

First Interagency Conference on Research in the Watersheds

Celebrating the 50th Anniversary of the USDA ARS Walnut Gulch
Experimental Watershed



CUAHSI

ICRW Program, Maps and Menu

Benson, AZ, 27-30 October 2003

Purpose: The planning unit used by most federal agencies is the watershed, as mandated by federal programs such as the Clean Water Act and the Unified Assessment Program. *The purpose of this conference is to highlight current research that is relevant and applicable to the watershed scale. The conference will emphasize research in instrumented, experimental watersheds and a primary conference focus is to engage stakeholders.*

ICRW Program Overview

When	Where	What
Monday (10/27) 5:30 - 8:30 PM	Turquoise Hills Country Club	Mixer of conference attendees and invited national and local stakeholders; includes dinner, cash bar, posters, short presentations and ICRW registration
Tuesday (10/28) 7:00-8:00 AM	Cochise College	Catered breakfast and ICRW registration
Tuesday (10/28) 8:00-11:55 AM	Cochise College	Invited speakers to review watershed research programs and outline future research direction
Tuesday (10/28) 12:00 PM	Cochise College	Box lunch provided
Tuesday (10/28) 12:00-5:00 PM	On the road, buses provided	Tour of USDA ARS Walnut Gulch Experimental Watershed
Tuesday (10/28) 5:00-8:30 PM	Walnut Gulch Experimental Watershed	At-watershed bar-b-que and festivities
Wednesday (10/29) 7:00-8:00 AM	Cochise College	Catered breakfast
Wednesday (10/29) 8:00-11:45 AM	Cochise College	Oral presentations
Wednesday (10/29) 11:45 AM - 1:00 PM	Cochise College	Catered lunch
Wednesday (10/29) 1:00-4:45 PM	Cochise College	Oral presentations
Wednesday (10/29) 5:30-8:30 PM	Turquoise Hills Country Club	Poster session; includes dinner and cash bar
Thursday (10/30) 7:00-8:00 AM	Cochise College	Catered breakfast
Thursday (10/30) 8:00-11:30 AM	Cochise College	Oral presentations
Thursday (10/30) 11:40 AM - 12:30 PM	Cochise College	Meeting synthesis by ICRW stakeholder committee Meeting summary and wrap-up by ICRW program committee
Thursday (10/30) afternoon	Kartchner Caverns	Optional tour, reservations during conference registration

Conference Menu:

M Dinner: Mexican Taco Buffet

T Breakfast: Bagels, cream cheese, muffins, fresh fruit

T Lunch: box lunch for the road: deli sandwiches, chips, fresh fruit, cookie

T Dinner: WGEW BBQ, beef & turkey, potato salad, coleslaw, beans, tortillas, salsa, anniversary cake

W Breakfast: Eggs, bacon, butter, toast, fresh fruit

W Lunch: Soup and Salad bar

W Dinner: Carved meat, vegetables, cheese, fruit

Th Breakfast: Bagels, cream cheese, muffins, fresh fruit

All above menus include beverages such as coffee, tea, soda and lemonade

Snacks available T morning, W morning, W afternoon, Th morning: Fresh fruit, cookies and fruit bars

**FIRST INTERAGENCY CONFERENCE ON RESEARCH IN THE WATERSHEDS
27-30 OCTOBER 2003**

27 October, Monday Evening Mixer 5:30-8:30 PM Turquoise Hills Country Club

Arizona water issues--and the science required to address them--will be the topic of a presentation by Herb Guenther, director of the Arizona Department of Water Resources, at the opening public event of the first Interagency Conference on Research in the Watersheds, scheduled for 5:30-8:30 p.m. Oct. 27 at the Turquoise Hills Country Club in Benson, Arizona. After Director Guenther's presentation, attendees will have the opportunity to meet local decision makers and watershed scientists from around the country at an informal mixer. No registration is required and a Mexican Taco Buffet is provided.

Mixer Program 6-6:30 PM, Turquoise Hills Country Club

Goodrich, David	ICRW Organizing Committee	ICRW welcome
Reid, Sharon	Natural Resource Conservation District	Mixer welcome
Guenther, Herb	Arizona Department of Water Resources	Invited speaker: Integrated science and policy for Arizona water needs

**Mixer Posters and Demonstrations, 5:30-8:30 PM, Turquoise Hills Country Club
(authors at poster 6:30-7:30 PM)**

Heilman, P. , USDA-ARS SWRC Lawrence, P., Queensland Dept. of Nat. Resources & Mines	Watershed Planning with the Facilitator Decision Support System
Wu, K. , Louisiana State Univ. Xu, Y. J., Louisiana State Univ. Kelso, W.E., Louisiana State Univ. Rutherford, D.A., Louisiana State Univ.	Application of BASINS for Water Quality Assessment on the Mill Creek Watershed in Louisiana
Kepner, W.G. , US-EPA Semmens, D.J., USDA-ARS SWRC Heggen, D. T., US-EPA Evanson, E. J., Lockheed Martin Environmental Services Edmonds, C. M., US-EPA Scott, S. N., USDA-ARS SWRC	The San Pedro River Spatial Data Archive: A Database Browser for Community-Based Environmental Protection
McQuaid, B. , USDA-NRCS WSI Aschmann, S., USDA-NRCS WSI Seybold, C., USDA-NRCS SSC Spiller, G., USDA-NRCS NEDC	Indicators for Assessing Watershed Conditions
Serveiss, V. B. , US-EPA Bowen, J. L., Boston Univ. Dow, D., NOAA NMFS Valiela, I., Boston Univ. Rao, L., US-EPA	Using Science to Support Management Decisions in Waquoit Bay, MA
And many more	Topics include SAHRA, ECOSTART and San Pedro News and Comment

28 October, Tuesday breakfast 7:00-8:00 AM catered at Cochise College

Breakfast and ICRW registration

28 October, Tuesday Morning 8:00-11:55 AM Cochise College

Invited speakers to review watershed research programs and outline future research direction:

Moderator: Jon Werner NRCS

8:00-8:15	Moran, Susan	ICRW Welcome
8:15-8:40	Weltz, Mark A. Bucks, Dale A.	The USDA-Agricultural Research Service Watershed Research Program
8:40-9:05	Ryan, Douglas F.	Watershed Research and Development in the USDA Forest Service
9:05-9:30	Muller, Daniel P.	Watershed Research in the Bureau of Land Management
9:30-9:55	Band, Lawrence Moss, Marshall Ogden, Fred	The CUAHSI Plan for a Network of Hydrologic Observatories

9:55-10:15	Break	
10:15-10:40	Mulkey, Lee A. Barnwell, Thomas O. Hedtke, Steven Arraujo, Rochelle Slimak, Michael	An Overview of the Strategic Content of EPA's Watershed Research Program
10:40-11:05	Baedecker, Mary Jo	Overview of the Water, Energy, Biogeochemical Budgets Program of the U.S. Geological Survey
11:05-11:30	Richter, Holly Strain, Bob	Upper San Pedro Partnership: An Example of Scientists Working with Decision Makers
11:30-11:55	Jon Werner	USDA, NRCS : Applying Watershed Research

28 October, Tuesday box lunch provided at Cochise College

28 October, Tuesday Afternoon 12:00-5:00 PM Field Tour

28 October, Tuesday Evening 5:00-8:30 PM Banquet at USDA ARS WGEW

The Interagency Conference on Research in the Watersheds (ICRW) will celebrate the 50th anniversary of USDA ARS Walnut Gulch Experimental Watershed (WGEW). A field day at WGEW is planned for Tuesday afternoon consisting of three coincident thematic tours focused on hillslope, watershed and riparian processes. Each tour will be 3 hours long with transportation provided by bus from the parking lot at Cochise College.

The "hillslope" tour will cover topics of rainfall simulation, weir and sediment sampling, rangeland health, CO₂ flux and application of remote sensing for forage assessment. The "watershed" tour will cover topics of flume construction and hydraulics, rainfall characteristics, scaling hydrology and erosion, channel sediment transport and watershed scale modeling. The "riparian" tour will cover topics of watershed partnerships, ET and carbon flux, nutrient cycling and trace gases, remote sensing, channel recharge and rainfall/runoff modeling.

All tours will culminate at the ARS WGEW facility in Tombstone for evening festivities including a bar-b-que, bar and country music. Participants will be bused back to the Cochise College in Benson at the end of the festivities.

29 October, Wednesday breakfast 7:00 - 8:00 AM catered at Cochise College

29 October, Wednesday posters 8:00 AM - 4:45 PM Cochise College

Selected posters on display in Cochise College lobby to highlight experimental watersheds (authors at posters during breaks)

Van Liew, M.W. , USDA-ARS GRL Starks, P.J., USDA-ARS GRL Daniel, J.A., USDA-ARS GRL Steiner, J.L., USDA-ARS GRL	The USDA ARS Little Washita River Experimental Watershed
Harmel, R. D. , USDA-ARS GSWRL Richardson, C. W., USDA-ARS GSWRL King, K.W., USDA-ARS SDRU Arnold, J. G., USDA-ARS GSWRL	Hydrologic Instrumentation at the USDA-ARS Grassland, Soil and Water Research Laboratory, Riesel, TX
Steiner, J.L. , USDA-ARS GRL Goodrich, D.C., USDA-ARS SWRC Hardegree, S., USDA-ARS Burkhart, M.R., USDA-ARS Strickland, T.C., USDA-ARS Weltz, M.A., USDA-ARS	Information Technology Applications in the ARS Watershed Network
Sheridan, J., USDA-ARS SEWRL Bosch, D. , USDA-ARS SEWRL Hubbard, R., USDA-ARS SEWRL Lowrance, R., USDA-ARS SEWRL Potter, T., USDA-ARS SEWRL Strickland, T., USDA-ARS SEWRL Truman, C., USDA-ARS SEWRL Wauchope, D., USDA-ARS SEWRL	The USDA-ARS Southeast Watershed Research Laboratory and Little River Experimental Watersheds

**29 October, Wednesday Morning 8:00 - 9:30 AM Cochise College
Concurrent Sessions: Erosion I and Hydrology I**

Erosion I, Moderator: Dale Fox, NRCS		
8:00-8:15	Simon, A. , USDA-ARS NSL Langendoen, E. J., USDA-ARS NSL Thomas, R., Univ. of Leeds	Incorporating Bank-Toe Erosion by Hydraulic Shear into a Bank-Stability Model: Missouri River, Eastern Montana
8:15-8:30	Keppeler, E. , USDA-FS PSRS Lewis, J., USDA-FS PSRS Lisle, T., USDA-FS PSRS	Effects of Forest Management on Streamflow, Sediment Yield, and Erosion, Caspar Creek Experimental Watersheds
8:30-8:45	Stone, J. , USDA-ARS SWRC Paige, G., USDA-ARS SWRC	Variable Rainfall Intensity Rainfall Simulator Experiments on Semi-arid Rangelands
8:45-9:00	Warnemuende, E. , USDA-ARS Shuster, W. D. US-EPA ORD Smith, D., USDA-ARS Bonta, J., USDA-ARS	Methodology for Determining Effects of Extent and Geometry of Impervious Surface on Hydrologic Balance
9:00-9:15	Gray, J.R. , USGS Melis, T.S., USGS Patino, E., USGS Larsen, M.C., USGS Topping, D.J., USGS Rasmussen, P.P., USGS Figueroa-Alamo, C., USGS	U.S. Geological Survey Research on Surrogate Measurements for Suspended Sediment
9:15-9:30	Tyler, R.W. , Filtrexx International, LLC	The Soil and Water Quality Link - Using Composted Products for Effective Stormwater Management

Hydrology I, Moderator: Jerry Gottfried, USFS		
8:00-8:15	Goodrich, D.C. , USDA-ARS SWRC Williams, D.G., Univ. of Wyoming Unkrich, C.L., USDA-ARS SWRC Scott, R.L., USDA-ARS SWRC Hultine, K.R., Univ. of Arizona Pool, D., USGS Coes, A., USGS Hogan, J., Univ. of Arizona	Multiple Approaches to Estimate Ephemeral Channel Recharge
8:15-8:30	Very, E.S. , USDA-FS NCRS Kolka, R.K., USDA-FS NCRS	Importance of Wetlands to Streamflow Generation
8:30-8:45	Van Liew, M.W. , USDA-ARS GRL Schneider, J.M., USDA-ARS GRL Garbrecht, J.D., USDA-ARS GRL	Streamflow Response of an Agricultural Watershed to Seasonal Changes in Precipitation
8:45-9:00	Hsieh, H., Office of the Nat. Sci. & Tech. Prog. for Hazards Mitigation Stone, J. , USDA-ARS SWRC Guertin, D.P. , Univ. of Arizona Slack, D.D., Univ. of Arizona	Stochastic Daily Rainfall Generation in Southeast Arizona: An Example from Walnut Gulch Experimental Watershed
9:00-9:15	Gungle, B. , USGS WRD	Estimation of Ephemeral Streamflow Duration Using Temperature Methods in the Upper San Pedro River Basin, Arizona
9:15-9:30	Bosch, D. , USDA-ARS SEWRL Sheridan, J., USDA-ARS SEWRL Williams, R., USDA-ARS SEWRL	Hydrologic Characteristics of the Little River Experimental Watershed

**29 October, Wednesday Morning 10-11:45 AM Cochise College
Concurrent Sessions: Erosion II and Hydrology II**

Erosion II, Moderator: Dale Fox, NRCS		
10:00-10:15	Foster, G.R. (ret.), USDA-ARS SWRC Toy, T.E. , Univ. of Denver Renard, K. G. (ret.), USDA-ARS SWRC	Comparison of the USLE, RUSLE 1.06c, and RUSLE2 for Application to Highly Disturbed Lands
10:15-10:30	Nichols, M.H. , USDA-ARS SWRC Renard, K.G. (ret.), USDA-ARS SWRC	Sediment Yield from Semiarid Watersheds
10:30-10:45	Nearing, M.A. , USDA-ARS SWRC Polyakov, V., The Ohio State Univ. Shipitalo, M., USDA-ARS	Tracking Erosion and Sediment Re-distribution in a Small Watershed

10:45-11:00	Laronne, J. , Ben Gurion Univ. Lekach, J., Hebrew Univ. Cohen, H., Ben Gurion Univ. Alexandrov, Y., Ben Gurion Univ.	Experimental Drainage Basins in Israel: Rainfall, Runoff, Suspended Sediment and Bedload Monitoring
11:00-11:15	Hoening, S.A. , Univ. of Arizona	The Use of Used Tires in Water Systems
11:15-11:30	Grant, G. , USFS PNWRS Hayes, S., Oregon State Univ. Lewis, S., Oregon State Univ.	Effect of Peak Flow Increases on Sediment Transport Regimes Following Timber Harvest, Western Cascades, Oregon
11:30-11:45	Powell, D.M. , Univ. of Leicester Brazier, R., Univ. of Sheffield Nichols, M., USDA-ARS SWRC Wainwright, J., King's College Parsons, A., Univ. of Leicester	Stream-bed Scour and Fill in Low-order Ephemeral Stream Channels

Hydrology II, Moderator: Jerry Gottfried, USFS

10:00-10:15	Paige, G. , USDA-ARS SWRC Stone, J., USDA-ARS SWRC	Infiltration and Runoff: Plot to Point Scale
10:15-10:30	Gish, T.J. , USDA-ARS HRSL Walshall, C.L., USDA-ARS HRSL Daughtry, C.S.T., USDA-ARS HRSL McCarty, G.W., USDA-ARS EQL Dulaney, W.P., USDA-ARS HRSL	Watershed-Scale Sensing of Subsurface Flow Pathways at the OPE3 Site
10:30-10:45	Sieck, L. , Univ. of Washington Steiner, M., Princeton Univ. Burgess, S. J., Univ. of Washington Smith, J. A., Princeton Univ. Alonso, C. V., USDA-ARS NSL	The Challenges of Measuring Rainfall: Observations Made at the Goodwin Creek Research Watershed
10:45-11:00	Cosh, M. , USDA-ARS HRSL Jackson, T. J., USDA-ARS HRSL Bindlish, R., SSAI Prueger, J. H., USDA-ARS NSTL	Estimation of Watershed Scale Soil Moisture from Point Measurements during SMEX02
11:00-11:15	Booth, D.T. , USDA-ARS HPGRS Glenn, D., USDI-BLM Keating, B., USDI-BLM Nance, J., CloudStreet AirSports Cox, S. E. USDA-ARS HPGRS Barriere, J. P., TAASS	Monitoring Rangeland Watersheds With Very-Large Scale Aerial Imagery
11:15-11:30	Shafique, N.A. , SoBran Environmental, Inc. Fulk, F., US-EPA NERL Autrey, B. C., SoBran Environmental, Inc. Flotemersch, J., US-EPA NERL	Hyperspectral Remote Sensing of Water Quality Parameters for Large Rivers in the Ohio River Basin
11:30-11:45	Scott, R.L. , USDA-ARS SWRC Goodrich, D. C., USDA-ARS SWRC Levick, L.R., Univ. of Arizona	A GIS-based Management Tool to Quantify Riparian Vegetation Groundwater Use

29 October, Wednesday lunch 11:45 AM - 1:00 PM catered at Cochise College

**29 October, Wednesday Afternoon 1:00 - 2:45 PM Cochise College
Concurrent Sessions: Watershed Modeling I and Watershed Networks and Data Management**

Watershed Modeling I, Moderator: Rick Hooper, CUAHSI

1:00-1:15	Miller, S. N. , Univ. of Wyoming	Estimating Channel Morphologic Properties from a High Resolution DEM
1:15-1:30	Stolte, K. , USDA-FS SRS Murdoch, P., USGS WRD Jenkins, J., USDA-FS NERS Birdsey, R., USDA-FS NERS Evans, R., USDI NPS	Multi-Scale Evaluation of Watershed Health in the Delaware River Basin and CEMRI
1:30-1:45	Veith, T.L. , USDA-ARS PSWMRU Srinivasan, M.S., USDA-ARS PSWMRU Gburek, W. J., USDA-ARS PSWMRU	Process Representation in Watershed-Scale Hydrologic Models: An Evaluation in an Experimental Watershed

1:45-2:00	Vivoni, E.R. , MIT Istanbulluoglu, E., MIT Bras, R. L., MIT	A Blueprint for an Integrated Watershed Hydrogeomorphic Modeling System
2:00-2:15	Schwarz, G. , USGS Smith, R. A., USGS Alexander, R. B., USGS Gray, J. R., USGS	Recent Progress in the Development of a SPARROW Model of Sediment for the Conterminous U.S.
2:15-2:30	Gonzalez Cervantes, G., INIFAP-CENID RASPA Sanchez-Cohen, I. , INIFAP-CENID RASPA Rossignol, J. P., Nat. Institute of Horticulture	Soil Water Dynamics Studies Using Image Analysis
2:30-2:45	Lemonds, P. J., Colorado School of Mines McCray, J. , Colorado School of Mines	Modeling Phosphorus Transport in The Blue River Watershed, Summit County, Colorado

Watershed Networks and Data Management I, Moderator: Beau McClure, BLM

1:00-1:15	Amatya, D.M. , USDA-FS Sun, G., USDA-FS Trettin, C.C., USDA-FS Skaggs, R.W., North Carolina State Univ.	Long Term Forest Hydrologic Monitoring in Coastal Carolinas
1:15-1:30	Neary, D. , USDA-FS Gottfried, G. J., USDA-FS Ffolliott, P. F., Univ. of Arizona DeBano, L. F., Univ. of Arizona Baker, M. B., USDA-FS	Forest Service Watershed Research in the Southwest
1:30-1:45	Renard, K.G. (ret.), USDA-ARS SWRC Nichols, M.H. USDA-ARS SWRC	History of Small Watershed Research in Non-Forested Watersheds in Arizona and New Mexico
1:45-2:00	Rango, A. , USDA-ARS JER Snyder, K., USDA-ARS JER Herrick, J., USDA-ARS JER Havstad, K., USDA-ARS JER Gibbens, R., USDA-ARS JER Wainwright, J., King's College Parsons, T., Univ. of Leicester	Historical and Current Hydrological Research at the USDA/ARS Jornada Experimental Range in Southern New Mexico
2:00-2:15	Osterkamp, W. R. , USGS Gray, J. R., USGS	A Proposed International Watershed Research Network
2:15-2:45	Discussion	

**29 October, Wednesday Afternoon 3-4:45 PM Cochise College
Concurrent Sessions: Watershed Modeling II and Water Quality and Quantity I**

Watershed Modeling II, Moderator: Rick Hooper, CUAHSI

3:00-3:15	Kalin, L. , US-EPA Hantush, M. M., US-EPA	Assessment of Two Physically-Based Watershed Models Based on Their Performances of Simulating Water and Sediment Movement
3:15-3:30	Pan, Y., USDA-FS NERS Hom, J. , USDA-FS NERS McCullough, K., USDA-FS NERS	Past and Prospective Effects of N Deposition on Carbon Cycling and Nutrient Retention in the Delaware River Basin
3:30-3:45	Hernandez, M. , USDA-ARS SWRC Goodrich, D. C., USDA-ARS SWRC Lane, L. J. (ret.), USDA-ARS SWRC	Entropy-Based Assessment of Two Hydrologic Models
3:45-4:00	Hantush, M.M. , US-EPA Kalin, L., US-EPA	Modeling Uncertainty of Runoff and Sediment Yield Using a Distributed Hydrologic Model
4:00-4:15	Webb, R.M.T. , USGS Peters, N. J., USGS Aulenbach, B.T., USGS Shanley, J. B., USGS	Relations Between Hydrology and Solute Fluxes at the Five Water, Energy, and Biogeochemical Budget (WEBB) Watersheds of the United States Geological Survey
4:15-4:30	Peters-Lidard, C., NASA Wu, Y., NASA Tischler, M. , NASA O'Neil, P., NASA	Operational Modeling of Soil Moisture at Local and Regional Scales

4:30-4:45	Sun, G. , USDA-FS SGCP McNulty, S. G., USDA-FS SGCP Moore, J., USDA-FS SGCP	Modeling the Potential Effects of Forest Management and Climate Change on Water Yield Across the Southeastern U.S.
Water Quality and Quantity I, Moderator: Beau McClure, BLM		
3:00-3:15	Bonta, J. , USDA-ARS Shuster, W., US-EPA Warnemuende, E., USDA-ARS Thurston, H., US-EPA Smith, D., USDA-ARS Goss, M., US-EPA Cabezas, H., US-EPA	Quantification of Urbanization in Experimental Watersheds
3:15-3:30	Comiskey, J.J. , Institute of Water Resources	Water Supply and the U.S. Army Corps of Engineers
3:30-3:45	Xu, Y. J. , Louisiana State Univ.	Spatiotemporal Assessment of Long-Term Stream Water Chemistry Across Louisiana
3:45-4:00	Sigleo, A. , US-EPA Frick, W. E., US-EPA ERD	Seasonal Variations in River Flow and Nutrient Concentrations in a Northwestern USA Watershed
4:00-4:15	Frick, W. , US-EPA ERD Denton, D. L., US-EPA	Modulating Storm Drain Flows to Reduce Stream Pollutant Concentrations
4:15-4:30	Alberts, E.E. , USDA-ARS Jaynes, D.B., USDA-ARS Lerch, R., USDA-ARS	Nutrient and Herbicide Movement in Streamflow from Two Midwestern Watersheds
4:30-4:45	Adams, M. B. , USDA-FS Edwards, P. J., USDA-FS Kochenderfer, J. N., USDA-FS Wood, F., USDA-FS	Fifty Years of Watershed Research on the Fernow Experimental Forest, WV: Effects of Forest Management and Air Pollution in Hardwood Forests
29 October, Wednesday Evening 5:30-8:30 PM Turquoise Hills Country Club Dinner and poster sessions (authors at posters 6:30 - 7:30 PM)		
Posters: Integrating Science with Watershed Decision Making I		
P1	Adinarayana, J. , Indian Institute of Technology - Bombay	Spatial Decision Support System for Identifying Priority Sites for Watershed Management Schemes
Posters: Erosion III		
P2	Rhoton, F.E. , USDA-ARS Emmerich, W.E., USDA-ARS SWRC Goodrich, D.C., USDA-ARS SWRC McChesney, D.S., USDA-ARS Miller, S., USDA-ARS SWRC	Soil Contributions to Sediment Properties in Walnut Gulch Experimental Watershed: Influence of Slope Factors
P3	Simon, A. , USDA-ARS NSL	Suspended-Sediment-Transport Rates at the 1.5-Year Recurrence Interval for Ecoregions of the United States: Transport Conditions at the Bankfull and Effective Discharge
P4	Alberts, E.E. , USDA-ARS Ghidey, F., USDA-ARS Kramer, L.A., USDA-ARS	Impact of Grass Hedges on Sediment Yield from a HEL Watershed
P5	Semmens, D.J. , USDA-ARS SWRC Goodrich, D. C., USDA-ARS SWRC Osterkamp, W. R., USGS	Simulating Channel Geomorphic Change in Semi-Arid Watersheds
Posters: Watershed Modeling III		
P6	Marks, D., USDA-ARS NWRC Flerchinger, G. , USDA-ARS NWRC Seyfried, M., USDA-ARS NWRC	Influence of Sub-grid Variability on Snow Deposition and Ablation in North American Mountain Environments: Implications for Upscaling to Meso-scale Representations
P7	Canfield, H. E. , USDA-ARS SWRC Goodrich, D. C., USDA-ARS SWRC	Studies of Scale and Processes in Hydrologic Modeling on the Lucky Hills Watershed
P8	Skirvin, S. , USDA-ARS SWRC Moran, M.S., USDA-ARS SWRC	Rangeland Ecological and Physical Modeling in a Spatial Context
P9	Simon, A. , USDA-ARS NSL Bingner, R.L., USDA-ARS NSL Langendoen, E. J., USDA-ARS NSL Wells, R.R., USDA-ARS NSL Alonso, C.V., USDA-ARS NSL	Combined Geomorphic and Numerical-Modeling Analyses of Sediment Loads for Developing Water-Quality Targets for Sediment

P10	Hernandez, M. , USDA-ARS SWRC Kepner, W.G., US-EPA Semmens, D.J., USDA-ARS SWRC Ebert, D.W., US-EPA Goodrich, D.C., USDA-ARS SWRC Miller, S.N., USDA-ARS SWRC	Integrating a Landscape/Hydrologic Analysis for Watershed Assessment
Posters: Hydrology III		
P11	Rosenberry, D.O. , USGS Dean, W.E., USGS Duff, J.H., USGS LaBaugh, J.W., USGS Reddy, M.M., USGS Schuster, P.S., USGS Striegl, R.G., USGS Triska, F.J., USGS Winter, T.C., USGS	Exchange of Water, Solutes, and Nutrients at the Sediment-Water Interface Affects a Northern Minnesota Watershed at Multiple Scales
P12	Leonhart, L.S., Hargis & Assoc., Inc. Roudebush, E.M. , Hargis & Assoc., Inc. Long, M.R., Hargis & Assoc., Inc. Scully, B.A., Hargis & Assoc., Inc. Semmens, B.A., Hargis & Assoc., Inc.	Hydrogeology of the Alluvial Aquifer Along the Curtiss Reach of the San Pedro River
P13	Harmel, R. D. , USDA-ARS GSWRL King, K. W., USDA-ARS Richardson, C. W., USDA-ARS GSWRL Williams, J.R., Blackland Res. & Extension Center Arnold, J. G., USDA-ARS GSWRL	Analysis of Long-Term Precipitation for the Central Texas Blackland Prairie: 1939 to 1999
P14	Hardegreve, S. , USDA-ARS NWRC Van Vactor, S.S., USDA-ARS NWRC Healy, K.R., USDA-ARS NWRC Alonso, C. V., USDA-ARS NSL Bonta, J. V., USDA-ARS Bosch, D. D., USDA-ARS SEWRL Fisher, D. S., USDA-ARS Goodrich, D. C., USDA-ARS SWRC Harmel, R. D., USDA-ARS GSWRL Steiner, J. L., USDA-ARS GRL Van Liew, M. W., USDA-ARS GRL	Multi-Watershed Evaluation of WSR-88D (NEXRAD) Radar-Precipitation Products
P15	Grow, D. , Univ. of Arizona	Substrate and Dendrochronologic Streamflow Reconstruction
P16	Endale, D. , USDA-ARS Fisher, D. S., USDA-ARS Steiner, J. L., USDA-ARS GRL	Long-Term Rainfall and Runoff Characteristics of a Small Southern Piedmont Watershed
P17	Kennedy, J. , USDA-ARS SWRC Keefer, T., USDA-ARS SWRC Paige, G., USDA-ARS SWRC Barnes, F., Univ. of Arizona	Evaluation of Dielectric Constant-Based Soil Moisture Sensors in a Semiarid Rangeland
P18	Renard, K. G. (ret.), USDA-ARS SWRC	An ARS Retiree Looks at USDA Water Resource Programs
P19	Burkart, M. R. , USDA-ARS NSTL Tomer, M. D., USDA-ARS NSTL James, D.E., USDA-ARS NSTL Isenhardt, T. M., Iowa State Univ.	Modeling Hydrologic Variables and Terrain Features for Strategically Locating Riparian Buffers
Posters: Hydrology IV (Remote Sensing and GIS)		
P20	Holifield, C.D. , USDA-ARS SWRC Emmerich, W. E., USDA-ARS SWRC Moran, M. S., USDA-ARS SWRC Bryant, R., USDA-ARS SWRC Verdugo, C. L., USDA-ARS SWRC	Estimating Regional Daytime Net Carbon Dioxide Flux Using Remotely Sensed Instantaneous Measurements
P21	Starks, P.J. , USDA-ARS GRL Jackson, T. J., USDA-ARS HRSL	Inferring Root Zone Soil Water Content by Assimilating Remotely Sensed Data into a Soil Water Model

P22	Bryant, R. , USDA-ARS SWRC Thoma, D., USDA-ARS SWRC Moran, S., USDA-ARS SWRC Holifield, C., USDA-ARS SWRC Goodrich, D., USDA-ARS SWRC Keefer, T., USDA-ARS SWRC Paige, G., USDA-ARS SWRC Williams, D. J., US-EPA Skirvin, S., USDA-ARS SWRC	Evaluation of Hyperspectral, Infrared Temperature and Radar Measurements for Monitoring Surface Soil Moisture
P23	Alonso, C.V. , USDA-ARS NSL Augustine, J. A., NOAA ARL SRRB Meyers, T., NOAA ATDD Schaefer, G. L., USDA-NRCS NWCC White, L., Jackson State Univ.	Monitoring Climate and Weather Variability in Mississippi
Posters: Ecology I		
P24	Mayer, P. , US-EPA Striz, E., US-EPA Shedlock, R., USGS Doheny, E., USGS Groffman, P., Institute of Ecosystem Studies	The Effects of Ecosystem Restoration on Nitrogen Processing in an Urban Mid-Atlantic Piedmont Stream
P25	Martens, D. A. , USDA-ARS SWRC McClain, J. E.T., USDA-ARS SWRC	Vegetation Community Impacts on Soil Carbon, Nitrogen and Trace Gas Fluxes
P26	Korfmacher, J.L. , USDA-FS RFSL Chambers, J. C., USDA-FS RFSL	Influences of Alluvial Fans on Upland Watersheds in Central Nevada
P27	Emmerich, W. E. , USDA-ARS SWRC	Carbon Dioxide Fluxes on Walnut Gulch Experimental Watershed
Posters: Watershed Networks and Data Management II		
P28	Unkrich, C. , USDA-ARS SWRC	Hydrologic Data Processing Technology at the Southwest Watershed Research Center - Past, Present and Future
P29	Fox, D. , USDA-ARS SWRC Miller, S. N., Univ. of Wyoming	Walnut Gulch Experimental Watershed (WGEW) Database Support
P30	Eads, R., USDA-FS PSW Lewis, J. , USDA-FS PSW	Turbidity Threshold Sampling in Watershed Research
P31	Keppeler, E. , USDA-FS PSRS Lewis, J., USDA-FS PSRS Lisle, T., USDA-FS PSRS	Effects of Forest Management on Streamflow, Sediment Yield, and Erosion, Caspar Creek Experimental Watersheds
P32	Arnold, J. G. , USDA-ARS GSWRL Harmel, R. D. USDA-ARS GSWRL Richardson, C. W., USDA-ARS GSWRL	Use of the ARS Watershed Network for Developing and Validating Models
P33	Seyfried, M. , USDA-ARS NWRC	Distribution and Application of Research Watershed Data
P34	Gburek, W.J. , USDA-ARS PSWMRU Sharpley, A.N., USDA-ARS Srinivasan, M.S., USDA-ARS PSWMRU Kleinman, P.J., USDA-ARS Veith, T.L., USDA-ARS PSWMRU Vadas, P.A., USDA-ARS Bryant, R.B., USDA-ARS Stout, W.L., USDA-ARS Dell, C.J., USDA-ARS	Merging Hydrology and Water Quality - The Mahantango Creek Watershed
P35	Rawls, W. , USDA-ARS HRSL Kustas, W.P., USDA-ARS HRSL Schmugge, T.J., USDA-ARS HRSL Ritchie, J.C., USDA-ARS HRSL Jackson, T.J., USDA-ARS HRSL Rango, A., USDA-ARS JER Doraiswamy, P., USDA-ARS HRSL	Remote Sensing in Watershed Scale Hydrology
Posters: Water Quality and Quantity II		
P36	Lerch, R.N. , USDA-ARS Blanchard, P.E., Univ. of Missouri	Herbicide Contamination and Transport in Northern Missouri and Southern Iowa Streams
P37	Hubbard, R. , USDA-ARS SEWRL Sheridan, J. M., USDA-ARS SEWRL Bosch, D. D., USDA-ARS SEWRL	A Derived-Distribution Approach to Estimating Daily Loads of Sediment in Coastal Plain Streamflow
P38	Tomer, M.D., USDA-ARS NSTL Burkart, M.R. , USDA-ARS NSTL	Long-Term Effects of N Fertilizer on Groundwater in Two Small Watersheds

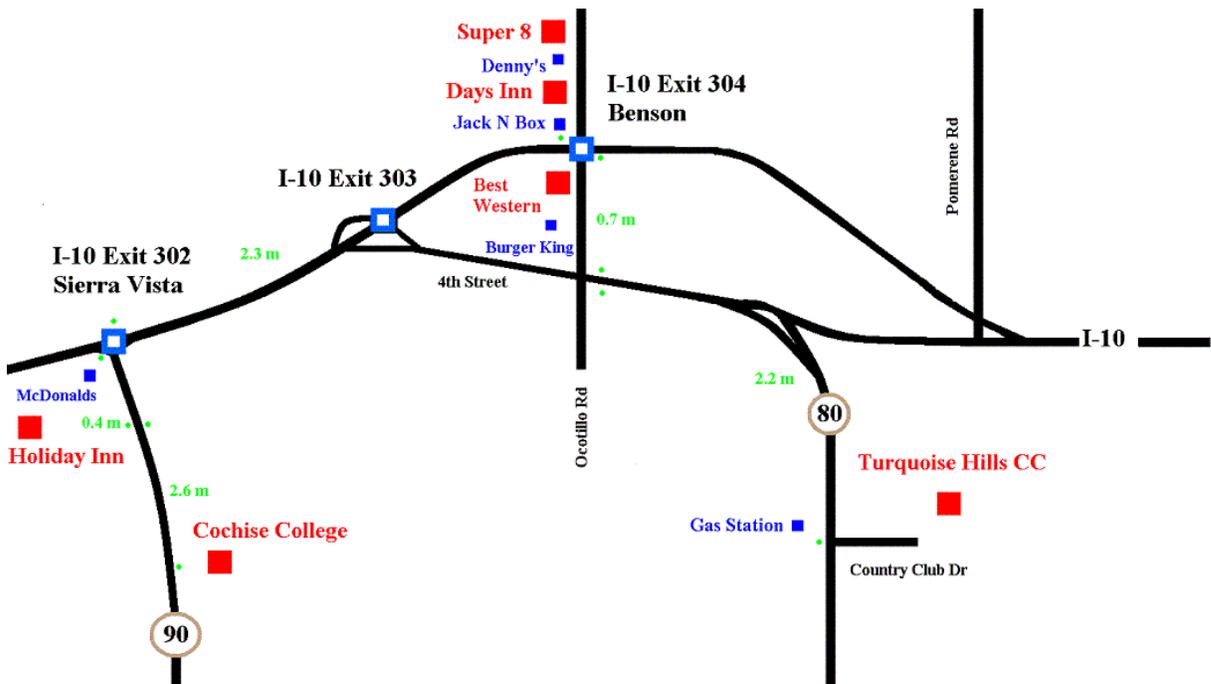
P39	McBroom, M. , Stephen F. Austin State Univ. Beasley, R. S., Stephen F. Austin State Univ. Chang, M., Stephen F. Austin State Univ. Gowin, B., Temple Inland Forest Products Corp. Ice, G., Nat. Council for Air and Stream Improvement	Runoff and Sediment Losses from Annual and Unusual Storm Events from the Alto Experimental Watersheds, Texas: 23 Years After Silvicultural Treatments
P40	Jorgensen, E.E. , US-EPA Holub, S.M., US-EPA Silva, G., ORISE Mayer, P.M., US-EPA West, A.E., ORISE Gonsoulin, M.E., US-EPA Tunnell, S.J., Oklahoma State Univ. Clark, J.E., Oklahoma State Univ. Parsons, J.L., Oklahoma State Univ. Engle, D.M., Oklahoma State Univ. Hellgren, E.C., Oklahoma State Univ.	Sources and Estimated Load of Bioavailable Nitrogen Attributable to Chronic Nitrogen Exposure and Changed Ecosystem Structure and Function
P41	Quertin, D. P. , Univ. of Arizona McReynolds, K., Univ. of Arizona Pater, S., Univ. of Arizona Schalau, J., Univ. of Arizona Schwartz, K., Univ. of Arizona Sutton, S., Arizona Dept. Environ. Quality Ward, S., Arizona Dept. Environ. Quality Young, D. J., Univ. of Arizona	Reaching Communities Across Arizona with Water Education
Posters: Water Quality and Quantity III (Fire)		
P42	Pierson, F.B. , USDA-ARS NWRC Robichaud, P. R., USDA-FS RMRS Spaeth, K. E., USDA-NRCS NWRC Moffet, C. A., Univ. of Idaho	Impacts of Fire on Hydrology and Erosion in Steep Mountain Big Sagebrush Communities
P43	Fierchinger, G. , USDA-ARS NWRC Clark, P.E., USDA-ARS NWRC	Potential Hydrologic Response to a Prescribed Fire on a Small Mountainous Watershed
P44	Meixner, T. , UC-Riverside Fenn, M. E., USDA-FS PSW Wohlgemuth, P.M., USDA-FS PSW	Fire Disturbance and Nitrogen Deposition Impacts at the Watershed Scale in Southern California
30 October, Thursday breakfast 7:00 - 8:00 AM catered at Cochise College		
30 October, Thursday Morning 8:00-9:45 AM Cochise College Concurrent Sessions: Water Quality and Quantity II and Integrated Management		
Water Quality and Quantity II, Moderator: Mike Shannon, ARS		
8:00-8:15	Murdoch, P. , USGS Minocha, R., USFS	Multi-Scale Assessment of the Extent and Effects of Calcium Depletion in Forest Soils of the Upper Delaware River Basin
8:15-8:30	Wohlgemuth, P.M. , USDA-FS PSW	Post-Fire Erosion Control Research on the San Dimas Experimental Forest: Past and Present
8:30-8:45	Meixner, T. , UC-Riverside Wohlgemuth, P.M., USDA-FS PSW	Climate Variability, Fire, Vegetation Recovery, and Watershed Hydrology
8:45-9:00	Ryan, S.E. , USDA-FS Dixon, M. K., USDA-FS Dwire, K. A., USDA-FS Emmett, W. W. (ret.), USGS	Historical and On-Going Hydrologic and Sediment Transport Research at Little Granite Creek near Bondurant, Wyoming
9:00-9:15	Robichaud, P.R. , USDA-FS RMRS Brown, R.E., USDA-FS RMRS	Quick Response Small Catchment Monitoring Techniques For Comparing Postfire Rehabilitation Treatment Effectiveness
9:15-9:30	Gottfried, G. J. , USDA-FS Neary, D. G., USDA-FS Baker, Jr., M. B., USDA-FS Ffolliott, P. F., Univ. of Arizona	Impacts of Wildfire on Hydrologic Processes in Forest Ecosystems: Two Case Studies
9:30-9:45	Discussion	
Integrated Management, Moderator: Bill Kepner, EPA		
8:00-8:15	Levinson, B. , US-EPA ORD Thornton, K. W., FTN Associates Ltd.	Managing Interdisciplinary Research: Lessons Learned from the EPA-STAR/NSF/USDA Water and Watersheds Research Program

8:15-8:30	Brandau, B., BLM Wittler, R. , BR Orr, B., Univ. of Arizona	San Simon Watershed Assessment and Restoration Plan
8:30-8:45	Dolloff, C. A., USFS SRS Roghair, C.N. , USFS CATT Moran, J.D., USFS CATT Kirk, D.M., USFS GWJNF	Research and Management Partnership for Stream Habitat Inventory in the Appalachians
8:45-9:00	Lopes, V.L. , University of Arizona J. E. de Steiguer, University of Arizona	Integrated Watershed Management: A New Paradigm for Natural Resource Management
9:00-9:15	Day, J.W., Louisiana State Univ. Ko, J.-Y. Louisiana State Univ. Cable, J., Louisiana State Univ. Day, J.N. Fry, B. , Louisiana State Univ. Hyfield, E., Louisiana State Univ. Justic, D., Louisiana State Univ. Kemp, P., Louisiana State Univ. Lane, R., Louisiana State Univ. Mashrique, H., Louisiana State Univ. Reyes, E., Univ. of New Orleans Rick, S., Univ. of Louisiana at Lafayette Snedden, G., Louisiana State Univ. Swensen, E., Templet, P., Louisiana State Univ. Twilley, R., Univ. of Louisiana at Lafayette Wheelock, K. Wissel, B., Louisiana State Univ.	Pulses: The Importance of Pulsed Physical Events for Louisiana Floodplains and Watershed Management
9:15-9:30	Johnson, S. L. , USDA-FS PNWRS Swanson, F. J., USDA-FS PNWRS McGuire, K., Oregon State Univ. Jones, J. A., Oregon State Univ. Harmon, M., Oregon State Univ.	Experimental Watersheds, Nutrient Dynamics and Collaborative Research
9:30-9:45	Discussion	
30 October, Thursday Morning 10:00-11:30 AM Cochise College Concurrent Sessions: Ecology and Integrating Science with Watershed Decision Making		
Ecology II, Moderator: Mike Shannon, ARS		
10:00-10:15	Reyes, E. , Univ. of New Orleans Lane, R., Louisiana State Univ. Day, J. W., Louisiana State Univ.	Watershed Analysis of Pulsing Freshwater Events Using Landscape Modeling in Coastal Louisiana
10:15-10:30	Wissmar, R. C. , Univ. of Washington Timm II, R. K., Univ. of Washington	Changes in Land Uses, Hydrology and Fish Habitats in an Urban Drainage, Cedar River, Washington
10:30-10:45	Hunsaker, C.T. , USDA-FS PSRS Eagan, S. M., USDA-FS PSRS	Small Stream Ecosystem Variability in the Sierra Nevada of California
10:45-11:00	Hill, B. H. , US-EPA McCormick, F. H., US-EPA	An Interregional Comparison of Channel Structure and Transient Storage in Streams Draining Harvested
11:00-11:15	McCormick, F. H. , US-EPA Hill, B. H., US-EPA	Interregional Comparison of Nutrient Uptake Rates in Managed and Old-Growth Watersheds
11:15-11:30	Discussion	
Integrating Science with Watershed Decision Making II, Moderator: Bill Kepner, EPA		
10:00-10:15	Miller, R. C., Univ. of Arizona Guertin, D. P. , Univ. of Arizona Heilman, P., USDA-ARS SWRC	An Internet-based Spatial Decision Support System for Rangeland Watershed Management
10:15-10:30	Lane, L. J. (ret.), USDA-ARS SWRC	Transfer and Application of Simulation Modeling in Important Environmental Problems
10:30-10:45	de Steiguer, J. E. , Univ. of Arizona Duberstein, J.N., Univ. of Arizona Lopes, V. L., Univ. of Arizona	The Analytic Hierarchy Process as a Means for Integrated Watershed Management

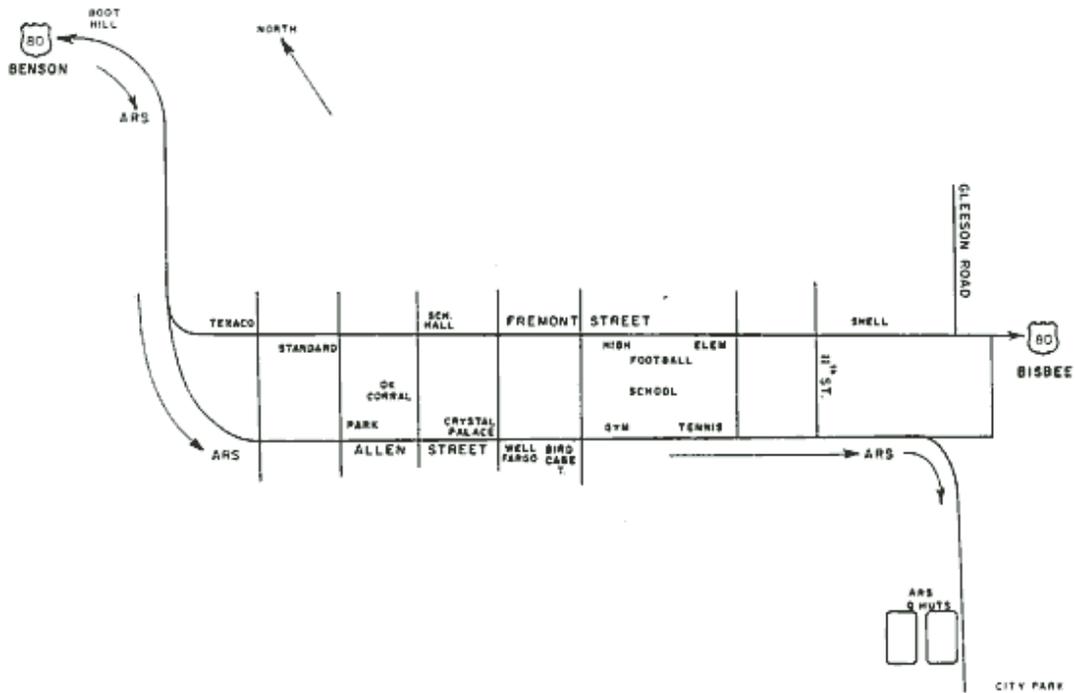
10:45-11:00	Novotny, V. , Northeastern Univ. Clark, D., Marquette Univ. Griffin, R.J., Marquette Univ.	Urban Watershed/Water Body Restoration - The Driving Forces
11:00-11:15	Heilman, P. , USDA-ARS SWRC Duan, Y., Univ. of Arizona Miller, R. C., Univ. of Arizona Guertin, P. D., Univ. of Arizona	Calculating the Cost of Reducing Erosion from a Small Rangeland Watershed
11:15-11:30	Duberstein, J.N., Univ. of Arizona de Steiguer, J.E. , Univ. of Arizona	Contingent Valuation and Watershed Management: A Review of Past Uses and Possible Future Applications
30 October, Thursday late Morning 11:40 AM - 12:30PM Cochise College		
11:40-12:15	Meeting synthesis by ICRW Stakeholder Committee	
12:15-12:30	Meeting summary and wrap-up by ICRW Program Committee	
30 October, Thursday Afternoon - Optional Tours of Kartchner Caverns		
<p>The conference location in Benson is only a few miles from the extraordinary Kartchner Caverns that recently opened for public tours. The managers of Kartchner Caverns State Park have reserved six tours (20 people each) for our group after the ICRW conference on Thursday, 30 October 2003. Tours leave every 20 minutes and last approximately 70 minutes. The tours reserved for ICRW will be filled on a first-come-first-serve basis through the ICRW registration.</p>		
30 October - 1 November, Companion Conference: <i>Santa Rita Experimental Range: One-Hundred Years (1903-2003) of Accomplishments and Contributions.</i>		
<p>A companion conference: <i>Santa Rita Experimental Range: One-Hundred Years (1903-2003) of Accomplishments and Contributions</i> is scheduled in Tucson, AZ, 30 October - 1 November 2003, to celebrate the accomplishments and forecast the future contributions of research performed on the longest continuously operating research area dedicated to the sustainable management of North American rangelands. Invited speakers will review the significance of research findings developed on the Santa Rita Experimental Range (SRER) and forecast the opportunities and directions for future research. Investigators who have completed research on the SRER will give volunteer poster presentations. A daylong field tour and BBQ at the SRER will occur on the final day. Papers from all invited speakers and poster presentations are available in a proceeding published by the USDA Forest Service Rocky Mountain Research Station. It will be distributed at the conference. Details are available by contacting Mitchel McClaran, University of Arizona at 520-621-1673.</p>		

MAPS

BENSON, ARIZONA and surrounding area



ARS Tombstone Facility Location of Tuesday Night Bar-B-Que



ICRW Organizing Committee:

Susan Moran, David Goodrich and Phil Heilman, USDA ARS Southwest Watershed Research Center
smoran@tucson.ars.ag.gov
dgoodrich@tucson.ars.ag.gov
pheilman@tucson.ars.ag.gov

Walter Rawls, USDA ARS - Hydrology and Remote Sensing Laboratory
wrawls@hydrolab.arsusda.gov

Bill Gburek, USDA ARS - Pasture Systems and Watershed Management Research
wjg1@psu.edu

Beau McClure, Bureau of Land Management
[Beau McClure@blm.gov](mailto:Beau_McClure@blm.gov)

Bill Kepner and Lee Mulkey, Environmental Protection Agency
Kepner.William@epamail.epa.gov
mulkey.lee@epa.gov

George Leavesley, U.S. Geological Survey
george@usgs.gov

Marshall Moss, Consortium of Universities for the Advancement of Hydrologic Science, Inc.
memoss@worldnet.att.net

Doug Ryan, U.S. Forest Service
dryan01@fs.fed.us

Jon Werner, USDA Natural Resources Conservation Service
jon.werner@usda.gov

ICRW Proceedings:

The proceedings of The First Interagency Conference on Research in the Watersheds have been published by USDA-ARS in hard bound copy and are available on CD-ROM. This publication is a high-quality representation of state-of-the-art research in watersheds. Copies of the proceedings can be obtained by contacting members of the ICRW Organizing Committee.