

# "Get smart with your water well assets!"

Workshop: Southern California – Lakewood

Program for agricultural, municipal and industrial end-users of high-yield wells

## MAKE SURE YOU MAXIMIZE YIELD FROM YOUR WATER WELLS

An educational workshop program from the American Ground Water Trust

Tuesday, February 18, 2020 – 8:30am – 4:15pm

The Centre at Sycamore Plaza, 5000 Clark Avenue, Lakewood, CA 90712

Previous American Ground Water Trust education workshops in California with a focus on Wells and Pumping have been held in Sacramento, Stockton, Bakersfield, Salinas, Fresno, Tulare, Lakewood and Ontario.

Climate change, economic growth and new water use regulations are increasing competition among municipal, agricultural and industrial users for groundwater resources. Maintaining well efficiency to maximize yield potential and securing long-term supply sustainability is a key objective for all groundwater-based supplies. To minimize O & M pumping costs for municipal supply and achieve maximum water yield with limited water resources, pump owners must optimize well performance and follow state of the art technology in well design, construction and operation. This workshop provides a great learning opportunity for water well owners, water operators, utility managers, water management consultants, hydrogeologists, irrigators and well and pump contractors on the latest practical, cost-effective solutions. The program will explain how to maximize the economic return on pumped groundwater by correct pump selection, well operation and the use of real-time data to effectively match well pumping to aquifer conditions and water demands.



### Continuing Education

Approved by the State of CA for Drinking Water Operators – 7.5 Hours

Approved by the State of CA for Water Well Drillers & Pump Installation Contractors – 7.5 Hours

Approved by IA for Agricultural Irrigation Specialists & Irrigation Designers – Course #IA02201-6.5A - 6.5 Hours

The AGWT will issue Certificates of Attendance for engineers and other professions

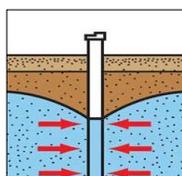
### SPONSORS



Daniel B. Stephens & Associates, Inc.



PROGRAM PRESENTED BY AMERICAN GROUND WATER TRUST (a 501(c)(3) non-profit education organization)



7:30 – 8:30      **REGISTRATION (Coffee/breakfast breads)      Network with exhibitors**

8:30 - 8:50

**MEASUREMENT OF HYDROLOGIC INPUTS AND OUTPUTS: THE KEY TO WATER RESOURCES MANAGEMENT**

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

[To manage you need to measure. Measurement produces data. SGMA requires data-based management. The combined effects of well design & construction, pumping efficiency and aquifer characteristics influence the data used to decide on management strategies for sustainability.]

8:50 – 9:35

**WELL HYDRAULICS – ESSENTIAL BACKGROUND TO OPTIMIZE WELL AND PUMP EFFICIENCY**

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

[Because water pumping is a major cost for irrigators and municipalities, maintaining efficiency in water systems is key to profitability and cost reduction. The presentation will explain and define the key hydraulic terms that are used in well efficiency calculations. The flow dynamics through rock fractures or screens into well bores and into pump intakes is an important basis for well design.]

9:35 – 10:20

**DESIGN AND OPERATION PRINCIPLES FOR MAXIMIZING WELL EFFICIENCY**

Kevin McGillicuddy, PG, Chief Hydrogeologist, Roscoe Moss Company, Los Angeles, CA

[Stainless steel for your well? What are the economics of the selection of casing and screen materials? What criteria from the driller's log or down-hole geophysics are used to determine screen position, length, slot size and diameter to optimize performance and ensure well longevity?]

10:20 – 10:40      **BREAK      Network with exhibitors**

10:40 – 11:25

**DECLINING WATER WELL PERFORMANCE DIAGNOSTICS: IDENTIFYING THE PROBLEM IS THE CRUCIAL FIRST STEP IN FINDING A SOLUTION**

Terry Watkins, PG, Senior Geohydrologist, GEOSCIENCE Support Services Inc., Claremont, CA

[Is the problem the well, the pump or the aquifer? The presentation will show the importance of well construction data and analysis to determine rehabilitation techniques and intervals. Down hole cameras can be a useful trouble-shooting tool. Water chemistry can provide clues to appropriate acid treatment if encrustation is a reason for declining yield.]

11:25 – 12:10

**21<sup>ST</sup> CENTURY WELL DRILLING TECHNOLOGY TO MAXIMIZE SUSTAINABLE YIELDS**

Mark Howard, Business Development Manager, Western Region, Layne Christensen (A Granite Company), Redlands, CA

[Information needed to decide where to drill and how deep to drill. Selecting the appropriate drilling method. How data collected during drilling should inform well design and construction decisions. How to use aquifer testing data for pump selection and operation. Case studies of California water wells.]

12:10 – 1:10      **LUNCH (provided)      Network with exhibitors**

1:10 – 1:55

**USE OF REAL-TIME DATA TO EFFECTIVELY MATCH WELL PUMPING TO AQUIFER CONDITIONS AND WATER DEMANDS**

Greg Allen, VP and Principal, REDtrac, LLC, Bakersfield, CA

[Real time information and timely reports showing pumping and standing water levels, pump efficiency, specific capacity, actual energy costs per acre foot, and applied water are vital to effective farm operations. When coupled with soil moisture, weather and field-specific ET measurement growers and operators can manage their groundwater.]

1:55 – 2:40

**INTELLIGENT PUMP VARIABLE FREQUENCY DRIVES**

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

[The presentation will cover water industry and agricultural applications of VFD controlled pumps. Included will be explanation of energy consumed by pumps, AC drive basics (how VFD systems work), fixed speed with valve control vs. VFD, adding "intelligence" to pump system controls, case studies of cost advantages of using VFD to improve pump efficiency and VFD controls to optimize management of multi-pump systems]

2:40 – 3:25

**MAXIMIZING YIELD AND QUALITY BY VERTICAL WELL PROFILING OF WATER WELLS TO DETERMINE DEPTH-DEPENDENT ZONES OF FLOW AND THEIR WATER QUALITY CHARACTERISTICS**

Noah Heller, PG, President, BESST Inc., San Rafael, CA

[Selective zonal groundwater extraction can be an alternative to treatment. In new and in existing wells there are inexpensive down-hole measurement techniques using geophysical equipment that provide detailed information about the best water producing zones from an aquifer. These techniques can also pin-point zones where water quality might be a concern for crop production or the maintenance of downstream treatment equipment.]

3:25 – 4:10

**SELECTION AND MAINTENANCE OF PUMPS TO MINIMIZE OPERATION AND MAINTENANCE COSTS:**

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

[The presentation will discuss basis for pump selection and the parameters that need to be monitored in order to operate a pump at its best efficiency. Topics covered include: pump specification for high-yield applications, pump efficiency principles, horsepower and bowl assembly selection criteria, causes of pump capacity changes, merits of submersible vs. line-shaft for high yield wells, case studies of installation and O & M costs for different types of pump, pump replacement criteria, and calculations on the \$ return on upgrading motor or bowls.]

4:10 – 4:15      **FINAL Q & A AND WRAP-UP - ADJOURN** and continuing education sign-out