



PROJECT OVERVIEW

The City of Filer is a rural community in southern Idaho that owns and operates a municipal drinking water system serving a population of approximately 2,740 people. Water is supplied to the City by five deep, groundwater wells. While the water quality produced from the wells is generally exceptional, arsenic concentrations exceeded the drinking water standard. The purpose of this project was to implement an arsenic water treatment plant that provides a safe, reliable drinking water source for the community, while also remaining affordable to ratepayers and flexible for future expansion.

THE PROBLEM

In 2001, the U.S. EPA established a new rule reducing the arsenic drinking water standard from 50 to 10 micrograms per liter (ug/L). Historical water quality sampling indicated that water produced from the City's groundwater wells had arsenic concentrations higher than the new standard, making it difficult to meet the standard consistently and reliably.

Over the next several years, J-U-B ENGINEERS, Inc. (J-U-B) worked together with the City and several subconsultants to investigate alternatives to resolve the high arsenic levels in the groundwater. Arsenic mitigation strategies that were considered included source abandonment, new sources, blending, a regional water system, use of back-up wells, and water treatment. Ultimately, the City and J-U-B concluded that the best arsenic mitigation approach was to construct a coagulation filtration (C/F) with pressure filtration water treatment plant. This technology was chosen due to lower upfront capital costs, compatibility with the City's water quality, and simplified on-going operation and maintenance requirements.

THE SOLUTION

As a rural community, one of the City's primary objectives for the project was to maintain water rates at an affordable level for their customers. Prior to the project commencement, J-U-B and the City endeavored in a public education process to successfully pass a revenue bond. J-U-B then assisted the City in securing several grants and low-interest loans, which ultimately yielded a cost-effective project.

A pilot test of the C/F treatment process was then conducted by J-U-B and Corona Environmental Consulting to identify several key design parameters for the treatment plant, including ferric chloride dose, pH conditions, media selection, hydraulic loading and backwash rates, and blending options. Pilot testing was crucial for optimizing and correlating the treatment process to the unique water quality produced by the City's groundwater wells.

Following the pilot test, J-U-B worked together with the City, funding agencies, and regulatory agencies to design, bid, construct, and start-up the arsenic water treatment plant facilities. A portion of the combined water from the groundwater wells is diverted through a new raw water pump station and delivered to the arsenic water treatment plant. The treatment plant employs chemical feed systems and horizontal pressure filters to remove arsenic from the water. The treated water is then blended with untreated water and sent to a storage reservoir for distribution to customers.