An Evaluation of the Northern Integrated Supply Project: Feasibility of Filling Glade Reservoir

Kelsey Dudziak, Clint Kimbrell, John Labadie
Department of Civil and Environmental Engineering, Colorado State University

Abstract. The Northern Integrated Supply Project (NISP) aims to develop much needed water storage capacity in Colorado's Front Range area. A primary component to this effort is the construction of Glade Reservoir, which has a proposed capacity of 170,000 acre-feet and an annual yield of 40,000 acre-feet. Water allocation in Colorado is governed by the Doctrine of Prior Appropriation, which promulgates that all historical water users received their designated streamflow before any water can be diverted by new water users. NISP intends to fill Glade Reservoir with excess streamflows from the Cache la Poudre River, which refers to streamflow that has not yet been allocated to a senior water user. For this analysis, we used MODSIM to simulate the filling of Glade Reservoir using historic streamflow and diversion data for the past 50 years to determine if this project is capable of supplying the projected demand outlined by the project. In addition, we ran additional simulations in which the reservoir size and annual yield were altered in order to provide decision-makers with additional options regarding the construction of this storage project.