SALINE WATER - REVISITED

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The title of this Workshop came from a general feeling that the desalinization and/or utilization of saline water had at one time been a rather high priority item and now seems to have been placed on the back burner. It was felt that it is time for re-emphasizing this area of water research and technology in view of current and projected water needs. The once through water use has been wasteful in the past, is now, and multiple use must be emphasized. Under right conditions desalting can make a contribution in both producing usable water from brackish sources and as in process treatment to improve water in industrial process.

Not only is the amount of potable water in the United States limited, but water suitable for agriculture and industrial use is in short supply. This is especially true of the Western part of the country. In some areas, there are large quantities of brackish or saline water that could be used to free or supplement the fresh water supplies. Where this is possible, it would be very desirable. Often the reasons given for not considering desalinization have been economic.

Generally, water desalinization has been considered expensive when compared to alternative sources. In many cases this is justified. However, if one considers the hidden costs of other water developments, the economics may be more favorable. For example, many cities and industries use large amounts of water for which they pay low prices. If the payments would include the original cost of building a dam or developing reservoir capabilities, the prices would be higher. The difference in those costs have been borne by taxpayers as a whole. Another problem with reservoir waters is that large amounts are lost through evaporation and by transport through ditches. Large water projects cannot meet small community requirements as they must be built either in anticipation of needs with investments idle, or long after needs exist equal to storage and conveyance capacity. Taking all factors into consideration, perhaps there are situations where desalination for specific communities is cost competitive or to be preferred.

There is no question that the original capital cost of desalinization plants are high. Alternatives have up to now been available and attractive. These alternative sources are being depleted, however, and desalination needs to be included in overall water planning. In some areas even now, desalination of water is the only realistic approach.

One of the fundamental questions repeatedly raised at this Workshop was "What should be the respective roles of federal and state government in desalting water?" How much up front funding or cheap long-term loan should come from government? Should not government

participation be reasonably expected when a reliable water source will provide an economic boost to a community, state or region? An example that applies to New Mexico, is the water situation in the northwestern part of the State. Here there is a tremendous amount of energy production with accompanying water usage. This water usage will increase. Perhaps the government should become involved in water supply here since the energy production is of benefit to the entire nation.

Consideration of energy production introduced other topics that were discussed. Energy production is often carried out or is feasible in areas where large quantities of brackish water are available. The typical energy generating plant has tremendous loss of heat energy. In still other situations, there is high waste of mechanical energy. Much of this now wasted energy could be used to desalinate water through such techniques as vaporization, and vapor compression, reverse osmosis, etc. for both industrial or commercial process use and potable water for domestic use. Energy would be put to a good use and usable water provided at the same time. This kind of situation should be taken into account when planning. Possibly, government pressure should be put on certain industries to locate where brackish water can be used directly or their waste energy could be used to desalinate water. The most often mentioned site was the Tularosa Basin.

Many participants stressed that more consideration needs to be given to water that can be used directly or with only mild pacification. A favorite topic was the agricultural use of brackish water. This was discussed including the techniques developed in Israel and California for isolating or developing strains of salt resistant plants. The area does show promise. It was proposed that the government take a more active role in the utilization of brackish water by agriculture.

Another aspect brought up was that although huge amounts of money have been spent on research to remove salt from water, there has been comparatively little spent on actually building working models. In other words, the transfer of the knowledge from the scientific lab to actual on-site plants has been minimal. Instead of building more and more demonstration plants, why not build at least one major on-line system? There have been many new materials such as teflon and stainless steel developed that are much more corrosion tolerant than those previously available. Many of the economic studies were done before those were in use. Newer and better membranes exist. Plants, not models using these should be built. The same techniques can be used for waste water clean-up allowing municipalities to go on a semi-closed loop water system. Research should not be stopped. Probably it should be expanded. However, actual plants are needed, as nothing takes the place of a high visibility desalting plant producing water as part of an operating system.

The last major topic discussed was the environmental problems associated with brackish water clean-up. These will be of two main kinds. There will be either a brine or solid salts to dispose of and the pumping of saline water from aquifers will have effects on the ground water in the region. More specific site studies must be done.