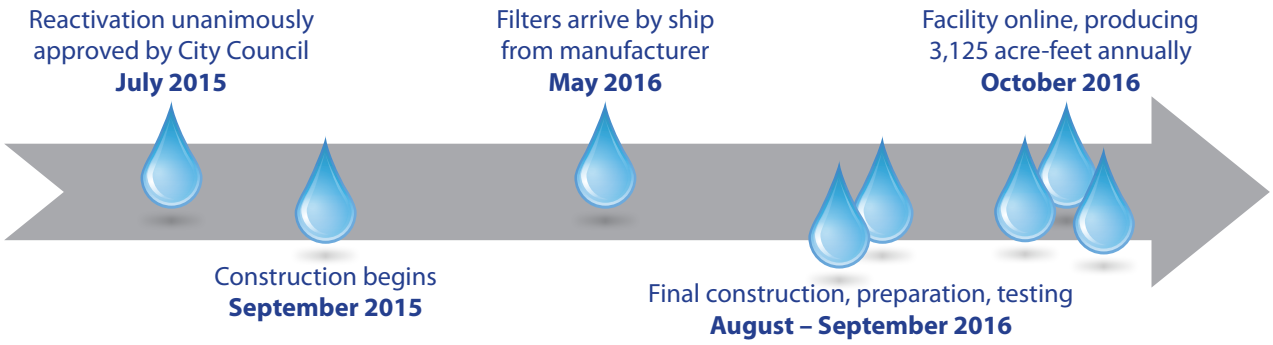
CITY OF SANTA BARBARA
DESALINATION FACILITY UPDATE

A BRIEF HISTORY

On July 21, 2015, in response to exceptional drought conditions, the Santa Barbara City Council voted unanimously to reactivate the Charles E. Meyer Desalination Facility. The facility will use state-of-the-art technology and design practices to reduce electrical demand and environmental impacts, while providing a critical water supply for the City.

The facility will begin supplying water in October 2016 with a production of nearly 3 million gallons per day. This is equivalent to 3,125 acre-feet of water annually or about 30% of the City's demand. At additional expense, the City has the option to expand the facility, up to the permitted capacity of 10,000 acre-feet of water annually, if drought conditions continue and additional water is needed.

The capital costs to reactivate the facility (at a capacity of 3,125 acre-feet per year) are estimated at $55 million financed over 20 years with a low 1.6% interest rate loan, which equates to $3.2 million per year in debt service. Annual operating costs are estimated to be about $4.1 million at full production and about $1.4 million in non-operation or standby mode. The facility could be put in standby mode during rainy periods to reduce operating costs.



IMPROVEMENTS IN DESALINATION TECHNOLOGY

A lot has changed in desalination technology since the previous facility was built in 1991.

The reactivated facility…

- Will use **40% less energy** than the original design, greatly reducing its electricity demand and carbon footprint.
- Will use ocean intake pipes equipped with wedge wire screens recognized by the State Water Resources Control Board as a **best available technology for screened open ocean intakes**. The screens will be made of durable copper-nickel alloy and will have 1 millimeter openings to minimize marine life entrainment and impingement.

> ***"Desalination has a role in meeting future water needs though it should be pursued only in the face of diligent water conservation."***
>
> *– Joshua Haggmark, Water Resources Manager*

Old (1990s era) intake screen versus modern intake screen

HOW DESAL WORKS

- Seawater will enter the City's desalination facility from 2,500 feet offshore passing through the wedge wire screens (noted above) at velocities of less than .5 feet per second (which is less than typical ocean currents).
- Once on shore, the seawater will go through a series of filters that remove sediment, bacteria, viruses, and minerals (including salt), to produce an ultra-pure water. The City's desalination facility will use reverse osmosis treatment for removal of salt from seawater.
- Before the finished water is ready to be pumped into the water system and distributed to customers, natural minerals are reintroduced into the water to make it compatible with the City's other water supplies.
- The waste product from the desalination process is referred to as brine and is about twice as salty as normal seawater. The brine is blended with the City's treated wastewater and is discharged into the ocean over a mile and a half offshore. Discharge flow rates of brine and treated wastewater leaving the City's outfall pipe are controlled to protect sea life and comply with current regulations.

> ***"The severity of this drought has really been a game changer and a paradigm shift in the City's water supply planning."***
> *– Joshua Haggmark, Water Resources Manager*

Aerial image of Charles E. Meyer Desalination Plant April 2016

WHAT IS THE FUTURE ROLE OF DESAL AS A CITY WATER SUPPLY?

The City's current adopted policy considers desalinated water as a drought supply. However, the City's existing permits allow for a range of operating scenarios which could include non-drought operations. When the drought emergency ends and our groundwater supplies have recovered from drought-related pumping, the role of desalinated water in the City's Long Term Water Supply Plan will be considered by the City Council. The City Council is expected to engage in this policy discussion as part of a Long-Term Water Supply Plan update, which will begin after the current drought emergency has abated.

View of intake weir box location, East Beach

EXPLORING ALTERNATIVES: SUB-SURFACE INTAKES AND POTABLE REUSE

Sub-surface seawater intakes are pipes installed under the sandy seafloor, rather than in open water. An ongoing City-sponsored study recently found that sub-surface intakes were infeasible at this time, due to several factors including impacts to sensitive habitat (Mission Lagoon), insufficient water production, and geologic factors. When the drought ends and the water supply emergency has subsided, the City will revisit the role of desalination as part of an update to the Long-Term Water Supply Plan.

Potable reuse is the process of treating wastewater with advanced treatment technology to meet or exceed drinking water quality standards so it may be used as a potable water supply source. The City is currently investigating the feasibility of various potable reuse alternatives. Findings from the potable reuse initial screening investigation will be presented at a Technical Advisory Panel public meeting to be held at City Hall on August 3, 2016.

For more information on these topics, visit ***www.SantaBarbaraCA.gov/Desal***