Dewey-Burdock Uranium ISR Permitting, Edgemont, South Dakota

RESPEC was involved in multiple aspects of permitting Powertech's Dewey-Burdock project. As part of baseline investigations, RESPEC produced stand-alone reports meteorology, surface water hydrology, groundwater hydrology, water rights, and geology, in addition to many other permit components.

RESPEC performed a surface hydrology and water-quality characterization study of the Dewey-Burdock site. Information regarding site surface hydrology was derived from preoperational studies conducted by RESPEC, as well as U.S. Geological Survey (USGS) long-term gaging stations, standard statistical and empirical methods, and computer modeling to determine rainfall and associated flood flows. Information regarding surface water quality was derived from a preoperational monitoring plan in compliance with U.S. Nuclear Regulatory Commission (US NRC) regulations that included monthly sampling of perennial and ephemeral streams and quarterly sampling of surface water impoundments within, upstream, and downstream of the proposed permit boundary. A HEC-RAS floodplain model and a HEC-HMS rainfall/runoff model was completed for Pass Creek, an ephemeral stream that flows through the permit boundary. A HEC-RAS floodplain model, along with statistical estimates of peak flow/flood frequency based on USGS gage data, was completed for Beaver Creek, the perennial stream that flows through the permit boundary.

As part of the baseline groundwater assessment, RESPEC was involved in several aspects of characterizing the site hydrogeology. RESPEC helped develop and implement two aquifer pump tests, a water-quality sampling program, a groundwater level and flow monitoring program, and a regional groundwater model. The chemical monitoring network was established in 2007 with water-quality samples collected quarterly from 19 wells between September 2007 and June 2008. Monthly samples from an additional 12 wells were collected with sampling from April 2008 through March 2009. The regional groundwater numerical model was constructed to simulate impacts of mining on groundwater flow. In addition, an extensive review of available published literature on regional and site hydrogeology, water quality, and past pumping tests was performed.