November 2010

Intake Studies and Options

Proposed Seawater Desalination Project Components

The City of Santa Cruz (City) and Soquel Creek Water District (District) have joined together to form the **scwd²** Task Force to evaluate desalination as a supplemental supply source. A regional 2.5 million gallon per day (mgd) seawater reverse osmosis desalination project is being evaluated by the City and the District to provide a supplemental water supply during drought conditions and to preserve groundwater aquifers from seawater intrusion.

The conceptual components of the proposed project include:

Seawater Intake: Either a sub-seafloor intake system or a screened, open-ocean intake using passive screens. (The 36-inch diameter abandoned wastewater outfall at Mitchell's Cove was identified as a potential intake in the City's Integrated Water Plan Program EIR. Other feasible types and/or locations will be considered in the project EIR).

Desalination Plant: 2.5 mgd plant located somewhere within the industrial area on the west side of Santa Cruz.

Brine Disposal System: Brine from the treatment process is approximately twice as salty as ocean water. To dilute, the brine will be blended with the existing effluent from the Santa Cruz Wastewater Treatment Plant.

Conveyance System: Desalinated water will be directly blended with the City's drinking/potable water system. An intertie connection between the City and District would allow for water to be distributed to the District during non-drought conditions.

This fact sheet provides information on the intake system studies for the proposed regional desalination project.

Frequently Asked Question:

Are the agencies addressing how an intake system can affect marine life?

During our ongoing community dialogue, we have heard members of the public and environmental groups express concern about how the proposed seawater intake system for the desalination project could impact marine life. The City and District are conducting an Environmental Impact Report (EIR) on the proposed desalination project; it will identify and thoroughly evaluate how the feasible intake systems will interact with the marine environment. Three technical studies (explained in the article, "Seawater Desalination Intake Systems") have been developed under the guidance of Technical Working Groups (interdisciplinary team of local experts and regulators) and will be used to inform the EIR.

Paired plankton nets used to collect fish and shellfish larvae in the source water.

The notion that "fish will be sucked into the proposed desalination plant" is simply unfounded. Both sub-seafloor and passive screened open-ocean intake systems would be designed to eliminate entrapment and impingement. Screened, open-ocean intakes would also be designed to minimize entrainment impacts.

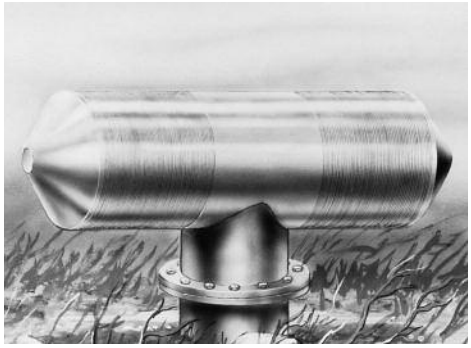
As part of the Screened, Open-ocean Intake Effects Study, 13-months of

continued on back

"FAQ" continued...

sampling included collecting data on the concentration of fish eggs, fish larvae and target shellfish larvae in the ocean and at the pilot scale intake to assess the impacts of a proposed screened, open-ocean intake. This Study will assess the operational effectiveness of the passive screen system in preventing entrapment and impingement and minimizing entrainment, and will model potential impacts on local fish and target shellfish populations.

The three technical studies (shown at right) are scheduled to be completed by January 2011 and will be made available on our project website. For more information, visit www.scwd2desal.org



Passive wedgewire screens are used on open-ocean intakes to minimize impacts on marine life.

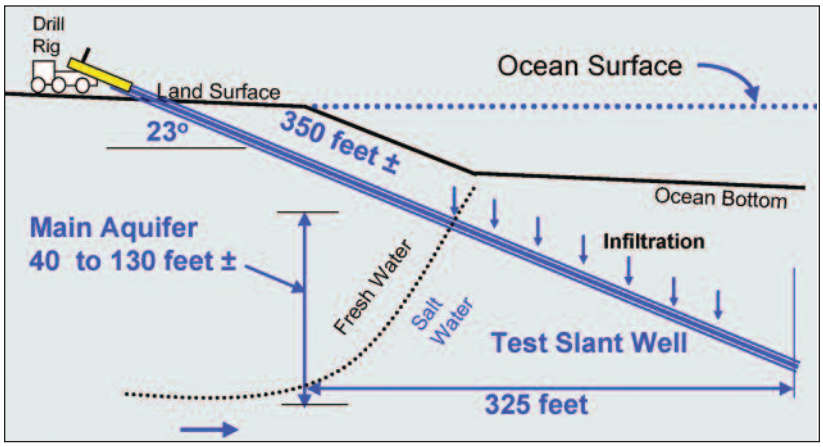
Glossary

Entrapment: When fish or large organisms pass through an intake opening and cannot freely swim back out of the intake system.

Impingement: When fish or large organisms become trapped or pinned against the screening devices by water flowing into the intake system.

Entrainment: When smaller organisms pass through screening devices and are drawn into the intake system.

Passive Screen System: An intake that utilizes small-screen openings and operates at low intake velocities to prevent entrapment and impingement and minimize entrainment.



Slant Wells are a type of sub-seafloor system that draws seawater from beneath the seafloor.

Seawater Desalination Intake Systems — What Are They?

The primary objective of a seawater intake system is to supply seawater to a desalination plant. Seawater intake systems can be broadly categorized as sub-seafloor or open-ocean. Sub-seafloor intakes collect water beneath the seafloor and open-ocean intakes collect water above the seafloor.

The City and District are currently conducting three studies that focus on identifying the most effective intake system to provide a reliable, cost-effective supply of seawater, while protecting marine life and the environment:

Offshore Geophysical Study to determine if the geology of the ocean floor can allow for a sub-seafloor intake.

Screened, Open-ocean Intake Effects Study to evaluate marine life impacts of a screened, open-water intake and assess the effectiveness of a passive screen system.

Intake Feasibility Study to evaluate the feasibility of various types of intake systems given the specific local geological and ocean conditions off of Santa Cruz, and based on the studies listed above.

Within the Intake Feasibility Study, the agencies are currently evaluating five potential types of intake systems: vertical beach wells, slant wells, offshore radial collector wells, offshore engineered infiltration galleries, and screened open-ocean intakes.

Comparisons of Intake System Advantages

Sub-seafloor Intake	Screened Open-ocean Intake
• Passive protection of marine organisms from entrapment, impingement and entrainment	• Passive protection of marine organisms from entrapment and impingement
• Reduces bio-fouling on seawater transmission piping and facilities	• Small screen size and low intake velocity minimizes entrainment
• Could require less pretreatment	• Can provide larger volumes of water at lower cost
	• Could utilize existing infrastructure at Mitchell's Cove to minimize construction impacts to the seafloor

scwd² Collaborating to conserve, protect and create reliable water resources

City of Santa Cruz & Soquel Creek Water District

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Esta información está disponible en español.
Por favor llame al (831) 475-8500.