



ARIZONA

WATER RESOURCE

Arizona Water Resource, September-October 2008 Volume 17, Number 1

Seagoing Desalination Plant Touts Environmental Benefits

With desalination looming big on the water resource horizon, many water officials are looking at their options. One option Arizona officials are considering is building a desalination plant in Puerto Peñasco that would be a joint Mexican-Arizona project, with both the resort community and the state benefitting from the desalinated water supplies.

With desalination an emerging technology, other kinds of options will be available in the future. One such option is seawater desalination vessels, ships capable of onboard desalination for onshore use. Even landlocked states like Arizona might benefit from such vessels.

(There is something oddly fitting about a seagoing vessel outfitted to desalinate ocean water for inland use. Designed for the sea, the vessel floats on the raw resource to be processed, the ocean in all its abundance, unlike a land-based desalination plant that treats seawater from the shore.)

Water trading would enable Arizona to benefit from a desalination vessel. For example, Arizona could invest in a vessel that would then operate off the coast of California and provide water to the West Coast state. In return, California could agree to Arizona taking a share of its allotted Colorado River water. Desalinated water is swapped for Colorado River water. This is a simplified version of what would be a very complicated agreement.

Water Standard, a Texas-based company, has developed the seawater desalination vessel as an alternative to land-based systems. The company is converting existing tanker vessels into desalination vessels by adapting proven processes used on military and cruise ships and installing proprietary technologies. The company says the result will be an environmentally friendly desalination process that can be designed at different capacities, to deliver from 5 to 75 million gallons of desalinated water per day.

Able to move about, the vessels will be able to seek areas of the ocean with the best quality of water for desalination. Since the vessels will be processing better quality water with less suspended solids, there will be reduced pre-treatment costs associated with power, chemicals, and waste disposal. The low-velocity pumps that draw seawater

through the intake water system means less impact on sea life. Further, the passive screen on the intake will minimize entrainment and entrapment. Water Standard has designed a discharge water system that will have minimal impact on marine life.

The vessels could deliver desalinated water onshore through seabed pipelines or by employing shuttle tankers similar to those in use for bulk transport of orange juice concentrate or wine. If operating within a harbor, the vessels could pump water directly ashore.

Water Standard considers that two prime advantages of the vessels are their distance from shore - they will typically operate two to five kilometers from the coast - and their mobility. This enables the vessels to confront a range of possible future scenarios from bad weather and natural catastrophes to geopolitical and socio-economic instability. Mobility also ensures that if objections arise that the desalination operation is visually unattractive, the vessels could move over the horizon, out of sight of land.

Cost might discourage the use of desalination vessels, although Water Standard believes its vessels will become more cost-competitive in the future. Onshore plants face increasing land and permitting costs as well as environmental issues. Meanwhile technology costs relating to desalination are coming down.

According to Gayle Collins, Water Standard spokesperson, the company's seawater desalination vessel is a relatively new concept. She says, "There are no such vessels operating in the world right now. All eyes are kind of on us to get that first one out."