Use of Isotopes in Ground Water Investigations

By: Gary Stevens P.G., L.G., L.HG.

Isotopes are commonly used in ground water investigation as a tool to determine flowpaths and recharge sources. Chemical elements are composed of positively charged particles (protons) and particles with no charge (neutrons). Some elements can exist with the same number of protons but different numbers of neutrons. When an element has the same number of protons but different number of neutrons it is called an isotope.

Water has the chemical composition of H$_2$O, with the hydrogen component primarily composed of $^1$H (1 proton and no neutrons) and the oxygen component primarily composed of $^{16}$O (8 protons and 8 neutrons). A small fraction of water molecules will have either hydrogen composed of the $^2$H isotope (1 proton and 1 neutron) or oxygen composed of the $^{18}$O (8 protons and 10 neutrons). Because of the extra neutrons, these isotopes of hydrogen and oxygen weigh more than the more abundant hydrogen and oxygen forming most of the water molecules. These isotopes do not decay and are considered stable. The concentration of a stable isotope in a water sample is measured as the difference between the isotope concentrations from a known standard and is expressed as the delta ($\delta$). A common international standard used is the Vienna Standard Mean Ocean Water created by mixing distilled ocean waters from several locations around the world. The delta concentrations of $^2$H and $^{18}$O from a water sample are typically plotted on a graph with $\delta^2$H on the vertical axis and $\delta^{18}$O on the horizontal axis. As described below, plotting a number of analytical results from an area of investigation can give some indication as to the history and source of the water.

The concentration of $^2$H and $^{18}$O in a water sample depends on a number of environmental conditions. Water vapor from the ocean rises and condenses, forming clouds that move onto the adjacent land mass. As the water vapor encounters lower temperatures, it moves inland towards higher altitudes and latitudes. As temperatures decrease, the water vapor condenses and forms drops that fall to the ground as precipitation. Because of the additional mass, the heavier $^2$H and $^{18}$O isotopes are preferentially removed with the precipitation leaving behind the lighter $^1$H and $^{16}$O. The water vapor in clouds has less and less of the heavier $^2$H and $^{18}$O due to continued precipitation the farther inland you are located. This preferential separation of the heavier isotopes from the lighter isotopes is termed “fractionation.” Precipitation formed during winter or at high altitudes has a higher degree of fractionation and has different isotope concentrations than precipitation from the warmer summer month or lower altitudes.

continued on page 5
Since 1882, Mitchell Lewis & Staver has served the Pacific Northwest, providing superior products and service.

Today, Mitchell Lewis & Staver provides top quality pumps, turbines, drives, panels, water systems & conditioning along with packaged systems to the Agriculture, Municipal, Industrial and Residential markets.

Mitchell Lewis & Staver is a proud member of the IGWA. This year, we're excited to announce the addition of Cornell Pumps. Call or visit us online for more information!

Featuring:

GOULDS
WATER TECHNOLOGY
a xylem brand

BERKELEY

CORNELL

Fairbanks Morse
Pentair Water

866-748-8077
www.mitchellewiss.com

Meridian, ID
800-325-8168

Midvale, UT
800-733-6065

Spokane, WA
800-938-0196
IGWA 2014 Board of Directors

President    2018
Eric Forsmann
Stuivenga Vessey Drilling
eric@svdrilling.com
(208) 451-4273

Vice President    2016
Kenny Vollmer, Jr.
Vollmer Well Drilling, LLC
vollmer@vollmerdrilling.com
(208) 317-6314

Associate President    2015
Marty Baker
APEX Drilling
marty.baker13@gmail.com
(208) 312-2270

Associate Vice President    TBA
Position to be filled...

M & S President    2015
Robert Kitterman
H. D. Fowler Co.
robertk@hdfowler.com
(208) 473-8968

M & S Vice President    2016
Todd Housely
Boshart Industries, Inc.
todd.housely@boshart.com
(208) 705-1113

Past President    2015
Rod Hendricks
Independent Drilling
rod@independentdrilling.com
(208) 709-4444

Directors
Henry Baker    2015
APEX Drilling
apex_drilling@yahoo.com
(208) 312-5146

Legrand Baker    2016
Pump Service, Inc.
grande713@yahoo.com
(208) 300-9043

Dave Adamson    2017
Adamson Pump & Drilling, Inc.
adamsondrilling@gmail.com
(208) 473-8968

Tony Hackett    2017
Down Right Drilling & Pump
tony@downrightdrilling.com
(208) 484-8472

Tom Richardson    2018
H2O Well Drilling
tomr@h2owell.com
(208) 772-4004

T A B L E   O F   C O N T E N T S

1, 5 Use of Isotopes in Ground Water Investigations
3 2014 Board of Directors & Table of Contents
4 Continuing Education Opportunities
7, 9 Making Your Drill Fluid Work for You
11 NGWA Offers Variety of Products to Keep You Safe at Job Sites
13 NGWA Releases Updated Position Paper on Hydraulic Fracturing
15 From Our Executive Director
17 Community Milestones
18 Continuing Education Committee & Members Bulletin Board
19 In Memory of Glen Allen Teague

Advertisers:
2 Mitchell Lewis Staver
4 Steve Regan Co.
6 2M Company, Inc.
8 Rockmore International
8 RJB Wholesale
10 Western Hydro Corporation
12 Baroid Industrial Drilling Products
14 2M Company, Inc.
16 H. D. Fowler Co.
NOVEMBER 13, 2014
CEC Workshop - Coeur d’Alene
Hampton Inn & Suites
1500 Riverstone Dr

JANUARY 28-29, 2015
Convention - Boise
The Riverside Hotel
2900 Chinden Blvd.
Tentative Vendor Set-Up: January 27

MARCH 6, 2015
CEC Workshop - Pocatello
Shoshone-Bannock Hotel
I-15 Exit 80

MARCH 13, 2015
CEC Workshop - Nampa
Hampton Inn
5750 E Franklin Rd

APRIL 24, 2015
CEC Workshop - Lewiston
Red Lion
621 21st St
Another type of fractionation can occur with water that has been subject to significant evaporation, such as lakes and lagoons. These waters show depletion in the lighter $^1$H and $^{16}$O and enrichment in the $^2$H and $^{18}$O isotopes. The lighter isotopes migrate at a greater rate from the surface of the water body to the atmosphere.

As more water evaporates, more fractionation occurs, and a larger difference in isotope concentrations results. Surface water bodies such as lakes, ponds, and lagoons have ratios of these isotopes that are characteristic and may be seen in ground water that receives significant recharge from these sources. Stable isotopes of $^2$H and $^{18}$O can be used to determine recharge sources, water budgets, and infiltration rates particularly with surface water bodies.

As part of a ground water investigation of the Rathdrum Prairie aquifer in northern Idaho, water samples from a number of wells and six peripheral lakes were obtained and submitted for analysis of $^2$H and $^{18}$O isotopes. The results show the different isotope concentrations from the six peripheral lakes and water wells immediately downgradient from the lakes. The different isotope concentrations of the lakes reflect the altitude of precipitation in the watershed along with the rate of evaporation. The wells immediately downgradient from the lake show similar isotope concentrations indicating most of the water is derived from lake recharge.

Gary Stevens has been the hydrogeologist for the Idaho Department of Environmental Quality in the Coeur d’Alene Regional Office since 2004. He has completed a variety of hydrogeological projects since 1990 in Idaho, Washington, and Oregon for the government and private sectors.
We Build Pumps!

Custom Built

6” & 8” Submersible Turbines & Centrifugals
to meet your pumping demands!

Call Us Today!

2M Company Inc. Boise
130 East Victory Road • Meridian, ID 83642
Phone: 208-884-0687 • Fax: 208-884-0280

TOLL FREE: 800-285-7875

2M Company Inc. Idaho Falls
5296 Heyrend Drive • Idaho Falls, ID 83402
Phone: 208-542-2515 • Fax: 208-542-2704

TOLL FREE: 877-982-7867
Making Your Drill Fluid Work for You
By Bob Oliver, Northwest Regional Manager, CETCO

There are times when a bentonite drilling mud or a drilling foam will be all that is needed to drill into a formation without major problems. Both products are designed for that. On the other hand there are those times when the two fluids need to be enhanced. The formations may be tougher to drill. It may be swelling or sticky clays or an unconsolidated formation that causes loss of the fluid, or the borehole may not stay intact during the drilling.

It is important for drilling contractors to know that there are products out there that can be added to the drill fluid to deal with such problems. In the early days of drilling these additives were limited to products like starch and lime. Today there are a host of products available that have been adapted to specific applications like swelling clays, sand, gravel, rock, and cobble. It is critical for drilling contractors to be aware of the products and how to use them. Please take advantage of trainings made available through IGWA and other associations. Manufacturer’s websites are another way of gaining information on these kinds of products.

There are basically two types of soils that drilling contractors encounter and they are reactive and non-reactive. Reactive soils are clay and shales that tend to swell when coming in contact with drilling fluid. Non-reactive soils include sand, gravel, rock, and cobble.

There are several additives available to deal with clays and shales. Among them are synthetic polymers which are available in both liquid and dry form. Long chain polymers are the most common, but there are also short chain polymers that do not raise the viscosity of drill fluid as long chain polymers do. These types of products inhibit the swelling of clays which makes drilling easier and faster. Long chain polymers do not work when a recycler is being used as it will blind the screens. Short chain polymers work well with recyclers. There are other types of additives for really difficult clays that actually break the clay down in to a liquid so the clay can be pumped out of the borehole. Other examples of additives for clay include wetting agents, thinners, and lubricants.

For non-reactive soils the main polymer additive is Pac. Pacs also come in liquid and dry versions. Pacs are often called modified natural polymers. They are made from wood cellulose and contain fibers which help to form a thin, tough filter cake around the borehole. Pacs provide dramatic fluid loss control and are a great product for borehole stabilization in unconsolidated formations. They work well with bentonite drilling mud and also drilling foam. We as bentonite drilling mud manufacturers recommend Pacs as a product to have on hand for tough drilling conditions. Another product that is available for unconsolidated formations is a gel strength enhancer. Normally drilling fluid enhanced with polymers will remove cuttings satisfactorily, however if cuttings removal becomes a problem, all of the manufacturers have an additive to enhance the gel strength which aids in suspension and transport of cuttings.

All of the above mentioned products are tools for drilling contractors. Each has its own application and are part of a tool kit. As bentonite manufacturers we recommend that manufacturer specifications be followed when using these products. They work best when they are applied correctly. They can be over-used and this just adds cost without benefit. We also recommend for these polymers and additives, as we do with the use of bentonite drilling mud and foams, that the make-up water used to mix them be treated with soda ash to raise the pH to 8.5 to 9.5 and to treat out hardness in the water. This saves money on the drilling project because not as much product will be needed and each product will perform as it was designed. Treating make-up water is stressed in all mud schools by all the bentonite manufacturers because it is so important.

continued on page 9

This space is available for technical or human interest articles from our newsletter advertisers and others. To submit an article or make inquiries, contact Brenda Tominaga at btominaga@hotmail.com.
DRILL MORE with Rockmore's High Performance DTH Hammer featuring SonicFlow Technology - The ROK Series

Streamlined design means fewer parts, easier maintenance
New piston geometry for more impact energy
Optimized air channels deliver more energy to the piston
Patented SonicFlow technology minimizes backflow and turbulence

Rockmore International
Wilsonville, Oregon, USA
(503) 882-1001
Judenburg, Austria
+43 3572-86300
www.rockmore-intl.com

Pipe - Drilling Supplies
Steel Pipe 1/8"-36"
Well Casing
Well Screens
Black, Galvanized & Plastic Pipe
Bentonite
Drive Shoes 4"-24"
Well Supplies, Fittings & Valves

Since 1973

Serving WA, OR, ID, MT, NV
Northern CA, AK, and B.C.
Delivery to your door by Our fleet of trucks

(425) 823-1444
Fax (425) 821-7363
(800) 875-0431
P.O. Box 2849
12418 N.E. 124th St.
Kirkland, WA 98033

www.rjbwholesale.com

Members-WSGA, OGWA, IGWA, MWDA, AWWA, BCWWDA
All of the various types of polymers and additives mentioned above will definitely make a drilling project easier and faster. Easier and faster means completing a project more successfully and more profitably. In doing conventions, mud schools, and in direct contacts with drilling contractors it is apparent that not every contractor is aware of these products and the advantages that they bring to drilling projects. Some of these products are new and have not had as much exposure as some of the products that have been used for years. That is why training and education is so important.

I would definitely encourage all drilling contractors to become familiar with these products mentioned above so that they can be used in applications where they can improve drilling conditions. Please contact your distributor or manufacturer representatives for information on these products.

Bob Oliver is the Northwest Regional Manager for CETCO’S Drilling Products Group and is based in Spearfish, SD. For the past 23 years, Bob has provided marketing and technical support for the Drilling Products Group while establishing a distribution network throughout northwest U.S. and southwest Canada. His primary responsibility includes promoting bentonite drilling fluids, grouts and sealants, drilling polymers and additives, and well rehabilitation chemicals.

Bob has been employed by, first, American Colloid Company (ACC) and then CETCO for 44 years. This includes 21 years in manufacturing, during which time he was involved in quality control, mining, and plant management. Bob has a Bachelor of Science (BAS) degree from Black Hills State University in Spearfish, SD.
In the Great State of Idaho, Experienced Drilling and Pump Contractors Know That Western Hydro Is The Place To Go For The Equipment And Supplies You Want At Competitive Prices!

We stock a comprehensive line of...
- Pumps
- Casing - PVC/Steel
- Screen - PVC/Steel Pipe
- Pump Derricks & Parts
- Drilling Rig Pumps and Parts
- Tanks
- Drilling Fluids - Mud/Grout
- Water Treatment Systems & Supplies
- Drilling Supplies - Bits/Subs/Hammers
- Lead Free Water Service Valves
- And Much More!

Western Hydro Corporation now has five complete build centers, strategically located for your build to order submersible and lineshaft turbines. Machine work, labor, and other services available by quotation.

Labor:
- Bowl tear down and rebuild
- Remove seized nipples
- Special TPL's
- Impeller back fitting
- Hardened sleeves removed/installed
- Line shaft/head shaft flame straightening
- Tube and shaft clean up

Machine Work:
- Wear Rings – Cast iron, brass, stainless steel
- Impellers Trimmed
- Machine bowls for wear rings or oversize bearing
- Resurface Bowls
- Keyways cut
- Machine for dual seals
- Motor or drive clutch bored, bushed, re-key
- Special length shafts, oil tubes, column pipe, column nipples
- Special Adaptations – Threading, tee-brgs, stretch bearings

Franklin Electric

NEW!
WE ARE PROUD TO NOW OFFER A FULL LINE OF FRANKLIN ELECTRIC PUMPS AND MOTORS TO OUR CUSTOMERS!
Please Contact Your Local Western Hydro Corporation Salesperson For More Details!

Hydro Western Hydro Corporation
2406 South 3270 West
West Valley City, UT 84119
1-800-421-4185

Red Jacket Water Products
CentriPro
Myers
Pentair
Goulds
Lakos
Johnson Screens
SIEMENS
Stenner
Water Group
SymCom
Pure Gold Medium Chips
Drill Rod 220 Medium Carbon and Hardened Rods
Green Valley Supply
CertainTeed
NGWA Offers Variety of Products to Keep You Safe at Job Sites

June is National Safety Month and the National Ground Water Association has an assortment of products available for you to utilize to ensure you stay safe at the job site. They include:

◊ A 30-minute DVD, *Drill Safe, Drill Smart*, has been a popular title in the NGWA online bookstore since it debuted in 2010. Produced in collaboration with the video production company, Training Without Boredom, *Drill Safe, Drill Smart* was produced in an informative but fun fashion that keeps those watching alert to the important details. Suitable to the drilling of both domestic water supply and environmental wells because many of the same hazards apply, the video is not just for new drill crew employees, but also seasoned workers who may need a refresher on safe practices.

*Drill Safe, Drill Smart* covers the most common causes of drill site accidents: slips, trips, and falls; materials handling; chemicals; machine guarding; and electrocution. In addition to the video, the DVD includes printable documents—a job safety analysis form, lighting guidelines, pre-trip inspection form, and safety assessment plan.

◊ Detailed discussions on safety are easy to have with *Safety Meetings for the Groundwater Industry*. A set of 52 sheets printed on two-part carbonless paper, it is designed to enable companies to have weekly safety meetings on a different industry-specific subject each week of the year. Each sheet contains talking points, and areas to write down related topics and employee recommendations, and employee and manager signatures. Among the subjects are hearing conservation, proper blocking of drill and pump service equipment, properly storing fiber rope, and safety from falling objects.

◊ *Model Environmental Health and Safety (EHS) Manual* is a CD providing a complete safety program manual for those working in the groundwater industry. It can be viewed on a computer or printed and stored in a three-ring binder. It contains an editable version so specific company information can be added. Among the sections are those on: having a code of safe work practices, inspection and auditing, incident and accident reporting, confined space operations, electrical safety, employee training, fire prevention, fall prevention, hazard communication, hearing conservation, and respiratory protection.

◊ *Pump Safe, Pump Smart* is a 30-minute DVD designed to help professionals learn about the hazards of pump installation and service and gain new insight to ensure everyone is kept safe.

In a fun, highly watchable way, the DVD covers job preparation, site safety assessments, figuring your load, PPE, site mobilization and setup, blocking and leveling, proper handling of the pump column and wire, pulling the pump, inspection, transportation, moving equipment, tools, lighting, maintenance, and more.

To learn more or to purchase these products, visit the NGWA bookstore at [www.NGWA.org](http://www.NGWA.org), or call (800) 551-7379 (614-898-7791).
The Sign of Service.  
The Symbol of Quality.

• Grouts •
• Drilling Fluids •
• Well Cleaning Chemicals •

Local Contact:

**Kirby Donald**  (503) 702.5731  
**Vince Hazelton**  (406) 672.4681  
**Jack Sowers**  (425) 501.5230

Baroid Industrial Drilling Products  
Product Service Line, Halliburton  
P.O. Box 1675 Houston, TX 77251  
(877) 379.7412 or (281) 871.4613  
www.baroididp.com

© 2014 Halliburton. All Rights Reserved
NGWA Releases Updated Position Paper on Hydraulic Fracturing

NGWA’s updated *Hydraulic Fracturing: Meeting the Nation’s Energy Needs While Protecting Groundwater Resources* position paper presents the official position of the Association, and identifies steps to take to protect the country’s valuable groundwater and drinking water supplies while addressing the nation’s energy needs through increased oil and gas development using hydraulic fracturing.

Defining the oil and gas hydraulic fracturing process as “a method where fluids are injected under very high pressures to create fractures that extend from a borehole hundreds of feet into surrounding rock formations,” the paper supports additional studies, field-based research, and groundwater monitoring while finding that currently no widespread water quality or quantity issues have been definitively documented that are attributable to the oil and gas hydraulic fracturing process itself. However, there have been several cases of water contamination related to oil and gas activities such as faulty casing installations, unsealed abandoned wells, or poor management of materials/chemicals at the surface.

Defined as the official position of the Association on issues of federal legislative or regulatory importance to the groundwater industry, position papers are based on generally accepted scientific and technical understanding and, if applicable to the subject matter, to striking a balance of human and environmental needs. Position papers are subject to approval by the NGWA Board of Directors.

To read the position paper, visit [www.NGWA.org](http://www.NGWA.org) under the Advocacy/Awareness tab.
Hit The PANIC Button!

Your emergency is

OUR Emergency!

- Calls Always Answered 24/7/365 days a year
- Phones forwarded “after” hours
- Free Delivery and Hot Shot Delivery Service

2M Company Inc. Boise
130 East Victory Road • Meridian, ID 83642
Phone: 208-884-0687 • Fax: 208-884-0280
TOLL FREE: 800-285-7875

2M Company Inc. Idaho Falls
5296 Heyrend Drive • Idaho Falls, ID 83402
Phone: 208-542-2515 • Fax: 208-542-2704
TOLL FREE: 877-982-7867

www.2mco.com
As we all look forward to a busy, productive summer (and hopefully some time for fun with family and friends), it occurs to me that this is a time of endings and beginnings for our office.

OLD BUSINESS: Here in Boise we are wrapping up a very busy and successful six months: the January Annual Convention is behind us; Continuing Education Committee (CEC) workshops in Coeur d’Alene last November and Pocatello, Nampa, and Lewiston during March and April are finished. We are wrapping up minutes, reports, and projects in anticipation of IGWA’s year-end on September 30th.

NEW BUSINESS: But these summer months are also a time for planning ahead for our membership campaign that will kick-off on October 1st; organizing next year’s Annual Convention and trade show on January 28th and 29th; and preparing for another round of continuing education workshops. The first CEC workshop is scheduled for November 13, 2014 in Coeur d’Alene. Once again we will be offering dual Rules & Regulations credits for Idaho and Washington. Our dual accreditation with surrounding states has proven to be very popular with Idaho drillers who are working out of state as well as drillers from around the region who are working in Idaho.

Watch for our flyer in the mail announcing all of IGWA’s 2014 and 2015 CEC opportunities.

So, we are in the process of contacting speakers and planning agendas. If you have any suggestions about who or what you’d like to see at these events, please contact the office. We want to hear your ideas.

CEC BUSINESS: The CEC Board met on May 2, 2014 to elect a chairman, orient new committee members, review courses approved in 2013-2014, and discuss changes in how workshops will be scored for credits in the future. Subject to approval by IGWA’s Board of Directors, Group II courses relating to Pumps, Electrical as Related to Pumps, and Plumbing as Related to Pumps will receive full credit instead of partial credit going forward. Another significant change being proposed is to expand opportunities to earn Idaho Rules & Regulations credits. As proposed and subject to board approval, these credits will continue to be offered at all IGWA events and at set times around the state in Idaho Department of Water Resources (IDWR) regional offices. IGWA is proposing to produce a DVD video presentation relating to state rules & regulations that would be followed by a Question & Answer discussion led by IDWR well inspectors. Registration will be required through IGWA. Cost will be $75 per credit for members; $100 per credit for non-members.

GOOD-BYES & FAREWELLS: This is also a time of transition for our office. On June 13th, we will say good-bye to Cassandra Myers, our executive assistant. Most of you have talked to Cassandra on the telephone; some of you were lucky enough to work with her on the CEC or meet her at one of the annual conventions. Cassandra, who worked part-time in our office, graduated from Boise State University this May with a Bachelor of Applied Science, minor in Communication, and a certificate in Dispute Resolution. She is looking forward to starting her career and full-time employment. She will be missed and we are sure that you join us in thanking her for a job well done and wishing her all the best.
H.D. Fowler Company is the oldest and largest independent distributor of waterworks, irrigation, pumps and wastewater treatment equipment in the Pacific Northwest, and one of the largest in America.

**Boise**
208.846.8366

**Idaho Falls**
208.522.3466

**Jackson**
307.733.0355

**Twin Falls**
208.734.8838

**Bozeman**
406.388.1169

---

What you need when and where you need it.

- Solar pumping solutions
- Now stocking Octave Meters- IDWR approved
- Ask about our Boise Pump-Build Program

[Logos of various companies]

www.hdfowler.com
Serving the Pacific Northwest for more than 100 years.
COMMUNITY MILESTONES

Our congratulations to the Pacific Northwest Ground Water Association Expo board for hosting a successful event in Portland on March 28-29, 2014. IGWA member, Gary Duspiva, is currently board president.

IGWA ANNOUNCES NEW PNWGWA board members: Rob Dawson (Contractor/Robert Dawson Drilling, Inc.), Tony Hackett (Contractor/Down Right Drilling), and Jeremy Corbin (M & S Representative/Franklin Electric) have been appointed to represent Idaho on the PNWGWA Expo’s board. These are two-year appointments, commencing in 2014 and concluding in 2016.

IGWA would like to thank out-going PNWGWA board member Jay Meade (Robertson Supply) for his service.


The CEC met in Boise on May 2nd to elect officers. David Baker (APEX Drilling) was re-elected chairman.

IGWA would like to thank out-going CEC members, Gary Duspiva and Guy Weech, for their service.

Watch your mail for our CEC flyer announcing all of our 2014-2015 continuing education opportunities.

IGWA announces the 2015 Annual Convention in Boise at The Riverside Hotel, January 28th & 29th.

Mark your calendars! NGWA reminds its members that Protect Your Groundwater Day is September 9th and encourages them to promote it to the public.

CONGRATULATIONS CASSANDRA MYERS who graduated from Boise State University this May with her Bachelor of Applied Science, a minor in Communication, and a certificate in Dispute Resolution. A single-mom, she is looking forward to starting her new career and full-time employment—and the paycheck that comes with it. We’re going to really miss her but wish her well in her future endeavors.

Cassandra and daughter, Kaileigh (2 yrs) at the Texas Rangers game in Dallas.
I was asked once why we have these continuing education classes? I had to ask myself that question a few times and spend some time thinking about it before I was able to answer. I remember back when I was having to work (and I mean work) through my high school years. Dad told me that education and schooling are not always tied together, and he was right; however, I learned that both are needed. I wasn't very good with the schooling part. We are here to learn; life is about learning; life is a continual education. We all learn differently, but, I have also come to know that we can all learn how to learn in different ways. A couple of my children are great at learning in school, school was easier for them. One is a sophomore, taking college trig/pre-calculus. He makes me proud (and sick). My oldest daughter is a senior and will have graduated by the time you read this. She is to the stage of "I just want this to be over." Whether it is struggling through a class, or fighting a poor social status, or just trying to get out of school because it is close to the end, I have come to understand that education/schooling is all about attitude. My attitude through school was POOR. I tell my children that I was the one in the family that had the poor attitude and that they had to pick something different. They don't get to have the poor attitude.

As I have been in the drilling business, I have come to understand that some days are good, some days not so good, some days really bad, and some days I am really glad I am here. As I have looked back, a lot of the good or bad, was the attitude I had at the time I was dealing with life's difficulties. I have come to realize that everyone of us is at different stages of the learning process. Some drillers are just starting out and are working at learning the processes. Some drillers can drill very well but are learning to run a business. Some drillers are at that stage where they have been there/done that, and we all look to them for help, advice, and moral support. I for one would not be here if it had not been for some great drillers in this state. The roll of the industry is to self-govern, self-teach, self-expand, and advance in all areas. Therefore, we as an industry have accepted our role, and we get to have continuing education. May we have positive attitudes and look for ways to help those in the industry around us. We all have areas that we excel in, and we all have areas of need.

As Chairman of the CEC I have been getting more and more input into what we could be doing for classes at the convention and workshops. This input has been very helpful and appreciated. We have gained great support from the IDWR and have had comments from them on the classes and attitudes of the association members. I see great progress in the future as we continue on the path that has been taken thus far. Please keep the topic ideas coming, and we will keep putting them in the line-up. Thank you for your support.

David Baker, CEC Chairman

P.S. Great news is coming on credit scoring

MEMBERS BULLETIN BOARD

No member announcements for this issue.
IN MEMORY OF GLEN ALLEN TEAGUE

Feb. 4, 1937-May 17, 2014—Glen Allen Teague passed away at home May 17th near Adrian, OR after a lengthy illness. He was cared for in his home during the past years by his wife of 52 years, Marie, his sister-in-law, Anita, and his grandson Benjamin. He was born Feb. 4th, 1937, in Mt. Vernon, WA, to James and Maudest Teague. He is survived by his wife Marie, daughter Irene (Shawn) Connell and their children Nathan and Kylan, daughter April (Michael) Tyner and their children, Jacob, William and Benjamin. Glen is also survived by his adopted son, James Niccum, sisters, Arva Hunt and Linda Gustavson of Grandview ID, sisters-in-laws Florence Bancroft, Rita Niccum, Linda Niccum and Anita Phillips, brother-in-law Norris Niccum, and many nieces and nephews. He was preceded in death by his parents, brother Jack Teague, and brothers-in-law, Marvin Niccum, Richard Gustavson, and Mike Hunt.

His early days were spent in western Washington and Oregon, where his parents owned and operated various businesses, including a grocery store, farms, and timber lands. While his mother taught school, his father taught Glen from a very early age to work at all of their enterprises, and to operate heavy equipment. Glen was adept at mechanics and helped the family, working at various jobs while attending school.

During World War II his father, James, went to work at the shipyards in Seattle, welding in the hull of a ship and became deathly ill from toxic fumes. He worked for several years, but gradually became an invalid for the rest of his life. Glen and his siblings had to take up the slack. When the family moved to Nyssa, where his Mother had a teaching job, they were able to obtain credit from Emil Stunz of Stunz Lumber Co. for the materials to build a house on North 3rd St. Glen, aged 12, and his brother and younger sisters were able to build a good house of cinder block which is still in use today. They also built a large chicken house and Glen tried to coax their badly alkali ground into producing various crops, but had little luck. Upon graduation from high school at age 17, he volunteered for the draft and spent two years in the Army. While he was stationed at Fort Huachuca, AZ, he got very interested in the geology of that area, and decided to study Geology at a university in New Mexico. His brother Jack in Nyssa talked him into coming home and attending Oregon State. Geology was his major, but the weather in Corvallis did not agree with him, and he was anxious to find a way to get into the mining business right away. He quit college after a couple of years and went to work back at Nyssa as a Millwright at Farmers Feed and Seed. In 1961, he married Marie Niccum who was a cute cowgirl from the rural Nyssa area, and a sister to one of his best friends, Marvin Niccum.

Two daughters were born to this union, Irene and April. Getting into the mining business was prefaced with some disastrous experiences such as going broke a few times in hard rock mining. At a later date one of his earlier forays turned out well with the Glen Silver ore deposit named after him and his partner at the time, Glen Pegram. This became part of the Delamar Mine in Owyhee County ID, which was a profitable silver mine for over 30 years.

Glen and Marie built their first home on Adams RD outside of Nyssa in 1965. It was primarily built with stone from a site off of the Owyhee River that he quarried and hauled down in a dump truck to ford the river. He did much of the stone masonry and building of that home. They lived there for 37 years before moving to their farm on Mendiola RD.

Glen had a small backhoe business at that time and soon started to get into the Bentonite clay business on the side with a deposit in the Succor creek area that he had discovered on BLM land and staked mining claims on. Teague Mineral Products was started with a small pilot mill in the pasture beside their home on Adams RD in 1970. He continued operating a backhoe business until 1975 when they moved to a site two miles south of Adrian OR and built a building to hold their small mill. In 1981 with the help of a SBA loan, he expanded the operation and put in a Raymond roller mill and was then in the bentonite business full-time. They took on another mineral, clinoptilolite zeolite, shortly after getting the big mill running. Teague Mineral Products is one of only about a dozen producers of natural zeolites in the US.

In 1995 they purchased a 160 acre farm on Mendiola RD near Adrian that was originally a homestead. Glen planted a trellis apple orchard with the varieties Fuji, Gala and Maravilla. The Maravilla, an early yellow apple was developed from an unknown tree that he discovered in a block of Fuji trees. He applied and obtained a plant patent on this variety.

In the year 2001 Glen and Marie moved into a new home that Glen had spent three years building at the Orchard property. He constructed a culvert across the canal and a road up the hill leading to the stucco Santa Fe style house where they have resided since that time.

Over the years Glen enjoyed visiting with friends and talking over the days happenings at the Mirage in Adrian after work. This interaction with neighbors and friends was an enjoyable and important part of his life.

In lieu of flowers, contributions may be made to the Glen Teague Memorial Scholarship Fund, at any Umpqua Bank. The Scholarship Fund will benefit students pursuing science in higher education.
SAVE THE DATE

IGWA ANNUAL CONVENTION

January 28 & 29, 2015

The Riverside Hotel
2900 Chinden Blvd.
Boise, ID

Tentative Vendor Set-Up: January 27th