

Pascagoula River Study and Hydraulic Structure Evaluation for the Canadian National Railroad Near the Town of Merrill, Mississippi

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Civil • Water Resources • Environmental

The Pascagoula River drainage basin is one of the six major drainage basins in the state of Mississippi; it drains almost the entire southeastern portion of the State of Mississippi and portions of southwestern Alabama. Flowing south into the Gulf of Mexico, the Pascagoula River is formed by the convergence of the Leaf and Chickasawhay Rivers just west of the small Town of Merrill, Mississippi. A railroad track connecting Jackson, Mississippi to Mobile, Alabama traverses the Pascagoula floodplain just downstream of the convergence of the Leaf and Chickasawhay Rivers. At the present time, this railroad is owned and operated by the Canadian National Railroad (CN) Company. Based on USGS data, a drainage area of 6,590 square miles contributes to the Pascagoula River at the CN Railroad crossing and the 100-year discharge is estimated to be 218,000 cfs. Currently, 23 flood conveyance structures exist along the CN Railroad to convey large flood events across the approximate 6-mile wide valley floodplain. The majority of these flood conveyance structures are timber ballast deck trestle bridges that are approaching the end of the design life and are in need of repair or replacement.

The initial purpose of this project was to develop a hydraulic model to evaluate the existing flood conveyance structures along the CN Railroad. After the existing flood conveyance structures were assessed, an evaluation of selected improvements to structures was conducted. Results of the alternative evaluations were documented and utilized to provide recommendations on the feasibility of implementing the selected improvements to the existing flood conveyance structures. The staff of Anderson Consulting Engineers completed the following specific tasks for this project:

- conducted on-site field reconnaissance to gather site specific parameters related to the Pascagoula River floodplain and existing flood conveyance structures along the CN Railroad to promote the development of the hydraulic model;
- developed an existing condition hydraulic model that required the use of the multiple bridge opening routine in HEC-RAS to accurately model multiple bridge openings at the same crossing;
- calibrated the existing condition hydraulic model to concurrent discharge and stage data collected by the USGS during previous flood events on the Pascagoula River;
- formulated and hydraulically evaluated conceptual alternatives for repairing/replacing the existing flood conveyance structures; and
- provided recommendations on the feasibility of implementing the alternative improvements while still meeting federal and local floodplain regulations.



CN Railroad Crossing - Main Channel of Pascagoula River



Standard Timber Ballast Deck Trestle Bridge on the CN Railroad