

Arizona Hydrological Society Hosted Symposium on Landfills in Arid Climates

Michael Geddis – Hydro Geo Chem, Inc.



The Arizona Hydrologic Society (AHS) hosted the First Biennial Symposium on Scientific Issues Related to Management of Landfills in Arid and Semi-Arid Regions on June 7 in Tucson, Arizona. More than 100 people attended the symposium. Tucson's Vice-Mayor Carol West opened the symposium with a discussion on sensible Brownfields development and a political perspective on environmental issues related to landfills. Plenary speaker John Baker, Director of New Technologies for Waste Management (WM), described four WM bioreactor projects designed to accelerate degradation within landfills and discussed his efforts working with the U.S. Environmental Protection Agency to define an end for

post-closure care. He also provided an update on proposed rule changes that affect the bioreactor development. James Derouin, an attorney with Steptoe and Johnson, discussed environmental compliance and his approach toward successful negotiating with regulators. Technical sessions covered volatile organic compound remediation; landfill gas production, measurement, and control; covers and liners; and special topics. A field trip to a pilot-test site for an aerobic bioreactor and an operational soil vapor extraction and air injection system followed the technical sessions. Copies of the proceedings are available.

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DRI Awards 2002 Guinn Environmental Fellowship

From an article originally appearing in DRI News, Summer 2002

Darren Meadows, a DRI graduate research assistant and Ph.D. candidate in hydrology at the University of Nevada, Reno, has

been awarded the 2002 Kenny C. Guinn Environmental Research Fellowship by the Desert Research Institute (DRI). Meadows will use his fellowship to study the role of desert pavements – the natural crust that forms on the surface – in desert ecology.

Meadows is interested in investigating the relationship between the condition of the pavement and the infiltration and distribution of water within the soil directly beneath the pavement. His winning research proposal noted that pavements, generally composed of a layer of closely packed gravel over a layer of silt, are suspected to be one of the most significant factors influencing arid land ecosystems.

The fellowship, in its second year, provides a one-year award of \$15,000, an office at DRI, and use of the Institute's computer and laboratory facilities. DRI established the fellowship in honor of Governor Guinn's efforts on behalf of higher education in Nevada.

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International Arid Lands Meetings in Tucson

From an article originally appearing in Arizona Water Resources, May-June 2002

The International Arid Lands Consortium (IALC) will be hosting a workshop and conference Oct. 20-25 in Tucson titled "Assessing Capabilities of Soils and Water Resources in Drylands: The Role of Information Retrieval and Dissemination Technologies." The conference will address the importance, role, and capabilities of soils and water resources in the planning and management of dryland regions, and electronic access to soil and water data. The workshop focus is the use of electronic resources available through World Wide Web sites, interactive decision-making tools, new Internet technologies, and other electronic means to assist in the planning and management of soils and water resources for development activities.

Visit ialcworld.org for more information, or contact Dr. Jim P.M. Chamie, IALC, at ialc@ag.arizona.edu or (520) 621-3024.

California Water Agencies Oppose Postponement of MTBE Ban

The Association of California Water Agencies (ACWA) announced its opposition to postpone the ban on MTBE and other oxygenates in California's gasoline from the end of 2002 to the end of 2003. In a letter to the California Air Resources Board, the ACWA stated, "MTBE continues to be discovered in drinking water in California, and delaying the ban by even one more day is another opportunity for MTBE to find its way into another community's drinking water supplies."

The letter pointed out the regulatory justification of the one-year delay – supply and pricing problems that oil companies may face – does not take into consideration the supply and pricing problems that water agencies may face if MTBE turns up in more drinking water supplies. Given that the reason for the ban

in the first place was to protect water supplies, ACWA reasoned, it doesn't make sense that the regulatory rationale not take water supply impacts into account.

Visit www.acwanet.com.

Arizona Water Map II Now Available



The University of Arizona's Water Resources Research Center (WRRC) published the first Arizona Water Map in 1994. Illustrating natural and man-made water bodies of all kinds, together with topography and water-related political subdivisions of the state, the attractive and informative map has proven popular in offices, classrooms, and libraries, with over 7,000 distributed.

The WRRC has recently revised the map, adding more graphics with less text. The Arizona Water Map II contains new color photos, charts and inset maps representing pertinent water issues, surrounding the state map. Information about the Colorado River, water uses, groundwater, annual precipitation, and conservation is provided, along with a time line showing important events in the water history of the state. And, like the original Arizona Water Map, it looks great on your wall.

The new Arizona Water Map is available for \$8 from WRRC. Visit www.ag.arizona.edu/azwater or call (520) 792-9591.

NGWA Announces Southwest FOCUS Conference

The National Ground Water Association (NGWA) announces an upcoming conference that will focus on issues critical to groundwater in the Southwest. The Southwest FOCUS Conference: Water Supply and Emerging Contaminants will be held Feb. 20-21, 2003 in Phoenix. The conference will cover a broad range of topics from water supply issues to irrigation. The emerging contaminant portion of the conference will focus on n-nitrosodimethylamine (NDMA), 1,4-dioxane, and perchlorates. The deadline to submit abstracts has passed, but keep your calendars open for this regionally-focused conference.

Visit www.ngwa.org/education/ for more information.

The advertisement features a dark blue background with white and light blue text. At the top, 'INTERA...' is written in a large, bold, sans-serif font. Below it, 'managing water resources' is written in a smaller, lowercase font. Further down, 'across the Southwest' is written in a bold, italicized font. A list of services is provided: 'Groundwater/surface water modeling', 'Conjunctive strategies for managing water resources', and 'Litigation support'. At the bottom, the 'INTERA' logo is displayed, consisting of the word 'INTERA' in a bold, blue font with wavy lines above and below it. Below the logo, contact information is provided: 'On the web at www.intera.com, or call: David Jordan, PE 505-246-1600 NM, Van Kelley, PG 512-425-2000 TX, Dr. Alaa Aly, PE 303-652-8899 CO'.

Wildfires, continued from page 7

BIA, U.S. Forest Service, and Tribal representatives, to evaluate the damage to the Tribal lands that comprised nearly 60 percent of the burned area. The U.S. Forest Service also organized a similar team to assess the impacts to non-tribal lands.

In the BIA's Interagency BAER team, section leaders were designated to focus on soil and watershed analyses, wildlife, vegetation, forestry, emergency response, and roads. Thus began nearly a month of 16-hour days and seven-day weeks spent assessing the damage and the potential hazards to life, property, water quality, and ecosystems in order to determine how best to alleviate emergency conditions.

Laurel Lacher, White Mountain Apache Tribe Hydrologist, led the soil and watershed analysis section. Her first job was to recruit and import experts to perform the various analyses from other agencies already stretched thin by wild fires all over the West. The immediate tasks of her section were to produce a burned severity map and to try to anticipate flood impacts to two tribal

communities downstream of the burned area.

The burned severity map, which shows areas of severe changes in soil and vegetative properties associated with fire, was prepared primarily from satellite imagery. It was used to identify areas of hydrophobic soils where runoff, erosion, and even slope failure may be severe. Post-burn runoff in the watersheds was modeled using HEC-1. The results of the modeling indicated that, for a 10-year, tropical-type storm that would cover the entire watershed, peak runoff may be two to five times the pre-burn, 100-year flood event. Sediment loads, which typically are one ton per acre per year in the area, may be as much as 40 tons per acre per year in severely burned areas.

Having calculated the magnitude of what could come, the soil and watershed team immediately began attempts to mitigate potential damage and to warn the public. With the assistance of the U.S. Geological Survey, three new stream gages were installed high in the watersheds to act as flood warning systems (see related article on page 28),

and seven new remote automated weather stations with satellite-telemetered data are on the way. Five million pounds of seed mix containing native grasses and cereal grains was ordered from any place it could be found, and aurally distributed over the entire area. If less than 80 percent ground cover is achieved in test plots, more seed will be distributed this winter.

An estimated 24,000 acres on the reservation are devoid of all vegetation and require mulching. Already, as the summer monsoons have begun, roads are washing out and access is becoming limited. Culverts will be removed so they don't become blocked with debris and force the streams to run down the roads. Sand bags, straw bales, and armored bank are being emplaced to minimize potential damage when the big floods come. Residents of the community are being educated about the potential dangers they could face this summer, perhaps this winter, or maybe not until next year. It will be a long, slow process of soil stabilization and forest regeneration, with high potential for more destruction to occur in the mean time.

Salton Sea, continued from page 8

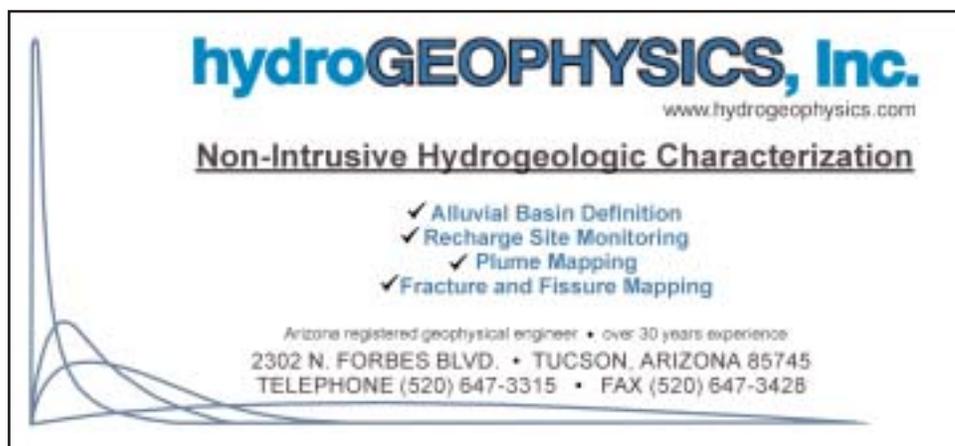
Diego transfer could result in a 200,000 af/y reduction in Salton Sea inflows.

Another smaller threat to Salton Sea inflows arises from two north-flowing rivers that originate in Mexico: the New River and the Alamo River. As human population, agriculture, and industry grow in Mexico's border region, the

demand to utilize these waters south of the border will grow, reducing their availability to the Salton Sea.

Salton Sea inflows are balanced by evaporative outflows. Decreasing inflows will result in the sea shrinking in size and becoming even more saline. Currently, the sea is 25 percent more saline than ocean water.

Several issues arise. In the near term, the Salton Sea serves as a major stopover along the Pacific flyway. Approximately 400 species of birds live at or visit the sea annually. With the decline in alternative wetlands in northern Mexico and Southern California, the sea has become a more important stopping point. But the sea's value as a bird sanctuary is in decline. The growing salinity combined with pesticides and other toxic inflows have caused rare diseases in some of the fish populations, with resulting bird die-offs as they eat the diseased fish. As the sea dries, these



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conditions will worsen. Long-term issues surround stabilizing exposed portions of the sea bed to avoid the mobilization by wind of noxious aerosols and particulate matter. There also are local concerns related to the recreation industry and land ownership near the sea.

Today, policy-makers and advocates share a broad vision of restoring the Salton Sea, which includes:

- Maintaining the sea as a repository for agricultural drainage.
- Provide a safe environment for birds and endangered species.
- Restoring recreational uses of the sea.
- Maintaining a viable sport fishery.
- Enhancing the sea to provide economic development.

Operationally, this amounts to stabilizing its elevation and reducing salinity in some parts of the sea to support healthy fish and bird populations. Projected costs range from hundreds of millions to over one billion dollars as planners grapple with the physical challenge of maintaining a large freshwater lake in the middle of one of the world's hottest deserts. As yet, no one has come forward with checkbook and pen in hand. The potential financial liability that IID could face as the Salton Sea dries up may be enough for it to pull out of its transfer deal.

Given the many alternative demands on the Colorado River and the projected costs of restoration, one must look with skepticism on the current restoration vision. But if the Salton Sea proves to be too important to lose, it may be the splash of water that wakes the western-U.S. Gulliver. Considering that California has twice the population (32.5 million vs. 14.6 million), annual economic output (\$1.3 trillion vs. \$0.5 trillion), and members of Congress (53 vs. 25) compared with all six other basin states combined, the importance of the upcoming Dec. 31 QSA deadline may evaporate as well.

The author expresses appreciation for research assistance by UCSC student Christopher J. Brown. Contact Brent Haddad at bhaddad@CATS.UCSC.EDU.



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