



Above: (L to R) Donala board members Ken Judd, William George, and Bob Denny are sworn in by board vice president David Powell. *Photo by John Heiser.*

fluent to Monument Creek and provide about 25 million gallons of reuse water to the Gleneagle Golf Club (GGC). That leaves about 148 million gallons or 454 acre-feet per year available for reclamation.

Sams noted that one difficulty is that during the summer when the demand for water is highest, the district's obligations to release effluent and provide reuse water to GGC also peak, leaving less effluent available for reclamation. During the winter when there is the maximum amount of effluent available, water use is

lower and so there would be less mixing of reclaimed water with water from other sources such as the renewable water the district receives through its connection with Colorado Springs Utilities (CSU). Sams added that having additional water storage could help even out those seasonal fluctuations.

Sams said there is currently no regulatory framework to address implementation of direct potable reuse (DPR) where effluent would be highly treated at the wastewater plant and then mixed into the potable water system.

DPR would reduce piping costs but increase treatment costs and could pose water quality control risks. As a result, the DEWSS focused on indirect potable reuse (IPR) approaches in which the effluent is released into the natural environment where it passes through multiple barriers and is then recovered, extensively treated, and mixed into the potable water system.

Sams' presentation provided cost estimates for nine IPR project options (sorted by added cost per 1,000 gallons) shown below.

Option	Capital Costs (Millions)	Annual Costs (Millions)	Added Cost per 1,000 gal.
Jake's Lake	\$7.04	\$0.63	\$8.15
Monument Creek 2	\$6.67	\$0.67	\$8.27
Monument Creek 1	\$6.93	\$0.67	\$8.40
Monument Creek 3	\$7.62	\$0.67	\$8.73
Bristlecone	\$12.00+	\$0.68	\$8.99
GGC partial	\$12.34	\$0.66	\$9.58
Smith Creek	\$11.06	\$0.66	\$10.37
GGC entire	\$16.77	\$0.69	\$14.41
Brown Ranch/JC	\$19.07	\$0.76	\$15.02

The costs in the table would be in addition to the district's current cost of providing service and the voter-approved expenditures for infrastructure improvements to accommodate renewable water.

The Jake's Lake, Smith Creek, and Monument Creek options would rely on enhanced wetlands, in most cases coupled with soil aquifer treatment.

The Brown Ranch/Jackson Creek option would rely on constructed wetlands and employ storage of water for six to

12 months in a reservoir to be constructed on the Brown Ranch near Roller Coaster Road and Highbay Road. Sams noted that two pump stations would be needed to lift the water from close to the lowest point in the district to close to the highest point in the district.

Two options using the GGC were retained based on suggestions from the district's Citizens Advisory Committee (CAC). One option would use constructed wetlands over the entire golf course and the other would use constructed wetlands on the central 42 percent of the course.

The Bristlecone option would use storage in the Bristlecone reservoir, which is within the Forest Lakes district. Sams noted that the costs associated with the purchase or use of the reservoir are a substantial factor in the estimated capital costs for this option.

At the conclusion of the study, all the options except those using Monument Creek (shown in bold with gray highlighting in the table) were judged to be too expensive or had other significant issues.

In the three Monument Creek options, the effluent would be pumped to different upstream points that would provide varying amounts of in-stream flow. The water would then be recovered by wells near the district's wastewater treatment plant and piped to one of the district's water treatment plants. Sams noted that the Triview district has rights for four wells in the Monument Creek alluvium. He added that those wells have not been constructed and permits have not been issued for them; however, all the Monument Creek options could impact those potential wells to some degree.

Dana Duthie, Donala district general manager, noted that the capital costs for the Monument Creek options shown above are comparable to the acquisition cost for the Willow Creek Ranch near Leadville that the district purchased. He added that the amount of water gained from the ranch purchase and the projected amount of water gained from the proposed water reclamation project each represents about 25 percent of the district's demand.

Sams laid out the following plan for achieving implementation of water reclamation by 2020, the point at which production from the district's wells is expected to be in significant decline:

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- Determine the treatment requirements that would likely result from revising the wastewater treatment plant's permits. This is made difficult by the political environment surrounding treatment for nutrients.
- Study the subsurface water quality and hydrologic conditions at the wastewater plant to ensure recovery wells there would be feasible.
- Plan the water court actions needed.

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