

# Steven A Conrad, Ph.D.

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## Education

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SIMON FRASER UNIVERSITY, Burnaby, British Columbia  
Ph.D. **Resource & Environmental Management**

ARIZONA STATE UNIVERSITY, Tempe, Arizona  
M.S. **Environmental Technology Management**

THE UNIVERSITY OF ARIZONA, Tucson, Arizona  
B.S. **Optical (Electrical) Engineering**  
B.S. **Psychology (Cognitive)**

## OTHER

**Certificate**, Sustainable Community Design and Planning, University of Illinois at Urbana-Champaign

**Certificate**, Small Group Training and Instructor Services, University of Arizona

**Certificate**, Instructor of Post Secondary Education, Pima Community College

## Professional History

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- 2021 – **Colorado State University**, Systems Engineering, Walter Scott Jr. College of Engineering  
*Associate Professor, 2021 -*
- 2017 – 2020 **University of British Columbia**, Institute for Resources, Environment and Sustainability, Faculty of Science  
*UBC Future Waters Research Excellence Cluster Chair, 2019 – 2020*  
*Associate Research Professor, 2017 – 2020*
- 2010 – 2020 **Simon Fraser University**, School of Resource and Environmental Management, Faculty of the Environment  
*Associate Director, Pacific Water Research Centre, 2015 – 2017*  
*Chair, REM Water Research Group, 2010 – 2019*  
*Instructor, 2011 – 2020*  
*Pacific Institute for Climate Solutions Research Fellow, 2011-2014*  
*Research Associate, 2013-2016*
- 2009 – 2012 **Resilient Consulting Group, Inc.**  
*Managing Partner*
- 2009 – 2010 **University of British Columbia**, Faculty of Applied Science  
*Instructor*
- 2000 – 2008 **EMA Group, Inc., EMA Canada, Inc.**  
*Western Canada Program Manager, 2006-2008*  
*Director of Sustainability Services, 2005-2006*  
*Senior Water and Energy Research Program Engineer, 2000-2005*
- 1997 – 2000 **Tracer Research Corporation**  
*Director of Strategic Research Development*
- 1995 – 1996 **EMA Services, Inc.**  
*Water Engineer*
- 1992 – 1994 **Abelard Controls, Inc.**  
*Systems Engineer*

## **Professional Affiliations**

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American Water Works Association, BC Water and Waste Association, International Water Association, Water Environment Foundation, BC Sustainable Energy Association.

## **Service Honours and Awards**

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2021 George Warren Fuller Award, American Water Works Association  
2021 Sustainability Curriculum Innovation award, School of Global Environmental Sustainability, Colorado State University, \$4,500  
2020 Grants for Catalyzing Research Clusters, Vice-President, Research & Innovation and the Provost & Vice-President, Academic, University of British Columbia, \$115,000  
2020 Stanley S. Copp Service Award, BC Water and Waste Association  
2019 5S Merit Award, Water Environment Federation  
2015 Featured Researcher, Office of the Vice-President, Research, Simon Fraser University  
2015 Simon Fraser University Community Engagement Award, \$5,000  
2013 Department of Graduate Studies Travel Research Award, \$2,500  
2010 – 2013 3-year Pacific Institute for Climate Solutions Graduate Fellowship, \$18,000 per year  
2011 BC Water and Waste Association Honoured Member  
2010 Simon Fraser University President's PhD Research Stipend, \$6,500  
2009 Faculty of Applied Science Graduate Fellowship, \$6,250  
2008 Faculty of Applied Science Graduate Fellowship, \$6,250  
2007 – 2008 2-year Pacific Century Graduate Scholarship, \$5,000 per year  
2007 Faculty of Applied Science Graduate Fellowship, \$6,250  
1990 – 98 Multiple Academic Distinction Awards for 3.5 GPA or better, College of Engineering Dean's List Awards and National Dean's List Awards, University of Arizona  
1992 Honours Center, University of Arizona, Research Award, \$2,500  
1990 Inducted, Golden Key International Honour Society  
1990 Inducted Phi Eta Sigma National Honor Society  
(President University of Arizona Chapter, 1991-92)

## **Research Awards**

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2014 – Research Title: *Public perceptions of water reservoir operations and conditions to inform the Campbell River Water Use Plan*  
Role: **co-Principal Investigator**  
Grantor: BC Hydro, \$1,234,477  
2020 Research Title: *Distributed and Renewable Energy, from science to policy*  
Role: **Principal Investigator**  
Grantor: Water Research Foundation, \$75,250  
2016 – 19 Research Title: *Opportunities and Barriers for Distributed Energy Resource Development at Water and Wastewater Utilities*  
Role: **co-Principal Investigator**  
Grantor: Water Environment Research Foundation, Water Research Foundation, \$369,275  
2013 – 16 Research Title: *Water and Electric Utility Integrated Planning*  
Role: **Principal Investigator**  
Grantor: NY State Energy Research and Development Authority, American Water Works Association, Water Research Foundation, \$447,243  
2013 – 14 Research Title: *Policy outcomes from behaviourally informed decision-making in the Okanagan*  
Role: **Principal Investigator**  
Grantor: Real Estate Foundation of BC, \$80,375  
2011 – 12 Research Title: *Assessing Water User Preferences to Water Conservation Policy and Implementation Strategies*

- Role: **Principal Investigator**  
 Grantor: Natural Resources Canada & Agriculture & Environment Wildlife Fund, \$180,363
- 2011 – 12 Research Title: *Addressing Climate Change by Applying Adaptive Management Techniques to Infrastructure Management.*  
 Role: **Principal Investigator**  
 Grantor: Water Research Foundation, \$97,908
- 2012 – 13 Research Title: *Effective Communication About Climate Change to Water Utility Stakeholders*  
 Role: Contributing researcher  
 Grantor: Water Research Foundation, \$525,447
- 2010 – 12 Research Title: *Building a Climate-Ready Regulatory System*  
 Role: Contributing researcher  
 Grantor: Water Research Foundation, \$390,072
- 2007 – 11 Research Title: *Decision Support System for Sustainable Energy Management*  
 Role: **Principal Investigator**  
 Grantor: Water Research Foundation and Water Environment Research Foundation, \$642,955
- 2005 – 07 Research Title: *Water Consumption Forecasting to Improve Energy Efficiency*  
 Role: Contributing researcher  
 Grantor: AWWA Research Foundation, \$441,098
- 2002 – 05 Research Title: *Optimizing Operations at JEA's Water System*  
 Role: **co-Principal Investigator**  
 Grantor: AWWA Research Foundation, \$602,400
- 1999 – 01 Research Title: *Implementing a Prototype Energy and Water Quality System*  
 Role: Contributing researcher  
 Grantor: AWWA Research Foundation, \$415,000

### **Other Research Contributions**

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**Project advisory committee service:** *Optimization of Energy and Water Quality Management Systems for Drinking Water Utilities*, Water Research Foundation, *Compendium of Energy Management Best Practices*, Water Research Foundation, *Consumer Perceptions and Attitudes Towards EDCs and PPCPs in Drinking Water*, Water Research Foundation, *Okanagan Hydrological Connectivity Study*, Okanagan Basin Water Board, *Water Utility Planning Strategies to Mitigate Impacts of Climate Change in Central Ohio*, City of Columbus Department of Public Utilities and Mid-Ohio Regional Planning Commission. *Real Time Carbon Management of Water Resource Recovery Facilities using In-Situ Bio-Electrochemical Sensors*, Water Research Foundation

### **Industry Projects and Collaborations**

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- *Economic analysis of climate change adaptation measures.* BC Climate Action Secretariat. Under contract with Swift Creek Consulting, Victoria, British Columbia, Canada.
- *Localized deep learning for autonomous pumping and water system optimization.* City of Chilliwack, British Columbia, Canada
- *Assessing significance of home energy information in residential real estate purchases.* American Council for an Energy-Efficient Economy, Washington DC. USA
- *Choice experiment survey to estimate the economic value of visibility improvement for Canadians.* Environment and Climate Change Canada (ECCC), Government of Canada. Ottawa, Ontario, Canada.
- *Drinking Water and Emergency Management Best Practices Audit.* Office of the Auditor General for Local Government, British Columbia, Canada.

- *Water Use Measuring and Reporting Practices*. British Columbia Ministry of Environment and Climate Change Strategy, British Columbia, Canada.
- *Auto Buyers' Valuation of Fuel Economy: A Randomized Stated Choice Experiment*. Consumers Union. USA.
- *Quantifying and Optimizing Energy and Water Utilization in Asian Development Bank's Water Supply, Sanitation, and Wastewater Management Projects*. Asian Development Bank. Under contract with the International Water Centre, Brisbane Australia.
- *Identifying and Amalgamating Local Data to Inform Water Allocation Decisions*. BC Ministry of Environment and Climate Change Strategy, British Columbia, Canada.
- *Water-energy carbon analysis*. Southeast Queensland Water. Under contract to University of Queensland, Australia.
- *Technical Analysis to Support Metro Vancouver's Water Conservation Initiatives*. Metro Vancouver. Under contract with Urban Systems. Vancouver, British Columbia, Canada.
- *Floodplain Mapping Action Plan Implementation*. BC Real Estate Association. Vancouver, British Columbia, Canada.
- *Evaluation of the Smart Planning for Communities program*, Fraser Basin Council. Under contract with Junxion Strategies, Vancouver, British Columbia, Canada.
- *GHG Emission Management Opportunities in the Water Utility Sector*, Ledcor/Offsetters. Vancouver, British Columbia, Canada.
- *Industrial Energy Conservation Program*. FortisBC (formerly Terasen Gas). Vancouver, British Columbia, Canada.
- *Evaluation of the standards, conducting the gap analysis and making recommendations for developing a certificate management program for the RiverWiseBC program*. Pacific Salmon Foundation. Vancouver, British Columbia, Canada.
- *Stakeholder Engagement Strategy and Development of a Food Innovation Centre*. BC Ministry of Agriculture and Lands. Victoria, British Columbia, Canada.
- *Development of an Area of Low Pesticide Prevalence Policy*. BC Fruit Growers Association. Under contract with Junxion Strategies, Vancouver, British Columbia, Canada.
- *Comparative Analysis of Policy and Regulatory Developments on Carbon Capture and Storage in Canada*, British Consulate. Under contract with Junxion Strategies & Mark Jaccard and Associates. Vancouver, British Columbia, Canada.
- *Water and Energy Management and Operations Optimization*. Greater Vancouver Regional District, BC. Under EMA Group, Inc. Vancouver, British Columbia, Canada.
- *Water Pumping Efficiency in the development of a Technology Incentive Program for San Diego Gas and Electric*. Under EMA Group, Inc. St. Paul, MN, USA.
- *Sustainable Water Operations for Seattle Public Utilities, WA*, Under EMA Group, Inc. St. Paul, MN, USA.
- *Operations Optimization Requirements Plan*. City of Phoenix Water Department, AZ. Under EMA Group, Inc. St. Paul, MN, USA.
- *Design and Implementation of the Technical Constructs for Operations Optimization for the City of San Diego Water Department. Energy, Water Supply and Quality System*. Under EMA Group, Inc. St. Paul, MN, USA.
- *Water Supply Management Simulation*. Colorado Springs Utilities, CO. Under EMA Group, Inc. St. Paul, MN, USA.
- *City of Albuquerque Water Utility Division Water Operations Management System*. Under EMA Services. St. Paul, MN, USA.

- *City of Tucson, AZ, Tucson Water Department System Operations Optimization Assessment*. Under EMA Services. St. Paul, MN, USA.

## **Refereed Publications**

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- Conrad, S., Sussman, R., Kormos, C., Park, C., Cooper, E. (in review) “Decision influence of home energy efficiency information in the American housing market: A consumer preference study” *Energy Policy*
- Robbins, C. A., Du, X., Bradley, T. H., Quinn, J. C., Bandhauer, T. M., Conrad, S. A., Carlson, K. H., ... Tong, T. (2022). Beyond treatment technology: Understanding motivations and barriers for wastewater treatment and reuse in unconventional energy production. *Resources, Conservation and Recycling*, 177, 106011.
- Sussman, R., Conrad, S., Kormos, C., Park, C., Cooper, E. (2022) “Context and Meaningfulness in Energy Efficiency Label: Real Estate Listings ” *Journal of Environmental Psychology*
- Strazzabosco, A., Kenway, S., Conrad, S., Lant, P., (2021). “Renewable electricity generation in the Australian water industry: lessons learned and challenges for the future” *Renewable and Sustainable Energy Reviews*, 147, 111236, DOI: 10.1016/j.rser.2021.111236
- Strazzabosco, A., Conrad, S., Kenway, S., Lant, P., (2020). “Expert opinion on influential factors driving renewable energy adoption in the water industry: An Australian study.” *Renewable Energy* 162, 754–765.
- Oberg, G., Metson, G., Kuwayama, Y., Conrad, S. (2020). “Conventional sewer systems are too time-consuming, costly and inflexible to meet the challenges of the 21st century.” *Sustainability*, 12(16), 6518
- Conrad, S., Pipher, J., Haider, W. (2019) “How current lawn attributes affect the preferences of water conserving lawn options: An individualized choice experiment in Kelowna, British Columbia.” *Landscape and Urban Planning*. 193, 147-156.
- Conrad, S., Yates, D. (2018). “Coupling stated preferences with a hydrological water resource model to inform water policies for residential areas in the Okanagan Basin, Canada.” *Journal of Hydrology*. 564, 846–858.
- Conrad, S.A., Rutherford, M.B., Haider, W. (2017). Profiling Farmers’ Preferences about Drought Response Policies Using a Choice Experiment in the Okanagan Basin, Canada. *Water Resources Management* 31, 2837–2851.
- Kenway S., McMahon J., Elmer V., Conrad S., Rosenblum J. (2013). "Managing water-related energy in future cities - A research and policy roadmap". *Journal of Water and Climate Change*. 4 (3): 161-175.
- Lazarova, V.; Lefebvre, O.; Conrad, S.; Liu, Y.; Cornel, P.; Choo, K.-H. (2012): Summary and concluding remarks – solving the water-energy nexus for tomorrow, in: *Water-Energy Interactions in Water Reuse*, pp 315-322, Hrsg.: Lazarova, V. , Choo, K.-H. und Cornel, P., ISBN: 9781843395416
- Conrad, S. (2011) “Decision support for the water-energy nexus: examining decision-making in the American west”, in Kenney, D. (2011) *The Water-Energy Nexus in the American West*. Edgar
- Conrad, S., Hall, M., Cook, S. (2010) “Key Decisions for Sustainable Utility Energy Management”, *Water Science & Technology: Water Supply*, 10 (5): 721–729
- Conrad, S. (2010) “Energy and Greenhouse Gas Management Options in the Water Utility Sector” in Welch, C. (2010) "The Green Utility: A Practical Guide to Sustainability", American Water Works Association Publishing.

- Jentgen, L, Conrad, S. et. al. (2007) “Energy Management Strategies Use Short-Term Water Consumption Forecasting to Minimize Cost of Pumping Operations.” *J. AWWA*, 99 (6): 86-94
- Jentgen, L. and Conrad, S. (2006) “Operations Optimization Systems: A Substantial, Sustainable Opportunity for Water Utilities”, *J. AWWA*, 98 (2).
- Jentgen, L., Conrad, S., Lee, T., (2005) “Optimizing System Operations.” *J. AWWA*, 97 (8): 58-65
- Barnett, M., Lee, T., Jentgen, L., Conrad, S., Kidder, H., Wooschlager, J., Lozano, E.C., Kelly, S., Eaton, M., Hollifield, D. Groff, C., (2004). “Real-time automation of water supply and distribution for the city of Jacksonville, Florida, USA.” *EICA*, 9 (3), pp.15-29.

*Referred Conference Papers*

- Kenway, S., Conrad, S., Jawad, M., McIntosh, B. (2016), “Water and Energy Integrated Planning and Capacity Building.” proceedings of the International Water Association World Water Congress, Brisbane, Australia, 9-14 October 2016.
- Kenway, S., McMahon, J., Conrad, S., Rosenblum, J. and Elmer, V. (2012), In: World Congress on Water Climate and Energy (International Water Association, ed.), May 2012, International Water Association, Dublin. (2012) “Managing water-related energy in future cities- A research and policy roadmap”, IWA World Congress on Water Climate and Energy, May 13-18, Dublin, Ireland
- Conrad, S., Geisenhoff, J., Brueck, T., Volna, M., Hall, M. (2011). “Case studies in utilizing a decision support system for sustainable energy management”, proceedings of the Water Environment Federation - Energy and Water Conference. Chicago, IL, July 31-August 3.
- Conrad, S. et. al (2010) “A Framework of Support for Utility Sustainable Energy Management”, proceedings of the Water Environment Federation Utility Management Conference, San Francisco, CA, February.
- Conrad, S. et. al. (2010) “Water Governance Considerations for Sustainable Energy Management.”, proceedings of the International Water Association World Water Congress, Montreal, Québec, 14-19 September.
- Conrad, S., Hall, M., Cook, S., Geisenhoff, J. (2009) “Key Energy Decisions for Sustainable Utility Energy Management.” Proceedings of the 5th IWA Specialists Conference on Efficient Use and Management of Urban Water, Sydney, Australia.
- Conrad, S. (2009). “New Tools that Support Greater Energy Efficiency and More Sustainable Energy Management Decisions.” Proceedings of the American Water Works Association Annual Conference, 14-18, June 2009.
- Conrad, S., (2009). “Effectiveness of the Organic Market: Influences on the North American Food System”, proceedings of the Canadian Society for Ecological Economics Annual Conference, Vancouver, Canada, October 2009.
- Kidder, H. Conrad, S. (2006). “Operations Optimization of Water Systems – The Economic Benefits”, Proceedings of the Texas Water Conference. April 10-13, 2006.
- Conrad, S and Kelly, S., Hollifield, D., Groff, C., Eaton, M., Jentgen, L., Barnett, M., (2004) “JEA Develops Smart Technologies to Optimize the Operational Management of its Water Supply and Quality.” proceedings of the IWA World Water Congress, Marrakech, Morocco, 20 - 24 September 2004.
- Hill, R., Conrad, S., Kidder, R., Riddle, R., Jentgen, L., (2005) “Optimal Control of Water Distribution.” proceedings of the 2nd International Water Association Conference on Instrumentation, Control and Automation, Busan, Korea, May 29 – June 2, 2005.

Jentgen, L., Conrad, S., et al. (2001). “Energy and Water Quality Management Systems Promise Significant Energy and Water Quality Benefits.” Proceedings of the 2001 World of Water Conference, Las Vegas, NV, December.

### **Referred Publications In Progress**

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Jawad, M., Conrad, S., Kenway, S. (manuscript in progress) “Integrated Water and Energy Utility–emerging links and implications for planning, collaboration and regulation.” *Futures*

Conrad, S., Kenway, S. (manuscript in progress) “Games can be transformational: Combining water and energy scenario planning and design visualization.” *Sustainable Cities and Society*

Conrad, S. (manuscript in progress) “Balancing water supply and efficiency investments through continuous choice experiment in the Okanagan, BC. ” *Climate Change*

Conrad, S. (manuscript in progress) “Informing policy and planning through a coupled water and energy systems dynamic model.” *Renewable and Sustainable Energy Reviews*

Conrad, S. (manuscript in progress) “A structural framework for coupling human behaviour and water system hydrology in water management models.” *Environmental Modelling and Software*

### **Refereed Conference Presentations**

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Conrad, S., Kenway, S., Strazzabosco, A. (2020). “Enabling pathways for water/wastewater utilities to contribute to a renewable energy future” presented at the AIChE 4<sup>th</sup> Water Conference, Virtual, 10-12 December

Conrad, S., Sobczak, C., Wilson, J. (2020). “Autonomous water system optimization through smart water systems” presented at the BC Water and Waste Association Annual Conference, Penticton, BC. 2 – 4 November

Conrad, S and Kenway, S., McCall, J. (2020). “Opportunities and Barriers for Implementing Distributed Energy Resources at Water and Wastewater Utilities” presented at the Sustainable Water Management Conference, Minneapolis, MN. 29 March – 1 April.

Conrad, S and Kenway, S. (2019). “Navigating the opportunities for distributed energy recovery and generation” presented at the BC Water and Waste Association Annual Conference, Victoria, BC. 27 – 29 May. DOI: 10.13140/RG.2.2.16764.97925

Conrad, S. (2018). “Do you run when you see fire? Climate impacts on emergency best practices for preserving water services.” Keynote presentation at the Yukon Water and Wastewater Conference, Whitehorse, BC. 24-25 October.

Conrad, S and Kenway, S. (2017). “Utilizing Game Theory to Encourage Integrated Water and Electric Utility Planning” presented at the BC Water and Waste Association Annual Conference, Victoria, BC. 29 – 30 May.

Conrad, S. (2016). “Seeking Pathways for Water and Electric Utility Integrated Planning.” presented at the American Water Works Association Water Sustainability Conference, Providence, RI, 8-10 March.

Conrad, S. (2015). “Climate change attitudes”, presented at the Canadian Water Works Association annual conference, Whistler, BC, 27-29 October.

Conrad, S. (2015). “Envisioning a new model of water research”, presented at the Canadian Water Works Association annual conference, Whistler, BC, 27-29 October.

Conrad, S. (2015) “Okanagan Water Allocation Policies: Drought Response Planning”, presented at the BC Branch CWRA Conference: Vancouver, BC, 18-19 November.

Conrad, S. (2014) “Achieving carbon neutrality in BC”, presented at the BC Water and Waste Association Conference, Whistler, BC, 4– 6 May.

- Conrad, S. (2013). “Carbon Neutral in BC: If You Can Do It Here, You Can Do It Anywhere!”, presented at the American Water Works Association Annual Conference, Denver, CO, 10 – 13 June.
- Conrad, S. (2013). “Assessing The Effectiveness Of Climate Change Adaptation Policies: A Survey Of Residential Water Use Preferences”, presented at the American Water Works Association Annual conference, Denver, CO, 10 – 13 June.
- Conrad, S. (2013). “Assessing the Effectiveness of Climate Change Adaptation Policies: Residential Water Use Choices ”, presented at the BC Water and Waste Association Conference, Kelowna, BC, 20 – 24 April.
- Conrad, S. (2013). “Building A Coupled Social-Hydrological Model For Assessing The Effectiveness Of Climate Change Adaptation Policies”, presented at the BC Branch Canadian Water Resources Association Annual Conference: Vancouver, BC, 5-7 March.
- Conrad, S, Raucher, B. (2012). “Addressing climate change uncertainty in utility infrastructure management”, presented at the American Water and Waste Association Annual Conference, Dallas, TX, June.
- Conrad, S. (2012). “Existing Research on Utility Energy Efficiency”, presented at the BC Water and Waste Annual Association. Penticton, BC, 20 – 23 April.
- Conrad, S. (2012). “Addressing Climate Change by Applying Adaptive Management Techniques to Infrastructure Management”, presented at the BC Water and Waste Association Annual Conference, Penticton, BC, 20 – 23 April.
- Conrad, S. (2011). “Energy management decision support system (DSS) to help water utilities make better decisions for sustainable energy management”, presented at the California Nevada Section American Water Works Association Annual Conference, Long Beach, CA, March.
- Conrad, S. (2010). “Energy Management and Decisions at Water and Wastewater Utilities,” presented at the Water Research Foundation & Water District #1 - Technical Transfer Workshop, Lenexa, KS, 5 May.
- Conrad, S., Jentgen, L. (2010) “Energy Water Quality Management Systems: Background and Applications”, presented at the American Water Works Association Sustainable Water Specialty Conference, Albuquerque, NM, April.
- Conrad, S. Geisenhoff, J., Brueck, T., Hall, M. (2010) “A Decision Support System for Sustainable Energy Management”, presented at the American Water Works Association Sustainable Water Specialty Conference, Albuquerque, NM, April 6-9 2010.
- Conrad, S., Peters, S., (2007) “GVRD Employs Innovative Operational Decision Support Tools for Sustainable Water Management”, presented at the American Water Works Association Annual Conference, Toronto, Canada, June
- Jentgen, L, and Conrad, S, (2006) “Program-driven Operations: Forecasting & Planning of Daily Operations for Maximum Efficiency.” Presented at the American Water Works Association Distribution System Symposium, Phoenix, AZ, September 2006.
- Sederstrom, M., Conrad, S. (2005). “Sustainability Toolkit creates a Pathway for Success for the Water Industry.” Presented at the American Water Works Association Annual Conference, San Francisco, CA, June.
- Conrad, S. & Cooke, W. (2005). “Meeting and Exceeding Performance Measures in San Diego Using Water System Optimization.” Presented at the American Water Works Association Annual Conference, San Francisco, CA, June.



- Jentgen, L., Conrad, S., et al. (2004). “JEA’s Operations Optimization System from Concept to Operating Reality in 13 Months.” Presented at the American Water Works Association Annual Conference, Orlando, FL, June.
- Jentgen, L., Conrad, S., et al. (2003). “JEA Prototypes Operations Optimization System in Six Months.” Presented at the Florida American Water Works Association Annual Conference, Orlando, FL, November.
- Conrad, S., et al. (2003). “Strategies for Implementing Software Tools for Energy Optimization.” Presented at the American Water Works Association Annual Conference, Anaheim, CA, June.
- Jentgen, L., Conrad, S., et al. (2002). “New Software Tools for Real-Time Energy Optimization for Water Utilities.” Presented at the American Water Works Association IMTech Conference, Kansas City, MO, April.
- Jentgen, L., Conrad, S., et al. (2001). “Progress Report on an Implementation Prototype Energy & Water Quality Management System.” Presented at the AwwaRF Technology Transfer Conference, Long Beach, CA, October.
- Jentgen, L., Conrad, S., et al. (2001). “Colorado Springs Adopts Electric Utility System Operations Model for Significant Energy/Water Quality Benefits.” Presented at the American Water Works Association Annual Conference, Washington, DC, June.

### **Non-Refereed Publications**

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- Kenway, S., Conrad, S., Jawad, M. (2019), “Renewable and Distributed Energy Resource Development” *Advances in Water Research Magazine*, Volume 29, Number 3, Summer. Denver, CO: Water Research Foundation.
- Kenway, S.J., Conrad, S.A., Jawad, M., Gledhill, J., Bravo, R., McCall, J., Strazzabosco, A., Howe, C., (2019). *Opportunities and Barriers for Renewable and Distributed Energy Resource Development at Drinking Water and Wastewater Utilities*. Water Research Foundation, Denver, CO.
- Kenway, S.J., Conrad, S.A., Jawad, M., Gledhill, J., Bravo, R., McCall, J., Strazzabosco, A., Howe, C., (2019). *Opportunities and Barriers for Renewable and Distributed Energy Resource Development at Drinking Water and Wastewater Utilities: Case Studies*. Water Research Foundation, Denver, CO. DOI: 10.13140/RG.2.2.22527.23201
- Conrad, S., Belzile, J., Nelitz, M. (2018), *Water Use Measurement & Reporting: A Sample of Water Users’ Perspectives and Cost Benefit Trade-offs*. Ministry of Environment, Victoria, BC.
- Kenway, S.J., Orams, P. Jawad, M, Conrad, S and Pascoe, M. (2017). *Energy Utilization Screening Methodology for ADB Municipal Water Projects*. Manila, Philippines: Asian Development Bank
- Conrad, S., Kenway, S., Jawad, M. (2017), “How games help encourage water and electric utility integrated planning.” *Watermark*, Summer. Vancouver, BC: BCWWA
- Conrad, S., Kenway, S., Jawad, M. (2017), “Planning together to manage water and electric utility service delivery.” *Advances in Water Research Magazine*, Spring. Denver, CO: Water Research Foundation.
- Conrad, S. (2017). *Amalgamating Local Data to Inform Water Related Decisions: Summary Report*. Burnaby, BC: Pacific Water Research Centre, Simon Fraser University.
- Conrad, S., Kenway, S., Jawad, M. (2017). *Water and Electric Utility Integrated Planning*. Denver, CO: Water Research Foundation.
- Conrad, S., Kenway, S., Jawad, M. (2017). *Water and Electric Utility Integrated Planning: Case Studies* Denver, CO: Water Research Foundation. DOI: 10.13140/RG.2.2.34782.46408
- Honey-Rosés, J., Bailey, J., Brandes, O., Conrad, S., Gill, D., Harris, L., Janmaat, J., Klein, D., Pareja, C., Schreier, H., Shah, S. (2016). Drought Preparedness in B.C.: Workshop Summary. Water Planning

- Lab. School of Community and Regional Planning. University of British Columbia. DOI: 10.14288/1.0300299
- Conrad, S. (2016). Introduction: *Enough Water: A Guide to What We Have and How We Use It*. London, ON: Firefly Publishing
- Conrad, S. (2016). "Moving beyond the debate to focus on risk and resiliency." *Watermark*, Spring. Vancouver, BC: BCWWA
- Conrad, S., Kenway, S., Jawad, M. (2015). *Joint Utility Planning Tournament: Summary Report*. Denver, CO: Water Research Foundation, Simon Fraser University
- Raucher, R. Raucher, K. Leiserowitz, A., Conrad, S., Millan, M., Dugan, B. Horsch, E. (2014). *Effective Communication About Climate Change to Water Utility Stakeholders*. Denver, CO: Water Research Foundation.
- Conrad, S., Olson, E. Raucher, S., Smith, J. (2013) *Opportunities for Managing Climate Change by Applying Adaptive Management*. Denver, CO: Water Research Foundation.
- Conrad, S. (2013). *Assessing Water Use Preferences to Water Conservation Policy and Implementation Strategies*. Victoria, BC: Simon Fraser University, Investment Agriculture Foundation of British Columbia. doi: 10.13140/RG.2.2.31839.89762
- Conrad, S. (2013) "Understanding Kelowna BC residential attitudes about managing climate change and drought." *Watermark*, Summer. Vancouver, BC: BCWWA.
- Conrad, S. (2012) (Contributing editor) "Water-Energy Interactions in Water Reuse", London, UK: IWA Publishing.
- Conrad, S. (2012) "Science is not enough: communicating climate change", *PICSNews*, Fall 2012. Victoria, BC: PICS.
- Conrad, S. (2012) "Messages from AAAS 2012: Communicating Climate Change". *Watermark*, Fall. Vancouver, BC: BCWWA.
- Conrad, S. (2012). *Okanagan Water Study Resident descriptive summary*. Burnaby, BC. Simon Fraser University. doi: 10.13140/RG.2.2.25967.87200
- Conrad, S. (2012). *Assessing the effectiveness of climate change adaptation policies: a survey of residential preferences*. Ottawa, ON. Natural Resources Canada. DOI: 10.13140/RG.2.2.25882.67521
- Conrad, S., Geisenhoff, J., Brueck, T., Hall, M., Cook, S., Kenway, S., et al. (2011). *Decision support system for sustainable energy management*. Denver, CO: Water Research Foundation.
- Conrad, S. (2011) "Managing climate change through adaptive governance", *Watermark*, Summer, Vancouver, BC: BCWWA.
- Conrad, S., (2011). "Reflections on water governance and climate change". *Watermark*. Vancouver, BC: BCWWA.
- Conrad, S. (2011). "Decision support system for sustainable energy management". *Drinking Water Research*. January-March. Denver, CO: Water Research Foundation.
- Conrad, S. (2010) GHG Emission Management Opportunities in the Water Utility Sector, Research Paper. Vancouver, BC: Simon Fraser University.
- Jentgen, L., Conrad, S., et. al, (2007). *Water Consumption Forecasting to Improve Energy Efficiency of Pumping Operations*. Denver, CO: American Water Works Association Research Foundation.
- Jentgen, L. A., Conrad, S., Kidder, H., Barnett, M, Lee, T., Wooschlager, J. (2005). *Optimizing Operations at JEA's Water System*. Denver: CO: American Water Works Association Research Foundation.

Conrad, S., (2005). *An Exploratory Assessment on Applying the Precautionary Principle to Genetically Modified Foods*. Tempe, AZ: ASU Press.

Jentgen, L. A., Conrad, S., Riddle, R., Sacken, E. V., Stone, K., Grayman, W., Ranade, S. (2003). *Implementing a prototype energy and water quality management system*, Denver, CO: American Water Works Association Research Foundation.

### **Invited Talks**

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Conrad, S. (April 24, 2020), Guest Lecture on Systems Objective Functions – Integrated Urban Water Management (WATR7700), University of Queensland, Australia.

Conrad, S. (September 16, 2019), Guest Lecture on Water-Energy Optimization, Urban Metabolism - Resource and Energy Recovery Systems (WATR7700), University of Queensland, Australia.

Conrad, S. (June 21, 2019). “A global perspective on community water and energy planning.” Research Seminar presented to the Advanced Water Management Centre, University of Queensland, Brisbane, Australia.

Conrad, S. (March 27, 2019). “Quantifying Energy, Water, and Human interactions: Pathways for building urban system sustainability.” Research Seminar presented to Tecnológico de Monterrey, Monterrey, Mexico.

Conrad, S. (November 14, 2018), Guest Lecture on Informing energy water management and planning through decision support, Energy-Water-Food Nexus, University of British Columbia, Vancouver, BC.

Conrad, S. (November 5-7, 2018), Guest Lecture on Water energy implications and decision/Policy Support, IWME 504 Water and Wastewater Management Strategies, University of British Columbia, Vancouver, BC.

Conrad, S. (October 26, 2018). “Moving beyond quantifying climate change impacts: Pathways towards climate adaptation.” Invited talk to Yukon Engineers, Whitehorse, Yukon.

Conrad, S. (September 24, 2018), Guest Lecture on Water-Energy Modelling, Urban Metabolism - Resource and Energy Recovery Systems (WATR7700), University of Queensland, Australia.

Conrad, S. (April 24, 2018). “Seeking pathways to quantify Water-Human system interactions affecting urban system sustainability.” Research Symposium, presented by invitation of East Carolina University, Faculty of Applied Science.

Conrad, S. (April 3, 2018). “Quantifying Energy, Water, and Human interactions: Pathways for building urban system sustainability.” Research Symposium, presented by invitation of Arizona State University, Polytechnic College.

Conrad, S. (February 1, 2018). “Why people matter: including water user preferences in water policymaking.” Presented at the Institute for Resources, Environment, and Sustainability seminar series.

Conrad, S. (September 27, 2017), Guest Lecture on Integrating understanding of urban water and metabolism, Water-Energy feedbacks and decisions, Urban Metabolism - Resource and Energy Recovery Systems (WATR7700), University of Queensland, Australia.

Conrad, S. & Kenway, S. (May 3, 2017). “A decade of water-energy research and implications for improved planning, and city resilience.” Presented by special invitation to the National Renewal Energy Laboratory, Golden, CO.

Conrad, S. (January 23, 2017). “Groundwater, Perceptions, and Policy: the invisible factors affecting water resiliency in BC.” Keynote Talk given at the 2017 BCWWA Climate Change Adaptation Conference, Vancouver, BC.

- Conrad, S. (November 29, 2016). "Social Considerations about Water Conservation," Presented at the 2016 Irrigation Industry Association of British Columbia Annual Conference, Kelowna, BC.
- Conrad, S. (October 27, 2016). "Addressing global water security locally: Managing the impacts of energy and food production." Guest lecture, REM 660, Simon Fraser University, Burnaby, BC.
- Conrad, S. (November 29, 2016). "Participatory Policymaking: A Canadian Approach to Managing Environmental Issues and Uncertainty", presented at the 2015 International Seminar on Environmental Policy, Tsukuba, Japan.
- Conrad, S. (September 27, 2016). "Community considerations in Local Stormwater Management." Presented at the North Shore Cool Drinks Forum, Vancouver, BC.
- Conrad, S. (September 12, 2016). "Water and Electric Utility Integrated Planning: Research Considerations." Presented to the Water Research Foundation's Energy Technical Advisory Committee, Denver, CO.
- Conrad, S. (April 22, 2016). "Droughts, climate, and groundwater: A discussion of perceptions and factors affecting BC's water", presented to the City of Vancouver's Division of Sustainability, Vancouver, BC.
- Conrad, S. (April 21, 2016). "Groundwater: friend? enemy? or unfortunate distraction to preparing for droughts in B.C.", presented at the 2016 EMA Forum: Drought on the West Coast - A New Reality?, North Vancouver, BC,
- Conrad, S. (April 11, 2016). Guest Lecture on Water, Energy, and Food Systems, REM 100, Simon Fraser University, Burnaby, BC.
- Conrad, S. (March 10, 2016). Panellist University of British Columbia's Forum on Drought Responses, Vancouver, BC.
- Conrad, S. (January 18, 2016). "Is water security a British Columbian issue?", presented at the PWRC public forum on water security, Vancouver, BC,
- Conrad, S. (January 11, 2016). "Envisioning a new model of water research", presented to the Real Estate Foundation of BC, Vancouver, BC,
- Conrad, S. (December 15, 2015). "Participatory Policymaking: A Canadian Approach to Managing Environmental Issues and Uncertainty", presented at the 2015 International Seminar on Environmental Policy, Tsukuba, Japan.
- Conrad, S. (November 4, 2015). "Integrated Behavior Water Use Modelling", presented to members of the American Water Works Association, Denver, CO.
- Conrad, S. (October 27, 2015). "Water conservation attitudes", presented to the Simon Fraser University Sustainability Office.
- Conrad, S. (October 29, 2015). "Integrating stated preference modeling with water management modeling", presented at the "Scientific Colloquium on Natural Resources and Societal Issues: Celebrating the Life and Career of Dr. Wolfgang Haider", Burnaby, BC.
- Conrad, S. (June 24, 2015). "Community informed water policy in the Okanagan", presented at the Simon Fraser University Blue Water Community Engage dialogue, Vancouver. BC.
- Conrad, S. (June 23, 2015). "Policy to address delivering water to a growing urban area that takes into account both engineering and human behaviour" presented at the Royal Canadian Institute's *"Is our drinking water at risk from urban growth? Water challenges, water solutions in a changing landscape."* water panel, Vancouver, BC.
- Conrad, S. (April 9, 2015). "Why people matter: including water user preferences in science centric policy-making", presented at the Resource and Environmental Management research seminar.

- Conrad, S. (March 18, 2015). “Coupling social sciences with physical system models”, Guest Lecture to REM 802, Simon Fraser University, Burnaby, BC.
- Conrad, S. (October 24, 2014). “Agricultural drought response planning: exploring policy options with BC's Water Sustainability Act”, presented to University of British Columbia Land and Food Systems Symposium, Vancouver, BC.
- Conrad, S. (April 4, 2014). “Research in Action: Developing residential landscape preferences using a discrete choice experiment”, Guest Lecture to REM 651, Simon Fraser University, Burnaby, BC.
- Conrad, S. (February 19, 2014). Guest Lecture on Water Research Management, REM 200, Simon Fraser University, Burnaby, BC.
- Conrad, S. (December 10, 2013). “Virtual Water”, presented to the students of University Highlands Elementary, Burnaby, BC.
- Conrad, S. (November 13, 2013). "Measuring Agriculture's preferences for managing regional watersheds", presented at the Action for Climate Team Dinner, Vancouver, BC.
- Conrad, S. (October 10, 2013). “Worlds of Water”, presented to the students of Wally High School, Langley, BC.
- Conrad, S. (March 12, 2013). “Water, Climate, and Estimating the Effectiveness of Climate Change Adaptation Policies”, Guest Lecture, REM 631, Simon Fraser University, Burnaby, BC.
- Conrad, S. (November 14, 2012). Panellist at the “Exploring New Collaborations amongst professions, to assist long term sustainability through the ‘lenses’ of food, energy and water-waste” workshop, hosted by the Adaptation to Climate change and Association for Professional Engineers and Geoscientists of BC. Vancouver, BC.
- Conrad, S. (September 14, 2012). “Integrated water-energy cities: Opportunities and Priorities”, Panellist and Speaker at the Professions in Progress Forum, Vancouver, BC, hosted by the Adaptation to Climate change and Association for Professional Engineers and Geoscientists of BC. Vancouver, BC.
- Conrad, S. (June 13, 2012). “Exploring Stakeholder Participation In Water Adaptation Policymaking: A Survey Of Residents In Kelowna British Columbia”, presented at the PICS Climate Change Solutions: The Road Ahead annual conference, Victoria, BC.
- Conrad, S. (April 2, 2012). “Informing water adaptation policies by eliciting water user preferences for drought response options” presented at the CCIRC student research day, Simon Fraser University, Burnaby, BC.
- Conrad, S. (March 29, 2012). Panellist at the Thompson-Okanagan Climate Action Exchange, Kelowna, BC, hosted by the BC Climate Action Secretariat.
- Conrad, S. (February 28, 2012). Keynote panellist at the Environmental Stewardship Forum, Vancouver, BC, hosted by Association for Professional Engineers and Geoscientists of BC.
- Conrad, S. (March 16, 2011). “Regulations affecting Climate Change responses”, presented at the *Building a Climate-Ready Regulatory System* workshop. Washington, DC.
- Conrad, S., Jentgen, L. (September 1, 2010). “Sustainable Water System Operations Yields Substantial Results.” Presented to the Sustainable Cities Network (SCN) Water and Wastewater Workgroup.
- Conrad, S., (April 10, 2009). “Water Research Foundation project 4090 - Decision Support System for Sustainable Energy Management”, presented at the 2<sup>nd</sup> Forum on Energy and Water Sustainability, Santa Barbara, California.

### **Teaching Experience**

Colorado State University

**Environmental Modelling** (Annually each Spring 2014-2020)

4<sup>th</sup> year undergraduate course on the application of systems dynamic theory to environmental and ecological systems. Students receive hands-on experience in the construction and analysis of computer simulations across case studies of water, energy, population, fishery, biological, and economic systems.

**Building Sustainable Communities: Concepts and Cases** (Fall 2019, Summer 2020)

3<sup>rd</sup> year undergraduate course that explores and analyzes policy instruments, planning tools, and strategies from around the world for engaging people and institutions in building sustainable communities. Utilizes game theory and a tournament design challenge to engage students in understanding how to plan and cultivate sustainability at the community and city level, taking into consideration the environmental, economic, and social aspects of development.

**Systems Thinking** (Fall 2015, Fall 2016, Fall 2017, Fall 2018, Spring 2019, Fall 2019)

Course developer and instructor of 2<sup>nd</sup> year undergraduate course that provides an introduction to systems thinking in the context of environmental and sustainability challenges using system archetypes and system dynamics theory.

**Global Change Distance - Course Developer/Supervisor** (Three offerings annually, 2018 – 2020)

Online offering of Global Change – Course development and framework for offering Global Change as a distance learning option within the Centre for Online and Distance Education.

**Earth Systems and Global Change in Environmental Management** (Spring 2017)

Graduate course in which students review how human and natural processes across earth systems and over a range of scales interact to affect the hydrological cycle, climate, and land surface processes that are relevant to resource management.

**Ocean resources** (Fall 2016)

3<sup>rd</sup> year undergraduate course that introduces the principles of oceanography, including ocean circulation, ocean carbon cycling, nutrients and biological productivity, oceans and the climate system, and ocean resource contributions to global food supply.

**Global Change** (Fall 2011, Spring 2012, Spring 2013, Spring 2015, Summer 2019)

Large lecture format, 1<sup>st</sup> year undergraduate course that provides students with an overview of global environmental change and its causes from a social science perspective, historically and at the present time.

University of British Columbia

**Organizational Sustainability** (Fall 2009)

Graduate course providing a background on systems that address economics and resource efficiency, including steps to address environmental and social inefficiencies relating to energy, water, materials, employees and supply chain.

**Academic and Professional Service**

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- 2017 – 21 *Chair* Education Program, 2018, 2019, 2020, 2021 BC Water and Waste Association Annual Conference
- 2018 – 2021 *Board of Director*, British Columbia Water and Waste Association.
- 2011 – 21 Member, *Chair* (2020-2021), Technical leadership council, BC Water and Waste Association.
- 2014 – 20 Member, professional advisory committee, SFU Action Climate Team.
- 2014 – 20 Member, climate change committee, Canadian Water Works Association and American Water Works Association.

- 2019 Member, organizing committee, IWA's LESAM (Leading Edge Strategic Asset Management) and PI (Performance Indicators) conferences, Vancouver, British Columbia
- 2015 – 2018 **Board of Director**, American Water Works Association.
- 2015 – 2018 Member, Canadian Affairs Committee, American Water Works Association.
- 2015 – 2018 **Co-chair, risk and resiliency committee**, BC Water and Waste Association.
- 2016 – 17 **Chair**, organizing committee, BCWWA climate change adaptation conference, Vancouver, Canada.
- 2016 – 17 Member, Fraser Basin Council's Watersheds and Water Resources Committee
- 2016 Advisory Panel, 2016 Canadian Water Summit, Toronto, Canada. 23 June
- 2015 **Moderator and co-chair**, organizing committee, Simon Fraser University, SFU BLUE: Blue Water Community Engage dialogue, Vancouver, Canada.
- 2011 – 15 **Chair**, climate change committee, BC Water and Waste Association.
- 2014 – 15 Judge, Student Design Competition, University of British Columbia, BC Water and Waste Association.
- 2013 – 14 Selection Committee for the appointment of new Research Chair in Avalanche Risk Management, School of Resource and Environmental Management, Faculty of Environment, Simon Fraser University.
- 2013 **Chair and Moderator**, *Got Risk* workshop and communicating climate change and risk, School of Resource and Environmental Management, Faculty of Environment, Simon Fraser University, and BC Water and Waste Association.
- 2011 – 14 Graduate representative, Faculty Executive, School of Resource and Environmental Management, Simon Fraser University.
- 2010 – 13 **Chair**, Seminar Symposium Series, School of Resource and Environmental Management, Simon Fraser University.
- 2011 – 12 **Co-chair**, energy management sub committee. International Water Association.
- 2010 – 11 Graduate representative, Graduate Services Committee, School of Resource and Environmental Management, Simon Fraser University.
- 2010 Peer-review of paper submissions for the 2010 International Water Association World Water Congress, Montreal, Canada.
- Ongoing Peer-review for academic Journals (incl. Water Research, Water Resources Research; Resources, Conservation & Recycling, Water and Climate, Landscape and Urban Planning, Water Resources Management, Water).

### **Media Coverage**

- 2018 Yukon CBC Radio on Climate Adaptation Extremes in the Yukon
- 2017 Guest on CBC Radio – The current with Anna Maria Tremonti – on rebuilding Canada's cities to adapt to extreme weather events.
- 2017 Interview with CBC on water system impacts from winter storm management and the use of salts.
- 2016 Interview with Bryce Tarling, Alive Magazine on global water shortage and understanding groundwater depletion. Available - <http://www.alive.com/lifestyle/water-supplies-from-the-ground-up/>
- 2016 Interview with Charles Mandel, National Observer, on water supply and drought in Canada.
- 2015 Interview with Jeff Lee, Vancouver Sun, re: Underground aquifers and City of Vancouver's use of groundwater to water during droughts.
- 2015 Interview with Kiran Dhillon, CBC Radio, Vancouver responds to 2014 drought.
- 2015 Interview with Water Canada, Launch of the Pacific Water Research Centre.
- 2015 Interview with SFU Peak on water research in Canada.

- 2015 CBC Radio guest with Gloria Macarenko on Water research and water supply in Metro Vancouver.
- 2015 Vancouver Sun interview with Bethany Lindsay and Rob Shaw on lack of information on the state of underground aquifers challenge water decisions.
- 2015 Globe and Mail interview with Ian Bailey on how social science surveys can help tailor water restrictions in Vancouver.
- 2015 Global TV News guest to discuss the goals of the Canadian Water Summit underway in Vancouver.
- 2015 Interview with Radio Canada International with Marc Montgomery on Drought, water restrictions, and the Pacific Water Research Centre.
- 2015 Interview with Vancouver Sun on researching future water supplies and community responses to drought.

**Personal Information**

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**Citizenship**                      United States of America, Canada  
**Languages**                        English, Spanish

**Policy Contributions**

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Citizen Panel for Water Resource Development, Tucson, AZ  
Citizens for a Sustainable Arizona, Oro Valley, AZ  
Development Planning Board, Oro Valley, AZ  
Town Council Candidate, Oro Valley, AZ