Myles McManus, P.E.

Hydraulics and Hydrology Senior Engineer

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Broken Arrow, OK
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WORK EXPERIENCE

The Water Institute
110 River Road S, Suite 200, Baton Rouge, LA 70802

Senior Water Resources Engineer

2022 – Present

Supervisor: Ioannis Georgiou (504-931-5178)

Duties:

- Real-time Forecasting Software System – Develop Joint Compound Flood Alert System for the state of Louisiana. Includes HEC-RAS riverine flooding and ADCIRC storm surge flooding along the coast. The system requires expertise across disciplines in hydrology, hydraulics, ocean modeling, geospatial databases, data automation, and JavaScript web application development.
- Lead Hydrologist - Provide technical leadership for hydrologic studies. Provide mentorship and expertise in complex modeling projects such as the Louisiana Watershed Initiative.

RPS Group
575 N Dairy Ashford Rd #700, Houston, TX 77079

Senior Water Resources Engineer

2021 – 2022

Supervisor: Bart Standley (281-589-7257)

Duties:

- Hydrology Team Lead – Technical lead for hydrology related modeling tasks across water resources projects such as flood control mitigation design, dam / levee safety, and hydrology statistics. Also, the lead for H&H data management design such as database, SharePoint, version control, and Dev Ops related tasks for collaborating and sharing data across modelers and outside agencies.
- H&H Software Development – In order to best automate Hydrology and Hydraulic studies, I often develop tools to efficiently build models and gather data. This includes software for data acquisition, data processing and manipulation, as well as data visualization and reporting.
- Ocean Sciences Software Development – Developing data collection and dissemination platforms. Platforms include web mapping frameworks for displaying real-time ocean data such as ERDDAP and THREDDS. Developing automation tools for ensuring datasets ae compliant with known standards such as the Integrated Ocean Observing System Program (IOOS).

Accomplishments:

- Texas Government Land Office – I was the principal hydrologic modeler for the project of building a coastal flood-wall levee system in Orange County, Texas. This project required modeling the interior drainage portion of the levee to optimize levee designs and ensure construction would not exacerbate flooding withing city centers.
- Web Based Inundation Map Framework – There is an ongoing effort to build a web-based framework for running displaying the results of hydraulic models in an interactive environment. The map allows interactive feedback of flood levels. This capability will better enable decision makers to understand flood stages or hydraulic model output down to zoom levels not found in other publicly available inundation map platforms such as FEMA, USGS, or USACE.

Stantec Consulting
910 Louisiana St Suite 2600 Houston, TX 77002

Senior Water Resources Engineer

2020 – 2021

Supervisor: Matt Hoy (636-764-5851)

Duties:

- Hydrology and Hydraulic Design – Performing engineering design analysis based on hydrologic and hydraulic modeling. This routinely involves the use of HEC-HMS and HEC-RAS with various modeling specialties based on region, watershed, and design criteria which include: Snowmelt, Frequency Flood Statistics, Probable Maximum Precipitation and Dam / Levee Breach Modeling.
- Subject Matter Expert Reviewer and Mentor - I am routinely involved in assisting colleagues and sub-contractors by providing reviews of models and methodologies. This includes implementation best practices within modeling software, as well as demonstrating and presenting techniques and interpreting academic studies.
- Software Development – In order to best automate Hydrology and Hydraulic studies, I often develop tools to efficiently build models and gather data. This includes software for data acquisition, data processing and manipulation, as well as data visualization and reporting.

Accomplishments:

- Orange County Coastal Storm Risk Management Project – I was the principal hydrologic modeler for the project of building a coastal flood-wall levee system in Orange County, Texas. This project required modeling the interior drainage portion of the levee to optimize levee designs and ensure construction would not exacerbate flooding within city centers.
- Downtown Des Moines Flood Protection Improvements – I acted as the Internal Technical Reviewer for the Hydrology and Hydraulic Design of a new Levee system through downtown Des Moines, IA. This project will better protect both the city and the residents living on each side of the Des Moines River which is placed along a stretch of river between two reservoirs in series, which creates additional engineering constraints.
- Cloud Based Modeling Framework – There is an ongoing effort to build a web-based framework for running hydrologic and hydraulic models in a cloud environment. This effort will benefit users by having a web front end to choose models from to run, and to be able to predetermine the amount of computing power given to the model run by adding resources to the environment as needed. This capability will better enable stochastic modeling for water management policies, hydraulic structure designs, and risk-based decisions.

U.S. Army Corps of Engineers,
Hydrologic Engineering Center
609 2nd St. Davis, CA 95616

GS-13 Senior Hydraulic Engineer

2017 – 2020

Supervisor: Chan Modini (530-304-5745)

Duties:

- Software Development – I am the project lead for the software development of HEC-DSSVue, HEC-CWMSVue, Jython Scripting, and CWMS Mobile. This work requires development in Java, Python, JavaScript, and PL/SQL. I also routinely deal with contractors to perform software development. (Software Website: https://www.hec.usace.army.mil/software/)

- Software Support and Mentoring – I am routinely involved in assisting Corps Districts and other agencies with support of HEC and CWMS software. This includes webinars, documentation, writing scripts, or implementing new code and features into existing software.

- Teaching – The HEC staff provides classes and workshops to Corps Districts and other agencies with support for HEC and CWMS software. I have coordinated and participated in the following classes: HEC-DSSVue, HEC-ResSim, HEC-HMS, HEC-EFM, and CWMS. I have also provided scripting webinars through the H&H Community of Practice and hosted workshops for topics such as: Snowmelt Modeling and CWMS Database Administration.

Accomplishments:

- Web Development – Completed Implementation of CWMS Mobile website where Districts can host observed or forecasted data from their Oracle databases on to public facing websites.

- Mosul Dam Technical Reviewer – Forecasting of inflows along the Tigris River in Iraq during construction of a new dam.

- Folsom Dam Raise Technical Reviewer – Review of the new water management plan as needed due to the construction of a dam raise at Folsom Dam. This includes reviewing Probable Maximum Flood used in the design of the spillways, and the subsequent management of the spillways for induced surcharge operations.

- Columbia River Treaty – Modeling of the Willamette basin as part of a larger study on the Columbia River Basin and the international treaty between U.S. and Canada involving flood benefits from Dams located in Canada.

- Development of scripts within CWMS – Dozens of projects have been completed using Jython scripts within CWMS models that make use of custom functions and HEC Java API protocols.

U.S. Army Corps of Engineers, Tulsa District
1645 S 101st E Ave Tulsa, OK 74128

GS-12 Hydraulic Engineer

2013 – 2017

Supervisor: Scott Henderson (918-669-7509)

Duties:

- Forecasting – The development of inflow and pool routing forecasts for the district during flood events. Forecasts are performed using precipitation radar and observed gage data. The data is processed through hydrologic modeling. This also requires effectively communicating the results of the hydrologic modeling analyses, verbally to water managers, and written for after action reports and other technical documentation. I served as the lead forecaster of the District starting August 2016. Lead forecaster duties include leading a group of 5 forecaster's, assigning forecaster's work and duties, scheduling meetings with peers and outside agencies, and managing the forecasting systems to ensure mission readiness.

- Benefits – The processing of hydrologic data for stage reduction from flood operation benefits. The benefits process requires hydrologic and hydraulic modeling. It also requires coordinating with economists and neighboring districts for shared accounting and results.

- Modeling – Development of CWMS models. This includes meeting the requirements of the national modeling teams (MMC). I have completed models from various software including: HEC-HMS, HEC-RAS, HEC-ResSim, HEC-CAVI and Riverware.

- Studies – Performing system modeling for studies and planning regarding flood control, water supply, pool reallocations, dam safety, and water control manuals. This includes period of record and operational models for statistical analysis of reservoirs and watershed systems. The execution of these studies includes interpretation of the results and documentation.

- Software Enhancements – Responsible for maintaining and coordinating the enhancements needed by the district for software used for forecasting including HEC-Metvue, HEC-HMS, and Riverware. This includes managing enhancement ideas, contract order progress, and implementation testing.

Accomplishments:

- Peer reviewer as subject matter expert for the emergency spillway release diagram (ESRD) for Sacramento District's water control manual update at Folsom Dam. My expertise in this field stems from experience with creating ESRD's and routing inflow design storms and producing outflow hydrographs for 4 water control manual updates in the district using Excel and HEC-ResSim.

- Developed HEC-HMS models for 9 watersheds including 14 flood control reservoirs for CWMS implementation. This represents roughly 50% of the district's hydrologic modeling needs.

- Updated and extended the period of record Riverware model for the North Canadian watershed. This was the first period of record extension performed on these models since their original implementation. This work was documented to provide a guide for the other period of record models in the district to be updated.

- Performed HEC-RAS model calibrations on the Arkansas River to improve results and develop inundation maps for several different flow regimes that may be of high priority to stakeholders during flood events.

- Developed a Jython script for forecast plotting that is now fully implemented by multiple district offices. This script provides automation and better information on all forecasted products. The script works for any watershed in the district. This Increases efficiency and detail accuracy. Documentation was also written for the script to detail the logic and code used in the script.

Brasfield & Gorrie General Contractors
3021 7th Ave S Birmingham, AL 35233

Construction Manager, Intern

2012 – 2013

Supervisor: Robert Carswell (205-328-4000)

Duties:

- Developing bid packages and coordinating with subcontractors on water treatment and power plant projects.
- Estimating project costs through quantity takeoffs and scheduling the duration of work packages.

Accomplishments:

- Submission of a winning hard bid for a water supply treatment plant in Florence, AL.
- Learned to use multiple construction management and building information management applications such as Autodesk Revit, Primavera, Microsoft Project and Sage Timberline.

Jefferson County Department of Health,
Watershed Protection Division
1400 6th Ave S. Birmingham, AL 35233

Environmental Engineer, Intern

2011 – 2012

Supervisor: Scott Hofer (205-335-8158)

Duties:

- Developing baseline pollutant loading and trends for water analysis pollutant tracking.
- Inspection and enforcement of construction site erosion best management practices.

Accomplishments:

- Learned about coordinating Geospatial data with field data using ArcMap and Excel. The field data was water quality data taken from many sites throughout the county. The sites were chosen based on access and stream order.
- Helped to map out the storm drain system for Jefferson County, Alabama. This was done using handheld Tremble GPS units and some kayaking and hiking of the rivers to find outlet locations.
- Used and calibrated in-situ water quality testing equipment such as YSI meters and turbidity meters.

EDUCATION

Licensed Professional Engineer: State of Oklahoma

University of Alabama at Birmingham
Major: Civil Engineering

Master's:	12/2012	GPA: 4.0/4.0
Bachelor's:	12/2011	GPA: 3.2/4.0

TRAINING

- Javascript Web Application Development using React (CRREL Lakewood, CO 2019)
- Java Object Oriented Design Concepts (Webucator Davis, CA March 2018)
- Java Programming Introduction (Learning Tree Reston, VA August 2016)
- Advanced 1D/2D Modeling Using HEC-RAS (HEC Davis, CA July 2016)
- Hydraulics and Hydrology for Dam Safety Studies (HEC Davis, CA March 2016)
- Reservoir System Analysis with HEC-ResSim (HEC Davis, CA February 2015)
- Riverware Rule-based Simulation Modeling (CADSWES Boulder CO, September 2014)
- Hydrologic Engineering Applications of Geographical Information Systems (HEC Davis, CA April 2014)
- Riverware Introduction to Simulation Modeling (CADSWES Boulder, CO March 2014)
- Hydrological Modeling with HEC-HMS (HEC in Tulsa, OK December 2013)
- Water Resources Data Management with DSSVue (HEC in Tulsa, OK November 2013)