

1.0 Background

The Yakima River Basin Water Storage Feasibility Study (Storage Study) is an ongoing evaluation of alternatives for providing additional stored water for the benefit of fish, irrigation, and municipal water supply within the Yakima River basin. Congress has directed the Secretary of the Interior, acting through the Bureau of Reclamation (Reclamation), to conduct a feasibility study of options for additional water storage in the Yakima River basin. Sections 214 of the Act of February 20, 2003, (Public Law 108-7) contains this authorization and includes the provision "... with emphasis on the feasibility of storage of Columbia River water in the potential Black Rock Reservoir and the benefit of additional storage to endangered and threatened fish, irrigated agriculture, and municipal water supply." The Black Rock alternative includes building an off-channel storage reservoir in the Black Rock Valley about 6 miles south of Priest Rapids Dam, which is on the Columbia River. The reservoir would occupy about 13.67 square miles and have a storage capacity of about 1.46 million acre-feet when full. The Black Rock reservoir would be filled by pumping water from the Priest Rapids reservoir. The stored water would be conveyed to the lower Yakima Valley through a series of tunnels and canals (USBR, 2004c).

Groundwater investigations previously conducted by Reclamation include a Pacific Northwest National Laboratories (PNNL) assessment of the potential for increased mobility of contaminants beneath the Hanford Reservation as a result of increased groundwater levels due to reservoir seepage (PNNL, 2007).

To date, fourteen test holes have been drilled to investigate the geology and hydrogeology of the Black Rock damsite. Nine test holes were drilled by Reclamation, of these five were used to determine depth of sediments and the top elevation of basalts, and four were used for aquifer testing and water level observation (USBR, 2004b, 2004d and PNNL, 2004b, 2007b). Five test holes were drilled by Washington Infrastructure Services Inc. and used in the initial geotechnical investigation of the damsite (WIS, 2003). All but the four Reclamation observation wells were later backfilled and abandoned.

Given the current limited availability of hydrogeologic data from the site, any groundwater modeling effort aimed at predicting future reservoir seepage would necessarily have a significant amount of uncertainty associated with it. Nevertheless, model development under these conditions can still be extremely useful. Sensitivity analysis involving different conceptual models can provide a range of estimates for reservoir seepage and other reservoir hydrologic impacts. Equally important, Black Rock model results can be used to guide the process of future data acquisition at the reservoir site in order to reduce model uncertainty.

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