

**Third International Water Conference**  
**Research and Education in an International Watershed:**  
**Implications for Decision Making**  
 &  
**Red River Basin River Watch Forum**  
**Youth Perspectives on Local Water Quality**

**Tuesday March 13th**

8:00 am - 9:00 am	<b>River Watch Forum Registration and Continental Breakfast</b> - Ballroom 4 (display setup until 9:00 am in Ballroom 5 )
9:00 am - 9:30 am	<b>Preliminary Display Judging without Students</b> - Ballroom 5
9:30 am - 9:45 am	<b>Forum Opening Presentation</b> - Ballroom 5
9:45 am - 11:50 am	<b>Forum Concurrent Sessions</b> - <b>Display Judging with Students</b> - Ballroom 5 <b>Data Management</b> - Bluebird - <i>Dave DeMuth/Andrew Shephard</i> <b>Communications/Video Messages</b> - Finch - <i>Larimore/Red Lake Students</i> <b>Pod casting RW/School News</b> - Cardinal - <i>Stephen/Argyle Central Students</i> <b>River Watch Graduates Panel Discussion</b> - Hummingbird <i>John Polansky, Jessica Poegel, Laura Bell, Maggie Murphy, and Jordan Sand.</i>
12:00 pm - 12:45 pm	<b>Lunch</b> - Ballroom 4 Churchill Trip Presentation - <i>Ila LaChapelle, Science Teacher, Walhalla High School, Walhalla, ND.</i>
1:00 pm - 2:00 pm	<b>Forum School Presentations</b> - Ballroom 5
2:00 pm - 2:30 pm	<b>Awards</b> - Ballroom 5
2:30 pm - 4:00 pm	<b>Closing and Display Take Down</b> - Ballrooms 5
4:00 pm - 6:00 pm	<b>Conference Registration</b> - Ballroom 4
4:00 pm - 6:00 pm	<b>Conference Exhibitor Set-up</b> - Ballroom 5
6:00 pm - 6:30 pm	<b>Conference Welcome and Introductions</b> - Ballroom 5 <i>Paul Swenson, US Co-Chair, Management Board, International Water Institute and Tribal Liaison Officer, MN DNR, Bemidji, MN,</i>
6:30 pm - 7:30 pm	<b>Plenary Session</b> - Ballroom 5 <b>"Development of the Red River Basin Flood Forecasting Display Tool"</b> <i>Christy Shostal, GIS Specialist, Houston Engineering, Maple Grove, MN. Additional comments by Mark Ziemer, Senior Hydrologic Forecaster, North Central River Forecasting Center, National Weather Service, Chanhassen, MN, Charles Fritz, Director, International Water Institute, Fargo, ND.</i>
7:30 pm - 8:30 pm	<b>Plenary Session</b> - Ballroom 5 <b>"Water Flows Downhill"</b> <i>Tony Dean, Tony Dean Outdoors, Pierre, SD.</i>
8:30 pm - 10:30 pm	<b>Social with cash bar</b> - Ballroom 4

**Wednesday, March 14<sup>th</sup>**

7:30 am - 8:00 am	<b>Conference Registration</b> - Ballroom 4
8:00 am - 9:30 am	<b>River Watch Student Presentations</b> - Ballroom 5
9:30 am - 10:00 am	<b>Break</b> - Ballroom 4
10:00 am - 11:00 am	<b>Plenary Session</b> - Ballroom 5 <b>"Application of Fundamental Geomorphic Concepts for Development of Sediment TMDLs".</b> <i>Dr. Andrew Simon, Research Geologist, Watershed Physical Processes Research Unit, USDA, Sedimentation Laboratory, Oxford, MS.</i>
11:00 am - 12:00 pm	<b>Plenary Session</b> - Ballroom 5 <b>"Rigler's Gift and Lake 227: When Will We Learn Their Lessons?"</b> <i>Dr. Robert Hecky, Professor of Biology, 2006 Laureate of Frank H. Rigler Award, University of Waterloo, Waterloo, ON.</i>
12:00 pm - 1:00 pm	<b>Lunch</b> - Ballroom 4
1:00 pm - 2:00 pm	<b>Concurrent Session 1A - Sediments: Sources, Loads, and Goals for Reduction.</b> - Ballroom 1 <i>Moderated by Mark Deutschman, Houston Engineering, Maple Grove, MN.</i> <b>1 - The Importance of Understanding Suspended-Sediment Transport.</b> <i>Lan Tornes, Water Quality Specialist, USGS, MN Water Science Center, Mounds View, MN.</i> <b>2 - A Sentinel Watershed-Systems Approach to Future Water Quality Management.</b> <i>Joseph Magner, Hydrologist, MN PCA, St. Paul, MN.</i> <b>Concurrent Session 1B - Lake Winnipeg: Ecosystem Changes.</b> - Ballroom 3 <i>Moderated by Alex Salki, Research Biologist, Freshwater Institute, Dept. of Fisheries and Oceans and Science Coordinator, Lake Winnipeg Research Consortium, Winnipeg, MB.</i> <b>1 - Climate Change, Runoff, and Lake Winnipeg, Eutrophication - Part 1.</b> <i>Mike Stainton, Fisheries and Oceans Canada, and Greg McCullough, University of Manitoba and Centre of Earth Observation Studies, Winnipeg, MB. Presented by Greg McCullough.</i> <b>2 - Climate Change, Runoff, and Lake Winnipeg, Eutrophication - Part 2.</b> <i>Mike Stainton, Fisheries and Oceans Canada, and Greg McCullough, University of Manitoba and Centre of Earth Observation Studies, Winnipeg, MB. Presented by Steve Page, Chemist, Freshwater Institute, Dept. of Fisheries and Oceans, Winnipeg, MB.</i> <b>3 - Phytoplankton Succession in Lake Winnipeg: An Overview.</b> <i>Hedy Kling, Owner, Algal Taxonomy and Ecology Inc., Winnipeg, MB.</i> <b>Concurrent Session 1C - Macroinvertebrates, Periphyton, and IBIs.</b> - Ballroom 5 <i>Moderated by Mike Ell, Environmental Administrator, ND Dept. of Health, Division of Water Quality, Bismarck, ND.</i> <b>1 - Taxonomic Resolution: Are Family Level Determinations Sufficient for Biomonitoring Purposes in Low Gradient Northern Prairie Streams?</b> <i>Andre DeLorme, Assoc. Prof. of Science, Valley City State University, Valley City, ND.</i> <b>2 - Macroinvertebrate Methods Comparison Between the North Dakota Department of Health and the Minnesota Pollution Control Agency.</b> <i>Aaron Larsen, Environmental Scientist, and Mike Ell, Environmental Administrator, ND Dept. of Health, Division of Water Quality, Bismarck, ND, and Christina Hargiss, Research Associate, Dept. of Animal and Range Sciences, North Dakota State University, Fargo, ND.</i> <b>3 - Challenges of Completing a Bioassessment on the Clearwater River.</b> <i>Corey Hanson, Water Quality Coordinator, Red Lake Watershed District, Thief River Falls, MN.</i>
2:00 pm - 3:00 pm	<b>Concurrent Sessions 2A - Sediments: Sources, Loads, and Goals for Reduction.</b> - Ballroom 1 <i>Moderated by Mark Deutschman, Houston Engineering, Maple Grove, MN.</i> <b>1 - Flow Energy, Time, and Evolution of Dynamic Fluvial Systems: Implications for Stabilization and Restoration of Unstable Systems.</b> <i>Andrew Simon, Research Geologist, USDA, Sedimentation Laboratory, Oxford, MS.</i> <b>2 - Framework for Developing Suspended and Bedded Sediment Criteria.</b> <i>Debra Taylor, Biologist, USEPA, Duluth, MN.</i>

**Concurrent Session 2B - Lake Winnipeg: Ecosystem Changes. - Ballroom 3**

*Moderated by Karen Scott, Outreach Coordinator, Lake Winnipeg Research Consortium, Inc., Winnipeg, MB.*

**1 - The Impact of Eutrophication, Climate and Exotics on the Lake Winnipeg Zooplankton Community.** *Alex Salki, Research Biologist, Freshwater Institute, Dept. of Fisheries and Oceans and Science Coordinator, Lake Winnipeg Research Consortium, Winnipeg, MB, Greg McCullough, Post Doctoral Fellow, Centre of Earth Observation Studies, University of Manitoba, Winnipeg, MB, Mike Stainton, Senior Chemist and Kaz Patalas, Senior Scientist (Ret.), Freshwater Institute, Dept. of Fisheries and Oceans, Winnipeg, MB.*

**2 - Effects of Stratification and Hypolimnetic Hypoxia on Zoobenthos in Lake Winnipeg.** *Brenda Hann, Professor, Zoology Dept., University of Manitoba, Winnipeg, MB.*

**3 - Summary of Lake Winnipeg Beam Trawl Fishing 2002-2006.** *Doug Watkinson, Fisheries Biologist and Bill Franzin, Research Scientist, Freshwater Institute, Dept. of Fisheries and Oceans, Winnipeg, MB. Presented by Al Kristofferson, Director, Lake Winnipeg Research Consortium Inc., Gimli, MB.*

**Concurrent Session 2C - Macroinvertebrates, Periphyton, and IBIs. - Ballroom 5**

*Moderated by Andrew Delorme, Assoc. Prof. of Science, Valley City State University, Valley City, ND.*

**1 - Tiered Aquatic Life Uses-The Future Basis for Biological Assessment in Minnesota.** *Joel Chirhart, Biologist, MPCA, St. Paul, MN.*

**2 - Composition and Seasonal Pattern of Invertebrate Drift in the Red River of the North near Fargo, ND.** *Wei Zheng, Graduate Student and Malcolm Butler, Professor, Dept. of Biological Sciences, North Dakota State University, Fargo, ND.*

**3 - Macroinvertebrate Responses Associated with a Change in Water-Level Regulation of Lakes in Voyageurs National Park, MN.** *Daniel McEwen, Graduate Student and Malcolm Butler, Dept. of Biological Sciences, North Dakota State University, Fargo, ND.*

3:00 pm - 3:30 pm

**Break - Ballroom 4**

3:30 pm - 4:30 pm

**Concurrent Sessions 3A - Sediments: Sources, Loads, and Goals for Reduction. - Ballroom 1**

*Moderated by Lan Tornes, Water Quality Specialist, USGS, MN Water Science Center, Mounds View, MN.*

**1 - Sediment Generation and Transport Modeling Within the South Branch, Buffalo-Red River Watershed District.** *Mark Deutschman, Houston Engineering, Maple Grove, MN.*

**2 - Fields Versus Banks: Identifying, Selecting, and Applying Research Tools to the Task of Defining Sediment Loads in Stream Reaches in the Red River Basin.** *Molly MacGregor, Principal Planner, MPCA, Detroit Lakes, MN.*

**Concurrent Session 3B - Lake Winnipeg: Watershed Nutrient Sources and Sinks. - Ballroom 3**

*Moderated by Al Kristofferson, Director, Lake Winnipeg Research Consortium, Inc., Winnipeg, MB.*

**1 - Netley-Libau Marsh - Another Piece in the Lake Winnipeg Nutrient Puzzle: Utilizing a Natural Wetland for Nutrient Removal and Bioenergy Production.** *Richard Grosshans, Project Director, International Institute for Sustainable Development, Winnipeg, MB.*

**2 - Eutrophication Issues in Lake Winnipeg: Bioavailability of Nutrient Loads.** *Sue Watson, Research Scientist, Environment Canada, Burlington, ON, Len Hendzel, Research Biologist, (Ret.), Freshwater Institute, Dept. of Fisheries and Oceans, Winnipeg, MB, and Hedy Kling, Owner, Algal Taxonomy and Ecology Inc., Winnipeg, MB.*

**Concurrent Session 3C - Macroinvertebrates, Periphyton, and IBIs. - Ballroom 5**

*Moderated by Andre DeLorme, Assoc. Prof. of Science, Valley City State University, Valley City, ND.*

**1 - Effects of Piscivore Introduction on Prairie Wetland Ecosystems: Trophic Interactions Can Alter Ecosystem Structure.** *A.J. Potthof, Graduate Student and M.G. Butler, Professor, Biological Sciences, North Dakota State University, Fargo, ND, K.D. Zimmer, Asst. Prof. of Biology, University of St. Thomas, St. Paul, MN, B.R. Herwig, Fisheries Biologist, M.A. Hanson, Wetland Biologist, J.R. Reed, Fisheries Biologist, and B.G. Parsons, Fisheries Biologist, MN DNR, Bemidji, MN, M.C. Ward, Graduate Student and D.W. Willis, Professor, Dept. of Wildlife and Fisheries Science, South Dakota State University, Brookings, SD.*

**2 - Effects of Macrophytes, Nutrients, and Fish on Periphyton Abundance in Shallow Lakes.** *M.K. Konsit, Graduate Student and M.G. Butler, Professor, Biological Sciences, North Dakota State University, Fargo, ND, K.D. Zimmer, Asst. Professor of Biology,*

*University of St. Thomas, St. Paul, MN, B.R. Herwig, Fisheries Biologist, M.A. Hanson, Wetland Biologist, and J.A. Younk, Fisheries Biologist, MN DNR, Bemidji, MN.*

4:30 pm - 5:30 pm

**Concurrent Sessions 4A - Watershed/Water Quality Education - Ballroom 1**

*Moderated by G. Padmanabhan, Director, ND Water Resources Research Institute, North Dakota State University, Fargo, ND.*

**1 - Upper Souris River TMDL Background Study.** *Wei Lin, Civil Engineering and Environmental and Conservation Sciences, Bernhardt Saini-Eidukat, Geosciences and Environmental and Conservation Sciences, and Joseph Super, Environmental and Conservation Sciences, North Dakota State University, Fargo, ND, and Mike Ell, Environmental Administrator, ND Dept. of Health, Division of Water Quality, Bismarck, ND.*

**2 - Simulation of Constituent Transport in the Red River of the North Basin, North Dakota and Minnesota, During Unsteady-Flow Conditions, 1977 and 2003-04.** *R.A. Nustad, Environmental Engineer, USGS, ND Water Science Center, Grand Forks, ND, and J.D. Bales, Hydrologist, USGS, North Carolina Water Science Center, Raleigh, NC.*

**3 - Application of Entrapped Cell Systems for Treatment of Anaerobic Sludge Digester Supernatant.** *Christopher Hill and Eakalak Khan, Professor, Dept. of Civil Engineering and Construction, North Dakota State University, Fargo, ND.*

**Concurrent Session 4B - Lake Winnipeg: Watershed Nutrient Sources and Sinks. - Ballroom 3**

*Moderated by Charles Fritz, Director, International Water Institute, Fargo, ND.*

**1 - Continuous Water Quality Monitoring and Regression Analysis to Estimate Constituent Concentrations and Loads in the Red River of the North, Fargo, ND, 2003-05.** *Karen Ryberg, Statistician, USGS, Bismarck, ND.*

**2 -Statistical and Geochemical Water-Quality Relationships of the Red River of the North, 1984-2006.** *Charles Fritz, Director, International Water Institute, Fargo, ND, and Haimeng Zhang, Assoc. Prof., Mathematics and Computer Science Dept., Concordia College, Moorhead, MN. Presented by Joel Fisher, Senior Scientist, (Ret.), International Joint Commission.*

**Concurrent Session 4C - Water Quality in Rivers and Streams - Ballroom 5**

*Moderated by George Youngs, Jr., Professor, Dept. of Sociology-Anthropology, North Dakota State University, Fargo, ND.*

**1 - The Red River Basin River Watch Monitoring Program.** *Nathalie Bays, Education Coordinator, Oak Hammock Marsh Interpretive Center, Stonewall, MB.*

**2 - River Watch: Interactive Database and Query Tools.** *David DeMuth, Jr., Math, Science and Technology Dept., University of Minnesota-Crookston, Crookston, MN and Andrew Sheppard, Computer Science Dept., University of Minnesota, Minneapolis, MN.*

**3 - A GIS Community Mapping Project.** *Nathalie Bays, Education Coordinator, Oak Hammock Marsh Interpretive Center, Stonewall, MB.*

5:30 pm - 6:30 pm

**Free time**

6:30 pm - 8:30 pm

**Dinner with cash bar - Ballroom 4**

**Presentation: Hudson Bay Expedition 2005 - An Adventure Story: 3 Paddlers, 2000 Miles.**

**"Canoeing from St. Cloud to Hudson Bay: Changing Water Quality Along the Way"**

*Scott Miller, Todd Foster, Matt Lutz, and Chuck Rose, Dept. of Environmental and Technological Studies, St. Cloud State University, St. Cloud, MN.*

Thursday, March 15<sup>th</sup>

8:00 am - 9:00 am	<p><b>Plenary Session - Ballroom 5</b> <b>"Vulnerability of Prairie Wetlands to Climate Change"</b> <i>Dr. Carter Johnson, Prof. of Ecology, Dept. of Horticulture, Landscape and Parks, South Dakota State University, Brookings, SD.</i></p>
9:00 am - 10:00 am	<p><b>Concurrent Sessions 5A - Watershed Management.</b> - Ballroom 1 <i>Moderated by Paul Swenson, Tribal Liaison Officer, MN DNR, Bemidji, MN, and US Co-Chair, Management Board, International Water Institute, Fargo, ND.</i></p> <p>1 - <b>Effect of Land Cover and Pattern on the Quality of Groundwater Discharged from Springs at the Nature Conservancy's Pigeon Point Preserve, Southeastern North Dakota.</b> <i>William Lenarz, Graduate Student and Phil Gerla, Professor, Dept. of Geology and Geological Engineering, University of North Dakota, Grand Forks, ND.</i></p> <p>2 - <b>Remote Sensing Technologies for Identification of Water and Wetlands.</b> <i>Brian Huberty, National Wetland Inventory Coordinator, USFWS, R-3 Ecological Services, Ft. Snelling, MN.</i></p> <p><b>Concurrent Session 5B - High Resolution Elevation Data.</b> - Ballroom 3 <i>Moderated by Ron Wencil, Geospatial Liaison, USGS, Mounds View, MN.</i></p> <p>1 - <b>LiDAR Technology, Best Practices, Accuracy, and Products.</b> <i>Jamie Young, Chief LiDAR Engineer, Sanborn, Colorado Springs, CO.</i></p> <p>2 - <b>LiDAR Research and Applications.</b> <i>Jason Stoker, Senior Scientist, USGS, Earth Resources Observation and Sciences, Sioux Falls, SD.</i></p> <p><b>Concurrent Session 5C - Floods, Droughts, and Water Management.</b> - Ballroom 5 <i>Moderated by George Youngs, Jr., Professor, Dept. of Sociology-Anthropology, North Dakota State University, Fargo, ND.</i></p> <p>1 - <b>Risk Communication on Human Health Risk from Climate Change-Induced Extreme Events: A Study of Rural Communities of the Prairies.</b> <i>Graham Smith, Graduate Student, Natural Resources Institute, University of Manitoba, Winnipeg, MB.</i></p> <p>2 - <b>Evaluation of the Waffle® Concept: Key Results and Conclusions.</b> <i>Bethany Kurz, Senior Research Manager, Energy &amp; Environmental Research Center, University of North Dakota, Grand Forks, ND.</i></p> <p>3 - <b>Application of Regional Flood Frequency Analysis Using L-Moments Approach to the Red River Basin for Project Evaluations.</b> <i>Howe Lim, Asst. Prof., Civil Engineering, University of North Dakota, Grand Forks, ND.</i></p>
10:00 am - 10:30 am	<p><b>Break - Ballroom 4</b></p>
10:30 am - 11:30 am	<p><b>Concurrent Sessions 6A - Soils, Bacteria, and Wastewater Treatment.</b> - Ballroom 1 <i>Moderated by G. Padmanabhan, Director, ND Water Resources Research Institute, North Dakota State University, Fargo, ND.</i></p> <p>1 - <b>The Fate of Manure-Borne, Land-Applied Hormones.</b> <i>Francis Casey, Assoc. Prof., Mary Schuh, Graduate Student, and Zhaosheng Fan, Graduate Student, Dept. of Soil Science, North Dakota State University, Fargo, ND, and Gerald Larsen, Research Chemist/Research Leader and Heldur Hakk, Research Chemist, Bioscience Research Lab, USDA-ARS, Fargo, ND.</i></p> <p>2 - <b>Denitrification in the Red River Basin and Beyond: How Aquifer Sediments Influence Water Quality.</b> <i>Scott Korom, Assoc. Prof., Dept. of Geology and Geological Engineering, University of North Dakota, Grand Forks, ND.</i></p> <p>3 - <b>Sensitive Determination of Bacterial Cells Using Fluorescent Nanoparticles.</b> <i>Yuhui Jin, Graduate Student, Jenna Parisien, Student, and Julia Xiaojun Zhao, Assoc. Prof., Dept. of Chemistry, and Min Wu, Asst. Prof., Dept. of Biochemistry, School of Medicine and Health, University of North Dakota, Grand Forks, ND.</i></p> <p><b>Concurrent Session 6B - High Resolution Elevation Data - Ballroom 3</b> <i>Moderated by Ron Wencil, Geospatial Liaison, USGS, Mounds View, MN.</i></p> <p>1 - <b>LiDAR Reality Check.</b> <i>Tim Loesch, GIS Operations Supervisor, MN DNR, St. Paul, MN.</i></p> <p>2 - <b>Red River Basin Mapping Initiative.</b> <i>Charles Fritz, Director, International Water Institute, Fargo, ND.</i></p> <p>3 - <b>Panel Discussion.</b> <i>Charles Fritz, Director, International Water Institute, Fargo, ND., Tim Loesch, GIS Operations Supervisor, MN</i></p>

*DNR, St. Paul, MN., Jason Stoker, Senior Scientist, USGS, Earth Resources Observation and Sciences, Sioux Falls, SD., and Ron Wencil, Geospatial Liaison, USGS, Mounds View, MN.*

**Concurrent Session 6C - Floods, Droughts, and Water Management - Ballroom 5**

*Moderated by Phil Gerla, Professor, Dept. of Geology and Geological Engineering, University of North Dakota, Grand Forks, ND.*

**1 - Characteristics of Effective Local Water Management Organizations in the Red River Basin.** *Craig Kritsky, Graduate Student and Robert Hearn, Asst. Prof., Dept. of Agribusiness and Applied Economics, North Dakota State University, Fargo, ND.*

**2 - The Red River Management Consortium.** *Daniel Stepan, Senior Research Manager, Energy & Environmental Research Center, University of North Dakota, Grand Forks, ND.*

11:30 am - 12:00 pm

**Closing Remarks - Ballroom 5**

*Charles Fritz, Director, International Water Institute, Fargo, ND.*

Posters:

**“Soil Salinity in the Red River Valley of North Dakota, Minnesota, and Manitoba”**

*Michael Ulmer, Soil Scientist, USDA, NRCS, Bismarck, ND.*

**“Developing a Rapid Method for Assessing the Physical Stability of Streams and Rivers in Minnesota’s Agassiz Beach Ridges”**

*Abigail Franklund, Graduate Student and Phil Gerla, Professor, Dept. of Geology and Geological Engineering, University of North Dakota, Grand Forks, ND.*

**“Possible Effects of Arsenic in Drinking Water on Dairy and Beef Products”**

*Barbara Luikkonen, Water Resources Education Coordinator, Water Resources Center, University of Minnesota, St. Paul, MN, Vince Crary, Extension Educator, Otter Tail County, MN, Melinda Erickson, Lecturer, Civil and Environmental Engineering, James Linn, Professor, Animal Science, and Michael Murphy, Professor, Veterinary Population Medicine, University of Minnesota, St. Paul, MN.*

**“Immediate and Long-Term Impact of a Catastrophic Flood: Community Leaders’ Perceptions”**

*George Youngs, Jr. , Professor, Dept. of Sociology-Anthropology, and Katherine O’Neill, Professor, Dept. of Psychology, North Dakota State University, Fargo, ND.*

**“10<sup>th</sup> Anniversary of the 1997 Red River Flood”**

*Karen Ryberg, Statistician, Kathleen Macek-Rowland, Hydrologist, and Gregg Wiche, Director, North Dakota Water Science Center, USGS, Bismarck, ND., and Lee Klapprodt, Director, Planning and Education Division, ND State Water Commission, Bismarck, ND.*