



Presents

FOURTH  
CONFERENCE  
ON WATERSHED  
MANAGEMENT TO MEET  
WATER QUALITY  
STANDARDS AND  
TMDLS

(TOTAL MAXIMUM DAILY LOAD)

ISSUES: SOLUTIONS AND  
IMPEDIMENTS TO  
WATERSHED MANAGEMENT  
AND TMDLS



March 10-14, 2007

**Crowne Plaza Riverwalk**

**San Antonio, Texas**

<http://www.asabe.org/meetings/tmdl2007/index.htm>

***On-Site Program***

# Welcome to our Fourth Conference on Watershed Management to Meet Water Quality Standards and Emerging TMDL



**March 10-14, 2007  
Crowne Plaza Riverwalk – San Antonio, Texas**

This conference will bring together engineers, managers, researchers, producers, politicians, and other professionals in the agricultural and environmental industries for the fourth time to exchange information, discuss opportunities and address challenges of TMDLs and water quality programs.

The technical sessions will focus on the science, engineering, policy, and economics of watershed management to meet water quality standards and emerging TMDL. We have many exciting speakers who will present ideas and information on issues such as agricultural BMP effectiveness, political ramifications of TMDL, implementation, field and watershed scale modeling, water quality standards, TMDL case studies, TMDL development and process, data collection, data quality, data management, water quality associated with forestry and rangeland, and TMDL allocation issues.

Poster presentations will be displayed in the conference area. Commercial exhibitors will demonstrate and explain their newest products that serve professional engineers in their work related to TMDLs, water quality, and waste management areas.

We will have two days of workshops regarding TMDL and watershed modeling including Soil and Water Assessment Tool (SWAT 2006), cumulative uncertainty in measured streamflow and water quality data for small watersheds, using the bacteria source load calculator (BSLC) for TMDL development, Agricultural Policy/Environmental eXtender (APEX), and SWAT/APEX Program (SWAPP). We will also have a great afternoon tour to provide an opportunity for participants to learn about San Antonio River system.

So it is with great excitement that I extend a warm invitation to you to attend the 2007 watershed management to meet water quality standards and emerging TMDL in the beautiful city of San Antonio, Texas. Please plan on being a part of this conference to learn about new science and technologies and meet people who share the same interests in TMDLs and water quality.

Ali Saleh, Conference Chair

## **Sponsor:**

The American Society of Agricultural and  
Biological Engineers

## **Endorsers:**

NCASI  
Society of American Foresters  
Soil Science Society of America  
The Center for TMDL and Watershed  
Studies at Virginia Tech  
TIAER  
Watershed Management Council

*Information available at time of print*

## **PLANNING COMMITTEE**

**Ali Saleh, Symposium Chair**

**Anne McFarland, Proceedings Chair**

**Saied Mostaghami, George Ice  
Tad Slawewski, Thomas Davenport  
Jeff Arnold, Mark Weltz**

# CONFERENCE OVERVIEW

## SATURDAY, MARCH 10

- 1:00pm-6:30pm WORKSHOP 1 – Watershed & Field Modeling - Part 1: Using SWAT 2006
- 1:00pm-5:00pm WORKSHOP 2 – CANCELLED –

## SUNDAY, MARCH 11

- 8:15am-5:00pm Watershed & Field Modeling - Part 2: Using SWAPP: A SWAT and APEX Interface Program
- 8:30am-5:00pm WORKSHOP 3 – Modeling Strategies for Implementation Planning

## MONDAY, MARCH 12

- 8:00am-9:30am OPENING PLENARY SESSION
- 9:30am-10:00am BREAK
- 10:00am-11:40am CONCURRENT SESSIONS I, II, III, IV
- I. Urban Perspectives on Water Quality
  - II. Field and Watershed Scale Modeling - Part 1
  - III. Emerging Problems-New TMDL Case Studies
  - IV. Performance and Validation of Models
- 11:40am-1:15pm LUNCH (on your own)
- 1:15pm-2:40pm CONCURRENT SESSIONS V, VI, VII, VIII
- V. Field and Watershed Scale Modeling - Part 2
  - VI. Agricultural BMP Effectiveness - Part 1
  - VII. Water Quality Issues for Forest and Rangelands - Part 1
  - VIII. Data Collection to Support TMDL Development - Part 1
- 2:55pm-3:15pm BREAK
- 3:15pm-4:55pm CONCURRENT SESSIONS IX, X, XI, XII
- IX. Performance and Validation of Models for TMDLs - Part 1
  - X. TMDL and Water Quality Issues: Watershed Approach
  - XI. Management Practices for Sediment Control
  - XII. Data Collection to Support TMDL Development - Part 2
- 5:30pm-8:00pm POSTER SESSION, EXHIBITS & RECEPTION

## TUESDAY, MARCH 13

- 8:15am-9:55am CONCURRENT SESSIONS XIII, XIV, XV
- XIII. Agricultural BMP Effectiveness - Part 2
  - XIV. Water Quality Standards
  - XV. Performance and Validation of Models for TMDLs - Part 2
- 9:55am-10:15am BREAK
- 10:15am-11:55am CONCURRENT SESSIONS XVI, XVII, XVIII
- XVI. Emerging Issues
  - XVII. Bacterial Monitoring, Source Identification and Control Practices
  - XVIII. Field and Watershed Scale Modeling - Part 3
- 11:55am-1:15pm LUNCH
- Keynote Speaker: Dr. Kenneth Reckow, Duke University
- 1:30pm-6:30pm TECHNICAL TOUR - San Antonio River Authority Urban Floodplain Management Tour (Optional - prior registration needed)

## WEDNESDAY, MARCH 14

- 8:15am-9:55am CONCURRENT SESSIONS XIX, XX, XXI
- XIX. Field and Watershed Modeling - Part 4
  - XX. Water Quality Issues for Forest and Rangelands - Part 2
  - XXI. Watershed Implementation Planning
- 9:55am-10:15am BREAK
- 10:15am-11:55am CONCURRENT SESSIONS XXII, XXIII, XXIV
- XXII. Data Collection to Support TMDL Development - Part 3
  - XXIII. Economic Implications of TMDLs
  - XXIV. Water Quality Issues for Forest and Rangelands - Part 3
- 12:00pm TMDL MEETING ADJOURNED

## TECHNICAL TOUR

### SAN ANTONIO RIVER AUTHORITY URBAN FLOODPLAIN MANAGEMENT TOUR

Tuesday, March 13 1:30PM-6:00PM

The San Antonio River Authority's Urban Floodplain Management tour is designed to inform audiences about flood control projects in Bexar County. The tour focuses on a heavily urbanized portion of the Upper San Antonio River in San Antonio. Sites included on the tour are the Olmos Dam, San Antonio Springs/Brackenridge Park/ San Antonio River Tunnel Inlet & Outlet, Gate 5 Marina, Original San Antonio Channel Improvement Project, Eagleland segment and culminate with the Historical Mission Reach of the San Antonio River Improvements Project.

**COST: \$45.00** Tour includes bus transportation, and tour guide. (Minimum 20 participants)

# CONTINUING PROFESSIONAL DEVELOPMENT WORKSHOPS

Workshop 1

## WATERSHED & FIELD MODELING

### Part 1: USING SWAT 2006

**Saturday, March 10, 2007 1:00PM-6:30PM**

Instructor: Jeff Arnold, Mauro Di Luzio, Santhi Chinnasamy, Balaji Narasimhan, Cole Green, Daniel Moriasi (USDA ARS and Texas A&M University)

Level of Difficulty: Entry Level to Intermediate

Credits: 5 Professional Development Hours

Minimum 10 participants

The workshop will include an overview of SWAT model and its latest additions (2006 version). The attendants will be also introduced to the updated AVSWATX, a GIS interface of the model developed for ArcView 3.3. AVSWATX is designed to provide an extendable environment including optional capabilities to the interface, such as the Automatic calibration tool, the SEA (SSURGO Extension for AVSWAT) and the Splitting tool. The attendants are invited to bring their own laptop with ArcView 3.3 and Spatial Analyst 1.1 (or later) installed. A CD with the new software will be distributed. The attendants will have a chance to get hands-on experience: starting from the set up of an AVSWATX project and ending with a SWAT 2006 model run and calibration.

## WATERSHED & FIELD MODELING

### Part 2: USING SWAPP: A SWAT AND APEX INTERFACE PROGRAM

**Sunday, March 11, 2007 8:30AM-5:00PM**

Instructor(s): Ali Saleh, Edward Osei, Jeff Arnold, Oscar Gallego (TIAER)

Credits: 7.5 Professional Development Hours

Minimum 10 participants

Soil and Water Assessment Tool (SWAT) and APEX (Agricultural Policy/Environmental eXtender) models are used to assess and evaluate various BMPs at field (using APEX) and watershed (SWAT) levels. However, these models are capable of simulating a limited number of scenarios individually. This CPD is in continuation of CPD 1 where after reviewing the APEX, SWAT, and SWAPP program which was developed to facilitate the simultaneous use of these two models will be introduced. Attendees are encouraged to bring their laptop to participate in this workshop.

**COST: Full Workshop (Parts 1 & 2) . . . . \$275**  
**Part 1: Only Saturday . . . . . \$130**  
**Part 2: Only Sunday . . . . . \$185**

Workshop 2

## USING THE BACTERIA SOURCE LOAD CALCULATOR (BSLC) FOR TMDL DEVELOPMENT

**Saturday, March 10, 2007 1:00AM-5:00PM**

Workshop has been cancelled

Workshop 3

## MODELING STRATEGIES FOR IMPLEMENTATION PLANNING

**Sunday, March 11, 2007 8:30AM-5:00PM**

Instructor: Gene Yagow, Brian Benham, Becky Zeckoski, Kevin Brannan, Kyle Hall (Virginia Tech)

Level of Difficulty: Entry Level to Intermediate

Credits: 7 Professional Development Hours

Minimum 10 participants

This workshop will provide participants with hands-on exercises and demonstrations of modeling strategies that can be used during development of implementation plans to achieve load reduction TMDL goals.

**COST: \$185**

Workshop participants will maximize their workshop experience if they bring along a laptop loaded with ArcGIS and Microsoft Excel, though laptops are not required, as procedures will be demonstrated with a computer projector and participants will be supplied with workshop notes and spreadsheet files with demonstrated samples.



SACVB/Photographer

Continuing Professional Development Certificates will be issued upon request for those attending the CPD workshops.

# TECHNICAL SESSIONS

## MONDAY, MARCH 12

8:00am-9:30am **OPENING PLENARY SESSION**  
Moderator: George Ice, National Council for Air and Stream Improvement (NCASI)

8:00am Opening Remarks - Ali Saleh  
8:05am Welcome to the city of San Antonio  
8:15am Market based solutions to Nonpoint Source Problems  
*Carl Lucero, National Leader for Clean Water, USDA - NRCS*

8:40am The TMDL Program, Progress and Challenges  
*Francoise M. Brasier, Associate Chief, Watershed Branch, USEPA*

9:05am TMDL and Water quality issues at the State level  
*David Schanbacher, Chief Engineer, Texas Commission for Environmental Quality*

9:30am-10:00am **BREAK**

### CONCURRENT SESSIONS I, II, III, IV, IV

#### I. URBAN PERSPECTIVES ON WATER QUALITY

Moderator: Tad Slawewicki, Limno Tech, Inc.  
Location: TBA

10:00am UAAs and the Standards-Setting Process  
*Brooks M. Smith, Hunton & Williams LLP*

10:25am Adaptive Implementation of TMDLs  
*Ken Reckhow, Duke University, Durham, NC United States*

10:50am Enforcement, Policy and Regulatory Developments Affecting the Agricultural Sector  
*David Cook, Nixon Peabody LLP*

11:15am The Urban and Rural Communities CAN work Together to Solve Environmental Problems!  
*Michael Moore, Orange County (CA) Sanitation District*

#### II. FIELD AND WATERSHED SCALE MODELING - PART 1

Moderator: Santhi Chinnasamy, USDA ARS  
Location: TBA

10:00am Comparison of the auto calibration tool available within SWAT 2005 and Manual calibration  
*Paula Jo Lemonds and Michael Kasch, HDR Engineering, Inc, Austin, TX (P.J.Lemonds, and M.Kasch)*

10:25am Application of CANWET and HSPF for TMDL Evaluation under Southern Ontario Conditions  
*Amanjot Singh, University of Guelph, Guelph, ON, Canada (A.Singh, R.P Rudra, B Gharabaghi, I Ahmed, and S Das)*

10:50am Using SWAT to Investigate TMDL of Bacteria in Upper Oyster Creek  
*Bing Du, TIAER, Stephenville, TX United States (L.M. Hauck, X.Y. Ji and B. Du)*

11:15am Impact of Urbanization on Watershed Hydrology and Hydro-Geology  
*Deepak Khare, Department of Water Resources Development & Management, Roorkee, Uttaranchal, India (D Khare, P. K. Garg, and M.K. Jat)*

#### III, IV. EMERGING PROBLEMS-NEW TMDL CASE STUDIES

Moderator: Michael Thomas, Florida Department of Environmental Protection  
Location: TBA

10:00am Spatially Explicit Load Enrichment Calculation Tool (SELECT) and Load Duration Curves for Identification of Ecoli Sources in Plum Creek Watershed, TX  
*Aarin E Teague, Texas A&M University, College Station, TX, United States (A. Teague, M. Babbar-Sebens, R. Karthikeyan, R. Srinivasan, J. Jacobs, M. McFarland, N. Dictson, and D. Boellstorff)*

10:25am Establishing a Framework for Phosphorus Trading in the Etowah Basin  
*L. Mark Risse, University of Georgia, Athens, GA, United States (D. Radcliffe, R. Jackson, and J. Romeis)*

10:50am Fate and Transport of Emerging Contaminants in a Wastewater Dominated Stream  
*Douglas J Schnoebelen, U.S. Geological Survey, Iowa City, IA, United States (D.J. Schnoebelen, D.W. Kolpin, L.B. Barber, E.. Furlong, M.M. Meyer and M. Skopec)*

11:15am Flood Control - A Mechanism for Extreme Bacteria Loading  
*Ron Stein, Texas Commission on Environmental Quality, Austin, TX, United States (R. Stein and Dr. H.Rifai) R. Jackson, and J. Romeis)*

#### IV. PERFORMANCE AND VALIDATION OF MODELS

Moderator: Larry Hauck, Texas Institute of Applied Environmental Research  
Location: TBA

10:00am Evaluation of Modeling Tools for TMDL Development and Implementation - Presentation of the Collection  
*Rafael Muñoz-Carpena, University of Florida, Gainesville, FL, United States (Muñoz-Carpena, R., G. Vellidis, A. Shirmohammadi and W.W. Wallender)*

10:25am Development of a TMDL for the Raccoon River in West Central Iowa using SWAT  
*Phillip W Gassman, Center for Agricultural and Rural Development, Ames, IA, United States (M. Jha, C. Wolter, K. Schilling, P.W. Gassman, and S. Secchi)*

10:50am Impacts of Changing Herd Sizes on the Effects of Manure Application Rates  
*Edward Osei, Texas Institute for Applied Environmental Research, Stephenville, TX, United States (E.Osei, B. Du, and L. Hauck)*

11:15am Estimating Environmental Benefits from a Manure Haul-off and Composting Project for North-Central Texas Watersheds  
*Larry M Hauck, TIAER, Stephenville, TX, United States (L.M. Hauck, A. Saleh, A. McFarland, and O. Gallego)*

11:40am-1:15pm **LUNCH**

### CONCURRENT SESSIONS V, VI, VII, VIII

#### V. FIELD AND WATERSHED SCALE MODELING - PART 2

Moderator: Cole Green, USDA ARS  
Location: TBA

1:15pm Assessing Alternative Fecal Coliform Direct Deposit Modeling Approaches  
*Kyle M Hall, Biological Systems Engineering Department, Virginia Tech, Blacksburg, VA, United States (K.M. Hall, B.L. Benham, K. M. Brannan, and R.W. Zeckoski)*

1:40pm Comparison of HSPF Simulated In-Stream Fecal Bacteria Concentration Using FTABLEs Generated with Field Survey and Digital Data  
*Kyle M Hall, Biological Systems Engineering Department, Virginia Tech, Blacksburg, VA, United States (K.M. Hall, R.W. Zeckoski, K.M. Brannan, and B.L. Benham)*

2:05pm Validating and Applying the Enhanced Dynamic Fertilizer Model (SWAT-DFC)  
*James B Houser, TIAER, Stephenville, TX, United States (J. B. Houser, A. Saleh, and L. Hauck)*

2:30pm Pathogen, Nutrient, and Sediment Prediction Using AVSWAT-X and WARMF Water Quality Models  
*Amir P Nejadhashemi, Kansas State University, Manhattan, KS, United States (A.P. Nejadhashemi, P.B. Parajuli, and K.R. Mankin)*

#### VI. AGRICULTURAL BMP EFFECTIVENESS - PART 1

Moderator: Philip Barnes, Kansas State University  
Location: TBA

1:15PM Sprinkler and Surface Irrigation Effects on Return Flow Water Quality and Quantity  
*David L. Bjorneberg, NWISRL, ARS, USDA, Kimberly, Idaho, United States (D.L. Bjorneberg, D.T. Westermann and N.O. Nelson)*

# TECHNICAL SESSIONS

## MONDAY, MARCH 12

1:40PM Implementing BMPs in a Agricultural Watershed  
*Daniel L. Devlin, Kansas State University, Manhattan, Kansas, United States (D.Devlin, P.Barnes, R. Graber, D. Ladd, and J. Neel)*

2:05PM The Attenuation of Atrazine and its Major Degradation Products in a Restored Rip  
*Paige Gay, University of Georgia, Tifton, GA, United States (P. Gay, G. Vellidis, and J.J. Delfino)*

2:30PM Assessing Best Management Practices Effectiveness in a Small Watershed using a Process-based Based Modeling Approach  
*Taesoo Lee, Amherst, NY, United States (T. Lee and C.S. Renschler)*

### VII. WATER QUALITY ISSUES FOR FOREST AND RANGELANDS - PART 1

Moderator: Eric B. Schilling, National Council for Air and Stream Improvement  
Location:TBA

1:15pm Predicting Background and Risk-based Sedimentation for Forest Watershed TMDLs  
*William J. Elliot, Rocky Mtn Research Station, Moscow, ID, United States (W. J. Elliot, I. S. Miller and B. D. Glaza)*

1:40pm Evaluation of Water Sampling and Storage Procedures Used in Herbicide Dissipation Studies  
*Joseph B Fischer, USDA Forest Service, Auburn, AL, United States (J.B. Fischer, J.L. Michael, and H.L. Gibbs)*

2:05pm Impacts of Contemporary Timber Harvest and Road Construction Practices in a Mountainous Catchment of North Idaho  
*John Gravelle, University of Idaho, Moscow, ID, United States (J.A. Gravelle, T.E. Link, J.A. Hubbard, J.H. Braatne, and D.L. Karwan)*

2:30pm Addressing Infrequent, Brief, and Small Excursions of Water Quality  
*George G Ice, NCASI, Corvallis, OR, United States (G.G. Ice, J.P., Unwin, T.J. Hall, and P.Wiegand)*

### VIII. DATA COLLECTION TO SUPPORT TMDL DEVELOPMENT - PART 1

Moderator: Rafael Munoz-Carpena, University of Florida  
Location:TBA

1:15pm Study on Wireless-Sensor-Based Groundwater  
*Dongping Qian, Agricultural University of Hebei, Baoding, Hebei, China (D. Qian)*

1:40pm Productivity, Biochemical Oxygen Dynamics and Nutrient Cycling in the Tidal Segment of the Arroyo Colorado, Texas  
*Meghan C Roussel, USGS, Austin, TX, United States (M. Roussel, R. Kiesling, and M. Canova)*

2:05pm Measurement of Water Residence Time, Flowpath and Sediment Oxygen Demand in Seasonally Inundated Floodplain Wwamps of the Georgia Coastal Plain  
*Jason Todd, UGA, Tifton, GA, United States (M. J. Todd, G. Vellidis, and C.M. Pringle)*

2:30pm Improving TMDL Determinations Through Assessment of Benthic Macroinvertebrate Communities  
*Adrienne Viosca, School of Renewable Natural Resources, Baton Rouge, LA, United States (A. Viosca, Y.J. Xu, and W.E. Kelso)*

2:55pm-3:15pm **BREAK**

## CONCURRENT SESSIONS IX, X, XI, XII

### IX. PERFORMANCE AND VALIDATION OF MODELS FOR TMDLS - PART 1

Moderator: Cole Green, USDA ARS

Location:TBA

3:15pm Evaluation of Nutrient Component of AnnAGNPS Model in a Watershed in Ontario

*Samaresh Das, University of Guelph, Guelph, Ontario, Canada (S Das, R.P. Rudra, B. Gharabaghi, A. Singh, I Ahmed, and P. K. Goel)*

3:40pm Evaluation of HSPF Uncertainty Bounds Using a Probabilistic Point Estimate Method

*Jairo N Diaz-Ramirez, Mississippi State University, Mississippi State, MS, United States (J. Diaz-Ramirez and W. McAnally)*

4:05pm Storm event Simulations in the Upper North Bosque River Watershed

*Mauro Di Luzio, TAES - Blackland Research Center, Temple, TX, United States (M. Di Luzio, A. Saleh, A. McFarland, and J.Arnold)*

4:30pm Considering Measurement Uncertainty in Model Evaluation

*Daren Harmel, USDA-ARS, Temple, TX, United States (D. Harmel and P. Haan)*

4:55pm A Neural Network Model for the Prescription of TMDLs in Groundwater Systems

*T Akinfenwa Fashanu, University of Lagos, Nigeria (T.A. Fashanu, V.O.S. Oluoyo, and O. Ibadapo-Obe)*

### X. TMDL AND WATER QUALITY ISSUES: WATERSHED APPROACH

Moderator: Philip Barnes, Kansas State University

Location:TBA

3:15pm Challenges of Watershed Implementation Plans: Joe's Bayou Watershed

*Daniel N Moriasi, USDA-ARS, El Reno, Oklahoma, United States (D.N. Moriasi and J. Boydston)*

3:40pm Alternative Wetland Analysis Approaches with SWAT for the Boone River Watershed in North Central Iowa

*Philip W Gassman, Center for Agricultural and Rural Development, Iowa State University, Ames, IA, United States (S. Secchi and, M. Jha)*

4:05pm Difficulties in Measuring for Success

*Anne McFarland, TIAER - Tarleton State University, Stephenville, TX, United States (A. McFarland, J. Millican, and A. Bekele)*

4:30pm Key Consideration in development of Watershed approaches

*Ron Jones, TIAER - Tarleton State University, Stephenville, TX, United States (R. Jones)*

### XI. MANAGEMENT PRACTICES FOR SEDIMENT CONTROL

Moderator: Eric B. Schilling, National Council for Air and Stream Improvement

Location:TBA

3:15pm Soil Disturbance Indicators Associated With Watershed Sediment Losses Following Clearcut Harvesting With Best Management Practices

*Matthew W McBroom, Stephen F. Austin State University, Nacogdoches, TX, United States (M.W. McBroom, R.S. Beasley, M. Chang, and G. Ice)*

3:40pm Channel Erosion and Best Management Practice Simulation using SWAT

*Balaji Narasimhan, Spatial Sciences Laborator y, College Station, TX United States (B. Narasimhan, P.M. Allen, R. Srinivasan, J. Arnold and J.A. Dunbar)*

4:05pm The Influence of Intermittent Stream Hydrology on Target TMDLs

*Philip Saks, Louisiana State University, Baton Rouge, LA, United States (P. Saks and J. Xu)*

4:30pm The Effectiveness of Rural Unpaved Road BMP's in Reducing Sediment Loads in the Stillwater Creek, OK Watershed

*Donald J. Turton, Oklahoma State University, Stillwater, OK, United States (D.J. Turton, E. Stebler and M.D. Smolen)*

# TECHNICAL SESSIONS

## MONDAY, MARCH 12

### XII. DATA COLLECTION TO SUPPORT TMDL DEVELOPMENT - PART 2

- Moderator: Rafael Munoz-Carpena, University of Florida  
Location: TBA
- 3:15pm Predicting the Contribution of Atmospheric Deposition to the Seasonal and Daily Nitrogen Loads at the East Fork Little Miami River Watershed  
*Xinhao Wang, School of Planning, University of Cincinnati, Cincinnati, OH, United States*
- 3:40pm A Site-specific Water Quality Trading Ratio: Using GIS and Watershed Modeling to Account for Spatial and Temporal Variability  
*Ming-chieh Lee, Kansas State University, Manhattan, KS, United States (M.-C. Lee and K.R. Mankin)*
- 4:05pm Fertilizer Nitrogen Management to Reduce Tile Water Nitrates  
*Ken Smiciklas, Illinois State University, Normal, IL, United States (K.D. Smiciklas and A.S. Moore)*
- 4:30pm Factors that Influence Variability in Relationships Between Suspended Sediment Concentrations and Turbidity  
*Matthew W Meadows, Oregon State University, Corvallis, OR, United States (M.W. Meadows and A. Skaugset)*
- 5:30pm-8:00pm **POSTER SESSION, EXHIBITS & RECEPTION**  
Moderator: Mauro Di Luzio, TAES - Blackland Research Center  
Location: TBA
- Poster # Title
- #1 Application of Generalized Regression Neural Network in Water Requirement of Paddy Forecasting  
*Daocai Chi, Shenyang Agricultural University, Shenyang, Liaoning, China*
- #2 Economic Assessment of Natural Resources of Lake Arpi and its Watershed Basin  
*Karen Ghazaryan, Yerevan State University, Chair of Ecology and Nature Protection, Yerevan, Capital Armenia (K. Ghazaryan and K. Grigoryan)*
- #3 Assessment of the Microbial Load along Chino Creek, CA, Using a Multi-Indicator Approach  
*Abasiotok M Ibekwe, USDA-ARS, Riverside, CA, United States (M.B. Leddy, A.M. Ibekwe and R.M. Bol1)*
- #4 Pollution Control of Groundwater within an Industrial Zone (Skikda, Algeria).  
*Sofiane Labar, University of Skikda, El Hadeik, Skikda Algeria (S. Labar, A. Hani, C. Cunningham, and A. Younsi)*
- #5 Comparison of Stream Nutrient Conditions in a Subtropical Lowland Watershed to EPA Suggested Criteria  
*April Mason, School of Renewable Natural Resources, Baton Rouge, LA, United States (A. Mason, Y. J. Xu and J.M. Grace)*
- #6 The Leon River Watershed: A CEAP Joint ARS Benchmark and Special Emphasis Watershed  
*Daniel N Moriasi, USDA-ARS, El Reno, Oklahoma, United States (D.N. Moriasi, T. Dybala, C. Amonett, T. Marek, D.N. Moriasi, C.H. Green, and J.G. Arnold)*
- #7 Stream Rehabilitation on a Rural/Urban Watershed  
*Wesley Rosenthal, Blackland Research Center, Temple, TX, United States (W. Rosenthal, P. Casebolt, and D. Hoffman)*
- #8 Evaluating Uncertainty in E. coli Retention in Vegetated Buffer Strips in Locations Selected with SWAT Simulations.  
*Ali M Sadeghi, USDA-ARS, Beltsville, MD, United States (A. Guber, A. Sadeghi, and Y. Pachepsky)*
- #9 Data Base Management System for Karun River Water Quality  
*MohammAdreza Sakian Dezfouli, Khuzestan Water and Power Authority, Ahwaz, Khuzestan, Iran (D.M.R. Sakian)*
- #10 Water Quality Issues Facing the Forest Products Industry: Current Research Focus and Future Research Needs  
*Erik B. Schilling, NCASI, Newberry, FL, United States (E. Schilling, G. Ice, M. Miwa, and A. Saleh)*

- #11 Chapel Branch Creek TMDL Development: Integrating TMDL Development with Implementation.  
*Devendra M Amatya, USDA - Forest Service, Charleston, SC, United States (T. M. Williams, D. M. Amatya, D. Hitchcock, and N. Levine)*
- #12 Reliability Test on Water Quality and Distribution Network of Two Selected Dam in Ondo State Nigeria  
*O. A Elemide, Federal College of Agriculture, Akura Ondo State, Nigeria*
- #13 Calibration of the SWAT Model to the Aysén Basin of the Chilean Patagonia: Challenges and Lessons  
*Matt Yarrow, Laboratorio de Modelación Ecológica, Las Palmeras, Santiago, Chile (M. Yarrow and P. Chambel Leitão)*
- #14 Use of Nitrogen Removing Technology in Onsite Sewer Disposal Systems in Relation to the Bay Restoration Fund and Nutrient Reduction Implementation Plans in the Corsica River Watershed  
*Shan Abeywickrama, Maryland Department of the Environment, Baltimore, MD, United States (S. Abeywickrama)*
- #15 Reducing Losses with Polymers for Improvement in Water Management and Watershed Maintenance  
*Michael Hurd, Kemira Water Solutions (M. Hurd and V. Johnson)*

## TUESDAY, MARCH 13

### CONCURRENT SESSIONS XIII, XIV, XV

#### XIII. AGRICULTURAL BMP EFFECTIVENESS - PART 2

- Moderator: Rebecca Zeckoski, Virginia Tech University  
Location: TBA
- 8:15am Evaluation of the Riparian Ecosystem Management Model for 4 Sites in the Stemple Creek Watershed in California  
*Carrie D Graff, Limno Tech, Washington DC, United States (C. Graff, R. Lowrance, and R. Williams)*
- 8:40am Cycling of Biosolids Through Turfgrass Sod Prevents Sediment and Nutrient Loss  
*Ronnie W Schnell, Texas A&M University, College Station, TX, United States (Schnell, R. D. Vietor, R. White, C. Munster, X. Dai, and T. Provin)*
- 9:05am 5 years of BMP Implementation Outreach in Florida  
*Michael Thomas, FL Dept. Environmental Protection, Tallahassee, FL, United States (B. Boman and M. Thomas)*
- 9:30am Reclaim De-Ionized Water (RDI) Reuse in Silicon Wafer Fabrication Minimize Water Quality Impact  
*Mazibur R Khan, Siltronic Corp., Beaverton, OR, United States (M. Khan, T. McCue, and B. Fish)*

#### XIV. WATER QUALITY STANDARDS

- Moderator: Kent Becher, USGS  
Location: TBA
- 8:15am Emerging Contaminants in U.S. Waters  
*Kent D Becher, USGS, Fort Worth, TX, United States (K. Becher)*
- 8:40am Impacts of Aircraft Deicer and Anti-icer Runoff on Receiving Waters from Dallas/Fort Worth International Airport, Texas, USA  
*Glenn R Harwell, US Geological Survey, Fort Worth, TX, United States (S.R. Corsi, G.R. Harwell, S.W. Geis, and D. Bergman)*
- 9:05am Bacteria TMDL Issues--A View from Both Sides of the Aisle  
*Paul A Jensen, PBS&J, Austin, TX, United States (P. Jensen and Y.-C. Su)*
- 9:30am Streamflow and Nutrient Dependence of Temperature Effects on Dissolved Oxygen in Low-Order Forest Streams  
*April Mason, School of Renewable Natural Resources, Baton Rouge, LA, United States (A. Mason, Y. J.n Xu, P. Saks, A. Viosca, J.M. Grace, J. Beebe, and R. Stich)*

# TECHNICAL SESSIONS

## TUESDAY, MARCH 13

### XV. PERFORMANCE AND VALIDATION OF MODELS FOR TMDLS - PART 2

Moderator: Jeff Arnold, USDA-ARS

Location: TBA

- 8:15am SWAT Simulation of Streamflow, Sediment, and Nutrients on the Blackfoot River Watershed in Western Montana  
*Michael W Van Liew, Montana DEQ, Helena, MT, United States (M.W. Van Liew, K.F. Flynn, D.T. Marshall, and T.M. Byron)*
- 8:40am Mathematical Simulation Tools for Developing Dissolved Oxygen TMDLs  
*P. Barnes, University of Georgia, Tifton, GA, United States (G. Vellidis, P. Barnes, D.D. Bosch, and A.M. Cathey)*
- 9:05am A Numerical Stream/River Water Quality Model for TMDL Studies  
*Gour-Tsyh (George) Yeh, Univ of Central Florida, Orlando, FL, United States (G-T Yeh and F Zhang)*
- 9:30am A Multi-objective Programming Approach for Optimal Management of the Rio Caonillas Watershed in North-Central Puerto Rico  
*Christian A. Villalta, University of Puerto Rico at Mayaguez, Mayaguez, PR, United States (L.R. Pérez Alegria, PhD, P.E. and C. Villalta Calderón, MSc)*
- 9:55am-10:15am **BREAK**

### CONCURRENT SESSIONS XVI, XVII, XVIII

#### XVI. EMERGING ISSUES

Moderator: Rebecca Zeckoski, Virginia Tech University

Location: TBA

- 10:15am Preemptive Strategies for Agricultural Sector (TMDL context).  
*Mahendra P Mohite, Malcolm Pirnie, Inc., Houston, TX, United States (M.P. Mohite, P.E.)*
- 10:40am Model Evaluation Guidelines for Systematic Quantification of Accuracy in Watershed Simulations  
*Daniel N Moriasi, USDA-ARS, El Reno, Oklahoma, United States (D.N. Moriasi, J.G. Arnold, M.W. Van Liew, R.L. Bingner, R.D. Harmel, and T. Veith)*
- 11:05am Water Politics and Law for Trans-Boundary Level (Example of Central Asia)  
*Yusup Khaidarovich Rysbekov, Scientific-Information Center ICWC of Central Asia, Tashkent, Tashkent, Uzbekistan (R. Yusup Khaidarovich)*
- 11:30am Application of TMDL and Risk Assessment Principles for Pathogen Management at an Urban Recreational Lake  
*Nicholas J Ashbolt, Univ of New South Wales, Sydney, Australia (N.Ashbolt, D. Roser, C. Davies, W. Glamore, K. Hakwer and B. Miller)*

#### XVII. BACTERIAL MONITORING, SOURCE IDENTIFICATION AND CONTROL PRACTICES

Moderator: Kent Becher, USGS

Location: TBA

- 10:15am Watershed-Wide Analysis of Fecal Contamination and Fecal Source Identification in Santa Ana River Watershed Impacted by Differences Sources.  
*Abasiofiok M Ibeke, USDA-ARS, Riverside, CA, United States (A. Mark Ibeke and M. Leddy)*
- 10:40am Soil Microcosm Based Estimates of CMA Oxygen Demand and Bacterial Density in a Highway Infiltration Basin  
*David W Ostendorf, Civil and Environmental Engineering Department, Amherst, MA, United States (K.B. Wisdom and C. Rotaru)*
- 11:05am New Methods in Modeling Sources Specific Bacteria at Watershed Scale Using SWAT  
*Prem B. Parajuli, Kansas State University, Manhattan, KS, United States (P.B. Parajuli, K. R. Mankin, and P. L. Barnes)*
- 11:30am Evaluation and Application of Microbial Source Tracking Methodologies for TMDL Development in Texas  
*Andrew Sullivan, Texas Commission on Environmental Quality, Austin, TX, United States (J. A. Sullivan and F. Hambleton)*

### XVIII. FIELD AND WATERSHED SCALE MODELING - PART 3

Moderator: Jeff Arnold, USDA-ARS

Location: TBA

- 10:15am Simulation of Landscape Processes within the SWAT Watershed Model  
*Jeffrey G. Arnold, USDA, ARS, Temple, TX, United States (J.G. Arnold, P. M. Allen and M. Volk)*
- 10:40am Comparison of SWAT Phosphorus Watershed Transport Model Routines  
*Cole Green, USDA ARS GSWRL, Temple, TX, United States (J.G. Arnold and J.R. Williams)*
- 11:05am Use of CEEOT-SWAPP Modeling System for Targeting and Evaluating Environmental Pollutants Necessary for a Successful Trading Program  
*Ali Saleh, TIAER, Stephenville, TX, United States (A.Saleh, E. Osei, and O. Gallego)*
- 11:30am Application of WEPP to Natural Gas Exploration and Production Sites  
*David J Wachal, City of Denton, Denton, TX, United States (D.J. Wachal and K.E. Banks) Allen and M. Volk)*
- 10:40am Comparison of SWAT Phosphorus Watershed Transport Model Routines  
*Cole Green, USDA ARS GSWRL, Temple, TX United States (J.G. Arnold and J.R. Williams)*
- 11:05am Addressing Watershed Nonpoint Source Pollution with SWAPP- An Environmental and Economic Modeling System  
*Ali Saleh, TIAER, Stephenville, TX United States (A.Saleh, E. Osei, and O. Gallego)*
- 11:30am Application of WEPP to Natural Gas Exploration and Production Sites  
*David J Wachal, City of Denton, Denton, TX United States (D.J. Wachal and K.E. Banks)*
- 11:55am-1:15pm **LUNCH**  
Keynote Speaker - Dr. Kenneth Reckow, Duke University
- 1:30pm-6:30pm **TECHNICAL TOUR** - San Antonio River Authority Urban Floodplain Management Tour (Optional - prior registration needed)

1907-2007



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**June 17-20, 2006**

and plan to attend the  
100th Anniversary of

**ASABE Annual International Meeting**

to be held in  
Minneapolis, Minnesota

# TECHNICAL SESSIONS

## WEDNESDAY, MARCH 14

### CONCURRENT SESSIONS XIX, XX, XXI

#### XIX. FIELD AND WATERSHED MODELING - PART 4

- Moderator: Manaj Jha, Center for Agricultural and Rural Development  
Location: TBA
- 8:15am Development of an Extensive Fate and Transport Model for Pathogens in Watersheds  
*Meghna Babbar-Sebens, Texas A&M University, College Station, TX, United States (M. Babbar-Sebens, R. Karthikeyan, and R. Srinivasan)*
- 8:40am A Web-Based Multi-User Model Scenario Generator for Use in Model Allocation and Implementation Planning  
*Robert W Burgholzer, Chesapeake Bay Program - University of Maryland, Annapolis, MD, United States (R.W. Burgholzer.)*
- 9:05am Comparing the Performance of SWAT and AnnAGNPS Model in a Watershed in Ontario  
*Samaresh Das, University of Guelph, Guelph, ON, Canada (S Das, R.P. Rudra, B. Gharabaghi, P. K. Goel, A. Singh, and I Ahmed)*
- 9:30am A paired watershed study to investigate the impact of best management practices: Little Arkansas River, Kansas  
*P. L. Barnes, Department of Biological and Agricultural Engineering, Kansas State University, Kansas (P. L. Barnes, D. Devlin, T. Kearne and J. Neel)*

#### XX. WATER QUALITY ISSUES FOR FOREST AND RANGELANDS - PART 2

- Moderator: Matthew W. McBroom, Stephen F. Austin State University  
Location: TBA
- 8:15am Erosion Rates from Forest and Rangeland Following Fuel Management  
*William J Elliot, USDA Forest Service, Moscow, ID, United States (W.J. Elliot, I.S. Miller and B.D. Glaza)*
- 8:40am Quantifying Stream Temperature Changes Following Forest Harvesting in Non-Fish-Bearing Headwater Reaches of Hinkle Creek: A Paired Watershed Investigation  
*Kelly M Kibler, Oregon State University, Forest Engineering Department, Corvallis, OR, United States (K. Kibler and A. Skaugset)*
- 9:05am Water Quality of Two First Order Forested Watersheds in Coastal South Carolina  
*Devendra M Amatya, USDA Forest Service, Center for Forested Wetlands Research, Charleston, SC U.S.A (D.M. Amatya, C.A. Harrison, and C.C. Trettin)*
- 9:30am Portable Water Quality Monitoring System  
*Ben Miller, Rain for Rent (B. Miller)*

#### XXI. WATERSHED IMPLEMENTATION PLANNING

- Moderator: Brian Benham, Virginia Tech University  
Location: TBA
- 8:15am TMDL Implementation Plan Development for a Rapidly Urbanizing Watershed in Northern Virginia  
*Brian Benham, Virginia Tech, Blacksburg, VA, United States (M.L. Wolfe, B. Benham, F. Dukes, S. Morris, A. Collins, T. Borisova, and G. Yagow)*
- 8:40am Identification of a Management Framework for TMDL Source Allocations in the Flathead Lake Basin, Montana  
*Kyle F Flynn, Montana DEQ, Helena, MT, United States (K.F. Flynn, M.W. Van Liew, M. Pipp, and J. Bond)*
- 9:05am Watershed Prioritization Considering Soil Erosion Status: A Case Study of India  
*Deepak Khare, Department of Water Resources Development & Management, Roorkee, Uttaranchal, India (D. Khare, K.S. Singh, K.A. Dhore, and T. Bhatnagar)*
- 9:30am Implementation Planning – Lessons Learned from 3 Watersheds in Virginia  
*Gene Yagow, Virginia Tech, Biological Systems Engineering Department, Blacksburg, VA, United States (G. Yagow, B. Benham, M.L. Wolfe, C. Heatwole, and B. Zeckoski)*
- 9:55am-10:15am BREAK

### CONCURRENT SESSIONS XXII, XXIII, XXIV

#### XXII. DATA COLLECTION TO SUPPORT TMDL DEVELOPMENT - PART 3

- Moderator: Jim Houser, Texas Institute for Applied Environmental Research  
Location: TBA
- 10:15am Joint State (Kansas and Nebraska) Atrazine Big Blue River Monitoring Project  
*Phillip Barnes, Kansas State University, Manhattan, KS, United States (P. Barnes)*
- 10:40am The Effects of Tree Species on Microbial Respiration in Coastal Plain Blackwater Streams  
*Andrew S Mehring, University of Georgia, Athens, GA, United States (A.S. Mehring, G. Vellidis, and C.M. Pringle)*
- 11:05am Analysis of Particle Size Distributions within a Stream Channel to Identify Mobile Sediment and Phosphorus  
*Michael R Penn, Univ. of Wisconsin-Platteville, Platteville, WI, United States (M. Penn, B. VandenBoom, A. Hoffman, D. Armstrong, and R. Lathrop)*
- 11:30am On-Farm Watershed Study of Water Use and Water Quality for Rice Production  
*Phil Tacker, University of Arkansas, Little Rock, AR, United States (P. Tacker, W. Smith, and R. Lipsey)*

#### XXIII. ECONOMIC IMPLICATIONS OF TMDLS

- Moderator: Brian Benham, Virginia Tech University  
Location: TBA
- 10:15am Net Economic Benefits of Using Ecosystem Restoration to Meet Stream Temperature Objectives  
*Kristin Lee, ECONorthwest, Eugene, Oregon, United States (E. Niemi, K. Lee, and T. Raterman)*
- 10:40am Survey of Lawn Care Practices in a Water Supply Watershed  
*Dianne K Olsen, Cornell Cooperative Extension of Putnam County, Brewster, NY, United States (C. Cutietta-Olson, V. Giorgio, J. Lee, D. Olsen, A. Snider, and J. Stengle)*
- 11:05am Application of a Farm-Level Economic Simulation Model to Evaluate Tillage  
*Edward Osei, TIAER, Stephenville, TX, United States*
- 11:30am Water Quality and Economic Benefits of Livestock Exclusion from Streams: Experiences from Virginia  
*Rebecca W Zeckoski, Biological Systems Engineering/Virginia Tech, Blacksburg, VA, United States (R.W. Zeckoski and B.L. Benham)*

#### XXIV. WATER QUALITY ISSUES FOR FOREST AND RANGELANDS - PART 3

- Moderator: George Ice, National Council for Air and Stream Improvement  
Location: TBA
- 10:15am Water Quality Effects of Enhanced Ephemeral Stream Protection  
*Jami E Nettles, Weyerhaeuser Company, Columbus, MS, United States (J. Nettles and H. Liechty)*
- 10:40am The Hydrology of Forest Roads in Western Oregon.  
*Arne E Skaugset, Oregon State University, Corvallis, OR, United States (A.E. Skaugset, A.N. Simmons, K. Ellingson, E. Gilbert, C. E. Marbet, E. M. Toman, and C. Surfleet)*
- 11:05am Accomplishments of the Plum Creek Timber Company Native Fish Habitat Conservation Plan at 5 Years  
*Brian D Sugden, Plum Creek Timber Company, Columbia Falls, MT, United States (B. Sugden)*
- 11:30am Designing Forest Roads to Minimize Turbid Runoff during Wet Weather Use  
*Elizabeth M Toman, Oregon State University, Corvallis, OR, United States (E.M. Toman and A.E. Skaugset)*



# FOURTH CONFERENCE ON WATERSHED MANAGEMENT TO MEET WATER QUALITY AND TMDLS (TOTAL MAXIMUM DAILY LOAD) ISSUES: SOLUTIONS AND IMPEDIMENTS TO WATERSHED MANAGEMENT AND TMDLS

March 10-14, 2007 – San Antonio, Texas

## EXHIBITS

### WHO WILL ATTEND?

Professionals in the field of watershed management and environmental water quality, manufacturers of products and equipment (or services) related to watershed management, water quality, and pollution control.

### WHAT YOU GET:

10 foot x 10 foot booth, includes 1 table and 2 chairs, pipe and drape, company sign and one full conference registration.

Advertising as listed:

- Advertising in Final Program
- Online Technical Library with 5 Keyword Listing 60 days post conference

**COST:** \$450 per booth  
\$200 per person additional booth  
Exhibitors will not be permitted to attend technical sessions

### Exhibit Schedule

#### Monday, March 12

EXHIBIT SET-UP: . . . . .7:00am to 1:00pm  
EXHIBITION: . . . . .1:00pm to 8:00pm  
COFFEE BREAK (in hall) . . . . .3:00pm  
RECEPTION (in hall) . . . . .5:00pm to 6:30pm

#### Tuesday, March 13

EXHIBITION . . . . .9:30am to 3:30pm  
COFFEEBREAK (in hall) . . . . .10:00am  
EXHIBITSCLOSE . . . . .2:00pm  
EXHIBIT DISMANTLING . . . . .2:00pm to 6:00pm

## What is happening in the Exhibit Hall?

### Coffee Breaks

Monday Morning and Monday Afternoon  
Tuesday Morning  
Wednesday Morning

### Poster Session

### Monday Night Welcome Reception

## SPONSORSHIP

All promotional opportunities are priced separately from exhibit space.

### SPONSORSHIPS

All sponsorships receive a listing in the final program as a sponsor, and extra 5 keyword search listing for 60 days post conference.

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- Monday Morning Break
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- Tuesday Morning Break
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- Registration packet insert
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Room rate is \$125 single/double, \$135 Triple, \$145 Quad plus 16.75% tax. Government rates are available. Hotel check in time is after 3:00pm and check out is by 11:00am. For hotel reservations at the special conference rate call: 888-623-2800 or visit their website at

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for more information.

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# REGISTRATION

**FOURTH CONFERENCE ON WATERSHED MANAGEMENT TO MEET WATER QUALITY STANDARDS AND TMDLS (TOTAL MAXIMUM DAILY LOAD) ISSUES: SOLUTIONS AND IMPEDIMENTS TO WATERSHED MANAGEMENT AND TMDLS**

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| WORKSHOP(S)                              | \$        |  |
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| <input type="checkbox"/> Monday <input type="checkbox"/> Tuesday <input type="checkbox"/> Wednesday |                                |  |

### WORKSHOP FEES

WORKSHOP 1 - Part 1 & 2 Saturday, March 10 & Sunday, March 11  
 SWAT 2006 and SWAPP: A SWAT & APEX  
 \$275 \$ \_\_\_\_\_

**PART 1** - Saturday, March 10  
 Watershed & Field Modeling - Part 1: Using SWAT 2006  
(minimum 10 people)  \$130 \$ \_\_\_\_\_

**PART 2** - Sunday, March 11  
 Watershed & Field Modeling - Part 2: SWAPP: A SWAT & APEX  
(minimum 10 people)  \$185 \$ \_\_\_\_\_

WORKSHOP 2 - Saturday, March 10  
 CANCELLED

WORKSHOP 3 - Sunday, March 11  
 Modeling Strategies for Implementation Planning  
(minimum 10 people)  \$185 \$ \_\_\_\_\_

### TECHNICAL TOUR

TT#1 - San Antonio River Authority Urban  
 Floodplain Management Tour  
(minimum 20 people)  \$45 \$ \_\_\_\_\_

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FOURTH CONFERENCE ON WATERSHED MANAGEMENT TO MEET WATER  
QUALITY AND TMDLS (TOTAL MAXIMUM DAILY LOAD)  
ISSUES: SOLUTIONS AND IMPEDIMENTS TO WATERSHED  
MANAGEMENT AND TMDLS

**March 10-14, 2007**

**Crowne Plaza Riverwalk – San Antonio, Texas**

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