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PROFESSIONAL EXPERIENCE

Program Manager, 2008 – present, *Water Power Technologies, Energy Efficiency and Electricity Technologies Program, Oak Ridge National Laboratory.* Management of $6 million annual ORNL research and technical support for the Water Power Program in the Department of Energy Office of Energy Efficiency and Renewable Energy. Strategic guidance of proposals and annual operating plans for ORNL support of the DOE Water Power Program. Ongoing major programmatic efforts at ORNL include nationwide assessment of hydropower development potential, creation of a comprehensive hydropower development cost model, advancement of an ecological and energy co-optimization methodology for river basin development, and development of standardized modular design and technology for small and low-impact hydropower site development.

Group Leader, 2009 – present, *Energy-Water-Ecosystem Engineering Group, Environmental Sciences Division, Oak Ridge National Laboratory.* Strategic and career guidance, technical management, and administration of a growing group of 15 scientist-engineer staff and post-doctoral associates. Management of research projects and hydrologic technical support for U. S. Department of Energy, Federal Energy Regulatory Commission, Nuclear Regulatory Commission, Tennessee Valley Authority, and other electric utility sector sponsors.

Water Resources Engineer, 2005 – present, *Energy-Water-Ecosystem Engineering Group, Environmental Sciences Division, Oak Ridge National Laboratory.* Research focused on energy, water, environmental, and ecological optimization in hydropower-thermal systems, energy-water interdependencies in regulated river basins, water use optimization for integrated river systems, effects of hydropower and wind power coordination on water availability and riverine ecosystems, nonlinear techniques for improved ambient and mixed water temperature forecasting for cooling water systems, and effects of climate change and variability on hydropower and thermoelectric generation.

Water Resources Engineer, 1995 – 2005, *Tennessee Valley Authority, Engineering Laboratory (Norris, TN) and River Operations (Knoxville, TN).* Support to hydrology and hydraulics engineering design and operations groups within the TVA power generation system and river system, including development of three-dimensional hydrodynamic reservoir models and field data collection schemes for integrated hourly forecasting and scheduling of hydropower flows and thermoelectric cooling water operations, support of regulatory compliance at TVA nuclear and fossil plant cooling water intakes and outfalls through detailed prototype flow field measurements in rivers, diagnosis and solution of sediment and debris accumulation problems at hydropower and thermal plant cooling water intakes through computational and physical modeling, physical modeling of hydraulic structures (navigation locks, turbine intakes, spillways, and cooling water intakes), model and prototype testing and optimization of hydroturbine performance, environmental performance testing of aerating hydroturbines, measurement of flow-induced vibration in turbine draft tubes, investigation and modeling of sediment transport through the Tennessee River system, including fate and transport of point-source mercury contamination.

EDUCATION

Ph.D., Civil and Environmental Engineering (Hydraulics), University of Iowa, 1995
Thesis: Ice-cover influence on flow and bedload transport in dune-bed channels

M.S., Civil and Environmental Engineering, University of Iowa, 1992

B.E., Civil and Environmental Engineering, Economics, Vanderbilt University, 1990

LICENSURE

Professional Engineer, State of Tennessee, License No. 00105293.

PROFESSIONAL ACTIVITIES

Hydro Research Foundation (HRF) Board of Directors
Selection Committee, HRF Graduate Hydropower Fellowships Program
Alternate U.S. Delegate to Hydropower Implementing Agreement Executive Committee, International Energy Agency
Steering Committees, 2010-2013 National Hydropower Association Annual Conferences
External Subject Matter Expert (Hydrology Safety), Nuclear Regulatory Commission
External Subject Matter Expert (Water Resources), Federal Energy Regulatory Commission

JOURNAL PUBLICATIONS

Hadjerioua, B., S. Kao, Y. Wei, H. Battey, and B. T. Smith. 2012. Non-powered dams: An untapped source of renewable electricity in the USA. *International Journal of Hydropower & Dams*, no. 4, 45-49.

Smith, Brennan T., Vincent S. Neary and Kevin M. Stewart. 2012. National geodatabase of tidal stream power resource in USA. *Renewable and Sustainable Energy Reviews* 16, no. 5, 3326-3338.

Jager, Yetta and Brennan T. Smith. 2008. Sustainable reservoir operation: can we generate hydropower and preserve ecosystem values? *River Research and Applications* 24, no. 3, 340-352.

Smith, B. T., and R. Ettema. 1997. Ice-cover influence on flow structure over dunes. *Journal of Hydraulic Research* 35(5): 707-19.

Smith, B. T., and R. Ettema. 1997. Flow resistance in ice-covered alluvial channels. *Journal of Hydraulic Engineering* 123(7): 592-599.

SELECTED PROCEEDINGS

Lin, F., G. E. Hecker, P. N. Hopping, and B. T. Smith. 2003. Innovative 3-D numerical simulation of thermal discharge from Browns Ferry multi-port diffusers. *Proceedings of the International Joint Power Generation Conference*, June 16-19, 2003, Atlanta, GA.

Smith, B. T., D. T. Darby, R. L. Dinkins, and P. B. Loiseau. 2002. Use of acoustic-Doppler velocimeters to measure hydroturbine draft tube and tailrace turbulence. *Proceedings of the ASCE/IAHR International Conference on Hydraulic Measurements and Experimental Methods*, July 28-August 1, 2002, Estes Park, Colorado.

Hopping, P. N. and B. T. Smith. 2002. Measurement of flow patterns using GPS drogues. *Proceedings of the ASCE/IAHR International Conference on Hydraulic Measurements and Experimental Methods*, July 28-August 1, 2002, Estes Park, Colorado.

Smith, B. T., and R. Ettema. 1994. Floating cover influence on sediment transport in dune-bed channels. Proceedings of the ASCE National Conference on Hydraulic Engineering, Buffalo, New York, August 1994.

Smith, B. T. and Q. Zhang. 2012. Best practices implementation for hydropower efficiency and utilization improvement. *Hydrovision International 2012.*

Smith, B. T., Y. Jager and P. March. 2007. Sustainable reservoir operation*. Waterpower XV,* Chattanooga, TN.

SELECTED TECHNICAL REPORTS

S. Kao, B. Hadjerioua, R. McManamay, F. K. Pasha, D. Yeasmin, A. Oubeidillah, N. Samu, K. Stewart, M. S. Bevelhimer, S. L. Hetrick, and B. T. Smith. 2013. *An assessment of energy potential from new stream-reach development in the United States: initial methodology report*. ORNL/TM-2012/298. Oak Ridge, TN: Oak Ridge National Laboratory.

Zhang, Qin Fen, Brennan T. Smith and Wei Zhang. 2012. *Small Hydro Cost Reference Model.* ORNL/TM-2012/501. Oak Ridge, TN: Oak Ridge National Laboratory.

Snyder, Isabelle B., Brennan T. Smith and Michael R. Starke. 2012. *Case Study: Hydropower Constraints on Osage and Taum Sauk Facilities.* ORNL/TM-2012/232. Oak Ridge, TN: Oak Ridge National Laboratory.

Smith, Brennan T. and Michael R. Starke. 2011. *Research Needed to Enable Regional and National Modeling of Water Availability and Policy Impacts on Water Power Grid Services.* ORNL/TM-2011/429. Oak Ridge, TN: Oak Ridge National Laboratory.

Wolff, P. J., B. T. Smith, and P. N. Hopping. 1997. Aeration performance tests for the new auto-venting turbines at Norris Dam, TVA Report WR97-1-2-120.