Cover photo taken along the Kachina Trail, Flagstaff, AZ
by DNRoss & Associates
PROVEN THM REMOVAL AT HALF THE ENERGY COST

Powerful active mixing for better water quality | Lowest lifecycle cost of any system | Scalability from 50,000 gal to 50 MG

PAX WATER TECHNOLOGIES: THE NEWEST ADDITION TO UGSI SOLUTIONS’ BEST-IN-CLASS TECHNOLOGIES

The custom-designed PAX Trihalomethane Removal System (TRS™) combines energy-efficient aeration components with powerful active mixing to maximize THM removal at dramatically reduced energy costs. PAX TRS™ features 100% stainless parts, clog-proof maintenance-free nozzle design and a 100% success rate in achieving removal targets.

- The industry’s strongest guarantee for THM removal products
- Works in all tank types and clearwells
- Now available through a wide network of distributors

With hundreds of PAX TRS™ systems operating successfully worldwide, you’ll have complete confidence when you work with PAX. Call us today and discover why it’s more affordable than ever to make PAX your trusted partner in THM removal.

Represented by: Katie Sanders
(623) 680-7394
katie@ylsenterprises.com

PAX Water Technologies
A UGSI SOLUTIONS COMPANY
www.paxwater.com     Toll Free: 866.729.6493
TABLE OF CONTENTS

features

14   AZ Water 2017 Wastewater System Project of the Year
     Manganaro Lift Station Rehabilitation
22   AZ Water 2017 Water System Project of the Year
     City of Phoenix: Scenario 6 Water Transmission Main
32   AZ Water 2017 Water Treatment Project of the Year
     Superstition Area Water Plant
36   AZ Water 2017 Water Reuse Project of the Year
     Ocotillo Recharge Facility ASR Well Expansion Project
40   Salt River Project Biomass Test Burn at Coronado Generating Station
48   AZ Water 2017 Wastewater Treatment Project of the Year
     91st Avenue Wastewater Treatment Plant Digester/Rehabilitation
52   Building Better Water Quality One Job at a Time
     National Green Infrastructure Certification Program Celebrates a First Year of Success
56   Update on KW (H2O) Using Sunshine to Power Arizona’s Water Future

announcements

59-73  AZ Water 90th Annual Conference & Exhibition Highlights
58   AZ Water 91st Annual Conference & Exhibition Call for Abstracts
29   Pure Water Brew Challenge Schedule
41   Water For People Southern Arizona Golf Classic
27   Tri-State Seminar 2017
21   Wastewater Collections Workshop
28   WateReuse Symposium 2017
11   WEFTEC 17, Chicago, IL
74   Wine Tasting Event

news

2   Advertisers
26  Association News
2  Board of Directors
3  Calendar
18  Committee News
12  Member News
46  Movers and Shakers
30  Pipeline - Operator Certification Challenge
50  Pipeline Answers
42  WIFA News

reports

8   AWWA Director Report
6   Executive Director Report
54  Historian Report
4   President Report
34  Success and Fun
10  WEF Delegate Report
board of directors

PRESIDENT
Bob Hollander
City of Peoria
bob.hollander@peoriaaz.gov

PRESIDENT-ELECT
Lisa Jackson
Black & Veatch
jacksonla@bv.com

VICE PRESIDENT
Tim Thomure
Tucson Water
timothy.thomure@tucsonaz.gov

TREASURER
Asia Philbin
Town of Marana
aphilbin@maranaaz.gov

SECRETARY
Jeanne Jensen
Town of Gilbert
jeanne.jensen@gilbertaz.gov

PAST PRESIDENT
Marie Pearthree
mpearthree@gmail.com

AWWA NATIONAL
Alan Forest
HDR Inc.
alan.forest@hdrinc.com

WEF NATIONAL DELEGATE
Patty Kennedy
City of Phoenix
patty.kennedy@phoenix.gov

DIRECTOR
Mike Ambroziak
CPM
mike@constructionproductmarketing.com

DIRECTOR
Amy Baker
City of Peoria
amy.baker@peoriaaz.gov

DIRECTOR
Jesse Black
Black Environmental
jesse@blackenvironmental.com

DIRECTOR
Patrick Goodfellow
Brown and Caldwell
pgoodfellow@brown kald.com

DIRECTOR
Darlene Helm
City of Phoenix
darlene.helm@phoenix.gov

DIRECTOR
Doug Kobrick
Hazen and Sawyer
dkobrick@hazenandsawyer.com

DIRECTOR
John Masche
City of Phoenix
john.masche@phoenix.gov

DIRECTOR
Mike Worlton
GHD
mike.worlton@ghd.com

2017
the kachina news
article and advertisement
deadlines

ISSUE       DEADLINE
WINTER      December 10
SPRING      March 10
SUMMER     June 10
FALL       September 10

ACCEPTABLE FORMATS INCLUDE:
High-resolution PDF files
with fonts embedded,
Adobe Illustrator 9.0 .eps files,
.tif files, .jpg files, or
Microsoft Word files.
Include any high-resolution
(300-dpi) photos or artwork
used with Microsoft files
separately as either .tif or .jpg.

E-mail all articles
or advertisements to:
manager@azwater.org

Statements of fact and opinion
expressed are those of the authors
and AZ Water, AZAWWA, and
AZWEA assumes no responsibility
for the content, nor do they
represent official policy of
the Associations.

The three Associations do not
endorse the products or services of
their advertisers. Advertisements are
included as an educational service
to our members and are reviewed
by the editor before publication to
ensure their relevance to the water
environment and the objectives of
the Association.

The Kachina News is the
official publication of the AZ Water
Association, Arizona Section of the
American Water Works Association,
and the Arizona Water
Environment Association.

AZ WATER ASSOCIATION
18521 E. Queen Creek Rd.
Ste. 105-611
Queen Creek, AZ 85142
www.azwater.org

(c) 2017 AZ Water Association

directory of advertisers

APS.........................................................9
Aqua Aerobic Systems .........................7
American Flow Control..................... 57
Arcadis............................................. 6
Archer Western.............................. 17
Az Safe Water................................. 8
Beeman Equipment Sales............... 44
Black & Veatch............................. 6
Brown and Caldwell......................... 10
Carollo Engineers.......................... 50
CH2M...............................................OBC
CPM............................................. 24
Coombs Hopkins.......................... 45
Custom Automation....................... 33
DN Tanks....................................... 51
Ecoverde........................................ 13
ECS Environmental Solutions........... 53
FANN Environmental....................... 34
Ford Meter Box.............................. 4
Goulds Water Technology............... 25
Greeley and Hansen....................... 42
Harrington Industrial Plastics........... 1
HDR.................................................. 59
IES Southwest Inc.......................... 7, 53
InfoSense, Inc................................. 20
Legend Technical Services................ 51
M. E. Simpson Company................... 3
MISCO...........................................3, 10, IBC
Montgomery & Associates............... 5
PCL Construction........................... 37
Reliner®/Duran Inc..........................43
Stanley Consultants....................... 35
Stantec...........................................39
Syneco Systems............................. 76
Texas Aquastore............................ 75
USA Bluebook................................... 76
West Tech Equipment/Val-Matic......... 49
Wilson Engineers........................... 10
YLS Enterprises................................ IFC
### Calendar of Events | July through December 2017

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Location</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>AWWA Webinar: Effective Utility Mgmt.: Your Utility’s Road to Sustainability</td>
<td><a href="http://www.awwa.org">www.awwa.org</a></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Wastewater Collections Workshop</td>
<td>Flagstaff, AZ</td>
<td>See page 11</td>
</tr>
<tr>
<td>August</td>
<td>AZ Water 91st Annual Conference &amp; Exhibition Call For Abstracts Opens</td>
<td>See page 58</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>AWWA Webinar: How to Implement Utility Climate Action Plans</td>
<td><a href="http://www.awwa.org">www.awwa.org</a></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>2017 Water For People Southern Arizona Golf Classic</td>
<td>Tucson, AZ</td>
<td>See page 41</td>
</tr>
<tr>
<td>31</td>
<td>WIWA Funding Opportunity Applications Due</td>
<td>See page 43</td>
<td></td>
</tr>
<tr>
<td>September</td>
<td>Tucson Luncheon Program</td>
<td>Tucson, AZ</td>
<td><a href="http://www.azwater.org">www.azwater.org</a></td>
</tr>
<tr>
<td>7</td>
<td>WateReuse Symposium</td>
<td>Phoenix, AZ</td>
<td>See page 28</td>
</tr>
<tr>
<td>10-13</td>
<td>Phoenix Luncheon Program</td>
<td>Tempe, AZ</td>
<td><a href="http://www.azwater.org">www.azwater.org</a></td>
</tr>
<tr>
<td>12</td>
<td>85% WBC Wine Tasting Event 2017</td>
<td>Scottsdale, AZ</td>
<td>See page 73</td>
</tr>
<tr>
<td>17</td>
<td>33rd Annual Tri-State Seminar</td>
<td>Las Vegas, NV</td>
<td>See page 27</td>
</tr>
<tr>
<td>26-28</td>
<td>WEFTEC 2017</td>
<td>Chicago, IL</td>
<td>See page 11</td>
</tr>
<tr>
<td>October</td>
<td>Tucson Luncheon Program</td>
<td>Tucson, AZ</td>
<td><a href="http://www.azwater.org">www.azwater.org</a></td>
</tr>
<tr>
<td>5</td>
<td>Phoenix Luncheon Program</td>
<td>Phoenix, AZ</td>
<td><a href="http://www.azwater.org">www.azwater.org</a></td>
</tr>
<tr>
<td>November</td>
<td>Wastewater Treatment Seminar</td>
<td>Tempe, AZ</td>
<td><a href="http://www.azwater.org">www.azwater.org</a></td>
</tr>
<tr>
<td>1</td>
<td>Tucson Luncheon Program</td>
<td>Tucson, AZ</td>
<td><a href="http://www.azwater.org">www.azwater.org</a></td>
</tr>
<tr>
<td>2</td>
<td>Phoenix Luncheon Program</td>
<td>Phoenix, AZ</td>
<td><a href="http://www.azwater.org">www.azwater.org</a></td>
</tr>
<tr>
<td>December</td>
<td>Tucson Luncheon Program</td>
<td>Tucson, AZ</td>
<td><a href="http://www.azwater.org">www.azwater.org</a></td>
</tr>
<tr>
<td>7</td>
<td>Phoenix Luncheon Program</td>
<td>Phoenix, AZ</td>
<td><a href="http://www.azwater.org">www.azwater.org</a></td>
</tr>
</tbody>
</table>
At the risk of being redundant, let me start by repeating what I said during my incoming remarks at the AZ Water Annual Business Meeting. I am humbled and honored to be selected as the President of the AZ Water Association for the coming year.

I joined the AZ Water Association over 40 years ago. At that time, it was the Arizona Water & Pollution Control Association (AWPCA). It seems like a lifetime ago and yet not. Only upon reflection do some of the details emerge. I was a young water industry professional and never thought that I would be President of the organization one day.

I am passionate about AZ Water and its continuing success. It is my portal to the water industry for which I am equally passionate about. The feelings run deep and personal. The Association has helped advance my career, not just with the technical information and education it has provided to me, but by the support it has given to me, and the personal and professional relationships I have been so fortunate to acquire. I had the privilege to give a presentation at an annual conference as a graduate student. I was a scholarship recipient so many years ago, but still remember how important that financial support was.

But while it is nostalgic and emotionally satisfying to reflect on the past, the organization must be focused on the future. Water supply, water quality, sustainability, potential impacts of climate change (regardless of what an individual may believe about the cause), financial stability of utilities, effective management, and public perception and transparency, are all issues being faced by the industry. These challenges must be confronted by a variety of professionals. It was with this renewed focus that the AZ Water Association rebranded itself, updated its Strategic Plan, and developed a detailed Business Plan.

In my remarks at the AZ Water Annual Business Meeting, I provided a few highlights about my priorities. With this, my first column, I think it is appropriate to repeat and expand on them here, to set the tone for the coming year, and the future.

Much of this is captured in our Strategic Plan Update of 2015. The Plan identifies four key Objectives.

1. AZ Water will be the State’s premiere training and professional development organization.

AZ Water started the certified operator program as a voluntary effort. It is now required that all water and wastewater operators be certified in the areas, and at the appropriate levels, of their practice, in order to perform their jobs. The program is now operated by the Arizona Department of Environmental Quality. We have continued that effort with our operator training offerings. We have and will continue to bring these training opportunities to a wider state-wide audience. The need for competent operators exists throughout the State. I myself joined the operator ranks in November 2014 when I passed my Grade 2 Water Treatment Exam. As of April 19, 2017, I have achieved Grade 2 Certification in all four disciplines. I am considering myself a 2X4, something I can build upon.

The quality of the technical presentations at the Annual Conference and in our workshops, seminars, luncheon events, webinars, and more, are a testament to being the premiere training and professional development organization in the State. While we have heard that members most enjoy face-to-face training and development activities, we must also include on-line delivery in our toolbox, to successfully and adequately reach the greatest audience and achieve our goal. Stay tuned for these opportunities.

We need to bring and nurture a new generation of water professionals. And not just training existing members to the industry, but attracting new individuals. This should include reaching out to secondary schools, colleges and universities, trade schools, and military veterans. Many of our current operators learned their trade in the military. I know a few, and they are committed and disciplined individuals. I have participated in outreach events at the elementary school level, through my current employment. You cannot start too young to excite and engage young minds and AZ Water should get more involved with these types of activities. The education and training of future water professionals is critical.

2. AZ Water will be the authoritative resource on water in Arizona.

As I reflected earlier on the many challenges that face the water industry, success will only be achieved if decision and policy makers have accurate and credible information. The membership of the AZ Water Association includes, in my opinion, the most intelligent, informed and talented operators, engineers, scientists, contractors, manufacturers, academicians, economic, and legal professionals in the State of Arizona, and probably the nation and the world. It is our responsibility to engage with our wider communities to meet the challenges that face us. These individuals live and understand that good science and...
WATER RESOURCE PLANNING

Integrating hydrology, economics, and policy for Arizona’s water users

Planning & Policy
Demand & Conservation
Water Resource Development

MONTGOMERY & ASSOCIATES
www.elmontgomery.com
During our 2017 Annual Conference & Exhibition this past May, I overheard a comment from our previous Board President, Tom Galeziewski, regarding the discussions that were ongoing related to the financing of the new football stadiums in Los Angeles for the Rams and Chargers; and, in Las Vegas for the Raiders. The media had identified how team ownerships were pursuing legislation which would make tax exempt financing available for these private enterprises in addition to asking for taxpayer money to underwrite construction costs. Tom essentially said “these guys are asking for hundreds of millions of dollars, maybe billions, in subsidies while we try to figure out how to finance our infrastructure projects”. This got me to thinking and the reason why I wanted to broach this subject in the Executive Director’s column. Do we have our priorities mixed up? Is there more public support for paying for stadiums and arenas for professional sports teams than there is to pay for design, construction and operation of water, wastewater and stormwater infrastructure?

Historically, tax exempt financing has been available for the public-sector to pay for its capital projects. In some cases, creative financing tools are used in public-private partnerships. Specific IRS Code provisions allows for non-profit entities to use low cost loan options. The AZ Water Association feels strongly that these funding mechanisms need to be protected and expanded, if possible. We were extremely pleased to be actively involved through the American Water Works Association as to the federal authorization and appropriation for the Water Infrastructure Finance and Innovation Act (WIFIA). This program accelerates investment in the country’s water infrastructure by providing long-term, low-cost supplemental loans for regional and nationally significant projects. Lending for this year was increased to $1.5 billion, which in the scheme of things is not a lot of money at the Federal level; however, this amount can be significantly leveraged which can really make a difference. At the State level, the AZ Water Association has worked with other stakeholders in expanding the role and funding levels for WIFA. Traditionally, much of the funding provided by WIFA has been used to build wastewater collection and treatment facilities. New initiatives are geared towards conservation by recycling and reusing wastewater. This financing, which currently stands at over $2 billion and counting; coupled with technical assistance and support is extremely valuable. But again, we need to continue to build strong, unrelenting public support from our taxpayers and ratepayers to ensure the money is there today and in the future to invest in clean water, wastewater collection and reuse and conservation. It is one of our organizational priorities.

When I hear President Trump and Congressional leadership talk about “rebuilding our Nation’s infrastructure”, this statement is mostly followed by language regarding “roads, bridges and airports”. What is sorely missing is laser focus on water, wastewater and stormwater needs. I get it – we can all see the above ground projects and I completely understand that transportation needs are a critical element of job creation and economic growth. However, nothing, and I mean nothing is more important than safe drinking water; wastewater collection, treatment and reuse; and, stormwater protection. The most recent report card grades from the American Society of Civil Engineers shows barely passing and, in some cases, failing grades as to infrastructure. Time is of the essence. Let’s make sure that public needs, public health and public safety are given priority over some of our national pastimes.
IS WASTEWATER REUSE IN YOUR PLANT'S FUTURE?

Today’s water treatment standards are rapidly changing, requiring plants to implement adaptive water management strategies. Aqua-Aerobic Systems’ experience in Biological Processes and Filtration provide you with the most advanced technologies for reuse applications and meeting the most stringent effluent demands. Whether utilizing filtration following a secondary biological process or implementing a “green” approach to your plant’s water reuse initiatives, we have the ideal solutions to meet your water reuse goals.

Aqua-Aerobic® Cloth Media Filtration
Featuring OptiFiber® Pile Cloth Media

AquaDisk®
Cloth Media Filter
- Vertically mounted disks reduce required footprint
- High solids and hydraulic loading rates
- Low backwash rates

AquaDiamond®
Cloth Media Filter
- Up to eight vertically oriented diamond laterals
- Fits neatly into existing traveling bridge filter profile
- Provides two to three times flow capacity of a traveling bridge filter with an equivalent footprint

Aqua MegaDisk™
Cloth Media Filter
- Large 10’ diameter disks
- Up to 24 disks in a single filter treating 24 MGD
- Fewer filters required results in lower capital and O&M costs
- Ideal for deep bed sand filter retrofits

Aqua-MBR Membrane Bioreactor
- Enhanced biological nutrient removal in a compact footprint and direct filtration via submerged membranes

AquaMB Process®
Multi-BARRIER Membrane System
- High level nutrient removal utilizing multiple barriers, featuring cloth media filters followed by membranes
- Low energy consumption

Aqua UltraFiltration™ System
Featuring Aqua MultiBore™ Membranes
- Membrane fibers do not break
- No air scouring required
- Modular T-track assembly has small footprint

John Spielman | Ryan Spielman
IES Southwest
41365 N. Desert Winds Dr. | Cave Creek, AZ 85331
p 480.488.3009 | f 480.488.2525
john@iessouthwest.com | www.iessouthwest.com
As usual, I am waiting till the last minute to start on my AWWA Director’s report. Which means, I am writing this while sitting in a hotel room in Philadelphia, PA – home of this year’s AWWA Annual Conference and Exposition (ACE). Once again, AWWA has put a fantastic conference together and over 11,000 water professionals, from all over the world are in attendance. The venue and host City for this year’s conference were also great! The Philadelphia convention center is amazing! Part of the facility is housed in what used to be the train shed of the historic Reading Railroad terminal. The entrance of the convention center is located in what was once the head house of the original terminal and used to contain office spaces for the Reading Railroad Company (yes, this is the same railroad company featured in the game Monopoly) beginning in the late 1890’s.

The technical program for this year’s ACE was top notch too. Unfortunately, given additional duties associated with my election as an AWWA Vice President, I wasn’t able to attend as many presentations as I would have liked. One of the highlights though was attending the Keynote address given by Dr. Gary Amy, this year’s winner of the prestigious AP Black Research Award. I know I am probably dating myself here, but Dr. Amy was one of my professors at the University of Arizona back in the 1980’s. It was fun catching up with him a little bit prior to his presentation.

Another highlight for me was judging the Young Professionals Fresh Ideas Poster Competition. Based on my interactions and discussions with the students and young engineers participating in this completion, I feel good about the future of our industry. They truly are the best brightest young minds our AWWA Sections have to offer and in a word, the work they are doing is “amazing”. I’m looking forward to helping out with next year’s competition in Las Vegas.

Community Engineering Corps

Community Engineering Corps (CECorps) is an alliance between AWWA, American Society of Civil Engineers and Engineers Without Borders USA. The alliance combines the strengths of three organizations to provide technical expertise to underserved communities in the United States and ensure the communities’ infrastructure meets community needs. CECorps is seeking enthusiastic volunteers to use their skills and expertise to work on project teams, serve on program committees, or mentor student project teams.

I know a lot of AZ Water members are already aware of CECorps – in fact several of our members are currently working with the Town of Chloride Arizona on a CECorps project – but, this is a really worthwhile program and I wanted to take this opportunity to encourage all of you who have an interest in new volunteer opportunities to give CECorps a look. Also, I was recently asked to serve on the CECorps Advisory Committee and my first meeting was held at ACE. I am still learning what my role is to be, but basically it sounds like I will help lead efforts to identify deserving projects and help build project teams to successfully deliver these projects. Feel free to contact me if you want to get involved in CECorps or if you are aware of some underserved communities here in Arizona that could benefit from this program. For more information on the CECorps, who they are and what they do, you can reach out to cecinfo@ewb-usa.org.

State of the Water Industry

I didn’t realize this until recently, but AWWA has published a State of the Water Industry Report each year since 2004. This year’s report – the 2017 State of the Water Industry Report – was released earlier this year and you can download a copy from AWWA’s website. I recently took a quick look at this report and it contains some very interesting and useful information. The report’s content is based on a survey of water professionals that went out in September 2016. As rated by respondents, the current health of the industry (i.e., soundness) was 4.3 on a scale of 1 to 7. This is down from 4.5 in 2016 and prior to this year, the rating has been in the range of 4.5 to 4.9. Overall, these are not bad numbers, but they aren’t great either.

The report also lists the top five most important issues facing the water industry as:

1. Renewal and replacement (R&R) of aging water and wastewater infrastructure
2. Financing for capital improvements
3. Long-term water supply availability
4. Public understanding of the value of water systems and services
5. Public understanding of the value of water resources

continued on page 51
Want a way to make your plant more efficient?

APS has a rebate for that.

Pumps use a lot of energy—they can account for up to 25% of energy use for industrial plant operations, according to the Department of Energy. Our energy efficiency program, Solutions for Business, can help. We offer performance testing that identifies opportunities to save and rebates that make upgrading pumps and blowers affordable.

To learn how you can save, visit aps.com/pumping or call (602) 457-5003.
Program funded by APS customers and approved by the Arizona Corporation Commission.
This year our Annual Conference & Exhibition made the move to a larger location. This meant more room for exhibitors, more space for technical sessions, increased seating for meals and more areas to network. As with any big change, there were some minor hiccups and concessions that needed to be made, but overall the change proved to be the right move for the association. Chad Pregracke, the Wednesday keynote speaker who singlehandedly started a movement to clean up the Mississippi River, was very telling of the impact one person can have on a community. Makes my quest to get my 12-year-old to clean his room seem so insignificant! The sessions were extremely well attended and the expanded exhibit hall provided plenty of room to network and communicate with the exhibitors. The mobile app made finding sessions, topics, and speakers so easy. Kudos to the Conference Program committee for securing Senator Jon Kyl as our closing Keynote Speaker. Hearing Senator Kyl speak at our conference has been a vision of the committee for the past five years.

Attending the conference is such a rejuvenating and rewarding experience. Not only does it provide the environment for learning and networking, but it also renews the reason we each chose this field. I encourage everyone to continue this momentum into summer. On June 24, the Water for People Committee hosted their annual golf tournament at Troon North Golf Club. All the proceeds will go to Water for People to promote the development of high-quality drinking water and sanitation services to all.

While our local conference is a top notch conference, there is something amazing about a national conference! The sheer size of the exhibit hall and breadth of technical sessions will leave you in awe. Registration is now open for the Water Environment Federation Technical Exhibition & Conference (WEFTEC). WEFTEC is recognized as the world’s largest annual water quality technical conference and exhibition. Professionals from around the world attend to participate in the outstanding water quality education and training. As a past attendee, I experienced the cutting-edge technical program. The massive exhibition hall boasts the title of the largest exhibition in the world! In addition to training and the exhibit hall, one of my favorite events at WEFTEC is the operators challenge. Come see some of the best wastewater collection and treatment personnel display their skills in five events, collection systems, laboratory, process control, maintenance and safety. WEFTEC will be held September 30 - October 4 in Chicago. I am looking forward to one of the biggest and best WEFTEC conferences yet. See you all in Chicago, and don’t forget your walking shoes!
WEFTEC is the one event for professionals, industry experts, and the most innovative companies from around the world. Learn from the very best thought-leaders in water quality.

SAVE THE DATE

WEFTEC 2017
the water quality event

McCORMICK PLACE Chicago, Illinois
CONFERENCE Sep 30 – Oct 4, 2017
EXHIBITION Oct 2–4, 2017

www.weftec.org
Andrea Odegard-Begay Has Been Promoted To Lead Its Arizona Water Team

In her new role, Andrea will lead all business operations related to water and wastewater treatment, reuse, and infrastructure from Garver’s Phoenix office.

Andrea is a Stanford graduate with 17 years of experience in water and wastewater systems. After growing up in Southern California, she began her career as a water engineer in Phoenix, and has been in Garver’s Frisco office since 2013. Her most significant work has involved the design of water and wastewater systems, including conventional and advanced treatment facilities, pump stations, ground and elevated storage tanks, and water and wastewater network piping.

“Andrea has been a crucial part of the success of many Texas water projects and we’re excited that she now gets to return home and use that expertise to benefit another growing market,” said Steve Jones, Garver Director of Water Services. “Arizona has a need for water infrastructure improvements, and Andrea is the perfect person to lead those efforts for our Garver Water Team.”

“I have a passion for water, wherever it is in the water cycle,” Andrea said. “Our Arizona Water Team is ready to provide innovative, value-added solutions to preserve and enhance water resources and help ensure that a safe and abundant water supply remains available to all of Arizona.”

Find out what Andrea and Garver’s Arizona Water Team can do for you by contacting AMOdegard-Begay@GarverUSA.com.

ASCE Phoenix Honors Gannett Fleming’s Tempe Town Lake Dam Project

Gannett Fleming’s Tempe Town Lake Dam Replacement project was selected as the 2017 American Society of Civil Engineers (ASCE) Phoenix Branch Project of the Year in the “Greater than $10 Million” category. Gannett Fleming was the design engineer of record for the $45 million dam located in Tempe, Arizona, and provided design and construction management services. The award is shared in partnership with the owner, the City of Tempe, and the prime contractor, PCL Construction, Inc.

Arizona’s second-most visited public attraction, Tempe Town Lake draws more than 2.4 million visitors each year to enjoy swimming, boating, kayaking, and fishing. One of the lake’s original rubber bladders failed in 2010, causing more than 750 million gallons of water from Tempe Town Lake to rush downstream. The new Tempe Town Lake Dam is the largest hydraulically controlled steel gate dam of its kind in the United States, and it ensures the lake’s continued success as a recreational venue and a powerful economic development engine,” said Stewart Vaghti, PE, CFM, ENV SP, a senior project manager for Gannett Fleming.

“Gannett Fleming is excited to be a part of an historic project, and we take great pride in the positive impact our work has on the communities we serve,” noted John Derr, PE, executive vice president and Gannett Fleming’s West Region director. The replacement dam consists of eight hydraulically operated steel gates, each 106 feet long, 17 feet tall, and more than 260,000 pounds. The use of steel gates improves the durability and reliability of the dam, while the implementation of a hydraulically operated system offers a heightened level of safety and flow flexibility. The dam’s concrete piers and spillway slab were constructed over a roller-compacted concrete (RCC) foundation, one of several solutions employed during the project to help reduce the construction schedule.

“PCL is pleased to have been a part of this momentous project,” said Mike McKinney, PCL district manager. “We look forward to continuing to provide complex solutions to communities’ growing water needs.”

The ASCE Phoenix Project of the Year Award is presented annually to a civil engineering project in Gila, Maricopa, or Pinal counties that demonstrates significant excellence in delivering infrastructure that improves communities and the quality of life. The Tempe Town Lake Dam Replacement also garnered a Best Project award in the Water/Environment category of the Engineering News-Record Regional Best Projects 2016 Awards – Southwest, and the American Concrete Institute and International Concrete Repair Institute Arizona Chapter’s Best in Concrete award for the around-the-clock placement of 18,000 cubic yards of RCC.
Will Sipes, Water Consulting Services

Long time AZ Water member, Will Sipes, recently started his own consulting business. He offers a range of water treatment services. As your remote operator in Maricopa County, he can assist you in compliance with local and state statutes. Typically, his team works with water systems that are meant to serve a population of 10,000 people or fewer. Like you, he wants to create a water source that provides safe and clean H2O. Will has been in the water business for many years and you can count on his expertise to get your ground water up to code.

Will is currently the water compliance manager at Hickman’s family farms and most recently was chief operator for the Town of Gila Bend. He holds a Grade IV ADEQ Certification in Water Treatment, Distribution, Wastewater Treatment and Collections.

Services Provided
- Assist companies, businesses and municipalities in achieving compliance with their small drinking water systems and maintaining compliance with Maricopa County, ADEQ and ADHS.
- Provide a wide variety of water sampling for small drinking water systems.
- Serve as a third-party independent consultant for water quality sampling analysis for industrial sites, government entities and community watchdog groups.
- Assist in the implementation of procedures to streamline operations and increase efficiency with the focus on providing safe clean drinking water.
- Provide private well owners with water sampling which many mortgage lenders are now requiring for home loans.
- Provide agriculture sampling for USDA compliance.
- Provide consultation on treatment options for unsafe drinking water.
- In good standing with ADEQ, ADHS, USDA and MCESD.
- Well maintained by remote operator in Maricopa County.

Please go to www.willsipeswaterconsultant.com to view all the services the company provides; give them a call at 520-431-3284 or send an email to will.s.sipes@gmail.com.
The City of Chandler inherited the Manganaro Lift Station, located on the ADOT right-of-way at the intersection of Ray Road and the Loop 101 off-ramp in Chandler. Over the last few years, the City noticed deteriorating conditions inside the lift station wet well and adjacent influent and discharge manholes. Wilson Engineers, already retained by the City to design a flow metering structure, evaluated and integrated the rehabilitation work in the final design documents. The wet well, only 15 feet long by 12 feet wide but almost 45 feet deep, houses four submersible pumps. At least three of the pump discharge pipes had significant holes, therefore gushing sewage back into the wet well when in operation. The discharge sewer manhole showed heavy signs of corrosion including multiple areas of T-lock failures. The scope of work included replacing all pump discharge piping, spot repairs to the wet well protective coating, rehabilitating the influent and discharge manholes with FRP inserts and the installation of a magnetic flow meter inside a new concrete vault. The location of the lift station is shown in Figure 1. The challenge in doing any work at the Manganaro Lift Station is that it is extremely compact and enclosed within a 45 feet by 50 feet perimeter wall adjacent to a freeway off-ramp, a busy intersection and several businesses. Flow bypass around the lift station was considered but was very expensive, further there was no room within the lift station site to install bypass pumps.

After completion of the work on one side, the contractor extended the lift station inlet pipe to convey the sewer flow over the other side of the cofferdam. The design and installation of the cofferdam depended heavily on the participation of divers specialized in raw sewage environments. The cofferdam had to be made to fit perfectly with the bottom, sides and baffle wall of the wet well. Another innovative method technique that was used for the entirety of the work inside the wet well was the lowering basket assembly that allowed divers, construction workers and inspectors to enter and exit the lift station wet well safely. The assembly consisted of a man basket lowered and lifted by a powered winch located atop of a movable crane mounted on steel track. Figure 2 shows the overall cofferdam and man basket assembly.

During construction, the lift station odor control had to be turned off because of the ozone released by the system presented a hazard to the crew. The City of Chandler has a very strict policy on odors but due to space constraints, another type of odor control could not be installed onsite. Wilson Engineers looked into a temporary remote chemical feed facility that could reduce the formation of odor-forming compounds in the sewer with enough detention time. After investigating several City remote sites, a temporary calcium nitrate feed facility was installed within a City Well Facility about four miles from the lift station as shown on Figure 3.
The rehabilitation effort also included newer material and installation technologies. The discharge pipe and drop sewer connection at the discharge manhole was made exclusively of HDPE material in order to avoid any future corrosion. Figure 4 shows the pipe connections before rehabilitation with corroded DIP pipes and after HDPE pipe installation. Another advantage of using HDPE pipe was being able to use several custom-made HDPE fittings as well as electrofusion technology to make a tailored pipe assembly. The final HDPE connection is shown on Figure 5.

The manholes were also rehabilitated using newer and long lasting materials such as FRP manhole, FRP insert and FRP covers as shown on Figure 6.

Social and Economic Considerations
The Manganaro Lift Station Rehabilitation project will benefit the City of Chandler for many years to come. The use of materials well suited for corrosive sewer environments such as 316 stainless steel nuts and bolts, dielectric fittings, polyamine epoxy coated DIP pipes, FRP, HDPE pipe and epoxy resin protective coating will provide a much longer lifespan to the facility. The new pump discharge pipes that replaced the old corroded pipes, will provide the City and the community with increased energy efficiency and savings. The new magnetic flow meter will provide the City valuable flow information as well as data about pump performance to anticipate pump maintenance and thereby increasing pump life.

From the construction phase standpoint, a significant amount of tax dollars was saved by work performed inside the live wet well. Installing a bypass pump station would have cost the City an excess of $250,000 in rental, fuel, and labor cost including 24-hour pump watch.

Considerations for public health, safety and wellbeing were paramount in the implementation and the entire duration of the project. Surrounding business patrons were contacted early and made aware of the upcoming construction work. Early coordination and communication allowed the contractor to agree on a very reasonable price to lease a section of the parking lot away from most customer traffic and delimited by screened chain-link fences. As a result, many customers never noticed the construction area. Most of the heavy equipment and machinery was delivered by using the right lane of the off-ramp during allowed traffic control hours which were limited from 9:00 a.m. to 3:00 p.m. Besides minimizing impact on traffic, the City also insisted that the Contractor made sure that pedestrian traffic along the off-ramp would not be interrupted.

Perhaps the most important public relation concern for the City of Chandler was a successful “no odor-complaints” goal during the entire project. As mentioned earlier, an odor control facility was set up inside a remote Well Facility. The tank and feed pumps were concealed inside the facility perimeter wall and not visible from the nearby park and school. Chemical deliveries were carefully scheduled and monitored to avoid any nuisance to the community.

Complexity
The location and tight footprint of the Manganaro Lift Station required very rigorous and thorough planning especially with the most complex tasks associated with work in the wet well. Before setting up the cofferdam, divers had to replace the discharge pipes of the two pumps that would serve to pump flow into the HDPE bypass piping set up to discharge into a downstream manhole. This bypass was necessary in order to repair the discharge manhole. Divers then installed the cofferdam to split the wet well into two sections where construction crews could work on one side at a time after dewatering. Divers had to work at night during low flows as shown on Figure 7.

Unexpected and complex challenges also arose during the project. The discharge manhole, which was only supposed to be repaired with an FRP insert, was so deteriorated that it was on the brink of failure when excavated. Additionally, the alignment of the unearthed pipe between the valve vault and the discharge...
manhole was significantly different than shown on the asbuilt. The project team had to quickly come up with a solution as the discharge manhole repair was in the critical path to finish the project on schedule. The team decided to use a standalone FRP manhole instead of an insert and ordered custom-made HDPE pipe fittings and electrofusion couplings to rework the pipe alignment.

Meeting and Exceeding Owner Needs
During the entire duration of the project, the lift station remained operational at all times, tax-payer money was saved by rethinking the bypass concept, and there were no odor complaints. The team was also able fulfill the City’s needs by incorporating a few design changes near the end of the project while finishing on time and under budget. Project highlights are shown on Figure 8.

FIGURE 8

PROJECT HIGHLIGHTS
- Manganaro Lift Station Improvements
- Project Duration: 6 Months
- Construction Budget: 1.73 Million
- Final Construction Cost: 1.66 Million
BUILDING WATER
PROJECTS FOR THE SOUTHWEST

The Walsh Group is proud to be listed as the industry's top builder of facilities that gather, treat and distribute our most vital resource.

Serving Arizona for almost 20 years.

ARACHER WESTERN
1830 N. 95TH AVENUE | SUITE 114
PHOENIX, ARIZONA | 602.246.1485

WWW.WALSHGROUP.COM

(Rankings via Engineering-News Record, 2016)
The member Cities of Tap Into Quality have stepped up and partnered with the Arizona Department of Environmental Quality (ADEQ) to complete the Public School Drinking Water Lead Screening Program. ADEQ is funding this six-month, proactive, fast-tracked screening program in an effort to collect and test 14,000 drinking water samples from 7,000 school buildings statewide. This proactive program is ambitious and Tap Into Quality member Cities (as well as other Utilities) have stepped up in a variety of ways.

The Program was initiated by ADEQ to screen all public schools in the state of Arizona for Lead in their drinking water. School drinking water may become contaminated as water moves through the schools plumbing. The program involves the following steps:

1. ADEQ identifies schools to sample and coordinates the sampling.
2. Sample collectors receive sample kits by mail or by hand delivery.
3. Samples are collected, documented and sent to a laboratory for testing.
4. ADEQ posts lab results in the screening database and reports the data to the school, the Arizona Department of Health Service (ADHS) and the Arizona School Facilities Board (SFB).
5. If the results are >15 ug/L, the school takes corrective action to prevent lead exposure by removing the fixture from service.
6. Schools report the corrective actions performed to ADEQ, school staff, students and parents.
7. If corrective actions were necessary, the school conducts confirmation tests and works with the SFB to investigate and remediate the exceedance.

Some TiQ member Cities have assisted with this effort by coordinating the sample kit delivery and pickup of samples for the schools in their areas, while others are actually taking the responsibility of collecting the samples with City personnel. Additionally, many member Cities have ADHS certified laboratories and have volunteered their staff and analytical resources to performing the Lead analysis in house.

More information and the results database can be found at azdeq.gov/LeadScreeningProg.

The AZ Water Association Phoenix Technical Luncheon Committee is proud to announce the following dates for our 2017/2018 luncheon series:

**SAVE THE DATES!**

- September 12, 2017 ........................................................... SRP Pera Club
- October 10, 2017 ............................................................... SRP Pera Club
- November 14, 2017 ............................................................ SRP Pera Club
- December 12, 2017 ............................................................ SRP Pera Club
- January 9, 2018 ................................................................. SRP Pera Club
- February 13, 2018 ............................................................. SRP Pera Club
- March 13, 2018 .................................................. Estrella Mountain Community College
- April 10, 2018 ................................................................. SRP Pera Club

Registration begins at 11:30 a.m. with lunch following at 12:00 p.m. Additional information will be available on the AZ Water web site at www.azwater.org. We hope to see you there!

As most of you know, the AZ Water Association utilizes the Committee structure to provide service to our members, tackle projects and help formulate policies and procedures throughout the various disciplines within the water professions. The committee members who put forth the “roll up your sleeves” kind of efforts are essential to our success. The Leadership Committee is now recruiting members to help our organization build an even stronger cadre of current and future leaders, the men and women who want to become supervisors, superintendents, managers and directors, along with business leaders to run the companies, build the products, develop the technologies and provide consulting services so vital to the industry. Our goal is to identify young talent and nurture said talent. We are committed to providing leadership training and skill sets, and to mentor individuals so inclined to pursue management opportunities. Please come join us. All interested individuals should contact Dave Iwanski, our Executive Director, at Director@AZWater.org.
The Stormwater Committee has been quickly pulling together their resources to get their group up and running.

**Laying the Groundwork**

During the last few months, the group finalized their Vision, Mission, and Strategic Plan. The vision of this committee is to provide a forum where stormwater professionals throughout Arizona share information addressing stormwater quantity and quality issues and advance the knowledge of the public and practitioners in the field. To reach this vision, the committee will focus on:

- sharing resources and information;
- continuing education of practitioners in the field;
- engaging regulators and future water practitioners;
- promoting stormwater related solutions and pollution prevention; and
- advancing the value of stormwater as a resource.

**Spreading the Word**

At the 2017 AZ Water Annual Conference & Exhibition, Co-Chairs Todd Williams (Michael Baker International) and Rebecca Sydnor (Amec Foster Wheeler) discussed the value that the Stormwater Committee will bring to the overall association and also solicited feedback for how the group could best meet the needs of the membership. There were over 50 people in attendance at the session and the committee has now grown to 63 registered group members!

The committee and its leadership are planning a stormwater workshop before the end of the year that may include presentations, field training, inspection insights, and more.

Committee meetings are held the 4th Tuesday of each month from 12:00 – 1:00pm in the Adobe room of the Maricopa County Flood Control District Building, located at 2801 West Durango Street in Phoenix.

---

**Young Professionals Committee**

The AZ Water YP Committee had a busy spring full of fun and exciting events including several activities at the 2017 AZ Water Annual Conference & Exhibition. The YP Committee had several duties at the AZ Water Annual Conference: judging the Student Poster Contest, organizing the YP Block and the Annual YP Raffle Fundraiser, holding our monthly meeting and any other small tasks that were needed around the conference. We had a great time with all our activities. The YP Committee is able to do so much because of its enthusiastic and ready-to-help members. The monthly YP meeting held at the Annual Conference had over 40 young professionals in attendance, and we are excited to get our new and prospective YP members involved!

Every month or two the YP Committee organizes a hike, and lately the hikes have been near Payson and Sedona to help everyone escape the heat.

---

continued on page 20
The YP’s schedule a variety of tours covering a wide range of technical topics. Our April tour was held at Keller Electrical Tour in Phoenix where the staff at Keller gave YP’s a first-hand look at what it takes to build and maintain motors, controllers and other important electrical equipment used in the water industry. Another tour is scheduled at Phoenix Pumps in July.

Tour of Keller Electrical in Phoenix, AZ

The YP Committee organizes judging for the Stockholm Junior Water Prize, and YP’s attended regional and statewide Science Fairs throughout the spring in order to recognize science fair contestants with exceptional water-related projects.

Stockholm Junior Water Prize Regional Winners

The YP Committee is committed to growing our educational outreach efforts, especially to K-12 classrooms and groups. The YP’s can facilitate several water-related educational activities, and a number of YP’s and student chapter members recently met to try out different hands-on activities that can be used to get younger members of the public excited about water.

YP’s, ASU and NAU Students treating water with handmade filters in a team-building exercise

The YP’s have plenty of events scheduled for the summer and fall, including happy hours, tours, hikes, game nights, water festival participation, fundraisers and a variety of social events. Anyone interested in learning more or interested in getting involved should feel free to reach out to the contacts below.

Contact Clayton Freed (clayton.freed@phoenix.gov) or Nashita Naureen (nnaureen@carollo.com) to learn more about the Young Professionals Committee and about upcoming events. Follow us on Facebook: https://www.facebook.com/AZWaterYPs/.
The AZ WATER Wastewater Collections Committee is offering an educational workshop designed to assist collection system operators with career and skill enhancement utilizing new technologies.

**Thursday, August 10, 2017**

**Flagstaff, AZ**

**8:00am—3:30pm**

**Workshop Sponsors:**

![Armorock](image)

![BrownAndCaldwell](image)

![CPM](image)

**WORKSHOP TOPICS INCLUDE:**

- Manhole Rehabilitation
- Confined Space Entry (Not a Certification Class)
- Cleaning Nozzle Technologies and Demonstrations
- Odor Control Monitoring/Testing and Supplies
- Collection System Root Control

**PDH’S AVAILABLE**

$75 Members  
($95 Non-members):  
includes:  
continental breakfast,  
lunch and refreshments.

Register by August 7, 2017

Online at [www.azwater.org](http://www.azwater.org)

or contact:

Mark Poppe:
MPoppe@brwncald.com

or

520-918-2314

**Location:**

5401 East Commerce  
Flagstaff, AZ 86004
The City of Phoenix takes a proactive approach to prevent large diameter water main failures with a pipe evaluation program. In September 2013, it was determined that a critical water transmission main was severely distressed. The City took immediate action, replacing a 240-foot section of the water main that was approaching failure, and continued their efforts to ensure that the remaining 42-inch diameter Scenario 6 Water Transmission Main would be able to reliably transport potable water throughout the City.

A project team for design and construction phases was assembled, including Dibble Engineering as the lead design engineer and construction phase resident engineer, Kiewit Infrastructure West as the Construction Manager at Risk (CMAR), with support from Wilson Engineers (electrical design) and Central Creative (public outreach). Together, the team reviewed the City’s needs to improve their existing water system with minimal disruption to the public.

The existing water transmission main crossed the heavily used Cortez Park and the Arizona Canal and ACDC. Potential soil saturation from the Arizona Canal and flood irrigation for watering the turf at Cortez Park, along with corrosive soils and stray current from the nearby overhead high voltage power lines, likely contributed to the degradation and corrosion to the existing water transmission main. The team evaluated pipe routes, materials, and installation methods that would provide the City with a long-lasting corrosion-resistant system.

Alignment Analysis
A weighted priority matrix was used to assist the team in determining the alignment to be selected. Alignment alternative considerations included:
• Potential corrosion conditions
• Feasibility of crossing the ACDC
• Use of existing right-of-way and easements versus acquiring and securing new easements
• Existing utility conflicts
• Impacts to the public
• Future access for maintenance and/or repair
• Construction methods and duration/cost

Social Considerations and Public Outreach
As determined by the alignment analysis, considerations included:
• Traffic control on arterial streets, including impacts to Cortez High School
• Traffic control on a residential street and disruption to residents
• Mature tree removal within and impacts to Cortez Park usage.

The entire team understood from early in the project development that impacts on the residents along Carol Avenue could be dramatic. A personalized program was implemented, including a team member exclusively dedicated to public and neighborhood considerations, multiple door hangings and door-
to-door visits, a telephone hotline, and a sensitive and personable construction crew. Access to each home and essential services such as water, sewer, and garbage pick-up were maintained with minimal interruption throughout the project.

Materials Evaluation
The project specifications and design allowed for multiple pipe materials to ensure competitive pricing. Each material selection required its own corrosion protection system. Potential materials included: AWWA C150 Ductile Iron Pipe (DIP), AWWA C200 Steel Cylinder Pipe (Steel), AWWA C303 Concrete Cylinder Pipe (CCP), and AWWA C950 Fiberglass Reinforced Pipe (FRP). Each material was considered for constructability, corrosion susceptibility or resistance, strength, and cost. Several materials were determined to be suitable for the project requirements, and ultimately the Contractor elected to use a combination of Steel and DIP. Considering new technology and applying a numerical grading system to evaluate alternatives resulted in the selection of an alignment and material that used traditional construction methods that increased the productivity, efficiency, and quality of the pipe installation.

Integration with 20 MG Reservoir
Early and proactive engineering allowed the 42-inch water main to be placed within a narrow area between the existing site wall and a new 20 million gallon concrete reservoir being constructed by the same Contractor. Construction of the reservoir included an excavation approximately 26-feet deep with soil nail slope stabilization. The distance from the site wall to the reservoir excavation top of slope was only five feet wide! Advanced planning mitigated a constructability “headache” by designing the water main to be located out of conflict with the existing soil nails, and to be constructed during the backfill operation of the reservoir excavation.

ACDC Crossing
The project included two 40-foot deep excavations and 374-feet of 66-inch diameter steel casing for tunneling beneath the ACDC and the SRP Arizona Canal. The jacking pit was located within the Deer Valley Water Treatment Plant (DVWTP), and the receiving pit was located on Flood Control District of Maricopa County (FCDMC) property north of the ACDC. The northern pit had a restricted in footprint to stay outside of an APS-owned parcel and to ensure protection of an existing 18-inch sewer adjacent to the pit.

The project team met with FCDMC at the beginning of the project to confirm impacts and permitting requirements for crossing the ACDC and the 40-foot deep excavations at each end of the crossing. However, during the Design Phase, the United States Army Corps of Engineers (USACE) made a policy change that required this project to be submitted for a Section 408 Permit instead of only requiring a review through FCDMC. The City, Dibble and the CMAR Contractor worked as a team with FCDMC to submit FCDMC’s first permit to the USACE under the new rules. A permit was secured after approximately 12 months of coordination with USACE, after construction had already begun. Prior to encroaching their facilities and issuing a permit, the USACE required that the project team develop and submit a Contractor Quality Assurance and Quality Control Plan. Kiewit provided daily detailed surveys of the ACDC at marked locations to ensure no impact to the concrete channel to ensure the satisfaction of the FCDMC and the USACE.

Surge Tank
The team evaluated the placement and height of a 30,000 gallon surge tank to minimize its visibility beyond the walls of the DVWTP. The location preserves open space at the DVWTP to allow the City the opportunity for a future booster station expansion. The pressurized surge tank protects the water transmission main by providing a 60/40 cushion of compressed air to absorb pressure transients experienced during operation of the water transmission main. The surge tank was integrated into the City’s SCADA system to ensure the City staff can observe conditions remotely.

Corrosion Protection
Two corrosion protection systems were designed depending on continued on page 24
the pipe material selected, impressed current or galvanic anode. A galvanic anode system was installed, and is currently protecting the City’s new water transmission main from the corrosive environment that degraded the original, now replaced, water main.

**Start-Up and Commissioning**

Connection to the booster station at the DVWTP and existing water transmission main in 35th Avenue required development of a Maintenance of Plant Operations (MOPO) plan. Dibble, Kiewit, and City staff met together many times to develop a commissioning plan that included valve closures, testing, dewatering, disinfection, and final connections to the existing system within the City’s designated shutdown period, ensuring uninterrupted service to the public and safe working conditions for the Contractor.

**Leak Detection and Repair**

During the preliminary pressure testing, it was discovered that the new water main would not hold the required 188 psi test pressure. Kiewit worked seven days each week for extended hours to determine the source of the leak and to resolve the problem, draining the water main and performing a manned pipeline inspection with the Engineer. A manufacturer defect in supplied rubber gaskets resulted in the water transmission main being unable to meet the required pressure. All steel joints with rubber gaskets were ultimately seal welded to prevent leaking and to ensure a lasting product to meet the needs of the Owner.

**A Successful Project**

The measurement of this project’s success is a very pleased owner. This improvement to the City’s public water supply system was essential to the community, ensuring a reliable water source to its residents. Planned preventative replacement of critical infrastructure and thoughtful design minimized problems during construction. A unified team provided an organized and methodical approach to highly complex project, meeting the City’s schedule and budget, and ultimately exceeding expectations.
INTEGRITY UNCOMPLIED

It starts with the highest-quality pumps manufactured and never ends with our loyalty to independent dealers. No industry change, no advancement in technology will get in the way of the service, support and value you deserve. See just how much you mean to Goulds Water Technology and just what we can do for you at goulds.com/independents.
Incoming Board President, Bob Hollander presents a Kachina to outgoing President, Marie Pearthree.

L-R: Asia Philbin, Tom Galeziewski (outgoing Past President … just doesn’t want to leave us), Mike Ambroziak, Lisa Jackson, Mike Worlton, Amy Baker, Patty Kennedy, Marie Pearthree, John Masche, Bob Hollander, Doug Kobrick, Tim Thomure, Jeanne Jensen, Patrick Goodfellow, Alan Forrest.

Missing from the picture: Jesse Black and Darlene Helm.

Outgoing Board Member

Incoming Board President, Bob Hollander honors past Board Member, Lisa Culbert for her service on the Board of Directors from 2012-2016.

The UA Partners with Ag Industry to Conserve article that appeared in the 2017 spring issue of the AZ Water Kachina News magazine, page 38 - the author of the article was incorrectly spelled, it should read Channah Rock, Ph.D., University of Arizona. Also, the sixth paragraph is the caption for the picture on the page, “The South West Extension CONSERVE Team distributing the Needs Assessment Survey at the Southwest Agricultural Summit, Feb. 2017”. It is our sincere apology to the author and University of Arizona for the errors that appeared in this article.

Article Correction to UA Partners with Ag Industry to Conserve
SALUTE TO SERVICE

TRI-STATE SEMINAR

33rd ANNUAL • SEPTEMBER 26-28, 2017

ALL UNDER ONE ROOF

• Over 300 exhibitors in a regiment of their own
• Over 200 classes with new recruits and highly trained experts
• Special tours and add-on workshops for new trainees and experienced veterans
• Up to 21 contact hours available for your squad’s battlefield tactics

REGISTRATION

$99 per person

Value Priced, spacious hotel rooms On-Site
$90 per night • 13 Restaurants On-Site •
(Group Code: TRI0924)

For hotel reservations www.southpoint.com

www.tristateseminar.com
LEARN WHAT’S NEW AND WHAT’S NEXT IN WATER REUSE!

More than 100 presentations, panels, and workshops
- Facility Tours - Networking Events - Exhibit Hall

REGISTER TODAY AT WATEREUSE.ORG/SYMPOSIUM
FIND THE PURE WATER BREW CHALLENGE AT ONE OF THESE UPCOMING EVENTS:

**Jul 1\(^{st}\) - Frontier Days Parade** PRESCOTT

**Jul 4\(^{th}\) - 2\(^{nd}\) Annual Diamond in the Sky Celebration presented by Kino Sports Complex** TUCSON

**Jul 15\(^{th}\) - 16\(^{th}\) - AZ Get Outdoors Expo!** SCOTTSDALE

**Jul 23\(^{rd}\) - 27\(^{th}\) - International Water Association Conference** LONG BEACH (CA)

**Jul 28\(^{th}\) - AZ Brewcon** PHOENIX

**Jul 29\(^{th}\) - Real Wild & Woody Beer Fest** PHOENIX

**Aug 18\(^{th}\) - Beat the Heat Main Street Block Party** YUMA

**Sep 10\(^{th}\) - 13\(^{th}\) - National WateReUse Symposium** PHOENIX

**Sep 30\(^{th}\) - SanTan Brewing Oktoberfest** CHANDLER

**Sep 30\(^{th}\) - Great Tucson Beer Fest** TUCSON

**Oct 13\(^{th}\) - 15\(^{th}\) - Tempe Oktoberfest** TEMPE

**Nov 5\(^{th}\) - Chillin ‘N Swillin Beer Fest** LAKE HAVASU

**Nov 18\(^{th}\) - Pizza Festival** PHOENIX

**Dec 5\(^{th}\) - AZ Beer Day - “Feel the Repeal”** PHOENIX

---

We challenge all local residents, community groups, environmental organizations and local businesses to learn more about water issues. Do you support Pure Water? Like us, follow us:

@AZPureWaterBrew  
Facebook  
YouTube  
Instagram  
Twitter  
#AZPureWater  
#AZPureWaterBrew

Want to Know More?  
Visit [www.Azpurewaterbrew.org](http://www.Azpurewaterbrew.org) to find out more and sign up to participate in the Challenge.
3. You’ve just started up a new 75 MGD Water Filtration Plant with Ozone as a primary disinfectant and chloramines as residual disinfectant. Calculate the ammonia dosage required to maintain a 0.5 mg/L chloramine residual with a demand of 3.5 mg/L and a 4:1 chlorine:ammonia dosage ratio.
   A. 0.5 mg/L
   B. 1.0 mg/L
   C. 3.5 mg/L
   D. 4.0 mg/L

4. What is the calcium hypochlorite feed rate in mL/min if the chlorine dosage is 2.4 mg/L, the flow is 2.26 MGD, and there is 0.25 pound of chlorine per gallon of calcium hypochlorite.
   A. 120 mL/min
   B. 188 mL/min
   C. 360 mL/min
   D. 480 mL/min

5. While changing chlorine ton containers, the operators note the upper valve is stuck. How should this be addressed?
   A. Call 911
   B. Utilize wrench 7b in the “B” kit, which is 3 inches longer, to loosen the valve.
   C. Disconnect, rotate the cylinder, and use the other valve. Tag the stuck valve.
   D. Disconnect, tag the valve, and return the cylinder to the supplier.

WATER DISTRIBUTION GRADES 3 & 4
1. If you have a water well sample analyzed and it contains 0.8 mg/L Fluoride, what would you expect to be notable of the customers due to drinking the water?
   A. The children would be sick frequently, and missing school frequently.
   B. All elderly customers may have Alzheimer’s disease.
   C. Adults will have high blood pressure.
   D. Children should have lower incidence of dental caries.

2. Who should be notified prior to crews digging to repair broken water mains?
   A. Police Department
   B. Fire Department
   C. Arizona Bluestake for underground utilities
   D. Your Supervisor

3. For a safe yield, a well can supply 500 AF per year. What size pump should be put in the well?
   A. 24 inch
   B. 500 HP
   C. 163 GPM
   D. 300 GPM

4. An operator collects 80 total coliform samples per month. How many can be positive?
   A. 1, but then you need to re-sample.
   B. 4
   C. 8
   D. 76

5. While flushing a 12” water main, a flow meter on a hydrant reads 748 gpm. What is the velocity of the water through the main?
   A. 1.0 ft/sec
   B. 1.5 ft/sec
   C. 2.1 ft/sec
   D. 2.5 ft/sec
WASTEWATER COLLECTION GRADES 1 & 2
1. Collection system leakage should not be a problem in:
A. Areas with high groundwater tables.
B. Pipes with rigid joints.
C. Properly constructed and maintained sewers.
D. Sewers with root intrusion which plugs any holes.
2. The purpose of traffic control is to:
A. Control dust and air pollution near collection system operators.
B. keep cars, trucks and buses out of open trenches.
C. Prevent excessive speeds in construction zones.
D. Provide safe and effective work areas.
3. A sewer line 800 feet in length has a starting elevation of 1,212.50 and an ending elevation of 1,197.50. What is the slope?
A. 0.009 ft/ft
B. 0.012 ft/ft
C. 0.019 ft/ft
D. 0.115 ft/ft
4. Potential problems are often found during routine:
A. Cleaning and maintenance.
B. Cleaning of root stoppages.
C. Correction of lift station failures.
D. Removal of grease.
5. Hydraulic shores are used frequently due to their:
A. Ability to retain flowing soils.
B. Ease of installation and removal.
C. Light weight.
D. Superior strength.

WASTEWATER COLLECTION GRADES 3 & 4
1. A pump could overload a motor due to:
A. Plugged lines.
B. Broken discharge line.
C. Excessive inflows.
D. Lack of mud and debris in wet well.
2. Machinery should be locked out and properly tagged to:
A. Explain how machinery works to new employees.
B. Identify the machinery and enter information into a database.
C. Indicate the employee working on the equipment.
D. Prevent accidents.
3. A 30-inch diameter sewer 500 feet long flows half full with a velocity of 2.15 feet per second. What is the flow in GPM?
A. 105.25
B. 1500.0
C. 2370
D. 2845.8
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 supplies.
C. Flood homes.
D. All the above.
5. Sewers and wet wells may have insufficient oxygen, a condition called:
A. Anoxic.
B. Flooded.
C. Aseptic.
D. Septic.

WASTEWATER TREATMENT GRADES 1 & 2
1. Effluent is defined as the ______ water flowing from a reservoir, basin, treatment process, or treatment plant:
A. Raw
B. Septic
C. Treated
D. Primary
2. Combined sanitary and storm sewer systems are preferable to separate sewer systems because a combined system permits more economical and more efficient wastewater treatment.
A. True
B. False
3. Preliminary treatment equipment includes:
A. Hydrogen Peroxide feed systems at lift stations
B. Comminutors
C. Clarifiers
D. Sludge digesters
4. Dangerous gasses which may be encountered by operators in a wastewater treatment plant include:
A. Argon.
B. Carbon monoxide
C. Excess Oxygen.
D. Nitrous oxide.
E. All the above.
5. The hydraulic surface loading on a trickling filter 90 feet in diameter with a flow of 0.7 MGD is approximately:
A. 80 GPD/sq ft.
B. 90 GPD/sq ft.
C. 100 GPD/sq ft.
D. 110 GPD/sq ft.

WASTEWATER TREATMENT GRADES 3 & 4
1. The best control method for activated sludge is:
A. Food/microorganism ratio.
B. Dissolved Solids control.
C. Detention time control.
D. BOD measurement and control.
2. The main purpose of a confined space entry permit is to:
A. Comply with laws.
B. Ensure the use of safety precautions and safe work practices.
C. Inform emergency responders of hazardous work being done.
D. Limit employer’s liability for injuries that may occur and reduce insurance rates.
3. What is the organic load to a sedimentation basin if the flow is 2.5 MGD, the diameter of the basin is 75 feet, it is 14 feet deep and the BOD of the influent is 225 mg/L?
A. 0.39 gpmpsf
B. 6.00 hours
C. 4700 lbs/day
D. 0.22 MG
4. What is the feed rate in lbs/hr of lime for an anaerobic digestion enrichment system dosing 25 mg/L to a flow of 18.5 MGD?
A. 46 lb/hr
B. 160 lb/hr
C. 1093 lb/hr
D. 3857 lb/hr
5. You have 5 sand drying beds 100 ft long and 20 ft wide. If you apply 15 lbs/yr/sq ft, how many pounds of sludge can you apply per year?
A. 100,000 lbs
B. 150,000 lbs
C. 200,000 lbs
D. 250,000 lbs

SEE ANSWERS ON PAGE 50
In 2014, Apache Junction Water District (AJWD) began design of a new surface water treatment plant. AJWD utilized a loan from the Water Infrastructure Finance Authority of Arizona (WIFA) and internal funds to move forward with the design and construction of the new Superstition Area Water Plant (SAWP). Carollo Engineers was hired as the consultant to work with AJWD’s concept and limited budget to come up with an exceptional design. This design included 3 phases, an initial 2 million gallon per day (MGD) plant, 6 MGD plant, and at ultimate build out of a 10 MGD plant. The design was finished in 8 months with several rounds of value engineering.

SAWP was constructed in Apache Junction on a Greenfield land parcel adjacent to the Central Arizona Project (CAP) canal. The main treatment process for the SAWP includes a packaged treatment system with adsorption clarification and media filtration. Other processes at the SAWP include a raw water pump station that pumps CAP water through self-cleaning strainers, a finished water clear well that provides backwash storage and houses the finished water pumps, and support facilities, including chemical storage/feed and solids handling. AJWD and Carollo Engineers worked closely during the design to come up with innovative ideas for the project.

One of the first focus points of the project was how to get water out of the CAP canal. The first option considered was to build a turn out structure in the side of the canal, but for a project of this size it was going to be cost prohibitive. The next option was to build a bridge over the CAP canal and install vertical turbine pumps into the CAP canal. Again this would be expensive and a maintenance nightmare. Finally, an existing City of Apache Junction bridge crossing the CAP canal that had been fenced off and no longer in use was considered. AJWD approached the City of Apache Junction to use the bridge to install the pumps on and hang two 8-inch stainless steel pipes into the canal to suck out the water. This alternative was selected because it was the most cost effective way since the bridge was already in place and the pumps were in a secure location that maintenance personnel could work on them. AJWD was allowed to utilize the bridge for this project. CAP also agreed with this idea and approved the design and construction. This alternative design and construction helped save AJWD approximately $500,000.

In effort to keep the project moving, Carollo Engineers suggested to AJWD to do a pre-selection of the treatment train. This would allow Carollo Engineers to design around a certain packaged system. AJWD would be able to assign the packaged system to the contractor who was awarded the contract saving time and money. The packaged system selected was provided by Corix. The system itself is made of marine grade aluminum so it will not rust and no coating is required. The system has an up-flow clarifier that is unique because most clarifiers are down flow. Also the water enters the system and 16 minutes later it exits meeting drinking water standards with chlorine contact time achieved later in the clear well.

AJWD and Carollo Engineers were able to come up with another solution to remove sludge. The City of Yuma had retired 4 – 7,000 gallon coned bottom tanks and conveyor system that had been used for sludge removal. These items were used by Yuma at their
Main St. Water Treatment Plant as a temporary solution and were no longer in service. AJWD was able to procure these items from the City of Yuma for half of the original price. Since the SAWP processes all of its residuals on-site, it is essentially a zero-liquid discharge facility, meaning that water is recovered from the process residuals and does not go to waste.

AJWD learned from Carollo Engineers that the City of Phoenix was dismantling its Verde River Water Plant and would have parts that may help with the construction of SAWP. AJWD requested several items from the City of Phoenix such as laboratory cabinets, turbidity meters, and pipe fittings. One of the ductile iron fittings used from the Verde Water Plant was constructed in 1948 and is critical to maintain a certain head pressure on the underdrain system of the new plant. The fittings were refurbished and installed on the discharge side of the plant. This again saved AJWD money during the construction of SAWP. Another interesting fact about this fitting is that it was installed on the State of Arizona’s first surface water plant that was designed by John Carollo of Carollo Engineers almost 70 years ago. SAWP is the first surface water plant in Pinal County, AZ and it was designed by Carollo Engineers.

One of the most unique parts of the design is a future corridor for a water line to bring effluent to the plant. The Superstition Communities Facilities District No. 1 (Sewer District) is on the other side of the CAP canal. As drought conditions in the southwest become more critical there will be the need for additional water supplies. The public may not be ready for it today but at some point this will be a source of water to help us survive in the future arid southwest.

AJWD has identified reclaimed water as a potential future source of supply for the SAWP. Although Arizona statute currently does not permit the use of reclaimed water as a drinking water supply, the facility’s design accommodates this vision by reserving space on the plant site for a future pipeline that would convey reclaimed water from the nearby water reclamation facility to the SAWP’s future raw water impoundment. The treatment building is also positioned so it can be readily expanded to accommodate additional treatment technologies that might be required for direct potable reuse.

AJWD signed a contract with Garney Construction in May of 2015 and construction was started. Garney Construction worked with AJWD and Carollo Engineers throughout the project to come up with construction ideas to help save costs and improve the project. The partnership that was formed between the owner, engineer, and contractor made this project a great success. The construction on this project was finished in 16 months, on time and within budget.
recently heard a presentation from a speaker named Paul Tsika titled "Commitment". I trust that this will help you in your work and personal life relationships.

Many people wonder what is the key to SUCCESS? There are many theories and books that have been written about the keys to success. It is my experience that one of the main things that set people apart from those that are successful, versus those who are not as successful, is COMMITMENT.

Although commitment may be a rather benign word, we all know that words have meaning and also have great impact upon our daily lives. It has been said, for a successful life, that our thoughts lead to our words, which lead to actions, which lead to habits, which lead to better results.

In our society today, it appears that many people are committed to being committed rather than being truly committed to what it takes to become successful in their life. In order to be successful in anything in life you must be:

• committed to your purpose;
• committed to your dream;
• committed to your goals; and
• committed to your destiny.

In short, you must be committed to your success.

You can tell a lot about a person’s character by how they keep their commitments. Not how they make their commitments, but how they keep their commitments. It’s a fact that anybody can make a commitment or make a decision about being committed. But it is following through on that commitment that will make the difference between your success in life and ultimately your influence in the life of other people.

In our culture today we have seen an erosion in things like faithfulness, perseverance, and commitment. These have been replaced with an acceptance of, no absolutes, nothing nailed down, no real truth, and no concrete commitments to anyone or anything.

This reminds us of the story of the hen and the hog that were walking down the street in New York. They passed a sign at a restaurant saying ham and eggs special. The chickens said, isn’t that wonderful? They’re featuring us on their menu today. The hog said I don’t feel that way because for you, it’s a contribution and for me it’s a commitment. This little story leads me to believe that many people in life are merely making a contribution to success rather than making a commitment to success. So the question is, “Do you want to make a contribution toward your success or do you want to make a commitment toward your success”?

There are two reasons that people lack commitment:

1. People desire a consensus. We want everyone to agree with what we are doing and buy in into what we are doing before we will move forward.

2. A need for certainty. In our culture today we want guarantees for everything including success in what we do.

The question each of us face is not whether we are going to do is right or wrong, but the question is, “Do I have the strength to remain committed even if others do not share our beliefs and are we committed to our path toward success”? Even if things don’t go just as we had imagined we need to decide if we will remain committed.

The process of doing what you are truly committed to should be its own reward. If you have a dream, goal, or a purpose that you are committed to; the process of striving toward that dream and purpose must be enough to sustain you.

If has been said that “What we really believe is what we will really be committed to”. But the fact is, what you are really committed to and follow through on, proves what you believe. We’ve all seen people say that they are committed to this or that. But when the going gets tough, do they remain committed to what they say they are committed to?

People who do not follow through on their commitments live in intentional defeat. I’m not talking about superficial success in their personal or business life. It’s sad when a person is successful on the outside, but is a personal failure on the inside related to the things that are truly important to them. This can lead to depression and despair.

There are four elements necessary to a commitment that will make a difference:

1. Choices; we don’t live by chance we live by choice if we are to be successful. Successful people live intentionally. Successful people do not make excuses, they change behavior through choice. Success is primarily about following through and dealing with obstacles and problems on a daily basis. As you deal with today’s problems you develop skills...
that will allow you to be successful and overcome those problems or obstacles the next time you encounter them. It has been said that effort is the ultimate measure of success. Each of us need to ask the question, are we giving it our maximum effort.

2. Choices must be backed up by your Convictions and values. Your actions must align with your convictions and values, or there will be conflict in your life. Your associations must match up with your convictions and values or there will be conflict in your relationships. It is been said that your success will mirror the five people that you associate with most. Do the people you associate with, share your conviction and values and encourage you to remain committed?

3. Courage to maintain your commitment even when the going gets tough. Nothing is accomplished without great effort and sacrifice. Great effort is not possible without great commitment backed up by your values that align with your daily activities.

4. Confidence and belief in what you have committed to. All successful people and great leaders exude confidence. Most people are seeking relationships with those that exhibit confidence. I am not speaking about false confidence or bravado, but a steady commitment to their dreams and goals. Confidence can be contagious, just as fear can be contagious. Each of us must choose. Please choose wisely.

The purpose of commitment is to enable you to make a difference in your life. We all want to make a difference in our personal and our work life. If you commit to great things, but don’t fully succeed, you’re far better off than if you make no commitment and are successful.

Make choices every day based upon your convictions and values daily. Have courage every day and confidence every day that you are created for greatness. Then you will make a difference not only for yourself but others in your sphere of influence. I know that you can be a difference maker. And not just a person who makes a minimal contribution or slides through life, BE A DIFFERENCE MAKER.

A thought:
• Make your life count for something great.
• Don’t allow your past to dictate my future.
• Make your commitment, by God’s grace to make right choices for the right reasons.
• Stand with confidence and courage on the conviction that you were created for greatness.
• Give your personal best so that others may reach their potential.
• Seek to end well.
• Make commitment more than just a word, make it a lifestyle.
• Don’t back up.
• Don’t give up.
• Don’t shut up.
• Stand up.
• Speak up.
• Live up to every commitment that you make.

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.
AZ WATER ASSOCIATION PRESENTS:
2017 WATER REUSE PROJECT OF THE YEAR
OCOTILLO RECHARGE FACILITY ASR WELL EXPANSION PROJECT

Award Recipients: City of Chandler, Wilson Engineers, PCL Construction
By Alan Palmquist, Uday Gandhe – Wilson Engineers
Kim Neill, John Pinkston – City of Chandler

Project Background
As the City of Chandler continues to grow, it expands its wastewater facilities accordingly. The City currently utilizes two Aquifer Storage and Recovery (ASR) well systems to inject reclaimed water into a shallow aquifer for underground storage purpose. In times of need, the ASR wells are designed to recover reclaimed water and introduce within the reclaimed distribution system for delivery to customers. The City has two ASR well fields, the Tumbleweed Recharge Facility and the Ocotillo Recharge Facility. This project included permitting for the expansion of capacity at the Ocotillo Recharge Facility (ORF) from 10 MGD to 20 MGD and the drilling/equipping of four (4) new ASR wells which brings the total number of ASR wells in this well field to ten (10). This is the single largest recharge facility in Arizona utilizing ASR well technology. Figure 1 – ORF Site Plan provides the site layout and ASR Well locations.

Original or Innovative Considerations
The Ocotillo Recharge Facility ASR wells are designed with a recharge capacity of 1,500 gpm. The 1,500 gpm was identified early in the design due the unique features of the underlying formations. The ancestral river course for the Salt River has provided a layer of sand and gravel which provides the exceptional recharge capabilities in the area. This allows each ASR well to be relatively close together and maintain their capacity during operation.

The technology to recharge 1,500 gpm into each ASR well is accomplished with a variable orifice recharge valve. The variable orifice recharge valve allows a rubber bladder to inflate/deflate depending on the desired injection flowrate. The inflation and deflation of the rubber bladder is accomplished by utilizing de-humidified compressed air or compressed nitrogen gas in 150 lb. cylinders as a back-up source. The reclaimed water then enters the formation through slots on the side of the variable orifice recharge valve. A high-pressure check valve is installed beneath the vertical turbine pump suction can to ensure reclaimed water is controlled through the recharge valve during an injection cycle.

When a well is injecting reclaimed water into the shallow aquifer for a pre-determined amount of time, like any filter, it requires a backwash cycle to remove suspended solids and maintain its capacity for the long term. The actuation of butterfly valves control the direction of reclaimed water at each ASR well and therefore, enables a backwash/purge cycle to occur. At the ORF, the purge water from the ASR Wells is discharged into the lake system managed by the Ocotillo Management Group (OMG).

Social and Economic Considerations
The Ocotillo Recharge Facility benefits the surrounding community by reusing all the recovered water or injecting all the surplus reclaimed water into the aquifer for future beneficial use. During periods of low reclaimed water demand from the

continued on page 38
TEAMWORK.
IT GETS YOUR DESIGN BUILT

PCL’s Water Infrastructure Group is dedicated to building and enhancing Arizona’s water infrastructure. Our innovative solutions, specialized expertise, and partner-focused approach result in clean water.

TOGETHER WE BUILD SUCCESS
Watch us build at PCL.com
the water can be banked or injected in the shallow aquifer. In times of high reclaimed water demand (summer conditions) where the demand is greater than supply, the water can be recovered from the aquifer and used to supplement the reclaimed water. This flexibility provides the residents with a consistent source of reclaimed water for parks, irrigation and lake features, saving valuable potable water resources. The ability to both store excess water that would otherwise be lost and reuse the stored water in lieu of potable water provides the municipality a sustainable solution to the overall reclaimed water system balance. The reduced cost of utilizing reclaimed water provides an economical alternative for large business when compared with potable water. By monetarily incentivizing a sustainable practice, the city can easily convince large industrial customers to utilize reclaimed water for specific applications in lieu of the more expensive potable water alternative. Additionally, the city does not have to invest in infrastructure to expand potable water treatment and distribution facilities. Overall, the use and reuse of reclaimed water provides both the municipality and the customer with significant savings.

Complexity
The drilling of the new ASR wells is less complex. The most complex element of the project was the installation of the below grade FCVs and the check valves. The installation of the valves will need to be done correctly to enable proper operation of the ASR Wells. In addition to this, it was critical to complete the connections to the separate onsite recharge and purge water piping systems. The complexity of the piping system ultimately ensures the City maintains the largest margin of flexibility for operation. Figure 3 – Baski Flow Control Valve shows photos of the installation and Figure 4 – Underground Tie-In provides an example of the buried piping network. Maintaining flexibility in flowrates, isolation of wells and ensuring each well can purge independently is paramount because of the large dependency on weather or climate conditions. As seasons change and weather systems move through the valley, the recharge facility is the one system that maintains the constant flow of reclaimed water for the City. By maintaining flexibility, the city ensures that the reclaimed water system can provide a solution, no matter how the climate or weather effects reclaimed water demands.

Meeting and Exceeding Owner Needs
The Ocotillo Recharge Facility has consistently exceeded the expectations of the City. As the City undergoes changes, the facility has changed with it to ensure it meets the needs of operations and maintenance staff and the City management. Wells, piping and valves have all been added to the site over multiple expansions and throughout the process the facility has either maintained or gained operational flexibility. The facility has maintained consistent recharge capabilities for nearly a decade, far surpassing the expectations set by similar facilities, much to the satisfaction of the City. Overall, the Ocotillo Recharge Facility has constantly met or exceeded the city’s needs in nearly all areas, including flexibility, complexity, budgetary constraints, constructability and the ability to work in conjunction with existing city infrastructure. The facility has implemented original and innovative ideas in order to meet their needs while considering the social and economic impacts of their decisions.
Fusing client needs, best practices, and sound design

It’s what we do.

We are working on various projects with owners, such as the Salt River Project, Town of Marana, and Yuma County, to develop innovative solutions for conveyance of water and wastewater using HDPE force mains. We aim to always incorporate their goals, best practices, and practical design into their projects.

-Noel Guercio, Senior Project Manager

Design with community in mind

stantec.com
Salt River Project’s (SRP) water supplies originate on the Salt and Verde River watersheds, an area that covers more than 13,000 square miles in central and eastern Arizona. Wildfire events create erosion, sedimentation and water quality issues that impact water storage and delivery infrastructure. Notable fires on the watersheds such as the 2002 Rodeo-Chediski fire and 2011 Wallow fire have devastated large portions of the Salt River watershed. The Four Forests Restoration Initiative (4FRI) in northern Arizona is an industry driven restoration and fuels reduction program that covers more than two million acres of Ponderosa Pine forest across the Mogollon Rim. Approximately half of the acres included in the planning area for 4FRI overlap with the Salt and Verde River watersheds. The recognition that the health and resiliency of the forest directly impacts SRP’s water supplies

One of the founding principles of 4FRI is creating value in the woody material removed from forest restoration sites, in order to pay for the restoration. The large amount of biomass per acres in the 4FRI area has shown to be a challenge in reaching the 50,000 acre per year restoration goal of 4FRI. In order to be part of the solution, SRP has embarked on an effort to identify the feasibility of utilizing woody biomass residual from 4FRI restoration sites as a supplemental fuel source at Coronado Generating Station (CGS) in Saint Johns, Arizona. If successful, this effort is intended to aid in the expansion of market utilization capacity in northern Arizona, not to replace the existing coal source at the plant. CGS was not designed to utilize biomass as a fuel source, the feasibility process is being conducted to identify if the existing power asset can be part of the needed growth in utilization capacity.

In addition to understanding the physical and operational impacts of integrating biomass into the CGS fuel supply, the test also aimed to gather information on the supply chain of harvesting, processing and transporting biomass from active restoration sites in northern Arizona to CGS. During the development of the test, the State of Arizona showed interest in understanding the biomass supply chain in northern Arizona. A biomass source on State Trust Lands outside of Flagstaff and City of Flagstaff land was chosen because it both provided a suitable Ponderosa Pine material for the test, as well as an opportunity to gather transportation cost information for moving the low-density material long distances.

The testing at CGS looks to identify a market-driven solution to the large quantity of biomass material that must be utilized in order to reduce the risk of catastrophic wildfire on watersheds serving SRP. SRP is analyzing the impacts of long-term operations at CGS to evaluate whether or not the generating station can be part of the solution to the existing biomass bottleneck in the 4FRI efforts to restore Arizona’s Ponderosa Pine forests.
Help Us Celebrate Our 14th Year

Water for People
Southern Arizona Golf Classic 2017

Saturday, August 26, 2017
Sign in @ 6:30 a.m.  Tee Off @ 7:30 a.m. sharp!

For more information, contact Jeff Biggs:
jeffbiggs@comcast.net • 520-245-1006

For details regarding Sponsorship
Packages and Online Registration, visit:
www.azwater.org/event/SAGC2017

Complete the registration form and make check payable to: AZ Water Association

Mail to: Jeff Biggs,
9497 N. Weather Hill Drive, Tucson, AZ 85743

Or register online:
www.azwater.org/event/SAGC2017

Email

I/We cannot participate at this time. Enclosed is a contribution of $__________

Complete the registration form and make check payable to: AZ Water Association

Mail to: Jeff Biggs,
9497 N. Weather Hill Drive, Tucson, AZ 85743

Or register online:
www.azwater.org/event/SAGC2017

Email

I/We cannot participate at this time. Enclosed is a contribution of $__________

<table>
<thead>
<tr>
<th>Player One</th>
<th>Player Two</th>
<th>Player Three</th>
<th>Player Four</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
<td>Name:</td>
<td>Name:</td>
<td>Name:</td>
</tr>
<tr>
<td>Email:</td>
<td>Email:</td>
<td>Email:</td>
<td>Email:</td>
</tr>
<tr>
<td>Phone:</td>
<td>Phone:</td>
<td>Phone:</td>
<td>Phone:</td>
</tr>
</tbody>
</table>

Shirt Size: Mens S M L XL XXL

Shirt Size: Mens S M L XL XXL

Shirt Size: Mens S M L XL XXL

Shirt Size: Mens S M L XL XXL

Shirt Size: Ladies S M L XL XXL

Shirt Size: Ladies S M L XL XXL

Shirt Size: Ladies S M L XL XXL

Shirt Size: Ladies S M L XL XXL

Complete the registration form and make check payable to: AZ Water Association

Mail to: Jeff Biggs,
9497 N. Weather Hill Drive, Tucson, AZ 85743

Or register online:
www.azwater.org/event/SAGC2017

Email

I/We cannot participate at this time. Enclosed is a contribution of $__________
Drinking Water Loans

City of Globe
$3 million ($750,000 provided in forgivable principal) WIFA loan will be used to repair and upgrade the City of Globe’s aging drinking water system, which serves approximately 7,500 people. This new loan continues the WIFA funding provided in 2014 to support the City’s efforts to rehabilitate and improve its drinking water distribution infrastructure. The City will replace waterlines in the Arlington, downtown and northeast areas of the City. Other drinking water infrastructure to be upgraded with these funds includes water meters for commercial establishments, a booster pump and a well.

Ash Fork Water Service
Ash Fork Water Service, a small, private water company in Yavapai County, serving over 200 households, received a $150,000 loan ($75,000 provided in forgivable principal) to address arsenic concerns in the community’s drinking water. Funding will be used to install an arsenic treatment system to reduce public health risks associated with arsenic contaminated water supplies.

Eagletail Water Company
$174,000 loan ($157,050 provided in forgivable principal) for Eagletail Water Company, a small, private water company, near Tonopah, for a new water storage tank. WIFA’s priority is to guide resources to communities with the greatest need, and this loan is the perfect example of the value WIFA can provide to Arizona’s communities. Eagletail Water Company had a critical need to replace a leaky storage tank, and is a very small community with very high water rates. This investment will control water loss and save money, and ensure that their residents have adequate drinking water for years to come.

Clean Water (Wastewater) Loans

City of Douglas
$3 million loan ($500,000 provided in forgivable principal) for the City of Douglas to expand its wastewater treatment plant for extended sewer services to the Bay Acres Colonia. Bay Acres Colonia has been using onsite wastewater treatment systems, septic tanks and cesspools, some of which are failing. These failing systems have created a public health risk and other environmental threats. To make this $17 million project a reality, WIFA provided funding to supplement grant funds from the North American Development Bank’s Border Environment Infrastructure Fund (BEIF), provided by EPA, and USDA Rural Development (USDA RD); a perfect example of collaboration between federal, state and local entities, coming together and leveraging resources to help a community in need.