



Location: Rifle, CO

Year: 2009

Owner: City of Rifle

Contact: Charlie Stevens, Utility Director, 970-625-6272

Key SGM Staff: Louis Meyer, PE; Warren Swanson, PE; Brad Zachman, PE; Ryan Loebach, PE; David Schieldt, EI; Ken Neubecker

Subconsultants and their project roles: Resource Trends (Water Utility Branding Consultant); S. Nevada Water Authority Water Quality Lab (EDCs/Pharmaceuticals Analysis)

Since 1995, the City of Rifle has relied on SGM for expert drinking water consulting services. In 2006 SGM's Rifle Water Master Plan recommended construction of a new 8-MGD water plant to meet rapidly growing demands and replace an aging, unreliable facility. The City and SGM also recognized that poor aesthetic water quality was eroding consumer confidence. Of particular concern, but not the only suspected problem, was high salinity in the Colorado River, the City's primary source. Desalination would be a key to improved water quality.

To launch its new plant effort, the City awarded a multi-faceted planning project to SGM. SGM's charge was to establish the right technical direction and win community support for the project. SGM crafted and implemented a plan to: a) better characterize the aesthetic problems and their causes; b) evaluate relevant treatment processes and collect water quality data to support WPF design; c) establish the feasibility of desalination and brine management options; d) assess customer preferences and willingness-to-pay for improved water quality; e) improve water utility community ties; and f) stimulate and sustain appropriate, long-term community investment in water infrastructure.

SGM successfully met this challenge by:

- **Designing and executing a 1-year sampling program to water quality from source to tap.** Targeted parameters were key to: desalination, membrane treatment, organic taste/odor, colored water, DBP formation, emerging organic contaminants, and solids handling. Results produced a clearer understanding of all issues, establishing project direction and providing solid design data.



- **Training water operators on routine odor testing methods.** SGM worked with City staff to select appropriate methods, acquire necessary equipment, and train plant operators. The comparative odor methods used allow for relatively quick, low-cost assessment of water odor as compared to costly, slow-turnaround lab analysis of algae byproducts. Operators will now be able to track odor trends, identify odor sources from source to tap, and make timely process decisions to mitigate odors.



- **Conducting water taste testing.** SGM designed the test matrix, synthesized test waters simulating various degrees of advanced treatment, screened and selected panelists, conducted the taste testing, and interpreted the data. The results were used to establish treatment goals for the new facility.

- **Screening overall treatment process options.** SGM accompanied City staff on advanced treatment facility tours, listened to their preferences and concerns, considered near- and long-term water quality goals, and evaluated technical issues and costs. This allowed the shortlisting of three main process trains to be studied further with bench- and pilot-scale testing.

- **Evaluating desalination technologies,** including precipitative softening and reverse osmosis (RO), nanofiltration (NF), and electrodialysis reversal (EDR) membrane processes. SGM's membrane process performance simulations and cost estimates supported a low-pressure RO process recommendation.



- **Interviewing Rifle water customers.** SGM solicited valuable input from City of Rifle water customers in face-to-face interviews conducted at a busy City retail outlet. SGM designed and administered a survey that provided key input on customer support for water rate increases for improved drinking water quality. The valuable input helped give decision-makers a measure of comfort to invest in moving the project forward.

- **Assembling a new citizen-based Water Services Advisory Board.** SGM worked with City staff to assemble an official new City board to weigh-in on water (and wastewater) utility planning issues. Key community leaders and stakeholders in water pricing, water conservation, and water infrastructure issues were targeted. The new board helps the Utility Director better communicate with the community and understand its values and concerns.

- **Building a new, positive Utility Department brand.** SGM teamed with a utility branding expert to help the City begin improving its services to, and relationship with, its customers as both water consumers and investors. Key to this effort was understanding branding principles, defining the brand (what services, values, and product quality customers can count on Rifle's water utility to deliver) and beginning to communicate the brand and deliver on the commitments. As a result the utility department is now communicating much more strategically and effectively with its customers and the City Manager and City Council.



- **Winning the City a CDPHE waiver to the Colorado River "no salt discharge" effluent standard.** SGM's detailed, comprehensive technical and cost feasibility analysis of zero-liquid discharge (ZLD) and other brine reduction/disposal strategies won this key project victory that helps pave the way for desalination at the new plant.