

DHS Bulletin



on March 13

FY11 - No. 2

October through December 2010

Publications and Presentations

Journal Articles

Chen, D., K. Acharya, M. Stone, 2010. Sensitivity analysis of non-equilibrium adaptation parameters for modeling mining-pit migration. *Journal of Hydraulic Engineering, ASCE*, 36(10):806-811.

Li, Y., Acharya, K., Chen, D., and Stone, M. (2010) Modeling water ages and thermal structure of Lake Mead under changing water levels. *Lake and Reservoir Management* 26(4):258-272.

Conference Abstracts/Presentations

Chief, K., M.H. Young, and D. Shafer. 2010. Low-Intensity, Fire-Induced Changes of Soil Structure, Physical and Hydraulic Properties. American Society of Agronomy-Crop Science Society of America- Soil Science Society of America International Annual Meeting. Long Beach, CA.

Eissa, M.A., Thomas, J.M., Dawoud, M.I., Pohll, G., Gomaa, M.A., Dahab, K.A. and R.L. Hershey, 2010. Groundwater resource sustainability in Wadi Watir, Gulf of Aqaba, Sinai, Egypt. 10th International Conference on Development of Drylands, Cairo, Egypt, December 12-15, 2010.

Naranjo, R.C, Niswonger, R.G., Stone, M., McKay, A., and C. Davis, 2010. Using Measurements of Heat and Pressure to Characterize Hyporheic Exchange through a Riffle-Pool Sequence in the Truckee River, NV. Presented at the American Geophysical Union Fall Meeting, San Francisco, CA. H32C-07

Thomas, J.M. and A. Lutz, 2010. Engaging students in water resources issues in developing countries. American Geophysical Union Fall Meeting, San Francisco, CA.

DHS Reports

Pohlmann, K. and M. Ye, 2010. Numerical Simulation of Inter-Basin Groundwater Flow Into Northern Yucca Flat, Nevada National Security Site. DHS Publication No. 45235.

New Projects

Open Burn Open Detonation Emissions Monitoring

PI: Dave Decker/Vic Etyemezian

Agency: Jacobs Technology

Amount: \$281,687

Summary: Measurement of air emissions resulting from open burn open detonation (OBOD). The measurements are to be completed at the Naval Air Weapons Station at China Lake, California. These measurements are intended to support the development of emission factors for inclusion in U.S. EPA's AP 42 Guidance document and related databases.

PIRE: International Collaboration for Education, Training, and Research in Ice Core Science (ICE-ICS)

PI: Joe McConnell

Agency: Oregon State University

Amount: \$123,211

Summary: The Desert Research Institute's (DRI) scope of work builds on the McConnell group's extensive experience designing and building continuous flow analysis systems and then applying these novel methods to ice cores for paleoclimate, atmospheric and precipitation chemistry, and other studies. As part of the scope, McConnell and his group will work closely with all ICETRICS partners, particularly the Brook group at Oregon State University and the Blunier group at the University of Copenhagen, to develop and test methods to couple new gas measurement instrumentation to DRI's continuous ice core analytical system and to apply these methods to analysis of ~300 m of ice core. Included in this collaboration are extended laboratory student and post-doctoral exchanges with international partners at the University of Copenhagen and group meetings both in the U.S. and abroad.

Magazine/Test Bay Network O & M

PI: Dave Decker

Agency: Jacobs Technology

Amount: \$332,487

Summary: The Desert Research Institute (DRI) will maintain the environmental instrumentation packages in eight ordnance magazines and test bays that it installed in GFY 2010. In GFY 2011 DRI will operate and maintain the data server, database and web interface that it assembled in GFY 2010 to provide data access to NAWCWD personnel. A new alarm and notification capability will be developed and integrated with the existing monitoring network. This capability will alleviate a number of user-feedback points raised in the first three months of operation using the Campbell Scientific datalogger technology.

Wetlands Up-Scale Selenium Cycle

PI: Kumud Acharya
Agency: Southern Nevada Water Authority
Amount: \$74,832
Summary: There are several wetlands in the Las Vegas Valley, some naturally formed and some constructed in various landscape positions with a variety of hydrologic, vegetation and soil conditions. Erosion control structures constructed in recent years have created more acreage of wetlands in the Las Vegas Wash, which now offer extended habitat for aquatic life. Previous studies show that the Las Vegas Wash and its tributaries also contain elevated levels of selenium and other metalloids. With the increasing wetland area, there is a growing concern over bioaccumulation of these trace metals and pollutants. The Southern Nevada Water Authority (SNWA) has been regularly monitoring the waters in the Las Vegas Wash, its tributaries and surrounding wetlands and has established a baseline dataset for selenium concentrations. The basic task of this work is aimed at understanding the selenium distribution in the Las Vegas Wash and its tributaries by developing a process-based mathematical model of selenium fate and transport. The model will be based on a system wide mass-balance calculation which will incorporate chemical, biological and physical processes.

Expertise in Support of Administrative Hears on SNWA Water-Right Applications in Spring, Cave, Dry Lake, and Delamar Valleys

PI: Jim Thomas
Agency: Southern Nevada Water Authority
Amount: \$95,000
Summary: As requested by the Authority, provide technical expertise in support of administrative hearings on Authority water-right applications in Spring, Cave, Dry Lake, and Delamar valleys by characterizing groundwater chemistry and developing stable-isotope mass-balance models to evaluate groundwater budgets and inter-basin flow.

Gaze-Directed Interaction in CAVEs

PI: Daniel Coming
Agency: Eye-Com Corporation
Amount: \$100,403
Summary: Eye-ComTM Corporation's eye-tracking equipment has many potential uses in immersive displays such as CAVEs. Once integrated, they could be used together for enhancing training, psychological experiments, and user interfaces. So as a first step in that direction, we propose a two-phase plan: integration and evaluation in Phase 1 and then application in Phase 2. Following completion of each phase, demonstrations of progress in a CAVE will be provided.

Final Design and Restoration of Area A of Middle Rosewood Creek

PI: Rick Susfalk
Agency: Nevada Tahoe Conservation District
Amount: \$150,580
Summary: Complete the restoration design of a linear 2,200 foot section of middle Rosewood Creek (RWC) known as Area A, obtain all necessary permits, construct and revegetate the project area, and monitor water quality for five years. The primary objective is to construct a new channel the entire length of the project area that is well connected to the surrounding floodplain to prevent the massive erosion experienced with the current channel alignment and simultaneously improve the water quality by spreading high flows over the floodplain and allowing sediment from upstream to drop out of suspension. A secondary objective is to enhance restore forest health of the SEZ and improve fish habitat.

Phoenix Copper Leach Closure Data Collection

PI: Bill Albright
Agency: Newmont USA Limited - AKA Newmont Mining Co.
Amount: \$10,640
Summary: The goal of this program is to ensure Newmont has collected the appropriate level of information to successfully close the proposed Phoenix Copper Leach Facility.

Surface Flow Study, Edwards Air Force Base, CA

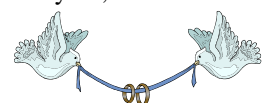
PI: Julie Miller
Agency: North State Resources - DoD
Amount: \$16,778
Summary: As requested by NSR, DRI shall review the work performed by NSR under the Surface Flow Study, Edwards Air Force Base, California, Task 4 - Stream Delineation. To accomplish Task 4, NSR will use Geographic Information System (GIS) support to delineate valley channels to Rosamond, Buckhorn, and Rogers dry lakebeds, Piute Ponds and other areas as needed, delineate flood control diversions, develop topographic data from LiDAR data, and provide general GIS support for the project as needed. In addition, DRI shall perform review of other NSR work products and attend meetings as requested by NSR and mutually agreed to by DRI and NSR.

DHS Announcements

- Karletta Chief was named the 2010 American Indian Science and Engineering Society's "Most Promising Engineer/Scientist of the Year."



- Karla Cosens and Todd Mihevc were married on January 17, 2011. Congratulations!



New Hires (Oct 2010 - Dec 2010)

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| <ul style="list-style-type: none"> ■ Eleeja Shrestha – Hourly Technical (Li Chen) ■ Ben Conrad – Postdoctoral Fellow (Kumud Acharya) ■ Suzanne Hudson – Program Specialist (Amy Russell) ■ Janine Winnemucca – Hourly Technical (Karletta Chief) ■ Eduardo Robleto-Martinez – Hourly Technical (Kumud Acharya) ■ Jordan Naviaux – Graduate Research Assistant (Ron Hershey) ■ Rongrong Zhang – Hourly Technical (Julian Zhu) | <ul style="list-style-type: none"> ■ Calista Tsinnijinnie – Hourly Technical (Karletta Chief) ■ Christopher Glover – Hourly Technical (Roger Jacobson) ■ Richard Hendricks – Hourly Technical (Roger Jacobson) ■ Nathan Chellman – Hourly Technical (Joe McConnell) ■ Karen Lefebre – Hourly Technical (Ron Hershey) ■ Nicholas Baker – Hourly Technical (Roger Jacobson) ■ Xiaobing Chen – Hourly Technical (Li Chen) |
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Proposals (submitted this quarter - Oct through Dec)

| Date | PI(s), CO-PI(s) | Sponsor | Title | Funding (\$) |
|-----------|---|--|--|--------------|
| 20-OCT-10 | Thomas, Jim | US Agency for International Development | Groundwater Management near Contamination Sources using Evolutionary Computational Algorithms | 124,630 |
| 22-OCT-10 | Huntington, Justin | DOI - National Park Service | Estimating Actual Historical Consumptive Use for Irrigated Areas of the Death Valley Regional Flow System | 184,002 |
| 28-OCT-10 | Acharya, Kumud (PI) Chief, Karletta | Environmental Protection Agency | Developing a tool and method for heavy metal removal using constructed wetlands | 199,693 |
| 28-OCT-10 | Chen, Li | USDA - Forest Service | Assessing fine sediment reduction in Stream Environmental Zones of Upper Truckee River | 148,546 |
| 28-OCT-10 | Chen, Dong (PI) Susfalk, Rick | USDA - Forest Service | Evaluating ultrafine sediment loads and phosphorus concentrations in Lake Tahoe tributaries | 128,704 |
| 04-NOV-10 | Susfalk, Rick | State of NV Div State Lands-Dept Conserv & Nat Resources | Lower Rosewood Creek Restoration Monitoring (2011-2013) | 39,159 |
| 05-NOV-10 | Reeves, Matt | Nye County, Nevada | Pahrump Groundwater Flow Model | 139,722 |
| 03-DEC-10 | Lutz, Alexandra | National Science Foundation EPSCoR | Mountain-to-Valley Ecohydrology at Multiple Spatial and Temporal Scales | 16,520 |
| 07-DEC-10 | Zhang, Yong | National Science Foundation | Coupling chemical reactions with non-Fickian transport: A combined study of laboratory experiments and stochastic analysis | 354,331 |
| 07-DEC-10 | Zhu, Jianting (PI) Young, Michael Chief, Karletta | National Science Foundation | Effective Hydraulic Properties of Layered Soils for Infiltration and Redistribution: Numerical and Field Lysimeter Studies | 261,318 |
| 07-DEC-10 | Warwick, John | DOI - US Geological Survey | Quantifying the Impact of Hyporheic Exchange on In-Stream Water Quality in the Truckee River, NV | 46,506 |
| 07-DEC-10 | Schumer, Rina | DOI - US Geological Survey | Effects of regional climate change on snowpack in northern Nevada: Research and education | 62,140 |