

THE ARIZONA HYDROLOGICAL SOCIETY

NEWSLETTER



WET WINTER: WATER LEVEL RISES SHARPLY

-by Henry Brean
Las Vegas Review-Journal

The following originally appeared in the Friday, February 18, 2005, online edition of the Las Vegas Review-Journal. It is reprinted with permission. LKB

Gain of 7-1/2 feet recorded on Lake Mead in January is largest monthly gain since 1983

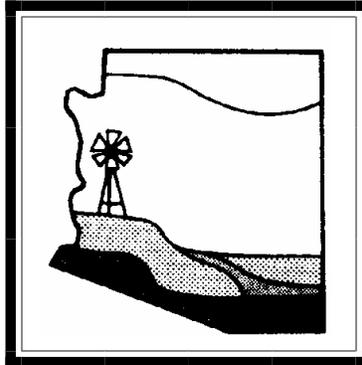
As winter storms soaked the West last month, officials from the U.S. Bureau of Reclamation predicted that the wet weather would raise the water level of Lake Mead but could not say by how much.

They can now.

According to the bureau's latest projection for reservoir operations on the Colorado River, Lake Mead rose almost 7 1/2 feet in January and is expected to gain another 2 1/2 feet by the end of this month.

January's increase was the largest monthly gain since 1983 and the third-largest since 1966, when the Colorado's flow into Lake Mead came under human control with the opening of Glen Canyon Dam.

Southern Nevada depends on Lake Mead for about 90 percent of its supply of drinking water. An elevation gain of 7 1/2 feet at this relatively low level in Lake Mead translates roughly to a little more than a two-year supply of water for Southern Nevada.



Bureau spokesman Bob Walsh said winter storms in Nevada, Arizona and California have reduced water demand by farms and cities that depend on the Colorado River. At the same time, the storms have filled tributaries that feed into the river above and below Hoover Dam. That has enabled the bureau to keep more water in Lake Mead, Walsh said.

"It's been these storms that have been coming through this

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VOLUNTEER JUDGES NEEDED FOR REGIONAL SCIENCE FAIRS

In accordance with the educational and outreach goals of AHS, both the Phoenix and Tucson Chapters will be actively participating in their regional science fairs. Both chapters have provided information on their respective activities. LKB

CENTRAL ARIZONA REGIONAL SCIENCE AND ENGINEERING FAIR

-by Paul Plato
GeoTrans, Inc.

The AHS Phoenix Chapter is again supporting the Central Arizona Regional Science and Engineering Fair (CARSEF), in 2005. This year, the fair will be held March 22 through 26, 2005, at the Mesa Convention Center in Mesa, Arizona. Students from the Central Arizona

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SCIENCE FAIR CONTINUED FROM PAGE 1

region from grades 4 through 12 will compete in the event, with individual and team projects. The grand prize winners will be selected to attend the International Science and Engineering Fair which is to be held right here in Phoenix this year. The judging of student projects will take place on March 24, 2005, and awards will be presented at a ceremony on March 26, 2005. Thanks to a generous matching contribution from Central Arizona Project, our total awards this year will rise from \$150 to \$400 total prize money. I would also like to solicit Phoenix Area members of AHS to consider joining me in offering our services as judges for either AHS or the event. If you wish to participate as a judge for the event, you can apply online through the CARSEF website (<http://carsef.asu.edu/mainpage.html>). If you are interested in judging for AHS, please get in touch with me, Paul Plato, at (602) 682-3320 or pplato@geotransinc.com.

SOUTHERN ARIZONA REGIONAL SCIENCE AND ENGINEERING FAIR

-by Bill Petroutson,
Pima County Department of
Environmental Quality
AHS Tucson Chapter President

This year is the 50th anniversary Southern Arizona Regional Science and Engineering Fair (SARSEF). Each year the Tucson Chapter of AHS participates by being a Special Awards Donor. The chapter gives \$25 to \$50 checks for hydrology science projects to grades K-12 at SARSEF. The event is held at the Tucson Convention Center, March 14 -19. The chapter is

seeking at least four judges for the morning of Tuesday, March 15, 2005.

The judge's registration, breakfast and briefing will begin at 7:30 AM. Judging begins at 8:30 AM and the AHS volunteers will conclude their judging activities by 11:30 AM that day. You will also be treated to a lunch by SARSEF at 11:30.

An electronic sign up form is available at SARSEF's website, which is at www.sarsef.com. Please be sure to enter the Arizona Hydrological Society as the organization that you are representing and check off the box labeled "Special Judge for Organization indicated above." You will not have to mark off on the form any of the grade categories. If you do sign up as a judge, please email me a copy of your confirmation. Also, SARSEF is providing judges and volunteers the opportunity to pre-order SARSEF shirts, one of which is a commemorative shirt embroidered with the 50th anniversary logo.

If you have a morning available and are interested in participating in this fun and beneficial event to encourage a potential future hydrologist, please contact me at (520) 740-3329 or bill.petroutson@esd.pima.gov to learn more.

Thanks!



WET WINTER CONTINUED FROM PAGE 1

three-state region since December," he said.

For example, storm runoff in Arizona's Gila River will be used by Mexico, which is guaranteed a share of the Colorado River

under a treaty with the United States.

Despite Lake Mead's recent gains, however, the largest man-made reservoir in North America still finished last month down about 3 feet from the year before.

The bureau expects Lake Mead to shrink by 12 1/2 feet by the end of the year as normal water deliveries are made downstream amid a sixth year of record drought in the region. The drought's impact can be seen in a stark white ring, more than 75 feet high, that marks Mead's banks where the water was as recently as 1998. People call it the bathtub ring, but Lake Mead is no bathtub.

"One foot of rise in the lake can make a difference of 10 to 20 feet on the shoreline, depending on the slope of the area," said Roxanne Dey, spokeswoman for Lake Mead National Recreation Area.

When the water comes up quickly, park maintenance personnel and private marina concessionaires must scramble to move courtesy docks and reconfigure marinas around the lake.

"It's things most people don't think about when they go out to launch their boat. They don't think about that maintenance crew who was out there at 5:00 AM," Dey said.

The lake level has seemed especially finicky during the drought and the recent storm activity, Dey said.

"The fluctuations didn't used to be that severe. It's a constant challenge," she said.



WET WINTER CONTINUED FROM PAGE 2

But to Western water suppliers and the millions of people who depend on them — and the Colorado River itself — a sudden rise in Lake Mead sure beats the alternative.

“The wet weather we've had over the last couple of months has had some temporary benefits,” said Vince Alberta, spokesman for the Southern Nevada Water Authority.

“But ultimately, it's going to take several years of above-average snowpack in the Rockies for Lake Mead to recover and stabilize.”

“No one is saying the drought is over,” Walsh said.

“We're all just enjoying the heck out of this year so far.” ☐



THE SECRET LIFE OF ACID DUST

The following is a December 14, 2004, press release from the Pacific Northwest National Laboratory. It is available at <http://www.pnl.gov/news/2004/04-69.htm>. LKB

Team discovers large, new class of airborne particles unaccounted for in climate models, a new study from the Pacific Northwest National Laboratory.

SAN FRANCISCO – Dry dust reacts with air pollutants to form dewy particles whose sunlight-reflecting and cloud-altering properties are unaccounted for in atmospheric models.

“Calcite-containing dust particles blow into the air and encounter gaseous nitric acid in polluted air from factories to

form an entirely new particle of calcium nitrate,” said Alexander Laskin, a senior research scientist at the Department of Energy's Pacific Northwest National Laboratory in Richland, Washington.

“These nitrates have optical and chemical properties that are absolutely different from those of originally dry dust particles, and climate models need to be updated to reflect this chemistry.”

Calcite dust is ubiquitous in arid areas such as Israel, where this past winter Laskin and colleagues Vicki Grassian, chemistry professor at the University of Iowa, and Yinon Rudich, professor of environmental sciences and energy research at the Weizmann Institute of Science, collected particles for analysis. Laskin presented their findings Tuesday at the American Geophysical Union fall meeting.

Working from a mountaintop, the team collected dust that had blown in from the northern shores of Egypt, Sinai and southern Israel. The particles had mingled with air containing pollutants that originated from Cairo. They analyzed nearly 2,000 individual micron-sized particles and observed the physical and chemical changes with an array of techniques at the W.R. Wiley Environmental Molecular Sciences Laboratory at PNNL.

A key change in the properties of the newly formed nitrate particles is that they begin to absorb water and retain the moisture. These wet particles can scatter and absorb sunlight – presenting climate modelers, who need to know where the energy is going, a new wild card to deal

with. Companion studies of dust samples from the Sahara and the Saudi coast and loess from China show that the higher the calcium in the mineral, the more reactive they are in with nitric acid. And once the particle is changed, it stays that way.

“When dust storms kick up these particles and they enter polluted areas, the particles change,” Laskin said. “To what extent this is happening globally, as more of the world becomes industrialized, we don't know. But now we have the laboratory and field evidence that shows it is definitely happening. The story is much more complicated than anybody



LEONARD HALPENNY INTERN SCHOLARSHIP REPORT

-by Patricia Magowan
2004 Halpenny Intern Scholar

In the summer of 2004, the AHS Leonard Halpenny Intern Scholarship completed its eighth year. In March of 2004, I applied for and won the scholarship. I began work May 20, just two short weeks after completing my junior year at Northern Arizona University.

The first place I worked was at the Tucson office of The Nature Conservancy. There with the guidance of Jeanmarie Haney, I learned how to use ARCVIEW, applying this knowledge by plotting water flow along the Lower San Pedro River. I was also able to visit the Lower San Pedro River Preserve and observe how knowledge of the groundwater is used to plan and implement processes to rehabilitate the riparian habitats along the river.

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CHAPTER NEWS



FLAGSTAFF

-by Nancy Riccio
Plateau TechComm / Plateau
MediaWorks

FEBRUARY MEETING SUMMARY

Recap of Birdsall-Dreiss Lecture

On February 16, Dr. William Woessner of the University of Montana presented the 2005 Birdsall-Dreiss lecture at NAU. His talk focused on the occurrence, transport, and fate of two classes of contaminants — viruses and pharmaceutical compounds — that originate from septic effluent and may potentially impact groundwater quality. Given the EPA's proposed new screening process for viruses in groundwater, this topic was both timely and pertinent.

Using a multidisciplinary approach, Dr. Woessner examined data from a high school drain field, tracer experiments, and a regional, survey-level study, which all featured shallow aquifers consisting predominantly of sand and gravel. Not surprisingly, he and his fellow researchers identify many factors that influence the concentrations of these constituents in groundwater; these factors include properties of the fluids, the aquifer media, and the drugs and viruses themselves. Although the results of Dr. Woessner's studies are qualitative, they show that certain viruses and drugs such as carbamazepine (which is used to treat epilepsy and other disorders) are likely to persist in groundwater — albeit

in trace concentrations — at distances that exceed current setbacks required for water supply wells. Furthermore, in many cases, a large percentage of the constituent mass remains dissolved within low-conductivity aquifer zones, a condition that facilitates their slow release over time.

Dr. Woessner's work plants the seeds for additional, much-needed research to answer important questions about the efficacy of our protective measures. It also begs another question: What are the cumulative, long-term impacts of exposing human and other receptors to low concentrations of viruses, prescription drugs, and nonprescription drugs? How do these substances affect our bodies, our food sources, and the environment?

Symposium Planning Updates

Flagstaff Chapter members met on February 9 to discuss planning issues for the upcoming 2005 AHS Symposium. The next meeting is tentatively scheduled for 5:30 PM, March 2, at the U.S. Geological Survey. Details will be announced via email.

MARCH MEETING

Thursday, March 10, 2005

Time: 4:00 PM

**Location: Geology Building at
NAU, Room 103**

**Topic: "Investigations of the
Middle and Upper Verde
Rivers"**

On March 10, the next lecture in the NAU Earth Science Seminar Series will feature Kyle Blasch. He will be presenting a talk on the USGS' investigations of the Middle and Upper Verde Rivers. The talk will be held in Room 103 of the Geology building at NAU. Details will be announced via email; you can also contact Dr. Abe Springer (abe.springer@nau.edu) or check the Flagstaff Chapter page of the AHS Web site (www.azhydrosoc.org/flagstaff.html) for more information.



PHOENIX

-by Lee-Anna Walker
Archaeological Consulting Services, Ltd.

FEBRUARY MEETING SUMMARY

-by Keith Scoular
Archaeological Consulting Services, Ltd

On Tuesday, February 8, 2005, Pat Quinn, P.E., R.L.S., and Mike Kellogg, G.I.T. JE Fuller/Hydrology and Geomorphology gave a presentation on the "Colorado River Boundary Determination – Who's Land is it Anyway?"

When Pat Quinn first spoke, she indicated that the presentation had something for just about anyone who might be in the audience including hydrology, geomorphology, law, politics, history, and surveying, and she was right. For those of us in the audience who are life-long Arizona residents, we even got a little bit of Arizona vs. California relative to the Colorado River, which is always heart warming to some degree or another.

CHAPTER NEWS



PHOENIX NEWS
CONTINUED FROM PAGE 4

The presentation centered around a long-term project being conducted for the Arizona State Land Department (ASLD) regarding sovereign land determinations along the Colorado River. The objectives of the project are to recommend the location of the sovereign land boundary along the Colorado River, field survey the sovereign land boundary, and prepare plat maps and file the maps with the appropriate county recorder. The process involves the following general steps: using all available data, investigate each reach to determine if the current boundary is a result of an accretion or an avulsion and make a boundary determination based on that research; once the boundary determination has been made, implement that determination through field surveys, plat map recording, and boundary recording. Prior to making the determinations and conducting the surveys, however, lots of information needed to be gathered regarding the various laws and doctrines that govern a states' land ownership along a river.

The term "sovereign lands" refers to those lands lying in beds of navigable waterways, and in this case, the sovereign is the state. In addition to the definition of sovereign lands, other legal basics discussed in the presentation included the Public Trust Doctrine, the Equal Footing Doctrine, and the Submerged Lands Act, all of which deal with states' rights relative to riverbed ownership, and the

Doctrines of Avulsion and Accretion, which deal with riparian land ownership. An avulsion is a sudden or abrupt change in the course of a river where the old channel is abandoned and a new channel alignment is created. The cause of an avulsion can be natural or manmade, but the sovereign boundary remains fixed in the last known position of the channel prior to the avulsive event. Examples of avulsions on the Colorado River are the 1920 flood that created Yuma Island and the dredging of a new channel south of Hoover Dam to straighten the alignment of the river. An accretion is a gradual or imperceptible change in channel position, often over a long period of time, that is caused by natural geomorphological forces. With accretion, the sovereign boundary moves with the river and the courts presume accretion in the absence of clear evidence for an avulsion. An example of an accretion event would be the long-term channel changes that a river makes within its floodplain. Adding to all of this is that a various times, Arizona, California, and Nevada have claimed sovereign lands based on different points: in 1850, California claimed land from the centerline to the right ordinary low watermark; in 1864, Nevada claimed land from the centerline to the right ordinary high watermark; and in 1912, Arizona claimed land from the centerline of the river to the left ordinary high watermark.

The ASLD is interested in the issue of sovereign lands for a number of different reasons including the following: a political

boundary does not equal a land title boundary; ASLD is required to manage Sovereign Lands differently than they manage Trust Lands, including revenue allocations; land conveyance and parcel improvement issues; clouded titles mean difficulty in obtaining title insurance; permitting delays (Clean Water Act 404, etc.) until clear ownership is determined; and lost revenue to the state from leasing/sales of sovereign lands.

Various types of data were used to help determine whether or not a boundary resulted from an accretion or an avulsion. Pre-field research included reviews of historical aerial photographs, engineering reports, Government Land Office maps, land use determinations, land ownership, hydraulic models, and quiet titles. Once a boundary determination had been made, implementation of that determination required field data from monument surveys using static GPS (tied to local survey controls) and ordinary high watermark surveys using real time kinematic GPS (tied to monument control).

Although not complete yet, the project has already resulted in some small property boundary changes in certain areas and maps showing Arizona land located in California and California land located in Arizona. Once the project is complete, the next steps will be to determine candidate acreages for interstate land exchanges and implementation of the land exchanges.

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**PHOENIX NEWS
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Thanks to Pat and Mike for their presentation and assistance with this summary.

MARCH MEETING

Tuesday, March 8, 2005

Time:

5:30 PM Social Hour

6:15 Order Dinner

6:30 PM Dinner

7:15 PM Meeting

Location:

**Macayo's Depot Cantina
300 S. Ash, Tempe**

*****NOTE: THE PRICE FOR MEMBERS HAS BEEN INCREASED TO \$13 TO COVER VENUE COSTS.*****

Cost: \$13 members, \$17 non-members, \$5 students

Please RSVP by Friday, March 4th to Beth Proffitt by phone at (602) 437-0330 or by email at: eproffitt@transgeo.com.

Topic: "The Evolution of Mars: Changing Views of a Changing World," presented by Dr. Phil Christensen, Arizona State University

Abstract: Our view of Mars has changed dramatically over time, ranging from a world with intelligent beings to a barren, Moon-like planet. Recent observations show that water has played a major role in shaping the planet, and today Mars is the focus of intensive exploration to search for environments where life may have originated. A fleet of spacecraft has explored Mars over the past decade from orbit and from the surface. These robots have pro-

vided a vast amount of new information that show that Mars itself has changed dramatically over time. These discoveries have greatly expanded the debate about the climate and environment of Mars, its evolution over time, the history of water, and possibility that life could have originated. These observations present conflicting views – minerals are present that would quickly break down in a wet environment, yet Mars abounds with ancient river channels; the current climate is very dry and cold, yet the Opportunity rover landed on the floor of an ancient lake; liquid water cannot exist today, yet recent gullies emerge beneath modern snowpacks. The emerging picture is one of a complex planet – not a simple view of "warm and wet" versus "cold and dry" - but that of a real world with many different faces and its own story to tell of its change through time.

**SYMPOSIUM PLANNING
VOLUNTEERS NEEDED**

Members, we need volunteers to help the Flagstaff Chapter with their symposium. In addition, the Phoenix Chapter is starting to form its own 2006 Symposium Planning Committee! If you are able to help out with either one, please direct your inquiries to Ted Lehman at ted@jefuller.com. Thank you.

LOOKING AHEAD...

Patrick Dent with the CAP will give a presentation on CAP Canal hydraulic operations at the April meeting.

In May, Brett Howey, with FCDMC, will speak on Dam Safety rehabilitation program efforts in Maricopa County;

there is also a tentative field trip to a rehab construction site the following Saturday.

Karen Sorenson, City of Mesa, will give a presentation on Water re-use in Mesa at the June meeting.

For a complete 2005 schedule, please visit the Phoenix Chapter section on the AHS website at www.azhydrosoc.org. ☐



TUCSON

-by Bill Petroustson
Pima County Environmental
Services Department

**FEBRUARY MEETING
SUMMARY**

Ralph Marra and Tim Thomure, hydrologists with the City of Tucson Water Department, spoke to the Tucson Chapter on February 8, 2005, at the offices of Errol L. Montgomery & Associates, Inc. Mr. Marra and Mr. Thomure presented "Water Plan: 2000-2050: City of Tucson Final Draft, Mayor and Council, November 22, 2004."

Mr. Marra discussed the resources and goals of the plan which are: to meet projected total demand, utilize renewable resources, meet water quality targets, achieve sustainable pumpage, manage costs and rate impacts, and comply with the rules established by the Assured Water Supply Program. This plan is a comprehensive revision of the *Tucson Water Resources Plan 1990-2100*. A scenario planning approach was used to accommodate regulatory changes and agreements with other local water providers in the development of a highly flexible, long range water resources plan.


**TUCSON NEWS CONTINUED
FROM PAGE 6**

Municipal water use surpassed agricultural water use in the mid-1980's within the Tucson Active Management Area and is the primary user of available supplies. Mr. Thomure showed water level contours that demonstrated this shift in water use. By 1980, agricultural use in Avra Valley had caused severe water level declines. By 1985, Avra Valley water levels began to rebound with decreasing agricultural water use. However, water levels in central Tucson continued to decline because of steadily increasing municipal use. The decline has been attenuated in the short term, but increasing drawdown is expected when demand outstrips supply based upon population projections estimated from United States Census and Pima Association of Governments data. Hence, the need for a water plan that addresses a range of potential future situations and determines a number of possible pathways that could lead to them.

Critical decision points exist along these pathways where community input must determine which alternative pathway they choose to follow. At the critical decision points, a list of water programs and projects were developed. Implications of the water plan and project choices to be made will be provided to customers before they are asked to provide input to the decision making process.

The first set of decisions to be made will occur on or during 2006. Customers will be asked to decide whether to maintain the current preferred level of 450 milligrams per liter (mg/L) of

Total Dissolved Solids (TDS) or to allow a higher TDS of 600 mg/L that will be the naturally occurring balance reached between recharged Colorado River water and groundwater. Additional treatment facilities would have to be constructed in the event that customers choose to maintain the lower level. The second decision to be made in 2006 concerns the usage of the remaining Colorado River allotment. The decision will be whether to expand the Clearwater Project to accept additional Colorado River water for recharge and recovery, or to bring the existing Hayden-Udall Water Treatment Facility back into service to directly treat Colorado River water and add it to the water delivery system.

The next set of decisions concerns the use of available effluent and must occur before 2014. Effluent is expected to continue to be used to meet reclaimed water demand, which is estimated to be approximately 8% of total demand. Two critical decisions need to be made: whether the current effluent disposal practices continue or to maximize the use of effluent as a water supply; and if the use of effluent is to be maximized, whether it will be stored in long-term water banking facilities or used to augment the potable water supply.

To open a dialogue with customers and facilitate discussion, Tucson Water supplies recommendations that will address many of the identified critical decisions. Tucson Water believes that implementing their recommendations will allow the achievement of all of the specified planning goals and also to retain maximum plan flexibility. Tucson Water suggests that the

recommendations clearly support the conclusions to maximize the use of available renewable water supplies, to aggressively pursue acquisition of additional water supplies, and to reduce water usage through demand management programs.

The full text of the Water Plan can be downloaded from the City of Tucson website. The Tucson Chapter would like to thank Ralph Marra and Tim Thomure for their time and an informative presentation.

MARCH MEETING

Tuesday, March 8, 2005

**Time:
7:00 PM Social Half Hour
7:30 PM Presentation**

**Location:
Errol L. Montgomery &
Associates
1550 E. Prince Rd.**

Topic: "Atmospheric pollution and pre- and post-fire hydrology and biogeochemistry in southern California watersheds" presented by Dr. Tom Meixner, Department of Hydrology and Water Resources, UofA

On Tuesday, March 8, Dr. Tom Meixner will be presenting at the AHS monthly meeting. Dr. Meixner is the newest member of Hydrology Faculty in the Department of Hydrology and Water Resources at the University of Arizona. He will speak on atmospheric pollution and pre- and post-fire hydrology and biogeochemistry in southern California watersheds.



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**TUCSON NEWS
CONTINUED FROM PAGE 7**

LOOKING AHEAD...

On Tuesday, April 12, Dr. Frank D'Agnesse of Earth Knowledge, LLC, will speak at the AHS monthly meeting. Dr. D'Agnesse's presentation will discuss Earth Knowledge's current efforts in southern Nevada to build stronger and more-informed multi-stakeholder involvement for achieving water sustainability in the region. He will offer opportunities and tools for increased collaboration, more efficient and effective integration of knowledge, and more reliable decision management.



**INTERN SCHOLAR REPORT
CONTINUED FROM PAGE 3**

The next place I visited was Errol L. Montgomery & Associates, Inc., where I worked with Marla Odom. Marla instructed me in Surfer, ARCGIS, and AQTESOLV. I learned how to plot groundwater level hydrographs using Grapher from data acquired through state databases. I learned the ins and outs of the Arizona Department of Water Resources 55 wells registry and the Groundwater Site Inventory Databases. I collected data for a project for Marla by querying the Arizona Department of Environmental Quality Underground Storage Tank and Leaky Underground Storage Tank files for sites that might be subject to adverse impacts of potential recharge operations. I also began a project to map the groundwater, and wells for an Arizona area of my choosing. I also sat in on an AHS meeting with a speaker from the U of A.

Tucson Water was the third place that I worked; I spent most of my time with the Hydro lab. Most days I was in the field accompanying Dick Thompson, Becky Borker, Ian Ream, and Laura Macklin. I learned about CAVSARP (Central Avra Valley Storage and Recovery Project), and SAVSARP (South Avra Valley Storage and Recovery Project). I helped with sampling, transit surveying, and sieve analysis. I was able to observe the installation of a well using a reverse mud rotary rig. I spent a day in the office where I was again introduced to ARCGIS by Michael Liberti and learned about Tucson's short and long term planning from Wally Wilson and Tim Thomure.

The last company I worked for was Clear Creek Associates. I worked with Mike Alter, Chris Courtney, Dale Armstrong, and Phil Bredfeldt. I collected and compiled information into fence diagrams for several of the locations Clear Creek was working on. I was also able to observe an observation well installation using an air rotary hammer rig.

I enjoyed this summer working with so many different personalities and experience levels. I was able to learn a great deal about an entry level Hydrology position. Everyone I worked with was happy to answer questions and was free with professional suggestions. I would like to thank all of the people at The Nature Conservancy, Montgomery & Associates, Inc., Tucson Water, and Clear Creek Associates for their help and friendship. To have been given this opportunity was an honor, and I hope future Halpenny interns learn as much, and enjoy their time as much as I did. 



ANNOUNCEMENTS

AHS would like to extend congratulations to one of our own. **Kerry Schwartz of Arizona Project Wet.** She received the U.S Department of the Interior, Bureau of Reclamation, Lower Colorado Region, Water Conservation Field Services Program Award. The award was given "In recognition of exceptional work accomplishment in Water Conservation." Great job Kerry! 



**MEMBERS ON
THE MOVE**

Bill Petrouson is pleased to announce his move to the Pima County Department of Environmental Quality, where he will serve as Senior Hydrologist. Bill is also the current Tucson Chapter President. His new contact information is:

Pima County Department of Environmental Quality
Phone: (520) 740-3329
Fax: (520) 882-7709
Email: bill.petrouson@esd.pima.gov



**EMPLOYMENT
OPPORTUNITIES**

Due to the volume of employment opportunities this month, each announcement listed has been abridged. For complete postings, visit the AHS website or contact me. LKB

MACTEC Engineering and Consulting, Inc. is seeking an experienced **Environmental professional** with 4 + years of experience focusing on Water Resources, Site Assessment and Remediation, Hazardous Waste Management and Permitting, Air Pollution Control, and Natural Resource Management.



EMPLOYMENT CONTINUED
FROM PAGE 8

Contact: Harry R. Hendler
Environmental & Facilities
Department Manager
MACTEC Engineering and
Consulting, Inc.
Office: (602) 437-0250
Cell: (602) 451-2172

ASFPM Announces New Position of Deputy Executive Director

The Association of State Floodplain Managers (ASFPM) has created a new position of Deputy Executive Director to assist the Executive Director in duties including policy, administration, project management, Certification program and member service activities. ASFPM is a national, nonprofit, professional membership association with 7,000 members and 20 chapters throughout the U.S., and an operating budget of over \$600,000. This position is located in the Executive Office in Madison, WI.

Required qualifications: Bachelor's degree in a field related to floodplain management. Minimum five years experience in progressively responsible management positions. Direct experience in floodplain management, Certified Floodplain Manager preferred.

The application closing date is April 1, 2005. Interested parties should view the full position announcement at <http://www.floods.org/files/depexdir.pdf>. To apply, please send your resume, a cover letter, two writing samples, and examples of previous management experience to:

ASFPM Administrator
Diane Brown
Association of State
Floodplain Managers
2809 Fish Hatchery Rd.
Suite 204
Madison WI 53713
(608) 274-0123
Fax (608) 274-0696
diane@floods.org
www.floods.org

The Town of Prescott Valley is looking for a Water Resources Manager as well as a new Public Works Director.

For more information, please visit: <http://www.pvaz.net/Jobs/general.asp>.

GOLDER ASSOCIATES INC., an international employee-owned, earth sciences consulting firm specializing in geotechnical engineering, hydrogeology, and water resources **is currently seeking an entry- to mid-level hydrogeologist** to work as part of the water resources/environmental team on water resource development and mining-related environmental projects in our Tucson, Arizona office.

Please submit letters of interest and resumes to:
Golder Associates Inc.
4730 North Oracle Road
Suite 210
Tucson, Arizona 85705
Attn.: Tucson Resumes

Additional detail can be obtained at www.golder.com. Phoenix-based

Salt River Project is recruiting for a **Geohydrologist** at our SRP facility located at 16th St. and Lincoln.

B.S. in hydrology, geology, geohydrology, engineering or similar discipline required. M.S. preferred. Minimum 3 years experience. Professional registration in Arizona preferred.

Out of town work may be required.

Excellent benefit package. For more details and to apply, visit our Careers section at www.srpnet.com.

The Phoenix office of Earth Tech is seeking several qualified professionals for a variety of openings. The first two involve TMLD studies.

- Staff Professional V **Water Quality Modeler** Position within our Water Resources Engineering Dept.

- Staff Professional V **Water Resources Programmatic Position** within our Water Resources Engineering Dept.

- Senior Professional X **Structural Engineer Position** to perform as a structural engineer and project manager.

- Project Professional VIII **Civil Engineer Position** to perform as a resident engineer on construction administration service projects.

For more information on any of these positions, please visit <http://www.earthtech.com/corporate/careers.htm>.

2005 MEMBERSHIP DUES

Dues, payable to AHS (\$40.00, \$15.00 for students) should be sent to: Leilani Bew, AHS Newsletter Editor, Errol L. Montgomery & Associates, Inc. 1550 East Prince Road, Tucson, Arizona 85719 Phone: (520) 881-4912, or pay online at www.AzHydroSoc.org.

ARIZONA HYDROLOGICAL SOCIETY
Newsletter Department
Leilani Bew
c/o Errol L. Montgomery & Associates, Inc.
1550 East Prince Road
Tucson, Arizona 85719

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AHS NEWSLETTER SUBMITTALS

Submittals and comments should be addressed and faxed to Leilani Bew at Errol L. Montgomery & Associates, Inc. by the **15th** of each month. If you learn of something timely after the deadline has passed, call me, and we can discuss it.

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Thanks are extended to Errol L. Montgomery & Associates, Inc. for their donation of phones, fax, computers, and staff to support publication of this newsletter.

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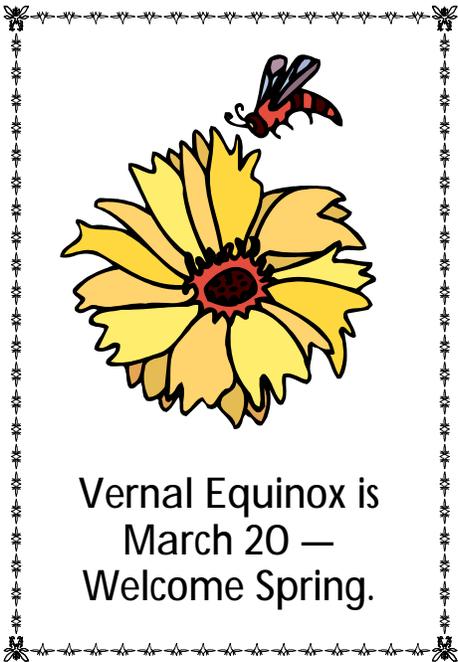
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