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- INTRODUCTIONS:** Mark Hubbard, and Dr. Nick Hild, ASU
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RULES: Ozone Attainment Changes
PERMITTING: Understanding Your Permit; Application & Renewal; Record-keeping; Reporting
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JOURNAL of Environmental Management

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FROM THE EDITOR



I was reminded that the Journal has not published a crossword puzzle recently, so in this issue (see page 12) the "Crossword Challenge!" returns. I hope you will enjoy it!

Unless you are a new subscriber, you should have received a copy of the Journal's first calendar--the 2015 Calendar / Wall Planner--with your Oct/Nov 2014 issue of the Journal. Please take a moment to email or call me and let me know

what you think. Approximately 3500 copies of the 2015 Calendar were distributed across Arizona last year (both by mail and as free hand-outs). Your opinion will help in deciding if the Journal should publish a 2016 Calendar, and if we should make any changes to the format.

Authors -- please let me know if you would like to contribute an article for one of the upcoming issues of the Journal. Topics can be on almost any current relevant environmental issue or regulation.

And as always, thank you to our advertisers, contributors and authors, and to you our readers!

Sincerely,

Jim Thrush, M.S. Environmental Management

Editor & Publisher 480-422-4430 x42

Email: jimthrush@cox.net



HONEYWELL AEROSPACE

CREATING A CULTURE OF COMPLIANCE

By Gregory Bopp

During the week of May 4th, 2015, Honeywell Aerospace held an **Americas HSE&F Workshop** in Phoenix, Arizona. On the agenda was a **Regulatory Panel Session** with Henry Darwin, Director of Arizona Department of Environmental Quality (ADEQ); Phil McNeely, Director of Maricopa County Air Quality; and Jessie Atencio, Assistant Director of Arizona Division of Occupational Safety and Health (ADOSH) Voluntary Protection Program (VPP).

At Honeywell Aerospace, we believe appropriate regulatory engagement makes the jobs of our regulators easier and aids in creating a consulting rather than enforcing relationship. We asked the panel their thought on the best way to engage regulators and build trust. Each talked about their opportunities for regulatory engagement. Key programs mentioned included: participation in ADEQ's Voluntary Environmental Stewardship Program; ADOSH Voluntary Protection Program and Maricopa County Clean Air Council. Honeywell Aerospace benefits from participating in these and other programs. For us the differentiator is our structured engagement process.

I often say to our sites, "if the only time you see your regulator is during a regulatory inspection, then you have missed the true opportunity for engagement". This sentiment was echoed by the regulatory panel in their own way. When you engage outside of an inspection you have the opportunity to learn. Knowing what's on the regulator's compliance agenda and understanding new requirements greatly helps preparation for inspections. Beyond that, creating the opportunity to know your inspector by name and explain your processes is inherently helpful. Participate in regulatory workshops, conferences, seminars and training opportunities and use these as platforms to pursue awards and external recognition.

Honeywell Aerospace's strategic goal is 100 percent health, safety and environmental compliance for all inspections.

PHOTO: Sky Harbor International Airport, courtesy of Wikimedia Commons, provided by the National Archives and Records Administration as part of a cooperation project.

In order to achieve this we must always do the right thing. By engaging regulators ahead of inspections, open lines of communication that benefit the understanding of technical issues are maintained. This is clearly regulatory engagement and helps regulators understand Honeywell, what we do and how we comply.

We ask our sites to find out “who” their regulators are, build trust between the regulators and the site, visit with regulators during seminars/workshops, etc. Another takeaway from our panel was that regulatory decisions are not always black and white and as such, building trusted relationships helps. I will leave you with this final thought from a panel member [paraphrasing]:

“...when we [the regulator] trust what you say, you make it difficult for us to issue an NOV or penalty. Building trust through an appropriate engagement process benefits all involved.”

Gregory Bopp oversees the HSE&F Compliance Assurance and Management Systems function for approximately 85 Honeywell Aerospace manufacturing sites around the world: Americas, Europe and Asia Pacific with approximately 40,000 Aerospace employees. Greg can be reached by email at Gregory.Bopp@Honeywell.com.

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ASSOCIATIONS PAGES

The Journal of Environmental Management Arizona invites environmental, health and/or safety organizations in Arizona to contribute news articles about their associations. Contact the editor at 480-422-4430 x42.



Planning and preparation are underway for the Arizona Hydrological Society (AHS) 2015 AHS Annual Symposium. The Symposium is held in rotation in the Tucson, Flagstaff, and Phoenix areas; this year, it will take place September 16-18, at the Desert Willow Conference Center in Phoenix.

Education, which is the primary focus of AHS, is also the focus of the Symposium. The formal program includes keynote speakers, technical breakout sessions, short courses, field trips, a program for schoolteachers, and the Annual Meeting of the Society. In addition, there is a luncheon with a featured speaker, a formal dinner with presentation of awards, and many other opportunities to network with fellow professionals. An area is provided for exhibitors, including consulting firms, vendors, and drilling companies and other service providers.

The Call for Abstracts will be out soon, for those wishing to do a presentation in one of the technical breakout sessions or in the poster session. Registration will also open up soon; in keeping with our commitment to education, special rates are available for student registrants. More information will be available soon on our newly-remodeled website at azhydrosoc.org.

Tom Walker
Executive
Director



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The Arizona Chamber Commerce and Industry and the Arizona Manufacturer's Council's June 10th Environment Committee Breakfast meeting will feature Bill Wiley, Director of the Maricopa County Flood Control District. Bill will address the flooding hazards that exist in Maricopa County and the numerous dams, canals and retentions basins the Flood Control District oversees and manages to control and prevent flooding.

Breakfast meetings are held at the Sheraton Phoenix Airport Hotel located at 52nd Street and Broadway in Tempe. Breakfast is served at 7:00 AM and speakers begin at 7:30. For more information contact Jeff Homer at jeff.homer@gmail.com or Cylee Gutting at cgutting@azchamber.com. To register go to the Arizona Chamber web page at www.azchamber.com.

Jeff Homer
Chairman
Environment
Committee



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WATER CONCERNS REACHING A BOILING POINT IN ARIZONA

A majority of Arizonans, especially in outlying areas of the state, believe Arizona is in a water crisis and are willing to pay a higher price for water to identify and develop new sources, according to public interest association, Arizona Forward.

A recently released statewide survey commissioned by Arizona Forward through WestGroup Research revealed residents are experiencing rising anxieties about dwindling water supplies. Just over half the state's residents, 53 percent, believe the Grand Canyon State is experiencing a water crisis. Residents in outlying areas are significantly more likely to believe Arizona is in a water crisis – 61 percent vs. 50 percent in Phoenix and 52 percent in Tucson.

In addition, two-thirds of those surveyed indicated they are "very" or "somewhat" willing to pay higher prices to mitigate water shortages.

The most commonly cited concerns about water issues in Arizona relate to a lack of supply (38 percent) or quality of the water supply (21 percent). The survey further uncovered a lack of understanding by the general public about where household water supplies come from.

A majority of residents, 61 percent, indicated there's not enough public awareness being generated by state leaders or the media about Arizona's water situation. The statewide telephone survey of more than 400 Arizona residents was conducted in March, prior to California Gov. Jerry Brown's Executive Order that imposed water restrictions throughout his state due to crippling drought conditions.

We are in a period of water depletion. The public needs to be more informed and better engaged in a systemic approach to solving complex and controversial water issues.

Our relationship with water needs to change – this finite resource is a critical lifeline for our unique desert environment. All Arizonans need to be vested in where our next supply is going to come from, what it will cost and how it's going to be managed.

The opinions expressed in the poll results probably would have been more negative if the poll had been done after Gov. Brown's actions in California.

Key findings also spotlight what personal actions Arizona residents are willing to take to decrease water usage. Residents over age 30 with a higher income are more likely to conserve water by reducing usage for landscaping. Those under age 50 would modify their personal habits by taking shorter showers and not letting the water run while brushing their teeth.

The complete Arizona Forward water survey is available on www.arizonaforward.org.

Diane Brossart
President



WWW.AWMA-GCS.COM

The Air and Waste Management Association-Grand Canyon Section had two meetings in the past month. Our first, on April 28, was a joint

meeting of the Arizona Association of Environmental Professionals (AZAEP) and AWMA. Martin Godusi and Peter Hyde presented on their work on air quality in the Tonto National Forest. I would like to thank Martin and Peter for their presentation, and to the AZAEP board for hosting us.

Our next meeting was on May 12. Phil McNeely of the Maricopa County Air Quality Department presented to our group giving a regulatory update and discussion of air quality in Maricopa County. Thanks to Phil for the presentation.

We will be continuing to host "happy hour" mixers on the last Thursday of every month. Please attend and meet your fellow colleagues! All environmental professionals are welcome, regardless of membership in AWMA. Free parking and light rail are nearby. The event is free, but please RSVP so we can have an accurate head count.

Meeting information will be posted on our website and sent to our members when it becomes available. For more information about AWMA-GCS, please visit us at <http://awma-gcs.com>.

Mike Sonenberg, PE
Chair



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As I approach the end of my term as SAEMS President, I want to express my gratitude for the SAEMS board members' hard work in making this year a success. Despite juggling the demands of continuing education, job changes, and board member transitions, they were able to accomplish our goals. Derek Koller will soon assume the role of President, and I wish him and the newly elected board continued success.

SAEMS successfully hosted its twenty-sixth RCRA seminar in May. As always, it was well-attended and was a great learning experience for the attendees. Speakers included public and private industry, consulting firms, and governmental authorities. A special thanks goes to Lisa Cuestas, Heather Shoemaker, and the other members of the seminar committee for organizing another great event.

This year, SAEMS awarded \$10,000 in scholarships and helped facilitate awarding \$1500 from the Arizona Laboratory Association. We wish all recipients continued success accomplishing their educational and professional goals.

In April, SAEMS volunteers collected 17 bags of trash and several tires from a stretch of I-10. Neither snow, nor rain, nor heat stays these volunteers from from the swift completion of their highway clean-ups, but they can always use an extra hand! Please contact us if you would be interested in the next clean-up event.

For more information about SAEMS, please visit our webpage at www.saems.org/

Patrick
Harrington
President



ASSOCIATION PAGES are continued on page 10

SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT



Nicholas R. Hild, PhD.

NAVIGATING THE GREENHOUSE GAS DISCUSSION

"A funny thing happened on the way to the forum..."

In 1970, after signing the Environmental Quality Act (EQA) and establishing the Council on Environmental Policy, President Nixon declared himself to be our, *'environmental President.'* Most of the nation yawned and went back to watching the dinner hour news with Walter Cronkite providing the latest body count from Vietnam and discussing protest demonstrations that were occurring across the nation in the aftermath of the Kent State University and Jackson State College student fatalities. The environment, at that time, just wasn't a major topic on the lips of the moral majority.

By 1972, however, the environment did become a part of daily conversation and TV network news began to cover *'the environment'* more aggressively. It was then, with the help of the newly minted Environmental Protection Agency, that Congress passed the Water Quality Act Amendments of 1972 (WQAA), the most far-reaching and comprehensive environmental regulation ever written up to that time.

Unfortunately, when it reached the environmental President's desk on October 17th, he vetoed the Act, commenting that it would be too onerous for industries and municipal treatment works that would be required to spend millions on new wastewater treatment technology that, to that point in time, hadn't even been invented. The next day, a bipartisan Senate found a 2/3 majority to overrule the President and make the WQAA one of the most effective environmental laws ever written.

What got me thinking about that relatively painless, historical beginning to this country's efforts to address environmental problems, is the recent long and arduous process that President Obama has had to navigate since he declared in 2008 that the issues of climate change and finding ways to regulate greenhouse gas would be a top priority of his administration. True to his words, on (Earth Day) April 22nd of 2009, just four months after taking the office, President Obama proclaimed that green technology would be the linchpin of economic advancement declaring, in part, that *"...the nation that leads the world in creating new energy sources will be the nation that leads the 21st century global economy."*

Unfortunately, after spending the next three years trying to get Congress to embrace the concept that the U.S. should be *that* nation, the President has learned that he cannot rely on Congress to be on the same page when it comes to environmental legislation (or most anything else) and he's had to resort to Executive Orders to just even get the GHG conversation started.

And, just as unfortunately, that is likely to be about all that happens while a Republican majority in both houses is unimpressed with almost anything Obama declares in Executive Orders (i.e. think deportation of immigrants, delaying implementation of the Affordable Care Act, negotiating with Iran on Nukes; etc.). And it is especially so

when it comes to ultra- conservative tea party republicans--- who doubt climate change is real in the first place.

But, the conversation has, indeed, re-started with his Executive Order titled, *Planning For Federal Sustainability In The Next Decade*, ([www.epa.gov/executive orders](http://www.epa.gov/executive-orders)) on March 19th which declares... *'federal agencies will cut greenhouse gas emissions by 40%,'* mostly by implementing efficiency and energy reduction programs that will be overseen by the Chairman of the Council on Environmental Quality. Of course, the 'orders' will likely be ignored in a Congress that will decry the "cost" of implementation as a reason (i.e. an excuse) for not funding it, just as Nixon cited "costs" as one of the reasons he vetoed the Water Quality Act Amendments in '72.

So, while the WQAA in '72 took barely a year to write and pass into law, times were different then (and so was Congress). The current GHG discussion 40+ years later, now provides every citizen who cares about our environment, an opportunity to reflect on how far we've come and how much farther we have to go, as we look to the new generation of environmental scientists to sustain our progress. In the '60s and early '70s, environmental progress was a bipartisan process whereby problems were identified, committees that consisted of scientists and environmental organizations were asked to study and comment and testify on proposed legislation; a process that resulted in good laws and regulations being passed that have had a significant and positive impact on reducing contaminate emissions into our air and water.

In the new millennium, that *process* changed and became very confrontational along party lines---think about the 25 years it has taken just to get particularly toxic air pollutant regulations for mercury and arsenic from coal and oil fired power plants and ozone regulations through the courts ---they are still being debated at the Supreme Court, because of conflicting interpretation of definitions in the proposed legislation. For example, on March 25th, the high court seemed to agree that EPA had done a poor job of defining what the words, *'appropriate and necessary,'* really meant. At least two Judges said it is a *"capricious"* term that gives the government far too much leeway (in dictating what power plants need to do).

Just imagine how long GHG legislation---which has not even yet been written---will take to wind its way through the courts and other political fiefdoms before it finds its way into environmental law that can begin to reduce man-caused GHG emissions.

Yes, the *'process'* by which *'environment'* gets equal opportunity in today's political arena has changed significantly since the cries of the '60's fostered the first Earth Day on April 22, 1970 that actually became the first national 'forum' for the *'environment.'* Of course, some of the issues from Nixon's time are still unresolved: we still have water and wastewater emissions that need to be addressed; soils and groundwater contamination that continues to be treated under the 1980 CERCLA and Superfund (Acts), we continue to discover new sources of contamination that no one anticipated in Nixon's time---climate change and GHG, as well as mercury and ozone that were unknown when he signed the EQA---even finding ways to evaluate oil exploration (fracking) practices were unknown when the EPA was established as the watchdog agency for protecting our environment.

So while it is unlikely that Obama's GHG Executive Order will have much real effect on actually reducing man-caused greenhouse gas reduction, it would be a good strategy to take a page from the WQAA of '72 and provide a Section in GHG Orders that solicits and funds proposals from qualified firms who can utilize the good science-based research and provide technology solutions that can be reasonably implemented to actually reduce GHG emissions. Kicking this can down the road as Congress has continued to do with almost all of Obama's proposals since he was elected in 2008 is not sustainable; time is running out for *"becoming the nation that utilizes green energy to lead the global economy."*

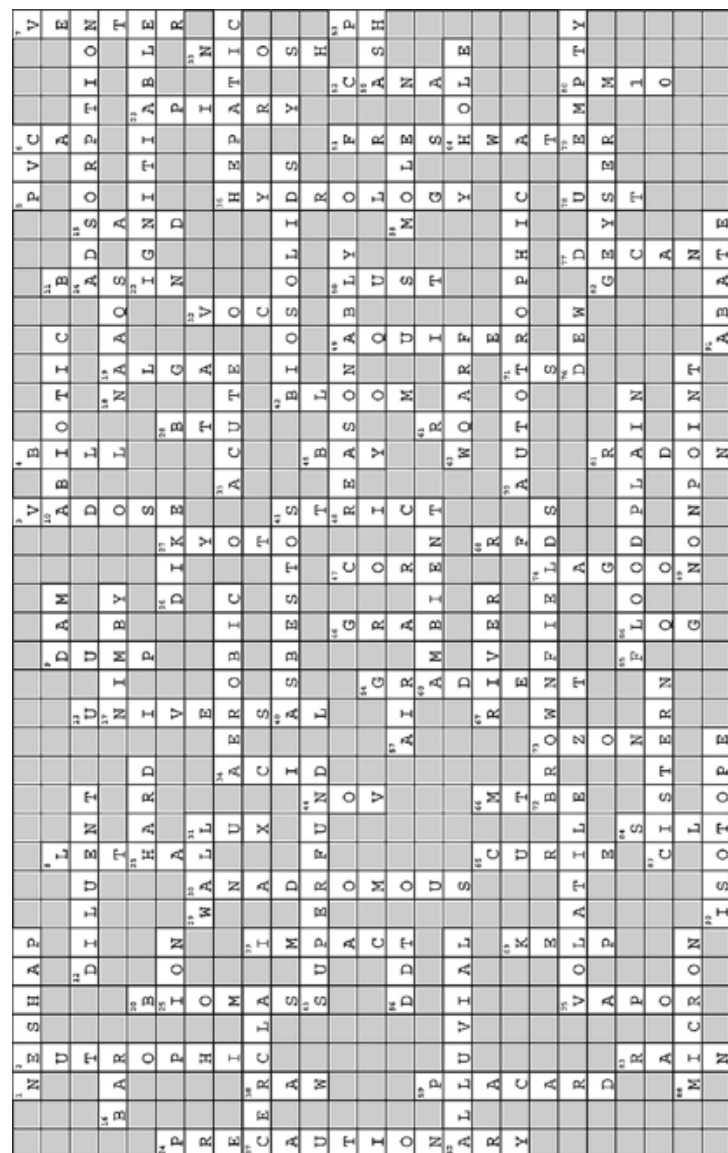
Otherwise, you know what's coming: the GHG Executive Order will *never* be funded by a radically partisan congress who figures they won't be around when it is time to answer the sticky questions asked by our children's, children's, children.

Nicholas R. Hild, PhD., is an Emeritus Professor and Sustainability Scientist in the College of Technology and Innovation and the founder of the Environmental Technology Management program at Arizona State University. Dr. Hild has extensive industrial environmental engineering and management experience as well as continuing to be a consulting environmental engineer for the past 40+ years. Reach him at www.worldsleadingexpert.com or email at drnick@asu.edu.



CROSSWORD CHALLENGE ANSWER KEY

BELOW IS THE ANSWER KEY TO THE CROSSWORD
PUZZLE FOUND ON PAGE 11.



ASSOCIATIONS PAGES CONTINUED FROM PAGE 8



WWW.AZAEPO.ORG

The AZAEP and Air and Waste Management Association held a joint meeting on Tuesday, April 28th, 2015 at Grimaldi's in Scottsdale. The speakers were Martin Godusi, Applied Enviro Solutions and Peter Hyde (air quality consultant). They presented on: **Air Quality Assessment of the Tonto National Forest (TNF).**

Martin Godusi, Applied Enviro Solutions, and Peter Hyde, air quality consultant (formerly with ADEQ) I presented their findings and management implications for the 3-million acre Tonto National Forest. The TNF is affected by the nearby Metropolitan Phoenix, a non-attainment area for ozone; 5.8 million visitors annually, copper mining and leaching, smelting, and prescribed and natural burns.

The forest ranges in altitude from 1,300 to 7,900 feet and has a wide range of vegetation. Effects of pollutants on soils, water, and air quality (visibility) were discussed qualitatively, with emphasis on the maximum loads vegetation, soils, and water quality can tolerate before adverse ecological effects take place. Better management of the forest is the anticipated result of the assessment.



Mike Dawson
President



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Thank you to those who participated in our 11th Annual EPAZ Scholarship Golf Tournament at the Legacy Golf Resort. With the help of our players and sponsors Republic Services, Overley's Vacuum Service

and Eddie Martinez at Keller Williams, we were able to raise \$4,746 towards our scholarship fund. The 1st place winners of the tournament were the BakerCorp team which included DJ Jewett, (BakerCorp), Nate Little (AZ Beeman Drilling), Neil Ripley (BakerCorp) and Marty Brown (Industrial Fluid Services).

We are accepting nominations for our next Board of Directors. Our election of officers will take place in September with new officers taking the helm November 1, 2015. If you would like to nominate someone or volunteer yourself for a position, please contact Mike Ford at mford@swlaw.com.

Upcoming Events:

May 14, 2015 our luncheon will feature a "Status Update on the Resolution Copper Project", Presented by David Richins, Principal Advisor - Government Affairs, Resolution Copper
June 11, 2015 our luncheon will feature "The City of Phoenix's 100 Member PPT - A Recipe for Success in Stormwater", Presented by Lisa Farinas, City of Phoenix and Misti Burkman, CDM Smith

June 24, 2015 we will be co-hosting a joint mixer with the Arizona Chapter of ASSE at Four Peaks Brewery in Tempe from 5 - 7 PM. During the mixer we will be hosting a raffle to benefit the Peak Foundation in memory of Peter Ewbank. If you would like to donate a gift to the raffle, please contact Lisa Culbert at info@epaz.org.

July - No Luncheon Meeting in July

EPAZ hosts monthly luncheon meetings on the second Thursday of the month from 11:30 AM to 1:00 PM at the SRP PERA Club. For the most up to date information, event details and reservations please visit our website at www.epaz.org.



Lisa Culbert
Association
Manager



AZALLIANCE.ORG

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The Alliance and the Maricopa County Air Quality Department will co-host an Air Quality Permit Compliance Assistance Seminar in Phoenix at the Carnegie Center (1101 West Washington Street) on Tuesday,

July 14th. If your facility has an Air Quality permit in Maricopa County, or if you are a consultant working with a regulated source in Maricopa County, this seminar is designed for you! Morning session speakers will include Maricopa County AQ Department regulators, including a presentation by Director Philip McNeely, and afternoon session speakers will include industry professionals with experience applicable to your situation. New this year are the optional One-On-One 15 Minute Private Help Sessions with personally meet with regulators to discuss your specific questions.

Register online at azalliance.org or call the Alliance office at 480-422-7392 for more information (Note: See advertisement on page 3).



Greg Bopp
Chair



PART I A SHORT SERIES ON WATER IN THE AMERICAN WEST

Larry Olson, PhD.

IT'S ALL ABOUT CHEMISTRY

WATER IN THE AMERICAN WEST

There is no more important question facing those of us living in the western United States (defined as the 17 states west of the 100th Meridian - a line that runs vertically through North and South Dakota, Nebraska, Kansas, Oklahoma and Texas) than where we are going to get our water in the future. Almost all parts of the West have shared an obsession with water – how to get it when it is scarce, how to move it to where you need it, and how to protect it from those who want to take it from you.

From the earliest settlements of the Hohokam along the Gila and Salt rivers in central Arizona 2000 years ago, water was the driving factor. For some 1500 years they built a sophisticated society that may have reached 50,000 people in central Arizona which would have been the largest population in the prehistoric southwest and larger than Paris, London, or Rome in 1000 AD. The culture was based on the most elaborate irrigation system in the New World. There were over 1000 miles of canals irrigating over 100,000 acres. While we look with pride at the modern day Arizona that has resulted from the Salt River Project and the Central Arizona Project, we really don't have anything on the Hohokam.

The West is distinguished from the rest of the U.S. in how much land is owned by the federal government or tribes. At least 30% of Washington, Oregon, California, Arizona, New Mexico, Colorado, Utah, Nevada, Idaho, Montana, and Wyoming fall in this category. In Arizona, it is 48.1%. So the federal government has always had a great deal to say about what happens in the West. Throughout much of the 20th century the feds funded major "Reclamation" projects, a term used to describe "reclaiming" arid lands for human use. Following passage of the National Reclamation Act in 1902, one of the first major projects was our own Roosevelt Dam dedicated by Teddy Roosevelt in 1911. Today the Bureau of Reclamation is responsible for some 180 projects in all 17 Western states providing water to about a third of residents and irrigation for more than 10 million acres. But for the last 30 years the focus has shifted away from developing new water projects. So we've entered a new era requiring us to manage our existing water resources better in order to meet ever increasing demands.

In Arizona those water resources include surface water storage on the Salt and Verde rivers of over 2.3 million acre feet (MAF) and water from the Colorado river which is controlled by a series of complex legal agreements called the Law of the River. The final agreement allocated 7.5 MAF annually to the upper basin states and another 7.5 million to



MOISTURE SOURCES TO THE COLORADO RIVER BASIN

Image Source: USGS, Science for a Changing World, at USGS.GOV. "Climate Fluctuations, Drought, and the Flow in the Colorado River".

the lower basin states. Arizona is entitled to 2.8 MAF annually from the Colorado, including 1.5 MAF through the Central Arizona Project, California is allotted 4.4 MAF and Nevada 0.3 MAF. Mexico is to receive 1.5 MAF. The problem is that the allocations were based on an assumption of an average annual flow of 16.4 million acre feet at Lees Ferry using data from 1905-1922, which turned out to be the wettest period in the 20th century. Annual flows on the Colorado can vary dramatically. The highest measured annual flow was in 1984 at 22.4 MAF and the lowest was 3.8 MAF in 2002. We are currently in the midst of one of the longest drought periods in the Colorado river basin and there hasn't been enough water for all parties to draw their full allotments. It appears now that average annual flows will be substantially below 16.4 MAF in the future.

Even though Arizona is largely desert, we are fortunate to have substantial groundwater reserves in many areas, particularly in the metropolitan Phoenix and Tucson areas. Prior to 1980, Arizona groundwater was governed by the American Rule of reasonable use, which meant landowners could pump water out of wells on their land without any significant restrictions. In some basins, withdrawals exceeded recharge rates by 3:1 and substantial land subsidence issues resulted. As one of the requirements for the federal government to provide funding for the Central Arizona Project, the political leaders of the day were forced to address this problem. Fortunately, they were able to come together and enact the Groundwater Management Act in 1980 which remains as one of the most comprehensive and far sighted pieces of environmental legislation in the nation's history.

Reclaimed water, or treated effluent, is the last, and an increasingly important, water source in Arizona. About 90% of our 6.7 million population live in urban areas and the amount of wastewater they generate is one of the few water sources that is increasing. Arizona is already at the forefront of using reclaimed water with the Palo Verde Nuclear Plant and the City of Flagstaff as prime examples.

Estimates of total water usage in Arizona vary from 6.96 MAF, an estimate from the Arizona Department of Water Resources based on data from 2001-2005, to an 8 MAF estimate by the University of Arizona. Currently we get about 40% of our supply from groundwater, about 39% from the Colorado River, 19% from other surface water sources (Salt, Verde and other rivers), and 2% from reclaimed water.

In the next few columns we'll explore new strategies we could employ for managing our need for water in the future, including conservation efforts and new augmentation options.

Larry Olson, PhD., Associate Professor, Arizona State University Environmental Technology Management Program. Dr. Olson holds a Ph.D. in Chemistry from the University of Pennsylvania, and is an environmental chemist with interests in remediation technologies and international environmental management. He can be reached at 480-727-1499, or by email at Larry.Olson@asu.edu.

CROSSWORD CHALLENGE!

ANSWER KEY IS FOUND ON PAGE 5

ACROSS

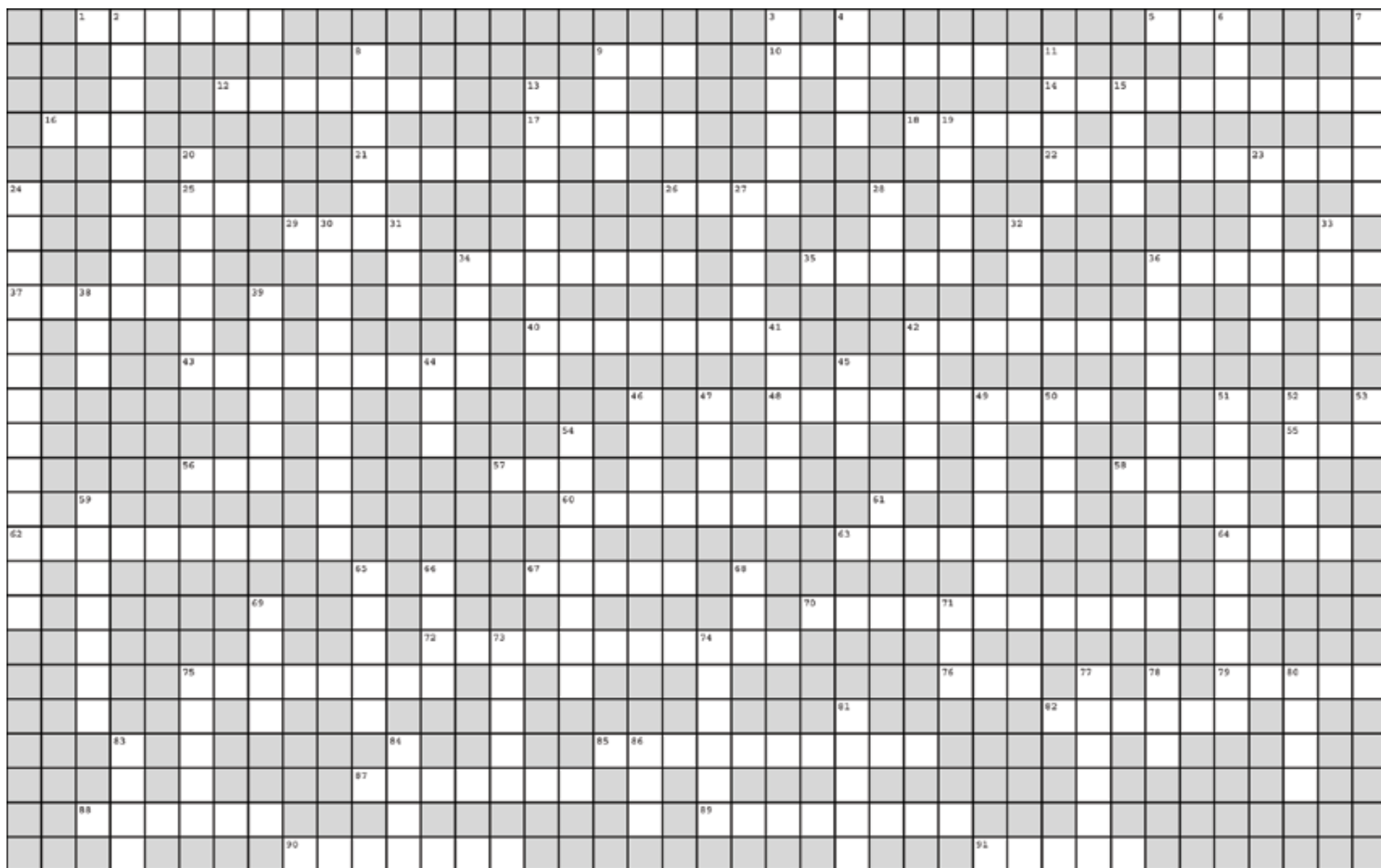
1. These AQ standards regulate 188 haz air pollutants from particular industrial sources.
5. A tough, environmentally indestructible plastic that releases hydrochloric acid when burned.
9. This structure impedes flow of water.
10. Resources that are considered not renewable
12. A liquid or solid material used to dilute or carry an active ingredient.
14. Attachment of one substance to surface of another.
16. Submerged offshore ridge or mound of sand or gravel.
17. Refers to people's tendency to avoid allowing hazardous sites to be located near by.
18. These AQ standards list max concentration above which adverse effects may occur on human health for six "criteria pollutants".
21. Describes alkaline water containing dissolved salts.
22. Capable of burning or causing a fire.
25. An electrically charged atom or group of atoms.
26. A low wall than acts as a barrier to prevent a spill from spreading.
29. Vertical structural element.
34. Life processes that require presence of oxygen.
35. Not chronic, this brief type of exposure to a toxic substance may result in severe biological harm or death.
36. Pertains to liver.
37. Superfund.
40. Name given to number of naturally occurring minerals mined for properties such as thermal insulation and high tensile strength.
42. Nutrient-rich organic materials from treatment of sewage sludge.
43. CERCLA
48. The letter "R" in RACT stands for this word.
55. The mineral content of a product remaining after complete combustion.
56. Pesticide banned in the US in 1972 because of its persistence in the environment and accumulation in the food chain, has a half-life of 15 years.
57. O2 21%, N2 78%.
58. Unit of measurement in chemistry
60. General conditions in the environment
62. Refers to mud and/or sand deposited by flowing waters.
63. Arizona's Superfund
64. Refers to a thin area of ozone.
67. Large stream that flows in a defined course.

70. Organism that uses carbon dioxide as its main source of carbon.
72. Abandoned, idled, or underused industrial sites where redevelopment is complicated by environmental contamination.
75. Evaporates easily.
76. Form of H₂O found on plantlife at lower temperatures.
79. A drum is this when contents removed using common practices, and certain requirements met.
82. Thermal spring that ejects with force.
85. Land beyond a stream channel forming perimeter for the max probability flood.
87. Small tank or storage facility used to store water for a home or farm.
88. Unit of measurement.
89. This pollution originates over a wide geographical area, not from a specific location.
90. These have the same atomic number of protons but different number of neutrons.
91. Reduce degree or intensity of pollution

DOWN

2. Body of water in which nutrients do not limit algal growth.
3. The unsaturated region between soil surface and the water table.
4. Beak.
6. A layer of clay or other impermeable material installed over the top of a closed landfill to prevent entry of rainwater and minimize leachate.
7. The underside or belly.
8. The word represented by the "L" in LD50.
9. A site used to dispose of solid waste without environmental controls.
11. Submarine depression.
13. A type of hazardous waste that is common and managed under streamlined requirements.
15. Particles between .05 and 2.0 MM in diameter.
19. Rootless plants growing in sunlit waters.
20. Weight of biological matter.
23. Home to bees.
24. This principle states that when information about potential risk is incomplete, decisions should be made with a preference for avoiding unnecessary health risks rather than avoiding economic expenditures.
27. City where 160 nations agreed to reduce greenhouse gas emissions.

28. Quantity of heat.
30. This type of fish lives part of its life in salt water but returns to fresh to spawn.
31. Unit of light measurement.
32. Organic compounds in air that combine with other pollutants to form ozone and fine particulates.
33. Federal agency responsible for developing recommended health and safety standards.
34. A corrosive solution with a pH of less than 7.
36. Science dealing with properties, distribution, and circulation of water.
38. Untreated, as in untreated sewage.
39. The "I" in EIS, Environmental _____ Statement.
41. Under environmental law _____ liability for a violation means you are automatically guilty and liable, intent does not matter.
42. A proliferation of algae or aquatic plants in a body of water, often related to pollutants that accelerate growth.
44. A facility will strive to comply with regulations to avoid receiving one of these.
45. Area of water extending into land from lake or sea.
46. A _____ sample, usually of water, collected at a particular time and place.
47. The heart of a nuclear reactor containing uranium
49. An underground geological formation containing water.
50. Has two meanings but in environmental field its underground
51. This water is not salty.
52. Man-made watercourse.
53. Measures concentration of hydrogen ions.
54. Slope of land or water or streambed surface.
59. Warning sign.
61. The amount of hazardous waste released from a facility into the environment that must be reported immediately.
65. A measure of radioactivity.
66. Ether compound used to raise oxygen content of gasoline.
68. Reference Dose
69. Makes an excellent fertilizer, an ocean weed.
71. This type of facility requires a permit under the hazardous waste programs.
73. A form of oxygen that can be "good" or "bad" depending on where it is found.
74. Shallow pond.
75. Gas given off by solids or liquids at ordinary pressure and temperature.
77. Draw off the upper layer of liquid after the heaviest material has settled.
78. This container gets its name because of its location in the ground.
80. Air particles less than 10 micrometers in diameter.
81. Radioactive, inert gas formed by decay of radium atoms in soil or rocks.
83. Form of H₂O, can affect vacation plans.
84. Fine or intermediate sized mineral particles.
86. Generates 2200 lbs or more of haz waste per month or 2.2 lbs of acutely haz waste per month.



NEWS BRIEFS

VEOLIA ES TECHNICAL SOLUTIONS TO PAY \$360,000 IN CIVIL PENALTIES FOR HAZARDOUS WASTE VIOLATIONS

❖ The Arizona Department of Environmental Quality announced recently that Veolia ES Technical Solutions, LLC, of Phoenix, will pay \$360,000 in civil penalties under a consent judgment for illegally disposing hazardous waste to a sand and gravel pit near the Salt River in 2009.

In response to a complaint in April 2009, ADEQ compliance officers inspected a sand and gravel pit in which they observed crushed lamps, intact fluorescent lamps, intact metal halide lamps, intact compact fluorescent lamps, and other lamp related debris in a portion of the sand and gravel pit that was less than 600 feet from the Salt River. The investigation revealed the lamps and broken glass had been generated by Veolia. Samples of the broken glass taken from the pit were found to be above regulatory thresholds for mercury.

An inspection of Veolia's facility in May 2009 resulted in ADEQ issuing a Notice of Violation to the company for improper sampling equipment and techniques, inadequate response to high mercury samples, open containers, containers in poor condition, hazardous waste on the ground, and disposal of hazardous waste without a permit. Veolia staff also had failed to examine lab reports to verify if hazardous waste was being sent to the landfill.

Since the activities of 2009, Veolia has improved processes at their facility; and had been in compliance with its hazardous waste storage permit and related hazardous waste generator requirements during recent inspections.

"As a result of our agency's investigation and holding the company accountable for its violations, Veolia has improved its operations and is now in compliance with all conditions of its permit, thus ensuring public health and the environment are protected," ADEQ Director Henry Darwin said.

The settlement is subject to court approval.

CALPORTLAND RILLITO AND SALT RIVER MATERIALS GROUP CLARKDALE AMONG 70 TOP PERFORMING ENERGY STAR CERTIFIED MANUFACTURING PLANTS IN 29 STATES

❖ The U.S. Environmental Protection Agency (EPA) announced recently that 70 manufacturing plants have achieved Energy Star certification for their superior energy performance in 2014. Together, these manufacturing plants saved a record amount of energy, cut their energy bills by \$725 million, and reduced greenhouse gas emissions by more than 8 million metric tons—equivalent to the annual total energy use of more than 650,000 households. From implementing corporate energy management programs to implementing energy efficiency projects, there are many ways plants can save energy with EPA's Energy Star program.

"Energy Star certified manufacturing plants are leading their industries by advancing energy efficiency and making cost-saving improvements while combating climate change," said EPA Administrator Gina McCarthy. "Through their work with EPA, the 2014 Energy Star manufacturing plants are demonstrating that making sustainability and energy efficiency improvements is a smart business decision."

Energy Star certified plants are independently verified on an annual basis to have reached the top 25 percent of energy performance for their industries nationwide. Among these are plants from the auto assembly, cement manufacturing, corn refining, food processing, glass manufacturing, pharmaceutical manufacturing, and petroleum refining industries.

Since the inception of EPA's Energy Star certification, a total of 139 manufacturing plants have achieved this distinction. These plants have saved over 530 trillion British thermal units (BTU) in energy, equal to preventing more than 36 million metric tons of carbon dioxide equivalent emissions and saving enough energy to provide the total yearly energy needs of approximately 3 million American households.

EPA provides industry-specific Energy Star plant benchmarking tools to help industry measure energy performance. These are available or under development for more than 20 manufacturing sectors. Energy Star benchmarks enable companies to compare a plant's energy performance against those of its industry and empower manufacturers to set informed improvement goals.

Two facilities from Arizona were honored among the 2014 Energy Star Manufacturing Plants: **CalPortland Rillito** (Cement) and **Salt River Materials Group Clarkdale** (Cement).



SAEMS MEMBERS AND RCRA COMMITTEE EXTENDING FRED BRINKER A WARM CONGRATULATIONS ON HIS RETIREMENT

❖ Fred Brinker, Tucson Airport Authority, received a warm thank-you and congratulations from all of SAEMS on his retirement at the May 14, 2015 SAEMS RCRA held recently in Tucson. The Journal also extends our congratulations to Fred and appreciation for his many years of contributions to Arizona's environmental community!



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OVER 150 ATTENDEES PARTICIPATE IN THE 26TH ANNUAL SAEMS RCRA SEMINAR

SAEMS hosted its 26th Annual RCRA Seminar at the Hilton Tucson East Hotel in Tucson on Thursday, May 14th, 2015. Speakers included Pat Harrington (SAEMS President), Fred Brinker (Tucson Airport Authority), Jeanine Inman and Linneth Lopez (ADEQ), Barton Day (Law Office of Barton Day), Amanda Stone (ADEQ), Laura Malone (ADEQ), Sarah Reitmeyer (PDEQ), Jerry Worsham (The Cavanagh Law Firm, PA), John Wisner (Pima County), Bradley Baker (ADEQ), Al Brown (ASU). More than 150 attended the day-long session, which concluded with a Q&A Wrap-Up with Door Prizes, and a Happy Hour. The SAEMS Board also presented a special thank-you and congratulations to Fred Brinker, in honor of his retirement (see photo on page 13). For more information on the RCRA and SAEMS, visit www.saems.org.

Below: Members of the 2015 SAEMS RCRA Committee



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Above: Laura Malone, ADEQ Waste Programs Director, Presenting on: "Updates on Waste Programs, Solvent Wipes Ruling"

2015 SAEMS RCRA

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MAY 14, 2015

11:30 AM - 1 PM

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LUNCHEON FEATURING:

Speaker: David Richins, Principal Advisor - Government Affairs, Resolution Copper

Topic: Status Update on the Resolution Copper Project

Location: SRP Pera Club, 1 E. Continental Drive, Tempe, AZ 85281

JUNE 11, 2015

11:30 AM - 1 PM

SPONSOR:  Environmental Response, Inc.
A Priority Chemical Subsidiary of Baker Hughes Environmental

LUNCHEON FEATURING:

Speaker: Lisa Farinas, City of Phoenix, and Misti Burkman, CDM Smith

Topic: The City of Phoenix's 100 Member PPT -- A Recipe for Success in Stormwater

Location: SRP Pera Club, 1 E. Continental Drive, Tempe, AZ 85281

JUNE 24, 2015

5:00 PM - 7:00 PM

JOINT MIXER WITH / ASSE

JOINT MIXER CO-HOSTED WITH THE AZ CHAPTER ASSE:

During the mixer we will host a raffle to benefit the Peak Foundation, in Memory of Peter Ewbank. If you would like to donate a gift to the raffle contact Lisa Culbert at info.epz.org.

Location: Four Peaks Brewery, Tempe, Arizona

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