

American Society of Civil Engineers

World Environmental and Water Resources Congress 2006

“Examining the Confluence of Environmental
and Water Concerns”

May 21-25, 2006
Omaha, Nebraska, USA

Volume 1 of 7

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571
www.proceedings.com

ISBN: 978-1-60423-561-6

Some format issues inherent in the e-media version may also appear in this print version.

American Society of Civil Engineers
World Environmental and Water Resources Congress
2006

TABLE OF CONTENTS

VOLUME I

Role of Information and Communication Technology in Adaptive Integrated Water Resources Management.....	1
<i>Kapoor, Tilak Raj</i>	
Spatial Distribution of Groundwater Availability for Various Pumping Scenarios in Savannah Region.....	11
<i>Aral, Mustafa M. ; Kentel, Elcin</i>	
Adaptive Infrastructure Management for Environmental and Water Resources: A Conceptual Approach.....	23
<i>Dahab, Mohamed F. ; Woldt, Wayne E.</i>	
Tracing Factors Affecting the Adoption of Water Markets—Some Australian Experiences.....	28
<i>Bjornlund, Henning</i>	
Planning Different Construction Strategies to a Proposed Protection to Reduce the Cost and Improve the Shoreline Shape.....	38
<i>Balah, M. I. ; El-Serafy, S.</i>	
An Update on Draft ASCE Monitoring Guidelines for Monitoring Stormwater Gross Solids.....	48
<i>England, Gordon ; Rushton, Betty</i>	
Development of Urban Storm Sewer Optimal Layout Design Model Considering Risk.....	58
<i>Jang, Sukhwan ; Park, Daeryong ; Roesner, Larry A.</i>	
Characterization of Particle Class Sizes Associated with Indicator Organisms in Stormwater.....	68
<i>Characklis, Gregory W. ; Krometis, Leigh-Anne H.</i>	
Propagation of Surge Conditions in Flowing Sewers.....	71
<i>Vasconcelos, Jose G. ; Wright, Steven J.</i>	
Mechanisms for Air Pocket Entrapment in Stormwater Storage Tunnels.....	81
<i>Vasconcelos, Jose G. ; Wright, Steven J.</i>	
Conveyance Analysis of Chicago's "Deep Tunnel" System.....	91
<i>Bondar, Corrie E. ; Hoy, Matthew A. ; Oberg, Nils ; Schmidt, Arthur R.</i>	
Development of Fuzzy Rules Based System for Rainfall-Runoff Modeling.....	101
<i>Rivas, Ivan ; Roesner, Larry A.</i>	
GIS-Based Support System for Modeling Chicago's "Deep Tunnel" System.....	110
<i>Bondar, Corrie E. ; Hoy, Matthew A. ; Schmidt, Arthur R.</i>	
Unsteady Flow Routing in Sewers Using Hydraulic and Volumetric Performance Graphs.....	120
<i>Hoy, Matthew A. ; Schmidt, Arthur R.</i>	

Rapid Determination of Wastewater Sludge Dewatering Performance Using Capillary Suction Timer	130
<i>Zhou, Jianpeng</i>	
Potential Utilization of Sugar Industry Waste for Removal of Color from Textile Industry Effluent.....	136
<i>Aadhar, P. ; Mausumi, M. ; Vishal, J.</i>	
Evaluation of Bench Scale SBR for Removal of Nutrients from Domestic Wastewater	146
<i>Basu, Sudevi ; Kumar, B. Manoj</i>	
Bench-Scale Digestion Studies	156
<i>Butler, A. J. ; Lackey, L. W. ; Mines, R.O., Jr.</i>	
Experimental Research on Treatment of Housing Estate Wastewater by Non-Residual Sludge Hydrolytic Acidification Process.....	164
<i>Han, Hong-jun ; Ma, Wen-cheng ; Zhong, Dan</i>	
An Innovative Geocentric Decision Support Solution to Comprehensive Planning, Design, Operation, and Management of Urban Drainage Systems	170
<i>Boulos, Paul F. ; Muleta, Misgana K. ; Orr, Chun-Hou ; Ro, Jun Je</i>	
A Framework for the Removal of Bacterial Contamination from UASBR Effluent	180
<i>Mittal, Atul K. ; Pant, Anju</i>	
Statistically Based Design of Wastewater Treatment Plants (WWTPs) Using Monte Carlo Simulation of Activated Sludge Model No. 1 (ASM1)	188
<i>Cox, Chris D. ; Huo, Jinsheng ; Jiang, Yan ; Robinson, R. Bruce ; Seaver, William L.</i>	
Evaluation of Constructed Wetland as Secondary Wastewater Treatment, Source for Tertiary Wastewater Treatment, and Reuse System	198
<i>Haddad, Marwan</i>	
Micro- and Macro-Environmental Studies in Scirpus validus Rhizosphere: Engineering Significance	212
<i>Bezbaruah, Achintya N. ; Zhang, Tian C.</i>	
Column Tests for Simulation of Phosphorus Fate and Transport and Evaluation of Life Expectancy of a Wastewater Land Treatment System.....	221
<i>Dahab, Mohamed F. ; Nunes, Germana ; Surampalli, Rao ; Zhang, Tian C.</i>	
Modeling Biofilm Dynamics in a Constructed Wetland Wastewater Treatment System	231
<i>Dahab, Mohamed ; Marahatta, Ram ; Schulte, Dennis ; Woldt, Wayne</i>	
Minimizing Leakage Rates in Water Distribution Networks through Optimal Valves Settings.....	240
<i>Al-Hemairi, H. A. ; Shakir, R. H.</i>	
Leakage Management for Water Distribution System in GIS Environment	253
<i>Ardeshir, Abdollah ; Behzadian, Kourosh ; Sabour, Farhad ; Saraye, Mehdi</i>	
Capability of Immobilized Mix Culture Technique as a Bio-Eco Engineering for River Basin Management	263
<i>Kazama, F. ; Pathak, B. K. ; Saiki, Y. ; Sumino, T.</i>	
Chemically Induced Redox Reactions in Water Treatment: A Summary of Advanced and Direct Technologies	270
<i>Anipsitakis, George P. ; Dionysiou, Dionysios D.</i>	

Interactions between Halide Ions and Ammonia in Water under UV Light from Low Pressure Mercury Lamps	280
<i>Beckles, Yvette ; Diyamandoglu, Vasil</i>	
An Efficient Numerical Scheme for Modeling Two-Phase Bubbly Homogeneous Air-Water Mixtures	289
<i>García, Marcelo H. ; Ghidaoui, Mohamed S. ; León, Arturo S. ; Schmidt, Arthur R.</i>	
Microbial As (III) Oxidation in a Continuously Stirred Tank Reactor	299
<i>Dastidar, Aniruddha ; Suttigarn, Arthon ; Wang, Yi-Tin</i>	
Decadal Precipitation Variations and Inflows into Fort Cobb Reservoir, Oklahoma	307
<i>Garbrecht, Jurgen D. ; Schneider, Jeanne M. ; Van Liew, Michael W.</i>	
Pacific Oceanic/Atmospheric Variability and the Wind River Range	316
<i>Hunter, Thad M. ; Piechota, Thomas C. ; Tootle, Glenn A.</i>	
Does Downscaling in Space and Time Degrade the Dependability of Seasonal Climate Forecasts?	327
<i>Schneider, J. M. ; Garbrecht, J. D.</i>	
Responding to Concerns About Flexibility in Agricultural Water Management in the Western U.S: A Climate of Uncertainty	333
<i>Wiener, John D.</i>	
Optimizing Management Efforts for Sustainable Long-Range Water Supply Planning	343
<i>Kirshen, Paul H. ; Vogel, Richard M. ; Zoltay Titcomb, Viktoria</i>	
Artificial Neural Network Approach for Streamflow Forecasting in India Using ENSO and EQUINOO	353
<i>Kumar, D. Nagesh ; Maity, Rajib</i>	
Is Climate Change Evident in U. S. Streamflow?	362
<i>Davies, Rob ; Kalra, Ajay ; Piechota, Thomas C. ; Tootle, Glenn A.</i>	
Support Vector Machine Approach to Downscale Precipitation in Climate Change Scenarios	371
<i>Nanjundiah, Ravi S. ; Srinivas, V. V. ; Tripathi, Shivam</i>	
Three Dimensional Numerical Modeling of Cohesive Sediment Transport in a Shallow Oxbow Lake	381
<i>Chao, Xiaobo ; Cooper, Charlie ; Jia, Yafei ; Shields, F. Douglas, Jr.</i>	
Numerical Modeling of Morphological Processes around Coastal Structures	392
<i>Ding, Yan ; Jia, Yafei ; Wang, Sam S. Y.</i>	
Modeling Hydrodynamics and Storm Effect in the Altamaha River Sound	402
<i>Aral, Mustafa M. ; Nam, Kijin</i>	
Use of Computation Fluid Dynamic Modeling to Evaluate Pump Intake Performance and Develop Design Modifications	413
<i>Rashid, Mizan ; Wicklein, Edward</i>	
Numerical Modeling of Culvert Hydraulics: Modernization of Existing HY8 Software	423
<i>Hotchkiss, Rollin H. ; Nelson, E. James ; Rowley, Brian J. ; Thiele, Elizabeth A.</i>	
A 3D CFD Model Investigation of an Outfall Reservoir Hydraulics for Repowering a Power Plant	433
<i>Khan, Liaqat A. ; Rashid, Mizan ; Wicklein, Edward A.</i>	

Mathematical Modeling of Fate and Transport of Dissolved and Particulate Mercury in Riverine Systems	443
<i>Bombardelli, Fabian A. ; Ginn, Timothy R. ; Massoudieh, Arash</i>	
Comprehensive Flow Analysis and Near-Realtime Based Streamgauging Planning at Water Control Structures	453
<i>Dessalegne, Tibebe</i>	
Use of EPA SWMM5 for Generation of BMP Effluent EMC Distribution	464
<i>Huber, Wayne C.</i>	
Numerical Simulation of Local Scour with Free Surface and Automatic Mesh Deformation	471
<i>García, Marcelo H. ; Liu, Xiaofeng</i>	
Numerical Simulation of the Morphodynamics in Rills	481
<i>Papanicolaou, A. N. ; Sanford, J.</i>	
Modeling Sediment-Laden Gravity Currents	491
<i>Ying, Xinya</i>	
A Staggered-Grid Scheme for the Advection-Dispersion Equation	501
<i>Man, Chuanjian ; Tsai, Christina W.</i>	
Modeling Channel Morphologic Change in the West Jordan River, Utah	508
<i>Chen, Dong ; Duan, Jennifer G.</i>	
Numerical Simulation of Meandering Evolution	518
<i>Duan, Jennifer G. ; Julien, Pierre</i>	
Three-Dimensional Mean Flow and Turbulence around a Spur Dike	528
<i>Duan, Jennifer G.</i>	

VOLUME II

1-D Numerical Simulation of Morphodynamic Processes under Dam Break and Overtopping Flows	537
<i>Wang, Sam S. Y. ; Wu, Weiming</i>	
Two-Dimensional Flood Simulation on Unstructured Grids	547
<i>Jorgeson, Jeff ; Wang, Sam S. Y. ; Ying, Xinya</i>	
Application of Multi-Criteria Tool in MIKE SHE Model Development and Testing	557
<i>Berlamont, J. ; Feyen, J. ; Rubarenz, M. H. ; Willems, P.</i>	
The Use of Numerical Models for the Buena Vista Lagoon Restoration Feasibility Analyses	567
<i>Kimura, Sherilyn ; Poon, Ying</i>	
Water Budget and Hydrodynamic Modeling of the A.R.M. Loxahatchee Refuge	577
<i>Arceneaux, Jeanne C. ; Griborio, Alonso G. ; Habib, Emad ; Meselhe, Ehab A. ; Waldon, Michael G.</i>	
Habitat Creation in Tidal Zones: Hydrologic Issues in West Coast Applications	587
<i>Martz, M. ; Price, K. H.</i>	
Three-Dimensional Hydrodynamic Simulation of Flows for Fish Passage at the Dalles Dam	597
<i>Constantinescu, George ; Li, Songheng ; Weber, Larry J.</i>	
Numerical Modeling Study for Fish Screen of River Intake Channel	607
<i>Coonrod, Julie ; Hanna, Leslie ; Ho, Jungseok ; Mefford, Brent</i>	

A Three-Dimensional Thermal Model for McNary Dam	617
<i>Constantinescu, George S. ; Haque, Md. M. ; Politano, Marcela ; Weber, Larry</i>	
Drinking Water Research Funding Opportunities—The Awwa Research Foundation	627
<i>Kawczynski, Elizabeth</i>	
Stormwater Pollution Prevention Education Effectiveness	630
<i>Chapman, John A. ; Isensee, Mikael</i>	
An Overview of U. S. EPA and USDA Drinking Water Treatment System Demonstrations in China	639
<i>Garner, Lucille M. ; Goodrich, James A. ; Haught, Roy C. ; Patterson, Craig L.</i>	
Implementation of On-Line Asynchronous Tools to Facilitate Problem-Based Learning in Water Resources Engineering	647
<i>Schmidt, Arthur</i>	
San Gorgonio River Monitoring: A Case Study	654
<i>Avila, Catherine M. C.</i>	
Electronic Field Data Collection and Data Entry for Physical Habitat Assessment on the Cheyenne River, South Dakota	663
<i>Brich, Sol ; Foreman, Cory ; Patceg, Andrew</i>	
Design of a River Water Quality Monitoring Network: An Entopy Based Approach	673
<i>Baghvand, Akbar ; Karamouz, Mohammad ; Kerachian, Reza ; Nokhandan, Amir Khajehzadeh</i>	
Water Allocation for Wetland Environmental Water Requirements: The Case of Shadegan Wetland, Jarrahi Catchment, Iran	679
<i>Sima, S. ; Tajrishy, M.</i>	
Risk Based Conflict Resolution Model for River Water Quality Management	689
<i>Karamouz, Mohammad ; Moridi, Ali</i>	
Evaluation of Ceramic Filtration for Drinking Water Treatment in Small Systems	697
<i>Haught, Roy C. ; Krishnan, E. Radha ; Muhammad, Nur ; Patterson, Craig L. ; Sinha, Rajib</i>	
Agent-Based Approach Enhances Conventional Aquatic Habitat Description and Species Utilization Methods	708
<i>Anderson, J. J. ; Goodwin, R. A. ; Nestler, J. M. ; Smith, D. L. ; Stockstill, R. L. ; Weber, L. J.</i>	
Managing Water Levels and Flows for Improved Economical, Environmental, and Ecological Benefits in Lake Ontario and in the St. Lawrence River	716
<i>Loucks, Daniel P.</i>	
Hunter Rouse, Hydraulician: An Overview of His Work	724
<i>Ettema, R.</i>	
Hunter Rouse's Historical Writings and the History of Hydraulics Rare Book Collection	736
<i>Daly, D. L. ; Ettema, R. ; Mutel, C. F.</i>	
History of the Pick-Sloan Program	742
<i>Johnston, Paul</i>	
Past, Present, and Future of the Pick-Sloan Program for the Missouri River Basin: Operations of Dams under the Pick-Sloan Program	745
<i>Cieslik, Larry J.</i>	
Environmental Management of the Three Gorges Project	749
<i>Chen, Yongbai ; Liu, Jian ; Lou, Peng ; Sun, Zhiyu</i>	

Third-Party Environmental Audit—A Tool for Industrial Environmental Compliance	758
<i>Chandran, Suresh ; Chitikela, S. Rao</i>	
Air Permitting and Reporting for Public Landfills and POTWs	765
<i>Henning, Thomas A. ; Martin, F. Jason</i>	
Upgrading a Small Wastewater Treatment Plant for the 21st Century	775
<i>Satchell, Thomas T.</i>	
Aeration Performance of a Hydraulic Jump	786
<i>Cokgor, S. ; Kucukali, S.</i>	
Impacts of Inundation of Houziyan Reservoir on Zang Nationality Blockhouse Group Relics along the Dadu River	796
<i>Qi, Shengwen ; Sheng, Zhuping ; Wu, Faquan ; Yan, Changgen</i>	
Dissolved Oxygen Modeling of Lake Ogallala: A Midwest Hydropower Tailwater Reservoir Using CE-QUAL-W2, Version 3	806
<i>Admiraal, D. ; Dove, E. ; Kozimor, L. ; Stansbury, J.</i>	
Using Neural Network to Investigate the Environmental Impact of an Abandoned Landfill	816
<i>Mryyan, S. A. ; Najjar, Y. M.</i>	
Wetland Treatment of MTBE Contaminated Groundwater at a Local Refinery	826
<i>Pruden, A. ; Raynal, M. ; Sale, T.</i>	
Comparing the Regulated Riparian and Appropriative Rights Model Water Codes	836
<i>Dellapenna, Joseph W.</i>	
Progress on Creating a Model Agreement on Transboundary Water Quality Management with Guidelines for the Development of Border Water Quality Standards, Management Plans, and Effective Agreements	846
<i>Eaton, David ; Killgore, Mark W.</i>	
Evolutionary Algorithms for Multi-Objective, Automatic Calibration of a Semi-Distributed Hydrologic Model	855
<i>Bekele, Elias G. ; Nicklow, John W.</i>	
Using Genetic Algorithms and Particle Swarm Optimization for Optimal Design and Calibration of Large and Complex Urban Stormwater Management Models	867
<i>Boulos, Paul F. ; Muleta, Misgana K. ; Orr, Chun-Hou ; Ro, Jun Je</i>	
Calibration of CAEDYM Using a Genetic Algorithm—The Lake Kinneret Case Study	877
<i>Gal, Gideon ; Ostfeld, Avi ; Salomons, Elad</i>	
Interactive Multi-Objective Inverse Groundwater Modeling—Formulation and Addressing User Fatigue	883
<i>Minsker, Barbara ; Singh, Abhishek</i>	
A Collaborative Interactive Genetic Algorithm Framework for Mixed-Initiative Interaction with Human and Simulated Experts: A Case Study in Long-Term Groundwater Monitoring Design	893
<i>Babbar, Meghna ; Minsker, Barbara</i>	
Use of Surrogate Models for a Groundwater Pollutant Source Characterization Problem	903
<i>Clayton, Matthew ; Mahinthakumar, G. ; Mirghani, Baha ; Ranjithan, S. Ranji ; Zechman, Emily M.</i>	

An Algorithm for Groundwater Long-Term Monitoring Spatial Optimization by Analogy to Ant Colony Optimization for TSP.....	906
<i>Hilton, Amy B. Chan ; Li, Yuanhai</i>	
Efficient Strategies for Sampling Uncertain Parameters in a Genetic Algorithm-Based Chance-Constrained Watershed Water Quality Management Problem.....	912
<i>Harrell, Laura J. ; Yu, Kwisun Park</i>	
Efficient Methods for Constraint-Handling in Evolutionary Algorithm-Based Management of Irrigation Canal Network Operations	922
<i>El Gamel, Talaat ; Harrell, Laura J.</i>	
Optimized Pond Design for Water Quality Improvement in an Upland Agricultural Basin.....	932
<i>Gillespie, William E. ; Nicklow, John W.</i>	
Improvement of Water Network Reliability: A Conflict Resolution Approach.....	942
<i>Karamouz, Mohammad ; Moridi, Ali ; Nazif, Sara</i>	
A Hybrid Model Tree (MT)—Genetic Algorithm (GA) Scheme for Toxic Cyanobacteria Predictions in Lake Kinneret	953
<i>Kronaveter, Lea ; Ostfeld, Avi ; Rom, Meir ; Tubaltzev, Ariel</i>	
Interactive Educational Module to Enhance Understanding of Genetic Algorithms in Surface Water Resources Systems Analysis	962
<i>El Gamel, Talaat ; Harrell, Laura J.</i>	
Aquifer Heterogeneity Estimation and Uncertainty Analysis Using a Multi-Parameterization Method	972
<i>Li, Xiaobao ; Tsai, Frank T-C.</i>	
Geophysical Data Integration and Conditional Uncertainty Analysis on Hydraulic Conductivity Estimation	982
<i>Carlson, Douglas A. ; Rahman, Asheka ; Tsai, Frank T-C. ; White, Christopher D. ; Willson, Clinton S.</i>	
Using Hydrologic Tracers as a Risk Assessment Tool in a Karstic Watershed	992
<i>Gentry, R. W. ; Koirala, S. ; Layton, A. ; McCarthy, J. ; McKay, L.</i>	
Parameter Estimation Using an Artificial Neural Network to Incorporate Multiple Types of Data.....	1000
<i>Besaw, L. E. ; Mouser, Paula J. ; Rizzo, Donna M.</i>	
Development of Analytical Mass Transport Model for the Pollutant Migration in the Subsurface Environment.....	1007
<i>Mahadevaswamy, M. ; Murthy, B. M. Sadashiva ; Pavithra, M.</i>	
Transport of Selected Contaminants in Recycled Water through a Hawaii Soil	1016
<i>Mohanty, S. K. ; Ray, C. ; Snehot, M.</i>	
A Stochastic Streamtube Model for NAPL Transport in Heterogeneous Media.....	1026
<i>Chan, T. P. ; Govindaraju, Rao S.</i>	
Optimal Groundwater Management Using Empirical Orthogonal Functions	1036
<i>McPhee, James ; Yeh, William W-G.</i>	
Varied Solutions to Groundwater Problems—Four Case Histories	1041
<i>Novak, Donald J.</i>	
Simulation/Optimization Modeling Post-Audits.....	1051
<i>Peralta, R. C.</i>	

Optimizing Groundwater Remediation Designs under Uncertainty Using Dynamic Surrogate Models	1053
<i>Minsker, Barbara ; Yan, Shengquan</i>	
Impact of Conditioning on Robust Remediation Design	1063
<i>Adaramola, Olufemi ; Culver, Teresa B.</i>	
Effect of Heterogeneity Correlation Scale on Pump-and-Treat Remediation Design	1070
<i>Aksoy, A. ; Güngör-Demirci, G.</i>	

VOLUME III

In-Situ Bioremediation of Contaminated Groundwater Using Artificial Neural Network	1077
<i>Mathur, Shashi ; Prasad, Ram Kailash</i>	
Exact Analytical Solution to the One-Dimensional Advective-Dispersive Equation with a Decaying Source Term	1087
<i>Tomasko, David ; Williams, Gustavious Paul</i>	
A Multi-Objective Water Quality Wetland to Complement Phytoremediation of Contaminated Groundwater	1095
<i>Darling, Joan ; Gilmore, Steve ; Ikenberry, Charles ; LaFreniere, Lorraine ; McPeak, Jeff ; Ruhge, Tony ; Steck, Don ; Talley, Chris ; Williams, John</i>	
The Life Cycle of Vernal Pools: Hydrologic Principles	1106
<i>Loáiciga, Hugo A.</i>	
Modeling of Soil Hydraulic Processes and Base Flow in Flanders	1113
<i>Berlamont, J. ; Feyen, J. ; Rubarenzya, M. H. ; Willems, P.</i>	
Characterizing the Pathways and Characteristics of Nutrients Discharging from Ground-Water to Surface Water	1123
<i>Mathisen, P. P. ; Pellegrino, D. J. ; Wen, H.</i>	
Characterization of Interaction of Surface Water and Groundwater in the El Paso Lower Valley of Texas	1125
<i>Barcenas, Marisela ; Gomez, Monica ; Sheng, Zhuping ; Villalobos, Joshua</i>	
Bayesian Statistics-Based Procedure for the Groundwater Long-Term Monitoring Temporal Optimization Problem	1127
<i>Chan Hilton, Amy B. ; Li, Yuanhai</i>	
Optimizing LTM Networks: Applying GTS at Tinker AFB	1132
<i>Cameron, Kirk</i>	
Vertical Flow Aggregation in the Vadose Zone with Spatial-and Cross-Correlated Hydraulic Properties	1144
<i>Leij, Feike J. ; Sciortino, Antonella</i>	
A Statistical Study of the Hydrological Character of the Edwards Aquifer	1154
<i>Tomaskos, David ; Williams, Gustavious Paul</i>	
Tutorial on Function Approximation Optimization for Computationally Expensive Nonlinear Models Including Applications to Uncertainty Analysis and to Groundwater Transport	1160
<i>Shoemaker, Christine A.</i>	
Long-Term Monitoring Optimization Using MAROS	1164
<i>Vanderford, Mindy</i>	

Recent Applications of Hydroacoustic-Based Field Flow Measurements in Understanding the Hydraulics of Water Control Structures	1174
<i>Ansar, Matahel ; Chen, Zhiming ; Gonzalez-Castro, Juan</i>	
Determining Hydraulic Conditions for Holding Areas of Large Predatory Fish within the Tracy Fish Collection Facility	1182
<i>Bark, R. ; Frizell, K. W.</i>	
Characterizing a December 2005 Density Current Event in the Chicago River, Chicago, Illinois.....	1191
<i>García, Carlos M. ; García, Marcelo H. ; Jackson, P. Ryan ; Johnson, Kevin K. ; Oberg, Kevin A.</i>	
Turbulence Observations in Cobble-Bed Rivers	1201
<i>Hotchkiss, Rollin H. ; Morrison, Ryan R. ; Stone, Mark C.</i>	
ADV Point Measurements within Rapids of the Colorado River in Grand Canyon.....	1211
<i>Griffiths, Peter G. ; Magirl, Christopher S. ; Webb, Robert H.</i>	
Turbulence Characteristics of Flow in a Culvert with Sloped-Weir Baffles	1221
<i>Compton, Alex F. ; Horner-Devine, Alex R. ; Hotchkiss, Rollin H. ; Morrison, Ryan R. ; Thurman, David</i>	
Hydrodynamics of Juvenile Salmon Passage in Sloped-Baffle Culverts	1231
<i>Compton, Alex F. ; Horner-Devine, Alex R. ; Hotchkiss, Rollin H. ; Morrison, Ryan R. ; Thurman, David R.</i>	
Development of a Simple Loop Method for Correcting Acoustic Doppler Current Profiler Discharge Measurements Biased by Sediment Transport	1241
<i>Mueller, David S. ; Wagner, Chad R.</i>	
Field Evaluation of Shallow-Water Acoustic Doppler Current Profiler Discharge Measurements	1251
<i>Rehmel, Michael S.</i>	
Uncertainties in Discharges Determined from Index-Velocity Ratings.....	1259
<i>Schmidt, Arthur</i>	
Near-Transducer Errors in Acoustic Doppler Current Profiler Measurements	1268
<i>Brownson, Z. ; Burkhardt, A. ; Gonzalez-Castro, J. ; Kim, D. ; Muste, M.</i>	
Flow and Sediment Laboratory Measurements over Unsubmerged Roughness Elements	1278
<i>Kramer, C. ; Papanicolaou, A. N.</i>	
The Use of LSPIV to Measure Large Streamwise Vortices	1286
<i>Fox, J. F. ; Patrick, A. ; Wood, S.</i>	
Scale Effects in Movable Bed Models of Rivers with Dominant Suspended Load	1296
<i>Enggrob, Hans Gustav ; Haque, Md. Manjurul ; Klaassen, Gerrit J.</i>	
The Effects of Relative Submergence on Flow Patterns around Large Particles in a Gravel Bed River	1309
<i>Kramer, C. M. ; Papanicolaou, A. N.</i>	
A Storm Runoff Simulator to Evaluate Grass Filter Strips and Other Storm Water Management Systems	1319
<i>Franti, T. G. ; Shelton, D. P.</i>	
Comparison between Dispersion Coefficients Estimated from a Tracer Study and ADCP Measurements.....	1328
<i>Carr, Meredith L. ; González, Juan A. ; Rehmann, Chris R.</i>	

Real Time Estimation of ADCP Bedload Velocity Using a Kalman Filter	1338
<i>Rainville, F. ; Rennie, C. D.</i>	
A Review of Bridge Abutment Scour Countermeasures	1348
<i>Barkdoll, B. D. ; Ettema, R. ; Melville, B. W.</i>	
A Practical Approach to Estimating Scour Depths at Bridge Abutments	1357
<i>Ettema, R. ; Muste, M. ; Nakato, T. ; Yorozya, A.</i>	
Riprap Sizing for Bridge Pier and Abutment Countermeasures	1367
<i>Clopper, P. E. ; Lagasse, P. F. ; Zevenbergen, L. W.</i>	
Research Needs for Scour at Bridge Foundations—An Update	1376
<i>Arneson, L. A. ; Lagasse, P. F. ; Zevenbergen, L. W.</i>	
Guidelines for Risk-Based Management of Bridges with Unknown Foundations	1385
<i>Sedmera, K. A. ; Stein, S. M.</i>	
Experimentally Determined Inlet Loss Coefficients for Buried-Invert, Circular Culverts	1395
<i>Anderson, D. S. ; Tullis, B. P.</i>	
Increased Roughness in Reinforced Concrete Box Culverts	1404
<i>Culmer, Kayla M. ; Hill, Adam S. ; Hotchkiss, Rollin H. ; Miraglio III, Michael A.</i>	
Hydraulic Characteristics and Dynamics of Beaver Dams in a Midwestern U.S. Agricultural Watershed	1414
<i>Admiraal, D. M. ; Dosskey, M. G. ; Eisenhauer, D. E. ; McCullough, M. C.</i>	
Fish Passage over Weirs in Midwestern Streams	1424
<i>Dermisis, D. C. ; Papanicolaou, A. N. (Thanos)</i>	
Design and Assessment Techniques for Fish Passage at Culverts and Bridges	1434
<i>Frei, Christopher M. ; Hotchkiss, Rollin H.</i>	
A Study of the Free Surface Flow on Brownlee Dam	1444
<i>Carrica, Pablo M. ; McDaniel, Brady ; Politano, Marcela S. ; Turan, Cagri ; Weber, Larry</i>	
Water Entrainment and Mixing Due to Spillway Discharges	1454
<i>Carrica, Pablo M. ; Politano, Marcela S. ; Turan, Cagri ; Weber, Larry</i>	
Flow Separation Downstream of Equal and Opposing Flow Junctions in Open Channels	1464
<i>Frizzell, Carl ; Werth, David</i>	
Converging RCC Stepped Spillways	1474
<i>Hunt, S. L. ; Kadavy, K. C. ; Temple, D. M.</i>	
Model Study for the Design of Emergency Stoplogs Deployed in a Complex Flow Field—Part 1: Experimental Results	1487
<i>Haug, Pete ; Hay, Duncan ; Lyons, Troy ; Muste, Marian ; Weber, Larry</i>	
Model Study for the Design of Emergency Stoplogs Deployed in a Complex Flow Field—Part 2: Numerical Results	1497
<i>Carrica, Pablo ; Hay, Duncan ; Politano, Marcela ; Turan, Cagri ; Weber, Larry</i>	
Hydraulic Modeling Study for Rio Grande Diversion Structure at Albuquerque	1507
<i>Coonrod, Julie ; Gill, Tom ; Ho, Jungseok ; Mefford, Brent</i>	
Flow Around Submerged Barbs in the Raccoon River Iowa	1517
<i>Papanicolaou, A. N. ; Wardman, B. G.</i>	
Hydraulic Design of a Lazy River	1527
<i>McEnroe, Bruce M.</i>	

Sediment Yield Investigation and Method Comparison for Southern California Coastal Watersheds	1536
<i>Smith, David S. ; Teal, Martin J.</i>	
The Use of Hydrologic and Ecological Models to Guide Restoration Efforts	1546
<i>Demissie, Misganaw ; Lian, Yanqing ; White, David ; You, Jiing-Yun</i>	
Stability of Non-Cohesive Sediments under Conditions of Pore Water Flux	1556
<i>Cakir, Pinar ; Wright, Steven J.</i>	
A Bayesian Unmixing Model for Land-Use Fingerprinting Using $\delta^{15}N$ and C/N	1566
<i>Fox, J. F. ; Papanicolaou, A. N.</i>	
Construction of the FFWS Using Supervised and Unsupervised Performance in the Small Catchment	1578
<i>Kim, Sungwon ; Park, Kibum</i>	
Flood Estimation by Various Techniques for Small and Large Catchments	1588
<i>Ahmad, Muhammad Masood ; Ghumman, Abdul Razzaq ; Shamim, Muhammad Ali</i>	
The Coordinated Flood Control Operation Rules at the Upper and Lower Jinhu Reservoirs	1601
<i>Huang, Minghua ; Liu, Jian ; Lou, Peng ; Xiao, Wen</i>	

VOLUME IV

Flood Hazard Analysis and Protection Plan for a Residential Development	1610
<i>Doroudian, Macan ; Hamilton, Douglas ; Lyle, Jene E. ; Shaller, Philip J. ; Shrestha, Parmeshwar L.</i>	
Evolution of Bulletin 17B for Flood Frequency Analysis in the United States	1620
<i>Griffis, V. W. ; Stedinger, J. R.</i>	
Even When It Rains You Need to Drought Plan: Dynamic Modeling Application to Water Supply Planning in Virginia	1630
<i>Hare, J. Timothy ; Snyder III, Edwin ; Spacek, James ; van der Tak, Laurens</i>	
Drinking Water Surveillance of a Growing Community in Osun State, Nigeria	1640
<i>Ayangade, J. A. ; Olanipekun, E. A. ; Omojola, S. O.</i>	
Hydrologic Impact of the 2004 Hurricane Season on South Florida	1647
<i>Abtew, Wossenu ; Huebner, R. Scott</i>	
Riparian Buffer Zone Change Detection Based on RADARSAT-1 and LANDSAT Satellite Images	1658
<i>Chang, N. B. ; Drunpob, A.</i>	
A Hydrologic Analysis on Inundation in the Flooding Area of the Mekong Delta, Cambodia—The Combined Deterministic and Stochastic Models for Flood Forecasting	1668
<i>Goto, A. ; Mizutani, M. ; Sothea, K.</i>	
Development of Stage-Discharge Relation Using Support Vector Machines	1678
<i>Goel, Arun ; Pal, Mahesh</i>	
Improving Hydrologic Model Performance by Using the UNET Model: A Case Study for the Illinois River Basin	1688
<i>Demissie, Misganaw ; Knapp, H. Vernon ; Lian, Yanqing ; Xie, Hua</i>	
Effect of Digital Elevation Model (DEM) Resolution on the Hydrological and Water Quality Modeling	1698
<i>Ormsbee, Lindell ; Teegavarapu, Ramesh S. V. ; Viswanathan, Chandramouli</i>	

Stochastic GIS-Based Water Resources/Quality Modeling of the Land Water Interface	1706
<i>Nelson, E. J. ; Salah, A. M.</i>	
Isopleths for Rainfall Data in Sabah.....	1715
<i>Bolong, N. ; Febik, J. K. ; Kurian, V. J. ; Zakaria, I.</i>	
Regional Frequency Studies of Annual Extreme Precipitation in the United States Based on Regional L-Moments Analysis.....	1725
<i>Bonnin, G. M. ; Lin, B. ; Martin, D. L. ; Parzybok, T. ; Riley, D. ; Yekta, M.</i>	
Investigating Urban Land Use Effects on Runoff by Using the Distributed Large Basin Runoff Model	1736
<i>Cowden, J. R. ; Croley II, T. E. ; Watkins, D.</i>	
Investigation on Changes of the Sakarya River Characteristics	1745
<i>Dogan, Emrah ; Isik, Sabahattin ; Sasal, Mustafa</i>	
Classification of River Yields in Turkey with Cluster Analysis	1753
<i>Dogan, Emrah ; Isik, Sabahattin ; Turan, Aydin</i>	
Comprehensive Watercourse Management for the Menomonee River, WI: Milwaukee County Grounds Floodwater Facility.....	1760
<i>Chapman, Tom ; Hahn, Michael ; Kasun, Joshua M. ; Printz, Ronald J. ; Schwar, Michael</i>	
Hedging Rule and Its Relevance to Decision Making in Reservoir Operation	1767
<i>Cai, Ximing ; You, Jiing-Yun</i>	
Rubber Dam in China.....	1777
<i>Gao, Benhu</i>	
Study of Eco-Environment Monitoring in Arid Area Based on Multi-Source Multi-Temporal Remote Sensing Images and GIS.....	1785
<i>Li, Lin ; Lu, Jingxuan</i>	
Crop Type Change Monitoring by Remote Sensing in an Irrigated District under Water Resources Restrictions.....	1793
<i>Lu, Jingxuan ; Ruan, Benqing ; Xu, Mei</i>	
Middle Route Project of South-to-North Water Transferring in China	1800
<i>Liu, Zi-hui</i>	
The South-to-North Water Transfer Project of China.....	1806
<i>Mei, Jinshan</i>	
Key Technologies for Urban Flood Mitigation	1815
<i>Hu, Changwei ; Wan, Hongtao ; Wang, Yanyan ; Yuan, Ximin ; Zhang, Hongpin</i>	
Using RVA to Determine the Feasible Draft of Main Tunnel of the Diversion Work from the Datong River to the Huangshui River.....	1821
<i>Hao, Fu-qin ; Li, Ai-xiang ; Liu, Yong-feng ; Ma, Yi-juan ; Shi, Rui-lan ; Sun, Zhao-dong ; Wang, Ren-xiang ; Zheng, Jian-guo</i>	
Importance of Soil and Water Conservation and Ecological Environment Protection in Key Hydraulic Projects and Hydropower Stations Construction on Chinese Great Rivers.....	1831
<i>Gao, Xubiao ; Jiao, Junren</i>	
Preliminary Study on the Classification and Types of Preferential Flow in the Dark Coniferous Forest Ecosystem of Gongga Mountain	1842
<i>Chen, Lihua ; Niu, Jianzhi ; Rao, Liangyi ; Yu, Xinxiao ; Zhao, Yutao</i>	

Studies on the Sediment Distribution Property of the Guanting Reservoir Watershed for the Last Five Decades	1851
<i>Gao, Guoxiong ; Hu, Chunhong ; Liu, Shihai ; Xu, Zhaoyi ; Xue, Zhide</i>	
A Critical Issue of Flood Management in China—Flash Flood, Landslide and Mudflow Disasters, Weakness in Defense, and Countermeasures	1861
<i>Li, Kungang</i>	
Debris-Flow Hazards and Prevention Measures in Beijing	1871
<i>Wang, Lijun</i>	
Simulation of Velocity Profile under Ice Cover	1876
<i>Fu, Hui ; Sun, Xiaoyan ; Wang, Jun ; Yi, Mingkun</i>	
Preliminary Analyses of Effect of Establishing Sluices at the Three Exits of Jingjiang on Scour-Deposit of the Yangtze and Dongting Lake	1883
<i>Gong, Ping ; Yuling, Huang</i>	
Estimation of Water Resources Availability in Taiwan	1891
<i>Hsu, Nien-Sheng ; Wei, Chih-Chiang</i>	
Using System Dynamics to Simulate the Hsinchu Region Development and Water Resources	1897
<i>Chen, Yen-Chang ; Kao, Su-Pai ; Yang, Han-Chung</i>	
Assessment of Man-Made Ponds on Flood Retention and Water Resources Management	1907
<i>Chien, Chuan-Pin ; Li, Ming-Hsu ; Wu, Ray-Shyan</i>	
Assessing the Human Water Use Impact in the River Basin Context	1915
<i>Cai, Ximing ; Yang, Yi-Chen E.</i>	
Water Resources Management and Modeling in Iraq, the Middle East, and the Nile Basin: Towards Knowledge Transfer and Capacity Building.....	1923
<i>Al-Weshah, R. ; Nelson, E. J. ; Salah, A. M. ; Shammout, M. W.</i>	
Estimation of Non-Point Source Pollution in a Typical River of India.....	1935
<i>Bhatia, K. K. S. ; Jha, Ramakar ; Ojha, C. S. P. ; Singh, V. P.</i>	
Optimization of Integrated Water and Wastewater Systems: Case Study of Beirut, Lebanon	1947
<i>Kirshen, Paul H. ; Ray, Patrick A. ; Vogel, Richard M.</i>	
Transboundary Issues and Uncertainty in Water Management in Bangladesh	1957
<i>Bhuiyan, ABM Faruquzzaman ; Hossain, M. M.</i>	
The Berlin Rules on Water Resources: The New Paradigm for International Water Law	1967
<i>Dellapenna, Joseph W.</i>	
Evaluation of Infrastructure Impacts on Rio Grande/Rio Bravo Water Quality	1977
<i>Dulay, Marcel ; Eaton, David</i>	
Subsurface Drainage and Its Management in the Upper Midwest Tile Landscapes.....	1987
<i>Helmert, M. J. ; Singh, R.</i>	
Combination of Drainage Water Management, Cover Cropping, and Wetland Diversion as a Suite of BMPs to Reduce Nitrogen Loss from Cropland.....	2000
<i>Appelboom, Timothy W. ; Fouss, James L.</i>	
Use of the ASCE Standardized Reference ET Equation by Agricultural Weather Networks in the Western U.S.: Current Status and Future Challenges.....	2012
<i>Brown, P. W.</i>	

Development of Bahiagrass Crop Coefficients Using Weighing Lysimeters and Eddy Correlation Methods	2022
<i>Dukes, M. D. ; Jacobs, J. M. ; Jia, X.</i>	
Converting KC Values between ETo and ET r	2033
<i>Davidoff, Baryohay ; Eching, Simon ; Frame, Kent ; Ghandour, Atef ; Snyder, Richard L. ; Temesgen, Bekele</i>	
Evaluation of FAO-56 Alfalfa Crop Coefficients in an Arid Southwestern U. S. Climate	2038
<i>Beutler, Aaron M. ; Keller, Andrew A.</i>	
Water Banking as a Method to Improve District Water Management in Utah's Sevier River Basin.....	2048
<i>Walker, Wynn R.</i>	
Hydraulic Model of the Belle Fourche Irrigation District Using EPA SWMM 5.0	2055
<i>Hoyer, Dan ; Kenner, Scott ; Schoenfelder, Curtis</i>	
SRP Irrigation System Modeling	2065
<i>Gooch, Robert S. ; Siewert, Dennis O.</i>	
Water Balance for a Predominantly Surface Irrigated District in Southern Idaho	2074
<i>Bjorneberg, David L. ; Nelson, Nathan O. ; Westermann, Dale T.</i>	
Continuing Education Programs for Irrigation Engineers in Developing Countries: A Pressing Need.....	2084
<i>Yap-Salinas, L. Humberto</i>	
Essential Dimensions and Elements in the Design of Irrigation System Management Transfer Projects	2094
<i>Yap-Salinas, L. Humberto</i>	
Concerned Aspects in Large Drainage Project: A Case Study of the Mun River Bypass Project in Thailand	2104
<i>Bhokha, S. ; Jaensirisak, S. ; Sangtian, N. ; Sriworrarnas, K.</i>	
An Expansion of the Ungaged Pan Evaporation Using Neural Networks Model in Rural Regions, South Korea	2115
<i>Jee, Hongkee ; Kim, Sungwon</i>	
Estimation of the Reference Evapotranspiration Using Neural Networks Model and Limited Climatic Variables	2125
<i>Kim, Hung-Soo ; Kim, Sungwon</i>	
Climatic Risk to Cotton Production in the Ogallala Aquifer Region.....	2135
<i>Baumhardt, R. L. ; Esparza, A. ; Gowda, P. H. ; Robinson, C. A.</i>	

VOLUME V

Estimate Irrigation Water Use by Data Assimilation	2145
<i>Cai, Ximing ; Wang, Dingbao</i>	
Why Use Reference Evapotranspiration to Calibrate Satellite-Based Energy Balances?	2155
<i>Allen, Richard G. ; Tasumi, Masahiro ; Trezza, Ricardo</i>	
Yield Response of Corn to Timing of a Limited Seasonal Irrigation Depth (150 mm) with Subsurface Drip Irrigation	2167
<i>Irmak, Suat ; Payero, José O. ; Tarkalson, David</i>	

Corn Yield Response to Different Irrigation Depths with Subsurface Drip Irrigation	2180
<i>Irmak, Suat ; Payero, José O. ; Tarkalson, David</i>	
The NRCS Intake Families for Furrow Irrigation—Old and New	2198
<i>Ivans, Sinisha ; Walker, Wynn R.</i>	
On-Farm Studies of Water Use and Water Quality for Rice Production	2207
<i>Chaubey, I. ; Lipsey, R. ; Schaffer, B. K. ; Smith, W. ; Tacker, P. L. ; Vories, E. D.</i>	
An Integrated Software Package for Simulation, Design, and Evaluation of Surface Irrigation Systems	2213
<i>Bautista, Eduardo ; Clemmens, Albert J. ; Schlegel, James ; Strand, Robert J. ; Strelkoff, Theodor S.</i>	
The San Joaquin Valley Westside Perspective	2223
<i>Linneman, J. Christopher ; Quinn, Nigel W. T. ; Tanji, Kenneth K.</i>	
The Need and Development of TMDLs for the San Joaquin Valley of California	2237
<i>Grober, Leslie F. ; Johnston, William R. ; Karkoski, Joe</i>	
The San Joaquin Valley East Side Perspective	2258
<i>Johnston, William R. ; Niemi, Michael ; Ward, Walter P.</i>	
A Water Quality Improvement Approach for the San Joaquin River Basin	2269
<i>Buck, Byron M. ; Ploss, Lowell F.</i>	
Field Performance Analysis of Center Pivot Sprinkler Packages	2282
<i>Beutler, Aaron ; Bliesner, Ron ; Spare, Dan</i>	
Concepts of In-Canopy and Near-Canopy Sprinkler Irrigation	2292
<i>Bordovsky, James P. ; Howell, Terry A. ; Lamm, Freddie R.</i>	
Converting Open Ditches into Underground Pipelines on a System with no Formalized Scheduling	2303
<i>Isaacson, Michael ; Keller, Andrew</i>	
Operational Model of the Belle Fourche Irrigation District	2313
<i>Hoyer, Dan ; Kenner, Scott ; Olson, Tim</i>	
Water Measurement and Management Initiatives in the Pioneer Irrigation Ditch	2323
<i>Einhellig, Robert F. ; Gill, Tom ; Korf, Dan ; Wergin, Jack</i>	
Real Time Weather Station Data Quality Control Procedures in the Alberta Agriculture Drought Monitoring Network (AGDMN)	2333
<i>Itenfisu, Daniel ; Wright, Ralph</i>	
Crop Coefficients Developed at Bushland, Texas for Corn, Wheat, Sorghum, Soybean, Cotton, and Alfalfa	2337
<i>Colaizzi, P. D. ; Copeland, K. S. ; Dusek, D. A. ; Evett, S. R. ; Howell, T. A. ; Tolk, J. A.</i>	
Footprint Analysis to Assess the Conditioning of Temperature and Humidity Measurements in a Weather Station Vicinity	2346
<i>Allen, Richard G.</i>	
Remote Sensing and Water Balance Modeling in California Drip-Irrigated Vineyards	2358
<i>Johnson, L. ; Michaelis, A. ; Nemani, R. ; Pierce, L. ; Scholasch, T.</i>	
Performance of Crop Coefficients Inferred from NDVI Observations for Estimating Evapotranspiration and Irrigation Scheduling of Wheat	2367
<i>Clarke, T. R. ; Fitzgerald, G. J. ; French, A. N. ; Hunsaker, D. J. ; Pinter, P. J., Jr.</i>	

Estimation of Spatially Distributed Evapotranspiration over Wheat Using Thermal Infrared Images and Ground-Based Radiometers	2380
<i>Clarke, Thomas R. ; Fitzgerald, Glenn J. ; French, Andrew N. ; Hunsaker, Douglas ; Pinter, Paul J.</i>	
Estimating Riparian ET through Remote Sensing in the Middle Rio Grande	2390
<i>Bawazir, Salim ; Bleiweiss, Max ; Macias, Maritza ; Samani, Zohrab ; Schmutge, Thomas ; Skaggs, Rhonda</i>	
Use of Crop Canopy Size to Estimate Crop Coefficient for Vegetable Crops	2396
<i>Gartung, Jim ; Trout, Thomas</i>	
Evaporation—A Tool for Sustainable Drainage Management.....	2403
<i>Markham, Steve ; Murfin, Quintin ; Worrall, Peter</i>	
Experimental Investigation of Direct Connectivity between Macropores and Subsurface Drains during Infiltration	2413
<i>Akay, Onur ; Fox, Garey A.</i>	
Potential for Reducing Nutrients from the Poultry Industry in the Chesapeake Bay Watershed.....	2423
<i>Ritter, William F.</i>	
Tillage and N-Source Effects on NO₃-N Leaching Losses to Subsurface Drainage Water	2431
<i>Bakhsh, A. ; Kanwar, R. S.</i>	
The Nitrogen Simulation Model, DRAINMOD-N II: Field Testing and Model Application for Contrasting Soil Types and Climatological Conditions	2441
<i>Skaggs, R. W. ; Youssef, M. A.</i>	
The New England Coastal Basins Observatory: Documentation of Hydrologic Transport Processes	2452
<i>Doerner, S. M. ; Ostendorf, D. W. ; Rees, P. S.</i>	
Drinking Water Distribution Systems: A Dual-Use Vision for Implementing an Environmental Observatory for an Engineered System	2462
<i>Boccelli, D. L. ; Janke, R. ; Murray, R.</i>	
Water QUEST: Center for Water Quality in Urban Environmental Systems	2464
<i>Dzombak, D. A. ; VanBriesen, J. M.</i>	
The Integrated Catchment Study of Auckland City (New Zealand): Fate of Contaminants in Coastal Receiving Environments.....	2467
<i>Bogle, M.G. V. ; Croucher, A. E. ; Davis, M. D. ; Kinley, P. ; O'Sullivan, M. J. ; Paterson, G. ; Sharman, B.</i>	
The Integrated Catchment Study of Auckland City (New Zealand): Contaminant Load Discharge to Coastal Receiving Environments	2477
<i>Davis, Matthew D. ; Kinley, Peter ; Paterson, Greg ; Reed, Jacquie ; Sharman, Brian ; Timperley, Mike ; Wilson, Geoff</i>	
The Integrated Catchment Study of Auckland City (New Zealand): Overview	2491
<i>Brown, Roger ; Davis, Matthew D. ; Kinley, Peter ; Paterson, Greg ; Ranchhod, Sandip ; Sharman, Brian</i>	
The Integrated Catchment Study of Auckland City (New Zealand): Long Term Groundwater Behaviour and Assessment	2503
<i>Cowpertwait, Paul ; Davis, Matthew D. ; Kinley, Peter ; Mullan, A. Brett ; Namjou, Parviz ; Paterson, Greg ; Pattle, Alan ; Salinger, M. Jim ; Sharman, Brian ; Strayton, Gerald</i>	

New Dynamically Dimensioned Search Algorithm for Automatic Calibration with Application to Phosphorous Transport in Northeast Watershed	2515
<i>Shoemaker, Christine A. ; Tolson, Bryan</i>	
A Theoretical Model Development—Effect of Initial Phenol Concentrations on Phenol Degradation Using Pseudomonas putida Cells Immobilized on Calcium Alginate Matrix	2524
<i>Mahadevaswamy, M. ; Mall, I. D. ; Mishra, I. M. ; Prasad, B.</i>	
Three-Dimensional Model Analysis of Pier Scour Hydraulics: A Supplement to Experimental and Field Investigations	2534
<i>Kassem, Ahmed A.</i>	
Groundwater Plume from an Infiltration Basin	2544
<i>Hinlein, E. S. ; Ostendorf, D. W. ; Rotaru, C.</i>	
Life Cycle Assessment (LCA) as a Framework for Addressing the Sustainability of Concentrated Animal Feeding Operations (CAFOs).....	2554
<i>Curran, MaryAnn ; Doby, Troy A. ; Gonzalez, Michael</i>	
Construction of Water Saving Society in China	2563
<i>Huang, Minghua ; Liu, Jian ; Lou, Peng ; Xiao, Wen</i>	
The Federal Role in Water Supply Planning	2572
<i>Connor, J. B. ; Cox, W. E. ; Lohani, V. K.</i>	
Eco-Efficiency Analysis of Existing Industrial Wastewater Treatment: How to Include the External Costs to the Environment.....	2580
<i>Barkdoll, B. ; Gaines, W. ; Garcilaso, L.</i>	
Water Conservation Techniques and Graywater Reuse at the Single Household Level	2590
<i>Alkhatib, R. Y. ; Edgerly, J.</i>	
Assessment of Water Supply of Aurangabad City	2598
<i>Deshmukh, Bijlee ; Godihal, J. H.</i>	
Application of a Depth-Averaged 2-D Model in River Restoration	2605
<i>Wang, Sam S. Y. ; Wu, Weiming</i>	
CONCEPTS: A Process-Based Computer Model of Instream and Riparian Processes	2615
<i>Langendoen, Eddy J.</i>	
Design Tool for the Structural Stability of Rootwads in Streambanks	2625
<i>Wood, Alan D.</i>	
Stable Design Program for Meandering Channels	2641
<i>Shih, Hui-Ming ; Watson, Chester C. ; Yang, Chih Ted</i>	
Geomorphic Meander Restoration of Incised and Aggraded Systems in the Blue Mountain Range in Washington State	2651
<i>Southerland, W. Barry</i>	
Linking Benthic Macroinvertebrate Bioassessments to Channel Stability and Bed Sediment Characteristics	2660
<i>Schwartz, John S. ; Williams, Kelley Haerer</i>	
A Depth-Averaged 2-D Analysis of Fish Habitat Suitability Impacted by Vegetation and Sediment.....	2669
<i>He, Zhiguo ; Wang, Sam S. Y. ; Wu, Weiming</i>	

VOLUME VI

Restoration of Wallens Bend and Clinch Rivers to Reduce Sediment near Threatened Mussel Shoals	2679
<i>Adams, Michael F., Jr. ; Babbitt, Greg</i>	
Preliminary Analysis of Lake Pontchartrain Pollution after Hurricane Katrina	2688
<i>Aral, Mustafa M. ; Kilic, Sinem G.</i>	
Rainfall-Based Management Plan for Water Conservation Area 3A in the Florida Everglades	2698
<i>Palermo, Samuel ; Pathak, Chandra S.</i>	
Hydrologic Analysis for a Floodplain Forest Wetland Mitigation Site	2709
<i>Gumtow, J. ; Michaud, B.</i>	
Urban Stream Restoration: Guidance for Monitoring and Assessment Protocols	2719
<i>Carpenter, Donald D. ; Lucas, Shannon ; McPhillips, Munsell ; Niezgoda, Sue L. ; Prager, Robert ; Schwartz, John S. ; Slate, Louise O.</i>	
Hydrologic Monitoring Criteria for Freshwater Wetland Plant and Animal Communities	2729
<i>Duever, Michael ; Nath, Ananta</i>	
Ethical and Professional Issues Associated with River Restoration	2737
<i>Carpenter, Donald D. ; McPhillips, Munsell ; Prager, Robert ; Schwartz, John ; Slate, Louise</i>	
The Implications of Academic Dishonesty in Undergraduate Engineering on Professional Ethical Behavior	2739
<i>Carpenter, D. D. ; Finelli, C. J. ; Harding, T. S.</i>	
The Application of Stream Classification Using the Fluvial Geomorphology Approach for Natural Channel Design: The Rest of the Story	2751
<i>Rosgen, David L.</i>	
The Natural Channel Design Method for River Restoration	2767
<i>Rosgen, David L.</i>	
A Method to Select Surface Bed Samples that Represent Bankfull Conditions in Active Gravel Channels	2779
<i>Schlindwein, Alan</i>	
Natural Channel Design Difficulties When Confronted with Anthropogenic Downstream Fining in a Sand-Pebble Channel	2785
<i>Schlindwein, Alan</i>	
Spreadsheet Tools for River Evaluation, Assessment, and Monitoring: The STREAM Diagnostic Modules	2795
<i>Mecklenburg, D. E. ; Powell, G. E. ; Ward, A. D.</i>	
Channel Restoration Design of Deadman's Run Tributary: An Application of Tractive Shear Analysis and Regime Methodology	2807
<i>Kwiatkowski, Brian ; Meyer, Mark ; Prager, Robert</i>	
Estimating a Stream Restoration Design Discharge	2814
<i>Niezgoda, Sue L. ; West, Tyrel S.</i>	
Prediction of Flow and Bank Erosion in the Sacramento River	2824
<i>Ercan, Ali ; Younis, Bassam A.</i>	
The GeoTools Shareware Package for Fluvial Systems Analysis	2834
<i>Bledsoe, B. P. ; Brown, M. C. ; Raff, D. A.</i>	

An Overview of a Two Dimensional Hydraulic Modeling of Llano Seco Riparian Sanctuary on Sacramento River	2843
<i>Mishra, Su ; Smith, Tom ; Vaughn, Morgan</i>	
Temporal Variation of Dissolved Oxygen in a Mountain Stream Plunge Pool: An Example from Northern Turkey	2853
<i>Cokgor, S. ; Kartal, B. ; Kucukali, S.</i>	
Treatment of Urban Run Off Using Constructed Wetlands in New Delhi, India	2863
<i>Jain, Mehul ; Jamwal, Priyanka ; Mittal, Atul K. ; Mouchel, J. M.</i>	
Environmental Restoration of the Xinzhou River in Shenzhen	2873
<i>Huang, Minghua ; Liu, Jian ; Lou, Peng ; Xiao, Wen</i>	
Underwood Creek Rehabilitation and Flood Management, Menomonee River Watercourse, Milwaukee, Wisconsin	2882
<i>Fowler, David C. ; Sear, Thomas R.</i>	
Regional Application of Stream Classification Systems in Planning and Design of Streambank Stabilization Projects	2892
<i>Reckendorf, Frank ; Steffen, Lyle</i>	
The Role of Riparian Roots in Resisting the Hydraulic Scour of Streambanks	2902
<i>Pollen, N. ; Simon, A.</i>	
Temporal and Spatial Variability in the Root-Reinforcement of Streambanks: Incorporating Variations in Soil Shear Strength and Soil Moisture into the RipRoot Model	2912
<i>Pollen, N. ; Simon, A.</i>	
Experimental Study of HDPE Material Used for Pervious Pavement Components	2922
<i>Bao, Qiaoqiao ; Davies, John W. ; Davis, Tim ; Newman, Alan P.</i>	
An Overview of Graywater Collection and Treatment Systems	2932
<i>Alkhatib, R. Y. ; Marjoram, C. ; Roesner, L. A.</i>	
Wastewater Reuse Options for Gloucester County, New Jersey	2942
<i>Everett, J. ; Hasse, J. ; Jahan, K. ; Orlins, J. ; Walker, W.</i>	
The Role of Risk Management in Sustainable Water Supply Planning	2952
<i>Nebiker, Steven</i>	
City of Seattle—Stormwater Low Impact Development Practices	2964
<i>Johnson, Richard L. ; Staeheli, Peg</i>	
Advancing Sustainable Stormwater Management at Villanova University	2974
<i>Heasom, William C. ; Traver, Robert G.</i>	
Project Sustainability Management in China's Hydropower Development	2984
<i>Chen, Yongbai ; Liu, Jian ; Lou, Peng ; Sun, Zhiyu</i>	
Domestic Rainwater Harvesting Assessment to Improve Water Supply and Health in Africa's Urban Slums	2994
<i>Cowden, J. R. ; Mihelcic, J. R. ; Watkins, D. W.</i>	
Comparison of Wastewater Treatment in Developed and Developing Countries	3004
<i>Barkdoll, B. ; Diaz, J.</i>	
Revised Operation of Prado Dam and Reservoir for Additional Water Conservation	3014
<i>Stuart, Robert J.</i>	
Sustainable Management of Water Resources Infrastructure	3024
<i>Annandale, George W. ; Johndrow, Tamara Butler ; Palmieri, Alessandro</i>	

Rational Water Tariff: A Tool for Sustainable Urban Water Management in India	3034
<i>Mittal, A. K. ; Singh, Mamata R. ; Upadhyay, V.</i>	
Developing Sustainable Behaviors through Community-Based Social Marketing	3044
<i>Johnston, C. E.</i>	
Measuring Total Volatile Suspended Solids in Stormwater to Understand the Influence of Organic Matter on BMP Performance	3053
<i>Lehman, Jeremiah M. ; Lenhart, James H.</i>	
Monitoring of a Retention Pond Before and After Maintenance	3065
<i>O'Connor, Thomas P. ; Rossi, James</i>	
Improved Extended Detention Basin Performance through Better Residence Time Control.....	3076
<i>Barrett, Michael E. ; Middleton, John R.</i>	
Applying a Vadose Zone Model to Stormwater Infiltration	3086
<i>Baker, K. H. ; Clark, S. E. ; Mikula, J. B.</i>	
Experimental Analysis and Modeling of a Stormwater Perlite Filter	3096
<i>Adriasola, José M. ; Fernández, Bonifacio ; Gironás, Jorge</i>	
Evaluation of Retention Pond and Constructed Wetland BMPs for Treating Particulate-Bound Heavy Metals in Urban Stormwater Runoff	3106
<i>Muthukrishnan, Swarna ; Selvakumar, Ariamalar</i>	
Nitrogen Removal from Stormwater: A Pilot Plant Research Project	3119
<i>Smith, Daniel P.</i>	
Performance of Upflow Filtration for Treating Stormwater	3127
<i>Andoh, Robert ; Clark, Shirley ; Khambhammettu, Uday ; Pitt, Robert</i>	
Enhanced Sand Filtration for Storm Water Phosphorus Removal	3137
<i>Erickson, Andrew J. ; Gulliver, John S. ; Weiss, Peter T.</i>	
Planes, Drains, and Automobiles: Design Criteria for Storm Water Drainage Facilities at Lambert-St. Louis International Airport Expansion.....	3147
<i>Buechter, M. T. ; Weiland, J. L.</i>	
Residential Manmade Lake System Design for Storm Water Treatment	3154
<i>Phillips, Bruce M.</i>	
The Utilization of Fly Ash for Sediment Stabilization during the Holmes Lake Restoration Project	3159
<i>Beckman, Ryan ; Gokie, Timothy P.</i>	
Pollutant Potential from Building Materials: Laboratory and Field Evaluations	3169
<i>Clark, Shirley E. ; Elligson, James C. ; Hafera, Julia M. ; Lalor, Melinda M. ; Long, Brett V. ; Mikula, J. Bradley</i>	
A Watershed Process to Quantify and Facilitate Ecosystem Improvements through Flow Regime Restoration	3179
<i>Bails, Jack ; Brown, Brent ; Kealy, Mary Jo ; Medina, Dan ; Mittag, Mark</i>	
Removal of Pollutants by a CDS Unit at a Major Storm Outfall in Florida	3188
<i>Rushton, Betty</i>	
Rainwater Harvesting, Low Impact Development Strategies, and Meeting the National Pollution Discharge Elimination System (NPDES) Stormwater Discharge Standards.....	3198
<i>Kinkade-Levario, Heather</i>	

Low Impact Development Strategies and Tools for NPDES Phase II Communities	3206
<i>Kloss, C. ; Rittenhouse, B. ; Weinstein, N. A.</i>	
The SPAW Model: Application to Infiltrating BMP Facilities	3210
<i>Lucas, William C.</i>	

VOLUME VII

BMP Decision Support System for Evaluating Watershed-Based Stormwater Management Alternatives	3220
<i>Akinbobola, Chris A. ; Alvi, Khalid ; Cheng, Mow-Soung ; Riverson, John ; Shoemaker, Leslie ; Zhen, Jenny</i>	
A Model of Optimal Best Management Practices Placement	3231
<i>Chiu, S. K. ; Hsieh, P. H. ; Kuo, J. T.</i>	
SUSTAIN - An Evaluation and Cost-Optimization Tool for Placement of BMPs	3241
<i>Lai, Fu-hsiung ; Riverson, John ; Shoemaker, Leslie ; Zhen, Jenny</i>	
Application of the Community-Based Watershed Management Planning Process to Preserve Cunningham Lake	3254
<i>Farnsworth, J. ; Slaven, P.</i>	
Fecal Coliform Impairment in Edwards Run, New Jersey	3264
<i>Garcia, Diana ; Jahan, Kauser ; Orlins, Joseph</i>	
Assessing Reach-Based Restoration Practices in an Urban Stream from a Watershed Perspective.....	3271
<i>Herricks, Edwin E. ; Wang, Ying</i>	
Initiating Sewer System Real Time Controls in Cincinnati	3279
<i>Horvath, R. M. ; Moughton, D. W. ; Schultz, N. U.</i>	
Milwaukee Case Study in Example Evolution of Sewer Controls	3289
<i>Heinz, Steve ; Schultz, Nancy U.</i>	
Real-Time Control of Combined Sewers: US EPA Manual	3299
<i>Stinson, Mary ; Vitasovic, Z. C.</i>	
Real-Time Control Implementation within a Combined Sewer System: An Operational Perspective	3307
<i>Akridge, Angela ; Carty, David</i>	
Stormwater Best Management Practices Assessment for the City of Lincoln, Nebraska	3316
<i>Admiraal, David ; Dvorak, Bruce ; Krause, Tony Dean ; Stansbury, John</i>	
Water Demand Estimation Using Land Use and Population Growth Information: A Case Study in Salt Lake County, Utah	3326
<i>Hassan, Wafa ; Kaluarachchi, Jagath</i>	
City of Newport Beach Storm Drain Diversion Study	3334
<i>Kimura, Sherilyn ; Poon, Ying</i>	
Prioritizing Stormwater Capital Improvement Program (CIP) Projects—Lincoln, Nebraska	3344
<i>Biesecker, Devin ; Jha, Lalit ; Johnson, J. D. ; Jones, Jonathan</i>	
The Use of Sediment Tracers in Watershed Processes.....	3354
<i>Abaci, O. ; Papanicolaou, A. N. ; Theregowda, R.</i>	

Extended Analysis for Sediment Pond Design	3364
<i>Cheng, Yuan</i>	
A Process Based Erosion and Sediment Model for Construction Sites	3373
<i>Sheshukov, Aleksey Y. ; Wilson, Bruce N.</i>	
Prioritization of Annual Mains Replacement Activities Using Historical Failure Data, Hydraulic Modeling, and Economic Data	3383
<i>Brundle, Mark ; Green, Antony ; Johnson, Joel G. ; Tinubu, Peter</i>	
Prioritizing Collection System Repairs with Limited Information	3393
<i>Kilpatrick, Sean ; Sample, David</i>	
Vegetative Flow Resistance: Characterization of Woody Plants for Modeling Applications	3402
<i>Järvelä, Juha</i>	
Relationships Among Land-Use, In-Stream Stressors, and Biological Condition in Prince George's County, MD	3412
<i>Akinbubola, Chris ; Cheng, Mow Soung ; Leppo, Erik W. ; Lessard, JoAnna L. ; Stribling, James B.</i>	
Preliminary Study of Water Pollution Due to Re-Suspension of Bed Materials Adsorbing Pollutants	3422
<i>Ding, Yun ; Yu, Xue-zhong ; Zhong, De-yu</i>	
Effects of Catchment Modification on the Flow Frequency Curve Modeled Using the EPA-SWMM Model	3431
<i>Davis, J. P. ; Roesner, L. A. ; Rohrer, C. A.</i>	
Simplified Detention Requirements with Watershed-Wide Benefits	3441
<i>Heatherman, William J. ; McEnroe, Bruce M.</i>	
Integrated Watershed Management	3451
<i>Pitt, Robert</i>	
The Great Works of UWRRC	3461
<i>Jones, Jonathan E.</i>	
Improvement of the EXTRAN Block in Storm Water Management Model (SWMM4.4h)	3472
<i>Farber, Martin A. ; Gironás, Jorge ; Jang, Sukhwan ; Park, Daeryong ; Roesner, Larry A.</i>	
Simulation of Infiltration and Surface Runoff—A Windows-Based Hydrologic Modeling System HYDROL-INF	3484
<i>Chu, Xuefeng ; Mariño, Miguel A.</i>	
An Integrated Approach to Water Quality Assessment in Support of a Long-Term Control Plan	3492
<i>Gray, P. ; Hulley, M. E. ; Umberg, M. ; Zukovs, G.</i>	
The Application of Radar Rainfall Data to Collection System Analysis	3502
<i>Hill, Christine ; Jobin, Daniel ; McLean, Tracey ; Zukovs, George</i>	
Operation of the Trinity River/Fort Worth Central City Flood Management System	3512
<i>Loucks, Eric D. ; Stahr, Lisa M.</i>	
Evaluation of Bacteria Impacts on Beaches in Milwaukee: The Bacteria Source, Transport, and Fate Study	3517
<i>Magruder, Christopher ; McLellan, Sandra L. ; Oriel, Kimberly A. ; Thuman, Andrew J.</i>	
Optimized Vegetation Buffer Strips Design for Integrated Management of Goodwin Creek Watershed in Mississippi	3527
<i>Alidaee, Bahram ; Altinakar, Mustafa S. ; Qi, Honghai ; Vieira, Dalmo A.</i>	

Developing a Comparative Tool for Both Conventional and Green Stormwater Management Techniques	3537
<i>Eyring, B. ; Hollander, D. A. ; Schmidt, A. R.</i>	
Q2 - Designing for the Quality as well as the Quantity of Water: A Review of the Kansas City Manual for Best Management Practices	3547
<i>Henson, J. W. ; Jacobs, T. A.</i>	
A Cohesive Approach for the Implementation of the Comprehensive Everglades Restoration Plan.....	3555
<i>Heaney, James P. ; Knight, Scott L. ; Reisinger, Daniel L.</i>	
Finding the Best Comparable Dataset for Estimating Parameters for a Water Quality Model.....	3565
<i>Heaney, James P. ; Knight, Scott L. ; Reisinger, Daniel L.</i>	
Options for a Decision Support System on the Central Platte River Basin.....	3575
<i>Frevert, Donald ; Kube, Mike ; Lieb, Amy ; Rieker, Jeff ; Stroup, Duane</i>	
Integration of Water Quantity and Water Quality Modeling on the Truckee River	3583
<i>Rieker, J. D.</i>	
Changing Tactics for Managing Water in Alberta—The Water for Life Strategy and Challenges in It's Implementation.....	3590
<i>Bjornlund, H. ; Klein, K. K. ; Nicol, L.</i>	
U.S. Bureau of Reclamation Use of CALSIM: A Generalized Model for River System Analysis.....	3600
<i>Parker, Nancy L.</i>	
The Effect of Assumptions on Unknown Parameter Values in Forecasting Reliability of Meeting Effluent Limits	3610
<i>Devkota, Ishwar ; Doby, Troy A. ; Smith, Raymond</i>	
Digital Floodplain Mapping and an Analysis of Errors Involved	3620
<i>Cai, Ximing ; Hamblen, Christopher S. ; Soong, David T.</i>	
Optimal Load Reductions for Beargrass Creek Watershed in Louisville, Kentucky	3630
<i>Ormsbee, Lindell E. ; Tufail, Mohammad</i>	
Assessing the Impact of Loading Rate Uncertainties in TMDL Allocations	3640
<i>Culver, Teresa B. ; Foraste, Alex ; Taher, Imtiaz</i>	
Lake Tohopekaliga Pollutant Modeling Study for Kissimmee, Florida	3650
<i>England, Gordon</i>	
A Watershed Nutrient Management Model: System Dynamics and Transport Rates Approach.....	3660
<i>Kato, T. ; Purwanto, M. Y. J. ; Setiawan, B. I.</i>	
Modeling Phosphorus in the Appoquinimink Watershed with AGNPS.....	3670
<i>Hoffman, Scott C. ; Ritter, William F.</i>	
Linking Species Changes to Watershed Modification: A Long-Term Analysis Using Fish Communities	3680
<i>Herricks, Edwin E. ; Marcinkevage, A. Catherine ; Suen, Jian-Ping</i>	
Using Stream Classification to Develop the Channel Erosion Component in a Watershed Sediment Budget	3689
<i>Steffen, Lyle</i>	
The Fire-Flood-Erosion Sequence in California—A Recipe for Disaster	3699
<i>Hamilton, Douglas ; Lyle, Jene E. ; Mathieson, Elizabeth ; Shaller, Philip J. ; Shrestha, Parmeshwar L.</i>	

Investigation of Flood and Debris Flow Recurrence—Andreas Canyon, San Jacinto Range, Southern California	3705
<i>Doroudian, Macan ; Hamilton, Douglas ; Lyle, Jene E. ; Shaller, Philip J. ; Shrestha, Parmeshwar L.</i>	
How Planning and Management Can Benefit from Uncertainty and Risk Analyses: A Case Study on the Niagara River	3712
<i>Franceschini, Samuela</i>	
3D Sediment Transport Modeling of a Hyper-Eutrophic Lake.....	3720
<i>Jain, Mamta</i>	
Photocatalytic Treatment of Atrazine-Contaminated Water	3728
<i>Brown, Shalana L.</i>	
Metals Contamination in Stormwater from Common Roofing Materials	3736
<i>Hafera, Julia</i>	
Drought Preparedness	3744
<i>Slifko, Paul D.</i>	
Environmental vs. Economical Benefits of Dams from Different Perspectives	3752
<i>Pettingill, Luis</i>	
Author Index	