



# 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**

Wednesday, November 13, 2013

Sacramento, CA

Four Points by Sheraton

Sacramento International Airport

4900 Duckhorn Drive, Sacramento, CA 95834

or

Friday, November 15, 2013

Lakewood, CA

The Center at Sycamore Plaza

5050 Clark Avenue

Lakewood, CA 90712

PROGRAMS PRESENTED BY: AMERICAN GROUND WATER TRUST



## CONTINUING EDUCATION



**Water Operators:** Approved for 6.75 hours Continuing Education Contact hours

**Certificate of Attendance:** (Contact Hours: 6.75) 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 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, MA, MD, MI, NC, NE, NH, NY, OH, OR, PA, TX, VA, and WA.

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

**7:30 – 8:10 REGISTRATION** (Coffee & donuts)

**8:10 WORKSHOP INTRODUCTION - WELL & PUMP TECHNOLOGIES**

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

**8:15 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

**9:00 WATER WELL DESIGN, CONSTRUCTION AND REHABILITATION**

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

- Well drilling to obtain maximum yield from aquifers
- Design basics for high-yield wells (screen selection, gravel-pack, etc.)
- Water well construction & well development methods
- The importance of monitoring and maintenance
- Well redevelopment / rehabilitation techniques
- Case studies of improving well performance

**10:00 BREAK**

**10:15 ECONOMIC SIGNIFICANCE OF FLEXIBLE DROP PIPE FOR WATER WELLS**

Tanner Tryon, General Manager, 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 maintenance or rehabilitation

**10:45 METHODS FOR IMPROVING WELL PERFORMANCE**

Jim Bailey, National Well Services Director, Shannon & Wilson, Seattle, WA

- A practical approach to managing wells as an asset
- Why rehabilitate - Well inspection technology
- Key well performance indicators
- Prioritizing well condition factors
- How to decide on treatment options
- Theory behind particle movement during well development
- Simulations of well-aquifer / aquifer-well flow dynamics during rehabilitation

**12:00 LUNCH** (Provided)

**1:00 WELL PERFORMANCE SOLUTIONS**

Kevin McGinnis, President, Cotey Chemicals, Lubbock, TX

- Typical problems (mineral and biological blockage) that reduce well bore inflow
- The arsenal of chemicals available to enhance/ restore well performance
- Matching the solution to the problem (How to decide on the “cocktail” to be used)
- The importance of a dual mechanical/ chemical approach
- Successful well-yield restoration case-studies

**1:45 WELL PERFORMANCE DECLINES: CAUSES AND CURES**

Neil Mansuy, VP, Subsurface Technologies, Kansas City, MO (Lakewood only)

- 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

**2:45 BREAK**

**"Best workshop program I have been to in years"**

**"It is great how you organize the program to flow so smoothly"**

**"Thank you for a well balanced discussion of the issues"**

**"This must be the best value event on this topic"**

**"I had more good contacts at my exhibit table than I usually get at a trade show!"**



**"Content Great! ..... Networking Awesome!"**

### 3:00 INTELLIGENT PUMP VARIABLE FREQUENCY DRIVES

Dan Peters, Applications Engineer, Yaskawa America, Inc., Cypress CA

- Energy consumed by pumps
- Fixed speed with valve control vs. VFD
- AC drive basics (how VFD systems work)
- 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
- VFD controls to optimize management of multi-pump systems

### 3:45 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

### 4:30 ADJOURN

#### EVENT SPONSORS



Preferred Pump



ROSCOE MOSS COMPANY

#### Sacramento Workshop Venue

Four Points by Sheraton

Sacramento International Airport

4900 Duckhorn Drive, Sacramento, CA 95834  
Phone: (916) 263-9000 – Hotel is 3 miles from  
Sacramento Airport. Airport Shuttle – Free parking

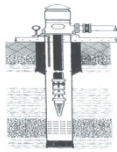
#### Lakewood Workshop Venue

The Center at Sycamore Plaza,

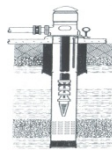
5050 Clark Avenue, Lakewood, CA 90712

Free parking – plenty of nearby hotels to be found using  
internet search engines. Long Beach Airport is 3.3  
miles from the workshop venue

Get updates on the latest well & pump technology



Education Program from:  
**American Ground Water Trust**  
 50 Pleasant Street (Suite 2)  
 Concord, NH 03301



# WATER WELLS & PUMPS

"More Water – Less Cost" (November 13<sup>th</sup>)  
 Workshop on operation, rehabilitation & maintenance

California Programs

Sacramento, CA - November 13 or Lakewood, CA - November 15

~~ WELLS & PUMPS ~ THE VITAL LINKS THAT CONNECT RESOURCE AND CUSTOMER ~~

- \$ Increase well yields** ~ it is all about design & maintenance and operation
- \$ Save on operation costs** ~ how your pump impacts well performance
- \$ Reduce energy costs** ~ it is all about well & pump efficiency
- \$ Time to fix your well?** ~ how to decide what to do and when
- \$ Technology** ~ are you up to speed with VFD for pumps?

2013 California Well & Pump Program - REGISTRATION FORM – ( or register on-line at [www.agwt.org/events](http://www.agwt.org/events) )

**Select event – CHECK BOX**    Sacramento Nov 13     or    Lakewood Nov 15

General.....	<b>\$230</b>	<input type="checkbox"/>	
Government employees (Federal, state, county, local).....	<b>\$200</b>	<input type="checkbox"/>	
AGWT Members (\$250+ level) .....	<b>\$180</b>	<input type="checkbox"/>	
Full-time Student (ID required) .....	<b>\$110</b>	<input type="checkbox"/>	
CD (pdf versions of PowerPoint presentations – \$50 for non-registrants)	<b>\$ 20</b>	<input type="checkbox"/>	
Exhibit Table (personal registration also required) .....	<b>\$250</b>	<input type="checkbox"/>	

Registration includes handouts, coffee breaks & lunch      **TOTAL \$** \_\_\_\_\_

**PAYMENT:**     Check    [payable to: American Ground Water Trust]  
 AMEX     Visa     MasterCard     PO Expiration \_\_\_\_\_

**Credit Card or PO No.** \_\_\_\_\_

**Cardholder Name** \_\_\_\_\_

**Registration Name** \_\_\_\_\_

**Title/Position** \_\_\_\_\_

**Company/ Organization** \_\_\_\_\_

**Address** \_\_\_\_\_

**City** \_\_\_\_\_      **State** \_\_\_\_\_      **Zip** \_\_\_\_\_

**Phone** \_\_\_\_\_      **E-Mail** \_\_\_\_\_

### CANCELLATION POLICY

Cancellations received in the AGWT office by 5 pm EST 5 days prior to event will receive a full refund less \$25. For cancellation 4-2 days prior to the there is a 50 % refund. Cancellations one day prior to the start of the event or on the day of the event are considered "No Shows" and no refund will be made - (substitutions gladly accepted).

The AGWT 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.

### SPONSORSHIP & EXHIBITS

There are opportunities to showcase work, projects, products and services as exhibitors or event sponsors. Sponsors will receive recognition for their financial assistance. Call 800-423-7748 for more information or visit [www.agwt.org](http://www.agwt.org)

Mail: American Ground Water Trust, 50 Pleasant Street, Concord, NH 03301 - Fax: (603) 228-6557; Phone: (800) 423-7748

Scan and e-mail: [trustinfo@agwt.org](mailto:trustinfo@agwt.org) - Register on line: <http://www.agwt.org/events>