

MARIA T. AMAYA

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EDUCATION

The Ohio State University (OSU), Columbus, OH

B.S. in Environmental Engineering, May 2017

Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA

Ph.D. in Civil Engineering, Environment & Water Resources, May 2022

Fellowships/Scholarships:

OSU: Taylor Engineering Scholarship, Townsend Memorial Scholarship, Trustees Scholarship, American Electric Power Educational Trust Scholarship, Waddell Scholarship, Research Scholar Award

Virginia Tech: Via Doctoral Fellowship, New Horizons Graduate Scholarship, Multicultural Academic Opportunities Scholarship

Education Abroad:

Sustaining Human Societies and the Environment – Queensland, Australia, May 2016

GPA:

Undergraduate Studies: 3.92 (4.0 scale), **Latin Honors:** Summa Cum Laude

Doctoral Studies: 3.76 (4.0 scale), **Dissertation Progress:** Complete

Certification: Engineer in Training (EIT), Ohio, May 2017

UNDERGRADUATE RESEARCH EXPERIENCE

1. Coal Combustion Residual Utilization in Acid Mine Drainage (AMD) Neutralization

- Assisted with the running of Bench-Scale Tests
- Calibrated geotechnical analytical models with Bench-Scale Tests results using SEEP/W software
- Created geotechnical design models for full-scale AMD Remediation Application using SEEP/W, SLOPE/W, and SIGMA/W computer software

Publications:

Cheng, C., **Amaya, M.**, Butalia, T., Baker, R., Walker, H., Massey-Norton, J., & Wolfe, W. (2016). Short-term influence of coal mine reclamation using coal combustion residues on groundwater quality. *Science of the Total Environment*, 571, 834-854. doi:10.1016/j.scitotenv.2016.07.061

Sponsor: Ohio Coal Development Office

Advisor: Dr. Tarunjit Butalia, PhD, PE

2. Utilization of Chinese Coal Combustion Byproducts for Stabilization of Weak Soils

- Performed geotechnical tests on varying mixtures of soil and FGD byproduct to determine the optimum performance and stabilization achieved with the amended soil

Publications:

Butalia, T., **Amaya, M.**, Amin, M., Cheng, C., Lu, M., Chen, Y., . . . Wolfe, W. (2018). Beneficial utilization of Chinese dry FGD materials for stabilization of weak soils. *The Journal of Solid Waste Technology and Management*, 44(3), 288-298. doi:10.5276/JSWTM.2018.288

Cheng, C., **Amaya, M.**, Lin, S., Su, Q., Wu, M., Butalia, T., & Wolfe, W. (2017). Leaching characterization of dry flue gas desulfurization materials produced from different flue gas sources in China. *Fuel*, 204, 195-205. doi:10.1016/j.fuel.2017.05.016

Presentation:

“Beneficial utilization of Chinese dry FGD materials for stabilization of weak soils”

- Oral presentation at *2015 World of Coal Ash*, <http://www.flyash.info/2015/043-amaya-2015.pdf>
- Midwest Coal Ash Association Stipend Award
- Most Outstanding Student Oral Presentation Award

Sponsor: Lonjing, Inc.

Advisor: Dr. Tarunjit Butalia, PhD, PE

3. Stiffness and Damping Characteristics of AquaBlok Material

- Performed cyclic testing on samples of AquaBlok material to determine dynamic properties of the material under varying strain levels

Sponsor: AquaBlok, Ltd.

Advisor: Dr. Tarunjit Butalia, PhD, PE

GRADUATE RESEARCH EXPERIENCE

1. A Coupled Hydro-Economic Modeling Framework for Evaluating Alternative Options for Reducing Watershed Impacts in Response to Future Development Patterns

- Developed scenarios to apply conceptual hydro-economic modelling framework
- Compiled input-output database for a county in Chesapeake Bay Watershed
- Coupled Economic Input-Output Model with calibrated HSPF Watershed Model

Publication:

Amaya, M., Baran, A., Lopez-Morales, C., & Little, J. C. (2021). A coupled hydrologic-economic modeling framework for scenario analysis. *Frontiers in Water*, 3. doi:10.3389/frwa.2021.681553

Manuscript Submissions:

“Applying a coupled hydrologic-economic modeling framework: Evaluating alternative options for reducing impacts for downstream locations in response to upstream development”

- Submitted to *Sustainability*, April 2022 (currently under review)

“Applying a coupled hydrologic-economic modeling framework: Evaluating conjunctive use strategies for alleviating seasonal watershed impacts caused by agricultural intensification”

- Submitted to *Frontiers in Water*, April 2022 (currently under review)

Presentations:

“A coupled hydro-economic modeling framework for analysis of scenarios about the future”

- Virtual oral presentation at *10th International Environmental Modelling & Software Symposium*, September 2020

“A coupled hydrologic-economic modeling framework for scenario analysis”

- Virtual oral presentation at *1st Delft International Conference on Sociohydrology*, September 6th, 2021

Advisor:

Dr. John Little, PhD, PE, Charles E. Via, Jr. Professor, Civil & Environmental Engineering, Virginia Tech

Other Doctoral Committee Members:

Dr. Faye Duchin, PhD, Professor Emeritus, Economics, Rensselaer Polytechnic Institute

Dr. Erich Hester, PhD, PE, Associate Professor, Civil & Environmental Engineering, Virginia Tech

Dr. Theodore Lim, PhD, Assistant Professor, Urban Affairs and Planning, Virginia Tech

TEACHING EXPERIENCE

Graduate Teaching Assistant

- CEE 5134: Engineering Aspects of Water Quality (Fall 2017)
- CEE 3304: Fluid Mechanics (two lab sections for Spring 2018)
- CEE 4134/5114: Environmental Sustainability- A Systems Approach (Spring 2020, 2021 & 2022)

GENERAL EXPERIENCE

Modeling Experience

- GeoStudios Software (SEEP/W, SLOPE/W, SIGMA/W)
- General Lake Model (GLM)
- Vensim Software
- Geographic Information System (GIS)
- Hydrologic Simulation Program-Fortran (HSPF)

Programming Experience

- Matrix Laboratory (MATLAB)
- RStudio (R)
- Optimization Modeling Software (Lingo)
- Microsoft Office Suite (Excel, Word, PowerPoint)

Other Competencies

- Written and oral communication
- Team collaboration
- Self-motivation
- Spanish as a second language

PROFESSIONAL ACTIVITIES

Environment and Natural Resources (ENR) Scholars Program - OSU

(Fall 2013 – Spring 2017)

- Member of the Leadership Council from September 2013 to December 2015
- Head of the Academic Committee from September 2014 to December 2015

Tau Beta Pi Engineering Honor Society - OSU

(Spring 2015 – Present)

- Active member of Ohio Gamma Chapter from January 2015 to May 2017
- Chair of Initiation Committee from January 2016 to December 2016

New Horizons Graduate Scholars (NHGS) Program - Virginia Tech

(Fall 2017 – Spring 2022)

- Member of Critical Reading Group (Fall 2018)
- Member of Graduate Writing Group (Spring 2019)
- Attended the Dissertation Institute at University of California, San Diego (July 2019)

Multicultural Academic Opportunities Program – Virginia Tech

(Fall 2019 – Spring 2022)