The AVC Quarterly

Your Official Source for News on the Arkansas Valley Conduit

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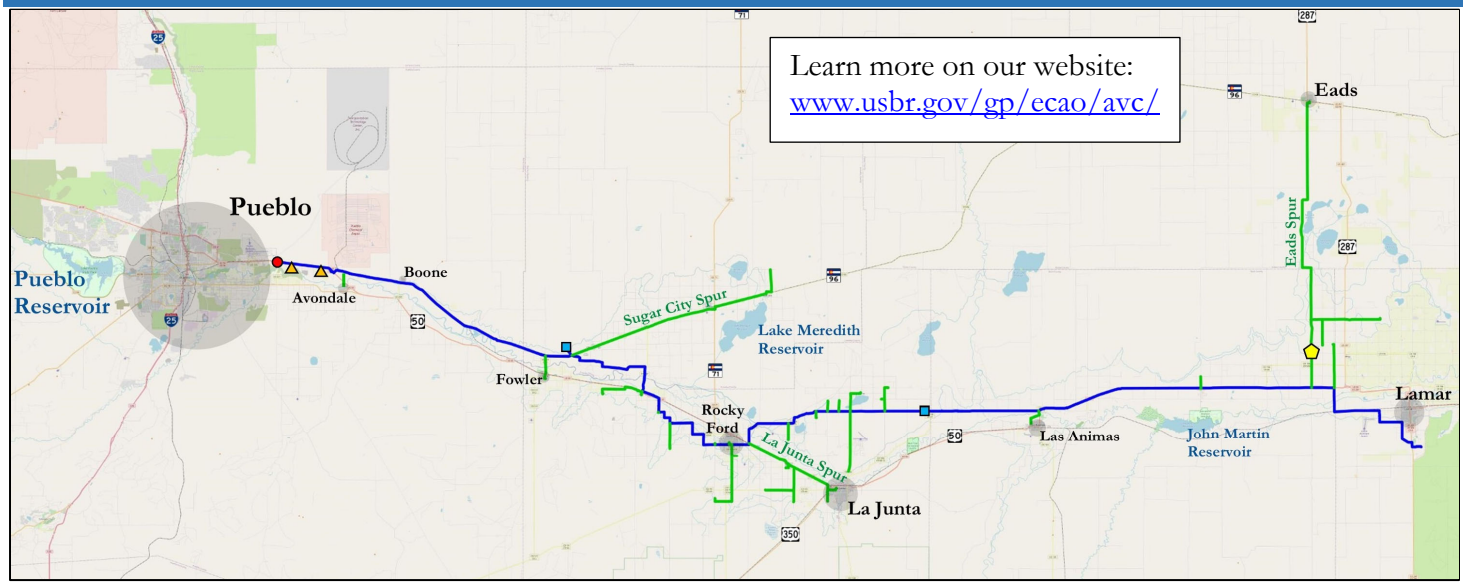


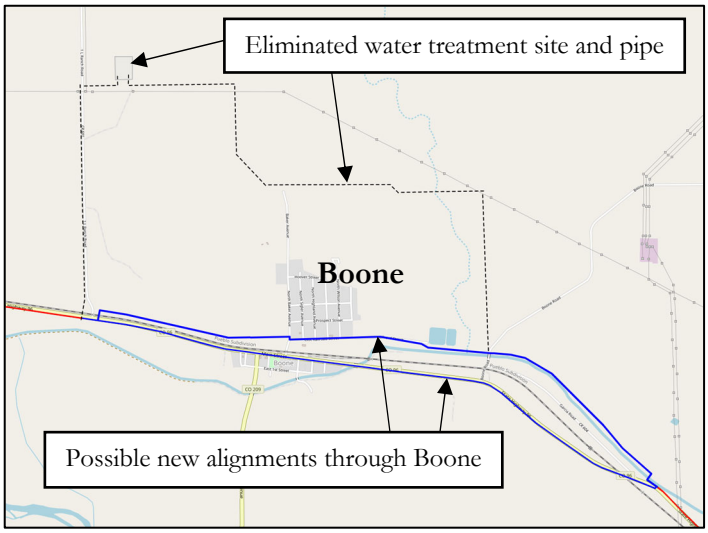
The current planned AVC project alignment. The blue line is the "trunk line" being designed and constructed by the Bureau of Reclamation. The green lines are the "spur and delivery lines" being designed and constructed by the Southeastern Colorado Water Conservancy District.

Change Is in the Air

While the AVC is primarily a water conveyance pipeline, we can't overlook water quality and regulatory requirements. To ensure the providers receiving water through the AVC can deliver clean and safe drinking water to the people they serve, the AVC must also treat the water before sending it down the pipeline.

Our initial plan was to construct a water treatment facility northwest of Boone. As part of the design process for that facility, a Value Engineering (VE) Study was conducted – to learn more about VE Studies, make sure to read the article on the next page. This study identified an opportunity to save the project over $10 million in construction costs by replacing the water treatment facility with two smaller injection sites right along the pipeline (the orange triangles on the map above).

A major part of the savings comes from a reduction in pipeline around Boone. For the hydraulics of the system to function, the site chosen for the treatment facility was a high point northwest of Boone. The new design does not have this same requirement and allows for the elimination of about two miles of 30-inch pipe.



Two new alignments through Boone are under consideration now as shown on the map above. Overall, this change is a win for AVC participants as it will result in significant cost savings and should also shorten the project completion schedule slightly.

BUREAU OF RECLAMATION

Southeastern Colorado Water Conservancy District

Value Engineering

Value Engineering (VE) (also known as Value Analysis) originated in the 1940s at General Electric in response to shortages in skilled labor and materials during World War II. It began with simple substitutions in response to these shortages but developed into a systematic process when they found these substitutions increased "value" by reducing costs and/or improving the product function.

$$Value = \frac{Function}{Cost}$$

As defined by Bureau of Reclamation policy, VE is "a systematic process of reviewing and analyzing the requirements and functions of processes, systems, project, equipment, facilities, services, and supplies for the purpose of achieving the essential functions at the lowest life cycle cost consistent with required performance, reliability, quality, and safety."

The use of VE is a requirement for all Federal Agencies in accordance with Public Law 104-106 (1996) as well as Office of Management and Budget (OMB) Circular No. A-131 (1993).

"VE originated in the industrial community, and it has spread to the Federal Government due to its potential for yielding a large return on investment. VE has long been recognized as an effective technique to lower the Government's cost while maintaining necessary quality levels. Its most extensive use has been in Federal acquisition programs."

-OMB Circular No. A-131

Within Reclamation, A VE Study occurs at the design stage when the design process and documentation is approximately 30-50 percent complete (design and contract documents are in draft form). The study typically involves five to ten subject matter experts along with a trained facilitator working together full time for three to five days to collaboratively analyze the functions of the design and generate functional alternatives. The team selects the best ideas to develop into proposals and then presents them to the managers responsible for the activity.

Following the study, a final report is issued detailing all the proposals. The responsible project manager, in consultation with the design team and management, decides which proposals are to be implemented. This is documented officially in an "Accountability Report" which details the reasons for accepting or rejecting each proposal.

For a large project like the AVC, final designs are completed sequentially as the project progresses – typically one design for each construction contract. VE is applied independently to each final design/contract.

Another element of the Reclamation Value Program is the Value Planning (VP) Study, which is required for projects estimated to cost over $10 million. The AVC has had two VP Studies completed – one in 2010 and one in 2019. The 2019 VP Study contributed substantially to finally getting the project moved into construction by identifying alternatives which significantly reduced the needs for Federal appropriations. No additional VP Studies are currently anticipated for AVC.

"A VP Study occurs at the conceptual/schematic/planning stage of project development and considers project scope, need, and alternatives. A VP Study considers all the various solutions or alternatives available to meet the identified need and typically identifies the preferred alternatives. A VP Study improves scope definition and guidelines and principles for future development."

-Reclamation Manual Policy CMP P05

The People of AVC

In this issue, we introduce you to the two folks that are leading and coordinating Reclamation's design teams and other project support functions at the Technical Service Center (TSC) in Lakewood, CO. Tim Steen and Meaghan Peters serve a critical role in keeping AVC on track.

Tim Steen, PE, PMP

Tim joined Reclamation's Technical Service Center as a Civil Engineer in the Water Conveyance group in 2017. Prior to his time at the TSC, Tim spent 10 years in the private industry. He has worked on many complex projects in the United States, Central America, and South America. His experience ranges from preliminary planning phases through construction closeout on a variety of civil works projects. He has experience that involves water resources and surface water management including transmission pipelines, canals, dams, spillways, and appurtenant conveyance infrastructure. Tim has worked extensively on the Arkansas Valley Conduit project since he joined Reclamation. As TSC's AVC Project Team Leader, Tim coordinates efforts of numerous TSC technical design team leaders and team members, managing the interpendincies among independent designs for the overall project. When asked about his experience at the Bureau, Tim says "I enjoy working with an incredible team of many knowledgeable and motivated individuals committed to development of projects that make a significant difference for so many people."

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Meaghan Peters, PE, PG, PMP

Meaghan has 18 years of experience as an engineer and project manager for large, multi-disciplined engineering projects. She received her engineering degrees from Colorado School of Mines (BS in 2000) and Michigan Technological Institute (MS in 2002).

Meaghan was first exposed to the AVC Project around 2003 while working on the Fryingpan-Arkansas Project as a water resource engineer in Glenwood Springs, Colorado. Meaghan worked for engineering consulting firms performing construction and inspection oversight, preparing engineering plans, designs, and reports, and providing site coordination and project management. In the fall of 2016, Meaghan joined the Bureau of Reclamation in the Construction Coordination and Specifications Group where she is responsible for coordination of construction contracts between Reclamation's TSC and Regional and Area Offices. She is part of the TSC's Project Management Steering Committee and has prepared and provided project management training for TSC's Team Leaders.

As TSC's Project Manager, Meaghan is involved in the overall coordination of the AVC Project within the TSC for the multiple design service agreements. Meaghan is proud to be part of the AVC team with the goal of providing water for municipal and industrial use to water users within the boundary of Southeastern Colorado Water Conservancy District (Southeastern).

A Helping Hand

An engineering firm that has helped many AVC participants in the past is now working with the Southeastern Colorado Water Activity Enterprise (Enterprise) to facilitate the transition of drinking water systems from groundwater sources to the AVC.

GMS, Inc. Consulting Engineers (GMS) of Colorado Springs has been hired by the Enterprise to work with AVC participants on behalf of the Enterprise.

GMS has worked with many communities throughout Colorado to find water supply and water quality solutions, as well as assisting with finding the appropriate agencies to finance those solutions.

GMS tasks for the AVC include:

- Connections, assuring designs are compatible with existing systems.
- Individual meetings to review water systems for water loss, water quality, pressures, distribution, and storage.
- Define recommended improvements for connection to the AVC pipeline to include disinfection, corrosion control, booster pumping or pressure reduction, system improvements to reduce water loss, and integration with existing facilities.

Those factors would define the financial impact and which federal, state, or local funding is available, and define a funding scenario for participants. That, coupled with AVC charges, will give a picture of the impact on user rates by refining information in a model that has been developed to estimate AVC costs.

Finally, the information can be used with the timeline of construction for the AVC to assist with financial planning.

Enterprise staff are working on a communication plan to begin assessing water systems and financial planning for the AVC. These will involve community meetings in the near future.

Project Managers – Contact Information

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More information is available on the AVC website:
www.usbr.gov/gp/ecao/avc/