

SUMMER
2011

The Official Publication of the Water Environment Association of Utah



DIGESTED news

Celebrating 50 Years of Clean Water

2011

**WEAU ANNUAL
CONFERENCE RECAP**

**APRIL 5 - 8 • DIXIE CENTER
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INSIDE:

The Pump Whisperer ■ Operations Challenge ■ YP Changing of the guard

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Message from the editor

Someone once said that time marches on. How true. The Annual Conference came and passed. What a successful conference! As I was putting the pictures together and putting names with the faces I thought about how much fun was had and how much knowledge was exchanged. It seems that each year the conference just keeps getting better and better. One day you would think that it would reach a limit on how successful it is but not as of yet. Great job to all of the people involved in making the conference what it is. Having been involved with the conference 'creation' in the past I know it takes everyone to make it successful.

The *Digested News* is continuing to move forward. I would like to take this opportunity to welcome Chad Burrell

(Orem) on board. He and I will be working together on the remaining issues in 2011 and then I will be stepping aside and Chad will have the show.

Just as the annual conference takes many people to put on so does the *Digested News*. It would not have near the content in it if I did not have people sending me articles and quizzes to include. Thank you to all that contributed for this issue. The goal is to make the *Digested News* a valuable tool that you can use to improve your knowledge and understanding of our profession.

Please enjoy the issue and as always comments and suggestions are welcome.

Sincerely,
Sharon Siebold, *Digested News* Editor

Cover Photo: Jill Houston and Dan Olson Changing of the Guard



Dan Olson

What a wonderful Annual Conference

First, I would like to give thanks. This association could not be as successful as it is without the thousands of volunteer hours given by dozens of people. Jill Houston, aka 'Empress of the World', spent unknown hours planning, preparing, executing and now basking in the glory of a successful conference. Jim Schwing, acting as Annual Conference council chair in usual form covered all bases. We were delighted to have Chris Browning attend as our Water Environment Federation Representative. The members of the Annual Conference council, the board of directors, the presenters, the

vendors, consultants, the sponsors and the attendees all came together to make the conference a grand experience for all who attended. Of course, we would not want to forget our sponsoring entities that allow us the time and resources to serve the association. It was the paramount educational experience of the year.

As we look to the coming year, the bar has been set high by the past presidents. I can only hope to emulate the great qualities they have demonstrated. I hope to continue the work they have begun and build upon it with new ideas and suggestions. Great ideas do not always

come from the top. In fact, most great ideas come from the guys in the trenches, no pun intended. Many of you have contacted me to share your ideas. I look forward to implementing some of them. Unfortunately, Paul Krauth's suggestion is physically impossible and may be illegal in Utah, but the rest were really good.

Remember this is your association and you have a voice. Make your thoughts known and get involved. [en](#)



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Collection Systems Training

By Don Telford

The collection training for February was on barricades, dot lighting, traffic setup and how to safely excavate around natural gas and electrical power lines.

The first two presenters were Dave Shields and Doug Coleman from Utah Barricade. Their initial discussion was about the various types of work zone channelization devices to be used. These devices come in the form of barricades, plastic drums, vertical panels, cones and tubular markers. Each of these devices has specific uses depending on the application, night or day and the length of their use. They explained the types of Barricades, (type 1, 2 and 3). What types can be used and where. In night operations the channelization devices have to be large enough and have enough reflective surface to be seen. Specific requirements was discussed on the types of devices to be used on highways, interstate, subdivision and other types of roads and whether the work is to be done day, night and long term. The work zone layout was discussed with the requirements based on speed, visibility and general UDOT requirements. This gives the required sign spacing and the types to situations that require the use of Arrow Boards. When preparing for controlling traffic, know if a traffic control

plan is required on the street that you will be doing work on and if a permit is required. When works are actually on site, be sure that the workers are using vests of the correct ANSI class for conditions. They demonstrated pieces of lighting equipment, which can be used at the work site. The lighting balloons were portable, easy to set up and compact when stored. The balloon lights are self-contained, blow themselves up and provide light for the work area and provide less glare for motorists' eyes. It is important to use the proper devices and be safe.

Don Cash from Federal Signal then discussed vehicle lighting.

Lights on a roadside vehicle is to give advance warning of a hazard...but, to clarify it further... the HAZARD is YOU and your CREW. It is important that the lights get the driver's attention and that the work zone stands out and the warning is early enough that the drivers can react. There are four factors that should be used to determine the type of lights to be used. They are:

1. Intensity
2. Contrast
3. Animation
4. Installed Position

Intensity is a function of the amount of light output, flash energy, and how the

light is focused. The brighter the lights the greater distance that they can be seen. **Contrast** relates directly to the issue of the light standing out from the surrounding environment. If the intensity of the light is only as bright as the environment then the warning lights will not be seen. Contrast is also a function of dark time (that is the off-time of a strobe). **Animation**, this the 'Conspicuity Factor' which simply means, the additional awareness created by the animation of a signal (motion). Peripheral vision picks up 'Motion' very well. **Install Position** of the warning lights on a vehicle determines the visibility of the warning lights. Lights mounted high on the vehicle or higher are called level one lights. Lights mounted at eye level are called level two lights. Level three lights are mounted even or slightly higher than the stop, turn and tail lights (about 24" of the ground). Each of these four factors increases the effectiveness of a vehicle's warning lights. Rotators have the most visible bright light that can be seen from the greatest distances. Don then went over the different types of lights available. The big advances are in the LED type of lights. They are becoming brighter, more directed and



Mike Wardle



Don Cash



Balloon Light

more important, they draw a lot less power for the amount of light they deliver and they seldom burn out. LED lights can provide a more compact light package.

Bud Slack from Rocky Mountain Power discussed the importance of staying away from high voltage lines and to make sure that before digging that 'Blue Stake' (811) is called for location of utilities.

Mike Wardle from Questar Gas talked about the importance of contacting them when a line gets scratched. He emphasized the importance of not doing anything with their pipe and to be aware of static electricity that builds up on the plastic pipe.

We would like to thank each of our presenters for time that they spent instruction us on safety. [DN](#)



Bud Slack

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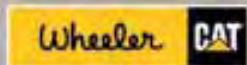
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Know the Zone

Compiled By Bill Patterson and Tim Madsen
Cottonwood Improvement District

1. How many square inches of reflective material must be on a grade 2 safety vest?
a) 70 b) 150 c) 110 d) 190

2. What are the five areas of a traffic work zone?

- 1) A _____ W _____
- 2) T _____
- 3) B _____
- 4) W _____ Z _____
- 5) T _____

3. What is the formula you use to figure out the taper on 40 MPH street?

- a) $\frac{\text{Width of the road} \times \text{Speed of the road}}{45}$
- b) $\frac{\text{Width} \times \text{Taper} \times \# \text{ of Cones}}{50}$
- c) $\frac{\text{Speed} \times \text{Lane Width} \times \text{Project Length}}{55}$
- d) $\frac{\text{Lane Width} \times \text{Speed} \times \text{Speed}}{60}$

4. Name three different types of channeling devices?

5. When using a lighted type 1 barricade as a channeling device the light should be set to?

- a) Steady burn b) Flashing
- c) 50% power d) Off

Bonus Question: Why is a hard hat required while flagging?

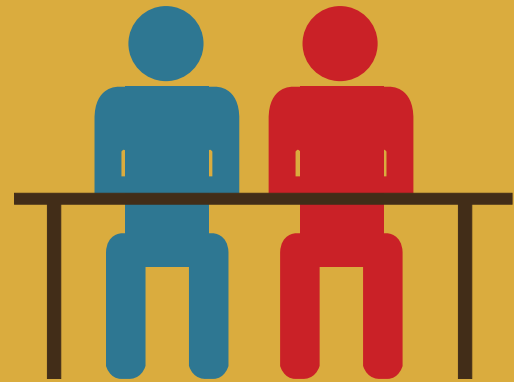
Answers: 1- c, 2- Advanced Warning, Transition, Buffer, Work Zone, Termination. 3- d, 4- Cones, Panels, Barrels. 5- a, Bonus Question: So the stop slow paddle will not injure the flagger if hit by a vehicle. Yes, this is the real reason given.

Collections Quiz

2011

WEAU ANNUAL CONFERENCE

APRIL 5 – 8 • DIXIE CENTER • ST. GEORGE, UTAH



ANNUAL CONFERENCE ONE OF THE MOST SUCCESSFUL EVER

By Jim Schwing/CH2M HILL

The 2011 WEAU Annual Conference was one of the most successful Annual Conferences in our history. Attendance was around 385 with over 50 vendors exhibited their products. We also had 68 attendees at the Pre-conference Workshop. The conference was from April 5-8, in St. George.

The April 5 Pre-conference Workshop theme was Challenges and Strategies to Address Utah's Aging Wastewater Infrastructure. The workshop included information about the state of Utah's POTW infrastructure followed by presentations by Alan Ispass and Cody Stanger of CH2M HILL on asset management strategies. Jonathan Ward of Zions Bank provided valuable information about developing financial strategies and Mark Stanley of Salt Lake City Department of Public Utilities discussed the role of the city's Asset Management Program in the rehabilitation of their 66-inch 1800 North Interceptor. The workshop closed with a presentation by Giles Demke of Salt Lake City's Water Reclamation Facility about unanticipated condition issues with the facility's anaerobic digesters that led to a complete redesign and construction of their primary digesters.

The Operations Challenge, which always a fun event was on Tuesday morning and included teams from Central Valley (Wasted Gas), Central Weber (Blue Darts), Cottonwood Improvement (Sinkers), North Davis (two teams; Gold Flush and Royal Flush), Provo/South Valley (The

Replacements) and Snyderville Basin (Sewer Saviors). The technical program ran from Wednesday afternoon through Friday morning. Session themes included Wastewater Facility Planning, Risk and Safety, Environmental Issues, Collection Systems, Residuals, Nutrients, Electrical and I&C, Wastewater Equipment and Operations, and PWO and Young Professional Training.

The Young Professionals held combined events with the PWO that include a training session each day of the conference, a combined BBQ on Wednesday evening and a breakfast at the Cracker Barrel restaurant on Thursday morning.

The Opening Lunch on Wednesday morning featured the Keynote Address by the WEF Treasurer Chris Browning. The Business Lunch was held on Thursday and the Annual Banquet was Thursday evening followed by an impromptu 'post-banquet business meeting' at 'The Office' in the Hilton Garden Inn.

Extra-curricular activities include a Pre-conference ATV Ride, Sporting Clays, Golf Tournament, and a Mountain Bike Ride. Unfortunately, the WEAU Annual Conference Friday Storm Event 'pre-empted' both the Golf Tournament and Mountain Bike Ride.

The Partners Program included the Operations Challenge on Wednesday morning, the Opening Luncheon, and the Banquet. Optional activities included passes to the Summit Athletic Club throughout the conference and golf lessons on Wednesday afternoon.

Select Society of Sanitary Sludge Shovelers (SS) inductees included Jennifer Robinson of UDWQ and Chris Reilley of CVWRF and the Master of Ceremonies for the induction was the ever-entertaining Jon Adams of the Timpanogos Special Service District.

Awards and awardees included Reed Fisher/CVWRF – Grant K. Borg Award (WEAU), Lance Wood/CWSID – Arthur Sydney Bedell Award (WEF), Chad Burrell/Orem – William D. Hatfield Award (WEF), and Richard A. Mickelsen – Laboratory Analyst Excellence Award (WEF). Jim Schwing/CH2M HILL received his WEF Lifetime Membership with more than 40 years of active membership.

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WEAU also extends special thanks to the Annual Meeting Committee: Jim Schwing – Chair, Lance Wood - Vice Chair and Local Arrangements, Phil Heck - Technical Programs, Mike Foerster - Board Liaison and Hotels, Dan James - Vendor Exhibits, John Mackey - Pre-conference Workshop, Tiffini Adams - Young Professionals, Chris Reilley – PWO, Dru Whitlock – Registration, Jeff Beckman – Golf Tournament, Darrel Dixon – Mountain Bike Ride, Dave Hutchinson – Preconference ATV Ride, and Sporting Clays – Dan Olson.

AWARD WINNERS



Andrew Oko Outstanding Laboratory Technician



Ash Creek Outstanding Non-Discharging Lagoon



Jill Houston and Dan Olson Changing of the Guard



Central Davis Sewer Outstanding Collection System Over 5 MGD



Providence City Outstanding Collection System Under 5 MGD



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Brett Olson Outstanding Operator Over 5 MGD



Lance Wood Arthur Sydney Bedell Award



Chris Reilley SSSSS Award



Cedar City Excellence Award



Chad Burrell William D Hatfield Award



Cody Snyder Outstanding Operator Under 5 MGD

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Darrell Olmstead Outstanding Supervisor



Jennifer Robinson SSSSS Award



Kevin Muhlestein Outstanding Collection Operator Under 5 MGD



North Davis Outstanding Water Reclamation Facility Over 5 MGD

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Reed Fisher Grant K Borg Award



North Davis Outstanding Laboratory



Richard A Mickelsen Laboratory Analyst Award



Jennifer Robinson Outstanding Young Professional



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Jim Schwing Life Membership



Snyderville East Canyon Outstanding Waer Reclamation Facility under 5 MGD



Steve Desmarais Outstanding Collection Operator Over 5 MGD

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2011 WEAU GOLF TOURNAMENT RESULTS



1ST

1ST PLACE: NET SCORE = 65

Danny Astill \$70 Uinta Golf Gift Card
Dean Gibbs \$70 Uinta Golf Gift Card
Mike Dofelmire \$70 Uinta Golf Gift Card
Jeff Beckman \$70 Uinta Golf Gift Card

2ND

**2ND PLACE: NET SCORE = 69
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Dave Norman \$45 Uinta Golf Gift Card
Mark Johnson \$45 Uinta Golf Gift Card
Scott Forsling \$45 Uinta Golf Gift Card
Dustyn Shaffer \$45 Uinta Golf Gift Card

3RD

3RD PLACE: NET SCORE = 69

Tom Holstrom \$25 Uinta Golf Gift Card
Vicki Holstrom \$25 Uinta Golf Gift Card
Bill Peretti \$25 Uinta Golf Gift Card

INDIVIDUAL AWARDS

Long Drive

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Closest to Hole

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Do it right

By Gary Hill

I thought I could get out of the coveys, turn off the heater, and let the sun shine in the old garage. Not so! It is raining and cold out today, so the heater is on, getting into my coveys, the lights are on, and the compressor is humming along. You gotta love springtime in Utah.

Some of you know that I am restoring a mid 60's Pontiac GTO, one of my all time favorite cars. I bought the car from a family that the father had decided to restore with his son. Kind of like a bonding project. I now call it, bonding with Bondo. When I looked it over, I knew there were some issues and there were areas of Bondo on the left quarter panel that had cracked, meaning it was deep. There were also some other smothered areas that I would find later. When I finally dug through, some places being almost a quarter inch deep, I discovered why. The Bondo had to hide some hideous welding and patch work that I am guessing was from lack of knowledge and experience and eventually overwhelmed the duo. I am sure they were in a hurry to get out on the open road. It never made it. I also have had to strip and sand the entire car as the Bondo duo had sprayed the entire car with high build primer to keep the rust down. That brought the total layers of paint to sand

through to three. It has taken awhile to get to bare metal. In the meantime, I have rebuilt the three deuces, tripower it is called on a Pontiac and have taken apart most of the car. The engine is done, and the trans is done. It is coming along.... slowly. Had the father/son took the time to repair and restore the car RIGHT, they might be enjoying the payoff with the scream of three deuces opened up with the pedal down to it. Or they could have commanded a much higher price at the sale.

So, what has this got to do with wastewater you say. Well, it is the same concept whether you are working on a pump, calculating process, running samples in the lab, or basically doing any job. If you do it right, hopefully the first time, it will pay dividends down the road, not only for you, but the next guy. It is also so much more cost effective, and time saving to deal with a job done right. It is downright frustrating to come across shoddy workmanship, or corners that were cut in order to save money or get to lunch on time. We all have run into this at one time or another. Nobody wants to redo a job that should have been done right in the first place, or keep dealing with band aids on problem areas in the plant that should



be corrected right. The one place that we can never afford to cut corners is in safety. Even when I am sanding or grinding, it is coveys or long sleeves, safety glasses, gloves, and dust mask. ALWAYS do it right when it comes to safety. I am sure I am preaching to the choir here, as so many of you are professionals and take pride in doing the job right. Just was on my mind. OK, the compressor is up and ready and it is time to get going here, to get this car done RIGHT!!

Before I get to grinding, I am looking forward to meeting with many of you, to working with both Ron and Chris (sorry cannot let you rest just yet), and with the WEAU. We have our National Challenge teams kicking off in June, we have a PWO Golf Tournament on the 27th of June which will be a good one. We have some great training on tap in electrical, thanks Myron, and some training in Eastern Utah later this summer. We are looking forward to a great year!! [DVI](#)

“ Whether you are working on a pump, calculating process, running samples in the lab, or basically doing any job, do it right.”

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The Pump Whisperer

Reflections on the history of pumping power

By Larry Bachus



Someone said, “A zoo is a special park in many cities where animals come from all over the world to stand around and look at the people.” Most people think it is the other way around.

I am sitting in a hotel room in the Caribbean. Tomorrow, I will go into a chemical plant to see a sick ammonia pump. Hopefully, I will be able to solve the pump’s problem. The TV is on some movie channel, and there is an old movie about a cowboy who whispers to horses. He coerces the horse to do man’s bidding without ‘breaking’ and dominating the horse. He is the ‘Horse Whisperer.’

There is a similar TV program starring some man who whispers to dogs, the ‘Dog Whisperer.’ The dog whisperer changes the dog’s behavior without resorting to force or punishment — or so it seems.

Actually, he changes the dog owner’s behavior. I admit that the dog reacts differently by the end of the program, but only because the owner changed his attitude toward the dog. And this brings me to this installment of ‘The Pump Guy.’

People think the Pump Guy is clairvoyant with cast iron. They think I can diagnose and cure a ‘bad actor’ pump. I really hate that phrase, because the pump is not the bad actor. Think of the zoo and the dog whisperer. My real mission is to change the engineer’s attitude toward pumps.



James Watt’s centrifugal governor on “Old Sally,” a 150-Hp steam engine installed in 1881 at Boulder, Co. A shot of steam drives the balls (top, center of photo). As the balls spin faster, they stand out by centrifugal force and levers raise a valve stem that opens to relieve excess pressure and governs the engine’s velocity. This mechanical device is the history of instrumentation.

In this installment of the Pump Guy, I am going to offer some horse (common sense to understanding horsepower and kilowatts applied to pumps. First, a little history.

James Watt was born in 1736. He was raised and educated in the coal and iron mining region of Scotland. In school, James was interested in math and studied instrument repair. In 1755, a customer brought him a boiler to repair. James studied the old boiler and thought of ways to improve it. James is credited with developing the modern boiler, the centrifugal pressure regulator, the centrifugal governor, and the rotary steam engine. He also invented devices used in civil engineering and surveying. Every student of electricity knows James. After all, the electric unit ‘Watt’ is named in his honor.

Mining was a labor intense industry, and still is today. For menial labor, children were sent into the mines, because they had small lungs and did not consume the air (oxygen) that a full-grown miner would consume. For work beyond the ability of a grown man, the mining industry bred especially small horses that could go into the mines and do the pulling and hauling that a grown man could not do.

Because most mines are dug below the water table, and sometimes below sea level, many mines would eventually flood if it were not for the children and horses that removed the water. With pity toward the children and the horses, James Watt decided to replace the human and animal labor in the mines with machines.

Just as an artist would begin a painting by establishing perspective, James Watt began by defining terms and establishing standards. He defined ‘energy’ as the capacity to perform work. James defined ‘work’ as a force exerted or multiplied over a distance. And he defined ‘power’ as work performed within a certain time frame.

James began his quest by establishing what a horse could do. He harnessed a workhorse to a support frame with a pulley

and a platform with different weights. The horse lifted 550 pounds of weight a distance of 10 feet in 10 seconds.

James Watt declared that 550 foot-pounds per second is one horsepower. It is because of Mr. Watt’s scientific effort that all electric motors, internal combustion engines, turbines, boilers, jet and rocket engines, etc. are rated in horsepower, as opposed to iguana power or ostrich power.

James went to his grave with an important part of the formula though. He never told anyone what the size of his test horse was, so we do not know if it was a Shetland pony or a Clydesdale.

Because the first pumps pumped water, the output or work of a pump is called Water Horsepower (WHP). The formula is:

$$WHP = \frac{H \times Q}{3,960}, \text{ where}$$

H - Head In Feet Q - Flow in GPM

3,960 is a factor that converts horsepower into pump terms. Enter this into your cheat sheets, and remember it. I will explain.

Horsepower is expressed in foot-pounds per second, and pump output is expressed in gallons per minute (GPM). We need to convert horsepower terminology into pump terminology. One HP is 550 foot-pounds per second. Multiply this by 60 seconds in a minute and we have 33,000 foot pounds per minute, or horsepower-minutes. Next, a gallon of water (at sea level and 70 F.) weighs 8.333 pounds. Divide the 33,000 ft.-pounds by 8.333 pounds per gallon and we have 3,960. The ‘3,960’ is a horsepower expressed in pump terminology.

In the early days of pumps, water was the first and only liquid moved in bulk. Other liquids like beer, paint, lamp oil, milk, acid, and whiskey were made in bottles, buckets, or casks and carried from one place to another. As technology advanced and pumps were applied to move other liquids, another element, the specific gravity, was incorporated into the basic horsepower formula. The formula for

“ They think I can diagnose and cure a ‘bad actor’ pump. My real mission is to change the engineer’s attitude toward pumps.”

water horsepower incorporating specific gravity is:

$$WHP = \frac{H \times Q \times sp. \text{ gr}}{3,960}$$

The result of this equation is a good number, but it is not very useful because we never need to know this number. Frequently, we need to know a variation of this number. We need to know the BHP or what size motor we are going to use on this pump. The BHP considers the pump’s efficiency. Now we have:

$$BHP = \frac{H \times Q \times sp. \text{ gr}}{3,960 \times \text{elf.}}$$

This is a relatively easy formula to understand. Let’s work with it a little. Imagine that we need a pump for a system that requires 600 GPM of water, while generating 40 PSI. The 40 PSI in pump terminology is the same as 92 feet of head. Let’s say our pump is 77 percent efficient. The specific gravity of water is 1.0. To apply the formula, the H is 92, the Q is 600, and the efficiency is 77 percent. Now we have:

$$BHP = \frac{92 \times 600 \times 1.0}{3,960 \times 77\%}$$

$$BHP = 18.1 \text{ horses}$$

This pump would burn 18.1 horses or 13.5 kilowatts (1-Hp = .746-kw). We’d have to install a 20 hp motor onto this pump because no one makes an 18.1 hp motor.

Many pump specifications do not mention the efficiency. They are mostly concerned with meeting the needs of the system, meaning head and flow. What if we could save \$800.00 by buying another comparable pump that meets the needs of the system. If the cheaper pump were 60 percent efficient, we’d have some different horsepower figures:

$$BHP = \frac{92 \times 600 \times 1.0}{3,960 \times 60\%}$$

$$BHP = 23.2 \text{ horses}$$

Now we must buy a 25 HP motor to operate this other pump with the reduced efficiency. And it’ll consume 17.3 kilowatts. The difference is 5.1 horses or 3.8 kilowatts (1 HP = .746 Kw) compared to the first pump.

If the pump runs for a year, this would mean an additional \$3,332 dollars per year in electricity to run the inefficient pump at 10¢ per kilowatt/hour. And this \$3,332 would be on top of the additional cost for the 25 HP motor. How do you feel about your \$800.00 savings now?

An even cheaper pump might perform the same work and be only 50 percent efficient. This pump would burn 27.8 horses of electricity, and it would require an even larger motor. If it ran 24 hours per day, this would be an additional \$6,340 in the electric bill per year compared to the first pump.

The lesson to be learned is: Always buy the most efficient pump, especially these days with rising energy costs. [DII](#)

Larry Bachus, founder of pump services firm Bachus Company Inc., is a regular contributor to Flow Control magazine. He is a pump consultant, lecturer, and inventor based in Nashville, Tenn. Mr. Bachus is a member of ASME and lectures in both English and Spanish. He can be reached at larry@bachusinc.com or 615-361-7295. www.bachusinc.com

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2011 Annual Operations Challenge, St. George

This year has been another successful year for our Operations Challenge. We had our kickoff meeting on December 7, 2010 for this year's challenge, because we needed a jump start for 2011.

It was a little rough getting everything up and running, but once we had our teams lined up and a practice schedule made up the teams did great. We had overlapping days the last three weeks and the teams worked great together. This is when I really appreciate the great people we have in our organization and in the field in which we work. There were lots of individuals and teams that would help each other out learning the events and just helping each other improve. This makes the Challenge better every year. There is a little joking and teasing, but a lot of learning and helping and I truly want to say thanks to all of the teams and judges for

helping each other out so that this could be a great success this year. The other people I need to thank is all the managers and boards who make this possible, along with our co-workers who help make the difference at the plants so the teams can practice. Thanks to everyone for your help and support.

This year with the help of all involved, we had seven teams compete in the challenge. This is the most we have ever had and it was great to have lots of teams and individuals involved to help make this happen. Our combined team utilized a lot of the help from the other teams. We had a lot of new people on several of the teams





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“ The competition was extremely tight this year, as usual, and each event was up for grabs.”

and it has been great to see the growth and camaraderie amongst everyone.

We started a half hour earlier this year because of the new events of the Lab and Pump and also due to a 7th team joining the ranks. The tension, excitement, and the nerves were all present and ranged anywhere from high to low on any chart. However, time was a ticking and soon the question and answer session had began along with the final walk through with the judges that followed. The hat draw for the starting placement and order of teams was made and then the event began. There were bumps in the road all the way some from teams, some from individuals, some from equipment, and some that I just plain forgot to put out on the table as a judge. (Oops, sorry, one of my many mistakes.) However, all in all, the first four events went very well and it was a blast watching and participating in our annual competition. The competition was extremely tight this year, as usual, and each event was up for grabs to see who could pull it off the best with the least amount of mishaps. Just like many different kind of events the more you practice hard, the better chance you have at pulling off the best time you possible can. However, game day and pressure have their time to shine, to test each individual and each team. The competition was getting even closer as we went to lunch, giving the teams a chance to have their stomach chew and their minds stew on the need to do well as a team on the ‘Dreaded Process Test.’ The test was laid out and the once again the teams put it all on the line. The results were yet to be determined but we had all enjoyed the events of the challenge and the friendships it brings. Everyone jumped in to load up the equipment, which was followed by the beginning of the technical sessions. That night we had our Operations Challenge and Young Professionals Park BBQ which was another night of great success in enjoyment with our families, and friends. We had several days of fantastic training and technical sessions with a lot of information being exchanged and relayed that help everyone in the field. Our Operation Track was very

well attended and our presenters all did a marvelous job. Thursday night was the Awards Banquet and every team placed in one of the top three spots in at least one event. Take a minute to look at our final results along with all the different people

who have helped in our event this year. Congratulations to all the teams and to our winners this year we look forward to seeing our two national teams doing well this year in representing the WEAU in L.A. at Nationals. [D&A](#)

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Operations Challenge Teams For 2011

Central Valley "Wasted Gas"



Kevin Gallagher, Jeff Weiss, Hadley Gunn, Darin Morris, Tiffini Adams

North Davis "Royal Flush"



Tom Anderson, Bryce Southworth, Jose Zamora, Lane Reynolds

Central Weber "Blue Darts"



Tyler Barfuss, Shawn Wilson, Jeff Porter, Matt Burlison, Brett Nelson

Provo/South Valley "The Replacements"



Weston Youd, Jordan Boone, Sherry Sheffield, Weston Gardner

Cottonwood Improvement "Sinkerrzz"



Jeff Terry, John Lewis, Ker Spor, James Herrera, Mark Leonard

Snyderville Basin "Sewer Saviors"



Dakody Cines, Nick Brown, Dustin Lewis, Marlo Davis, Cody Snyder

North Davis "Gold Flush"



Ron Clements, Kylee Nelson, Brian Lamar, Gordon Call

Judges For Operations Challenge St. George 2011 Annual Conference



Safety Event

Head Judge Eddie Alex
Brent Carnham
Jeff Macfarlane
Gary Faulkner

Collection Event

Head Judge Blaine Bowden
Rod Ivie
Mike Foerster

Process Event

Head Judge Chris Reilley
Gary Hill

Laboratory Event

Head Judge Anthony Daw
Lee Rawlings
Jeff Kirkman
Leslie Wentland

Maintenance Event

Head Judge David Barnes
Lonn Rasmussen
Myron Bachman
Brett Olson

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2011 Operations Challenge Results

TEAM NAME	SAFETY			LABORATORY			MAINTENANCE			COLLECTION			PROCESS			FINAL	
	Time	Score	Rank	Time	Score	Rank	Time	Score	Rank	Time	Score	Rank	Time	Score	Rank	Score	Rank
#1 Snyderville	4.13	96.92	2	14.36	97.07	4	6.28	81.42	4	1.85	93.42	3	-1677.50	70.16	6	439.00	3
#2 Central Valley	5.06	90.25	4	14.26	97.61	2	6.25	81.83	3	1.83	93.74	2	-2792.00	91.04	3	454.48	1
#3 Cottonwood	9.28	60.00	7	14.35	97.13	3	6.46	78.98	5	3.88	60.00	7	-1135.00	60.00	7	356.11	7
#4 NDSO Gold Flush	4.15	96.77	3	18.96	72.61	5	4.91	100.00	1	1.45	100.00	1	-1950.00	75.27	5	444.65	2
#5 Central Weber SID	3.70	100.00	1	19.83	67.98	6	5.11	97.29	2	1.95	91.77	4	-2045.00	77.05	4	434.09	4
#6 NDSO Royal Flush	6.83	77.56	6	21.33	60.00	7	7.86	60.00	7	2.13	88.81	5	-3160.00	97.94	2	384.31	6
#7 Provo/South Valley	6.16	82.37	5	13.81	100.00	1	7.11	70.17	6	2.76	78.44	6	-3270.00	100.00	1	430.97	5



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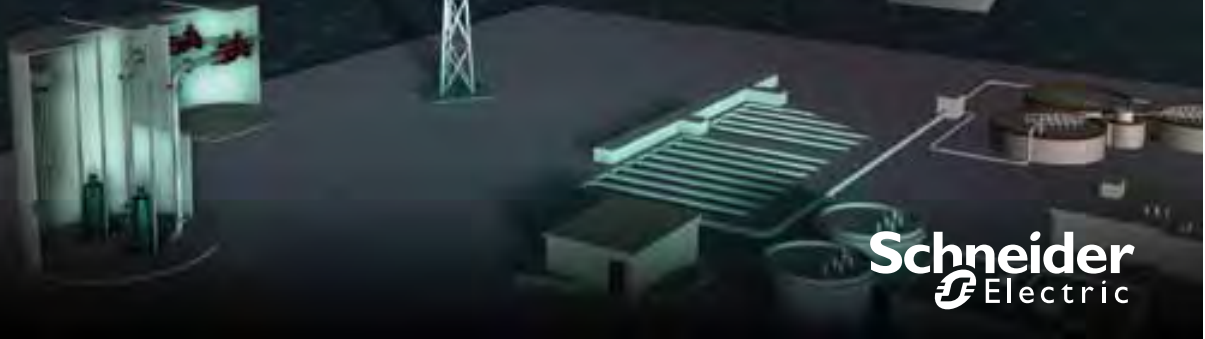
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2011 PWO GOLF TOURNAMENT



DATE

Monday, June 27, 2011

TIME

7:00 am Registration
7:30 am Shotgun Start

LOCATION

Valley View Golf Course
2501 East Gentile Layton
Utah 84040
See: www.valleyviewutah.com

FORMAT

4 Person Scramble
(A cap of 100 people)

COST:

\$50 per person
(includes cart and lunch)

REGISTRATION

Deadline: June 17, 2011

Team names and money needs to be to Chris Reilley by June 17th 2011

If there are questions please call:

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Mail money (checks payable to WEAU) **and registration to:**

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2011 PWO GOLF TOURNAMENT

Team member's name	Phone	Amount
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2.		
3.		
4.		



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1. A diaphragm pump is a type of?

- a) Dynamic feed pump
- b) Positive displacement pump
- c) Rotary pump
- d) Centrifugal pump

2. The term A.C. in the phrase "A.C. induction motor stands for"?

- a) Automatic control
- b) Alarm contact
- c) Average capacity
- d) Alternating current

3. Impellers are components of _____ pumps?

- a) Plunger
- b) Centrifugal
- c) Progressive cavity
- d) Rotary lobe

4. Which of the following abbreviations stands for a document that provides a profile of hazardous substances or mixtures?

- a) CERCLA
- b) OSHA
- c) CFR
- d) MSDS

5. _____ carry no electrical charge.

- a) Neutrons
- b) Electrons
- c) Protons
- d) None of the above

6. The industry standards is to interchange power leads L1 and L3 to reverse the direction of a three phase motor.

- a) True
- b) False

7. A fuse is an overcurrent protection device (OCPD) with a fusible link that melts and opens the circuit on an overcurrent condition.

- a) True
- b) False

Answers:

1. b, 2. d, 3. b, 4. d, 5. a, 6. a, 7. a

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USU design team taking Logan Lagoons to WEFTEC

By Clint Rogers

There is an old adage that says, if at first you do not succeed... try again. A student design team for Utah State University (USU) has done just that and is now headed to WEFTEC to compete in the national student design competition.

Two years ago, the USU team first presented their design to a panel of WEAU judges on the topic of modifying the existing sewer lagoons in Logan, Utah to meet a new total phosphorus limit. At that time the judges recommended that the students take another year to prepare their design for WEFTEC. The design was not ready to compete on the national level. It was not due to a lack of effort from the students, the fact was that these were undergraduate students that were delving into the world of wastewater for the first time. There was only one senior on the team and the remaining three students had yet to take a wastewater design class. The students were congratulated for their effort and plans were made to help them improve technically for the 2011 competition by working closely with USU professor Ryan Dupont and Clint Rogers (Carollo Engineers) from WEAU.

Fast forward to the 2011 WEAU Annual Conference, the students presented their improved Logan Lagoon project as a technical presentation during the Friday morning session. Those who attended were impressed by the design concepts presented, conclusions made, and the quality of presentation given by the

“The most valuable thing that I have gained from this competition, however, may be the introduction to the wastewater treatment community that it has given me. After attending a few WEAU conferences I have been impressed with how down to earth everyone is. People have been so ready to provide feedback and help for us, and there truly is a sense of community at these events. This has only added to my interest in pursuing a career in wastewater treatment, and has even led to relationships with potential employers.”
Riley Bradshaw
USU College of Engineering Senator

students. The students benefited greatly from this practice session and question and answer period that followed. WEAU members asked great follow-up questions and were helpful and encouraging in their interactions with the students. There was excitement in the air as it was evident that the students were in the process of polishing the presentation for their date with the WEAU judging panel the following week and ultimately the opportunity to compete at WEFTEC.

Judgment day was April 20, 2011. The judges were thoroughly impressed by the improved technical approach and presentation skills demonstrated by the students and voted unanimously to recommend to the Board that they be sent to WEFTEC to represent WEAU in the national competition. This year's judging panel included Jeff Wiest (Waterford Systems), Lance Wood (Central Weber), Jim Schwing (CH2M HILL) and Trevor Lindley

(J-U-B Engineers). Special thanks to Issa Hamud and Jim Harps (City of Logan) for hosting the event and being a resource to the students throughout this process with plant tours, data sharing, and question answering.

The USU student team includes three undergraduate students: Camilla Snow, Diane Pribble, and Riley Bradshaw. They are to be commended for their efforts. As fulltime students it was difficult for them to find time for the design project. There were long nights and weekends devoted to the study of wastewater. Perhaps it will lead to a career. Best of luck to Camilla, Diane, and Riley as they compete at WEFTEC. [DN](#)



“As far as my thoughts on this competition, I have really appreciated the in-depth experience that the WEAU student design competition has given me. I don't think any of us realized what we were getting ourselves into when we started into this over a year ago. Considering we had only one member of our team then with any experience in this field at all, there was a very steep learning curve. We have gone from knowing almost nothing about wastewater treatment, to seriously considering careers in this field.”
Riley Bradshaw
USU College of Engineering Senator

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Leaders energize and engage the workforce

By Gregory P. Smith



A. W. 'Bill' Dahlberg, the former CEO of Southern Company believes in having fun. At company gatherings, he has impersonated soul singer James Brown, dressed as General George Patton and arrived decked out as a fortune-teller, complete with crystal ball.

Employees at PeopleSoft, Inc. remember the day that CEO David Duffield danced the Macarena in front of 500 happy co-workers.

Over at Odetics, Inc., they are still talking about the time the chief technology officer took over duty on the cafeteria cash register on St. Patrick's Day...dressed as a leprechaun!

And then there is John Briggs, director of production at Yahoo. In early 1997, Briggs promised salespeople that he would have the Web directory's logo tattooed on his posterior when the stock passed \$50 a share. To show he had kept his promise, he modeled the new tattoo in front of everyone in the company.

Finally, there is something called 'Bowling with Turkeys.' Hotel tradition calls for employees at the Hyatt Regency (Lexington, Kentucky) to wrap a 12-pound frozen turkey with electrical tape, then roll it 50 feet down the loading dock and try to turn over as many wine bottle 'bowling pins' as possible. Winners get a pumpkin pie.

After a professional lifetime identifying what it takes to create transform ordinary organizations into extraordinary organizations, I know work can be awfully boring—unless someone at the top shakes everything up.

The leaders and organizations I just mentioned know it is important to engage, energize and involve people about their work. You need to lighten up and have some fun every now and then.

It is not hard to dress up as a leprechaun, sponsor a company contest, ask people for their ideas and maybe even throw a party. And the payoff for an energized work environment is enormous: improved retention and productivity and reduced turnover.

We cannot merely employ someone's hands and tell them to leave their hearts, minds and spirits at home. Today's workers are looking for many things in an employment relationship. They want a meaningful partnership with their workplaces. Workplaces that provide meaning and purpose and are fun, engaging, and energizing will enjoy greater retention, higher productivity and lower turnover.

Remember Abraham Maslow? His well-known hierarchy of needs theory said all people strive for self-actualization, which is the need for innovation and creativity. When people can reach this higher level on the job they gain greater personal fulfillment, which improves job satisfaction. Yes, you still have to pay well, but an organization can create an energized, 'higher calling' environment will have higher retention and greater productivity.

Jobs and work environments using high-involvement activities provide people with autonomy, learning opportunities, meaning, purpose, and a way to grow and get ahead—not to mention a host of benefits to the company as well. High-involvement activities include, but are not limited to, the use of self-managing teams, information sharing, shared goal setting, suggestion programs, brainstorming sessions, Kaizen, idea campaigns and motivational meetings.

A survey conducted by Development Dimensions International (DDI), asked 232 organizations around the world including 81 from Hong Kong, Thailand, Philippines,


Singapore and Indonesia to answer the question, 'Do high-performance practices improve business performance and which practices have the greatest impact?'

The findings from the survey showed significant improvements in all areas.

Most noteworthy were the improvements in the areas of customer service and quality of the products and services. Furthermore, I would be so bold as to estimate that the biggest changes were not measured directly, but more implicitly. Although the survey did not measure the improvement of attitudes, retention rates, and feelings of the workforce, I'm sure they improved as well. As Abraham Maslow indicated in his theory of motivation, the more ability and freedom people have to use their thinking ability the more satisfaction they receive on the job, and the higher they move up the pyramid of needs. People do not respond favorably to overly restrictive work environments. High-involvement activities help people reach higher levels. These places engage and energize their workforce.

This article was transcribed from the book, *Here Today, Here Tomorrow*.

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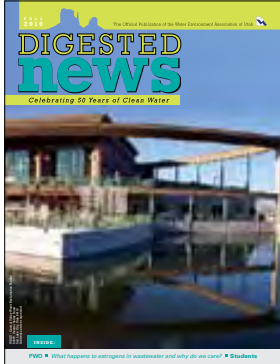
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- We ensure that an efficient recycling program is used for all printing plates and all waste paper.
- Within the pages of each issue, we actively encourage our readers to REUSE and RECYCLE.
- In order to reduce our carbon footprint on the planet, we utilize a carbon offset program in conjunction with any air travel we undertake related to our publishing responsibilities for the magazine.

*So enjoy this magazine...and **KEEP THINKING GREEN.***

Laboratory Quiz

Thanks to Anthony Daw, CVWRF

Given an initial filter weight of 0.1505g, 100 mL of Raw influent was filtered, dried, and furnace. The dried filter weight was 0.1702g, and furnace filter weight was 0.1659g. Determine the TSS and VSS of the sample in mg/L.

1) TSS

- a) 19.7 mg/L
- b) 154 mg/L
- c) 197 mg/L
- d) 15.4 mg/L

2) VSS

- a) 19.7 mg/L
- b) 154 mg/L
- c) 197 mg/L
- d) 43 mg/L

3) Which test would give the quickest estimate of solids entering the plant?

- a) Total Suspended Solids
- b) Volatile Suspended Solids
- c) Settleable Solids
- d) Total Solids

4) Which test would be used to determine the salts in the water?

- a) Total Dissolved Solids
- b) Total Suspended Solids
- c) Volatile Solids
- d) Total Solids

5) How tight of filter should be used for trapping TSS?

- a) 0.20 um
- b) 0.45 um
- c) 2.0 um
- d) 5.0 um

Answers:

1, c, 2, d, 3, c, 4, a, 5, c

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Young Professionals ~ Changing of the guard

By Tiffini Adams

The annual WEAU Young Professionals Breakfast at the Cracker Barrel was well attended this year. There were 26 attendees that ranged from students, to operator's challenge team participants, to engineers and seasoned professionals. Jim Schwing, CH2M Hill, spoke to the group about his long time involvement with WEAU and how important it is to be an active member of WEAU for networking and professional connections. Next, Tiffini Adams, Central Valley Water Reclamation Facility Chairperson of the WEAU YP Committee passed the baton to Christina Osborn, J-U-B Engineers, Inc,

who will take the helm of the committee. Christina then shared her excitement and enthusiasm to take on this new role. Lastly, Andrew Castro from Blue Bunny talked about their pretreatment program and invited everyone to attend a tour of their wastewater treatment facility that afternoon.

Wells Enterprises/Blue Bunny Tour

Thursday evening of the WEAU annual conference, the Young Professional Committee hosted a tour of the Wells Enterprises/Blue Bunny Ice Cream Wastewater Treatment Plant. Andrew

Castro, Line Owner/WWTP, took about a dozen people around his pretreatment facility. He led the tour through the laboratory and talked about the tests that he analyzes each day - TSS, Settleometer, Soluble COD, pH, and DO. He then took the group out into the blustery weather to show us their 250,000 GPD conventional activated sludge system and aerobic digesters. They currently treat ~ 80,000 GPD. Andrew then surprised the tour participants with hot off the line (well, cold off the line) ice cream to sample. It was all delicious! Thank you for your time and treats, Andrew! [bn](#)





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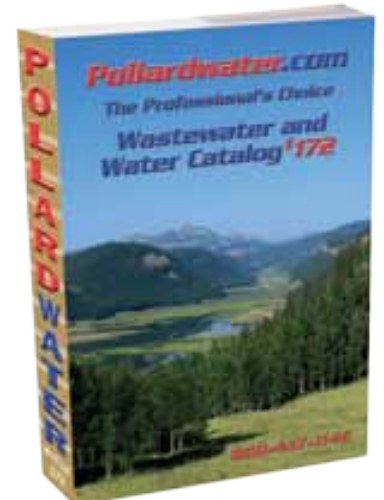
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