

Parmeshwar L. Shrestha, Ph.D., P.E., D.WRE
Senior Managing Engineer

Professional Profile

Dr. Parmeshwar L. Shrestha (Pravi) is a Senior Managing Engineer in Exponent's Civil Engineering practice. Dr. Shrestha has over 20 years of experience in the field of water resources and environmental engineering. His expertise in hydrology and hydraulics include a large number of studies for delineating flood hazards including simulation of flooding in alluvial fans, and mitigation of onsite and offsite flood waters. In addition, he has considerable experience in the planning, design, construction, and maintenance of irrigation and drainage channels and hydraulic structures. His experience in the area of hydrodynamic and sediment transport include the development and application of finite element (RMA series of models) and finite difference models (ECOMSED, EFDC) for hydrodynamic and sediment transport modeling (both cohesive and noncohesive) and inherent physico-chemical processes in surface water systems. Specific experience includes development and application of numerical models for Sam Rayburn Lake (Texas), San Francisco Bay, San Diego Bay, Clear Lake (California), New York and New Jersey Harbors, Housatonic River (Massachusetts), Lavaca Bay (Texas), Green Bay (Wisconsin), Tannery Bay (Michigan), Lake Waban (Massachusetts), and the Arafura Sea (Indonesia) for purposes of water quality assessment and mitigation of potential adverse effects. Dr. Shrestha has also conducted workshops and hands-on training on the use of hydrodynamic and sediment transport models for Sandia National Laboratory (NM), The Research Center on Flood and Drought Disaster Reduction (PRC), and Stevens Institute of Technology (NJ). His teaching experience includes courses in hydraulics and open channel flow at Virginia Tech and courses on sediment and pollutant transport at the Hong Kong University of Science and Technology.

Dr. Shrestha is currently serving as an Associate Editor for the *ASCE Journal of Hydrologic Engineering* and the *Journal of Coastal Research* of the Coastal Research and Education Foundation. He was involved in the Water Environment Federation Watershed and Wet Weather Technical Bulletin Advisory Board. He served on the ASCE Task Committee on Contaminated Sediments and on the ASCE Task Committee on Fluid Mud. He is currently serving on the ASCE Standards Committee KSTAT (Fitting of Hydraulic Conductivity with Statistical Spatial Estimation), the ASCE Surface Water Hydrology Technical Committee, and the COPRI Navigation Engineering Task Committee. Dr. Shrestha served as a member of the organizing committee for InterCoh 2003. He is also a member of the advisory committee for the biennial conference on Estuarine and Coastal Modeling.

Academic Credentials and Professional Honors

Ph.D., Water Resources Engineering, University of California, Davis, 1991
M.S., Water Resources Engineering, University of California, Davis, 1985
B.S., Civil Engineering, Jadavpur University (*First class honors*), 1979

Faculty of the Year Award, Department of Civil Engineering, Virginia Tech, 1994
Dean's List for Outstanding Instructor, Virginia Tech, 1993, 1994
Nominated for Engineering Sporn Award in Teaching Excellence, Virginia Tech, 1994
Fulbright-Hays Scholar, M.S. Program, University of California, Davis, 1983–1986
Colombo Plan Scholar, Bachelor program, Jadavpur University, 1974–1979

Licenses and Certifications

Registered Professional Engineer (Civil), California, #67971
Registered Professional Engineer (Civil), Arizona, #51083
Registered Professional Engineer (Civil), Virginia, #026710
Hong Kong Institution of Engineers, #MO0267236
Diplomate, Water Resources Engineer, #00278

Publications

Loaiciga HA, et al. Standard guideline for geostatistical estimation and block-averaging of homogeneous and isotropic saturated hydraulic conductivity. ASCE/EWRI Standard 54-2010, ASCE Press, Reston, VA, 2010.

Loaiciga HA, et al. Standard guideline for fitting saturated hydraulic conductivity using probability functions. ASCE/EWRI Standard 50-08, ASCE Press, Reston, VA, 2008.

Loaiciga HA, et al. Standard guideline for estimating the effective saturated hydraulic conductivity. ASCE/EWRI Standard 51-08, ASCE Press, Reston, VA, 2008.

McAnally WH, Friedrichs C, Hamilton D, Hayter E, Shrestha P, Rodriguez H, Sheremet A, Teeter A. Management of fluid mud in estuaries, bays, and lakes. I: Present state of understanding on character and behavior. J Hydro Engin 2007; 133(1):9–22.

McAnally WH, Teeter A, Schoellhamer D, Friedrichs C, Hamilton D, Hayter E, Shrestha P, Rodriguez H, Sheremet A, Kirby R. Management of fluid mud in estuaries, bays, and lakes. II: Measurement, Modeling, and Management. J Hydro Engin 2007; 133(1):23–38.

James S, Shrestha P, Roberts J. Modeling noncohesive sediment transport using multiple sediment size classes. J Coast Res 2006; 22(5):1125–1132.

Shrestha P, Blumberg A. Cohesive sediment transport. pp. 327–330. In: Encyclopedia of Coastal Science. Schwartz M (ed), Springer, The Netherlands, 2005.

Roig LC, Shrestha P, Ramireddygar SR. Mixing and transport. Water Environ Res 2000; 72(5):1–50.

Roig LC, Shrestha P. Mixing and transport. Water Environ Res 1999; 71(5):931–948.

Govindaraju RS, Ramireddygar SR, Shrestha P, Roig LC. Continuum bed model for estuarial sediments based on nonlinear consolidation theory. *ASCE J Hydraul Engin* 1999; 125(3):300–304.

Shrestha P, Orlob GT, King IP. Comparison of 1-D and 2-D models for simulation of hydrodynamics and water quality in shallow bays. *J Environ Sci Health* 1997; A32(4):979–999.

Shrestha P. An integrated model suite for sediment and pollutant transport in shallow lakes. *Adv Engin Software* 1996; 27:201–212.

Shrestha P. Aggregation of cohesive sediments induced by internal shear rates with application to sedimentation. *Environ Int* 1996; 22(6):717–727.

Shrestha P, Orlob GT. Multiphase distribution of cohesive sediments and heavy metals in estuarine systems. *ASCE J Environ Engin* 1996; 122(8):730–740.

Govindaraju RS, Shrestha P, Orlob GT. Comparison of single mechanism and multi mechanism-based approaches for kinetics of sediment removal. *Environ Technol* 1994; 15:1101–1120.

Shrestha P, DeVries JJ. Design of inverted siphons—Program documentation. *Adv Engin Software* 1992; 31992(14):205–212.

Shrestha P, DeVries JJ. Interactive computer-aided design of inverted siphons. *ASCE J Irrig Drain* 1991; 2(117):233–254.

Shrestha P, Arulanandan K. Erosion rate of dispersive and non-dispersive clays. *J Geotech Engin* 1988; 114(5):22433; *ASCE J Geo Engin* 1989; 1824–1826.

Proceedings and Presentations

Shaller PJ, Shrestha PL, Doroudian M, Hamilton D, Sykora D. The January 10, 2005 La Conchita landslide. Poster, GSA Cordilleran Section and Pacific Section AAPF with Western Regional SPE, Anaheim, CA, May 27–29, 2010.

Cydzik K, Hamilton D, Stenner H, Cattarossi A, Shrestha PL. Natural hazard public policy implications of the May 12, 2008 M7.9 Wenchuan Earthquake, Sichuan, China. American Geophysical Union 2009 Fall Meeting, San Francisco, CA, December 14–18, 2009.

Cydzik K, Shrestha PL, Hamilton D, Rezakhani M, Scheffner NW, Lenaburg RT. Numerical modeling to support floodplain mapping in coastal areas. American Geophysical Union 2009 Fall Meeting, San Francisco, CA, December 14–18, 2009.

Shrestha PL, Hamilton DL, Cydzik K, Wardak S, Jordan N, Shaller PJ, Doroudian M. Flood hazard analysis and mitigation. Proceedings, International Conference on Water, Environment, Energy and Society (WEES-2009), pp. 699–706, New Delhi, India, January 12–16, 2009.

Murillo B, Wardak S, Hamilton DL, Shrestha PL, Cydzik K, Doroudian M. Sedimentation analysis for existing and proposed development conditions. Proceedings, International Conference on Water, Environment, Energy and Society (WEES-2009), pp. 1636–1641, New Delhi, India, January 12–16, 2009.

Lenaburg RT, Scheffner NW, Shrestha PL, Cydzik K, Rezakhani M, Hamilton DL. EST-based tropical storm flood mapping of the Hawaiian Islands. Proceedings, An International Perspective on Environmental and Water Resources, Bangkok, Thailand, January 5–7, 2009.

Shrestha PL, Hamilton D, Jordan N, Lyle JE, Doroudian M, Shaller PJ, Wardak S, Cydzik K, Medellin J. Inland flood hazard analysis and mitigation. Poster, ASCE-EWRI World Environmental & Water Resources Conference, Honolulu, HI, May 12–16, 2008.

Wardak S, Murillo B, Hamilton D, Shrestha PL, Doroudian M, Cydzik K, Medellin J, Shaller PJ. Sedimentation analysis in an open channel network for existing and proposed development conditions. Poster, ASCE-EWRI World Environmental & Water Resources Conference, Honolulu, HI, May 12–16, 2008.

Gangai JW, Lenaburg R, Batten B, Drei-Horgan E, Scheffner N, Hamilton D, Rezakhani M, Shrestha P. Hurricane flood insurance study for the Hawaiian Islands. Proceedings, ASCE-COPRI Solutions to Coastal Disasters Conference, Oahu, HI, April 13–16, 2008.

Shrestha P, Hamilton D, Lyle J, Doroudian M, Shaller P. Analysis of flood hazards for a residential development. Proceedings, ASCE World Environmental and Water Congress, Tampa, FL, May 15–19, 2007.

Shrestha P, Bigham G, Hamilton D, Doroudian M. A three-dimensional model for Lake Sam Rayburn, Texas. Proceedings, ASCE International Perspective on Environmental and Water Resources, New Delhi, India, December 18–20, 2006.

Cattarossi A, Mastrocola P, Hamilton D, Shrestha P. Hydrological potential for the restoration of the Mesopotamian marshlands. Proceedings, ASCE International Perspective on Environmental and Water Resources, New Delhi, India, December 18–20, 2006.

Futornick K, Shrestha P, Sykora D, Hamilton D. Post-Katrina strategies to manage consequences of levee failure. A&WMA 99th Annual Conference and Exhibition, New Orleans, LA, June 20–23, 2006.

Hamilton D, Shrestha P, Lyle J, Doroudian M, Shaller P. Flood hazard analysis and protection plan for a residential development. Proceedings, ASCE World Environmental and Water Resources Congress, Omaha, NE, May 21–25, 2006.

Shaller P, Hamilton D, Shrestha P, Lyle J, Doroudian M. Investigation of flood and debris flow recurrence—Andreas Canyon, San Jacinto Range, Southern California. Proceedings, ASCE World Environmental and Water Resources Congress, Omaha, NE, May 21–25, 2006.

Shaller P, Hamilton D, Lyle J, Mathieson E, Shrestha P. The fire-flood-erosion sequence in California—A recipe for disaster. Proceedings, ASCE World Environmental and Water Resources Congress, Omaha, NE, May 21–25, 2006.

Jones C, James S, Roberts J, Shrestha P. Continuous treatment of cohesive and non-cohesive sediment dynamics in a 3-dimensional model of meandering flow. 9th Estuarine and Coastal Modeling (ECM9), Charleston, NC, October 31–November 2, 2005.

Shrestha P, Roberts J, James S, Gailani J. Quantifying resuspension of fine-grained bottom sediments. InterCoh2005, Saga University, Saga, Japan, September 20–23, 2005.

Shaller P, Hamilton D, Doroudian M, Shrestha P, Lyle J, Cattarossi A. Investigation of flood hazards on alluvial floodplains. Proceedings, ASCE World Water and Environmental Resources Congress, Anchorage, AK, May 16–19, 2005.

James S, Shrestha P, Roberts J. Noncohesive sediment transport modeling with multiple class sizes. Proceedings, ASCE World Water and Environmental Resources Congress, Anchorage, AK, May 16–19, 2005.

Shrestha P, Hamilton D, Jordan N, Doroudian M, Hong S, Proctor D. Impact of sewage line spills on pathogen levels in recreational waters. Proceedings, ASCE World Water and Environmental Resources Congress, Anchorage, AK, May 16–19, 2005.

Hamilton D, Shaller P, Shrestha P, Lyle J, Doroudian M. Investigating flood hazards on alluvial floodplains. Alluvial Fan Flood Hazard Management Symposium, Phoenix, AZ, April 20–22, 2005.

Shaller P, Hamilton D, Lyle J, Medley E, Mathieson E, Shrestha P. Fire-flood-erosion sequence: Analysis and mitigation. Arid Regions 10th Biennial Conference, Restoration and Management of Arid Watercourses, Mesa, AZ, November 16–19, 2004.

Hamilton D, Shaller P, Lyle J, Doroudian M, Shrestha P. Multi-disciplinary approach to distinguishing flood hazards on alluvial floodplains. Arid Regions 10th Biennial Conference, Restoration and Management of Arid Watercourses, Mesa, AZ, November 16–19, 2004.

Shaller P, Hamilton D, Doroudian M, Shrestha P, Lyle J, Cattarossi A. Interpretation of tectonic, fluvial, and eolian landforms in the Upper Coachella Valley, California, using aerial photography, DEM, and LiDAR technology. Poster, Geological Society of America, Annual Meeting, Denver, CO, November 7–10, 2004.

Shrestha P. Sediment transport modeling. Invited Presentation, California Department of Water Resources, July 19, 2004.

Hamilton D, Cattarossi A, Polo P, Shrestha P, Nielson D. Restoration of the Mesopotamian marshlands. Society of Wetland Scientists, 25th Anniversary Meeting, Seattle, WA, July 18–23, 2004.

Cattarossi A, Hamilton D, Shrestha P, Polo P. Macro- and micro-scale circulation modeling in the Mesopotamian marshlands of southern Iraq. Proceedings, Arid Lands Symposium, ASCE-EWRI World Water and Environmental Resources Congress, Salt Lake City, UT, June 27–July 1, 2004.

James SC, Roberts J, Shrestha P, Jepson R, Gailani J. Quantifying sediment resuspension in surface water systems. ASCE-EWRI, World Water and Environmental Resources Congress, Salt Lake City, UT, June 27–July 1, 2004.

Shrestha P. Solving practical environmental problems using high technology tools: Hydrodynamics and sediment transport. Invited Presentation, University of California, Los Angeles, CA, April 27, 2004.

Hamilton D, Cattarossi A, Shrestha P. The Eden Again Project: Restoration of the Mesopotamian marshlands. Keynote presentation, National Society of Consulting Soil Scientists 17th Annual Meeting, San Diego, CA, February 5–7, 2004.

Hamilton D, Cattarossi A, Shrestha P. Numerical modeling of flows in the Iraqi marshlands. Headwaters to Oceans (H2O) Conference, Long Beach, CA, October 23–25, 2003.

Shrestha P, Blumberg A, Kaluarachchi D, Li H, Laguette H. Modeling the stability and transport of bed sediments in a shallow lake. InterCoh 2003, VIMS, VA, October 1–4, 2003.

Shrestha P, Blumberg A, Kaluarachchi D, Li H, Laguette H. Modeling the stability and transport of bed sediments in a shallow lake. Proceedings, Special Session on Contaminated Sediments, ASCE-EWRI Conference, Philadelphia, PA, June 22–26, 2003.

Farley K, Shrestha P, Blumberg AF, Damiani D, Miller R, Wands J. The use of sediment transport models in contaminant evaluations. Invited Presentation, NOPP-CSTM Workshop, Williamsburg, VA, September 29–October 2, 2002.

Shrestha P. Simulation of sediment transport in Lavaca Bay. Video Presentation, NOPP-CSTM Workshop, Williamsburg, VA, September 29–October 2, 2002.

Shrestha P, Blumberg AF, Kaluarachchi D, Li H, Laguette H. Modeling sediment stability in a shallow lake. Poster, NOPP-CSTM Workshop, Williamsburg, VA, September 29–October 2, 2002.

Shrestha P. Hydrodynamics and sediment transport modeling. Invited Presentation, Sandia National Laboratory, Albuquerque, NM, May 8, 2002.

Shrestha P, Blumberg AF. ECOMSED: Some history and its future. 2002 Ocean Services Meeting, Session 0S21, ASLO/AGU, Honolulu, HI, February 11–15, 2002.

Shrestha P, Paquin PR, Blumberg AF, Migliorini MC. Modeling contaminated sediments in a shallow bay. Proceedings, ASCE-EWRI Conference, Orlando, FL, May 20–24, 2001.

Shrestha P, Kaluarachchi DI, Anid PJ, Blumberg AF, DiToro DM. Cohesive sediment re-suspension: Experimentation and analysis. Proceedings, ASCE-EWRI Conference, Orlando, FL, May 20–24, 2001.

Shrestha P, Blumberg AF, Ramireddygar SR. ECOMSED: A 3-D time-dependent hydrodynamic and sediment transport model. Invited Presentation, National Community Sediment Transport Model Workshop, Woods Hole, MA, June 21–23, 2000.

Shrestha P, Blumberg AF, Ramireddygar SR. Sediment transport studies as a precursor to modeling contaminant fate and transport. Invited Presentation, Institute of Engineering, Pulchowk Campus, Katmandu, Nepal, July 17, 2000.

Shrestha P, Blumberg AF, DiToro DM, Hellweger F. A three-dimensional model for cohesive sediment transport in shallow bays. Invited Paper, ASCE Joint Conference on Water Resources Engineering and Water Resources Planning and Management, Minneapolis, MN, July 30–August 2, 2000.

Shrestha P, Paquin PR, Blumberg AF, Migliorini MC. Evaluating the stability of contaminated sediments in a shallow bay. Platform Presentation, SETAC 21st Annual Meeting, Nashville, TN, November 12–16, 2000.

Shrestha P, Blumberg AF, DiToro DM, Fitzpatrick JJ, Hellweger FL, Khan LA. Sediment transport modeling in Green Bay: A precursor to addressing PCB fate and transport. SETAC 20th Annual Meeting, Philadelphia, PA, November 14–18, 1999.

Shrestha P, Khan LA, Blumberg AF, Schwab DJ. The importance of sediment transport modeling for assessing the fate of toxic chemicals in aquatic systems. 6th International Conference on Estuarine and Coastal Modeling, New Orleans, LA, November 2–5, 1999.

Shrestha P. Physico-chemical processes for transport and redistribution of contaminated sediments. Invited Presentation, EPRI Workshop, Newark, NJ, September 14, 1999.

Shrestha P, Ziegler K, Blumberg AF. Hurricane-induced sediment transport in a shallow barrier island/bay system. 5th International Conference on Estuarine and Coastal Modeling, Alexandria, VA, October 22–24, 1997.

Shrestha P, Govindaraju RS, Roig LC. A continuum theory for evolution of soft sediment beds with application to sediment dynamics. Proceedings, XXVII IAHR Congress, San Francisco, CA, August 10–15, 1997. Also in *Environmental and Coastal Hydraulics: Protecting the Aquatic Habitat 2*:1262–1267.

Kumar A, Shrestha P. Verification of resistance criteria for alluvial streams. Proceedings, Rivertech '96, International Water Resources Association, pp. 67–74, Chicago, IL, September 22–26, 1996.

Shrestha P. Sediment and mercury pollution in shallow lakes. Proceedings, ASCE North American Water and Environment Congress, Anaheim, CA, June 23–28, 1996.

Shrestha P. An improved model for deposition of cohesive sediments. Proceedings, Australasian Fluid Mechanics Conference, pp. 711–714, Sydney, Australia, December 10–15, 1995.

Shrestha P. Modeling water quality in San Diego Bay. Proceedings, ASCE First International Conference on Water Resources Engineering, pp. 209–213, San Antonio, TX, August 14–18, 1995.

Shrestha P, Govindaraju RS, Orlob GT. Modeling kinetics of sediment removal in water columns. Proceedings, ASCE National Conference on Hydraulic Engineering, pp. 1065–1069, Buffalo, NY, 1994.

Shrestha P. Hydrodynamics of San Diego Bay. Proceedings, ASCE National Conference on Hydraulic Engineering, pp. 140–144, Buffalo, NY, August 1–5, 1994.

Shrestha P, Saviz CM, Orlob GT, King IP, Sobey RJ, Ford RG. San Francisco Bay and Delta oil spill fate studies—Part I: Hydrodynamic simulation. Proceedings, ASCE National Conference on Hydraulic Engineering, pp. 635–640, San Francisco, CA, July 25–30, 1993.

Ford RG, Sobey RJ, Shrestha P, Saviz CM, Orlob GT, King IP. San Francisco Bay and Delta oil spill fate studies—Part II: Oil spill simulation. Proceedings, ASCE National Conference on Hydraulic Engineering, pp. 641–646, San Francisco, CA, July 25–30, 1993.

Shrestha P, Orlob GT. Modeling the fate and transport of toxic heavy metals in south San Francisco Bay. Proceedings, ASCE National Conference on Hydraulic Engineering, pp. 647–652, San Francisco, CA, July 25–30, 1993.

Shrestha P, DeVries JJ, Krone RB. Hydrodynamic modeling for channel barrier design. Proceedings, ASCE National Conference on Hydraulic Engineering, pp. 1079–1084, San Francisco, CA, July 25–30, 1993.

King IP, Shrestha P, Orlob GT. Wind induced circulation and contaminant transport in shallow lakes. Proceedings, ASCE National Conference on Hydraulic Engineering, pp. 1440–1445, San Francisco, CA, July 25–30, 1993.

Bale A, Shrestha P, Orlob GT. A CASS for evaluation of mercury contamination in Clear Lake, California. Proceedings, 20th Anniversary Conference, ASCE Water Resources Planning and Management Division Conference, pp. 292–295, Seattle, WA, 1993.

Shrestha P, Bale A, Orlob GT. Multiphase distribution of cohesive sediments and associated heavy metals in surface waters. 5th Annual Research Symposium, UC Toxic Substances Research and Teaching Program, University of California, San Francisco, CA, October 19, 1991.

Workshops Conducted

Shrestha P. POM/ECOMSED workshop. Lecture on sediment transport modeling at Stevens Institute of Technology, Hoboken, NJ, June 11, 2003.

Shrestha P. ECOMSED training: Grid generation, hydrodynamics, sediment transport, simulation and analysis. Four-day workshop for The Research Center on Flood and Drought Disaster Reduction, Ministry of Water Resources, Beijing, PRC, December 2–5, 2002.

Shrestha P, Li H, Ahsan Q, Kim N. ECOMSED workshop. Three-day workshop for Sandia National Laboratory participants, HydroQual, May 14–16, 2002.

Prior Experience

Senior Project Manager, HydroQual, Inc., 2001–2003

Project Manager, HydroQual, Inc., 2000–2001

Project Engineer, HydroQual, Inc., 1997–2000

Visiting Assistant Professor, Hong Kong University of Science & Technology, 1994–1996

Visiting Assistant Professor, Virginia Tech., 1993–1994

Post-doctoral Research Associate, University of California, Davis, 1992

Assistant Engineer and Engineer's Representative, Department of Irrigation and Drainage, Nepal, 1980–1983

Academic Appointments

- Visiting Assistant Professor, Hong Kong University of Science & Technology, 1994–1996
- Visiting Assistant Professor, Virginia Tech., 1992–1994

Editorships and Editorial Boards

- Associate Editor, CERF—Journal of Coastal Research
- Associate Editor, ASCE—Journal of Hydrologic Engineering

Professional Committees

- ASCE Task Committee on Contaminated Sediments
- ASCE Task Committee for Fluid Mud
- ASCE Standards Committee KSTAT
- COPRI Task Committee Navigation Engineering
- ASCE Surface Water Hydrology Technical Committee
- Organizing Committee, InterCoh, 2003
- Advisory Board, WEF Watershed and Wet Weather Technical Bulletin
- Advisory Board, Estuarine and Coastal Modeling Conference

Professional Affiliations

- American Geophysical Union
- American Society of Civil Engineers
- Association of State Floodplain Managers
- Coastal Education and Research Foundation
- Floodplain Management Association
- Water Environment Federation