

## Joshua A. Rice, E.I.

Staff Water Resources Engineer  
Spronk Water Engineers

**Education:** B.S., Civil Engineering, August 2002, Colorado State University.

**Professional Registration:** Engineer Intern in Colorado

**Professional Memberships:** American Water Resources Association

**Work Experience:**

2008 to Present: Water Resources Engineer  
Spronk Water Engineers, Inc.  
1000 Logan Street  
Denver, Colorado 80203

Responsible for compilation and analysis of water resources, water rights and hydrologic data including climatological data, streamflow and diversion records, cropping patterns, water rights tabulations and decrees. Analyses include historical water use studies, water rights evaluations and preparation of court exhibits. Provides engineering support for quantification of historic use of irrigation water rights, including consumptive use analysis, depletion analysis, and analysis of diversion and reservoir storage records. Performs weekly water supply accounting and assists in the preparation of substitute supply plans. Utilizes GIS software in the mapping and analyzing of surface water and ground water uses and demands.

2005 to 2008: Water Resources Engineer  
Brown and Caldwell  
Golden, Colorado

Responsible for successful management, analysis and completion of water rights and water supply projects. Projects included historical water use studies, water rights evaluations and preparation of court exhibits. A sample of projects is included below:

Mid-American Energy Holdings Co, Wyoming

Reservoir optimization model to maximize the yield of a complex set of water rights. Estimated the yield of the multiple owners' water rights located in Lake DeSmet, Wyoming depending on various operating scenarios of Lake DeSmet as part of a due diligence water rights purchase. A total of 13 different water rights from three different streams are owned by three entities. The entities store water in Lake DeSmet via an eight foot diameter inverted siphon with a capacity of 800 cfs, a 200 cfs

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pumping plant, and on-stream storage. Work included (1) estimating legal water availability, (2) Creating a spreadsheet model to included three points of diversion, 13 water rights, and three types of use: recreation, industrial, and agricultural.

### Twin Platte Natural Resource District, Nebraska

Conducted an inventory and an analysis of land and water use conditions within the Twin Platte Natural Resource District in Nebraska to determine historical consumptive uses within the district. A district wide water balance was developed to determine a sustainable level of consumptive use within the district.

### THF Realty and the Prairie Center Municipal Districts 1 and 3, Colorado

Prepared a water needs assessment for the Prairie Center Development near Brighton, Colorado. A historical use analysis of Fulton, Burlington and Wellington ditch company water rights to change the use of senior agricultural water rights from agricultural to municipal and augmentation to be used for a non-potable irrigation system near Brighton, Colorado was performed. The future water supply demand for the Prairie Center Development was estimated and an operations plan outlined. All work products were prepared in order to file an augmentation plan for the Prairie Center Development.

### Well Augmentation Subdistrict of the Central Colorado Water Conservancy District, Colorado

Estimated well depletions and develop a plan for augmentation. This effort required immense data management and quality control with a Microsoft Access database.

### U.S. Bureau of Reclamation, Nevada

Estimated the annual reduction of farming income farms irrigating under the Central Arizona Project would realize under various shortage conditions based on an existing economic model developed by the University of Arizona for the Lower Colorado River Shortage Environmental Impact Statement.

### Private Landowner, Colorado

Investigated the potential to exchange senior water rights on the Rio Grande upstream to two small tributaries in order to provide water for fish habitat. Work included estimating the yield of the senior water rights while protecting other Rio Grande stakeholders' water rights interests. Major interests included: an interstate compact, instream flow rights on both the Rio Grande and the tributaries and delivery of water to irrigation canals.

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2003 to District Engineer  
2005 Central Colorado Water Conservancy District  
Greeley, Colorado

Oversaw day to day administration of water rights and accounting and reported to a board of directors. Analyzed historical use of water rights in preparation for change cases, prepared documents for augmentation cases and estimated well depletions based on district records. A sample of projects is included below:

Change Cases

Reviewed change of use engineering reports for water rights transfers including: the Fulton Irrigation Company, the Burlington Ditch, Reservoir and Land Company, the Wellington Reservoir Company, the Jones Ditch Company, the Whitney Ditch Company, the Brighton Ditch Company, the Platteville Irrigation and Milling Ditch Company, the Platte Valley Irrigation Company, the Union Ditch and the Plumb Ditch.

Chatfield Reallocation

During the study of reallocating space in Chatfield Reservoir from flood control to active storage it was found that a portion of the flood control pool in Chatfield Reservoir could be used for active storage. A number of entities were interested in obtaining storage space in the reallocated pool. Three categories of users were defined: Downstream Users, Instream Users and Upstream Users. The Downstream Users and the Instream Users agreed to study if the individual entities storage space could be better utilized when operation of space were combined. A reservoir model was created using input data from Denver Water's PACSIM model to determine best use scenarios.

Quota Trading

Following the settlement of the Ground Water Subdistrict of the Central Water Conservancy District Augmentation Plan water court case member well pumping was reduced. In order to allow members to continue pumping at pre-court levels, a quota trading program was developed and implemented.

Substitute Water Supply Plans and Augmentation Plans

Two augmentation plans consisting of approximately 1,200 wells on the South Platte River and over 20 sources of supply were created.

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2002 to            Engineer  
2003              URS Corporation  
                     Oakland, California

Wrote groundwater monitoring reports, work plans and soil and water investigations. Organized and oversaw the installation and destruction of wells. Logged soil and sampled groundwater.

**Expert**

**Testimony:**            District Court, Water Division 1, Colorado - Jones Ditch Change Case