STAFF SUMMARY FOR AUGUST 16, 2017

25. ITEMS OF INTEREST FROM PREVIOUS MEETINGS (MARINE)

Today's Item **Information ☐** **Action ☒**

This is a standing agenda item to provide FGC with updates on marine items of interest from previous meetings. For this meeting there are three topics:

(A) Approve letter to California State Lands Commission (SLC) on proposed Huntington Beach seawater desalination project

(B) Approve memorandum of understanding (MOU) between Marine Protected Area (MPA) Statewide Leadership Team (leadership team) and MPA Collaborative Network regarding management of California's MPA network

(C) Receive update on status of recreational razor clam fishery closure

Summary of Previous/Future Actions

(A)

- FGC letter sent to CCC on proposed project — Feb 1, 2017
- **Today approve letter to SLC on proposed project** — **Aug 16, 2017; Sacramento**

(B)

- FGC endorsed OPC's MPA Partnership Plan — Dec 3, 2014; El Segundo
- FGC executed MPA implementation MOU between partner agencies
- FGC received final MPA leadership team work plan — Oct 7-8, 2015; Los Angeles
- **Today authorize execution of MPA MOU** — **Aug 16, 2017; Sacramento**

(C)

- FGC emergency closure of recreational razor clam fishery — Apr 25, 2016; emergency teleconference
- FGC 90-day extension of emergency closure — Oct 19-20, 2016; Eureka
- Declaration of fishery closure by DFW Director — Jan 30, 2017
- **Today's update** — **Aug 16, 2017; Sacramento**

Background

This item is an opportunity for staff to provide any follow-up information on marine topics previously before FGC.

(A) ***FGC Comment Letter on Huntington Beach Desalination Project***

In Feb 2017, FGC submitted a letter to the California Coastal Commission (CCC) to express ecological concerns related to the proposed seawater desalination project in Huntington Beach currently under consideration (Exhibit A1). An equivalent letter to the California State Lands Commission (SLC) is drafted but held to correspond with timing of SLC consideration. In Jun 2017, staff advised FGC that the SLC hearing was scheduled on the project. At the same meeting, FGC received a letter from the project applicant, Poseidon Water, with responses to concerns expressed by FGC to CCC, and an offer to meet with FGC members or staff (Exhibit A2). FGC directed staff to

review the responses and consider if any follow-up was warranted, including possible revisions to the draft FGC comment letter to SLC. Today, staff has an update and draft letter to SLC for FGC consideration (Exhibit A3).

(B) ***MOU between MPA Statewide Leadership Team and MPA Collaborative Network***

FGC is a member of the MPA Statewide Leadership Team, a standing body convened by the California Ocean Protection Council (OPC) to ensure communication, collaboration, and coordination among entities that have significant authority, mandates, or interests that relate to the MPA network. In 2014, OPC developed an MOU among the leadership team members. Other members of the leadership team include the California Natural Resources Agency, California Department of Fish and Wildlife, California Department of Parks and Recreation, State Water Resources Control Board, SLC, CCC, California Ocean Science Trust, National Park Service, National Oceanic and Atmospheric Administration, and Resources Legacy Fund Foundation.

The leadership team has recognized the role played by the MPA Collaborative Network, formed in 2014, which includes 14 individual collaboratives associated with coastal counties of California. The work of these collaboratives provides local knowledge and coordination of efforts to support MPA management in their regions. In recognition of this value, OPC has asked state agencies involved in the leadership team to formalize their working relationship with the MPA Collaborative Network through a non-binding MOU. The MOU intends to confirm roles, facilitate input from all signatories into the state's MPA management program, and provide a platform for collaboration. The MOU also lays the groundwork for seeking support and funding for shared priorities. Signatures are currently being approved and gathered, and a signature on the MOU is requested of FGC at this meeting (Exhibit B1).

(C) ***Razor clam emergency closure***

In Apr 2016, California's health agencies (California Department of Public Health and the Office of Environmental Health Hazard Assessment) determined that razor clams in Humboldt and Del Norte counties had high levels of domoic acid that posed a human health risk, and recommended closing the recreational fishery (there is no commercial fishery). FGC took emergency action to close the fishery from Apr to Oct 2016, and continued the closure through Jan 26, 2017.

On Jan 30, 2017, under new authority established by Fish and Game Code Section 5523, DFW's director issued a declaration to uphold the closure based on persistently elevated domoic acid levels, and notified FGC. The closure continues until the director is notified by public health agencies that a health risk no longer exists.

Recently, the health agencies confirmed that elevated domoic acid levels (above the agency-imposed 20 ppm limit) are ongoing in both Humboldt and Del Norte counties (Exhibit C1).

Significant Public Comments

A request for FGC to actively engage in the review process for the proposed Poseidon desalination project to ensure robust review of fish and wildlife protections within and outside MPAs. Provides supporting documentation in attachments (Exhibit A4).

Recommendations

FGC staff: (A) Review and approve revisions to the draft comment letter to SLC concerning the seawater desalination project in Huntington Beach, as proposed by staff; (B) authorize FGC to execute the MPA management MOU.

Exhibits

A1. Letter from FGC to CCC, dated Feb 1, 2017
A2. Letter from Scott Malone, Poseidon Water, received May 16, 2017
A3. Draft letter from FGC to SLC
A4. Email from Susan Jordan, California Coastal Protection Network, received Aug 4, 2017
B1. MOU to advance management of California's MPA network, dated Jun 23, 2017
C1. California Department of Public Health email and test results for domoic acid levels in the most recent razor clam samples, received May 8, 2017

Motion/Direction

(A) Moved by _____ and seconded by _____ that the Commission directs staff to send the letter to the California State Lands Commission regarding the proposed seawater desalination project in Huntington Beach, as recommended by staff.

OR

Moved by _____ and seconded by _____ that the Commission directs staff to send the letter to the California State Lands Commission regarding the proposed seawater desalination project in Huntington Beach, as recommended by staff, except for _____.

AND

(B) Moved by _____ and seconded by _____ that the Commission authorizes execution of the memorandum of understanding, as shown in Exhibit B1, among the member agencies of the MPA Statewide Leadership Team, MPA Collaborative Network staff, and MPA Collaborative Network members, related to advancing management of California's MPA network.

STATE OF CALIFORNIA
Edmund G. Brown Jr., Governor

Fish and Game Commission

Valerie Termini, Executive Director
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Wildlife Heritage and Conservation
Since 1870

February 1, 2017

Dayna Bochco, Chair
Members
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Dear Chair Bochco and members of the California Coastal Commission:

I am writing on behalf of the California Fish and Game Commission (FGC) to offer comments for consideration on proposed desalination projects in general, and the Huntington Beach proposal specifically.

With California in its fifth year of drought, seawater desalination has been proposed as one solution to the water needs of California communities. FGC understands the need to explore new and alternative measures to meet resource demands in a sustainable manner, and recognizes that seawater desalination has the potential to be a valuable tool in California's water supply portfolio. At the same time, the seawater desalination process also has the potential for significant detrimental impacts to California's marine ecosystems. Thus, FGC would like to emphasize that seawater desalination projects must be considered and analyzed carefully, and ultimately designed in a way to avoid or minimize adverse effects in the marine environment to the greatest extent possible.

FGC also recognizes that climate variability, and an increased need for alternative resource uses, are issues facing all resource management agencies, and that balancing the needs of human populations in the face of uncertain resource availability can be a difficult task. The mission of FGC is to ensure the long-term sustainability of fish and wildlife in California. Furthermore, in an effort to preserve marine ecosystem functions and complement species-specific management, FGC adopted the nation's first coast-wide network of marine protected areas (MPAs), as you are aware. In place since 2012, California's globally significant MPA network was created to help ensure that the natural diversity, marine ecosystem functions, and marine natural heritage of the state were protected while also helping to improve recreational, educational and study opportunities.[1] FGC, with the California Department of Fish and Wildlife as the lead implementing agency, has invested significant time and resources to ensure that the

[1] Marine Life Protection Act, Fish and Game Code § 2853(b)

MPAs are managed in a manner consistent with stakeholder intent and legislative guidance, and ensuring the system of MPAs functions as a robust network.

It is the understanding of FGC that there are at least nine active proposals for seawater desalination plants along the California coast that would join the ten existing plants[2], some in close proximity to MPAs. FGC seeks to strengthen the shared commitment of our partner coastal management agencies to help maximize MPA network functionality by considering actions that subject the MPA network to minimal human disturbance. FGC valued the opportunity to work closely with the California Coastal Commission and its staff during the MPA planning process and would like to acknowledge the commission's continued leadership in upholding standards for marine protection, specifically its role as a key member of the MPA Statewide Leadership Team convened by the Ocean Protection Council. Therefore, FGC supports efforts to reduce impacts to marine resources by evaluating potential project impacts to individual MPAs, the MPA network as a whole, and site-specific marine resources during permitting and decision-making processes. As such, we urge the commission to require that proposals for seawater desalination facilities avoid or minimize impacts to MPAs and all marine resources through best available siting, design, and technology.

Minimizing impacts through thoughtful design is consistent with the State Water Resources Control Board's recently adopted Ocean Plan Amendment, which requires desalination plants to use the best available site, design, technology and mitigation measures feasible to minimize intake and mortality of marine life *and identifies subsurface intakes as the preferred technology.* [3] Additionally, the board's policy contains requirements for protecting MPAs, including a prohibition on harmful intake and discharge structures *within* MPAs and a directive to site discharge and surface intakes at sufficient distances to minimize water quality and marine life impacts to protected areas.

Impacts to marine life from seawater desalination can be avoided through current technology such as subsurface intakes, which pull in ocean water through pipes beneath the seafloor rather than through an open pipe in the water column. This subsurface technology eliminates impacts to marine life from being impinged on an intake screen or entrained in the source water from an open ocean intake, impacts that can result in significant injury and death of marine species. Unfortunately, the policy also provides flexibility for alternative intake and disposal methods, with greater impacts to marine life, if it can be demonstrated that preferred technologies are infeasible.

FGC urges that, due to potential impacts to marine resources, open ocean intakes be avoided. While new desalination projects with open ocean intakes will not be permitted within MPAs, facilities with open ocean intakes *near* MPAs can have direct impact on marine resources through incidental take and the reduction of critical larval connectivity

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[2] http://pacinst.org/publication/key-issues-in-seawater-desalination-proposed-facilities/

[3] State Water Resources Control Board, Final Staff Report and Final Desalination Amendment, including the Final Substitute Environmental Documentation. Adopted on May 6, 2015. Available at: http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2015/rs2015_0033_sr_apx.pdf

between MPAs as marine life is pulled into the plant and removed from the ecosystem. Impacts from open ocean intake have the potential to undermine the ability of our MPAs to function as a network, weakening the science-based framework on which they were created and potentially their ability to generate expected long-term benefits.

With desalination facilities poised for your consideration, it is critical to uphold the protection within California's MPA network, and to preserve the state's significant investment in the resilience of our ocean. Seawater desalination can be a tool in our water supply portfolio, but it must be analyzed carefully and designed in a way to avoid or minimize adverse effects to the greatest extent possible. Siting these facilities away from MPAs (and other sensitive habitats and species) and requiring the use of subsurface intakes will help ensure California's ocean ecosystems are sustained for the long-term.

We urge you to require precautionary design, siting and technology for the Huntington Beach desalination plant and any future seawater desalination proposals along the California coastline.

Sincerely,

Eric Sklar on behalf
President

cc: John Ainsworth, Acting Executive Director, California Coastal Commission
Members, California Fish and Game Commission
Felicia Marcus, Chair, State Water Resources Control Board
John Corbett, Executive Officer, and members, North Coast Regional Water Quality Control Board
Terry Young, PhD, Chair and members, San Francisco Bay Regional Water Quality Control Board
Dr. Jean Pierre Wolff, Chair and members, Central Coast Reginal Water Quality Control Board
Irma Munoz, Chair and members, Los Angeles Reginal Water Quality Control Board
William Ruh, Chair and members, Santa Ana Regional Water Quality Control Board
Henry Abarbanel, Chair and members, San Diego Regional Water Quality Control Board

POSEIDON SURFSIDE
a Poseidon Water company

May 9, 2017

Mr. Eric Sklar
President
California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

SUBJECT: Huntington Beach Desalination Project

Dear President Sklar:

I am writing in response to your February 1, 2017 letter to the California Coastal Commission regarding the proposed Huntington Beach Desalination Project ("Project"). A copy of your letter was recently provided to us by the State Water Resources Control Board staff on May 4, 2017.

Poseidon supports the California Fish and Game Commission's mission to ensure the long-term sustainability of fish and wildlife. Our Carlsbad Desalination Plant, the state's first and only large-scale seawater desalination plant, has successfully produced over 20 billion gallons of drinking water since starting commercial operation in December 2015 while operating in accordance with applicable state and federal environmental laws and regulations. The Carlsbad project includes the restoration of 66 acres of wetlands in south San Diego Bay, an endeavor undertaken in cooperation with the U.S. Fish and Wildlife Service that will measurably enhance fish and wildlife habitat. In addition, with the adjacent Encina Power Station scheduled to decommission its cooling water system soon, Poseidon is poised to serve as the long-term steward for the resource-rich Agua Hedionda Lagoon, 300 acres of sensitive and vital coastal wetlands.

Based on the comments in your February 1, 2017 letter I want to make sure the Fish and Game Commission and its staff are correctly informed about our proposed Huntington Project and its relationship to the state's Marine Protected Areas (MPAs) and the Commission's effort to preserve marine ecosystem functions and oversee species-specific management.

The proposed Project has been in the state's permitting process since 2002. Over the past fifteen years the Project has successfully obtained permits and environmental approvals from the City of Huntington Beach, the Santa Ana Regional Water Quality Control Board ("Regional Board") and the California State Lands Commission ("SLC"). These environmental approvals include the Project's Subsequent Environmental Impact Report ("SEIR") (State Clearinghouse No. 200151092) certified by the City of Huntington Beach on September 7, 2010 and subsequently relied upon by the SLC and Regional Board for the agency's respective approvals of the Project.

Poseidon Surfside
17011 Beach Blvd., Suite 900 Huntington Beach, California 92647 Phone: (714) 596-7946 Fax: (714) 596-7947
www.poseidonwater.com

More recently, the proposed Project description has evolved and been amended to demonstrate compliance with the requirements of the California State Water Resources Control Board's Seawater Desalination Ocean Plan Amendment ("Desalination Amendment"). Poseidon's proposed Huntington Beach Project will be the first large-scale desalination facility in the world to deploy 1mm (1/25th inch) slot width wedgewire intake screens with a through-screen water velocity of less than 0.5 feet per second in an open-ocean setting. The plant will also include state-of-the-art brine diffuser technology that will ensure that the salinity level in the plant's seawater discharge meets the Desalination Amendment's stringent new receiving water quality requirements. These technologies will minimize the intake and mortality of all forms of marine life. Because of these technology enhancements the Project's long-term, stand-alone operation will continue to provide 50 MGD of drinking water but only require an average annual volume of source water of approximately 106 MGD, or 30% less water than the 152 MGD analyzed in the City of Huntington Beach's 2010 SEIR.

The current proposed Project description was informed, in large part, by the outcome of a site-specific assessment of the feasibility of subsurface seawater intake technologies. Between 2014-15, at the direction of the Coastal Commission, the Coastal Commission staff and Poseidon jointly convened an Independent Scientific & Technical Advisory Panel ("ISTAP") to reach a scientifically justified and independent assessment of the feasibility of subsurface seawater intake systems. During the two-year process, which included public participation, the ISTAP evaluated nine different subsurface intake technologies and different project scales (i.e., product water production capacities) ranging from a plant capable of producing 12.5 MGD to 100 MGD of drinking water. Based on the application of the Coastal Act's and Desalination Amendment's definition of feasibility, the ISTAP concluded that eight (8) of the nine (9) subsurface intake technologies – including all beach well technologies - were technically infeasible, and a the ninth (9^{th}) technology – a seafloor infiltration gallery - was not economically viable at the Huntington Beach location within a reasonable time frame. To our knowledge, the Commission's ISTAP process is the most comprehensive, independent evaluation of the site-specific feasibility of subsurface seawater intake technologies ever conducted.

Your February 1, 2017 letter characterized the feasibility standards in the Desalination Amendment as providing "unfortunate" technology flexibility; however, the requirement that a project be feasible is codified in state law - both the Coastal Act and California Water Code – with the Water Code requirement recently being affirmed by the California courts (*Surfrider Foundation v. the California Regional Water Quality Control Board, San Diego Region, Fourth District Court of Appeal case No. Do60382.),* which in turn helped inform the development of the Desalination Amendment.

The Fish and Game Commission's concern about the potential effects screened seawater intakes could have on the state network of MPAs is understood; however, the proposed Project's intake and discharge structures are not located within or nearby any MPA. The

nearest Area of Special Biological Significance is located more than nine (9) miles southeast and down current. The nearest MPA is the Bolsa Chica State Marine Conservation Area, which is approximately 4.3 miles northwest.

Any concerns to the state's MPAs should be based on Project and site-specific facts. A key marine life finding in the Project's EIR on this point states:

> *Impacts on marine organisms due to the potential entrainment resulting from the project are relatively small, and would not substantially reduce populations of affected species, or affect the ability of the affected species to sustain their populations. Therefore, entrainment impacts would be less than significant.*

This CEQA finding is supported by site-specific information, empirical data and statistical analysis including:

- **The intake area does not have any environmentally sensitive habitats such as eelgrass beds, surfgrass, rocky shores, or kelp beds;**

- **No larvae of threatened or endangered species are anticipated to be entrained;**

- **Potential entrainment of larval species of commercial or recreational value will be extremely rare;**

- **Operation of the desalination facility may entrain 0.02% of the larva in the source water and at risk of entrainment, meaning only 2 out of every 10,000-at-risk larval are anticipated to be entrained.**

It's important to note these potential impacts do not take into consideration that the 1mm wedgewire screens will reduce entrainment and eliminate impingement of larger marine life (e.g., seals, sea lions, sea turtles, and adult fish like Kelp Bass and California Sheephead). The entrainment reducing potential of the wedgewire screens is a function of slot size relative to organism size, the behavior of organisms near the screen, and ambient hydrodynamics. The influence of organism behavior (swimming ability) and ambient hydrodynamics are documented by the 2010 Santa Cruz Water District pilot study https://www.youtube.com/watch?v=bSEmJZmJRMU.

In 2015, at the request of the Coastal Commission staff, Poseidon specifically analyzed the relationship between the proposed Project's ocean intake and the state's networks of MPAs. Tenera Environmental issued a report entitled *"Assessment of Entrainment Effects Due To The Proposed Huntington Beach Desalination Facility On State Marine Protected Areas"* which concludes that 91% of larvae estimated to be entrained by the proposed Project are from fish that are not associated with the kelp and rocky reef habitat inside the Southern California coastal MPA reserve network. Of the remaining 9% associated with kelp and

rocky reef habitats, the report's ocean currents model concludes that the probability is, at most, 1.0% (or 0.09% of the total larvae potentially at risk of entrainment) of that larvae from inside one of these MPAs could be transported into the vicinity of the Project and subject to entrainment. The results of the ocean current modeling suggest that the more likely source of the larvae from fishes associated with kelp and rocky reef habitat in the vicinity of the Project's intake and discharge is from the rocky habitat formed by Los Angeles/Long Beach Harbor Complex, which is not a protected area and is closer to the proposed Project's intake than any of the kelp and rocky reef coastal MPAs. Therefore, the location of the Project at the proposed site ensures that there is little or no likelihood the Project's potential entrainment could negatively affect an MPA or any "network" of ocean MPAs. Again, this analysis did not include any consideration of the entrainment minimizing effects of the 1 mm wedge wire screens. California Department of Fish and Wildlife were briefed and provided copies of this study in December of 2015 and over the past fifteen-plus months there have not been any questions or comments.

Tenera 2015 found that four of the nine MPAs within 80 km (50 mi) up coast or down coast of the HBDP intake are protected tidal embayments or estuaries (e.g., Bolsa Chica) and do not contain kelp and rocky reef habitat. Marine larvae spawned from within these MPAs are subject to high levels of natural mortality because there is no suitable adult habitat for these larval fishes to settle on along the open coast. The Project intake is in an area not directly adjacent to the opening to any of these MPAs where tidal action might have some possibility of transporting larvae back into the embayment from which they were spawned. It is extremely unlikely larvae originating from embayment MPAs that are potentially entrained at the intake would have contributed to the adult population in the absence of entrainment and therefore entrainment of these larvae is extremely unlikely to result in any impacts to the adult populations of these fishes inside the embayment MPAs.

Nonetheless, in 2016, at the request of the Regional Board staff, Poseidon augmented the 2015 Tenera Environmental report with a species-specific marine life biological assessment conducted by HDR and MBC entitled *"Huntington Beach Desalination Facility: Intake Location Entrainment Analysis."*

The HDR/MBC report was prepared, in part, to address concerns about potential impacts to Bolsa Chica and non-open-ocean, rocky-reef MPA species and whether moving the proposed screened intake location farther offshore would reduce marine life effects. The HDR/MBC report concluded:

- **Only four (4) of the twenty (20) most abundant taxa occurring in plankton samples taken offshore of Huntington Beach are documented to occur in the Bolsa Chica Ecological Reserve;**

- **The current intake location entrained the fewest fish taxa and lowest density of those taxa that the California South Coast Region Marine Protected Area Network was expected to protect and enhance;**

- **Adverse impacts to fish taxa that the South Coast Region Marine Protected Area Network was designed to protect will increase by moving the intake farther offshore of Huntington Beach.**

Finally, despite the Project's CEQA determination that the marine life effects are anticipated to be insignificant, the Coastal Act and State Water Code require mitigation for unavoidable marine life impacts, no matter how ecologically insignificant. Based on guidance provided by the Desalination Amendment, Poseidon has calculated the Project's necessary compensatory mitigation, and based on input from the SLC staff we have proposed a Marine Life Mitigation Plan that involves the maintenance of the tidal influence of Bolsa Chica to ensure the long-term preservation of the 1,500-acre Bolsa Chica Ecological Reserve, the largest saltwater marsh between Monterey Bay and the Tijuana River Estuary.

In closing, we want to take this opportunity to propose a meeting with the Fish and Game Commission and its staff to address any questions you may have about the Huntington Beach Project. In the meantime, the studies and reports referenced above are part of the Regional Board application administrative record and copies can be provided to you at your request.

Sincerely,

Scott Maloni
Vice President, Poseidon Water

cc: Nancy McFadden, Executive Secretary Office of Governor Edmond G. Brown Jr.
Felicia Marcus, Chair State Water Resources Control Board
Dayna Bochco, Chair California Coastal Commission
Lt. Governor Gavin Newsom, Chair State Lands Commission
Kurt Bertchold, Executive Officer Santa Ana Regional Water Board
Valerie Termini, Executive Director CA Fish and Game Commission

STATE OF CALIFORNIA
Edmund G. Brown Jr., Governor

Fish and Game Commission

Wildlife Heritage and Conservation
Since 1870

Valerie Termini, Executive Director
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August X, 2017

Honorable Gavin Newsom, Lieutenant Governor
Chair, California State Lands Commission
100 Howe Avenue, Suite 100 South
Sacramento, CA 95825

Via email to CSLC.CommissionMeetings@slc.ca.gov

Re: Comments on Poseidon Resources' proposed seawater desalination project at Huntington Beach (Poseidon Project)

Dear Lieutenant Governor Newson:

I am writing on behalf of the California Fish and Game Commission (FGC) to offer comments for consideration on proposed desalination projects in general, and the proposed Poseidon Project in Huntington Beach specifically. FGC provided comments to the California Coastal Commission on its consideration of the proposed Poseidon Project in February 2017[1], and appreciates the opportunity to convey similar comments to you now.

With ongoing concerns about long-term water availability for California and less snow pack as the climate warms, seawater desalination is proposed as one solution to the water needs of California communities. FGC understands the need to explore new and alternative measures to meet resource demands in a sustainable manner, and recognizes that seawater desalination has the potential to be a valuable tool in California's water supply portfolio. FGC also recognizes that climate variability is an issue facing all resource management agencies, and that balancing the needs of human populations in the face of uncertain resource availability can be a difficult task.

At the same time, current seawater desalination technology also has the potential for significant detrimental impacts to California's marine ecosystems. The mission of FGC is to ensure the long-term sustainability of fish and wildlife in California. Thus, FGC would like to emphasize that seawater desalination projects must be carefully considered and analyzed by all permitting agencies, and ultimately designed in a way to avoid or

[1] http://www.waterboards.ca.gov/santaana/water_issues/programs/Wastewater/Poseidon/Letter_CFG_2017_02_01.pdf

minimize adverse effects to living marine resources and habitats in the marine environment to the greatest extent possible.

Of particular relevance, in an effort to preserve marine ecosystem functions, buffer against uncertainty, and complement species-specific management, FGC adopted the nation's first coast-wide network of marine protected areas (MPAs). In place since 2012, California's globally-significant MPA network was created to help ensure that the natural diversity, marine ecosystem functions, and marine natural heritage of the state were protected while also helping to improve recreational, educational and study opportunities.[2] FGC, along with the California Department of Fish and Wildlife and numerous other agencies and non-governmental organizations, has invested significant time and resources to ensure that MPAs are managed in a manner consistent with legislative guidance, FGC and stakeholder intent, and ensuring that the system of MPAs functions as a robust network.

I understand that there are at least nine active proposals for seawater desalination plants along the California coast that would join the ten existing plants[3], some in close proximity to MPAs. FGC seeks to strengthen the shared commitment of our partner coastal management agencies to help maximize MPA network functionality by considering actions that subject the MPA network to limited human disturbance. FGC valued the opportunity to work with the California State Lands Commission (SLC) and its staff during the MPA planning process and would like to acknowledge SLC 's continued leadership in upholding standards for marine protection, specifically its role as a key member of the MPA Statewide Leadership Team convened by the California Ocean Protection Council. In particular, SLC committed in the leadership team's adopted work plan[4] to update SLC's strategic plan to reflect commitments regarding MPAs, to assess pending agency regulations for potential impacts to MPAs, and to both consider data regarding and identify opportunities for mitigation and impact avoidance strategies in current regulatory/policy requirements pertinent to MPAs.

FGC reiterates its support of efforts to reduce impacts to marine resources by evaluating potential project impacts to individual MPAs, the MPA network as a whole, and site-specific marine resources during permitting and decision-making processes. As such, we urge SLC to require that proposals for seawater desalination facilities avoid or minimize impacts to MPAs and all marine resources through best available siting, design, and technology.

Minimizing impacts through thoughtful design is consistent with the State Water Resources Control Board's recently-adopted Ocean Plan Amendment, which requires desalination plants to use the best available site, design, technology and mitigation

[2] Marine Life Protection Act, Fish and Game Code § 2853(b)
[3] http://pacinst.org/publication/key-issues-in-seawater-desalination-proposed-facilities/
[4] Marine Protected Area (MPA) Statewide Leadership Team Work Plan FY 15/16 – 17/18, Key Action Items 1.4, 2.4, and 4.3. Available at www.opc.ca.gov/programs-summary/marine-protected-areas/partnerships/

measures feasible to minimize intake and mortality of marine life *and identifies subsurface intakes as the preferred technology.* [5] Additionally, the board's policy contains requirements for protecting MPAs, including a prohibition on harmful intake and discharge structures *within* MPAs and a directive to site discharge and surface intakes at sufficient distances to minimize water quality and marine life impacts to protected areas.

Impacts to marine life from seawater desalination clearly can be avoided through current technology such as subsurface intakes, which pull ocean water through pipes beneath the seafloor rather than through an open pipe in the water column. Subsurface technology eliminates impacts to marine life from being impinged on an intake screen or entrained in the source water from an open ocean intake, impacts that can result in significant injury and death of marine species. Despite this, the policy within the Ocean Plan Amendment also provides flexibility for alternative intake and disposal methods, with greater impacts to marine life, if it can be demonstrated that preferred technologies are infeasible. Given that all subsurface technologies evaluated for this site were found to be technically or economically infeasible by the Independent Scientific Technical Advisory Panel jointly convened by the California Coastal Commission and Poseidon Water, FGC questions the appropriateness or necessity of siting the proposed desalination plant off Huntington Beach relative to the need for alternative sources of water to augment Orange County's water supply arsenal at a high economic and environmental cost.

At a minimum, FGC urges SLC to make avoiding potential impacts to MPA effectiveness a priority and to consider additional science on best management measures for seawater intake. While new desalination projects with open ocean intakes will not be permitted within MPAs, facilities with open ocean intakes *near* MPAs can have a direct impact on marine resources; incidental take and the reduction of critical larval connectivity between MPAs occurs as marine life is pulled into a plant and removed from the ecosystem, including organisms originating from the MPAs that are necessary to support California's marine life. Impacts from open ocean intake have the potential to undermine the ability of MPAs to function as a network, weakening the science-based framework on which they were created and potentially their ability to generate expected long-term benefits.

While in a July 2017 letter to FGC[6] Poseidon stated that 91% of larvae estimated to be entrained by the proposed project are from fish that are not associated with the kelp and rocky reef habitat inside the southern California coastal MPA reserve network, FGC would like to emphasize that kelp and rocky reef habitat are only two of the many habitat types California's MPAs are designed to protect. The network is designed to provide protection to *all* marine habitat types and their associated marine life, as mandated by the MLPA. Further, while Poseidon concludes that there is little or no likelihood that the

[5] State Water Resources Control Board, Final Staff Report and Final Desalination Amendment, including the Final Substitute Environmental Documentation. Adopted on May 6, 2015. Available at: www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2015/rs2015_0033_sr_apx.pdf
[6] Fish and Game Commission meeting materials for June 21-22, 2017 meeting, Agenda Item No. 34, available at nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=145898&inline

project's potential entrainment could negatively affect any MPA or any network of MPAs, and that marine life effects due to entrainment are anticipated to be insignificant based on the 2010 California Environmental Quality Act (CEQA) review relied upon by SLC, the 2010 CEQA review was completed before MPAs were designated as a network within the Southern California Bight. FGC requests that the supplemental CEQA review fully evaluate how the proposed open ocean intake as modified would adversely impact productivity and connectivity of the affected MPA system.

With a tidelands lease for desalination facilities poised for your consideration, it is critical to uphold protections for California's MPA network, and to preserve the state's significant investment in the resilience of our ocean. Seawater desalination can be a tool in our water supply portfolio, particularly when other less economically- and environmentally-costly options are exhausted, but it must be carefully analyzed and designed in a way to avoid or minimize adverse effects to the greatest extent possible. Siting desalination facilities away from MPAs (and other sensitive habitats and species), and requiring the use of subsurface intakes, will help ensure California's ocean ecosystems are sustained in the long-term.

We urge you to require precautionary design, siting and technology for the Poseidon Project and any future seawater desalination projects along the California coastline.

Sincerely,

Eric Sklar
President

cc: Members, California Fish and Game Commission
Honorable Betty T. Yee, California State Controller and member, California State Lands Commission
Michael Cohen, Director of the California Department of Finance and member, California State Lands Commission
Jennifer Lucchesi, Executive Officer, California State Lands Commission
Jack Ainsworth, Executive Director, California Coastal Commission
Felicia Marcus, Chair, State Water Resources Control Board
David Noren, Chair, and members, North Coast Regional Water Quality Control Board
Dr. Terry Young, Chair, and members, San Francisco Bay Regional Water Quality Control Board
Dr. Jean Pierre Wolff, Chair, and members, Central Coast Reginal Water Quality Control Board
Irma Munoz, Chair, and members, Los Angeles Reginal Water Quality Control Board
William Ruh, Chair, and members, Santa Ana Regional Water Quality Control Board
Henry Abarbanel, Chair, and members, San Diego Regional Water Quality Control Board

Ashcraft, Susan@FGC

From: Susan Jordan <sjordan@coastaladvocates.com>
Sent: Friday, August 04, 2017 2:05 PM
To: Eric Sklar
Cc: FGC; Susan Jordan
Subject: FGC Review of Proposed Brookfield Poseidon Seawater Desalination Plant
Attachments: Final Letter to FGC on Poseidon Desal.pdf; Final Desal Principles in OPPOSITION of Poseidon-HB.pdf; Poseidon Short Letter Statement - Appendix.pdf; Poseidon DSEIR_Comment_Ltr_072717.pdf

Dear Chair Sklar,

Please find the following documents attached below:

1. A cover letter from CCPN requesting the FGC to engage in review of the Brookfield Poseidon Seawater Desalination Plant as proposed.

2. The NGO Restatement of Principles on Seawater Desalination in California and Opposition to the Brookfield Poseidon Plant as Proposed and supporting Appendix:

3. The California Coastal Commission comment letter submitted to the State Lands Commission on July 27th, 2017 on the Supplemental DSEIR for the proposed project that is cited in our Cover letter:

Please do not hesitate to contact me if you have any questions.

Best,

Susan Jordan

Susan Jordan, Executive Director
California Coastal Protection Network
2920 Ventura Drive
Santa Barbara, CA 93105

Ph: 805-637-3037
Email:sjordan@coastaladvocates.com
www.coastaladvocates.com

"Our lives begin to end the day we become silent about things that matter."
- Martin Luther King, Jr.

Attachment 1

RECEIVED

AUG 04 2017

CALIFORNIA COASTAL PROTECTION NETWORK
2920 Ventura Drive, Santa Barbara, CA 93105 • 805-637-3037
WWW.COASTALADVOCATES.COM

August 8th, 2017

Eric Sklar, Chair
California Fish and Game Commission
1416 Ninth Street, Suite 120
Sacramento, CA 95814

Dear Chair Sklar,

As you know, the Brookfield Poseidon Huntington Beach Desalination Plant is currently undergoing regulatory review before the State Lands Commission, the State Water Resources Control Board, the Regional Water Quality Control Board and the California Coastal Commission.

Upcoming decisions on this project are of precedential importance as California considers how to make its water supply more safe, resilient, equitable, and cost effective into our collective long term future.

Our organizations and our hundreds of thousands of members are dedicated to advancing freshwater sustainability, consumer protection, environmental justice and coastal and marine conservation in California. As such, we felt it was critical at this time to restate the principles that guide our collective approach to seawater desalination in California and to express our strong opposition to the Brookfield Poseidon Huntington Beach Project as proposed (See Attached Letter and Appendix).

The mission of the Fish and Game Commission (FGC) is to ensure the long-term sustainability of fish and wildlife in California. As such, the FGC has an important and unique role to play in the review of this proposed desalination project. Two years after this project's Environmental Impact Report was certified by the City of Huntington Beach in 2010, the FGC adopted the nation's first Marine Protected Areas Network to help ensure that the natural diversity, marine ecosystem functions, and marine natural heritage of the state were protected while also helping to improve recreation, education and study opportunities.[1]

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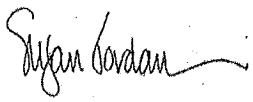
[1] Marine Life Protection Act, Fish and Game Code § 2853 (b)

There are 9 MPAs within 25 miles of the proposed facility that may be significantly and adversely affected by the project. As proposed, the project would intake 106 million gallons of seawater every day over the course of the project's life estimated at 50 to 60 years. As the Coastal Commission stated in its comment letter to the State Lands Commission on the Poseidon DSEIR dated July 27, 2017, "Poseidon's proposed intake volume .... represents a significant reduction of the habitat numerous species rely on to support their productivity. During each year of operations, the LMP would remove more than 38 billion gallons of habitat." In its letter, the Coastal Commission also notes that it is possible that of the roughly 100 million organisms Poseidon would entrain every year that when it comes to a particular MPA "those entrained organisms may represent a relatively large proportion of the organisms exported from the MPA to support California's marine life ecosystems." [2]

Given the concerns outlined by the Commission above and the Ocean Plan Amendment's primary goal of minimizing marine life mortality, CCPN urges the Fish and Game Commission to actively engage in the analysis of this project to help ensure that it receives a robust review under all applicable state laws and policies including those that are required to protect the state's fish and wildlife both within and outside of Marine Protected Areas.

Sincerely,



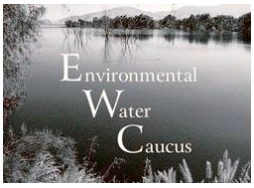
Susan Jordan, Executive Director

CC: Valerie Termini, Executive Director

---

[2] Letter to the State Lands Commission from the California Coastal Commission, "Comments on Draft Supplemental Environmental Impact Report for the Proposed desalination project ("Poseidon Project" in Huntington Beach (SCH #2001051092)" dated July 27th, 2017.

Attachment 2



July 26, 2017

The Honorable Edmund G. Brown
Governor, State of California
c/o State Capitol, Suite 1173
Sacramento, CA 95814

Felicia Marcus, Chair
State Water Resources Control Board
1001 I Street, 24th Floor
Sacramento, CA 95814

Dayna Bochco, Chair
California Coastal Commission
45 Fremont Street #2000
San Francisco, CA 94105

Gavin Newsom, Chair
California State Lands Commission
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825

William Ruh, Chair
California Regional Water Quality Control Board
Santa Ana Region
3737 Main Street, Suite 500
Riverside, California 92501-334

RE: Brookfield/Poseidon Huntington Beach Desalination Project – OPPOSE

Dear Governor Brown and Honorable Chairpersons:

We write in opposition to the Brookfield/Poseidon Huntington Beach seawater desalination facility as currently proposed (Project). Our organizations and our hundreds of thousands of members are dedicated to advancing freshwater sustainability, consumer protection, environmental justice, and coastal and marine conservation in California. Upcoming decisions regarding the Project are of precedential importance as California considers how to make its water supply more safe, resilient, equitable, and cost-effective into our collective long-term future. We oppose the Project as proposed because it is not consistent with these goals, and instead would:

(1) Impose significant and unnecessary costs on Orange County water districts and ratepayers;

(2) Set back California's efforts to advance climate-smart water policy;

(3) Fail to alleviate reliance upon, or impacts to, freshwater ecosystems, including the Bay-Delta; and

(4) Fail to comply with California law and regulations that govern seawater desalination facilities.[1]

We should be clear that we remain open to the use of seawater desalination as a "last resort" element of a well-planned local or regional water supply portfolio that prioritizes investment in multi-benefit, cost-effective, climate-smart supplies. As recently explained

[1] We provide information in support of these arguments in the attached appendix.

by Stanford's Water in the West Program, sustainable seawater desalination projects are those that "are smaller; that provide supply to meet a specific, clear local demand; that are located away from sensitive and valuable marine areas; and that are powered by renewable energy sources."[2] For example, the proposed Monterey Peninsula Water Supply Project,[3] which includes a modestly-sized desalination facility as part of a portfolio of investments, follows many of the recommendations our organizations have put forth, such as prioritizing lower-impact water resources, seeking to "right-size" the facility, and using subsurface intakes in order to comply with the State Water Board's Ocean Plan Desalination Amendment.

By contrast, large-scale seawater desalination facilities in California will have significant economic, energy, and opportunity costs that rarely justify their benefits. It would be far too easy for an expensive and inefficient large-scale facility to become a stranded asset – or, worse, an inescapable long-term liability – for local water districts and communities at the expense of more affordable, resilient, and environmentally sound alternatives.

We also reiterate our support for a rigorous regulatory process that ensures seawater desalination facilities are sited, scaled, and designed to meet demonstrated needs and to incorporate "best available" technologies that avoid or minimize adverse impacts on California's productive coastal and marine ecosystems. At minimum, proposed facilities must comply with the State Water Resources Control Board's 2015 regulations governing seawater desalination facilities and brine disposal ("Desalination Policy'). They should also use innovative designs and technologies, such as the use of renewable energy to power 100% of their operations; variable production schedules that allow facilities to take advantage of less expensive electricity rates at certain times of day; and sub-surface intakes to minimize marine life impacts, in contrast to open ocean intakes, the use of which is contrary to long-standing California policy and barred from use in other contexts.

In this case, after reviewing permit application materials and other documents associated with the proposed Project, as well as claims made by the Project's agents and lobbyists, we believe the Project is not compatible with the common-sense approaches, policies, and regulations that California has established to guide its water investments and, more specifically, to guide the introduction of seawater desalination into the state's water supply portfolio.

For these reasons, we urge you to deny the Project as proposed pursuant to your respective authorities. California should be showing the United States and the world how it will champion innovative water solutions, rather than enabling the Project's proponent to lock Californians into long-term dependence on a project that is more costly than the alternatives and based on the use of outdated, harmful, and unsustainable technology.

Sincerely,

---

[2] Leon Szeptycki, et al., *Marine and Coastal Impacts of Ocean Desalination in California* (Water in the West, Center for Ocean Solutions, Monterey Bay Aquarium, The Nature Conservancy, May 2016), available at http://stanford.io/2axdXE7.

[3] See Monterey Peninsula Water Supply Project, https://www.watersupplyproject.org/.

Sean Bothwell
Policy Director
California Coastkeeper Alliance

Garry Brown
Executive Director
Orange County Coastkeeper
Inland Empire Waterkeeper

Susan Jordan
Executive Director
California Coastal Protection Network

Merle Moshiri
President
Residents for Responsible Desalination

Damon Nagami
Director, Southern California Ecosystems Project
Natural Resources Defense Council

Steven Johnson
Water Resources Policy Analyst
Heal the Bay

Kyle Jones
Policy Advocate
Sierra Club

Staley Prom
Legal Associate
Surfrider Foundation

Marce Gutiérrez-Graudiņš
Founder / Director
AZUL

Olga Reynolds
Founder
Orange County Earth Stewards

Marco Gonzalez
Executive Director
Coastal Environmental Rights Foundation

Elizabeth Dougherty PhD
Director
Wholly H20

Conner Everts, Executive Director & Facilitator
Executive Director & Facilitator
Environmental Water Caucus
Desal Response Group
Southern California Watershed Alliance

Oscar Rodriguez
Victor Valladares
Directors
Oak View ComUNIDAD

Dan Silver
Executive Director
Endangered Habitats League

Dan Jacobson
State Director
Environment California

Adam Scow
California Director
Food & Water Watch

Leslie Tamminen
Ocean Program Director
Seventh Generation Advisors

Yenni Diaz
Project Director
Orange County Environmental Justice

Kira Redmond
Executive Director
Santa Barbara Channelkeeper

Claire Robinson
Managing Director
Amigos de los Rios - Emerald Necklace

Colin Bailey
Executive Director & Managing Attorney
The Environmental Justice Coalition for Water

Attachment 3

STATE OF CALIFORNIA—NATURAL RESOURCES AGENCY EDMUND G. BROWN, JR., *GOVERNOR*

CALIFORNIA COASTAL COMMISSION

45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105- 2219
VOICE (415) 904- 5200
FAX (415) 904- 5400
TDD (415) 597-5885

July 27, 2017

Alexandra Borack
California State Lands Commission
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825

VIA EMAIL: CEQA.comments@slc.ca.gov

RE: Comments on Draft Supplemental Environmental Impact Report ("DSEIR") for the proposed Poseidon desalination project ("Poseidon Project") in Huntington Beach (SCH #2001051092)

Dear Ms. Borack:

This letter provides Coastal Commission staff comments on the above-referenced DSEIR. The DSEIR limits its review to just the proposed changes to the project's offshore components that occurred after the previous CEQA review was completed in 2010 by the City of Huntington Beach and that are within the California State Lands Commission's ("CSLC's") tidelands lease. The DSEIR refers to these proposed changes, which include installation of wedgewire screens and a diffuser, as the Lease Modification Project ("LMP"). In response to the CSLC's Notice of Preparation of a Supplemental Environmental Impact Report, Coastal Commission staff had requested that in addition to evaluating these newly proposed offshore LMP components, the CEQA analysis be broadened and modified to address onshore project changes, changed circumstances, and new information applicable to the Poseidon Project that have occurred or been developed since the EIR was certified by the City of Huntington Beach in 2010.

Coastal Commission staff's request was based on the Coastal Commission's obligation to comprehensively review both onshore and offshore components of the Poseidon Project. The CSLC's review of solely the LMP means that this document will be of limited use for the Coastal Commission to rely on for evaluating conformity of the Poseidon Project to relevant provisions of the Coastal Act and the City of Huntington Beach Local Coastal Program. The Coastal Commission's evaluation of the Poseidon Project will need to address proposed project changes and changed circumstances that have occurred since 2010, the majority of which are not addressed in the DSEIR. For example, the Poseidon Project's projected operating life was originally 30 years, but Poseidon now proposes a 50-60 year operating life, which will extend the period of project effects on marine life and other coastal resources. The proposed site layout has also been modified and wetlands have been identified on site. These are issues that are not evaluated in the DSEIR, given its limited scope, but they will need to be considered by the Coastal Commission.

In addition, there is new information available today that was not available during the 2010 CEQA review. For example, there is new information and sources about projected sea level rise ("SLR") and new guidance on how to address SLR.[1] Since 2010, new information has been developed regarding increased seismic risks at and near the site, increased beach scour and erosion rates, and increased tsunami risks. The Coastal Commission will also need an evaluation of the project's effects on nearby Marine Protected Areas ("MPAs"), which were established after completion of the 2010 EIR.

Specific Comments on the DSEIR (LMP Only)

Section 3.0 – Cumulative Projects: The document's Table 3-1 briefly describes several nearby projects that could result in cumulative impacts along with the LMP. The table notes only that "Beach Nourishment Projects" occur on an approximately five-year cycle and that one or two such projects are expected within the term of the LMP over the next 10 years. We recommend that the DSEIR be revised to fully evaluate how the necessary beach nourishment will affect the LMP over its expected operating life and how the LMP will rely on beach nourishment in the face of increasing coastal erosion.

In reviewing the 2010 Project's effects related to beach scour and replenishment, the 2010 CEQA document noted only that project stability would rely "on ongoing and increased beach replenishment." It did not assess the amount or timing of beach replenishment needed to protect the facility. Since 2010, new information has been developed establishing that beach scour and erosion is likely to be more severe than previously known and that both the LMP and the Poseidon Project would need even greater volumes of sand to provide adequate protection, particularly over their full proposed operating lives. Over the past several years, the United States Geological Survey has applied the CoSMoS modeling system to identify locations along the California coast where sea level rise and future storm events are likely to cause coastal flooding and erosion. In 2015, the CoSMos process identified the likelihood of significant increases of up to 30% in storm and wave energy at beach locations adjacent to Poseidon's proposed site and increased frequency of extreme El Nino events.[2] As part of the 2015 Independent Science and Technical Advisory Panel ("ISTAP") conducted by Poseidon and

[1] These include: 2013 California Ocean Protection Council *State of California Sea-Level Rise Guidance Document* ("*State Guidance Document*"), which was based largely on a 2012 National Research Council report, *Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future,* 2014 California Natural Resources Agency *Safeguarding California: Reducing Climate Risk*, 2015 Coastal Commission *Sea Level Rise Policy Guidance,* 2016 California's *Safeguarding California: Implementation Action Plans*, 2017 State Water Board Resolution No. 2007-0059 directing staff to evaluate how to reduce vulnerability of water infrastructure to flooding, storm surge, and sea level rise, Coastal Storm Modeling System ("CoSMoS") 3.0 for Southern California, with expected SLR effects on Southern California beaches, expected 30% increases in wave and storm energies, etc. Several of these documents and efforts resulted in part from work of California's Coastal and Ocean Resources Working Group for the Climate Action Team, an interagency state effort that includes about twenty agencies, including the CSLC, State Water Board, and Coastal Commission.

[2] See, for example, Cai et. al, *ENSO and greenhouse warming*, Nature Climate Change 5, 849-859, 2015, and Barnard et. al, *Coastal vulnerability across the Pacific dominated by El Nino/Southern Oscillation*, Nature Geoscience 8, 801-807, 2015.

Coastal Commission staff, Poseidon provided documentation showing that the beach and surf zone near the proposed facility site could move up to about 1000 feet laterally due to erosion and accretion that results from seasonal sand movement and storm events, and that scour could remove up to about 30 vertical feet of sand from the nearshore area.[3] This amount of sand movement could expose portions of the LMP's offshore pipelines and associated pipeline manholes, some of which are elevated above the pipelines themselves. Poseidon's calculations were prepared prior to release of the above-referenced CoSMos results, so the effects identified during the ISTAP are likely to be even greater than stated.

Increased storm and wave energy and higher rates of coastal erosion within state tidelands could result in exposure and possible damage to the intake and outfall structures, which in turn could affect public access, marine life, and other coastal resources. We recommend that the SEIR be revised to incorporate new information about expected increases in sea level rise and coastal erosion rates developed after 2010, including the potential that more frequent and higher volume beach replenishment projects may be needed to protect the LMP.

Section 4.0 – Environmental Setting and Impacts Analysis:

- **Geology and Soils:** The DSEIR acknowledges that the prior CEQA review found the 2010 Project may be subject to significant impacts or hazards from seismicity, faulting, unstable soils, liquefaction, and shallow groundwater conditions, though it also notes that these would be reduced through mitigation measures. However, the 2010 CEQA review of seismic-related effects evaluated just the project's onshore components and was based on a lower level of potential seismic activity than is currently expected for the project location. The 2010 review based its assessment on the underlying Newport-Inglewood Fault Zone ("NIFZ") experiencing a maximum 6.9 magnitude earthquake and a maximum ground acceleration of 0.74g. More recent studies have identified the NIFZ as having the potential for earthquakes of 7.4 or 7.5 magnitude earthquakes, which would presumably be accompanied by significantly higher potential ground accelerations.[4]

  The DSEIR further notes that CEQA generally requires that the impacts of existing hazards need to be evaluated only if a proposed project risks exacerbating existing hazards or conditions, such as exposing people or structures to loss, injury, or death, or being located on an unstable site. New information and changed circumstances since the 2010 CEQA review show that the LMP could result in these hazards or conditions. The area's relatively high seismic energy and potential ground movement could result in damage or collapse of the offshore structures, leading to adverse impacts to marine life, public access to the shoreline, recreational use, and/or to other coastal resources. We recommend the SEIR be revised to evaluate whether the LMP would cause adverse effects as a result of the relatively high potential for significant seismic events at and near the site.

[3] See Jenkins, Scott, and Joseph Wasyl, *Oceanographic and Sediment Transport Analysis of Optimal Siting of a Seabed Infiltration Gallery (SIG) at the Huntington Beach Desalination Facility*, May 19, 2014, and Jenkins, Scott, *Updated Beach Gallery Reconsideration Memo*, produced for Poseidon, February 6, 2015.

The DSEIR includes a currently proposed mitigation measure (APM/APLC-1) that would have Poseidon contract with a structural or civil engineer to investigate the ability of the outfall pipeline to support the selected diffuser based on expected wave loading and currents and increased salinity. We recommend that this mitigation measure be revised to require that this investigation also evaluate the structural integrity of both pipelines and their ability to withstand the site's seismic characteristics.

- **Public Services, Utilities and Service Systems, and Product Water Quality:** The proposed LMP would be subject to adverse effects of sea level rise and climate change, including those associated with increased wave and tide heights, increased storm and wave energy, higher rates of coastal erosion, increased frequency of flooding, and others. As indicated above, protecting the LMP from these phenomena will likely require changes to regional beach nourishment programs. We recommend the SEIR evaluate likely changes needed to this public service, along with the environmental effects of any infrastructure changes that would likely be necessary to protect the LMP and its associated components, and that the review incorporate new state and agency guidance on sea level rise, climate change, and infrastructure adaptability.

Section 4.1 Ocean Water Quality and Marine Biological Resources: Both the Poseidon Project and the LMP are expected to have extensive, long-term, and significant adverse effects on public trust marine biological resources due to the type and extent of the entrainment that would result from its use of a screened, open intake. As part of the formal consultation the Regional Board is conducting in its review of the Poseidon Project, we have prepared two technical memoranda that review and critique the Poseidon entrainment data and studies referenced in the DSEIR and that show substantially different and higher annual entrainment impacts than identified in the DSEIR. These productivity losses would also apply to the shorter-term LMP operating life being reviewed in this SEIR. Those memoranda also show that extending the existing intake to any of several different nearby locations would result in substantially lower entrainment rates than the currently proposed intake location. We recommend that the SEIR include a more comprehensive analysis of the potential entrainment effects of the LMP, based on the information available now that was not analyzed as part of the 2010 CEQA review.

We also recommend the DSEIR be revised to evaluate the LMP's ocean acidification effects. Global climate change is resulting in increasing acidification of California's offshore waters.[5] California has taken a number of steps to address this adverse impact to the state's coastal waters.[6] Desalination discharges are generally more acidic than ambient ocean water, and in

[5] See, for example, Chan, et. al, *Persistent spatial structuring of coastal ocean acidification in the California Current System*, Scientific Reports 7, May 31, 2017, available at: http://www.nature.com/articles/s41598-017-02777-y

[6] See, for example, the state's involvement in the Pacific Coast Collaborative and West Coast Governors Alliance on Ocean Health, the West Coast Ocean Acidification and Hypoxia Science Panel, and the CSLC's 2016-2020 Strategic Plan that includes a specific provision to "Through lease terms and other mechanisms, develop strategies to address and, where possible avoid, shoreline armoring, ocean acidification, and generation of marine debris."

fact, discharges from Poseidon's Carlsbad facility, which are expected to be similar to those of this Huntington Beach facility, generally has lower pH levels than ambient conditions. The LMP's ongoing discharge of 56 MGD of effluent more acidic than seawater is likely to adversely affect nearby public trust resources and may represent a cumulatively significant adverse impact. We recommend these adverse effects be evaluated in a revised SEIR.

Section 4.1.1.2 – Marine Biological Resources: This section describes several of the marine species found in the project area and that rely on local habitat, including the federally-listed endangered western snowy plover (*Charadrius alexandrinus nivosus*). The DSEIR, however, does not evaluate known or expected impacts to the plover. Similarly, the 2010 CEQA review acknowledged the presence of plovers nearby but did not assess potential project impacts to the plover.[7] After 2010, however, the U.S. Fish and Wildlife Service published its final rule regarding designated critical habitat for the plover, which included nearby areas in Bolsa Chica and at the mouth of the Santa Ana River. There has been no CEQA evaluation of the effects of this change related to the Poseidon Project or the LMP, and we recommend the SEIR be revised to include the necessary evaluation.

Section 4.1.1.3 – Marine Protected Areas: The 2010 CEQA review was completed before MPAs were designated within the Southern California Bight. Several of these MPAs are within source water bodies that would experience entrainment-related effects due to Poseidon's proposed use of the power plant intake. Although Poseidon has stated that the organisms originating in nearby MPAs represent a very small percentage of all the organisms it expects to entrain,[8] it is not yet clear whether those organisms represent a much larger proportion of those originating in a particular MPA – that is, an MPA may provide a relatively small number of the roughly 100 million organisms Poseidon would entrain each year, but those entrained organisms may represent a relatively large proportion of the organisms exported from the MPA to support California's marine life ecosystems. We recommend the SEIR be revised to more fully evaluate how the LMP would adversely affect the intended productivity and connectivity of the affected MPA system.

Section 4.1.3 – Marine Biological Resources, Significance Criteria: For evaluating the LMP's effects on marine biological resources, the document proposes to use similar significance criteria that were used in the 2010 CEQA review. For entrainment and impingement, the 2010 CEQA document used as its criterion "whether project-related impingement and entrainment impacts would substantially reduce populations of affected species such that the sustainability of those populations could not be maintained." Using this criterion in the SEIR, however, does not acknowledge changes that have occurred since the 2010 CEQA document was certified,

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[7] Additionally, the California Energy Commission's review of the power plant retooling (Application For Certification 00-AFC-13) included a September 8, 2006 letter from the California Department of Parks and Recreation that described the propose power plant's entrainment as one of several effects it considered significant under CEQA guidelines, due to degradation of the plover's foraging habitat and reduction of native fish. However, this issue was not addressed in that AFC review.

[8] See Tenera Environmental, *Assessment of Entrainment Effects Due to the Proposed Huntington Beach Desalination Plant on State Marine Protected Areas*, prepared for Poseidon, 2016.

including the OPA Desal Amendment. The 2010 document explained part of its reasoning for using that criterion was that while "the primary issue of concern for the project relates to effects from impingement and entrainment… [t]here is no specific regulatory guidance for determining the significance of these impacts for seawater desalination facilities." This is no longer the case, given the specific requirements established in the OPA's Desal Amendment regarding avoiding and minimizing entrainment, so we recommend the SEIR be revised to base its significance criteria on whether the proposed project would exceed that regulatory standard. This change would also be consistent with the other significance criterion the DSEIR adopted from the prior 2010 CEQA review – i.e., whether the project discharge "would exceed regulatory (NPDES permit) limits." We therefore recommend that the SEIR use as a significance criterion whether the LMP would be consistent with requirements of the OPA's Desal Amendment.

The DSEIR also cites the CEQA Guidelines (Section 15065(a)(1)) that an EIR be prepared when a project "has the potential to substantially reduce the habitat of a fish or wildlife species…" As acknowledged in the environmental documentation supporting the OPA's adoption, seawater is habitat.[9] Poseidon's proposed intake volume of 106 MGD of seawater habitat represents a significant reduction of the habitat numerous species rely on to support their productivity. During each year of operations, the LMP would remove more than 38 billion gallons of habitat.[10] Although the water drawn into the intake comes from source water bodies that extend some distance up and down coast, this volume, if condensed into a single location, is the equivalent of losing, each year, all of the water along the entire 9.5 mile City of Huntington Beach shoreline and extending a mile offshore.[11] A land-based habitat effect of this magnitude would certainly be considered significant, and we recommend the SEIR also evaluate this proposed effect on seawater habitat as significant.

Section 4.1.4 – Marine Biological Resources, Environmental Impact Analysis and Mitigation: The DSEIR describes several conclusions reached in the 2010 CEQA review regarding the 2010 Project's less than significant impacts on nearby marine biological resources and benthic habitat and similarly evaluates the proposed LMP's impacts on those nearby resources. As noted above, we disagree with these conclusions with respect to entrainment-related impacts and recommend the SEIR reassess project-related effects within the expected source water areas.

Section 4.1.4.1 – Marine Biological Resources, Construction Impacts: The DSEIR addresses construction-related impacts primarily as they relate to the LMP's offshore activities, including

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[9] See *Final Substitute Environmental Documentation for Amendment to the Water Quality Control Plan for Ocean Waters of California*, Adopted May 6, 2015.

[10] The project would also discharge about half this volume as effluent that must be diluted before it can again serve as habitat.

[11] 106 MGD equals approximately 118,680 acre-feet per year. Assuming an average depth of 20 feet within the first mile offshore of Huntington Beach, this volume of water would be equal to that "wedge" of water extending along the 9.5 mile Huntington Beach shoreline.

dredging up to about 3,300 cubic yards of sediment that would be transported by barge for upland disposal and placing about 1,300 square feet of riprap during intake screen installation

and about 4,000 square feet of riprap as part of the diffuser installation. These dredge and fill activities would be subject to Coastal Act Section 30233, which requires that such activities in coastal waters occur only when there is no less feasible alternative (including reducing the extent of dredged or filled areas) and that suitable dredged material be used for beach replenishment. We recommend the analysis evaluate whether the extent and volume of proposed dredging and fill can be reduced and whether the dredged material can be used for beach replenishment.

Section 4.6 – Greenhouse Gas Emissions: The DSEIR evaluates offshore construction-related emissions of the LMP. Because the currently proposed project would involve additional construction-related emissions beyond those evaluated in the 2010 CEQA review, we recommend the upcoming review evaluate the increased emissions resulting from those activities. This issue area is of particular concern, given that the 2010 CEQA review identified the expected construction-related emissions as an "unavoidable significant impact," even after incorporating mitigation measures.

Section 4.7 – Hazards and Hazardous Materials: The DSEIR briefly acknowledges the potential for tsunamis at and near the LMP site, though similar to its statement regarding seismic risks, it notes that CEQA generally requires that the impacts of existing hazards need to be evaluated only if a proposed project risks exacerbating existing hazards or conditions, such as exposing people or structures to loss, injury, or death, or being located on an unstable site. With new information about tsunamis developed after the previous 2010 CEQA review, we recommend the SEIR evaluate the potential adverse effects of a tsunami on the LMP.

The 2010 CEQA review of tsunami-related hazards was based on the City's 1996 General Plan Environmental Hazards Element, which acknowledged the project's location within the City's Tsunami Runup Zone and stated that it was subject to low risk of tsunami runup elevations of no more than five feet (100-year recurrence) or 7.5 feet (500-year recurrence). The City's review did not incorporate the 2009 California Geological Survey's Tsunami Runup Map for Huntington Beach, which projected runups of up to 11 feet above mean sea level. An even more recent study suggests even greater inundation levels at the site of up to about 20 feet.[12] [***Note:*** these runup elevations do not include the above-referenced recent SLR projections and would therefore be even higher than stated above.] There has been no evaluation of tsunami effects, at the earlier projections or at the current projections, on the LMP's offshore components. It is likely that the higher energy that would accompany a larger tsunami would create one or more "drops" in offshore elevations that could damage the LMP. We recommend the SEIR include these evaluations.

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12 See *Science Application for Risk Reduction (SAFRR) Tsunami Scenario*, published in September 2013 by California's Natural Resources Agency, Department of Conservation, and Geological Survey and the United States Geological Survey and Department of Interior, which describes a tsunami scenario for the California coast that would result from a 9.1 earthquake in the Aleutians. While the study did not identify specific run up elevations along the Huntington Beach shoreline, it noted that tsunami elevations in adjacent Newport Beach could reach up to about 20 feet above mean sea level with velocities of up to about 60 feet per second (or roughly 45 miles per hour).

The Hazards section of the DSEIR also cites concerns identified during the previous CEQA review regarding the power plant outfall's structural stability when subjected to back pressure resulting from Poseidon's proposed diffuser. The DSEIR states that several evaluations will likely be conducted in the future in order to determine the outfall's structural stability. We recommend, if the evaluations show the outfall does have the necessary structural integrity, that the review assess alternatives to using the existing structure, including the potential of "sliplining" the existing outfall to allow it to convey Poseidon's discharge and potentially avoid some construction-related impacts that would result if alternative structural improvements are required (see also our related comments on the intake and outfall's possible seismic instability).

Section 5.0 – Alternatives, and Section 6.0 – Other Required CEQA Sections and Environmentally Superior Alternative: The DSEIR describes several potentially feasible and less environmentally damaging alternatives that were considered but eliminated from review. Two of those alternatives would have involved extending the existing intake from about two to four kilometers further offshore to nearby locations that would result in lower project entrainment rates. The DSEIR acknowledges that extending the existing intake "would meet most project objectives and is potentially technically feasible." However, the DSEIR's Section 5.3.1.2, in providing the rationale for eliminating these two alternatives, states that Poseidon found that larval densities would either be significantly higher or would not be significantly different than those at the existing intake location, and that the additional construction-related effects of extending the intake would not be offset by meaningful reductions in entrainment effects. As noted above, we have prepared two technical memoranda that raise substantial questions about the study Poseidon conducted to reach its proposed conclusions. These memoranda also suggest that extending the intake to any of several nearby feasible locations would likely result in the Poseidon Project having a substantially lower entrainment rate than it would at the existing intake location. We recommend that the SEIR consider potential alternative intake locations, taking into consideration updated analyses of potential entrainment effects.

Additionally, although Poseidon has separately contended that the deeper offshore sites may not have sufficient "sweeping velocities" to keep the wedgewire screens clean, this potential shortcoming of those sites could be overcome with use of the self-cleaning screens described in the DSEIR's Section 6.0 and concluded to be the Environmentally Superior Alternative. Even if these self-cleaning screens initially require additional boat trips for inspection and therefore increase project-related emissions, this is a relatively minor impact compared to the substantial reduction in marine life mortality that would result from locating the intake at these deeper locations. We understand that this type of screen has been designed to meet fairly stringent criteria for fish protection and has been used in tidal environments.[13] We recommend the revised document continue to support this self-cleaning screen system as a feasible and environmentally superior alternative to the current proposed screens.

[13] The company referenced on the DSEIR's page 5-13, Intake Screen, Inc., provides descriptions of a number of environmental settings where these screens have been installed and provides design criteria requirements from a number of agencies – U.S. Environmental Protection Agency, National Marine Fisheries Service, U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, etc. – that the screens are intended to meet.

Again, thank you for the opportunity to comment. If you have questions, please call me at 415-904-5205 or Tom Luster at 415-904-5248.

Sincerely,

ALISON DETTMER
Deputy Director

Cc: State Water Resources Control Board – Claire Waggoner
Santa Ana Regional Water Quality Control Board – Milasol Gaslan
Poseidon Water – Scott Maloni
Orange County Water District – John Kennedy

APPENDIX

The Brookfield/Poseidon Huntington Beach Project ("Project") would impose significant and unnecessary costs on Orange County water districts and ratepayers.

A recent analysis from the Pacific Institute found that when the full costs of construction and lifetime operation are calculated, seawater desalination is the most expensive "alternative" water supply option available, as compared to indirect potable reuse, direct reuse, brackish groundwater desalination, and stormwater capture, while conservation and efficiency can generate significant *savings*.[1]

In the case of the Brookfield/Poseidon Huntington Beach project, construction costs of the facility alone have been estimated at $1 billion; additional anticipated costs include up to $100 million to build and manage a new pipeline system to convey the water to customers; maintenance and repair costs resulting from siting the project in an area that is vulnerable to sea level rise, storm surge, tsunamis, and earthquakes; and the cost of re-treating any desalinated water that must be stored in groundwater aquifers. The Project will also be vulnerable to fluctuating energy costs in light of its dependence on high levels of electricity consumption.

Moreover, the proposed water purchase agreement between Brookfield/Poseidon and its potential customer, Orange County Water District (OCWD), guarantees that ***water produced by the Huntington Beach desalination project will not be cost competitive with imported water for at least the first 40 years of the project's operation.*** Under the 2015 term sheet approved by OCWD, the "base price" of the Project's water "will be tied to the treated full service rate cost of imported water provided by the Metropolitan Water District of Southern California (MWD)." Additional guaranteed costs include "readiness to serve" and capacity charges required by MWD, *plus* a premium to cover the facility's operating costs and an "agreed upon rate of return" for Brookfield/Poseidon.[2] The premium will raise the cost of water generated by the Project as high as 20 percent above the combined cost of imported water and the MWD charges. The Project's water can only achieve cost parity with imported water after the Project has been operating for 40 years, and even then, only if Brookfield / Poseidon is capturing its guaranteed rate of return.

Orange County does not need Brookfield/Poseidon's water, and to the extent it does need additional local water supplies, it has better alternatives. Orange County's existing water supply is anticipated to be sufficient to cover its anticipated needs through 2040, even in a multiple-year dry period. The Metropolitan Water District of Orange County (MWDOC), which, in coordination with OCWD, sells water at retail to local water districts throughout Orange County, recently published an urban water management plan showing that the water agencies in

[1] Heather Cooley and Rapichan Phurisamban, The Cost of Alternative Water Supply and Efficiency Options in California (Pacific Institute, 2016), *available at* http://bit.ly/2dMKDcT.

[2] Orange County Water Dist., Ocean Desalination Exploration Term Sheet Explained http://bit.ly/2r5NQaK.

MWDOC's service area have successfully used conservation to limit growth in water use, keeping retail water use relatively flat even as the County's population has increased.[3]

Future growth in water demand in MWDOC's service area will also be limited. By 2040, under normal conditions MWDOC expects total retail water demand in its service area to increase by only 3.27 percent, even as population grows by 10 percent.[4] In both normal years and single dry years, MWDOC's available water supply "will meet projected demand due to diversified supply and conservation measures."[5] Even in a multiple-year drought, "MWDOC is capable of meeting all retail agency demands with significant reserves held by [MWD] from 2020 through 2040 with a demand increase of 6 percent."[6] In a recent presentation to the MWDOC Board of Directors, MWDOC staff calculated only a 30 percent likelihood that available supplies may not meet demand in 2040; even then, they explained, a 10,700 acre-foot (AF) project would be sufficient to fill the anticipated gap. Staff also concluded that the Brookfield/Poseidon project "would supply more water than needed in most every year."[7]

As it works to reduce its reliance on imported water over time, Orange County has cheaper and more sustainable alternatives to the Project. MWDOC's Urban Water Management Plan describes many such options, including water recycling, stormwater capture, enhanced storage, and brackish groundwater desalination, as well as smaller seawater desalination projects. Collectively these projects could provide far more "new" water than the anticipated 56,000 AFY that the Brookfield/Poseidon project would produce. Specific examples[8] include:

Metropolitan Indirect Potable Reuse Project (Carson City)	65,000 AFY
Santa Ana River Conservation & Conjunctive Use Program	60,000 AFY
Expansion of water recycling throughout Orange County	53,520 AFY
Groundwater Replenishment System expansion	30,000 AFY
Doheny Desalination Project (using subsurface intakes)	16,800 AFY
West Orange County Enhanced Pumping Project	10,000 AFY
Total potential production of alternatives shown here	**235,320 AFY**

[3] Municipal Water District of Orange County, 2015 Urban Water Management Plan 2-1 (April 2016 Draft), *available at* http://bit.ly/2pb6C2M).

[4] Id. at 2-2 and 2-5.

[5] Id. at 3-47 and 3-48.

[6] Id. at 3-49.

[7] Municipal Water District of Orange County, OC Water Reliability Study Overview (February 6, 2017), *available at* http://bit.ly/2qSR1py.

[8] Id. at 6-3 and 7-2.

The Brookfield/Poseidon Project would set back California's efforts to advance climate-smart water policy

State policies and climate change strategies such as the Governor's Executive Order B-20-15 on Climate Change, the 2017 AB 32 Scoping Plan Update, *Safeguarding California*, and *Making Water Conservation a California Way of Life* aim to make California's water supply and conveyance system less energy intensive, reduce its direct and indirect GHG emissions, and make it more resilient to climate impacts. These policies require "full life-cycle cost accounting,"[9] and prioritize greater use of water conservation, efficiency, recycling, stormwater capture, and sustainable groundwater management.[10] Similarly, the State Water Resources Control Board's recent climate change resolution acknowledges the need to modify permits and other regulatory requirements to reduce the vulnerability of water infrastructure to flooding, storm surge, and sea level rise.[11]

By contrast, seawater desalination is the most energy-intensive water supply option available and, in the absence of an electricity supply that is based on renewable energy sources, will generate significant direct and indirect GHG emissions.[12] The Brookfield/Poseidon Project is no exception. It will create significant new, unplanned energy demand in a region that is already electrically constrained.[13] It will be fueled primarily by fossil fuels, generating more than 10,000 metric tons of GHGs in the course of its construction and nearly 70,000 metric tons of GHGs *each year* over anticipated lifetime.[14] The Project is also vulnerable to flooding and inundation from sea level rise and storms within its anticipated lifetime.[15]

The best way to reduce GHG emissions is to avoid them in the first place, and the best way to avoid vulnerability to sea level rise is to develop new sources that are not in the ocean's way. As noted above, Orange County has identified a range of less energy- and GHG-intensive options to

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[9] Executive Order B-30-15, Section 6 (April 29, 2015), *available at* http://bit.ly/1KmIVsi, ("State agencies shall take climate change into account in their planning and investment decisions, and employ full life-cycle cost accounting to evaluate and compare infrastructure investments and alternatives.")

[10] California Air Resources Board, 2017 Climate Change Scoping Plan Update (Jan. 20, 2017), *available at* http://bit.ly/2lQuFzb; California Natural Resources Agency, Safeguarding California Plan: 2017 Update (Draft, May 2017), *available at* http://bit.ly/1MgQd16; California Department of Water Resources, et al., Making Water Conservation a California Way of Life: Implementing Executive Order B-37-16 (April 2017), *available at* http://bit.ly/2oYfGZl.

[11] State Water Resources Control Board, Resolution No. 2017-0012, Comprehensive Response to Climate Change (March 7, 2017), *available at* http://bit.ly/2r9nWqj.

[12] H. Cooley and M. Heberger, Key Issues for Seawater Desalination in California: Energy and Greenhouse Gas Emissions (Pacific Institute, May 2013), *available at* http://bit.ly/2r9lUGF.

[13] See Natural Resources Defense Council, Proceed with Caution II: California's Droughts and Desalination in Context (March 2016), *available at* http://on.nrdc.org/2qofMHX.

[14] Poseidon Resources, Huntington Beach Desalination Plant, Energy Minimization and Greenhouse Gas Reduction Plan (Nov. 6, 2017), *available at* http://bit.ly/2r91NZg.

[15] California Coastal Commission, Poseidon Water Staff Report, Appeal No. A-5-HNB-10-225, pg. 75 (October 25, 2013); *available at http://bit.ly/2rQZoiK*. The Poseidon site and facility would be subject to flooding and tsunami runup, both of which would be exacerbated by expected higher sea levels during the life of the project.

secure new water. Orange County officials and California leaders should be encouraging those climate-smart alternatives to this Project.

The Brookfield/Poseidon Project would fail to alleviate reliance upon, or impacts to, freshwater ecosystems, including the Bay-Delta

Many of us have worked for decades to advance the long-term health and stewardship of the Bay-Delta as a critically important ecosystem and water supply. Many have also worked to improve local supplies in Southern California, as we know is necessary to make Southern California more self-reliant. However, seawater desalination is not a viable solution to this problem. As explained in a recent report from Stanford's Water in the West program:

> Ocean desalination will not, in the foreseeable future, significantly reduce stress on freshwater resources—particularly freshwater ecosystems. Even the highest total projected production of potable water from ocean desalination in California is so low that it will not meaningfully reduce stress on freshwater systems, such as, for example, exports from the Bay Delta system…. In addition, it is not clear the extent to which planned desalination facilities will provide the regions with supplemental supply and therefore work to reduce or replace existing demands on groundwater and surface water sources.[16]

Brookfield/Poseidon has not been able to identify any agreement or mechanism by which construction of its project would guarantee that water remains in the Bay-Delta or other surface water sources. Indeed, legal and practical barriers preclude any possibility that construction of this Project, or indeed any desalination facility in Southern California, would significantly reduce withdrawals from the Bay-Delta. The existing water supply contract between MWD and the State Water Project, which underlies exports to Orange County via MWD and MWDOC, prevents new local supplies in Southern California from limiting MWD's ability to import or use its full State Water Project entitlement.[17]

The Brookfield/Poseidon project fails to comply with California law and regulations governing seawater desalination facilities

Since 1976, California law and policy have strongly discouraged the use of "open ocean" water intakes for industrial facilities because they entrain and kill organisms that are integral parts of California's productive marine and coastal ecosystems.[18] Under state law and the U.S. Clean Water Act, such intakes are no longer permissible for coastal power plants, which must use alternative cooling technologies to minimize their impacts or else (in the case of existing

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[16] Leon Szeptycki, et al., *Marine and Coastal Impacts of Ocean Desalination in California* (Water in the West, Center for Ocean Solutions, Monterey Bay Aquarium, The Nature Conservancy, May 2016), *available at* http://stanford.io/2axdXE7.

[17] San Diego County Water Authority, SEAWATER DESALINATION PROGRAM AGREEMENT AMONG THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA, THE SAN DIEGO COUNTY WATER AUTHORITY, et al., SDP Agreement No. 70025, Section 13: Metropolitan's Imported Water Entitlements (Nov. 24, 2009).

[18] California Water Code § 31342.5(b); California Public Resources Code §§ 30230-31.

facilities) achieve comparable harm reduction through other means.[19] This clear emphasis on protecting California's ecology and natural heritage is continued under the State Water Resources Control Board's 2015 regulations governing seawater desalination facilities and brine disposal ("Desalination Policy"),[20] which are intended to minimize the "significant intake and mortality" of marine life, and the associated "loss of biological productivity," that is caused by the potential use of open ocean intakes at seawater desalination facilities.

The Desalination Policy establishes subsurface water intakes as the preferred technology for avoiding such harms. It requires the use of site selection, facility design (including but not limited to facility size), and control technologies to minimize environmental harms and, where such measures are demonstrably infeasible, requires mitigation to compensate fully for all unavoidable harms.[21]

The Brookfield/Poseidon project would fail to comply with the Desalination Policy, and fail to be consistent with California's long-standing priorities, if assessed for compliance today. The Project's current flaws include:

- Failure to identify a need for desalinated water that is sufficient to justify Brookfield/Poseidon's proposed choice of facility site, design (including size), and control technologies. (See discussion of needs and alternatives, above.)

- Failure to complete an environmental impact report (EIR) of the Project and related activities and actions, including the likely uses of Project water and the potential impacts of those uses on the environment; alternative means and routes of transmitting Project water to anticipated customers; potential impacts to marine protected areas (MPAs); and any anticipated updates or changes to the Project's site, design, and control technologies that would be required to secure a tidelands lease from the State Lands Commission and bring the project fully into compliance with all applicable state laws and policies.

- Continued use of the Huntington Beach Generating Station's antiquated open-ocean intakes past the end of 2019, thereby perpetuating harms that will no longer be caused by the generating station itself – and indeed would no longer be lawful for the station itself to cause under California's Once-Through Cooling (OTC) Policy.[22]

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[19] *See* State Water Resources Control Board, Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling, as amended April 7, 2015 ("OTC Policy"), *available at* http://bit.ly/2qkJr6D; *id.*, OTC Policy, Final Substitute Environmental Document (May 4, 2010), *available at* http://bit.ly/2qoCeAq.

[20] State Water Resources Control Board, Resolution No. 2015-0033, Amendment to the Statewide Water Quality Control Plan for the Ocean Waters of California Addressing Desalination Facility Intakes, Brine Discharges, and to Incorporate Other Nonsubstantive Changes ("Desalination Policy"), May 6, 2015, available at http://bit.ly/2pOC6cm.

[21] California Water Code § 13142.5(b); Desalination Policy, Part III.M.2.e ("Mitigation for the purposes of this section is the replacement of all forms of marine life or habitat that is lost due to the construction and operation of a desalination facility after minimizing intake and mortality of all forms of marine life through best available site, design, and technology.")

[22] OTC Policy § 3(E) (Huntington Beach Generation Station compliance deadline of December 31, 2020).

- Use of 1 mm screens to attempt to reduce marine life mortality, despite Water Code requirements that new or expanded industrial facilities must "minimize" marine life mortality, as well as conclusions by the State Water Board and its Expert Review Panel on Desalination Plant Entrainment Impacts and Mitigation that ***a 1 mm screen would reduce marine life mortality by, at most, one percent.*** Indeed the State Water Board found that "fine meshed screens … still allow all small phytoplankton and zooplankton, and the majority of eggs, and fish and invertebrate larvae to pass through" the screens and be entrained.[23] (By contrast, alternatives to full "Track 1" compliance with the OTC Policy must reduce mortality by 90 percent as compared to full compliance.[24])

- Failure to demonstrate that alternative facility sites, including sites that would support the use of subsurface intakes, would not be feasible.

- Failure to demonstrate that alternative facility designs, including a combination of smaller facility sizes and alternative intake designs, including subsurface intakes, would not be feasible. The State Water Board has determined that "a design capacity in excess of the need for desalinated water … shall not be used by itself to declare subsurface intakes as not feasible."[25]

- Failure to demonstrate, using a full life-cycle cost analysis, that the Project as proposed – as compared to the potential use of alternative sites, sizes, and designs for which subsurface intakes would be feasible – would be the only economically viable option for meeting the demonstrated need for the facility's water.[26]

- Failure to demonstrate that the Project will not adversely impact nearby state marine protected areas (MPAs) or the ecological connectivity between those MPAs.[27]

Because of these serious outstanding shortcomings, it is imperative that California's public trust and regulatory agencies undertake stringent analysis of the Brookfield/Poseidon project. If the Project cannot be brought into compliance, it must not be authorized to proceed.

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[23] State Water Resources Control Board, Final Staff Report Including Substitute Environmental Documentation for Amendment to California Ocean Plan Addressing Desalination Facility Intakes, Brine Discharges, and Incorporation of other Non-Substantive Changes 51, 56, 98 (2015) ("Desalination Policy SED"), *available at* http://bit.ly/2pN3qZ9.

[24] OTC Policy § 2 (A)2).

[25] Desalination Policy § M(2)(d)(1)(a).

[26] Desalination Policy § M(2)(d)(1(a)(i); Executive Order B-30-15, Section 6.

[27] See Public Resources Code §§ 36710 (stating that it is unlawful to "injure, damage, take, or possess" any living marine resource within a state marine reserve, and unlawful to "injure, damage, take, or possess" any living marine resource in a state marine conservation area for commercial or recreational purposes); Fish & Game Code § 2862 (requiring the Department of Fish and Wildlife to evaluate "proposed projects with potential adverse impacts to marine life and habitat in MPAs" and to "recommend measures to avoid or fully mitigate any impacts that are inconsistent with the goals and guidelines of [the Marine Life Protection Act] or the objectives of the MPA.").

MEMORANDUM OF UNDERSTANDING TO ADVANCE MANAGEMENT OF CALIFORNIA'S MARINE PROTECTED AREA NETWORK

I. OBJECTIVES

1.1 This Agreement outlines the purpose, roles, and partnership terms agreed upon by the Parties, as defined in Section II below, to advance the management of California's Marine Protected Area (MPA) Network. Parties represent state-, federal-, and local-level entities involved in California MPA management, including member agencies of the MPA Statewide Leadership Team (MSLT), the MPA Collaborative Network Staff, and the MPA Collaborative Network Members (described in Section III below). Representatives of the Parties worked together to develop the contents of the draft Agreement during a workshop in Sacramento on March 27-28th, 2017 and provided input throughout the subsequent Agreement development process.

1.2 The California Fish and Game Commission (Fish and Game Commission) recently adopted the Marine Life Protection Act (MLPA) Master Plan, which outlines the State's MPA Management Program and requires active engagement in four key focal areas: Outreach and Education, Enforcement and Compliance, Research and Monitoring, and Policy and Permitting. Since the inception of the statewide MPA Collaborative Network in 2013, its ability to aggregate local expertise to inform and support the management of the MPAs across the state has been critical to the success of the MPA Management Program. The MPA Collaborative Network is made up of 14 individual collaboratives generally associated with California's coastal counties. The Parties recognize that as a partnership between the MPA Collaborative Network and the State has grown, there is a need to more clearly define the shared purpose, roles, and responsibilities of this partnership (Partnership). This Agreement seeks to allow the Partnership to continue and to formally recognize the MPA Collaborative Network's significant contributions to the management of the State's MPA Network. This Agreement seeks to formalize the working relationship that has already been established between the MPA Collaborative Network and the MSLT, and to increase the MPA Collaborative Network's representation on the MSLT to better reflect local knowledge related to MPA management across the state.

II. PARTIES

2.1 This section describes the Parties to the Agreement and their roles within the Partnership. The Partnership will strive for an inclusive approach that incorporates input from all Parties as appropriate to inform California MPA management priorities.

2.2 The MSLT is an advisory body that promotes active and engaged communication among entities with significant authority, mandates, or interest in California's MPA Network, and advises on the MPA Management Program. The MSLT also coordinates among the Parties to identify shared priorities for the MPA Management Program and coordinate with MPA collaboratives on locally-driven initiatives.

The MSLT consists of an Executive Committee and a Working Group. The Executive Committee, which includes the Secretary for Natural Resources and directors of member agencies and organizations, meets biannually to review progress and set priority work areas. The Working Group includes a representative from each member agency or organization and meets quarterly (with additional calls as needed) to complete tasks and projects identified by the Executive Committee and identify priority work areas for Executive Committee approval.

2.2.1 The process for establishing tribal and collaborative representation on the MSLT is ongoing. The Parties intend to include representation from California tribes and tribal communities, and intend to expand representation from local MPA collaboratives. This Agreement may be updated to describe tribal and collaborative participation as agreed by the Parties.

2.2.2 The Ocean Protection Council (OPC), consisting of the Secretary of the California Natural Resources Agency, Secretary for Environmental Protection, Chair of the State Lands Commission, two legislative members and two public members, was created by the California Ocean Protection Act of 2004. OPC is tasked with coordinating the activities of ocean-related agencies to improve the effectiveness of State efforts to protect ocean resources and establishing policies to coordinate the collection and sharing of scientific information related to coast and ocean resources.

2.2.3 The California Natural Resources Agency (Agency) is a State of California cabinet-level agency which seeks to restore, protect, and manage the state's natural, historical, and cultural resources for current and future generations using creative approaches and solutions based on science, collaboration, and respect for all the communities and interests involved. The Agency oversees the policies and activities of 26 departments, boards, commissions, and conservancies.

2.2.4 The California Department of Fish and Wildlife (Department) is a state department within the Agency that is the trustee for fish and wildlife resources in the State of California and has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants and habitat necessary for biologically sustainable populations of those species. The Department is also responsible for management of specific lands and waters under their ownership. With respect to MPAs, the Department seeks to accomplish the objectives of the MPA Management Program through management of cooperative implementation of the coastwide MPA Network in a collaborative, cost-effective manner consistent with the policies of the MPA Management Program and the Department's public trust responsibilities.

The Fish and Game Commission recently adopted the MLPA Master Plan, which outlines the State's MPA Management Program, and requires active engagement in four key focal areas: Outreach and Education, Enforcement and Compliance, Research and Monitoring, and Policy and Permitting. The Department is a managing agency under the Marine Managed Areas Improvement Act (MMAIA).

2.2.5 The Fish and Game Commission is an independent, constitutionally-established state agency housed within the Agency whose mission is to ensure the long-term sustainability of California's fish and wildlife resources. The Fish and Game Commission is responsible for establishing state hunting and fishing regulations and, among other things, oversees the establishment of wildlife areas, ecological reserves, and the designation of MPAs under the MLPA. The Fish and Game Commission is a designating entity under the MMAIA.

2.2.6 The California Department of Parks and Recreation (State Parks) is a state department within the Agency whose mission is to provide for the health, inspiration, and education of the people of California by helping to preserve the state's extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high-quality outdoor recreation. As a trustee agency, State Parks is responsible for managing approximately one quarter of California's coastline, including dune ecosystems, beaches, coastal wetlands, estuaries, and nearshore marine areas. State Parks is a managing agency under the MMAIA.

2.2.7 The State Water Resources Control Board (Water Board) is a state agency within the California Environmental Protection Agency whose mission is to preserve, enhance, and restore the quality of California's water resources and drinking water for the protection of the environment, public health, and all beneficial uses, and to ensure proper water resources allocation and efficient use, for the benefit of present and future generations. The Water Board oversees nine California Regional Water Quality Control Boards (Regional Boards). The mission of the Regional Boards is to develop and enforce water quality objectives and implementation plans that will protect the State's waters, recognizing local differences in climate, topography, geology, and hydrology.

2.2.8 The California Coastal Commission (Coastal Commission) is an independent, quasi-judicial state agency housed within the Agency. The Coastal Commission's mission is to protect, conserve, restore, and enhance environmental and human-based resources of the California coast and ocean for environmentally sustainable and prudent use by current and future generations. The Coastal Commission, in partnership with coastal cities and counties, plans and regulates the use of land and water in the coastal zone. Development activities, which are broadly defined by the Coastal Act to include (among others) construction of buildings, divisions of land, and activities that change the intensity of use of land or public access to coastal waters, generally require a coastal permit from either the Coastal Commission or the local government.

2.2.9 The California State Lands Commission is an independent, quasi-legislative state agency housed within the Agency that has exclusive control, jurisdiction, and administration authority over all ungranted tide and submerged lands and the reversionary and residual interest of the State as to public trust lands legislatively granted to local governments. The Commission serves the people of California by providing stewardship of the lands, waterways, and resources entrusted to its care through economic development, protection, preservation, and restoration. Its members include the Lieutenant Governor, the State Controller, and the Governor appointed State Director of Finance.

2.2.10 The California Ocean Science Trust (OST) is a non-profit organization established by the California legislature to support, advance, and coordinate science integration to California ocean policies and management. OST works to broaden participation in science and include diverse sources of knowledge to inspire involvement in and understanding of California's MPA Network.

2.2.11 The Resources Legacy Fund (RLF) is an independent non-profit organization that supports and performs essential services to promote land, freshwater, and marine conservation. Consistent with its mission, RLF has developed and administered many strategic charitable programs, including one which is designed to achieve significant advances in coastal and marine conservation in California. RLF seeks to assist the Parties to achieve the implementation objectives of the MPA Management Program by providing funding, as available, and other assistance.

2.2.12 The United States National Park Service (Park Service) is a federal agency within the United States Department of the Interior whose mission is to preserve unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. The Park Service cooperates with partners to extend the benefits of natural and cultural resources conservation and outdoor recreation throughout this country and the world. There are several coastal California parks that conserve, restore, and manage diverse coastal and ocean resources. The National Park System of the United States now comprises 417 areas covering more than 84 million acres in 50 states, the District of Columbia, American Samoa, Guam, Puerto Rico, Saipan, and the Virgin Islands.

2.2.13 The United States Department of Commerce, National Oceanic and Atmospheric Administration (NOAA) is a federal science agency whose mission is to understand and predict changes in Earth's environment and conserve and manage coastal and marine resources to meet the nation's economic, social, and environmental needs. The agency works to achieve five strategic goals: (1) protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management; (2) understand climate variability and change to enhance society's ability to plan and respond; (3) serve society's needs for

weather and water information; (4) support the nation's commerce with information for safe, efficient, and environmentally sound transportation; and (5) provide critical support for NOAA's mission. Six line offices execute the programs required to achieve these goals: the National Weather Service; the National Marine Fisheries Service; the National Ocean Service; the National Environmental Satellite, Data, and Information Service; the Office of Oceanic and Atmospheric Research; and the Office of Program Planning and Integration. The Office of National Marine Sanctuaries manages 13 national marine sanctuaries and Papahānaumokuākea and Rose Atoll marine national monuments. Three of the four national marine sanctuaries off the California Coast have jurisdictions that overlap with state waters and the network of California MPAs.

2.3 MPA Collaborative Network Staff acts as a conduit between the MPA collaboratives and the MSLT to help identify shared priorities and opportunities for the Parties to provide support to one another. The MPA Collaborative Network Staff directly supports the MPA Collaborative Network Members and is also a member of the MSLT. Due to this unique bridging role, the MPA Collaborative Network Staff is highlighted separately from the MSLT and the MPA Collaborative Network Members throughout this document.

2.3.1 In addition to liaising between the MPA Collaborative Network Members and the MSLT, the MPA Collaborative Network Staff facilitates sharing of best practices and lessons learned among MPA Collaborative Network Members. By spearheading the development of communications mechanisms and scheduling calls and meetings among the Parties, the MPA Collaborative Network Staff leads communication efforts among collaboratives as well as between collaboratives and the MSLT. The MPA Collaborative Network Staff consists of the Network Director and may grow to include additional staff.

2.4 The MPA Collaborative Network is composed of 14 member MPA collaboratives that provide a localized, comprehensive approach to ocean resource management by bringing together local experts and authorities in the areas of outreach and education, enforcement and compliance, and research and monitoring. MPA Collaborative Network Members represent community stakeholders involved in MPA management in California's coastal counties. The role of the MPA collaboratives is to coordinate with local partners and share local priorities, reactions, and concerns to inform MPA management. In addition, the MPA collaboratives work with the Parties to enhance management of MPAs through locally and/or regionally organized projects. Each of the MPA collaboratives and their mission statements are listed below, in order from north to south.

2.4.1 Del Norte: Engaging diverse communities in support of MPAs and the resources they provide from Pelican Beach to Shelter Cove.

2.4.2 Humboldt: Engaging diverse communities in support of MPAs and the resources they provide from Pelican Beach to Shelter Cove.

2.4.3 Mendocino: The mission of the Mendocino MPA Collaborative is to enhance effectiveness and increase awareness of Mendocino County's marine protected areas.

2.4.4 Sonoma: To connect and empower community stewards to promote the long-term sustainability of Sonoma Coast marine ecosystems.

2.4.5 Golden Gate: The Golden Gate MPA Collaborative is dedicated to community engagement to safeguard the ocean and coastal ecosystems of San Francisco and Marin Counties.

2.4.6 San Mateo: Enhance awareness and promote stewardship of MPAs as special, protected places and sources of ecological, recreational and commercial value through the coordinated activities of community partners.

2.4.7 Santa Cruz: Embedding awareness of marine protected areas into existing programs to increase community engagement in stewardship.

2.4.8 Monterey: Our mission is to use a collaborative approach to increase MPA literacy to facilitate respect and stewardship of our coastal marine environment.

2.4.9 San Luis Obispo: To inspire individuals to become ocean stewards by cultivating an understanding and appreciation of the value and purpose of our local MPA's through research, education and enforcement.

2.4.10 Santa Barbara Channel: Fostering diverse community engagement to assist in the management of Santa Barbara Channel MPAs.

2.4.11 Los Angeles: The Los Angeles MPA Collaborative channels broad and diverse perspectives to build ocean resilience and promote the cultural, recreational, and ecological value of Los Angeles County's marine protected areas.

2.4.12 Orange County: The mission of OCMPAC is to collaborate at a regional level to assist and inform the public and partner agencies in order to support the effective management of Orange County marine protected areas.

2.4.13 Catalina: To act as grassroots stewards of Catalina's marine protected areas through engagement of local stakeholders and island visitors.

2.4.14 San Diego: The San Diego MPA Collaborative is a federal, state, county, municipal, tribal, and community alliance that facilitates local communication and coordination to support the management of marine protected areas through; 1. Outreach and Education, 2. Enforcement and Compliance, and 3. Research and Monitoring.

III. RECITALS

3.1 The Parties recognize the importance and high priority of cooperative actions at local, regional, and statewide scales to manage the MPA Network created pursuant to the MLPA. Completed in 2012 following a science-based and stakeholder-driven planning process, the MPA Network now includes 124 MPAs and 15 special closures that encompass 16% of state waters and protect marine and coastal ecosystems between the borders of Oregon and Mexico. California recently adopted the MLPA Master Plan, which outlines the State's MPA Management Program, and requires active engagement in four key focal areas: Outreach and Education, Enforcement and Compliance, Research and Monitoring, and Policy and Permitting. This Agreement formalizes the relationship among Parties and solidifies the Parties' roles in advancing the MPA Management Program. The Parties will cooperatively undertake efforts to inform, support, and implement actions as part of the MPA Management Program. This Agreement provides a structure for aligning priorities to advance management of the MPA Network and lays the groundwork for seeking support and funding for those shared priorities.

3.2 The Partnership formalized through this Agreement will foster collaboration and create a platform for incorporating input from all Parties to advance the MPA Management Program. This Agreement confirms the role of MPA collaboratives, which provide valuable financial and human resource contributions to MPA management by providing local input to inform and help guide discussions among the Parties. This Agreement also reinforces the partnership among MSLT members and provides a platform for collaboration among the MSLT, MPA Collaborative Network Staff, and MPA collaboratives.

3.3 In keeping with the collaborative statewide approach to MPA management, the Parties are committed to a core value of diversity underlying all aspects of the partnership. The Parties seek inclusive participation in the MPA Management Program and the MPA Collaborative Network, involving all willing and able federal, tribal, state, and local governments as well as universities, coastal businesses, conservation organizations, fishing interests, fishery organizations, and other interested parties. The partnership honors and respects tribal government involvement, the right to government-to-government communications, and the ability of tribes to request formal consultations with agencies outside the MPA Collaborative Network framework.

IV. GENERAL TERMS

4.1 The Parties seek to manage California's MPA Network in accordance with the MLPA by integrating diverse local and statewide perspectives and expertise.

4.2 Goals are attainable, measurable conditions that the Parties will strive to achieve in the coming five years. The following shared goals apply to all the Parties collectively.

4.2.1 Communication: Maintain and strengthen consistent communication, coordination, and information-sharing among Parties.

4.2.2 Direction and Priorities: Collaboratively identify and coordinate on shared priorities for the partnership to advance management of the MPA Network.

4.2.3 Funding and Staffing: Seek resources from the Parties and other diverse sources to support shared priorities.

4.3 The partnership will utilize the MSLT as the framework for facilitating collaboration among the Parties, including by using the existing MSLT meeting schedule to convene representatives from the Parties. Given that many Parties are current members of the MSLT, the partnership will augment the MSLT to build in representation of other Parties. In particular, the Parties are committed to adequate representation of the MPA collaboratives and tribes and tribal governments on the MSLT. The structure of the partnership and representation will evolve depending on the needs of the Parties and the resources available to the partnership.

4.4 The Parties recognize the value of evaluating collective achievements and shortcomings and implementing adaptive management to improve partnership functioning. Therefore, the Parties are committed to self-improvement, evaluation, and adaptive management of the partnership.

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

John Laird
Chair, California Ocean Protection Council
Secretary, California Natural Resources Agency

Date

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

Deborah Halberstadt Date
Executive Director
California Ocean Protection Council

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

Charlton H. Bonham Date
Director
California Department of Fish and Wildlife

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____	_____
Eric Sklar	Date
President	
California Fish and Game Commission	

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

Lisa Mangat
Director
California Department of Parks and Recreation

Date

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____	_____
Michael Lauffer	Date
Acting Executive Director	
State Water Resources Control Board	

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____	_____
John Ainsworth	Date
Executive Director	
California Coastal Commission	

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____	_____
Jennifer Lucchesi	Date
Executive Officer	
California State Lands Commission	

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

Nancy Sutley
Board Chair
California Ocean Science Trust

Date

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

Michael Mantell Date
President
Resources Legacy Fund

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

Laura Joss
Regional Director, Pacific West Region
United States National Park Service

Date

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

William J. Douros Date
West Coast Regional Director
Office of National Marine Sanctuaries
National Oceanic and Atmospheric Administration
National Ocean Service
NOS Agreement Number: [TO BE PROVIDED BY NOAA UPON SIGNING]

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

Calla Allison
Director
MPA Collaborative Network

Date

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

Rosa Laucci
Co-Chair
Del Norte MPA Collaborative

Date

_____ _____

John Corbett
Co-Chair
Del Norte MPA Collaborative

Date

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

Delia Bense-Kang
Co-Chair
Humboldt MPA Collaborative

Date

_____ _____

Beth Chaton
Co-Chair
Humboldt MPA Collaborative

Date

_____ _____

Joe Tyburczy
Co-Chair
Humboldt MPA Collaborative

Date

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

Theo Whitehurst
Co-Chair
Mendocino MPA Collaborative

Date

_____ _____

William Lemos
Co-Chair
Mendocino MPA Collaborative

Date

_____ _____

Anna Neumann
Co-Chair
Mendocino MPA Collaborative

Date

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

Suzanne Olyarnik Date
Co-Chair
Sonoma MPA Collaborative

_____ _____

Michele Luna Date
Co-Chair
Sonoma MPA Collaborative

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

Brian Baird
Co-Chair
Golden Gate MPA Collaborative

Date

_____ _____

David McGuire
Co-Chair
Golden Gate MPA Collaborative

Date

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

Rebecca Johnson
Co-Chair
San Mateo MPA Collaborative

Date

_____ _____

Carla Schoof
Co-Chair
San Mateo MPA Collaborative

Date

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

Rikki Eriksen Date
Co-Chair
Santa Cruz MPA Collaborative

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

Patricia Clark-Gray
Co-Chair
Monterey MPA Collaborative

Date

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

Gordon Hensley Date
Co-Chair
San Luis Obispo MPA Collaborative

_____ _____

Cara O'Brien Date
Co-Chair
San Luis Obispo MPA Collaborative

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

Kristen Hislop Date
Co-Chair
Santa Barbara Channel MPA Collaborative

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

Lauren Czarnecki-Oudin Date
Co-Chair
Catalina Island MPA Collaborative

_____ _____

Hillary Holt Date
Co-Chair
Catalina Island MPA Collaborative

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

Dana Roeber Murray
Co-Chair
Los Angeles MPA Collaborative

Date

_____ _____

Phyllis Grifman
Co-Chair
Los Angeles MPA Collaborative

Date

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

Carla Navarro Woods
Co-Chair
Orange County MPA Collaborative

Date

_____ _____

Jeremy Frimond
Co-Chair
Orange County MPA Collaborative

Date

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives.

_____ _____

Zach Plopper
Co-Chair
San Diego MPA Collaborative

Date

_____ _____

Isabelle Kay
Co-Chair
San Diego MPA Collaborative

Date

_____ _____

Kathy Weldon
Co-Chair
San Diego MPA Collaborative

Date

Ashcraft, Susan@FGC

From: Zubkousky-White, Vanessa (CDPH-DDWEM-EMB) <Vanessa.Zubkousky@cdph.ca.gov>
Sent: Monday, May 08, 2017 11:47 AM
To: Jacque Smith ; Jaytuk Steinruck; Ken Graves Rosa Laucci; Tom Weseloh (Tom.weseloh@sen.ca.gov); Ramey, Kirsten@Wildlife; Martel, Melissa (HUMBOLDT COUNTY); McNally, Brian (Del Norte); Ray, James@Wildlife; Trevena, Eric (CDPH-EMB); Ashcraft, Susan@FGC; Kalvass, Peter@Wildlife; Klasing, Susan@OEHHA
Subject: Razor Clam Domoic Acid Data, April 2017
Attachments: RazorClams_DA_Table.pdf

Hello,

Please see attached for the updated table of razor clam domoic acid results. CDFW collected recently from Humboldt County.
The Clam Beach meat samples are individual clams and the Little River State Beach samples are pooled groups of 6 clams.
The levels in the razor clams continue to be above the 20 ppm DA limit.

Thank you,
Vanessa

Vanessa Zubkousky-White
Senior Environmental Scientist
California Department of Public Health
Preharvest Shellfish Program
850 Marina Bay Pkwy., G165
Richmond, CA 94804
Phone (510) 412-4635 (new number)
Fax (510) 412-4637
vanessa.zubkousky@cdph.ca.gov

DOMOIC ACID LEVELS IN RAZOR CLAMS

May 8, 2017

County	Location	Collection Date	Collecting Agency	Sample Type	DA (parts per million)[1]
Del Norte	Crescent Beach	2/6/2016	Del Norte Health Dept	Meat	60
	Crescent Beach	2/6/2016	Del Norte Health Dept	Meat	81
	Crescent Beach	2/6/2016	Del Norte Health Dept	Meat	60
	Crescent Beach	2/6/2016	Del Norte Health Dept	Viscera	55
	Crescent Beach	2/6/2016	Del Norte Health Dept	Viscera	68
	Crescent Beach	2/6/2016	Del Norte Health Dept	Viscera	55
	Crescent Beach	4/3/2016	Del Norte Health Dept	Meat	41
	Crescent Beach	4/3/2016	Del Norte Health Dept	Meat	47
	Crescent Beach	4/3/2016	Del Norte Health Dept	Meat	61
	Crescent Beach	4/3/2016	Del Norte Health Dept	Viscera	55
	Crescent Beach	4/7/2016	Tolowa Dee-ni' Nation	Meat	9.3
	Crescent Beach	4/7/2016	Tolowa Dee-ni' Nation	Meat	21
	Crescent Beach	4/7/2016	Tolowa Dee-ni' Nation	Meat	120
	Crescent Beach	4/7/2016	Tolowa Dee-ni' Nation	Viscera	38
	Crescent Beach	4/10/2016	Volunteer	Meat	160
	Crescent Beach	4/10/2016	Volunteer	Meat	170
	Crescent Beach	4/10/2016	Volunteer	Meat	33
	Crescent Beach	4/10/2016	Volunteer	Meat	16
	Crescent Beach	4/10/2016	Volunteer	Meat	70
	Crescent Beach	4/10/2016	Volunteer	Meat	47
	Crescent Beach	4/10/2016	Volunteer	Meat	6.8
	Crescent Beach	4/10/2016	Volunteer	Meat	100
	Crescent Beach	4/10/2016	Volunteer	Meat	32
	Crescent Beach	4/10/2016	Volunteer	Meat	94
	Crescent Beach	4/10/2016	Volunteer	Viscera	110
	Crescent Beach	4/10/2016	Volunteer	Viscera	120
	Crescent Beach	4/10/2016	Volunteer	Viscera	25
	Crescent Beach	4/10/2016	Volunteer	Viscera	8.7
	Crescent Beach	4/10/2016	Volunteer	Viscera	35
	Crescent Beach	4/10/2016	Volunteer	Viscera	8.9
	Crescent Beach	4/10/2016	Volunteer	Viscera	61
	Crescent Beach	4/10/2016	Volunteer	Viscera	18
	Crescent Beach	4/10/2016	Volunteer	Viscera	94
	Crescent Beach	5/7/2016	Volunteer	Meat	16
	Crescent Beach	5/7/2016	Volunteer	Viscera	17
	Crescent Beach	5/7/2016	Volunteer	Meat	13
	Crescent Beach	5/7/2016	Volunteer	Viscera	14
	Crescent Beach	5/7/2016	Volunteer	Meat	14
	Crescent Beach	5/7/2016	Volunteer	Viscera	9.1
	Crescent Beach	6/5/2016	Volunteer	Meat	85
	Crescent Beach	6/5/2016	Volunteer	Viscera	69
	Crescent Beach	6/5/2016	Volunteer	Meat	18
	Crescent Beach	6/5/2016	Volunteer	Viscera	28
	Crescent Beach	6/5/2016	Volunteer	Meat	35
	Crescent Beach	6/5/2016	Volunteer	Viscera	60

[1] Federal action level is 20 parts per million.

Del Norte	Crescent Beach	6/5/2016	Volunteer	Meat	43
	Crescent Beach	6/5/2016	Volunteer	Viscera	59
	Crescent Beach	6/5/2016	Volunteer	Meat	57
	Crescent Beach	6/5/2016	Volunteer	Viscera	67
	Crescent Beach	6/21/2016	Volunteer	Meat	68
	Crescent Beach	6/21/2016	Volunteer	Viscera	76
	Crescent Beach	6/21/2016	Volunteer	Meat	44
	Crescent Beach	6/21/2016	Volunteer	Viscera	38
	Crescent Beach	6/21/2016	Volunteer	Meat	160
	Crescent Beach	6/21/2016	Volunteer	Viscera	130
	Crescent Beach	6/21/2016	Volunteer	Meat	81
	Crescent Beach	6/21/2016	Volunteer	Viscera	52
	Crescent Beach	7/5/2016	Tolowa Dee-ni' Nation	Whole	190
	Crescent Beach	7/20/2016	Volunteer	Meat	110
	Crescent Beach	7/20/2016	Volunteer	Viscera	85
	Crescent Beach	7/20/2016	Volunteer	Meat	200
	Crescent Beach	7/20/2016	Volunteer	Viscera	170
	Crescent Beach	7/20/2016	Volunteer	Meat	97
	Crescent Beach	7/20/2016	Volunteer	Viscera	94
	Crescent Beach	7/20/2016	Volunteer	Meat	170
	Crescent Beach	7/20/2016	Volunteer	Viscera	150
	Crescent Beach	7/20/2016	Volunteer	Meat	130
	Crescent Beach	7/20/2016	Volunteer	Viscera	110
	Crescent Beach	7/20/2016	Volunteer	Meat	230
	Crescent Beach	7/20/2016	Volunteer	Viscera	170
	Crescent Beach	8/19/2016	Volunteer	Meat	65
	Crescent Beach	8/19/2016	Volunteer	Viscera	61
	Crescent Beach	8/19/2016	Volunteer	Meat	43
	Crescent Beach	8/19/2016	Volunteer	Viscera	28
	Crescent Beach	8/19/2016	Volunteer	Meat	97
	Crescent Beach	8/19/2016	Volunteer	Viscera	97
	Crescent Beach	8/19/2016	Volunteer	Meat	67
	Crescent Beach	8/19/2016	Volunteer	Viscera	71
	Crescent Beach	8/19/2016	Volunteer	Meat	73
	Crescent Beach	8/19/2016	Volunteer	Viscera	67
	Crescent Beach	11/13/2016	Volunteer	Meat	58
	Crescent Beach	11/13/2016	Volunteer	Meat	< 2.5
	Crescent Beach	11/13/2016	Volunteer	Viscera	22
Humboldt	Clam Beach, McKinleyville	6/4/2015	CA Dept of Fish & Wildlife	Whole	11
	Moonstone Beach	6/17/2015	CA Dept of Fish & Wildlife	Meat	13
	Moonstone Beach	6/17/2015	CA Dept of Fish & Wildlife	Viscera	7.2
	Clam Beach, McKinleyville	7/3/2015	CA Dept of Fish & Wildlife	Meat	27
	Moonstone Beach	8/14/2015	CA Dept of Fish & Wildlife	Whole	340
	Moonstone Beach	10/26/2015	CA Dept of Fish & Wildlife	Whole	300
	Clam Beach, McKinleyville	1/24/2016	CA Dept of Fish & Wildlife	Meat	380
	Clam Beach, McKinleyville	1/24/2016	CA Dept of Fish & Wildlife	Viscera	300
	Clam Beach, McKinleyville	1/24/2016	CA Dept of Fish & Wildlife	Meat	140
	Clam Beach, McKinleyville	1/24/2016	CA Dept of Fish & Wildlife	Viscera	120
	Clam Beach, McKinleyville	1/24/2016	CA Dept of Fish & Wildlife	Meat	280
	Clam Beach, McKinleyville	1/24/2016	CA Dept of Fish & Wildlife	Viscera	210
	Clam Beach, McKinleyville	1/24/2016	CA Dept of Fish & Wildlife	Meat	92
	Clam Beach, McKinleyville	1/24/2016	CA Dept of Fish & Wildlife	Viscera	80
	Clam Beach, McKinleyville	1/24/2016	CA Dept of Fish & Wildlife	Meat	10
	Clam Beach, McKinleyville	1/24/2016	CA Dept of Fish & Wildlife	Viscera	9.8
	Moonstone Beach	4/6/2016	CA Dept of Fish & Wildlife	Meat	180
	Moonstone Beach	4/6/2016	CA Dept of Fish & Wildlife	Viscera	150

	Moonstone Beach	4/6/2016	CA Dept of Fish & Wildlife	Meat	120
	Moonstone Beach	4/6/2016	CA Dept of Fish & Wildlife	Viscera	91
	Moonstone Beach	4/6/2016	CA Dept of Fish & Wildlife	Meat	54
	Moonstone Beach	4/6/2016	CA Dept of Fish & Wildlife	Viscera	70
	Moonstone Beach	4/6/2016	CA Dept of Fish & Wildlife	Meat	100
	Moonstone Beach	4/6/2016	CA Dept of Fish & Wildlife	Viscera	110
	Moonstone Beach	4/6/2016	CA Dept of Fish & Wildlife	Meat	72
	Moonstone Beach	4/6/2016	CA Dept of Fish & Wildlife	Viscera	61
	Clam Beach, McKinleyville	5/9/2016	CA Dept of Fish & Wildlife	Viscera	9.8
	Clam Beach, McKinleyville	5/9/2016	CA Dept of Fish & Wildlife	Meat	24
	Clam Beach, McKinleyville	5/9/2016	CA Dept of Fish & Wildlife	Viscera	< 2.5
	Clam Beach, McKinleyville	5/9/2016	CA Dept of Fish & Wildlife	Meat	< 2.5
	Clam Beach, McKinleyville	5/9/2016	CA Dept of Fish & Wildlife	Viscera	80
	Clam Beach, McKinleyville	5/9/2016	CA Dept of Fish & Wildlife	Meat	75
	Clam Beach, McKinleyville	5/9/2016	CA Dept of Fish & Wildlife	Viscera	25
	Clam Beach, McKinleyville	5/9/2016	CA Dept of Fish & Wildlife	Meat	17
	Clam Beach, McKinleyville	7/6/2016	CA Dept of Fish & Wildlife	Meat	91
	Clam Beach, McKinleyville	7/6/2016	CA Dept of Fish & Wildlife	Viscera	89
	Clam Beach, McKinleyville	7/6/2016	CA Dept of Fish & Wildlife	Meat	78
	Clam Beach, McKinleyville	7/6/2016	CA Dept of Fish & Wildlife	Viscera	78
	Clam Beach, McKinleyville	8/19/2016	CA Dept of Fish & Wildlife	Meat	160
	Clam Beach, McKinleyville	8/19/2016	CA Dept of Fish & Wildlife	Viscera	140
	Clam Beach, McKinleyville	8/19/2016	CA Dept of Fish & Wildlife	Meat	96
	Clam Beach, McKinleyville	8/19/2016	CA Dept of Fish & Wildlife	Viscera	81
	Clam Beach, McKinleyville	8/19/2016	CA Dept of Fish & Wildlife	Meat	160
	Clam Beach, McKinleyville	8/19/2016	CA Dept of Fish & Wildlife	Viscera	120
	Clam Beach, McKinleyville	8/19/2016	CA Dept of Fish & Wildlife	Meat	130
	Clam Beach, McKinleyville	8/19/2016	CA Dept of Fish & Wildlife	Viscera	69
Humboldt	Clam Beach, McKinleyville	8/19/2016	CA Dept of Fish & Wildlife	Meat	80
	Clam Beach, McKinleyville	8/19/2016	CA Dept of Fish & Wildlife	Viscera	61
	Clam Beach, McKinleyville	8/19/2016	CA Dept of Fish & Wildlife	Meat	190
	Clam Beach, McKinleyville	8/19/2016	CA Dept of Fish & Wildlife	Viscera	130
	Clam Beach, McKinleyville	8/19/2016	CA Dept of Fish & Wildlife	Meat	34
	Clam Beach, McKinleyville	8/19/2016	CA Dept of Fish & Wildlife	Viscera	30
	Clam Beach, McKinleyville	11/13/2016	CA Dept of Fish & Wildlife	Meat	210
	Clam Beach, McKinleyville	11/13/2016	CA Dept of Fish & Wildlife	Meat	84
	Clam Beach, McKinleyville	11/13/2016	CA Dept of Fish & Wildlife	Meat	8.6
	Clam Beach, McKinleyville	11/13/2016	CA Dept of Fish & Wildlife	Meat	34
	Clam Beach, McKinleyville	11/13/2016	CA Dept of Fish & Wildlife	Viscera	57
	Clam Beach, McKinleyville	12/13/2016	CA Dept of Fish & Wildlife	Meat	78
	Clam Beach, McKinleyville	12/13/2016	CA Dept of Fish & Wildlife	Meat	44
	Clam Beach, McKinleyville	12/13/2016	CA Dept of Fish & Wildlife	Meat	82
	Clam Beach, McKinleyville	12/13/2016	CA Dept of Fish & Wildlife	Meat	92
	Clam Beach, McKinleyville	12/13/2016	CA Dept of Fish & Wildlife	Meat	39
	Clam Beach, McKinleyville	12/13/2016	CA Dept of Fish & Wildlife	Meat	23
	Clam Beach, McKinleyville	12/13/2016	CA Dept of Fish & Wildlife	Meat	32
	Clam Beach, McKinleyville	12/13/2016	CA Dept of Fish & Wildlife	Meat	99
	Clam Beach, McKinleyville	12/13/2016	CA Dept of Fish & Wildlife	Meat	99
	Clam Beach, McKinleyville	12/13/2016	CA Dept of Fish & Wildlife	Meat	18
	Clam Beach, McKinleyville	12/13/2016	CA Dept of Fish & Wildlife	Meat	220
	Clam Beach, McKinleyville	12/13/2016	CA Dept of Fish & Wildlife	Meat	57
	Clam Beach, McKinleyville	12/13/2016	CA Dept of Fish & Wildlife	Viscera	45
	Clam Beach, McKinleyville	2/10/2017	CA Dept of Fish & Wildlife	Meat	4.2
	Clam Beach, McKinleyville	2/10/2017	CA Dept of Fish & Wildlife	Meat	35
	Clam Beach, McKinleyville	2/10/2017	CA Dept of Fish & Wildlife	Meat	39
	Clam Beach, McKinleyville	2/10/2017	CA Dept of Fish & Wildlife	Meat	10
	Clam Beach, McKinleyville	2/10/2017	CA Dept of Fish & Wildlife	Meat	18

Humboldt	Clam Beach, McKinleyville	2/10/2017	CA Dept of Fish & Wildlife	Viscera	15
	Clam Beach, McKinleyville	3/9/2017	CA Dept of Fish & Wildlife	Meat	30
	Clam Beach, McKinleyville	3/9/2017	CA Dept of Fish & Wildlife	Meat	8.5
	Clam Beach, McKinleyville	3/9/2017	CA Dept of Fish & Wildlife	Meat	18
	Clam Beach, McKinleyville	3/9/2017	CA Dept of Fish & Wildlife	Meat	49
	Clam Beach, McKinleyville	3/9/2017	CA Dept of Fish & Wildlife	Meat	55
	Clam Beach, McKinleyville	3/9/2017	CA Dept of Fish & Wildlife	Meat	41
	Clam Beach, McKinleyville	3/9/2017	CA Dept of Fish & Wildlife	Meat	45
	Clam Beach, McKinleyville	3/9/2017	CA Dept of Fish & Wildlife	Meat	82
	Clam Beach, McKinleyville	3/9/2017	CA Dept of Fish & Wildlife	Meat	25
	Clam Beach, McKinleyville	3/9/2017	CA Dept of Fish & Wildlife	Meat	7.8
	Clam Beach, McKinleyville	3/9/2017	CA Dept of Fish & Wildlife	Meat	42
	Clam Beach, McKinleyville	3/9/2017	CA Dept of Fish & Wildlife	Meat	47
	Clam Beach, McKinleyville	3/9/2017	CA Dept of Fish & Wildlife	Meat	51
	Clam Beach, McKinleyville	3/9/2017	CA Dept of Fish & Wildlife	Meat	42
	Clam Beach, McKinleyville	3/9/2017	CA Dept of Fish & Wildlife	Viscera	36
	Clam Beach, McKinleyville	4/27/2017	CA Dept of Fish & Wildlife	Meat	19
	Clam Beach, McKinleyville	4/27/2017	CA Dept of Fish & Wildlife	Meat	4.2
	Clam Beach, McKinleyville	4/27/2017	CA Dept of Fish & Wildlife	Meat	32
	Clam Beach, McKinleyville	4/27/2017	CA Dept of Fish & Wildlife	Meat	21
	Clam Beach, McKinleyville	4/27/2017	CA Dept of Fish & Wildlife	Meat	35
	Clam Beach, McKinleyville	4/27/2017	CA Dept of Fish & Wildlife	Meat	16
	Clam Beach, McKinleyville	4/27/2017	CA Dept of Fish & Wildlife	Meat	35
	Clam Beach, McKinleyville	4/27/2017	CA Dept of Fish & Wildlife	Meat	44
	Clam Beach, McKinleyville	4/27/2017	CA Dept of Fish & Wildlife	Meat	55
	Clam Beach, McKinleyville	4/27/2017	CA Dept of Fish & Wildlife	Meat	44
	Clam Beach, McKinleyville	4/27/2017	CA Dept of Fish & Wildlife	Meat	29
	Clam Beach, McKinleyville	4/27/2017	CA Dept of Fish & Wildlife	Meat	30
	Clam Beach, McKinleyville	4/27/2017	CA Dept of Fish & Wildlife	Meat	56
	Clam Beach, McKinleyville	4/27/2017	CA Dept of Fish & Wildlife	Viscera	25
	Little River State Beach	4/28/2017	CA Dept of Fish & Wildlife	Meat	30
	Little River State Beach	4/28/2017	CA Dept of Fish & Wildlife	Viscera	26
	Little River State Beach	4/28/2017	CA Dept of Fish & Wildlife	Meat	16
	Little River State Beach	4/28/2017	CA Dept of Fish & Wildlife	Viscera	11
	Little River State Beach	4/28/2017	CA Dept of Fish & Wildlife	Meat	50
	Little River State Beach	4/28/2017	CA Dept of Fish & Wildlife	Viscera	38