



November 13, 2024

Ocean Desalination State Water Resources Control Board
P.O. Box 100, Sacramento, CA 95812-2000 (mail)
email delivery to DWQ-OceanDesal@waterboards.ca.gov

Re: Preliminary Comments on Ocean Plan Amendment Scoping Proposal

Dear Ocean Desalination Project Staff:

Introduction

Thanks for the opportunity to offer our viewpoint on the proposed amendments to the Desalination Amendment to the Ocean Plan. We believe that this Amendment needs to be structured to consider not only the present with available technologies but also look to the future to promote development of new technologies that will significantly grow the environmental and economic benefits of ocean desalination to properly serve California.

Desalination is critical to California's water resiliency in the face of climate change as a significant source of climate-resilient water, defined to mean a source where "variations in rainfall and temperature have little or no influence." This source is fundamentally different from groundwater, storm water, or water imported from freshwater river systems, all of which are vulnerable to climate events. California citizens deserve to know they have a base supply of water to survive supply disruption from climate or natural disaster.

OceanWell is a climate resilience company with an "environment first" approach to providing the water supplies needed to compensate for climate change. OceanWell was founded in California to help solve the state's water problem by developing freshwater supplies from the ocean without causing environmental damage. This new technology, submerged reverse osmosis (SRO), uses standard membrane technology in a new way that harnesses high-pressure seawater at 400+ meters depth to reduce energy consumption and the environmental and social impacts of desalination. SRO technology was developed in California by an environmentally-conscious team in consultation with environmental NGOs, scientists, regulators, and water agencies. SRO technology is designed to grow the economic benefits of ocean desalination while virtually eliminating the environmental concerns of the past. As a result, there is a growing coalition of support for developing SRO technology among water supply interests, far-sighted environmental NGOs, and others in California.

Near-Term Considerations

The Ocean Plan as written considers only currently available (onshore) ocean desalination technologies and establishes “slant wells” as the preferred technology with an expedited permitting process. Compared to traditional onshore, open intake desalination technology, slant wells reduce the amount of sea life mortality as water is withdrawn from the photic zone of the ocean into the desalination plant. This appears to be the primary basis for establishing slant wells as the preferred technology. At the same time, slant wells have some serious drawbacks. They encourage desalination plants to:

- Remain on the beach,
- Continue to discharge brine in the photic zone, where 80 percent of organic ocean life lives,
- Significantly increase energy use,
- Increase capital and operating costs, resulting in higher water rates for lower income households, contrary to the social justice goals of the State Board,
- Require periodic maintenance on the ocean floor with associated environmental impacts, and
- Limit the ability to grow a climate resilient source of freshwater supply.

Whether intended or not, the Ocean Plan creates a preference for technology that can never be an effective tool in managing the fight against climate change. We recommend that amendments to the Ocean Plan expand the criteria for evaluating desalination technologies to consider a broader range of impacts including those listed above.

We are confused by the staff recommendations which require that mitigation must be fully completed with demonstrably successful performance metrics prior to commencement of desalination operations at a facility. This requirement is apparently driven by the concern that a desalination project may operate for a period and not comply with its mitigation obligations. While we agree with that concern, the language proposed seems burdensome even to projects that intend to comply with mitigation obligations as soon as operations commence. See below for a suggestion to clarify the intent of this mitigation requirement.

The Role of New Technologies

By far, OceanWell’s most important comment on the Ocean Plan Amendment is that the State Board should use the Ocean Plan to foster the development of new technologies that can outperform the current preferred technology. The ocean desalination industry has given rise to a number of new technologies in recent years. These include offshore technologies that operate on the surface of the ocean such as Sea Well, developed by a Santa Barbara company, Blue Desal out of the Bay Area, and Oneka, a Canadian company that proposes to supply fresh water to Fort Bragg.

As the name suggests, subsea reverse osmosis is different. OceanWell proposes to move the RO process *offshore and at depth*. An OceanWell water farm would consist of buoyant “pods” anchored to the ocean floor at a depth of about 400 meters. The anchors are designed to minimize any impact on the ocean floor. SRO technology can provide multiple benefits beyond a resilient source of supply. For example, since SRO technologies are best operated in coordination with

storage programs, it can be used to provide replenishment water for groundwater basins, helping to operate the basins for sustainability.

By relocating the RO process from the beach to depth, SRO technology has numerous benefits compared to the State Board's current preferred slant well technology:

- Shoreline footprint that is only 10 percent (or less).
- No brine impacts because SRO technology doesn't create brine in the first place.
- Little or no sea life mortality – there is relatively little organic life at 400 meters depth, and the “Life Safe” system of our technology is designed to leave any sea life it draws in unharmed and placed safely back in the ocean where it belongs.
- Energy use reduced by as much as half because natural hydrostatic pressure provides free energy to drive the RO process.
- Significantly lower capital and operating costs with less water rate impacts on lower income households, consistent with State Board policies on social justice.
- Ability to scale up as climate change occurs and to reduce demands on freshwater supply sources in the Colorado River watershed, the Bay-Delta in Northern California and Mono Lake and its tributaries.

SRO is well along in the R&D process and warrants serious consideration by the State Board as it revises the Ocean Plan. In the past 15 months, we have achieved the following benchmarks:

- Both the US Bureau of Reclamation and the Metropolitan Water District of Southern California have endorsed the promise of this technology by making grants to further SRO pilot studies.
- OceanWell and Las Virgenes Municipal Water District in northwest Los Angeles County signed an MOU to create a public-private partnership to advance the technology.
- We have created an OceanWell Statewide Work Group with 25 public water supply agencies ranging on the coast from Monterey County to San Diego County and inland as far east as Riverside County.
- Eight Southern California public agencies that are solely dependent on the State Water Project for imported supplies in all or parts of their service areas have executed a letter of intent and cost sharing agreement for a feasibility study to explore ways to deliver OceanWell water from a submerged water farm to their service areas.
- In October 2024, OceanWell completed Series A, the first issue of public stock in financing this innovative future technology; a strong indication of support from the private capital market.
- Starting on day one, we have been meeting with environmental NGOs, several of which submitted written letters of support for a USBR grant. Ultimately, every acre-foot of water that might be developed by these efforts is an acre-foot that will no longer be demanded from the Bay-Delta or Colorado River watersheds.

We have made steady progress in establishing SRO as a proven technology with our public-private partnership with Las Virgenes MWD. The MOU we signed essentially commits the partnership to work together on a “Line of Sight” to commercial viability. The Line of Sight includes various activities to prove the technology:

- 2022: Proof of concept test in Navy facilities at Port Hueneme, California
- 2023: Bench tests of certain aspects of SRO technology in Houston, Texas and California
- 2024: Reservoir test in Las Virgenes Reservoir
- 2025: Boat test in the Gulf of Mexico
- 2026: Demonstration project in Hawaii with an anchored pod delivering water to shore
- 2028: Proven technology with commercial readiness to sign contracts and start construction

The boat test in 2025 will lower an OceanWell test pod off the back of an ocean-going vessel by a cable down to 400+ meters to perform tests that are best done at depth but do not require the expense of anchoring the pod to the ocean floor and the construction of a pipeline to deliver water to shore. The demonstration project scheduled for 2026 will anchor a pod with commercial-sized components to the ocean floor off the big island of Hawaii and construct an umbilical pipeline to carry power down and fresh water back up. The demonstration project will operate for at least a year to complete the R&D process. Following this R&D pathway, we expect to be commercially ready by 2028. We are fully permitted to conduct the boat test in the Gulf of Mexico and almost fully permitted for the demonstration project in Hawaii. We would strongly prefer to conduct these tests off the California coast, but the permitting process of the State Board under the Ocean Plan is too time-consuming and costly. However, this could change with the amendments to the Ocean Plan as outlined below.

Recommendations for State Board Actions

SRO is a game-changing technology that can provide substantial benefits for water supply and the California economy and its environment. SRO is also a technology that could prove invaluable in the quest to adapt to climate change. We believe that the State Board can and should act not only to protect the environment in the near-term but also to encourage the development of new technologies like SRO that substantially grow the water supply benefits of ocean desalination while reducing or eliminating its environmental impacts.

The State Board can accomplish this by observing the following guidelines. We recommend that the State Board:

1. Increase the clarity and speed of approvals for pilot and demonstration projects that have the potential to promote the co-equal goals of water supply resilience and ecosystem enhancement, consistent with the 2009 Delta Protection Act.
2. Clearly define the criteria to compare alternative desalination technologies; the criteria should cover more than just environmental impacts and encourage advances that help California deal with climate change in the future.
3. Replace the current mitigation requirement language with language that clearly requires a fully developed mitigation plan that will be implemented at the commencement of project operations.
4. Devote resources to fund required tests of new technologies and staff to work collaboratively with project proponents to complete the tests.
5. Recognize that entrainment does not equal mortality for all desalination technologies, especially those specifically designed to eliminate mortality even if an organism is entrained.

6. Allow local agencies to determine whether they need additional supplies from desalination projects.
7. Reject any "Loading Order" that puts innovative technologies like SRO on the back seat of the bus so that these technologies can be developed for the benefit of all interests.
8. In keeping with AB 2108 Environmental and Social Justice considerations, require an analysis that includes the effects on SB 535 designated communities and Tribal communities.

We appreciate the opportunity to provide comments on this preliminary Ocean Plan amendment scoping effort. We are fully prepared to actively engage in the Ocean Plan amendment process to ensure that the end-product promotes the coequal goals of water supply resilience and environmental enhancement.

For any questions regarding the comments embodied within this correspondence, please contact the undersigned or OceanWell's Water Policy Strategist, Timothy Quinn – at tquinn@oceanwellwater.com or at (916) 606-3124.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert Bergstrom", with a long horizontal flourish extending to the right.

Robert Bergstrom
Chief Executive Officer
OceanWell Co.