Our Ocean Backyard

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Column No. 346

What’s Up With Desalination?

Almost any new project in Santa Cruz become controversial almost the day it is proposed. You are often either for it or against it, and desal is no exception. There is often not much middle ground. A former Santa Cruz City Council member once told me from his years on the council that what typically happens with most new proposals is that a line gets drawn, and one group gets on one side, the other gets on the opposite side and they duke it out for months or longer. He said a more productive approach is to draw a circle and put both groups inside and start to find common ground to work towards a solution. Never easy.

Our present water shortage in Santa Cruz and beyond is becoming more apparent by the day, whether forest fires, reservoir levels or water rationing. Loch Lomond is now at 62.9% of capacity with no rainfall likely for at least four or five months, and how wet or dry the next year will be is anyone’s guess. In Monterey County, as of July 16, Lake San Antonio and Lake Nacimiento, which supply the Salinas Valley with water, are at 9% and 17% of capacity, respectfully.

The one area of common ground I’m sure everyone in Santa Cruz could agree on is that we would all like to have water coming out of our tap when we turn it on. And local water districts have the often-thankless job of trying to make sure this happens. Both are now studying alternatives to determine which are feasible if the present drought continues. The historical record of rainfall in the west provides clear evidence that there have been droughts that have lasted several decades or longer, which is not good news.

One of the potential future sources of water we will always have available to us is the offshore ocean, all 332,000,000 cubic miles of it. But the 3.5% salt makes this unusable for any household or agricultural uses without first removing the salt. Desalination today is widely carried out around the world in arid regions in about 20,000 individual plants in 120 different countries using a well-developed technology, pushing brackish or salty water through a semi-permeable membrane using the process of osmosis.

After 15 years of planning, design, environmental impact assessment and review, and final political approvals, the largest desalination plant in the United States went online at Carlsbad in northern San Diego County in December of 2015. This is the most technologically advanced and energy-efficient desalination facility in the Western Hemisphere and taps the world’s largest reservoir of water, the Pacific Ocean.

This plant has the capacity to produce 50 million gallons of fresh water a day, which is about seven to ten percent of San Diego County’s total water usage. San Diego is an arid region and imports most of their water from somewhere else. About 60% comes from the Colorado River (which is about 130 miles away and oversubscribed), and about 20% comes from the Sacramento-San Joaquin delta region, which is nearly 500 miles away and also oversubscribed in dry years. The remaining 20% is locally derived. San Diego has historically been dependent on sources of water many miles away that are no longer completely reliable. A large desalination plant, while expensive, gives them some measure of independence and reliability.

Although the original construction costs were estimated at $270 million, in the 15 years from inception to completion, the total price tag grew to about $1 billion. There was also considerable opposition along the way as desalination proposals in California have rarely met with complete public approval.

The three major issues that are nearly always raised and then argued with every new proposal for a desalting plant include: 1) costs, 2) energy usage, and 3) potential impacts on the marine environment. My objective in each of these Ocean Backyard columns is to educate but not to advocate, and each of these three issues needs some explanation.

What is important to understand is that the Santa Cruz City water supply system that we depend on when we turn on the tap (the Loch Lomond reservoir, the San Lorenzo River, small diversion dams on three north coast streams and some long pipelines, several wells, and the Graham Hill Road water treatment plant and the water distribution system) were all built and paid for decades ago.

While we still pay for operations, maintenance, upgrades and replacement of pipes, storage and treatment systems, the big-ticket items were paid off years ago. Any of our future options are going to cost money- a lot of money. There is no more cheap water around nor a lot of options.

Costs of fresh water produced from the new Carlsbad desal plant are a little over twice what the San Diego County Water Authority presently pays for imported water, although there is no certainty in the years ahead with a changing climate that they will still be able to obtain water from the Colorado River and the Bay Delta.

The price tag for their 30-year contract with Poseidon is at least $110 million per year, which would increase the typical homeowner’s water bill by about $5 to $7 a month. A $1 billion desalination plant with annual $110 million amortization costs sounds like a very expensive investment; but $5 to $7 a month, less than the cost of two lattes, doesn’t sound like much at all for a family’s guaranteed monthly water needs that aren’t dependent upon the vagaries of future rainfall or uncertainties in future water allocation by some political process. More to this story coming in two weeks.