



DECEMBER 2012 NEWSLETTER

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GOVERNMENT GOINGS-ON

The Central Arizona Project canal was originally conceived as a boon to agriculture, bringing water to farmers. But Arizona's growth led to the realization that one day the needs of farms would be supplanted by the needs of cities and towns. Several pools of CAP water were defined for various

types of users: agricultural, municipal and industrial (M&I), and Indian. Built into the legal structure of the canal was the idea that water set aside in the pool for agricultural uses would be transferred in orderly fashion over to the M&I pool, to reflect the predicted ascendancy of municipal needs over agricultural needs. That day has arrived.

The Arizona Department of Water Resources is finalizing criteria for the distribution of a large chunk of non-Indian agricultural water. These criteria will be passed along to the Bureau of Reclamation and the Secretary of the Interior will make the final determinations, but typically what ADWR recommends is what the Secretary will adopt. Of the 96,295 acre-feet to be re-allocated, some 17,333 acre-feet will be allocated outside the three-county CAP service area, up to 15,000 acre-feet goes to irrigation districts in Pinal County, and around 12,000 acre-feet is reserved for industrial users. This leaves 51,962 acre-feet to be re-allocated amongst the municipal providers inside Maricopa, Pinal, and Pima Counties. While that seems like a lot of water, the cities need all of it for projected growth, and competition will be keen. However, this water only has agricultural priority on the canal, and ADWR estimates it will only be available about 67% of the time over the next 100 years. Still, it's wet.

ADWR wants the water to flow to cities that don't have water portfolios with large replenishable supplies. So some interesting caveats have been thrown into the criteria. First, all M&I applicants have to show an imbalance between supply and demand by 2020. This lets out all the cities who a couple of years ago got an updated Designation of Assured Water Supply through 2025 that shows sufficient supply to meet demand, which includes pretty much all the larger cities. Even if they apply and receive an allocation, cities with a Designation out to 2025 must give up their groundwater allowance proportional to the re-allocated non-Indian agricultural water. But groundwater is generally reserved as a hedge against drought, and giving up that hedge for a less reliable CAP supply doesn't seem like good planning to many cities. Second, cities must show the financial capability to transport and use this water, plus pay for it (currently estimated price = \$2,288 per acre-foot). Most smaller cities can't afford the water or the infrastructure now, and aren't likely to be fiscally better off in 2020. So if larger cities can't qualify because they already effectively planned ahead and smaller cities can't afford the costs, who gets the water?

The Central Arizona Groundwater Replenishment District (CAGRDR) is considered part of the M&I pool. CAGRDR can already demonstrate a massive disparity between supply available in its portfolio and projected replenishment obligations, and that imbalance can be projected through 2020 as well. CAGRDR has the financial resources to purchase the water and replenish groundwater withdrawals on an AMA-wide basis. It looks like CAGRDR will be well positioned when the re-allocations occur, and could wind up with a sizeable chunk of the non-Indian agricultural water. While it is not necessarily a bad thing that CAGRDR could acquire water to meet its substantial replenishment obligations, this is not exactly what ADWR said they had in mind.

Comment letters have been flying fast and furious, and every entity has an axe to grind. Nothing wakes up water folks like a re-allocation of several thousand acre-feet of CAP water, never mind its reliability. It will be interesting to see what the next draft of proposed criteria from ADWR looks like. Stay tuned!

Alan Dulaney,
City of Peoria

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AHS FOUNDATION SEEKS END-OF-YEAR DONATIONS

AHSF raises monies through fundraising and solicitation of available grants to help fund the AHS scholarships, Halpenny, Bouwer, Avery Intern- Scholarships, and prizes for annual school science fairs. AHSF is working to grow its endowment fund to cover the scholarships and internships in

perpetuity and increase its educational support in Arizona.

YOU can help us move toward our goal of a sustainable endowment by closing out 2012 with a **tax-deductible donation to the Foundation**. We don't toot our horn often, but consider the value of the AHS internships. We've all heard the praise for and from our student interns who have moved on to hydrology or related jobs in our community and around the world thanks to their AHS internship experience.

Please help us ensure that the internships, scholarships, and science fair awards can continue to be an AHSF/AHS legacy. Your donation can be earmarked for the long-term endowment, scholarships, or one of the intern- scholarships. Go to <http://www.azhydrosoc.org/> and click on [AHS Foundation online donations](#) at the bottom of the left column.

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AHS MEMBERSHIP 2013 RENEWAL REMINDER

2013 is right around the corner so it's time to renew your AHS membership if you were not able to attend this year's annual symposium! 2013 Membership was included for both full registration and a one day registration fees. Membership dues can to be renewed online at: http://www.azhydrosoc.org/join_ahs.html

Or by mail to:

Arizona Hydrological Society
P.O. Box 1882
Higley, AZ 85236

Thank you for your continued support of the Arizona Hydrological Society!

PHOENIX CHAPTER NEWS

The next Phoenix chapter dinner meeting will be held **on Tuesday, December 11, 2012**, at SunUp Brewing Co., in midtown Phoenix (on the north side of Camelback Road, just east of Central Avenue). Please join us for a beverage, to share business cards, and talk water!

Location:

[SunUp Brewery](#)
322 E. Camelback Road
Phoenix, AZ 85012

Event:

Monitoring Evaporite Karst Activity and Land Subsidence in the Holbrook Basin, Arizona using Interferometric Synthetic Aperture Radar (InSAR)
Brian Conway, Arizona Department of Water Resources, & Joe Cook, Arizona Geological Survey

Chapter Board Meeting:

4:30 PM – 5:30 PM

Happy Hour & Dinner:

5:30 PM – 7:00 PM

Program: 7:00 PM – 8:00 PM

Cost: \$15 member, \$20 non-member, \$5 student

RSVP with Kirk Creswick at kcreswick@eecphx.com or 602-248-7702.

Hope to see you there!

At the December Phoenix Chapter meeting, Brian Conway, Arizona Department of Water Resources, & Joe Cook, Arizona Geological Survey, will give a presentation on the use of InSAR in monitoring evaporite karst activity and land subsidence in the Holbrook Basin, Arizona.

Brian Conway received his Bachelor's Degree in Environmental Science from Creighton University in Omaha, Nebraska in 1997. He attended the University of Arizona's Masters of Hydrology program from 1998 to 2001. Brian has worked for the Arizona Department of Water Resources since 1999, starting out as an intern and working his way up from an entry level Hydrologist in the Hydrology Division's Geophysics/Surveying Unit and has supervised the Geophysics/Surveying Unit since 2006.

Joe Cook graduated with a MS in Geosciences with an emphasis in Geomorphology from the University of Arizona in 2006. Since then, Joe has worked as a surficial geologic mapper with the Arizona Geological Survey (AZGS) in Tucson, Arizona. Projects have included mapping of the extent of Holocene alluvium along the San Pedro and Verde Rivers, surficial geologic quadrangle mapping, and delineation of debris flow deposits along the base of the Santa Catalina Mountains. Currently, Joe is a Research Geologist with the AZGS, manages the earth fissure mapping program, and continues to map throughout the state.

Abstract:

The Holbrook Basin, located in east-central Arizona, is home to more than 500 evaporite karst depressions. The Arizona Department of Water Resources (ADWR) recently acquired, processed, and interpreted archived Interferometric Synthetic Aperture Radar (InSAR) data to evaluate historical deformation patterns in the Holbrook Basin in preparation for monitoring potential future subsidence related to planned potash mining activities around the Petrified Forest National Park. Three land subsidence features were identified by ADWR using InSAR data from the European Space Agency's ERS 1 and 2 satellites between 1992 and 1997. Continued subsidence in two of the three features was also identified by ADWR using InSAR data from the Japan Aerospace Exploration Agency's ALOS satellite collected from 2006 to 2011.

In June 2012 Arizona Geological Survey (AZGS) and ADWR staff visited one of the more prominent subsidence features identified using InSAR. Numerous steep-walled evaporite karst sinkholes were observed en route to the field site. These roughly circular collapse features ranged in size from 40-130 m across and 10-30 m deep. The subsidence features identified through InSAR are much more extensive, up to 1,100 m across; are not as deep, up to 15 m; and do not have steep walls. Local subsidence has resulted in broad closed basins with drainage reversals and numerous expanded joints in the Coconino sandstone at the surface. A thin sandy soil above the Coconino covers the basin floor except where collapsed into open joints. Expansion along both joint orientations was observed. Which orientation was expanded depended on location relative to ongoing subsidence. Based on field observations and comparison with other collapse features in the region these three subsidence features are relatively young, constitute different collapse morphology than nearby sinkholes, and warrant further study. InSAR will remain a critical geophysical tool for monitoring land subsidence in the Holbrook basin.

Future Event Calendar (see also calendar on www.azhydrosoc.org)

- January 8, 2013 – Annual planning meeting at Nello's in Tempe.
- February and beyond – maybe you? Please contact [Tom Walker](#), Phoenix Chapter Vice President, if you would like to give us a presentation or if you know anyone else who could use an audience.

PHOENIX CHAPTER OFFICER ELECTION RESULTS

A big THANK YOU to our dedicated 2012 Phoenix Chapter officers – we appreciate your service! Please enter your responses by Friday, December 14, 2012. The following is the revised slate of officers for 2013 (for addition information please [click here](#)):

- President: **Summer Waters**, University of Arizona Cooperative Extension, Maricopa County
- Vice-President: **Tom Walker**, Fleet-Fisher Engineering, Inc
- Treasurer: **Vacant**
- Secretary: **David Sampson**, Decision Center for a Desert City, Global Institute of Sustainability, ASU

Phoenix Chapter Board Members

- **Rich Siegel**, Salt River Project
- **Matt Beversdorf**, Salt River Project

Phoenix Chapter Corporate Board Representatives

- **Mike Hulst**, EEC
- **Dennis Hall**, Montgomery & Associates

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TUCSON CHAPTER NEWS

Please join us for the next Tucson Chapter meeting, **Tuesday, December 11**. At the December meeting, Wally Wilson, Tucson Water's Chief Hydrologist, will present: ***Tucson AMA Assessment and Predictive Flow Modeling - A Water Provider's Perspective***.

Location: Montgomery and Associates
1550 East Prince Road
Tucson, AZ

Social half hour: 6:00 PM

Program: 6:30 PM

[Tucson AMA Assessment and Predictive Flow Modeling - A Water Provider's Perspective](#)

Wally Wilson, Tucson Water

In January 2012, ADWR released the Tucson Active Management Area Water Demand and Supply Assessment Report which outlined several scenarios of growth and water demands from 1985 through 2025. The assessment evaluated several possible scenarios for future groundwater overdraft which range from the AMA achieving safe-yield by 2025 to an overdraft of more than 100,000 acre-feet in 2025. The Tucson AMA Groundwater Users Advisory Council (GUAC) requested ADWR to perform a predictive flow model of the TAMA using the 2009 AMA groundwater flow model. Results of this analysis were presented to the GUAC in September 2012. Using basic scenario assumptions, the analysis indicated additional work needed to build the TAMA flow model into a regional integrated resource planning tool for all users in the TAMA.

Wally Wilson graduated with a Bachelor of Science in Geology from Sul Ross State University in 1985. Mr. Wilson has 25 years of experience as a hydrogeologist performing all levels of environmental investigations and remediation involving groundwater, surface water and soils. He has 10 years of experience in water resource development, management and long range planning for the City of Tucson. Mr. Wilson combines extensive experience in regulatory compliance in half a dozen western states with strong knowledge of Arizona water resource policy as well as environmental and water laws. Mr. Wilson is currently the Chief Hydrologist at Tucson Water overseeing the Water Resources Management Section. This group of hydrologists monitors and optimizes the Utility's four major recharge and recovery projects which provide the City with both renewable drinking water and reclaimed water. Mr. Wilson is also responsible for developing and maintaining strong working relationships with local, state and federal water providers and users groups and agencies.

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TUCSON 2013 AHS SYMPOSIUM PLANNING COMMITTEE

December meeting announcement for the Tucson 2013 AHS Symposium Planning Committee

The Tucson Chapter of the Arizona Hydrological Society (AHS) will be hosting the annual AHS symposium in Tucson in the fall of 2013. The symposium planning committee will meet in December as follows:

When: Thursday, December 6th at **6:00 p.m.**

Where: Offices of Montgomery & Associates
1550 E. Prince Road
(520) 881-4912

*****Beer, soda, chips, and pizza will be provided. Please contact Marla Odom (see contact information below) with any dietary needs prior to the meeting. **Please RSVP to ensure accurate food count.****

Benefits: Volunteering to serve on the symposium planning committee allows you to get to know others in the Tucson hydrology community in a creative atmosphere. Revenue generated by the AHS annual symposia is the primary source for funding AHS activities, including our intern and scholarship programs.

This revenue also provides the means to reach out to our membership through monthly meetings and educational workshops. *All AHS members are welcome to join us for food, drink, and fun at our August planning meeting!*

December Meeting Agenda:

1. Reports from committees
2. Review and selection of symposium image
3. Determine content for Save the Date flyer
4. Re-confirm deadlines

If you are interested in joining the symposium planning committee, please contact Marla Odom, the Symposium Chair, at (520) 881-4912 or modom@elmontgomery.com with any questions.

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TUCSON CHAPTER OFFICER ELECTIONS

A big THANK YOU to our dedicated Tucson Chapter officers – we appreciate your service! Here are the results from the 2013 officer election. Unfortunately, we only had responses from 18 % of the eligible Tucson membership on the election. If you do not feel you know your officers well enough to vote for them than please come to a meeting and get to know them!

President: **Damien Gosch**, Hargis + Associates, Inc.

Vice-President **Greg Hess**, Clear Creek Associates

Treasurer: **Dan Guido**, Montgomery & Associates

Secretary: **Brittany Bates**, Montgomery & Associates

Tucson Chapter Board Member (1): **Shane Clark**, Student, Watershed Hydrology and Management

Tucson Chapter Corporate Board Representative (1 two-year term): **John Villinski**, Clear Creek Associates

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FLAGSTAFF CHAPTER NEWS

AHS-Flagstaff Holiday Dinner & Special Presentation

You and your guest(s) are cordially invited

Where: Forest Highlands Canyon Clubhouse
2425 William Palmer, Flagstaff, AZ 86001
(Gate attendant will direct you to the Canyon Clubhouse)

When: Friday, December 7, 2012, 6:00 PM to 9:00 PM

RSVP: Erin Young at erinyoung27@gmail.com by December 4, 2012

Entertainment: Presentation by Brad Hill, City of Flagstaff Utilities Director, Protecting Flagstaff's Water Supplies from Catastrophic Wildfires - Impact of the Schultz Fire on the Inner Basin Water Supply and the Passing of Bond 405 (description below)

Drinks: Cash Bar

Cost: The Flagstaff Chapter will provide a lovely selection of catered appetizers but we ask that everyone pay for their meals so we can retain funds in our account to support the 2013 Avery Intern Scholarship. In addition, to further support the Avery Scholarship, we will be selling \$10 raffle tickets for a chance to win a holiday basket full of goodies. Please help support the scholarship for next year. You will be able to order directly from the [menu](#). Entrees start at \$10.50. Please relay any special menu requests (vegetarian, vegan, gluten free) to Erin as Forest Highlands welcomes these requests in advance.

Directions:

From Flagstaff: Follow Interstate I-17 South of Flagstaff to EXIT 337 toward AZ-89A S / PULLIAM AIRPORT. Turn RIGHT onto W JOHN WESLEY POWELL BLVD and turn LEFT onto AZ-89 and follow 1.7 miles to the Forest Highlands front entrance gate (on the left of US 89).

From the South: Follow interstate I-17 North to Flagstaff. EXIT 337 toward AZ-89A S / PULLIAM AIRPORT (just South of Flagstaff.) Turn LEFT onto W JOHN WESLEY POWELL BLVD and follow across freeway bridge where the road will end. Turn LEFT onto AZ-89 and follow 1.7 miles to the Forest Highlands front entrance gate (on the left of US 89).

Presentation Overview: The Schultz fire of June 20, 2010, burned 15,075 acres of overgrown forest and completely destroyed a 1-3 foot layer of forest duff that had exceptional water absorbing qualities. The first major and subsequent monsoon storms during the summer of 2010 created severe runoff and powerful erosion effects on the mountainside, damaging the Inner Basin pipeline in a number of locations. The pipeline was severed in two sections and damaged to some degree along a 6-mile run of the pipeline from the Inner Basin to Weatherford Canyon. Brad Hill, the Utilities Director for the City of Flagstaff, will talk about the history and importance of this supply, the relocation and reconstruction efforts to fix the pipeline, and how the City will work with 4FRI through the Citizens' passing of Bond 405, to mitigate potential wildfire-related catastrophes to water supplies within the Rio de Flag and Lake Mary watersheds.

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2012-2013 JAHN'S DISTINGUISHED LECTURE - PRELIMINARY ANNOUNCEMENT

The Flagstaff Chapter is pleased to announce that, in collaboration with Northern Arizona University (NAU), they will be sponsoring, in part, the 2012-2013 Jahn's Distinguished Lecture titled ***The Mountains are Falling Apart: A Spectrum of Mass Failures from Landslides through Deep-Seated Gravitational spreading (Sackung), to "Unfolding" of Folds.***

This lecture will be given by Dr. James McCalpin at 1600 MST on **Tuesday, January 29, 2013**, in Room 103 of Building 12 (Frier Hall) on the NAU campus. As the time draws near, we hope to have an abstract as well as the details of the reception AHS-Flagstaff will host. We hope to see you there for what promises to be a fascinating lecture.

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FLAGSTAFF CHAPTER OFFICER ELECTIONS

A big THANK YOU to the dedicated Flagstaff Chapter officers – we appreciate your service! Here

are the results from the 2013 board elections:

President: **Mike Tomlinson**, UHM Oceanography

Vice-President: **Paul Whitefield**, National Park Service

Treasurer: **Dana Downs-Heimes**, CH2M Hill

Secretary: **John Cochran**, Peabody Investments Corporation

Flagstaff Chapter Board Member (1): **Erin Young**, City of Flagstaff

Flagstaff Chapter Corporate Board Representation (1 tow-year term): **Charlie Ester**, SRP

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HYDRO-NEWS

ARIZONA GEOLOGICAL SOCIETY MEETING

Challenges in the Geological Sciences and Education

Joaquin Ruiz

**Executive Dean, Colleges of Letters, Arts and Sciences and Professor of Geosciences
University of Arizona**

Sheraton Tucson Hotel & Suites

Pima Ballroom (Enter at NW corner of the building and go upstairs)

5151 East Grant Road, Tucson

(The hotel is on Rosemont north of Grant, just north of the International House of Pancakes.)

Lecture at 8:00 PM

Tuesday, December 6, 2011

[Reservations are required for the dinner.](#) Admission to the talk only is free. Please also note that although there is limited surface parking around the hotel, there is ample parking in the garage beneath the hotel.

Special Meal Deal for Students! Dinner is *FREE* for students who make a reservation online at the website below. Please bring a student ID with you.

SCHEDULE: CASH BAR @ 6:00 PM, DINNER @ 7.00 PM, TALK @ 8:00 PM. WITH RESERVATION: MEMBER = \$24.00, GUEST = \$27.00. If you do not have a reservation, an extra \$3.00 will be charged. Also, without reservations you may not get dinner. To make dinner reservations please call the AGS answering machine at (520) 663-5295 or reserve online at <http://www.arizonageologicalsoc.org/meeting-information/dinner-reservations> by 5:00 P.M. on the Friday before the meeting. Leave name, number of attendees, and whether a vegetarian or low-salt meal is required. This number can also be used for field-trip reservations and leaving messages for Society officers. Please cancel your reservation via the answering machine if you find that you will be unable to attend.

Dean Ruiz can be reached at jruiz@email.arizona.edu

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WRRC 2012 PHOTO CONTEST



Calling all photographers

WRRC is pleased to announce our Arizona WRRC 2012 Photo Contest.

Submission deadline: Saturday, December 15, 2012

This year's theme is, **Water - The Human Element**

Arizona is a region of extremes when it comes to water sources and resources. Water, in one form or another, can be found everywhere and affects everything: environment, communities, people, etc.

What makes a winning photograph? Quality, clarity and composition are all important, but we are also looking for those special moments and unique interpretations that will capture emotions and evoke a response. This is your opportunity to show us what you see through the lens - standard, telephoto and/or macro. Remember: All photos must be taken within the state of Arizona.

The top 5 winning photographs will be:

- Announced at the WRRC 2013 Annual ChocolateFest, Friday, February 15, 2013.
- Incorporated into a slide show of the top 20 photographs to be shown at the ChocolateFest and featured on the WRRC web site.

Fifteen (15) additional photographs will be selected as "finalists" to be incorporated into a WRRC 2012 Photo Contest slide show. It will be on display at the WRRC 2013 ChocolateFest and featured on the WRRC web site.

A completed entry form and associated paperwork (model release, if applicable) must accompany all photo submissions. The Water Resources Research Center reserves the right to disqualify incomplete entries.

PRACTICAL STATS FALL 2012 COURSE

Applied Environmental Statistics

December 3-7, 2012

Embassy Suites Phoenix/Scottsdale
4415 E. Paradise Village Parkway S. Phoenix, AZ 85032

[For More Information and to Register](#)

Our flagship in-person training course surveying the methods needed for interpreting environmental data.

What you will learn from this course:

- How to compute nonparametric, permutation and parametric tests, and when to use which type.
- How to build good regression equations (hint: r^2 isn't the best guide)
- Trend analysis methods
- not to be fooled by 'Urban Legends' in environmental statistics

For a detailed outline, go to our [AES outline page](#)

Dennis Helsel

 Practical Stats
Statistics, down to earth

WRRC'S 2013 ANNUAL CONFERENCE TAKES ON “WATER SECURITY FROM THE GROUND UP”



The banner features a blue background with a light brown textured area on the left. On the left, a blue speech bubble contains the text "WATER SECURITY" in blue and "FROM THE GROUND UP" in brown. In the center, "WRRC CONFERENCE 2013" is written in large yellow letters, with "TUESDAY, MARCH 5 Tucson, Arizona" below it. On the right, logos for the Water Resources Research Center (with tagline "Research, Extension & Education For Real World Issues"), USGS (with tagline "science for a changing world"), and the University of Arizona College of Agriculture & Life Sciences are displayed.

The Water Resources Research Center 2013 Annual Conference: *Water Security from the Ground Up*, will be held on Tuesday, March 5, 2013, at the University of Arizona Student Union Memorial Center.

A complete **agenda** can be found at wrrc.arizona.edu/agenda-conference-2013

Registration fees remain the same as last year. The **registration form** can be found at wrrc.arizona.edu/registration-conference-2013

REGISTER NOW

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SOME WEST VALLEY CITIES WITHOUT WATER AFTER UTILITY OUTAGE ITED

by **Parker Leavitt** - Nov. 27, 2011 09:35 PM
The Arizona Republic

Some West Valley cities had no running water Thursday evening after an unexpected water outage on Liberty Utilities providers, authorities said.

City of Litchfield's Park City Manager Darryl Crossman said the significant outage affected the Litchfield area, Glendale and areas south of Glendale.

"They have not found the source of the problem at this point," Crossman said but officials at Liberty Utilities are troubleshooting feverishly.

Representatives plan on rerouting from other wells to provide water to areas of the outage by midnight, Crossman said.

Low water pressure closed the Bella Luna Ristorante near Indian School and Litchfield roads in Goodyear.

"Most of the city of Goodyear seems to have low pressure," said Bella Luna Ristorante owner Sam Billelo.

Billelo said he closed both of his Goodyear restaurants at 9 p.m., an hour before regular hours, because of the low pressure.

"The water just seemed to get less pressure and less pressure," he said.

Read more: <http://www.azcentral.com/2012/review/community/swvalley/articles/20121129west-valley-some-cities-without-water-utility-outage-abrk.html>

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CAP WATER TO HELP TRIBES RESTORE FARMING HERITAGE

By **Shaun McKinnon**
The Republic | azcentral.com
Sun Nov 25, 2012 11:53 PM

SACATON - Workers scramble down an earthen section of the Southside Canal on the edge of the Gila River Reservation, smoothing a fresh concrete panel and readying the next segment for lining, a process that will save millions of gallons of water that once was lost to

seepage.

The flow of water, halted temporarily to allow construction, will resume in two weeks and much work



remains. David DeJong, director of the community's irrigation project, checks what has been done, then moves on to another site near the far end of the channel. Timing is critical to ensure water for winter crops.

"For a long time, we were doing one project a year and a lot of people were saying, 'Oh, it'll never happen, it'll never get built,'" DeJong said. "Then we built a new canal segment along the highway, and suddenly people could see the work. Now they're clamoring for water."

The community has the water. In 2004, tribal leaders received the

rights to more than 600,000 acre-feet a year, or enough to serve a city of 3 million people, in the largest Indian water settlement in U.S. history. The U.S. Supreme Court ruled in 1908 that tribes with reservations were entitled to enough water to remain self-sufficient. The government has since settled claims with dozens of tribes.

Now leaders must find a way to use the water and, with none in the river that gives the reservation its name, the solution is the same as it has been in Arizona since the Hohokam built the first canals across what is now Phoenix.

Read more: http://www.azcentral.com/news/articles/20121121cap-water-tribes-farming-heritage.html?nclick_check=1

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ICE SHEETS MELTING AT POLES FASTER THAN BEFORE

Associated Press

Thu Nov 29, 2012 5:34 PM



WASHINGTON — Fueled by global warming, polar ice sheets in Greenland and Antarctica are now melting three times faster than they did in the 1990s, a new scientific study says.

So far, that's only added about half an inch (1.3 centimeters) to rising sea levels, not as bad as some earlier worst case scenarios. But the melting's quicker pace, especially in Greenland, has ice scientists worried.

One of the biggest wild cards in climate change has been figuring out how much the melting of the massive sheets of ice at the two poles would add to the seas. Until now, researchers haven't agreed on how fast the mile-thick sheets are thawing — and if Antarctica was even losing ice.

The new research concludes that Antarctica is melting, but points to the smaller ice sheet in Greenland, which covers most of the island, as the bigger and more pressing issue. Its melt rate has grown from about 55 billion tons a year in the 1990s to almost 290 billion tons a year recently, according to the study.

“Greenland is really taking off,” said National Snow and Ice Data Center scientist Ted Scambos, a co-author of the paper released Thursday by the journal *Science*.

Study lead author Andrew Shepherd of the University of Leeds in England, said their results provide a message for negotiators in Doha, Qatar, who are working on an international agreement to fight global warming: “It's very clear now that Greenland is a problem.”

Scientists blame man-made global warming for the melting. Burning fossil fuels, such as coal and oil, emits carbon dioxide and other greenhouse gases that trap heat, warming the atmosphere and oceans. Bit-by-bit, that erodes the ice sheets from above and below. Snowfall replenishes the ice sheets, but hasn't kept pace with the rate of melting.

Read more: <http://www.azcentral.com/news/free/20121129ice-sheets-melting-poles-faster-than-before.html>

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NATURAL RESOURCE RISKS STEM FROM PAST DECISIONS

By Shaun McKinnon

The Republic | azcentral.com

Mon Nov 26, 2012 11:26 PM

As plans for the Central Arizona Project fell into place more than four decades ago, state officials made two decisions that reverberate even more loudly today than they did at the time.

Arizona agreed to let California take its water from the Colorado River first, even if it meant there might not be enough left to fill the CAP Canal, and the state elected to build a coal-fired power plant to run the canal's pumps.

“The two biggest decisions made to get us built put us in the most jeopardy,” said David Modeer, the general manager of CAP, whose governing board and staff are working to reduce the risk of future water shortages and avoid the high costs of proposed air-pollution controls on the power plant.

The challenges facing the CAP are not unique. Over the past year, *The Arizona Republic* and *azcentral.com* examined the history and modern realities of the state's air, land and water management. In each, there was a common theme. Decisions made years ago, as the state grew and developed, have put those resources at risk today.

People in Phoenix and its suburbs breathe air that is polluted, sometimes to levels that bring daily health risks, because so many homes and businesses sit so close to freeways and congested highways.

Ponderosa pine forests, now home to many Arizonans and a cool refuge to many more, are on the verge of collapsing amid wildfires and insect attacks that thrive in the overgrown, uncontrolled stands of trees.

And water managers, who run systems that have survived historic droughts, now face a drier future with supplies based on shaky guarantees.

Plans are in the works to address all of these issues: air-quality plans for Maricopa and Pinal counties, a forest-restoration project in the high country, long-term approaches to augmenting water resources and securing more certain power supplies.

For those who manage the resources, and for the outside groups that seek better air, healthier forests and

more water conservation, the recurring question is one of time. In systems that take decades to develop, can the decision-makers of today come together in time to avert the risks?

Read more: http://www.azcentral.com/news/articles/20121126arizona-resource-planning-visionary.html?nclick_check=1#protected

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THE WATER WE NEED: CANAL PROJECT AN UPHILL JOURNEY

By Shaun McKinnon

The Republic | azcentral.com

Sun Nov 25, 2012 11:52 PM

Sometime before 2:30 a.m. on Sept. 30, in the desert in far western Arizona, a concrete slab buckled and gave way. The slab lined the edge of the Central Arizona Project Canal, and as it broke, millions of gallons of water began to gush, unchecked, into the silent darkness.

Almost 200 miles away, at the CAP control center in Phoenix, computers showed the water level dropping outside the community of Bouse.

[PDF: CAP canal by the numbers](#)

An inspection crew left at daylight Sunday and at 7 a.m. found the breach. Water had flooded nearby Arizona 72, carving jagged channels as it spread. Crews would later estimate water losses at about 130 million gallons.

With the canal wall washed away, the crews had little choice but to shut the system down. The canal would have to run dry for repairs to begin.

At the Colorado River, gates and siphons were closed. And with that, the lifeblood of much of Phoenix and Tucson was cinched shut. If it remained closed long enough, the cities would run out of CAP water. The clock was ticking.

More than half a century ago, when planners envisioned a canal that would carry water from the river 336 miles to Tucson, there were plenty of reasons to consider the idea impossible.

Building a canal through this forbidding stretch of desert, where the washout now drained away in rivulets of sand, was just one.

There were political challenges. California officials never wanted Arizona to build the canal.

There were technical barriers. Tucson sits a little over 2,000 feet higher in elevation than the river. Pumping that much water uphill would require enormous amounts of power — and today, that power supply is tenuous.

Even at hundreds of miles long, the canal would leave much of Arizona outside its reach. Critics wondered whether it would work, whether Arizona needed it.

And the canal's two biggest challenges both came from hundreds of miles away.

The first came from a deal, struck in the back hallways of Congress, five years before the canal was ever dug.

The other returns every winter, more than 1,000 miles upstream, where the Rocky Mountains touch the sky.

Read more: <http://www.azcentral.com/news/articles/20121120arizona-canal-project-water-journey.html>

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SRP BEGINS CLEAN-UP OF 131 MILES OF VALLEY CANALS

By **Mike Sakal**, Tribune

Posted: Saturday, November 24, 2012 11:30 am | Updated: 9:38 am, Sun Nov 25, 2012.

It's been a long time since the silt and vegetation along the walls of 131 miles of SRP canals throughout the Valley have been cleared away.

But as of Nov. 16, that began to change for the first time in 23 years when SRP started placing white amur fish in the canal to feed on the vegetation that could grow and impede the flow of water from the region's lakes and watersheds.

That's when morning joggers, walkers and bicyclists along the canals began to notice SRP workers kicking off a seven-year cleanup project for the entire 131 miles of SRP canals that provide East Valley cities drinking water and farmers irrigation water after it is all treated at local plants.

The cleanup also includes the "herding of the fish or the relocation of the white amur fish (similar to a carp) that feed off the vegetation and often hover around the tires that people dump into the canals that provide East Valley cities drinking water.

The project, which consists of clearing 20 miles of canals two months out of the year during "dry-up" periods in November and January when the need for water is not as high, will help water flow through the system in a more efficient manner as crews make sure portions of the canal remain structurally sound.

Read more: http://www.eastvalleytribune.com/local/gilbert/article_441c9f94-3606-11e2-82c3-001a4bcf887a.html

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U.S. AND MEXICO SIGN MAJOR DEAL ON COLORADO RIVER ISSUES: DELTA RESTORATION, INFRASTRUCTURE, WATER SHARING

The agreement marks a turn in Colorado River management.

MONDAY, 26 NOVEMBER 2012 11:45

Senior officials from the United States and Mexico signed a broad five-year agreement on Tuesday that marks renewed cooperation over the Colorado River, a desert lifeline that provides water to at least 30 million people, irrigation to top agricultural counties, and electricity to millions — despite water demands in the last few years rising above the average annual supply.

The pact, known as Minute 319, covers three key issues: it brings Mexico into existing U.S. water-management agreements for sharing shortages and surpluses; it allows U.S. states to pay for irrigation improvements across the border and reap some of the water savings; and it allocates water for the restoration of the Colorado River delta. .

"That we were able to address all three things makes this truly historic," said U.S. Interior Secretary Ken Salazar after the signing ceremony Tuesday in San Diego. "A year ago, people would have said it was impossible to do, even in the last 20 days. It seemed at times like Humpty Dumpty was falling off the wall. This great team kept him on the wall, and we get to celebrate the birth of a new relationship between the U.S. and Mexico on the Colorado River."

The abused Colorado River delta, which often does not hold enough water to connect the river to the Sea of Cortez, is one of the winners in the deal.

Read more: <http://www.circleofblue.org/waternews/2012/world/u-s-mexico-sign-major-deal-on-colorado-river-issues-delta-restoration-infrastructure-water-sharing/>

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PHOENIX WEBSITE HELPS RAISE AWARENESS ON STORM-WATER POLLUTION

by *Alicia Canales* - Nov. 10, 2012 08:25 PM

Special for *The Republic* | azcentral.com

Only one in four Phoenix residents recognizes storm water goes straight to local rivers without any sanitary treatment, according to survey results in the 2012 Municipal Separate Storm Sewer System annual report.

The Phoenix Water Services Department wants to raise the level of storm-water awareness with a new interactive website launched in June. It features simple ways to reduce storm-water pollution.

Phoenix has a sanitary sewage system and a storm-drain sewage system.

Wastewater is moved through the sanitary system, which takes it to a wastewater-treatment plant before emptying into the Salt River. Storm-water runoff carries pollutants as it travels across yards and streets into storm drains, which transport water directly to rivers and other water basins.

"It's one of those things people take for granted," said Linda Palumbo, environmental programs coordinator at the Water Services Department.

"You don't really think about where storm water goes after it rains or you don't really think about the drains on the side of the street. There's a lot of folks that make the assumption the water gets treated like the sanitary wastewater gets treated at a treatment plant, but it doesn't."

Read more: <http://www.azcentral.com/arizonarepublic/local/articles/20121110phoenix-website-helps-raise-awareness-storm-water-pollution.html#protected#ixzz2DgSoyyEQ>

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ADDITIONAL INFORMATION

For more information about the Arizona Hydrological Society, or to view current job listings and announcements, please visit our regularly updated web site at:

<http://www.azhydrosoc.org/>

Membership may be renewed by credit card through the AHS website or by mailing a check to the Arizona Hydrological Society, P.O. Box 1882, Higley, AZ 85236. Dues remain at \$45.00 year for regular membership and \$15.00 for students. Please remember that your 2011 membership was included in the 2010 Symposium registration fee!