

Department of Natural Resources

Division of External Services

Classification Title: Water Regulation and Zoning Engineer – Senior

Working Title: Floodplain Engineer

Position Summary:

This position assists in providing technical expertise and develops floodplain engineering studies in partnership with other floodplain mapping engineers. This position will ensure that the floodplain studies produced by the Floodplain Mapping Program meet State and Federal Emergency Management (FEMA) standards. The position will assist in managing contracts and completing quality assurance reviews of consulting firms completing work for the Floodplain Mapping Program. In addition, the position will be a technical resource for Regional Water Management Engineers on floodplain analyses, floodplain delineation, floodplain mapping issues, coastal plan review, and provide review concurrence approvals of hydrologic and hydraulic (H&H) analyses, ensuring they meet the standards of Wis. Adm. Code, Ch. NR 116.

Geographic Scope and Travel Requirements:

This position may be located in the Madison Headquarters office or any field office assuming office space availability. This position is responsible for assisting with the development and implementation of floodplain risk identification mapping projects throughout the state. Occasional travel throughout the state will be required for meetings with local DNR staff, community Geographic Information Systems (GIS), engineering and zoning officials, and the general public.

Scope of Authority:

The position is supervised by the Dam Safety and Floodplain Section Manager in the External Services Waterways Program. This position is not supervisory. This position works under general supervision.

Goals and Activities:

25% **A. Complete hydrologic and hydraulic analyses for complex floodplain engineering studies.**

- A. 1 Develop complex hydrologic and hydraulic models for comprehensive basin-wide and county-wide flood analyses.
- A.2. Conduct engineering review of hydrologic and hydraulic models developed for comprehensive basin-wide and countywide flood studies.
- A.3. Review engineering submittals for Letters of Map Revision (LOMRs) submitted to Regional Engineers, as necessary.
- A.4. When funding is available, perform engineering analyses to define floodplain limits for community zoning where no floodplain study exists. Use judgment to choose

the technique that will give the best results given available information and physical features.

30% **B. Develop digital floodplain limits and techniques to merge data into existing products.**

- B.1. Use GIS based tools and other automated methodology to digitally incorporate floodplain engineering study and reports into DNR' s and FEMA' s comprehensive reporting system.
- B.2. Review floodplain boundaries for completeness and accuracy and provide quality assurance/quality control (QA/QC) comments for preliminary flood hazard map development.
- B.3. Maintain and update computer model input files for previously conducted and new hydraulic and hydrologic studies for floodplain analysis.

35% **C. Serve as a DNR project lead engineer for engineering issues related to Cooperating Technical Partner (CTP) projects in assigned counties.**

- C.1. Assist in all engineering aspects of FEMA Floodplain Mapping projects including the development of the technical data used to develop the regulatory and non-regulatory products.
- C.2. Support quality assurance review of the H&H modeling completed by other engineers working on floodplain mapping projects.
- C.3. Assist with managing, coordinating, reviewing and auditing the activity of engineering consultants.
- C.4. As funding allows, assist local communities in developing flood study designs, assessing existing information to incorporate into mapping efforts, reviewing preliminary maps, and implementing completed flood studies that can be approved by both Wisconsin and FEMA.

5%. **D. Evaluate new technologies for use in developing hydrologic and hydraulic analysis for use in floodplain studies.**

- D1. Explore new GIS tools and methods to incorporate them into detailed and approximate floodplain studies.
- D.2. Evaluate existing hydrologic and hydraulic modeling techniques, looking for ways to make the models more accurately represent the physical properties of flooding events. Asses the value of new modeling tools for use in floodplain studies.

- D.3. Provide guidance and training to other program engineers on the new tools and models available for floodplain mapping.

5% **E. Provide support and perform other duties as assigned by supervisor.**

Special Requirements

- More than three (3) years of experience performing engineering responsibilities similar to those in the Position Description and the education and experience necessary to be deemed an Engineer-in-Training by the Wisconsin Department of Safety & Professional Services.
- Ability to meet requirements to operate a state vehicle, including obtaining and maintaining a Wisconsin Driver's license.

Knowledge, Skills and Abilities

1. Education or training and knowledge of hydrologic and hydraulic analyses. Some experience developing and reviewing hydrologic and hydraulic models including Hydrologic Engineer Center River Analysis System and Hydrologic Modeling System (HEC RAS and HEC HMS) or similar hydrologic and hydraulic models.
2. Ability to apply new technologies to produce improved floodplain analyses and digital mapping products.
3. Experience applying GIS technology to floodplain mapping and hydrologic and hydraulic modeling.
4. Experience working with FEMA's digital floodplain program and its quality assurance standards.
5. Knowledge of data management techniques.
6. Knowledge of project planning.
7. Knowledge of written and oral communication techniques.
8. Knowledge of group dynamics and dispute resolution.

Physical Requirements and Environmental Factors

Strength Requirements: Sedentary work (occasional lifting of up to 15 pounds) about 95% over a year's time. Light work (infrequent lifting of up to 50 pounds) about 5% over a year's time.

Physical: This position will spend a majority of time in an office setting or in meetings. Regular activities include talking, hearing, seeing, handling paper, sitting, walking and driving. The position will also occasionally spend time standing, carrying, lifting, reaching, climbing, bending at the waist, kneeling, and crouching.

Environmental Factors: May need to frequently spend more than one hour outdoors in temperatures below 32 degrees, above 80 degrees and in harsh weather conditions. Ability to traverse uneven ground, steep grades and heavy brush.

Equipment Used: Office equipment, electronic equipment, and motorized vehicles.

Telework Evaluation:

Up to 60% telework may be considered for this position.