

## *Hydrology and Hydrologic Modeling*

---

Most studies conducted by ACE involve hydrologic analyses, including flood frequency determinations and flow duration analysis. Staff hydrologists are experienced in deterministic, empirical and stochastic analytical techniques.

Specifically, the hydrologic analyses frequently required the application of procedures described in WRC Bulletin No. 17B, TP-40, HMR51 and HMR52. In addition, this work commonly involves the application of HEC-1 and other computer models including TR-20, TR-55 and the EPA Stormwater Management Model (SWMM). Finally, ACE has conducted many hydrologic studies requiring the development of computer models for water data management, integration of water data management systems and reservoir operation models, flood routing and optimization.

### **Representative projects illustrating ACE experience in hydrology include:**

- Master Drainage Plans, Fort Collins, CO: Hydrologic modeling, using SWMM, conducted in support of drainage master plans for the Spring Creek, Canal Importation, West Vine, Lower Dry Creek, and Evergreen/Greenbriar Basins in Fort Collins, Colorado.
- Hydrologic Investigation of the Coldwater River Basin, MS: This study, conducted for the COE Vicksburg District, included evaluation of approximately 300 miles of river channel in a 600 square mile watershed. HEC-1 was used to develop hydromorphic data for the 2-, 5-, 10-, 25-, 50-, and 100-year flood events.
- Instream Flow Investigations, WY: Hydrologic analysis and determination of flow availability for instream flow requirements on the North Platte River, Douglas Creek and Laramie River in Wyoming.
- City of Greeley Drainage Master Plan, Greeley, CO: Hydrologic modeling, using SWMM, conducted in support of the preparation of drainage master plans for over 20,000 acres in Greeley, Colorado.
- Centerport International Airport Investigation, CO: Detailed hydrologic and hydraulic analyses of improvements associated with the development of a proposed airport near Denver, Colorado. The project included the hydraulic design of several miles of channel conveyance systems, numerous detention basins, drop structures, channel outfall structures and channel protection measures.
- Sand Lake Dambreak Investigation, Carbon County, WY: Hydrologic and dambreak analyses for the Sand Lake dam embankment breach. The project included PMF evaluation based on HMR #55 and determination of incremental benefits associated with proposed improvements.



**Breach in Sand Lake Dam, Carbon County, Wyoming**