

JAYNE F. KNOTT

a. Professional Preparation

- University of New Hampshire, Durham, NH; Ph.D. in Civil and Environmental Engineering, 2019
- Massachusetts Institute of Technology, Cambridge, MA; M.S. in Civil and Environmental Engineering, 1981
- Mount Holyoke College, South Hadley, MA; B.A. in Geology and Physics, Magna cum laude, 1978

b. Awards and Honors

- UNH Civil and Environmental Engineering Summer Graduate Fellowship (2018)
- Bennett Prize for excellence in physics (1978)
- Woods Hole Oceanographic Institute Summer Student Fellowship (1977)
- Phi Beta Kappa (1974)

c. Professional History

- JFK Environmental Services LLC – Owner/Principal (2008-present)
- University of Massachusetts Boston – Research Associate (2019-present)
- University of New Hampshire – Research Scientist (2019-present)
- University of New Hampshire - Research Assistant in the Department of Civil and Environmental Engineering (2015-2017)
- Independent Environmental Consultant – Jayne F. Knott (1986-2008)
- Environmental Research and Technology, Inc. (now AECOM) (1983-1985)
- U.S. Geological Survey (1981-1983)
- GCA Corporation (1981)
- Massachusetts Institute of Technology/Woods Hole Oceanographic Institute – Research Assistant (1978-1981)

d. Publications

- Knott, J.F., Jacobs, J.M., Sias, J.E., Kirshen P., Dave, E.V., 2019. A Framework for Introducing Climate-Change Adaptation in Pavement Management. *Sustainability* 2019, 11, 4382. <https://doi.org/10.3390/su11164382>.
- Knott, J.F., 2019. Climate Adaptation for Coastal Road Infrastructure in the Northeast. Doctoral Dissertation, University of New Hampshire, Department of Civil and Environmental Engineering. May 2019.
- Knott, J.F., Sias, J.E., Dave, E.V., 2019. Seasonal and Long-Term Changes to Pavement Life Caused by Rising Temperatures from Climate Change. *Transportation Research Record: Journal of the Transportation Research Board*, 2673(6), pp. 267-278. <https://journals.sagepub.com/doi/10.1177/0361198119844249>
- Knott, J. F., Daniel, J.S., Jacobs, J., Kirshen, P., 2018. Modeling Groundwater Rise Caused by Sea-Level Rise in Coastal New Hampshire. *Journal of Coastal Research*, 35(1), pp.143-157. <http://www.jcronline.org/doi/abs/10.2112/JCOASTRES-D-17-00153.1>
- Knott, J. F., Daniel, J.S., Jacobs, J., Kirshen, P., 2018. Adaptation Planning to Mitigate Coastal Road Pavement Damage from Groundwater Rise Caused by Seal-Level Rise. *Transportation Research Record: Journal of the Transportation Research Board*, 2672 (2). <https://doi.org/10.1177/0361198118757441>
- Jacobs, J., Knott, J., Durfee, E., Mack, R., and Pimental, K., 2017. Sea-Level Rise Impacts on Drinking Water – A Groundwater Modeling Study in Newmarket, NH. Strafford Regional

Planning Commission, Rochester, NH.

http://www.strafford.org/cmsAdmin/uploads/final_groundwater-modeling-report_001.pdf

- Knott, J. F., Elshaer, M., Daniel, J.S., Jacobs, J., Kirshen, P., 2017. Assessing the effect of rising groundwater from sea-level rise on the service life of pavements in coastal road infrastructure. *Transportation Research Record: Journal of the Transportation Research Board*, No. 2639, pp. 1-10. <https://trrjournalonline.trb.org/doi/abs/10.3141/2639-01>.
- Hemond, H., Nuttle, W.K., Nichols, E. Chen, D., Stolzenbach, K., Schaefer, M., and Knott, J., 1987. Hydrological Technology for Freshwater Wetlands. *In: Laderman, A.D. (ed.) Atlantic White Cedar Wetlands*. Westview Press, Boulder.
- Knott, J. F., Nuttle, W.K., and Hemond, H.F., 1987. Hydrologic parameters of salt marsh peat. *Hydrological Processes*, vol.1, no. 2.
- Knott, J. F., and Olimpio, J.C. 1986. Estimation of recharge rates to the sand and gravel aquifer using environmental tritium, Nantucket, Massachusetts, *U.S. Geological Survey – Water Supply Paper 2297*.
- Knott, J. F., 1984. Design of a low-cost multilevel groundwater Sampler. *U.S. Geological Survey – Water Resources Bulletin*.
- Hemond, H.F. and Fifield, J.L., 1982. Subsurface flow in salt marsh peat: A model and field study. *Limnology and Oceanography*, vol. 27, no.1, pp. 126-136.
- Fifield, J. L., 1981. Peat hydrology in two New England salt marshes: a field and model study. M. S. Thesis, Massachusetts Institute of Technology, Cambridge, MA.

e. Recent Presentations

- A Framework for Introducing Climate-Change Adaptation in Pavement Management. Presented at Transportation Resilience 2019-An International Conference on Natural Hazards and Extreme Weather Events, Washington, D.C., November 13, 2019.
- Seasonal and Long-Term Changes to Pavement Life Caused by Rising Temperatures from Climate Change – presented at the Transportation Research Board 98th Annual Meeting, Washington, D.C., January 13-17, 2019.
- Sea-Level Rise Impacts on Drinking Water: A Groundwater Modeling Study in Newmarket, New Hampshire – presented at the NH Coastal Adaptation Working Group (NHCAW) Climate Summit, Greenland, NH, June 20, 2018
- Sea-Level Induced Groundwater Rise with Implications for Coastal Road Infrastructure – presented at the Transportation Research Board 97th Annual Meeting, Washington, D.C., January 7-11, 2018
- Adaptation Planning to Mitigate Coastal Road Pavement Damage from Groundwater Rise Caused by Sea-Level Rise – presented at the Transportation Research Board 97th Annual Meeting, Washington, D.C., January 7-11, 2018
- The Effects of Sea-Level Rise on Groundwater Levels in Coastal New Hampshire – presented at the Groundwater Protection Council Annual Forum, Boston, MA, September 27-29, 2017
- Assessing the Effects of Rising Groundwater from Sea-Level Rise on the Service Life of Pavements in Coastal Road Infrastructure – presented at the New York City Mayor’s Office of Recovery and Resiliency, April 25, 2017
- Assessing the Effects of Rising Groundwater from Sea-Level Rise on the Service Life of Pavements in Coastal Road Infrastructure – presented at the Transportation Research Board 96th Annual Meeting, Washington, D.C., January 8-12, 2017
- Modeling the Effects of Climate Change and Sea-Level Rise on Groundwater Levels with Implications for Road Infrastructure in Coastal New Hampshire - presented at the Maine

Sustainability and Water Conference in Augusta, ME, and the Water and Watershed Conference in Plymouth, NH, March 2016.

- Adaptation Planning to Minimize Damage to Road Infrastructure from Rising Groundwater Associated with Sea-Level Rise and Climate Change in Coastal New Hampshire - presented at the American Geophysical Union (AGU) Conference in San Francisco in December 2015.

f. Project Experience

- Developed a hybrid bottom-up/top-down approach to climate change adaptation for road infrastructure – This approach assesses the combined effect of seasonal and long-term climate-change induced temperature and groundwater level changes on pavement life. The approach uses asset-based and scenario-based performance analyses coupled with life-cycle cost analysis to produce stepwise and flexible adaptation plans for pavement design and management with climate change.
- Groundwater modeling for climate-change adaptation – Used USGS MODFLOW to investigate the effects of sea-level rise on groundwater levels in coastal NH. Created a groundwater-flow model using MODFLOW and SEAWAT to investigate sea-level rise impacts on groundwater levels and saltwater intrusion in New Hampshire coastal communities.
- Pavement modeling for climate-change adaptation – Coupled groundwater and pavement modeling to investigate coastal-road infrastructure vulnerability to sea-level rise induced groundwater rise and investigated adaptation alternatives.
- Groundwater fate and transport modeling - Used groundwater fate and transport modeling to evaluate remediation options at contaminated sites including Superfund sites.
- Hydrogeology expert reports for litigation - Conducted hydrogeological studies at contaminated sites to determine historical groundwater flow patterns, timing of release, and the effectiveness of cleanup options; prepared expert witness reports for litigation – These projects were in California, Massachusetts, Minnesota, Montana, New York, New Jersey, and Rhode Island.
- Water supply exploration and permitting - Project manager/engineer for aquifer exploration and the permitting of a new public drinking water source in Massachusetts
- Cleanup of contaminated sites - Project manager/engineer for the remediation of groundwater contamination at industrial sites, including observation and injection well installation, groundwater monitoring; in-situ chemical oxidation (ISCO), bioremediation, excavation, and pump and treat remediation technologies
- Groundwater research - Project manager of a USGS investigation to measure groundwater recharge: well installation; the design and use of multilevel groundwater samplers, geophysical techniques, water-quality sampling, data analysis, report preparation
- Wetlands - Designed and conducted a field and laboratory study of subsurface water flow in two New England salt marshes; adapted an analytical model for the simulation of groundwater flow in the salt marsh ecosystem

g. Affiliations

- 4th National Climate Assessment – Northeast Chapter Review Editor
- American Society of Adaptation Professionals
- American Geophysical Union
- Transportation Research Board
- NSF RCN SEES Infrastructure and Climate Network (ICNet)