



Drinking water pipes in the Claude "Bud" Lewis Carlsbad Desalination Plant.

What is Desalination?

Desalination is the process of removing salts from seawater or brackish water through distillation or filtration to produce fresh, drinkable water. At a desalination plant, ocean or bay water is filtered to remove salts and other impurities. The material removed from the salt water is referred to as brine and must be properly disposed of to protect the environment. Desalination is used in various dry regions around the world, such as the Middle East, Australia, and California.

Bay Area Desalination

Since 2015, Valley Water has been researching desalination to help meet future water supply needs. Valley Water participated in the Bay Area Regional Desalination Project (BARDP), a collaboration among Bay Area water agencies. BARDP evaluated sites around San Francisco Bay for a desalination project, and ultimately Mallard Slough in eastern Contra Costa County was chosen as the most feasible site for a desalination project. The current BARDP project proposal can be found at regionaldesal.org

Feasibility of Desalination in Santa Clara County

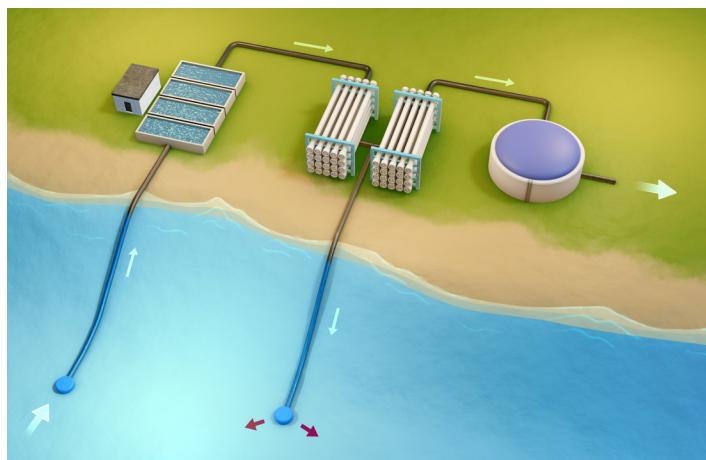
In October 2023, Valley Water completed a preliminary environmental feasibility study for the development of a desalination project in Santa Clara County. The completion of this preliminary study represents the first phase in evaluating a potential desalination project in the county. The study indicates that a desalination facility in the county may be feasible provided certain environmental issues are addressed. Specifically, critical issues include those related to protection of the sensitive South Bay ecosystem related to intake of water, brine management, and protection of habitats.



Valley Water has recently hired a technical consultant to conduct the second phase of this study, an engineering feasibility study which will evaluate the technical feasibility, costs, and regulatory permitting requirements associated with a possible desalination project in the South San Francisco Bay (South Bay). The scope of services for this second phase includes some of the following tasks:

- Conduct feasibility of a desalination facility to produce potable water to augment existing Valley Water's water supplies.
- Conduct fatal flaw analysis to screen alternatives initially identified in the Environmental Feasibility Study.
- Work with stakeholders to help identify possible siting locations.
- Determine technology options based on water quality, intake options, brine management and siting options.
- Provide cost estimate for both capital and operating costs for most viable option.

The timeline for this study is estimated at one year following the notice to proceed.



3D render of converting salt water into fresh water through a desalination plant.

Energy and Economic Factors That Must Be Considered For Desalination

The energy required in the desalination treatment process is a major and costly challenge. Filtering the salts and other compounds from sea water must be done at very high pressure which requires a significant amount of energy. While potable reuse uses similar technology, the energy requirement is lower because the source water contains fewer salts.



Energy recover devices used to capture hydraulic energy at the Carlsbad Desalination Plant.

More Project Details

For more information about Desalination, please contact Senior Water Resources Specialist Henry Barrientos via email at hbarrientos@valleywater.org or visit delivr.com/2bkwu.

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