

THE MONTEREY COUNTY WATER RECYCLING PROJECTS

-- over 7 billion gallons sold!

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SUMMARY

The Monterey County Water Recycling Project (MCWRP) is a joint effort between two public agencies that are helping to slow seawater intrusion in Northern Monterey County. Since beginning operating in 1998, over 7 ***billion*** gallons of recycled water have been used for irrigation of food crops. The initial concerns over waterborne pathogens, food safety, and public perception have not turned out to be pressing problems at this juncture. Instead, water quality (salts) has been the key concern. Various strategies have been employed to anticipate and/or mitigate potential disruptions in order to maintain the project's overall success.

BACKGROUND

Northern Monterey County is one of the most productive agricultural areas in California. However, it has also been plagued by seawater intrusion for decades. Thus, in the late 70's, the concept of substituting recycled water for crop irrigation was proposed as a way to reduce groundwater pumping. However, there were lots of questions about the safety of using recycled water on food crops that might be consumed without cooking. A study would be needed to confirm that the new water would be suitable.

With that charge, the Monterey Wastewater Reclamation Study for Agriculture (MWRSA) was initiated in 1978. This 11-year study included five years of field tests. Various crops were irrigated including artichokes, head lettuce, celery, broccoli, and cauliflower. Using side-by-side comparisons with well water, the yield and quality of the produce was measured. The recycled water and produce were also examined to verify that no pathogens were present. At the end of five years, a summary report was published indicating that the water was safe. It was found that produce yields and quality were as good as, and in some cases, better using recycled water. Subsequently, approvals for using this water were obtained in 1988 from both the state and county.

Based on the above affirmations, conceptual and pre-design reports were prepared in order to prepare environmental documentation and to obtain funding support. Eventually, Bureau of Reclamation and California low-interest loans were obtained for the \$75 million project. In order to proceed, a partnership was created between the Monterey County Water Resources Agency (the water planning agency for Monterey County) and MRWPCA (the regional wastewater agency).

KEY OBSTACLES

A. Long-Term Loans

The key funding instruments were the Bureau of Reclamation loans. These loans (one for construction of the treatment plant and another for the distribution system) were very low interest with 40-year terms. However, because the Bureau was limited on current funding, the loans were disbursed over eight years. Since project construction would be completed in 2½ years, short-term bonds were used as a cash flow “bridge.” Unfortunately, this increased both overall project costs, as well as initial annual operating costs (debt service).

B. Signage

The project area encompassed 12,000 acres of rural agricultural land in Northern Monterey County. So, it was a major concern when our draft permit indicated that we’d need to post large (3’ x 3’) “Recycled Water – Do Not Drink” signs every 100’ along the perimeter and interior roads of the project. Fortunately, after extensive discussions, we were able to revise the requirements to signs every 1/3 mile since most of the sites were fenced and on private property. And, wording on the signs was changed to “Irrigation Water – Do Not Drink” or “No Trespassing.”

C. Customer Concerns

The main grower issues were related to food safety (pathogens), marketability of the produce, public perceptions, and water quality. The concern over water safety was understandable since there had been many recent incidents nationwide related to “emerging pathogens.” While the MWRSA testing in the 1980’s looked at viruses and general pathogens, it didn’t address some of the new ones, such as E-coli (157:H7), cryptosporidium, cyclospora, giardia, and legionella. In order to address these concerns, a short food safety study was conducted prior to actual operation of the recycling plant. The results verified that the water was of very high quality, free of viable pathogens, and thus suitable for food crop irrigation.

Marketability and public perception issues were of particular importance since the produce would need to be sold in the open market. Because recycled water quality is similar to that of other water sources, there is **no** labeling of the produce to indicate that it’s grown with recycled water. To address perceptions and marketing issues, a communications company was hired to develop an overall plan that considered both education and crisis planning. Materials generated were used to prepare local produce sellers and growers for any questions regarding the safety of recycled water and the produce grown with it.

OPERATIONS

A. Production

The first year of operation was geared towards starting slow and achieving a very high level of water quality and safety. Extra testing was conducted to assure that the water was pathogen free. As with any new venture, there were also the usual O&M issues during the first year. Even so, about 5,000 acre feet (AF) of recycled water was produced during

calendar year 1998. For 1999, production problems were much reduced. Consequently, 10,000 AF of recycled water was distributed to the growers. And for the year 2000, expected production should be about 10,500 AF.

B. Water Quality Questions

The project was designed to supply water for about 12,000 acres of food crops. Based on about 1.75 acre feet of water per irrigated acre, about 21,000 AF of water would eventually be needed per year. However, most of this water is supplied during the peak growing months of May through August. Since the recycling plant has a current output of nearly 21 MGD (about 1,900 AF per month), supplemental well water is added to make up the difference. For example, in June 2000, 1,790 AF of recycled water was added to 1,050 AF of well water in order to meet the grower demand.

Even with the added well water, some growers still had a concern about the long-term impact of high salts. Since the system was not designed to achieve uniform blending of recycled and supplemental well water, the salt level received by a grower depended on their location, plus which wells were operated. Currently, the salt level of 100% recycled water, as measured by the sodium absorption ratio (SAR) is about 4.7. In contrast, good quality well water averages about 1.8. Overall grower water consumption in 1999 was 15,300 AF (10,050 AF recycled and 5,250 AF well). Thus, the overall SAR was about 3.9.

The question of how high the SAR can be over the long term without significant yield and soil permeability impacts is not known at this time. Thus, a multi-year soil salt monitoring program has been initiated to better understand this issue. In the interim, MRWPCA has embarked on a source control effort to limit salts from commercial and residential customers from entering the wastewater system.

LESSONS LEARNED

Although it took 20 years before the project became a reality, the MCWRP has been a tremendous success by providing a new source of water for the area. Persistence and ongoing dialogue with the customers (growers, regulatory agencies, etc.) has proven to be the keys for negotiating the obstacles expected for a large-scale and innovative project.

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