

THE IMPACT OF DESALTING ON WATER SUPPLY - ALAMOGORDO, NEW MEXICO

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I want to thank Tom and the Institute for inviting me to speak, from a consulting point of view, on what is happening in the water industry today. We are dealing with almost every major city in the state of New Mexico, plus many of the small communities. All of them, with the possible exception of one or two, have the same problems: water quantity and water quality.

Each city government spends a lot of time planning, and a lot of money trying to figure out where the next quantity of quality water is coming from. The state appropriated money to help some communities look into the possibility of using desalting. The Office of Water Research and Technology (OWRT) came forth with a program to study various communities throughout the United States. Alamogordo and Virginia Beach were selected to have a demonstration program of desalting technology: to prove that a community could hire an engineer, spend the money, design the plant, and go from there. We are at the point right now where the tentative agreement, or preliminary agreement, between the city of Alamogordo and OWRT has been approved, has been sent on to Washington, and we are awaiting final funding of the first phase of the Alamogordo desalting plant. However, final approval, final acceptance, of this plant still lies with the voters of Alamogordo.

Alamogordo parallels many other communities. They have very good quality of water, but it is very limited: about 4 million gallons a day that will meet federal standards of 500 parts per million TDS, or less. Unfortunately, their consumption in the midsummer is about 12 million gallons a day. Their only additional water supply is groundwater. Groundwater goes into their system at approximately 1,500 to 2,000 ppm TDS. As people move here from the east because of snow, lack of energy, retirement, these communities are starting to grow, and consequently, their need for water is increasing. As more wells are drilled, the community's water is of poorer and poorer quality. Steve Reynolds, our state legislators, our senators and representatives in Washington, have seen this.

The plant itself--total operation, maintenance and construction--is going to cost somewhere around \$13 million. About \$9 million of that will be for construction, and \$3 to \$4 million will be operation and maintenance for the first four years. The new proposal is that Alamogordo will put up 15% of the project, OWRT will put up 85%. This means that the voters must put in approximately \$2 million.

In deciding how big the desalting plant should be, we, as working consultants for the city of Alamogordo, with OWRT and their engineers doing the feasibility study, came to an agreement. We took several things into consideration. One, we wanted to make an impact on Alamogordo's water system which would show people what good quality water will do. Second, we knew that a small community

could not come up with \$5 or \$10 or \$15 million to build a plant; and third, the federal government, through OWRT, had limited its expenditure to \$50 million for a total of five plants, or approximately \$10 million per plant (some plants will spend more than that, some will spend less, according to size). Looking at Alamogordo's water quality, we settled on two million gallons a day for the plant. We wish we could have gotten four million gallons a day. They could use it today. However, we worked a trade off on cost and need, and settled on two million gallons a day.

Now, what does good quality water mean? You have good drinking water, better tasting foods and beverages, reduced soap use in laundry and showers, as well as reduced replacement of water heaters. The life of anything that uses water will be considerably extended with high quality water. It also will reduce corrosion and scaling in the municipal system.

The average cleaning product cost, with added treatment from desalting (getting the hardness down to just a little less than 300 parts) would be around \$11.00 a month. If we kept the hardness where it is now without treatment, which is just above 500, the cost would be a little less than \$15.00 a month. This means that in soap costs alone the customer could save \$4 or \$5 a month. The estimated extended life for appliances, for instance, of garbage grinders, would be a year, or two, or three. In every case--coolers, water heaters--we would extend the life two or three or four years.

What does this mean to the average homeowner? We looked at the cost it would save the homeowner in Alamogordo strictly due to maintenance, soap savings, and municipal costs. The average homeowner would save approximately \$9.56 a month, or \$114 a year, that they could put into additional water costs by adding desalting. This does not even include the \$11.80 a month that could be saved if they got rid of a water softener.

The figures that we have come up with are very conservative. It is obvious why. We want to be able to prove: (1) that we are saving money, and (2) we want to be fair and honest with everybody, including the citizens of Alamogordo. At the Buckeye treatment plant in Arizona, they proved that they were saving \$120 a year (or \$10 a month), which is more than we are estimating for today. However, they were treating drinking water at 3,000 parts per million, and here we are talking about water in terms of 1,000 to 1,500 parts per million TDS.

Alamogordo has the opportunity: to be the leader in a breakthrough in desalting technology for the state, to produce high quality water, to work with the local universities, New Mexico and New Mexico State University in research, and to work with the federal government as well, so that every community in the state can learn from this technology how to improve their water supply.