GRANT J. GOEDJEN

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EDUCATION

Ph.D. Civil Engineering **June 2023**
University of Minnesota (Anticipated)
Dissertation Title: "Evaluation of Select Insecticides in Minnesota's Hydrology & Hydrogeologic Systems: Environmental Occurrence, Fate, and Degradation of Neonicotinoid and Fipronil in Minnesota Natural and Engineered Treatment Processes"
Committee: William Arnold, Paul Capel, Melissa Wilson

M.Enve Environmental Engineering **May 2020**
Texas Tech University

B. S. Environmental Engineering **May 2020**
Texas Tech University

HONORS AND AWARDS

2022 Compost Research Scholarship **2022**
Compost Research & Education Foundation
Awarded for work pertaining to the degradation and leaching potential of neonicotinoid insecticides and fiproles in commercial and residential composting systems.

RESEARCH PROJECTS

Dissertation, University of Minnesota, Minneapolis, Mn **2023**
Advisor: William Arnold (Anticipated)

- Areas of active research include:
  - Occurrence of neonicotinoids and fiproles in Minnesota surface waters.
  - Occurrence of neonicotinoids and fiproles in Minnesota hydrogeology.
  - Fate & transport of neonicotinoids and fiproles in precipitation and runoff.
  - Fate, degradation, and leaching potential of neonicotinoids and fiproles in commercial and residential composting systems.
  - Fate of neonicotinoids and fiproles in drinking and wastewater treatment processes.
- Designed and conducted experimental methods for advanced detection of contaminants in surface and ground water systems.
- Coordinated sampling and QA/QC plans for intra-state sample collection with state, local, and university organizations.
- Coded statistical analysis and data visualization programs using R and Microsoft Excel.
- Managed project git repositories and oversaw data storage plans.
- Oversaw field investigations and sampling for surface, groundwater, drinking water treatment, wastewater treatment, and commercial composting operations.

- Aided in oversight and sampling plans for the Saint Paul Regional Water Service Pilot Drinking Water Treatment System.

Texas Tech University; United States Geological Survey, Lubbock Tx
Graduate Research Assistant, William Asquith & Theodore Cleveland

- Performed computational statistical hydrology developed regional hydrographs using HEC-SSP.
- Programmed statistical calculations of regional hydrograph skew factors in R.
- Evaluated site data for validity for statistical analysis.
- Maintained Git repository of collected data.

Texas Tech University Lubbock Texas
Graduate Research Assistant, Siva Vanapalli

- Developed preliminary toxicity screening assessment for the model organism C. *elegans*.
- Aided in the synthesis of biomicrofluidic systems using photolithography techniques.
- Researched effects of hexavalent chromium on C. *elegans*.
- Maintained cultures of C. *elegans* and E. *coli* in a BSL-2 wet laboratory.

Texas Tech University Lubbock Texas
Graduate Research Assistant, Audra Morse

- Studied the abilities of organo-selenium embedded tubing to inhibit urease to prevent the catalyzation of urea to ammonia in closed, long-term bioreactors for urine reclamation.
- Aided in the operation of a NASA bioreactor for urine reclamation for long-term space operations.
- Designed a structure to evaluate the standing flowrate of new membranes based on the constant head test.

TEACHING ASSISTANCE EXPERIENCE

University of Minnesota, Minneapolis Mn
Teaching Assistant, Department of Civil, Environmental, and Geo Engineering

- **CEGE 5541: *Environmental Water Chemistry*;** a graduate-levels environmental chemistry course averaging 45 students per semester covering: Basic Reactions, Kinetics, & Activity, Acid-Base Reactions, RedOx Reactions, Metal Complexation, Sorption, Mass Balance, Computational Chemistry in R and Minteq+, and Environmental Fate & Partitioning. Taught using a hybrid approach. **(Virtual Spring 2021, In-Person Fall 2022).**

- **CEGE 8504: *Theory of Unit Operations*;** a graduate-levels environmental engineering course averaging 40 students per semester covering: mass and energy balance, pH and RedOx chemistry, sorption, coagulation, flocculation, sedimentation, clarification, membrane and rapid filtration, disinfection, air treatment technologies, reaction kinetics and modeling, and reactor design. **(In-Person, Fall 2022).**

- Developed **CEGE 8490: *Data Quality***; a graduate-level analytical chemistry course, covering topics on: statistics, error propagation and uncertainty, Data processing in R, data validation, computational model validation in R, sensitivity analysis, LC-MS, LC-MS/MS, and HPLC worklist and QC development, Quality Assurance in field sampling, and data documentation **(Spring and Summer 2022).**

- **CEGE 3542/5542: Environmental Engineering Laboratory**; a graduate/undergraduate-level environmental engineering course averaging 18-students covering the following topics: statistical error and uncertainty, water quality, analytical techniques (Uv Vis, IC, GC, HPLC, LC-MS, GC-MS, LC-MS/MS), coagulation and flocculation, filtration, TCLP testing, and disinfection processes **(In-Person, Spring 2021).**

INDUSTRY EXPERIENCE

University of Minnesota, Minneapolis Mn **Sept 2020 – Present**
Research Assistant

- Managed and maintained analytical chemistry laboratory, including: HPLC, GCMS, LC-MS/MS.
- Aided in analytical method development and quantitative techniques for various research projects.
- Trained undergraduate students, graduate students, and postdoctoral scholars on LC-MS/MS, HPLC, GCMS, and computation modeling and statistics in R.
- Collaborated research in civil and environmental engineering, public health, and the School of Medicine.
- Safety manager / primary contact for three wet laboratories.

Harkins Engineering, Remote **Aug 2020 – May 2022**
Staff Engineer/EIT

- Tele-design and collaboration in water resources and water / wastewater engineering. Drafting in MicroStation v8i and AutoCAD Civil 3d.
- Residential and commercial water resource design & development.
- GIS support and drafting in ArcGIS suite and QGIS.

Texas Department of Transportation, Lubbock Tx **Feb 2019 – Aug 2020**
Student Engineer / EIT, District Design Office

- Drafting, analysis, and design in Bentley MicroStation, Openroads, SignCAD, ArcGIS suite, and Microsoft Excel.
- Removal of organic contaminants by pre-oxidation and biofiltration in a pilot-scale drinking water treatment plant
- Hydraulic modeling and design in HEC-RAS, HY-8, HydroCAD, and HEC-HMS.
- Presentation of proposed design and materials in public town hall meetings.
- Monitoring, design, and inspection field operations.
- Environmental protection, EPIC, and SW3P design, implementation, oversight, and documentation.
- Training of engineering and design staff on operation of modeling software and ArcGIS.

Parkhill, Smith, & Cooper, Lubbock Tx **April 2018 – Feb 2019**
Student Engineer, Department of Hydraulics and Hydrology

- Hydraulic systems design using ICPR, SWMM, HEC-HMS, HEC-RAS.
- 2D and 3D design, surface development, manipulation, and drafting in AutoCAD, AutoCAD Civil 3D.
- Automation of hydrologic calculations using Excel VBA.

LICENSES AND CERTIFICATIONS

Texas: Engineer in Training, **EIT No. 71799**

Minnesota: Engineer in Training, **EIT No. 160572**

PUBLICATIONS

Journal Publications (In Progress)

Goedjen, G., Berens, M., Capel, P., and Arnold, W. "Watershed-level Factors Influencing the Occurrence of Neonicotinoid and Fipronil Insecticides in Midwest Surface Waters", *In Progress.*

Goedjen, G., Berens, M., Capel, P., and Arnold, W. "Comparative Occurrence of Neonicotinoids and Fiproles in Minnesota Hydrogeologic Systems.", *In Progress.*

Berg, S., Goedjen, G., and Arnold, W. "Removal of organic contaminants by pre-oxidation and biofiltration in a pilot-scale drinking water treatment plant", *In Progress.*

PRESENTATIONS AND INVITED LECTURES

Poster Presentation, "Evaluation of Neonicotinoid and Fipronil Insecticides in Minnesota's Drinking and Wastewater Treatment Plants", *Gordon Research Conference: Environmental Science: Waters*, June 19-22

Poster Presentation, "Evaluation of Neonicotinoid and Fipronil Insecticides in Minnesota's Drinking and Wastewater Treatment Plants", *Gordon Research Series: Environmental Science: Waters*, Holderness, NH. June 17-18.

Oral Presentation, "Pesticides in Minnesota's Surface and Groundwater: Neonicotinoids, Fipronil, and Key Transformation Products.", *American Chemical Society: Spring 2022.* San Diego, CA. March 22-24.

Oral Presentation (Virtual), "Neonicotinoids Insecticides in Minnesota Surface and Groundwater: Occurrence, Trends, and Future Work", *American Chemical Society: Spring 2021.* Virtual. April 5-16.

PROFESSIONAL AFFILIATIONS

- **American Society of Chemistry,** *Member, Speaker*
- **Twin Cities R User Group***, Member*
- **American Society of Civil Engineers**, *Member*
- **Society of Environmental Professionals**, *President, Member*
- **TTU NASA Rasc-Al,** *LaTeX Control & Editor*
- **TTU WEAT Design Team**, *Design Engineer*
- **Texas Society of Professional Engineers,** *Member*

PROFESSIONAL SERVICE

Peer-Reviewed Articles for:
- Environmental Science & Technology
- Aquatic Toxicology
- Water Environmental Research

Academic Mentoring Programs
- TTU College of Engineering LYFE, *Environmental Engineer Mentor*
- Men of STEM Learning Community, *Engineering Mentor and Advisor*

COMPUTER SKILLS

Programming Languages: R, Python, MatLab, Git, SQL, LaTeX typesetting, CSS, HTML, Excel VBA

CAD and GIS Applications: MicroStation Suite, Openroads Suite, AutoCAD Suite, AutoCAD Civil 3D, ArcGIS Pro Suite, QGIS.

Modeling Applications: ICPR, HY-8, HEC-HMS, HEC-RAS, EPA-NET, EPA SWMM, EQC, ACE, GW Vistas, MODFLOW, HydroCAD, InfraWorks, Minteq+

REFERENCES

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