepts regarding Loss of Specific Capacity and Loss of Efficiency
 - Diagnostic characteristics for rock wells, screened wells, horizontal wells and recharge wells
- 12:00 – 1:00 **LUNCH**
- 1:00 – 2:00 **GROUND WATER ASSET MANAGEMENT: Phillip Brown, Hydrogeologist, Golder Associates Inc., Lake Oswego, OR**
- Asset Management defined with focus on groundwater supply systems
 - The regulatory background
 - Approaches for asset tracking and condition assessment of groundwater supply wells
 - Risk assessment approaches, prioritization, planning, and implementation
 - Approaches to evaluating the elements that contribute to the efficiency of a groundwater supply system
 - Well inspection and evaluation methods
 - Overview of rehabilitation methods to maintain supply wells
 - A summary of asset management benefits to groundwater supply systems
- 2:00 – 2:45 **HOW IMPORTANT IS THE PUMP? Michael Allen, Sales & Marketing Manager, Flowserve Corporation, Hastings, NE**
- Information needed for selection of pump. What type of pump?
 - Pump efficiency
 - Horsepower and bowl assemblies
 - Merits of submersible vs. line-shaft
 - Pump replacement benefits - \$ return on upgrading motor or bowls

Day One Workshop Program Continued — Tuesday, June 20, 2006

- 2:45 – 3:00 **BREAK**
- 3:00 – 3:45 **ALTERNATIVE WELL DESIGNS: Henry Hunt, Senior Project Manager, Collector Wells International, Columbus, OH**
- When to consider a horizontal collector well
 - Advantages of riverbank filtration well systems
 - Well design and the GWUDI Rule
- 3:45 – 4:45 **CEDAR RAPIDS EXPERIENCE OF WATER PRODUCTION: Roy Hesemann, Manager, Cedar Rapids Water Department, Cedar Rapids, IA**
- The Utility's aquifers well-fields and wells
 - Rehabilitation and Maintenance Experience
 - The Cost of Water Production
 - Challenges of Treating Water from the same aquifer with different quality signatures
 - Including well maintenance and rehabilitation costs in the overall utility budget
- 4:45 – 6:45 **RECEPTION (Cash Bar – Meet the Presenters)**

Day Two Workshop Program — Wednesday, June 21, 2006

- 8:00 – 9:00 **OUTLINE OF PRINCIPAL WELL PERFORMANCE SOLUTIONS: Kevin McGinnis, President, Cotey Chemicals, Lubbock, TX**
- Matching the solution to the problem
 - Outline of chemical methods used throughout the US (Calcium Hypochlorite, Sodium Hypochlorite, Hydrochloric Acid, Hydrogen Peroxide, etc.)
 - Outline of mechanical methods used throughout the US (Surge and bail, hydrojetting, blasting, wire brushing, hydrofracking, CO2, etc.)
- 9:00 – 9:45 **IMPORTANCE OF WELL SCREEN SELECTION IN HIGH YIELD WELLS: Don Baron, District Manager, Johnson/Weatherford, Okemos, MI**
- Criteria for well screen selection and placement
 - The role of screens in maximizing well performance and efficiency
 - Pros and cons: well construction materials and well maintenance
- 9:45 – 10:30 **IMPORTANCE OF WELL DEVELOPMENT AT TIME OF WELL CONSTRUCTION: Andy Schumacher, Senior Field Sales Representative, Baroid-IDP, Belvidere, IL**
- Physical blockage caused by poor selection of drilling fluids
 - Mitigating physical blockage by proper maintenance of drilling fluids
 - Remediation methods for wells not adequately developed during construction
- 10:30 – 10:45 **BREAK**
- 10:45 – 11:30 **US ENVIRONMENTAL PROTECTION AGENCY WATER SUPPLY INFRASTRUCTURE INITIATIVE: Morris Holmes, US Environmental Protection Agency Region 7, Kansas City, KS**
- 2002 EPA *Gap Analysis* report
 - Four Pillars of Sustainable Water Infrastructure: Better Management, Water Efficiency, Full Cost Pricing and Watershed Approach
 - Capacity Development and Assistance for Small Systems
- 11:30 – 12:15 **GROUND WATER RULE (Final Rule: August 2006; Effective Date: Early Spring 2009): Nefthali Hernandez-Santiago, US EPA Region 7, KC, KS**
- Safe Drinking Water Act Mandate
 - Health Risks as basis for rule making
 - Hydrogeologic sensitivity assessments, Sanitary Survey and Source Water Monitoring
 - Compliance, Corrective Action and Reporting Requirements
- 12:15 – 1:00 **LUNCH**
- 1:00 – 2:00 **DES MOINES WATER WORKS EXPERIENCE: Vern Rash, Senior Engineer, Des Moines Water Works, Des Moines, IA**
- Water demand challenges and source options
 - Horizontal Well experience – installation & and production costs
 - Collector Wells - installation and production costs
 - Development of new water supplies
 - Including well maintenance and rehabilitation costs in the overall utility budget
- 2:00 – 3:00 **PREVENTION IS MORE COST EFFECTIVE THAN CURE: Neil Mansuy, Vice President, Subsurface Technologies Inc., Newburg, NY**
- Cost / benefit evaluation of well rehabilitation techniques used in the US
 - New concepts in well maintenance
 - Case studies on effective well maintenance
 - Preventive maintenance procedures
 - Importance of well maintenance for monitoring, and sampling wells
- 3:00 – 3:15 **BREAK**
- 3:15 – 4:00 **REGULATORY AND ENVIRONMENTAL ISSUES FOR WELLS AND REHABILITATION: Bob Campbell; Mark Moeller; Taroon Veerabhadrapa - Iowa DNR**
- Water rights - Withdrawal permits - Overview of well construction programs
 - Licensing and inspection requirements related to well construction and rehabilitation
 - Permits and reporting rules for new wells and for well improvement work
 - Well rehabilitation chemicals and the environment – What are the guidelines?
 - Chemical and equipment options for removal neutralization and disposal
 - Technical assistance available for utilities
 - Federal and state funding sources for well improvement
- 4:00 – 4:30 **GENERAL DISCUSSION SESSION - All presenters and participants (Chair – American Ground Water Trust)**
- 4:30 **ADJOURN: Complete CEU sign-out**

The American Ground Water Trust is a not-for-profit (501)(c)(3) education organization that partners with national, state and local organizations throughout North America. The mission of the Trust is to protect ground water, promote awareness of the environmental and economic importance of ground water and provide accurate information to assist citizens, communities and decision makers in water resource issues.

Presenters (Listed Alphabetically)

Michael M. Allen, Sales & Marketing Manager, Flowserve Corporation, Hastings, NE: *Mr. Allen has a BS Mechanized Agriculture, Univ. of Nebraska. Since 1995 he has been Sales and Marketing Manager, Ground Water Development North America, Ingersoll Dresser Pump/Flowserve Pump Division. He serves on the NE Water Well Standards and Contractors Licensing Board.. He also serves on the NE Water Resources Assoc., Board of Directors. From 1985 to 1991 he was a Product Engineer for Ingersoll-Rand Co. Vertical Turbine Pump Division. From 1991 to 1995 he was Western Region Sales and Distribution Center Manager for Ingersoll-Rand/Ingersoll Dresser Pump with responsibility for sales development in western third of U.S.*

Don Baron, District Manager, Johnson/ Weatherford, Okemos, MI: *Mr. Baron has a MA in Geology from the Univ. of South Dakota (Vermillion, SD) and a BA Geology - Univ. of St. Thomas (St. Paul, MN). He worked for Johnson Screens from 1973 – 1985, 1988 – Present (17 Years - District Manager; 12 Years - Field Sales). He has sales responsibilities for the Midwest portion of the U. S. including the Dakotas to Michigan and Iowa to Indiana. His Canadian responsibilities include Manitoba to Prince Edward Island for Johnson Screens.*

Phillip A. Brown, Hydrogeologist, Golder Associates Inc., Lake Oswego, OR: *Mr. Brown has BS and MS degrees in Hydrogeology and Geology from San Diego State Univ. He is a Registered Professional Geologist in OR and WA and a WA Licensed Hydrogeologist. He has 18 years of experience in conducting, staffing, and managing water supply and groundwater resource investigations. His work involves, hydrogeologic and geologic characterizations, and state and federal regulatory site investigations. He has over a decade of experience in the design and installation of groundwater production wells, collector wells, design and analysis of single well, multiple well, and multiple aquifer pumping tests; evaluations of groundwater-surface water interaction; geochemical analysis of waters; contaminant fate and transport; and numerical and analytical numerical computer modeling for groundwater remediation and resource development.*

Bob Campbell, Environmental Engineer, IDNR - Water Supply Engineering Des Moines, IA: *Mr. Campbell is an Environmental Engineer working in the Water Supply Engineering Section of the Iowa Department of Natural Resources. His areas of responsibility include water allocation, public water supply construction, and Drinking Water State Revolving Fund (DWSRF). He graduated from the Univ. of Iowa State in 2002, with a BS in Civil Engineering.*

Roy Hesemann, Manager, Cedar Rapids Water Department, Cedar Rapids, IA: *Mr. Hesemann has a BS degree in Agricultural Engineering from the Univ. of Missouri – Columbia. In 2001, he assumed the duties of managing the City of Cedar Rapids' filtration treatment plants. Prior to his appointment as plant manager, he served as a project engineer for the Water Department. Before joining the Cedar Rapids Water Department, Mr. Hesemann spent 14 years as a general manager, project manager and sales engineer in the well drilling and water supply construction field. He is a licensed well driller/pump installer in MO and IA, and holds Iowa DNR Grade 4 licenses in water treatment and water distribution. He serves on the Boards of the Iowa Watershed Assoc. and the Iowa Groundwater Assoc.*

Morris Holmes, US Environmental Protection Agency Region 7, Kansas City, KS: *After retiring from the U. S. Marine Corps, Mr. Holmes began his EPA career in 1998 in the Drinking Water State Revolving Loan branch at the EPA Region 7 office. From there he served as the Regional Drinking Water Tribal Coordinator, then as the Regional Small Communities Water and Wastewater Coordinator. Currently he is the Iowa State Drinking Water Coordinator, Regional Tribal Drinking Water Infrastructure Coordinator, and Regional Sustainable Infrastructure Liaison.*

Henry Hunt, Senior Project Manager, Collector Wells International, Columbus, OH: *Mr. Hunt's expertise is in the inspection, evaluation, operation and maintenance of collector wells and in preparing feasibility studies for collector wells and other water supply alternatives. This involves economic evaluations for system comparisons and the development of innovative approaches to solving water supply problems. He has been involved with design, installation, maintenance and rehabilitation of collector wells, vertical wells, infiltration galleries, beach wells and surface water intakes in the U. S. and in South America for over 27 years. Mr. Hunt was a co-author of the recent publication: Riverbank Filtration: Improving Source-Water Quality.*

David Kill, Market Development Manager, ITT Industries (ITT Water Technology Inc.), Shoreview, MN: *Mr. Kill is a Registered Professional Engineer and has a BS in Agricultural Engineering from the Univ. of Minnesota. He joined Johnson Screens in 1969 and became Regional Manager in 1974. In 1979 he joined the Fluid Systems Division UOP in the reverse osmosis water treatment business in San Diego, CA as 2002 Director of Marketing. He rejoined Johnson Screens in 1981 as Environmental Products Manager. In 1988, he founded Recovery Equipment Supply, a supplier of products for ground water monitoring and remediation. In 1996, he joined Goulds Pumps ITT and was promoted to Regional Commercial Business Manager in and Regional Market Development Manager in 2004. He was the 2005 NGWA McEllhine Distinguished Lecturer and presented "Well Efficiency Is Not a Myth" to over 20 water well contractor conventions.*

Neil Mansuy, Vice President, Subsurface Technologies Inc., Newburg, NY: *Mr. Mansuy has 20 years of extensive worldwide well rehabilitation experience. He holds a MS from the Univ. of Regina, Saskatchewan, Canada, specializing in iron-related bacteria and causes of well plugging. He was previously an aquifer and well rehabilitation specialist with Layne GeoSciences Inc. for 10 years. Mr. Mansuy's workshop presentations cover all aspects of well problems and solutions related to lost capacity and water quality problems. Neil is the author of the book, "Water Well Rehabilitation," 1999, Lewis/CRC Press.*

Kevin McGinnis, President, Cotey Chemicals, Lubbock, TX: *Cotey Chemicals develops products for the rehabilitation and development of all types of water wells. Mr. McGinnis graduated from Texas Tech Univ. in 1984 with a BA degree. He has worked in the water well remediation industry for 10 years. He has delivered technical papers to Saudi Arabia's Ministry of Agriculture and Water in Riyadh, and to the Philippine Water Works Assoc. In addition to his experiences in the U.S., Mr. McGinnis has supervised water well rehabilitation projects in several states of the Middle East, Far East and Latin America.*

Mark Moeller, Environmental Engineer, IDNR - Water Supply Engineering, Des Moines, IA: *Mr. Moeller is an Environmental Engineer working in the Water Supply Engineering Section of the Iowa Department of Natural Resources. His duties include issuing water use and water supply construction permits, as well as managing Drinking Water State Revolving Fund projects. Mr. Moeller graduated from the Univ. of Iowa in 2004 with a BS in Civil Engineering.*

Neftali Hernandez-Santiago, US EPA Region 7, Kansas City, KS: *Mr. Hernandez began to work at EPA in 2003. He received a MS degree in Public Health with a major in Environmental Health from the Univ. of Puerto Rico. Prior to EPA, he worked for the Office of the Puerto Rico Aqueduct and Sewer Authority Monitor and currently Mr. Hernandez works as an Environmental Scientist in the Drinking Water Management Branch, Water Wetland and Pesticides Division, EPA Region 7 Kansas City, KS.*

Vern Rash, Senior Engineer, Des Moines Water Works, Des Moines, IA: *Mr. Rash began his employment at the Des Moines Water Works in 1978 immediately after receiving his B S degree in Civil Engineering from Iowa State Univ.. During the course of his employment at the Des Moines Water Works, he returned to Iowa State Univ., and in 1986 received a M S degree in Environmental Engineering. Mr. Rash is a member of the National Society of Professional Engineers, the Society of Land Surveyors of Iowa, and is a licensed Professional Engineer and Land Surveyor in the State of Iowa.*

Andy Schumacher, Senior Field Sales Representative Baroid-Industrial Drilling Products, Belvidere, IL: *Andy Schumacher is a Senior Field Sales Rep. for Baroid-Industrial Drilling Products, covering the Upper Midwest. He received a BS in Geology from Beloit College, Beloit, WI in 1982. Andy has been involved in the drilling industry for 24 years, the last seven as a certified Mud Engineer for Baroid-IDP.*

Martha J. Silks, President/ Hydrogeologist, Quad State Services, Inc., Perry, KS: *Ms. Silks has 17 years experience as a hydrogeologist. Her experience has been in both the water supply and environmental fields and has involved the investigation, evaluation, and design of well fields completed in both alluvial sediments and consolidated rock. Ms. Silks is a registered Professional Geologist in Nebraska, Kansas, and Texas. Her professional career has included employment with Terra Resources, Inc., Layne GeoSciences, Inc and Chatman and Associates, Inc. Her technical skills include aquifer characterization, aquifer testing and analysis, groundwater modeling, bore hole logging, diagnosing and troubleshooting well and well field problems, well design, groundwater sampling, Environmental monitoring, and drilling and well installation supervision.*

Taroon Veerabhadrapa, Environmental Engineer, IDNR - Water Supply Engineering, Des Moines, IA: *Mr. Veerabhadrapa, P.E., is an Environmental Engineer in the Water Supply Engineering Section of the Environmental Protection Division of the Iowa Dept. of Natural Resources. He works in the water rights, water supply construction permits and drinking water SRF program areas including source and ground water protection. His educational background includes a BS in Civil Engineering and MS in Civil Engineering and Agricultural Engineering from Iowa State University.*

Continuing Education Credit



Specific CEU approval:
Iowa Certified Well Contractors 1.3 CEU (13 contact hours) Iowa
Certified Pump Installers 1.3 CEU (13 contact hours)
Iowa Certified Water Treatment Operators 1.1 CEU (11 contact hours)
Iowa Certified Water Distribution Operators 1.1 CEU (11 contact hours)
CEU's for water professionals in other states are pending. Call for details.



Employee Development University is a learning partner with the American Ground Water Trust and 1.3 CEU credits are available for conference attendees who complete the sign-in and sign-out sheet at registration and who submit an evaluation form. [Visit www.eduniv.com for more information about this CEU program.]

Hotel Information

Participants are responsible for their own hotel reservations.
Blocks of rooms have been reserved at Sheraton West Des Moines, 1800 50th Street, Des Moines IA 50266. (515) 223-1800. The block rate for a room is \$89.00 and the cut-off date for the block rate is Tuesday May 30th.

Map and directions will be emailed with registration confirmation.

Program Sponsorship

Program sponsorship opportunities are available. Please call the Trust for more information: (603) 228-5444.

Registration and Payment Information

GENERAL REGISTRATION	\$325.00
TRUST MEMBERS AND THEIR EMPLOYEES	\$275.00
FULL-TIME STUDENTS (College ID required at registration check-in)	\$150.00
EXHIBIT TABLE (registration not included)	\$300.00
EARLY REGISTRATION (Received <u>before</u> May 30th)	DEDUCT \$25.00
WALK-IN REGISTRATION (<u>On day of event</u>)	ADD \$25.00

To register Online, by Mail or by Fax click your browser Back button then click on Register

To register by Phone call (603) 228-5444

CANCELLATION POLICY

- ◆ Cancellations received in the Trust office by 5 pm (ET) 15 days prior to the start of the event will receive a full registration refund less a \$25 processing fee.
- ◆ Cancellation 14 days to two days prior to the start of the event will receive a 50% registration refund.
- ◆ Cancellations one day prior to the start of the event, or on the day of the event, are considered "No Shows." No refund will be made. (Substitutions gladly accepted).
- ◆ The Trust will not cancel a program because of bad weather conditions. Except that, as the result of an event cancellation resulting from, (but not limited to) circumstances such as a state mandatory evacuation or a fire at the program facility, the Trust will reschedule the event and honor registrations as payment for the new event.