

UTAH GROUND WATER ASSOCIATION

The Advocate
SUMMER 2018 EDITION

LETTER FROM THE PRESIDENT KYLE WIDDISON

Do You Really Want to Make Money? Part Three

This last tip I offer, #5, I will title "Do What You Love - Love What You Do".

Back in the early 1980's was a time where I did not own my own video logging unit. I had an handshake agreement with Louie Lee about running video logs. We used to ride together in his van all over the state doing videos. It was something he enjoyed doing as he closed in on retirement. It was something I also enjoyed and we had long conversations on all sorts of topics. We talked for long hours and enjoyed each others company. On a particular day in about 1983 we were headed home from Delta to the shop and we stopped for lunch at a little roadside table. As we sat there and ate our sack lunches I asked the following question.... " Why is it that you seem to be more successful, to have more money than the other drillers I know?". His answer came pretty quickly. He responded... " All those guys like the money but not the work. Me... I liked both!".

That simple answer has stuck with me over the decades. The meaning there I believe is one of life's foundational truths. If you enjoy the work, if you like being out in the field, if you like the sun,

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LETTER FROM THE PRESIDENT KYLE WIDDISON

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dust, rain and snow then everything you do will naturally work out better. On the reverse side, if you are unhappy in the field, if you're too cold or too hot or just wish you were somewhere else then that too will be reflected in the outcome of the work you do. You will miss little clues on how to improve, on how to provide a better product and value to the customer. On average your reputation will suffer and it will be generally harder to collect those accounts.

As time goes on it can be hard to stay engaged, motivated, and excited. It is not possible to love your job every day, no one does. If however you work at keeping a positive attitude as hard as you do at completing the current project you are on then you can stay engaged in what ever you are doing. Keep a smile on your face. Work at enjoying each day. Get up, get out the door and go to work. Try and exercise a bit and lose some excess weight. Eat better. Take a vacation from time to time. The change in scenery will also change your attitude. Read a book or two on a topic different from work. Play with your kids and grand-kids. Kiss your wife when you leave the house and remind her that she's the best thing that ever happened to you. Cultivating these habits will pay benefits in a quality of life that will surprise you. These principle's are true even in retirement. If you decide that your tired and determine to sit and binge-watch TV, season after season of what ever you think is interesting, at that moment, it will not be long before your brain turns to mush and you won't be able to get up out of that Lazy-boy. I am fully aware that it's easy to get in and stay in a rut, It's comfortable but it's not healthy.

In the end I guess I'm trying to say that some balance in your life will help you be happier, healthier and you will live longer. Oh, and by the way, you will make more money. Do what you love and love what you do.

M. Kyle Widdison

President UGWA

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UGWA 2018 Moab Convention Report

UGWA's 2018 Moab PED and Convention was held on June 7-8 at the Moab Valley Inn. On Thursday afternoon before the convention, Mike Anzalone organized a golf outing at "The Hideout" Golf Course in Monticello. The Hideout is one of the most scenic courses in Utah, with lots of elevation changes and challenges. We had 16 people show up for a wonderful afternoon of golf. Teams were organized on the spot. Friendly bets and threats soon followed. It was really fun and super hot!! Thanks Mike A for organizing a fun golf outing.

On Friday we had a very good turnout for the 6 continuing education presentations, with 15 drillers and about 10 suppliers and consultants attending. The presentation topics included "Utah Water Well Drilling Rule Updates" (Jim Goddard/Water Rights), "Pump Drives and Solar Pumps" (Mitchell Lewis & Staver), "Deep Set Submersible Pumps" (Steve Price, Western Hydro), and the "Operational Stage of Water Wells (Thom Hanna, Johnson Screens). In the afternoon, we did a field trip to the Intrepid Potash Mine located about 15 miles downstream of Moab on the Colorado River. Brandon Bartosh, the GM for the mine gave UGWA a presentation on the geology of the potash deposit, the history of the 50+ year old mine, the global potash market, and how the Intrepid Potash mine is currently operated. The mine is currently a solution mining operation that uses deep directional drilled borings/wells to inject, dissolve, and recover the potash. After the classroom presentation, we did a field trip tour of Intrepid's injection/recovery wells, evaporation ponds, and processing plant.

Our BBQ social on Friday night was hosted by "The Holland's" and Moab Bit & Tool at the Holland's home in Moab. The Holland's backyard setting is absolutely gorgeous with giant sycamore trees, birds chirping, and friendly horses. The head count report was we had 55 UGWA members and families there. Mike Zimmerman provided the BBQ. Mike brought his custom built "Z Team" smoker and BBQ down from Erda for the event. Mike and his helpers spent the whole day tending the goods. The food was delicious. Plenty of everything to go around. Thanks Mike Z for your donation and efforts on a fantastic BBQ for us. Thank you

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UGWA 2018 Moab Convention Report

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Stan and Gavin and Aaron (The Holland's) for a truly special place to share time together as a group.

On Saturday a group of 16 of us got together for an ATV ride with Moab Cowboy Off-Road Adventures. Ken Green was the tour guide and entertained with great stories on the local history, landscape, geology, and fossils of the area. The ATV adventure was coordinated by Charlie Fox with Franklin Electric. Yeehaw, what a blast!! After the ATV ride, we all rendezvoused back at the Holland's home again, and Charlie treated us to unlimited tasty tacos.

The Moab event is successful and fun because of the sponsorship and support we get from our UGWA member suppliers. We couldn't do it without their attendance and financial support. Western Hydro was a Platinum sponsor for the event. Mitchell Lewis & Staver was a Platinum sponsor for the event. Todd Beeman and Beeman Equipment Sales were Gold sponsors. Moab Bit & Tool sponsors us whenever we come to town, hosting our event and food/drinks. Mike Zimmerman and Zimmerman Well Service provided the BBQ. Charlie Fox and Franklin Electric provided the taco lunch. Mike Anzalone organized the golf outing. Presenters at UGWA events are all volunteers. Please give a big thank you to these individuals and their companies for supporting UGWA.

The Moab "Event" is a long standing tradition of UGWA. I hope everyone will consider coming next year, bringing their family, and making it a great time for the Utah water well industry.

Chris Mikell, PG
UGWA Conventions Chair
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UGWA 2018 Moab Convention Photos



UGWA 2018 Moab Convention Photos

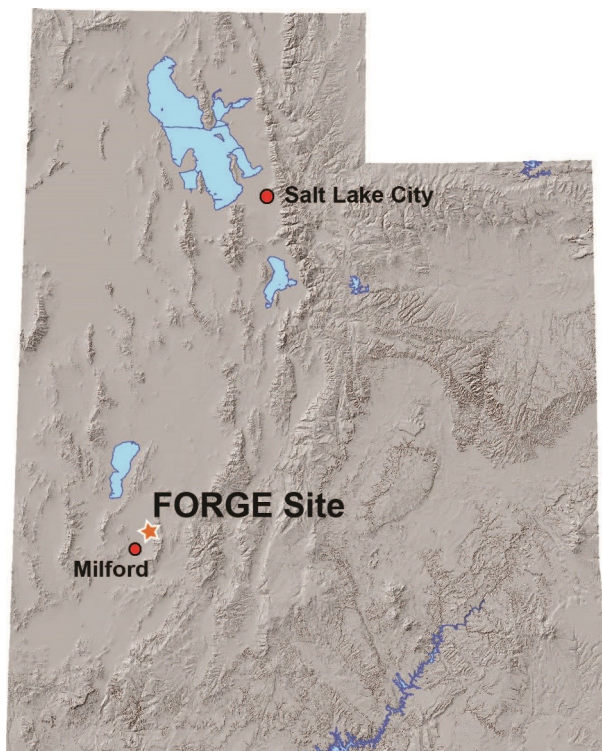




FORGING AHEAD

By University of Utah Communications

Following a [three-year, five-way competitive process](#), the U.S. Department of Energy has selected the Energy and Geosciences Institute (EGI) at the University of Utah to develop a geothermal laboratory near Milford, Utah. The laboratory, called Frontier Observatory for Research in Geothermal Energy ([FORGE](#)) will focus on developing enhanced geothermal systems which could greatly expand the nation's capacity to produce geothermal energy. The FORGE award will consist of up to \$140 million over five years.



“We thank the U.S. Department of Energy for this exceptional opportunity,” said John McLennan, co-principal investigator of Utah’s FORGE team. “Having this research program in Utah would not have been possible without the support and encouragement of Utah Governor Herbert; Dr. Laura Nelson, the Governor’s Energy Advisor; the Office of Energy Development; the Utah School and Institutional Trust Lands Administration; and the Utah congressional delegation in Washington. We appreciate the assistance that we have received from State representatives and from Beaver County and from Milford. At the University, strong support has come from the President of the University and the central administration as well as from the College of

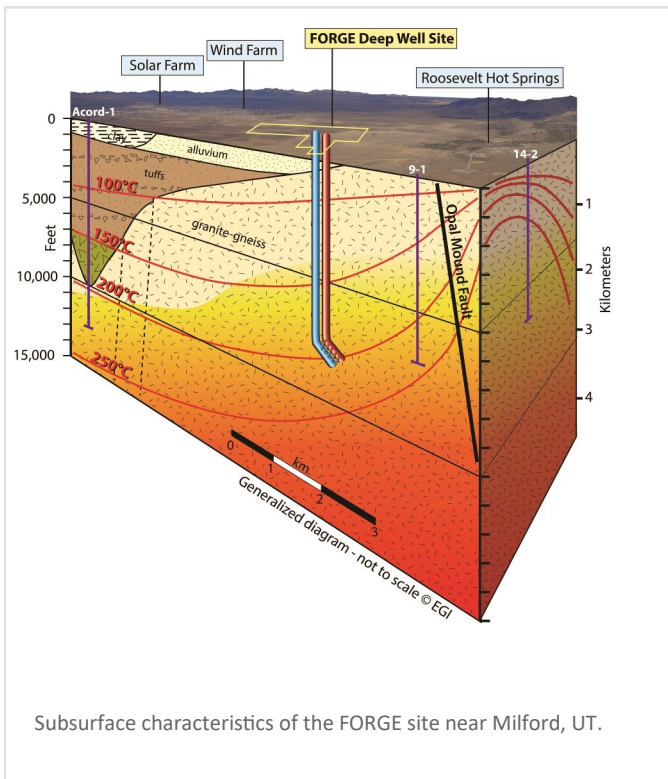
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Engineering and the Energy & Geoscience Institute.”

“Utah is proud to provide national leadership in advancing energy innovation that will help drive affordable, baseload, renewable power to market,” said Gov. Gary R. Herbert, in a statement from the Governor’s Office of Energy Development. “This will put Utah on the map as a world leader for geothermal research as well as expand geothermal production here in rural Utah and throughout the world.”

“The University of Utah is grateful for Senator Orrin Hatch’s leadership and his tireless efforts to advance important scientific research,” said University of Utah President Ruth Watkins, in a statement from Hatch’s office. “Because of his efforts to help secure this FORGE grant, the University of Utah will continue to lead the Nation as the preeminent institution for researching the commercial production of geothermal energy.”



The FORGE project involves drilling two 8,000-ft long wells in an area north of Milford, Beaver County, Utah. Cold water will be pumped into one well and heated by the rocks as it circulates, then will be pumped out of a second well. After the heat is extracted at the surface, the cooled, circulated water will be cycled back into the first well. The laboratory will use non-potable groundwater that cannot be used for agriculture or human consumption.

Currently, geothermal power plants need two things: hot rocks at depth, which can be found practically anywhere on the planet, and hot groundwater that can be extracted at the surface. Enhanced geothermal systems like FORGE could create their own hot groundwater, making it possible to place a geothermal power plant nearly anywhere.

Read the U.S. Department of Energy press release [here](#).

Read the release from the Governor’s Office of Energy Development [here](#).

Find U.S. Senator Orrin Hatch’s statement [here](#).

Read more about the project at forgeutah.com or [here](#).



State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Division of Water Rights

KENT L. JONES
State Engineer/Division Director

R655-4 State of Utah Well/Pump Rule Revisions Effective May 2018

Over the past year or so we have been considering and presenting revisions, updates, and clarifications to the Administrative Rules for Water Wells (R655-4 UAC). We have sent out letters describing the proposed revisions as well as presented them at continuing education seminars including UGWA Mesquite UGWA Moab, and Water Rights SLC. Most of these proposals have come about as a result of suggestions and recommendations from licensed drillers and pump installers. A brief listing of rule revisions is included below. The revisions went into effect in May 2018.

- **R655-4-1.1: Scope of Rules:** Add testing and disinfection to the list of activities regulated. It has always been inferred that these activities were regulated. This clarification also cascades through other sections such as R655-4-3.
- **R655-4-1.2 Allowed Regulated Activities by License:** With the inclusion of two licensing types, Well Driller and Pump Installer, it has become necessary to clarify the regulatory roles of each classification and define under which circumstances a well log and/or pump log be submitted. In other words, it is necessary to define what regulated activities each licensing category is authorized to do. Presently, regulated activities include drilling, construction, development, testing, pump installation/repair, cleaning, disinfection, deepening, repairing, renovating, and well abandonment. A well driller's license shall be able to perform drilling, construction, development (except with a pump), testing, cleaning, disinfection, deepening, repairing, renovating, and well abandonment. A licensed driller shall submit a well log following performance of these regulated activities on a well. Alternatively, if the only activity on a well by a well driller includes development, testing, cleaning, disinfection, a pump log can be submitted instead of a well log. A separate abandonment log is required for stand-alone well abandonment activity. If a newly drilled/constructed well fails and needs to be abandoned, the abandonment details can be included on the well log report and a separate abandonment log is not needed. A pump installer's license shall be able to perform pump development, testing, pump installation/repair, cleaning, and disinfection. A licensed pump installer shall submit a pump log following performance of these regulated activities on a well. A pump log does not need to be submitted if disinfection is the only activity on the well. This is also clarified in R655-4-3.4.
- **R655-4-1.3.2 Geothermal Exemption Clarification:** The revision clarifies that geothermal wells (>120 degrees Celsius) are drilled and constructed under Rule R655-1; however, the driller of such wells must be a Utah licensed driller in accordance with these Rules.
- **R655-4-1.3.7 (new subsection) Setback Requirements:** Clarify that setback and separation requirements are regulated at the local level or by other agencies.
- **R655-4-2 Neat Cement Grout Definition:** Can be Types I, II, III, V, high alumina, or a combination thereof. Clarify the acceptable recipe, and state that approval is needed to add bentonite, fly ash, or other additives.



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Subject: R655-4 Well Rule Revisions effective May 2018

- **R655-4-2 Sand Cement Grout Definition:** Clarify that equal parts cement and sand is defined by volume and not by weight.
- **R655-4-3.2:** Clarify that drilling experience must be relative to the applied-for drilling method(s).
- **R655-4-3.2.4.5:** For acceptable drilling experience, replace the phrase classroom study with training/education.
- **R655-4-3.3.5 Minimum Score on Operator Exam:** Presently, an applicant for operator registration is required to pass a take-home open-book exam with a score of at least 70%. Given the on-your-own and open-book nature of the exam, revised that the minimum score on the operator exam be increased to 80% instead of 70%.
- **R655-4-3.9.2 Surety Bond Effective Period:** The surety bonding requirements are clarified such that the effective period of the bond matches exactly the 2-year licensing period of the licensee. This will eliminate the chance of a bond expiring in the middle of a licensing period which can jeopardize the status of the licensee.
- **R655-4-3.9.2.2 Name on Bond:** Further clarify that the principal on a surety bond must be the licensee's individual name and not the company name.
- **R655-4-4.1 Renovate Permit Required:** Previous to pump installer licensing, a renovate permit was required anytime regulated activity was performed on an existing well. Regulated activity related to a renovate included deepening, repair, renovation, cleaning, development, testing, and disinfection. In order to obtain a renovate permit, a renovate application needed to be filed with the Division of Water Rights. Upon approval of the application, an approval letter and start cards would be issued to the applicant, and the licensed driller would need to submit the start cards before the work and a well log following the work. With the recent promulgation of pump installation rules and processes, the policy regarding when and for what a renovate permit is needed has been modified. Now, a renovate permit is needed only when the well itself will be modified which includes activities such as deepening, casing/seal/gravel pack repair/renovation, liner installation, pitless adapter/unit installation, and perforating/screen installation. Other regulated well activities that do not modify the well itself such as cleaning, development, testing, disinfection, and pump work are covered under the Pump Installation rule and processes, and a renovate permit is no longer required. However, this work must still be performed by a licensed well driller or pump installer and a pump log must be submitted upon completion of the regulated work.
- **R655-4-4.2.2 Start card with special conditions:** If a start card is stamped with special conditions or similar statement, then driller must contact the Division to find out what the conditions are or review the water right's memo decision.
- **R655-4-4.2.1 Start card submittal process:** Further clarify when the start card must be sent back to Water Rights. If faxed or emailed with attachment, then original does not need to be sent in. If phoned in, then original must be sent in.
- **R655-4-4.7.1 No Pump log for disinfection only:** A pump log need not be submitted if well disinfection is the only activity.
- **R655-4-5 Level I Infractions:** Add infraction for failure to notify Division of well abandonment prior to starting.
- **R655-4-5 Level III Infractions:** Add infraction for failure to install casing according to the rules.
- **R655-4-5.6 Well Driller Hearings:** Add provision that a driller may request a preliminary conference in lieu of a hearing in order to resolve a violation. This preliminary conference is then defined in R655-4-7.8.4.

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Subject: R655-4 Well Rule Revisions effective May 2018

- **R655-4-8.1.1(c) License Renewal Criteria:** Clarify that if a licensee does not fully submit a complete renewal application by the expiration date, then the license becomes inactive and the licensee must cease and desist all regulated activity until the license is renewed.
- **R655-4-10.2.1 Well Location Map Datum:** Change the approved map datum to NAD 83 instead of NAD27.
- **R655-4-11.2.3 Table 6 Minimum Wall Thickness of Steel Casing:** Revise table by eliminated rows for 2, 3, & 4 inch diameter casing and provide further clarifications.
- **R655-4-11.2.4.2 Use of 4-inch PVC Casing:** Currently the rules allow Sch40/SDR21 4-inch PVC casing in wells. Anything larger than 4-inch nominal casing would need to be Sch80/SDR17. The original intent of this rule was to allow small diameter non-production wells such as monitoring wells to utilized Sch40/SDR21 casing. However, there is an increasing frequency of the use of 4-inch Sch40/SDR21 PVC casing in production wells, which was never the intent of this rule. In fact, with the increase use of this casing, we are seeing more and more failed 4-inch PVC production wells. The rule is revised to only allow 4-inch or smaller Sch40/SDR21 casing in non-production wells. Production wells would be required to have Sch80/SDR17 casing or thicker.
- **R655-4-11.2.4.2 PVC Casing:** Clarify that liner pipe does not need to meet these standards if it is within a casing that does meet the standards.
- **R655-4-11.4.2.1 Annular space for grout seal:** Specify that the annular space for seal must be kept open in order to ensure proper grout installation.
- **R655-4-11.4.2.1 Neat cement and sand cement cure time:** Specify that the cure time for neat and sand cement grouts must be at least 24 hours before work can resume on drilling and construction. Also clarify the use of additives on cure time.
- **R655-4-11.4.2.1 Cement With Plastic Casing:** A provision has been added that restricts the use of cement type grouts with PVC/HDPE casing. It has been shown that the heat of hydration can damage plastic casing. Moreover, it has also been shown that due to expansion-contraction of the plastic casing during heat of hydration, a micro-annulus can form between the plastic casing and cement after the cement sets up and hardens and the plastic casing contracts as it cools. This can allow a contamination migration pathway into the well from the surface. Also, the bond between cement and plastic casing is weaker than the bond between cement and steel casing.
- **R655-4-11.4.2.2 Bentonite Grout Recipe:** Based on the Nebraska Grout Study and our own observations/testing, the current 20% solids bentonite grout recipe is inadequate especially in the vadose zone. It is proposed that bentonite grout not be used for seals in the vadose zone unless they are modified by adding solids content to stabilize the grout.
- **R655-4-11.4.3.1 Temporary Surface Casing Removal:** The ambiguous language regarding removal of surface casing and the provisions for leaving unsealed surface casing in place has been clarified. The rule language will be simplified by stating that surface casing must be properly sealed in place or removed.
- **R655-4-11.4.3.6 Surface seal shallow depth exceptions:** New section to clarify that a variance can be obtained to place a seal less than 30 feet of the groundwater sought is less than 30 feet.
- **R655-4-11.4.4 Interval Seals – Aquifer Cross Contamination:** Clarify that well should not be constructed so as to comeingle aquifers of significantly different quality and pressure.
- **R655-4-11.5.1 Annular Space in oversized boreholes:** Clarify that open annular spaces must be filled with formation stabilizer and not left open.

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Subject: R655-4 Well Rule Revisions effective May 2018

- **R655-4-11.5.6 Gravel Feed Pipe Seal:** Specify that if a gravel feed pipe is installed on the outside of the casing, it must have a 2-inch seal between it and the borehole wall.
- **R655-4-11.6.1 Drilling Fluids and LCMs:** Phosphate-based substances cannot be used. Also all polymers and additives must be NSF/ANSI approved or be approved by the Division.
- **R655-4-11.6.3 Aquifer cross-contamination:** Bolster this section to clarify that aquifer cross contamination must not be done.
- **R655-4-11.7.5 Pitless Adapter Installation:** Clarify the requirements of what to do with the excavation and re-sealing of a well following pitless adapter installation. Specify that cement seals shall not be used in the pitless section if it is known that a pitless will be installed. Clarify that the excavation above the pitless adapter can be backfilled with compacted low permeability fill that includes clay.
- **R655-4-12.1.2 Public Supply Well Requirements:** This section references the rules of public supply wells and the Division of Drinking Water, but removes the specificity as to what those requirements are.
- **R655-4-12.1.4 Closed Loop Heat Exchange – Direct Exchange:** Clarify that direct exchange (DX) closed loops are not allowed without specific approval from the Division.
- **R655-4-12.1.4.2(a) Closed Loop boring safety:** Add a provision to ensure that the closed loop borings are kept safe from allowing surface water or other foreign matter to enter them prior to construction and sealing.
- **R655-4-12.1.4.2(e) Closed Loop grout placement:** The tremie shall remain submerged in the grout. The grout shall be inspected 48 hours after placement and topped off as necessary.
- **R655-4-12.1.4.2(h) Closed Loop fluids:** Potassium acetate and ethylene glycol shall not be used in closed loop systems.
- **R655-4-12.1.4.2(i) Closed Loop system abandonment:** Clarify process of abandoning these types of wells including notification, applicable standards, removing fluids, flushing, grouting, and capping.
- **R655-4-14.5.3 Sealing Abandoned Wells:** Clarify that on a grouting job, the seal must be topped off as need over time to ensure that the seal stays at ground surface.
- **R655-4-14.6.1 Casing Cut-Off During Abandonment:** The requirement of cutting an abandoned well's casing off two-feet below ground is removed. This requirement was put in place when most wells were agriculture-related where there was a need to cut the casing off below the cultivation zone. In many cases, this requirement no longer applies, and so the cut-off depth would be determined on a case-by-case basis.
- **R655-4-14.9.1 Abandoning gravel packed wells:** Clarify that if gravel pack extends above the screen or perforations in the annular space, additional perforations will be needed to properly seal of these zones.

Hyperlink to the *State of Utah Water Well Handbook* included below:

<https://waterrights.utah.gov/wellinfo/handbook.pdf>

STATE OF UTAH WATER WELL HANDBOOK

BASED ON THE ADMINISTRATIVE RULES
FOR WATER WELLS
(R655-4 UAC)

Adopted May 2018



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OFFICE OF THE UTAH STATE ENGINEER

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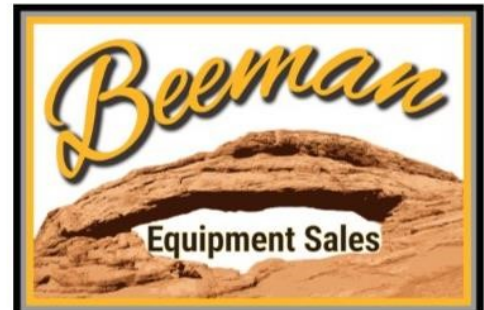


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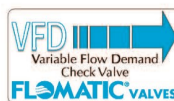
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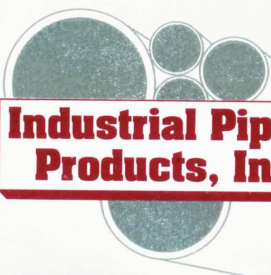
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Project Site Photographs

If you have a project site you're proud of, please consider submitting a photograph for inclusion in the next UGWA Newsletter.

Submissions can be sent to:

UGWA Newsletter Editor — Ian Schofield
ian@loughlinwater.com



Project Site Photographs



Well Owner:	Town of Huntsville
Project Location:	Huntsville, Utah
Drill Contractor:	High Plains Drilling
Consultant:	Loughlin Water Associates
Well Specs:	10-inch completion to 1000-feet TD
Project Description:	Municipal drinking water well installation

UTAH GROUND WATER ASSOCIATION

Membership Application

RENEW or JOIN ON-LINE at WWW.UTAHGROUNDWATER.ORG or
MAIL THIS COMPLETED APPLICATION WITH YOUR PAYMENT of \$60 to:
UGWA 5577 Walden Glen Dr, Murray UT 84123-7942

MEMBERSHIP TYPE (CIRCLE ONE): A B C D E F

DRILLING LICENSE # _____ **CONTRACTORS LICENSE #** _____

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PHONE (_____) _____ **EMAIL** _____

HOW DID YOU HEAR ABOUT US _____

Membership Types

- A. CONTRACTOR:** Any person doing business and licensed to drill, either water wells or ground water monitoring.
- B. PUMP INSTALLER:** Any person doing business and licensed to install ground-water pumping equipment.
- C. MANUFACTURER:** Any person engaged in the manufacturing of equipment, or materials used in the ground water industry.
- D. SUPPLIER:** Any person engaged in the sale of equipment or supplies associated with the ground water industry.
- E. TECHNICAL:** Any hydrologist, geologist, or engineer involved in teaching, research, consulting and or government services associated with the ground water industry.
- F. ASSOCIATE:** Any person engaged in the support of the UGWA who does not accurately fit in any of the above.

This membership allows the joining of one individual to benefit from all the privileges of membership in the Utah Ground Water Association. Annual membership dues are \$60.00 per year. These dues cover membership only in the Utah Ground Water Association. The Utah Ground Water Association is affiliated with the National Ground Water Association and the Mountain States Ground Water Association. **All memberships are annual and run July 1st thru June 30th. Memberships purchased mid-year will have the 2nd year pro-rated to bring them compliant with this format.**

UTAH GROUND WATER ASSOCIATION INC

ADVERTISING FEE SCHEDULE

NEWSLETTER (per quarterly issue)

DESCRIPTION	MEMBER	NON-MEMBER
1/8 Page or Business Card	\$25	\$30
1/4 Page	\$50	\$60
1/2 Page	\$75	\$90
Full Page	\$100	\$120

BRONZE LEVEL SPONSOR: Your logo on the UGWA website, with link to your website or email; One 1/8 page size/business card size ad in The Advocate, the UGWA's quarterly newsletter (\$120 value); Recognition at all UGWA events.

SILVER LEVEL SPONSOR: One UGWA membership (\$60 value); Your logo on the UGWA website, with link to your website or email & reoccurring HOME page placement; One 1/4 page size ad in The Advocate, the UGWA's quarterly newsletter (\$200 value); 5% discount at all UGWA events; Recognition at all UGWA events.

GOLD LEVEL SPONSOR: One UGWA membership (\$60 value); Your logo on the UGWA website, with link to your website or email, HOME & SPONSOR tab placements; One 1/2 page size ad in The Advocate, the UGWA's quarterly newsletter (\$300 value); 10% discount at all UGWA events; Recognition at all UGWA events.

PLATINUM LEVEL SPONSOR: Two UGWA memberships (\$120 value); Your logo ad on the UGWA website, with link to your website or email, Platinum all tabs placement; One full page size ad in The Advocate, the UGWA's quarterly newsletter (\$400 value); 20% discount at all UGWA: Recognition at all UGWA events.

For More Information Contact: admin@utahgroundwater.org or 801.541.7259

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