

John C. Tracy
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Personal

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Education

Ph.D., Engineering, Univ. of California at Davis, 1989
M.S., Civil Engineering, Univ. of California at Davis, 1986
B.S., Civil Engineering, Colorado State University, 1980

Professional Experience

Texas A&M University and AgriLife Research/Extension

Director, Texas Water Resources Institute, December 2015 to Present

As Director of the Texas Water Resources Institute my role is to work with faculty from diverse disciplines to develop and forward research initiatives that address many of Texas', the region's and nation's pressing water resources issues. This includes developing strategies that aid university faculty in creating funding networks with state, regional and federal water resource agencies, environmental and water focused foundations, and private corporations, as well as working across departmental and college boundaries to forward the water resource research, education and outreach activities across the Texas A&M system. During my time as director I have worked to develop programmatic emphases for the institute focused on: Watershed Assessment and Protection Planning; Agricultural and Municipal Water Conservation; Tools to help resolve transboundary groundwater conflict from intra-state to international scales; and methodologies to improve stakeholder engagement. As Director of TWRI I report directly to the Texas A&M University System Vice Chancellor of Agriculture, and coordinate plans and activities with Academic Departments, Regional Research Centers and Statewide Extension Services within the Texas A&M System. During my tenure as director, TWRI's technical staff has expanded from 5 FTE to 15 FTE, and annual research awards have grown from \$2.5 million in FY 2015 to over \$6.0 million in FY 2017.

University of Idaho, August 2004 to November 2015

Director, Idaho Water Resources Research Institute, August 2004 to November 2015
Professor, Department of Civil Engineering, August 2004 to November 2015

As Director of the Idaho Water Resources Research Institute (IWRRI) I focused on working with a wide range of faculty members to develop and forward research initiatives that address many of Idaho's and the Intermountain West's pressing water resources issues. As IWRRI Director I facilitated a number of University of Idaho water resources research initiatives, including: furthering UI faculty involvement in understanding the impacts of the Columbia River Treaty on the delivery of future ecosystem services in the headwater tributary watersheds; serving as a resource to the State NSF-EPSCoR program to create engagement opportunities between faculty and potential funding sources for their future research programs; and leading a number of projects to determine how to maximize hydroservice benefits through improving the operation and management of regulated river systems.

Associate Vice President for Research, Southern Region August 2009 to November 2015

As Associate Vice President for Research I represented the University of Idaho's Office of Research and Economic Development in the southern Region of Idaho. This included: representing the University of Idaho Office of Research and Economic Development (ORED) in Southern Idaho (predominantly the Boise Metro area) at events and meetings that the Vice President of Research is unable to attend; reporting to the ORED leadership on opportunities that are available to advance the University's research activities; serving as primary point of contact for University of Idaho research faculty in southern Idaho to address issues that may arise related to their research programs; serve as liaison between the ORED and the University of Idaho-Boise campus leadership; summarizing the University's research activities and outcomes in the southern Idaho region; and serving on the ORED's strategic planning committee to identify improvements that can be made to advance research programs at the University.

Vice President for Research, Interim Assignment January 2007 to June 2008

The Vice President for Research is the lead administrator for the University Research Office, reports directly to the University President, and is part of the University's executive cabinet. As the Vice President for Research I was responsible for operation of the Research Office, which at the time included: the Office of Sponsored Projects; The Technology Transfer Division; the Idaho Geological Survey; five interdisciplinary research institutes; the support operations for the federal relations efforts at the University; and all research compliance activities at the University. I also serves on the State's EPSCoR advisory board, the State of Idaho's Science and Technology Committee and represented the President of the University on the Higher Education Research Council when the President is unavailable. As Vice President for Research I was responsible for developing strategies to advance scholarly activity at the University, restructure the administrative support and compliance activities for all extramurally funded activities at the University, and for administering an annual operating budget of approximately \$4.5 million. In addition, I was responsible for developing the University's annual federal relations priorities, and working with our federal delegation and key federal agencies to identify federal resources to fund these priorities.

Desert Research Institute, January 1997 to August 2004

Director, Watersheds and Environmental Sustainability Center, August 2000 to August 2004

The Center for Watersheds and Environmental Sustainability (CWES) was created at the Desert Research Institute in the Fall of 1999. As Director of the Center I reported directly to the President of the Institute. The purpose of the Center was to stimulate interdisciplinary research within the Institute that focused on an applied research mission of understanding the integrated behavior of watershed systems, and using this understanding to better aid in watershed planning and managing activities. As Director, my initial focus was on the development of a regionally based research program addressing environmental management problems in the Lake Tahoe, Walker River, Carson River and Truckee River watersheds, located in Northwestern Nevada. Faculty from all three of the Desert Research

Institutes divisions (Division of Atmospheric Sciences, Division of Earth and Ecosystem Sciences and Division of Hydrologic Sciences) were significantly involved in the Center's research activities, and have included a wide range of projects topics. During my tenure as Director, research activities in these watersheds grew from less than \$0.5 million to over \$4.0 million per year for DRI faculty and long-term research funding sources were developed for both the Walker River and Lake Tahoe watershed programs.

Associate and Full Research Professor, Division of Hydrologic Sciences, January 1997 to 2004.

I developed and maintained an extramurally funded research program related to inter-disciplinary water resources and watershed management. My activities included: developing research proposals to regional, state and federal agencies; developing and implementing project management plans for DRI faculty, staff and scientists to complete funded research projects; working with funding agencies to advocate for funding of larger research initiatives related to watershed management; and provide service to the institute and professional societies as needed.

South Dakota State University, August 1992 to December 1996.

Assistant and Associate Professor of Civil Engineering, August 1992 to December 1996.

I developed and taught graduate and undergraduate courses in water resources engineering topical areas. These included courses in Hydraulic Engineering, Hydrology and Groundwater Hydrology. I also developed an extramural funded research program and directed graduate research projects related to hazardous waste remediation, water resources management and wetlands hydrology. In addition I participated in departmental, college and university planning activities and provided service to the university and professional societies as needed.

Kansas State University, August 1989 to August 1992.

Assistant Professor of Civil Engineering, August 1989 to August 1992.

I developed and taught graduate and undergraduate courses in water resources engineering topical areas. These included courses in Hydraulic Engineering, Hydrology, Computer Applications, Systems Analysis, Finite Element Analysis and Groundwater Hydrology. I also developed extramural funding for and directed graduate research projects related to hazardous waste remediation and water resources management, as well as participated in departmental and college planning activities and provided service to the university and professional societies as needed.

Hydraulic Engineer, Army Corps of Engineers, Hydrologic Engineering Center

609 Second Street, Davis, CA 95616, June 1984 to August 1985.

Hydrologic Engineer

My principal job responsibilities were to convert Hydrologic Computer Software from Mini-computer to Micro-Computer format, and provide user support for micro-computer use of the Flood Routing Simulation package HEC-1. Additional responsibilities were to perform hydrologic analyses of river basins.

Extramurally Funded Research Activities

Over my career, I have been involved in over \$25,000,000 in extramurally funded research activities as a Principal Investigator, Co-Investigator or Senior Research Personnel. This funding has come from a mixture of entities, including the NSF, USDOE, USDO, USDA, NASA, USDOD, USEPA, in addition to several state and regional governmental entities. This research has focused on the broad area of water and environmental management, and has typically been undertaken through the development of interdisciplinary and inter-institutional teams of

researchers. Narratives are provided below for some of my more extensive projects. A full listing of the research projects I have been a part of is provided at the end of my CV.

Project: Diversifying the Water Portfolio for Agriculture in the Rio Grande Basin (2017 – 2021)

Purpose and Role: This project is funded by the USDA National Institute for Agriculture (NIFA) through their Agricultural Food and Research Initiative (AFRI), Water for Agriculture Program. I serve as the Principal Investigator and Project Director, overseeing the five primary project objectives, these being: (1) Simulation of Water Flow and Quality within the basin; (2) Identifying non-traditional water sources and crops that can be used to increase agricultural production; (3) Development of improved methods for predicting crop water demand; (4) Determining the most economically efficient use of water throughout the basin; and (5) Implementing innovative programs to enhance engagement with agricultural producer so that they increase adoption of improved crop, soil and water management practices. My primary responsibility is to ensure that project activities stay on schedule, project deliverables are submitted on time, and to coordinate integration of project objectives.

Project: Quantifying the hydrologic behavior of Prairie Pothole Wetlands as they are impacted by the installation of tile drainage systems (Intermittently from 1993 to 2016)

Purpose and Role: This project was funded through a variety of sources, including the USGS Biological Resources Division and the US Fish and Wildlife Service. My role in the project was to lead the development of a quantitative hydrologic behavior model for single prairie potholes and prairie pothole complexes in a manner that could be integrated with waterfowl habitat (primarily vegetative) models. Once developed, this model was used to predict prairie pothole complex ecological function under various land use and climate change scenarios, including how tile drainage systems would impact wetland function. The developed model was used by the USFWS to determine tile drainage placement in the proximity of wetlands that are in their conservation reserve program within the northern Great Plains Region (South and North Dakota).

Project: Managing Idaho's Landscapes for Ecosystem Services (2013 – 2015)

Purpose and Role: This project was funded through Idaho's NSF EPSCoR program, and its purpose was to build Idaho's capacity to study complex social-ecological processes related to water demand and valuation of ecosystem services. My role in the project was to lead the Engagement and Outreach component of the research project and to lead the project team in developing innovative processes and tools to enhance engagement between water and natural resource stakeholders and project research personnel.

Project: Implementation of Adaptive Management within the Lake Tahoe Basin (2002 – 2004)

Purpose and Role: This project was funded in part by the Tahoe Regional Planning Agency, and through a combination of Lake Tahoe local, state and federal agency resources. The purpose of the project was to provide a foundation on which to develop an adaptive management strategy that could be used as the foundation the TRPA regional plan update. My role was as project manager, setting the overall strategy for engaging the research community, environmental agencies and key stakeholders (approximately 45 participants) in developing consensus processes to set targets for a wide range of environmental conditions throughout the Lake Tahoe Basin.

Additional Information

Archival Publications

- Tracy, J. C., and Mariño, M. A., 1987. "Seepage into variably-saturated porous medium," *J. Irrig. and Drain. Eng.*, ASCE 113(2), pgs. 198-212.
- Mariño, M. A., and Tracy, J. C., 1988. "Flow of water in a root-soil environment," *J. Irrig. and Drain. Eng.*, ASCE 114(4), pgs. 588-604.
- Tracy, J. C., and Mariño, M. A., 1989. "Movement of solutes in a root-soil environment," *J. Irrig. and Drain. Eng.*, ASCE, 115(4), pgs. 608-625.
- Tracy, J. C., and Mariño, M. A., 1989. "A management model for control of on-farm irrigation," *J. Irrig. and Drain. Eng.*, ASCE, 115(6), pgs. 954-972.
- Tracy, J. C., and Mariño, M. A., 1991. "Identification of an Aquifer's Well Pumpage Histories," *J. Water Resources Planning and Management Div.*, ASCE, 117(4),432-447.
- Tracy, J. C., 1992. "The movement of non-point source contaminants through heterogeneous soils," *J. of Irrig. and Drain. Eng.*, ASCE, 118(1),88-103.
- Tracy, J. C., Erickson, L. E., Shimp, J. F., and Davis, L. C., 1992. "Modeling the beneficial effects of vegetation in the management of landfill leachates," *Proceedings of the 85th Annual Meeting of the Air & Waste Management Association*, Kansas City, MO, June 21-26, 1992, Paper No. 92-27.03, 16 pgs.
- Davis, L. C., Erickson, L. E., Lee, E. , Shimp, J. F., and Tracy, J. C. 1993. "Effects of plants on the bioremediation of contaminated soil and ground water," *Environmental Progress* 12(1), 67-75.
- Shimp, J. F., Tracy, J. C., Davis, L. C., Lee, E., Huang, W., Erickson, L. E., and Schnoor, J. L., 1993. "Beneficial effects of plants in the remediation of contaminated soil and ground water," *CRC, Critical Reviews in Environmental Control*, 23(1):41-77.
- Mariño, M. A., Tracy, J. C. and Taghavi, A. 1993. "Forecasting of reference crop evapotranspiration," *Agricultural Water Management* 24:163-187.
- Havenner, A. M., and Tracy, J. C. 1993. "Flooding on the Eel River: System theoretic time series, transfer function time series, and structural model forecasts," *Natural Resource Modeling*, 6(2):171-190.
- Tracy, J. C., Erickson, L. E., and Davis, L. C., 1993. "Rate limited degradation of hazardous organic contaminants in the root zone of a soil," In the *Proceedings of the 86th Annual Meeting of the Air & Waste Management Association*, Denver, CO, June 14-16, 1993, Paper No. 93-WA-89.02, 16 pgs.
- Ghali, K., Jones, B., and Tracy, J. C. 1994. "Experimental techniques for measuring parameters describing wetting and wicking in fabrics," *Textile Research Journal*, 64(2):106-111.
- Erickson, L.E., Banks, M.K., Davis, L.C., Schwab, A.P., Muralidharan, N., Reilley, K., and Tracy, J.C. 1994. "Using vegetation to enhance in situ bioremediation," *AICHE, Environmental Progress*, 13(4):226-231.

- Ghali, K., Jones, B., and Tracy, J. C. 1994. "Modeling moisture transfer in fabrics," *International Journal ETFS* 9:330-336.
- Pierzynski, G., Schnoor, J., Banks, M. K., Tracy, J. C., Licht, L. A. and Erickson, L. E., 1994. "Vegetative remediation of superfund sites," in *Mining and its Environmental Impact*, R. E. Hester and R. M. Harrison Eds., Royal Society of Chemistry, Cambridge, UK, pgs. 49-70.
- Tracy, J. C., Ramireddy, H., Erickson, L. E., and Davis, L. C., 1994. "Effects of climatological variability on the performance of vegetative systems in remediating contaminated soil," In the *Proceedings of the 87th Annual Meeting of the Air & Waste Management Association*, Cincinnati, OH, June 19-24, 1994, Paper 94-WA86.01, 16 pgs.
- Mariño, M. A. and Tracy, J. C. 1994. "Water and solute movement in a rooted soil," in *Trends in Hydrology*, Research Trends, Council of Scientific Information, Trivandrum, India, pgs. 359-371.
- Narayanan, M., Davis, L. C., Tracy, J.C., Erickson, L. E., and Green, R. M. 1995. "Experimental and modeling studies of the fate of organic contaminants in the presence of alfalfa plants," *Journal of Hazardous Materials*, 41:229-249.
- Tracy, J. C., Van Lent, T. J. and Mariño, M. A. 1995. "Design of ground water monitoring quality networks," In *Advanced Methods for Groundwater Pollution Control*, Eds. G Gambolati and G. Verri, CISM Courses and Lectures No. 364, Springer-Verlag Publishers, New York, NY, pgs 177-196.
- Ghali, K., Jones, B., and Tracy, J. C. 1999. "Modeling heat and mass transfer in fabrics," *International Journal of Heat and Mass Transfer*, 38 (1) (1995).
- Hameed, T., Mariño, M. A., DeVries, J. J. and Tracy, J. C. 1997. "Method for trend detection in climatological variables," *Journal of Hydrologic Engineering*, ASCE, 2(4):154-160.
- Davis, L. C., Banks, M. K., Schwab, A. P., Muralidharan, N., Erickson, L. E., and Tracy, J. C. 1998. "Plant-based bioremediation," *Bioremediation: Principles and Practice: Volume II. Biodegradation Technology Developments*, Eds. S. K. Sikdar and R. L. Irvine, Technomic Publishing Co., Inc., Lancaster PA, USA.
- Narayanan, M., J.C. Tracy, L.C. Davis, and L.E. Erickson. 1998. "Modeling the Fate of Toluene in a Chamber with Alfalfa Plants 1. Theory and Modeling Concepts," *Journal of Hazardous Substance Research*, Vol. 1, No. 5.
- Narayanan, M., L.C. Davis, J.C. Tracy, and L.E. Erickson 1998. "Modeling the Fate of Toluene in a Chamber with Alfalfa Plants 2. Numerical Results and Comparison Study," *Journal of Hazardous Substance Research*, Vol. 1, No. 5b-1.
- Stevens, D. K., Lall, U. Stednick, J. D., Ward, R. McKay, A. and Tracy, J. 1999. "Water quality monitoring requirements for TMDL development in the western United States," *Water Resources Impact*, AWRA, 1(6): 27-29.

- Ffolliott, P. F., Dawson, J. O. Fisher, J. T., Moshe, I., DeBoers, D. W., Fulbright, T. E., Tracy, J. C., Al Musa, A., Johnson, C. and Chamie, J. P. M. 2001. *Arid and Semi-Arid Land Stewardship: A Ten-Year Review of Accomplishments and Contributions of the International Arid Lands Consortium*, General Technical Report RMRS-GTR-89, USDA. Forest Service, Rocky Mountain Research Station, 74 pgs, November 2001.
- Tracy, J. C. 2004. "Impacts of managing water in a closed basin: The Walker River Basin case study," *Water Resources Impact*, 6(3), pps. 18-21.
- Tracy, J. C. 2004. "Environmental impacts from water management in a closed basin: Walker Lake, Nevada," *Southwest Hydrology*, 3(4), pps. 14-17.
- Carroll, R. W. H., Pohll, G. Tracy, J. C., Winter, T. and Smith, R. 2005. "Simulation of a semi-permanent wetland basin in the Cottonwood Lake Area, East-Central North Dakota," *Journal of Hydrologic Engineering*, ASCE, 10(1): 70-84.
- Murphy, E. C. and Tracy, J. C. 2005. "Century-long impacts of increasing human water use on numbers and productivity of American White Pelicans at Pyramid Lake, Nevada," WATERBIRDS, In *The Biology and Conservation of the American White Pelican*, Edited by D. W. Anderson, D. T. King and J. Coulson, 28(SP1), pps. 61-72.
- Tracy, J. C. 2006. "Genesis and anatomy of water resources adaptive management: Components, approaches, benefits," *Water Resources Impact*, AWRA, 8 (3), pps. 11-13.
- Tracy, J. C. 2008. Complexity and Uncertainty in Water Resources Management, Editor: *Journal of Contemporary Water Research & Education*, Issue 140, September 2008.
- Tracy, J. C. 2009. Application of Adaptive Management in Water Resources, Editor: *Water Resources IMPACT*, AWRA, 11(3), May 2009.
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- Tracy, J. C. 2012. Exempt Wells, Editor: *Journal of Contemporary Water Research & Education*, Issue 148, September 2012.
- Ryu, J. H., Contor, B., Johnson, G., Allen, R, and Tracy, J. 2012. "System dynamics to sustainable water resources management in the Eastern Snake Plain Aquifer under water supply uncertainty," *Journal of the American Water Resources Association*, AWRA, 48(6), 1204-1220
- Sohrabi, M. M., Ryu, J. H. Abatzoglou, J. and Tracy, J. 2013. "Climate extremes and its linkage to regional drought over Idaho, USA", *Natural Hazards*, 65(1), 653-681.
- Sohrabi, M., J. Ryu, J. Abatzoglou, J. Tracy, 2015. "Development of Soil Moisture Drought Index (SODI) to Characterize Droughts," *Journal of Hydrologic Engineering*, ASCE, 20(11), 04015025.

Alley, W. M., L. Beutler, M. E. Campana, S. B. Megdal, J. C. Tracy, 2016. "Groundwater visibility: The missing link," *Groundwater*, 54(6), 758-761.

Alley, W. M., L. Beutler, M. E. Campana, S. B. Megdal, J. C. Tracy, 2016. "Making Groundwater Visible," *Water Resources Impact*, 18, 14-15.

Werner, B., J. C. Tracy, W. C. Johnson, R. A. Voldseth, G. R. Guntenspergen, B. Millett, 2016. "Modeling the effects of tile drain placement on the hydrologic function of farmed prairie wetlands," *Journal of the American Water Resources Association*, AWRA, 52(6):1482-1492.

Look to Google Scholar and update

Archived Project Reports

Tracy, J. C., and Mariño, M. A., 1989. *A Model for the Management of Crop Irrigation and Soil Salinity*, Water Science and Engineering Paper No. 2016, Dept. of Land, Air, and Water Resources, University of California, Davis, CA 95616, 101 pgs.

Tracy, J. C., Erickson, L. E., and Davis, L. C. 1991. *Modeling of the use of plants in the remediation of soil and groundwater contaminated by hazardous organic substances*, Progress report for Region 7 and 8 HSRC Project 90-13, 8 pgs.

Tracy, J. C. and Koelliker, J. K. 1992. *A model for the management of water rights in basins with interconnected surface and ground water supplies*, Kansas Water Resources Research Institute, Kansas State University, Manhattan, KS, Contribution No. 294, Report No. G2020-04, 41 pps.

Tracy, J. C., Erickson, L. E., and Davis, L. C. 1993. *Modeling the use of plants in remediation of soil and ground water contaminated by hazardous organic substances*, Progress report for Region 7 and 8 HSRC Project 90-13, 12 pgs.

Tracy, J. C. and Koelliker, J. K. 1993. *Administration of Water Rights in Basins with Interconnected Surface and Ground Water Supplies*, Kansas Water Resources Research Institute, Kansas State University, Manhattan, KS, Contribution No. 301, 59 pps.

Van Lent, T. J. and Tracy, J. C. 1994. *Assessment of the Rain Gage Network in the South Florida Water Management District*, Final report prepared for the National Park Service under contract CA4250-4-9015, September 1994, 216 pps.

Tracy, J. C. 1995. *Review of Corps Hydraulic Analysis for Design Memorandum*, Final report prepared for the National Park Service, April 1995. 45 pps.

Tracy, J. C., Mihevc, T. 1998. *Assessment of Flooding Impacts to the Army Guard Facility in Henderson, Nevada due to the Development of Black Hill*. Final report prepared for the Nevada Dept. of Military, September 1998, 22 pps.

Tracy, J. C. 1999. "Walker River Network Modeling," Volume III, *Project Completion Report for A Preliminary Assessment of the Potential for Water Banking to Restore Flows to Walker Lake*,

- Final report prepared for the US Bureau of Reclamation, Lahontan Basin Area Office, October 1999, 61 pps.
- Tracy, J. C., Humberstone, J. A. and McKay, W. A. 2001. *Potential Impacts of Water Banking on Water Quality and Hydrologic Conditions within the Walker River Basin*, Final report prepared for the U.S. Bureau of Reclamation, Lahontan Basin Area Office, July 2001, 131 pps, DRI Report 41171.
- Pohll, G., Tracy J. C. and Fosgren, F. 1999. *Data Decision Analysis: Project Shoal*, Publication 45166, Nevada Operations Office, Department of Energy, January 1999, 74 pgs.
- Pohll, G. and Tracy, J. C. 1999. *Numerical Assessment of Hydrogeomorphic Wetland Functions*, Publication Number 41163, Water Resources Center, Final report prepared for the Army Corps of Engineers, March 1999. 25 pgs.
- Tracy, J. C. and Keane, C. M. Eds. 2000. *Peer Review of Models Predicting the Fate and Export of PCBs in the Lower Fox River Below DePere Dam*. Published by the American Geologic Institute, April 2000, 88 pgs.
- Tracy, J. C. and Dana, G. 2000. *A Statistical Evaluation of the Effectiveness of the IPES Program in Relation to Suspended Sediment Loads in Lake Tahoe's Tributaries. Final Report for the Tahoe Regional Planning Agency*, July 2000, 64 pps.
- Pohll, G., Tracy J. C. and Carroll, R. M. 2000. *Numeric Assessment of Hydrogeomorphic Wetland Functions: Phase II*. Final report prepared for the Army Corps of Engineers, 68 pps.
- Manley, P. , Tracy, J. C., Murphy, D. D., Noon, B. R., Nechodom, M. and Knopp, C. M., 2000. "Chapter 7 Elements of an Adaptive Management Strategy for the Lake Tahoe Basin," Pgs. 690-735. In *The Lake Tahoe Watershed Assessment*, D. Murphy and C. Knopp Eds., USFS, PSW-GTR-175, May 2000.
- Tracy, J. and Rost, A. 2003. *Stream Flow Conditions of Lake Tahoe Streams Based on Gaged Flows and Statistically Modeled Flow Estimates: Implications for Salmonid Fish Population Management*. Final Report Prepared for the Tahoe Regional Planning Agency, May 2003, DRI Publications No. 41189, 112 pps.
- Tracy, J. 2004. *Final Report for the Adaptive Management Framework Development Project: Phase I*. Final Report Prepared for the Tahoe Regional Planning Agency, June 2004, 36 pps.
- Tracy, J. and Unger K. 2008. *Development of an Integrated Land and Water Use Planning Tool for the Carson River Watershed: Phase I Development of a Planning Platform and Water Resources Assessment*. Final Report Prepared for the United State Bureau of Land Management, Carson City District Office, November 2007, 219 pps.
- Tracy, J., R.D. Schmidt, J. Cuhaciyani, 2014. *An Approach to Hydro-Economic Modeling Using Partial-Equilibrium Optimization*. IWRRI Technical Completion Report 201402, 86 pps.

Johnson, J. and J. Tracy, 2014. *Investigating the Impact of River Regulation on Groundwater Supplies in the Western US*. Research and Development Office, Science and Technology Program Final Report 2014.2892. 69 pps. In review.

Full Listing of Extramurally funded projects

Current Projects:

Title: Pathways to Sustainable Urban Water security: Desalination and Water Reuse in the 21st Century
Funding Entity: TAMU X-Grant Seed Funding program
Principal Investigator: Wendy Jepson, Department of Geography
Co-Investigators: J. Tracy, K. Portney (Bush School of Public Policy), G. Eckstein (School of Law), M. Holtzapple (Department of Chemical Engineering).
Status: Funded 9/1/2018 – 8/31/2020, \$1,450,000

Title: Identifying and Assessing the Condition of Transboundary Aquifers between Texas and Mexico
Funding Agency: USGS
Principal Investigator: John C. Tracy
Co-Investigators: Zhuping Sheng (TAMU), Rosario Sanchez (TAM AgriLife Research-TWRI)
Status: Funded 9/1/2017 – 9/30/2022, \$835,000

Title: Texas' FY 2017 Annual Application under section 104 of the Water Resources Research Act
Funding Agency: USGS
Principal Investigator: John C. Tracy
Co-Investigators: Multiple, Multiple Universities
Status: Funded 3/1/2016 – 2/28/2018, \$184,650

Title: Diversifying the Water Portfolio for Agriculture in the Rio Grande Basin
Funding Agency: USDA - NIFA
Principal Investigator: John C. Tracy
Co-Investigators: Multiple Co-PIs, TAMU and New Mexico State University
Status: Funded 5/1/2017 – 4/30/2021, \$5,000,000

Previous Research Projects:

Title: Identifying and Assessing the Condition of Transboundary Aquifers between Texas and Mexico
Funding Agency: USGS
Principal Investigator: John C. Tracy
Co-Investigators: Zhuping Sheng (TAMU), Rosario Sanchez (TAM AgriLife Research-TWRI)
Status: Funded 8/1/2016 – 9/30/2017, \$167,000

Title: 2015 Workshop on Remote Sensing of Evapotranspiration Applications
Funding Agency: NASA
Principal Investigator: John C. Tracy
Co-Investigators: None
Status: Completed 7/1/2015-2/28/2016 (\$34,975)

Title: EPSCoR RII Track 1: Managing Idaho's Landscapes for Ecosystem Services
Funding Agency: NSF
Principal Investigator: Peter Goodwin (University of Idaho)

Engagement and Outreach Lead: J. Tracy
Status: Funded 1/1/2014-9/30/2018 (\$20,000,000)

Title: IGERT: Adaptation to change in water resources: science to inform decision-making across disciplines, cultures and scales

Funding Agency: NSF

Principal Investigator: Jan Boll (University of Idaho)

Co-Investigators: J. Tracy, T. Link, M. Shrestha, B. Kennedy (University of Idaho)

Status: Funded 1/1/2014-9/30/2018 (\$3,100,000)

Title: USGS 104B Grant Management

Funding Agency: US Geological Survey

Principal Investigator: John C. Tracy

Co-Investigators: Multiple faculty from Idaho's Universities

Status: Funded 3/1/05 – 2/28/2016 (~\$92,000/yr)

Title: IDWR Database Design and Programming

Funding Agency: Idaho Department of Water Resources

Principal Investigator: John C. Tracy

Co-Investigators: None

Status: Funded 4/15/13-12/31/14 (\$75,409)

Title: Investigating the Impact of River Regulation on Groundwater Supplies in the Western United States.

Funding Agency: US Bureau of Reclamation, Science and Technology Office

Principal Investigator: John C. Tracy

Co-Investigator: J. Johnson (US Bureau of Reclamation, Pacific Northwest Region)

Status: Funded 01/01/2013-9/30/2014 (\$75,000)

Title: Water Management Responses to Global Climate Change Using Coupled Hydrologic and Economic Models

Funding Agency: US Bureau of Reclamation, Pacific Northwest Regional Office

Principal Investigator: John C. Tracy

Co-Investigators: RD Schmidt (University of Idaho), Garth Taylor (University of Idaho)

Status: Funded 5/1/09-9/30/14 (\$305,000)

Title: 2012 Workshop on Remote Sensing of Evapotranspiration Applications

Funding Agency: NASA

Principal Investigator: John C. Tracy

Co-Investigators: None

Status: Completed 9/1/12-2/28/13 (\$28,979)

Title: 2011 Workshop on Remote Sensing of Evapotranspiration Applications

Funding Agency: NASA

Principal Investigator: John C. Tracy

Co-Investigators: None

Status: Completed 9/1/11-8/31/12 (\$29,300)

Title: Lower Boise River Water Quality and Natural Resources Management

Funding Agency: Battelle Energy Alliance/Idaho National Laboratory

Principal Investigator: John C. Tracy

Co-Investigators: None

Status: Completed 10/1/11-8/31/11 (~\$24,000)

Title: IDWR Database Design and Programming
Funding Agency: Idaho Department of Water Resources
Principal Investigator: John C. Tracy
Co-Investigators: None
Status: Completed 1/1/08-12/31/11 (~\$69,000/year)

Title: INRA Advisory Committee
Funding Agency: INRA Pass through funding from the US DOE
Principal Investigator: John C. Tracy
Status: Completed 5/1/05 - 6/30/07 (~\$15,000/yr)

Title: Development of a in Integrated Land and Water Use Planning Tool for the Carson River Watershed:
Phase I Development of a Planning Platform and Water Resources Assessment
Funding Agency: US BLM, Carson City District
Principal Investigator: John C. Tracy
Status: Completed 5/1/05 – 9/30/06 (\$80,000)

Title: Implementation of Adaptive Management within the Lake Tahoe Basin
Funding Agency: Tahoe Regional Planning Agency
Principal Investigator: John C. Tracy
Status: Completed 4/1/04 (Total - \$240,000, DRI - \$70,000)

Title: Development of an International Center for Environmental Sustainability
Funding Agency: US Department of Energy
Principal Investigator: John C. Tracy
Status: Completed 10/1/03 – 3/31/05 (DRI - \$240,000)

Title: Northern Great Plains Prairie Pothole Wetlands
Funding Agency: USGS, Biological Resources Division
Principal Investigators: G. Guttensperg (USGS-BRD), W. C. Johnson (SDSU)
Status: Funded 4/1/99 through 3/31/04 (Total - \$750,000, DRI - \$85,000)

Title: Technical Support Developing a Programmatic EIS for Water Rights Purchases within the Walker
River Basin
Funding Agency: US Bureau of Reclamation, Carson City District
Principal Investigator: J. Tracy
Status: Completed 11/1/99 – 6/30/02 \$390,000

Title: Fisheries Habitat Assessment for TRPA's Threshold Streams
Funding Agency: Tahoe Regional Planning Agency and Nevada Division of Wildlife
Principal Investigator: J. Tracy
Status: Completed 1/1/00 – 6/30/02 \$70,000

Title: Development of a Prototype System Dynamics Based Decision Support System to aid in
Integrated Watershed Planning for the Lake Tahoe Watershed.
Funding Agency: Tahoe Regional Planning Agency and USGS
Principal Investigators: R. Bernknopf (USGS, Menlo Park), J. Tracy
Status: Completed 4/1/99 through 6/30/02 (DRI - \$24,000)

Title: Preliminary EIS for Restoration of Stream Flows to Walker Lake
Funding Agency: US BOR (Carson City District)

Principal Investigator: J. Tracy
Status: Completed 10/1/99 through 6/30/00 (Total - \$140,000, DRI - \$40,000)

Title: Water Banking on the Walker River
Funding Agency: US Bureau of Reclamation (Carson City District)
Principal Investigator: R. Narayanan (UNR)
Status: Completed 1/1/98 through 6/30/00 (Total - \$250,000, DRI - \$124,000)

Title: Nevada Test and Training Range - Integrated Natural Resource Management Plan
Funding Agency: US DOD, Air Force
Principal Investigator: G. Cochran (DRI)
Status: Completed 1/1/00 - 9/30/00 (DRI - \$500,000)

Title: Peer Review of PCB Fate and Transport Models for the Fox River
Funding Agency: American Geological Institute
Principal Investigator: J. Tracy
Status: Completed 12/1/99 - 6/30/00 (Total - \$200,000, DRI - \$43,000)

Title: Numerical Assessment of Hydrogeomorphic Wetland Functions
Funding Agency: US Army Corps of Engineers, WES
Principal Investigator: G. Pohl (DRI)
Status: Completed 9/1/98 through 4/30/00 (\$95,000)

Title: Evaluation of the Effectiveness of the Individual Parcel Evaluation System for Controlling
Sediment Loads in Lake Tahoe Tributaries
Funding Agency: Tahoe Regional Planning Agency
Principal Investigator: J. Tracy
Status: Completed 12/1/99 - 2/28/00 (DRI - \$17,000)

Title: Lake Tahoe Watershed Assessment (A Systems Approach to Integration and Simulation of the
Conditions in the Lake Tahoe Watershed)
Funding Agency: US Forest Service (LTBMU)
Principal Investigator: D. Murphy (Univ. of Nevada, Reno)
Status: Completed 9/1/98 through 12/31/99 (Total - \$1,600,000, DRI - \$100,000)

Title: Assessment of Flooding Impacts to the Army Guard Facility in Henderson, Nevada due to the
Development of Black Hill
Funding Agency: State of Nevada, Department of the Military
Principal Investigator: J. Tracy
Status: Completed 9/30/98 (DRI - \$26,533)

Title: A Preliminary Assessment of the Potential for Water Banking to Restore Flows to Walker Lake
Funding Agency: US Bureau of Reclamation, Carson City District
Principal Investigator: R. Narayanan (UNR)
Status: Completed 10/14/99 (Total - \$125,000, DRI - \$64,000)

Title: Fate and Transport of Heavy Metals and Radionuclides in Soil: The Impacts of Vegetation
Funding Agency: US EPA Regions 7 and 8 Hazardous Substances Research Center.
Principal Investigator: A. P. Schwab, (KSU)
Status: Completed 5/17/98 (Total - \$411,546, SDSU - \$15,000)

Title: Development of a Systematic Methodology for Optimally Designing Vegetative Systems for Remediating Contaminated Soil and Ground Water
Funding Agency: US EPA Regions 7 and 8 Hazardous Substances Research Center.
Principal Investigator: J. Tracy
Status: Completed 5/17/98 (SDSU - \$165,961)

Title: Use of C2 to C10 Organic Acids to Enhance Bioremediation of DNAPL Contaminated Aquifers
Funding Agency: US EPA Regions 7 and 8 Hazardous Substances Research Center.
Principal Investigator: S. Gibson (SDSU)
Status: Completed 5/17/97 (SDSU - \$187,500)

Title: Evaluation of the Feature Design Memorandums for the Modified Water Deliveries to Everglades National Park Project.
Funding Agency: National Park Service, Department of the Interior
Principal Investigator: J. Tracy
Status: Completed 12/31/95 (SDSU - \$42,977)

Title: Evaluation of the Meteorological Data Collection Network within the South Florida Water Management District
Funding Agency: South Florida Water Management District, through the NPS
Principal Investigator: T. Van Lent (SDSU)
Status: Completed 10/31/94 (SDSU - \$64,050)

Title: Optimal Control of Well Pumpage for Short Term Mitigation of Contaminated Ground Water Supplies
Funding Agencies: State Water Resources Institute, USGS Section 104 Grants.
Principal Investigator: J. Tracy
Status: Completed 4/30/94 (SDSU - \$24,000)

Title: Modeling of the Use of Plants in the Remediation of Soil and Groundwater Contaminated by Hazardous Organic Substances.
Funding Agency: US EPA Regions 7 and 8 HSRC
Principal Investigator: J. Tracy
Status: Completed 5/17/94 (KSU - \$295,384)

Title: Administration of water rights in basins with interconnected surface and ground water supplies.
Funding Agency: Kansas Water Resources Research Institute, USGS.
Principal Investigator: J. Tracy
Status: Completed 3/31/93 (KSU - \$42,000)

Title: Modeling of the Uptake of Hazardous Organic Chemicals by a Crop's Roots.
Funding Agency: Kansas Agricultural Experiment Station.
Principal Investigator: J. Tracy
Status: Completed 8/16/92 (KSU - \$6,000)

Title: A Model for the Management of Water Rights in Basins with Interconnected Surface and Ground Water Supplies.
Funding Agency: Kansas Water Resources Research Institute, USGS.
Principal Investigator: J. Tracy
Status: Completed 3/31/92 (KSU - \$43,242)

Honors

- Outstanding Research Oriented Journal Paper Award, Journal of Irrigation and Drainage Engineering, ASCE, for "Movement of solutes in a root-soil environment," August, 1989, 115(4), 608-625.
- 1991 Chi Epsilon Teaching Excellence Award, Kansas State Chapter
- 1992 finalist for the College of Engineering Hollis Award for Excellence in Undergraduate Teaching.
- Young Civil Engineer of the Year Award for 1993, American Society of Civil Engineers, Eastern Branch of South Dakota Section.
- South Dakota State University Department of Civil and Environmental Engineering Royal Shaft Award, 1994.

Professional Service Activities

Professional Society and Advisory Committee Service

- Board Member, American Water Resources Association, 2012 – 2016.
- President Elect, President, Past President American Water Resources Association, 2014, 2015, 2016.
- AWRA Representative to the 7th World Water Forum in South Korea, April 2015.
- Board Member, National Institutes for Water Resources, 2009-Present.
- Executive Secretary/Treasurer, National Institutes for Water Resources, 2011-Present..
- President Elect, President, Past-President University Council on Water Resources, 2006-2009.
- Board Member, University Council on Water Resources, 2003-2009.
- Science and Research representative on the Lake Tahoe Federal Advisory Committee and Tahoe Working Group, 2004 - 2006.
- Science Advisory Board Member, Midwestern Hazardous Substances Research Center, USEPA, Purdue University, 2002-2005.
- Board Member, International Arid Lands Consortium, 2001-2004.
- Board Member, Nevada Water Resources Association, 2001-2003.
- Co-Chair and founding member of the Tahoe Science Advisory Group, Organized by the Tahoe Regional Planning Agency, 1999 – 2004.
- Research and Demonstration Advisory Committee Member, International Arid Lands Consortium, 1998 – 2001.
- Associate Editor of ASCE Journal of Irrigation & Drainage, in charge of Ground Water Papers, January 1992 through December 1995.
- Eastern South Dakota ASCE Branch Vice-President, October 1993 to September 1994.
- Eastern South Dakota ASCE Branch President, October 1994 to September 1996.
- Member of the Water Resources Systems committee in the Water Resources Planning and Management Division of the American Society of Civil Engineers, 1989-2005.

Conference Planning Activities

- Planning Committee Chair, AWRA Specialty Conference, The Science, Management and Governance of Transboundary Groundwater, July 2018, Fort Worth, TX.
- Coordinator for Main Focus Area 1 – Water Efficiency, 7th World Water Forum, Daegu, South Korea, April, 2015.
- Planning Committee Chair, AWRA Specialty Conference, Integrated Water Resources Management, July 2014, Reno, NV.
- Technical Planning Committee, AWRA Annual Conference, November 3-7, 2013, Portland, OR.
- Technical Planning Committee, Idaho Flood Plain Managers Conference, November 14 & 15, 2013, Boise, ID.
- Planning Committee, 2012 Workshop on Remote Sensing of Evapotranspiration Applications, October 24 & 25, Boise, ID

- Planning Committee, 2011 Workshop on Remote Sensing of Evapotranspiration Applications, October 4 & 5, Boise, ID
- Technical Planning Committee for the AWRA Specialty Conference, Adaptive Management of Water Resources II, June 29 – July 1, 2009, Park City, Utah.
- Planning Committee Chair, University of Idaho President’s Sustainability Symposium on Sustainable Water Resources Infrastructure, October 20 and 21, 2008, Boise, ID.
- Program Co-Chair, University Council on Water Resources Annual Conference, Water Resource Hazards, July 24-26, 2007, Boise, ID.
- Program Chair, Idaho Water Resources Research Symposia, November 28-29, 2006, Boise, ID.
- Technical Planning Committee for the AWRA Specialty Conference, Adaptive Management of Water Resources, June 26-28, 2006, Missoula, MT.
- Member, Lake Tahoe Science Symposium Planning Committee, 2nd Symposium.
- Technical Planning Committee for the AWRA Annual Spring Conference, Water Quality Monitoring and Modeling, April 30 – May 2, 2001. San Antonio, TX.
- Conference Planning Committee for Nevada Water Resources Association Annual Conference, “2001 – A Water Odyssey,” February 8-9, 2001, Reno, NV.

Professional reviews and National Review Panels

- *Journal of Irrigation and Drainage Engineering*, ASCE
- *Journal of the Water Resources Planning and Management*, ASCE
- *Journal of Environmental Engineering*, ASCE
- *Journal of Hydrology*, Elsevier
- *Water Resources Research*, American Geophysical Union
- *Journal of Environmental Quality*
- *A Practical Guide to Groundwater and Solute Transport Modeling*, Spitz and Moreno, Wiley Interscience Publ.
- *Modeling for Managerial Decision Making*, Mandal and Mohapatr, ASCE Press.
- US EPA Review Panel for the International Ground Water Modeling Center, Golden Colorado, 1993.
- Electric Power Research Institute Review Panel for the Watershed Analysis Risk Management Framework, chaired by Dr. A. Keller, UC Santa Barbara, 1999-2000.
- NIFA-AFRI Review Panel, September 2010

Courses Developed and Taught

- Hydraulics of Open Channels (Graduate Level)
- Analysis of Ground Water Flow (Graduate Level)
- Ground Water Modeling (Graduate Level)
- Advanced Finite Element Analysis (Graduate Level)
- Water Resources Systems Analysis (Graduate Level)
- Quantitative Hydrology (Graduate Level)
- Water Resources Engineering (Undergraduate/Graduate Level)
- Computer Applications in Civil Engineering (Undergraduate Level)
- Hydraulic Engineering (Undergraduate Level)
- Hydrologic Methods Laboratory (Undergraduate Level)
- Quantitative Hydrology
- Field Methods in Hydrology (Graduate Level)
- Interdisciplinary Methods in Water Resources (Graduate Level)

Professional Society Affiliations

American Water Resources Association
American Geophysical Union
Registered Professional Engineer, Kansas Registration #12110.
Certified Environmental Manager, Nevada EM-1631
National Institutes of Water Resources
Geologic Society of America
University Council on Water Resources

Graduate Students Supervised

Student:	Munjed Al-Sharif	Degree:	Ph.D. May 1993, KSU
Thesis Title:	Development of a Basin Scale Model for a Hydraulically Connected Surface Water-Ground Water System.		
Student:	John Brummer	Degree:	M.S. August 1993, KSU
Thesis Title:	Estimation of the Hydraulic Flow Parameters at the Riley County Landfill.		
Student:	Surendra Ajjarapu	Degree:	M.S. December 1994, SDSU
Report Title:	Contaminant Transport Model Using Stream Lines.		
Student:	Karvnakar Asireddy	Degree:	M.S. December 1994, SDSU
Report Title:	A Review of Dispersion in Ground Water.		
Student:	Uma Atluri	Degree:	M.S. December 1994, SDSU
Report Title:	Spatial Variation of Selenium in the Lake Andes Wagner Project Area.		
Student:	Pannala Reddy	Degree:	M.S. December 1994, SDSU
Report Title:	Evaluation of a Ground Water Monitoring System.		
Student:	Harsha RamiReddy	Degree:	M.S. August 1994, SDSU
Report Title:	Effects of Climatological Variability on the Performance of Vegetative Systems in Remediating Contaminated Soil.		
Student:	Sudhanva Nemirajaiah	Degree:	M.S. August 1995, SDSU
Report Title:	Groundwater Contamination Capture and Containment using Pump and Treat Remediation Systems.		
Student:	Nagaraj Abbiah Reddy	Degree:	M.S. August 1995, SDSU
Report Title:	Solid Waste Disposal Site Selection using Digital Geographic Information System Techniques.		
Student:	Suresh Kamaiah	Degree:	M.S. August 1995, SDSU
Report Title:	Geographic Information Systems Techniques for Developing Model Parameters for the Agricultural Non-Point Source Pollution Model.		
Student:	Joy Cordier	Degree:	M.S. December 1997, SDSU
Thesis Title:	Simulation of Non-Point Source Pollution of an Agricultural Watershed using AGNPS.		
Student:	Jule Humberstone	Degree:	M.S. August 1999, UNR-DRI

Thesis Title: Walker River Basin Water Quality Modeling

Student: Stacy Langsdale Degree: M.S. May 2001, UNR-DRI

Thesis Title: A Systems Approach to Modeling the Walker River Basin in Nevada

Student: Andy Rost Degree: M.S. May 2003, UNR-DRI

Thesis Title: Prediction of hydrologic characteristics in ungaged watersheds

Student: Kurt Unger Degree: M.S. December 2003, UNR-DRI

Thesis Title: History and Effects of Carson and Walker River Basin Water Law and Possibilities for Reformation via the Public Trust Doctrine

Degree: Ph.D. August 2006, UNR-DRI

Dissertation Title: A Holistic Approach to Balancing Growth, Agriculture and the Environment in the Upper Carson River Basin

Student: Randy Kyes Degree: M.S. May 2014, UI

Report Title: An assessment of spring conditions and threats in the Mojave Desert Region

Student: Gerald Sehlke Degree: Ph.D. May 2016, UI

Dissertation Topic: A Conceptual Framework for Developing and Implementing Integrated Water Resources Management Programs in the United States.

Student: Patrick Johnson Degree: M.S./J.D. August 2016, UI

Thesis Topic: Assessing the impacts of flood management on hydroservices provided in the Columbia River basin.

Student: Jennifer Johnson Degree: Ph.D. December 2016, UI

Dissertation Topic: Evaluating Future Agricultural Water Needs using Integrated Modeling Methods.