



PLANNING COMMISSION STAFF REPORT

TO: Planning Commission

DATE: May 14, 2025

PREPARED BY: Eric Miller/Miller Marine Science & Consulting, Inc. and Tim Hogan/TWB Environmental Research and Consulting, Inc.

PRESENTER: Eric Miller/Miller Marine Science & Consulting, Inc.

AGENDA TITLE: Initial Study/Mitigated Negative Declaration – Oneka Desalination Buoy Pilot Project

RECOMMENDATION

Consider the potential environmental effects of the Oneka Desalination Buoy Pilot Project as presented in the Initial Study/Mitigated Negative Declaration, as well as public testimony and Planning Commissioners' discussion during the public meeting and certify the Initial Study/Mitigated Negative Declaration; and adopt Resolution No. PC XX-2025 entitled:

"RESOLUTION OF THE FORT BRAGG PLANNING COMMISSION FOR THE ADOPTION OF THE MITIGATED NEGATIVE DECLARATION AND THE ADOPTION OF THE INITIAL STUDY/MITIGATION AND MONITORING AND REPORTING PLAN FOR THE ONEKA DESALINATION BUOY PILOT PROJECT"

BACKGROUND

The City of Fort Bragg (City) has suffered water reliability concerns in recent years during the severe droughts California has endured. In response, the City installed portable, containerized desalination units to treat the brackish or saline waters at a diversion point approximately 4.5 miles upstream from the Noyo River mouth. To avert future challenges, the City has sought out new, reliable water supply alternatives. One promising technology is the Oneka Technologies (Oneka) wave-powered desalination system. The Oneka unit converts seawater into freshwater through reverse osmosis (RO) using only the power of ocean waves. The Oneka design will be the first of its kind in California and would therefore benefit from a pilot study to demonstrate its effectiveness and refine its operational parameters to inform a future utility-scale deployment.

In consultation with the City, Oneka identified their Iceberg class unit as the most appropriate to pilot test off the coast of the City. The Iceberg unit is the 9th generation of this technology developed over seven years in the ocean environment. The pilot study (Project) will deploy a single Iceberg class unit that will produce on average 13,200 gal/day

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or 0.013 million gallons/day (MGD) for a period of 12 months. Over the course of the pilot study, the operational parameters and environmental impact of the Iceberg’s operation will be monitored to support permitting of a future array of Iceberg units to provide a utility-scale water supply solution.

On May 4, 2023, the California Department of Water Resources awarded Fort Bragg Grant Number 4600015131 to support the pilot study of the Oneka Iceberg. To determine functionality, operability, and environmental effect, the pilot study will deploy a single Oneka Iceberg wave-powered seawater desalination buoy in Mill Bay offshore of the City’s existing wastewater treatment plant (WWTP). Desalinated water (permeate) will be conveyed to shore via a submerged pipeline that will be anchored on the seafloor (and on the existing WWTP concrete outfall encasement) extending through the surf zone and up the concrete stairway to the WWTP. Once on the WWTP property, the permeate will be available for testing and observation and ultimately disposed of via the existing WWTP outfall.

The Project is undergoing a full environmental review and permitting effort, beginning with an Initial Study and subsequent Mitigated Negative Declaration (together, the IS/MND, provided as Attachment 1). In August 2024, the City applied to the California State Lands Commission (CSLC) for a lease agreement for the subtidal lands of California needed for the Iceberg mooring system and conveyance pipeline to shore. It is anticipated that review of the lease will be completed in 2025. In addition to the CSLC’s jurisdiction, a Notice of Intent to comply with the terms of Order No. R1-2020-0006 General NPDES No. CA0024902 for Low-Threat Discharges to Surface Waters in the North Coast Region (Low-Threat Permit) was submitted the North Coast Regional Water Quality Control Board (RWB) on October 11, 2024. The Project is subject to the review and approval of several other federal and State entities with statutory and/or regulatory jurisdiction over various aspects of the Project as listed in Table 1 below.

The California Environmental Quality Act (CEQA) (Cal. Pub. Resources Code §21000 et seq.; see also, 14. Cal Code Regs. §15000 et seq. [State CEQA Guidelines]) requires that an agency considering approval of a discretionary project must consider the potential environmental effects and/or impacts of implementing the project before granting its approval. Approval of the Oneka Desalination Buoy Pilot Project would constitute a “Project” under CEQA, which requires the City to conduct an environmental review. In accordance with CEQA, the City, acting in the capacity of Lead Agency, undertook the preparation of an IS/MND to determine if the proposed Project would have a significant environmental impact. As set forth in Table 1, the IS/MND will also be used by responsible and trustee agencies for discretionary permits and approvals that may be required for the Project.

Table 1. Permitting agencies and the anticipated approvals, authorizations, and regulatory requirements.

Permitting Agency	Anticipated Approvals, Authorizations, and Regulatory Requirements
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Federal Agencies	
U.S. Army Corps of Engineers (USACE)	Section 10 of the Rivers and Harbors Act Authorization/Section 404 Clean Water Act
U.S. Coast Guard (USCG)	Local Notice to Mariners (LNM)
National Marine Fisheries Service (NMFS)	Essential Fish Habitat Assessment (with USACE), Marine Mammal Protection Act, Section 7 Consultation
California State Agencies	
California State Lands Commission (CSLC)	California Subtidal Lands Lease
California Coastal Commission (CCC)	Coastal Development Permit
North Coast Regional Water Quality Control Board (RWB)	CWC §13142.5(b) Determination, Low-Threat Permit, Clean Water Act Section 401 Water Quality Certification
California Department of Fish and Wildlife (CDFW)	Scientific Collecting Permit

DISCUSSION AND ANALYSIS

The Project would occupy approximately 6.3 acres of seaspace located approximately 0.5 mile offshore of the City's existing WWTP in Mill Bay. A pipeline will convey produced freshwater from the Oneka Iceberg to the WWTP on shore. The pipeline will be placed within an area leased from the CSLC paralleling, to the extent possible, the existing wastewater treatment plant ocean outfall.

The Oneka Iceberg buoy will be moored at a site in Mill Bay using a multipoint mooring system with built in redundancy to maintain the buoy's position should a mooring line fail. The primary mooring system for the Iceberg will consist of a main tether running between the underside of the buoy and a gravity anchor placed on the seafloor. The tether will be part of the heave compensation system built into the Iceberg that will accommodate the vertical movement of the Iceberg with wave swells. The gravity anchor will consist of a structural steel frame that will hold removable concrete blocks which will be set in place after landing the frame on the seafloor. This main mooring system integrates into the proprietary system used by the Oneka Buoy to convert the wave energy to mechanical energy used to operate the buoy's desalination system.

The secondary mooring system for the Oneka Iceberg buoy will consist of four traditional anchors, ground legs and mooring line spreads. Each spread will consist of a gravity anchor (comprised of either concrete or chain) connected to a marker buoy via a synthetic riser line running to the surface; a ground leg laying on the seafloor consisting of studlink chain; a synthetic riser line connected to the ground leg and running up to a surface buoy; and a surface mooring line running between the buoy and the Oneka Iceberg unit. The four secondary mooring spreads will be placed to best accommodate the prevailing swells and will remain within the seafloor footprint limitations. The design of these spreads, with a single riser between the ground leg on the seafloor and the buoy, will minimize the potential for interference with marine animals.

The Oneka Iceberg unit will withdraw up to 66,000 gallons of seawater per day (0.066 million gallons per day or MGD) through an ultra-fine mesh (60-micrometer mesh)

screen near the sea's surface. The Oneka Iceberg's proprietary system will pressurize the water and force it through reverse osmosis membranes using mechanical energy captured from the vertical movement of the buoy on the waves. The produced freshwater (up to 13,200 gallons/day or 0.013 MGD) will be conveyed to shore while the rejected brine (up to 52,800 gallons/day or 0.053 MGD) will be discharged back through the ultra-fine mesh intake screen. The discharge process helps keep the screen clear of fouling material. Upon discharge, the brine is diluted to near ambient salinity within approximately nine feet of the discharge point.

A High-Density Polyethylene (HDPE) pipe will be used to transfer the produced water from the Oneka Iceberg buoy to shore. HDPE is commonly used for marine pipeline installations due to its flexibility, corrosion resistance, and compatibility with fresh water. The three-inch diameter pipe will have an approximate total length of 3,600 feet, of which 2,900 feet will be below sea and the remaining 700 feet floating at the surface. The umbilical connection of the pipeline to the buoy will feature a standard lazy wave configuration used in most pipeline-to-floating-structure connections to reduce strain on the pipeline and avoid damage. The umbilical will use buoy supports and mid-water weights to lift and bend the pipeline before connecting to the Oneka Iceberg's produced water outtake. The connection of the pipeline to the outtake will feature a breakaway link which would disconnect the pipeline from the buoy for entanglement prevention and to prevent damage to either the Oneka Iceberg or the pipeline.

The onshore end of the produced water pipeline will terminate within the WWTP property. The pipeline will connect to a City-supplied water pipe through a valve and meter connection near the top of the bluff. From that point heading towards the ocean, the produced water pipeline will be attached to the existing concrete slab and deck using u-clamps and fasteners. At the edge of the bluff, the produced water pipeline will turn vertical and run down the face of the bluff, again being connected to the existing concrete bluff face using u-clamps and fasteners. At the bottom of the cliff the produced water pipeline will turn horizontal and run out across the shoreline to connect with the offshore portion of the produced water pipeline.

Once connected to the beach flange, the offshore section of the produced water pipeline will be aligned over the top of the existing WWTP ocean outfall which is encased in a concrete overpour. The produced water pipeline will be secured using a combination of concrete collars, mooring chain and articulated concrete mats as ballast. Where mooring chain is used, it will be draped over the pipeline, providing a continuous ballast along its length. Pipeline ballasting and stability will be augmented by concrete collars and articulated concrete mats as required. The ballast will be placed over the pipe on top of the existing WWTP ocean outfall concrete encasement. No mechanical attachments will be made to the concrete encasement, submerged surrounding rock, or seabed.

Once commissioned, the Oneka Iceberg will be deployed and operated for 12 consecutive months to collect data on its operations, maintenance needs, production rate, produced water quality, environmental effects, and other ancillary elements that would inform a future utility-scale installation. At the end of the 12-month deployment,

the Oneka Iceberg buoy, mooring systems, and produced water pipeline will be removed from the ocean in compliance with all permits and authorizations.

FISCAL IMPACT/FUNDING SOURCE

Once all regulatory permits and authorizations are granted by their respective agencies, the California Department of Water Resources Grant Number 4600015131 will be released to reimburse the City for all of its expenses. Oneka Technologies will be funding additional data collection not covered by Grant Number 4600015131.

ENVIRONMENTAL ANALYSIS

An Initial Study (IS) using the CEQA checklist was completed for the Project. The Project is expected to result in either No Impact or a Less than Significant Impact to 18 of the 21 categories included on the CEQA checklist. Mitigation was proposed that would reduce the impacts to Biological Resources, Cultural Resources, and Tribal Cultural Resources to less than significant.

Two subcategories under Biological Resources benefitted from mitigation to render the impacts less than significant. In both cases, the impact was almost less than significant without mitigation, but mitigation was proposed out of an abundance of caution. Each is described in more detail below.

Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

The Project infrastructure was proposed to be installed on areas surveyed and documented to be free of sensitive habitats. Any potential impacts to sensitive habitats will be reduced to less than significant with the proposed pre-construction survey to reaffirm that the proposed areas where all mooring anchors will be placed and where the produced water pipeline will be aligned are free of sensitive habitats.

The Oneka Iceberg will withdraw seawater near the surface of California's coastal waters. This will result in the entrainment of marine life with the seawater into the buoy's desalination system. The ultra-fine, 60-micrometer mesh intake screen and low through-screen intake velocity (0.22 feet/second) will presumably reduce the amount of marine life impacted by the seawater intake, but the actual loss of marine life cannot be accurately determined at this time. Mitigation negotiated with the North Coast Regional Water Quality Control Board will reduce this impact to less than significant.

Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

The Oneka Iceberg installation, removal, and operation could impact the marine mammals and marine birds in the area. The noise and movement of large equipment and materials could harass marine mammals during construction and removal. A Marine Wildlife Monitoring Plan was developed and proposed as mitigation to protect marine mammals during the construction and removal phases. Execution of this mitigation plan will reduce

this impact to less than significant. The presence of multiple mooring lines in the coastal waters during the operational phase presents entanglement potential for marine mammals and other large forms of marine life. An Entanglement Mitigation Plan was developed to reduce this impact to less than significant with its execution. Lastly, several protected marine birds nest in the overall area. To prevent upsetting the nesting pairs, mitigation was proposed wherein all construction of the landside segments will be completed outside of the nesting season or, if the work must occur during nesting season, include nest monitoring by a qualified biologist. Implementation of this mitigation will render this impact less than significant.

The potential impacts to Cultural Resources and Tribal Cultural Resources would result from the same pathway, the unexpected discovery of culturally-significant resources during construction and removal of equipment. A careful review of all available information suggests no culturally-significant resources should be uncovered by the Project's construction and removal phases. Nevertheless, a Tribal Monitor will be employed during all earth moving activities. If cultural resources, tribal or not, are uncovered during the Project, all work shall be temporarily halted within 50 feet of the discovery. This work stoppage will remain in place until a qualified professional archaeologist and Tribal Monitor has evaluated the situation and provided their recommendations. Work will resume when the recommendations have been received and implemented.

STRATEGIC PLAN/COUNCIL PRIORITIES/GENERAL PLAN CONSISTENCY

Goals 1A and 7A of the City's 2024-2028+ Strategic Plan specifically identify reference supporting the project.

Goal 1A. Enliven Fort Bragg through local jobs and business success and develop a Business and Economic Plan that benchmarks and attracts diverse businesses to support our community through enduring blue and green industries and elevates our City as an independent economy that serves local, regional, national, and international sectors.

Nurture regional focus on blue economy initiatives for economic growth, sustainable job creation, and improved livelihoods that support healthy ocean ecosystems.

Support innovation and inspire solutions to climate related challenges.

» Demonstrate Fort Bragg's leadership in alternative water supply (e.g., Oneka wave powered desalination buoy).

Goal 7A. Promote the City and highlight key accomplishments (e.g., Oneka Wave System desalination, broadband infrastructure) across multiple forms of multi-lingual media.

COMMUNITY OUTREACH

Multiple workshops and outreach efforts have occurred in relation to this project. These efforts are catalogued on the following websites.

[City of Fort Bragg Public Works Projects](#)

[City of Fort Bragg Community Development Projects](#)
[Noyo Ocean Collective- Oneka Technologies](#)

One comment letter, California Department of Fish and Wildlife, was received during the March 20, 2025, to April 21, 2025 public comment period. All of the comments were responded to in the Response to Comments (Attachment 2).

ALTERNATIVES:

An alternative location at the mouth of Noyo Harbor was initially evaluated but determined to be infeasible due its potential impact to Noyo Harbor activities.

ATTACHMENTS:

Attachment 1: Initial Study/Mitigated Negative Declaration: Oneka Desalination Buoy Pilot Project

Attachment 2: Public Comment Letter Response to Comments Matrix and Comment Letter.

Attachment 3: Resolution No. PC XX-2025 Resolution of the Fort Bragg Planning Commission for the adoption of the Mitigated Negative Declaration and the adoption of the Mitigation and Monitoring and Reporting Plan for the Oneka Desalination Buoy Pilot Project.