Ruth E. Richardson, Associate Professor in Civil and Environment Engineering, obtained degrees in Chemical Engineering (B.S.) and Civil and Environmental Engineering (M.S. & Ph.D). The Richardson lab at Cornell studies microbial communities of relevance to important environmental engineering challenges including bioremediation of toxic groundwater contaminants, bioenergy, sustainable wastewater treatment, nutrient and greenhouse gas cycling, and pathogen detection. The Richardson lab toolkit includes various techniques in genomics (DNA), transcriptomics (RNA) and proteomics as well as modeling of community kinetics and gene networks. Common goals in lab projects involve development of diagnostic biomarkers for improved monitoring, and modeling of microbial community-controlled outcomes in bioreactors and impacted environmental settings. Dr. Richardson is also active in advising project teams ((ESW Biofuels and AguaClara's sustainable Wastewater treatment subteams) and is a strong supporter of undergraduate independent research. Outside of teaching, Dr. Richardson enjoys hiking and swimming in nature, team sports, and the strategy game Dominion.