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| 7    | Southern Arizona Luncheon Program  
       Computerized Rounds Systems for Operator Data Collection | Tucson, AZ | See page 36 www.azwater.org |
| 12   | Phoenix Luncheon Program  
       Regulatory Update | Tempe, AZ | www.azwater.org |
| 14   | AZ Water Annual Research Workshop | Tempe, AZ | www.azwater.org |

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| 4    | Southern Arizona Luncheon Program  
       Pump Station Startup Procedures  
       Let’s get things moving! | Tucson, AZ | See page 36 www.azwater.org |
| 9    | Phoenix Luncheon Program  
       Emerging Contaminants in Arizona Water | Tempe, AZ | www.azwater.org |
| 9    | Water Distribution Workshop | Marana, AZ | www.azwater.org |
| 17   | Water Treatment Seminar  
       Operations, Techniques & Challenges | Phoenix, AZ | See page 11 www.azwater.org |
| 24   | Water Distribution Workshop | Scottsdale, AZ | www.azwater.org |

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| 3    | Southern Arizona Luncheon Program  
       Topic TBD | Tucson, AZ | See page 36 www.azwater.org |
| 8    | Phoenix Luncheon Program  
       Tempe Grease Cooperative | Tempe, AZ | www.azwater.org |
| 12   | Water For People Event:  
       Run for World Water | Tempe, AZ | See pages 56-57 www.azwater.org |

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| 7    | Southern Arizona Luncheon Program  
       A Regional Water Campus...  
       Realization through Collaboration | Tucson, AZ | See page 36 www.azwater.org |
| 12   | Phoenix Luncheon Program  
       Snowpack and Runoff Forecasts  
       for the Colorado River | Tempe, AZ | www.azwater.org |

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| 11-13| 89th Annual AZ Water Conference  
       & Exhibition | Glendale, AZ | See page 30 www.azwater.org |
COMMUNICATING THE IMPORTANCE OF INVESTMENT

Happy New Year! It’s hard to believe that 2015 has now come and gone, and it seems like every year goes by faster than the last one. But, I guess the good news is that the years are still accumulating!

The end of one year and the start of another is typically a time of reflection on what has been accomplished and a renewed focus on things we want to change or improve upon in the New Year (sometimes referred to as New Year’s resolutions). In looking back over the last year, I want to thank all of the AZ Water members who have generously volunteered their time to serve on committees and develop all of the educational opportunities that are available to our members. Their commitment and enthusiasm for serving the water profession is inspiring.

I also want to thank another group of people who are often overlooked. While many of us enjoyed time off over the recent holidays, our water and wastewater systems have to function 24/7, 365 days a year. When consumers turned on the tap or flushed the toilet on Christmas and New Year’s Day, everything worked. And the reason we have continuous service is due to our treatment plant and system operators who were not with their families on these holidays, but were on the job – either at the plants or on-call throughout the day and night monitoring their systems or responding to emergencies. I think the public recognizes services like police, fire, and hospitals that never close, but rarely is water and wastewater service included in this recognition. So thank you to our dedicated operations professionals for providing safe, reliable water for our communities, not just during “regular hours”, but every day of the year.

As you look back on this past year, one way you can thank an individual or a team that has done a great job is to nominate them for an AZ Water award. A call for award nominations will be coming out soon, so please take a few minutes, go to our website (www.azwater.org), and fill out a nomination form. It is a great way to show your appreciation to your co-workers and peers.

Over the last few years as we updated our Strategic Plan and Business Plan, one of the changes identified was to make AZ Water visible and vocal in supporting investment in water supplies and in water infrastructure. This past November, I, along with three members of our Board of Directors and our Executive Director, Dave Iwanski, participated in the 107th Arizona Town Hall in Mesa, Arizona. A diverse group of 170 Arizona residents gathered for three days to focus on water and discuss “Keeping Arizona’s Water Glass Full”. Given the persistent 15-year drought conditions in the Colorado River Basin, the possible reduction in water allocation to the CAP by 2017, the dramatic actions taken by California in the last year to conserve water, and the effects of climate change, the attendees at this Town Hall felt a sense of urgency. Dave provides an excellent summary of the Town Hall in this month’s Executive Director report. You can also go to www.aztownhall.org to read the Arizona Town Hall background report on water and the full list of recommendations made.

One of the clear takeaways from the Town Hall was that investment is critical to maintaining the water infrastructure we have, as well as for long-term planning to secure our water future in Arizona. As water industry professionals, the members of AZ Water need to be vocal in support for water-related investments. That vocal support can be as simple as talking to your neighbors about the importance of water and what you do, or reaching out to your elected representatives to help them make educated decisions. We need to help our local and state legislators, as well as the general public, understand that adequate funding for water is vital in several key areas:

- Champion stable and adequate funding of the Arizona Department of Water Resources. ADWR has played a key role in Arizona’s success with water management in the face of significant population growth, as well as representing Arizona’s interests in discussions and negotiations with neighboring states regarding our Colorado River water entitlement and supply management. Adequate funding is essential for ADWR to carry out its statutory responsibilities, and to retain and hire highly skilled, knowledgeable professionals to serve as leaders on statewide water issues.

- Ensure adequate investment in water production and delivery infrastructure. Funding sources are needed to maintain, rehabilitate, and replace the strong backbone of supply, treatment, and delivery infrastructure built over the last century to provide reliable and safe water supplies.

- Support water-related education for our next generation. It is imperative that we educate the public and our elected leaders on the value and importance of water, along with the next generation of water planners and water providers. Getting educated, staying involved, and helping to secure funding for our water future is the best investment we can make to assure the long-term viability of our communities and our environment in Arizona. I hope you will join me in the year ahead in communicating the value of water investment to our friends, neighbors, and elected representatives.
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In mid-November, I had the opportunity to attend this year’s Arizona Town Hall: “Keeping Arizona’s Water Glass Full.” Myself, along with our Board President and four other Board members spent three full days working with other stakeholders from throughout the State working on development of a Report which will serve as a blueprint for water policy discussions and planning efforts both today and in the future. There was an integration of agri-business, Tribal, rural, environmental, municipal, mining, association, education and individual interests all of whom brought their backgrounds, experiences, issues, concerns and recommendations to the table. That diversity created a dynamic and interesting flow of ideas, observations and heartfelt passion that is seldom seen in this day and age of political in-fighting, self-serving posturing, questionable motives and a lack of civility when discussing opposing viewpoints.

One of the events during the Town Hall was a video contest sponsored by the AZ Water Association. The contest was hugely successful, thanks to the incredible efforts of our Public Relations, Social Media and Outreach Committee, in concert with our consultant, Red Balloon. The winners came from an Elementary School District, a pair of young professionals in our industry, and two high school students. The cross-section of participants who submitted reflects the fact that we can reach out and make connection with a broader base than has historically been the case. Of significance is that if we can get students involved at an early age as relates to water and its importance, the better chance we have of identifying and grooming the next generations of industry professionals. We are encouraging everyone to continue creating videos for consideration during the 2016 AZ Water Annual Conference. Stay tuned for additional information regarding this effort.

Our Association has always been known for its professionalism and an ethic of encouraging and mentoring those who wish to pursue careers in water related fields. In order to become even more effective and more influential, we will all have to become more involved in cooperation and collaboration with other organizations and stakeholders – a prime example being the Town Hall. It is important to build strategic partnerships which will allow the AZ Water Association to bring its human capital, expertise, resources and dedication to other organizations having a vested interest in water and the water related professions. We benefit by having those entities bring their assets to bear. What begins to happen is that we will be looked upon as a partner that comes prepared, is respectful, is open-minded and is motivated for all the right reasons to make a difference. Many of you have heard me say repeatedly “that it is critical for everyone to know who we are, what we do, how we do it and why we do it.” That understanding by others will trigger positive reactions about this organization and enhance our standing in the industry, in the community and with decision and policy makers at all levels.
THANK YOU!
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Happy New Year! I hope that each of you had a wonderful holiday season. It’s hard to believe that it’s already 2016. There are many new, exciting happenings at AWWA for 2016. Here I’m sharing some of my favorites...

Tap Water
One of my favorite conversations to have with friends, neighbors, and other parents is about water conservation and the affordability of tap water. Yes, I’m a water geek and readily admit it. With all the news media about the drought it’s given me a lot of opportunity to discuss water and I always make sure to talk about tap water. Recently AWWA has been updating their consumer-facing website, DrinkTap.org, with plans to launch to the public in early 2016. This website is a great resource for consumers to learn the many facets of water including from where it comes from and how to protect it, to what’s in it and how to turn it off. There’s also a Kid’s Place and a drip calculator. The new website redesign updates existing features and provides new, relevant content with fresh new visual effects. I hope you’ll enjoy the new website. In addition, a little closer to home is the Tap Into Quality. com website. If you haven’t seen it yet Tap Into Quality (TIQ) has a new logo and the website got a new makeover as well. I especially like the fun facts on this website and there are links to the water quality reports of many of the Phoenix metro cities. I hope you’ll take a look at these two resources and share them with friends and family too.

Scholarships
I believe one of our greatest responsibilities as an organization is to help foster education about water (as seen above in my attempt to tell everyone I know about tap water). Part of this education is helping our students and future leaders. I’m sure many of you know that AZ Water gives about $14,000 in scholarships each year. Last year for the first time, AZ Water gave out a scholarship to a member’s child or grandchild. Well AWWA also gives out scholarships – 16, in fact, ranging in funding from $5,000 to $30,000. Applications are now being accepted for the 2016 AWWA Scholarships. AWWA has a vision to be the world’s largest water education scholarship fund. The Fund provides financial assistance to undergraduate and graduate students in water-related fields and to young and new professionals who want to add to their skill sets through conferences and courses. Investing in students and young professionals is critical for the future of the water profession. This fund is one part of the three legged stool known as The Water Equation Campaign (community outreach – which I’ll discuss a bit below – and global outreach being the other two pieces of the campaign). Please share with students you know about the opportunities to apply for these scholarships. And please consider giving funds towards either the AZ Water or AWWA scholarship funds. Every dollar donated goes directly towards student scholarships. Help truly make us the world’s largest water scholarship fund!

Community Engineering Corps®
Everyone deserves safe, reliable water. Yet much of our water infrastructure is aging, leaving smaller US communities struggling with subpar water and sanitation facilities. Now aid is at hand through the Community Engineering Corps® (CE Corps), a project of AWWA, Engineers Without Borders-USA, and the American Society of Civil Engineers. CE Corps sends enthusiastic volunteers to provide welcome technical and engineering expertise to help solve these problems. Engineers Without Borders-USA secured a USDA grant funds to support CE Corps operations in the water sector. The intention of the grant funded projects is to identify and evaluate potential solutions for water/wastewater infrastructure issues in rural, underserved U.S. communities. They are actively recruiting volunteers for a project right here in Chloride, Arizona. If you don’t know (which I didn’t until recently), Chloride is within Mohave County northwest of Kingman. It was once a mining town with over 70 mines in the area but now is a small village with about 250 residents. The Chloride community is requesting technical assistance assessing distribution infrastructure including managing leaks and meter issues, as well as developing a long-term plan for future improvements. Consider volunteering to help this community. There are also other needs throughout the US, just visit communityengineeringcorps.org or provide funding by visiting the Water Equation Campaign site at awwa.org. Please join me in helping make these three initiatives a success in 2016!
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HAPPY AZ WATER NEW YEAR!

We had a great fall in the high country of Arizona this year—a good crop of apples and several successful hunts. We apple wood smoked our turkey for Thanksgiving and headed to New Orleans for Christmas. As they say down in NOLA, “I hope you passed a good holidays, Chert!”

WEFTEC 2015
WOW! WEFTEC drew a record number of attendees to Chicago—over 25,000 registrants! I represented AZ Water at WEFTEC and if you went, I hope you had a great time—I did! Growing throughout the years, WEFTEC has captured the title of world’s largest annual water quality conference and exhibition and demonstrates that WEF is the authoritative source for all things water. The event featured unique platforms to disseminate information and an arena for leaders to meet and present global perspectives on the industry.

WIFIA Fix is Done!
In December, Congress came to a final agreement on a five-year highway reauthorization bill, which includes language that WEF has been advocating for to fix the WIFIA program by removing a restriction on the use of tax-exempt financing on WIFIA financed projects. The provision in the bill to fix WIFIA is language that WEF and other water associations have been advocating for since the program was enacted in 2014. The WIFIA program requires that WIFIA can only finance up to 49% of a total project cost and the remaining 51% cannot come from a tax-exempt source, such as tax-exempt municipal bonds or private activity bonds. Now WIFIA will allow for projects that receive WIFIA financing to use tax-exempt financing, as well as other forms of financing for the remaining 51% of a projects. BIG STUFF, GUYS!

WEF YouTube Video
“Water Resource Recovery Facility 3D Virtual Tour,” on WEF’s YouTube channel has hit more than 100,000 views. This virtual tour of a water resource recovery facility discusses how these facilities recycle the water and waste we flush down the drain. Water resource recovery facilities can also recover nutrients, generate energy, and create biosolids for use as fertilizer. The tour takes viewers through primary, secondary, and advanced treatment, as well as the plant headworks and biosolids treatment process. Watch the video at a computer near you soon!

2016 National Water Policy Forum, Fly-in and Expo
Please save the date for the 2016 National Water Policy Forum, Fly-In and Expo in Washington, DC, on April 11 -13, 2016. Plan on joining colleagues from around the nation to participate in the two-and-a-half day meeting which will feature congressional speakers, policy briefings, visits to Capitol Hill, and roundtable dialogues with key policymakers and experts in important regulatory and policy matters. The Forum & Fly-in is hosted by WEF, NACWA, the Water Environment Research Foundation (WERF), and the WateReuse Association, and will take place April 10 - 15 during WaterWeek 2016.

WEF Membership Equips Professionals With Tools to Do Their Job
Membership in the Water Environment Federation (WEF; Alexandria, Va.) carries many benefits and exclusive perks. Because members help protect and enhance water quality, WEF strives to provide them with access to the knowledge and tools needed for sustainable water resource management, water protection, and water and wastewater treatment. Benefits include discounts on WEF’s many educational events and various educational products and services, access to technical publications and regulatory updates, unique networking and career-building opportunities, and the ability to join WEF committees and receive WEF awards.

It’s a New Year—If you are not a member of WEF, please consider the benefits outlined above—Feliz ano nuevo!

REMEMBER - Together we are AZ Water!
Water Treatment Committee Seminar Series
“Operations, Techniques & Challenges”

Wednesday February 17, 2016

GateWay Community College
Center for Health Careers Education Auditorium
Room CH1106
108 N. 40th Street, Phoenix, AZ 85034

The event features presentations by leaders in Arizona water treatment on dissolved air flotation, sand ballasted flocculation, ozone, residuals handling, U.V., on-site sodium hypochlorite generation, ion exchange and ceramic filtration and will cover start-up, operational and O&M challenges and operating cost considerations.

Speakers are from the following AZ Water Association members, EPCOR, Chandler, Gilbert, Tempe, Mesa, Glendale and ADEQ. Also there is a special presentation by the operators of the largest municipal ceramic membrane filtration WTP in the US.

Participants have the opportunity to tour Tempe’s Johnny G. Martinez WTP on the afternoon of February 18.

You are encouraged to register on-line at www.azwater.org and choose to pay by credit card or check.

Registration Fee:
AZ Water Member: $70
Non-Member: $75

Payment:
Check (made payable to AZ Water)
Credit Card Payment (MasterCard, VISA and AMEX accepted via Web registration)

Go to www.azwater.org to view the agenda and find more information about the seminar and tour.
Planning for construction of water and wastewater treatment plants can be a daunting task. There are many complicated factors to consider, including selecting the best delivery method for the project, determining how the construction will be sequenced, figuring out how to interface with existing plant operations and, ultimately, planning for start-up.

Both hard bid projects and alternative delivery projects, including construction manager at risk and design-build delivery methods, allow for pre-bid walks. While hard-bid projects provide owners the opportunity to see the design beforehand so plans are easier to visualize during a pre-bid walk, the drawbacks are that the design is set, details are specified and there is no input from the builder until after the contract is awarded.

Alternative delivery projects, on the other hand, may not have any design documents developed except for an engineering study and the owners’ ideas of what needs to be built and processed. These types of projects allow input from the builder to address constructability, start-up and commissioning items during the preconstruction/design phase. The builder becomes an integral partner with the designer and owner and brings more experience and expertise to the table early on, promoting a team approach from the start. This ultimately reduces construction and design coordination issues during the construction phase, thereby also reducing additional costs and delays that are associated with making field modifications during construction.

Regardless of the delivery method that is selected, there are four keys to successfully transitioning water and wastewater treatment plants from construction to operation: start planning early, develop start-up checklists, maintain open communication and promote accountability.

Start planning early
While it may seem like backward thinking, start thinking about the end at the beginning. Knowing what the project goals are makes it easier to detail the path forward. During preconstruction, when the equipment and systems are being selected, determine with the project team what the requirements are for functionally testing the equipment. Once this is determined, work with the project team to incorporate items into the design that will benefit the start-up process and add value to the project for the owner.

A skilled general contractor will start planning early, ensure all stakeholders are engaged and champion collaborative problem-solving sessions that leave no possibility unanalyzed and no assumption unquestioned. The owner is an integral part of this team and needs to be involved in the planning of the project from the beginning. When a builder can collaborate with owners and designers early on during preconstruction, the best skills of design engineers and builders are brought together with a clear vision from the owner creating a culture of commitment, communication and trust, which results in a project with the highest quality that can be delivered on time and at the best final cost.

During the $106 million 91st Avenue UP05 Wastewater Treatment Plant expansion project in Phoenix, early planning during preconstruction saved the City of Phoenix hundreds of man hours and thousands of dollars by multitasking Maintenance of Plant Operations (MOPOs) and combining shutdowns whenever possible. The largest effort combined 27 MOPOs in seven different locations into a single, coordinated effort.

“Malcolm Pirnie, McCarthy Building Companies and the City of Phoenix, as partners, committed to jointly plan and construct our project through open communication, consistent coordination and enthusiastic collaboration at all levels. The success of this partnership resulted in a well-executed project, completed ahead of schedule, under budget, while achieving the five-city Sub-Regional Operating Group member requirements, meeting foreseeable regulatory mandates and the projects goals – an unprecedented result for a project of this magnitude,” said Rick Shane, Project Manager for the City of Phoenix.

Develop start-up checklists
In addition to early planning, it is important to develop detailed start-up checklists during preconstruction. These checklists provide identification of the various components of all the systems. As construction progresses, tracking the status of these items will enable the team to determine readiness for actual start-up and commissioning. Without these checklists and the ability to manage the overall progress of construction, items are often unaccounted for or missed. Finding out about missed items later on can potentially delay start-up and requires the additional costs of rework.

Developing the checklists during preconstruction is also a great way to ensure coordination between the design documents. Detailed flowchart checklists are being utilized on a collaborative
regional pipeline project, the Southern Delivery System Water Treatment Plant project in Colorado Springs, CO, which is currently under construction and will process 50 million gallons per day (MGD) upon completion with a capacity for 96 MGD. The checklists provide a quick visual for any team member (owner, general contractor, subcontractor, design engineer, vendor) that outlines the status of each process system as it pertains to checkout and being ready for startup.

Getting shop drawings and operation and maintenance manuals submitted and approved in a timely fashion is also critical to start-up planning. Proper receiving of equipment, storage prior to installation, installation, preventative maintenance and checkout will all facilitate a much smoother start-up. These items can also be incorporated into start-up checklists so they can be tracked and managed.

Ultimately, the main goal of planning for start-up is to ensure the highest quality project is turned over to the owner with equipment and systems that function as designed and perform properly for the expected lifecycle.

Maintain open communication

Developing and properly managing the plan requires the buy-in of all the team participants. This includes the owners, engineers, inspectors, contractor, subcontractors and vendors. All of these individuals have expertise and experiences that can assist in the development of the plan. But that only happens if there is open communication from the start and everyone is bought into the successful execution of the plan.

The best way for people to understand and buy into a plan is if they participate in the development of the plan. When team members are tasked with working toward goals and objectives that they developed, it becomes second nature to them and tasks are more easily understood.

Communication of the plan is also critical to ensuring safety in implementation of the plan. At the Chandler Airport Water Reclamation Facility expansion project in Chandler, AZ, the team took safety planning to a new level. The team was working on a $105 million large-scale expansion project at the site that was completed in fall 2014, which expanded the facility from a 15 MGD wastewater treatment plant to 22 MGD.

The Arizona Division of Occupational Safety and Health (ADOSH) Consultation Department named the City of Chandler Airport Water Reclamation Facility a “STAR Site” through the Voluntary Protection Program. Companies and jobsites that are awarded the STAR designation demonstrate exemplary and comprehensive safety and health management systems.

“Our team’s detailed planning allowed the project to thrive during the construction and execution of high risk tie-in and bypass activities,” said John Pinkston, Wastewater Facilities Superintendent for the City of Chandler.

One positive result of maintaining open communication is that it leads directly to promoting accountability among team members.

Promote accountability

Although planning is critical, we’ve all heard the familiar saying “the best laid plans of mice and men often go awry.” This happens particularly when the plans are not implemented and managed properly. People need to be held accountable for their part in the development and execution of the plan. This includes not only the work in the field but the verification and documentation of the status and completion of tasks.

There are numerous ways to manage accountability. Excel spreadsheets are a typical way to manage checklists and status updates. The problem is that usually there is a master hard copy and it isn’t easy to communicate updated information to others in real time although websites like Google Docs or Dropbox have helped make online coordination easier.

McCarthy utilizes a program called BIM 360 Field to manage start-up plans and checklists. BIM 360 Field allows the team to identify all the tasks associated with the plan and then monitor progress by having individuals verify and sign off on tasks. This information is accessible across the Web and is updated in real time through the use of tablets in the field. Status of tasks and reports summarizing the overall progress can be easily generated. BIM 360

continued on page 59
The Nomination Committee is accepting qualified and willing members to fill the positions of Vice President, Secretary and three Director positions within the leadership of the AZ Water Association for 2016. Nominees will be listed in the Spring 2016 Kachina News and voted on at the Annual Business meeting on May 12, 2016 during the AZ Water’s 89th Annual Conference & Exhibition in Glendale, Arizona.

Submittals should include nominee contact information and an explanation why this person should be considered for a leadership position within AZ Water. Please submit your nomination in writing by March 1, 2016 to the chair of the Nomination Committee:

Board Nomination Committee Chair
John Warner, 5th Past President
520-724-3402
john.warner@pima.gov

Director Duties
The Director serves within the structure of the AZ Water Association, Arizona Water Environment Association and Arizona Section of the American Water Works Association. Directors are expected to attend all AZ Water Board Meetings (six per year) and other meetings as designated by the President. All Director positions oversee assigned AZ Water committees. Directors must be members in good standing of the WEF, AWWA, and AZ Water. Terms are for one year, with an understanding that a three-year commitment is involved. Each year’s term is subject to re-election. If you have the energy, drive, and commitment to serve AZ Water, please consider placing your name or the name of a colleague in nomination for a Board seat.

Secretary Duties
In addition to Director duties, the Secretary prepares the agenda for all meetings of the Board of Directors, and records and distributes the proceedings of such meetings to the Board Members. This person maintains records of the Association, including a list of members and performs such other duties as may be assigned by the Board of Directors.

Treasurer Duties
The Treasurer serves as the financial officer of the Association. This person is charged with the funds of the Association and custody of its investments, and with ensuring that all funds due the Association are collected and deposited in depositories approved by the Board of Directors. The Treasurer also oversees accounts payable and receivables, and ensures that all assets and liabilities are accounted for. Other duties include preparation of the Association’s annual budget and preparation of all required state and federal income tax documents.

Vice President Duties
The Vice President serves within the structure of the AZ Water Association, Arizona Water Environment Association and Arizona Section of the American Water Works Association. This position oversees the activities of various committees during June 2016 - June 2017. The Vice President shall assist the President and President Elect and shall be the presiding officer of the Association in the absence of both the President and President Elect. The Vice President will have served as a Director, Secretary, or Treasurer of the AZ Water for at least one year and will have been a member of the AZ Water for at least one year and a member of both the AWWA and WEF at the time of elections.

The term for the Vice President is one year (2016-2017). This person must be willing to commit to move through the officer chairs and serve as President Elect, President, and first Past President (three additional years).
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The National Science Foundation (NSF) Nanosystems Engineering Research Center for Nanotechnology Enabled Water Treatment Systems (NEWT) will be the first national center to develop next-generation affordable, mobile, modular, high-performance water treatment systems enabled by nanotechnology (http://www.newtcenter.org). Our systems will be highly compact, energy efficient with the option of solar power, and adaptable to varying source water quality to meet the growing industrial and societal needs for off-grid water supply and reuse.

The importance of water reuse, recycle, and on-site treatment cannot be overstated to enable the broad-based market penetration of fracking technologies and unconventional exploration globally. To ensure development that will be accomplished in an environmentally responsible manner and will enable the productive, efficient exploration of hydrocarbons, NEWT will be the first national center to develop next-generation affordable, mobile, modular, high-performance water treatment systems enabled by nanotechnology. Our systems will be highly compact, energy-efficient (with the option of solar power), and adaptable to varying qualities of source water to meet the growing industrial and societal needs for decentralized water supply and reuse.

Exploiting the unique photonic, electronic, catalytic, and magnetic properties, as well as the very high surface area of nanomaterials, NEWT will develop novel practical approaches for selective, highly efficient removal of contaminants from water. When combined with integrated system design, these nanotechnologies will transform water treatment from the conventional chemical- and energy-intensive process it is today to an innovative physical and catalytic process that is uniquely suited for point-of-use (or recycle) applications.

These novel systems will be particularly attractive where centralized transmission/treatment infrastructure and skilful operators are unavailable, and where high efficiency, reliability, and smaller waste streams are critical. NEWT will deliver two demonstration testbeds: one for humanitarian, rural, and emergency drinking water supply (e.g., for the 43 million Americans and 780 million people worldwide without access to treated water), and another for industrial wastewater reuse in remote oil and gas fields, fracturing sites, and offshore oil platforms.

NEWT systems will remove interfering species and target contaminants using nanotechnologies that are more efficient and easier to operate and maintain than existing technologies, while being economic and safe for both people and the environment. Examples include 1) desalination by solar (membrane) distillation using nanophotonics to efficiently convert sunlight to heat, or by reverse osmosis using fouling-resistant, high-flux membranes with embedded nanomaterials that contribute to self-cleaning and auto-repair functions; 2) scaling control by electrosorption processes using nanocomposite electrodes that selectively remove multivalent ions from high salinity brines and generate smaller waste streams; 3) selective removal of target contaminants (including scalants) by multi-functional nanoparticles supported in macroscale structures or subject to magnetic separation for enhanced removal kinetics and easier reuse; 4) disinfection and advanced oxidation using nanocatalysts that destroy recalcitrant microbes and pollutants without generating harmful byproducts; and 5) biofouling and corrosion control using nanostructured surfaces that discourage microbial adhesion. Fundamental research to elucidate nanomaterial interactions with water pollutants and to determine the safety and efficacy of the enabled processes, coupled with the development of process models and design tool kits for sustainable application practices, will accompany technology development.

No other resource is as necessary for life as is water, and providing it safely and universally is a grand challenge inextricably linked to public health and sustainable development. The severity of this challenge is mounting as the global population increases, water pollution becomes more complex and difficult to remove, and climate change exacerbates fresh water scarcity. Technological innovation to exploit a broader range of water sources is vital for meeting these challenges, particularly for the millions of Americans and the billions of people around the world who lack access to municipal water networks or electricity. Enabling industrial wastewater reuse is also critical to address both water supply challenges and impacts from disposal, especially at remote oil and gas production sites. This Nanosystems Engineering Research Center for Off-Grid Nanotechnology Enabled Water Treatment will enable access to clean water and wastewater reuse almost anywhere in the world.
world. NEWT will develop and deploy efficient and compact water treatment systems that minimize energy use (especially via the solar power option) and decrease chemical use, waste residuals, and, in turn, environmental impact.

This center exploits the latest advances in nanotechnology to create next-generation water treatment systems that are highly efficient, adaptive and selective. Four academic partners (Rice University, Arizona State University, The University of Texas El Paso and Yale University) contribute both nanotechnology and water treatment expertise, thereby ensuring that the vision of modular, solar-powered water treatment becomes a reality. Novel photonic, electronic, catalytic and magnetic engineered nanomaterials (ENMs) can introduce entirely new approaches to transform water treatment from a centralized, chemical- and energy-intensive process toward decentralized physical and catalytic systems. NEWT will primarily meeting growing needs for water supply in rural communities, point-of-use and locations hit by natural disasters, and to reuse industrial wastewater to minimize regional environmental impacts at hydraulic fracturing oil and gas fields. While addressing these needs are our initial focus because the markets readily accept new technology, have high turn-over of new technology, and large markets, NEWT will conduct the science, engineering and policy work needed to bring nano-technology into the more capital-intensive municipal water market.

The intellectual merit of the center’s research arises from the innovative enabling technologies and their foundation on rigorous basic research. Examples of component technologies include fouling-resistant membranes with embedded ENMs that allow for self-cleaning and repair; capacitive deionization with highly conductive and selective electrodes to remove multivalent ions; rapid magnetic separation using super-paramagnetic nanoparticles; solar-thermal processes enabled by nanophotonics to desalinate with membrane distillation; disinfection, advanced oxidation and advanced reduction using nanocatalysts; selective ENMs for oxo-anion or scaling control; and nanostructured surfaces that discourage microbial adhesion and protect infrastructure against biofouling and corrosion. A key aspect of NEWT will be fabricating and demonstrating nano-enabled modules and integrate systems of modules (Figure 1) in the field at several testbeds. Fundamental research on ENM interactions with water pollutants and safety by design will ensure that our systems are resilient, economical and highly efficient.

NEWT will provide affordable and efficient water treatment systems that obviate current trade-offs between cost and performance and treatment rate. This will increase the competitiveness of our products in the emerging markets of global health and decentralized water management. It will also give many of the 43 million Americans served by private wells access to safer water, and enable thousands of industrial sites to treat and reuse wastewater with far less environmental impact. While the integrated systems developed by NEWT will have broad social impact, the people nurtured by the center’s intellectual community may be the most significant outcome of this effort.

NEWT’s highly diverse leadership is ideally suited for meaningful and lasting engagement at multiple levels with under-represented minorities, their K-12 and college teachers, and their schools. By providing these partners multidisciplinary and globally-relevant research experiences, students and teachers alike can contribute to the intellectual life of the center. They, along with NEWT’s researchers, will also benefit from the diversity of participants – companies, governments, and NGOs – engaged with NEWT’s innovation ecosystem. NEWT’s diverse community will help develop the center’s researchers into engineering leaders who understand how to pursue commercialization even when public acceptance and government regulation are as important as market forces to the success of products.

We are looking for partners at all levels of collaboration (industries across various supply chains, utilities and cities, pre-college and college educators, government and tribal agencies, etc.). For more information on becoming a NEWT partner, visit our website: http://www.newtcenter.org/#join-now/car3.

Figure 1 – Overview of nano-enabled modules that will be integrated into systems-level treatment systems.
n my thirty-seven years in the water industry, mostly in the arena of wastewater treatment, I’ve seen numerous work-related accidents and tragedies. Last year’s tragic event in Scottsdale with our brethren contractors, has rekindled painful memories of friends and co-workers who have been severely injured and even lost their lives working in this important industry. Working in water-related career fields is rewarding in many ways: an honorable profession that requires personal dedication to public service. We can easily forget that it can be difficult, unpredictable and DANGEROUS as well. But, water service still must be done. A recent article in Readers’ Digest titled 10 Jobs Americans Can’t Live Without listed nurses as #1 and amazingly Water/Wastewater Treatment and System Operators as #2 (RD Editors, July 2015).

But, how do we honor, and remember, those who died in the line of, a sometimes dangerous, duty or those who have been seriously hurt while on duty? While each of us may do so in our own private and personal way, we can and should take the time to personally acknowledge and appreciate our coworkers for their dedication to a job that many people won’t do; a job that is nasty, grueling, and downright disgusting at times, but is nevertheless critically important to the functionality of our society. Their work is undervalued by some, unappreciated by others, and misunderstood by many.

At times, the very people they are trying to serve and protect treat them with disrespect and contempt due to their own lack of knowledge or understanding regarding the serious nature of the work being performed because of simple unawareness. While this treatment could be considered degrading and humiliating, our personnel take it on the chin like professionals and persist to practice a high level of customer service skills.

Consider the following analogy as an example. Other public services are hugely beneficial and have their own hazards like fire and police but if you asked a common citizen if they had the misfortune of calling the police or fire during the current year. Their answer would be probably no. But ask them if they opened their faucet or used the commode that same morning and the answer is probably 100% yes. That is how vital and immediate our public service is. And, if during difficult economic times what service the same citizens could not do without, they would say WATER every time; our experiences are that during difficult financial times, citizens are more willing to let city parks go brown, tolerate more pot holes on their streets and accept reduced city office hours but basically DO NOT MESS with their drinking water or sanitary service. So for those specific reasons, we do everything necessary to continually provide good service.

I pray every day that nothing will happen to any of our employees. They work in dangerous situations every day. We have massive pump stations, heavy machinery and hazardous conditions in all areas like multiple chemical handling and contamination threats, risky traffic condition including those dangers in the treatment plants. Although, our employees are professionals and trained well and know what to do under any condition or any circumstances they encounter, I am constantly reminded that just one minor and unexpected thing can go wrong and result in injury or loss of life.

The importance of safety is something we all take for granted on a daily basis because our professional operations staff makes it look easy and natural. As AZ Water Association members, it is important to acknowledge these dedicated professionals; ask them about their day, what more they might need for safer work conditions, and how much they are appreciated for the work that they do.

There is a high level of dedication and commitment from those who work in this industry. They sacrifice and grind it out every day, and we should recognize their efforts and their specialized work before some tragic event makes it too late for words.

If you would like to learn more about how to get involved with AZ Water and all that we do regarding safety, then please contact Jesse Black our AZ Water Safety Committee Chair at JBlack@EPCOR.com.

References:

Work that matters

“The impact of my work is felt throughout the Valley. SRP’s Horseshoe Dam controls the release of water to the Verde River, helping our community to manage our water supply today and for years to come.”

- Taylor Ahrensdorf, Engineer in Training

Design with community in mind

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Stormwater is currently the only growing source of water pollution in many watersheds across the country, and it is a rising challenge for communities around the world. In 1970, 85% of U.S. water quality impairments were associated with point-source pollution. The remaining 15% came from nonpoint sources such as agriculture and urban stormwater. Today, after significant advancements in wastewater treatment, these values have flipped — 85% of impairments now stem from nonpoint and urban stormwater discharges. The U.S. Environmental Protection Agency’s (EPA) first administrator, William Ruckelshaus, alluded to these facts in a 2010 Wall Street Journal opinion article in which he called stormwater runoff “the water quality issue of the day.”

Rainfall to results: The future of stormwater, a comprehensive report by the Water Environment Federation (WEF; Alexandria, Va.) Stormwater Institute, presents a vision for the future in which all stormwater is transformed from a pollutant source to a resource.

The report is a product of a meeting of stormwater professionals convened by WEF in July at The Johnson Foundation at Wingspread (Racine, Wisc.). The report was released at WEFTEC 2015 in Chicago to coincide with the launch of the WEF Stormwater Institute, a new center of excellence and innovation created to address stormwater challenges.

Vision for the future of stormwater
In the vision presented in the report, stormwater is managed through an optimized mix of green, gray, and natural infrastructure, and pollutant source control is pursued as a complement to infrastructure solutions. In this vision, stormwater infrastructure is fully funded and managed by a dedicated utility with a comprehensive asset management program. Additionally, stormwater management is adaptive based on new science, experiences, technical innovations, and responsive regulations. Stormwater management is part of doing business and part of community resiliency and quality of life. As such, the community values and understands the many benefits of stormwater infrastructure.

The report identifies six key objectives and a set of concrete actions intended to achieve this vision and improve the future of stormwater in the United States.

1. Work at a watershed scale
All communities will have integrated, watershed-scale assessments of their water resources needs and challenges to better align stormwater management efforts with larger watershed priorities. This means long-range planning across jurisdictions within watersheds. Planning and decision-making will account for the many benefits of stormwater controls, which go beyond water quality improvements to increased property values, expanded public education, improved air quality, and more.

2. Transform stormwater governance
The second objective is to transform stormwater governance so that regulations are integrated and adaptive. Regulations will stimulate stormwater control innovation and improve performance by focusing on program outcomes. By exploring ways to emphasize stormwater program outcomes in permits and design and maintenance requirements, the sector can develop permitting frameworks that, for the first time, embrace the long-term nature and potential cost efficiencies of solving stormwater challenges.

3. Support innovation and best practices
Evaluating stormwater programs can provide a wealth of information. By sharing these experiences, the sector can ensure up-to-date best practices are available, advance the necessary tools and methods to support ongoing improvements in stormwater management, and increase the ability to analyze and value stormwater management on a multi-benefit basis.

4. Manage assets and resources
The next objective is to achieve stormwater systems that are maintained through robust asset management programs and supported by innovative information technology. Inadequate attention to operations and maintenance (O&M) and a lack of effective planning for repair and replacement are the biggest current weaknesses of stormwater management. Key to improving maintenance and developing a robust asset management program is developing a well-trained, multidisciplinary workforce. Also important is integrating O&M into project planning so that projects are properly designed and installed for easier operations, repair, and timely replacement.

5. Close the funding gap
Many of the opportunities to improve the stormwater sector invariably require financial resources. Communities can start by better understanding their funding needs and looking to reduce the costs of stormwater management. However, sustainable stormwater management requires a dedicated funding source. Education and understanding by elected officials are important, as they play a significant role in supporting the investments needed to meet stormwater objectives. Additionally, there are opportunities to access untapped sources of capital and innovative financing mechanisms.

6. Engage the community
The stormwater sector must improve its ability to engage various audiences and encourage information sharing between public officials. With increased communication and collaboration, communities can better value the role of stormwater management in providing clean and safe water, reducing flood risks, and making neighborhoods more resilient to the effects of climate change.

Better ways to address stormwater challenges
The actions and objectives outlined in Rainfall to results: The future of stormwater are meant to help communities tackle stormwater issues caused by urbanization, aging infrastructure, and climate change while overcoming regulatory hurdles. Beyond achieving a healthier water environment, stormwater management presents an opportunity to make communities more vibrant, livable, and resilient.

This report marks the beginning of an ongoing dialogue. It is a call to action for communities, companies, governments, and organizations to work together to move from rainfall to results. To read more about current challenges and future opportunities in stormwater, download Rainfall to results: The future of stormwater at http://wefstormwaterinstitute.org/rainfall-to-results/.

FROM RAINFALL TO RESULTS
A WATER ENVIRONMENT FEDERATION REPORT DETAILS A NEW VISION FOR MEETING THE CHALLENGES OF STORMWATER MANAGEMENT — AND THE RESULTING OPPORTUNITIES

Heather Harris and Chris French
Heather Harris is the chair of both the Stormwater Committee of the Water Environment Federation (WEF; Alexandria, Va.) and the Water Environment Association of Texas Stormwater Committee. She serves as the Central Texas operations lead for the Austin office of CH2M (Englewood, Colo.), where her focus includes stormwater management and stream restoration. Chris French is WEF’s director of stormwater programs and is guiding WEF’s newly launched Stormwater Institute through member, stakeholder, and practitioner engagement. Chris can be reached at CFrench@wef.org.
Four inventors received awards from the 2015 Ingenuity Contest at WEFTEC® 2015 in Chicago. This marks the fourth year that the competition has recognized fixes that tackle a persistent problem with nothing more than the materials at hand and a hearty dose of ingenuity.

Captains of the Inspection Squadron
When the City of Casper, Wyo., worried about the condition of the pipes within its water resource recovery facility, the wastewater crew found a floating solution. The crew — Lane Christensen, David Ferguson, Matt Wilhelms, Jared Winzenried, Brody Allen, and James Soller — pieced together some foam-board, a piece of wood, rope, and fasteners to create a raft for its collection system camera. The crew nicknamed the contraption The U.S.S. WWTP.

The crew needed a way to guide the camera through the pipe safely and ensure that it could be recovered at the downstream manhole. To accomplish this, the crew first dropped an inflatable ball attached to several hundred feet of twine into the pipe and tied the twine to the upstream manhole. When the ball made its way to the downstream manhole, the crew retrieved it with a hook. This left a long stretch of twine running the length of the pipe between the manholes.

Next, they tied the U.S.S WWTP to the twine at the upstream manhole, gently lowered it into the pipe, and then pulled at a steady rate from the downstream manhole. Upon arrival at the downstream manhole, the U.S.S. WWTP was removed using the long-handled hook.

The video collected from the camera was invaluable. It showed areas of severe corrosion and pipe collapse that must be repaired in the near future.

Valedictorians of the School of Hard Knocks
During a March 2011 thunderstorm, operators at the Hill Canyon Wastewater Treatment Plant (Thousand Oaks, Calif.) noticed the pipe from secondary clarifiers to emergency retention basins was not flowing fully. After the storm, the crew — Mark Capron, Mike Mantor, and Robert Richardson — determined that nothing but air was blocking the pipe, but it remained less than half full.

They realized that the high point of the base of the 875-mm (36-in.) diameter pipeline was too high. This configuration led to empty space within the headspace of the pipe.

Restoring the pipe’s full 189-m3/d (50-mgd) flow required getting the air out at the high point. Instead of a major construction project to lower the high point of pipe to prevent the air blockage, the crew installed a $500 vacuum pump to the exiting air release valve.

When the pipe is full of air, one vacuum pump requires a full day to remove all the air. After the air is removed, the pumps run less than 100 hours per year in sub-second bursts. The crew also decided to leave the air release valve itself in place to prevent the vacuum pump from pulling in water. With the air removed, the line regained its full capacity.

Master of the Machines
Vikas Bhaskaran, senior skilled trade technician at the Village Creek Water Reclamation Facility (Fort Worth, Texas), builds tools to aid his fellow mechanics. He created a plasma and oxy-acetylene cutting machine using parts salvaged from old traveling bridge filters. The machine cuts metal precisely to enable operators to fabricate metal pieces for custom repairs. Bhaskaran also created a ratchet to help remove and attach the stator from a screw pumps more safely. The ratchet enables a single person to do a task that, before, took five people.

Dean of Public Education
The Jacksonville (Ark.) Wastewater Utility wanted to educate customers about how line inspections work. To achieve this, operators, led by Walton J. Summers II, built a display that includes a replica manhole, lateral, and cleanout cap. Part of the display
Building a precision cutting tool from salvaged parts enables the Village Creek Water Reclamation Facility (Fort Worth, Texas) to make the custom pieces it needs for repairs. Photo credit: Village Creek Water Reclamation Facility.

gives an underground view of the lateral, which is cracked and wrapped with tree roots. Operators can show residents how smoke added to the manhole seeps up out of the grass — green outdoor carpet — and signals the need to televise the line to produce a defect drawing.

Share your ingenious fixes

The WEFTEC Ingenuity Contest will return in 2016 to honor more smart fixes and quick repairs. So, throw together a roughly 1-page description of the problem you faced and the fix you found. If your invention or idea can be photographed, snap a picture.

The submission window is open now until May 26, 2016. See the full entry details at www.weftec.org/ingenuity. Author Steve Spicer can be reached at SSpicer@wef.org.
To ensure safe drinking water and proper wastewater treatment in Arizona, WIFA closed five loans in the last quarter:

**Drinking Water Project for the City of Peoria**

WIFA issued a $14 million loan in October for the City of Peoria to purchase the New River Utility Company water system and acquire the associated Central Arizona Project (CAP) water allocation. Peoria will also begin a series of upgrades to the system. The New River Utility Company, a privately-owned water company within the central-eastern portion of Peoria’s water service area, serves approximately 11,000 people. Approximately $11 million of the WIFA loan will fund the purchase of New River Utility Company and its 1,885 acre-foot CAP water allocation. The remaining $3 million will be used for various upgrades, including well site improvements, installation of new interconnections, and replacement and integration of meters into Peoria’s current radio-read system. By consolidating the two systems, the City of Peoria will improve water pressure, system reliability and redundancy to ensure safe drinking water for years to come.

**Drinking Water Project for Clear Springs Utility Company**

In November, WIFA issued a $154,794 loan for Clear Springs Utility Company to replace deteriorating infrastructure and make upgrades to their drinking water system. The privately-owned water company located in Cochise County serves approximately 1,200 people near Pearce, Arizona. To reduce water loss, the Company will replace 22 fire hydrants and more than 200 feet of water service lines that were installed in the 1960s. In addition, five non-functioning isolation valves will be replaced. Functional isolation valves will allow the Company to isolate main line breaks without interrupting service to customers and will reduce water loss during a water main break.

**Two Clean Water Loans for the Town of Chino Valley**

The Town of Chino Valley is extending its wastewater system and saving its customers money by refinancing its debt. In November, WIFA closed two loans totaling $4,560,000 with the Town of Chino Valley. The loans will be used to refinance two USDA-Rural Development (RD) loans and to design and construct sewer lines to Mollie Rae Estates. The refinanced USDA-RD loans, which were issued in 2007 and 2008 and totaled $4,432,000, were used to install sewer line and service laterals to several sections of the Chino Meadows Subdivision. The Town requested that WIFA refinance these loans due to the interest savings and the potential to alleviate future sewer rate increases. The ultimate benefit of the sewer extension project is that all construction within Mollie Rae Estates will be tied into the Town’s sewer system, instead of relying on septic systems.

**Clean Water Project for Buckskin Sanitary District**

Buckskin Sanitary District, located along the Colorado River near Parker Arizona, is again taking steps to address failing septic systems and water quality concerns. In October, WIFA closed a three-year design loan for $915,000 with Buckskin Sanitary District to design plans for further expansion of its collection and treatment services. Over the last several years, Buckskin Sanitary District has been implementing an action plan to address concerns over observed failing onsite individual septic systems and related public health and water quality issues. WIFA has financed approximately $4.3 million dollars to improve and expand wastewater services in the area.

For more information, please visit WIFA’s Media Releases webpage at http://www.azwifa.gov/media-releases/.

Below is a summary of the projects that have been completed during the quarter, both loans and technical assistance projects. We hope you will enjoy reading about the successes and results of the funding that WIFA is providing to Arizona’s communities.

Q3 Summary:

10 projects completed (6 loans, 4 technical assistance projects)
- $11,565,707
- $11,357,721 in loans
- $107,986 in technical assistance funding
- 8 drinking water projects
  - 6 completed by small/rural communities (less than 10,000)
  - 2 clean water (wastewater) projects
  - 1 completed by small/rural communities (less than 10,000)
**Completed Loans**

**East Slope Water Company**  
Population: 3,787  
System Improvements (Storage, Booster Pumps, Well Improvements, Main Replacement)  
Loan Amount: $135,221  
*Project Results:* East Slope’s design loan provided funds to conduct a complete system evaluation, identify priorities, and complete design on several important water main, storage tank and booster station improvement projects.

**Payson, Town of**  
Population: 15,500  
**Payson Cragin Project Phase II**  
Loan Amount: $6,250,000  
*Project Results:* This loan to the Town of Payson was the second in a series of five loans to realize much needed renewable surface water supplies from C.C. Cragin Reservoir. This phase also included improvements to several sections of waterline within the Town. The Town has executed a third loan with WIFA to continue the design and construction of various project components.

**Holiday Water Company**  
Population: 550  
Water System Upgrades - Well, Storage & Distribution  
Loan Amount: $225,000  
*Project Results:* Holiday Water Company received funding to resolve storage and production deficiencies identified by ADEQ as well as pressure problems that had been occurring for many years. The company drilled a replacement well, purchased a second well, and installed new storage tanks and pressure sustaining valves. They also received planning and design technical assistance from WIFA in 2013 to get the projects started.

**Sunrise Water Co.**  
Population: 4,350  
Arsenic Treatment, Booster Pumps & Storage Tank  
Loan Amount: $755,000  
*Project Results:* This loan to Sunrise Water Company allowed for the construction of an arsenic treatment system, storage tank and installation of two variable frequency drive pumps. The Company is now able to meet production and storage shortfalls.

**Somerton, City of**  
Population: 1,121  
Purchase of Orange Grove Water Company  
Loan Amount: $550,000  
*Project Results:* The City received financing to purchase a neighboring small water system and improve the quality of service to its residents. The Orange Grove system had minimal upgrades in the last 40 years and was in poor condition, with more than 300 septic tanks located near the community well. Now that the City has purchased the system, they will use an awarded Community Development Block Grant to build an interconnection from the City to the Orange Grove system.

**Chino Valley, Town of**  
Population: 4,277  
Purchase of WWTP and installation of screen  
Loan Amount: $3,442,500  
*Project Results:* The Town used the loan funds to refinance the outstanding obligation for the construction of the Town’s wastewater treatment plant (WWTP) which had been constructed and managed by a private entity. The second component of the project was to replace the influent screen at the WWTP.

**Completed Technical Assistance Projects**

**Efrida Water Improvement District**  
Population: 800  
Distribution System Improvements PER and Environmental Report  
TA Amount: $24,600  
*Project Results:* The District completed a Preliminary Engineering Report and Environmental Report to prepare to apply for funding of water main replacement, looping and valve installation projects.

**Globe, City of**  
Population: 7,495  
Water Distribution System Improvements  
TA Amount: $35,000  
*Project Results:* The funding was used to develop a Preliminary Engineering Report which will provide a roadmap for the City to plan its water capital improvement projects for the next decade. It will also be used by the City to apply for federal and state funding to complete the improvements. Lastly, it will be used to educate staff, Council, and citizens and to provide justification for rate adjustments and the pursuit of funding to improve the water system.

**Nogales, City of**  
Population: 21,830  
Extreme West Pressure Zone (EWPZ) Storage Tank  
TA Amount: $13,386  
*Project Results:* The City used the technical assistance funds to prepare a design report for a new storage tank, booster station and water main replacement. The new storage tank will be more reliable than pumped capacity and ensure adequate flows and pressure now that the system has expanded. It will also provide redundancy to allow for improvements to the system’s other tanks, and will allow the City to stop pumping its wells during peak daytime hours. The City is financing construction through a WIFA loan.

**Pima County Regional Wastewater Reclamation Department**  
Population: 992,394  
Wastewater Reclamation Facility Energy Audits  
TA Amount: $35,000  
*Project Results:* The funding was used to conduct detailed energy audits on four wastewater reclamation facilities. The audits evaluated energy consumption at each plant and developed potential energy conservation measures that could be carried out. The County will use the audit to implement measures to conserve energy and lower utility costs.

*continued on page 26*
In support of the Value of Water Coalition’s Imagine a Day Without Water campaign, WIFA partnered with the Arizona Department of Water Resources, Arizona Department of Environmental Quality, Arizona Commerce Authority, University of Arizona Water Resources Research Center and Arizona Municipal Water Users Association to develop a proclamation. Several Arizona Corporation Commissioners provided their support as well.

Governor Ducey proclaimed the week of October 5-9 as the Value of Water Week and invited utilities, schools, local governments, and businesses to communicate the importance of water and investments in infrastructure. The proclamation was presented at the Healthy Forests, Vibrant Economy Conference, hosted by SRP, on October 7, 2015.

Thank you to everyone for helping make Arizona’s first ever Value of Water Week a success. Investments in infrastructure are essential to our quality of life and the state’s economic vitality, and we hope the movement will continue to grow and increased awareness.
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WATER TREATMENT GRADES 1 AND 2

1. The amount of available surface water depends primarily upon which factor?
   A. Dam capacity
   B. Evaporation
   C. Rainfall
   D. Topography

2. Jar testing indicates 18.0 mg/L alum is required. Calculate how much 48% alum in gallons per hour with a specific gravity of 1.33 is needed to treat 10.2 million gallons per day.
   A. 3.56 gph
   B. 10.2 gph
   C. 12.1 gph
   D. 15.0 gph

3. What happens to the settling rate of particles in water when the water temperature drops?
   A. Decreases
   B. Depends upon weather
   C. Increases
   D. Stays constant

4. How are filter production rates expressed?
   A. GPM
   B. GPM/sq.ft.
   C. MGD
   D. MGD/sq.ft.

5. How many gallons can a rectangular reservoir hold if it is 110’ long 36’ wide and 14’ deep?
   A. 325,000 gallons
   B. 362,000 gallons
   C. 415,000 gallons
   D. 462,000 gallons

WATER TREATMENT GRADES 3 AND 4

1. Which of the following chemicals will increase the pH of water?
   A. Chlorine gas
   B. Hydrofluosilicic acid
   C. Sodium Hydroxide
   D. Alum

2. What is the chemical formula for calcium carbonate?
   A. H2CO3
   B. CaCO3
   C. HCO3-
   D. CO3-2

3. You’ve just completed a jar test on CAP water with a raw turbidity of 1.4 and found the best dosage of aluminum sulfate to be 30 mg/L. Calculate the feed rate in gal/hr of alum when your water production is 24 MGD. Your alum is 48% with a specific gravity of 1.3.
   A. 8.0 gal/hr
   B. 13.0 gal/hr
   C. 15.0 gal/hr
   D. 48 gal/hr

4. You feed an average of 3.75 mg/L chlorine using bleach and produce 27.5 billion gallons per year. Your bleach is 12% and weighs 10.1 lbs per gallon and costs $.685 per gallon. How much does your bleach cost you every year?
   A. There is not enough information to determine costs.
   B. $275,000.00 per year
   C. $486,000.00 per year
   D. $685,000.00 per year

5. Sodium Thiosulfate is added to bacteriological sample bottles to keep the chlorine residual from changing before the sample is analyzed.
   A. True
   B. False

WATER DISTRIBUTION GRADES 3 & 4

1. What is the chemical formula weight of sodium hypochlorite?
   A. 35.5
   B. 58.5
   C. 74.5
   D. 100

2. A double check valve is NOT designed to prevent a backspihonage event that may result in contamination?
   A. True
   B. False

3. You need to disinfect a reservoir 57 feet in diameter and 26 feet deep. How many gallons of sodium hypochlorite (12.5% available chlorine with a density of 11.5 lbs/gal) are needed to disinfect the reservoir using a 35 mg/L dosage?
   A. 35 gals
   B. 100 gals
   C. 260 gals
   D. 350 gals

4. Which of the following is the most frequently used tests for assessment of stability of water?
   A. Marble test and Langelier Index.
   B. Lead and Copper analysis.
   C. Total Coliform analysis.
   D. Zinc, Phosphate, and Calcium Carbonate.

5. You run a large water distribution system with 4 operators on 12-hour shifts on a 24/7 basis. How many hours of overtime will you need each week at a minimum?
   A. None, they can flex their time.
   B. 8 hours
   C. 16 hours
   D. It cannot be determined.

WASTEWATER COLLECTION GRADES 1 & 2

1. Industrial discharges to sewers vary widely due to the:
   A. Cost of wastewater storage.
   B. Distance down to the groundwater table.
3. What is the flow in GPM of a sewer line 36" in diameter flowing half full at a scouring velocity of 5 feet per second?
A. 360 gpm
B. 5400 gpm
C. 7930 gpm
D. 10,800 gpm

4. Exfiltration can be a serious problem in areas where exfiltration flow can:
A. Cause flooding of surface waters.
B. Contaminate groundwater used for public drinking water supply.
C. Overload lift stations.
D. Reduce scouring velocities in sewers.

5. What is “hydrophilic”?
A. Having an affinity for water.
B. It will degrade in the aquatic environment.
C. Having explosive reactions in water.
D. Organic compounds which will react to acids and bases.

WASTEWATER TREATMENT GRADES 1 & 2
1. Why should all the diffusers in an aeration tank be cleaned at once?
A. So the air will flow evenly from all the diffusers.
B. To get the job done most efficiently.
C. To improve tapered aeration.
D. To improve the step-feed aeration.

2. Which of the following chemicals could be added to cure the cause of a “sour digester”?
A. Anhydrous ammonia
B. Lime
C. Soda ash
D. None of the above.

3. How many pounds of solids are under aeration in an aeration tank with a capacity of 1.2 MG when the MLSS are 2,700 mg/L?
A. 6,700 lbs
B. 13,500 lbs
C. 27,000 lbs
D. 30,000 lbs

4. The recommended dissolved oxygen level for nitrification in a suspended growth reactor is 2.0 to 4.0 mg/L.
A. True
B. False

5. In the denitrification process, what is the best methanol to nitrogen level to be maintained?
A. 1.1
B. 2.1
C. 3.1
D. 4.1

WASTEWATER TREATMENT GRADES 3 & 4
1. Power couplings between driver and driven parts of a machine should be:
A. Kept in alignment.
B. Kept in a sealed condition.
C. Periodically dried out.
D. Periodically refaced.

2. The liquid drained from a blacktop drying bed is normally piped to the:
A. Chlorine contact basin.
B. Aeration basin.
C. Primary clarifier.
D. Secondary clarifier.

3. During nighttime low flow periods, what operational changes may be necessary to maintain proper detention times in primary clarifier, and to keep the primary effluent fresh?
A. Take one or more clarifiers off line.
B. Place one or more clarifiers on line.
C. Recycle plant effluent to the headworks.
D. Decrease pump cycles.

4. A total of 3,000 gallons of raw sludge is pumped to an anaerobic digester. The Total Solids is 6%. The Volatile Solids is 75%. How many pounds of volatile solids is pumped to the digester each day?
A. 900 lbs
B. 1125 lbs
C. 1500 lbs
D. 3000 lbs

5. The key to successful process control of enhanced biological systems is:
A. BOD reduction.
B. Coliform kill.
C. Nutrient removal.
D. Liquid-solids separation.

SEE ANSWERS ON PAGE 35
89th Annual Conference & Exhibition
May 11 - 13th 2016 | Glendale, AZ
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Exhibit Registration Opens in early January
Attendee Registration Opens in late February

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The AZ Water Young Professionals (YP) Committee wrapped up another successful year – educational outreach, networking and reaching out to our members and the public. This school semester the YP Committee visited several of the state’s educational institutions with the intention of bringing awareness of the association’s message and an opportunity for students to get involved with the committee. The YP Committee has plenty of social events to offer a relaxed environment for young professionals to get to know each other and create a strong bond among committee members. One example of this is our networking lunches and our happy hours. Other events include hiking, kickball, and our annual Holiday Party.

Members of the committee sponsored a technical presentation at both U of A and ASU’s Environmental seminar class, and visited Gateway Community College’s WAVES club.

Visit to U of A to host their Engineering Seminar class and a happy hour afterwards.
This fall marks the third year the YPs have organized an AZ Water sponsored tent at Tempe’s Sister Cities Oktoberfest. This event was a lot of fun and a great way to spread the message about water in the community.

We also had our annual kickball event. This event has turned into a competitive bout between the AZ Water YPs and ASCE young professionals group, the YMFs. This year the YPs took the crown. We look forward to the rematch next year and this event is always a good time!

In December, the YPs sponsored two site tours. One at the Tempe Town Lake Dam, which included members of the AZ Water YP Committee and NAWIC (National Woman In Construction) Phoenix Chapter; thank you Tempe and PCL for making this possible. The other at the 91st Avenue Wastewater Treatment plant and Tres Rios; thank you John Masche and the City of Phoenix for such a great tour.

The YPs would like to thank Gretchen Baumgardner from the City of Mesa for an outstanding job as the 2015 Committee Chair. Gretchen will continue to be an active committee member while Lourdes Lopez from PCL Construction becomes the 2016 chair. We’d like to Congratulate Clayton Freed with the City of Phoenix on becoming the 2016 Vice-Chair.

Upcoming events for the YP Committee include: an association sponsored award for the Future Cities youth contest, booth participation at the Science Center for E-Day, and the WEF/AWWA YP Summit in San Diego, CA. If you’re interested in getting involved with the YP Committee contact LLopez@pcl.com or Clayton. Freed@Phoenix.gov for more information.

The Phoenix Technical Luncheons are half way through our program year. The Committee would like to thank the presenters, attendees and sponsors who have been part of this year’s lunch meetings. It is the interest and attendance by water professionals throughout our industry that enhances the educational and networking opportunities made available by these meetings. Below is a summary of the presentations and sponsors through December.

- **September - SRP Water Update;**
  Charlie Ester, Manager, SRP Water Resource Operations
  Sponsored by SRP and Burgess & Niple, Inc.

- **October - Implementing AZ Water’s Strategic Plan;**
  Dave Ivanski, AZ Water Association, Executive Director; Jim Pembroke, HDR, Vice President & Client Development Lead for Desert SW; Tim Thomure, HDR, Water Reuse Practice Lead & Area Water Operations Manager
  Sponsored by CPM and Coombs Hopkins

- **November - A Regional Water Campus….Realization Through Collaboration;**
  Jeff Prevatt, Program Manager & Barbara Escobar, Lab Manager, Pima County
  Sponsored by Brown and Caldwell and Waterworks Engineers

- **December - The Sub-Regional Operating Group (SROG);**
  John Masche, Lead Engineer for 91st Avenue Wastewater Treatment Plant, City of Phoenix
  Sponsored by PCL

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**Phoenix Technical Luncheon Committee**

- **September - SRP Water Update;**
  Charlie Ester, Manager, SRP Water Resource Operations
  Sponsored by SRP and Burgess & Niple, Inc.

- **October - Implementing AZ Water’s Strategic Plan;**
  Dave Ivanski, AZ Water Association, Executive Director; Jim Pembroke, HDR, Vice President & Client Development Lead for Desert SW; Tim Thomure, HDR, Water Reuse Practice Lead & Area Water Operations Manager
  Sponsored by CPM and Coombs Hopkins

- **November - A Regional Water Campus….Realization Through Collaboration;**
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- **December - The Sub-Regional Operating Group (SROG);**
  John Masche, Lead Engineer for 91st Avenue Wastewater Treatment Plant, City of Phoenix
  Sponsored by PCL

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**Continued on page 34**
If you missed out on the above presentations, we still have four excellent presentations from January to April. If any of the topics are somewhat outside of what you do in the water industry, please be encouraged to consider attending anyway. This is such a great way to meet other water professionals and learn a little more about events in our industry. Our remaining programs are:

January - Regulatory Update;
Donna Calderon, Drinking Water Program Manager, ADEQ
Sponsors: Goble Sampson and Valentine Engineers

February - Emerging Contaminants in Arizona Water;
Daniel Quintanar, Director’s Office - Strategic Initiatives, Tucson Water
Sponsors: Black & Veatch and HDR

March - Tempe Grease Cooperative;
David McNeil, Environmental Services Manager, City of Tempe
Sponsor: Stantec

April - Snowpack and Runoff Forecasts for the Colorado River,
Central Arizona Project
Sponsors: Carollo Engineers and Felix Construction

Go to www.azwater.org to register for a luncheon program. We look forward to seeing you at an upcoming luncheon.

The Wastewater Treatment Committee has worked hard throughout another very active year, and is looking forward to an even more-productive 2016!

The committee’s second annual Technical Seminar, entitled “Optimizing Wastewater Treatment for the New Normal,” was held on October 20. A capacity crowd of participants heard a strong group of local and national experts and leaders discuss current and emerging issues in the wastewater treatment arena. One of the highlights of the event was a utility managers’ panel discussion featuring Jackson Jenkins of Pima County Wastewater Reclamation, Bill Mattingly of the City of Peoria, Ken Morgan from the Town of Gilbert, and Ron Serio from the City of Phoenix. There was extensive interaction with the audience and the key topics of concern were “people” issues—recruitment, training, advancement, and retention. Participants also heard excellent presentations about changing wastewater characteristics, new approaches to treatment process optimization, and advances in plant automation and operations deploying mobile devices. We received outstanding reviews from the participants, and planning will soon begin for next year’s event.

During the past year, the committee carried out an active slate of plant tours, webinars, and operator math training workshops. Along with that, we prepared the “wastewater” section of the ASCE Arizona “Infrastructure Report Card,” which was released in mid-May and brought a great deal of attention to our state’s infrastructure needs across the board. We also undertook the first in what is hoped will be a series of “operator lunchtime forums” to provide opportunities for plant operators in neighboring communities to network and compare notes on mutual challenges and possible solutions.

As always, Wastewater Treatment Committee members were actively involved in the Annual Conference held in May, including Jesse Black whose Meter Mania competition was even bigger...
and better in its second year; Doug Berschauer who led the
development of this year’s operator training track; Tyson Glock,
Gary Whitten, and Jesse Black who along with Doug Berschauer
presented operator math training and also administered a practice
certification exam; and a number of members who either presented
certification track; Tyson Glock,
Gary Whitten, and Jesse Black who along with Doug Berschauer
presented operator math training and also administered a practice
certification exam; and a number of members who either presented
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certification exam; and a number of members who either presented
certification track; Tyson Glock,
Gary Whitten, and Jesse Black who along with Doug Berschauer
presented operator math training and also administered a practice
certification exam; and a number of members who either presented
papers or moderated sessions at the conference.
The committee, thanks to the tireless efforts of webmaster Bill
Kenning and deputy webmasters Mike Weber and Jenny Lopez, has
developed a content-rich and up-to-date committee webpage. We
encourage you to give it a visit to find out what we are up to and
to access an extensive set of links to useful wastewater treatment-
related information. We are very excited about tapping the full
potential of AZ Water’s new website, and that will include launching
each year we intend to create a test preparation/ training
program for Level 1 / Level 2 wastewater treatment operators.
Planning and content development are already underway. In the
coming year we also plan to produce an operator math “practice test” app for mobile and desktop users, drawing upon the material
we have already developed in our math training workshops.

Outreach and networking are other important initiatives for the
committee. We have worked collaboratively with several AZ Water
committees over the past year, including Energy/Sustainability,
Biosolids, and Pretreatment. We intend to continue and expand
our efforts to reach out to rural communities and work more closely
with the Rural Water Association of Arizona; and also reach out to
younger students (middle/high schools).

We have a lot on our collective plate, and the committee is
developing its Work Plan for year 2016, which will include these and
other activities to accomplish the goals and objectives it has set
for itself. The plan is put down in writing and monitored as the year
moves along to track our progress in accomplishing our goals. This
past year, we issued our first Annual Report documenting our results
in year 2014, and an Annual Report for 2015 will be produced early
next year.
The committee continues to grow and add members. We now
have nearly 40 professionals participating on the wastewater
treatment committee. The group includes operators, utility
managers, construction contractors, consultants, regulators,
academics, and supplier representatives, with a range from young
professionals to experienced professionals, and most areas of the
state represented as well.

You are encouraged to join us! If you are interested, please
contact committee chair Doug Kobrick at 602 826-2454 or
dkobrick@hazenandsawyer.com. The committee meets the fourth
Wednesday of each month (usually at noon) at ADEQ’s downtown
Phoenix offices, thanks to the hospitality of member Chuck Graf, with
teleconferencing available for those who cannot attend in person.
All are welcome. We hope to see you at an upcoming meeting!

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**PIPIPELINE ANSWERS**

*See questions on pages 28-29*

### WATER TREATMENT GRADES 1 & 2


### WATER TREATMENT GRADES 3 & 4


### WATER DISTRIBUTION GRADES 1 & 2


### WATER DISTRIBUTION GRADES 3 & 4


### WASTEWATER COLLECTION GRADES 1 & 2


### WASTEWATER COLLECTION GRADES 3 & 4


### WASTEWATER TREATMENT GRADES 1 & 2


### WASTEWATER TREATMENT GRADES 3 & 4


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THURSDAY | 01.07.16
TOPIC: Computerized Rounds Systems for Operator Data Collection
PRESENTED BY: Chris Grant, Pima County RWRD
SPONSORED BY: Dibble Engineering

THURSDAY | 02.04.16
TOPIC: Pump Station Startup Procedures — Let’s get things moving!
PRESENTED BY: Chris Simko, Stantec
*Location to be determined
SPONSORED BY: Stantec

THURSDAY | 03.03.16 (joint with ASCE)
TOPIC: To be determined
PRESENTED BY: To be determined
SPONSORED BY: AECOM

THURSDAY | 04.07.16
TOPIC: A Regional Water Campus . . . Realization through Collaboration
PRESENTED BY: Jeff Prevatt and Barbara Escobar, Pima County RWRD
SPONSORED BY: carollo

PDH Certificates are available for attendance at these meetings.
For more information please register online at the AZ Water Website under “Featured Events” http://www.azwater.org
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Top: 36" Jack and Bore under I-17 with a 24" Waterline
Bottom: Vertical Turbine Pump – San Tan Valley, Arizona

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UNDERSTANDING CHANGE

I recently came across an article about Understanding Change and how it happens and how to make it happen, by Scott London. In this issue of Success and Fun I will share excerpts from his work.

We all know that social change is an elusive concept. It is inevitable and yet, paradoxically, it depends on the will and the actions of ordinary individuals. We embrace change, yet something in our nature fiercely resists it. Is it possible for organizations to maintain stability under conditions of constant change? How do groups and individuals consciously bring about change?

There seems to be little consensus about what constitutes change. It is also notoriously difficult to measure change. The ancient Greek, Heraclitus said, “there is nothing permanent except change”.

Arnold Toynbee said, in A Study of History, that after a person or organization has reached a peak of vitality, they tend to lose their momentum and decline. An essential element in this breakdown, is a loss of flexibility. Whereas growing person or organization displays endless variety and versatility. The dominant forces will refuse to hand over their leading roles to these new cultural forces, but they will inevitably go on to decline and disintegrate, and the creative minorities may be able to transform some of the old elements into a new configuration. The process of cultural evolution will then continue, but under new circumstances and with new protagonists.

Paradigm Shifts

Thomas Kuhn said in The Structure of Scientific Revolutions, that the chief characteristic of a paradigm is that it has its own set of rules and illuminates its own set of facts. In this way it becomes self-validating and therefore resistant to change.

Cultural Renewal

Another model of social change has been described by Anthony F.C. Wallace in his 1961 book, Culture and Personality, where he observed that the change process begins with a shift away from cultural harmony, a change that shows up first in the form of increased individual stress. This process depends on a number of variables:

- The formulation of a code. An individual or small group builds a new idealized image of a “goal culture” that stands in attractive contrast to the existing situation.
- Communication. The formulatores then communicate their vision.
- Organization. Some form of organization is required to manage the group and implement a plan.
- Adaptation. As the new vision gets broader exposure, it generally grows and changes.
- Cultural Transformation. If the movement is able to gain enough support, the thrust shifts from communications to implementation.

- Routinization. Once the initial shift of cultural transformation has taken place, the next stage is to establish the new vision as the new steady state.

It is common for a culture to attempt a “let’s do the old way harder” revitalization as the first response to realizing that something must be done to get society back in track. It is only after the failure of a reactionary revitalization attempt that a culture is willing to risk fundamental change.

Scientific Perspectives on Change

Some of the most fascinating contributions to the theory of change are the emerging theories of chaos and complexity. In essence, instability means that small changes in initial conditions may lead to large amplifications of the effects of the changes.

Theories of Social Change

Conditions that tend to precipitate change include:

- A lack of cohesion among the various constituents of a social system.
- The inability of groups or individuals to adjust to their larger social or physical environment.
- Rigid and centralized social structures.
- High population densities.
- Social diversity.
- Creativity and innovation.

Each of these conditions leads to the kinds of social tensions which ultimately manifest in change. For example, in the business world innovation and renewal tend to occur very rapidly, whereas public schools and government bureaucracies typically change very slowly.

Robert Chin and Kenneth Benne in their classic textbook, The Planning of Change, state that strategies fall into three categories: 1) rational-empirical, 2) normative-educative, and 3) power-coercive.

The rational-empirical approach assumes that men and women are rational and practical and will change on their own given the appropriate conditions. These strategies include:

- Provide the right information, education or training to allow individuals to change of their own volition.
- Ensure that the “right” people are in the right “place” to bring about needed changes.
- Invite the perspectives or expertise of outsiders.
- Engage in research and development.
- Promote utopian thinking to stimulate creativity and “best-case” scenarios.
- Clarify the issues and/or reconceptualize the situation in order to bring about greater overall understanding among members of the group.

continued on page 40
Water professionals agree.

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The normative-reeducative is predicated on the view that change begins from the bottom up, not the top down. Two strategies characteristic of this approach are to:

- Improve the problem-solving capacities of a system by encouraging individuals to be self-diagnosing.
- Release and foster growth in the persons who make up the system.

The power-coercive approach to effecting change is the one most commonly associated with political movements and social activism. Strategies in this category include:

- Using political institutions to achieve change.
- Shifting the balance of power between social groups, especially ruling elites.
- Weakening or dividing the opposition through moral coercion or strategies of nonviolence.

Roland Warren offered a list of community-based change strategies to include: consensus planning, bargaining, protest movements, research demonstrations, social action, non-violence, organizations of client populations, community development, conflict, elite planning, organization of indigenous groups, and civil disobedience. He classifies these under four headings: 1) collaborative strategies, 2) campaign strategies, 3) contest strategies, and 4) a combination of strategies.

What this literature shows is that there are at bottom two modes of viewing change: the reactive and the proactive. From one perspective, individuals and groups are the objects of change. From the other perspective, individuals and groups are the initiators of change and change follows from human volition. Both perspectives have their validity, of course, and they are closely interrelated. For instance, when one social group actively tries to bring about change, there are invariably other groups who feel put upon and try to resist the change.

Management Theory

In the opening lines of Managing the Future: Ten Driving Forces of Change for the 90s, Robert Tucker writes:

“Two years after In Search of Excellence reported on 43 of the “best run” companies in America, 14 of the 43 firms were in financial trouble. The reason, according to a Business Week study: “failure to react and respond to change” that “change” and “innovation” have become the bywords of organizational management in the 1990s. As Common Cause founder John Gardner has said, “perhaps the most distinctive thing about innovation today is that we are beginning to pursue it systematically. The large corporation does not set up a research laboratory to solve a specific problem but to engage in continuous innovation.”

Peter Senge believes that the greatest challenges confronting organizations today involve fundamental cultural changes. Addressing these challenges requires what he calls collective learning. Organizations must be able to learn in order to survive.

The traditional approach to dealing with complex problems is to break them down into smaller, more easily managed problems. But this approach could be fatal to organizations, according to Senge. When we reduce complex problems and try to isolate their various parts we “can no longer see the consequences of our actions; we lose our intrinsic sense of connection to a larger whole,” he writes. When we give up this illusion, we can then build learning organizations.

The learning organization is one in which five learning disciplines are continually pursued:

- Personal Mastery, “the discipline of continually clarifying and deepening our personal vision, of focusing our energies, of developing patience, and of seeing reality objectively.”
- Analyzing one’s mental models and envisioning alternative ways of thinking about the world. Working with mental models means exposing our own ways of thinking, as well as making that thinking more open to the influence of others.
- Building a shared vision, “unearthing shared pictures of the future that foster genuine commitment and enrollment rather than compliance.”
- Learning as a team, which starts with dialogue and the skill of overcoming defensiveness and other patterns of interaction that keep members from learning — individually and as a team.
- Thinking systematically, seeing patterns and the “invisible fabrics of interrelated actions, which often take years to fully play out their effects on each other.”

According to Senge, the fifth discipline — systems thinking — ties all the other disciplines together. This kind of thinking involves “a shift of mind from seeing parts to seeing wholes, from seeing people as helpless reactors to seeing them as active participants in shaping their reality.” Senge notes that the really significant and enduring innovations he has observed have grown out of people from multiple constituencies working together.

The importance of systems thinking and creating a common vision also figures prominently in the organizational approach of Gary Frank, David Angus, and Bob Rehm. In what they call “future search conferences” or “visioning meetings”, they bring together a diverse group of people to create a shared vision, innovation, and joint planning. The rationale here is that meaningful, deliberate, consensual, and preferred change must involve as many people with a stake in the issue as possible.

A Note on Individual Change

The emphasis on systems thinking is a recent development in organizational thinking and has yet to be embraced in the mainstream management literature. From this perspective, social change has a great deal to do with individual motivation. Effective strategies for change must build on the caring and personal commitment of all the players involved.

Developing Strategies for Change

By way of conclusion, these are a number of practical strategies that may be taken to consciously effect change as well as successfully negotiate conditions of flux and uncertainty — be it in communities, organizations, or groups.

Build new relationships. A crucial first step means forming relationships, organizing, and claiming collective responsibility for a given issue or situation. The key is to develop a sense of group identity as well as a sense of agency. It is therefore an essential prerequisite to bringing about desired changes.

Discuss and deliberate. All effective change strategies hinge on discussion and deliberation. Dialogue helps to eliminate false divisions among people, builds common ground, and allows for the emergence of a more systemic perspective.

Develop shared visions and goals. Setting new directions for the future is one of the most powerful ways of effecting change. Some techniques for developing common visions include futures
commissions, search conferences, and visioning meetings in which participants develop “best case” scenarios and articulate common goals. This process is very different from such perfunctory strategies as writing “vision” statements. It often involves a great deal of reflection, listening, and mutual understanding.

**Foster social capital.** Social Capital can be measured in social as well as economic terms, that relationships have an inherent value. Building networks and relationships within and between individuals and groups is not something that can be done overnight, but it is no doubt one of the most effective change strategies available to communities and civic organizations.

Ensure broad participation and diversity. Fundamental change is impossible without the participation of everybody with a stake in the problem or issue. It follows that planned change is best achieved by promoting diversity.

**Determine leadership roles.** A leader lends cohesion to a group and act as spark-plugs for change. Their vision, drive and personal commitment can be keys to galvanizing a group into action. Leaders are also able to champion and protect those within groups who are most willing to risk change.

**Identify outside resources.** Fundamental change tends to be difficult and painful and always involves uncertainty and risk.

**Set clear boundaries.** When planning for specific kinds of change, it is important to operate within clearly defined boundaries -- for both psychological and practical reasons. On a practical level, clearly defined goals allow one to make realistic plans.

**Draw on the examples of others.** Those seeking to effect change may take comfort and inspiration from the examples of others. Not only does this provide mentors from whom they can learn, it offers them conviction that their goal is attainable.

**Adopt a change mindset.** Nothing precipitates change like a crisis. The question is whether it is possible to adopt a crisis-perspective without a crisis, or at least a mindset that is constantly attuned to change. What is required, they say, is a shift of perception from seeing change as dis-equilibrium to seeing it as a constant.

This report was part of a background study prepared for the Pew Partnership for Civic Change in 1996. Each of us can apply these principles to our daily lives. You will be amazed as you apply these thoughts and principles at work and at home. Please share them with others and see what happens! I am honored to share my perspective on “SUCCESS and FUN”. I hope to hear from you, contact me at phendricks@cox.net if I can be of assistance to you.
Attention all in state and out of state Operators...

The ADEQ has initiated new fees for licensing; this includes new certificates, renewals and reciprocity requests. This new rule impacts us all and we need to be prepared. Talk to your employers, let them know what is happening. If you are from out of state and would like to obtain your Arizona Water Operations certifications, do it now.

Operator Certification Fees

The Governor’s Regulatory Review Council (GRRC) approved ADEQ’s proposed rules to charge fees for drinking water and wastewater system operator certification. The fees become effective July 1, 2016. Visit http://www.azdeq.gov/function/laws/draft.html#water for the full Notice of Final Rule Making (NFRM).

Certificate Renewal:
One Certificate – $150.00  Three Certificates – $250.00
Two Certificates – $200.00  Four Certificates – $300.00

New Certificate – $65.00 (from exam or reciprocity)
Reciprocity Application Review – $250.00
Early Exam Application Review – $300.00

Can an operator renew early before July 1, 2016?
YES. You will receive a new expiration date based on the requested early expiration month. To renew early, submit:
• Renewal form documenting the 30 PDHs necessary for renewal
• All PDH documentation
• Statement requesting “ADEQ expire my certificate(s) early and renew them early.”

To receive the maximum renewal timeframe without paying the renewal fee, please submit the documentation listed above in the month of June 2016. Request your certificate(s) be expired in June 2016 and renewed. Your certificates will be expired on that date and renewed until June 30, 2019. Please do not submit early renewal documentation before June 2016.


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The Utility Partnership Program (UPP) consolidates all WEF members within your organization onto one account, streamlining the renewal process and maximizing your resources.

As an added bonus, UPP members benefit from complimentary memberships for public officials and new members, as well as special pricing on WEFTEC® and the WEF Knowledge Center.

Contact WEF for more information.
Brittany Burch
Sales Development, WEF
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703.684.2400, ext. 7213

www.wef.org/UtilityPartnership
The new website, launched in the summer of 2014, added many new features and services that improved your membership experience. One of the many areas that was updated and improved was member services. Member services are much more than just registering as a member of the Association. Your membership profile is your connection to member services and allows you to configure your personal contact information and privacy, and notification settings. It also allows you to enable and configure enhancements, additional features and tools that are now available via the new website.

Because of the built-in security features at the website, you must be a registered member and sign-in before accessing many sections within the website. When you navigate through the website you will be prompted when registration and/or sign-in is necessary if you are not already a member or signed in. The sign-in process and how to update your membership profile are discussed in the sections below.

**Member Sign In**

There are two options available for signing in from the home page as shown on the screen shot below. The first option is to click the ‘Sign In’ menu at the top right of the home page. Clicking this menu will take you to the “Sign-in” web page which displays the ‘Sign In’ username/password fields. The second option is to sign-in using the username/password fields in the ‘Sign In’ section located at the bottom right of the home page.

The first option might be a good choice for mobile devices that have a small screen as you can avoid scrolling through the home page. The second option avoids having to navigate to a new web page to sign in and might be the preferred option for large screen desktop devices. Which option you choose is to sign-in up to you.

If you have forgotten your password a link is provided to have your password sent to your e-mail account. If you are not a member, a link is provided that will take you to the registration web page where you can join the Association.

You can check the ‘Remember Me’ check box to avoid having to sign in when you return to the website. This action will remain in effect unless you block/erase cookies on your web browser or you sign out from the website. If you are using a shared or public computer (e.g. multiple users or a computer at a public library) you will want to uncheck this option so that other users cannot access your account after you log-off the computer.

If you have trouble signing in or have questions about becoming a member of the Association then click the ‘Contact Us’ menu at the top left of the home page. This menu will display a web page where you can send a request for additional information or assistance.

You must be signed in to update your membership profile. Ensure you are signed in and then navigate to the Association’s home page by clicking on the AZ Water Association’s logo at the top left of the page.

There are two options to navigate to your membership profile from the home page as shown on the screen shot below. The first option is to click the ‘My Profile’ menu at the top right of the home page. Clicking this menu will take you to a new web page that is your profile home page which is an abbreviate version of your membership profile and is displayed to other members. The second option is to update your membership profile by using the ‘My Profile’ section menus located at the bottom right of the home page.

At right are detailed instructions for updating your membership profile for each option.

1. The ‘My Profile’ menu will appear on the top right of the website’s home page if you are signed in. Click the ‘My Profile’ menu at the top left of the home page. This will take you to a new web page that is your profile home page. This web page is an abbreviate version of your membership profile and is displayed to other members. Select the ‘Bio’ tab. You can then click the ‘Edit’ menu on right side of the ‘Professional Information’ bar to navigate to the “Edit My Member Profile” web page where you can edit your membership profile.

2. The ‘My Profile’ section will appear on the bottom right of the website’s home page if you are signed in. This section contains a number of shortcuts that allow you to navigate through your membership profile. The ‘Profile Home’ shortcut allows you to navigate to your profile home page. The ‘Manage Profile’
shortcut allows you to navigate to your full membership profile page. The other shortcuts contained within this subsection are used to navigate to specific preference and setting groups within your membership profile.

A Few Recommendations When Updating Your Membership Profile

When you update your membership profile we have the following recommendations for you to consider:

1. Make sure that your e-mail address is correct and that you keep it up to date. This is the Association’s principal means of communication with you. If your e-mail address is not correct then you will not receive the Association’s E-Bulletin newsletter, be notified of any committee activities and will be unable to communicate with your peers.

2. Change your name, address, e-mail, and other information to lower case characters. The old website’s database data were transferred over with most text formatted as upper case characters. The new website displays the information exactly as you type it in your membership profile. When this information is displayed on the new website upper case characters look like you are “shouting”. This is particularly an issue for your name as it will appear on many of the web pages exactly as it is entered in your membership profile.

3. Consider adding a photo of yourself to your profile. This photo will appear next to your contact information on your personal page. Headshots allow for quick member recognition and typically work best as the photo will be scaled to 100 x 100 pixels. This is about the size of a large postage stamp.

4. Configure your privacy, preferences and notification settings to meet your requirements.

In addition to the contact information and privacy, preference and notification configuration settings, your membership profile has many other options for enhancements, additional features and tools. Some examples are a personal web page, photo galleries, social media preferences, forum /blog participation preferences, posting your resume and advertising employment opportunities. Please review these options and choose the ones that match your needs.

What’s Next?

Once you have configured your membership profile you are ready to explore the AZ Water Association’s website. The new website has a number of new features as compared to the old website.

The ability to interact directly with other members, join and participate on committees relevant to your particular interests, obtain resources to assist you in your career, obtain training and continuing education credits, interact with other professionals via social media, participate in blogs and forms and view job postings are but a few of the opportunities available to members.

You will probably want to visit the website periodically to view the Association’s and committee’s event calendars and read the news announcements. The Association has many exciting activities and events planned for the future!

If you have any questions or need assistance then click the ‘Contact Us’ menu at the top left of the website’s home page and submit a request for additional information or assistance.
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See www.azwater.org/group/youngprofessionals for deadline info
Submit your abstract for approval to Nashita Naureen | yp@azwater.org

AZ Water Annual Conference
Renaissance Glendale Hotel & Spa | Glendale, Arizona
Judging at the Conference on Wednesday May 11, 2016 | 5-6:00pm
Prizes to be given at BBQ | 6-8:00pm

Abstracts shall be less than 200 words. Content must be relevant to Water and Wastewater Industry.
Non-refundable registration fee (collected after abstract accepted): $30
Registration cost will cover printing of posters, 1-day conference registration, and 1-food and drink ticket to the BBQ event
(College students only)

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AZ Water Appoints Jesse Black as New Board Member

Jesse Black is a Senior Operator with EPCOR Water (USA) Inc. serving at the Northwest Valley Regional Water Reclamation Facility. In his new role as an AZ Water Board Member, Jesse’s main goal will be to increase operator membership and participation in AZ Water leadership roles, committee engagement, and general representation.

Jesse has eight years’ experience in the Water/Wastewater industry and carries Grade 4 certification’s across the board. Jesse started his career with the Camp Verde Sanitary District in a laborer position during the spring of 2007. Before making his departure from Camp Verde Sanitary District to Severn Trent Services, he was part of the Senior staff over wastewater operations. He fulfilled the role of lead operator at the Festival Ranch Treatment Facility from 2010-2012. Jesse has worked in all aspects of the Wastewater industry including: lead operations role in treatment facility design teams, process control, maintenance, collections, laboratory analyst, treatment facility startup, and treatment facility decommissioning. Jesse has been in a Senior Staff role for the past three years at EPCOR Water (USA) Inc. and is currently working on dual track degrees including a Bachelors in Project Management and a Master’s degree in Business Management at Grand Canyon University. Jesse also serves on the AZ Water Annual Conference Planning Committee, the Wastewater Treatment Committee, and serves as the Chairperson for the Safety Committee. In Jesse’s opinion, his greatest achievement so far with AZ Water has been the creation of the Annual Meter Mania Competition; Jesse boasts that his fastest time to date is 1:15:10 (time still to be verified).

Though thoroughly committed to his career, Jesse’s family still takes top priority in his life. So when he isn’t working or performing his AZ Water duties he can be found at his home in Surprise with his wife of nine years and their two children. Most nights are spent completing deadlines for homework, while using the weekends for outdoor adventures with the family or friends. When weather permits, Jesse will be seen on the roads cruising on his Yamaha Roadstar or climbing over rocks in his Jeep.

WEF Emerson Distinguished Service Award Recipient
Andrew Richardson

AZ Water Association nominated Mr. Richardson for the Water Environment Federation Emerson Distinguished Service Award. This award commemorates the service of the first president of the Federation, Charles Alvin Emerson, who served from 1928 to 1941, and was its first honorary member. This award is presented to an individual member of the Water Environment Federation whose contributions to the water environment profession most deserve recognition. WEF recognized Mr. Richardson’s many accomplishments and awarded him this prestigious award during WEFTEC in October 2015.

WEF Fair Distinguished Engineering Educator Medal Recipient
Paul C. Johnson

AZ Water Association nominated Dr. Johnson for the Water Environment Fair Distinguished Engineering Educator Award, which recognizes accomplishments in the education and development of future engineers. This award honors Gordon Maskew Fair, a professor of sanitary engineering at Harvard University for achieving exceptional results in preparing students for the water environment profession. Beyond the purely technical information, he imparted to his students a desire for environmental harmony and taught them to use their engineering skills toward the realization of that end. Dr. Fair’s insight into the capabilities and limitations of the field of sanitary engineering inspired research and investigation into emerging areas of concern. This medal commemorates Dr. Fair’s contributions and likewise the contributions of his fellow educators. WEF recognized Dr. Johnson’s many accomplishments and awarded him this prestigious award during WEFTEC in October 2015.
McCarthy Southwest’s Infrastructure Team Promotes Daniel Ward to Project Director

McCarthy Southwest, a division of McCarthy Building Companies Inc., recently promoted Daniel Ward to the role of project director for the Infrastructure team. In this position, Ward will focus on developing and leading the various internal and external teams from a construction project’s start to ensure a successful integrated approach throughout all phases of the project.

He is currently overseeing the $137 million Ocotillo Water Reclamation Facility (OWRF) Expansion and Process Improvement Projects for the City of Chandler. The project includes $125 million in new construction and $12 million in upgrades to the existing plant. The project is a joint venture with Sundt Construction Inc.

From the start of preconstruction, Ward works closely with the preconstruction director and design team to bring added value in the design phase based on their innovations and experiences. Once construction is underway, his leadership role focuses on project management continuity with emphasis on cost, schedule and quality control.

Ward has been involved in numerous projects in Arizona totaling in excess of $772 million. He was part of the team that expanded McCarthy’s Infrastructure geography into multiple states, which has led to fruitful business opportunities and growth for the company. He was awarded the 2013 Planner of the Year award by McCarthy for the successful completion of a complex, multi-phase, high-profile and fast-tracked public water treatment project in Chandler, Ariz. That project, known as the Chandler Airport Water Reclamation Facility Expansion, was the recipient of multiple awards, including the Arizona Public Works Project of the Year and the Arizona Water Reuse Project of the Year.

Ward previously served as project manager at McCarthy and has been with the construction company for nearly a decade. He has a bachelor’s degree in construction management from Bowling Green State University and is a member of the AZ Water Association.

He is also actively involved in McCarthy’s philanthropic efforts and has led teams on two successful pro bono projects in Chandler, AZ, including converting an old hazmat trailer into mobile showers for the Interfaith Homeless Emergency Lodging Program as well as a substantial expansion at Matthew’s Crossing Food Bank, which enabled them to partner with Chandler Unified School District on a Meals to Grow program for disadvantaged students.

Brown and Caldwell’s Steve Gates Elected to Design-Build Institute of America National Board of Directors

Brown and Caldwell, a leading environmental engineering and construction firm, recently announced that Senior Vice President Steve Gates has been chosen by the Design-Build Institute of America’s nominating committee to serve on the organization’s National Board of Directors for 2016.

Gates, responsible for design-build project development firm-wide for Brown and Caldwell, is a 38-year industry veteran in program, design and construction management roles. A nationally-recognized expert in integrated project delivery, he has successfully managed the delivery of environmental facilities valued well over US $4 billion for major public utilities and Fortune 1000 clients, using program management, partnering and design-build contracting, as an engineer, a contractor and an owner’s advisor.

“The use of design-build contracting is now routine throughout the environmental services business because of its many advantages over low bid general contracting,” said Gates. “I am honored to join this board and look forward to working with the DBIA community as we focus on advancing ‘Design-Build Done Right’ best practices in the coming year.”

Gates, who works out of Brown and Caldwell’s Boston office, will assume his post Jan. 1. The board of directors is comprised of owners, engineers, design-build construction contractors, architects, specialty trade contractors and other professionals to reflect DBIA’s growing community. Gates also serves on the board of directors for the Water Design-Build Council.

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The winner, One Lucky Young Professional Will Receive a PAID Trip to the 2016 AWWA Annual Conference & Exposition (ACE) in Chicago.

If you have questions about this contest or are interested in participating, please contact Gretchen Baumgardner (Gretchen.Baumgardner@mesaaz.gov).
AZ WATER ASSOCIATION MEMBERSHIP FORM

This information will be added to our database and used to inform you of opportunities specific to your needs. Your contact information will also be used in our annual membership directory. If you do not want this information published in our annual directory, please check here ☐.

Please note that the items showing an asterisk (*) are required.

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Full Name* _____________________________________________________________________________________________________________
Title ____________________________________________________________________________________________________________________
Business (if applicable) __________________________________________________________________________________________________
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☐ public owned municipal or special district, water, wastewater treatment system or plant process < 1mgd
☐ administration and/or enforcement of government environment programs
☐ administration of public health programs

Private Entity
☐ private or investor owned facility
☐ private industrial systems
☐ consultant
☐ contractor
☐ manufacturer (equipment or representative)
☐ distributor (equipment or representative)

Other Entities
☐ educational institutions (all components)
☐ research laboratory
☐ other _________________________

FIELD SERVED
☐ water supply only
☐ wastewater only
☐ both industries
☐ other _________________________

ENVIRONMENTAL FOCUS
☐ wastewater
☐ water
☐ process water
☐ ground water
☐ solid waste
☐ storm water
☐ pollution prevention
☐ residual/biosolids management
☐ coastal, river, lake ecology/surface water
☐ toxic & hazardous materials
☐ public education / information
☐ instrumentation/automation controls
☐ other _________________________

JOB TITLE
☐ EXECUTIVE: commissioner, board member, city manager, mayor, president, vice president, owner, partner, director
☐ MANAGEMENT: division head, section head, manager, chief engineer, comptroller, etc.
☐ ENGINEERING/NON MANAGERIAL: civil engineer, mechanical engineer, environmental engineer, planning manager, field engineer, system designer
☐ SCIENTIFIC/NON MANAGERIAL: chemist, biologist, biophysicist, researcher, analyst, etc.
☐ PURCHASING: purchasing agent, procurement specialist, buyer
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Member Dues are Subject to Change

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Winter 2016 | the kachina news | 51
In our last issue, I shared a few lessons that I learned from my mom and dad. To review, they were:

• “Where there’s a will there’s a way”
• “Figure out what you want to do and stick with it”
• “Whoa, there don’t get too far ahead of yourself now”; and finally
• “Better days are coming”.

I’m finishing this column off with some more lessons and words of wisdom that I learned from my parents that still stick with me nearly 50 years later.

Before doing that however, as I write this we are watching what has been a true renaissance and transformation of our professional football team. Long seen as the doormat of the National Football League, the St Louis (and now Arizona Cardinals) were regarded as perennial losers and an example of futility. Teams used to look forward to playing the Cardinals and there was always a feeling that the team would self-implode and find a way to lose. And now, after so many years of failure, the organization and team is regarded as one of the best franchises. I don’t know yet how the season is going to end (but as you read this, we all know), but the change that has occurred with the Arizona Cardinals has been remarkable.

What were the reasons? There are a few I suppose, that carry over to teams and organizations.

First, bring in the right leadership and trust that change can and will occur if given time. As mom and dad taught me – “Decide what you want to do and stick with it.” The Cardinal organization shrewdly selected a General Manager and Coach (the coach was passed over by several teams) and was hardly the leading candidate for the 2013 vacancy. Bruce Arians and Steve Keim understood what it takes to transform a culture and they allow each other to do their jobs. They work together as a team and recognize their roles. Coach Arians has also reinforced a lesson that nice guys like me struggle with – hold your people accountable and constantly push them to achieve higher levels of excellence and performance. He is always reminding the team that they can get better and to never rest on their laurels or become complacent. Always challenge yourself on what it is you can do better.

Finally, his “No Risk it No Biscuit” saying holds true for most everything in life. That is, to be bold and not be afraid of venturing out, trying something new, taking a chance and getting out of that comfort zone.

The Cardinal ownership has invested a lot in talent, but is also keenly aware that the most expensive players are not necessarily the best. They rewarded the players based on achievement and have been mindful to not overpay. There is a message here for all organizations as well. Simply throwing more money at people does not guarantee success. It’s about getting the right people in place and then trusting that they can do their jobs. Follow up, coach and at times verify that things are on track but leave them alone – don’t meddle or micromanage.

And, one more important lesson learned from Coach Arians. He is a firm believer in balance with his staff and their taking time to be with their families and not being married to the job, so to speak. Some coaches sleep in their offices, and I heard him talk about how he doesn’t want his coaches to not have the right balance in their lives. There sure is a connection here with careers and jobs and sacrificing the things in life that really matter and are important.

Getting back to those lessons learned from mom and dad; “Can’t never did anything, Son”

I used to sometimes doubt myself and when mom and dad gave me a challenging task or job, I would look at it and tell them that there’s no way I could possibly complete it. I was overwhelmed and it appeared to be too hard and complex. Dad would pull me aside and gently tell me to lose the negative thinking, advising me to instead focus on why or how something can be done. He taught me that every problem has a solution. He talked about seeing and visualizing the end result of what I want to achieve in my mind.

But often in our daily lives do we revert into a sense of negativity and project to ourselves (and our teams?) a sense of failure or lack of confidence in undertaking a difficult task. When asked to get something done, focus on how it can be done rather than why it can’t.

Our nation was built by entrepreneurs who challenged the status quo and had a tenacious attitude about focusing on the “Can” rather than the “Can’t.”

“Stop sniveling”

These words resonate with me. Mom and dad would very quickly stop me in my tracks anytime that I found myself complaining about a situation. During my lifetime of working in many different roles, I have seen, and continue to see, a good bit of negativity in the work environment. I guess that is driven by the fact that we are constantly immersed in 24 hours of news coverage, social media and so forth that is largely negative rather than positive. Much like “Can’t Never Did Anything,” complaining about a situation sure
doesn’t help things. Accept the situation for what it is. What I have found helpful is to compartmentalize events that happen during a work day and when given a tough situation, stop and think about something positive. It’s kind of like Happy Gilmore who had his “Happy Place.” For each of us, that is a unique place. Mine is sitting behind a grand piano, playing soft and relaxing music.

“See the best in someone else, rather than the worst.” This one came from mom. She always saw the best in someone else and refused to ever hold a grudge. I’ve sure had my fair share of comments sent my way over the years which, taken by themselves are demoralizing. I have been told that I’m too nice a guy to do my job. I’m sure that I’ve also said things over the years that have been hurtful to others as well. I’ve had to step back and realize that for the most part, people generally have good intentions and want to do the right thing. I have learned to accept feedback for what it is and then move on. Dale Carnegie said – “Instead of worrying about what people say of you, why not spend the time trying to accomplish something they will admire. That said, however, I have also learned that there are certain people in this world that, if allowed, will continue to drag a person down. The key however, is to step back for a moment and avoid letting emotions take over and cloud your judgement. Listen to what the other person has said and try to apply some lessons of self-improvement. That doesn’t always work, but it’s worth a shot.

“Keep moving.”

Finally, my dad was always on the move and very active right up until he became ill. He taught me the importance of not only being in good condition both mentally and physically, but even more importantly that in order to be successful, I must constantly challenge myself and change. Remaining still results in becoming stagnant. Organizations and teams must also constantly change and evolve in order to be successful and retain their competitive edge.

That wraps up some of the “lessons learned” from my parents. I do hope that their words help you in some way as you deal with the daily struggles of the world in which we live.

In closing, as I write this we are ending 2015 and looking forward to a new year. One of my clients referred to this an opportunity for “New Beginnings.” It’s a chance to step back, reflect on the past and look forward to a bright and better future.

Take care, have a great day and stay safe. Please feel free to contact me at fred.kriess@stservices.com if you have any lessons of leadership that you can share.
Many thanks to our riders, volunteers, and sponsors for participating in the 8th Annual Pedal With Purpose fundraising event presented by Arcadis to benefit Water For People on Saturday, November 21, 2015.

Pedal With Purpose riders took on two challenges:

1. RIDING El Tour de Tucson. Our 15 riders were represented in all of the event distances (104, 75, 55, or 40 miles).

2. RAISING money for Water For People to develop innovative and long-lasting solutions to the water, sanitation, and hygiene challenges facing developing parts of the world. Our team raised over $9,000 this year!

SAVE THE DATE
Pedal With Purpose at El Tour de Tucson to benefit Water For People

DATE: Saturday, November 19, 2016

CONTACT: Corin Marron
pedalwithpurpose@gmail.com
Tel: 513.593.2377

2015 PEDAL WITH PURPOSE RIDERS

Ron Ablin  Michael Cross  Louisa Larson
Brian Biesemeyer  Mustafa Dawoodbhoy  Michael Kostdzewski
Adam Bliven  Frank Howe  Philip Saletta
Ben Champion  Jeremy Jonas  Kieran Sildar
Mark Cross  Bruce Larson  Mark Stratton
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5th ANNUAL RUN FOR WORLD WATER
5K Fun Run, 1K Walk and Kid’s Lollipop Run
SATURDAY, MARCH 12, 2016
Kiwanis Park, 5299 S. Ash Ave., Tempe, 85283

Give meaning to your miles and help Water For People reduce water poverty in the developing countries of Africa, Asia, Central and South America.

Entry Fees:
$30 Prior to March 1, 2016
$35 March 1 to Race Day

Registration Methods:
☐ Register and pay online at: http://5krun.arizonawaterforpeople.org
☐ Or mail completed form and check payable to AZ Water to:
Laura McCasland, City of Scottsdale
8787 E. Hualapai Dr.
P.O. Box 25089
Scottsdale, Arizona 85255

Early Packet Pick-up
Friday, March 11, 4-7pm
Tempe Marketplace

Check-in/Registration: 7:15-8:15 AM At Baseline and Ash Rd
Race Start: 8:30 AM 5K
8:35 AM 1K Walk around Kiwanis Lake
9:15 AM Kid’s Lollipop Run (50 yd. Dash)

Awards Ceremony: 9:30 AM
Course: Chip timed and USATF certified course with varied terrain that includes grass, dirt and sidewalks.

Race Amenities: T-shirt for all 5K and 1K pre-registrants and while supplies last for the Race Day Registrants, snacks, Kid’s Face Painting and inflatables and a DJ!
5K Awards: 1st and 2nd Overall Male and Female Finishers
1st Place Male and Female Finishers in the following age groups: 14 and under, 15-19, 20-29, 30-39, 40-49, 50-59, 60 and over

Questions? Email azwaterforpeople@gmail.com or call 480-312-8717

Registration Form

Please print and complete entire form. One entry form per person. T-shirts for paid participants only.

Name: __________________________ Sex: M ☐ F ☐ Age on Race Day: ______________
Address: __________________________ City __________ State __________ Zip __________
Phone: __________________________ Email __________________________ Shirt Size (adult) S M L XL XXL

Event: 5K Fun Run ______ 1K Walk ______ Lollipop Run (free) ______

Participate in the Corporate Challenge! Company or team with the most registered participants will receive an award!
☐ Yes ☐ No Company/Team name: __________________________

Waiver: I know that participating in this walk/run is potentially hazardous. I should not enter unless I am medically able and properly trained. I also assume any and all risks associated with this event including but not limited to falls, contact with other participants, the effects of the weather, including high heat and/or humidity and the condition of the roads and traffic, all such risks being known and appreciated by me. Knowing these facts, and in consideration of your accepting my entry, I hereby, for myself, my heirs, executors, administrators, or anyone else who might claim on my behalf, covenant not to sue and waive, release and discharge the AZ Water Association, Water For People, the City of Tempe or any agents authorized by them for any purpose. This release and waiver extends to all claims of every kind or nature, foreseen or unforeseen, known or unknown. I further grant full permission for organizers to use photographs, video tapes, recordings or quotations or other record in legitimate accounts and promotions of this event.

Applications for minors are accepted only with a parent/guardian signature.

Signature: __________________________ Date: __________

Parent/Guardian if Participant is under age 18
**Sponsorship Opportunities**

**5th Annual Run For World Water**

---

**Title Sponsor Package $2500**
- Title Sponsorship Overall Event Presenting Sponsor of the 2016 Event.
- Company logo displayed prominently on all race material.
- Race Day benefits: Opportunity to address the crowd at the start of the race, company banner displayed at registration table, on start/finish arch and promotional table at the race.
- Complimentary race admission for 15 people.
- 5"x 7" logo on Sponsor Board and company banner on the start/finish arch.

**Gold Sponsor Package $1500**
- Company information displayed at registration table and on start/finish arch.
- Complimentary race admission for 10 people.
- 4"x 6" logo on Sponsor board and company banner on the start/finish arch.

**Silver Sponsor Package $1000**
- Complimentary race admission for 5 people.
- 3"x 5" logo on Sponsor board and company banner on the start/finish arch.

**Bronze Sponsor Package $500**
- Complimentary race admission for 3 people.
- 2"x 3" logo on Sponsor board.

**In-kind Sponsor $300-500 worth of products or services**
- Name of company on t-shirt, sponsor board, and in Kachina News.

---

Thank you for sponsoring the Run For World Water to benefit Water For People!

1. **Complete the following:**
   - Contact Name: ____________  Company: ____________
   - Address: ____________  City ____________  State ____________  Zip ____________
   - Phone: ____________  Email: ____________

2. **Check Sponsorship Level:**
   - **Sponsorship Deadline:** Friday, February 19!!

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<th>Title</th>
<th>Gold</th>
<th>Silver</th>
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3. **Send sponsorship form and a check payable to AZ Water Association to:**
   - Jenny Lopez, Greeley and Hansen
   - 2800 N. 44th Street, Suite 650
   - Phoenix, Arizona 85008
   - (602) 778-8787
   - (payment with credit card is also available)

4. **Email a high-resolution company logo (preferably PGN or JPEG) and completed registration forms for complimentary runners to Jenny Lopez @ jlopez@greely-hansen.com**

5. **Mail or drop off promotional items for Race Participant Goodie Bag by Friday, March 6th to Laura McCasland at 8787 E. Hualapai Dr., Scottsdale, AZ 85255 (480-312-8717)**
   - All sponsors will receive a letter acknowledging tax-deductible portion of contribution.
85% WBV Wine Tasting Event 2015

The AZ Water Association | Water For People Committee would like to thank all of our sponsors, silent auction in-kind donators, and attendees for their support. With your help, we were able to raise over $9,500 for Water For People!

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Matthew Adams
Field is an effective tool for managing the completion of start-up activities and serves as a means for holding people accountable for their tasks and responsibilities.

On the $134 million Metropolitan Water Reclamation District (MWRD) project in Denver, the start-up plans and checklists were developed in preconstruction. The inspector initially wanted hard copies printed so the items could be physically signed off. After introducing and familiarizing the project engineer and inspector with BIM 360 Field and web-based management of the start-up checklist, they quickly realized the benefits of the system. Ultimately, the management of the start-up process ensured all the items were performed and verified, which led to a higher-quality project for the owner.

Planning early, developing start-up checklists, maintaining open communication and promoting accountability leads to the smooth transition of water and wastewater treatment plants to owner/operators. The owner’s operating personnel gain a better understanding of how the systems were started up and tested, which leads to a greater understanding of how they should be operated and maintained.

David Heyde, LEED AP BD+C, is a Senior Project Manager/Start-up Manager for McCarthy’s Southwest division, located in Phoenix. McCarthy’s Southwest division has completed more than 55 water and wastewater treatment projects worth more than $1.5 billion in Arizona, California, New Mexico, Colorado, Nevada and Texas.
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(indicate 1st, 2nd, 3rd choice)

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___Information Technology
___Leadership
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___Scholarship

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___Lab Practices
___Luncheon Programs - Phoenix
___Luncheon Program – Tucson
___Research
___Safety
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___Water For People
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___Water Distribution
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___Water Reuse
___Water Treatment

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☐ I would like to know more information about the committee(s) indicated above.

☐ I am looking for suggestions for a committee on which to serve. My skills are: ______________________________
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