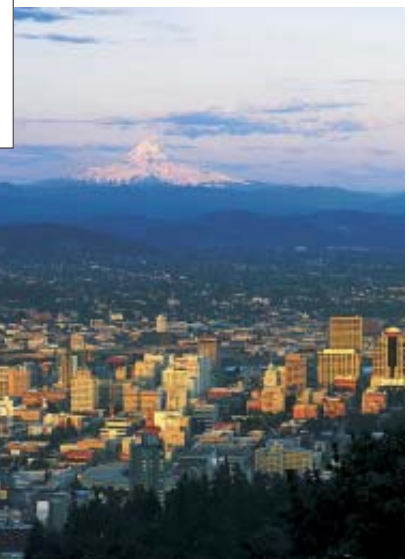
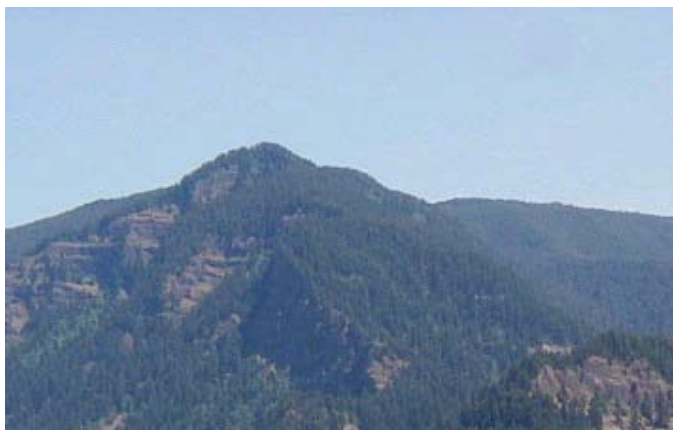


Allocating Water: Economics and the Environment

(Preliminary Program & Registration)

July 20-22, 2004

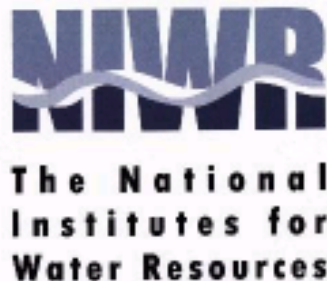
Portland, OR



SPONSORS



Universities
Council
On
Water
Resources



The National
Institutes for
Water Resources

Allocating Water: Economics and the

	MONDAY (July 19)	TUESDAY (July 20)
		REGISTRATION 8:00AM-5:00PM LOWER LEVEL, MAIN LOBBY
8:30-10:00 AM	<u>Afternoon Activities</u> Field Trip Tualatin 12:30-5:30 PM	Plenary Session I: Welcome -Mac McKee -James Moncur -Gary Johnson Keynote -John Keys
10:00-10:30 AM	REGISTRATION 3:00-6:00 PM LOWER LEVEL, MAIN LOBBY	BREAK
10:30AM-12:00 PM	UCOWR BOARD MEETING 2:00-6:00 PM EUGENE ROOM	Concurrent Technical Sessions Session 2 Session 3 Session 4 Session 5 Session 6
12:00PM-1:30 PM		UCOWR COMMITTEE MEETINGS
1:30PM-3:00 PM	<div style="border: 1px solid black; padding: 5px;"> <p>UCOWR Committee Meetings Tuesday July 20 12:00-1:30 p.m. All UCOWR delegates welcome.</p> <ul style="list-style-type: none"> * Education and Public Service * International Programs * Policy, Legislation and Administration * Research </div>	Concurrent Technical Sessions Session 7 Session 8 Session 9 Session 10 Session 11
3:00PM-3:30 PM		BREAK
3:30PM-5:00 PM		Concurrent Technical Sessions Session 12 Session 13 Session 14 Session 15 Session 16
EVENING ACTIVITIES		<u>Combined Event</u> -Welcome Reception -Technical Poster Session -Student Poster Competition (5:30-7:30 PM)

Environment Conference at a Glance

WEDNESDAY (July 21) REGISTRATION 8:00AM-4:00PM LOWER LEVEL, MAIN LOBBY	THURSDAY (July 22) REGISTRATION 8:00AM-2:00PM LOWER LEVEL, MAIN LOBBY	CONFERENCE NOTES
Plenary Session II: Northwestern Approaches to Changing Water Allocation -Paul Cleary -Joe Stohr -Karl Dreher	Concurrent Technical Sessions Session 30 Session 31 Session 32 Session 33	
BREAK	BREAK	
Concurrent Technical Sessions Session 19 Session 20 Session 21 Session 22 Session 23	Plenary Session IV: NGO Approaches to Balancing Economics and the Environment -Gail Achterman -Ruth Mathews -Norman Whittlesey Closing Remarks -Karl Wood -Jim Moncur	
LUNCH ON YOUR OWN		
Plenary Session III: Evolving Economic Approaches -Robert Young -Charles Howe	UCOWR Board Meeting 12:00-2:00 PM Committee Chairs Invited Lunch Provided	
BREAK		
Concurrent Technical Sessions Session 25 Session 26 Session 27 Session 28 Session 29		
UCOWR Banquet and Awards Ceremony (7-9 PM) Warren A. Hall Medal Dissertation Awards Friends of UCOWR Award Ed. & Pub. Service Award		

Welcome

Welcome to the 2004 UCOWR Annual Conference on “Allocating Water: Economics and the Environment.” In all parts of the United States—and, indeed, around the world—it is becoming more and more difficult to manage scarce water resources to achieve an ever growing list of competing objectives and satisfy increasingly diverse sets of stakeholder groups.

This conference will bring together academics, representatives of federal and state agencies, water managers, and other professionals to discuss approaches and policies for allocating water. Interesting and innovative case studies, analyses of current water allocation problems in several U.S. river basins, and proposed new techniques will be presented. These discussions will yield valuable materials for consideration in water resources research, education, legislation and policy.

Please join us for this interesting and significant meeting in Portland, Oregon.



Mac McKee
President, Universities Council on Water Resources
Professor, Civil and Environmental Engineering
Director, Utah Water Research Laboratory, Utah State University



The **UNIVERSITIES COUNCIL ON WATER RESOURCES (UCOWR)** is an organization of U.S. universities and international affiliates actively engaged in water resources education, research, and public service. UCOWR institutional members and delegates are leaders in water resources related research and education and represent virtually all fields of science. In addition to our annual national conference, UCOWR publishes the journal *The Journal of Contemporary Water Research and Education*. If you would like to join UCOWR, please visit our website at: www.ucowr.siu.edu or call 618-536-7571.



The **NATIONAL INSTITUTES FOR WATER RESOURCES (NIWR)** is a network of research institutes in each state that, in collaboration with the USGS, is responsible for implementing the Federal Water Resources Research Act. They conduct basic and applied research to solve water problems unique to their area. The bulk of Institute funding comes from non-federal sources. They have established themselves as a primary link between water-related personnel in the academic community; local, state, and federal government; and the private sector.

Keynote Speakers

PLENARY SESSION I



JOHN KEYS

Mr. Keys, P.E., heads the U.S. Bureau of Reclamation and is responsible for its water storage, distribution, and power generation facilities. The Bureau is the nation's largest wholesaler of water, providing one-fifth of western farmers with irrigation water for 10 million acres of farmland that produces 60% of the nation's vegetables and 25% of its fruit and nuts. He is committed to developing creative solutions to meet current and future water resources challenges facing the West and was awarded the Department of Interior's highest honor for maintaining open lines of communication and keeping interest groups focused on solutions.

PLENARY SESSION II



PAUL R. CLEARY

Paul R. Cleary is the Director of the Oregon Water Resources Department. He is responsible for the statewide administration of surface and ground water rights and for promoting wise long-term water management while addressing Oregon's water supply and streamflow restoration needs. He has over 25 years of experience in state natural resource management, policy development, and program administration. Mr. Cleary has previously served as: Director of the Oregon Division of State Lands; Deputy Director of the Wyoming State Land and Farm Loan Office; and as a natural resource advisor in the Wyoming Governor's Office. He began his professional career at the University of Wyoming's Water Resources Research Institute. He is a member of the Western States Water Council. He earned his M.S. in Water Resources in 1978 from the University of Wyoming where he was Phi Kappa Phi, and B.S. in Biology in 1975 from Trinity College in Hartford, Connecticut.



JOE STOHR

Joe Stohr has been with the Washington Department of Ecology for over 18 years. Since March 2001, he has served as program manager for the Water Resources Program. He received the Governor's Distinguished Manager Award in 2003 for improvements to water rights processing. Mr. Stohr's first five years with Ecology were spent in the Nuclear Waste Program as a program specialist and section supervisor where he received an Outstanding Achievement, Program Service, and two Special Recognition Awards. In 1997, Mr. Stohr accepted the section supervisor position to the Water Resource's Operations Support Section where he led a working team associated with reorganization of the Water Resource and Shorelands Programs. Prior to coming to Water Resources, Mr. Stohr spent the previous three and one-half years as the Program Manager for the Spill Prevention, Preparedness, and Response Program. Prior to working for the Department of Ecology, Mr. Stohr worked for the Washington Department of Social and Health Services for 4 years as a Unit Manager Health Physicist.



KARL J. DREHER

Mr. Dreher has 30 years of experience in developing and managing water resources covering a broad spectrum of disciplines including interstate negotiations, developing legislation, water rights administration, water law, water policy, water treatment, environmental issues, planning, program/project management, construction management, personnel management, contract negotiations, hydraulic analysis and design, structural analysis and design, and permitting for projects. Mr. Dreher has been involved with water resource projects in various countries throughout the world and has served as a consultant to a number of public as well as private organizations involved in the development and management of water resources. Mr. Dreher is a licensed professional engineer and is completing his second term as the Director of the Idaho Department of Water Resources. Mr. Dreher is also the current chairman of the Western States Water Council, which is an adjunct of the Western Governor's Association established to work on water policy and legislative issues.

Keynote Speakers

PLENARY SESSION III



2004

WARREN A. HALL
AWARD WINNER

ROBERT YOUNG

Robert A. Young is a resource and agricultural policy economist with over 40 years of applied research, teaching and consulting experience. He received degrees in Agriculture (1954) and Agricultural Economics (1958) from the University of California (Davis) and an Agricultural Economics doctorate from Michigan State University (1963). Young was on the faculty at the University of Arizona and then for two years was a visiting staff member at the nonprofit research organization Resources for the Future, Inc. in Washington, DC. Since his retirement in 1992 after 22 years as a full-time Colorado State University Agricultural Economics faculty member, Young has carried on his university research and outside consulting activities. He continues to focus on: methods for economic evaluation of proposed public policies for investments in, and allocation of, water supplies and water quality improvements; concepts and methods for valuation of nonmarketed water-related goods and services; and developing interdisciplinary approaches to modeling of water policy issues. He is the author or co-author of numerous articles, monographs, reports and conference papers.



2003

WARREN A. HALL
AWARD WINNER

CHARLES (CHUCK) HOWE

Chuck Howe is Professor Emeritus of Economics and a member of the professional staff of the Environment and Behavior Program, Institute of Behavioral Science, University of Colorado-Boulder –a program he directed for 12 years. He has served as consultant to international agencies and numerous countries. He is a Fellow of the American Geophysical Union and recipient of the American Water Resources Association Icko Iben Award and the Warren A. Hall Medal from the Universities Council on Water Resources. His most recent article is “Water Transfers and Their Impacts: Lessons from Three Colorado Water Markets,” *Journal of the American Water Resources Association* (forthcoming).

PLENARY SESSION IV



GAIL ACHTERMAN

Gail Achterman is the Director of the Institute for Natural Resources at Oregon State University. The Institute is a center for research, information access and policy analysis created by the Oregon Legislature in 2001. She received her J.D. and an M.S. in resource policy from the University of Michigan. Her natural resource experience in private law practice, state and federal government, well suits her for work across political, economic, social, and environmental interests.



RUTH MATHEWS

Ruth Mathews is the manager of Freshwater Conservation Programs for the Washington Chapter of The Nature Conservancy. During her seven years with The Nature Conservancy she has been working collaboratively with water managers, scientists, water users and other conservationists to protect and restore river flows. She co-authored a paper published in the journal *Ecological Applications* titled “Ecologically Sustainable Water Management: Managing River Flows for Ecological Integrity.” Ms. Mathews has lived in the Pacific Northwest since 2001.



NORMAN K. WHITTLESEY

Norman K. Whittlesey is Professor (Emeritus) of Agricultural Economics at Washington State University, where he has been since 1964. While at WSU he was involved in research and teaching related to production agriculture, irrigation development, water policy and environmental economics. In 1987, he won the prestigious Award For Professional Excellence from the American Agricultural Economics Association for work in water policy. In 1998, he was honored as a Fellow of the American Agricultural Economics Association.

Conference Location & Hotel

RESERVATIONS

To make reservations, call **1-800-546-9513** and ask for the **Universities Council on Water Resources 2004 Annual Conference rate**. If you prefer to make reservations through www.marriott.com, use the rate code **ucwucwa**. The rate for attendees is \$115 plus tax per room per night for single, double, triple, or quad accommodations. Please make your arrangements as early as possible to guarantee conference rates. Regular rates will go into effect when UCOWR's block of rooms is filled or on **June 25, 2004**, whichever happens first.

ACCOMMODATIONS

- All guest rooms feature individual climate control, two telephones with voice mail, data ports, high-speed Internet access and unlimited long-distance for \$9.95/day, complimentary cable television with in-room pay movies, coffeemaker, hair dryer, iron, and ironing board.

GUEST SERVICES

- Concierge, valet service, concierge lounge, safe-deposit boxes, business center, gift shop, shoeshine

RECREATION

- Heated indoor swimming pool, health club with exercise room, whirlpool, and sauna
- Jogging trail, golf, tennis, hiking, snowskiing, fishing, boating, and waterskiing nearby



The Marriott icon to the left marks the location of the conference hotel on the maps on the next page.



Portland Marriott Downtown
1401 SW Naito Parkway
Portland, Oregon 97201
Phone: (503) 226-7600
Fax: (503) 221-1789
www.portlandmarriott.com

Driving Directions

From the North (Seattle): Stay on I-5 South. Take the OMSI/Oregon City exit; remain in the right lane. Exit onto the Morrison Bridge; remain in the right lane. Take the ramp to Naito Parkway, which makes a sharp loop to the right, going back under the bridge. Head south on Naito Parkway, the hotel is located 8 blocks on the right.

From the South (Salem): Take I-5 North and as you approach closer to Portland remain in the extreme left lane. Take the Naito Parkway exit, which approaches rapidly. When you get to the

stoplight, cross Naito Parkway onto Clay Street. Remain on Clay and make a right on 2nd Avenue. Make a right on Columbia Street and follow it down to Naito Parkway. The driveway of the hotel is the second entrance on your right.

From the East (Portland International Airport): Follow the signs to I-205 South/Salem. Take the exit I-84 West to Portland. Remain in the left lane and follow signs to OMSI/City Center. On the overpass, switch to the right lane and take the City Center exit that goes onto the Morrison Bridge. On the bridge, remain in the right lane and take

the Naito Parkway exit, which makes a sharp loop to the right, going back under the bridge. Head south on Naito Parkway, the hotel is located 8 blocks on the right.

From the West (Oregon Coast): From Highway 26/Sunset Highway, take the Market Street exit (just through the tunnel). This will take you to 4th Avenue. Follow 4th Avenue to Columbia Street. Make a right on Columbia and follow it to Naito Parkway. Make a right on Naito Parkway and the driveway of the hotel is the second entrance on the right.

Shuttle Service

Shuttles are easily accessible at the Portland International Airport. From the baggage claim area, go out the glass doors. Look forward (across traffic lanes) and to the left for a small hut outside of which will be a menu of transportation modes and charges. The attendee can arrange for a "shuttle" to take you directly to the hotel for \$12 cash (per person), or the attendee can arrange other choices from the menu. As there are two Marriotts in downtown Portland, make sure the driver knows to go to the one located at 1401 SW Naito Parkway.

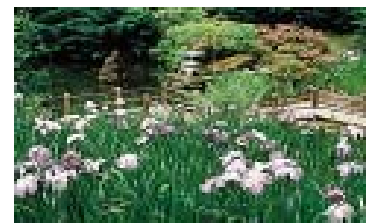
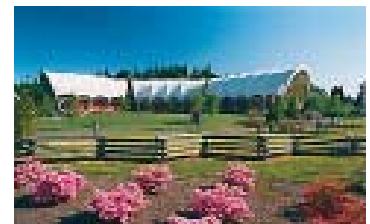
Commercial shuttles from the Marriott to the Airport can be arranged through the front desk. The charge is \$15 cash. If you have an early flight, this is best done the previous day.

For more information on ground transportation around Portland, you can visit the following website:

http://www.portlandairportpdx.com/web_pop/grndtran.HTM.

Portland Area Attractions

- Visit North America's most fascinating and diverse gardens
- Try out China Town
- Explore Oregon's fantastic beaches and seaside communities
- Cruise down the Columbia and Willamette Rivers on a sternwheeler or jet boat
- Experience wind surfing and kite boarding on the Columbia River
- Sample the nation's largest variety of microbrews
- Tour downtown by riding free of charge on streetcars, buses, and light rail
- Try the year-round skiing at Mt. Hood
- Go crabbing on the Lower Columbia
- Land the most powerful fish you will ever catch--a lunker sturgeon on the Columbia
- Visit the downtown art gallery and museum
- Check out the many nearby wineries
- Visit the Columbia Maritime Museum in Astoria
- Don't forget Mt. St. Helens is unforgettable
- Investigate the Oregon Museum of Science and Industry



Need more information? The Portland Oregon Visitors Association can help: <http://www.pova.com/visitors/>

On the facing page, there are maps of Portland and surrounding area. The numbers on those maps correspond to the following attractions:

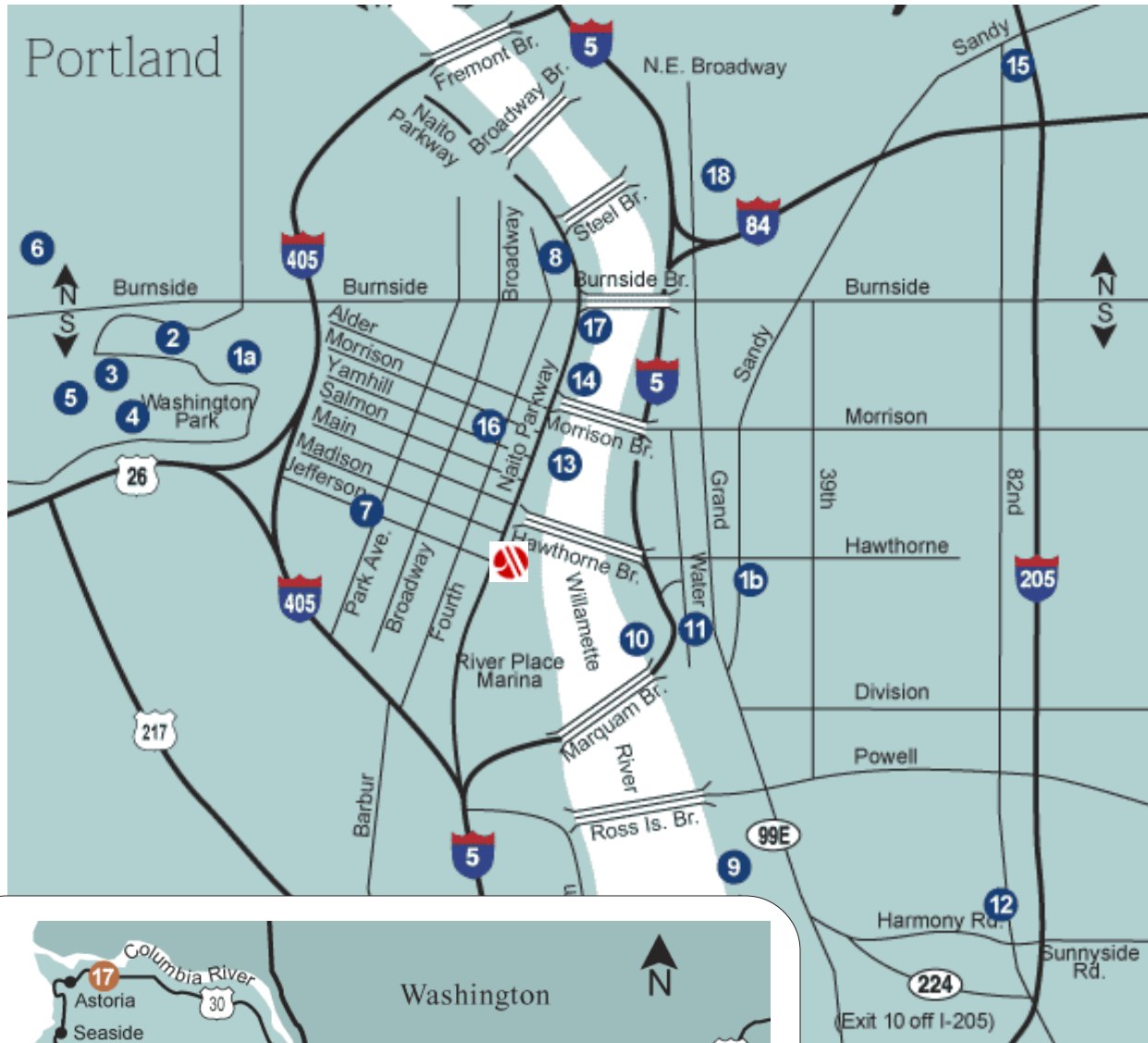
Upper Map

Lower Map

1. Port. Rose Gardens
2. Japanese Garden
3. Forest Discovery Ctr.
4. Oregon Zoo
5. Children's Museum
6. Pittock Mansion
7. Port. Art Museum
8. Class. Chinese Gard.
9. Oaks Amuse. Park
10. Willamette Jet Boats
11. OMSI
12. Clackamas Town Ctr.
13. The Portland Spirit
14. Sternwheeler
15. The Grotto
16. Pioneer Place
17. Port. Saturday Mkt.
18. Lloyd Ctr.
19. Jantzen Beach Ctr.
- 20.
- 21.
- 22.

- Vancouver Nat. Hist. Res.
- Columbia Gorge Interp. Ctr.
- Columbia Gorge Outlets
- Mt. Hood Railroad
- Columbia Gorge Disc. Ctr.
- Mt. Hood Ski Bowl
- Evergreen Aviation Museum
- End of OR Trail
- Woodburn Co. Stores
- The OR Garden
- Wilsonville Family Fun Ctr.
- The Enchanted Forest
- Pumpkin Ridge Golf Club
- Reserve Vineyard & Golf Club
- Willamette Shore Trolley
- Wildlife Safari
- Colum. River Maritime Mus.
- Tillamook Cheese Visitor Ctr.
- Blue Heron Cheese Co.
- Factory Stores @ Lincoln City
- OR Coast Aquarium
- OR's Mt. Hood Territory

Portland Maps



For driving directions from the conference hotel to destinations in and around Portland, enter the address that you would like to visit at the Marriott driving directions website below:

<http://marriott.com/property/drivingDirections.mi?marshaCode=PDXOR>

Technical Program

Tuesday, July 20, 2004

PLENARY SESSION I

8:30am – 10:00 am

Welcome, Introductions, and Conference Keynote

Mac McKee, UCOWR President, Utah State University

James E.T. Moncur, NIWR President, University of Hawaii

Gary Johnson, Host, University of Idaho

Water Resources Management in the 21st Century

John Keys, Commissioner, U.S. Bureau of Reclamation

CONCURRENT SESSIONS

10:30am – 12:00 pm

Session 2: Impacts, Risks, Prices and Irrigation

Implications of Incorporating Risk into the Analysis of an Irrigation District's Capital Renovation; Texas Lower Rio Grande Valley. *Michael E. Popp*, Allen W. Sturdivant, M. Edward Rister, Ronald D. Lacewell, and John R. C. Robinson, Texas A&M University, College Station, TX

Estimating a Price for Water Rights in the Umpqua Basin, Oregon. *Van Butsic* and Noelwah R. Netusil, Reed College, Portland, OR

Aspects of the Economic Impact on Irrigated Agriculture in the Juarez Valley Due to Salinity and as a Result of the Water Distribution between Mexico and United States in 1906. *Jorge A. Salas* Plata M, Universidad Autonoma de Ciudad Juarez

Substitutions Between Water and Other Agricultural Inputs - A Modeling Analysis. *Ximing Cai*, University of Illinois, Urbana-Champaign, IL

Session 3: Sustainability of semi-Arid Hydrology and Riparian Areas (SAHRA)

Multi-Resolution Integrated Modeling for Basin-Scale Water Resources Management and Policy Analysis. *Hoshin V. Gupta* and Thorsten Wagener, The University of Arizona, Tucson AZ; David S. Brookshire, University of New Mexico, Albuquerque, NM; Everett Springer, Los Alamos National Laboratories, NM

Options and Consequences: Water Banking/Leasing Explored for the Rio Grande in Southern New Mexico. *Vincent Tidwell*, James Krumhansl, Len Malczynski, Orman Paananen and Howard Passell, Sandia National Laboratories, Albuquerque, NM; David Brookshire, Janie Chermak, Kristan Cockerill, Kristine Grimsrud and Paul Matthews, University of New Mexico, Albuquerque, NM; Enrique Vivoni, New Mexico Institute of Mining and Technology, Socorro, NM

Induced Infiltration of Water from the Rio Grande Alluvium to the Hueco Bolson Aquifer: An Isotopic and Numerical Analysis. *Barry Hibbs*, California State University, Los Angeles, CA; Chris Eastoe, University of Arizona; Bill Hutchison and Scott Reinert, El Paso Water Utilities; Alfredo Granados, University of Ciudad Juarez, Mexico

A Decision Support System for Demand Management of the Rio Conchos Basin, Mexico. *Steve Stewart*, Juan Valdes and Jesus Gastelum, University of Arizona, Tucson, AZ; David Brookshire, University of New Mexico, Albuquerque, NM; Javier Aparicio, Jorge Hidalgo and Israel Velazco, Instituto Mexicano de Tecnologia del Agua, Morelos, Mexico

SAHRA Integrated Modeling Approach to Address Water Resources Management in Semi-Arid River Basins. Everett P. Springer, Los Alamos National Laboratory, Los Alamos, NM; Hoshin V. Gupta and Yuqiong Liu, The University of Arizona, Tucson, AZ; *David S. Brookshire*, University of New Mexico, Albuquerque, NM

Session 4: Balancing the Economic and Environmental Demands on Oregon's Water Resources: Real Life Success Stories

The Recycling of Oregon's Water. *Kent Madison*, Madison Ranches, Oregon

The Walla Walla Way. *Ron Brown*, Walla Walla River Irrigation District and Earl Brown and Sons Orchardists, Milton-Freewater, Oregon

Learning Together: Developing a Cooperative Water Policy Framework for the Deschutes Basin. *Patrick Griffiths*, Water Program Specialist, City of Bend, Oregon

Food Processing Water Re-Use. *Mark Steele*, Corporate Engineer, Norpac Foods, Inc., Stayton, Oregon

Session 5: Assessing Climate Change Vulnerability, Impacts and Adaptation

Climate Change and Adaptation in Irrigated Agriculture—A Case Study of the Yakima River. *Michael J. Scott* and Lance W. Vail, Battelle Pacific Northwest Division, Richland, WA; Claudio Stockle and Armen Kemanian, Washington State University, Pullman, WA
Vulnerability of Borderland Water Resources: Developing Indicators for Selected Watersheds on the U.S. Mexico Border—The Paso del Norte Region. *Christopher Brown*, Janet Greenlee, Marguerite Hendrie and Brian Hurd, New Mexico State University, Las Cruces, NM; Alfredo Granados, La Universidad Autonoma de Ciudad, Juarez, Mexico
Potential Impacts of Global Warming on Water Resources: Lessons from the Upper Rio Grande Basin. *Ed Hamlyn* and Charles D. Turner, University of Texas, El Paso, TX

Session 6: Solving Water Conflicts through Cooperation

40 Years of Change: The Western States Water Council. *Anthony Willardson*, Western States Water Council, Midvale, UT
Packaging Policies as a Vehicle for Reforming the Water Sector: The Case of the Californian Drought and the Central Valley Project Improvement Act. *Itay Fischhendler* and David Zilberman, University of California, Berkeley, CA
Creeks and Communities: Accelerating Cooperative Riparian Restoration and Management. *Laura Van Riper*, National Riparian Service Team, Pineville, OR
Environmental Clearinghouse as an Institutional Incentive for Data and Information Sharing and Conflict Reduction in the Mekong River Basin. *Godwin Uche Aliagha* and Goh Kim Chuan, Nanyang Technological University, Singapore

CONCURRENT SESSIONS

1:30 pm – 3:00 pm

Session 7: Water Rights Markets, Prices and Limitations

Water Rights Trading—Water Allocation Solution or Exploitation? *Jeff Barry*, Groundwater Solutions, Inc., Portland, OR
Market Prices for Water in the Semi-Arid West. *David S. Brookshire*, Mary Ewers and Philip Ganderton, University of New Mexico, Albuquerque, NM; Bonnie Colby University of Arizona, Tucson, AZ
Water Market Futures for Rio Grande Water in El Paso County Texas. *Charles D. Turner* and Abhijeet Jahagirdar, University of Texas, El Paso, TX
The Anatomy of Hydrologic Externalities: Limitations to Water Markets. *Zena Cook*, Idaho Department of Water Resources, Boise, ID; R.D. Schmidt, US Department of Interior, Bureau of Reclamation, Boise, ID; Joel Hamilton and R.G. Taylor, University of Idaho, Moscow, ID

Session 8: Legal Issues of Water Allocation

Restricting the Place of Use in Water Marketing – Sound Policy or Unjustified Economic Protectionism. *Olen Paul Matthews*, University of New Mexico, Albuquerque, NM
Quid Pro Quo: To What Extent Can States Implement Efficiency Standards on Individual Water Rights Under the Prior Appropriation Doctrine? *Michael Pease*, Southern Illinois University, Carbondale, IL
Water Wars, Eastern Style: Divvying Up the Apalachicola-Chattahoochee-Flint River Basin. *J.B. Ruhl*, Florida State University, Tallahassee, FL

Session 9: Balancing Water Allocation Among Listed Species

The Role of Science in Balancing the Needs of Protected Species: A History Lesson. *Michael Thabault*, US Fish and Wildlife Service, Washington, DC
Policy Implications: A Delicate Balance. *Judi Danielson*, Chair and Idaho Council Member, Northwest Power and Conservation Council, Boise, ID
Grand Coulee Dam: A Microcosm of Decision-Making. *Craig Sprankle*, Bureau of Reclamation, Grand Coulee, WA
Western Water Law and the ESA. *Martha O. Pagel*, Schwabe Williamson & Wyatt, P.C., Former Director, Oregon Water Resources Department, Salem, OR
Tribal Perspectives of the Upper Columbia United Tribes. *Mary Verner*, Upper Columbia United Tribes, Spokane, WA

Session 10: University, Agency and NGO Partnerships

Predicting the Ecological Outputs of Increased Base Flows in Ephemeral Texas Streams: Policy Implications for Agencies.

Rebecca S. Griffith, US Army Corps of Engineers, Forth Worth, TX

Predicting the Ecological Response to Increased Base Flows in Ephemeral Texas Streams: Results from Field Investigations.

Neal R. Wilkins, Kirk O. Winemiller and Ronald D. Lacewell, Texas A&M University, College Station, TX; *Rebecca S. Griffith*, US Army Corps of Engineers, Forth Worth, TX

Finding Solutions with Competing Uses in Agriculture and Natural Resources: Report from the Texas Water Summit. A. Gene

Nelson, Ric Jensen and Allan Jones, Texas A&M University, College Station, TX

Creating Partnerships and “New” Water in the Walla Walla Watershed. Chris Hyland, Corps of Engineers, Walla Walla, WA; Gary James, Confederated Tribes of the Umatilla Indian Reservation

Session 11: Methods for Valuing and Balancing Ecosystems and Water Use

The Value of Ecosystem Services in Portland, Oregon. Dan Heagerty, Kevin O’Hara and Gillian Ockner, David Evans and Associates,

Portland, OR; Ed Whitelaw, University of Oregon and ECONorthwest, Eugene, OR; Ed MacMullan, ECONorthwest, Portland, OR; Jim Middaugh, City of Portland, Portland, OR

Pecos River DSS System: Application for Adjudication Settlement and River Operations EIS. Jim McCord and John C. Carron,

Hydrosphere Resource Consultants, Inc., Socorro, NM; Beiling Liu and Sharon Rhoton, Socorro, NM Interstate Stream Commission, Santa Fe, NM; Miguel Rocha, US Bureau of Reclamation, Albuquerque, NM; Tomas Stockton, Tetra Tech, Albuquerque, NM

Balancing Water Use, Water Rights, Endangered Species and Economics: A Multi-Objective, System Operations Optimization

Approach. *Leon Basdekas*, Luis Bastidas, Arthur Caplan, Thomas Hardy, Mac McKee and David Stevens, Utah State University, Logan, UT

Allocation of Water Resources for the Large Scale Irrigation Project of Chi-Mun River Basin, Thailand. Tawatchai Tinsanchali,

Asian Institute of Technology, Pathumthani, Thailand

CONCURRENT SESSIONS

3:30 pm – 5:00 pm

Session 12: Prices and Policy: Management of Groundwater Resources (Extended Session)

Ground Water Banking and Conjunctive Management of Ground Water and Surface Water. Bryce A. Contor, University of Idaho, Idaho Falls, ID

Valuation of Groundwater Resources Using the Hotelling Valuation Principle. Mary Ewers, University of New Mexico, Albuquerque, NM

Efficient Groundwater Pricing, Intergenerational Welfare, and Inter-District Exchange. Basharat A. Pitafi and James A. Roumasset, University of Hawaii, Manoa, HI

Watershed Conservation or Efficient Groundwater Pricing? Optimal Policy Sequencing in Pearl Harbor. Basharat A. Pitafi and James A. Roumasset, University of Hawaii, Manoa, HI

The Economics of Water Regulation in Arizona. Sharon B. Megdal, Director, Water Resources Research Center, University of Arizona, Tucson, AZ

Session 13: PANEL – Columbia River Treaty: Past, Present and Future

Richard Kyle Paisley, University of British Columbia, Vancouver, Canada

Kate Stoeckel, University of British Columbia, Vancouver, Canada

Glen Hearn, University of British Columbia, Vancouver, Canada

Bo Bricklemeyer, ARC Group, Port Townsend, WA

Lynne Lewis, Bates College, Lewiston, ME

Session 14: New Programs in Water Resource Education

Masters Degree Program in Water Resources Planning and Management: An Update. Paul G. Bourget, US Army Corps of Engineers, Alexandria, VA

Designing an Interdisciplinary Graduate Water Degree. Ronald A. Kaiser and Valeen Silvy, Texas A&M University, College Station, TX

Over the River and Through the Woods: Teaching Environmental and Natural Resource Economics in the Field. Mark Griffin Smith, Colorado College, Colorado Springs, CO

Eye-to-Eye with a Lunker Brown Trout: Oden State Fish Hatchery & Watershed Walk. Douglas Denison, JJR Incorporated, Ann Arbor, MI

Session 15: Approaches to Water Conservation

Demand-Side Management of Urban Water Resources in Salt Lake City, Utah. *Eric A. Coleman* and Terry Glover, Utah State University, Logan, UT

Can Irrigation Technology Subsidies Effect *Real* Water Conservation? *Susan M. Scheierling*, Robert A. Young and Grant E. Cardon, Colorado State University, Fort Collins, CO

Issues in the Experimental Determination of Urban Water Demand. *David S. Brookshire*, Janie M. Chermak and Kate Krause, University of New Mexico, Albuquerque, NM; Steven Stewart, University of Arizona, Tucson, AZ

Evaluation of Water Policy Alternatives for Intertemporal Allocation of Groundwater in the Southern High Plains of Texas.

Jeffrey W. Johnson, Phillip N. Johnson, Kenneth A Rainwater, Eduardo Segarra and David Willis, Texas Tech University, Lubbock, TX

Session 16: Integrated Surface and Ground Water Management (Extended Session)

Economic and Environmental Aspects of Site Evaluation for Stream Augmentation Recharge Ponds in Colorado. *Catherine J. Shrier* and Darrell G. Fontane, Colorado State University, Fort Collins, CO

Investigating the Groundwater Quality Effects on Ecosystems and Human Activities for Informed Groundwater Policy. *Leroy P. Kettren*, Steve Miller, Pamela K.B. Hunt, Andreanne Simard and John Bartholic, Michigan State University, East Lansing, MI

Aquifer Storage and Recovery – An Innovative Water Resources Management Tool. *Jeff Barry*, Groundwater Solutions, Inc., Portland, OR

Procedures for Conjunctive Management Analyses in the Upper Snake River Basin. *Roger K. Larson*, US Bureau of Reclamation, Boise, ID

The Water Rights Transfer Tool: A Tool for Evaluating the Impacts to River Reaches due to Water Rights Transfers. *D.M. Cosgrove* and G.S. Johnson, University of Idaho, Idaho Falls, ID

RECEPTION AND POSTER SESSION

5:30 pm – 7:30 pm

Technical Posters

USDA – CSREES National Water Quality Program: Applying Knowledge to Improve Water Quality.

Lloyd Walker, Colorado State University, Fort Collins, CO

Water for Endangered Species, Communities, and Cultural and Economic Uses – A Southwestern Collaborative Solution. *Grace Haggerty*, New Mexico Interstate Stream Commission, Santa Fe, NM; Christina Radu, Tetra Tech EMI, Albuquerque, NM

Spokane Watershed Planning. *Douglas R. Allen*, Department of Ecology, Spokane, WA

Student Poster Competition

A student poster competition with cash awards is being sponsored by UCOWR and the U.S. Bureau of Reclamation. Please contact Rosie Gard (gardr@siu.edu) or Gary Johnson (johnson@if.uidaho.edu) for information on abstract submission.

Wednesday, July 21, 2004

PLENARY SESSION II

8:30am – 10:00 am

Northwestern Approaches to Changing Water Allocation

Paul Cleary, Director, Oregon Water Resources Department

Karl Dreher, Director, Idaho Department of Water Resources

Joe Stohr, Water Resources Manager, Washington Department of Ecology

CONCURRENT SESSIONS

10:30am – 12:00pm

Session 19: Alternative Policies, Risk and Tradeoffs in River Management

Economic Impacts of Alternative Policy Responses to Prolonged and Severe Drought in the Upper Rio Grande Basin. *Ari M.*

Michelsen, Texas A&M University, El Paso, TX; Frank A. Ward, New Mexico State University, Las Cruces, NM; J.F. Booker, Siena College, Loudonville, NY

Water Demand, Risk, and Optimal Reservoir Storage. *James F. Booker*, Siena College, Loudonville, NY

The Economics of Fish and Water: Balancing Instream Flow Needs of Listed Fish Species with Traditional State Water Allocation. *Krista I. Born*, Stoel Rives LLP, Portland, OR

Session 20: PANEL - Water Resources Development: Recent Trends in the Decision-Making Process

Warren (Bud) Viessman, Department of Environmental and Engineering Sciences, University of Florida

John Boland, Department of Geography and Environmental Planning, Johns Hopkins University

David Moreau, Department of Environmental Science and Engineering, University of North Carolina

Cliff Russell, Environmental Studies, Bates College

Peter Rogers, Department of Environmental Engineering, Harvard University

Gerry Galloway, Enterprise Engineering Group, Titan Corp., Fairfax, VA

Session 21: Water Utility Supply and Demand Planning

The Implementation of a Plan to Provide Water and Wastewater Service to El Paso County Residents. *Hector Gonzalez* and Mariana Chew, University of Texas, El Paso, TX

“A Common Share” – Water Supply Choices in Urban Turkey. *Anya Butt*, Central College, Pella, IA; Aysel Acar, Derya Eroglu and Ali Demirci, Fatih University, Istanbul, Turkey

Demand Responsive Pricing: A New Paradigm for Water Utilities. *Edna T. Loehman*, University of Colorado, Boulder, CO; John Whitcomb, Stratus Consulting, Boulder, CO

Session 22: Interpreting Perceptions of Stakeholders

Assessing Stakeholder Perceptions About a Proposed Method to Prioritize Watersheds for Environmental Restoration. *Ric Jensen* and C. Allan Jones, Texas A&M University, College Station, TX

Use of a Preference-Feasibility System for Addressing Choice Conflicts in Water Planning and Instream Flow Decision Making. *Valeen Silvy* and Ronald A. Kaiser, Texas A&M University, College Station, TX

Integrating Science with Society: Environmental Systems Analysis in a Participatory Context. *Olufemi Osidele*, University of Georgia, Athens, GA

Water Resources Gateway: An Internet-based Approach for Promoting Water Management and Planning Dialogues, *Paul G. Bourget*, US Army Corps of Engineers, Alexandria, VA

Session 23: Valuation of Natural Resources and Hydrologic Information

Economic Analysis of Fishery Enhancement: Case Study of Yakima River. *Earl Ekstrand*, US Bureau of Reclamation, Denver, CO
Can an Economic Value of Water to Sustain the Ecosystem Be Derived from the Analysis of Ecotourism Production? *Mitchell Mathis*, Houston Advanced Research Center, Houston, TX

Property Rights and the Value of Commercial Rafting Permits. *Joshua Mack* and Mark Griffin Smith, Colorado College, Colorado Springs, CO

Willingness to Pay for Hydrologic Information Appropriation in Consensus Based Decision-Making on Water Allocation: A Hypothetical Analysis. *Saket Pande* and Mac McKee, Utah State University, Logan, UT

PLENARY SESSION III

1:30 pm – 3:00pm

Evolving Economic Approaches

Non-Market Valuation for Public Water Allocation Choices: Progress and Problems

Robert Young, Emeritus Professor, Colorado State University, Estes Park, CO

The Return to the River Basin: The Increasing Costs of “Jurisdictional Externalities.”

Charles (Chuck) Howe, Department of Economics, University of Colorado, Boulder, CO

CONCURRENT SESSIONS

3:30pm – 5:00pm

Session 25: Ecologic Requirements and Water Rights Tradeoffs

An Integrated Assessment of Impacts of Altered Flow Regimes on Hydrologic, Ecologic and Economic Conditions within the Walker River Basin. *John C. Tracy*, Desert Research Institute, Reno, NV; Tom Harris, University of Nevada, Reno, NV

Priority Water Rights and Environmental Protection. *Tom McGuckin*, New Mexico State University, Las Cruces, NM

Water Leasing to Accommodate ESA: Impacts on the Regional Economies in the Platte River Basin. *Dawn Munger*, Bureau of Reclamation, Denver, CO

Water Resource Valuation and Millennium Ecosystem Assessment Framework. *Suren Kulshreshtha*, Richard Kellow and Joel Brunneau, University of Saskatchewan, Saskatoon, SK, Canada

Session 26: Using and Improving Water Transaction Strategies to Enhance Ecological Conditions

Oregon Water Trust Perspective on Allocating and Managing Water for a Sustainable Future. *Fritz Paulus*, Oregon Water Trust, Portland, OR

Montana Water Trust Perspective on Allocating and Managing Water for a Sustainable Future. *John Ferguson*, Montana Water Trust, Missoula, MT

Finding Water to Restore Stream Flows. *Hedia Adelman*, Washington Department of Ecology, Olympia, WA

Idaho Water Transaction Program. *Bill Graham*, Idaho Department of Water Resources, Boise, ID

Session 27: Water Market Myths and Public Interest Values

The Importance of Getting Names Right: The Myth of Markets for Water. *Joseph W. Dellapenna*, Villanova University, Villanova, PA

What if Markets Won't Work? An Alternative Market-Based Instrument for Water Allocation in the Presence of Irrigation

Subsidies and Social Value for Instream Flows. *Mitchell Mathis*, Houston Advanced Research Center, Houston, TX

Economic Efficiency, Ecosystem Management, and Policy Making in the Watershed. *William Blomquist*, Indiana University Purdue University Indianapolis, Indianapolis, IN

Estimation of the Use and Non-Use Value of the Agmon: A TCM and CVM Approach. *Nir Becker*, Haifa University, Haifa, Israel

Session 28: Weighing Tradeoffs in Water Quality, Quantity, Compliance and Costs

TMDL Allocations and Water Allocations – Reconciling Quality and Quantity. *Paul J. Pickett*, Washington State Department of Ecology, Olympia, WA

The Mid Columbia Total Dissolved Gas TMDL: Balancing Compliance with Other Demands. *Paul J. Pickett*, Washington State Department of Ecology, Olympia, WA

The Societal Costs and Benefits of Misallocating Water and Gasoline Additives in California. *Ed Whitelaw*, University of Oregon and ECONorthwest, Eugene, OR; John Tapogna, ECONorthwest, Portland, OR; Thomas Guardino ECONorthwest, Eugene, OR

Was MtBE A Costly Mistake? The Evidence from Maine. *Cecilia Clavet*, John M. Peckenham and Jonathan Rubin, University of Maine, Orono, ME

Session 29: Emerging Challenges and Technologies (Extended Session)

Feasibility of Using Desalination Technologies to Supplement Water Supplies in Eastern Virginia. Kimberly A. Edmonds, Yan Liang, Dixie W. Reaves and *Tamim Younos*, Virginia Polytechnic Institute and State University, Blacksburg, VA

Enhancing Watershed Fresh Water Supplies Through Innovative Water Treatment Systems. *D.B. Burnett*, C. Allen Jones, William E. Fox and Gene Theodori, Texas A&M University, College Station, TX

Riparian Response to Hydrologic Flux in the Downstream Reach of an Impounded 2nd Order Stream. *Jacqueline R. Duke*, Joseph D. White and Peter M. Allen, Baylor University, Waco, TX; Ranjan S. Muttiah, Blackland Research Center, Temple, TX

Raster-Based Streamflow Analysis Applied to the Middle and Upper Snake River. *Richard B. Koehler*, GeoSystems Analysis, Inc., Tucson, AZ

Water Availability for the Western United States: The Scientific Challenges. *Mark T. Anderson*, US Geological Survey, Tucson, AZ; Lloyd Woosley, US Geological Survey, Austin, TX

Thursday, July 22, 2004

CONCURRENT SESSIONS

8:30am – 10:00am

Session 30: Water Resources Institutions and Federal Intervention

The October 2003 Quantification Settlement Agreement Implications for Water Management. *Jonathan W. Bulkley*, Peter M.

WegeChair in Sustainable Systems at the School of Natural Resources and Environment, The University of Michigan, Ann Arbor, MI

Characteristics of the Brownsville Irrigation District's Operations: Texas Lower Rio Grande Valley. *Megan Stubbs*, Ed Rister, Ron Lacewell, Allen Sturdivant and John Robinson, Texas A&M University, College Station, TX

Evaluating Change in Water Institutions: Methodological Issues and Country Examples. *Marie Leigh Livingston*, University of Northern Colorado, Greeley, CO

Session 31: PANEL - Upper Rio Grande Operations Model: A Reference Point for Problem Solving

Gail Stockton, US Army Corps of Engineers, Albuquerque, NM

Mark Yuska, US Army Corps of Engineers, Albuquerque, NM

Zhuping Sheng, Texas A&M University, El Paso Research Center, El Paso, TX

Tim J. Ward, University of New Mexico, Albuquerque, NM

Vincent Tidwell, Sandia National Laboratory, Albuquerque, NM

Session 32: Water Allocation: Differing Geographic Perspectives

Public Support for Species Conservation Policies: The Case of Pacific Salmon in Oregon. *Valentina Fomenko*, Oregon State University, Corvallis, OR

The Downstream Economic Benefits from Storm Water Management: A Comparison of Conservation and Conventional Development. *Douglas M. Johnston* and John B. Braden, University of Illinois, Urbana, IL; Thomas H. Price, Conservation Design Forum, Elmhurst, IL

Evolving Eastern Water Allocation Policies: The Conflict Between Public Interest and Market Mechanisms Relating to Water Allocation in Georgia. *James E. Kundell* and Don R. Christy, University of Georgia, Athens, GA

Water Allocation Alternatives for the South Saskatchewan River Basin: Optimization Modelling for Improved Policy Choices. *Marius I. Cutlac* and Theodore M. Horbulyk, University of Calgary, Calgary, Alberta, Canada

Session 33: Water Resources Sustainability

Sustainable Water Allocation Resembles the Starship Enterprise. *Jason C. Lynch*, US Military Academy, West Point, NY

Understanding Sustainability at the State Level. *John R. Wells*, Minnesota Environmental Quality Board, St. Paul, MN

Challenges to Water Resources Sustainability in Florida. *Joseph J. Delfino*, University of Florida, Gainesville, FL

Perspectives on Conservation and Sustainability: A New Paradigm or Two. *Peter E. Black*, SUNY College of Environmental Science and Forestry, Syracuse, NY

Session 34: The Klamath: “Good Science”, Water Markets and Fish

Allocating Water in the Klamath Basin: The Endangered Species Act and “Good Science”. *Greg D. Corbin*, Stoel Rives LLP, Portland, OR

Resolving Water Conflicts in the Klamath Basin: A Role for Markets and Institutions. *William K. Jaeger*, Oregon State University, Corvallis, OR

Field Validation of Habitat Modeling of Chinook Spawning and Fry Life Stages in the Lower Klamath River. *Thomas B. Hardy*, Utah State University, Logan, UT

PLENARY SESSION IV

10:30am-12pm

NGO Approaches to Balancing Economics and the Environment

Gail Achterman, Director of the Institute for Natural Resources, Oregon State University

Ruth Mathews, Manager of Freshwater Conservation Programs, WA Chapter of The Nature Conservancy

Norm Whittlesey, Professor Emeritus, Washington State University

Closing Remarks

Karl Wood, UCOWR President 2004-2005, Director New Mexico Water Resources Research Institute

Jim Moncur, NIWR President, Director, Hawaii Water Resources Research Center

Registration Information

How to Register

There are a number of ways to register for the conference. The registration form is on the reverse of this page. If you have questions while filling it out, or need special accommodations, please contact Rosie Gard at 618/536-7571 or gardr@siu.edu. **Registration must be submitted by June 20, 2004 to qualify for the pre-registration discount.**

	US Mail	Fax	On-Line	On-Site
Check	*			*
Gov't Purchase Order	*	*		*
Credit Card	*	*	*	*

Unsure if you qualify for the member registration rate? If you are faculty or staff at a member institution, you qualify. Check www.ucowr.siu.edu for membership information or status.

- **Pre-Registration by Check** - Mail completed registration form and check (issued in US Dollars and drawn on US financial institution) made payable to UCOWR to:
Universities Council on Water Resources
Southern Illinois University
1000 Faner Drive, Room 4543
Carbondale IL 62901-4526
- **Pre-Registration by Government or University Purchase Order** – Mail completed registration form and Purchase Order to the address above, or **fax** them to **618/453-2671**.
- **Pre-Registration by Credit Card** – Mail or fax completed and signed registration form (Mastercard or Visa only) to above address or fax number, or use our On-Line Registration system at www.iwr.msu.edu/ucowr/ **through July 9, 2004**. On-Line Registration will accept Visa, Mastercard, American Express, and Discover.
- **On-Site Registration** must be accompanied by payment (Mastercard, Visa, Money Order) or copy of purchase order. Use of personal checks for on-site registration is discouraged.

Who Should Register

- **Speakers** – All speakers are required to register in advance for the conference and submit a registration fee. Speakers must check in at the registration desk to pick up badges and event tickets.
- **Students** – Full-time college or high school students are invited to participate in the conference and are offered a steeply discounted rate. Proof of full-time student status is required. Advanced registration is strongly encouraged.
- **Spouses / Guests** – Spouses, family members, and guests of registered conference attendees are invited to participate in the conference and/or attend the reception, awards banquet and technical tour.

Cancellations

To receive a refund of the registration fee, cancellations must be submitted in writing by June 30, 2004. A \$50 processing fee will be deducted from all refunds. Additional event tickets will be fully refunded if cancelled in writing by June 30, 2004. There are no refunds for cancellations after June 30, 2004, but someone else may attend in your place. For cancellations or change in attendee, write to UCOWR at the address above or fax 618/453-2671.

Conference Proceedings

Papers or extended abstracts will be published in the Conference Proceedings. All published materials and spoken presentations will be in English. Copies of the conference proceedings will be available on CD-ROM (on-site), and are given to every conference registrant as part of the registration fee. Additional copies may be purchased on-site at the registration desk. To purchase the proceedings following the conference, call UCOWR at 618/536-7571 or email Rosie Gard at gardr@siu.edu. Additional written materials based on the conference will appear subsequently in UCOWR's *Water Resources Update*.

Register by June 20th to save up to \$100 on your registration.

Special Events

Tualatin Project Technical Tour - Monday, July 19, 12:30-5:30 PM

Welcome Reception & Poster Session - Tuesday, July 20, 5:30-7:30 PM

Includes Student Poster Competition

UCOWR Banquet & Awards Ceremony - Wednesday, July 21, 7:00-9:00 PM

Warren Hall Medal Award-UCOWR presents the Warren A. Hall Medal to recognize distinguished achievements of an individual in the field of water resources. The friends and family of Warren A. Hall have established this memorial.

Friends of UCOWR-UCOWR recognizes individuals who have made outstanding contributions to the organization and names them "Friends of UCOWR."

Dissertation Awards-UCOWR recognizes two outstanding Ph.D. dissertations on water issues, one in each of the following categories: (1) water policy and socio-economics and (2) natural science and engineering.

Education and Public Service Award-This award is given to recognize individuals, groups, or agencies that have made significant contributions to increased public awareness of water resources development, use, or management.

Tualatin Project Tour



A technical tour of the Tualatin Project, west of Portland will precede the conference on the afternoon of Monday July 19. For a modest fee of \$15 you can climb aboard a comfortable tour bus and spend the afternoon enjoying the scenery of the Portland area while learning something about water concerns and management in the area.

The Tualatin Project, west of Portland in the coast range is a Bureau of Reclamation facility, operated by Washington County Parks and Recreation Department. It includes Scoggins Dam, Henry Hagg Lake which is 1,132 surface acres, two pumping plants, approximately 100 miles of buried pipeline, and recreation, fish and wildlife facilities. It is one of the few recreational lakes near

the Portland, Oregon metropolitan area. The lake provides flat water recreation, such as boating and fishing, and abundant wildlife such as deer, elk, cougar and bobcat in the forests surrounding the lake. The natural flow of Scoggins Creek is stored in Henry Hagg Lake for irrigation, municipal and industrial uses, recreation, fish and wildlife and water quality. The project also reduces flooding on Scoggins Creek and the Tualatin River. The area west of Portland, Oregon has one of the fastest population growth rates in the state. The local residents are looking toward the future needs of the area for water resources and are working with the Oregon Congressional Delegation to obtain funding and authorization for a feasibility study. Increasing the storage capacity of Henry Hagg Lake is one of the options being explored in the feasibility study, doing a water exchange from the Willamette River is another option. The tour will include the Tualatin NWR, Clean Water Services-Joint Water Commission, Springhill Pumping Plant, Scoggins Dam and the recreational facilities at Henry Hagg Lake.

The Tour Departs Conference Hotel at 12:30 PM, Monday, July 19 and returns about 5:30. Tour participants must include payment with their registration by June 20 (see registration form). If we do not receive the minimum necessary advance registrations, those who sign up will be notified of tour cancellation.

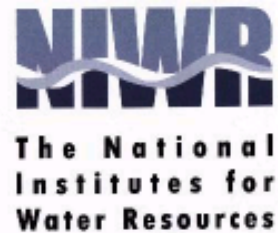
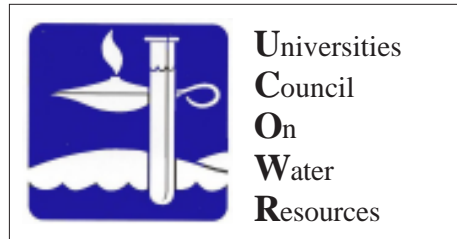
—2005 UCOWR Conference, Portland, Maine



2005 UCOWR Annual Conference
“River and Lake Restoration”
July 12-14, 2005
Holiday Inn By the Bay



Allocating Water: Economics and the Environment July 20-22, 2004 SPONSORS



CO-SPONSORS



HYDROSPHERE
Resource Consultants



UCOWR
Southern Illinois University
1000 Faner Drive, Room 4543
Carbondale, IL 62901
618-536-7571