

Summer 2018 Internship: Middlesex County Utilities Authority, NJ

Tom O'Donnell '19



MCUA

Middlesex County Utilities Authority

Middlesex County Utilities Authority (MCUA)

- Located in Sayreville, New Jersey
- Provide both solid and liquid waste management and treatment services, as well as many other health and environment-focused projects
- Founded by the county, so it's considered a local government entity
- Provides service to 800,000 people in the central NJ area



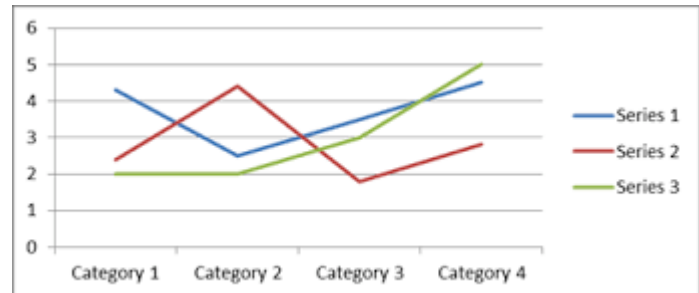
Internship information

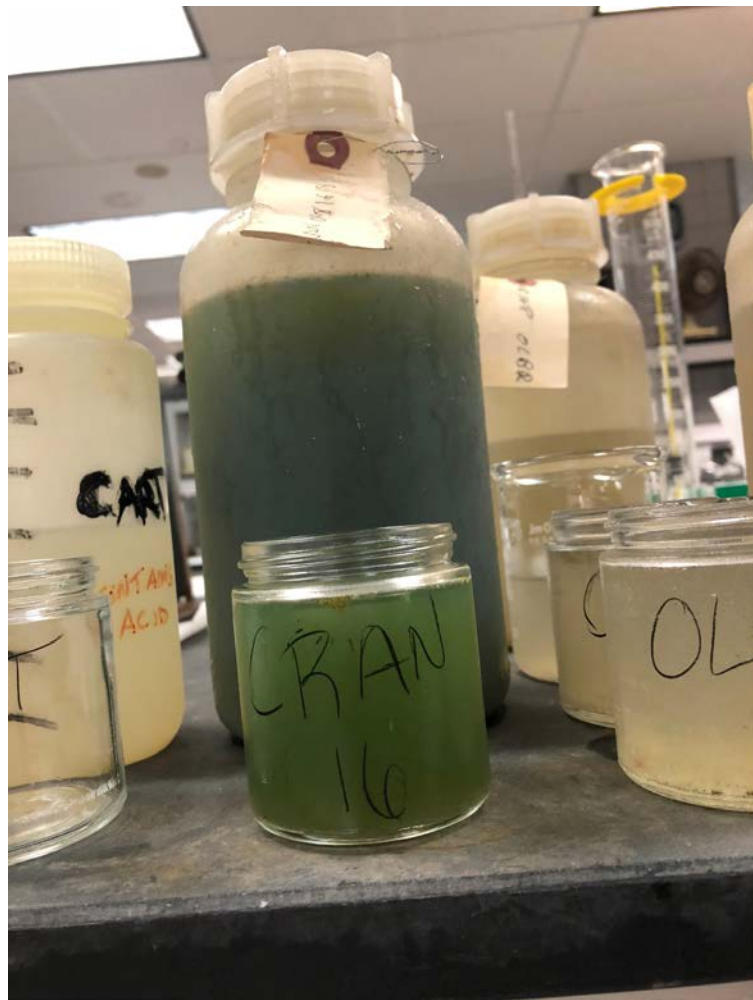
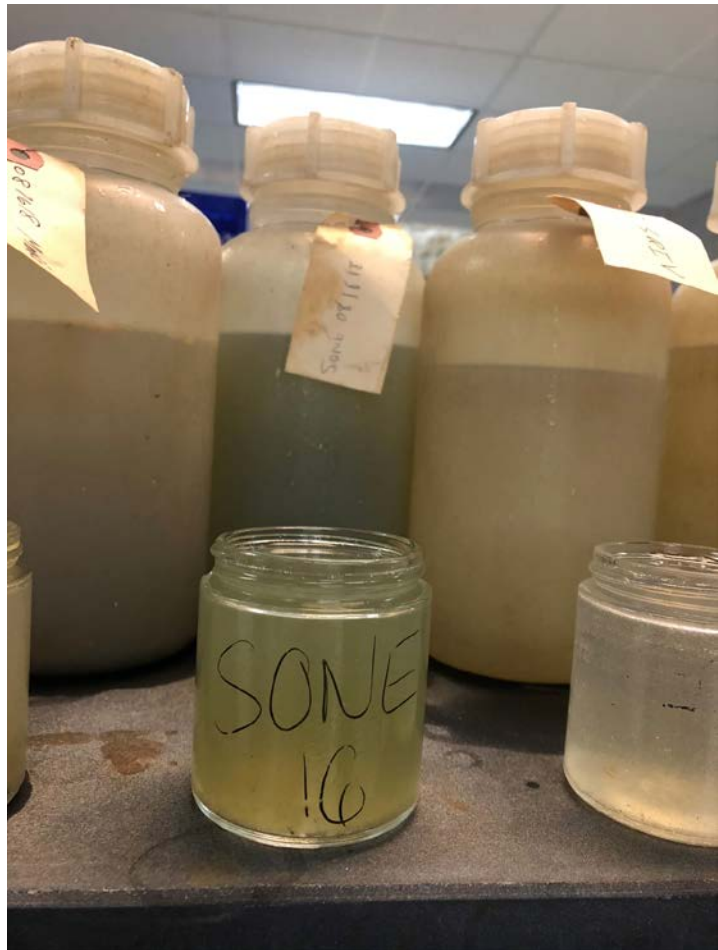
- I served as an intern in the laboratory of the Wastewater Division
- I worked under varying levels of authority: assistant lab technicians, lab technicians, a lab supervisor, and administrators
- Monday-Friday, 8:00 AM-4:00 PM
- Also registered with Dickinson's Internship Notation Program (INP)



What I did

- Performed various chemical and physical tests of water quality, and the results of these tests were used to calculate our municipal and industrial participants' bills for wastewater treatment
- Samples from over 80 different locations every day
- Also performed these same tests and additional tests on samples from within the plant to ensure plant operations were running smoothly
- Calculated running statistical analysis on the data month to month to ensure accurate and precise results

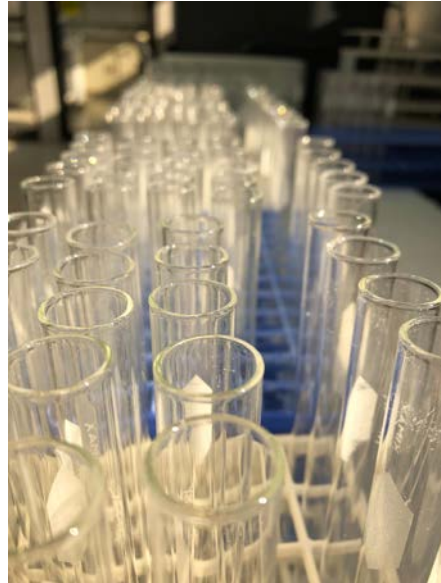




Water quality tests

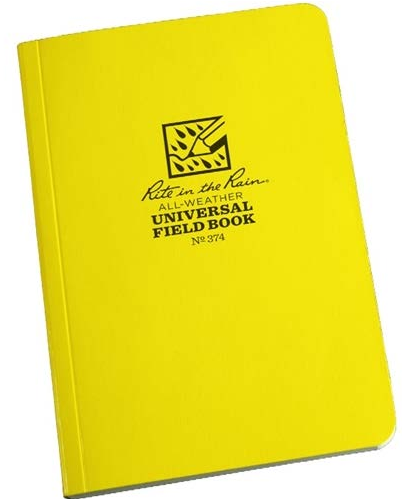
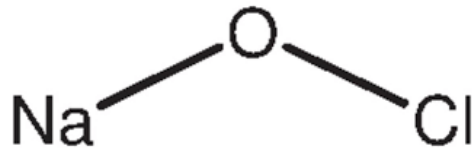
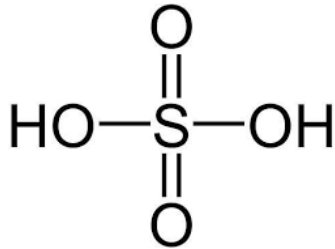
- Chlorine demand
- Biochemical oxygen demand (BOD)
- Total suspended solids (TSS)

- Volatiles (VOC)
- Chlorophyll a
- Metals



Skills required of me

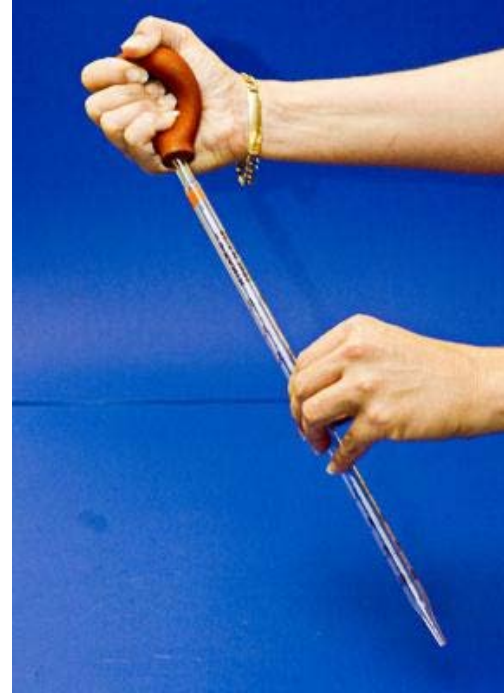
- Time management
- Confidence with Excel and basic statistics (mean, standard deviation, etc.)
- Knowledge of water chemistry, ecology, sedimentology, energy resources
- Writing in data logbooks -- very important!
- Spatial analysis (geography, GIS)
- Handling dangerous chemicals/reagents and biowaste
- Technical skills with general lab equipment
- Preparing reagents of specific normality (N)



Spectrophotometry



Volumetric pipets (annoying)



Mass and density analysis



Incinerators/furnaces for solids analysis

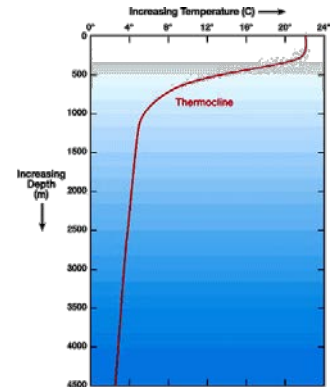


Titration apparatus



As an ERSC student

- Combined my academic coursework with my work at the Alliance for Aquatic Resource Monitoring (ALLARM) on campus
- Environmental Geoscience: Aquatics, Oceanography, Environmental Science, Geochemistry, Sedimentology and Stratigraphy, GIS
- Great networking with people in the environmental and earth science fields, but not in academia or part of a private company
- Grad school? Hydro(geo)logy, aquatic ecology, geochemistry...
- Opportunity for future employment



First day VS last day

