



# WATER WELL AND PUMP PERFORMANCE: THE ECONOMIC BASIS FOR WATER WELL OPERATION, REHABILITATION & MAINTENANCE DECISIONS

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

**Thursday February 21<sup>st</sup> 2013**  
**Raleigh, North Carolina**

Hotel: DoubleTree by Hilton  
Brownstone University  
1707 Hillsborough Street,  
Raleigh, NC 27605

**PROGRAM PRESENTED BY AMERICAN GROUND WATER TRUST**

## EVENT SPONSORS



Preferred Pump



## CONTINUING EDUCATION

- 7 contact hours by NC Water Treatment Facility Operators Certification Board
- 7.5 CEUs by the North Carolina Well Contractors Certification Commission

Certificate of Attendance: (Contact Hours: 7.25) will be provided to those attendees who sign-in and sign-out.

These certificates may be used by attendees to obtain continuing education credit from other professional organizations or licensing agencies. Attendance Certificates will be mailed after the event. (Sign-in, sign-out required)

Hear from experts about technologies and techniques to save money and reduce carbon footprint. It is all about maximizing efficiency and increasing performance. This program is for consultants, engineers & designers and for well operators, pump and well contractors, utility managers, irrigators, owners and end-users. Just one tip on well & pump operation or problem-solving diagnosis could save you thousands of dollars in operation costs and reduce replacement expense by extending the asset value of your wells & pumps.

The American Ground Water Trust is a national, non-profit public education organization that has been providing ground water information, awareness and education since 1986.

### The Trust's programs:



- ☺ Promote efficient and effective ground water management
- ☺ Communicate the environmental and economic value of ground water
- ☺ Showcase ground water science and technology solutions
- ☺ Increase citizen, community and decision-maker awareness
- ☺ Facilitate stakeholder participation in water resource decisions

## MORE WATER LESS COST - BACKGROUND

Inefficient wells cost millions of dollars in increased pumping costs and in unnecessary increments to the nation's carbon footprint. Well efficiency techniques and recent pump, and pump motor technology advances provide ways to reduce operation costs. This workshop program will show how major water users can save energy, manage resources efficiently and reduce infrastructure costs. More than 2,000 utility managers, well contractors, water industry professionals, regulatory staff, well owners, water users and ground water specialists have attended this program in: AR, AZ, BC, CA, CO, FL, IA, IL, IN, MD, MI, NC, NE, NH, NY, OH, OR, PA, TX, VA, and WA.

## MORE WATER LESS COST - PROGRAM

**7:30 – 8:00**      **REGISTRATION** (Coffee)

**8:00**      **WELL & PUMP TECHNOLOGIES TO REDUCE COST AND MAXIMIZE GROUNDWATER POTENTIAL**

Andrew Stone, Executive Director, American Ground Water Trust, Concord, NH

- AGWT programs that showcase groundwater industry technology
- One size does not fit all for well design, construction, operation or maintenance
- The importance of understanding the relationships among aquifer, well & pump in achieving optimum well yield at least cost

**8:30**      **WELL HYDRAULICS – THE BASICS**

David Kill, P.E. Training Consultant, Xylem Goulds Water Technology, St. Paul, MN.

- Definitions of the key hydraulic terms that are used in well efficiency calculations
- Explanations of the flow of water in aquifers towards wells
- Flow dynamics through rock fractures or screens into well bores and into pump intakes

**9:30**      **DESIGNING WATER WELLS TO OPTIMIZE PERFORMANCE AND ECONOMIC EFFICIENCY (PART 1)**

Kevin McGillicuddy, Senior Hydrogeologist, Roscoe Moss Company, Los Angeles, CA

- Design basics for high-yield wells (screen selection, gravel pack etc.)
- How to record, analyze and interpret well performance data

**10:15**      **BREAK**

**10:30**      **DESIGNING WATER WELLS TO OPTIMIZE PERFORMANCE AND ECONOMIC EFFICIENCY (PART 2)**

Kevin McGillicuddy, Senior Hydrogeologist, Roscoe Moss Company, Los Angeles, CA

- Techniques of managing pumping rates, and well operation to minimize energy costs
- Case studies of well performance

**11:00**      **PUMP VARIABLE FREQUENCY DRIVES**

Scott Matthews, Industry Marketing Manager, Yaskawa America, Inc., Fort Myers, FL

- Energy consumed by pumps
- Fixed speed with valve control vs. VFD
- Water industry and agricultural applications of VFD controlled pumps
- Adding “intelligence” to pump system controls
- Case studies of cost advantages of using VFD to improve pump efficiency

**12:00**      **LUNCH** (Provided on-site)

**1:15**      **WELL PERFORMANCE DECLINES: CAUSES AND CURES**

Neil Mansuy, VP, Subsurface Technologies, Kansas City, MO

- Chemical, microbiological and physical reasons for well problems
- Understanding typical “declining yield” problems
- Case studies of well yield declines attributable to encrustation
- Case studies on cost-effective maintenance for high yield wells
- Preventive maintenance procedures

**2:30**      **ECONOMIC SIGNIFICANCE OF FLEXIBLE DROP PIPE FOR WATER WELLS**

Tracy Keck, Sales Engineer, Hose Solutions, Inc., Scottsdale, AZ

- Physical properties of flexible hose (strength and durability of hose)
- Hydraulic performance capabilities (elasticity, pressure thresholds)
- Pump installation and removal methods (connectors, reels etc.)
- Cost savings for rapid “pump-in, pump-out” during pump maintenance or well rehabilitation

**3:00 Break**

**3:15 SELECTION AND MAINTENANCE OF PUMPS FOR MAXIMIZING WELL YIELD/ COST BENEFITS**

David Kill, P.E. Training Consultant, Xylem Goulds Water Technology, St. Paul, MN.

- How pumps work – evolution of the US pump market
- Pump efficiency principles, horsepower and bowl assembly selection criteria
- Pump efficiency testing, identifying the weak link in your system
- Merits of submersible vs. line-shaft for high yield wells - VFD technology
- Case studies of installation and O & M costs for different types of pump
- Pump replacement criteria, \$ return on upgrading motor or bowls
- Information needed for deciding on pump specification for high-yield applications

**4:15 PROGRAM WRAP-UP – PRESENTER DISCUSSION OF WELL ISSUES**

**4:30 ADJOURN**

**Presentation Team**

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

Andrew Stone has over thirty five years of ground water experience in Africa and the United States as a university professor, ground water consultant and ground water advocate & educator. He has first-hand experience of ground water exploration, well design and source protection in a wide variety of geologic environments. As the director of the AGWT's education programs he has convened and coordinated over 200 conference programs related to ground source heating and cooling technology, well design, ground water management, aquifer storage recovery, conjunctive use, water banking, shale-gas development and asset management.

**David Kill**, P.E., Training Consultant, Xylem Goulds Water Technology, St. Paul 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 McElhiney Distinguished Lecturer and presented "Well Efficiency Is Not a Myth" to over 20 water well contractor conventions.

**Tanner Tryon**, Engineer, Hose Solutions, Inc., Scottsdale AZ

Tanner Tryon received his bachelors in engineering at Arizona State University and his Masters in Business Administration from the University of Wisconsin. Tanner is the lead technical assistant for installations involving Flexible Drop Pipe. He frequently works on site to tackle specific problems and provide assistance at installations. He also shares his experiences at conferences all over the US with several organizations including the NGWA, AGWT, and several state organizations.

**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 McGillicuddy**, Senior Hydrogeologist, Roscoe Moss Company, Los Angeles CA

Kevin McGillicuddy is the Senior Hydrogeologist and Director of the Stormwater Treatment Division of Roscoe Moss Company. He joined the Roscoe Moss Company in 1996 and has worked as a technical liaison to municipal water agencies, groundwater consultants, and water well contractors. He has managed and participated in several educational workshops on water well design, testing and rehabilitation. Prior to joining Roscoe Moss Company, he worked as Director of Recharge Operations and as a Senior Hydrogeologist for the Orange County Water District in Fountain Valley, CA. He holds a Bachelor of Science Degree in Geology from Boston College and Masters' of Science Degree in Geology from the University of Southern California. He is a Registered Geologist in the State of California.

**Scott Matthews**, Sales & Industry Manger, Pumps & Mining, Yaskawa Electric America, Ft Myers, FL

Scott graduated from the University of Rhode Island with a BSEE (Electrical Engineering). His duties with Yaskawa involve developing custom pump drive (VFD) for the irrigation, agricultural and HVAC market segments, developing all technical and training support tools for sales and distribution, and locally training all distributors to service and support customers.

His past experience includes over 22 years of experience in the drives market involved with AC Drives, DC Drives, and AC motor Soft Starters, 5 years as a drive design systems engineer, coordinating drives (AC & DC), motor starter control, PLC's, and HMI's into multi drive systems, 2 years as a software development engineer designing integrated drive software solutions for custom applications.

**"Best one-day program on well & pump performance!"**