

# 17th ANNUAL MONTANA WATER CONFERENCE

Holiday Inn  
West Yellowstone, Montana  
October 5 & 6, 2000

**S** Student Research Project

Thursday October 5

**WC** - Research funded through the Montana Water Center

8:00 - noon Field Trip to Yellowstone National Park lead by Dr. Stephan Custer Year 2000 Water Legend, plus David Nimick and Phil Farnes. Controlled groundwater ... wetlands ... glaciers ... lava flows ... calderas and geysers. Leaving from the Holiday Inn Parking lot via bus. **Extra fee, so register early. Seating is limited.**

12:00 - 1:00 REGISTRATION AT HOLIDAY INN

1:00 - 1:20 Opening Remarks

## Session A. WATER QUALITY

Moderator: Jennifer Wintersteen, U.S. EPA Montana

1:20 - 1:40 **Diel Variation in Dissolved Metal Concentrations in Streams Draining Abandoned Mine Lands**  
David A. Nimick, Hydrologist and Thomas E. Cleasby  
U.S. Geological Survey

1:40 - 2:00 **Acid Rock Drainage on Butte Hill: A Tale of Two Pits**  
Pam Newbrough, Graduate Student  
and Chris Gammons  
**S** Geological Engineering - MT Tech of UM

2:00 - 2:20 **Waterline Permeation by Volatile Organic Compounds - A Case Study: Big Sandy, Montana**  
Mike Trombetta, Chief and Bill Hammer, Environmental Specialist  
Hazardous Waste Site Cleanup Bureau - Montana DEQ

2:20 - 2:40 **The Yellowstone River Drainage NAWQA and EMAP**  
Nathan Majerus, Student Intern U.S. Geological Survey

2:40 - 3:00 **Enhanced Wet Air Oxidation of Sediments Contaminated with Polychlorinated Biphenyls**  
James E. Duffy, Assistant Professor  
Marc Anderson, Charles G. Hill Jr., and Walter A. Zeltner  
Chemical Engineering, Montana State University

3:00 - 3:20

**BREAK**

Thursday Oct. 5 continued..... Concurrent Sessions

**Session B. WETLANDS/WATER TREATMENT**

**Moderator: Lynda Saul, Montana DEQ**

3:20 - 3:40  
**S**  
**Geochemical Considerations for the Operation and Closure of Anaerobic Wetlands for the Sequestration of Heavy Metals: The Importance of Metal-Sulfide Complexation and the Importance of Long-Term Sulfide Precipitate Stability**  
Angela K. Fransden, M.S. graduate & USGS Intern - Environmental Engineering - Montana Tech of UM

3:40 - 4:00  
**WC**  
**Constructed Wetlands for Water Quality Enhancement: Research at MSU, 1995-2000**  
Otto R. Stein, Associate Professor  
P.B. Hook, J.C. Cahoon, J.A. Biederman, W.C. Allen, and B.W. Towler  
Civil Engineering - Montana State U.

4:00 - 4:20  
**Cold-region Feasibility of Water Treatment Wetlands: Plant Species Selection is Critical**  
Paul B. Hook, Assistant Professor  
W.C. Allen, O.R. Stein, and J.A. Biederman -Land Resources and Environmental Sciences, Montana State U.

4:20 - 4:40  
**S**  
**The Fates of Polar Organic Solvents in a Constructed Wetland Treatment System**  
Janet Kowles, M.S. Graduate Student  
O.R. Stein, W.L. Jones, and A.K. Camper  
Civil Engineering - Montana State U.

4:40 - 5:00  
**S**  
**Effects of Supplemental Organic Carbon Addition on Sulfate Reduction and Zinc Precipitation Using Microcosm Constructed Wetlands in Cold Climate Regions**  
Deborah J. Borden, M.S. Graduate Student -- O.R. Stein, P.B. Hook, and W.L. Jones --- Civil Engineering - Montana State University

**Session C. SURFACE WATER**

**Moderator: Norm Middlyng, USGS**

3:20 - 3:40  
**Root-Rap or Restoration: The Misapplication of Rosgen-type Structures in Montana**  
Paul Callahan, Senior Hydrologist  
Land & Water Consulting

3:40 - 4:00  
**An Excel Template for Generating Rating Curves for Corrugated-Metal-Pipe Culverts**  
Joel Cahoon, Assistant Professor and Dan Baker  
Civil Engineering, Montana State University

4:00 - 4:20  
**Flood Hydrology for Dry Creek, Lake County, Northwestern Montana**  
Charles Parrett, Supervisory Hydrologist  
U.S. Geological Survey

4:20 - 4:40  
**Suspended-sediment Characteristics of the Yellowstone River at the Pine Creek Bridge, near Livingston, MT**  
Kyle W. Griffith, Student Intern  
U.S. Geological Survey

4:40 - 5:00  
**Suspended Sediment in the Ruby River above Ruby River Reservoir**  
Joe Van Mullem, Consulting Engineer

5:30 - 7:00 **POSTER SESSION AND HAPPY HOUR** pop, snacks and partially-hosted bar

7:00 **DINNER** Presentation of 5<sup>th</sup> Annual Montana Water Legend Award to Dr. Stephan Custer, Montana State University - Earth Science

Friday Oct. 6 -- Concurrent Sessions

**Session D. WATER MANAGEMENT - I**  
**Moderator: Jane Holzer, MT Salinity Control**

8:00 - 8:20 **S** **Instream Flow Requirements for Riparian Vegetation in West-Central Montana**  
 Stephanie K. Mulica, M.S. Graduate Student with Donald Potts, and Ward McCaughey - School of Forestry - UM

8:20 - 8:40 **WC** **Watershed Restoration Assessment for Lost Creek -- a tributary of the Upper Clark Fork River**  
 John Lhotak and James Harris M.S. Students  
 Vicki Watson, Professor  
 Environmental Studies, UM

8:40 - 9:00 **S** **Baseline Data and the Methodology for Evaluating Management Changes on a Great Plains River in Montana**  
 O'Brien Hollow, M.S. Student  
 Riparian and Wetland Research Program - UM School of Forestry

9:00 - 9:20 **The Hydrogeologic Conceptual Model for Source Water Protection Planning**  
 James Swierc, Water Quality Specialist  
 Source Water Protection Program - Montana DEQ

9:20 - 9:40 **Ground Water on a Platter: Serving Data on the World-Wide Web from the Montana Ground-Water Information Center**  
 Tom Patton, Hydrogeologist and Luke Buckley  
 Montana Ground-Water Information Center - (GWIC)  
 Montana Bureau of Mines and Geology

9:40 - 10:00 **Interactive Access to Comprehensive Watershed Data in Montana over the World Wide Web**  
 Duane Anderson, Water Information System Coordinator  
 Natural Resources Information System (NRIS)

10:00 - 10:20 **BREAK**

**Session E. GROUNDWATER**  
**Moderator: Kate Miller, MBMG**

8:00 - 8:20 **WC** **Hydrogeology of the West Billings Area, Yellowstone County, Montana**  
 Jon Reiten, Assistant Research Hydrologist  
 Montana Bureau of Mines & Geology

8:20 - 8:40 **WC** **Ground-Water Recharge Characterization Using Isotope and Geochemical Analyses, West Billings Area, Yellowstone County, Montana**  
 John Olson, Asst. Research Hydrologist  
 Montana Bureau of Mines & Geology

8:40 - 9:00 **Application of Earth Resistivity to Characterize Groundwater Conditions**  
 Mark Cunnane, Engineer / Hydrogeologist  
 Western Groundwater Services

9:00 - 9:20 **Ground-Water Monitoring along Silver Bow Creek, Subarea 2, Silver Bow Crossing to Miles Crossing**  
 Peter M. Norbeck, Hydrogeologist  
 Montana Bureau of Mines and Geology

9:20 - 9:40 **WC** **Mantle Flatulence and Septic Effluent: Sampling the Missoula Aquifer for Environmental Tracers**  
 John LaFave, Assistant Research Hydrogeologist  
 Montana Ground-Water Assessment Program  
 Montana Bureau of Mines and Geology

9:40 - 10:00 **S** **WC** **Assessment of Groundwater Contamination from Subdivisions**  
 Kerri Fleming, M.S. Student and Steve Custer  
 Dept. of Earth Sciences  
 Montana State University

10:00 - 10:20 **BREAK**

Friday Oct. 6 - continued

**Session F. WATER MANAGEMENT - II Moderator: John Arrigo, MT DEQ**

10:20 - 10:40	<b>A Basin Approach for Predicting Changes in Surface Water Quality</b> Stefanie Vandaele, Project Engineer John Carstensen, and Michael Nicklin Nicklin Earth and Water Inc.
10:40 - 11:00	<b>Riparian Timber Harvest Effects on Stream Temperature and Riparian Microclimate</b> Ron Steiner, Biological Technician and Brian Sugden Plum Creek Timber Co.
11:00 - 11:20	<b>The Forest Road Sediment Assessment Methodology: A Practical Approach to the Development of Sediment TMDLs</b> Paul Callahan, Senior Hydrologist Land & Water Consulting
11:20 - 11:40	<b>Desktop GIS - Tools, Data, and Techniques for Groundwater Projects</b> Jim Stimson, Water Quality Specialist Source Water Protection Program -MT DEQ
11:40 - 12:00	<b>Protecting Montana's Water - An Enforcement Perspective</b> David Rise, Environmental Enforcement Specialist MT DEQ
12:00 - 12:10	<b>BUSINESS ANNOUNCEMENTS --- ADJOURN</b>

**POSTERS - Authors will be present during the Thursday 5:30 p.m. Poster Session**

<b>A Rating System for Rural Culvert Crossing Repair and Maintenance</b> Dan Baker, Joel Cahoon, and Jodi Carson Western Transportation Institute - MSU	<b>Geomorphology, Floodplain Tailings, and Metal Transport in the Upper Clark Fork Valley, Montana</b> John H. Lambing, Jim Smith, David Nimick, Charles Parrett, Michael Ramey, and William Schafer U.S. Geological Survey
<b>Metal Loading to Basin Creek from Surface and Ground Water near the Buckeye and Enterprise Mines, Jefferson County, Montana</b> Michael R. Cannon, Thomas E. Cleasby, and David Nimick - U.S. Geological Survey	<b>Characterizing Water, Bed Sediment, and Aquatic Health in a Watershed Affected by Historical Mining, Montana</b> David A. Nimick, A. M. Farag, and S.E. Church U.S. Geological Survey
	<b>The Montana Ground Water Assessment Program: Progress Report</b> Tom Patton, Larry Smith, Luke Buckley, John LaFave, and Cam Carstarphen Montana Ground-Water Information Center - MBMG
<b>Sediment Retention in a SW Montana Riparian Meadow: implications for monitoring and management</b> Paul B. Hook, J.J. Conner, and P. House Land Resources and Environmental Sciences -MSU	<b>Ground-Water Characterization of the Flathead Lake Area</b> Larry Smith, J. LaFave, T. Patton, C. Carstarphen, D. Mason, and M. Richter Montana Ground-Water Assessment Program - MBMG
<b>John Wesley Powell -- A Legend in Water -- An Advocate for Public Science</b> Vern House, Agricultural & Applied Economics Montana State University and Clemson U.	<b>Compounds of Emerging Environmental Concerns</b> Joanna N. Thamke, L.K. Tuck, and L.H. Tornes - U.S. Geological Survey
<b>Willow Colonization of Mid-Channel Bars in a Braided Stream Reach, Taylor Fork, Gallatin River</b> Deb Kanter, P.B. Hook, and W. Locke Land Resources and Environmental Sciences - MSU	<b>Large Diel Variations in Water Quality in the Big Hole River</b> Adam Wenz, Chris Gammons, and Rebecca Ridenour Dept. of Chemistry & Geochemistry, MT Tech of UM

**THANKS TO ALL WHO MAKE THIS POSSIBLE**

**AWRA 2000 Officers Joanna Thamke, Donna Rise, Larry Dolan**

**The Water Center - Kathy Stephens and May Mace, Secretary and the Field Trip Leaders!**

